

DEFINITIONS

For purposes of this permit, the following definitions shall apply:

"Background" means the naturally occurring level, plus two standard deviations from the mean, of constituents of an environmental medium not affected by facility operations or leakage from a regulated unit. The location of the sampling site shall be selected by the Permittee and approved by the Director.

"Board" means the Utah Waste Management and Radiation Control Board.

"Director" means the Director of the Utah Division of Waste Management and Radiation Control.

"Energetic" means a substance, either a pure compound or a mixture of compounds, capable of undergoing a very rapid chemical change. Energetics include high explosives, low explosives (propellants and pyrotechnics), incendiaries, fuse powders and thermites.

"Explosive" means a chemical compound or mixture which, when subjected to heat, impact, friction, shock or other suitable stimulus, undergoes a very rapid chemical reaction with the evolution of large volumes of heated gases that exert high pressures in the surrounding medium.

"Facility" means all contiguous land structures and other appurtenances, and improvements on the land at the Tooele Army Depot, Tooele County, Utah.

"High Explosive" means an energetic material in which the decomposition process (detonation) proceeds through the entire material at supersonic speed; a shock wave is produced.

"Low Explosive" means an energetic material in which the decomposition process (deflagration) occurs at subsonic speeds. The decomposition process occurs on the surface of the explosive only; there is no shock wave.

"Open Burn" means the high temperature oxidation of fuel with the release of heat and combustion products in an open, outdoor environment.

"Open Detonation" means a chemical reaction of explosive material in conjunction with a shock wave in an open, outdoor environment.

"Operating Day" means any fraction of a calendar day when the permittee operates any unit under this permit.

"RCRA" means the Resource Conservation and Recovery Act of 1976, as amended by The Solid and Hazardous Waste Amendments (HSWA) of 1984.

"Significance Level" means the observed level of contamination that has been determined to be allowed to remain at the point of any contamination for a pre-approved time period. While the concentration of a significance level is above background concentrations, the observed level must be below applicable maximum contaminant limits established under the federal Safe Drinking Water Act, water classification standards, or below applicable air quality standards.

"Waste Munitions" means all types of conventional ammunition products and their components, produced by or for the Department of Defense (DOD) for national defense and security. This includes munitions produced by other parties under contract to or acting as an agent for DOD.

All definitions contained in Utah Admin. Code R315-260, 261, 270, 264, 263 and 268, are hereby incorporated, in their entirety, by reference into this permit. Where terms are not defined in the regulations or this permit, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

ACRONYM LISTING

AA.....Atomic Adsorption
ACFM.....Actual Cubic Feet Per Minute
AMCArmy Material Command
AR.....As Required
ASC.....Allowable Stack Concentration
ASTMAmerican Society for Testing Materials
°CDegree Centigrade (Celsius)
CARCorrective Action Report
CEMSContinuous Emission Monitoring System
CFR.....Code of Federal Regulations
CO.....Carbon Monoxide
CO₂Carbon Dioxide
CQA.....Central Quality Assurance
CrChromium
CSFContainer Storage Facility
CVCoefficient of Variation
CWAClean Water Act
DCD.....Deseret Chemical Depot
DDESBDepartment of Defense Explosives Safety Board
DERADefense Environmental Restoration Account
DOD.....Department of Defense
DOTDepartment of Transportation
DREDestruction and Removal Efficiency
DRMODefense Reutilization and Marketing Office
DSCFM.....Dry Standard Cubic Foot per Minute
DWSDrinking Water Standard
EMDEnvironment Office
EMT.....Emergency Medical Technician
EOCEmergency Operations Center
EPA.....Environmental Protection Agency
°F.....Degree Fahrenheit
FDFire Department
FIDFlame-ionization Detector
FPDFlame-photometric Detector
GAL.....Gallon
GC.....Gas Chromatograph
GC/MS.....Gas Chromatograph/Mass Spectrometry
GPL.....General Population Limit
GPM.....Gallons per Minute

GOGO.....Government Owned Government Operated
 HAZHazardous
 HCl.....Hydrogen Chloride
 HEPA.....High Efficiency Particulate Air Filter
 HMISHazardous Materials Information System
 HVACHeating Ventilation and Air Conditioning
 HWHazardous Waste
 HWCP.....Hazardous Waste Contingency Plan
 HWMP.....Hazardous Waste Management Program
 HWMUHazardous Waste Management Unit
 ICSIncident Command System
 IDIdentification
 IOSCInstallation On-Scene Coordinator
 IRTInstallation Response Team
 ISCPInstallation Spill Contingency Plan
 LVSLow Volume Sample
 MM5EPA Modified Method Five
 MSDSMaterial Safety Data Sheet
 N/A.....Not Applicable
 NAAQSNational Ambient Air Quality Standards
 NFPANational Fire Protection Association
 NHMCNon-methane Hydrocarbons
 NIOSH.....National Institute for Occupational Safety and Health
 NISTNational Institute of Standards and Technology
 NSNNational Stock Number
 NSPS.....New Source Performance Standards
 OB/OD.....Open Burn/Open Detonation
 OJT.....On-the-Job Training
 OSC.....On-Scene Commander
 OSHAOccupational Safety and Health Administration
 P&APrecision and Accuracy (study)
 PAOPublic Affairs Office
 PASPollution Abatement System
 PCB.....Polychlorinated Biphenyl
 PEPPropellant, Explosive and Pyrotechnics
 PLCProgrammable Logic Controller
 POHC.....Principal Organic Hazardous Constituent
 POL.....Petroleum Oil and Lubricants
 PPEPersonal Protective Equipment
 PPBParts per Billion
 PPMParts per Million
 QA.....Quality Assurance

QC.....Quality Control
QL.....QC Sample Prepared in the Laboratory
QP.....QC Sample Prepared in the Plant
R315.....Utah Administrative Code (Hazardous Waste)
RCRA.....Resource Conservation and Recovery Act
RD&D.....Research, Development, & Demonstration
RDTE.....Research, Development, Testing, and Evaluation
RQ.....Reportable Quantity
RRT.....Regional Response Team
SCFM.....Standard Cubic Foot Per Minute
SOP.....Standard Operating Procedure
SPCCP.....Spill Prevention Control and Countermeasures Plan
SAA.....Satellite Accumulation Area
SSA.....Stack Sampling Apparatus
STEM.....Sampling Train for Explosive Materials
TCLP.....Toxicity Characteristic Leaching Procedure
TEAD.....Tooele Army Depot
TSDF.....Treatment, Storage, and Disposal Facility
TWA.....Time-weighted Average
UDWMRC.....Utah Division of Waste Management and Radiation Control
VOST.....Volatile Organic Sampling Train
WC.....Water Column

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MODULE I - STANDARD PERMIT CONDITIONS

I.A. EFFECT OF PERMIT

- I.A.1. The Permittee is allowed to store hazardous waste in containers and to treat hazardous waste by incineration, by initiating primers, by hydrolysis, and by Open Burn and Open Detonation (OB/OD) at the Tooele Army Depot, in accordance with the conditions of this Permit. The Permittee shall also comply with Utah Admin. Code R315-101, 102, 124, 260, 261, 270, 262, 263, 264, 266, 268, 270, and R305-7 as applicable. Any storage, treatment or disposal of hazardous waste not authorized in this Permit, or the *TEAD Post Closure Permit for Post Closure Monitoring and Corrective Action of Solid Waste Management Units*, is prohibited.
- I.A.2. For the purposes of this Permit, treatment shall not include operations at the Tooele Army Depot that involve the mechanical separation of military munitions or components for the purpose of recovery of the propellant or other components. Treatment shall include initiating primers in the small caliber disassembly process in building 1325 and building 1335.
- I.A.3. Compliance with this Permit constitutes compliance, for purposes of enforcement, with the Utah Solid and Hazardous Waste Rules.
- I.A.4. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations.

I.B. ENFORCEABILITY

- I.B.1. Violations documented through the enforcement process of Utah Code Annotated 19-6-112, and upheld through judicial action, may result in penalties assessed in accordance with Utah Admin. Code R315-102.

I.C. OTHER AUTHORITY

- I.C.1. The Director of the Division of Waste Management and Radiation Control (Director) expressly reserves any right of entry provided by law and any authority to order or perform emergency or other response activities as authorized by law.

I.D. PERMIT ACTIONS

- I.D.1. This Permit may be modified, revoked and reissued, or terminated for cause, as specified in Utah Admin. Code R315-270-4.41 and Utah Admin. Code R315-270-

43. If the Director determines that cause exists to modify, revoke and reissue or terminate this Permit, the action will proceed in accordance with Utah Admin. Code R315-124-5.

- I.D.2. The filing of a request for a permit modification, revocation and reissuance or termination, or the notification of planned changes, requiring prior agency approval, or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.
- I.D.3. All conditions of this Permit supersede conflicting statements, requirements or procedures in any of the attachments to this Permit.
- I.D.4. If a conflict exists between conditions of this Permit, the most appropriate condition, as determined by the Director, shall be met.
- I.D.4.a. Upon discovery of a conflict, a modification to the Permit shall be initiated by the Permittee to meet the Director's determination.
- I.D.5. The Director may modify this Permit in accordance with Utah Admin. Code R315-270-41.
- I.D.6. This Permit may be modified at the request of the Permittee in accordance with the procedures of Utah Admin. Code R315-270-42.
- I.D.7. In accordance with Utah Code Annotated 19-6-108(13), this Permit shall be reviewed no later than five years from the date of issuance or renewal and modified, if necessary.

I.E. SEVERABILITY

- I.E.1. The provisions of this Permit are severable and if any provision, or the application of any provision to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby. Invalidation of any State or federal statutory or regulatory provision which forms the basis for any condition of this Permit does not affect the validity of any other State or federal statutory or regulatory basis for said condition.

I.F. DUTIES TO COMPLY

- I.F.1. The Permittee shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with Utah Admin. Code R315-270-61 or a temporary authorization issued in accordance with Utah Admin. Code R315-270-42. Any Permit noncompliance, other than authorized by an emergency permit or temporary authorization, constitutes a violation of the Utah Solid and Hazardous

Waste Act, and is grounds for enforcement action, permit modification, revocation and reissuance termination, or denial of a permit renewal application, or a combination of an enforcement action and any of the other listed remedies.

- I.F.2. Compliance with the terms of this Permit does not constitute a defense to any order issued or any action brought under Sections 3007, 3008, 3013, or 7003 of RCRA (42 U.S.C. Sections 6927, 6928, 6934 and 6973), Section 106(a), 104, or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9606(a), 9604, and 9607, commonly known as CERCLA) as amended by the Superfund Amendments and Re-authorization Act of 1986 (SARA), or any other state or federal law providing for protection of human health or the environment from any imminent and substantial endangerment.

I.G. DUTY TO REAPPLY

- I.G.1. If the Permittee wishes to continue an activity allowed by this Permit after the expiration date of this Permit, the Permittee shall apply for and obtain a new Permit in accordance with Utah Admin. Code R315-270-30(b).

I.H. PERMIT EXPIRATION

- I.H.1. This Permit is effective for ten years and will expire on November 21, 2026.

I.I. CONTINUATION OF EXPIRING PERMIT

- I.I.1. This Permit, and all conditions herein, shall continue in force until the effective date of a new Permit if the Permittee has submitted a timely (at least 180 days prior to permit expiration) and complete application under the applicable requirements of Utah Admin. Code R315-270-51, and through no fault of the Permittee, the Director has neither issued nor denied a new permit with an effective date on or before the expiration date of the previous permit..

I.J. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

- I.J.1. It shall not be a defense, for the Permittee in an enforcement action, that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit.

I.K. DUTY TO MITIGATE

- I.K.1. In the event of noncompliance with this Permit, the Permittee shall take all reasonable steps to minimize releases to the environment resulting from the

noncompliance and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

I.L. PROPER OPERATION AND MAINTENANCE

I.L.1. The Permittee shall, at all times, properly operate and maintain all facilities, treatment systems and ancillary controls (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary equipment or similar systems when necessary to achieve compliance with this Permit.

I.M. DUTY TO PROVIDE INFORMATION

I.M.1. The Permittee shall furnish to the Director, within a reasonable time, any relevant information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this Permit.

I.N. INSPECTION AND ENTRY

I.N.1. Pursuant to the Utah Solid and Hazardous Waste Act, Utah Code Annotated 19-6-109, the Permittee shall allow any duly authorized officer, employee, or representative of the Director, upon the presentation of credentials and other documents, as may be required by law, to:

I.N.1.a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records are kept as required by the conditions of this Permit;

I.N.1.b. Have access to and copy, at reasonable times, any records that are kept as required by the conditions of this Permit;

I.N.1.c. Inspect, at reasonable times, any portion of the Facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit;

I.N.1.d. Sample or monitor, at reasonable times, for the purposes of assuring compliance with this Permit or the Utah Solid and Hazardous Waste Act, any substances or parameters at any location; and

- I.N.1.e. Make a record of the inspection by photographic, electronic, videotape, or any other reasonable medium. All photographic and video recordings shall comply with national security requirements.

I.O. MONITORING AND RECORDS

- I.O.1. The Permittee shall retain records of all sampling, monitoring and waste analysis information, including calibration and maintenance records and, where applicable, all original strip chart recordings (or equivalent recordings) for continuous monitoring instruments, copies of all reports and records required by this Permit, the waste minimization certification required by Utah Admin Code R315-264-75(h) and records of all data used to comply with the conditions of this Permit, including any and all data to support the human health and ecological risk assessments for operations at the OB/OD unit. All of the above referenced material shall be retained for a period of at least three years from the date of the sample, measurement, report, certification, or recording unless a longer retention period for certain information is required by other conditions of this Permit. The three-year period may be extended by the Director at any time by written notification to the Permittee. The retention times are automatically extended during the course of any unresolved enforcement action regarding the Facility to three years beyond the conclusion of the enforcement action. Recordkeeping may be accomplished using original documents, xerographic copies, document replicas, electronic facsimiles, electronic disk, CD-ROM computer drive files, microfilm, microfiche, photograph, magnetic tape or any other reasonable medium or similar recordkeeping technique. Any recordkeeping system shall be capable of reproducing complete, accurate and legible records.
- I.O.2. Pursuant to Utah Admin Code R315-270-30(j)(3), records of monitoring information shall specify at a minimum:
- I.O.2.a. The date(s), exact place, and times of sampling or measurements;
- I.O.2.b. The name(s), title(s), and affiliation of individual(s) who performed the sampling or measurements;
- I.O.2.c. The date(s) analyses were performed;
- I.O.2.d. The individual(s) who performed the analyses;
- I.O.2.e. The analytical techniques or methods used; and
- I.O.2.f. The results of such analyses.
- I.O.3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed shall be the appropriate method from Utah Admin. Code R315-261 Appendix I or an equivalent method approved

by the Director. Laboratory methods shall be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846 (hereafter referred to as SW-846), or Standard Methods of Examination of Water and Wastewater. Other alternate methods approved in this Permit, or an equivalent method, in accordance with Condition I.O.4. of this Permit will be allowed if approved by the Director.

- I.O.4. When requesting substitute or additional analytical methods, the Permittee shall submit to the Director a request for substitution of an analytical method(s) which is equivalent to the method(s) currently approved or listed in Utah Admin. Code R315-261 Appendices I. The request shall provide information demonstrating that the proposed method(s) requested is equivalent or superior in terms of sensitivity, accuracy, and precision (e.g., reproducibility).
- I.O.5. This permit contains and refers to documents and forms on which information and data is recorded. The Permittee may reformat documents and forms as necessary to carry out administrative duties. The Permittee may use alternative forms or add language to the forms and documents so long as the alternative forms or additions do not eliminate or change information this Permit requires the Permittee to record. Changes pertaining to a document or form that changes the required information shall only be changed in accordance with the provisions of Condition I.D.6.

I.P. REPORTING PLANNED CHANGES

- I.P.1. The Permittee shall give written notice to the Director prior to any planned physical alterations or additions to any hazardous waste management unit or system being permitted or previously permitted in accordance with Utah Admin. Code R315-270-30(1). Planned physical alterations or additions shall include all changes in any hazardous and solid waste activities and to any non-waste underground storage tanks regulated under Utah Admin. Code R311-202. Neither construction nor operation of new or modified hazardous waste units shall begin unless the provisions of Utah Admin Code R315-124-5 have been met. Failure to comply with this condition may result in penalties in accordance with Utah Admin. Code R315-102.

I.Q. REPORTING ANTICIPATED NONCOMPLIANCE

- I.Q.1. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with requirements of this Permit. Advance notice shall not constitute a defense for any noncompliance.

I.R. CERTIFICATION OF CONSTRUCTION OR MODIFICATION

- I.R.1. The Permittee shall not commence storage, treatment, or disposal of hazardous waste in a new hazardous waste management unit (HWMU) or in a modified portion of an existing permitted HWMU until:
 - I.R.1.a. The Permittee has submitted to the Director by certified mail, express mail, or hand delivery:
 - I.R.1.a.i. A letter signed by the Permittee and a registered professional engineer certifying that the unit has been constructed or modified in compliance with this Permit; and
 - I.R.1.a.ii. As-built engineering drawings and specifications as appropriate; and
 - I.R.1.a.iii. The Director or designated representative has reviewed and inspected the modified or newly constructed unit(s) and has notified the Permittee in writing that the unit was found to be in compliance with the conditions of this Permit; or
 - I.R.1.a.iv.. If within 15 calendar days of the date of receipt of the letter required by Condition I.R.1.a.iii., the Permittee has not received notice from the Director, of the intent to inspect, a prior inspection is waived and the Permittee may commence treatment, storage, or disposal of hazardous waste in the permitted unit certified in accordance with Condition I.R.1.a.

I.S. TRANSFER OF PERMIT

- I.S.1. This Permit may be transferred to a new owner or operator only if it is modified or revoked and reissued in accordance with Utah Admin. Code R315-270-40. Prior to transferring ownership or operation of the Facility during its operating life, the Permittee shall notify the new owner or operator, in writing, of the requirements of Utah Admin. Code R315-270, Utah Admin. Code R315-264 and this Permit.

I.T. TWENTY-FOUR HOUR REPORTING

- I.T.1. In accordance with Utah Admin. Code R315-270-30(1)(6)(i), the Permittee shall orally report to the Director any noncompliance with this Permit which may endanger human health or the environment. Any such information shall be reported as soon as possible, but not later than 24 hours from the time the Permittee becomes aware of the noncompliance.
- I.T.2. In accordance with Utah Admin. Code R315-263-30(b), the Permittee shall orally report to the Director any spill of any hazardous waste or material which, when spilled becomes a hazardous waste. Any such information shall be reported as soon as possible, but not later than 24 hours from the spill occurrence.
- I.T.3. The oral report shall include the following:

- I.T.3.a. Information concerning the release of any hazardous waste which may endanger public drinking water supplies;
- I.T.3.b. Any information of a release or discharge of hazardous waste, fire or explosion at the Facility which could threaten human health or the environment.
- I.T.3.c. A description of the occurrence and its cause;
- I.T.3.d. The name, title, and telephone number of individual reporting;
- I.T.3.e. The same, address, and telephone number of the owner or operator;
- I.T.3.f. The same, address, and telephone number of the Facility;
- I.T.3.g. The date, time, and type of incident;
- I.T.3.h. The location of the incident;
- I.T.3.i. The name and quantity of materials involved;
- I.T.3.j. The extent of injuries, if any;
- I.T.3.k. An assessment of actual or potential hazard to the environment and human health, when this is applicable;
- I.T.3.l. A description of any emergency action taken to minimize threat to human health and the environment;
- I.T.3.m. An estimated quantity and disposition of recovered material that resulted from the incident; and
- I.T.3.n. Any other information necessary to fully evaluate the situation and to develop an appropriate course of action.
- I.T.4. Within fifteen (15) days of the oral report required by Conditions I.T.1. through I.T.3., the Permittee shall submit a written report to the Director.
 - I.T.4.a. The written report shall include the following information:
 - I.T.4.a.i. The name, title, address, and telephone number of the individual reporting;
 - I.T.4.a.ii. A description of the incident including the date, time, location and nature of the reported incident;
 - I.T.4.a.iii. The extent of injuries, if any;
 - I.T.4.a.iv. The name and quantity of material(s) involved in the spill;

- I.T.4.a.v. An estimated quantity and disposition of recovered material;
- I.T.4.a.vi. An assessment of actual or potential hazards to human health and the environment, where this is applicable. The report shall also include an assessment of whether or not the incident remains a threat to human health and the environment (whether the noncompliance has been corrected and the release has been adequately cleaned up); and
- I.T.4.a.vii. If the release or noncompliance has not been adequately corrected or cleaned, the anticipated time that the noncompliance or clean up is expected to continue; the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance; and/or the steps taken or planned to adequately clean up the release.

I.U. MONITORING RECORDS

- I.U.1. Monitoring information shall be recorded and maintained as specified in Condition I.O.

I.V. COMPLIANCE SCHEDULES

- I.V.1. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted no later than fourteen (14) days following each scheduled date.

I.W. MANIFEST DISCREPANCY REPORT

- I.W.1. Manifest discrepancies shall be defined as differences between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity or type of hazardous waste the Permittee actually receives. Significant discrepancies in quantity are: (1) for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload, and (2) for bulk waste, variations greater than 10 percent in weight. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid or toxic constituents not reported on the manifest or shipping paper. If a significant discrepancy is discovered in a manifest, the Permittee shall attempt to reconcile the discrepancy. If not resolved within fifteen (15) days, the Permittee shall submit a written report, including a copy of the manifest, and efforts to reconcile the discrepancy, to the Director in accordance with Utah Admin. Code R315-264-72.

I.X. UNMANIFESTED WASTE REPORT

I.X.1. This report shall be submitted to the Director within fifteen (15) days of receipt of unmanifested waste in accordance with Utah Admin. Code R315-264-76.

I.Y. BIENNIAL REPORT

I.Y.1. A biennial report shall be submitted covering Facility activities during odd numbered calendar years. This report shall be submitted by March 1 of the following even numbered year in accordance with Utah Admin. Code R315-264-75.

I.Z. OTHER NONCOMPLIANCE

I.Z.1 The Permittee shall report all other instances of noncompliance with this Permit not otherwise required to be reported in accordance with Condition I.T., within seven days of discovering the noncompliance. The reports shall contain the information listed in Condition I.T. of this Permit. Reporting shall not constitute a defense for any noncompliance.

I.AA. OTHER INFORMATION

I.AA.1. Whenever the Permittee becomes aware that it failed to submit any relevant facts in a permit modification, or submitted incorrect information in a permit modification, or in any report submitted to the Director, the Permittee shall submit such facts or corrected information within seven days of discovery.

I.BB. SIGNATORY REQUIREMENT

I.BB.1. All reports, notifications, submissions or other information required by this Permit, requested by or submitted to the Director, shall be signed and certified in accordance with Utah Admin. Code R315-270-11 and Utah Admin. Code R315-270-30(k).

I.CC. CONFIDENTIAL INFORMATION

I.CC.1. The Permittee may claim confidential any information required to be submitted by this Permit in accordance with Utah Code Annotated §63G-02-309 et seq. and Utah Code Annotated §19-1-306 and implementing regulations.

I.DD. REPORTS, NOTIFICATIONS, AND SUBMISSIONS

- I.DD.1. All reports, notifications, or other submissions which are required by this Permit to be transmitted to the Director shall be sent by certified mail or other means with proof of delivery to:

Director
Division of Waste Management and Radiation Control
P.O. Box 144880
Salt Lake City, Utah 84114-4880

During normal business hours (8 am to 5 pm, Monday through Friday, except Utah State holidays) required oral notifications shall be given only to the Director or an employee of the Director at 801-536-2000. Notifications made at other times shall be made to the 24-hour answering service at 801-536-4123. Notifications made to the 24-hour answering service shall include all applicable information required by this Permit. The Permittee shall give oral notification to the Director or an employee of the Director on the first business day following notification to the 24-hour answering service.

I.EE. DOCUMENTS TO BE MAINTAINED AT THE FACILITY SITE

- I.EE.1. The Permittee shall maintain at the Facility, for the periods specified, current copies of the following documents and amendments, revisions and modifications to these documents:
- I.EE.1.a. Attachment 2 (Waste Analysis Plan), as required by Utah Admin. Code R315-270-14(b)(3) until closure is certified in accordance with Condition II.N.7.
- I.EE.1.b. Attachment 4 (Inspection Plan), as required by Utah Admin. Code R315-270-14(b)(5), for a period of three years in accordance with Utah Admin. Code R315-8-2.6(d).
- I.EE.1.c. Attachment 5 (Training Plan) and records, as required by Utah Admin. Code R315-270-14(b)(12) until closure for current employees, or for a period of three years for former employees in accordance with Utah Admin. Code R315-264-16(e).
- I.EE.1.d. Attachment 7 (Contingency Plan) as required by Utah Admin. Code R315-270-14(b)(7) until closure is certified in accordance with Condition II.N.7.
- I.EE.1.e. Operating record, as required by Utah Admin. Code R315-264-73 until closure is certified in accordance with Condition II.N.7.
- I.EE.1.f. Attachment 8 (Closure Plan) as required by Utah Admin. Code R315-270-14(b)(13) until closure is certified in accordance with Condition II.N.7.
- I.EE.1.g. Copies of manifests as required by Utah Admin. Code R315-262-40(a) for at least three years from the date the waste shipment was accepted at the Facility.

I.EE.1.h A copy of the Permittee's waste minimization statement until closure is certified in accordance with Condition II.N.7.

MODULE II - GENERAL FACILITY CONDITIONS

II.A. APPLICABILITY

- II.A.1. The requirements of this Permit module pertain to all Hazardous Waste Management Units (HWMUs) identified within this Permit.

II.B. DESIGN AND OPERATION OF FACILITY

- II.B.1. The Permittee shall design, construct, maintain and operate the HWMUs and surrounding areas to minimize the possibility of a fire, explosion, or any sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, groundwater or surface water which could threaten human health or the environment. Should one of these incidents occur, the Permittee shall investigate and determine the cause of the incident and implement corrective measures to prevent future occurrences. The Director may consider appropriate enforcement action, to include the cessation of waste management activities, until adequate resolution of the problem occurs.
- II.B.2. Any request for changes to the existing HWMUs shall be in accordance with Utah Admin. Code R315-270-42. Changes to the design and operation of a HWMU shall satisfy the requirements specified in this Permit and in the Utah Solid and Hazardous Waste Rules. Any changes to a HWMU must be documented on as-built drawings and with professional engineering certifications as required by Utah Admin. Code R315-270-30(1).
- II.B.3. After review of the as-built drawings and field verification of the units, the Director will notify the Permittee in writing of any change which he concludes does not satisfy the operating requirements specified in this Permit. If it is established that such changes are permit violations, the Director may require the Permittee to remove, replace or modify any construction inconsistent with this permit.

II.C. REQUIRED NOTICE

- II.C.1. As required by Utah Admin. Code R315-264-12(a)(1), the Permittee shall notify the Director in writing at least four weeks in advance of the date the Permittee expects to receive hazardous waste from a foreign source. Notice of subsequent shipments of the same waste from the same foreign source in the same calendar year is not required.
- II.C.2. When the Permittee arranges to receive hazardous waste from an off-site source, the generator must be informed in writing by the Permittee that he has the

appropriate permit for and will accept the waste the generator is shipping. As required by Utah Admin. Code R315-264-12 (b), the Permittee shall keep a copy of the written notice as part of the operating record.

II.D. WASTE ANALYSIS PLAN

- II.D.1. The Permittee shall comply with the waste analysis procedures found in Attachment 2 (Waste Analysis Plan). In addition, the Permittee shall comply with any other conditions of this permit involving waste analysis.
- II.D.2. The Permittee shall use the test methods described in Attachment 2 (Waste Analysis Plan) or an equivalent procedure that satisfies Condition I.O.3. Changes in a test method described in Attachment 2 (Waste Analysis Plan) as a result of an improvement or refinement of that method, may be adopted by the Permittee in accordance with Utah Admin. Code R315-124-5.
- II.D.3. The Permittee shall verify the analysis of each waste stream when new or modified wastes are known or suspected to have been generated and at least once every three years thereafter. The Permittee shall conduct an evaluation of each new waste stream generated on site and shall submit to the Director a report of the analysis in compliance with Utah Admin. Code R315-264-13. The Permittee shall conduct a yearly evaluation of each waste stream and shall submit to the Director a letter report certifying that the known waste streams have not changed. The Waste Stream Evaluation Form, as shown in Attachment 2 (Waste Analysis Plan), shall be used for these reports. Data from the analysis of waste streams shall be kept in the operating record.
- II.D.4. Sampling of any component of a waste munition to be stored, treated or both at TEAD, including the energetic material of a munition, is not required to meet the waste analysis requirements of Utah Admin. Code R315-264-13 or of 40 CFR 265.13 which is incorporated by reference into Utah Admin. Code R315-265. Generator knowledge will suffice. Generator knowledge to determine the detailed physical and chemical analysis of waste munitions shall include use of information in the MIDAS database as well as drawings and manufacturers information. All waste characterization information shall be kept in the operating record. Residues from the treatment of PEP wastes are subject to Condition II.D.3.
- II.D.5. At a minimum, the Permittee shall:
 - II.D.5.a. Maintain proper functional instruments;
 - II.D.5.b. Use approved sampling and analytical methods;
- II.D.6. If the Permittee uses a contract laboratory to perform analyses, the laboratory

shall be certified by the State of Utah to perform the contracted analyses. Provisional certification is not acceptable as certification under this condition. For parameters for which certification is unavailable, the laboratory shall provide quality control/quality assurance data sufficient to assess the validity of the data. The Permittee shall inform the laboratory in writing that it is required to follow the Waste Analysis Plan conditions set forth in Attachment 2 (Waste Analysis Plan).

II.E. SECURITY

II.E.1. The Permittee shall comply with security conditions and procedures contained in Attachment 3 (Security Procedures).

II.F. GENERAL INSPECTION REQUIREMENTS

II.F.1. The Permittee shall conduct inspections in accordance with Utah Admin. Code R315-264-15, and the procedures and schedule in Attachment 4 (Inspection Plan). In addition, the Permittee shall comply with the conditions pertaining to inspections in Modules III, IV, V, VI, and VII and the following conditions:

II.F.1.a. The Permittee shall remedy any deterioration or malfunction of equipment or structures as required by Utah Admin. Code R315-264-15(c). If the remedy requires more than 72 hours to implement, from the time that the problem is detected, the Permittee shall submit to the Director, before the expiration of the 72 hour period, a proposed time schedule for correcting the problem.

II.F.1.b. Records of inspections shall be kept as required by Utah Admin. Code R315-264-15(d).

II.G. PERSONNEL TRAINING

II.G.1. The Permittee shall conduct personnel training as required by Utah Admin. Code R315-264-16. The Permittee shall comply with the training procedures found in Attachment 5 (Training Plan). New personnel working with or around hazardous waste shall complete the required personnel training within six (6) months after their hire date, assignment to the Facility or assignment to a new position at the Facility. In addition, the Permittee shall comply with the following conditions:

II.G.1.a. Facility personnel shall annually review their initial training in both contingency procedures and the hazardous waste management procedures relevant to the positions in which they are employed.

II.G.1.b. The Permittee shall maintain training documents and records as required by Utah

Admin. Code R315-264-16(d) and Utah Admin. Code R315-264-16(e) and in accordance with Attachment 5 (Training Plan). These records shall indicate the type and amount of training received.

- II.G.1.c. The Permittee shall maintain a copy of Attachment 5 (Training Plan) at the Facility until the Facility is fully closed and closure is certified in accordance with Utah Admin. Code R315-264-115.

II.H. GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

- II.H.1. The Permittee shall comply with the requirements of Utah Admin. Code R315-264-17 and the requirements of all applicable National Fire Protection Association (NFPA) and Department of Defense Explosives Safety Board (DDESB) codes and standards.
- II.H.2. In addition to the requirements of Utah Admin. Code R315-264-17, the Permittee shall comply with the conditions of Modules III, IV, V, VI, and VII pertaining to ignitable, reactive, or incompatible waste.
- II.H.3. The Permittee shall separate and protect ignitable and reactive waste from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), water and radiant heat.
- II.H.4. The Permittee shall take precautions to prevent reactions which:
 - II.H.4.a. Generate extreme heat or pressure, fire or explosions, or violent reactions;
 - II.H.4.b. Produce uncontrolled toxic mists, fumes, dusts or gases in sufficient quantities to threaten human health or the environment;
 - II.H.4.c. Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
 - II.H.4.d. Damage the structural integrity of the device or facility;
 - II.H.4.e. Through other or like means, threaten human health or the environment.

II.I. RESERVED

II.J. PREPAREDNESS AND PREVENTION

- II.J.1. The Permittee shall follow the preparedness and prevention procedures found in Attachment 6 (Preparedness and Prevention Plan).
- II.J.2. At a minimum, the Permittee shall equip and maintain at the Facility and keep in good operating condition the equipment set forth in Attachment 6 (Preparedness and Prevention Plan), as required by Utah Admin. Code R315-264-32.
- II.J.3. The Permittee shall test and maintain the equipment specified in Condition II.J.2. as necessary to assure its proper operation in time of emergency.
- II.J.4. The Permittee shall maintain records of those preventative maintenance and repair activities specified in Condition II.J.3. and shall keep schedules reflecting minimum and planned frequency for the performance of preventative maintenance activities in the Operating Record at the Facility.
- II.J.5. The Permittee shall maintain access to the communications or alarm system as required by Utah Admin. Code R315-264-34.
- II.J.6. The Permittee shall maintain aisle space as required by Utah Admin. Code R315-264-35. A minimum of 2.5 feet of aisle space is required in the container and munitions storage areas.
- II.J.7. The Permittee shall attempt to make arrangements with state and local authorities as required by Utah Admin. Code R315-264-37. Any refusals to enter into an agreement shall be documented in the Operating Record.

II.K. CONTINGENCY PLAN

- II.K.1. The Permittee shall comply with Attachment 7 (Contingency Plan), and follow the emergency procedures described by Utah Admin. Code R315-264-56 whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which threatens or could threaten human health or the environment. The Permittee shall comply with Utah Admin. Code R315-263-30 and Condition I.T. in reporting releases to the Director.
- II.K.2. The Permittee shall maintain copies of the plan in accordance with the requirements of Utah Admin. Code R315-264-53.
- II.K.3. The Permittee shall review Attachment 7 (Contingency Plan) in accordance with Utah Admin. Code R315-264-54. The Permittee shall immediately amend, if necessary, Attachment 7 (Contingency Plan) in accordance with Utah Admin. Code R315-124- 5.
- II.K.4. A trained emergency coordinator shall be available at all times in case of an

emergency as required by Utah Admin. Code R315-264-55. The names, addresses and telephone numbers of all persons qualified to act as emergency coordinators shall be supplied to the Director as required by Utah Admin. Code R315-264-52(d).

II.L. MANIFEST SYSTEM

- II.L.1. The manifest number shall be recorded in the Operating Record with each waste load that leaves the Permittee's facility. The Permittee shall comply with Utah Admin. Code R315-262 Appendix and Utah Admin. Code R315-264-70 for the movement of each waste load off site.
- II.L.2. The manifest number shall be recorded in the Operating Record with each waste load that arrives at the Permittee's facility. The Permittee shall comply with the manifest requirements of Utah Admin. Code R315-264-71, Utah Admin. Code R315-264-72 and Utah Admin. Code R315-264-76.
- II.L.3. If the waste load is refused and returned to the generator, such actions shall be documented in the Operating Record.

II.M. RECORDKEEPING AND REPORTING

- II.M.1. The permittee shall maintain an accurate written Operating Record at the facility in accordance with Utah Admin. Code R315-264-73 and Utah Admin. Code R315-264 Appendix I.
- II.M.2. The Permittee shall, by March 1 of each year, submit to the Director:
 - II.M.2.a. A certification pursuant to Utah Admin. Code R315-264-73, signed by the owner or operator of the facility or an authorized representative, that the Permittee has a waste minimization program in place to reduce the volume and toxicity of hazardous waste that he generates to the degree determined by the Permittee to be economically practicable; and that the proposed method of treatment, storage, or disposal is the most practicable method currently available to the Permittee which minimizes the present and future threat to human health or the environment; and
 - II.M.2.b. A certification that OB and OD treatment is the only practicable method or combination of methods currently available to minimize the present and future threat to human health or the environment and that the Permittee has a program in place to investigate available technologies, other than the OB and OD of energetic wastes, to reduce the volume and toxicity of released treatment residues and discharges. A report with an evaluation of alternatives shall be included with the certification. The report shall present a list and analysis of viable alternatives according to technical feasibility, economic feasibility, impact to employee health

and safety and whether the alternatives will reduce releases and discharges to the environment. Alternatives that are not viable shall be identified with the rationale for the rejection.

- II.M.3. The Permittee shall comply with the biennial report requirements of Utah Admin. Code R315-264-75, by March 1 of each even-numbered reporting year. The report shall include wastes generated, treated and stored at the Permittee's facility during the previous odd-numbered year.
- II.M.4. The Permittee shall submit additional reports to the Director in accordance with Utah Admin. Code R315-264-77.
- II.M.5. All reports, notifications, applications, or other materials required to be submitted to the Director shall be submitted at the address shown in Condition I.DD.
- II.M.6. The Permittee shall maintain a copy of the certifications required in Condition II.M. in the operating record and sign each certification in accordance with Utah Admin. Code R315-262-41(a)(8) and Utah Admin. Code R315-270-11(d)(1).

II.N. CLOSURE/POST-CLOSURE

- II.N.1. The Permittee shall comply with Utah Admin. Code R315-264-110 and close the Facility in accordance with Attachment 8 (Closure Plan).
- II.N.2. For all HWMUs, minor deviations from the procedures found in Attachment 8 (Closure Plan) that are necessary to accommodate proper closure shall be described in narrative form with the closure certification statements. The Permittee shall describe the rationale for implementing minor changes as part of this narrative report. Within sixty (60) days after completion of closure of each hazardous waste management unit, the Permittee shall submit the certification statements and narrative report to the Director.
- II.N.3. The Permittee shall amend Attachment 8 (Closure Plan) and any post-closure plans in accordance with Utah Admin. Code R315- 124-5 whenever necessary, or when required to do so by the Director.
- II.N.4. The Permittee shall notify the Director in writing of the partial closure of any portion of the Facility in accordance with Utah Admin. Code R315-264-110. The Permittee shall notify the Director at least 180 days prior to the commencement of final facility closure. Attachment 8 (Closure Plan) will be reviewed by the Permittee, and modified if necessary, before commencing partial or final facility closure. If Attachment 8 (Closure Plan) requires modification, the plan shall be modified and submitted to the Director for approval in accordance Utah Admin. Code R315-270-42.

- II.N.5. After treating the final volume of hazardous waste, the Permittee shall remove from the site all hazardous waste and complete closure activities in accordance with the time frames specified in Attachment 8 (Closure Plan).
- II.N.6. The Permittee shall decontaminate or dispose of all facility equipment, structures, soil and rinsate as required by Utah Admin. Code R315-264-114 and Attachment 8 (Closure Plan). Facility equipment, structures and soil which have not been decontaminated shall be disposed of at a permitted Treatment, Storage and Disposal Facility (TSDF).
- II.N.7. The Permittee shall certify that the facility has been closed in accordance with the specifications in Attachment 8 (Closure Plan) and as required by Utah Admin. Code R315-264-115, and shall provide a certification by an independent, registered professional engineer qualified by experience and education in the appropriate engineering field.
- II.N.8. In the event that any hazardous waste management unit cannot be clean closed by removing hazardous constituents, contaminated soil and subsoil, and any contaminated groundwater as specified in Attachment 8 (Closure Plan), the Permittee shall modify Attachment 8 (Closure Plan) and any post-closure plan for that HWMU in accordance with Utah Admin. Code R315-124-5. Within 30 days of the date that the Director approves the modification request, the unit shall be closed as a landfill, in accordance with Utah Admin. Code R315-264-110.
- II.N.9. The Permittee shall submit a survey plat no later than the submission of certification of closure of each hazardous waste storage and treatment unit, in accordance with Utah Admin. Code R315-264-116.

II.O. FINANCIAL ASSURANCE FOR FACILITY CLOSURE

- II.O.1. The Permittee is exempt from the requirements for closure cost estimates in accordance with Utah Admin. Code R315-264-140.

II.P. RECEIPT OF OFF-SITE WASTE PROHIBITED

- II.P.1. The Permittee shall not receive hazardous wastes that are generated at other facilities except for:
- II.P.1.a. Wastes generated by TEAD during investigation or remediation of sites adjacent to TEAD that were contaminated from past TEAD operations;
- II.P.1.b. Department of Defense (DoD)-owned waste conventional military munitions that will be treated in the incinerator operated in accordance with Module IV of this Permit;

- II.P.1.c. DoD-owned waste conventional military munitions that will be recycled and treated in the small caliber disassembly line operated in accordance with Module V of this Permit;
- II.P.1.d. DoD-owned waste conventional military explosives that will be treated at the hydrolysis facility operated in accordance with Module V of this Permit;
- II.P.1.e. Waste conventional munitions generated at the Tooele Army Depot South Area (TEAD-S);
- II.P.1.f. Conventional military or commercial explosive items identified as hazardous waste and collected during emergency response situations and transported by U.S. Army Explosive Ordnance Disposal (EOD) Personnel. The collection of these wastes is limited to the area of Utah, Wyoming and Idaho and three counties in Nevada, namely, Elko, Eureka and White Pine. The maximum amount of explosive wastes that can be received and stored from one EOD emergency response shall be no more than 100 kg (220 pounds);
- II.P.1.g. DoD-owned waste conventional munitions that will be treated at the OB/OD area in accordance with Module VI of this Permit; and
- II.P.1.h. DoD-owned waste conventional military munitions that will be treated in the low temperature thermal treatment system operated in accordance with Module VII of this Permit.
- II.P.2. F999 and P999 wastes associated with lethal chemical agents shall not be stored or treated at TEAD.

II.Q. TREATMENT OF MUNITIONS CONTAINING DEPLETED URANIUM

- II.Q.1. Munitions containing depleted uranium in any form shall not be treated at the Facility without the express approval of the Director.

II.R. RISK THRESHOLDS

- II.R.1. Open Burn (OB) and Open Detonation (OD) operations shall be conducted in a manner that minimizes the risk to human health and the environment. The risk thresholds in Module VI for operations at the OB/OD area are based on risk assessments.
- II.R.2. At the request of the Director or the Permittee, the completeness and accuracy of the risk assessments shall be evaluated. At a minimum, the evaluation shall include the following information:

- II.R.2.a. A review of the list of chemicals/munitions constituents to add additional chemicals and emission factors as a result of updates in the waste characterization databases such as the MIDAS database;
- II.R.2.b A review of the toxicity information (reference doses, cancer slope factors), to include any new toxicity data.

MODULE III - STORAGE IN CONTAINERS

III.A. APPLICABILITY

- III.A.1. The requirements of this Module pertain to the operation of hazardous waste container and hazardous waste munitions storage areas at the Facility. The Permittee shall comply with Utah Admin. Code R315-264-170 and all conditions of this Module. The units regulated in this Permit include three munitions igloos, C815, C816 and A101; two Service Magazines, 1368 and 1370, an Above Ground Magazine 1205 and Building 528.

III.B. WASTE IDENTIFICATION

- III.B.1 The Permittee may store in containers only the hazardous waste identified by the following codes:

D001, D002, D003, D004, D005, D006, D007, D008, D009, D011, D018, D019, D020, D022, D023, D025, D026, D028, D029, D030, D032, D033, D035, D036, D037, D039, D040, D042, D043, F001, F002, F003, F004, F005, K047, P030, P098, P106, U002, U003, U019, U031, U041, U044, U051, U069, U075, U080, U127, U131, U151, U154, U188, U211, U220, U226, U239.

- III.B.2. The Permittee is prohibited from storing hazardous waste not identified in Condition III.B.1. Any addition of hazardous waste to Condition III.B.1. requires a modification to the permit in accordance with Condition I.D.

III.C. CONDITION OF CONTAINERS

- III.C.1. If a container holding hazardous waste is not in good condition (e.g., severe rusting, bulging, apparent structural defects) or it begins to leak, the Permittee shall transfer the hazardous waste from such container, or the container of hazardous waste itself, to a Department of Transportation (DOT) approved container. This shall be completed as soon as possible, but no later than 24 hours from the time the problem was first discovered and noted in the inspection log.

III.D. COMPATIBILITY OF WASTE WITH CONTAINERS

III.D.1. The Permittee shall ensure that the waste is compatible with the containers as required by Utah Admin. Code R315-264-172.

III.E. MANAGEMENT OF CONTAINERS

III.E.1. As required by Utah Admin. Code R315-264-173 the Permittee shall keep all containers closed except when it is necessary to add or remove waste. The Permittee shall not handle or store containers in a manner which may rupture or cause the containers to leak. The Permittee shall manage containers in accordance with the procedures contained in Attachment 9 (Containers).

III.E.2. The Permittee shall maintain aisle space as specified in Condition II.J.6. and Attachment 9 (Containers).

III.E.3. The Permittee shall not use containers for storage of liquid waste in the storage facilities identified in Condition III.F. larger than an 85-gallon over pack drum.

III.E.4. The Permittee shall not stack 55-gallon and 85-gallon containers more than two high.

III.F. CONTAINMENT UNITS

III.F.1. The Permittee shall construct, maintain and operate the containment systems in accordance with Attachment 9 (Containers). At capacity, the Permittee may store the following volumes of waste:

III.F.1.a. Building 528 - 57,800 gallons, which is 680 85-gallon liquid waste containers, or the equivalent, 7,500 cubic feet. Incompatible waste in Building 528 shall be segregated by bays and identified accordingly;

III.F.1.b. Igloo A-101 - 5,760 cubic feet;

III.F.1.c. Igloos C-815 and C-816 - 12,960 cubic feet each;

III.F.1.d. Service Magazines 1368 and 1370 - 800 cubic feet which is 10 pallets (80 cubic feet per pallet) or their equivalent; and

III.F.1.e. Above Ground Magazine 1205 - 72,000 cubic feet which is 162 pallets (100 cubic feet per pallet) or their equivalent.

III.F.2. A secondary containment sump in Building 528 shall be inspected for the presence of liquids in accordance with Attachment 4 (Inspection Plan). If liquids are discovered in the sump, the Permittee shall identify the source of the release in the inspection log. Any liquids discovered in the sump shall be removed and handled according to the plan outlined in Attachment 4 (Inspection Plan).

III.F.3. For the purpose of inspections, all containers shall be considered full to their respective capacities with liquid or solid hazardous waste.

III.G. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

III.G.1. The Permittee shall not store containers holding ignitable or reactive waste within 50 feet of the Facility's property line in accordance with Utah Admin. Code R315-264-176.

III.H. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTE

III.H.1. The Permittee shall not place incompatible waste or materials in the same container in accordance with Utah Admin. Code R315-264-177.

III.H.2. The Permittee shall not place hazardous waste or materials in an unwashed container that previously held an incompatible waste or material in accordance with Utah Admin. Code R315-264-177.

III.H.3. The Permittee shall document compliance with Conditions III.H.1. and III.H.2. and place the documentation in the Operating Record.

III.I. IDENTIFICATION AND LOCATION OF CONTAINERS IN OPERATING RECORD

III.I.1. The Permittee shall record in the Operating Record the location of each container of hazardous waste and hazardous waste munition accepted in any container storage area until it is shipped off site or taken for treatment to the incinerator, the Small Caliber Disassembly Process, Hydrolysis, or the OB/OD unit.

III.J. INSPECTIONS

III.J.1. The Permittee shall conduct inspections of the storage areas identified in Condition III.A. of this Permit in accordance with the schedule outlined in Attachment 4 (Inspection Plan).

III.K. CLOSURE/POST CLOSURE

III.K.1. The Permittee shall close the storage areas in accordance with Utah Admin. Code R315-264-110, Utah Admin. Code R315-264-178, Condition II.N, and the procedures of Attachment 8 (Closure Plan).

III.L. STORAGE OF MUNITIONS

III.L.1. All waste munitions stored in containers or on pallets or other packing materials shall be stored in compliance with all applicable Department of Defense (DOD) Ammunition and Explosives Safety Standards.

MODULE IV - INCINERATION

The incinerator consists of an oil-fired rotary kiln with an oil-fired afterburner. The off-gas pollution control system consists of a cyclone dust separator between the kiln and afterburner, and a high temperature cast ceramic filter baghouse prior to the high temperature draft fan and exhaust stack. Waste is fed through an interlocked waste feed monitoring system to a single conveyor which empties into a feed hopper, which empties into the kiln. The solid waste exits the rotary kiln at the discharge/burner end. It is removed by the discharge conveyor and collected in drums. Additional details on the design of the system are found in Attachment 14 (System Description).

IV.A. OPERATION AND MAINTENANCE

- IV.A.1. The Permittee shall maintain and operate the incineration system in accordance with the drawings, specifications, and procedures contained in Attachment 10 (APE 1236 Drawings), Attachment 11 (Incinerator Shut Down Procedures), Attachment 13 (Process Control Equipment), Attachment 14 (System Description), and Attachment 15 (Continuous Emissions Monitor System CEMS).
- IV.A.2. Modifications to the drawings and specifications for the incineration system shall be allowed only in accordance with the permit modification requirements in Condition I.D.
- IV.A.3. All process monitors, required pursuant to Conditions IV.E, shall be equipped with alarms operated to warn of deviation or imminent deviation from the limits specified in Condition IV.D.
- IV.A.4. The Permittee shall maintain the incinerator and ancillary equipment in good repair. Routine maintenance shall be performed at sufficient frequency to ensure the incinerator remains in good repair. Malfunctions and deterioration shall be corrected as expeditiously as possible.
- IV.A.5. The Permittee shall maintain the incineration system so that when it is operated in accordance with the requirements in this permit, it will meet the performance standards specified in Condition IV.B.

IV.B. PERFORMANCE STANDARDS

- IV.B.1. The incinerator shall achieve a destruction and removal efficiency (DRE) of at least 99.99% for each of the principal organic hazardous constituents (POHCs) designated below.
- a. hexachlorobenzene (HCB)
 - b. dinitrotoluene (DNT)
 - c. nitroglycerin (NG)

The DRE shall be calculated in accordance with the formula given below.

$$DRE = \frac{W_{in} - W_{out}}{W_{in}} * 100\%$$

Where: W_{in} = mass feed rate of one POHC in the waste feeding the incinerator
 W_{out} = mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere

The DRE may not be rounded up to meet the required standard of 99.99%.

IV.B.2. The incinerator shall not emit particulate matter in excess of 180 milligrams per dry standard cubic meter (0.08 grains per dry standard cubic foot) when corrected to 7% oxygen in accordance with the formula given below.

$$P_c = P_m * \frac{14}{21 - Y}$$

Where: P_c = corrected concentration of particulate matter

P_m = measured concentration of particulate matter

Y = measured O₂ concentration (%) in the stack gas on a dry basis

IV.B.3. The Permittee shall control hydrogen chloride (HCl) emissions so that the rate of emissions is no greater than the larger of either 1.8 kilograms per hour (4.0 pounds per hour) or one percent of the HCl in the combustion gas prior to entering any pollution control equipment.

IV.B.4. The Permittee shall control emissions of products of incomplete combustion from the stack so that the carbon monoxide (CO) level in the stack, corrected to 7% oxygen in accordance with the formula given below, shall not exceed 100 ppmv, dry basis, over a one hour rolling average and shall not exceed 500 ppmv, dry basis, for more than one minute at any time.

$$CO_c = CO_m * \frac{14}{21 - Y}$$

Where: CO_c = corrected CO concentration (ppmv) on a dry basis

CO_m = measured CO concentration (ppmv) on a dry basis

Y = measured O₂ concentration (%) in the stack gas on a dry basis

IV.B.5. The Permittee shall control metal emissions from the stack so that the rate of emission for each metal or metal group is no greater than the maximum allowable emission rate specified herein.

Semivolatile metals (SVM)

(lead and cadmium combined).....	230 µg/dscm @ 7% O ₂
Low volatile metals (LVM)	
(arsenic, beryllium and chromium combined)	92 µg/dscm @ 7% O ₂
Barium.....	1392 µg/dscm @ 7% O ₂

IV.B.6. Compliance with the operating conditions specified in Condition IV.D of this permit shall be regarded as compliance with the required performance standards identified in Conditions IV.B.1 through IV.B.5. However, if it is determined that compliance with the operating conditions in Condition IV.D is not sufficient to ensure compliance with the performance standards specified in Conditions IV.B.1 through IV.B.5, the permit may be modified, revoked, or reissued, pursuant to Condition I.D.

IV.C. FEED LIMITATIONS

IV.C.1. The Permittee may only feed propellant, explosive and pyrotechnics (PEP) reactive waste munitions. No other wastes except incidental wrappings, holders and PEP containers may be incinerated.

IV.C.2. Only one type of waste munition or propellant shall be incinerated at a time.

IV.D. OPERATING REQUIREMENTS AND FEED RATE LIMITS

The Permittee may feed the wastes described in Condition IV.C. to the incinerator only under the following conditions:

IV.D.1. The combustion gas temperature at the kiln exit shall be maintained below 680°F. The kiln gas exit temperature shall be monitored and recorded continuously.

IV.D.2. The kiln rotation shall not be less than 1 rpm. The maximum kiln rotation shall not exceed 3 rpm. The kiln rotation speed shall be monitored and recorded continuously.

IV.D.3. The pressure within the kiln combustion zone shall not be above atmospheric for more than 5 seconds. The combustion zone differential pressure shall be monitored and recorded continuously.

IV.D.4. The combustion gas temperature at the outlet of the afterburner shall be maintained between 1611°F and 1811°F on an hourly rolling average basis. This temperature shall be monitored and recorded continuously.

IV.D.5. The carbon monoxide (CO) concentration in the stack exhaust gas, corrected to seven percent oxygen in accordance with the formula specified in Condition IV.B.4, shall not exceed 100 ppmv, dry basis, over a one hour rolling average, and shall not exceed 500 ppmv, dry basis, for more than 60 seconds at any time. The uncorrected and corrected CO concentration in the stack and the one-hour rolling average shall be monitored and recorded on a continuous basis. The oxygen

concentration in the stack shall also be monitored and recorded on a continuous basis.

- IV.D.6. The combustion gas temperature at the inlet of the baghouse shall not exceed 1048°F or be less than 750°F on an hourly rolling average basis. The baghouse temperature shall be monitored and recorded continuously.
- IV.D.7. The pressure drop across the baghouse shall not be less than 3.5 inches W.C. (inches H₂O). Pressure drop across the baghouse shall be monitored and recorded continuously.
- IV.D.8. Combustion gas velocity, measured at the stack, shall not exceed 45 feet per second on an hourly rolling average basis. The combustion gas velocity at the stack shall be monitored and recorded on a continuous basis.
- IV.D.9. The Permittee shall limit the total PEP feed rate to 56 pounds per hour.
- IV.D.10. The total potential particulate generation rate of items fed to the incinerator shall not exceed 66 pounds per hour. The potential particulate generation rate for the items fed is calculated by the following method. (1) A particulate generation factor (mass of potential particulate emissions per mass of reactant) is obtained from Attachment 12 (Particulate Generation Factors) for each component in the feed. (2) These factors are then multiplied by the feed rates of their respective components to obtain a potential particulate generation rate for each component. (3) The potential particulate generation rate for each component is then summed for a total potential particulate generation rate.
- IV.D.11. The total chloride fed to the system shall not exceed 2.2 pounds per hour.
- IV.D.12.a. The semivolatile metals (SVM) (lead and cadmium combined) fed to the system shall not exceed 0.22 pounds per hour.
- IV.D.12.b. The low volatile metals (LVM) (arsenic and beryllium and chromium combined) fed to the system shall not exceed 0.25 pounds per hour.
- IV.D.12.c. The barium fed to the system shall not exceed 19.13 pounds per hour.
- IV.D.12.d. Mercury shall not be fed to the system.
- IV.D.13. At no time will the weight of the munitions fed exceed the component feed rates listed above.

IV.E. MONITORING, RECORDKEEPING, AND CALIBRATION REQUIREMENTS

- IV.E.1. Hazardous wastes may be fed to the incinerator only when all instruments required by this condition are on-line and operating properly.

- IV.E.2. The Permittee shall maintain and operate the monitoring and recording equipment and record the data specified in Conditions IV.D.1 through IV.D.8 and Conditions IV.E.5 through IV.E.6 while burning hazardous wastes. The data shall be monitored and recorded as specified in Conditions IV.D and IV.E. The monitoring equipment shall provide accurate data.
- IV.E.3. The oxygen concentration and uncorrected CO concentration shall also be recorded continuously during the daily calibration checks.
- IV.E.4. The monitoring instruments shall be calibrated in accordance with Attachment 13 (Process Control Equipment). Records shall be maintained of any calibrations or maintenance performed on any of these instruments.
- IV.E.5. The munition feed rate shall be monitored and recorded. This shall be accomplished by recording the time the system is feeding waste and the number of items and/or the weight fed during each batch. The type of munition fed shall also be recorded. The feed rate shall be quantified in pounds per hour.
- IV.E.6. The feed rate of all waste materials shall be monitored and recorded on a daily basis. The feed rate shall be quantified in pounds per hour.
- IV.E.7. Prior to incinerating any munition, the Permittee shall have sufficient waste analysis data for that material to demonstrate that the feed rates specified in Conditions IV.D.9 through IV.D.12 will be met at the programmed munition feed rate. This information must be available for review by the Director at the incinerator whenever the material is being incinerated.
- IV.E.8. Alarms generated by the plant control system shall be recorded and made available for review by the Director.
- IV.E.9. The Permittee shall record the date and time of all automatic waste feed cut-offs, including the triggering parameter(s), reason for the cut-off, and corrective action(s) taken. The Permittee shall also record all failures of the automatic waste feed cut-off system to function properly and corrective actions taken.
- IV.E.10. The Permittee shall comply with Utah Admin. Code R315-266-100, which incorporates 40 CFR 266 Appendix IX, Section 2.1, *Performance Specifications for Continuous Emission Monitoring of Carbon Monoxide and Oxygen for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste*, by reference.
- IV.E.11. Copies of the data collected under this condition shall be provided to the Director upon request. The data shall be provided in electronic format if requested.

IV.F. WASTE FEED CUT-OFF REQUIREMENTS

The Permittee shall operate and maintain the systems to automatically cut off the hazardous waste feed to the incinerator under any of the following conditions:

SYSTEM PARAMETER	IMMEDIATE CUTOFF LIMIT	DELAYED CUTOFF LIMIT	DELAY PERIOD
1. Kiln temperature	>680°F	N/A	N/A
2. Kiln rotation	<1 rpm	N/A	N/A
3. Kiln rotation	>3 rpm	N/A	N/A
4. Kiln pressure	N/A	>atmospheric	5 seconds
5. Afterburner temperature	<1611°F HRA	N/A	N/A
6. Afterburner temperature	>1811°F HRA	N/A	N/A
7. Baghouse temperature	<750°F HRA	N/A	N/A
8. Baghouse temperature	>1048°F HRA	N/A	N/A
9. Baghouse pressure drop	<3.5" W.C.	N/A	N/A
10. CO concentration in the stack (corrected to 7% O ₂ , dry basis)	>100 ppmv (one hour rolling ave.)	>500 ppmv	60 seconds
11. Stack gas velocity	>45 fps HRA	N/A	N/A
12. Kiln burner flame out	loss of flame	N/A	N/A
13. Afterburner flame out	loss of flame	N/A	N/A
14. CO/O ₂ gas monitor	Failure	N/A	N/A
15. Waste feed scale	Failure	N/A	N/A
16. Retort combustion air fan	Failure	N/A	N/A
17. Retort burner controls	Failure	N/A	N/A
18. Afterburner controls	Failure	N/A	N/A
19. Afterburner combustion air fan	Failure	N/A	N/A
20. Draft fan	Failure	N/A	N/A
21. Draft fan controller	Failure	N/A	N/A

IV.F.26. In addition to the waste feed cut-off systems and associated set points specified in Conditions IV.F.1 through IV.F.23, the Permittee shall construct and maintain additional systems to manually or automatically cut off the waste feed to the incinerator under any of the following conditions:

IV.F.26.a. Any mechanical malfunction with either the incinerator system or controls which would compromise the integrity of the system.

- IV.F.26.b. Air pollution control device waste residue collection bins, hoppers, or containers are full and additional waste feeds would cause these receptacles to overflow.
- IV.F.27. The waste feed rate monitoring system shall be programmed so that the combination of weight allowed per cycle and the cycle frequency will not allow the feed rates specified in Conditions IV.D.9 through IV.D.12 to be exceeded.
- IV.F.28. In the case of a malfunction of the automatic waste feed cut-off system, the Permittee shall immediately initiate the furnace shut down procedure as described in Attachment 11 (Incinerator Shut Down Procedures). The Permittee shall not restart the waste feed until the problem causing the malfunction has been identified and corrected.
- IV.F.29. If the automatic waste feed cut-off system fails to function properly, the Permittee shall notify the Director in writing within seven days indicating the reason for the malfunction and also describing corrective measures taken by the Permittee to preclude future occurrences.
- IV.F.30. The Permittee shall test the emergency waste feed cut-off system and associated alarms listed in Conditions IV.F.1 through IV.F.23 at least weekly to verify operability. For purposes of this waste feed cutoff test, weekly is defined as 168 hours of operation on hazardous waste. Shutting off the fuel supply at each of the burners will be considered sufficient for testing the cutoff systems associated with Conditions IV.F.12 through IV.F.13. Additionally, the waste feed cutoff test may be run with the afterburner low temperature interlock set at 1300°F.

IV.G. TESTING REQUIREMENTS

- IV.G.1. The Permittee shall conduct periodic sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standards. This sampling and analysis or subsequent performance testing shall be performed during each odd calendar year (i.e. 2001, 2003, etc.) or more often if requested in writing by the Director. The performance testing, as required by this condition, is not for the purpose of establishing new permit limits. The Permittee must follow the modification procedures in Condition I.D, and conduct a trial burn for establishing new limits. If a trial burn is conducted during an odd calendar year, the Permittee may petition the Director to allow it to count for that year's required performance test. If a trial burn is conducted during an even calendar year, the Permittee may petition the Director to allow it to count for the following year's required performance test.
- IV.G.2. At least six months prior to a scheduled performance test, the Permittee shall submit a test plan describing the parameters to be tested for, the sampling and analytical methods to be used, the quality assurance/quality control procedures to be followed, and any other necessary information for approval from the Director. Within 90 days of the conclusion of the performance test (defined as the last day that samples were collected at the site) a report shall be submitted to the Director. The report will include a copy of all data collected during the performance test

and calculations and determinations to show whether the performance standards outlined in Condition IV.B. were met. The calculations and supporting data shall also be submitted electronically.

IV.H. INSPECTION REQUIREMENTS

IV.H.1. On at least a daily basis, when in operation, the Permittee shall thoroughly, visually inspect the incinerator, afterburner, off-gas pollution control system, and associated equipment (piping, valves, ducting, feed systems, etc.) and containment systems for leaks, spills, fugitive emissions, deterioration, excessive wear, and signs of tampering per Attachment 4 (Inspection Plan). These inspections shall be accurately documented.

IV.H.2. On at least a daily basis, when in operation, the Permittee shall thoroughly, visually inspect the monitoring instrumentation for out of tolerance and recorded operational data. These inspections shall be accurately documented.

IV.H.3. The metal and ash residues from the discharge of the incinerator shall be separated and inspected before these items are removed from the paved area of Building 1320. This inspection shall be performed within the next twenty-four hour operating period or within seven calendar days following the incineration of the hazardous waste. Ash residues shall be placed in a container and managed as a hazardous waste. Any un-detonated munition shall be recycled back into the incinerator. This event, along with the quantity and type of un-detonated munition, shall be recorded in the operating log.

MODULE V – MISCELLANEOUS MUNITIONS PROCESSING OPERATIONS

V.A. Small Caliber Ammunition Disassembly Lines

The Small Caliber Ammunition Disassembly Line (SCDL) is a process which removes the projectile (for recovery, recycling, or further processing), recovers the propellant (for recycling, or disposal) and initiates the primer. The disassembly lines in buildings 1325 and 1335 are configured to process 20, 25, and 30 mm cartridges. The disassembly line in building 1325 is configured to process 20 and 25 mm cartridges. The disassembly line in building 1335 is configured to process 20, 25, and 30 mm cartridges. The process includes ancillary feed equipment prior to a continuous-motion pull-apart turret that separates the projectiles from the cartridge case filled with propellant. The projectile is containerized and transferred to the deactivation furnace for treatment, or reclaimed for reuse. The cartridge cases continue to a dump cubical where they are inverted and the propellant drops out and is collected for recycling or for disposal at the OB/OD facility. The empty case with the primer then continues on to the primer firing module where the primer is initiated. The empty cartridge cases with expended primers are collected for recycling.

Emissions from the primer firing modules are pulled through a pollution abatement system. The pollution abatement system in building 1325 includes a Uni-Wash Model UC-10 wet type dust collector that removes particulate matter followed by a dry cell to remove excess moisture; a Mac Environmental Model FT30 cyclone separator; and a MIASMACT Model 4M2S automatic-cleaning HEPA filtering system. The pollution abatement system in building 1335 is a wet scrubber (ProVent Model VC-10) capable of removing PM₃. Building 1335 has a second wet scrubber (ProVent Model VC-30) that creates a negative pressure in both the powder collection room as well as the powder dump station. Any dust generated in these enclosures would be captured in this scrubber. The vacuum system for moving the propellant dumped from the cartridges to the powder collection containers has a HEPA filter to remove dust that may not be collected by the propellant collection air cyclone and filter.

The first part of this process (the pull apart machine and propellant dump cubicle) is not covered by this Permit. The emissions and pollution abatement system are regulated by an Approval Order issued by the Utah Division of Air Quality and is therefore not subject to the requirements of this Permit. This Permit covers the operation of the primer firing modules and the storage of wastes associated with this process.

V.A.1. OPERATION AND MAINTENANCE

- V.A.1.a. The Permittee shall maintain and operate the disassembly lines in accordance with the drawings and specifications contained in Attachment 18 (Small Caliber Disassembly Line Drawings).

V.A.1.b. Modifications to the drawings and specifications for the disassembly lines shall be allowed only in accordance with the permit modification requirements in Condition I.D.

V.A.1.c. The Permittee shall maintain the disassembly lines and ancillary equipment in good repair. Routine maintenance shall be performed at sufficient frequency to ensure each disassembly line remains in good repair. Malfunctions and deterioration shall be corrected as expeditiously as possible.

V.A.2. PERFORMANCE STANDARDS

Empty cases with the primer shall be processed through the primer firing module as they are generated from the propellant recovery operation. Alternatively, they may be accumulated and processed in the deactivation furnace. Primers that are not initiated in the first pass shall be run through the process again, for up to three additional passes, until they are initiated. Any primers that are not initiated shall be accumulated and processed in the deactivation furnace or another appropriate permitted facility.

V.A.3. FEED LIMITATIONS AND OPERATING REQUIREMENTS

V.A.3.a. The Permittee may only feed 20 and 25 mm cartridges to the disassembly line in building 1325. The Permittee may only feed 20, 25, and 30 mm cartridges to the disassembly line in building 1335.

V.A.3.b. The maximum inventory that may be stored in buildings 1325 and 1335 is 50,000 rounds per building.

V.A.3.c. Projectiles that have been identified as waste, and removed from their cartridges will be packaged and labeled as hazardous waste and stored in accordance with Utah Admin. Code R315-262-30 until they can be treated in the deactivation furnace or another appropriate permitted facility.

V.A.3.d. Recovered projectiles will be stored as product until they can be recycled/reused. Upon inspection, appropriate conditional codes will be assigned according to the DOD Supply Conditional Code (SCC) standards. Should projectiles require treatment, they will be packaged and labeled as hazardous waste and stored in accordance with Utah Admin. Code R315-262-30 until they can be treated in the deactivation furnace or another appropriate permitted facility.

V.A.3.e. Primers that are not initiated in the first pass will be run through the process again, for up to three additional passes, until they are initiated and/or packaged and labeled as hazardous waste until they can be treated in the deactivation furnace or another appropriate permitted facility.

V.A.3.f. The primer firing module in building 1325 shall be equipped with an acoustical detector and a means of separating the cartridge cases with primers that did not

initiate from those that did. The primer firing module in building 1335 shall be equipped with an IMI model 608A11 accelerometer and a means of separating the cartridge cases with primers that did not initiate from those that did.

- V.A.3.g. Cartridge cases shall be visually inspected prior to removal from the depot for recycling purposes and certified as explosive free. The certification shall be documented on DD Form 1348. This inspection and certification shall be done before these items are removed from building 1325, the paved area around buildings 1325 or 1335, or the paved area of building 1320. Containers of cartridge cases which have been inspected and certified as explosive free shall be clearly labeled to distinguish them from containers of cartridge cases which have not yet been inspected. Any primers that are discovered to have not been initiated shall be packaged and labeled as hazardous waste and treated in the deactivation furnace or another appropriate permitted facility.
- V.A.3.h. Recovered propellant shall be stored as product until it can be recycled/reused. Should propellant be determined to be waste or fail other Army criteria for safety, it shall be treated in the OB/OD facility in accordance with hazardous waste regulations as specified in Attachment 2 (Waste Analysis Plan).

V.A.4. MONITORING, RECORDKEEPING, AND CALIBRATION REQUIREMENTS

- V.A.4.a. Empty cartridge cases with the primer may be fed to the primer firing module only when all equipment and instruments required by this condition are on-line and operating properly.
- V.A.4.b. The microphone of the acoustical detector in building 1325 shall be replaced monthly when in use. Records shall be maintained of any replacements, calibrations, or maintenance performed.
- V.A.4.c. The accelerometer of the acoustical detecting system in building 1335 shall be replaced every five years when in use. It shall be tested on a quarterly basis to ensure proper detection of primer initiations. Records shall be maintained of any replacements, calibrations, testing, or maintenance performed.
- V.A.4.d. The hours of operation and the amount of waste fed to the primer firing module shall be monitored and recorded on a daily basis.
- V.A.4.e. The number of primers found during the visual inspection to have not initiated shall be recorded in the operating log.
- V.A.4.f. Copies of the data collected under this condition shall be provided to the Director upon request.

V.A.5. WASTE FEED CUT-OFF REQUIREMENTS

The Permittee shall cease feed to the disassembly line under any of the following conditions:

- V.A.5.a. Any mechanical malfunction with either the disassembly line or controls which would compromise the integrity of the system.
- V.A.5.b. Waste residue collection bins, conveyance system, hoppers, or containers are full and additional waste feeds would cause these receptacles to overflow/malfunction.

V.A.6. REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittee shall comply with all applicable provisions of DoD 6055.9-STD, “DoD Ammunition and Explosives Safety Standards”.

V.A.7. INSPECTION REQUIREMENTS

On at least a daily basis, when they are in operation, the Permittee shall thoroughly, visually inspect the disassembly line and associated equipment (conveyors, ducting, feed systems, etc.) and containment systems for leaks, spills, fugitive emissions, deterioration, excessive wear, and signs of tampering per Attachment 4 (Inspection Plan). These inspections shall be accurately documented in the facility operating records.

V.B. Hydrolysis Facility

The Hydrolysis Facility is a process that treats energetic material containing items such as Cartridge Activated Devices (CADs), Propellant Activated Devices (PADs), or other munitions for which the energetic material may be accessed readily by a caustic solution. The energetic items are hydrolyzed in a hot caustic bath to dissolve and inert the energetic material. The process provides indiscriminate de-activation of energetic constituents. A detailed description of the facility can be found at Attachment 19 (Hydrolysis System Description).

V.B.1. OPERATION AND MAINTENANCE

- V.B.1.a. The Permittee shall maintain and operate the hydrolysis facility in accordance with the drawings and specifications contained in Attachment 20 (Hydrolysis System Drawings).

- V.B.1.b. Modifications to the drawings and specifications for the hydrolysis facility shall be allowed only in accordance with the permit modification requirements in Condition I.D.
- V.B.1.c. The Permittee shall maintain the hydrolysis facility and ancillary equipment in good repair. Routine maintenance shall be performed at sufficient frequency to ensure the hydrolysis facility remains in good repair. Malfunctions and deterioration shall be corrected as expeditiously as possible.
- V.B.1.d. Prior to operation of the hydrolysis system, the Permittee shall provide a written assessment to the Director, reviewed and certified by a qualified Utah registered professional engineer, that attests to the structural integrity and suitability of the hydrolysis tank systems for handling the specified hazardous waste in accordance with Utah Admin. Code R315-264-192.
- V.B.1.e. The hydrolysis system shall be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to the air, soil, groundwater, surface water, or any other location which could threaten human health or the environment.
- V.B.1.f. The Permittee shall empty, visually inspect for the general condition of each tank, and measure the corrosion of each tank in the hydrolysis facility at least once each year and certify that it can safely manage the specified hazardous waste. These inspections and tests must be certified by a qualified Utah registered professional engineer.
- V.B.1.g. The Permittee shall equip all pumps that are not within a secondary containment area with drip pans to collect any spillage that may occur.
- V.B.2. PERFORMANCE STANDARDS
- V.B.2.a. Munition scrap remaining in the baskets after processing shall be inspected. Any energetic material, scrap containing energetic material, or suspect scrap will be returned to the process to ensure complete destruction.
- V.B.2.b. Sufficient caustic shall remain in the spent hydrolysate, and sufficient reaction time shall be allowed, to ensure that any energetic compounds in the solution are rendered non-reactive.
- V.B.2.c. Emissions from the hydrolysis system vent shall be controlled so that they do not pose an unacceptable risk to human health and the environment.

V.B.3. FEED LIMITATIONS AND OPERATING REQUIREMENTS

- V.B.3.a. The Permittee may process up to 488 pounds (4 baskets at a maximum of 122 pounds each) of munitions in the hydrolysis tank at any one time. The content of each basket shall not exceed the following limits: aluminum content shall not exceed 68 pounds; energetic content shall not exceed 31 pounds; and nitroglycerin content shall not exceed 6 pounds. Also, the total surface area of aluminum in each batch shall not exceed 60 ft².
- V.B.3.b. The feed baskets shall be staggered so that the interval between baskets is at least 30 minutes and each basket remains in the hydrolysis tank for at least two hours.
- V.B.3.c. Sufficient characterization information shall be available for each munition fed to the hydrolysis system to ensure that the limits in V.B.3.a. are not exceeded.
- V.B.3.d. The feed to the hydrolysis facility shall be limited to aluminum-clad Cartridge Activated Devices (CADs) and Propellant Activated Devices (PADs). Should the Permittee desire to process other munitions, or in excess of the limits in V.B.3.a. in the future, the following procedure shall be followed:
- V.B.3.d.1. The Permittee shall submit to the Director a class 1 modification request requiring prior approval which outlines the type(s) of munitions which are to be processed.
- V.B.3.d.2. The modification request shall include estimates of explosive compounds, ammonia, HCN, NO_x, total hydrocarbons, volatile organics, and semi-volatile organics potentially expected to be in the emissions when processing the requested munitions. Bench scale tests at the Facility may be conducted to determine these estimates.
- V.B.3.d.3. The modification request shall demonstrate that the estimated emissions will not cause an unacceptable risk to human health and the environment.
- V.B.3.d.4. Upon approval of the modification request, the Permittee may begin processing the requested munitions. Within 30 days of the start of processing the new munitions, the Permittee shall sample and analyze the vent gas for the compounds listed in Condition V.B.3.d.2. Within 90 days of the start of processing the new munitions, the Permittee shall submit to the Director a report of the results of the vent gas sampling and analysis and a justification showing that the emissions are protective of human health and the environment.
- V.B.3.d.5. Should the Permittee become aware at any time that the emissions from the hydrolysis system potentially pose an unacceptable risk to human health or the

environment, the Permittee shall immediately cease processing that munition type.

- V.B.3.e. The Permittee shall limit the feed rate of munitions in each batch to be processed so that the hydrogen concentration in the vent gas will be maintained below 2%.
- V.B.3.f. The Permittee shall maintain the flow of vent gas and push air so that the face velocity across the hydrolysis tanks is at least 200 feet per minute.
- V.B.3.g. The temperature of the hydrolysis solution shall be maintained below the boiling point of the solution.
- V.B.3.h. The liquid and/or foam levels in the reaction tank and rinse tank shall be maintained so that spill over to the secondary containment is avoided.
- V.B.3.i. The batches shall be configured, and the liquid level maintained, so that the feed material will be totally immersed in the caustic solution.
- V.B.3.j. The Permittee shall operate the hydrolysis system so that makeup to the scrubber system shall only be provided by the fresh water supply.
- V.B.3.k. The hydrolysis system shall only be operated during daytime hours.
- V.B.3.l. Munitions shall not be stored at the hydrolysis facility. However, small quantities of munitions may be placed in building 1400 in preparation for feed to the hydrolysis process. The maximum inventory of munitions that may be placed in the hydrolysis facility is 3,900 pounds. Any munitions at the hydrolysis facility that are not processed by the end of the day shall be returned to an appropriate permitted hazardous waste storage facility.
- V.B.3.m. All scrap metal shall be visually inspected prior to removal from the depot for recycling purposes and certified as explosive free. All other scrap shall also be visually inspected prior to removal from the depot for disposal and certified as explosive free. The certification will be documented on DD Form 1348. This inspection and certification shall be done before these items are removed from the hydrolysis facility or the paved area around the hydrolysis facility.
- V.B.3.n. The spent hydrolysate shall be non-reactive prior to removing it from the facility. The concentrations of explosive compounds in the spent hydrolysate shall be low enough that it will not present a potential reactive hazard (even when dry). This determination shall be certified by the Permittee for each load of hydrolysate shipped off site and the certification shall be maintained at the Facility as part of the Operating Record.

- V.B.3.o. For each different feed type to be processed in the hydrolysis system, the Permittee shall conduct sufficient bench scale tests to determine the necessary operating parameters for that type of feed (e.g., feed rates, hydrogen generation rates, processing times, hydrolysate composition, etc.) prior to initiating that particular feed in the hydrolysis system to ensure that the requirements of this Permit will be met. Where munition items have like configurations, the above data may be obtained by extrapolation based upon dimensional and compositional data.
- V.B.3.p. Bench scale tests, or other tests conducted in support of the hydrolysis operation, shall be conducted under the hood in the lab room of building 1400 and only when the hood is venting through the hydrolysis vent system. The quantity of PEP or munitions in the hood shall be limited to 500 grams.
- V.B.3.q. The secondary containment systems shall be operated and maintained so that they shall be free of both cracks and gaps and are sufficiently impervious to contain leaks and spills until the collected material is detected and removed.
- V.B.3.r. If a drip pan or secondary containment area contains any material, it will be emptied within 24 hours of discovering the contents. Any material removed will be managed as a hazardous waste until it can be characterized for proper disposal or returned to the hydrolysis system.
- V.B.3.s. Containment for 25% of the entire volume of waste held within the containment area or 100% of the volume of the largest tank in the containment area, whichever is greater, shall be provided for each tank area.
- V.B.3.t. No smoking shall be allowed in, or within 50 feet of, building 1400. The Permittee shall take precautions to prevent accidental ignition or reaction of waste or other materials. The hydrolysis system and any wastes placed in building 1400 shall be separated and protected from sources of ignition or reaction including, but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g. from heat-producing chemical reactions), and radiant heat. Such sources of ignition shall be allowed only after adequate additional precautions have been taken to prevent ignition of wastes or other materials and a hot work permit has been issued.
- V.B.4. MONITORING, RECORDKEEPING, AND CALIBRATION REQUIREMENTS
- V.B.4.a. Baskets containing munitions or munition components may be fed to the hydrolysis tank only when all equipment and instruments required by this Permit are on-line and operating properly and accurately.

- V.B.4.b. All instruments required by this Permit shall be calibrated in accordance with the manufacturer's specifications and at the manufacturer's recommended frequency. The procedures and frequencies of calibration specified by the manufacturer shall be maintained at the hydrolysis facility. The calibration frequency shall be increased when the calibration frequency is found to be inadequate to consistently provide accurate readings. The hydrogen analyzer shall be calibrated on a daily basis. All calibrations shall be documented in the Operating Record.
- V.B.4.b. The hours of operation and the amount and type of waste fed to the hydrolysis system shall be monitored and recorded on a daily basis.
- V.B.4.c. Copies of any bench scale tests and calculations used to determine the feed rates and processing times of specific munitions shall be maintained.
- V.B.4.d. The hydrogen concentration in the exhaust gas shall be monitored and recorded on a continuous basis.
- V.B.4.e. The flow of vent gas shall be monitored and recorded on a continuous basis. A loss of flow will activate an alarm. The Variable Frequency Drive on the blower shall remain as set during installation of the blower. All alarms will be recorded in the data logging program.
- V.B.4.f. The temperature of the hydrolysis solution shall be monitored and recorded on a continuous basis.
- V.B.4.g. The liquid level in the hydrolysis and rinse tanks shall be monitored and recorded on a continuous basis.
- V.B.4.h. The Permittee shall record the readings from the monitoring equipment specified in Attachment 21 (Hydrolysis System Instrument List) while treating hazardous waste.
- V.B.4.i. For each batch of hydrolysate placed in the hydrolysis tank, sufficient documentation shall be maintained to verify the caustic concentration.
- V.B.4.j. Copies of the data collected under this condition shall be provided to the Director upon request. Data recorded by the PLC shall be made available in electronic format if requested by the Director.

V.B.5. WASTE FEED CUT-OFF REQUIREMENTS

The Permittee shall cease feed to the hydrolysis tank under any of the following conditions:

- V.B.5.a. Any mechanical malfunction with either the hydrolysis line or controls which would compromise the integrity of the system.

V.B.5.b. A hydrogen concentration of greater than 2% in the exhaust gas.

V.B.6. REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

V.B.6.a. The Permittee shall comply with all applicable provisions of DoD 6055.9-STD, “DoD Ammunition and Explosives Safety Standards”.

V.B.6.b. The Permittee shall install and maintain an automatic dry fire suppression system designed to extinguish fires within the operational and material holding areas of the hydrolysis building.

V.B.7. INSPECTION REQUIREMENTS

On at least a daily basis, when it is in operation, the Permittee shall thoroughly, visually inspect the hydrolysis tank and associated equipment (scrubber system, ducting, blower, etc.) and containment systems for leaks, spills, fugitive emissions, deterioration, excessive wear, and signs of tampering per Attachment 4 (Inspection Plan). These inspections shall be accurately documented.

V.B.8. TESTING REQUIREMENTS

V.B.8.a. The Permittee shall conduct periodic sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standards. This sampling and analysis or subsequent performance testing shall be performed at least every five calendar years or more often if requested in writing by the Director. The performance testing, as required by this condition, is not for the purpose of establishing new permit limits or feed materials. The Permittee must follow the procedures specified in Condition V.B.3.d. for establishing new limits or for treating new munitions.

V.B.8.b. The Permittee shall conduct periodic ambient air sampling and analysis to verify that the modeling of the emissions used in the Screening Risk Assessment is an accurate (or a conservative) estimate of the dispersion of emissions from the hydrolysis facility. This performance testing shall be performed at least every five calendar years or more often if requested in writing by the Director.

V.B.8.c. The Permittee shall conduct periodic local breathing zone sampling and analysis during operations to verify that the atmosphere inside building 1400 poses no risk to onsite receptors. This performance testing shall be performed at least every five calendar years or more often if requested in writing by the Director.

V.B.8.d. At least six months prior to a scheduled performance test, the Permittee shall submit a test plan describing the parameters to be tested for, the sampling and analytical methods to be used, the quality assurance/quality control procedures to

be followed, and any other necessary information for approval from the Director. Within 90 days of the conclusion of the performance test (defined as the last day that samples were collected at the site) a report shall be submitted to the Director. The report will include a copy of all data collected during the performance test and calculations and determinations to show whether the performance standards outlined in Condition V.B.2. were met. The calculations and supporting data shall also be submitted electronically.

MODULE VI – OPEN BURN AND OPEN DETONATION (OB/OD)

VI.A. APPLICABILITY

- VI.A.1. The requirements of this permit module pertain to the treatment of waste military munitions at the OB/OD area at the Tooele Army Depot (TEAD). The Permittee shall comply with Utah Admin. Code R315-264 and all conditions of this module.
- VI.A.2. The permit conditions of this module allow treatment at the OB/OD area, as designed and described in the drawings and specifications in Attachment 16 (Open Burning/Open Detonation Operations). The OB/OD area consists of three Hazardous Waste Management Units (HWMUs), the open burn (OB) unit with 14 burns pans, the open detonation (OD) unit with a maximum of 19 detonation sites and the static fire (SF) unit with six static firing silos.
- VI.A.3. OB/OD operations shall be accomplished by trained explosives personnel in accordance with DOD OB/OD Standard Operating Procedures (SOPs) and the conditions of this permit.

VI.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

- VI.B.1. The Permittee may treat, at the OB/OD units, only hazardous waste military munitions that cannot be treated by any other means and that are so certified on the Demilitarization Approval Form. The Permittee shall treat only hazardous waste military munitions characterized as D003, and generated from the sources listed in Condition II.P.1. and from the following general sources:
- VI.B.1.a. Unserviceable or serviceable excess Army munitions and explosive materials (e.g. bulk explosives, small arms munitions, projectiles, flares, grenades, sub-munitions, bombs and rocket motors);
- VI.B.1.b. Unserviceable or serviceable excess solid propellant components and associated residue generated by an Army contractor and the contractor requests treatment assistance; and
- VI.B.1.c. Explosive residues generated from inspection and disassembly activities of munitions at the Facility.
- VI.B.2. The Permittee may only treat hazardous waste military munitions with known classifications and compositions in the *MIDAS Database* and in Attachment 2 (Waste Analysis Plan), excluding the items listed in Condition VI.B.2.a. unless an emergency situation exists. If an emergency exists and an item is not in the MIDAS database, all available information will be reviewed to minimize hazards to the Demil team and the environment. Information on the item will be submitted to the Defense Ammunition Center (DAC), for inclusion into the Munition Items Disposition Action System (MIDAS) database, within 60 days of treatment.

VI.B.2.a. The following munitions shall not be treated by OB/OD, unless an emergency exists and the Director of the Division of Waste Management and Radiation Control (Director) grants an Emergency Permit: Hawk Motor, Nike Motor, Explosive D Bulk, 20MM HEI Cartridge, M206 Flare IR Count, GGU2A Gas Generator, AN-M43A2 Red Star, M158 Red Star, TNT Bulk (excluding that used for donor material), 155MM Projectile, TH3 AN-M14 Incendiary Hand Grenade, M136 AT4 Shape Charge, M72A3 66MM High Explosive Antitank (Heat) Rocket, FIM-92A Stringer Missile Warhead and FIM-92A Stinger-Basic Launch Motor. Also prohibited are munitions with any of the following constituents: hexachloroethane (HC), colored smoke, white phosphorus (WP), red phosphorus (RP), depleted uranium (DU) and riot control munitions.

VI.B.3. The Permittee is prohibited from treating wholly inert items and improvised explosive devices (e.g. homemade bombs which are non-military), chemical and nuclear weapons, their devices and components and military munitions, propellant or residues that contain free liquids. Items that are believed to be wholly inert items, but cannot be conclusively verified to be inert, may be cracked open with a small explosive charge to expose the interior to verify that no explosives are present. The Permittee shall document in the Operating Record as required by Condition II.J all treatment and verification activities required by this condition.

VI.B.4. Subject to the prohibitions of Conditions VI.B.1, VI.B.2, VI.B.3 and II.P.2, the Permittee shall not exceed the maximum Net Explosive Weight (NEW) for each day and each calendar year as listed below. Each type of treatment; burning in pans, static fire, or open detonation; may take place in the same day, but only one type of treatment may take place in any one hour except one detonation pit may be used to treat range clean-up material the same hour the static fire silos or the burn pans are used.

Site	EPA Code	Daily Quantity (NEW lb/day)	Annual Quantity (NEW lb)	Frequency (days/year)
OB	D003	6,000	360,000	60
SF	D003	6,040	362,400	60
OD	D003	7,500	675,000	90

VI.B.5. Addition of hazardous waste codes to Condition VI.B.4. requires modification of the permit as specified in Condition I.D.

VI.B.6. The Permittee shall comply with the waste compatibility requirements of Utah Admin. Code R315-8-2.8.

VI.C. GENERAL OPERATING CONDITIONS

VI.C.1. The Permittee shall adhere to site specific SOPs and DOD Operational Directives contained in the operating record and listed in Attachment 16 (Open Burning/Open Detonation Operations) including the following non-site-specific procedures:

VI.C.1.a. OB/OD operations shall be conducted within the secure area of the OB/OD area with controlled access for humans and livestock. At a minimum, DOD Explosives Safety Standards shall be used to dictate safe separation distances from external receptors.

VI.C.1.b. The OB/OD area shall be posted with warning signs to keep unauthorized personnel out. Warning flags shall fly and access roads shall be barricaded and posted during OB/OD operations.

VI.C.1.c. During OB/OD operations, telephone or two-way radio contact shall be available and operational with support personnel, including security and firefighting units.

VI.C.1.d. The integrity of the OB/OD area and support equipment shall be determined through regular inspections in accordance with Attachment 4 (Inspection Plan). Inspection records shall be maintained at the facility.

VI.C.1.e. Prior to OB/OD operations, meteorological data including wind speed and direction, approach of storms (including electrical storms), precipitation, cloud cover, visibility and inversions (temperature with altitude) shall be monitored to ensure that OB/OD operations are not conducted under adverse weather conditions. Inversions shall be monitored by the clearing index. Meteorological data shall be recorded for each burn or detonation and maintained in the operating record. The following conditions apply to all of the OB/OD units:

VI.C.1.e.i. OB/OD operations shall occur between the hours of 10:00 a.m. and 5:00 p.m.

VI.C.1.e.ii. OB/OD operations shall not be initiated when an inversion is present as defined by a clearing index less than 500.

VI.C.1.e.iii. OB/OD operations shall not be initiated when the visibility is less than one mile.

VI.C.1.e.iv. OB/OD operations shall not be initiated when winds are coming from the SE counter-clockwise through WNW as shown in Figure 3-1 of the newest version of the OB/OD Risk Management Plan. The wind direction shall be observed at the time of treatment at the weather tower at the entrance to the OB/OD area and recorded on the Demilitarization Approval Form. The alternate weather tower near building 1345 shall be used in the event there is operational problems with

the tower by the OB/OD area entrance. If the wind direction is changing into and out of the exclusion zone due to rapidly changing weather conditions, then treatment shall not occur until the wind stabilizes. The wind shall be considered stable if the wind stays out of the exclusion zone for the fifteen minute period prior to treatment. Once treatment has commenced it will not cease until completed, even if the wind direction moves back into the exclusion zone or the wind speed drops out of the permit limits. The wind direction range during treatment shall be recorded on the Demilitarization Approval Form.

- VI.C.1.e.v. No OB/OD operations or static fire in Silos shall be initiated when the wind speed is in excess of 20 mph with gusts greater than 30 mph or wind speeds less than three mph.
- VI.C.1.f. Waste munitions shall be treated within 24 hours of receipt at an OB/OD unit. If treatment of the waste munitions is delayed, after the munitions are received at an OB/OD unit, due to an unforeseen change that creates conditions outside those permitted by Condition VI.C.1.e. and in Figure 3 in Attachment 16 (Open Burning/Open Detonation Operations) the munitions may be stored and remain in place in the unit until conditions allow treatment to be performed.
- VI.C.1.g. Prior to OB/OD operations waste munitions shall be inspected to ensure that only waste defined in Condition VI.B. is burned or detonated.
- VI.C.1.h. Clean-up of the OB/OD area shall be conducted according to Facility SOPs and the Army Standard *IAW AMC-R 755-8, Authorizing, Accomplishing and Reporting Demilitarization of Class V Materials*. Within two working days of the completion of a burn, detonation or static fire, personnel shall perform a sweep of the area, all pits, silos and pans to include the immediate surrounding areas, to clear all UXO or any metal fragments that could threaten human health or the environment. Items or material such as lumps of explosives or unfuzed munitions shall be recovered and prepared for treatment on the next scheduled day. Fuzed ammunition or other types of munitions that are unsafe to move shall be treated in place. Non-explosive scrap metal, casings, fragments and related items shall be picked-up and cleared from the OB/OD area bi-annually, once in the Spring prior to full-scale treatment and once in the Fall upon completion of full-scale treatment. Metal waste shall be recycled whenever feasible.
- VI.C.1.i. The donor charge and placement geometry for OB/OD operations shall be optimized to minimize the generation of unburned and un-detonated waste and residue. All re-burns and re-detonations shall be recorded in the operating record.
- VI.C.1.j. OD events shall be confined by covering or burying with soil, to discourage the production of excessive noise. High order burns and detonations shall be conducted using the appropriate amount of initiator to encourage the complete combustion of the energetic material.
- VI.C.1.k. Prior to each OB/OD event, the treatment area shall be inspected to ensure that no livestock are present.

- VI.C.1.l. The OB/OD operations shall not generate noise or ground vibration at levels that will have an adverse effect on nearby onsite and offsite receptors. Operations shall not exceed local noise ordinances. Noise complaints shall be recorded in the operating record.
- VI.C.1.m. The Permittee shall have a noise management program.
- VI.C.1.n. The Permittee shall have available, during each burn or detonation, adequate fire protection equipment and containment measures (e.g. firebreaks) to assure the confinement and control of any fire resulting from the OB/OD operations. The firebreaks shall be cleared and maintained clear to prevent the spread of any fire within the OB/OD area.
- VI.C.1.o. To help prevent ground fires, and in accordance with Army Material Command (AMC) Regulation 385-100, incorporated by reference, as in effect on the effective date of this permit, during operations, dry grass, leaves and other extraneous combustible material in the amounts sufficient to spread fire, shall be removed within a radius of 200 feet from the point of destruction.
- VI.C.2. The Permittee shall operate the OB/OD area to mitigate unacceptable risk of cancer and non-cancer effects to on-site workers and off-site residents and to minimize significant effects to the ecosystem surrounding the OB/OD area. The cumulative carcinogenic risk to on-site workers shall not exceed 1.0×10^{-4} (one in ten thousand) for the closest potential receptors, which during operations are the workers positioned at the gate at the entrance to the unit and the workers at the detonation firing bunker. The cumulative non-carcinogenic hazard to the closest on-site potential receptors of a burn or detonation shall not exceed a hazard index of 1.0.
- VI.C.3. The cumulative carcinogenic risk to actual or potential off-site human receptors shall not exceed 1.0×10^{-6} (one in a million). The cumulative non-carcinogenic hazard to actual or potential off-site receptors shall not exceed a hazard index of 1.0 for any 24-hour period following initiation of a burn or detonation. The Permittee shall maintain compliance with the environmental performance standards listed in Utah Admin. Code R315-264-600 and review the information in the newest version of the OB/OD Risk Management Plan periodically in accordance with Condition II.R.2.
- VI.C.4. The Permittee shall record in the OB/OD Operating Record all unplanned discharges, fires and explosions, including all low order detonations, as specified in Utah Admin. Code R315-264-56(i).

VI.D. SPECIFIC OPERATING CONDITIONS

VI.D.1. Open Burning in Burn Pans

VI.D.1.a The Permittee shall operate and maintain the approved burn pans based on the design in Attachment 16 (Open Burning/Open Detonation Operations) and in accordance with the following conditions:

VI.D.1.a.i. The open burning pans shall be used to burn only propellant from propellant-based munitions and associated components.

VI.D.1.a.ii. The OB operation may not be initiated with any solid waste.

VI.D.1.b. The integrity of each pan shall be evaluated before each use. The results of the inspection of the pans shall be recorded on the operations checklist.

VI.D.1.c. Burn pan lids shall remain on the pans at all times except during operations.

VI.D.2. **Open Detonation in Pits**

VI.D.2.a. The Permittee shall operate and maintain the detonation unit on the ground surface or in pits in accordance with the plans in Attachment 16 (Open Burning/Open Detonation Operations).

VI.D.2.b. Open detonations shall not occur in more than one pit at one time.

VI.D.2.c. Any fires started from kick-out from a detonation shall be extinguished as soon as possible.

VI.D.3. **Static Firing in Silos**

VI.D.3.a. The Permittee shall operate and maintain the static firing silos in accordance with the design plans and specifications in Attachment 16 (Open Burning/Open Detonation Operations).

VI.D.3.b. The Permittee shall operate and maintain the silos in accordance with the following conditions:

VI.D.3.b.i. When not in use, the Permittee shall place and maintain a lid on each silo to prevent precipitation, vegetation and wildlife from entering the silo.

VI.D.3.b.ii. The Permittee shall manage accumulated precipitation in accordance Attachment 2 (Waste Analysis Plan).

VI.D.3.c. The integrity of each silo and the concrete secondary containment shall be evaluated by visual inspection prior to use. Results of the inspection shall be recorded on the operations checklist.

VI.E. **RESIDUE AND ASH MANAGEMENT**

VI.E.1. All residue and ash generated from OB/OD operations shall be sampled, analyzed and managed in accordance with the procedures in Attachment 2 (Waste Analysis Plan).

VI.F. INSPECTION SCHEDULES AND PROCEDURES

VI.F.1 The Permittee shall inspect the OB/OD units in accordance with the inspection requirements in Attachment 4 (Inspection Plan). The Permittee shall conduct inspections of the silos, burn pans and detonation pits each day of treatment.

VI.G. ENVIRONMENTAL MONITORING REQUIREMENTS

VI.G.1. Soil Monitoring

VI.G.1.a. A treatment zone shall be defined as the aerial surface of the entire OB/OD area (including the entire hill side) described in Attachment 16 (Open Burning/Open Detonation Operations) and extending five feet below ground surface.

VI.G.1.b. Every five years, during the second quarter of the year, the Permittee shall conduct soil sampling in accordance with a sampling plan submitted to the Director at least 30 days prior to the date on which the Permittee plans to conduct the sampling.

VI.G.1.b.i. A report with the analytical results of soil sampling shall be submitted to the Director within 120 days of the sampling event. The report shall include the validated analytical data, a soil sampling location map and a detailed analysis of the data.

VI.G.1.b.ii. The Permittee shall incorporate the data from each sampling event into a human health risk assessment to update the evaluation of the risk to workers at the OB/OD Area due to direct exposure to the soils. The revised risk assessments shall be submitted within 180 days of the sampling results being approved by the Director.

VI.G.1.b.iii. Should analytical results from any soil sampling event indicate that the soil constituents exceed an acceptable risk threshold, the Permittee shall address the contaminated soil in accordance with Utah Admin. Code R315-264-101 or, if necessary, provide additional personnel protection equipment to workers at the area.

VI.G.2. Groundwater Monitoring

VI.G.2.a. Every five years, during the second quarter of the year, the Permittee shall conduct sampling of the single groundwater monitoring well, in accordance with a sampling plan submitted to the Director at least 30 days prior to the date on which

the Permittee plans to conduct the sampling in conjunction with the soil sampling event.

- VI.G.2.b. The point of compliance, for operations at the OB/OD area, shall be a vertical surface extending through well OBOD1, which is down gradient from the OB/OD operations area.
- VI.G.2.c. A report with the analytical results of groundwater sampling shall be submitted to the Director within 120 days of the sampling event. The report shall include the validated analytical data and a detailed analysis of the data..
- VI.G.2.d. The Permittee shall notify the Director if there is a statistically significant increase of the concentration of a Constituent of Concern (COC) or of a background concentration for any constituent. The Permittee shall:
 - VI.G.2.d.i. Notify the Director, in writing, within seven calendar days of the detection of the increase;
 - VI.G.2.d.ii. Resample the well and provide the results to the Director within 60 days of the sampling event, to determine if compliance monitoring is required; and
 - VI.G.2.d.iii. Within 90 days of determination by the Director that compliance monitoring is required for the one well at the OB/OD area, the Permittee shall submit a request to modify the permit to establish a compliance monitoring program to meet the requirements of Utah Admin. Code R315-264-99.
- VI.G.2.e. Abandonment of any monitoring well shall be accomplished in a manner that prevents vertical movement of water and possible contaminants within the borehole and the annular space surrounding the well casing. The Permittee shall comply with Utah Division of Water Rights rules for well abandonment.

VI.H. FACILITY MODIFICATION/EXPANSION

- VI.H.1. Modification of the design plans and specifications in Attachment 16 (Open Burning/Open Detonation Operations) and construction of additional treatment units shall be allowed only in accordance with Condition I.D.

VI.I. CLOSURE AND POST CLOSURE

- VI.I.1. The Permittee shall close the OB/OD units in accordance with Attachment 8 (Closure Plan) or conduct post-closure monitoring in accordance with Utah Admin. Code R315-264-110.

VI.J. OB/OD OPERATING RECORD

- VI.J.1. The Permittee shall maintain an operating record describing the OB/OD activities. Portions of the operating record may be maintained at the area where the report is generated. For example, records of waste treated at the OB/OD units may be maintained by ammunition operations personnel and kept in their office. The record shall include the following information:
- VI.J.1.a. The requirements of Utah Admin. Code R315-264-73.
- VI.J.1.b. Description and quantity (number and NEW) of each hazardous waste munition, initiators and donors received and treated at the OB/OD units.
- VI.J.1.c. Date of treatment.
- VI.J.1.d. Copies of documents showing the disposition of residues transported off the OB/OD area.
- VI.J.1.e. Current copies of all SOPs used at the OB/OD units.
- VI.J.1.f. An annual running total of the NEW of all energetics treated at the OB/OD units.
- VI.J.1.g. Meteorological conditions during each burn or detonation as listed in Condition VI.C.1.e.
- VI.J.1.h. All information to characterize waste and support Condition VI.B.2.
- VI.J.1.i. Copies of all completed demilitarization forms for all events.

VI.K LAND USE PROVISIONS

- VI.K.1. The Permittee shall evaluate the soil sampling data, air emission factors, land use, air modelling protocols and other pertinent inputs/drivers to any and all risk assessments conducted to support OB/OD operations and incorporate any changes into the risk assessments, in accordance with the schedule in permit Condition VI.G.1.

ATTACHMENT 1
GENERAL FACILITY DESCRIPTION

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1.0. GENERAL FACILITY DESCRIPTION [Utah Admin. Code R315-270-14(b)(1)]

1.1. Tooele Army Depot (TEAD) consists of 24,732 acres of federal land in north-central Utah, in Tooele County. The facility is located about 40 miles southwest of Salt Lake City, approximately 3 miles southwest of the town of Tooele, Utah.

1.2. A Vicinity Map, Figure 1, and a General Site Map, Figure 2, show the location of TEAD in reference to its surrounding communities and the overall layout, roads and structures, of the Depot. With the exception of the city of Tooele, the properties immediately adjacent to TEAD are undeveloped. The properties to the north are used as pasture or are cultivated, and the properties to the west and south are used for rangeland grazing. The properties to the east of TEAD consist of the city of Tooele and undeveloped rangeland along the lower western slopes of the Oquirrh Mountains.

1.3. The principal work activities at TEAD are the shipping, receiving, and demilitarization of conventional munitions, and the testing and development of ammunition peculiar equipment and related demilitarization testing. This Permit contains the operating requirements for permitting seven Hazardous Waste (HW) storage facilities, a deactivation furnace (HW incineration), a small caliber munitions primer initiation unit, a hydrolysis unit and Open Burn/Open Detonation (OB/OD) Units. General information about these hazardous waste management units (HWMUs) is given below:

HWMU	TYPES OF WASTES STORED/TREATED
Permitted HW Storage (Bldg. 528)	Waste industrial chemicals: solvents, fuels, paint residues, Petroleum Oil and Lubricant (POL), corrosives, paint removers, metal processing compounds.
PEP HW Storage (Bldgs. A101, C815, C816, 1205, 1368, 1370)	Waste propellants, explosives, and pyrotechnic (PEP) materials, munitions, munition components, residues.
HW Incineration (Deactivation Furnace Bldg. 1320)	Thermal treatment of waste munitions, munitions components, and PEP materials.
Primer Initiation (Disassembly Line Bldgs. 1325 and 1335)	Initiation of primers from small caliber munitions.
Hydrolysis (Bldg. 1400)	Items are hydrolyzed in a hot caustic bath to dissolve and inert the energetic material.
Open Burning/Open Detonation Units	Demilitarization activities including munitions detonation in pits, munitions burning in static silos and propellant burning in pans.

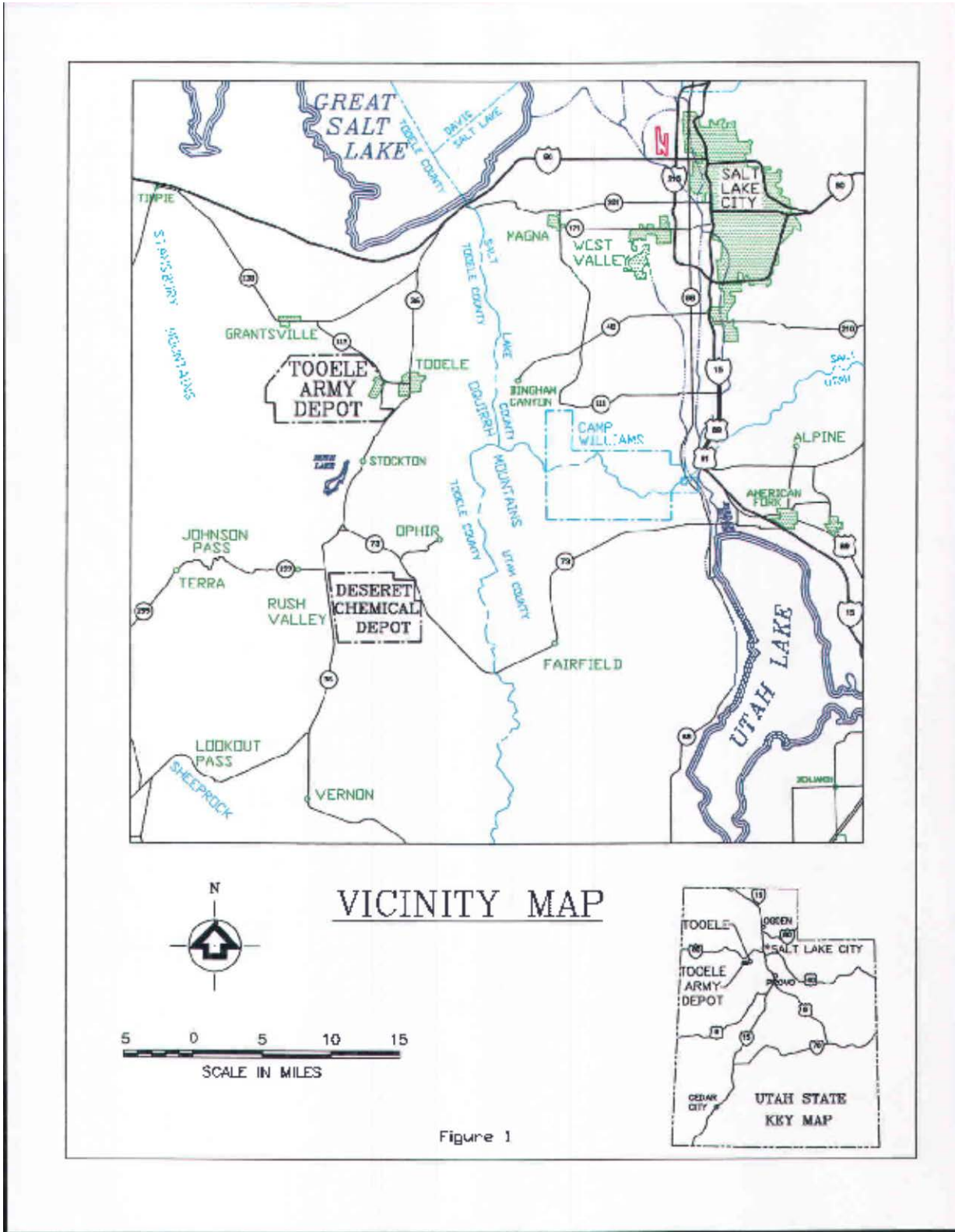


Figure 1
Vicinity Map

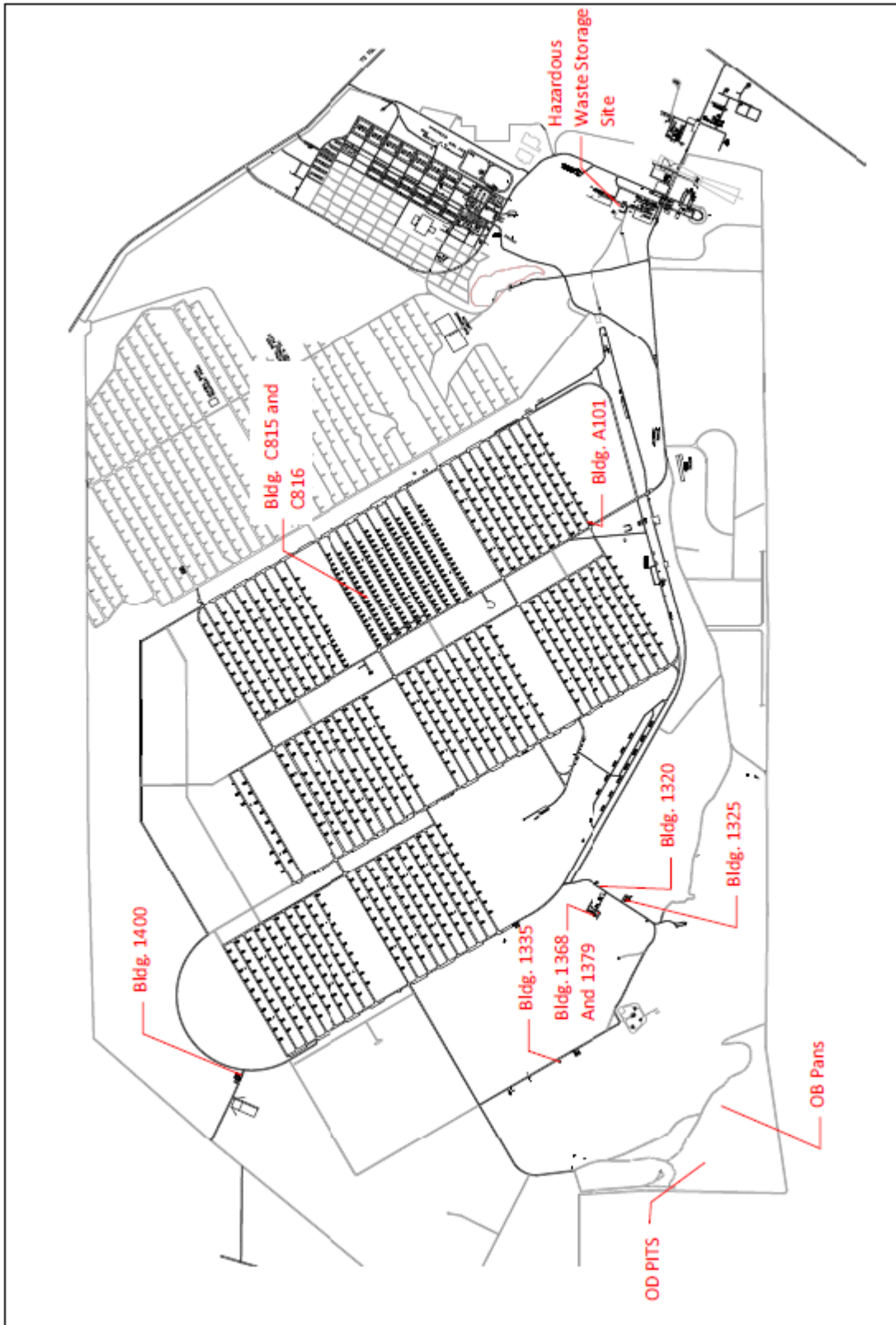


Figure 2
General Site Map

2.0. BACKGROUND INFORMATION

2.1. TEAD's current missions include ammunition renovation, storage, demilitarization, and the design, fabrication, and testing of ammunition equipment.

2.2. The realignment of TEAD's mission to rebuild and refurbish of military equipment, by the Base Realignment and Closure (BRAC) commission, has greatly reduced the generation of hazardous paint wastes, spent solvents, and acids and bases. The generated wastes are managed and stored pending removal and transportation to a permitted hazardous waste (HW) disposal facility by a contracted permitted HW transporter.

2.3. Small arms munitions from onsite inventories that are deemed obsolete or off-specification by Department of Army (DA) standards are incinerated in the Deactivation Furnace, also known as the APE 1236 furnace. Recoverable scrap metal from incineration of these munitions is recycled through the Qualified Recycling Program (QRP). The ash from this operation is tested by TCLP analysis and is managed appropriately. Metal parts are determined to be free of explosive contamination by Ammunition Surveillance personnel at TEAD and are reprocessed if necessary until free of explosive contamination.

2.4. The Small Caliber Disassembly Lines separate the projectiles from the cartridge cases, which allows for the propellant to be recovered for reuse. The projectile is containerized and sent to the Deactivation Furnace for treatment, or packaged for reuse. The primer in the cartridge case is initiated in a cubicle on the end of the disassembly line.

2.5. The Hydrolysis System, in Building 1400, treats energetic material containing items such as Cartridge Activated Devices (CADs), Propellant Activated Devices (PADs), or other munitions for which the energetic material may be accessed readily by a caustic solution. The energetic items are hydrolyzed in a hot caustic bath to dissolve and inert the energetic material. The process provides indiscriminate de-activation of the energetic constituents.

2.6. The OB/OD Area is located in the southwestern corner of TEAD and consists of a detonation unit, a static fire unit and a burn pan unit. The OB/OD Units have been used since the 1940s for demilitarization activities including munitions detonation in pits and propellant burning in pans. Past activities included burning munitions and other items in open trenches. Trenches were backfilled when they became full. Burning is no longer conducted in open trenches. There are currently 19 detonation pits, 14 burn pans and six static silos at the OB/OD Area.

3.0. CORRECTIVE ACTIONS

3.1. TEAD is on the CERCLA National Priorities List and entered into a Federal Facilities Agreement (FFA) with EPA Region VIII and the Utah Department of Environmental Quality (UDEQ) in September 1991. Seventeen of the 58 known and potential waste sites at TEAD were designated as CERCLA sites in this agreement.

3.2. In January 1991, TEAD was issued a RCRA Post Closure and Corrective Action Permit. This permit basically serves the same purpose as the FFA. The Corrective Action portion of the

Permit addresses 9 known release Solid Waste Management Units (SWMUs) and 32 suspected release SWMUs. Thus, 17 of the 58 sites are being handled under CERCLA/SARA with the EPA as the lead regulatory agency and 41 are being addressed under RCRA with the state of Utah as the lead agency. The FFA has been incorporated into the *TEAD North Area Industrial Waste Lagoon Post-Closure Permit*. Further information about the SWMUs and corrective actions can be found in the latest version of the TEAD Installation Action Plan.

4.0. SEISMIC STANDARD [Utah Admin. Code R315-264-18(a)]

4.1. The HWMUs at TEAD are existing facilities and as such are exempt from the provisions of Utah Admin. Code R315-264-18(a).

5.0. FLOODPLAIN STANDARD [Utah Admin. Code R315-264-18(b)]

5.1. No Flood Insurance Administration 100-year floodplain maps of the TEAD facility exist. However, TEAD has been determined to be outside of the 100-year flood plain and not subject to flooding based on the following information extracted from the *TEAD Master Plan Report* prepared by Higginbotham and Associates, P.C., and the *Installation Assessment* prepared by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA):

5.1.1. There is no history of flooding at TEAD during the 74 years that it has been in existence.

5.1.2. The overall drainage gradient for the entire TEAD facility is 2% or greater, and this grade continues for many miles. The topography is generally smooth and uniform, allowing no chance for ponding or pooling of floodwaters.

5.1.3. No channels exist that would concentrate flows from upgradient areas.

5.1.4. Few well-defined channels exist in the vicinity of TEAD. There are none that would carry or direct water to or through any of the HWMUs.

5.1.5. TEAD facilities are 300 feet higher in elevation than the Great Salt Lake, the ultimate drainage for the area.

5.1.6. The drainage gradient to the Great Salt Lake is smooth and uniform. The lake is approximately eight miles from TEAD.

5.1.7. There are no onsite barriers to impede runoff. No significant vegetation exists to retain runoff waters.

5.1.8. The area is arid to semiarid and receives little precipitation. The 100-year 24-hour precipitation event is less than 3.2 inches.

5.1.9. The soils of the area are generally very pervious. Thus, little runoff is expected.

5.2. A Topographic Map of the Depot covering all HWMUs, required by Utah Admin. Code R315-270-14(b)(19), is included in this Attachment as Figure 3.

6.0. TRAFFIC PATTERNS [Utah Admin. Code R315-270-14(b)(10)]

6.1. The Vicinity Map in Figure 1 shows the highway network for the major highways serving the TEAD area. State Highway 36 runs from the southwest to the northeast, adjacent to the southeast corner of TEAD.

6.2. State Highway 112 runs from the northwest to the southeast, adjacent to the northeast corner of TEAD. State Highway 59 runs from the north to the south along the western boundary of TEAD.

6.3. Primary entry routes to TEAD are by way of the Main Entrance Road to State Highway 36 and the North Gate Approach Road off of State Highway 112. The Main Entrance Road serves as the major traffic corridor.

6.4. Traffic patterns related to the HWMUs are shown in Figure 4. Generally, all traffic, including government, commercial, and private vehicles, follows the primary traffic routes.

7.0. TRAFFIC CONTROL

7.1. Stop signs are positioned at most intersections to control the flow of traffic in the more congested areas of the installation. Traffic lights are located at the main entrance gate. Security personnel are authorized to enforce traffic regulations and provide traffic control when required. Arterial roads are constructed within the magazine areas to service maintenance and storage facilities. These roads are of standard two-lane configuration with speed limits ranging from 10 to 50 mph, depending on congestion and road conditions such as curves, surface types, and visibility.

8.0. ESTIMATED TRAFFIC VOLUME

8.1. It is estimated that up to 600 vehicles belonging to employees and contractors, are driven onto the installation each workday. Most trips driven on the installation by employees are made in government vehicles. There are around 50 government (GSA) high capacity trucks and about 210 pickup trucks, vans, and sedans. These vehicles are used approximately 5 hours per day. About 60 engineering construction vehicles are also in use in varying degrees. Additionally, about 115 material handling equipment vehicles, forklifts, etc., are frequently driven on the installation's roads.

9.0. ROAD SURFACING AND LOAD BEARING CAPACITY

9.1. All arterial and major access roads at TEAD are designated for a minimum bearing load capacity of 18,000 pounds per axle. Construction materials for road surfaces along main access routes and arterial roads to the operations and storage are asphalt/concrete, bituminous, or gravel. Secondary road surfaces are earthen. Table 1 gives design details for TEAD roads by class.

10.0. TOPOGRAPHIC MAPS

- 10.1. The map, presented in Figure 3, illustrates the general topography of each HWMU, including the OB/OD Units.

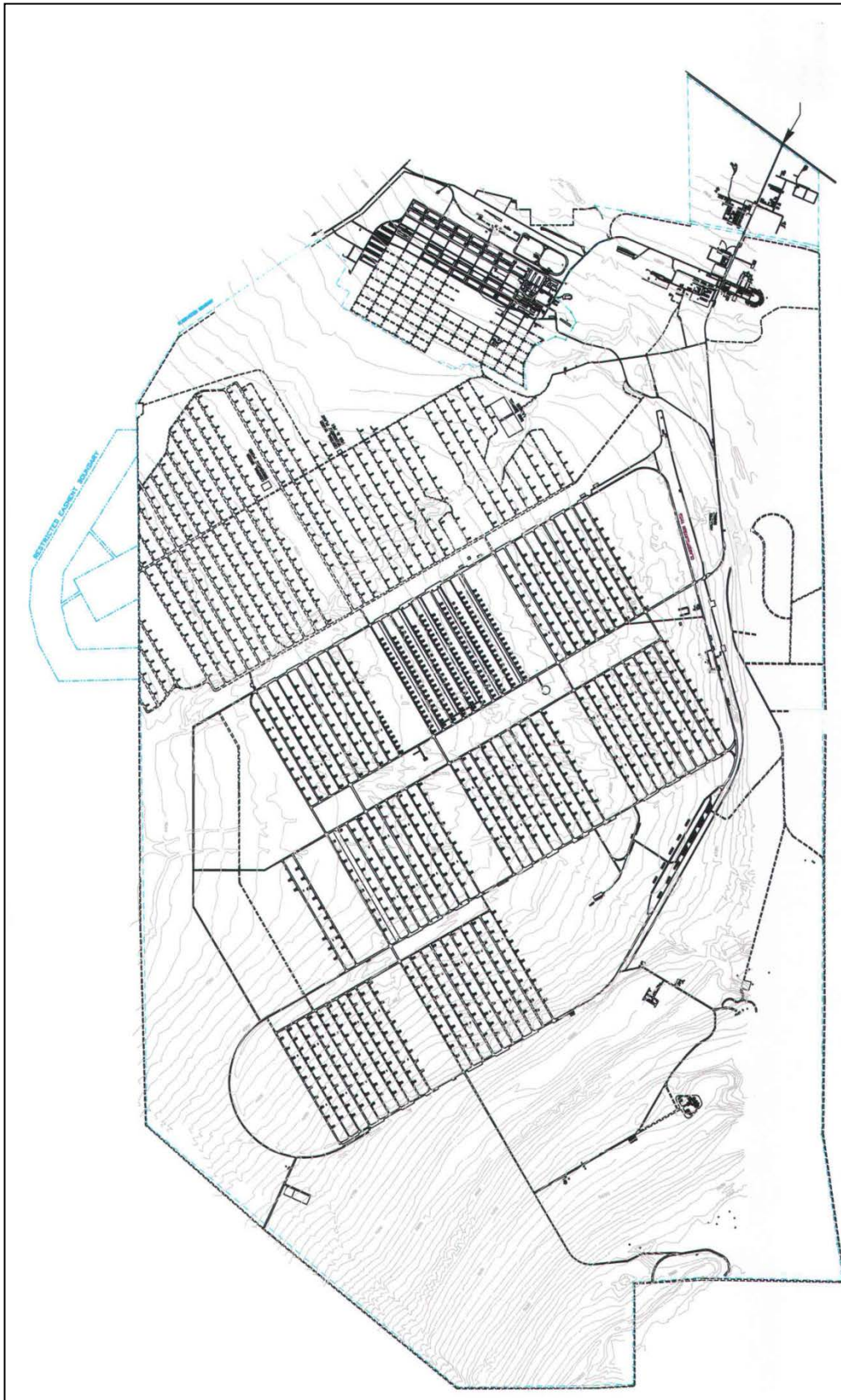


Figure 3
Topographic and Storm Drainage Map

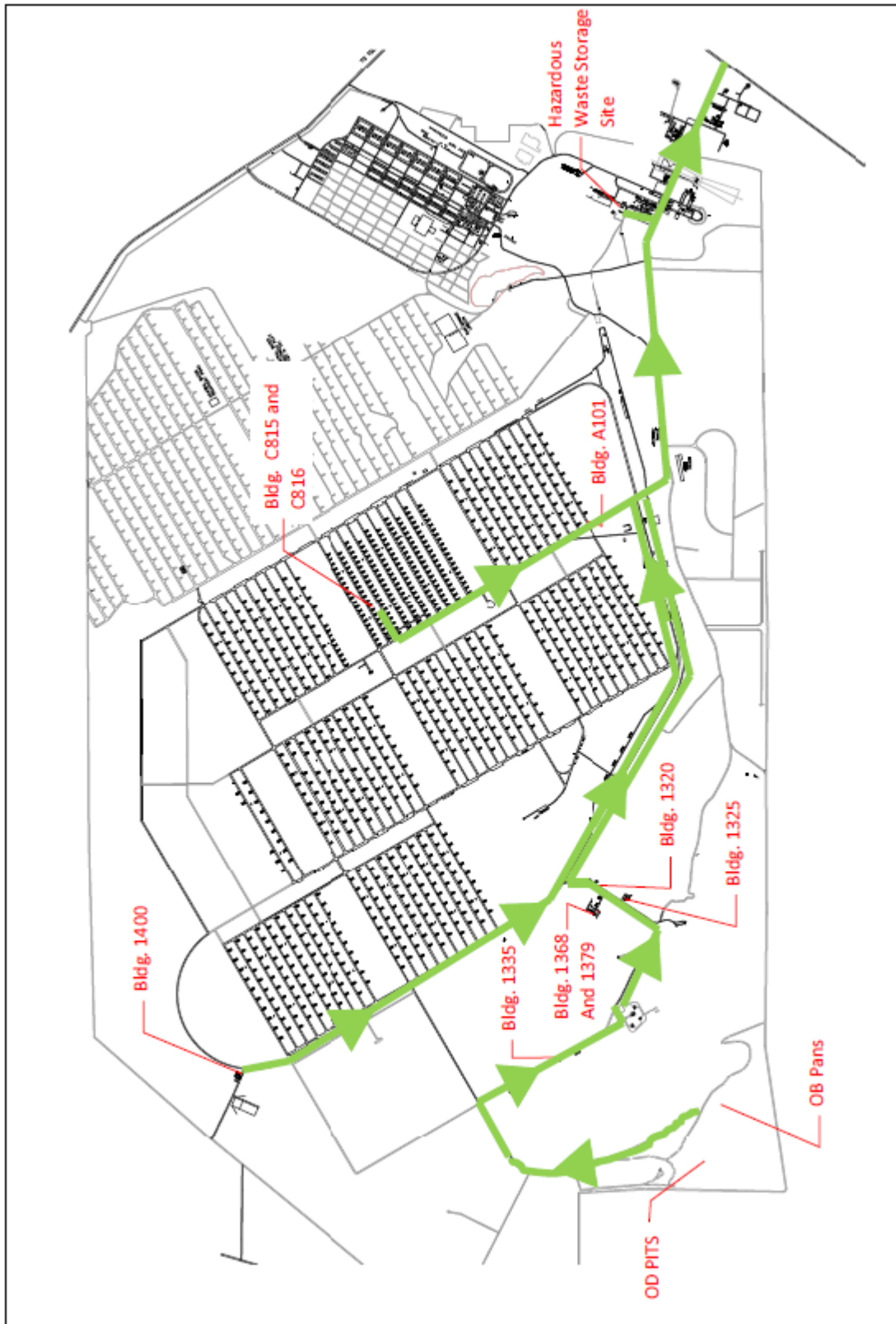


Figure 4
 Hazardous Waste Management Units/Traffic Patterns

<u>Design Controls and Elements</u>	<u>Class A</u>	<u>Class B</u>	<u>Class C</u>	<u>Class D</u>	<u>Class E</u>	<u>Class F</u>
<u>Design Controls</u>						
Road Type	4 Lane	2 Lane	2 Lane	2 Lane	2 Lane	2 Lane
Daily hourly vehicles* (vehicles/hour)	920/lane	780-920/2 lanes	580-780/2 lanes	190-580/2 lanes	19-190/2 lanes	under 19/2 lanes
Design speed, MPH	60	50	50	40	40	40
Average running speed, MPH	38	36	36	32	32	32
<u>Cross-Section Elements</u>						
Minimum width of lanes, ft**	12	12	12	11	10	10
Normal cross; slope, in/ft		1/8 to 1/4		3/16 to 3/8		1/4 to 1/2
Road thickness, in***	-----4-inch base material, 6-inch surface material-----					
<u>Design Elements</u>						
Grade desirable maximum percent	3	3	3	4	5	6
Road bearing capacity, lbs	-----18,000 lbs single axle load-----					
Maximum truck curb weight, lbs	-----18,000 lbs single axle load-----					
<u>NOTES:</u>						
* These values show the mixed traffic volume which that requires the same operational area as that required by light delivery trucks and passenger cars. These DHV's are based on indicated percentage of the daily volume and may be over-conservative in some instances because the percentages of trucks, track-laying vehicles, etc., during peak hours are considerably lower than the average percentage during all hours.						
** The traffic lane widths indicated are for use on streets where the traffic will consist principally of vehicles with maximum overall widths of 8 ft. or less.						
*** Thickness of combined base material and surface material.						
SOURCE: Department of the Army, TMS-822-6						

Table 1
Road Design Standards

ATTACHMENT 2
WASTE ANALYSIS PLAN

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1.0. Hazardous Wastes Managed at TEAD and Stored in Building 528

1.1. Background and Scope

1.1.1. Hazardous Wastes, except explosive wastes, requiring storage for more than ninety days, shall be stored in Building 528. Hazardous wastes managed at TEAD and stored in Building 528 shall be described by one or more of the following EPA waste codes; no other hazardous wastes of other codes can be handled or stored in Building 528:

D001, D002, D003*, D004, D005, D006, D007, D008, D009, D011, D018, D019, D020, D022, D023, D025, D026, D028, D029, D030, D032, D033, D035, D036, D037, D039, D040, D042, D043, F001, F002, F003, F004, F005, K047, P030, P098, P106, U002, U003, U019, U031, U041, U044, U051, U069, U075, U080, U127, U131, U151, U154, U188, U211, U220, U226, U239.

* Indicates reactivity as defined in Utah Admin. Code R315-261-23(5), regarding cyanide and sulfide bearing wastes. Does not include reactivity as defined in Utah Admin. Code R315-261-23(6), (7) or (8), regarding wastes capable of detonating (i.e. explosive wastes). D003 Reactive (explosive) wastes are managed at Igloos A-101, C-815 and C-816, Service Magazines 1368 and 1370, Above Ground Magazine 1205, the OB/OD area, the 1236 Deactivation Furnace (incinerator located at Building 1320), the Small Caliber Disassembly Line (Building 1325), and the Hydrolysis Facility.

NOTE: Waste described by the above listed characteristic (D) and listed (F) EPA waste codes are generated by processes that operate intermittently and on a continual basis by TEAD operations. K, P, and U waste codes are included based on a review of past operating records and are not generated on a continual basis.

1.2. Previously Identified Waste Streams & Associated EPA Waste Codes

1.2.1. Detailed chemical analyses shall be performed by the Permittee in order to identify and manage hazardous waste during storage, and to provide the correct notification to off-site treatment, storage and disposal facilities (TSDF) as required under the Land Disposal Restrictions found in Utah Admin. Code R315-268.

1.2.2. Specific waste streams grouped under nine general waste stream titles are presented in Table 1, along with the EPA Waste Code(s) that describe each group.

1.2.3. The parameters of analysis shall be those constituents described by EPA waste codes D001 through D043, the constituents included in the listed waste codes F001 through F005, and Total Organic Halides.

1.2.4. TEAD's Environmental Office (EO) shall select the parameters to be analyzed for as noted in the next paragraph using knowledge as to how the waste was generated, and past analytical results of similar waste streams.

1.3. Parameters and Rationale [Utah Admin. Code R315-264-13(b)(1)]

The parameters of chemical/physical analyses and rationale for their selection are described by general waste title in the following paragraphs.

1.3.1. Surface Coatings/Related Wastes: These wastes are generated during surface coating and removal activities. Wastes categorized under this waste stream title shall be analyzed for the characteristics of Ignitability, Toxicity Characteristic Leaching Procedures (TCLP) Metals and Organics, and Total Organic Carbon (TOC). Constituents of concern contained in the EPA listed waste codes F001 through F005 shall not be analyzed for if they are known to be in the waste stream. These codes are assigned to wastes based on the Permittee's knowledge. If there is any possibility of these constituents being in the waste stream, analysis shall be conducted to verify their presence or absence.

1.3.2. Batteries: Wastes included under this general waste stream include various spent batteries to include lithium, ni-cad and lead-acid. These wastes need not be analyzed unless the information available, safety data sheets or Army disposal guidance, does not allow a determination to be made. If a determination is required, the waste battery shall be analyzed for Toxicity Characteristic Metals.

1.3.3. Chemical Cleaning/Related Wastes (organics): Wastes categorized under this general waste stream title are generated from the degreasing and treatment of metal parts. Listed waste codes F001 through F005 will be assigned to these wastes based on the Permittee's knowledge. If a determination is required, these wastes shall be analyzed at a minimum for the characteristics of Ignitability, Toxicity Characteristic Metals, and Toxicity Characteristic Organics.

1.3.4. Petroleum Oil and Lubricant Wastes (POL): Wastes in this category include those from automotive and other mechanical operations. Wastes categorized under this general waste stream category will be analyzed for Total Metals, Total Organic Halides (TOX) and Ignitability. Wastes in this category are managed as Used Oil in accordance with R315-15.

1.3.5. Thermal Treatment Residues: Wastes categorized under this general waste stream title are generated in the deactivation furnace, the Small Caliber Disassembly Line, and the open burn and open detonation units. This waste shall be analyzed for Toxicity Characteristic Metals, and for the Toxicity Characteristic Organics 2,4, dinitrotoluene (D030), and hexachlorobenzene (D032) and if necessary, explosives.

1.3.6. Hydrolysate: Spent hydrolysate is generated from the destruction of munition items in a hot caustic bath. This waste will be analyzed for Corrosivity (D002), Reactivity (D003), the Toxicity Characteristics Metals, and Organics: nitroglycerine, 2,4 dinitrotoluene (D030) and hexachlorobenzene (D032).

1.3.7. Spent Blast Grit: Spent blast grit is generated from blast grits made of walnut shells, glass, or steel. The blast grit becomes contaminated with paint chips, the pigment formulations of which contain heavy metals. Past analyses of this waste stream show this waste to be hazardous for Toxicity Characteristic Metals. Therefore the only analysis that is required to be performed on this waste stream is Toxicity Characteristic Metals.

1.3.8. Installation Restoration Program (IRP) Derived Wastes: Wastes included in this general waste stream title are generated from the investigation and remediation of sites contaminated by past operations. The type of analysis for each waste shall depend upon the operations previously conducted at the site and previous investigative or remedial work performed. The parameters for determination that shall be considered include the characteristics of Ignitability, Corrosivity, and Reactivity. Determinations shall also be made for Toxicity

Characteristic Metals, Toxicity Characteristic Organics, and Toxicity Characteristic Organics (pesticides and herbicides). The results from these determinations shall be placed in the Permittee's Operating Record.

1.3.9. Discarded Commercial Products: If the waste is a discarded commercial product or residue collected from a spill of hazardous material, a Safety Data Sheet (SDS) shall be used to determine if the waste is a listed P or U waste or if the waste exhibits any hazardous characteristics.

1.3.10. Miscellaneous (Orphan) Wastes: These wastes are materials which are not currently or routinely generated from processes not currently in operations at the Facility and/or are limited in quantity. A determination shall be made for the characteristics of Ignitability, Corrosivity, and Reactivity. Also, determinations shall be made for Toxicity Characteristic Metals, Toxicity Characteristic Organics, and/or Toxicity Characteristic Organics (pesticides and herbicides) depending on the Permittee's knowledge of the process and materials that generated the wastes. Those characteristics which couldn't be generated will not be analyzed for.

1.3.10.1. If there is no knowledge as to the origin of the waste or how the waste was generated then the parameters of analysis shall include the characteristics of Ignitability, Corrosivity, Reactivity, plus Toxicity Characteristic Metals, Toxicity Characteristic Organics, Toxicity Characteristic Organics (pesticides/herbicides). Constituents of concern contained in the EPA listed codes F001 through F005 shall be analyzed for.

1.3.10.2 The results from these determinations shall be placed in the Permittee's Operating Record.

1.4. Parameter Test Methods [Utah Admin. Code, R315-264-13(b)(2)]

1.4.1. Table 1 contains the EPA waste codes for hazardous waste managed at the Facility, Building 528, and the approved SW-846 analytical method(s) for each waste code listed. In addition, the EPA waste numbers have been grouped into analyte groups.

1.4.2. More than one method of analysis may appear since analytical contracts are awarded to various labs. Labs performing the analysis shall be certified by the State of Utah for the parameters to be analyzed for.

1.5. Sampling Method [Utah Admin. Code R315-264-13(b)(3)]

1.5.1. Wastes generated on a continual basis at the Facility are sampled in the 90-day storage yard, or at the point of generation. Wastes are either managed in open top or closed top drums, gondolas, or in some instances discharged to a bulk tanker for transport to a Treatment Storage and Disposal Facility (TSDF).

1.5.2. The sampling method selected for a given waste stream shall be based on the physical properties the waste exhibits and the location or method of storage of the waste. Table 2 is a summary of sampling and analytical methodologies for each general waste stream title.

1.5.3. One sample per waste stream is taken, using a sampling tool that will insure the most representative sample. For waste streams generated at a rate greater than 55 gallons per month, the sample to be analyzed shall be a composite sample comprised of equal amounts taken from

all the drums filled with the same waste stream that are in storage in the 90-day storage yard (in any given month).

1.6. Frequency of Analyses [Utah Admin. Code R315-264-13(b)(4)]

1.6.1. An analysis shall be performed whenever the process generating a waste stream has changed. Waste streams generated on site and on a continual basis shall be analyzed (at a minimum) once every three years if the process generating the waste stream has not changed. Waste streams shall be reviewed on an annual basis to determine if a process change (such as using different materials such as paints or chemicals or a change in the operation has occurred such as a change in operating temperature or the use of equipment of new design) has occurred (see Figure 1). If the waste stream is changed, it shall be sampled within one week of the change and the sample analyzed and a determination made. Any changes in the waste stream will be documented in the Operating Record.

1.6.2. Waste streams generated from non-process sources (e.g. spill, leaks) shall be analyzed at the time of generation, if the constituent of concern is not identified as a listed waste. The determination shall be made on a case-by-case basis and includes both the application of the Permittee's knowledge (in the event of hazardous substance spills, and spills of wastes from existing waste streams) and chemical analysis if necessary. These determinations shall be documented in the Operating Record.

1.6.3. Waste streams generated from non-continuous sources shall be analyzed on an annual basis. These determinations shall be documented in the Operating Record.

1.7. Additional Requirements for Ignitable, Reactive or Incompatible Wastes [Utah Admin. Code R315-264-13(b)(6)]

1.7.1. Hazardous wastes shall be stored so as to prevent the mixing of incompatible waste should a release occur. In Building 528 the bays are numbered 1 through 4. With the orientation of the observer standing beneath the overhead door, facing into the building, bays 1 and 3 are to the observer's left, bays 2 and 4 are to the observer's right. Bays 1 and 2 are the first bays encountered upon entering Building 528 through the overhead door.

1.7.2. Bay 1 shall be used to store wastes that are sludges or solids and that are hazardous wastes by Toxicity Characteristic Metals D004 through D011. Bay 2 shall be used to store corrosive (D002 alkaline) wastes. Bay 3 shall be used to store ignitable and solvent wastes (D001 and F001 through F005). Bay 4 shall be used to store corrosive (D002, acidic) wastes.

1.7.3. The Permittee shall determine the most appropriate bay for wastes with EPA codes D018 through D043 or the U or P codes listed in paragraph 1.1 above based on the characteristics of each waste. Any wastes placed into storage that are reactive (D003, sulfide or cyanide producing) shall be stored in Bay 2.

1.8. Land Disposal Restrictions [Utah Admin. Code R315-268]

1.8.1. The Permittee shall arrange for the disposal of hazardous waste managed on site through the Defense Logistics Agency Disposition Services (DLADS). DLADS holds and administers the contract for the ultimate treatment and disposal of hazardous wastes managed at the Facility. The Permittee shall ensure that contracts are written in such a manner as to ensure the proper

treatment and disposal of hazardous wastes generated at the Facility. This includes the notifications required under the Land Disposal Restrictions (LDR) found in Utah Admin. Code R315-268.

1.8.2. The Permittee shall provide a notification with each shipment of hazardous waste that is being sent off site for storage, treatment, and/or disposal. The Permittee shall make the receiving facility aware of any LDRs and/or treatment methods that may be required before the hazardous waste can be disposed of. The Permittee shall include this notification with each shipment of hazardous waste transported off site in addition to, and in association with, the hazardous waste shipping manifest.

1.8.3. The Permittee shall determine:

1.8.3.1. All applicable EPA hazardous waste codes associated with each waste stream managed at the Facility.

1.8.3.2. Treatment standards, or prohibition levels that apply to the waste code(s) used to characterize each waste stream based on waste classification (i.e. wastewaters or non-wastewaters) and waste code, or (in the case of listed wastes) subdivisions found within waste codes referring to specific constituent(s) of concern.

1.8.3.3. What regulated constituents and what concentrations are present in the each waste stream.

1.8.4. From a comparison of information contained in paragraph 1.8.3.2. and 1.8.3.3. above, the Permittee shall determine which waste streams require treatment before disposal.

1.8.5. Table 3 is a compilation of tables CCWE (Constituent Concentration in Waste Extract, Utah Admin. Code R315-268-41), Table 2 (Technology-Based standards by RCRA Waste Code, Utah Admin. Code R315-268-42), and Table CCW (Constituent Concentration in Wastes, Utah Admin. Code R315-268-43) for hazardous wastes generated and managed at the Facility.

1.8.6. Should a hazardous waste or discarded commercial product be described by an EPA waste code that does not appear in Table 3, the Permittee shall review all three sections of Utah Admin. Code R315-268 referenced above to determine which treatment standard, or treatment technology applies.

1.8.7. The Permittee shall determine whether or not a hazardous waste or waste stream is restricted from land disposal by comparison of the waste analysis and the applicable tables mentioned above. If it is determined that the waste does not meet the treatment standards, a notice containing the following information will be sent with each shipment to the receiving facility:

1.8.7.1. The EPA hazardous waste code(s),

1.8.7.2. The applicable treatment standard(s), or if the treatment standard is expressed as a treatment, the applicable five letter treatment code,

1.8.7.3. The manifest number associated with the waste shipment, and

1.8.7.4. The waste analysis data used to make the determination.

1.8.8. If the Permittee determines that the waste meets the treatment standards, and can therefore be disposed of without further treatment, a notice containing the information listed above shall be sent with each shipment of hazardous waste to the receiving facility. In addition, the following certification will be sent with the waste shipment and will be signed by a representative of the Facility:

“I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in Utah Admin. Code R315-268-40 and all applicable prohibitions set forth in Utah Admin. Code R315-268-32 through 35. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.”

1.8.9. If it is determined that a waste is exempt from LDR regulations, or has been given an exemption under the nationwide capacity variance, in addition to information contained in items 1.8.7.1 through 1.8.7.4 above, the generator must include the date the waste is subject to prohibitions (i.e. the date the variance expires).

2.0. Waste Ammunition Igloos A-101, C-815, C-816, and Service Magazines 1368, 1205 and 1370

2.1. Background and Scope

2.1.1. Ammunition Igloos A-101, C-815, C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205 are used to store hazardous waste. The igloos and service magazines were designed for the purpose of storing munitions; however, these four structures have been designated Hazardous Waste Management Units (S01, storage) in order to comply with federal and state regulations and support the conventional ammunition demilitarization mission conducted by TEAD’s Directorate of Ammunition Operations.

2.1.2. The hazardous waste that is stored in the above mentioned igloos and service magazines can be described by the EPA waste code and subcategory D003 Reactive (explosive). In addition, some explosives can be further described as toxicity characteristic metals (EPA codes D004 through D011) and toxicity characteristic organics (D030 and D032).

2.1.3. Military Propellant, Explosive, and Pyrotechnics (PEP) formulations in general are comprised of the elements lead, sulfur, chlorine, carbon, hydrogen, oxygen, and nitrogen in the form of organic compounds, halogenated organic compounds, and lead compounds.

2.2. Waste Streams

2.2.1. The waste streams contributing to the D003 (explosive) hazardous waste that will be stored in the ammunition storage igloos A-101, C-815 and C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205 are:

2.2.2. Waste PEP: This waste stream is comprised of munitions that are determined to be obsolete and/or have undergone formulation degradation to the point that their performance characteristics are in question (in essence, discarded commercial or off spec product).

2.2.2.1. Waste PEP items are generated on site and received from off site. The only off-site facility/organizations the Permittee will receive off-site waste reactive (explosive subcategory) wastes from will be Tooele Army Depot South Area (TEAD-S), U.S. Army Explosives Ordnance Personnel and DOD facilities shipping waste munitions for treatment in the deactivation furnace. No hazardous wastes that have the State of Utah Waste codes P999 or F999 will be transferred from TEAD-S or any other facility to TEAD.

2.2.2.2. Munitions that are usable stock are not considered discarded or off-spec product (hazardous waste) until Department of Defense Form 4508 is signed by the operator of the treatment unit where the redesignated D003 (explosive) hazardous waste will undergo deactivation. Waste PEP items are treated at the APE 1236 Deactivation Furnace, the Small Caliber Disassembly Line, the Hydrolysis Facility, or the Open Burn/Open Detonation (OB/OD) area located at the Facility.

2.2.2.3. In the event that the availability of the treatment unit the munitions are intended to be treated at changes (due to weather conditions in the case of OB/OD, or equipment operational status in the case of the deactivation furnace), thereby preventing the munitions that have been designated hazardous waste from undergoing treatment, these wastes explosives shall be stored in igloos A-101, C-815, C-816, Service Magazines 1368 and 1370 and Above Ground Magazine 1205. Waste munitions received at an OB/OD unit may be stored in place in accordance with Condition VI.C.1.f.

2.2.3. Debris/Liquids contaminated with D003 reactive (explosive) Hazardous Waste: These wastes are generated on site by ammunition maintenance (i.e., disassembly of munitions) and demil operations, or samples of these types of waste are sent from off site. In many instances, these wastes are not reactive in the sense that they will detonate, but are contaminated with PEP residues.

2.3. Parameters and Rationale [Utah Admin. Code, R315-264-13(b)(1)]

The parameters of chemical/physical analysis, and the rationale for their selection, are described in the following paragraphs:

2.3.1. Waste PEP in Munitions: This waste stream is generated as: 1) munitions currently in storage as usable stock become obsolete; 2) PEP fillers found in munitions degenerate and become unstable or lose their performance characteristics; and 3) damaged, defective, or obsolete ammunition components are discarded and replaced with new components during ammunition maintenance operations.

2.3.1.1. Regardless of the reason the PEP item became a hazardous waste, the Army has knowledge as to the chemical make-up of the PEP filler, the correct method of storage, and the intended method of deactivation. Therefore, no chemical analysis will be done on waste PEP. In addition, PEP shipping containers are clearly marked and labeled. Further testing will not provide any useful information to the operator for storage than does already exist in munition specification data. The munition specification data for each munition shall be reviewed before

being placed in hazardous waste storage to ensure that the required information is available at the time of treatment. The parameters that shall be calculated are; 1) the heat content of the waste on a Btu/lb basis, and 2) the sulfur, halogen (specify halogen type), lead, and mercury content on a weight percent basis.

2.3.2. Debris/Liquids Contaminated With PEP Residue: No chemical analysis will be performed on these waste items. The generator has knowledge as to what raw materials were used in the process that generated the waste. Further analysis will not provide the operator with any useful knowledge for the purpose of storing the waste. This user knowledge includes knowing whether the waste contains free liquids. A visual inspection shall be performed at the time the waste is placed into storage to verify that the contents of the container match the physical description found on the container label.

2.4. Parameter Test Methods [Utah Admin. Code, R315-264-13(b)(2)]

2.4.1. For wastes stored in Ammunition Igloos A-101, C-815 and C-816, Service Magazines 1368 and 1370, and Above Ground Magazine 1205, the parameters of concern are heat content, sulfur, halogen, lead, and mercury content. As noted before, the concentrations of these parameters can be determined by review of manufacturer and/or munition specifications and no chemical analysis is done.

2.4.2. Calculations are conducted on the basis of one munition item (round), or on the basis of one pound of propellant. In all cases only the reactive PEP filler will be considered; the inert metal munition casing will not be considered.

2.5. Frequency of Analysis [Utah Admin. Code, R315-264-13(b)(4)]

2.5.1. The review and determinations as noted in paragraphs 2.3 and 2.4 above shall be performed each time a new waste, or munition is demiled (deactivated), or a munition with a different NSN number is programmed for deactivation. The analysis shall be prepared prior to the waste being deactivated.

2.6. Sampling Methods [Utah Admin. Code, R315-264-13(c)(2)]

2.6.1. No sampling methods shall be employed because the analysis of the parameters of concern is based on a review of manufacturer literature (i.e. generator knowledge) which is then used to determine the concentrations of the parameters of concern.

2.7. Analysis Supplied by Off-site Facilities [Utah Admin. Code, R315-264-13(b)(5)]

2.7.1. The Permittee may receive, in accordance with Condition II.P., reactive (explosive) hazardous wastes that are generated off site. The only facility/organizations TEAD will receive off-site generated hazardous waste from will be TEAD-S, U. S. Army Explosive Ordnance Personnel, and DOD facilities shipping waste munitions for treatment in the deactivation furnace, small caliber disassembly line or the hydrolysis facility. The only hazardous wastes the Permittee will receive from TEAD-S will be reactive (explosive subcategory). No hazardous wastes that have the State of Utah waste codes P999 or F999 shall be transferred from TEAD-S or any other facility to TEAD.

2.7.2. The TEAD Environmental Office (EO) will ensure that the waste analysis for wastes to be transferred is available, and includes, at a minimum, the analysis of the same parameters wastes generated in a similar manner at the Facility..

2.8. Additional Requirements for Wastes Generated Off-Site [Utah Admin. Code, R315-264-13(c)]

2.8.1. Hazardous waste (explosives) received from TEAD-S or other DOD facilities shall be inspected at the time of arrival to ensure that containers in the shipment match information included in the accompanying manifest. The operator who receives the shipment of hazardous waste shall:

2.8.1.1. Verify the manifest document number on each container label matches the unique number assigned to the manifest accompanying the shipment.

2.8.1.2. Verify that the number and type(s) of containers in the shipment match the number and type(s) of containers specified on the shipping document.

2.8.1.3. Verify that the explosive type and quantity of the contents of the container match the physical description found on the container label. Every container in the shipment shall be opened to verify this. This requirement shall not apply to unused ammunition shipped in their original containers. Type and quantity of unused munitions shall be verified by the nomenclature marked on the outside of the containers.

2.8.1.4. Verify that the waste analysis for the waste received is available, and the EPA waste codes that the waste is described by are permitted to be stored in igloos A-101, C-815 and C-816, Service Magazines 1368 and 1370, and Above Ground Magazine 1205.

2.8.2. If a discrepancy is found with the manifest, the TEAD EO shall be called (ext. 3504) for direction.

2.9. Land Disposal Restriction & Notification, Waste Analysis [Utah Admin. Code, R315-268]

2.9.1. Wastes stored in Ammunition Igloos A-101, C-815, C-816; Service Magazines 1368 and 1370; and Above Ground Magazine 1205 are reactive (D003, explosive subcategory), and are treated at either the 1236 Deactivation Furnace or at the OB/OD area operated by the Permittee and are not land filled. These methods of treatment comply with the treatment technology specified in Utah Admin. Code R315-268 for D003 (explosive subcategory) wastes.

3.0. APE 1236 Deactivation Furnace

3.1. Background and Scope

3.1.1. The Permittee operates a hazardous waste incinerator located in building 1320. The Army refers to the type of incinerator operated at the Facility as an Ammunition Peculiar Equipment (APE) 1236 Deactivation Furnace. Incinerators of this type are operated at Army Depots throughout the country and were designed specifically to deactivate discarded/obsolete military PEP.

3.2. Waste Streams

3.2.1. Incinerator Waste Feed: The only wastes that shall be treated in the APE 1236 Deactivation Furnace (hazardous waste incinerator) located in Building 1320 are defined as reactive (D003, explosive subcategory) hazardous waste as per Utah Admin. Code R315-261-23. The incineration of waste PEP meets the treatment technology required in Utah Admin. Code R315-268.

3.2.1.1. Hazardous wastes generated from industrial operations at the Facility (sump sludges, wastewater treatment sludges, paint waste, spent degreasers, etc.) shall not be treated in the APE 1236 Deactivation Furnace.

3.2.2. Incinerator Treatment Residues: Residues from the treatment of discarded/obsolete PEP consist of ash, scrap metal, and slag.

3.2.2.1. During operation, incinerator ash accumulates in the cyclone, and high temperature ceramic baghouse. Ash is removed from each of these pieces of process equipment as it is generated and collected in the drums. There is a collection drum associated with, and located below each piece of process equipment mentioned above. Each drum is connected to its associated component either by flexible ducting or hard fittings. This arrangement allows for the transfer and collection of incinerator residues from process equipment to storage drums, and insures that residues will not be released to the environment.

3.2.2.2. Drums filled with incinerator treatment residues (ash) shall be removed to one of the 90-day container storage areas and, if necessary, stored at Building 528 until they are transported to an off-site TSDF.

3.2.2.3. Metal introduced into the treatment process as ammunition casings and projectiles is removed from the kiln on a continual basis by the interior staggered flights (that act like an auger) that are fabricated into the kiln wall. As metal ammunition casings exit the incinerator at the burner end of the kiln, they fall on to a conveyor and are transferred to scrap metal collection drums for recycling.

3.2.2.4. Scrap metal is recycled.

3.2.3. Incinerator Systems Maintenance Generated Wastes: Wastes generated from maintenance of the APE 1236 Deactivation Furnace and its associated Pollution Abatement System (PAS) consist of treatment residues (ash) that has accumulated in the duct work, and discarded surface-contaminated process equipment.

3.3. Parameters and Rationale [Utah Admin. Code R315-264-13(b)(1)]

The parameters of chemical/physical analysis, and the rationale for their selection, are described in the following paragraphs:

3.3.1. PEP: Propellants, Explosives, and Pyrotechnics comprise the only waste stream that will be treated in the APE 1236 Deactivation Furnace. This waste stream is characterized as reactive (subcategory explosive) hazardous waste. No chemical analysis will be performed on this waste stream because the waste stream is characterized by the definition found in federal and state regulations (reactive), the treatment standard for the explosive subcategory of reactive wastes is technology based (DEACT), not concentration based, and treatment standards found in Utah

Admin. Code R315-268 expressed as technologies take precedence over treatment standards expressed as concentrations. The waste analyses for the PEP hazardous wastes to be treated in the APE 1236 Deactivation Furnace are included in the Munition Items Disposition Action System (MIDAS) database.

3.3.1.1. The analysis that shall be performed on hazardous waste PEP to be treated at the APE 1236 Deactivation Furnace is: 1) a visual inspection of the material contained in the shipment received at Building 1320 to ensure the material delivered matches the material described on the 4508 form accompanying the shipment, and 2) a review of the waste analysis contained in the MIDAS database to ensure that the PEP delivered to the APE 1236 Deactivation Furnace is included.

3.3.2. Treatment Residues (ash): Treatment residues collected in the cyclone and baghouse are managed as one waste stream. These residues shall be sampled and analyzed in accordance with Section 1 of this Attachment.

3.3.3. Treatment Residues (metal scrap): Metal is introduced to the treatment process as ammunition casings and cartridge projectiles. Metal that does not melt as it passes through the rotary kiln is collected and sold as scrap metal and is therefore exempt from regulation. No chemical analysis will be performed on the scrap metal.

3.3.3.1. All pieces of metal exiting the kiln shall be visually inspected to ensure that the deactivation of the PEP component contained in the items fed to the incinerator is complete.

3.3.4. Treatment Residue (slag): Slag accumulating in the rotary kiln is comprised of melted aluminum ammunition casings and/or melted lead projectiles. Metal slag removed from the APE 1236 Deactivation Furnace is recycled as scrap metal, and therefore exempt from regulation. No analysis will be performed on metal slag exiting the rotary kiln.

3.3.5. Discarded Process Equipment: Discarded process equipment that comes in direct contact with waste feeds or incinerator treatment residues may have its surface contaminated by residues that are Toxicity Characteristic hazardous waste. The surface of discarded process equipment will be decontaminated either by grit blasting, wire brushing, or compressed air jet. No chemical analysis will be performed on discarded process equipment.

3.3.5.1. This equipment is inorganic debris with surface contamination. Residues removed from the surface of discarded process equipment shall be collected and managed along with the waste stream described in paragraph 3.3.2 of this section.

3.3.5.2. Discarded process equipment will be visually inspected to ensure that no surface contamination remains on the item. Components made of metal will be recycled as scrap metal.

3.3.5.3. Discarded process equipment that cannot be surface decontaminated, and that has no recycle value, will be characterized as inorganic debris contaminated with characteristic hazardous waste treatment residues (ash). The characterization of the ash will be applied to the debris it contaminated.

3.4. Analysis Supplied by Off-site Facilities [Utah Admin. Code R315-264-13(b)(5)]

3.4.1. The Permittee may receive, in accordance with Condition II.P., reactive (explosive) hazardous wastes that are generated off-site. The only facility/organizations the Permittee will receive off-site generated hazardous waste from will be TEAD-S, U. S. Army Explosive Ordnance Personnel, and DOD facilities shipping waste munitions for treatment in the deactivation furnace, the Small Caliber Disassembly Line, and the Hydrolysis Facility. The only hazardous wastes TEAD will receive from TEAD-S will be reactive (explosive subcategory). No hazardous wastes that have the State of Utah waste codes P999 or F999 shall be transferred from TEAD-S or any other facility to TEAD.

3.4.2. The TEAD Environmental Office (EO) will ensure that the waste analysis for wastes to be transferred is available and includes at a minimum the analysis of the same parameters wastes generated in a similar manner at the Facility.

3.5. Additional Requirements for Wastes Generated Off Site [Utah Admin. Code R315-264-13(c)]

3.5.1. Hazardous waste (explosives) received from TEAD-S or other DOD facilities will be inspected at the time of arrival to ensure that containers in the shipment match information included in the accompanying manifest. The operator who receives the shipment of hazardous waste shall:

3.5.1.1. Verify the manifest document number on each container label matches the unique number assigned to the manifest accompanying the shipment.

3.5.1.2. Verify that the number and type(s) of containers in the shipment match the number and type(s) of containers specified on the shipping document.

3.5.1.3. Verify that the explosive type and quantity of the contents of the container match the physical description found on the container label. Every container in the shipment shall be opened to verify this. This requirement shall not apply to unused ammunition shipped in their original containers. Type and quantity of unused munitions shall be verified by the nomenclature marked on the outside of the containers.

3.5.1.4. Verify that the waste analysis for the waste received is available, and the EPA waste codes that the waste is described by are permitted to be burned in the APE 1236.

3.5.2. If a discrepancy is found with the manifest, the TEAD EO shall be called (ext. 3504) for direction.

3.6. Land Disposal Restriction & Notification, Waste Analysis [Utah Admin. Code R315-268]

3.6.1. The management method of each waste stream treated or generated at the APE 1236 Rotary Kiln is as follows:

Waste Stream	Management Method
Military PEP	Deactivation (DEACT)
Treatment Residues (ash)	Off-site treatment/disposal
Treatment Residues (metal scrap)	Recycled as scrap metal (not regulated)

Discarded Process Equipment	Recycled as scrap metal, or disposed of as hazardous waste if material is un-recyclable
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3.6.2. Hazardous wastes generated from operations of the APE 1236 Deactivation Furnace that will be further treated and eventually disposed of at an off-site TSDF are the treatment residue (ash), and discarded process equipment/components. These waste streams shall first be transferred to the central 90-day storage area or Building 528. From there these wastes shall be managed in accordance with the procedures for waste stored in Building 528 found in Section 1 of this Attachment. This plan discusses the methods used to ensure hazardous wastes leaving the Facility and bound for off-site TSDF are managed properly. This includes requirements found in Utah Admin. Code R315-268.

4.0. Small Caliber Disassembly Line

4.1. Background and Scope

4.1.1. The small caliber disassembly line separates the projectile from the cartridge case, collects the propellant, and initiates the primer.

4.2. Waste Streams

4.2.1. Small Caliber Disassembly Line Waste Feed: The only wastes that will be treated in the small caliber disassembly line located in building 1325 are primers from various size cartridges that are defined as reactive (D003, explosive subcategory) hazardous waste in accordance with Utah Admin. Code R315-261-23. The initiation of the primers meets the treatment technology required in Utah Admin Code R315-268.

4.2.2. Small Caliber Disassembly Line Treatment Residues: Residues from the treatment operation consist of projectiles, scrap metal casings, and casings with primers that failed to initiate.

4.2.2.1 The projectiles that are removed from the casings and determined to be waste shall be treated in the deactivation furnace in accordance with Section 3 of this Attachment.

4.2.2.2. Projectiles that have been classified as reusable through the Departments of Defense (DOD) Supply Conditional Code (SCC) Standards will be packaged for reuse.

4.2.2.3. As metal ammunition casings exit the primer-firing module, they are collected in drums for recycling.

4.2.2.4. Primers that fail to initiate in the primer-firing module are returned to the primer firing module or collected for processing through the deactivation furnace.

4.2.3. Small Caliber Disassembly Line Maintenance Generated Wastes: Wastes generated from maintenance of the disassembly line and its associated Pollution Abatement System (PAS) consist of treatment residues (ash) that have accumulated in the duct work, and discarded surface-contaminated process equipment. The residues from the pollution abatement system shall be removed to one of the 90-day container storage areas and, if necessary, stored at Building 528 until they are transported to an off-site TSDF. Scrap metal that has been decontaminated is recycled.

4.2.4. Propellant: Reusable propellant will be repackaged and stored as product for future use and is therefore exempt from hazardous waste regulation. Propellant that is determined to be waste by the Designated Disposition Authority (DDA) shall be managed in accordance with the Army Propellant Management Guide. Once the propellant is removed from storage in a military magazine or other storage area for the purpose of being disposed of, burned or incinerated, or treated prior to disposal it shall be handled as hazardous waste.

4.2.4.1. Waste propellant is treated at the Open Burn/Open Detonation (OB/OD) area located at the Facility or sent to a permitted hazardous waste treatment facility for off-site disposal.

4.2.4.2. In the event that the availability of the treatment unit the munitions are intended to be treated at changes (due to weather conditions in the case of OB/OD, or equipment operational status in the case of the deactivation furnace), thereby preventing the munitions that have been designated hazardous waste from undergoing treatment, these wastes explosives shall be stored in igloos A-101, C-815, C-816, Service Magazines 1368 and 1370 and Above Ground Magazine 1205, or treated off-site. Waste munitions received at an OB/OD unit may be stored in place in accordance with Condition VI.C.1.f.

4.3. Parameters and Rationale [Utah Admin. Code R315-264-13(b)(1)]

The parameters of chemical/physical analysis and the rationale for their selection are described in the following paragraphs:

4.3.1. Projectiles: Projectiles shall be characterized in accordance with Section 3 of this Attachment.

4.3.2. Primers: No chemical analysis of primers will be performed because: 1) the materials comprising this waste stream were manufactured to government specifications and are already well characterized, and 2) the waste stream is characterized by the definition found in federal and state regulations (reactive), the treatment standard for the explosive subcategory of reactive wastes is technology based (DEACT), not concentration based, and treatment standards found in Utah Admin. Code R315-268 expressed as technologies take precedence over treatment standards expressed as concentrations. The PEP analysis of the primers is on file at the Facility.

4.3.3. Shell Casings: The casings are scrap metal and are therefore exempt from hazardous waste regulation.

4.3.4. Pollution Abatement System Residue: Residues collected in the pollution abatement system shall be managed as one waste stream. The residue shall be sampled and analyzed in accordance with Section 1 of this Attachment.

4.3.5. Discarded Process Equipment: Any discarded process equipment shall be inspected to ensure it is free of explosive contamination and is therefore exempt from hazardous waste regulation.

4.4. Additional Requirements for Wastes Generated Off Site [Utah Admin. Code R315-264-13(c)]

4.4.1. Hazardous waste (explosives) received from TEAD-S or other DOD facilities shall be inspected at the time of arrival to ensure that containers in the shipment match information included in the accompanying manifest. The operator who receives the shipment of hazardous waste shall:

4.4.1.1. Verify the manifest document number on each container label matches the unique number assigned to the manifest accompanying the shipment.

4.4.1.2. Verify that the number and type(s) of containers in the shipment match the number and type(s) of containers specified on the shipping document.

4.4.1.3. Verify that the explosive type and quantity of the contents of the container match the physical description found on the container label. Every container in the shipment shall be opened to verify this. This requirement will not apply to unused ammunition shipped in its original containers. Type and quantity of unused munitions shall be verified by the nomenclature marked on the outside of the containers.

4.4.1.4. Verify that the waste analysis for the waste received is available.

4.4.2. If a discrepancy is found with the manifest, the TEAD EO shall be called (ext. 3504) for direction.

4.5. Land Disposal Restriction & Notification, Waste Analysis [Utah Admin. Code R315-268]

The management method of each waste stream generated at the small caliber disassembly line is as follows:

Waste Stream	Management Method
Primers	Deactivation (DEACT)
Propellant	Sold as product (not regulated)
Casings (metal scrap)	Recycled as scrap metal (not regulated)
Pollution System Residue	Off-site treatment/disposal
Discarded Process Equipment	Recycled as scrap metal (not regulated)

5.0. Hydrolysis Facility

5.1. Background and Scope

5.1.1. The Hydrolysis Facility treats energetic material containing items such as cartridge activated devices (CADs), propellant activated devices (PADs), or other munitions for which the energetic material can be accessed. The energetic containing items are hydrolyzed in a hot caustic bath to dissolve and inert the energetic material.

5.1.2. The process provides indiscriminate de-activation of energetic constituents. The precise configuration of the munition to be treated is not required due to the nature of the process. When available, manufacturing drawings and data are used to define critical characteristics of the munition to be processed. Important variables include energetic type and content, aluminum content and surface area, and accessibility of the energetic constituents. Based upon the

information, the caustic consumption by the waste is calculated. In instances where specific manufacturing data is not available, the required munition characteristics may be assumed by Department of Defense Identification Code (DODIC) and National Stock Number (NSN) groups. For example, many CADs possess comparable mass, size and constituent quantities. However, their NSNs differ due to their location of use (e.g., “left side” or “right side”). The chiral nature of the munition configuration will have no impact on its processing requirements.

5.1.3. Bench scale tests are performed on representative munitions to demonstrate the efficacy of the process and to determine the treatment time to access the energetic material. The treatment time is established as the accessing time plus 30 minutes plus a 25 % margin to assure destruction of all energetic material. The operating conditions are verified by the initial runs of each munition item in the hydrolysis tank and a thorough inspection of the effluent.

5.2. Waste Streams

5.2.1. Hydrolysis Waste Feed: The wastes that will be treated in the Hydrolysis Facility located in Building 1400 are CADs and PADs and are defined as reactive (D003, explosive subcategory) hazardous waste in accordance with Utah Admin. Code R315-261-23. The destruction of the CADs and PADs meets the treatment technology required in Utah Admin. Code R315-268.

5.2.2. Hydrolysis Facility Residues: Residues from the treatment operation consist of hydrolysate, scrap metal, plastic and sludge remaining from the reaction of the sodium hydroxide and the munition components.

5.2.2.1. The spent hydrolysate is transferred to a tanker truck or other suitable container and shipped to an off-site TSDF. Other residues removed from the process shall be containerized and stored for disposal in a 90-day container storage area and, if necessary, stored at Building 528 until they are transported to an off-site TSDF.

5.3. Parameters and Rationale [Utah Admin. Code, R315-264-13(b)(1)]

The parameters of chemical/physical analysis and the rationale for their selection are described in the following paragraphs:

5.3.1. Munitions (CADs and PADs): No chemical analysis of CADs and PADs or other munitions will be performed because: 1) the specifications for the materials comprising this waste stream are typically available from various databases, such as MIDAS, or in various repositories of the manufacturing information; and 2) the waste stream is characterized by the definition found in federal and state regulations (reactive), the treatment standard for the explosive subcategory of reactive wastes is technology based (DEACT), not concentration based, and treatment standards found in Utah Admin. Code R315-268 expressed as technologies take precedence over treatment standards expressed as concentrations. In addition, due to the similarity of various CADs and PADs, detailed characterization of each item is not necessary nor will be performed as characterizing one item may adequately represent a group as large as 100 having separate NSNs. A review of like items will be done to determine which item or items will be characterized as necessary to conduct the bench scale and validation test(s). The important data needed to conduct the bench scale tests and treat an energetic material containing item are the accessibility of the energetic material, the energetic material content, and the aluminum content and surface area. As stated above, this information is typically available from

various databases such as the MIDAS database.

5.3.1.1. Bench scale tests are conducted by placing the munition item in a bath of caustic at a temperature of 212 °F or higher and measuring the time to access the energetic to determine its accessibility. Successfully tested munitions will be processed at varying quantities in the hydrolysis system to validate efficacy of the process.

5.3.1.2. The objective of the validation tests is to set and confirm the final operating conditions. The important criteria are to maintain the hydrogen concentration in the off-gas at less than 2% which represents 50% of the lower flammability limit and to produce energetic-free solid and liquid effluents. Excessive hydrogen production may limit the batch size or require initial reaction at a lower temperature followed by heating to 212°F or greater as the final soak temperature. A 25% margin shall be added to the time required to achieve energetic-free effluents to assure destruction of energetic material in all production runs. The initial test is performed at ¼ batch size with submersion for the access time plus 30 minutes. If the concentration of hydrogen in the off-gas is less than 2%, then no adjustment in batch size or initial temperature is required. If the concentration is greater than 2%, then the batch size must be reduced to $100\% / 4 * C_{H_2}$ (C_{H_2} is the concentration of hydrogen gas) of the original size, or the starting temperature must be adjusted downward and the test repeated. Note that the bath temperature will still be raised to 212°F or greater for the time required for accessing plus 30 minutes after the aluminum reaction slows down. The solid and liquid effluents shall be analyzed to verify that the energetic material concentrations are low enough that they do not present a potential reactive hazard.

5.3.2. Hydrolysis Residue: Residues collected in the hydrolysis tanks shall be managed as one waste stream. The residue shall be sampled and analyzed in accordance with Section 1 of this Attachment.

5.3.3. Discarded Process Equipment: Any discarded process equipment shall be inspected to ensure all contamination has been removed and is therefore exempt from regulation.

5.4. Analysis Supplied by Off-site Facilities [Utah Admin. Code, R315-264-13(b)(5)]

5.4.1. The Environmental Office (EO) shall ensure that the waste analysis for wastes to be transferred is available and includes at a minimum the analysis of the same parameters wastes generated in a similar manner at TEAD are analyzed for.

5.5. Additional Requirements for Wastes Generated Off-Site [Utah Admin. Code, R315-264-13(c)]

5.5.1. Hazardous waste (explosives) received from TEAD-S or other DOD facilities shall be inspected at the time of arrival to insure that containers in the shipment match information included in the accompanying manifest. The operator who receives the shipment of hazardous waste shall:

5.5.1.1. Verify the manifest document number on each container label matches the unique number assigned to the manifest accompanying the shipment.

5.5.1.2. Verify that the number and type(s) of containers in the shipment match the number and type(s) of containers specified on the shipping document.

5.5.1.3. Verify that the explosive type and quantity of the contents of the container match the physical description found on the container label. Every container in the shipment shall be opened to verify this. This requirement will not apply to unused ammunition shipped in their original containers. Type and quantity of unused munitions shall be verified by the nomenclature marked on the outside of the containers.

5.5.1.4. Verify that the waste analysis for the waste received is available.

5.5.2. If a discrepancy is found with the manifest, the TEAD EO shall be called (ext. 3504) for direction.

5.6. Land Disposal Restriction & Notification, Waste Analysis [Utah Admin. Code, R315-268]

The management method of each waste stream generated at the hydrolysis facility is as follows:

Waste Stream	Management Method
Munitions	Deactivation (DEACT)
Tramp Material	Recycled as scrap metal (not regulated)
Hydrolysate Residue	Off-site treatment/disposal
Discarded Process Equipment	Recycled as scrap metal (not regulated)

Table 1. SW-846 Approved Analytical Methodologies

TEAD shall use the most current method

CHARACTERISTIC	WASTE CODE	DEFINITION CONSTITUENT OF CONCERN	Managed at TEAD	SW-846 ANALYTICAL METHOD(S)
Ignitability	D001	Flash Point less than 140 °F	✓	1010 or 1020
Corrosivity	D002	pH less than or equal to 2 or greater or equal to 12.5	✓ ✓	9040 or 9045
Reactivity	D003	Total Cyanide greater than 590 mg/kg Total Sulfide greater than 500 mg/kg	✓	9010 or 9012 9030
Toxicity (Metals)	D004	Arsenic		6010, 6020 or 7061
	D005	Barium		6010 or 6020
	D006	Cadmium	✓	6010 or 6020
	D007	Chromium	✓	6010, 6020, 7195, 7196, 7197, 7198 or 7199
	D008	Lead	✓	6010 or 6020
	D009	Mercury	✓	6020, 7470 or 7471
	D010	Selenium		6010, 6020, 7741 or 7742
	D011	Sliver	✓	6010 or 6020
Toxicity (Pesticides/Herbicides)	D012	Endrin		8081
	D013	Lindane		8081
	D014	Methoxychlor		8081
	D015	Toxaphene		8081
	D016	2,4 D		8151
	D017	2,4,5- TP (Silvex)		8151
	D020	Chlordane		8081
	D031	Heptachlor & (hydroxide)		8081
Toxicity (Organics)	D018	Benzene	✓	8015, 8021 or 8260
	D019	Carbon Tetrachloride	✓	8021 or 8260
	D020	Chlordane	✓	8081
	D021	Chlorobenzene		8021 or 8260
	D022	Chloroform	✓	8021 or 8260
	D023	o-Cresols	✓	8041 or 8270
	D024	m-Cresol		8041 or 8270
	D025	p-Cresol	✓	8041 or 8270
	D026	Cresol (Total)	✓	8041 or 8270
	D027	1,4 Dichlorobenzene		8021, 8121, or 8260
	D028	1,2 Dichloroethane	✓	8021 or 8260
	D029	1,1 Dichloroethylene	✓	8021 or 8260
	D030	2,4 Dinitrotoluene	✓	8091 or 8270
	D032	Hexachlorobenzene		8121 or 8270
	D033	Hexachloro 1,3 butadiene	✓	8121 or 8270
	D034	Hexachloroethane		8270
	D035	Methyl Ethyl Ketone	✓	8015
	D036	Nitrobenzene	✓	8091 or 8270
	D037	Pentachlorophenol	✓	8041 or 8270
	D038	Pyridine		8015, or 8260
D039	Tetrachloroethylene	✓	8021 or 8260	
D040	Trichloroethylene	✓	8021 or 8260	
D041	2,4,5 Trichlorophenol		8041 or 8270	
D042	2,4,6 Thichlorophenol	✓	8041 or 8270	

CHARACTERISTIC	WASTE CODE	DEFINITION CONSTITUENT OF CONCERN	Managed at TEAD	SW-846 ANALYTICAL METHOD(S)
	D043	Vinyl Chloride	✓	8021 or 8260
Spent Halogenated Solvents used in Degreasing	F001	Carbon Tetrachloride Methylene Chloride 1,1,1 Trichloroethane Tetrachloroethylene Trichloroethylene Chlorinated Fluorocarbons	✓ ✓ ✓ ✓	8021 or 8260 8021 or 8260 8021 or 8260 8021 or 8260 8021 or 8260 8021 or 8260
Spent Halogenated Solvents	F002	Chlorobenzene Methylene Chloride Ortho-Dichlorobenzene Tetrachloroethylene 1,1,1 Trichloroethane Trichloroethylene Trichlorofluoromethane 1,1,2 Trichloroethane 1,1,2 Trichloro- 1,2,2 trifluoroethane	✓ ✓ ✓ ✓ ✓ ✓ ✓	8021 or 8260 8021 or 8260 8021, 8121 or 8260 8021 or 8260 8021 or 8260 8021 or 8260 8021 or 8260 8021 or 8260 8260
Spent nonhalogenated Solvents	F003	Acetone n-Butyl Alcohol Cyclohexanone Ethyl acetate Ethyl Benzene Ethyl Ether Methanol Methyl Isobutyl Ketone Xylene	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	8015 or 8260 8260 8260 8015 or 8260 8015, 8021 or 8260 8015 or 8260 8015 or 8260 8260 8021 or 8260
Spent nonhalogenated Solvents	F004	Cresols Cresylic Acid Nitrobenzene	✓ ✓ ✓	8041 or 8270 8041 or 8270 8091 or 8270
Spent nonhalogenated Solvents	F005	Carbon Disulfide Isobutanol Methyl Ethyl Ketone Pyridine Toluene Benzene 2 Ethoxy ethanol 2 Nitropropane	✓ ✓ ✓ ✓ ✓ ✓ ✓	8260 8260 8015 or 8260 8015 or 8260 8021 or 8260 8021 or 8260 8260 8260
California List Land Ban Restrictions	TOX	Total Organic Halides	✓	9020 or 9022
	TOC	Total Organic Carbon	✓	9060

Table 2. Sampling/Analytical Methodology Summary

GENERAL WASTE STREAM TITLE	POSSIBLE PHYSICAL STATES	SAMPLING METHOD	CHEMICAL/PHYSICAL ANALYSIS*	ANALYTICAL METHOD(S)
Surface Coating/Related Wastes	• Sludge	Trier	• Ignitability	1010, or 1020
	• Solid	Auger	• TC Metals	7000 series
	• Liquid	Coliwasa or glass tube	• TC Organics • Total Organic Carbon	8260 and/or 8270 9060
Chemical Cleaning/Related Wastes (organics)	• Debris			
	• Sludge	Trier	• Ignitability	1010, or 1020
	• Liquid	Coliwasa or glass tube	• TC Metals • TC Organics	7000 series 8260 and/or 8270
	• Moist granules	Trier	• Spent Solvents FO01-F005	8260 and/or 8270
Petroleum Oil & Lubricant Wastes	• Sludge	Trier	• Total Organic Halides	9020 or 9022
	• Liquid	Coliwasa or glass tube	• Ignitability	1010 or 1020
Chemical Cleaning/Related Wastes	• Liquid	Coliwasa or glass tube	• Corrosivity • TC Metals	9040, or 9045 7000 series
	• Sludge	Trier	• Reactivity (cyanide)	9010, or 9012
Thermal Treatment Residues	• Dry powder	Trier	• TC Metals	7000 series
	• Packed powder	Auger	• Reactivity (explosive)	See notes below
Spent Blast Grit	• Dry powder	Trier	• TC Metals	7000 series
IRP Derived Wastes	• Liquid	Coliwasa or glass tube	• Generator Knowledge • Ignitability	1010 or 1020
	• Dry powder	Trier	• Corrosivity	9040 or 9045
	• Packed powder	Auger	• Reactivity (cyanide)	9010 or 9012
	• Sludge	Trier	• Reactivity (sulfide)	9030
	• Moist granules	Trier	• TC Metals • TC Organics	7000 series 8260 and/or 8270

			• TC Pesticides	8250
Miscellaneous (Orphan) Wastes	• Liquid	Coliwasa or glass tube	• Generator Knowledge	Material Safety Data Sheet
			• Ignitability	1010 or 1020
	• Dry powder	Trier	• Corrosivity	9040 or 9045
	• Packed powder	Auger	• Reactivity (cyanide)	9010 or 9012
	• Sludge	Trier	• Reactivity (sulfide)	9030
	• Moist granules	Trier	• TC Metals	7000 series
			• TC Organics	8260 and/or 8270
			• TC Pesticides	8270

* Refer to Table 1 , SW-846 Approved Analytical Methodologies for constituents of concern contained in each analyte group
(Latest version of test methods are to be used) TC refers to
Toxicity Characteristic

Table 3. Land Disposal Restrictions Standards/Technologies

Code	Characteristic/ Constituent of Concern	Regulatory Level	Waste Classification Subcategory	Land Disposal Restriction based on		
				CCWE*	CCW*	TBS*
✓ D001	Ignitability	Flash point less than 140 °F	High TOC ignitable liquids TOC greater than 10%			FSUBS; RORGS; or INCIN
✓			Ignitable compressed gases			DEACT
✓			Oxidizers			DEACT
✓ D002	Corrosivity	pH less than or equal to 2 or	Acid			DEACT
✓		pH greater than or equal to 12.5	Alkaline			DEACT
D003	Reactivity	Sulfide producing	Reactive sulfides			DEACT (may not be diluted)

Code	Characteristic/ Constituent of Concern	Regulatory Level	Waste Classification Subcategory	Land Disposal Restriction based on		
				CCWE*	CCW*	TBS*
		Cyanide producing	Total		590 mg/kg	
		Cyanide producing	Amenable		30 mg/kg	
		Class A or B explosive	Explosive			DEACT
D004	Arsenic	5.0 mg/l (TCLP)		5.0 mg/l		
D005	Barium	100 mg/l (TCLP)		100 mg/l		
✓ D006	Cadmium	1.0 mg/l (TCLP)		1.0 mg/l		
✓			Cadmium containing batteries			RTHRM
✓ D007	Chromium(total)	5.0 mg/l (TCLP)		5.0 mg/l		
✓ D008	Lead	5.0 mg/l (TCLP)		5.0 mg/l		
✓ D009	Mercury	0.2 mg/l (TCLP)	Low mercury- less than 260 mg/kg	0.2 mg/l		
			High mercury- greater than or equal to 260 mg/kg, containing organics also, and not an incinerator residue			RMERC
D010	Selenium	1.0 mg/l (TCLP)		1.0 mg/l		
✓ D011	Silver	5.0 mg/l (TCLP)		5.0 mg/l		
✓ D018	Benzene	0.5 mg/l (TCLP)		0.5 mg/l		
✓ D019	Carbon Tetrachloride	0.5 mg/l (TCLP)		0.5 mg/l		

Code	Characteristic/ Constituent of Concern	Regulatory Level	Waste Classification Subcategory	Land Disposal Restriction based on		
				CCWE*	CCW*	TBS*
✓ D020	Chlordane	0.03 mg/l(TCLP)		0.03 mg/l		
D021	Chlorobenzene	100 mg/l (TCLP)		100 mg/l		
✓ D022	Chloroform	6.0 mg/l (TCLP)		6.0 mg/l		
✓ D023	o-Cresol	200 mg/l (TCLP)		200 mg/l		
✓ D025	p-Cresol	200 mg/l (TCLP)		200mg/l		
✓ D026	Cresol (total)	200 mg/l (TCLP)		200 mg/l		
D027	1,4 Dichlorobenzene	7.5 mg/l (TCLP)		7.5 mg/l		
✓ D028	1,2 Dichloroethane	0.5 mg/l (TCLP)		0.5 mg/l		
✓ D029	1,1 Dichloroethylene	0.7 mg/l (TCLP)		0.7 mg/l		
✓ D030	2,4 Dinitrotoluene	0.13 mg/l (TCLP)		0.13 mg/l		
D031	Heptachlor & epoxide	.008 mg/l (TCLP)		.008 mg/l		
✓ D032	Hexachlorobenzene	0.13 mg/l (TCLP)		0.13 mg/l		
✓ D033	Hexachlorobutadiene	0.5 mg/l (TCLP)		0.5 mg/l		
D034	Hexachloroethane	3.0 mg/l (TCLP)		3.0 mg/l		
✓ D035	Methyl Ethyl Ketone	200 mg/l (TCLP)		200 mg/l		
✓ D036	Nitrobenzene	2.0 mg/l (TCLP)		2.0 mg/l		
✓ D037	Pentachlorophenol	100 mg/l (TCLP)		100 mg/l		

Code	Characteristic/ Constituent of Concern	Regulatory Level	Waste Classification Subcategory	Land Disposal Restriction based on		
				CCWE*	CCW*	TBS*
D038	Pyridine	5.0 mg/l (TCLP)		5.0 mg/l		
✓ D039	Tetrachloroethylene	0.7 mg/l (TCLP)		0.7 mg/l		
✓ D040	Trichloroethylene	0.5 mg/l (TCLP)		0.5 mg/l		
D041	2,4,5 Trichlorophenol	0.5 mg/l (TCLP)		0.5 mg/l		
✓ D042	2,4,6 Trichlorophenol	2.0 mg/l (TCLP)		2.0 mg/l		
✓ D043	Vinyl chloride	0.2 mg/l (TCLP)		0.2 mg/l		
✓ F001	Acetone	Detectable (TCLP)		0.59 mg/l		
-	n-Butyl alcohol	Detectable (TCLP)		5.00 mg/l		
F005						
✓	Carbon disulfide	Detectable (TCLP)		4.81 mg/l		
✓	Carbon tetrachloride	Detectable (TCLP)		0.96 mg/l		
	Chlorobenzene	Detectable (TCLP)		0.05 mg/l		
✓	Cresols	Detectable (TCLP)		0.75 mg/l		
✓	Cyclohexanone	Detectable (TCLP)		0.75 mg/l		
	1,2 Dichlorobenzene	Detectable (TCLP)		0.125 mg/l		
✓	Ethyl acetate	Detectable (TCLP)		0.75 mg/l		
✓	Ethylbenzene	Detectable (TCLP)		0.053 mg/l		
✓	Ethyl ether	Detectable (TCLP)		0.75 mg/l		
	2 Ethoxy ethanol	Detectable (TCLP)				INCIN
✓	Isobutanol	Detectable (TCLP)		5.00 mg/l		
✓	Methanol	Detectable (TCLP)		0.75 mg/l		
✓	Methylene chloride	Detectable (TCLP)		0.96 mg/l		
✓	Methyl ethyl ketone	Detectable (TCLP)		0.75 mg/l		
✓	Methyl isobutyl ketone	Detectable (TCLP)		0.33 mg/l		
✓	Nitrobenzene	Detectable (TCLP)		0.125 mg/l		
	2-Nitropropane	Detectable (TCLP)				INCIN
	Pyridine	Detectable (TCLP)		0.33 mg/l		
✓	Tetrachloroethylene	Detectable (TCLP)		0.05 mg/l		
✓	Toluene	Detectable (TCLP)		0.33 mg/l		

Code	Characteristic/ Constituent of Concern	Regulatory Level	Waste Classification Subcategory	Land Disposal Restriction based on		
				CCWE*	CCW*	TBS*
✓ F001	1,1,1 Trichloroethane	Detectable (TCLP)		0.41 mg/l		
- F005	1,1,2 Trichloro-1,2,2 tetrafluoroethane	Detectable (TCLP)		0.96 mg/l		
✓	Trichloroethylene	Detectable (TCLP)		0.091 mg/l		
✓	Trichlorofluoromethane	Detectable (TCLP)		0.96 mg/l		
✓	Xylene	Detectable (TCLP)		0.15 mg/l		

California List

Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing the following metals or compounds of these metals at concentrations greater than or equal to those specified:

Thallium => 130 mg/l

Nickel => 130 mg/l

- ✓ Liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm

Hazardous wastes containing Halogenated Organic Compounds (TOX) at concentrations greater than or equal to 1000 mg/kg or 1000mg/l

NOTES: ✓ indicates managed at TEAD

CCWE* => Constituent Concentrations in Waste Extract (40 CFR 268.41)

TBS* => Technology Based Standards (40 CFR 268.42)

CCW* => Constituent Concentrations in Waste (40 CFR 268.43)

The above mentioned sections in section 268 should be consulted if further information is required

Figure 1

WASTE STREAM EVALUATION FORM

Waste Stream Name _____ Date _____

Waste Stream Number: _____

Current Waste Stream Analytical Date: _____

EPA Waste Codes: _____

Brief Process Description:

Material(s) Used (paint, solvent, etc.)

Changes In Process Since Last Analytical (material or procedural):

Comments:

Is a New Waste Stream Analytical Necessary? YES _____ NO _____

Signature _____

6.0. OB/OD

6.1. Waste Appropriate for Treatment

6.1.1. Open burning (OB)/open detonation (OD) operations at TEAD are limited to the treatment of energetic wastes. The energetic wastes meet one or more of the following conditions:

6.1.1.1. The waste is capable of detonation explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

6.1.1.2. The waste is readily capable of detonation or explosive decomposition or reaction at standard temperatures and pressure.

6.1.1.3. The waste is considered a forbidden explosive as defined by 49 CFR 173.51.

6.1.1.4. The waste is one of the following Class 1 explosives as defined by 49 CFR 173.50.

6.1.2. Class 1 explosives that are appropriate for treatment by OB/OD are:

6.1.2.1. Division 1.1 (Class A) - consists of explosives that have a mass explosion hazard. A mass explosion hazard is one that affects almost the entire load instantaneously.

6.1.2.2. Division 1.2 (Class A or B) - consists of explosives that have a projection hazard but not a mass explosion hazard.

6.1.2.3. Division 1.3 (Class B) - consists of explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both.

6.2. Physical and Chemical Characteristics of Wastes

6.2.1. The wastes treated by OB/OD at TEAD consist primarily of military energetic materials that have exceeded their shelf life and off-specification versions of these same materials. These munitions are no longer serviceable and need to be destroyed. The off-specification items generally are composed of the same raw material as the usable items, but for one or more reasons they do not meet some performance specifications. For off-specification items, the same conclusions can be drawn regarding appropriate treatment based on published data. It is not likely that a difference in the composition of off-specification materials will render them unacceptable for OB/OD treatment, since in all cases they will be reactive.

6.2.2. When ordnance items are demilitarized because shelf lives have been exceeded or because deterioration of the energetic compound or container (casing) has occurred, any change in chemical or physical characteristics of the energetic constituents would not affect the choice of treatment technique. The overall chemical composition and resulting combustion products will not be affected, because the energetic materials are composed chiefly of carbon, hydrogen, and nitrogen. Concentrations of inorganics such as metallic compounds also will not change, nor

will the likely combustion products.

6.2.1. Waste Constituents

6.2.1.1. Process knowledge and munitions specifications are used to obtain the necessary chemical and physical data for treatment of explosive material at the OB/OD Unit. A summary of the primary chemical constituents of energetic material items that might be treated in OB/OD is presented in Table 4.

6.2.1.2. A complete munitions and/or ordnance item includes several components. Typical components may include a projectile, a propellant charge, and a primer that ignites the propellant. Other components such as a casing, fuzes, and bursting charge are frequently included. With few exceptions, these components contain one single energetic compound or a mixture of energetic compounds. The U.S. Army has been conducting a study to compile a computerized database of the composition of individual military energetic material items as a component of the Munitions Items Disposition Action System (MIDAS). The MIDAS database is developed by the U.S. Army Defense and Ammunition Center School. Information available from MIDAS on item-specific specifications is used to characterize items treated in the OB/OD Unit. The MIDAS computerized database includes complete composition information (energetic and non-reactive components) for over 3,000 munitions.

6.2.1.3. Munitions and ordnance items that may be treated at the OB/OD Unit can be grouped into the following consolidated families. They are:

- 6.2.1.3.1. Small arms, fuzes, and primers.
 - 6.2.1.3.1.a. Small arms ammunition less than or equal to 50 caliber, all types
 - 6.2.1.3.1.b. Fuzes, all types
 - 6.2.1.3.1.c. Primers, squibs, detonators, and other devices used to initiate detonation
- 6.2.1.3.2. Smokes and dyes
- 6.2.1.3.3. Pyrotechnics
- 6.2.1.3.4. High-explosive loaded projectiles
 - 6.2.1.3.4.a. Gun ammunition greater than 50 caliber and less than or equal to 40 mm, all types except smoke, riot control agents, or chemical
 - 6.2.1.3.4.b. Gun ammunition greater than 40 mm, all types except smoke, riot control agents, or chemical
- 6.2.1.3.5. Rockets and missiles
- 6.2.1.3.6. Bombs, torpedoes, and depth charges
- 6.2.1.3.7. Riot control agents
- 6.2.1.3.8. Bulk explosives (except fuzes, detonators, and related items)

- 6.2.1.3.9. Grenades and mines (all types except smoke, riot control agents, chemical, or fuzes)
- 6.2.1.3.10. Navy gun ammunition (all types except propellant charges)
- 6.2.1.3.11. Special function projectiles
- 6.2.1.3.12. Propellants and propellant charges
 - 6.2.1.3.12.a. Propellants
 - 6.2.1.3.12.b. Propellant charges
- 6.2.1.3.13. Inert loaded items (no energetics and not appropriate for OB/OD)
- 6.2.1.3.14. Miscellaneous Items
 - 6.2.1.3.14.a. Miscellaneous items (primarily related to aircraft ejection systems)
 - 6.2.1.3.14.b. Miscellaneous items (primarily not related to aircraft ejection systems)

**TABLE 4. GENERAL CHEMICAL COMPOSITION OF MILITARY ITEMS
TREATED AT THE OB/OD UNIT**

PROPELLANTS	
<u>Name</u>	<u>Chemical Formula</u>
Nitrocellulose	$C_{12}H_{16}(ONO_2)_4O_6$
Nitroglycerine	$C_3H_5N_3O_9$
Nitroguanidine	$CH_4N_4O_2$

These three primary constituents can be used singly or in various combinations along with metals, metallic salts, and organic polymer binders.

PRIMARY EXPLOSIVES	
<u>Name</u>	<u>Chemical Formula</u>
Lead Azide	H_6Pb (71% Pb)
Mercury Fulminate	$C_2HgN_2O_2$ (70.5% Hg)
Diazodinitrophenol (DDNP)	$C_6H_2N_4O_5$
Lead Styphnate	$C_6HN_3O_8Pb$ (44.2% Pb)
Tetracene	$C_2H_8N_{10}O$
Potassium Dinitrobenzofuroxane (KDNBF)	$C_6H_2N_4O_6K$
Lead Mononitroresorcinate (LMNR)	$C_6H_5NO_{4x}Pb$ (57.5% Pb)
Ingredients to Rocket Propellant:	$C_{14}H_{12}Cu_2O_8$
Copper Monobasic Salicylate	$C_{14}H_{10}O_6Pb$
Lead Salicylate	
Fuels:	$Pb(SCN)_2$ (64% Pb)
Lead Thiocyanate	S_5Sb_2
Antimony Sulfide	$CaSi_2$
Calcium Silicide	
Oxidizers:	
Potassium Chlorate	$KClO_3$
Ammonium Perchlorate	NH_4ClO_4
Barium Nitrate	N_2O_6Ba
Calcium Resinate	$Ca(C_{44}H_{62}O_4)_2$
Strontium Peroxide	SrO_2
Barium Peroxide	BaO_2
Strontium Nitrate	$Sr(NO_3)_2$
Potassium Perchlorate	$KClO_4$

Primary compositions include a mixture of primary explosive (as shown above), fuels, oxidizers, and binders (e.g., paraffin wax).

TABLE 4. (Continued)

**BOOSTER AND SECONDARY EXPLOSIVES
(High Explosives)**

<u>Name</u>	<u>Chemical Formula</u>
Aliphatic Nitrate Esters:	
1,2,4-Butanetriol Trinitrate (BTN)	$C_4H_7N_3O_9$
Diethyleneglycol Dinitrate (DEGN)	$C_4H_8N_2O_7$
Nitroglycerine (NG)	$C_3H_5N_3O_9$
Nitrostarch (NS)	$C_6H_7(OH)_X(ONO_2)_Y$ where $X - Y = 3$
Pentaerythritol Tetranitrate (PETN)	$C_5H_8N_4O_{12}$
Triethylene Glycol Dinitrate (TEGDN)	$C_6H_{12}N_2O_8$
1,1,1-Trimethylethane Trinitrate (TMETN)	$C_5H_9N_3O_9$
Nitrocellulose (NC)	$C_{12}H_{16}(ONO_2)_4O_6$
Nitramines:	
Cyclotetramethylene Tetranitramine (HMX)	$C_4H_8N_8O_8$
Cyclotrimethylene Trinitramine (RDX)	$C_3H_6N_6O_6$
Ethylenedimine Dinitrate (EDDN, Haleite)	$C_2H_6N_4O_4$
Nitroguanidine (NQ)	$CH_4N_4O_2$
2,4,6-Trinitrophenylmethylnitramine (Tetryl)	$C_7H_5N_5O_8$
Ammonium Picrate (Explosive D)	$C_6H_3N_3O_7H_3N$
1,3-Diamino-2,4,6-Trinitrobenzene (DATB)	$C_6H_4N_5O_6$
2,2',4,4',6,6'-Hexanitroazobenzene (HNAB)	$C_{12}H_4N_8O_{12}$
Hexanitrostilbene (HNS)	$C_{14}H_2N_6O_{12}$
1,3,5-Triamino-2,4,6-Trinitrobenzene (TATB)	$C_6H_6N_6O_6$
2,4,6-Trinitrotoluene (TNT)	$C_7H_5N_3O_6$
Ammonium Nitrate	HNO_3H_3N

TABLE 4. (Continued)

COMPOSITIONS

Binary Mixtures:

Amotols (ammonium nitrate + TNT)
Composition A (RDX + Desensitizer)
Composition B (RDX + TNT)
Composition C (RDX + Plasticizer)
Ednatols (Haleite + TNT)
LX-14 [HMX (95.5%) + Estane 5702-F1]
Octols (HMX + TNT)
Pentolite (PETN + TNT)
Picratol [Ammonium Picrate (52%) + TNT (48%)]
Tetrytols (TNT + Tetryl)
Tritonal [TNT (80%) + Flaked Aluminum (20%)]

Ternary Mixtures:

Amatex 20 [RDX (40%) + TNT (40%) + Ammonium Nitrate (20%)]
Ammonals (Ammonium Nitrate + Aluminum and TNT, DNT, or RDX)
HBX - High Blast Explosives (TNT + RDX + AlD₂ Wax + Calcium Chloride)
HTA-3 (HMX + TNT + Al Mixture 3)
Minol-2 (TNT + Ammonium Nitrate + Aluminum)
Torpex [RDX (41.6%), TNT (39.7%), Al (18.0%) Wax (0.7%)]

Quaternary Mixtures:

DBX [TNT (40%), RDX (21%), Ammonium Nitrate (21%), Al (18%)

Plastic Bonded Explosives (PBX):

Basic Explosive [RDX, HMX, HNS, or PETN + Polymeric Binder (Polyester, Polyurethane, Nylon, Polystyrene, Rubbers, Nitrocellulose, Teflon)]

Pyrotechnics:

Combination of:
Oxidizer-Oxygen or Fluorine
Fuel - Powdered Aluminum or Magnesium
Binding Agents - Resins, Waxes, Plastics, Oils, Retardants
Waterproofing, Color Intensifier

Source: Military Explosives, Department of the Army, Technical Manual TM9-1300-214, September 1984

6.2.2. Items Prohibited From Treatment

6.2.2.1. Certain items shall not be treated by OD. OD of hexachloroethane (HC), colored smoke, white phosphorus (WP), bulk red phosphorous (RP), depleted uranium (DU), and riot control munitions are prohibited, except in emergency situations as approved by the installation commander and the Director.

6.2.2.2. Certain items shall not be treated by OB. OB of spent halogenated solvents and non-halogenated solvents that are not constituents in an explosive is forbidden (i.e., diesel fuel, gasoline, paint thinner, trichlor, solvents, etc.). OB of HC, colored smoke, WP, RP, and riot control munitions (CS, CN) is forbidden. OB of WP and RP munitions will be allowed only for emergency destruction purposes and by authorization of the installation commander and the Director.

6.3. Waste Analysis

6.3.1. TEAD may thermally treat any form of conventional munitions waste at any given time except the prohibited items discussed elsewhere in this Permit.

6.3.2. This waste analysis plan also provides information on characterizing the ash residue remaining in the burn pans after OB operations and determining the appropriate handling, storage, and disposal of ash residual. The most recent analytical result of the OB ash is available at the Facility.

6.3.3. Analysis of the OD treatment residue is not conducted at TEAD. TEAD periodically recovers scrap metal, casing, fragment, and related items from the OD grounds as resources allow, based on the Demil Supervisor's judgment regarding safe operation of the range. The recovered material is disposed of through the Defense Logistics Agency Disposition Services (DLADS). The Demil Operations Team will inspect and document that the recovered material is explosive free. The Ammunition Surveillance Inspector will verify the documentation.

6.3.4. All residue from the OB grounds is required to be containerized. The waste/residue needs to be packaged in containers that are compatible with the waste. Waste/residue must be stored in appropriate containers that are in good physical condition. There shall be no free liquid permitted in solid waste containers (if free liquids are encountered, they must be removed by siphoning, draining, decanting, solidification, etc.). Free liquids removed or generated must be containerized in an approved liquid container (e.g., steel closed-top drum with threaded bung and special liner, or ABS, polyurethane, or similar inert plastic drum with threaded bung). All containers must have a 3-inch head space between lid and contents in the drum. All steel-top drums must be sealed with metal lids, gaskets, and rings. All containers must be labeled with the name of the waste, waste stream number and the 12-digit container number.

6.3.5. Drums need to be placed on pallets that are in good physical condition and free of wastes, spills, or any other contamination. Four-way pallets must be utilized. Waste must be placed three drums to a pallet and banded together using steel banding.

6.3.6. Parameters and Rationale

6.3.6.1. Wastes Treated

Unless an emergency or priority treatment is necessary, TEAD does not treat any wastes at the OB/OD Unit unless adequate chemical and physical information is available to treat the waste material safely.

6.3.6.2. Treatment Residue

The only hazardous wastes treated at the OB pans are those that possess the RCRA characteristic of reactivity. The burn pan treatment residue shall be sampled and analyzed for reactivity prior to being removed for disposal. In addition, although not expected to be present, the burn pan treatment residue shall be sampled and analyzed for the toxicity characteristic (TC) metals using the toxicity characteristic leaching procedure (TCLP). Table 5 lists the parameters analyzed for and the rationale for the analysis.

6.3.7. Test Methods

6.3.7.1. Waste Treated

Reactive hazardous wastes are not tested prior to treatment at the OB/OD Units because of safety concerns. The physical and chemical characteristics of the reactive hazardous wastes have already been determined prior to treatment as they are included in the MIDAS database.

6.3.7.2. Treatment Residue

The analytical methods for analyzing the treatment residue in burn pans are shown in Table 6. Analytical procedures are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (SW-846), unless otherwise referenced. Laboratories performing these analyses will operate in conformance with the TEAD Quality Assurance Program Plan (QAPP).

6.3.8. Sampling Methods

6.3.8.1. Waste Treated

Sampling and analyses of reactive hazardous wastes treated at the OB/OD Unit are not performed.

6.3.8.2. Treatment Residue

The treatment residue is collected only after the burn pans have cooled to ambient temperatures. Typically, the burn pans are cleared of ash at least 24 hours after the OB. The residual ash from OB shall be sampled to ensure that the treatment has been successful in rendering the waste non-reactive. The ash is collected and placed into an appropriate container. Ash is tested for TCLP

metals and reactivity criteria for energetics (i.e., concentrations greater than 10%). Analytical results are kept for 3 years at the EM office.

6.3.9. Frequency of Analyses

6.3.9.1. Wastes Treated

Sampling and analyses of reactive hazardous wastes treated at the OB/OD Unit are not performed.

6.3.9.2. Treatment Residue

Because of the low volume of OB ash and waste stream consistency these tests shall be conducted every 3 years.

6.3.10. Additional Requirements for Waste Generated Off-Site

Currently, TEAD does not accept waste from off-site for treatment at the OB/OD Unit except from Tooele Army Depot South Area (TEAD-S) and, on an emergency treatment basis from the 62nd Ordnance Group. Munitions are treated the same day (weather permitting) that they are received at the OB/OD Unit. In the case of weather delays, the munitions will be stored in place, in accordance with the OB/OD/SF Standard Operating Procedures, until conditions permit treatment to commence.

6.3.11. Additional Requirements for Ignitable, Reactive or Incompatible Wastes

All ordnance items treated at the OB/OD Unit are reactive. Ignitable and corrosive wastes shall not be managed at the OB/OD Unit unless they are primarily reactive; therefore, there is no need for additional requirements to handle ignitable or corrosive waste.

6.3.12. Land Disposal Restrictions

6.3.12.1. The explosive wastes treated at the OB area have the RCRA characteristic of reactivity (D003). The Land Disposal Restrictions (LDR) treatment requirements listed in Utah Admin. Code R315-268-40 for explosives subcategory D003 wastes is deactivation and attainment of the treatment standards listed in Utah Admin. Code R315-268-48. Underlying hazardous constituents that may be present in the wastes treated are listed in Utah Admin. Code R315-268-48. OB achieves the LDR treatment standard for deactivation. Ash from OB is analyzed to determine whether it is a hazardous waste because of reactivity or exhibits the TCLP. These analyses are also used to determine whether LDR treatment standards are met or whether treatment in accordance with the LDR is required.

6.3.12.2. Analytical results from the OB ash residues in conjunction with TCLP criteria for metals and reactivity criteria for energetics (i.e., concentrations greater than 10%) shall be used to determine if waste from OB that is being disposed of off site are hazardous.

TABLE 5. RATIONALE FOR PARAMETERS ANALYZED

Wastes	Parameters	Rationale
Burn pan treatment residue	TC leaching procedure	Generate leachate
Burn pan treatment residue	TC arsenic	Determine if treatment residue exceeds TC level for arsenic
Burn pan treatment residue	TC barium	Determine if treatment residue exceeds TC level for barium
Burn pan treatment residue	TC cadmium	Determine if treatment residue exceeds TC level for cadmium
Burn pan treatment residue	TC chromium	Determine if treatment residue exceeds TC level for chromium
Burn pan treatment residue	TC lead	Determine if treatment residue exceeds TC level for lead
Burn pan treatment residue	TC mercury	Determine if treatment residue exceeds TC level for mercury
Burn pan treatment residue	TC selenium	Determine if treatment residue exceeds TC level for selenium
Burn pan treatment residue	TC silver	Determine if treatment residue exceeds TC level for silver
Burn pan treatment residue	TC 2,4-dinitrotoluene	Determine if treatment residue exceeds TC level for 2,4-dinitrotoluene
Burn pan treatment residue	Reactivity	Determine if explosive has been treated

TABLE 6. ANALYTICAL TEST PROCEDURES AT TEAD FOR ASH

Parameter	Method	Regulatory Level (mg/L)
TCLP METALS		
Arsenic	6010, 6020 or 7061	5.0
Barium	6010 or 6020	100.0
Cadmium	6010 or 6020	1.0
Chromium	6010, 6020, 7195, 7196, 7197, 7198 or 7199	5.0
Lead	6010 or 6020	5.0
Mercury	6020, 7470 or 7471	0.2
Selenium	6010, 6020, 7741 or 7742	1.0
Silver	6010 or 6020	5.0
ENERGETICS		
HMX	8330	*
RDX	8330	*
TNB	8330	*
DNB	8330	*
NB	8330	*
TNT	8330	*
DNT	8330	*
2NT	8330	*
3NT	8330	*
4NT	8330	*
Tetryl	8330	*

* No regulatory level has been promulgated.

6.3.12.3. If the ash does not meet the LDR treatment standards for TCLP, with each shipment of waste, TEAD shall notify the facility receiving the waste in writing of the appropriate treatment standards. The notice will include the following information:

- 6.3.12.3.1. EPA hazardous waste number(s);
- 6.3.12.3.2. The corresponding treatment standard(s);
- 6.3.12.3.3. The manifest number associated with the shipment of waste; and
- 6.3.12.3.4. Waste analysis data.

6.3.12.4. If the ash meets LDR treatment standards, and the waste no longer exhibits characteristics of a hazardous waste (reactivity or toxicity), it may be disposed of as a nonhazardous waste at a Subtitle D landfill. Required notifications and certifications shall be submitted to U.S. EPA. The notification will include the following information:

- 6.3.12.4.1. Name and address of the facility receiving the waste shipment;
- 6.3.12.4.2. Description of the waste as initially generated, including applicable EPA hazardous waste number; and
- 6.3.12.4.3. Treatment standards applicable to the waste at the initial point of generation.

6.3.12.5. The certification shall be signed by an authorized representative of TEAD and shall state the following:

I certify under the penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that complies with the treatment standards specified in Utah Admin. Code R315-268-40, and all applicable prohibitions set forth in Utah Admin.Code R315-268-32. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

6.3.13. Quality Assurance

QA procedures for laboratory analysis of wastes shall be followed according to the latest edition of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846, (SW-846) and Attachment 22 Quality Assurance Program Plan (QAPP). Chain-of-custody procedures that conform to the U.S. EPA requirements contained in SW-846 shall be applied.

6.4. Management of Ash and Residues

This section contains the practices and procedures for the management of ash and residue generated by the OB/OD of waste munitions and components at the OB/OD unit.

6.4.1. Open Burning Ash and Residue Management

6.4.1.1. The SOP for OB (SOP No. TE-0000-H-012) specifies the procedure for containerizing the ash and residue from the OB grounds. All ash and residue from OB is required to be containerized. The ash and residue shall be packaged in containers that are compatible with the waste and in good physical condition. Free liquids are not allowed in the containers. If free liquids are encountered, they shall be removed by siphoning, draining, decanting, solidification, or other appropriate process. Free liquids removed or generated shall be containerized in an approved liquid container (i.e., steel closed-top drum with threaded bung and special liner, or ABS, polyurethane, or similar inert plastic drum with threaded bung). All containers shall have a 3-inch head space between the lid and contents. All steel-top drums shall be sealed with metal lids, gaskets, and rings with 5/8 inch bolts. All containers shall be labeled with the following information: name of the waste, waste stream number and 12-digit container number.

6.4.1.2. After OB, pans shall be inspected and any ash collected in an appropriate container. This container is temporarily stored at the burn pan area. When the container is full, a composite sample is collected and analyzed, and within three working days the container is taken to a TEAD storage facility.

6.4.1.3. All notifications, analytical results, demonstrations, certifications, and other relevant documentation shall be retained on site in the facility operating record for at least three years. Copies of all manifests shall be retained for at least three years after the waste is shipped off site.

6.4.1.4. After OB activities are completed, the burn pans shall be inspected for partial burns. If unburned material is discovered, it shall be reburned, provided the pan is safe. Otherwise, reburning operations will be delayed overnight and conducted in accordance with SOP No. TE-0000-H-012.

6.4.1.5. Drums of ash and residue shall be placed on pallets that are in good physical condition and free of wastes, spills, or any other contamination. Four-way pallets shall be utilized. A maximum of three drums shall be placed on a pallet and banded together using steel banding.

6.4.1.6. The containers shall be stored in a Satellite Accumulation Area (SAA) at the OB/OD unit. Drums shall be locked and keys kept with the Demil Supervisor. When necessary, drums will be moved from the SAA to a 90-day accumulation area. Most wastes will be sent off site within 90 days. However, wastes that are not sent off site within 90 days shall be moved to the Building 528 permitted hazardous waste storage area. The ash and residue shall be sampled for TCLP metals and energetics. Sampling shall be performed once every 3 years. Sampling more often is not necessary due to the low generation rate of OB ash and residue and the consistency of the waste stream. The ash and residue shall be sent off-site for disposal in accordance with RCRA regulations.

6.4.1.7. Analytical Parameters and Rationale

The only hazardous wastes treated at the OB pans are those that possess the RCRA characteristic of Reactivity. The burn pan treatment residue is sampled and analyzed for reactivity prior to being removed for disposal. In addition, although not expected to be present, the burn pan treatment residue is sampled and analyzed for the toxicity characteristic (TC) metals using the Toxicity Characteristic Leaching Procedure (TCLP). Tables 5 and 6 list the parameters analyzed and the rationale for the analysis.

6.4.1.8. Test Methods

The methods for analyzing the ash and residue in the burn pans are shown in Table 1. Analytical procedures are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (SW-846), unless otherwise referenced. When necessary, samples shall be screened for high level explosive concentrations using Methods 8510 and/or 8515 of SW 846. Laboratories performing these analyses shall operate in conformance with Attachment 22 QAPP.

6.4.1.9. Sampling Methods

Ash and residue from a burn pan is collected and sampled after the pan has cooled to ambient temperatures. Typically, the burn pans are cleared of ash within 24 hours of an OB event. The residual ash is sampled to ensure that the treatment has been successful in rendering the waste nonreactive. Collection, preservation and handling of ash and residue shall be conducted in accordance with Attachment 22 QAPP.

6.4.1.10. Frequency of Analysis

Because of the low volume of OB ash produced and the waste stream consistency these tests shall be conducted every 3 years.

6.4.2. Open Detonation Residue Management

6.4.2.1. OD is a very efficient method of treatment; very little shrapnel is generated. After each day of detonation operations, a search of the surrounding area shall be made for unexploded munitions and items. Items or materials such as lumps of explosives or unfuzed ammunition may be picked up and prepared for the next detonation. Recovery and detonation of fuzed ammunition or suspected live munitions items are treated in accordance with SOP No. TE-0000-G-010. All items or materials (fuzed, unfuzed, or live munitions) found must be detonated on the day they are found, or if they are safe to handle they shall be put into permitted storage until they are detonated.

6.4.2.2. Analysis of OD treatment residue is not conducted at TEAD. TEAD periodically recovers scrap metal, casing, fragment, and related items from the OD grounds as resources allow and based on the Range Supervisor's judgment regarding safe operation of the range. The recovered material is disposed of through the Defense Logistics Agency Disposition Services (DLADS). The Demil Team shall inspect and document that the recovered material is explosive free.

ATTACHMENT 3
SECURITY PROCEDURES

1.0 Security Procedures and Equipment (Utah Admin. Code R315-264-14)

1.0.1. The general security provisions at the Facility include: (1) a barrier around the entire TEAD facility; (2) 24 hour, 7-day-per-week surveillance by roving patrols; (3) warning signs posted along perimeter fences to discourage unknowing or unauthorized entry; (4) internal barriers around specific facilities; (5) controlled entry to HWMUs through locked gates; (6) personnel access to the storage units, the incinerator, the Decineration™ test area, and the OB/OD unit controlled by the Demil Team, the Environmental Office and the Security Office, (7) two-way radio communications between security personnel, selected employees, and a central communications center; and (8) telephone communications available at selected facilities.

1.0.2. In addition to the above, security provisions for the OB/OD Area include:

- 1.0.2.1. Entry to the area limited by posted road barricade/gate;
- 1.0.2.2. Access limited to personnel involved in ongoing operations; and
- 1.0.2.3. Restricted air space above TEAD OB/OD Area during daylight hours extends from ground surface to 3,048 m (10,000 ft) MSL.

1.1.1 Barriers and Means to Control Entry (Utah Admin. Code R315-264-14(b)(2)(i-ii))

1.1.1.1. The entire Facility is enclosed by a fence. Clear zones are maintained on either side of the perimeter fence, where possible. Clear zones are for the purpose of extending the line of sight distances for the patrolling security guards. Security personnel control gates in the perimeter fence. The main gate is open during normal duty hours Monday through Thursday and on an as-needed basis Friday through Sunday. All other gates are opened on an as-needed basis, and under security personnel supervision.

1.1.1.2. Conditions of entry signs are erected at the main gate outlining the responsibilities, limitations, and liabilities assumed by personnel entering the Facility. "No Trespassing" signs are posted every 500 feet along the perimeter fence.

1.1.1.3. In addition to perimeter fence and gates, entry to the three container storage igloos, the service magazines, the Decineration™ test area, and the deactivation furnace is controlled by internal barriers. The Facility Storage Yard (Bldg 528) is enclosed with a 6-foot-high chain-link fence. A single access gate to Bldg 528 is locked unless needed. TEAD Environmental Office personnel control gate access. Entry to the OB/OD Unit is limited by posted road barricade/gate, and access is limited to personnel involved in ongoing operations.

1.1.2 24-Hour Surveillance System (Utah Admin. Code R315-264-14(b)(1))

1.1.2.1. Periodic surveillance of facilities at TEAD, including the HWMUs, is accomplished by roving security patrols. The security checks are as follows: HWMUs, Buildings 528, A101, C815, C816, 1368, 1205 and 1370 will be checked once per shift during non-duty hours. The security checks include perimeter barriers, gates, locks, and building exteriors.

1.1.2.2. Adequate personnel are provided to man all access gates and to provide roving

patrols of the administration and ammunition areas. Each roving patrol is motorized and radio equipped, and is assigned to a specific patrol area during its watch. Typical duties required by patrol members include:

- 1.1.2.2.1. Checking for possible intrusion or security violations.
- 1.1.2.2.2. Checking the security of locks to bunkers and buildings within the perimeter of the patrol area.
- 1.1.2.2.3. Checking the physical integrity of perimeter barriers.
- 1.1.2.2.4. Challenging all persons entering or exiting the patrol area who act suspicious, do not have a proper badge or who may require questioning.

1.1.3 Warning Signs (Utah Admin. Code R315-264-14(c))

1.1.3.1. Signs stating "U.S. Government Property -- No Trespassing" are posted along the perimeter fences at 500-foot intervals. These signs are approximately 18" by 24" and are easily visible at a distance of 25 feet. Large signs describing the "Conditions of Entry" are posted at each gate to the Facility. These signs are approximately 4' by 6' in size and warn of the possible consequences of detected unauthorized entry.

1.1.3.2. Rectangular signs with either "Danger Unauthorized Persons Keep Out" or "Caution -- Hazardous Waste Area --Unauthorized Persons Keep Out" are posted at each of the HWMUs so that they can be seen from at least 25 feet from any approach to the unit. No other language edition is necessary since English is the area's predominant language.

1.1.3.3. The entrance to the TEAD OB/OD Unit is clearly marked with signs informing personnel that detonation and/or burning activities may be occurring. During the times that the OB/OD Unit is active, Ammunition Operations personnel control access to the area. As stated earlier, all signs are in English; all persons working within the TEAD perimeter are required to be literate in English, which is the predominant language of the surrounding area. Authorized visitors who might not be literate in English, such as members of international inspection teams shall be escorted by base personnel at all times.

1.1.4 Inspection Schedule (Utah Admin. Code R315-264-15(a)-(d))

1.1.4.1 The Facility conducts regular and frequent inspections in accordance with Attachment 4 (Inspection Plan).

ATTACHMENT 4

**INSPECTION PLAN
AND SCHEDULES**

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1.0 GENERAL INSPECTION REQUIREMENTS

1.1 The Permittee conducts regular and frequent inspections of the facilities and equipment used to treat, store, handle, or otherwise manage hazardous waste. These include checks for the mechanical condition of the equipment, equipment malfunctions, operator errors, structural deterioration, loss or theft of items, equipment supply, and discharges that could adversely affect the environment. Remedial actions found necessary by inspections are always completed on a time schedule that ensures that any deterioration or malfunction discovered does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action is taken immediately. Inspection of security and emergency equipment is carried out by security, fire and medical personnel.

1.2 The inspection schedule includes items that are considered important in preventing, detecting, or responding to environmental or human health hazards associated with hazardous waste material.

1.3 All inspection records shall be compiled and kept for 3 years. Inspection records show date and time of inspection, the name of the inspector, notations of observations made, and the date and nature of any repairs or remedial action.

1.4 The inspections outlined in this Attachment are the minimum required. All inspections required by this Permit shall be documented on forms and maintained as part of the Operating Record. Those forms are not included in this Attachment, but a list of all required inspection items, frequencies, and what is being inspected is included on the Inspection Plan and Schedules (Tables 1-7). Although the format of the inspection forms may change, all items on the Inspection Plan and Schedules shall be included on the forms and inspected.

1.5 The nature of the Facility activities requires the presence of a security force, a full-time fire department, a medical group, as well as engineering and operations groups responsible for equipment development and operation. Site security is maintained through the use of manned guard stations, patrols, barriers, and electronic monitoring equipment. Security force personnel are responsible for maintaining the communication equipment and the alarm system. Fire department personnel are responsible for dealing with emergency situations such as fires and explosions, and for maintaining emergency equipment, including fire extinguishers and other firefighting equipment. The fire department is also responsible for conducting safety inspections of all facilities. Industrial Hygiene personnel are responsible for inspection of all facilities to identify, recognize, evaluate and control hazardous occupational environments. Medical Personnel are responsible for inspection and maintenance of all necessary medical equipment.

1.6 Security personnel patrol the Facility storage, incinerator, and OB/OD Unit perimeters to ensure against intrusion or penetration of the security system. Tests of the radio communications network are made in accordance with Federal Communications Commission (FCC) regulations. A test of the transmitting system is made every 24 hours. In addition, all units on all three shifts respond to the dispatcher every 60 minutes with their call code. A radio log is kept noting these tests. The logs are kept for 5 years in the Security Office function file. Since the emergency communication equipment is in constant use, any defect is immediately reported and repaired.

1.7 The fire department at the Facility is a full-time organization. The Facility's emergency

firefighting equipment is inspected daily and any defect is promptly remedied. All inspections are noted in an organizational log. All fire extinguishers at the Facility (excluding those in vehicles) are inspected monthly and a log of these inspections is kept. The fire department also inspects all facilities and logs any potential hazard and ensures its removal by the responsible organization.

1.8 A medical unit is located at the Facility. Personnel within the unit are responsible for ensuring that their emergency equipment is operational. Frequent inspections of the equipment are made and noted in the Medical Unit Log. The medical unit also participates in periodic testing and training exercises monitored by inspectors from outside the TEAD organization.

2.0 DEACTIVATION FURNACE INSPECTION PLAN

2.1 The inspection plan and schedule for the deactivation furnace is given below as Table 1. The inspections indicated for a daily and weekly frequency are only for times when the facility is in use. The schedules identify the items requiring inspection and the types of problems to look for.

2.2 The emergency waste feed cut off system is described in Attachment 13 (Process Control Equipment). The low limit parameters are verified automatically each time the system is started up. The PLC programming of the system has interlocks so that the system will not run unless all of the low limit parameters are satisfied. During inspections Facility furnace operators demonstrate the low limit parameters by artificially altering sensor signals and observing that the feed system stops. The waste feed rate monitoring scale is tested weekly. To test the waste feed rate monitor, the operator shall call up the test mode on the computer, which allows a two-fold check with known weights. One weight that is slightly higher than the specified feed weight for the test is placed on the scale and shall cause the red overload indicator to illuminate, and cause the conveyor to be unable to feed. A second weight that is slightly under the specified feed weight for the test is placed on the scale and shall cause the green load OK indicator to illuminate.

3.0 CONTAINER STORAGE FACILITIES INSPECTION PLAN

3.1 The container storage hazardous waste management units (HWMUs) requiring inspection are Building 528 (hazardous waste from Industrial Sources), Igloos C-815, C-816 and A-101, Service Magazines 1368 and 1370 and Above Ground Magazine 1205 (explosive reactive hazardous waste).

3.2 These HWMUs will be inspected on a weekly basis and the inspections will be documented on logsheets specific to each facility. The inspection plan and schedules for the container storage HWMUs are given below as Tables 2 and 3.

3.3 Hazardous waste transfer areas (loading and unloading) are inspected whenever containers are received or removed from storage. The inspection plan and schedule is given below on Table 4.

4.0 SMALL CALIBER DISASSEMBLY LINE INSPECTION PLAN

4.1 The inspection plan and schedule for the Small Caliber Disassembly Line is given below as Table 5. The inspections indicated for a daily and weekly frequency are only for times when the facility is in use. The schedules identify the items requiring inspection and the types of problems to look for.

5.0 OB/OD INSPECTION PLAN

5.1 The operation of the OB/OD Unit is in accordance with the Tooele Standard Operating Procedures (SOPs). Inspections are conducted for equipment malfunctions, UXO, metal fragments, water, glass, wood, metal scraps, debris, trash, obstacles and other discharges that could threaten human health or the environment. The area is also inspected for plant matter and other potentially combustible material. The Permittee is allowed to store waste munitions in pits, pans and silos under certain conditions. When waste munitions are being stored the Permittee will conduct weekly inspections. The purpose of the inspections is to detect potential problems and correct them before they affect human health or the environment. Records of inspections and the inspection schedule are maintained in files at the Facility. All inspection logs are kept on file for at least 3 years.

5.2 The Demil Team is responsible for inspecting necessary equipment for operational readiness prior to the beginning of detonation and/or burning. If any vital equipment in the area is inoperative, has deteriorated, or is not in compliance with regulatory requirements, maintenance or replacement is initiated before operations commence. Table 6 presents a schedule for inspecting safety and emergency equipment, security devices, operating equipment, and the OB/OD Unit. This record will be maintained at the Facility for each day the OB/OD unit is operated.

5.3 At the conclusion of all detonations for the day, the area immediately surrounding the pit formed by the explosion is inspected for any possible kick-outs. If not completely destroyed, items are placed in the pit and detonated or, if unstable, detonated in place. The pits are inspected for the presence of water before OD operations. If there is water in a pit, that pit is not used.

5.4 Inspections for leaks, spills, and fugitive emissions are not applicable to the type of OB/OD operations performed at the Facility.

6.0 HYDROLYSIS FACILITY INSPECTION PLAN

6.1 The inspection plan and schedule for the Hydrolysis Facility is set out in Table 7, below. The inspections indicated for a daily and weekly frequency are only for times when the facility is in use. The schedules identify the items requiring inspection and the types of problems to look for.

7.0 RESERVED

8.0 Records

The records of inspection will be transferred to the Environmental Management Division and maintained for a minimum of three years.

TABLE 1. INSPECTION PLAN AND SCHEDULE FOR DEACTIVATION FURNACE

	Item	Frequency*	Types of Problems
	R315-264-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
Facility	Feed Housing	Daily	Inspect and clean out, if necessary. Collect and feed any live items through the furnace. Collect and containerize any ash or residues.
	Burner Area, Fuel Reservoir	Daily	Check for sufficient fuel level, look for damage, leaks, etc. in burner area and fuel lines.
	Retort/Conveyor Interface Area	Daily	Check for residue build up.
	Discharge Conveyor	Daily	Check for mechanical damage, remove melted/solidified metal.
	Scrap Metal Collection Drum	Daily	Insure that sufficient collection volume exists in drum.
	Feed Room Floor	Daily	Collect floor sweepings in waste drum. Check feed conveyor for damage.
	Catch Pans	Daily	Check that empty catch pans are in position under the retort junctions to receive ash that may sift through during operations.
	Afterburner	Daily	Check the afterburner, burner area, and ductwork for damage and leaks.
	Ductwork	Daily	Check the ductwork cleanouts, and double tipping valves for damage. Check for adequate capacity and proper labeling in collection drum.
	Gas Monitoring Equipment	Daily	Ensure equipment is in good condition.
	Cyclone Separator	Daily	Check ducting for leaks, corrosion, etc. Ensure that clean out gate is closed. Check for adequate capacity, and proper labeling of collection drum.
	Baghouse	Daily	Check proper function of double tipping valve. Check for adequate capacity, and proper labeling of collection drum.
	Draft Fan and Stack	Daily	Inspect the fan unit for damage, ductwork and fittings, joints, fan belt, etc. Inspect fan base for damage, inspect stack and duct connections for leaks or damage.
	Dampers	Daily	Visually inspect for damage and correct position (open or closed).
	Compressor	Daily	Check compressor and air lines for air tightness, check for rated 90 - 100 psi pressure in tank.
	Control Panels	Daily	Ensure all main enclosure indicator lights are functional.
	Load/Unloading Areas	Daily	Check for spills, collect for floor sweepings into waste drum.
	On Screen Monitoring Equipment	Daily	Verify that the on-screen monitoring equipment for the following items is operational before feeding waste into the furnace: furnace feed end temperature, furnace exhaust draft pressure, baghouse differential pressure, afterburner exit temperature, retort speed, pre-baghouse temperature, post baghouse temperature.
	Waste Feed Rate Monitoring System	Daily	Check that the WFRMS is not activated until all normal operating conditions are reached.
	Fugitive Emissions	Daily	Check for visible smoke coming from the retort, feed chute, or any other area of the furnace system.
	Baghouse Pressure Drop	Daily	Verify that the delta P range is above 3.5" wc during operation. Manually inspect the baghouse interior if delta P is outside of parameter.

TABLE 1. INSPECTION PLAN AND SCHEDULE FOR DEACTIVATION FURNACE

	Item	Frequency*	Types of Problems
	R315-264-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
	Tampering of Control System	Daily	Check for evidence of tampering (electrical jumpers, disconnections, etc.) of any of the feed system and feed controls.
	Proper Program Setting	Daily	Verify correct program setting.
	Waste Feed Cut Off Test	Weekly	Perform weekly test of the waste feed cut off system, and associated alarms. Test is described in Attachment 13 of the Permit.
	Calibration of WFRMS Scale	Weekly	Perform weekly calibration of the WFRNS scale, as described in paragraph 2.0 above.
General	Operating Record	As required by Module II.M	Verify that the entries in the operating record are complete and up to date. Entries include; description (common name, NSN, EPA codes, physical form, item number), process that produced the waste (characteristic wastes), quantity treated, feed rates, time and date. Verify that waste characterization data are present along with details of any incident, which requires implementation of the contingency plan. Records of repairs, emergency waste feed cut off system test results.
Emergency Equipment	Contingency Plan	Weekly	Ensure that the Contingency Plan is present at the facility.
	Fire Extinguisher	Weekly	Verify that the fire extinguisher is present and the pressure gauge shows the extinguisher to be operational.
	Communication Equipment	Weekly	Verify communication equipment is present at the facility and functional.
	Eye Wash	Weekly	Check eyewash for proper functioning.
* = When in use			

TABLE 2. INSPECTION PLAN AND SCHEDULE FOR BUILDING 528

	Item	Frequency*	Types of Problems
	R315-264-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
Facility	Doors	Weekly	Verify that the entrances to the building are closed when building is not in use, check all entrances both front and back.
	Security Fence	Weekly	Verify that fence is not damaged; look for bent or torn chain links, bent fence posts, and loose barbwire.
	Fence Gate	Weekly	Verify lock and chain is present.
	Warning Signs	Weekly	Verify that warning signs are readable from a distance of 25 feet and are able to be noticed from any direction the facility may be approached (i.e. each side of the fence which faces away from the building must have warning signs).
	Leaks	Weekly	Verify that no releases to the environment have occurred by inspecting the interior four corners of the secondary containment base (i.e. the four corners of the interior of building 528) looking for liquid accumulation and/or discoloration of the base coating.
	Base Integrity	Weekly	Verify the integrity of the secondary containment base by inspecting for cracks in the concrete base or berm, or exposed concrete (indicating the failure of the concrete sealant).
	Odors	Weekly	Verify the absence of odors. If odors are present, it is an indication of a possible spill, open container, leaking container, etc.
Containers	Operating Record	As required by Module II.M	Verify that all entries in the operating record are complete and up to date. Entries include; a description (common name, EPA hazardous waste numbers, physical form, and for characteristic wastes, the process that produced the waste) and quantity (weight, or volume and density) of each hazardous waste received and the methods (EPA handling codes) and dates of its treatment, storage, or disposal at the facility. Verify the location of the waste within the facility and the quantity at each location. Verify the records and results of waste analysis are present along with any summary reports and details of any incidents which required implementation of the contingency plan are present.
	Container Labels	Weekly	Verify that all containers are properly labeled.
	Proper Storage Location	Weekly	Verify that wastes received at the facility since the last inspection are stored in a compatible manner.
	Containers	Weekly	Verify all containers in storage are suitable for transport (i.e. no severe defects) and not leaking. In addition, insure the containers are stored in the proper configuration, which is; aisle space 2.5 feet (minimum), 6 rows per bay, 7 pallets per row, barrels are stacked no more than 2 high, and total container volume per pallet does not exceed 170 gallons.
Spill Equip.	Contingency Plan	Weekly	Ensure that the Contingency Plan is present at the facility.
	Fire Extinguisher	Weekly	Verify that the fire extinguishers are present and the pressure gauge shows the extinguisher to be operational.
	Communication Equipment	Weekly	Verify that the telephone is present at the facility and functional.
	Eye Wash	Weekly	Verify eye wash is functional
	Absorbent Material	Weekly	Verify absorbent material is present and in usable condition.
	Eye Shields	Weekly	Verify that face shields and safety glasses are present and in usable

TABLE 2. INSPECTION PLAN AND SCHEDULE FOR BUILDING 528

	Item	Frequency*	Types of Problems
	R315-264-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
			condition.
	Protective Gloves	Weekly	Verify protective gloves are present and are usable (i.e. without holes or cracks).
	Coveralls	Weekly	Verify that Tyvek suits are available at the facility and in usable condition.
Other	Material Handling Equipment	Weekly	Verify that material handling equipment performs properly by insuring that; 1) brakes function and work predictably, and 2) hydraulic lift functions properly and in a predictable manner.
* = When in use			

TABLE 3. INSPECTION PLAN AND SCHEDULE FOR IGLOOS A101, C-815, and C816, & SERVICE MAGAZINES 1368 and 1370 and ABOVE GROUND MAGAZINE 1205

	Item	Frequency*	Types of Problems
	R315-264-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
Facility	Doors	Weekly	Verify the entrances to the igloos and service magazines are locked when facility is not in use.
	Warning Signs	Weekly	Verify that warning signs are readable from a distance of 25 feet. The igloos and service magazines have only one door each through which to access, therefore the sign must be visible when the facility is approached from the entrance.
	Spills	Weekly	Verify that no spills have occurred by looking for loose debris on container surfaces, pallets, and floor.
	Base Integrity	Weekly	Verify the integrity of the base by inspecting for cracks in the concrete.
Containers	Operating Record	As required by Module II.M And Module III	Verify that all entries in the operating record are complete and up to date. Entries include; a description (common name, EPA hazardous waste numbers, physical form, and for characteristic wastes, the process that produced the waste) and quantity (weight, or volume and density) of each hazardous waste received and the methods (EPA handling codes) and dates of its treatment, storage, or disposal at the facility. Verify the location of the waste within the facility and the quantity at each location. Verify the records and results of waste analysis are present along with any summary reports and details of any incidents which required implementation of the contingency plan are present.
	Container Labels	Weekly	Verify that all containers are properly labeled.
	Proper Storage Configuration	Weekly	Verify that containers in the proper configuration see Attachment 9 of the permit for storage configurations specific to each facility.
	Containers	Weekly	Verify all containers in storage are free from severe defects and are not leaking.
Spill Equip.	Contingency Plan	Weekly	Insure that the Contingency Plan is present at the facility.
	Fire Extinguisher	Weekly	Verify that the fire extinguisher is present and the pressure gauge shows the extinguisher to be operational.
	Communication Equipment	Weekly	Verify that communication equipment, hand-held radio or phone, is present and functional.
* = When in use			

TABLE 4. INSPECTION PLAN AND SCHEDULE FOR HAZARDOUS WASTE LOADING/UNLOADING AREAS

Item	Frequency	Types of Problems
R315-264-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
Loading Dock/Ramp	Whenever in use	Inspect the loading ramps or concrete aprons for signs of damage which might cause instability, or difficulty with operation of material handling equipment. Look for scaling or chipping of surface, debris, or other objects on the concrete ramp/apron that the equipment operator would have to avoid.
Leaks/Spills	Whenever in use	Inspect for evidence of spills by looking for residue on pallets, and truck cargo beds. Look for soil discoloration in and around the concrete ramp/apron, and in the vicinity of the material handling equipment (i.e. trucks and forklifts).
Container Transferred	Whenever in use	<p>Inspect the containers that are to be transferred to ensure they are in good condition. Look for corrosion, bulging, loose lids, dents or creases that could significantly affect container integrity. Insure pallets are not crushed or broken to the point of causing difficulty for the forklift operator. Look for loose or broken banding.</p> <p>Ensure the containers are transferred to the proper location in storage (i.e. compatible storage configuration).</p> <p>Ensure containers are properly labeled.</p> <p>Ensure the transferred containers are added or subtracted from the operating record. Insure the waste analysis plan includes the type of waste being transferred (if the transfer is a receipt).</p> <p>Ensure the Hazardous Waste Manifest (if the transfer involves an off-site transfer of containers) is filled out properly and no applicable entries are blank. Insure verification of waste received from off-site is done according to the waste analysis plan.</p>

TABLE 5. INSPECTION PLAN AND SCHEDULE FOR SMALL CALIBER DISASSEMBLY LINE

	Item	Frequency*	Types of Problems
	R315-264-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
Facility	Process Room Floor	Daily	Collect floor sweepings in waste drum.
	Conveyor System	Daily	Check for mechanical damage.
	Delinker	Daily	Check for mechanical damage, unit is clean.
	Cart. Dear down mach	Daily	Check for mechanical damage, unit is clean.
	Propellant Dump Cube	Daily	Check for propellant residue.
	Deprime machine	Daily	Clean, check seals for leaks.
	Uni-wash dust cltr	Daily	Check water level.
	Mac Env Cyclone	Daily	Check for leaks. Check for adequate capacity, and proper labeling of drum.
	Baghouse	Daily	Check proper function of waste chute. Check for adequate capacity, and proper labeling of collection drum.
	Draft Fan and Stack	Daily	Inspect the fan unit for damage, ductwork and fittings, joints, fan belt, etc. Inspect fan base for damage, inspect stack and duct connections for leaks or damage.
	Control Panels	Daily	Ensure all indicator lights are functional.
	Load/Unloading Areas	Daily	Check for spills, collect floor sweepings into waste drum.
General	Operating Record	As required	Verify that the entries in the operating record are complete and up to date. Entries include; description (common name, NSN, EPA codes, physical form, item number), process that produced the waste (characteristic wastes), quantity treated; feed rates, time and date. Verify that waste characterization data are present along with details of any incident which requires implementation of the contingency plan. Records of repairs, emergency waste feed cutoff system test results.
Emergency Equipment	Contingency Plan	Weekly	Insure that the Contingency Plan is present at the facility and functional.
	Fire Extinguisher	Weekly	Verify that the fire extinguisher is present and the pressure gauge shows the extinguisher to be operational. Verify the expiration date on the extinguisher charge has not passed.
	Com Equipment	Weekly functional	Verify communication equipment is present at the facility and functional.
	Eye Wash	Weekly	Check eye wash for proper functioning, unit and water are clean.
	Absorbent Material	Weekly	Verify that absorbent material is present in adequate amounts in the spill kit.
	Protective Gloves	Weekly	Check that protective gloves are present and useable (no holes or cracks).
	Safety glasses or goggles	Weekly	Verify that safety glasses or goggles are present and in useable condition.
	Tyvek Suits	Weekly	Check that Tyvek Suits are available and in useable condition.

*= When in use

TABLE 6. INSPECTION PLAN AND SCHEDULE FOR OB/OD AREA

Item	Frequency*	Types of Problems
R315-2648-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
Loading/Unloading Area	Daily	Inspect for discolored soil, propellant, and explosive residue.
Entrance Gate	Weekly	Verify that lock and chain are present and operational.
Warning Signs	Weekly	Verify that warning signs are readable from a distance of 25 feet and noticeable from any direction from which the facility may be approached (i.e., each side of the fence that faces away from the building must have warning signs).
Burn Pans	Daily	Verify that the burn pans are in good condition and capable of containing the propellant that will be poured into them. Look for holes in the bottom or failed welds at the corners. Ensure that there is no residue or moisture in the burn pan.
Burn Pan Lids	Daily	Verify that the lids to the burn pans are capable of preventing precipitation from contacting the interior surface of the pan. Ensure that all lids are in place if pans are not in use, and that there is a lid for each pan.
Silos and Caps	Daily	Verify that silos are in safe operating condition and that caps are in place when the silos are not in use. Ensure that there is no residue/spent motor casings in the silo.
Detonation Pits	Daily	Ensure that all ordnance has been properly detonated.
Meteorological Conditions	Daily	Ensure that the meteorological conditions comply with those specified in the permit and Army Regulations and SOPs.
Waste Analysis Plan	As required	Verify that the waste analysis for the munitions/propellant to be demilled are included in the OB/OD operating record.
Transfer Documents	Daily	Verify that the transfer documents are filled out properly and the material received is the same as that specified on the document (NSN and quantity).
Road Barriers/Gate	Daily	Verify that the road barrier/gate is secure when operations are in progress.
Contingency Plan Equipment	Weekly	Ensure that the Contingency Plan is present at the Equipment facility.
Fire Extinguishers	Weekly	Verify that the fire extinguisher is present and the pressure gauge shows the extinguisher to be operational. Verify that the expiration date on the extinguisher charge has not passed.
Communication Equipment	Weekly	Verify that communication equipment is present at the facility.
Personal Protective Equipment	Weekly	Verify that each worker has powder coveralls, safety shoes, hard hat, gloves and safety glasses.
Material Handling Equipment	Weekly	Verify that material handling equipment performs properly by ensuring that (1) brakes function and work predictably, and (2) hydraulic lift functions properly and in a predictable manner.
Vehicle Horn	Daily	Verify that a vehicle horn is functional.
Burn Pans and Lids	Weekly**	Verify that the burn pans are in good condition and properly containing the propellant. Ensure that the lids are in place on the burn pans.
Silos and Caps	Weekly**	Verify that silos are in safe operating condition and that the caps are in place on the silos.
Detonation Pits	Weekly/After Storms**	Ensure that the pits have not been disturbed.

*= When in use (Operations generally occur between March and November).

**=When munition items are being stored in place. Visual inspections will be conducted from a safe distance.

TABLE 7. INSPECTION PLAN AND SCHEDULE FOR THE HYDROLYSIS FACILITY

	Item	Frequency*	Types of Problems
	R315-264-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
Facility	NaOH Storage Tank	Daily	Corrosion, leaks, liquid level, heater.
	NaOH Transfer Pump	Daily	Leaks, wear, mounting integrity.
	Line from NaOH Tank	Daily	Corrosion, leaks, cracks, insulation damage, loose supports.
	Basket Carriage System	Daily	Corrosion, excessive wear on drive train and parts.
	Vent Line	Daily	Corrosion, leaks, cracks, loose supports.
	Rinse Tank	Daily	Corrosion, leaks, liquid level.
	Rinse Tank Pump	Daily	Leaks, wear, mounting integrity, suction screen, discharge pressure.
	Hydrolysis Tank	Daily	Corrosion, leaks, liquid level.
	Push Blower	Daily	Cracks in housing, blade wear, mounting.
	Basket Cart	Daily	Structural integrity, signs of corrosion, air motor and oil, grease gears.
	Scale	Daily	Functionality, accuracy, excess debris buildup.
	Conveyor Motor	Daily	Cracked housing, mounting, roller wear.
	Spent Hydrolysate Line	Daily	Corrosion, leaks, cracks, insulation damage, loose supports, fittings, flanges.
	Hydrolysis Recirc Line	Daily	Corrosion, leaks, cracks, insulation damage, loose supports, fittings, flanges.
	Hydrolysis Recirc Pump	Daily	Leaks, wear, mounting suction strainer, discharge pressure.
	Hydrolysate Heating System	Daily	Corrosion, leaks, line fittings, cracks, loose supports, steam pressure.
	Hydrolysis Tank Secondary Containment System	Daily	Accumulated material, corrosion, damage, leaks.
	Rinse Tank Secondary Containment System	Daily	Accumulated material, corrosion, damage, leaks.
	Process Room Floor	Daily	Cracks, spills.
	Gas Analysis System (Lines, Chiller, Fan)	Daily	Leaks, cracks, corrosion, mounting, supports, gas pressure, flow rate.
	Vent Fan	Daily	Inspect the fan unit for damage, ductwork and fittings, joints, fan belt, caustic buildup.
	Scrubber	Daily	Inspect the scrubber unit for damage, ductwork and fittings, plugged spray nozzles, excessive material buildup on packing, and mist eliminator pads.
	Scrubber Sump Tank	Daily	Inspect the sump tank for damage, plugged strainer, excessive material buildup inside tank.
	Control Panels	Daily	Ensure all indicator lights are functional.
	Load/Unloading	Daily	Check for spills.

TABLE 7. INSPECTION PLAN AND SCHEDULE FOR THE HYDROLYSIS FACILITY

	Item	Frequency*	Types of Problems
	R315-264-15(b)(1)	R315-264-15(b)(4)	R315-264-15(b)(3)
	Areas		
General	Operating Record	As required by Module II.M.	Verify that the entries in the operating record are complete and up to date. Entries include; description (common name, NSN, EPA codes, physical form, item number), process that produced the waste (characteristic wastes), quantity treated, feed rates, time and date. Verify that waste characterization data are present along with details of any incident which requires implementation of the contingency plan. Records of repairs, emergency waste feed cutoff system test results.
	Contingency Plan	Weekly	Insure that the Contingency Plan is present at the facility and functional.
Emergency Equipment	Fire Extinguishers	Weekly	Verify that the fire extinguishers are present and the pressure gauge shows the extinguisher to be operational. Verify the expiration date on the extinguisher charge has not passed.
	Com Equipment	Weekly	Verify telephone is present at the facility and functional.
	Eye Wash	Weekly	Check for proper functioning, unit and water are clean.
	Emergency Shower	Weekly	Check for proper function.
	Absorbent Material	Weekly	Verify that absorbent material is present in adequate amounts in the spill kit.
	Personnel Protective Equipment	Weekly	Check that equipment is present and useable.

*= When in use

ATTACHMENT 5
TRAINING PLAN

TRAINING PLAN FOR HAZARDOUS WASTE MANAGEMENT PROGRAM AND AMMUNITION OPERATIONS

1.0. GENERAL

1.1. PURPOSE

Employee training at Tooele Army Depot (TEAD) is crucial to the accomplishment of all the Facility's missions and the requirement to provide environmental training is a top priority. The TEAD Hazardous Waste Management Training Program is formal program designed to enhance the environmental competencies of its participants and to promote responsible environmental practices throughout the organization. This training was developed and implemented to meet the requirements of Utah Admin. Code R315-264-16 for employees involved in hazardous waste operations. Specific course work has been outlined for this program, which contains material appropriate for accomplishing these objectives. Employees must successfully complete training specific to their duties in hazardous waste management procedures within six months of their appointment to this type of position and shall not work in unsupervised situations until training requirements are met. Hazardous waste duties may be delegated to an employee on a temporary basis, not more than six months, as long as they are performed under the direction of trained personnel while working in a hazardous waste management unit. Personnel must also participate in an annual review of this training.

1.2. SCOPE AND APPLICATION

All employees involved in the management, storage, treatment or handling of hazardous waste at the Facility's RCRA regulated or permitted facilities, including those on temporary appointments, are required to participate in the hazardous waste management training program. The types of duties an employee may engage in when dealing with hazardous waste includes, but is not necessarily limited to, coordination, engineering, technical work, transportation, containerization, labeling, storage, identification, record keeping, emergency response, and treatment. Tenant activities and contractors may operate a separate program as long as the training which is provided to their personnel meets regulatory compliance and is equivalent to, or greater than, the requirements of this program. Records and documents associated with such a program shall be made available for regular inspections by the Environmental Management Division (EMD).

1.3. SUPPLEMENTAL TRAINING

The development of program members and the benefit to be derived by the environment and employee health and safety, will be assured only through a total commitment to successful completion of all course work. However, the outlined courses should not be considered all inclusive. Constant changes in the area of environmental compliance and needs which may

be specific only to some functions will necessitate the need for supervisors and employees to seek out additional training to complement this program. A wide range of related course work is offered by the U.S. Army Defense Ammunition Center and School (the Army Logistics Management College), the School of Military Packaging Technology, the Naval Transportation Management School, academic institutions, and private sources.

2.0. PROGRAM ADMINISTRATION

2.1. CHIEF OF ENVIRONMENTAL MANAGEMENT DIVISION

The Permittee's hazardous waste management training program is directed by the Chief of the EMD. He reviews and approves the content, method of presentation, and evaluation techniques for all courses developed in support of Permittee's hazardous waste management training program. The EMD Chief shall ensure that individuals providing instruction or instructional support meet stringent standards which take into consideration educational degrees, professional certifications, schools/training, work history and knowledge.

2.2. TRAINING INSTRUCTORS

Training shall be taught by individuals proficient in State and Federal hazardous waste regulations and well versed in the area of hazardous waste management. Instructors shall maintain their knowledge base by keeping abreast of changes in the regulations and by taking refresher training as directed by the Chief of the EMD from organizations and companies that are well known and recognized for their hazardous waste training.

2.3. RECORD KEEPING/REPORTS/DOCUMENTATION

2.3.1. Documentation of course attendance and records which can be substantiated is a critical aspect of this program. All Facility personnel whose duties directly involve the storage, treatment, or handling of hazardous waste must successfully complete the applicable training courses that teach them to perform their duties in a way that ensures that the Facility will be in compliance with the requirements of the State of Utah Hazardous Waste Management Rules.

2.3.2. Participation in the courses shall be documented by a computer based recordkeeping system (Total Employee Development System (TEDS)) used for documenting all training required by the Facility employees. Successful completion of the courses shall require the employee to pass an exam that shall be retained by the EMD. These exams are available for inspection and copying by employees, their representatives and other government agencies with relevant responsibilities.

2.3.3. Documentation is further aided by TEDS, which can generate various reports. TEDS contains such information as employees' names, organizations, job numbers, course, date of initial training and when the refresher course is due.

2.4. PARTICIPANT CHANGES

The EMD shall maintain a current list of personnel participating in the TEAD Hazardous Waste Management Program. The following procedures shall be followed to add or remove an employee from list of active personnel:

- 2.4.1.. To enter the Hazardous Waste Training Program the employee's organization must submit a request to the EMD to add the employee. The request must indicate the employee's name, job title, job number, and identify the employee's hazardous waste duties and/or the hazardous waste management units at which the employee will work. The EMD shall enter the employee's information into the hazardous waste management program. The EMD shall inform the depot Training Officer of the addition of the employee into the hazardous waste management program and which hazardous waste courses the employee will be required to take. The depot Training Officer shall update TEDS appropriately to reflect the employee addition. The employee shall have six months to take and pass the applicable training courses or the employee shall be dropped out of the program. The employee shall not be allowed to work unsupervised by a trained employee until the employee has passed the applicable training courses.
- 2.4.2. To remove an employee from the Hazardous Waste Management Training Program the employee's organization must submit a request to the EMD noting the individual no longer has hazardous waste management duties. The EMD shall then remove the individual from the list of active members in the environmental management program.
- 2.4.3. Organizations permanently transferring employees who are in the Hazardous Waste Management Training Program from one hazardous waste management unit to another position must notify the EMD of the change. The notification must detail the old and new positions and the effective date of the transfer. The EMD shall then instruct the depot Training Officer to update the employee's training profile in TEDS.
- 2.4.4. Hazardous waste management and handling duties may not be delegated to anyone on a temporary basis (no matter how short the length of time) unless they are performed under the direction of personnel that are trained in the management of hazardous waste and for a duration of less than six months; all persons must be formally designated using the preceding procedure.
- 2.4.5. Anyone having hazardous waste management and handling duties shall be dropped from the program by the EMD if the individual does not complete training in the prescribed time frames. The EMD shall send notice to the Director of the employee's organization notifying them that the person is being dropped from the program. The employee's organization shall then not allow the employee to perform hazardous waste management duties unsupervised until the deficient training is completed.

2.5. CERTIFICATES

Employees that have received and successfully completed the initial training course shall be provided a certificate by the EMD that documents completion of the course.

2.6 TRAINING MODULES

Based upon individual training requirements for employees with hazardous waste duties at differing RCRA regulated facilities three training courses have been developed. An outline of each course is available in Appendix A of this Attachment.

2.7 JOB DESCRIPTION

2.7.1. The job descriptions of all employees with hazardous waste duties shall include the following statement;

“Performs hazardous waste management duties and/or hazardous waste worker duties in permitted or regulated facilities. Duties may involve one or more of the following: Management, coordination, engineering, or technical work involving hazardous waste management programs or projects; or movement, containerization, storage, identification, record keeping, emergency response procedures, treatment, and/or disposition of hazardous waste. Such duties require the ability to interpret and implement environmental regulations, knowledge of hazardous waste products and safety regulations, and the skill to comply with regulatory requirements and ensure proper management and/or handling of hazardous wastes. An incumbent must successfully complete training in hazardous waste management procedures within six months after the date of appointment to this position and will not work in unsupervised situations until these training requirements have been met. Incumbent must also participate in an annual review of this training.”

2.7.2. All job descriptions by job titles and job numbers for all hazardous waste management personnel are maintained and available for review at the Facility.

2.8 NEW EMPLOYEES

Training for new personnel is initiated at the time they start work at the Facility if they are to be involved in hazardous waste operations. Training shall consist of hazardous waste management procedures, to include site specific training covering communications and/or alarm systems, contingency plans for fires, explosions, and incidental spills, and any procedures necessary for shut down operations.

3.0. TRAINING AND CERTIFICATION PROGRAM FOR PERSONNEL WORKING IN AMMUNITION OPERATIONS

In addition to the requirements for personnel working in hazardous waste areas, personnel working in hazardous waste ammunition areas adhere to the requirements in the latest version of TEAD Regulation No. 350-1, *Training and Certification Program for Personnel Working in Ammunition Operations*. All personnel assigned to conduct or support demilitarization operations must pass *Hazardous Familiarization Training*, as a minimum requirement. This training consists of two primary elements, the Defense Ammunition Center (DAC) *Introduction to Ammunition* (AMMO-45), a CD-ROM self-taught program and a locally developed orientation program. Personnel conducting demil operations involving the set up and activation of charges, burning operations or other comparable activities are required to attend the *Ammunition Demilitarization Course*. All formal ammunition-training records are maintained in TEDS.

APPENDIX A

HAZARDOUS WASTE MANAGEMENT TRAINING PROGRAM COURSE OUTLINE

- **Course 1: HAZARDOUS WASTE FUNDAMENTALS, ACCUMULATION, AND STORAGE**
 - **Identify federal, state, and Army regulations**
 - Resource Conservation and Recovery Act (RCRA)
 - Federal Facilities Compliance Act (FFCA)
 - Utah Solid and Hazardous Waste Act
 - Utah hazardous waste management rules
 - **Outline the responsibilities of members of the hazardous waste management program**
 - Commander's Responsibilities
 - Duties of the Environmental Management Division
 - Duties of Hazardous Waste Generators
 - Duties of Operators of Hazardous Waste Storage and Treatment Facilities
 - **Explain pollution prevention requirements and benefits as they pertain to hazardous waste**
 - Hazardous Waste Prevention
 - Benefits of Pollution Prevention
 - **Explain Spill Response Requirements**
 - **Define hazardous waste**
 - Hazardous Waste Defined
 - Examples of Hazardous Waste
 - **Describe generation point hazardous waste management requirements**
 - **Identify 90-day area requirements for hazardous waste management**
 - **Identify the requirements for handling hazardous waste at permitted hazardous waste storage facilities.**
 - Operational Requirements and Parameters
 - Documentation Requirements
 - Emergency Requirements

HAZARDOUS WASTE MANAGEMENT TRAINING PROGRAM

COURSE OUTLINE

- **Course 2: TEAD HAZARDOUS WASTE TREATMENT FACILITIES**
 - **Identify the requirements for the treatment of hazardous waste at the deactivation furnace.**
 - Deactivation Furnace
 - Operational Requirements and Parameters
 - Documentation Requirements
 - Emergency Response
 - **Identify the requirements for the treatment of hazardous waste at the small caliber disassembly line.**
 - Requirements for Operation of the Small Caliber Disassembly Line
 - Operational Requirements and Parameters
 - Documentation Requirements
 - Emergency Requirements
 - **Identify the requirements for the treatment of hazardous waste at the hydrolysis facility.**
 - **Hydrolysis Facility**
 - Operational Requirements and Parameters
 - Documentation Requirements
 - Emergency Requirements
 - **Identify wastes that can be treated at the OB/OD facility.**
 - **Identify the procedures for receiving wastes at the OB/OD facility.**
 - Quantities that can be treated in each process at the facility.
 - **Identify the operating conditions required at the OB/OD facility.**
 - Open Detonation
 - Open Burning In Pans
 - Static Fire
 - Inspection requirements
 - Documentation Requirements
 - Emergency requirements
- **Course 3: HAZARDOUS WASTE – TREATABILITY STUDIES**
 - **Identify hazardous waste management requirements when conducting treatability studies**
 - Requirements for Conducting Treatability Studies
 - Documentation of Treatability Studies

ATTACHMENT 6

PREPAREDNESS AND PREVENTION PLAN

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PREPAREDNESS AND PREVENTION PLAN

1.0 Container Storage Facility – Bldg. 528

1.1 Emergency Equipment

1.1.1. Internal communication and alarm is achieved by a hand-held telephone or voice. The facility is small (75ft x 75ft) and generally no more than two people work in the facility at the same time.

1.1.2. A telephone is located just inside the exterior door of the facility to be used for summoning external help or emergency assistance. The operator of the facility shall also have a hand held telephone available for summoning assistance.

1.1.3. Whenever the facility is in use, employees will communicate by voice with others present. Employees will use the telephone for summoning external emergency assistance. If only one person is working in the Container Storage Facility (CSF), a hand held telephone shall remain within immediate reach for summoning external emergency assistance.

1.1.4. Two portable fire extinguishers are located at the CSF. The location of the fire extinguishers is given in the drawing of Building 528 in Appendix A.

1.1.5. A spill kit containing Tyvek suits, absorbent material, gloves, boots, face shields, and safety glasses or goggles is located at the CSF.

1.1.6. An eye wash and an emergency shower are located at the CSF. The location of this equipment is in the drawing of Building 528 in Appendix A.

1.2 Operating Requirement

1.2.1. A minimum aisle space of 2.5 feet shall be maintained between the rows of pallets. This space will allow for inspections, use of fire extinguishers, and spill control equipment, if necessary.

1.2.2. The Permittee shall maintain reciprocal agreements with area fire departments, law enforcement agencies and hospitals. A list of the local authorities that the Permittee has agreements with is given in Appendix B. Tooele Army Depot (TEAD) has its own fire department and security organizations, who will be the primary responders to emergencies. This plan and others dealing with hazardous waste management are reviewed by these organizations so that they may become familiar with hazards and properties of the materials and the facilities at TEAD.

1.2.3. Fire hydrant No. 31 is within 500 ft. of CSF, with a total flow of 3125 gpm at a static pressure of 82 psi. Fire hydrant No. 20 is within 700 ft. and has a total flow of 2000 gpm at 80 psi static pressure.

1.3 Preventative Procedures, Structures and Equipment

1.3.1. The following procedures, structures, and equipment are used to minimize hazards: forklift (high weight capacity) is used; a limit of four drums per pallet is adhered to; stronger hardwood (oak) pallets are used; a full concrete ramp exists leading to the main door; no docks are used; delivery trucks are backed onto the ramp in winter to avoid snow and ice during loading and unloading; operators are trained and licensed for operating material handling equipment; a minimum of two persons are present when the contractor is present for loading; slings, drums handlers, etc. are available for safely handling single drums.

1.3.2. The CSF is totally enclosed and weather tight. All spills shall be immediately cleaned up and neutralized using absorbents stored in the immediate area. Toxic spills shall be decontaminated by the fire department Haz Mat team.

1.3.3. Electricity is used only for lighting in the CSF. Lighting is only used in early hours in the winter, and the forklift has headlights that could be used in the event of a power outage. An extended power outage in the winter could result in freezing of the emergency shower. If this happens, operations shall be shut down until all safety and decontamination equipment is functional, or provisions for temporary equipment are made.

1.3.4. Contamination of water supplies is prevented by minimizing the probability of releasing hazardous waste (HW) into the environment by proper HW handling practices. Regular inspections, adherence to safety procedures, prompt cleanup of spills, and sufficient training of all employees working in the CSF are examples of proper HW management practices. In addition, a 20 mil liner is in place under the CSF as an additional precaution in the event that HW constituents penetrated the floor of the CSF. The floor of the CSF is sealed and divided into four separate cells by concrete curbing, and a six-inch concrete curb around the perimeter prevents spilled liquids from escaping the building.

1.3.5. No personnel protective equipment is used under normal conditions. If there is leakage or a spill, the following personnel protective items are available in the spill kit: Tyvek suits, gloves, boots, face shields and safety glasses or goggles.

1.3.6. Waste of different compatibility types are stored in separate cells; smoking is prohibited in the CSF; non-ferrous metal tools are used; explosion proof lighting is installed; and there are no electrical outlets in the CSF.

1.4 Inspections and Maintenance

1.4.1. The spill control, fire and decontamination equipment is inspected in accordance with Attachment 4 (Inspection Plan).

1.4.2. If any of the spill control or decontamination equipment is incomplete or deficient the Environmental Management Division (EMD) will provide whatever is needed to maintain the

spill control equipment. EMD shall also initiate work orders to Engineering Services Division to repair or replace any decontamination equipment (emergency eye wash and shower).

2.0 PEP Container Storage Facilities – Bldgs. A101, C815, C816, 1368, 1370, 1205

2.1 Emergency Equipment

2.1.1. Internal communication and alarm functions are achieved by voice and by two-way radio. These facilities are small and voice is the most efficient method for alarm and internal communication. Generally, there are no more than two people working at these facilities at a given time.

2.1.2. Personnel, when working at any of these locations, are required to have a hand-held phone and/or two-way radio immediately available which can be used for summoning external assistance in an emergency.

2.1.3. Whenever personnel are working at any of these facilities, voice communications are used to communicate between those present. A portable two-way radio or a hand-held phone shall be within immediate reach for summoning external emergency assistance. If only one person is working at these facilities, a portable hand-held radio or hand-held phone shall remain within immediate reach for summoning assistance.

2.1.4. Each facility has a 10 lb. ABC chemical/electrical dry powder type of fire extinguisher. The location of the fire extinguishers is shown on the drawing of the structures in Appendix A. Portable showers are not provided because the Permittee has determined that they are not necessary.

2.1.5. Spill kits are not provided at the PEP storage facilities because liquid hazardous waste will not be stored at any of these facilities.

2.1.6. Portable showers and eyewashes are not provided because the Permittee has determined that they are not necessary.

2.2 Operating Requirements

2.2.1. A minimum of 2.5 feet of aisle space shall be maintained between stacks of pallets in these storage facilities. This space is sufficient to allow inspection of containers, use of spill control equipment and fire control equipment.

2.2.2. The Permittee shall maintain reciprocal agreements with area fire departments, law enforcement agencies and hospitals. A listing of the local authorities that the Permittee has agreements with is given in Appendix B. TEAD has its own fire department and security organizations, who will be the primary responders to emergencies. This plan and others dealing

with hazardous waste management are reviewed by these organizations so that they may become familiar with the hazards and properties of the materials and the facilities at TEAD.

2.2.3. Only fires that are outside of the PEP igloos are fought (i.e. grass fires, etc.) and these fires are fought with pumper trucks only. In general, the fire department will respond to fires in the ammo storage area igloos only to the quantity/distance line, beyond which shrapnel etc. is not expected to reach. Fires outside of ammunition storage igloos are not fought because of explosion danger. Water for refilling pumper trucks is available from water troughs and fire hydrants at distances ranging from 1000 to 3200 feet from the PEP CSFs.

2.3 Preventive Procedures, Structures, and Equipment

2.3.1. Proper techniques for transportation and handling as outlined in SOPs include grounding when exposed propellant is present, prohibition of smoking and open flames, prohibition of spark producing devices, and use of non-sparking tools and material handling equipment.

2.3.2. Run-off control is provided by the fact that the six PEP CSFs are totally enclosed and weather tight.

2.3.3. In the event of equipment failure or power outage, operations shall cease until the faulty equipment is either repaired or replaced.

2.3.4. Contamination of water supplies is prevented by minimizing the risk of discharge through frequent inspections, training, adherence to SOPs, and prompt cleanup of spills. All of the PEP CSFs are enclosed so that spilled solids will be contained.

2.3.5. Personnel working in these facilities are equipped with coveralls and leather gloves. Since the substances stored in these facilities are non-corrosive and have a low toxicity, other personal protective equipment is not normally used.

2.3.6. A system of fusible links provides some protection from fires outside of the igloos by closing air vents when the outside temperature becomes too high. Proper storage and handling techniques, as outlined in SOPs, include: grounding, prohibition of smoking and open flames, prohibition of any spark producing devices, and all cotton clothing to reduce static electricity accumulation. No electrical outlets or lighting are present in these facilities.

2.4 Inspections and Maintenance

2.4.1. The fire extinguishers are inspected in accordance with Attachment 4 (Inspection Plan). If a fire extinguisher is deficient the operator will provide a replacement.

3.0 Deactivation Furnace – Bldg. 1320

3.1 Emergency Equipment

3.1.1. The deactivation furnace is operated remotely from the control room. Personnel access to the inside of the concrete/metal walls around the furnace is restricted during processing of PEP items. Alarms (audible beeping, flashing lights on control board) are built into the automated control system which alerts the operators to emergency situations. Other personnel working in the area are alerted by voice communication.

3.1.2. A telephone is located inside the control room with an additional phone located outside of the facility on the northwest corner, which can be used for summoning external help or emergency assistance.

3.1.3. When the furnace is in use, employees shall have immediate access to communications and alarm systems by voice communication and telephone. While the Deactivation Furnace is operating (treating wastes) there will always be more than one person present.

3.1.4. Fire extinguishers of the dry powder type (ABC chemical/ electrical, rubbish) are present. The locations of the fire extinguishers are given in the drawing of Building 1320 in Appendix A.

3.1.5. No liquids are stored or treated at this facility and therefore only brooms and dust pans are provided for the collection of any ash that may spill onto the floor.

3.1.6. An eyewash will be present at all times during operation of the incinerator. A portable shower is not necessary because the wastes processed are relatively non-toxic and non-corrosive.

3.2 Operating Requirements

3.2.1. The layout of the equipment in Building 1320 is provided in the drawing in Appendix A. The equipment layout was designed to allow easy inspection, maintenance, and removal/replacement of the installed equipment. This spacing is also adequate for spill control activities. No combustible materials other than the fuel and feedstock items are present. The spacing is adequate for fighting fires of ordinary combustible materials (non-PEP materials). No PEP materials are stored at the facility. During operation, only the quantity of PEP materials that are to be processed that day, are brought to the feed room. If for some reason these items are not processed, they will be returned to a permitted PEP HW storage facility.

3.2.2. The Permittee shall maintain reciprocal agreements with area fire departments, law enforcement agencies and hospitals. A list of the local authorities that the Permittee has agreements with is given in Appendix B. TEAD has its own fire department and security organizations, which will be the primary responders to emergencies. This plan and others dealing with hazardous waste management are reviewed by these organizations so that they may become familiar with the hazards and properties of the materials and the facilities at TEAD.

3.2.3. Fires fueled by PEP materials or wastes are not fought because of safety reasons. Fires of ordinary combustible items are fought and the following water sources are available: hydrant No. 6 is located within 1600 ft. of the deactivation furnace and supplies 1325 gpm at 101 psi

static pressure. Pumper trucks are also available for firefighting, and there are several sources of water for refilling, if necessary.

3.3 Preventive Procedures: Structures and Equipment

3.3.1. Proper techniques for transportation and handling as outlined in SOPs include prohibition of smoking and open flames, prohibition of spark producing devices, and use of non-sparking tools and material handling equipment.

3.3.2. The facility is fully enclosed. Prior to each day's operation, the interior concrete floor is swept to collect any ash which might be present and the sweepings are managed as hazardous waste.

3.3.3. If problems develop with equipment or power failure, the feed conveyor shall be immediately stopped, and not started until the problems are corrected. Any items remaining in the retort will be processed in the normal manner. In the event of a total power outage, the furnace flame will go out and all conveyors will stop. Feed stock items shall be removed from the conveyor in the feed room. Any items in the retort would be incinerated due to the residual high temperature. If items are left on the conveyor between the retort and outside of the control room, they shall be left loaded and access shall be controlled by ammunition operations personnel until the furnace can be restarted and processing resumed. After the power is restored, the furnace will be restarted and the items in the retort will be collected by the discharge conveyor.

3.3.4. Contamination of water supplies is prevented by sweeping up any ash or residue from the retort room concrete floor, properly containerizing drums of hazardous waste residues, and promptly responding to spills or discharges. Frequent inspections and training also help to prevent contamination of water supplies.

3.3.5. Personnel working at the deactivation furnace are equipped with coveralls and leather gloves. Since the substances processed are non-corrosive and have a low toxicity, other personal protective equipment is not normally used. Spill kits are not provided at the deactivation furnace as no liquid hazardous wastes are present.

3.3.6. Proper techniques for transportation and handling as outlined in SOPs include prohibition of smoking and open flames, prohibition of spark producing devices, and use of non-sparking tools and material handling equipment. All electrical systems and equipment at the facility are explosion proof.

3.4 Inspections and Maintenance

3.4.1. The emergency equipment is inspected in accordance with Attachment 4 (Inspection Plan). The decontamination equipment (eyewash) shall be inspected and maintained by Ammunition Operations personnel.

4.0 Small Caliber Disassembly Line – Bldg. 1325 and 1335

4.1 Emergency Equipment

4.1.1. Internal communication and alarm is achieved by voice. The facilities are small and generally no more than eight people work in each facility at the same time.

4.1.2. A telephone is located in the office of each facility that would be used for summoning external help or emergency assistance.

4.2.3. Whenever the facilities are in use, employees will communicate by voice with others present. Employees will use the telephone for summoning external emergency assistance.

4.2.4. Portable fire extinguishers are located at each Small Caliber Disassembly Line as shown on the drawings of Buildings 1325 and 1335 in Appendix A.

4.2.5. A spill kit containing Tyvek suits, absorbent material, safety glasses or goggles, boots and gloves is located at each Small Caliber Disassembly Line. The locations of the spill kits is shown on the drawings of Buildings 1325 and 1335 in Appendix A.

4.2.6. An eyewash is located at each Small Caliber Disassembly Line. The location of the eyewashes is shown on the drawings of Buildings 1325 and 1335 in Appendix A.

4.2 Operating Requirements

4.2.1. The floor plan of Buildings 1325 and 1335 is shown on the drawings in Appendix A. The equipment layout in each building was designed to allow easy inspection, maintenance, removal and replacement of the installed equipment. The spacing is also adequate for spill control activities. No PEP materials are stored at the facilities. During operation, only the quantity of PEP materials that are to be processed that day are brought to the feed room. If, for some reason, these items are not processed, they will be returned to a permitted hazardous waste storage facility.

4.2.2. The Permittee shall maintain reciprocal agreements with area fire departments, law enforcement agencies and hospitals. A listing of the local authorities that the Permittee has agreements with is given in Appendix B. TEAD has its own fire department and security organizations, which will be the primary responders to emergencies. This plan and others dealing with hazardous waste management are reviewed by these organizations so that they may become familiar with the hazards and properties of the materials and the facilities at TEAD.

4.2.3. Fires fueled by PEP material or wastes are not fought because of safety reasons. Fires of ordinary combustible items are fought and two primary water sources are available, one for each disassembly line building. For building 1325 a hydrant is located just outside the gate to the facility within a few hundred feet of the structure and supplies 1653 gpm at 20 psi of static

pressure. Building 1335 has a hydrant 50 feet directly east which supplies 1653 gpm at 20 psi of static pressure. Pumper trucks are also available for firefighting.

4.3 Preventative Procedures, Structures, and Equipment

4.3.1. Proper techniques for transportation and handling as outlined in SOPs include prohibition of smoking and open flames, prohibition of spark producing devices, and use of non-sparking tools and material handling equipment.

4.3.2. The Small Caliber Disassembly Lines are totally enclosed and weather tight. All spills shall be immediately cleaned up.

4.3.3. If problems develop with equipment or power failure, the process shall be halted and not started until the problems are corrected.

4.3.4. Contamination of water supplies is prevented by sweeping up any residue or propellant from the disassembly room concrete floor, properly containerizing all materials and waste, and promptly responding to all spills and discharges.

4.3.5. Personnel working at the Small Caliber Disassembly Lines are equipped with coveralls, leather gloves, and conductive soled shoes. Since the substances processed are non-corrosive and have a low toxicity, other personal protective equipment is not normally used. In the event of a spill, Tyvek suits, safety glasses or goggles, gloves and boots are available in the spill kit.

4.3.6. Proper techniques for transportation and handling as outlined in SOPs include grounding of exposed propellant, prohibition of smoking and open flames, prohibition of spark producing devices, and use of non-sparking tools and material handling equipment. All electrical systems at the facility are explosion proof.

4.4 Inspection and Maintenance

4.4.1. The spill control, fire, and decontamination equipment are inspected in accordance with Attachment 4 (Inspection Plan).

4.4.2. If any of the spill control or decontamination equipment is incomplete or deficient the Operators will provide whatever is needed to maintain the spill control equipment. The decontamination equipment (eyewash) shall be inspected and maintained by the Ammunition Operations personnel.

5.0 Open Burn/Open Detonation (OB/OD) Unit

5.1 Internal Communications

5.1.1. The OB/OD Area is serviced with a mobile telephone and a two-way radio. The telephone and the two-way radio are maintained in good working order and checked by Demil Team personnel prior to going to the area.

5.2 External Communications

5.2.1. Communications with off-site emergency agencies shall be conducted by the Installation On Scene Coordinator (IOSC) or the On Scene Commander (OSC). These personnel shall be contacted by the Demil Planner, who shall be contacted by portable radio and/or mobile telephone by the Demil Team Leader.

5.3 Fire and Spill Control

5.3.1. Firefighting equipment is readily available at the OB/OD area during operations. The equipment consists of hand tools and fire extinguishers. Additional emergency equipment is stored at the TEAD Fire Department. This equipment includes respirators, protective clothing, fire extinguishers, and first aid kits. TEAD Fire Department personnel, trained in responding to hazardous materials emergencies, have ready access to the area and are dispatched to the scene in case of emergency.

5.3.2. Prior to beginning OB/OD operations, the Demil Team Leader or his designated representative shall arrange to have the areas around the operations site cleared of vegetation. Firebreaks are cut around and within the OB/OD area. Access roads serve as firebreaks. After each burn/detonation, the area is swept for fires.

5.3.3. Workers are not allowed to engage in fire fighting if the size or condition of the fire would endanger their life or health.

5.3.4. In addition, the TEAD Fire Department stores and maintains an inventory of spill control and containment materials. This includes shovels, overpack drums and specialized tools. Large quantities of absorbent socks, pads, mats, sheets, bales, pillows, and pulp are also stored in the Fire Station.

5.3.5. The TEAD Fire Prevention and Protection Branch responds to fires and provides the initial response. They evacuate and assess the area. Meanwhile, the members of the TEAD Fire Department start decontamination procedures.

5.4 Equipment Testing and Maintenance

5.4.1. Preparedness and prevention equipment is inspected in accordance with Attachment 4 (Inspection Plan).

5.5 Contingency Arrangements and Coordination Agreements

5.5.1. The Permittee shall maintain reciprocal agreements with area fire departments, law enforcement agencies and hospitals. A listing of the local authorities that the Permittee has agreements with is given in Appendix B of this plan. TEAD has its own fire department and security organizations, which will be the primary responders to emergencies. This plan and others dealing with hazardous waste management are reviewed by these organizations so that they may become familiar with the hazards and properties of the materials and the facilities at TEAD.

5.5.2. The IOSC is the primary emergency authority. All decisions concerning the type of emergency response (i.e., firefighting technique, traffic control, medical treatment, isolation/evacuation requirements, air sampling, spill containment/cleanup) are made by the IOSC and the emergency response team members.

5.5.3. Ambulance Support is provided by the TEAD Fire Department 24 hours per day every day of the year.

5.6 General Hazard Prevention

5.6.1 Loading and Unloading Operations

5.6.1.1. Motor vehicles and mobile heavy equipment used for transporting ammunition or explosives are operated in accordance with the following procedures:

5.6.1.1.1. The motor is not started while a magazine door is open. Magazine doors are closed when a vehicle approaches within 25 feet, until the motor is turned off.

5.6.1.1.2. Prior to unloading, vehicles are turned off, parking brake is set, and wheels are chocked. Only then are explosive packages, components, and ordnance removed from the vehicle.

5.6.1.1.3. During unloading operations compatibility requirements are maintained. Any unloaded initiator, combustible material and fuels are positioned a safe distance from explosives or ordnance.

5.6.1.1.4. Explosives and ammunition are not unloaded or piled immediately in back of the exhaust system of the transporting vehicle.

5.6.1.1.5. All explosive and ordnance containers are spotted and opened at least 10 feet from each other and from previously laid material.

5.6.1.1.6. Packages are opened only when the vehicle is out of the area.

5.6.1.1.7. When the vehicle is completely unloaded, it is withdrawn from the area to a safe location, until completion of the demolition.

5.6.1.2. Items transported to the OB/OD area are stabilized in boxes filled with sand. Items are packaged in containers of strength equal to or greater than those described in 49 CFR Part 173 Subpart C – Explosives and Blasting Agents; Definition and Preparation. Containers are then transported to the OB/OD Area by Demil Team personnel in government-operated vehicles and offloaded at the silos, pits or burn pans. All containers shall be securely stowed to prevent movement during transport. During transport, all vehicles are operated according to strict adherence to U.S. Department of Transportation (DOT) motor courier, state, Army, and local regulations. Drivers are furnished with DD Form 836 (Special Instructions for Motor Vehicle Drivers) which describes the nature of the explosives on the truck, the fire hazards, the methods to be used in fighting fires involving the truck or cargo, the minimum distance in case of explosion, proper distance to maintain from other trucks, and any other information that will bring about safe delivery of the shipment to its destination. Army regulations require that the form be transferred to each subsequent driver and finally to the consignee at the destination. Transport vehicles are removed from the hazard area before the containers are opened.

5.6.2 Runoff

5.6.2.1. No hazardous wastes are present at the burn pans, silos or pits except during operations.

5.6.2.2. OB/OD operations shall not be conducted during periods of precipitation or during flooding.

5.6.3 Water Supplies

5.6.3.1. No known drinking water supplies are located within a mile of the OB/OD area.

5.6.4 Equipment and Power Failures

5.6.4.1. Power outages and lighting strikes are not anticipated to be a cause of problems at the OB/OD Unit. OB/OD operations do not require a permanently installed outside source of electric or other power; therefore, the facility is not subject to power failures. All OB/OD operations are halted or canceled during an electrical storm. Additionally, treatment operations using an electrical firing system are not conducted during sand, dust, or snowstorms. Other natural weather phenomena, such as high winds, are potential problems and are closely monitored. OB/OD operations are conducted only within well-defined weather conditions as specified in Module VI and Attachment 16 (Open Burning Open Detonation Operation).

5.6.4.2. If a truck breaks down and cannot be towed to its destination, a guard will be stationed at the truck site. The Permittee will dispatch a truck at once with loading personnel to transfer the load to a replacement vehicle.

5.6.5 Personnel Protection Procedures

5.6.5.1. The handling of waste explosives is conducted in a manner that minimizes contact of involved personnel with the waste. All handling operations and requirements for protective clothing are in accordance with SOPs. Protective clothing includes explosive handler coveralls, steel-toed safety shoes and safety glasses. Additional equipment may be required by a specific SOP for a particular ordnance item.

5.6.6 Prevention of Accidental Ignition or Reaction of Waste

5.6.6.1. All hazardous materials and hazardous wastes handled at the Facility OB/OD Area are assumed to be reactive, since they are military ordnance and only reactive wastes may be treated at the site. Non-reactive wastes are not treated at the OB/OD Area. All personnel working in the OB/OD Area must take all appropriate measures to prevent incidents that generate uncontrolled extreme heat or pressure, fire or explosions or violent reactions; produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment; produce uncontrolled inflammable fumes or gases in sufficient quantities to pose a risk of fire or explosion; or through any other means, threaten human health or the environment.

5.6.6.2. OB/OD operations generate heat, pressure (shock waves), explosions, and violent reactions. The intent of the OB/OD operations is to initiate these phenomena in a controlled setting. The means to prevent unintended reactions is provided through the establishment of safety guidelines implemented through SOPs. As summarized below, the safety guidelines include, but are not limited to, the following:

5.6.6.2.1. Unauthorized ignition sources such as flame-producing devices are prohibited at the OB/OD area at any time;

5.6.6.2.2. Sparking equipment and tools are prohibited near explosive materials unless specifically authorized by the Demil Supervisor;

5.6.6.2.3. All hand tools and mechanical devices are inspected prior to use to ensure their safety;

5.6.6.2.4. Motor vehicles used to transport waste explosives, ammunition, or other material meet the requirements of TE-0000-R-354;

5.6.6.2.5. OB/OD operations cease during electrical storms, rain, or snowstorms;

5.6.6.2.6. The material is protected against accidental ignition or explosion from fragments, grass fires, burning embers, or the impulse associated with materials being detonated;

5.6.6.2.7. Dry grass, leaves and flammable/combustible materials are removed from around the OB/OD area;

5.6.6.2.8. Initiators (e.g., blasting caps, primers) and explosives are packaged, transported, and handled separately until placement for treatment; or

5.6.6.2.9. Engines of transport vehicles are turned off prior to the unloading of munitions.

5.6.6.3. These procedures are in use at various Department of Defense OB/OD operations throughout the country. Experience has shown that when they are followed, the danger of accidental detonation or combustion is negligible.

6.0 Hydrolysis Facility, Building 1400

6.1 Emergency Equipment

6.1.1. Alarms (audible beeping, alarm messages on control screens) are built into the automated control system alerting the operators to emergency situations. Internal communication and alarm is achieved by voice. The facility is small and generally no more than eight people work in the facility at the same time.

6.1.2. A telephone is located in the office of the facility that shall be used for summoning external help or emergency assistance.

6.1.3. Whenever the facility is in use, employees will communicate by voice with others present. Employees shall use the telephone located in the office for summoning external emergency assistance.

6.1.4. Portable fire extinguishers are located at the Hydrolysis Facility as shown on the drawing of Building 1400 in Appendix A.

6.1.5. A spill kit containing Tyvek suits, absorbent material, gloves, boots, face shields, and safety glasses or goggles is located at the Hydrolysis Facility. The location of the spill kit is shown on the drawing of Building 1400 in Appendix A.

6.1.6. An eyewash and shower is located at the Hydrolysis Facility. The locations of the eyewash and shower are shown in the drawing of Building 1400 in Appendix A.

6.2 Operating Requirements

6.2.1. The floor plan of the Hydrolysis Facility is shown in the drawing of Building 1400 in Appendix A. The equipment layout was designed to allow easy inspection, maintenance, removal and replacement of the installed equipment. The spacing is also adequate for spill control activities. No PEP materials are stored at the facility. During operation, only the quantity of PEP materials that are to be processed that day are brought to the facility. If, for

some reason, these items are not processed, they will be returned to a permitted hazardous waste storage facility.

6.2.2. The Permittee shall maintain reciprocal agreements with area fire departments, law enforcement agencies and hospitals. A listing of the local authorities that the Permittee has agreements with is given in Appendix B. TEAD has its own fire department and security organizations, who will be the primary responders to emergencies. This plan and others dealing with hazardous waste management are reviewed by these organizations so that they may become familiar with the hazards and properties of the materials and the facilities at TEAD.

6.2.3. Fires fueled by PEP material or wastes are not fought because of safety reasons. Fires of ordinary combustible items are fought and two primary water sources are available. A hydrant is located just out the gate to the facility within a few hundred feet of the structure and supplies 1325 gpm at 101 psi of static pressure. Pumper trucks are also available for firefighting. Building 1400 is also equipped with an automatic dry powder fire suppression system.

6.3 Preventative Procedures, Structures, and Equipment

6.3.1. The same procedures and equipment used for unloading at the PEP CSFs are also used at the Hydrolysis Facility. These include: use of spotters for movement of PEP, non-sparking lifts and hand tools, grounding, explosive safety training, refresher training, and on-the-job training.

6.3.2. The Hydrolysis Facility is totally enclosed and weather tight. All spills will be immediately cleaned up.

6.3.3. The facility shall be supported with a back-up generator to ensure ventilation systems remain online in the event of a power failure.

6.3.4. Contamination of water supplies is prevented by the utilization of secondary containment on the hydrolysis, rinse and NAOH product tanks; sweeping up any residue or propellant from the disassembly room concrete floor; properly containerizing all materials and waste; and promptly responding to all spills and discharges.

6.3.5. Personnel working at the Hydrolysis Facility are provided chemical resistant aprons, rubber and leather gloves, face shield, boots, and conductive soled shoes. In the event of a spill, Tyvek suits, gloves, boots, face shields and safety glasses or goggles are available in the spill kit.

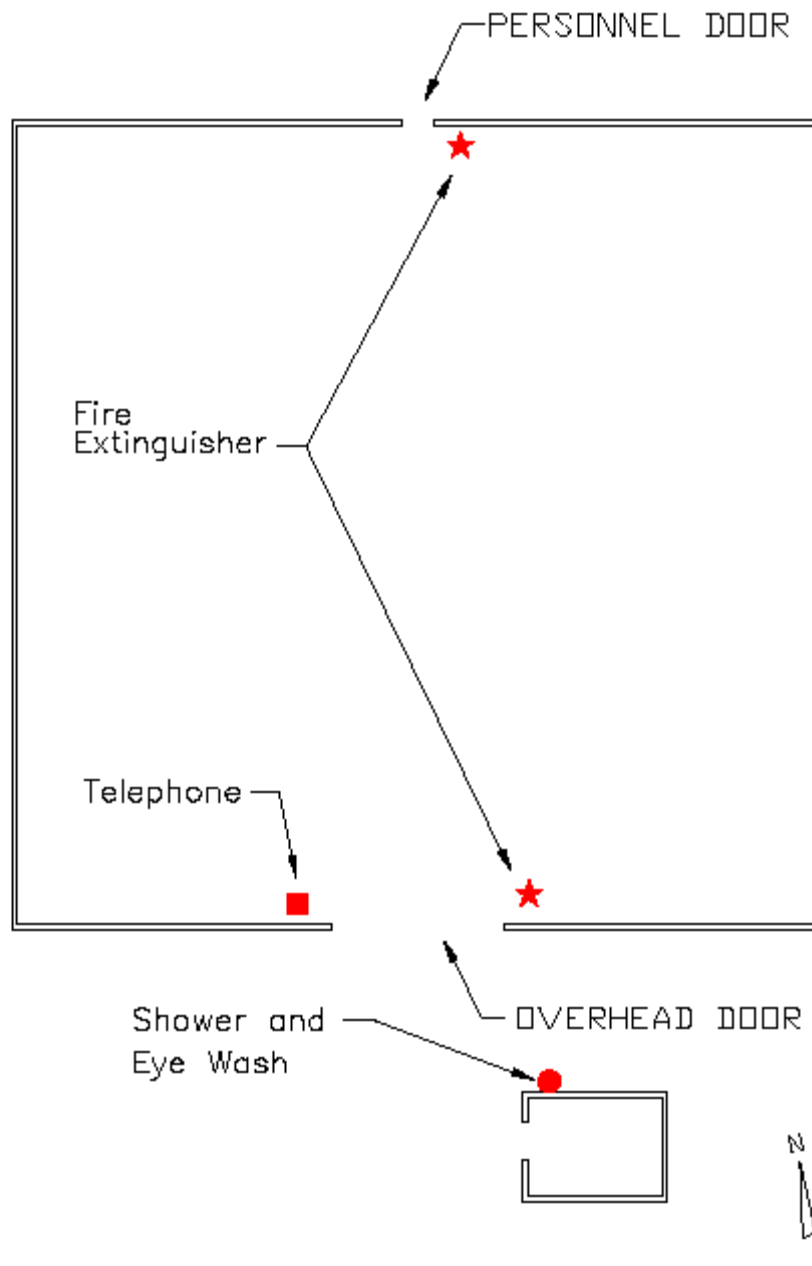
6.3.6. Proper techniques for transportation and handling as outlined in SOPs include grounding, prohibition of smoking and open flames, prohibition of spark producing devices, and use of non-sparking tools and material handling equipment. The ventilation system, which is supported by a back-up generator, ensures hydrogen emissions are maintained below the explosive limit.

6.4 Inspection and Maintenance

6.4.1. The spill control, fire, and decontamination equipment are inspected in accordance with Attachment 4 (Inspection Plan).

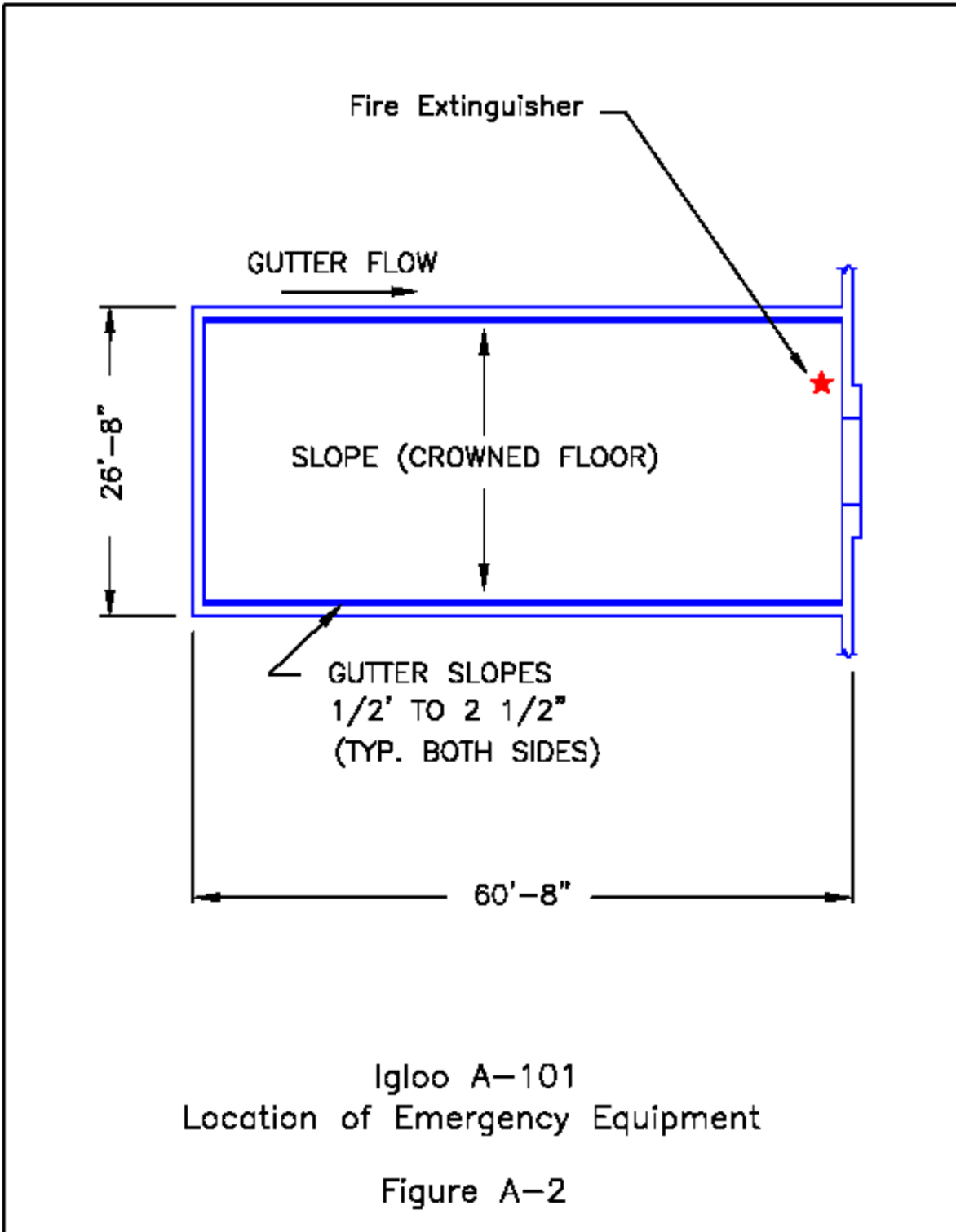
6.4.2. If any of the spill control or decontamination equipment is incomplete or deficient the Operator will provide whatever is needed to maintain the spill control equipment. The decontamination equipment (eyewash and shower) will be inspected and maintained by the Ammunition Operations personnel.

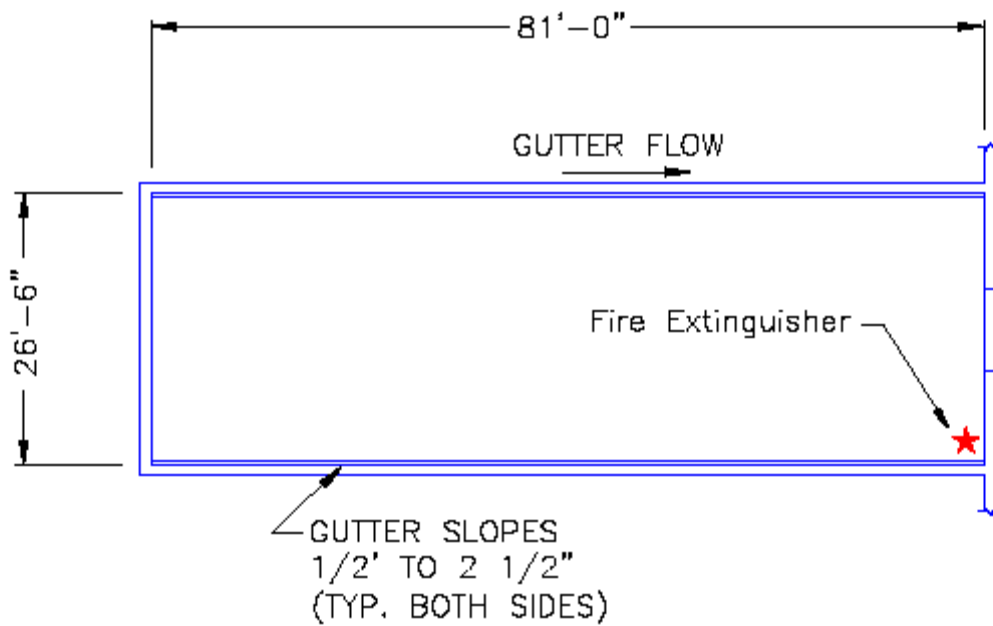
Appendix A
Location of Emergency Equipment



BUILDING 528
 TEAD CONTAINER STORAGE FACILITY
 LOCATION OF EMERGENCY EQUIPMENT

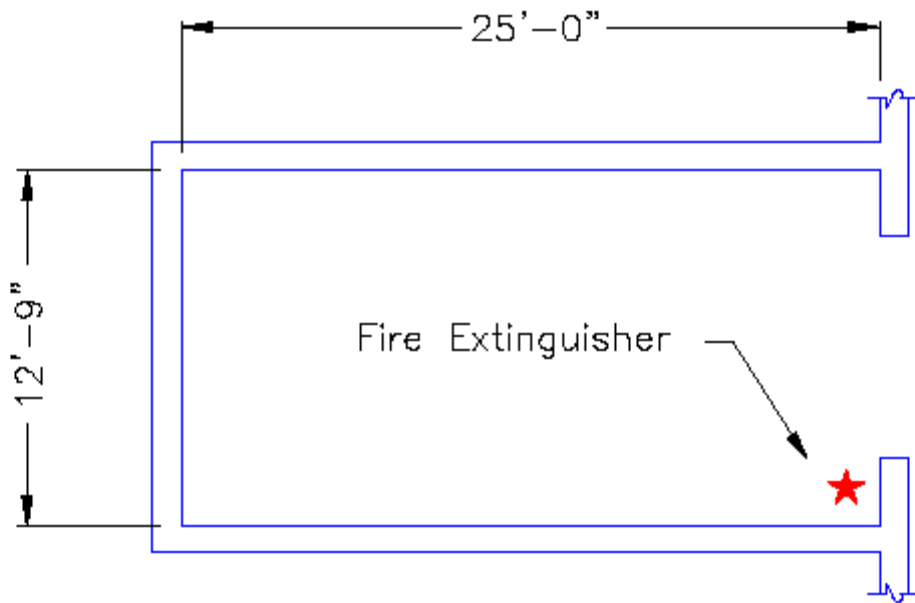
Figure A-1





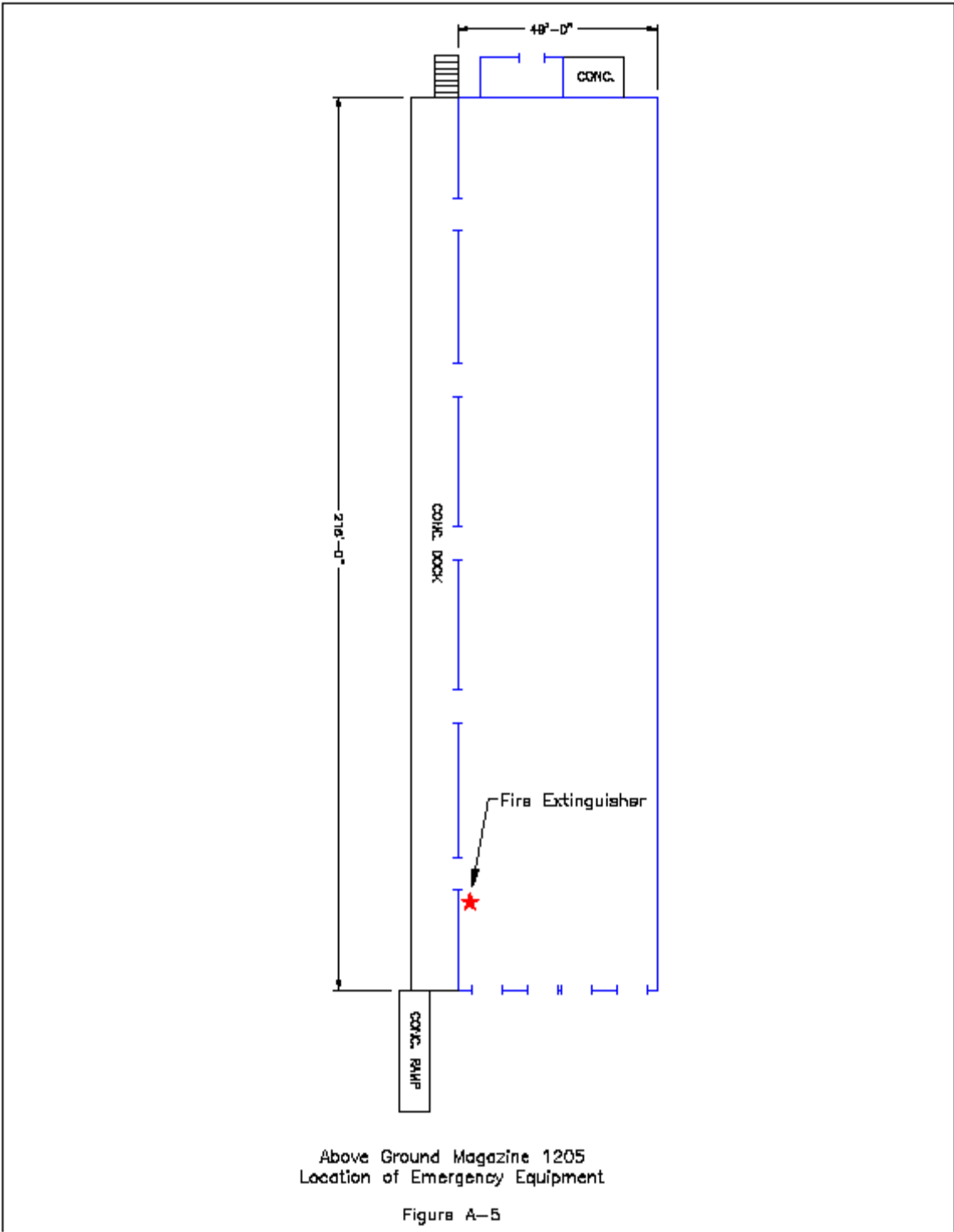
Igloo C-815 & C-816
 Location of Emergency Equipment

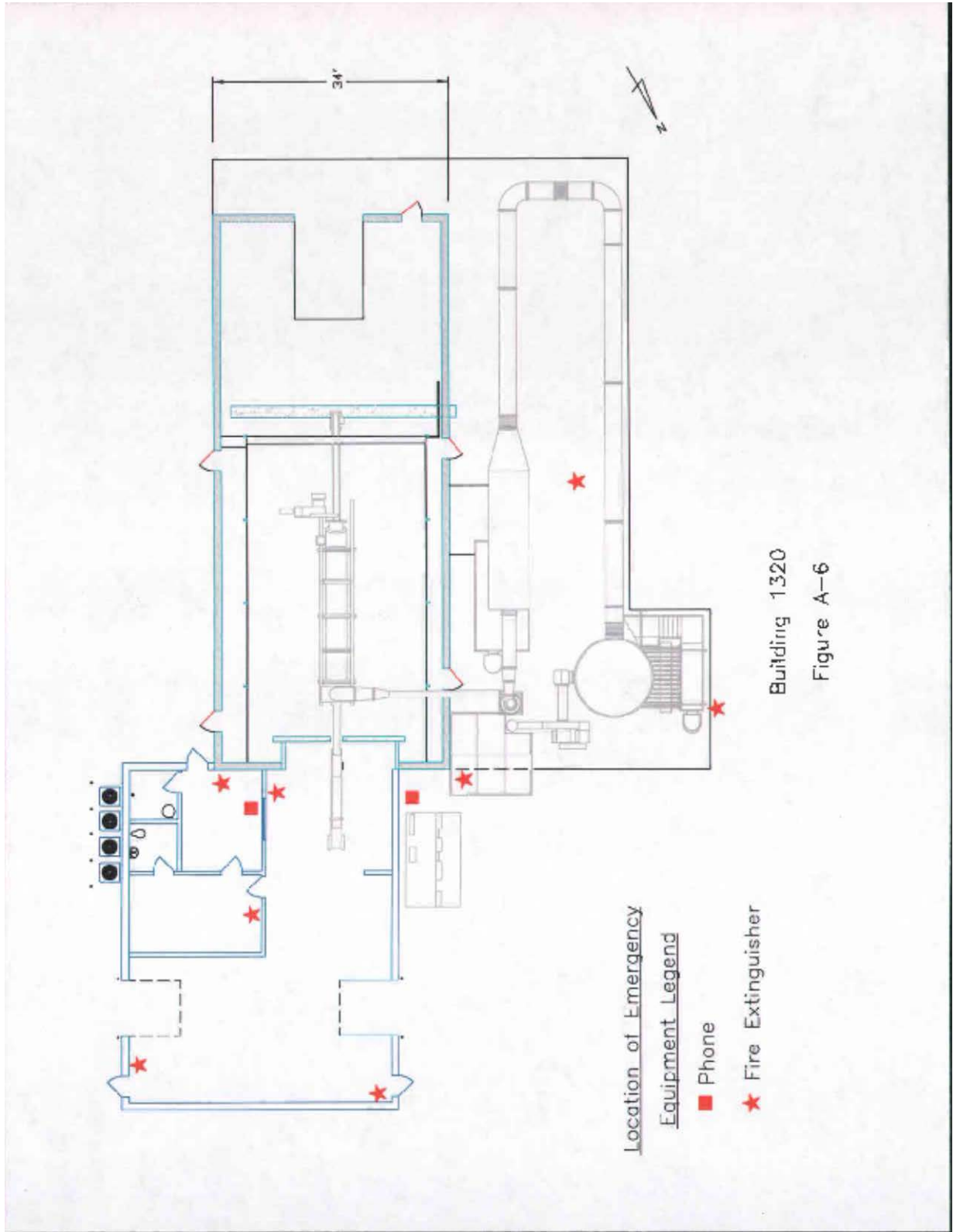
Figure A-3

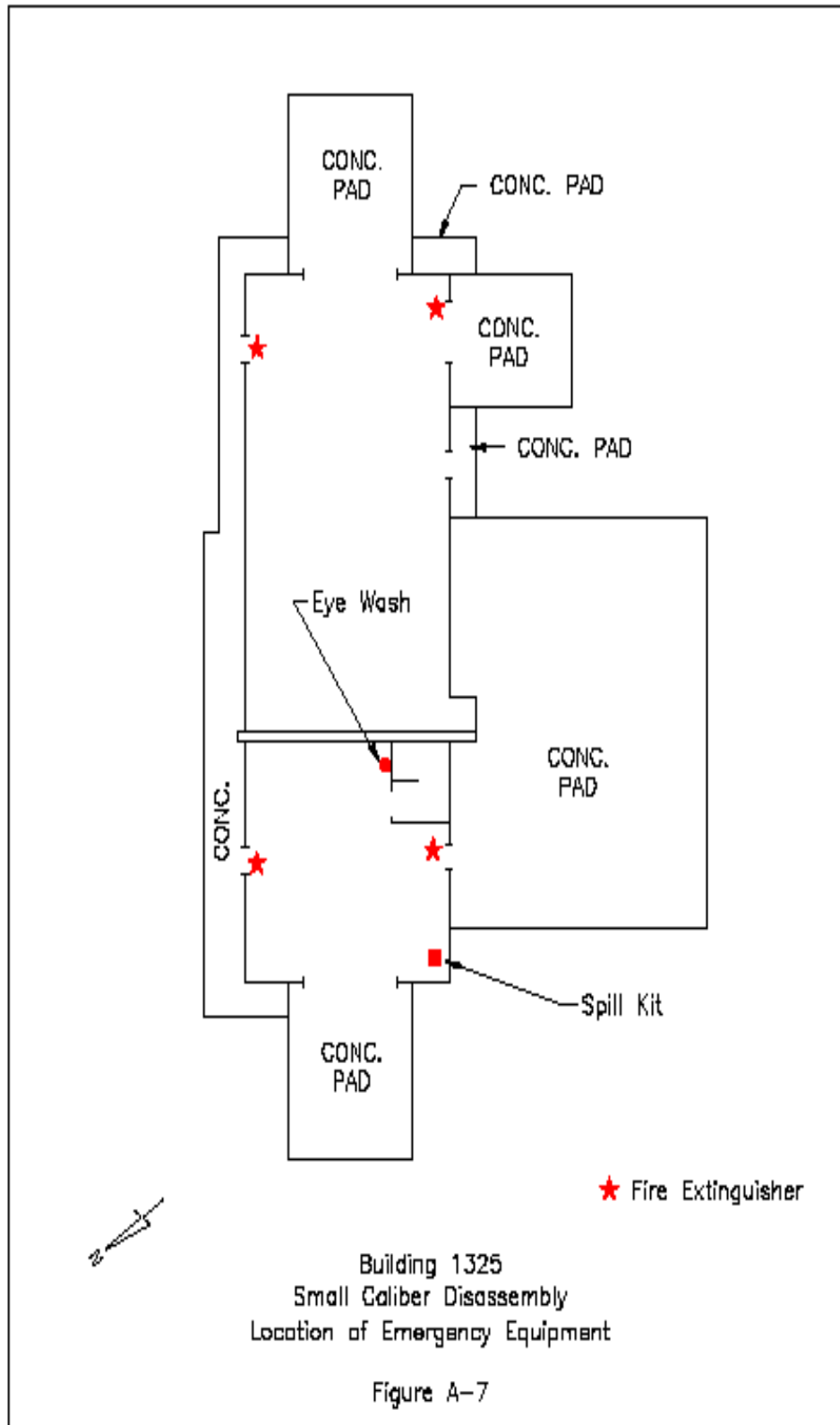


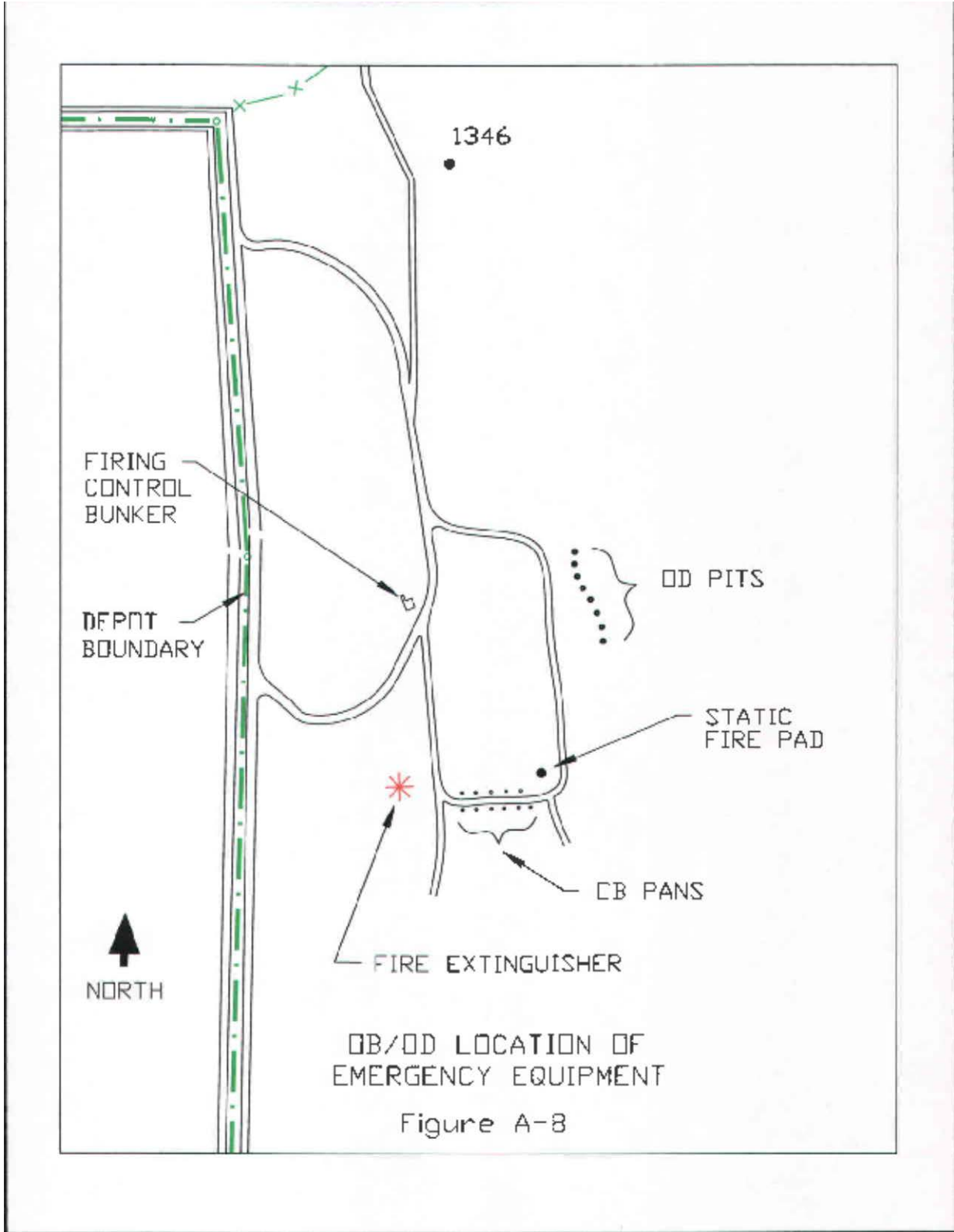
Service Magazines 1368 & 1370
Location of Emergency Equipment

Figure A-4

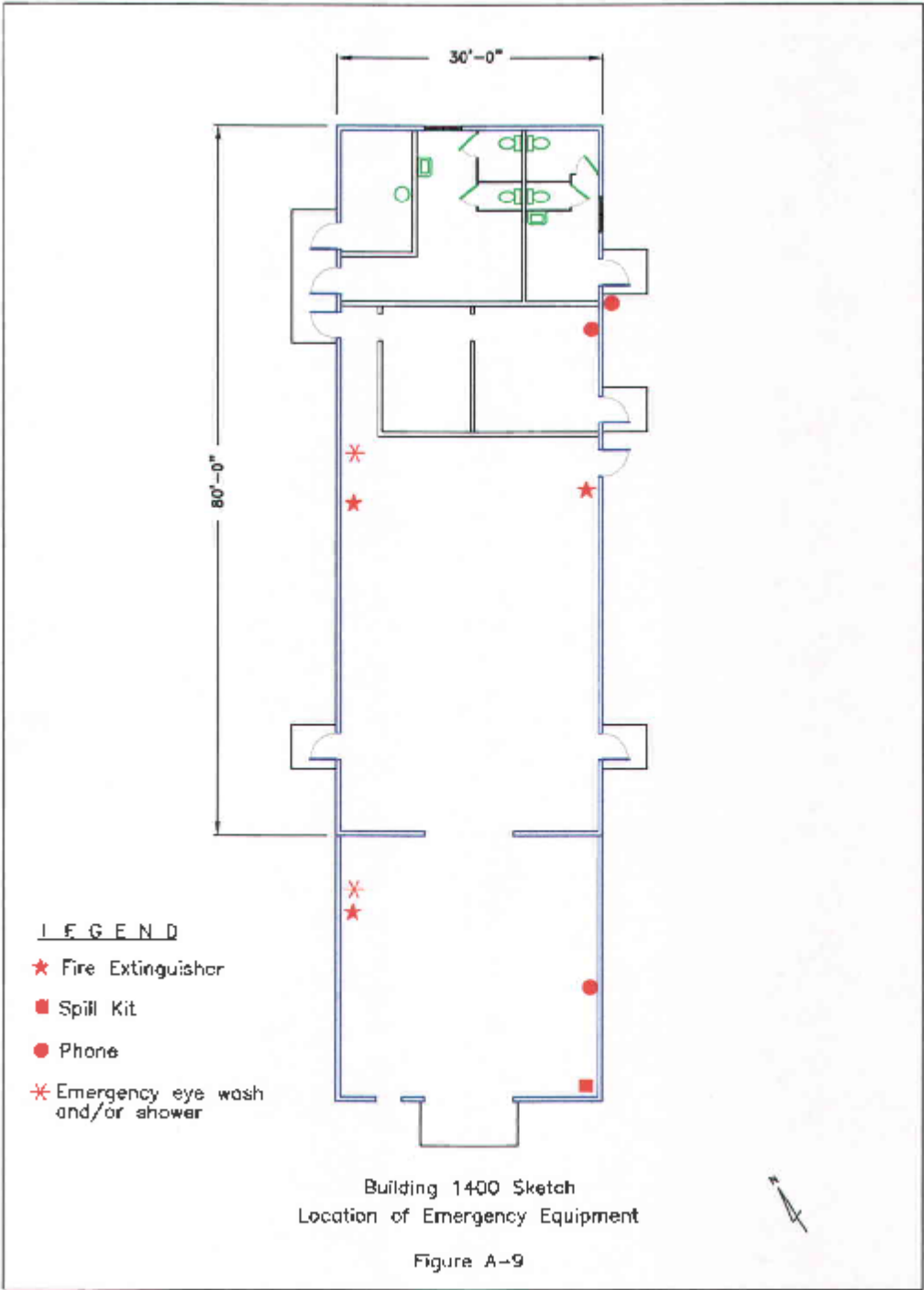


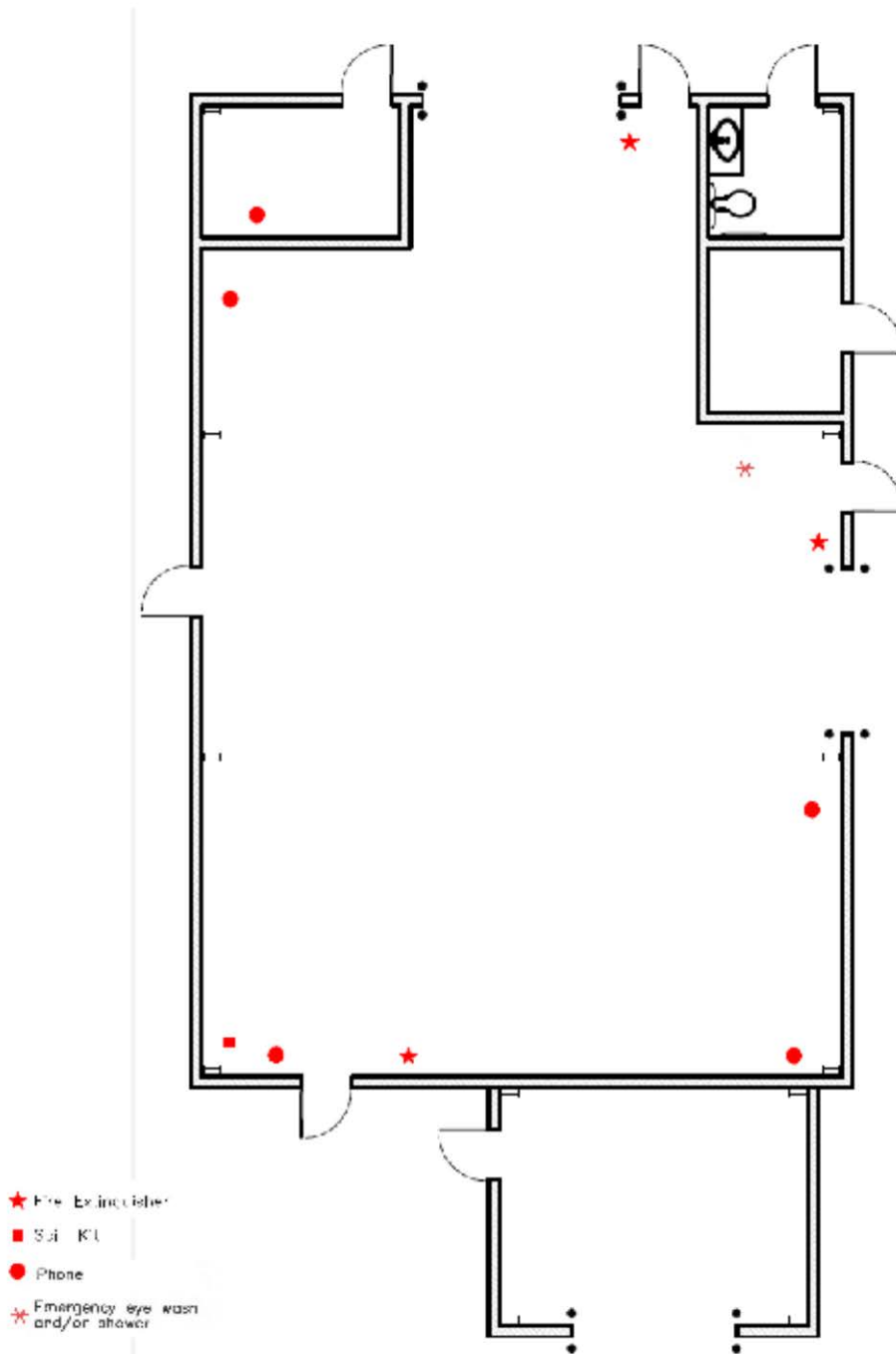






OB/OD LOCATION OF
EMERGENCY EQUIPMENT
Figure A-8





FLOOR PLAN BLDG. 1335

Small Caliber Disassembly
 Location of Emergency Equipment

Figure A-11

Appendix B

List of Reciprocal Agreements

Medical

- Mountain West Medical
- IHC Health Services, INC
- University of Utah Hospital
- MEDCOM

Fire

- Tooele City Fire Department
- Stockton Fire Department
- North Tooele County Fire Department
- Dugway Proving Ground Fire Department
- Grantsville City Fire Department

Law Enforcement

- Tooele City Law Enforcement

ATTACHMENT 7

HAZARDOUS WASTE CONTINGENCY PLAN

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Definitions

TEAD: Tooele Army Depot, the Facility.

EO: Environmental Office, the organization at TEAD responsible for managing all environmentally related programs at the installation. The EO will report spills to agencies if required.

HWCP: Hazardous Waste Contingency Plan, a plan which specifies how all types of emergencies in which hazardous wastes or substances are involved will be mitigated.

IOSC: Installation On Scene Coordinator, the individual who is responsible for assessing the potential impact of an incident and coordinating the deployment of personnel and equipment for mitigation and reporting the incident to the EO.

OSC: On Scene Commander, the individual who directs the actual cleanup operations at the site of the incident. This role is filled by the on duty Fire Department supervisor for emergency incidents.

HAZMAT TEAM: Fire Department personnel who are the most highly trained individuals of the Incident Response Team. This team has the responsibility of making emergency entries into hazardous areas to mitigate emergency incidents involving hazardous substances.

EOC: Emergency Operations Center, a facility located in building 1246 at TEAD which is designed and equipped for directing and coordinating response operations for all types of emergencies.

EOC Operations Officer: Acts as the IOSC and reports to the EOC in the event of an emergency incident.

ICS: Incident Command System, a standardized system of organization, terminology, and resource identification for efficient control of emergency situations.

PAO: Public Affairs Officer, the person who is authorized and given the responsibility for releasing information to the public, media, etc.

ISCP: Installation Spill Contingency Plan, a required plan (40 CFR 300) for cleanup of discharges of oil and hazardous substances. An ISCP is also required by Army Regulation AR 200-1.

HAZARDOUS WASTE CONTINGENCY PLAN

1.0 General Information

1.1 Introduction

1.1.1. A number of State and Federal regulations have been promulgated which require various plans to respond to spills of hazardous substances. The National Oil and Hazardous Substances Contingency Plan (40 CFR 300) requires federal agencies to develop a plan to respond to discharges of oil and hazardous substances for which they are responsible. The Utah Hazardous Waste Management Rules require facilities storing or treating hazardous waste to develop a contingency plan for the release of hazardous waste. Other State statutes require similar plans. This plan incorporates the requirements from the various regulations into one plan as they apply at the Facility.

1.2 Purpose

1.2.1. This plan establishes the duties, responsibilities, resources, and procedures to be employed for mitigation and cleanup of hazardous substance or waste spills, fires, and explosions at the Facility. This plan identifies the Installation On Scene Coordinator (IOSC), the On Scene Commander (OSC), and the Hazardous Material (HAZMAT) Team. This plan also identifies Army resources that may be available to the Regional Response Team (RRT) for assistance in cleaning up non-Army spills.

1.3 Scope

1.3.1. This plan addresses the following permitted Hazardous Waste Management Units (HWMUs) at the Facility: Container Storage Facilities (Building 528, A-101, C-815, C-816, 1368, 1370, and 1205), the Deactivation Furnace (Building 1320), the Small Caliber Disassembly Line (Buildings 1325 and 1335), the Open Burn/Open Detonation Facility and the Hydrolysis Facility (Building 1400).

1.4 Type of Installation

1.4.1. TEAD is a government-owned government-operated (GOGO) facility. The current major functions of the Facility are as follows:

- 1.4.1.1. Storage, surveillance, maintenance, and distribution of conventional munitions and other military supplies, and
- 1.4.1.2. Researching and developing new methods for demilitarization of all types of munitions

1.4.2. The current tenant activities at the Facility are:

U.S. Army Corps of Engineers

U.S. Army Health Clinic
Utah Industrial Hygiene Section
Air Force Reserve Ammunition Team
Civilian Personnel Advisory Center

1.5 Name/Address/Telephone Number of Owner/Operator

Installation – Government Staff:

Name: Tooele Army Depot

Address: Tooele Utah, 84074

Telephone Number: (801) 833-3504 (Environmental Office)

Installation's Major Subordinate Command

Name: Joint Munitions Command

Address: Rock Island, Illinois

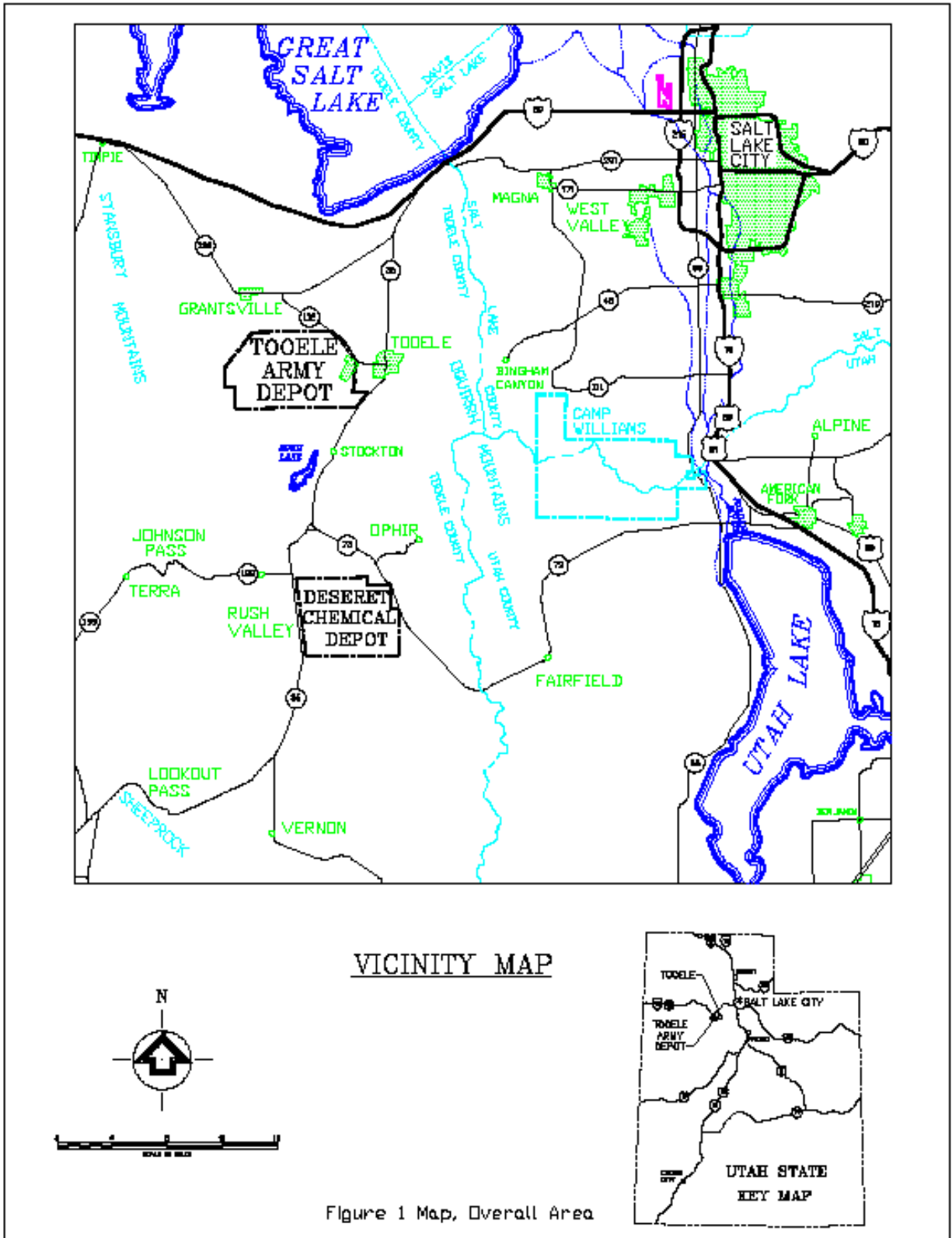
Telephone Number: (309) 782-0080

Installation's Major Command

Name: Army Material Command

Address: Fort Belvoir, Virginia 22060

Telephone Number: (703) 806-8726 (Env. Office)



1.6 Location of Installation

1.6.1. The Facility is located in the north-central portion of the state of Utah in eastern Tooele County. The installation lies about three miles south of the town of Tooele, and is about forty miles south and west of Salt Lake City. The location is indicated on Figure 1.

1.7 Surveillance Procedures for Early Detection of Spills

1.7.1. The surveillance function for the early detection of spills at the Facility will be accomplished by the following organizations: Area workers at potential spill sites, Fire Department (HAZMAT Team), and Installation Security. These personnel have been trained to observe these locations throughout the day during their normal duties. In addition to these groups, other personnel including environmental inspectors, maintenance, engineering, and transportation personnel will make observations while performing their regular duties.

1.8 Arrangements Agreed to by Local Agencies:

1.8.1. The Facility has its own law enforcement, medical, and Fire Department organizations located on the installation. These organizations will be the first responders for emergencies occurring at the Facility. These organizations have been provided copies of this plan and other related plans so that they are informed about the types of hazards present, the layout of the facilities, and evacuation routes.

1.8.2. In addition, the Permittee has entered into mutual assistance agreements with other local emergency, medical, and law enforcement agencies. Copies of these agreements are located in Attachment 6 (Preparedness and Prevention Plan).

1.8.3. Copies of this Contingency Plan are given to all of the TEAD organizations identified in the plan and the local agencies that the Permittee has support agreements with. The names and phone numbers of the local agencies are listed below:

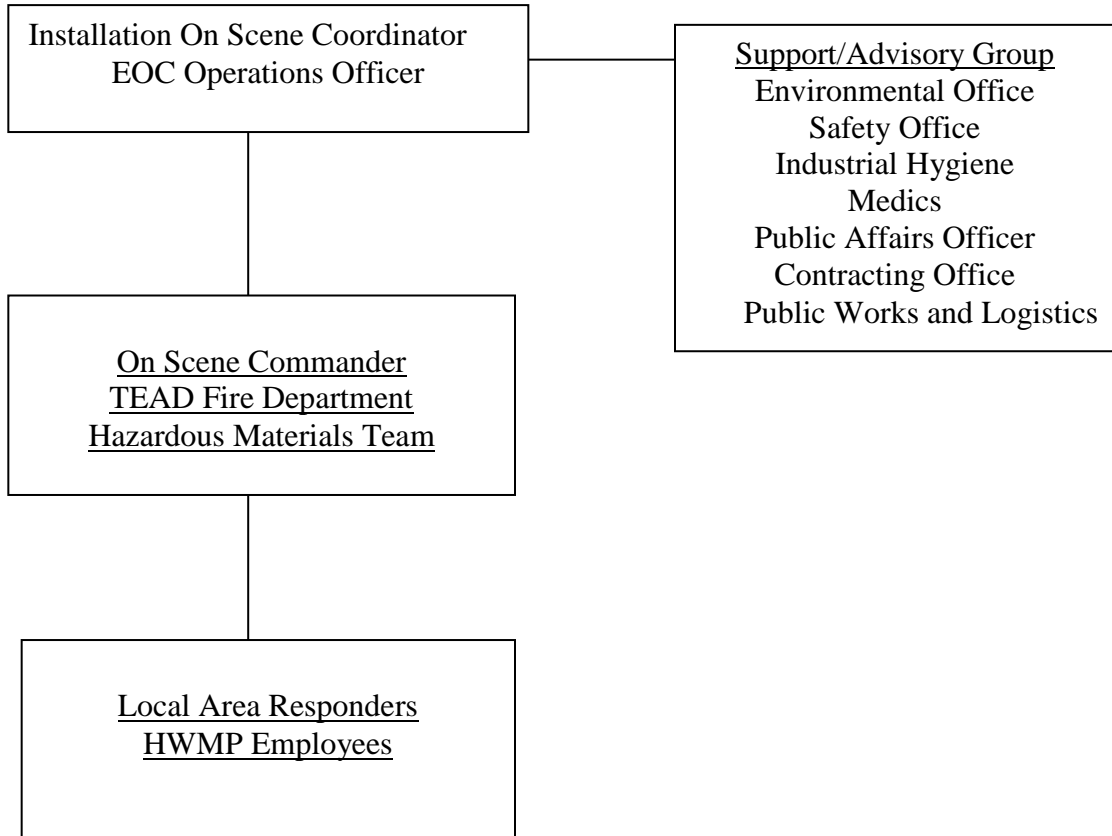
Tooele City Fire Department	(435) 882-5600
North Tooele County Fire Department	(435) 882-5600
Stockton Fire Department	(435) 882-5600
IHC Health Services, Inc.	(801) 357-7850
University of Utah Hospital	(801) 581-2121
Mountain West Medical Center	(435) 843-3601
Tooele City Law Enforcement.....	(435) 882-5600
Dugway Proving Ground Fire Department.....	(435) 831-2236
Grantsville City Fire Department.....	(435) 884-3343

1.9 Installation On-Scene Coordinator (IOSC)

1.9.1. The IOSC has been designated by the TEAD command group to be the Emergency Operations Center (EOC) Operations Officer. The IOSC will function as the facility emergency coordinator. The responsibilities of the IOSC include: assessment of the spill, requesting for additional manpower and resources, coordination of mitigation and cleanup. The IOSC will be supported as necessary by the

Advisory/Support Group, see Figure 2. Further information about the duties of the Advisory/Support Group is given in Section 2.2. The IOSC along with the alternates are specified in Appendix A.

EMERGENCY RESPONSE



INCIDENTAL (NON-EMERGENCY) RELEASE RESPONSE

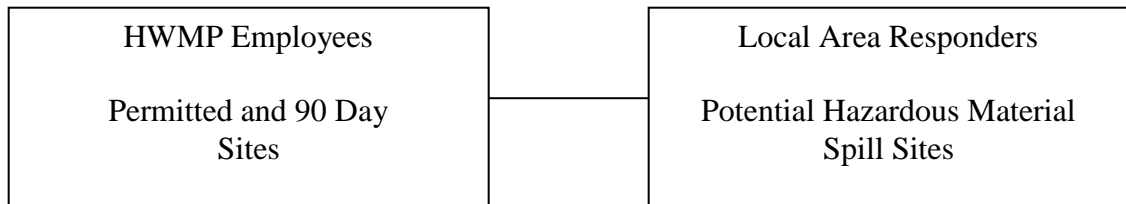


Figure 2. Emergency / Non-Emergency Response Duties

1.10 Review and Amendment of Plan

1.10.1. This plan will be reviewed and amended if necessary when any of the following conditions exist:

- 1.10.1.1. The facility hazardous waste operating permit is modified.
- 1.10.1.2. The plan fails in actual use during an emergency.
- 1.10.1.3. The design, operation, or construction of the facility changes in such a way as to cause an increased potential for fires, explosions, or releases of hazardous material or waste, or changes the response necessary in an emergency.
- 1.10.1.4. The list of emergency coordinators or emergency equipment changes.

2.0 Spill Response

2.1 Initial Response Actions

2.1.1. The Primary concern in any spill scenario is the protection of personnel from harm. This protection can be accomplished by evacuating the area, using appropriate clothing and personnel protective equipment, and removing sources of ignition if fire or explosion hazards exist.

2.1.2. The overall spill response procedure is shown in Figure 3. Whoever first discovers a spill shall assess the emergency status of the spill or related incident using the following criteria:

2.1.2.1. **EMERGENCY:** Any spill or release of hazardous substance, which poses an immediate threat to life or health, or poses an immediate threat to the environment and requires immediate action. The following criteria may also indicate an emergency scenario:

- 2.1.2.1.1. Need for personal protective equipment beyond what is on hand;
- 2.1.2.1.2. An unusual release of dangerous quantities of gases, fumes, liquids, etc. for which the local workers are not trained or prepared to deal with;
- 2.1.2.1.3. Presence of other hazards such as electrical shock, heat, flames, or other physical hazards;
- 2.1.2.1.4. Spills involving an unknown substance.

2.1.2.2. **NON-EMERGENCY (incidental release):** Any spill or release of a hazardous substance or waste, which is not immediately threatening to life, health, or the environment and can be controlled and mitigated by employees in the immediate area. A typical example would be routine spills of common substances for which the workers are familiar with and trained and prepared to respond to and in quantities that are manageable.

2.1.3. Table 1 provides additional guidance for determining the emergency status of a spill. An incident level of two or three for any of the listed incident conditions would indicate an emergency response.

2.1.4. Persons regularly working in these areas are most likely to be the ones who discover spills. Most of the workers at the HWMUs and other potential spill sites receive OSHA Hazard Communication

Standard training and on the job training (OJT) sufficient for assessing the emergency status of spills. This training is described in Section 2.11.

2.1.5. Initial Response for Emergency Spills includes the following:

- 2.1.5.1. Evacuate and deny entry to all personnel in immediate area.
- 2.1.5.2. Call 911 and give your name and call back number, the exact location of the spill or release, any injuries related to the spill or release, the type or kind of substance involved and the amount of substance involved.
- 2.1.5.3. Stay on the line and answer all questions asked by the dispatcher.
- 2.1.5.4. Assign someone to direct emergency personnel to spill or release.
- 2.1.5.5. Do not attempt to rescue downed personnel unless you are trained to do so, and have a reasonable chance for success.

2.1.6. Initial Response for Non-Emergency Spills (incidental releases) includes the following: Stop flow, contain and clean up spill with locally available resources (spill control supplies, personal protective equipment, manpower) in accordance with site specific instructions for spill cleanup and reporting. Only persons who have received formal training and are equipped with appropriate personal protective equipment (PPE) may take these actions. Site-specific instructions for non-emergency spill response (clean up and reporting) have been developed for all potential spill sites, and will be posted locally. Copies of the site specific spill response procedures are found in Appendix B.

2.2 Spill Response Duties and Responsibilities

2.2.1. IOSC: Shall activate any internal alarm systems not activated by the OSC and notify any needed facility personnel, such as local area responders, to assist in the emergency response. Shall take steps to ensure that fires, explosions, and discharges do not occur, recur, or spread to other hazardous substance or waste operations. This responsibility is also shared with the OSC. Shall request assistance from State or local response agencies when their assistance is needed. Shall determine the character, source, and extent of any discharged materials, and assess all possible hazards, both direct and indirect, to human health or the environmental resulting from these discharges. Shall ensure that any recovered waste or other contaminated materials resulting from the incident are properly managed as a hazardous waste, unless these materials are found not be hazardous. Shall ensure that all emergency equipment is clean and fit for its intended use, and shall notify the appropriate State or local authorities before operations are resumed.

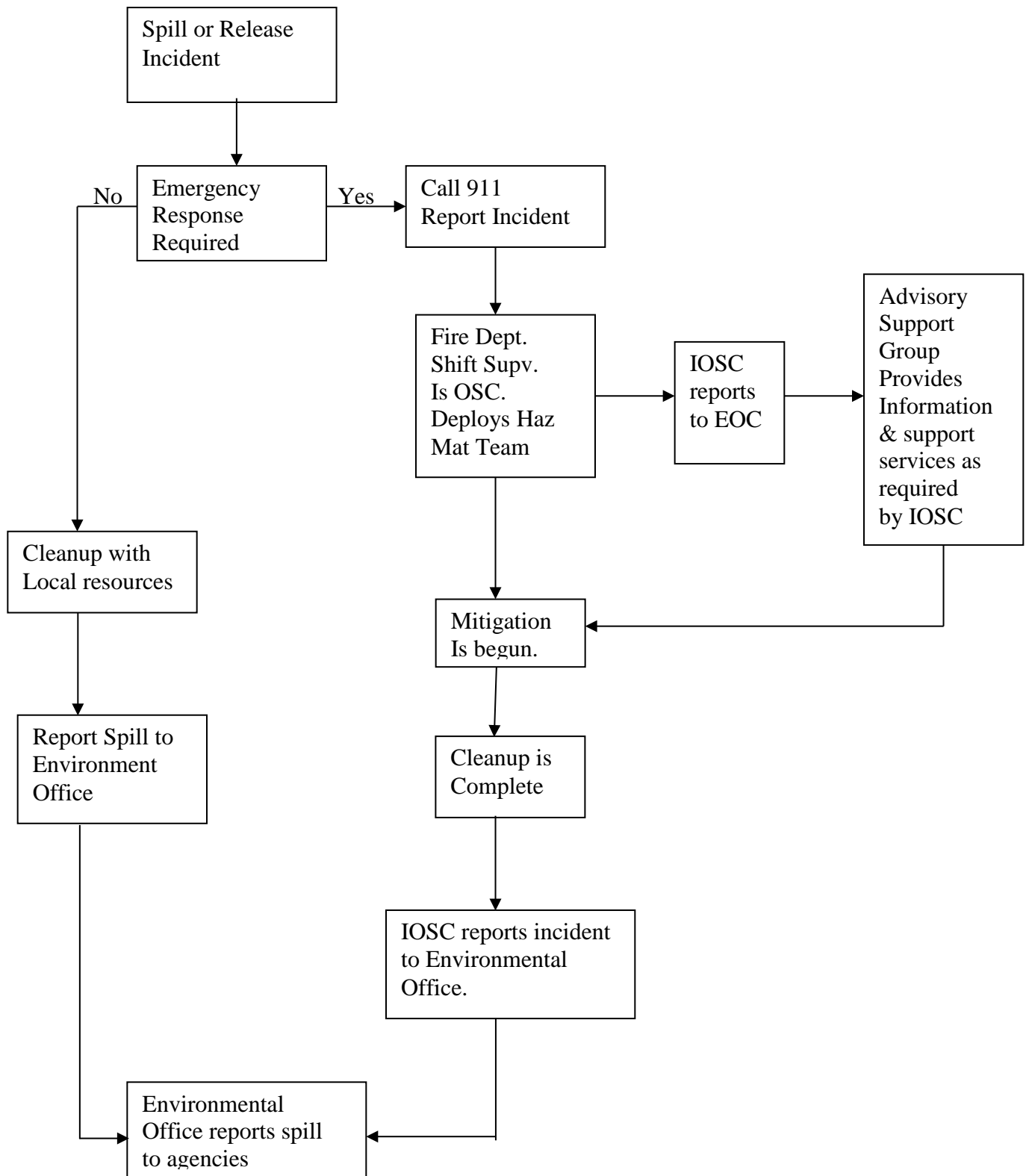


Figure 3 Spill Response Procedures

Table 1 NFPA Planning Guide for Determining Incident Levels, Response and Training

Incident Level	One	Two	Three
Incident Conditions			
Product Identifications	Placard not required, NFPA 0 or 1 categories all OLM A, B, C and D	DOT placarded, NFPA 2 for any categories, PCBs without fire, EPA regulated waste	Poison A (gas), explosives A/B, organic peroxide, flammable solid, materials dangerous when wet, chlorine, fluorine, anhydrous ammonia, radioactive materials, NFPA 3 and 4 for any categories including special hazard, PCBs and fire, DOT inhalation hazard, EPA extremely hazardous substance and cyrogenics
Container Size	Small (e.g., pail, drums, cylinders except one-ton packages, bags)	Medium (e.g., one-ton cylinder, portable containers, nurse tanks, multiple small packages)	Large (e.g., tank cars, tank trucks, stationary tanks, hopper cars/trucks, multiple medium containers)
Fire/Explosion Potential	Low	Medium	High
Leak Severity	No release or small release contained or confined with readily available resources	Release may be controlled without special resources	Release may not be controlled even with special resources
Life Safety	No life threatening situation from materials involved	Localized area, limited evacuation area	Large area, mass evacuation area
Environmental Impact Potential	Minimal	Moderate	Severe
Container Integrity	Not damaged	Damaged but able to contain contents to allow handling	Damaged to such an extent that catastrophic rupture is possible

2.2.2. On Scene Commander (OSC): The Fire Department supervisor shall assume the role of OSC. The OSC directs the emergency mitigation and cleanup operations at the incident site and works in communication with the IOSC. Responsibilities shared with the IOSC include: activation of facility alarms, notification or recall of response personnel and ensuring that fires, releases, explosions, etc., do not recur or spread to other HW operations.

2.2.3. Fire Department (FD): The participation of the FD HAZMAT Team shall be limited to incidents involving real or suspected emergency hazards as defined in section 2.1. The FD HAZMAT Team is the most highly trained and equipped group on the installation for spill response and is responsible for entering and mitigating emergency releases. The FD also provides emergency medical treatment and ambulance service of HAZMAT incident victims.

- 2.2.4. Advisory/Support Group: Members of this group have the responsibility of assisting the IOSC as outlined below.
- 2.2.5. Environmental Office (EO): Shall assist with determination of environmental threats, proper disposal and management of wastes, technical guidance and reporting to outside agencies as required by regulations.
- 2.2.6. Safety Office: Shall provide to the OSC site-specific information on chemical and other hazards at the Facility including MSDSs, PPE information, sampling and monitoring data, chemical hazard and other emergency response information. Other responsibilities include the establishment of control zones based upon the evaluation of hazards, ensuring that proper decontamination procedures (Appendix C) are in place, and documentation of site activities.
- 2.2.7. Utah Environmental Health Section (Industrial Hygiene): Shall provide monitoring of the scene and determine the extent of contamination around the scene. This information will be used by the IOSC or OSC to determine evacuation priorities.
- 2.2.8. U.S. Army Health Clinic: Responsibilities include providing medical surveillance and support for HAZMAT entry teams, while remaining outside of the hot areas.
- 2.2.9. Public Affairs Office: The Public Affairs Office (PAO) may be called upon by the IOSC to interface with the news media in the event that a hazardous substance escapes from the installation and threatens the public.
- 2.2.10. Contract Officer: The responsibility of the Contract Officer is to initiate a contract for spill cleanup by private contractor if directed by the IOSC. Contracted cleanup will be used when spill cleanup operations impair the primary mission of TEAD, or when the spill exceeds the installation's capabilities. Contractors will clean up any non-emergency spill that requires greater than level "C" protection. Possible sources of contracted clean up assistance are listed in Appendix D. If clean-up operations involve treatment of HW beyond initial response, an emergency permit may be required
- 2.2.11. Local Area Responders: Composed of persons who regularly work in non-HW management facilities that have a potential for spills of hazardous substances. This group consists of permanently employed individuals from Installation Support, Ammunition Equipment and Ammunition Operations.
- 2.2.11.1. Their responsibilities include cleaning up small or large incidental spills (non-emergency) of substances that they are familiar with, trained and equipped to deal with. This includes stopping or containing flows, diking, repairing leaks, containerizing and labeling spilled wastes, and notification to the IOSC. For larger, non-emergency spills, this group may be called upon by the IOSC to assist in the clean-up of spills in areas larger than where they ordinarily work.
- 2.2.12. HW Management Facility Employees: The responsibilities of this group are similar to those of the Local Area Responders except that these individuals are members of the TEAD Hazardous Waste Management Program (HWMP). The HWMP is for all employees who work at permitted HW management facilities. All HWMP members receive RCRA hazardous waste management training.

2.2.13. Directorate for Law Enforcement and Security: Their function is to control traffic and crowd situations as a result of an incident and assist the OSC with emergency evacuation and isolation.

2.2.14. Directorate for Base Operations: Maintenance and Grounds Division Provides heavy equipment support if needed as instructed by the IOSC or the OSC. The Utilities Division may be called upon to disconnect electrical power when deemed necessary by the IOSC or the OSC.

2.2.15. The training requirements for the response groups described above are given in Section 2.11.

2.3 Spill Response Mobilization Procedures

2.3.1. Any employee who witnesses or discovers a spill or incident involving hazardous or unknown substances and determines that the incident requires an emergency response shall call the Fire Department by dialing 911.

2.3.2. After receiving a 911 call, the Fire Department supervisor (OSC) shall activate the FD HAZMAT Team, notify the IOSC, and commence mitigation procedures.

2.3.3. The IOSC, or alternate, will report to the Emergency Operations Center (EOC), which is located in Building 1246. From the EOC, the IOSC will communicate with the OSC and mobilize support staff if necessary. The Incident Command System (ICS) will be implemented from the EOC, all responders will operate within the ICS.

2.3.4. The FD HAZMAT Team will remain at the incident site until the emergency is brought under control. When the situation becomes a non-emergency clean up, the IOSC will direct one of the other groups (Installation Support, local area responders, HW Mgmt. Employees, etc.) to complete the clean up operations, and report the incident to the EO.

2.3.5. Release of information to the media, if required, shall be coordinated with the PAO and TEAD command group by the IOSC. See Appendix G, *Guidelines for Releasing Information*.

2.3.6. Non-Emergency spills shall be cleaned up with local manpower and resources using locally available materials and manpower and report the incident as soon as possible to the EO in accordance with the site-specific spill response instructions posted in the immediate area and contained in Appendix B.

2.3.7. The EO shall report all spills that are at or above the reportable quantity to the appropriate state and federal agencies as detailed in Appendix F.

2.4 Emergency Notifications for Off-Site Impacts

2.4.1. Should the IOSC determine that the facility has had an incident that could threaten human health or the environment outside of the facility, the following reports will be made:

2.4.1.1. If the IOSC's assessment indicates that evacuation of local areas may be advisable, he will immediately notify the appropriate local authorities, and be available to assist the local authorities in making the decision of whether or not to evacuate.

2.4.1.2. The Environmental Office will make the appropriate notifications to the State of Utah Department of Environmental Quality and the National Response Center.

2.5 Response During Off-Duty Hours

2.5.1. The spill response procedure for off-duty hours is the same as for normal hours, except for the following differences: During off-duty hours, the IOSC and Advisory/Support Group are not present, and members or alternates may have to be called on to report to the incident site if required by the OSC.

2.6 Spill Mitigation and Cleanup

2.6.1. Site-specific spill response procedures for each hazardous material or waste management facility are given in Appendix B. These procedures are for non-emergency cleanup operations, and are to be carried out by HW Management Facility employees working in the immediate areas. The procedures in Appendix B are general in nature, and are for general guidance to be carried out by trained individuals only.

2.6.2. For emergency spills requiring emergency response, the IOSC shall determine the most effective clean up procedure for each individual spill, and ensure that the procedures are properly carried out.

2.6.3. Leaking HW containers (drums) are generally not repaired. Normally, a leaking drum will be placed into an overpack drum. Various types of emergency leak repair kits are maintained and may also be used as a temporary measure until the damaged drum is placed in an overpack drum or the contents transferred to a sound container.

2.6.4. In the event that a waste is incompatible with wastes or materials already stored at a given location is spilled, the incompatible materials or wastes will be moved to a temporary location until the spilled waste is completely cleaned up or neutralized. If necessary, an extension to the 90-day limit for emergency HW storage at the TEAD 90 day storage facility will be requested from the Director. This same procedure will be used if the Container Storage Facility is unusable for other reasons (fires, explosions, damage, etc.) as well.

2.6.5. Following the completion of spill cleanup, fires, or other incidents involving hazardous materials or wastes, all emergency equipment will be decontaminated using the procedures given in Appendix C. The decontamination operations will be conducted by members of the HAZMAT team, hazardous waste management facility employees, and/or local area responders under the direction of the IOSC. Also, the Fire Department, hazardous waste management facility employees, and/or local area responders will restock spill control and fire control materials, before normal operations resume.

2.6.6. During response to fires, care will be taken to contain and recover any run off of waste and water, foams, or chemicals applied to the fire. If possible, the area will be diked and any drains blocked before using liquids to fight the fire. After the fire is extinguished, the materials involved in the fire and surrounding area will be decontaminated if necessary and recovered and placed into containers for proper disposal.

2.6.7. A complete description of all emergency, spill control, and decontamination equipment, for each hazardous waste management facility is provided in Attachment 6 (Preparedness and Prevention Plan).

2.7 Control of Fires Involving Reactive (Explosive) Hazardous Waste

2.7.1. The TEAD FD shall respond to any reported emergency situation involving reactive hazardous wastes. The FD is staffed and led by trained, professional fire fighters. Actions appropriate to controlling and preventing the spread of fires will be selected and implemented by these trained professionals. The Permittee shall rely upon their professional, on-scene judgment in selecting a course of action that is most protective of human health and the environment. Similarly, the knowledge and training of on-scene Army ordinance experts shall be used in determining the most appropriate response to actual or potential uncontrolled explosions, or releases of reactive hazardous wastes. Typically fires involving explosives will not be fought unless it is necessary to provide assistance to injured personnel.

2.8 Cleanup Resources

2.8.1. Manpower for cleanup includes the HAZMAT team which is made up of FD staff, hazardous waste management facility staff and local area responders.

2.8.2. A complete listing of all of supplies, materials and equipment, including descriptions of capabilities, number of items, and locations are given in Appendix E.

2.8.3. A medical facility, the U.S. Army Health Clinic, is maintained at the Facility. The Fire Department maintains ambulance service 24 hours per day seven days per week.

2.8.4. A file of SDS's is maintained at the TEAD Safety Office, ext. 2713. A listing of environmental contractors, which could provide technical assistance for emergencies, and their telephone numbers, is provided in Appendix D.

2.9 Reporting Requirements

2.9.1. Personnel working at HWMUs shall follow the site-specific instructions for reporting spills. The site-specific instructions are located at the hazardous material/waste management areas and are also included in Appendix B of this plan. Regulations, as identified in Appendix F, require that spills in excess of their reportable quantities be reported immediately by telephone to various federal state, and local agencies and Army offices. The Environmental Office is responsible for determining whether a reportable quantity has been spilled and for making the required telephonic notifications. The telephonic reporting shall be done promptly, even if the information is incomplete.

2.9.2. It is required by various federal and state regulations that a written report be submitted, in addition to telephonic reporting, when a spill in excess of the reportable quantity happens. The written report must contain the information discussed in Appendix F. The Environmental Office shall maintain copies of written spill reports on file.

2.9.3. Spill information for release to the public shall be reviewed by the Environmental Office, and approved by the installation commander. Appendix G provides guidance for releasing information. The PAO has been designated as the individual responsible for providing information to the public.

2.10 Resources Available to Regional Response Team

2.10.1. All of the equipment listed in Appendix E is available for use by the Regional Response Team (RPT). In the event that such assistance is requested, the IOSC will coordinate with the installation commander and determine what resources will be made available the RRT.

2.11 Training

2.11.1. The TEAD ISCP training program consists of two parts as outlined below:

2.11.1.1. All employees that work in any of the hazardous waste management facilities will receive the OSHA Hazard Communication Standard training and the RCRA training for hazardous waste management facility employees in accordance with Attachment 5 (Training Plan). The training records for hazardous waste management employees are maintained by the EO.

2.11.2. This plan shall be tested annually by staging a simulated spill event, in which the HAZMAT Team is mobilized. In the event that a real spill occurs, the simulated event may not be required. The installation commander and the IOSC will determine the time and scope of the simulated spill. The response actions of the spill exercise shall be evaluated and a lessons learned briefing shall be held after the simulation. The exercise shall be documented by the IOSC to include the time, date, and participants of the exercise and lessons learned. The training requirements of OSHA 29 CFR 1910.120, which concern safety hazards associated with hazardous substance emergency response actions will be provided to the Fire Department.

2.12 Extremely Hazardous Substances

2.12.1. Presently there are no extremely hazardous substances, as defined by Superfund Amendment and Reauthorization Act (SARA) Title III, at the Facility. Yearly inventories are scheduled for determining if any of these materials will be present in the future. If any materials are brought on the installation that are considered extremely hazardous and are above the reportable quantity, the following actions shall be taken:

2.12.1.1. The Tooele County Health Department and the Utah Division of Waste Management and Radiation Control will be notified.

2.12.1.2. This plan shall be amended to identify that they are present.

3.0 Hazardous Waste Management Facilities

3.1 Location of Hazardous Waste Management Units (HWMUs)

3.1.1. The locations of the permitted HWMUs at the Facility (Buildings 528, A-101, C-815, C-816, 1368, 1370, 1205, 1325, 1335, 1320, 1400, and the Open Burning and Detonation area) are shown on Figure 4.

3.2 Dissemination of Site Specific Spill Procedures

3.2.1. The purpose of the site-specific spill response procedures is to provide instructions to the local workers at the permitted sites to assist them in cleaning up and reporting non-emergency spills. The instructions are not complete in all details, but should be useful to local workers who have received OSHA Hazard Communication Standard training, RCRA training, and on-the-job training. A complete list of the instruction sheets can be found in Appendix B.

3.2.2. Most of the hazardous wastes which are handled at these facilities are derived from common industrial and military materials that are well characterized. Instruction sheets have been prepared for initial response, reporting, emergency procedures, spill cleanup and decontamination procedures for each of the types of hazardous wastes present and will be posted at each HWMU. The table below lists the combination of instruction sheets posted at each unit.

Site Number	Type of Operation	Instruction Sheets
R0528M	Permitted HW Storage	All except K
A0101M	Igloo A101, PEP HW Storage	A, B, K
A0815M	Igloo C815, PEP HW Storage	A, B, K
A0816M	Igloo C816, PEP HW Storage	A, B, K
A1205M	Above Ground Magazine 1205, PEP HW Storage	A, B, K
A1368M	Service Magazine 1368, PEP HW Storage	A, B, K
A1370M	Service Magazine 1370, PEP HW Storage	A, B, K
1320T	Deactivation Furnace	A, B, K
A1325T	Small Caliber Disassembly Line (Buildings 1325 and 1335)	A, B, K
A1346T	Open Burning/Open Detonation	A, B, K
A1400T	Hydrolysis Facility	A, B, C, K

3.3 Evacuation Procedures and Routes

3.3.1. In the event that a safety or life-threatening hazard exists, the involved facilities shall be evacuated. Appendix H contains the evacuation routes and alternate routes for the hazardous waste facilities. The signal for commencement of evacuation is a steady continuous alarm with an air horn, siren, or vehicle horn. The supervisor or an assigned alternate shall determine the presence or absence of all employees when assembled at a safe waiting area.

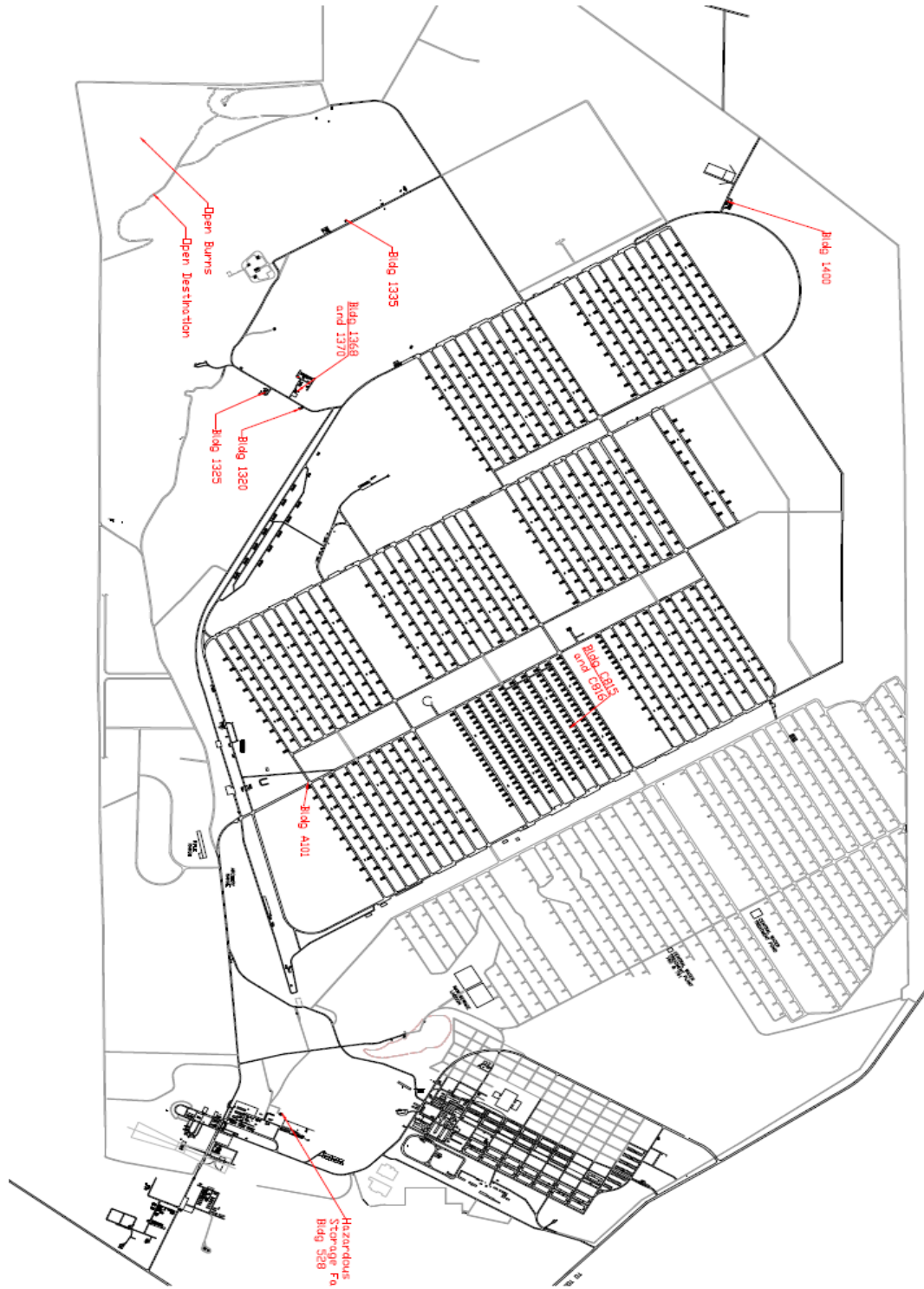


Figure 4 Locations of HWMUs

4.0 OB/OD Specific Procedures

4.0.1. The IOSC shall implement the Contingency Plan if accidents occur involving wastes intended for OB/OD when those accidents result in or could result in uncontrolled burning or detonation, which could release hazardous constituents into the environment or endanger human health. The IOSC shall act immediately to assess any such situation. The decision to implement this Plan will depend on the IOSC assessment of several factors:

- 4.0.1.1. The type and quantity of wastes and other materials involved
- 4.0.1.2. The potential for the spread of fire or the initiation of an explosion
- 4.0.1.3. The available capability to respond to and control the situation.

4.0.2. If the IOSC must be summoned, on-scene personnel (in particular the designated team leader), who would most likely be the Range Supervisor at the OB/OD unit, shall first call the Demil Team Leader, who shall then call the IOSC. While waiting for the IOSC to arrive, on-scene personnel shall try to control the incident, if safe to do so, or else shall immediately evacuate the area. The initial response to any emergency is to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment constitute the secondary response.

4.1 Identification of Hazardous Materials Released at the OB/OD Unit

4.1.1. The IOSC, with the assistance of the Demil Team Leader, is responsible for identifying the chemical and physical characteristics, exact source, amount, and area extent of the release and hazards of the incident.

4.1.2. Information available to the IOSC will be gathered by interviewing personnel at the OB/OD unit, reviewing the schedules and records pertaining to the OB/OD operations, and discussions with the Demil Team. Information of any hazards presented by waste materials during an emergency is limited to the items scheduled to be detonated.

4.1.3. The types of waste explosives treated at the Facility by OB/OD include unserviceable ammunition, mines, grenades, bombs, propellants, and other ordnance.

4.2 Assessment

4.2.1. The IOSC is responsible for assessing the nature of the emergency incident. Since little or no quantitative information (for example, exposure levels) initially may be available, the criteria for assessing the hazards, risks, and vulnerabilities are qualitative. The following criteria will be considered in making this assessment:

- 4.2.1.1. The need to protect individuals present at the scene and those in the process of responding.
- 4.2.1.2. The nature and size of the incident.
- 4.2.1.3. Specific information available on the wastes and other materials involved.

- 4.2.1.4. Weather (e.g., wind speed and direction), topography, and other conditions (e.g., time of day).
 - 4.2.1.5. Need to establish safety zones.
 - 4.2.1.6. Factors that affect spread, ignition, or reactivity of the product.
 - 4.2.1.7. The probability that the incident could spread beyond the incident scene.
 - 4.2.1.8. The need to deny access to unauthorized personnel.
- 4.2.2. To assist in the assessment of the situation, the IOSC may find it appropriate to confer with the Demil Team, or with explosives experts from other Department of Defense installations.
- 4.2.3. Under reasonably foreseeable conditions, the types and quantities of materials treated at the OB/OD unit would not result in any significant releases that could spread beyond the Facility boundary. In the event of fires, the combination of natural firebreaks, paved roads, man-made firebreaks, and long distances present in the OB/OD unit have been designed to prevent fires from spreading beyond the unit and outside the Facility.

4.3 Uncontrolled Fires

- 4.3.1. Uncontrolled fires may occur as a result of OB/OD operations. If an uncontrolled fire occurs within the OB/OD area, it will not be fought unless necessary to provide assistance to injured personnel.
- 4.3.2. During uncontrolled fires, the IOSC performs the following functions:
- 4.3.2.1. Assesses the situation using all available knowledge; the assessment determines whether or not to implement the Contingency Plan.
 - 4.3.2.2. Upon implementation of the Contingency Plan, performs the functions in paragraph 4.3.3.
 - 4.3.2.3. Notifies all appropriate military authorities and emergency response units immediately.
 - 4.3.2.4. Eliminates all possible sources of ignition in the immediate area. These include lighted tobacco products and unauthorized vehicle traffic.
 - 4.3.2.5. Coordinates all response efforts without exposing personnel to undue risk.
 - 4.3.2.6. With assistance from EO, assumes responsibility for directing follow-up activities, if required.
 - 4.3.2.7. With assistance from EO, prepares and submits all necessary reports on the incident.

4.3.3. The IOSC takes the following actions upon implementation of the Contingency Plan:

- 4.3.3.1. Stops all routine work in the affected area.
- 4.3.3.2. Stops all nonessential waste handling activities.
- 4.3.3.3. Evacuates all nonessential personnel.
- 4.3.3.4. Removes all injured persons from the site and gives medical treatment.
- 4.3.3.5. Gives "all-clear" notification by radio or portable telephone when all danger is over.
- 4.3.3.6. Arranges for cleaning and inspecting all emergency equipment before resuming normal OB/OD operations.

4.4 Storage, Treatment, and Disposal of Released Material

4.4.1. Immediately after an incident, the IOSC shall arrange for the treatment, storage, or transportation and disposal of recovered waste and waste residues, contaminated soil, or other contaminated materials. The cleanup residue is collected by Demil Team personnel and FD personnel. The material will be collected and containerized until the arrangements for sampling, analysis and disposal can be made.

4.4.2. Cleanup residues that do not possess a potential to burn or detonate will not be treated in the OB/OD unit. These waste residues that may be reactive, but not explosive, will be treated and disposed offsite by other appropriate methods in compliance with applicable regulations.

4.4.3. The IOSC shall be authorized to use all facility personnel and equipment or contractor services as necessary to complete this task. Should the services of a cleanup contractor be required, the IOSC shall request such support from the TEAD Director of Contracting. Reactive wastes or reactive waste residues recovered after an incident shall be treated on-site at the unit by Demil Team personnel.

4.5 Control of Fires and Prevention of Recurrence or Spread of Fires, Explosions, or Releases

4.5.1. The TEAD FD shall respond to any reported emergency situation involving reactive hazardous wastes. The FD is staffed and led by trained, professional fire fighters. Actions appropriate to controlling and preventing the spread of fires will be selected and implemented by these trained professionals. The Permittee shall rely upon their professional, on-scene judgment in selecting a course of action that is most protective of human health and the environment. Similarly, the knowledge and training of on-scene Army ordnance experts shall be used in determining the most appropriate response to actual or potential uncontrolled explosions, or releases of reactive hazardous wastes.

4.5.2. Should any event occur that would require implementation of this Contingency Plan, the Permittee shall follow up with actions to prevent future recurrences. At a minimum, future OB/OD operations shall be suspended and an investigation of the incident shall be conducted to determine the reasons for the occurrence. Based on the results of the investigation, any appropriate changes shall be instituted prior to resumption of OB/OD operations.

4.6 Post-Emergency Equipment Maintenance

4.6.1. The IOSC is responsible for maintaining necessary emergency response equipment and PPE. The FD Officer-In-Charge inspects and inventories all emergency equipment before returning it to service. As appropriate, soiled equipment is decontaminated with an appropriate cleaning solution and the rinsate is collected in 55-gallon drums. Representative samples of the collected rinsate will be analyzed for toxic metals (including barium, lead, and selenium) and for 2,4-dinitrotoluene. All analyses will be conducted in accordance with Attachment 2 (Waste Analysis Plan). Rinsates exhibiting hazardous or toxic characteristics as defined in Utah Admin. Code R315-261-20 through 24 will be managed accordingly and will be sent offsite for appropriate treatment at a RCRA-permitted treatment facility. OB/OD operations can resume only when all emergency equipment is determined to be clean and in service.

APPENDIX A
LIST OF EMERGENCY COORDINATORS

LIST OF EMERGENCY COORDINATORS

IOSC	Craig Tate	Office Phone: 435-833-2015 Home Phone: 435-830-7074
Alternate 1	James Tarpley	Office Phone: 435-833-2053 Home Phone: 801-631-5002
Alternate 2	Brad Tippetts	Office Phone: 435-833-2015 Home Phone: 435-830-8279

FIRE DEPARTMENT SUPERVISORS

Business Phone: 435-833-2015 (911 - For Emergencies)

Primary	Chief, Fire Department Craig Tate	Home Phone: 435-830-7074
Alternate 1	Assistant Fire Chief James Tarpley	Home Phone: 801-631-5002
Alternate 2	Brad Tippetts	Home Phone: 435-830-8279

APPENDIX B
SITE-SPECIFIC SPILL RESPONSE PROCEDURES

SHEET A

Site No.:

Location/Operation:

Spill Response Procedure:

A. Determine if the spill is an emergency. An emergency exists when the spill causes an immediate threat to human life, health, or the environment. If it is not clear whether or not an emergency exists, assume that there is an emergency. All other spills are non-emergencies.

B. FOR EMERGENCY SPILLS ONLY: (The Fire Department is not responsible for cleanup of non-emergency spills.)

1. Evacuate and deny entry to all personnel in immediate area.
2. CALL 911 and give the following information:
 - a. Your name and call back number.
 - b. Exact location of spill
 - c. Injuries involved.
 - d. Type of substance involved.
 - e. Amount of substance involved.
 - f. Stay on line and answer all questions asked by the dispatcher.
3. Assign someone to direct emergency personnel to the spill site.
4. Do not attempt to rescue downed personnel unless you are trained to do so, and have a reasonable chance for success.

C. For Non-emergency Spills: For spills which can be cleaned up with local resources, perform cleanup operations in accordance with the site specific instructions provided in the following page(s).

D. Reporting Instructions: Fill out the attached Notification of Spill Event as completely and accurately as possible and submit to the Environmental Specialist as soon as possible.

SHEET B

General Spill Response:

The first step in the event of a spill, after donning the proper PPE, is to stop the flow using one of the following methods:

- turning off pumps or closing valves
- returning the container to the upright position
- patching holes
- transferring the material to another container
- moving the container to a less dangerous location

After the flow is stopped or slowed down, the expansion of the spill should be slowed by using one of the following methods:

- apply porous or absorbent material in sheets, booms, pillows, or particulate form for land spills
- use floating booms of porous or absorbent material for spills onto water
- if feasible, the material should be gathered together so that it can be more easily separated or collected

Often a sorbent can be helpful for collecting spilled material. The sorbent is distributed using mops, pillows, sheets, booms, or scattered as loose chips, particles, beads, or fibers. Direct pickup, skimming, filtering, or settling can collect the sorbent, with its absorbed spill material. With some types of sorbents the hazardous material can be wrung or squeezed out, so that the sorbent can be used again for treating the spill.

To collect material spilled into water, the material can be skimmed from the surface using adsorbents, if the material floats. Materials that mix or dissolve in water cannot usually be recovered. Materials that sink may be recovered by pumping or dredging from the bottom.

Recovered products must be stored properly prior to reuse or disposal. If they are to be disposed, they must be stored properly until their hazardous waste status is determined. Contact the Environmental Office, extension 3504, for proper storage and containerization instructions. Used sorbents that are not immediately reused must be disposed of.

The last traces of hazardous materials must be removed (decontaminated) from the spill area, cleanup materials, and from protective clothing and equipment. Decontamination procedures for each type of material, which may be present at potential spill sites, are given in the specific spill response procedure for each type of substance.

SHEET C

SPECIFIC SPILL CLEAN-UP PROCEDURES FOR BASES:

1. Enclose the spilled material with a dike made of a solid absorbent such as sand, sawdust, clay, or vermiculite.
2. For Collection of Liquids:
 - a. Apply an appropriate neutralizer until the pH is in the 6 to 8 range. Use pH paper to test for pH.
 - b. Transfer material into a properly labeled drum by pumping or by collecting with an absorbent and shoveling into drums.
3. For Collection of Solids:
 - a. Containerize as much as possible into a properly labeled drum, by scooping or shoveling.
 - b. Add water to the remaining material and neutralize until the pH is between 6 and 8. The resulting liquid is then collected by pumping or absorption by solids and shoveled into a drum.
4. Personal Protective Equipment: See posted instructions for specific waste streams.
5. Decontamination: Decontaminate the spill area, tools, and personal protective equipment, etc. with an appropriate neutralizer until the resulting pH is between 6 and 8.

SHEET D

SPECIFIC SPILL CLEAN UP PROCEDURES FOR ACIDS:

1. Contain the spill with a dike of clay absorbent or other non-combustible absorbent.
2. Neutralize acid spill by adding sodium bicarbonate to the liquid acid spill until it is completely covered, test with pH paper until pH is between 6 and 8. If the acid is in solid or pellet form, containerize by direct pickup into a properly labeled drum. Take up liquid by adding sand or other non-combustible absorbent and deposit into properly labeled drum.
3. Personal Protective Equipment: See posted instructions for specific waste streams.
4. Decontamination: Decontaminate the spill area, tools, and personal protective equipment, etc. with sodium bicarbonate (or equivalent) until the resulting pH is between 6 and 8.

SHEET E

SPECIFIC SPILL CLEAN UP PROCEDURES FOR OXIDIZERS AND ORGANIC PEROXIDES:

1. Contain or enclose the spill by diking with clay, sand, or talc, or other non-combustible material.
2. Chemical treatment (neutralization): Consult with the Environmental Management Division, ext. 3504. Standard Hazardous Material cleanup methods will be employed.
3. Collection: Add more non-combustible absorbent until the oxidizer is completely absorbed. Scoop up the absorbent with a non-sparking shovel. Place the waste oxidizer into drum of the proper type and labeling.
4. Personal Protective Equipment: See posted instructions for specific waste streams.
5. Decontamination: Wash with soap and water.

SHEET F

SPECIFIC SPILL CLEAN-UP PROCEDURES FOR NON-FLAMMABLE SOLVENTS:

1. Contain the spilled material with a dike made from non-combustible absorbent material (sand, earth, vermiculite, etc.).
2. Collect spilled material by taking up with non-combustible absorbent and place into properly labeled drum. Where liquid is pooled deeply, air operated diaphragm pumps may be used for collection
3. Personal Protective Equipment: See posted instructions for specific waste streams.
4. Decontamination:
 - a. Impervious surfaces: Let trace amounts evaporate.
 - b. Tools and equipment: Tools clean with solvent, clothing wash with soap and water.

SHEET G

SPECIFIC SPILL CLEAN-UP PROCEDURES FOR PESTICIDES:

1. Contain the spilled material with a dike of absorbent (sawdust, clay, vermiculite, etc.).
2. Neutralize the spilled material by following the procedures found on the container label. Also, SDSs are available from the Safety Office, ext. 2713.
3. Collection: Add more absorbent if necessary, to collect liquids. Scoop up absorbent or dry solid material and place into a drum or metal can with a plastic liner.
4. Personal Protective Equipment: See posted instructions for specific waste streams.
5. Decontamination: Follow procedure found on product label, or SDS.

SHEET H

SPECIFIC SPILL CLEAN-UP PROCEDURES FOR PAINT:

1. Contain or enclose the spilled material with an absorbent such as sand, earth, clay, vermiculite, etc.
2. Collection of Material: If paint is in liquid form, add sufficient extra absorbent to absorb all of the liquid. Shovel or scoop the material into the proper type labeled container. If the material is dry or solidified, gather or shovel the material into the proper type labeled container.
3. Personal Protective Equipment: See posted instructions for specific waste streams.
4. Decontamination: Decontaminate the spill area by removing two inches of earth below the extent of the spill into the ground. Spill sites inside buildings and on impervious surfaces will be cleaned as completely as practicable using sorbents.

SHEET I

SPECIFIC SPILL CLEAN-UP PROCEDURES FOR OIL:

1. Contain the spilled material with a solid absorbent material such as earth, sawdust, vermiculite, clay, etc.
2. Collection of Material: Absorb liquids onto solid absorbent materials and scoop or shovel into a container. Oil soaked into the ground is shoveled into a container. Spilled oil and the clean-up residues have been tested and found to be non-hazardous. If the circumstances of any spill warrant, the spill clean-up residues will be tested for HW characteristics.
3. Personal Protective Equipment: See posted instructions for specific waste streams.
4. Decontamination: Oil spilled onto the ground is removed along with two inches of uncontaminated soil.

SHEET J

SPECIFIC SPILL CLEAN-UP PROCEDURES FOR FLAMMABLE AND COMBUSTIBLE ORGANIC LIQUIDS:

1. Enclosed spilled organic liquid with a dike of sawdust or sweeping compound (solid sorbent).
2. Collection: use enough sorbent to soak up all of the spilled liquid. Avoid all sources of ignition or sparking. Scoop up all of the solid sorbent with a non-sparking shovel or scoop and place into a proper type and properly labeled container.
3. Personal Protective Equipment: See posted instructions for specific waste streams. Decontamination Procedure: Let trace amounts which are not collected evaporate. For clothing and personal protective equipment, the procedure is evaporation followed by washing with soap and water.

SHEET K

SPECIFIC SPILL CLEAN-UP PROCEDURES FOR EXPLOSIVE REACTIVE WASTE:

1. If necessary enclose or contain the material with a non-combustible absorbent such as earth, sand, clay, etc.
2. Collection of Solids:
 - a. Powdery Materials: Apply oil to the material before attempting to collect to avoid reaction.
 - b. Pellet sized materials: Sweep up with non-sparking dustpan and broom.
 - c. Material is destroyed in open burning trays or in open detonation site.
3. Personal Protective Equipment: See posted instructions for specific waste streams.

APPENDIX C
DECONTAMINATION PROCEDURES

DECONTAMINATION PROCEDURES

DECONTAMINATION:

Personnel protective equipment helps prevent the wearer from exposure while good work practices help minimize contamination of protective clothing, instruments, and equipment. Even with these safeguards, contamination may occur. Harmful materials can be transferred to clean areas, exposing unprotected personnel. In addition, personnel may come in contact with contaminants while removing protective clothing. To prevent such occurrences, methods to reduce contamination must be developed before anyone enters a suspected contaminated area. Decontamination consists of physically removing contaminants involved and the level of exposure. Since the extent of decontamination will depend on the incident, only general guidelines can be given.

Initial decontamination planning should assume that persons leaving the contaminated area are grossly contaminated. A system is set up to wash and rinse all the protective clothing worn. This is combined with a sequential doffing of equipment, starting at the first station with the most heavily contaminated outer clothing and ending at last station with the least contaminated article. The spread of contaminants is further reduced by separating each step in the decon process by at least three feet. After more information is obtained, the initial system may be modified by eliminating unnecessary stations or adapting it for site conditions.

The decon plan must be adapted to conditions found at the incident. These conditions may result in more or less decon being required. The following factors should be considered in determining the extent of decon required.

The extent of decon will depend on the hazard characteristics involved and the chemical's routes of entry. Generally, the more toxic the substance, the more extensive the decon required.

The amount of contamination on protective clothing is normally determined visually. If gross contamination is evident, a thorough decon procedure is required. In addition, higher air concentrations of substances or direct contact may result in permeation or degradation of the clothing material. Swipe tests may help in determining the type and quantity of surface contaminants.

The level of protection to a certain extent influences the extent of decon required. Wearing disposable clothing over the primary protective equipment may reduce direct exposure.

The work being performed by the entry team determines their exposure potential. Clean up monitors, photographers, and perimeter air samplers performing tasks that will not bring them in direct contact with substances will normally require less decon than those performing task involving direct contact with contaminated substances.

The reason for leaving the contaminated area may influence the extent of decon. Personnel leaving the area to pick up or drop off equipment or to change out air cylinders or respirator canisters normally do not require full decontamination. Personnel departing for a lunch break or end of a workday must be thoroughly decontaminated to avoid spreading contaminants to the clean area.

There is no method for immediately determining how effective the decon procedure is. Discoloration, stains, corrosive effects, and substances adhering to clothing may indicate that contaminants have not been completely removed. Also, contaminants may not be easily observed, and permeation of suit material may not be evident. Swipe testing may be used to identify surface contamination. Testing for permeation will require a piece of the exposed material. If there is any question on the effectiveness of the decon procedure, the contaminated clothing may need to be disposed of.

Equipment for decon can be easily procured. Soft bristle, long handle scrub brushes are used to remove contaminants. Water in buckets or garden sprayers can be used for rinsing. Galvanized wash tubs or children's wading pools can be used for holding contaminated water, and plastic garbage bags may be used for storing contaminated water and other liquids, and plastic bags may be used for storing contaminated equipment and clothing.

Equipment is usually decontaminated by scrubbing with a detergent and water solution followed by rinsing with copious amounts of water. While this process may not be fully effective in removing contaminants, it is relatively safe compared with using a chemical decon solution. Decon chemicals may be appropriate when the exact contaminants are known and a decon material is useful to neutralize or change the contaminant to a less harmful substance. Chemical decon solutions should only be used in consultation with an experienced chemist. The appropriate decontamination procedure will be determined by the IOSC in consultation with the Advisory / Support group. Members of this group are outlined in section 2.2. of Attachment 7 (Contingency Plan).

Mobile equipment used at TEAD for emergency spill response will be taken to bldg. 609, a steam cleaning facility, for decontamination, if necessary. The effluent from this facility is piped directly into the Industrial Waste Treatment Plan (IWTP).

Any equipment exposed to a hazardous chemical environment must be considered potentially contaminated, and handled accordingly. The extent of decon required will vary with the type of equipment and magnitude of the potential contamination. In most instances, washing and rinsing will remove any gross contamination. In some instances, swab sampling and lab analysis may be required to ascertain the efficiency of the decontamination procedure.

Some situations, such as secondary releases, accidents on-scene, or unanticipated exposures may result in the need for a quick exit from the contaminated zone. Since the normal decon procedure is time consuming, an abbreviated decontamination procedure is necessary for removal of gross levels of contamination prior to exit from the contaminated zone. Generally, the emergency decon would be an abbreviated version of decon procedures including wash down and removal of equipment and protective clothing and removal of potentially contaminated underclothing. If prompt lifesaving first aid and / or medical treatment is required, decon procedures should be omitted or minimized. Lifesaving care should be instituted immediately, although every precaution should be taken to minimize the spread of contamination from injured personnel to medical personnel.

An excellent way to control contamination is with the use of protective equipment covers. These covers can be disposable or reusable. Reusable covers, however, should be decontaminated after

use. Disposable covers are the most convenient to use. Clear plastic bags can be used over equipment such as organic vapor detectors or radios. Some equipment, such as atmospheric sniffers, cannot be entirely encapsulated since they need direct access to ambient air. Plastic covers and masking (duct) tape can be used to cover many parts of the equipment. Upon completion of the response, these covers are removed and bagged for disposal.

DECONTAMINATION STATIONS: The full decontamination procedures outlined in this appendix are based on worse case gross contamination levels for entry team members. These procedures may need to be modified based on actual levels of contamination.

Station 1: Segregated Equipment Drop

- Deposit equipment used on scene (tools, monitoring instruments, etc.) on plastic drop cloths or in separate containers with plastic liners. Since each item may be contaminated to a different degree, segregation at the drop reduces the possibility of cross contamination.
- Equipment: Various size containers, plastic liners, plastic drop cloths.

Station 2: Boot Cover and Glove Wash

- Scrub outer boot covers and gloves with detergent / water or decon solution.
- Equipment: Container (0-3- gallons), Appropriate decon solution, 2-3 long handle soft handle soft bristle brushes, small buckets.

Station 3: Boot Cover and Glove Rinse

- Rinse off decon solution from station 2 using copious amounts of water. Repeat as many times as necessary.
- Equipment: Container (30-50 gallons) or high-pressure water spray unit, 2-3 long-handle soft bristle scrub brushes.

Station 4: Tape Removal

- Remove tape around boots and gloves and deposit in container with plastic liner.
- Equipment: Container (20-30 gallons), plastic liners.

Station 5: Boot Cover Removal

- Remove boot covers and deposit in container with plastic liner.
- Equipment: Container (20-30 gallons), plastic liners, bench or stool.

Station 6: Outer Glove Removal

- Remove outer gloves and deposit in container with plastic liner.

- Equipment: Container (20-30 gallons), plastic liners.

Station 7: Suit/Safety Boot Wash

- Thoroughly wash protective clothes and boots. Scrub unit and boots with long handle, soft bristle scrub brush and copious amounts of the appropriate decon solution. If level B Protection, wrap SCBA regulator (belt type) with plastic to keep out water. Repeat as many times as necessary.

Station 8: Suit/Safety Boot Rinse

- Rinse off decon solution using copious amounts of water, repeat as many times as necessary.
- Equipment: Container (30-50 gallons) or high-pressure water spray unit, 2-3 long handle, soft bristle brushes.

Station 9: Tank or Canister Change

- If the worker leaves the contaminated area to change out an air tank or respirator canister, this is the last step in the decon procedure. The workers air tank or canister is exchanged, new outer gloves and boot covers donned and joints taped. The workers then return to the contaminated area.
- Equipment: Air tanks / respirator canisters, tank, boot covers, gloves.

Station 10: Safety Boot Removal

- Remove safety boots and deposit in container with plastic liner.
- Equipment: Container (30-50 gallons), plastic liners, bench or stool, bootjack.

Station 11: Removal of Protective Clothing Garment (note: stations 11 and 12 reversed for level B).

- With assistance of decon team, remove the protective clothing garment (encapsulated suit, splash gear). Hang clothing or place in container for disposal as appropriate.
- Equipment: Rack, drop cloths, bench or stool, container (30-50 gallons), plastic liners.

Station 12: SCBA Backpack Removal (note: stations 11 and 12 reversed for level B)

- While still wearing face piece, remove backpack and place on table. Disconnect hose from regulator valve and proceed to next station.
- Equipment: table

Station 13: Inner Glove Wash

- Wash with appropriate decon solution that will not harm skin. Repeat as many times as necessary.
- Equipment: Basin or bucket, decon solution, small table.

Station 14: Inner Glove Rinse

- Rinse with water, repeat as often as necessary.
- Equipment: Water basin or bucket, small table.

Station 15: Face Piece Removal

- Remove face piece, deposit in container with plastic liner, avoid touching face with gloves.
- Equipment: Containers (30-50 gallons), plastic liners.

Station 16: Inner Gloves Removal

- Remove inner gloves and deposit in containers with plastic liner.
- Equipment: Container 30-50 gallons), plastic liners.

Station 17: Inner Clothing Removal

- Remove clothing soaked with perspiration. Place in container with plastic liner. Inner clothing should not be worn out of the decon area since some contaminants may have been transferred while removing the outer protective garment.
- Equipment: Container (30-50 gallons), plastic liners.

Station 18: Field Wash

- If practicable, a field shower should be taken before leaving the decon area. If a shower is unavailable, thoroughly wash face and hands.
- Equipment: Field shower, small table, basin or bucket, towels.

Station 19: Redress

- Put on clean clothing. A dressing trailer or tent is appropriate for inclement weather.
- Equipment: Tables, chairs, tent or trailer.

APPENDIX D

CONTRACTED AND OUTSIDE RESOURCES

CONTRACTED AND OUTSIDE RESOURCES

E.T. Technologies Inc.
3656 W 2100 S
Salt Lake City
(801) 977-0731

General HAZMAT, petroleum products,
Level B Team, TSD

Ecology Control Industries
503 W 400 S
(800) 321-5479
(801) 359-6861

General HAZMAT, petroleum products,
Level B Team, TSD

TW Company
505 N Main
North Salt Lake
(801) 299-1900

General HAZMAT, petroleum products,
Level A Team, Level B Team, TSD

**WRS Infrastructure
Environmental Inc.**
4120 S 500 W
Salt Lake City
Day (801) 265-2323
Night (404) 358-4135

General HAZMAT, petroleum products,
Level A Team, Level B Team, TSD

APPENDIX E
EMERGENCY AND SPILL CONTROL EQUIPMENT

**FACILITIES ENGINEER EMERGENCY EQUIPMENT
POINT OF CONTACT: Utilities Division x3386**

Description	Capability
Earth Auger	Boring, depths to 9 ft.
Multipurpose Excavator	Backhoe type, for excavation
Tractor	Caterpillar type, for trenching backhoe capabilities, etc.
Road Grader	Road Grader, trenching, etc. with 12 ft. blade
Scoop Loader	1-1/2 cu. yd. capacity, front end
Hydraulic Crane	25 ton major item material handling
Dump Truck	10 cu. yd. capacity
Pickup Truck	General transportation
Bucket Truck	60 ft. reach, 500 lb. capacity
Emergency Generator, Trailer Mounted	60 KW

FIRE DEPARTMENT EMERGENCY EQUIPMENT AND MATERIALS
POINT OF CONTACT: FIRE DEPARTMENT x2015
 In HAZ MAT TRAILER and TRUCK in Bldg. T-8

Description	Capability
Fire Truck	Skid Load Squad/Pierce Pumper
Trailer	Enclosed 22'
Acid Neutralizer	Acid Neutralizer Box
Base Neutralizer	Base Neutralizer Box
Repair Kit	Emergency leak repair kit (Edwards & Cromwell 'F')
Repair Kit	Emergency leak repair kit (Edwards & Cromwell 'A-NS')
Repair Kit	Emergency leak repair kit (Edwards & Cromwell 'E')
SCBA	Apparatus (SCBA), One Hour Packs SCBA, Thirty Minute Packer
Communications Interface (SCBA)	Communication hardware (installed on SCBA)
Replacement Bottles (SCBA)	Spare bottles for SCBA
Gastrsc	Flammable Gas Detector for Flammable Vapors
Weather Station	Wind speed and direction indicator
Decontamination Booth	Portable decontamination booth used for personnel after entry into hazardous areas
Eye Wash	Portable eyewash and solution used to wash out eyes after contamination
Level A	Protective Suits, fully encapsulated, Regular and Flash
Vests	Cooling vests used with ice
Drum Uprinder and Lifter	Used in placing drums in upright position
Cart, 300 lb Capacity	Portable cart used for moving equipment and for rescue of personnel
Tools	Non-sparking tools
Additional Miscellaneous	60-minute air cylinders
	pH paper
	Chemical tape
	Barricade tape (haz mat)
	Emergency response guidebook and various other references
	Push broom and scrub brushes
	Stakes for tents and marking
	Various Sorbent rolls and Pads
	Sorbent Pillows
	Plug and Dike Kit
	85 gal. salvage drum
	Levels of protective suits

FIRE DEPARTMENT EMERGENCY EQUIPMENT AND MATERIALS
POINT OF CONTACT: FIRE DEPARTMENT x2015
 In HAZ MAT TRAILER and TRUCK in Bldg. T-8

Description	Capability
	Scrubs apparel
	Butyl gloves
	PVC gloves
	Disposable silver shield gloves
	Examination gloves, various sizes
	Safety vests for positions
	Pipe fittings and valves
	Poly tarps
	Wooden plugs for tank holes, (various shapes and sizes)
	Bucket, brushers, soap
	Chlorine "A" kit
	Propane heaters

APPENDIX F
SPILL REPORTING

SPILL REPORTING

1. Utah Department of Environmental Quality Requirements:
 - a. Immediately notify the Department of Environmental Quality by calling the 24 hour answering service (801) 536-4123, if greater than 2.2 pounds of acutely hazardous waste is spilled or 220 pounds if any other hazardous waste is spilled in accordance with Utah Admin. Code R315-263-30(b). The following information will be provided when making the verbal report:
 - (1) Name, address, and phone number of the person responsible for the spill.
 - (2) Name, title, and telephone number of the individual reporting.
 - (3) Time and date of spill.
 - (4) Location of spill – as specific as possible including nearest town, city, highway, or waterway.
 - (5) Description contained on the manifest and the amount of material spilled.
 - (6) Cause of spill.
 - (7) Emergency action taken to minimize the threat to human health and the environment.
 - b. Within 15 days after any reportable spill of hazardous waste, submit a written report to the Director containing the following information:
 - (1) Name, address, and telephone number.
 - (2) Date, time, location, and nature of the incident.
 - (3) Name and quantity of material(s) involved.
 - (4) The extent of injuries, if any.
 - (5) An assessment of actual or potential hazards to human health or the environment, where this is applicable.
 - (6) The estimated quantity and disposition of recovered material that resulted from the incident.
 - c. If a release of a hazardous substance or an acutely hazardous substance, as defined in 40 CFR 302.6 or 40 CFR 355 Appendix A, has the potential to expose persons off-site, the incident must also be reported to the Department of Environmental Quality by calling (801) 536-4123.
 - d. Releases of greater than 25 gallons, or smaller releases that pose a potential threat to human health or the environment, of used oil must be reported immediately to the Department of Environmental Quality by calling (801) 536-4123. This must be followed by a written follow-up report within 15 days (Utah Admin. Code R315-15-9).
7. Local Community Emergency Coordinator: If a release of a hazardous substance or an acutely hazardous substance, as defined in 40 CFR 302.6 or 40 CFR 355 Appendix A, has

the potential to expose persons off-site, the incident must also be reported to Tooele County Emergency Management, (435) 833-8100.

8. National Response Center: Spills exceeding the reportable quantity of a hazardous substance must be reported immediately to the National Response Center in accordance with 40 CFR 302.6. Table 302.4, contains a listing of hazardous substances and their reportable quantities. The National Response Center requirement applies to both fixed facility and transportation incidents. The National Response Center's phone number is 800-424-8802 or 202-426-2675.
9. Army Internal Reporting Requirements: Any reportable spills, as defined in the paragraphs above, will be reported, within 24 hours of discovery, to JMC Operations Center by calling DSN 793-7270 and a follow-up report submitted electronically to the following email address:

AMC.ROCK.ORG.JMC-OPCTR-OP@mail.mil
Dennis.R.Versluys.civ@mail.mil
USARMY.RIA.JMC.MBX.OPCTR-OP@mail.mil

Within five working days from the initial notification, forward any information that was unknown at the time of the initial report to the above addresses, e.g., remedial action planned, total cost of cleanup activities, steps being taken to prevent future occurrences of this type, etc.

NOTIFICATION OF REPORTABLE QUANTITY POLLUTION EVENT

1. INSTALLATION:		2. COMMANDER:		3. DISCOVERY DATE & TIME:	
4. PERSON REPORTING (NAME/PHONE):			5. SEVERITY: <input type="checkbox"/> Minor <input type="checkbox"/> Medium <input type="checkbox"/> Major		
6. TYPE & AMOUNT OF MATERIAL SPILLED:					
7. LOCATION OF SPILL (FACILITY/EQUIPMENT INVOLVED):					
8. CAUSE:					
9. PERSONNEL INJURIES/PROPERTY LOSS:					
10. DURATION/MAGNITUDE OF POLLUTION PRODUCED/RELEASED:					
a. SOURCE OF RELEASE BEEN STOPPED?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
b. RELEASED MATERIAL BEEN RETAINED?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
c. REACH ENVIRONMENT (CHECK ALL THAT APPLY)?		<input type="checkbox"/> Navigable waters <input type="checkbox"/> Ground water <input type="checkbox"/> Land surface (soil)		<input type="checkbox"/> Surface water <input type="checkbox"/> Drinking water supply <input type="checkbox"/> Ambient air	
d. NAME OF RECEIVING WATERS:					
e. PASS THE INSTALLATION BOUNDARY?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
f. NPDES PERMITS POINTS INVOLVED?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
g. SAMPLE BEING TAKEN FOR LEGAL RECORDS?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
11. DAMAGE/IMPACT ON SURROUNDINGS (GROUNDWATER, WILDLIFE, ETC.):					
12. REMEDIAL ACTION TAKEN:					
13. REMEDIAL ACTION PLANNED:				14. DATE OF REMEDIAL ACTION COMPLETION:	
15. NOTIFICATIONS:					
a. NRC	<input type="checkbox"/> Yes <input type="checkbox"/> No	DATE/TIME:	POC:		
b. ACO STAFF	<input type="checkbox"/> Yes <input type="checkbox"/> No	DATE/TIME:	POC:		
c. STATE	<input type="checkbox"/> Yes <input type="checkbox"/> No	DATE/TIME:	POC:		
d. LEPC	<input type="checkbox"/> Yes <input type="checkbox"/> No	DATE/TIME:	POC:		
e. EPA	<input type="checkbox"/> Yes <input type="checkbox"/> No	DATE/TIME:	POC:		
16. NRC INCIDENT NUMBERS:			17. REACTION BY NEWS MEDIA/PUBLIC:		
18. DOLLAR VALUE OF MATERIAL SPILLED:			19. TOTAL COST OF CLEANUP ACTIVITIES (EST/ACTUAL) :		
20. WHAT STEPS ARE BEING TAKEN TO PREVENT FUTURE OCCURRENCES OF THIS TYPE AND DATE FORMAL REPORT IS DUE (TO WHAT AGENCY) :					
21. FORWARD REPORT TO: (1) JMC-OPCTR-OP@AFSC.army.mil (2) AMSJM-IS@AFSC.army.mil (3) AMSJM-ISM@AFSC.army.mil (4) Dennis.Versluys@us.army.mil					

APPENDIX G
GUIDELINES FOR RELEASING INFORMATION

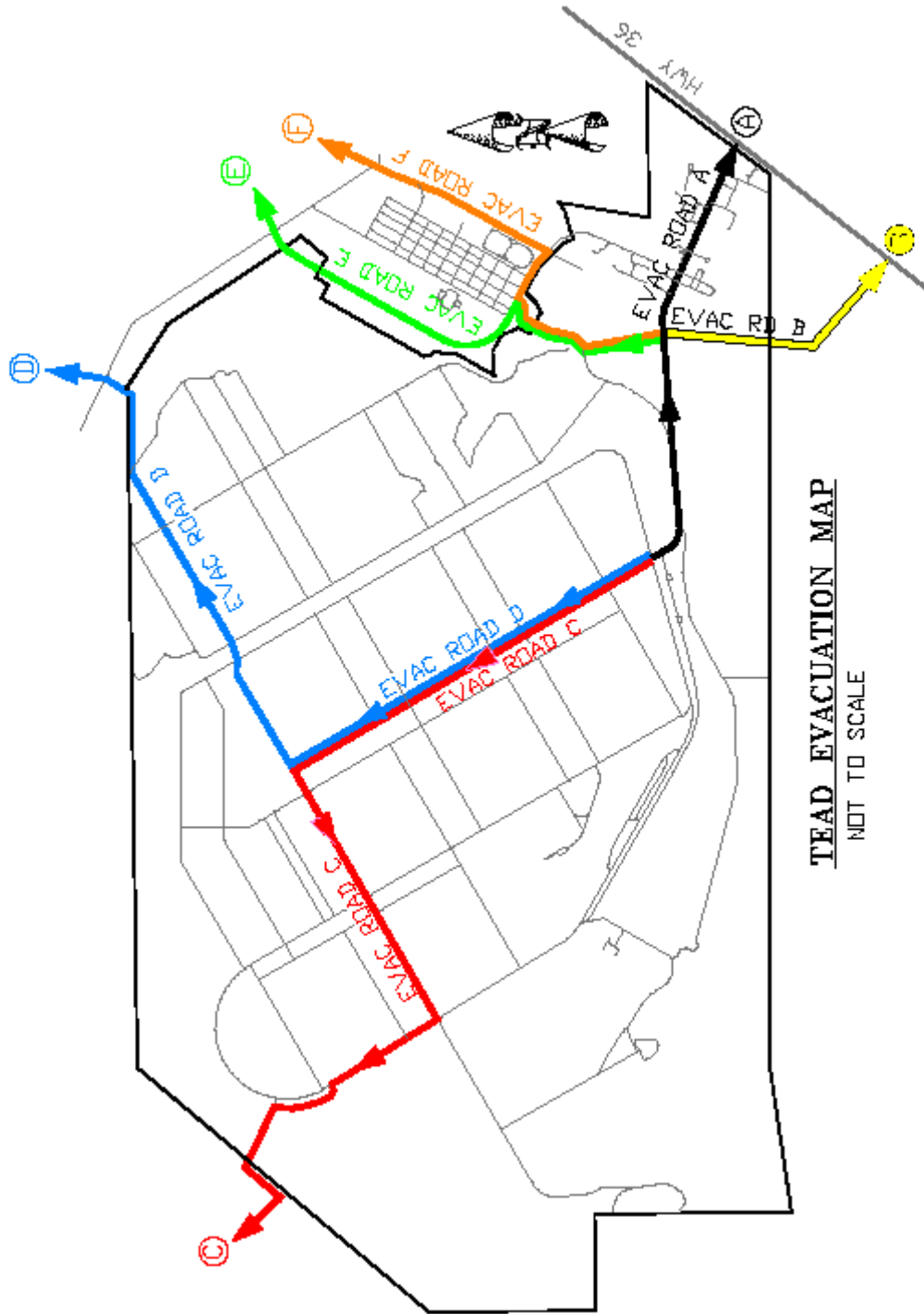
GUIDELINES FOR RELEASING INFORMATION

Although prompt action is essential in coping with any accident or incident, the potential impact on public health and the public's perceptions of spills of hazardous substances magnify this importance. Regarding release of information concerning chemical surety material and accidents resulting in casualty, specific guidance is in AR 360-5. Release of information regarding spills of hazardous substances will be conducted per the following guidelines:

1. The public is entitled to all unclassified information concerning a spill of a hazardous substance. Furnishing such information in a timely, positive manner that assures accuracy and reflects consideration of the public welfare is in the national interest and is a function of the command.
2. In the event that a spill of a hazardous substance poses an imminent threat to the public health or welfare, or to the environment, the Installation Commander has the authority to approve the release of information.
3. For spills that are contained within the installation boundaries and pose no threat to the public health and welfare, or the environment in the surrounding community, release of information will be made at the discretion of the Installation Commander. However, prompt release of factual information is encouraged. Even if no information is formally disseminated to the public, any unclassified information that may be obtained under the Freedom of Information Act should be made readily available to any person who requests it.
4. The responsible official who releases information about the spill should ensure that such releases of information will be prepared to:
 - a. Ensure public safety.
 - b. Prevent or reduce widespread public alarm.
 - c. Ensure public understanding of the extent and nature of the public hazard resulting from the spill.

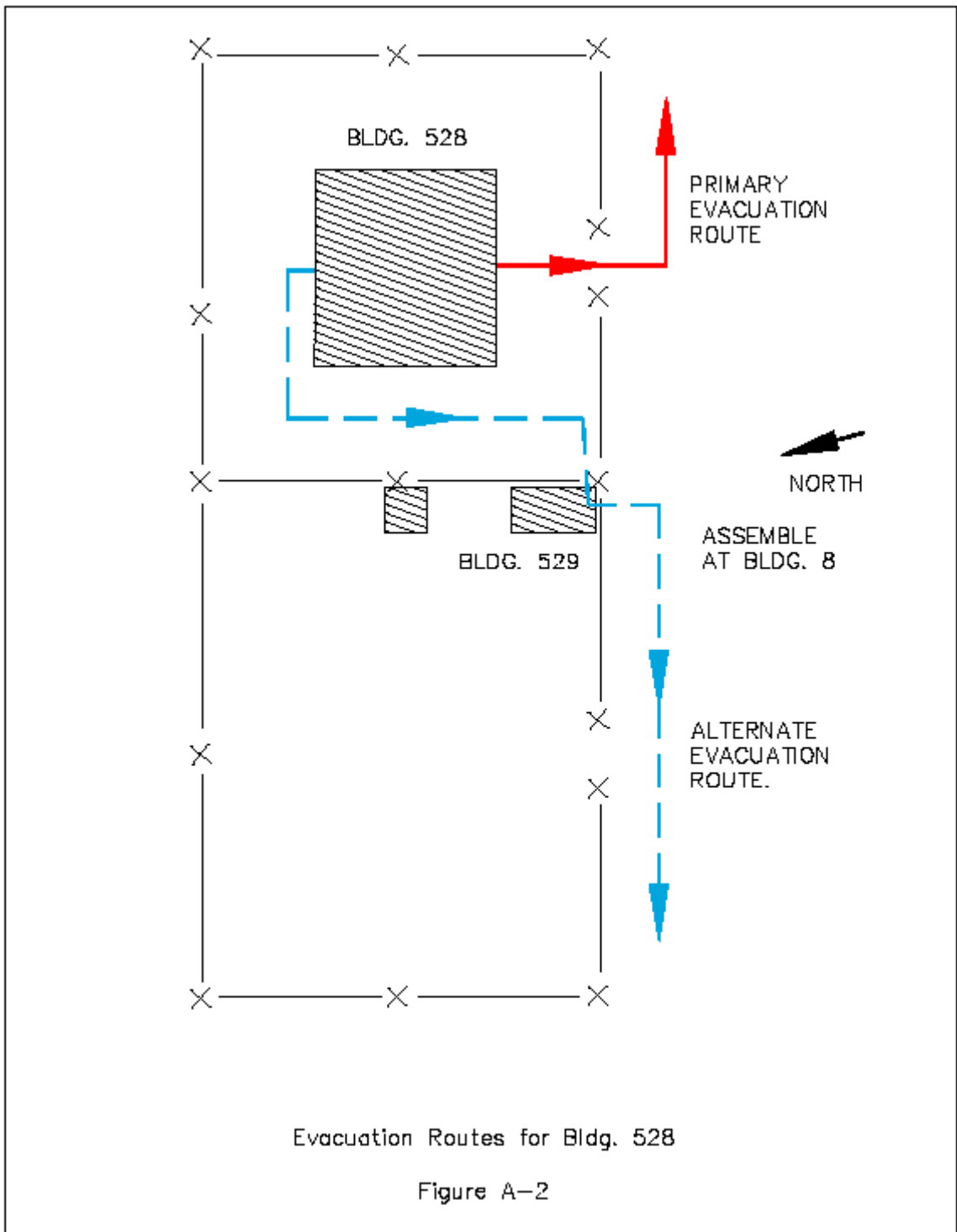
APPENDIX H

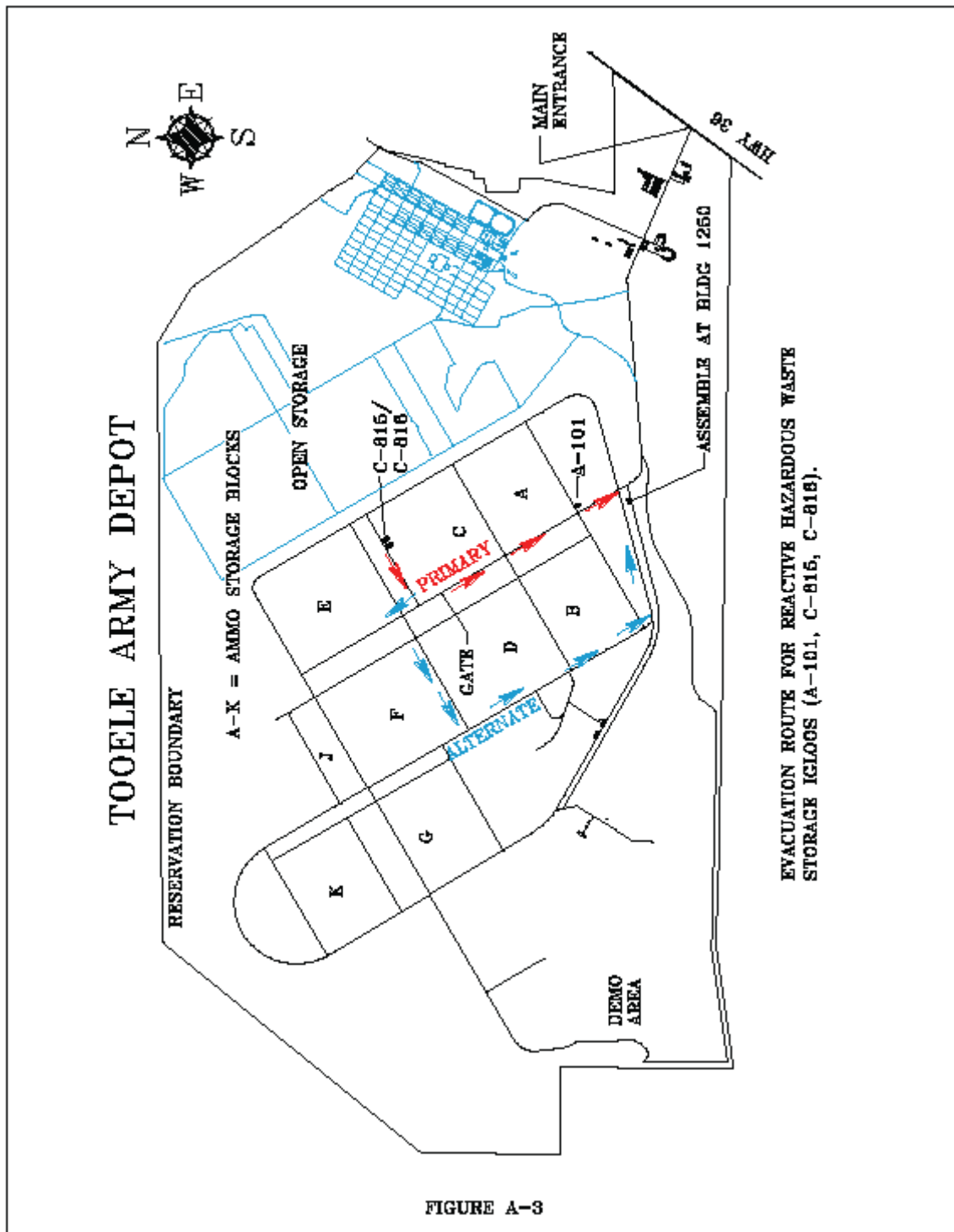
**EVACUATION ROUTES
Figures A-1 through A-11**

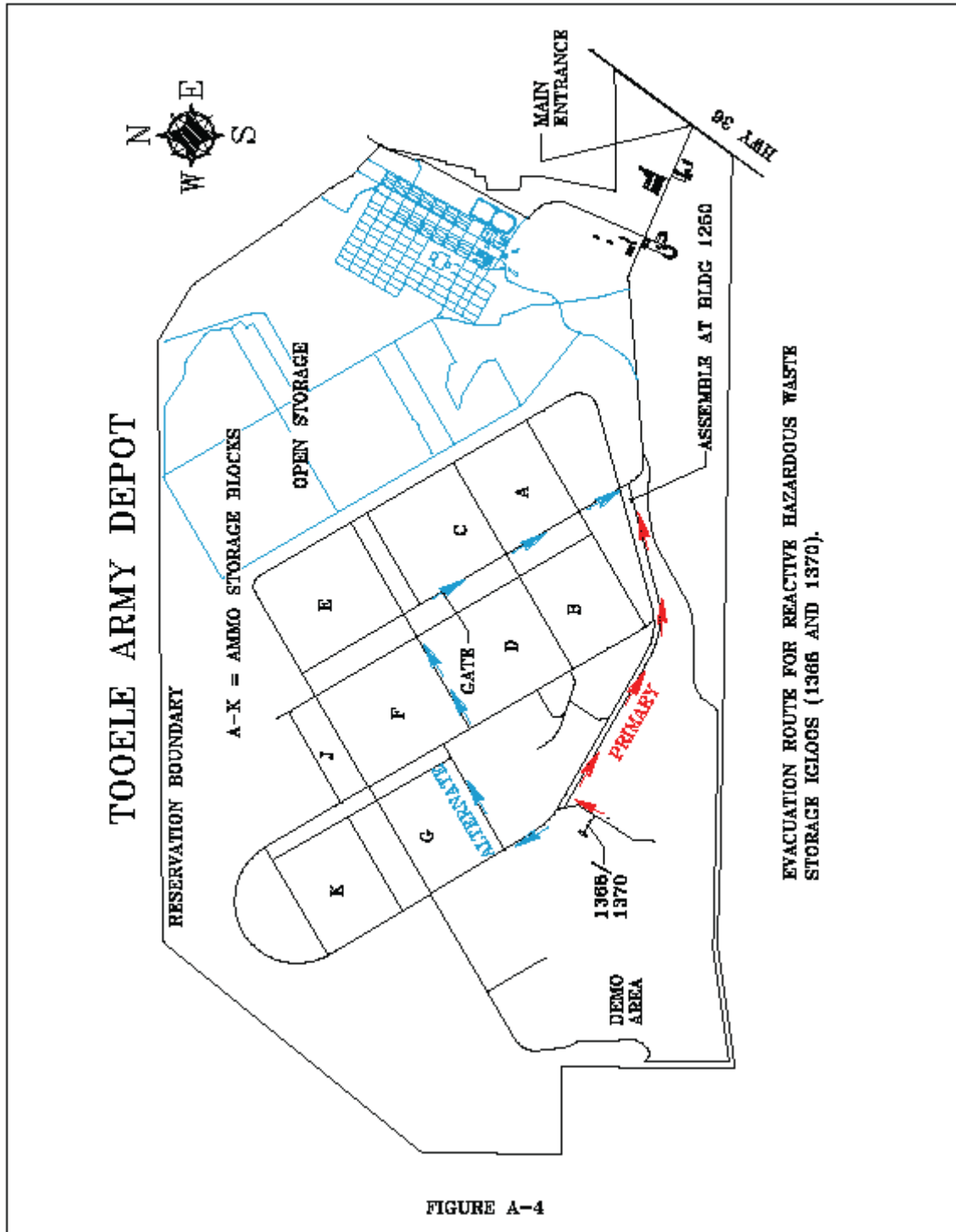


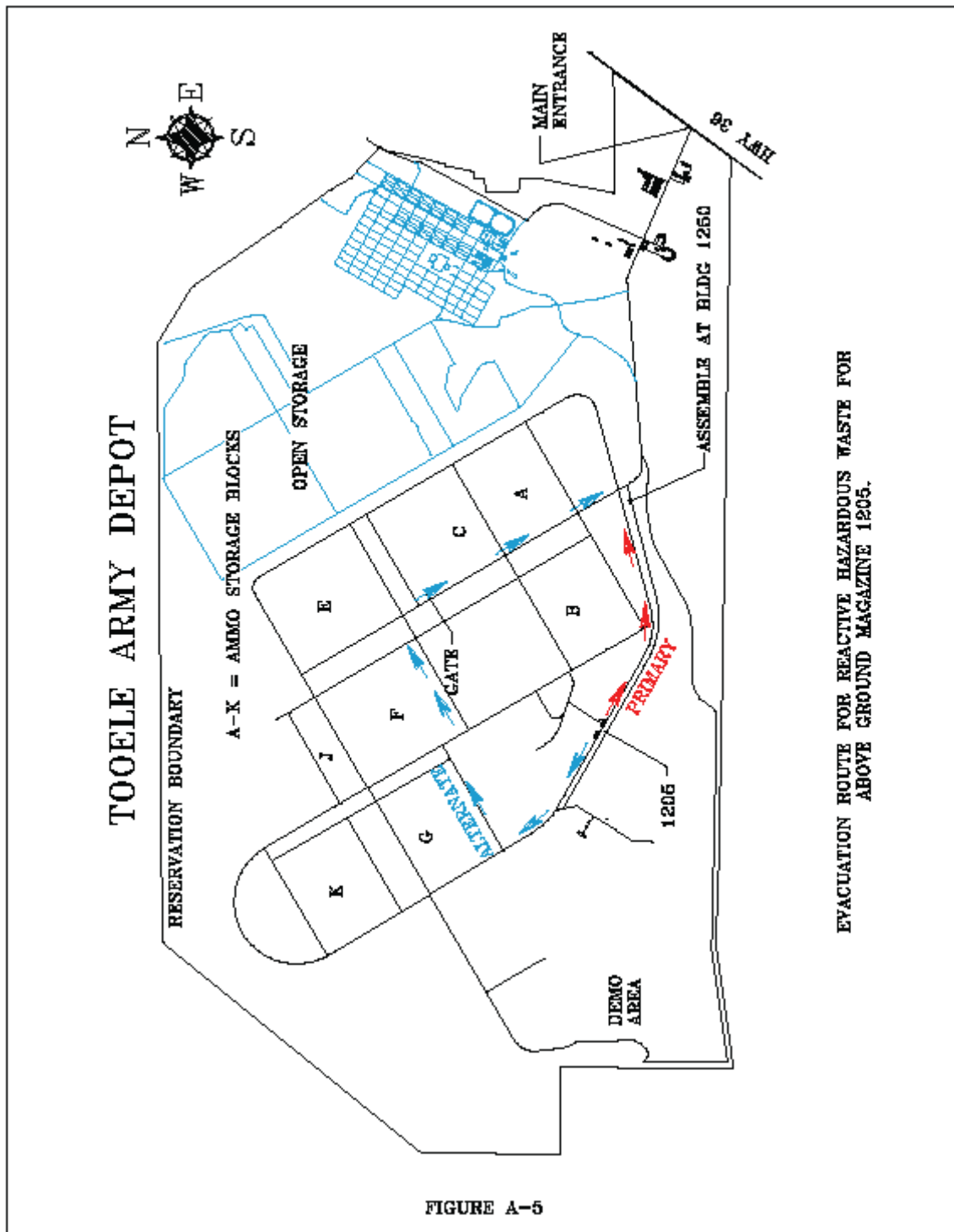
TEAD EVACUATION MAP
NOT TO SCALE

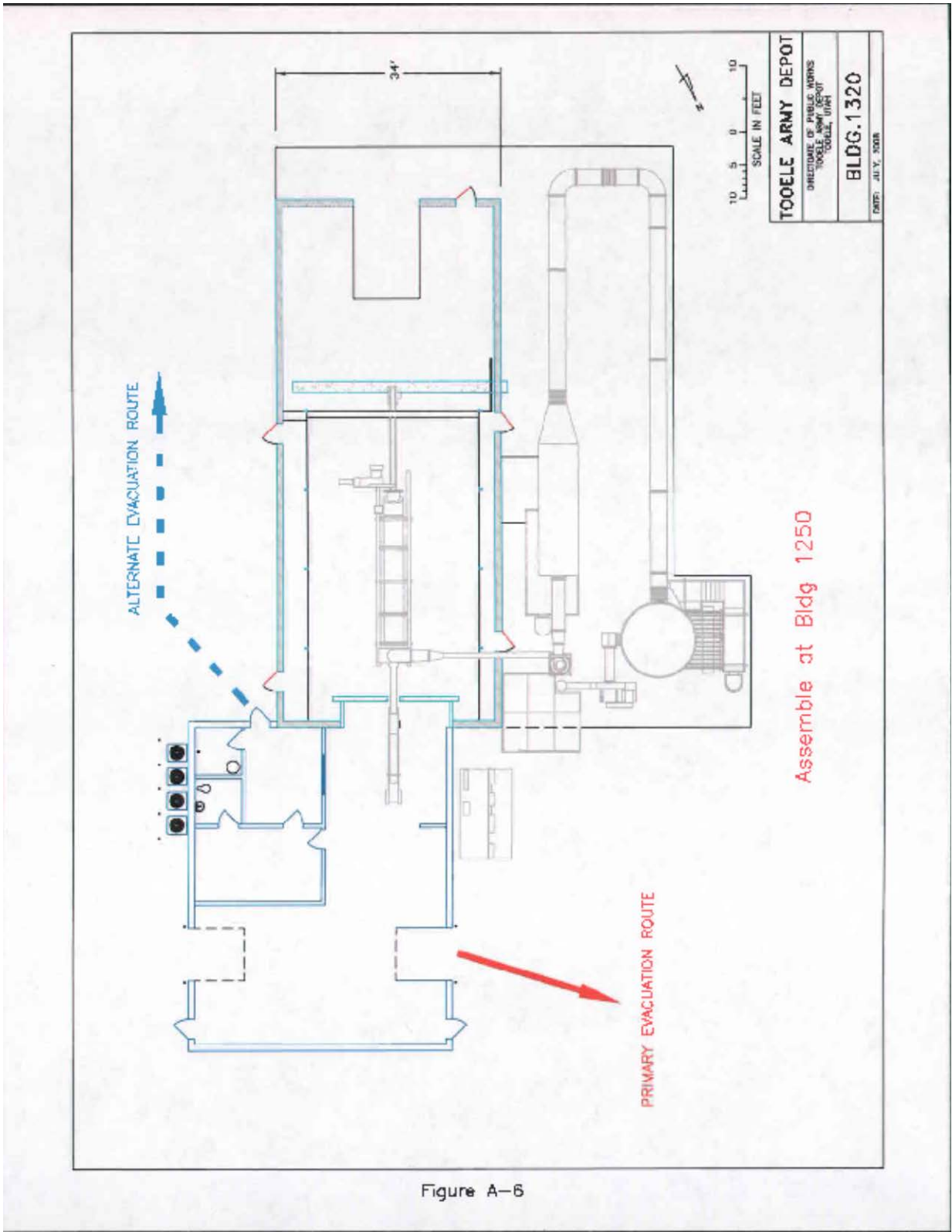
Figure A-1











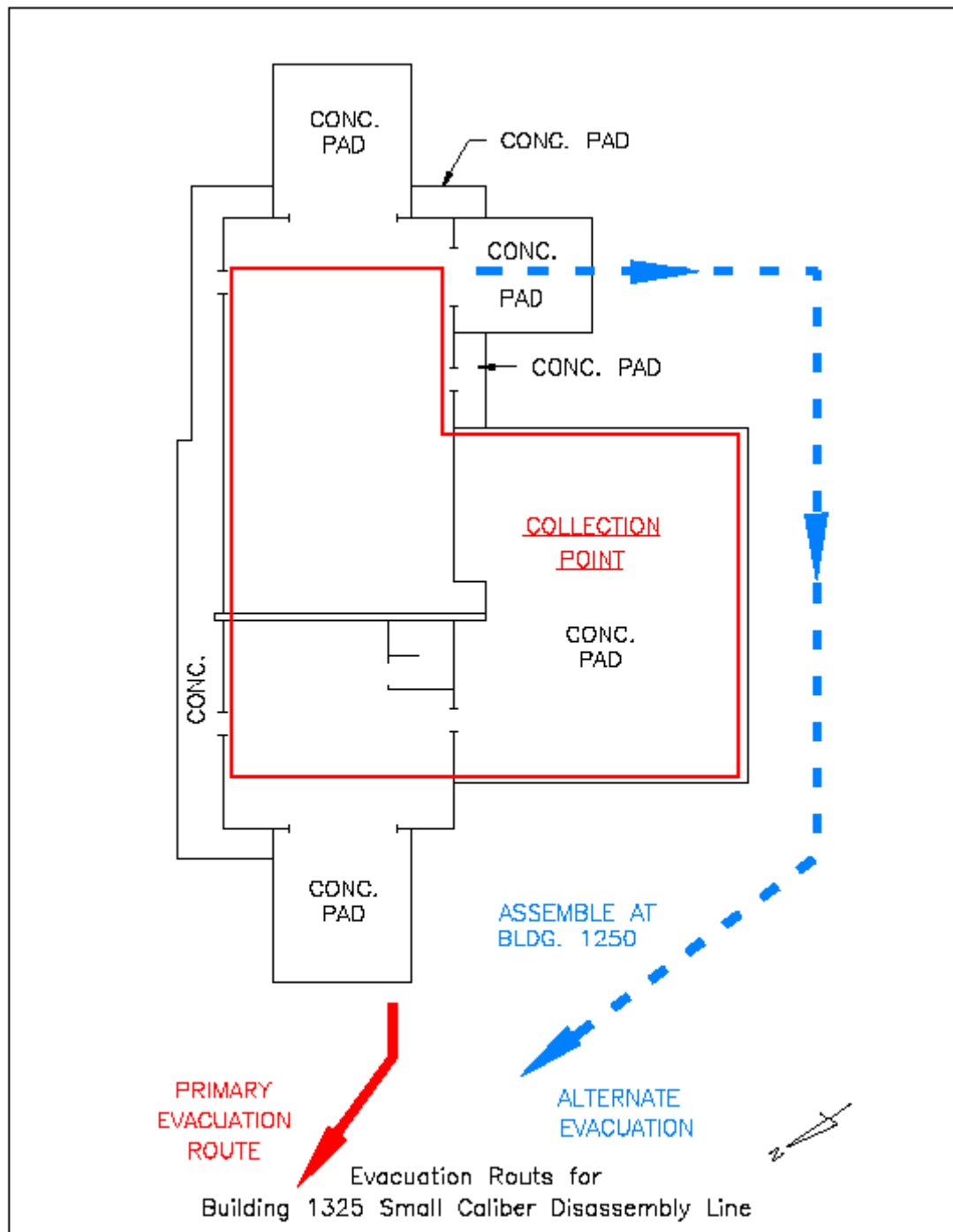
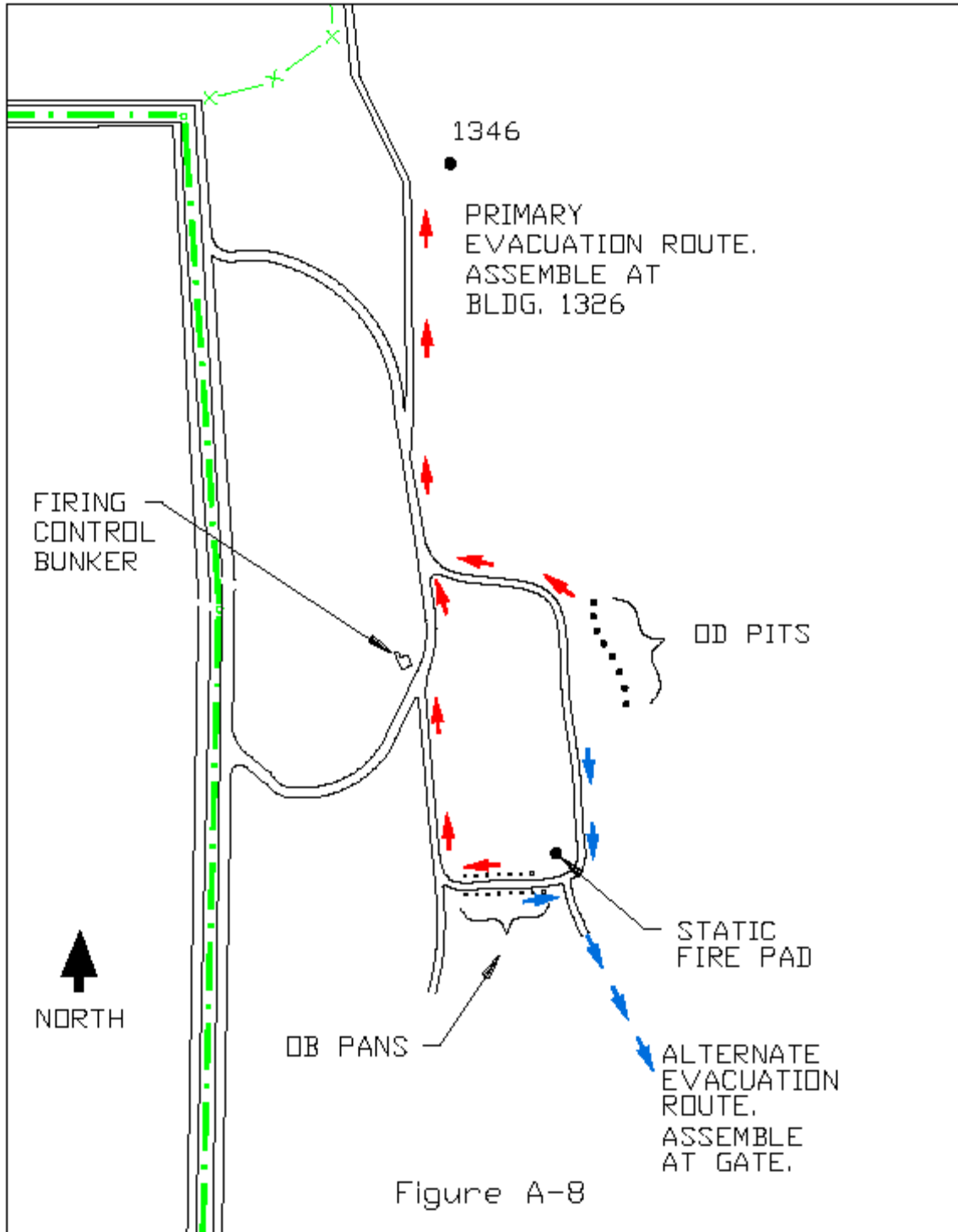


Figure A-7



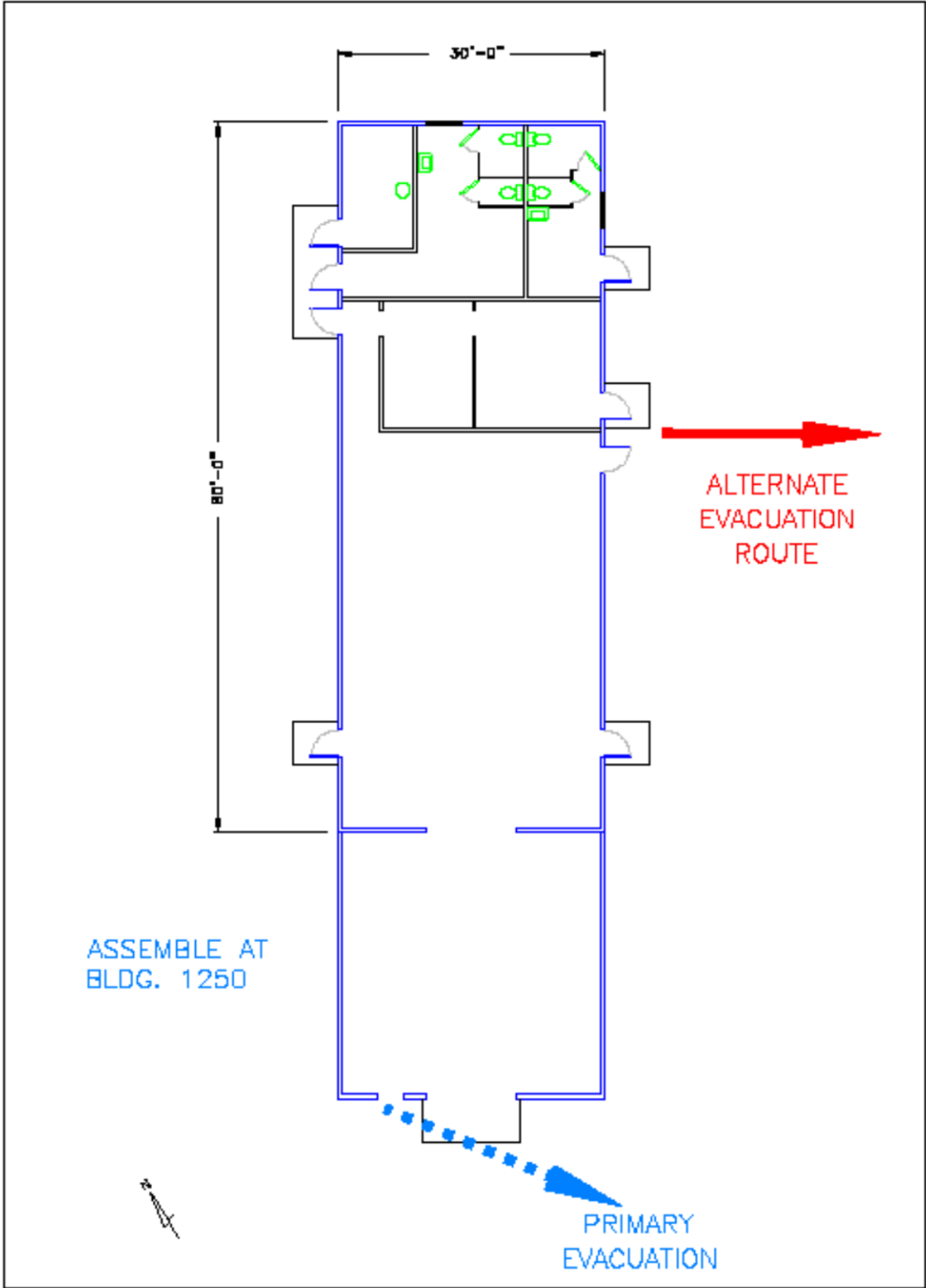


Fig A-9
 Building 1400 Evacuation Routes

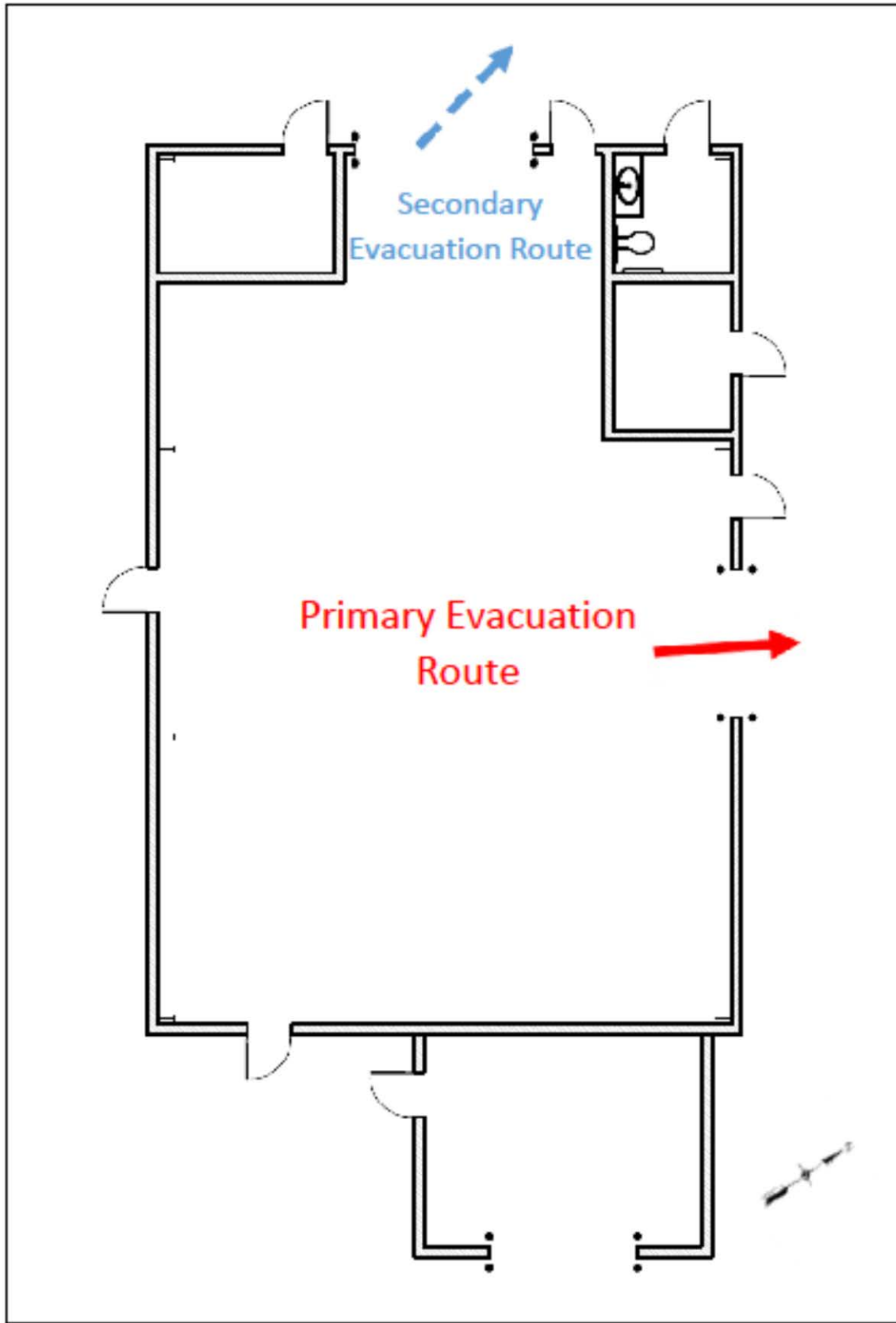


Figure A-11
Building 1335 Evacuation Route

ATTACHMENT 8

CLOSURE PLAN

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1.0 Closure Performance Standard

1.1 The Hazardous Waste Management Units (HWMUs) at the Tooele Army Depot (TEAD) shall be closed according to the requirements of Condition II.N, Utah Admin. Code R315-264-110 through 120 and the following closure and post-closure plan. Prior to closure of any or all HWMUs, when necessary, this plan shall be modified to add detailed procedures for sampling and decontamination or removal of all contaminated soil, groundwater, equipment and structures. The closure information in this document is general and is based on current information and future estimates of the use, current inventory and potential contamination and remediation of each of the HWMUs.

1.2 When necessary, prior to initiating closure, a baseline-sampling program shall be completed to determine background concentrations of contaminants in all appropriate media, equipment, structures and decontamination waters. Any sampling and analysis plans will be approved by the Director of the Division of Waste Management and Radiation Control (Director) prior to implementation.

1.3 The HWMUs operated by the Permittee shall be closed in a manner that minimizes the need for further maintenance and eliminates, minimizes, or controls the possible hazards to human health and the environment. When Open Burn/Open Detonation (OB/OD) operations at the Facility are terminated, the unit shall be closed in a manner that eliminates the need for post-closure care. Closure of the OB/OD unit shall comply with the environmental performance standards of R315-264-601 relative to closure activities and post-closure facility conditions.

1.4 This plan does not address corrective actions concerning past activities that are identified as Solid Waste Management Units (SWMUs) with Known Releases and SWMUs with Suspected Releases since these SWMUs are addressed in the Industrial Waste Lagoon Post Closure Permit issued by the Director January 7, 1991, and the TEAD Federal Facilities Agreement.

1.5 The removal of all hazardous waste inventories, and the treatment and disposal of all hazardous wastes stored at the Facility, at either HWMUs operated by the Permittee or off-site Treatment, Storage and Disposal Facilities (TSDFs), will minimize the need for further maintenance, and eliminate the possibility of a post closure escape of hazardous constituents from the HWMUs included in this permit.

1.6 The twelve HWMU's included in this closure plan are:

1.6.1 Building 528 - Container storage of wastes with free liquids.

1.6.2 Ammo Igloo A-101 - Container storage of wastes with free liquids.

1.6.3 Ammo Igloos C-815 and C816 - Container storage of wastes without free liquids.

1.6.4 Service Magazines 1368 & 1370 - Container storage of wastes without free liquids.

1.6.5 Above Ground Magazine 1205 - Container storage of wastes without free liquids.

1.6.6 APE-1236 Deactivation Furnace (incinerator at Bldg.1320) – Thermal treatment of reactive (D003, explosive) wastes. Wastes are limited to Propellant Explosive and Pyrotechnic (PEP) items having military application.

1.6.7 Small Caliber Disassembly Line – Initiation of primers after the propellant is removed from the projectile.

1.6.8 OB/OD Unit – Open burn and open detonation treatment of waste propellant and conventional military munitions and components in burn pans, static silos and open detonation pits.

1.6.9 Hydrolysis Facility – Destruction of explosives by hydrolysis in a sodium hydroxide solution.

1.7 Throughout closure of any HWMU, all operations shall be performed in a manner that will protect personnel, human health, and the environment. The necessary level of protection shall be achieved by ensuring that various precautions are put in place and properly implemented. Precautions will include:

1.7.1 Security: All existing security (e.g., signs, gates) will be maintained and, as necessary, supplemented.

1.7.2 Inspections: The facility inspection program will inspect areas where hazardous waste and residues are temporarily stored during remediation and decontamination.

1.7.3 Personnel Training: All personnel associated with facility closure will receive the training necessary to perform their duties.

1.7.4 Preparedness and Prevention: During closure activities, all equipment necessary to respond to potential emergencies at the facility will remain available. The facility will be maintained in such a manner as to minimize the potential for emergencies during closure.

1.7.5 Contingency Plan and Emergency Procedures: The facility Contingency Plan will be maintained, and, as necessary, augmented to describe proper responses in the event of emergencies during closure.

2.0 Maximum Waste Inventory

2.0.1 The maximum inventory each container storage HWMU will have is determined from the maximum permitted storage capacity for each unit as contained in Attachment 9 (Containers) and is listed below:

2.0.1.1 Building 528 – 57,800 gallons.

- 2.0.1.2 Igloo A-101 – 9,180 gallons.
- 2.0.1.3 Igloo C-815 & C-816 – 12,960 cubic feet each.
- 2.0.1.4 Service Magazines 1368 & 1370 – 800 cubic feet each.
- 2.0.1.5 Above Ground Magazines 1205 – 72,000 cubic feet.

2.0.2 The maximum inventory of wastes on site at the 1236 Deactivation Furnace (Bldg. 1320) at the time prior to closure is the sum of two waste streams. The first waste stream is comprised of the waste PEP item (munitions) that will be deactivated in the furnace and the second is comprised of the ash that results from furnace operations. The furnace can treat reactive (explosive) waste at a Net Explosive Weight (NEW) feed rate of 200 to 300 lbs/hr. Only the amount of waste PEP items that can be treated in one day are stored at the furnace site. Using 250 lbs/hr NEW feed rate, and 8 hours of operation/day as a basis, the maximum inventory of waste awaiting treatment stored at the furnace site is 2,000 pounds NEW.

2.0.3 Ash resulting from furnace operations is collected in the cyclone, the baghouse, and the containers into which this equipment empties. At the time of closure, the baghouse and cyclone will be emptied and all the bags shall be removed from the baghouse. Less than ten 55 gallon drums will be required to contain the residue resulting from this clean-up activity.

2.0.4 The total maximum inventory of wastes that may be at the 1236 Deactivation Furnace (Bldg. 1320) when closure begins is 550 gallons (ash) plus 320 gallons (PEP items), for a total of 870 gallons.

2.0.5 The maximum inventory of waste on site at the Small Caliber Disassembly Lines (Bldgs. 1325 and 1335) at the time prior to closure is the sum of two waste streams. The first waste stream is comprised of the PEP (munitions) that will be disassembled and the second is comprised of residue collected in the pollution abatement system. Only the amount of waste PEP that can be disassembled in a day will be stored at the facility. The maximum amount that will be disassembled in one day is 50,000 rounds.

2.0.6 The maximum inventory of wastes on-site at the Hydrolysis Facility (Bldg. 1400) at the time prior to closure is the sum of two waste streams. The first waste stream is comprised of the waste PEP items (CADs and PADs) that will be deactivated via hydrolysis reaction, and the second is comprised of the hydrolysate solution used to process the Reactive (explosive) waste. The hydrolysis facility can treat the explosives at an average NEW feed rate of 163 lbs/hr (average rate takes bath heat up time into account, normal processing rate is 250 lbs/hr). Only the amount of waste PEP items that can be treated in one day is stored at the hydrolysis facility. Using 163 lbs/hr NEW feed rate, and 10 hours of operation/day as a basis, the maximum inventory of waste awaiting treatment stored at the hydrolysis site is 1,630 pounds NEW.

2.0.7 Hydrolysis facility residues from hydrolysis operations remain in their respective tanks

until collected. At the time of closure, the hydrolysis tanks shall be emptied. The total maximum inventory of wastes that may be at the Hydrolysis Facility (Bldg. 1400) when closure begins is therefore ~2,200 gallons (hydrolysate), plus 300 gallons (PEP items), 2,500 gallons total.

2.0.8 The inventory of waste at the OB/OD unit is discussed in Sections 2.6 and 3.9.

2.1 Building 528

2.1.1 The Permittee does not operate any HWMU capable of treating or disposing of the types of wastes stored in Building 528. All wastes stored in Building 528 require some type of treatment before land disposal. Wastes shall be treated and disposed of at off-site TSDFs.

2.2 Igloos A-101, C-815 and C-816, Service Magazines 1368 and 1370, and Above Ground Magazine 1205

2.2.1 The Permittee does operate HWMUs capable of treating the types of wastes stored in Igloos A-101, C-815, C-816, Service Magazines 1368 and 1370, and Above Ground Magazine 1205 (Reactive, D003 (explosive)). Wastes stored in these HWMUs will be treated at either the 1236 Deactivation Furnace (the incinerator located at Bldg. 3120), the Hydrolysis Facility, or the Open Burn/ Open Detonation areas operated by the Permittee. There will be no need to transport the wastes stored at these HWMUs off-site, since the deactivation of these waste can be done at the Facility.

2.3 1236 Deactivation Furnace (Bldg. 1320)

2.3.1 At closure, the 1236 Deactivation Furnace (Bldg. 1320) shall be dismantled, and components that were in contact with hazardous waste and treatment residues shall be decontaminated and then recycled as scrap metal. This is an appropriate method of management of these components since they are made of metal and there is a market for scrap metal.

2.4 Small Caliber Disassembly Lines (Bldgs. 1325 and 1335)

2.4.1 At closure, the Small Caliber Disassembly Lines (Bldgs. 1325 and 1335) shall be disassembled, decontaminated and the components that were in contact with hazardous waste and treatment residues shall be recycled as scrap metal. This is an appropriate method of management of these components since they are made of metal and there is a market for scrap metal.

2.5 Hydrolysis Facility

2.5.1 At closure, the Hydrolysis Facility (Building 1400) shall be disassembled, and the components that were in contact with hazardous waste and treatment residues shall be decontaminated and recycled as scrap metal. This is an appropriate method of management of these components since they are made of metal and there is a market for scrap metal.

2.6 OB/OD Unit

2.6.1 Waste ordnance and munitions are not accumulated at the OB/OD Unit. Because these waste materials are transported to the OB/OD Unit on the day of treatment and treated on that day, there will be no inventory of such materials at this unit at closure. The maximum daily inventory of explosive material subject to OB/OD at the facility is also limited by the environmental performance standards specified in Module VI.

2.6.2 Shrapnel on the surface of the range created as a result of OD activities shall be collected and recycled at the time of unit closure. Ash generated from OB activities shall be collected, analyzed, and disposed of appropriately at the time of closure. Soil contaminated above risk-based or background levels (whichever are higher), shall be removed for off-site treatment.

3.0 Disposal or Decontamination of Equipment, Structures, Soils and Residues

3.0.1 Prior to any sampling of media or structures, historical records including the operating record shall be reviewed to determine if any spills or releases or hazardous waste or constituents has occurred. The HWMU shall be inspected for the presence of any stains or other discoloration that may indicate the potential release of a hazardous constituent or waste. This information will be used in a sampling and analysis plan to help determine the number and location of samples to be collected as well as the potential contaminants to be analyzed. If there is no evidence of a spill or release then sampling may not be required.

3.1 Building 528

3.1.1 Building 528 stores hazardous wastes containing free liquids. The EPA waste codes that describe the type of wastes stored there, and also define the nature of the possible contaminants and hazardous constituents expected to be present as a result of spills or leaks from containers can be found below in Table 1.

D001	D006	D018	D028	D035	D043	F001
D002	D007	D019	D029	D036		F002
D003	D008	D022	D030	D039		F003
D004	D009	D023	D032	D040		F004
D005	D011	D026	D033	D042		F005

3.1.2 Possible contaminated areas are; 1) the secondary containment base, 2) soil beneath the secondary containment base, 3) the containment trench surrounding Building 528, and 4) the load/unload area located directly in front of the entrance gate to Building 528.

3.1.3 To determine the need to decontaminate the secondary containment storage base of Building 528, samples shall be taken and analyzed and the operating record reviewed. Thirty-

seven samples of the concrete base shall be taken, the location of which shall be based on a hexagonal sampling pattern developed using the methodology described in EPA-560/5-86-017, "EPA Field Manual for Grid Sampling of PCB Spill Sites". The 36 samples shall be combined into 4 composite samples which shall be analyzed for the constituents described by the EPA waste codes found in Table 1. If these samples show contamination to be present, the secondary containment base of Building 528 shall be decontaminated.

3.1.4 Decontamination of the secondary containment base shall be done by steam cleaning. Steam cleaning will provide adequate decontamination considering the following:

3.1.4.1 The base is sealed with a coating that prevents the concrete from absorbing spill residue.

3.1.4.2 Required inspections lessen the possibility of a spilled waste contacting the base for long periods of time.

3.1.4.3 The only wastes that come into contact with the base are those that are spilled from containers (i.e. there are no waste piles stored in Building 528), and the condition of containers used to store hazardous waste makes this an infrequent occurrence.

3.1.4.4 Any volatile contamination will be driven off by the steam

3.1.4.5 Other types of waste stored in Building 528 will be suspended in the steam condensate.

3.1.5 Condensate generated while steam cleaning the secondary containment base of Building 528 shall be collected, sampled and either taken to the Tooele City Wastewater Treatment Plant or to an off-site TSDF, depending on the sampling results.

3.1.6 After procedures have been performed to decontaminate the secondary containment base of Building 528, 36 samples shall be taken using the same location determination described above. The 36 samples shall be combined into 4 composite samples that shall be analyzed for the constituents described by the EPA waste codes found in Table 1.

3.1.7 The contamination of soil beneath the secondary storage base of Building 528 is minimized by the integrity of both the containment base and the containers used to store the hazardous waste. Permit conditions require the weekly inspection of the base of Building 528 for any cracks or structural defects, and the condition of containers stored in Building 528 to ensure they are in good condition and closed.

3.1.8 Any discolored areas of the floor (or areas where the concrete sealant deteriorated) shall be grit blasted until all discoloration is removed. The operator will be able to determine the depth of penetration of contamination by observing the color change of the blasted concrete. Should the discoloration continue to the soil underlying the concrete base, soil samples shall be taken at the soil surface and 1 foot below. Any soil samples shall be analyzed for the

constituents described by the EPA waste codes found in Table 1. The building shell will hold the spent blast grit, which shall be containerized and managed depending on the results of the analysis of the spent blast grit. Any contaminated soil shall be removed and sent to an off-site TSDF.

3.1.9 To determine the extent of possible contamination in soil of the exterior containment trench, samples shall be taken from the centerline of the trench. When viewed from above, the trench forms a square around the secondary containment base. Both squares share the same center. Since the only source of contamination of the soil in the containment trench is the pipes found at the corner of the secondary containment base, any contamination present would be found at the highest concentration at the four corners of the square formed by the centerline of the exterior containment trench. Nineteen samples shall be taken at each corner of the exterior containment trench. The samples shall be taken along the centerline, at one-foot intervals.

3.1.10 The sample area shall be the area along the centerline 10 feet prior to the corner and 10 feet past the corner. The 19 samples from each corner shall be combined into 2 composite samples. Four corners will therefore yield 8 composite samples for analysis of the constituents described by the EPA waste codes found in Table 1.

3.1.11 The load/unload area shall be sampled to determine the extent of possible soil contamination. The sample area size shall be the entire area where hazardous wastes have been handled, and shall be determined by the TEAD Environmental Office. The appropriate number of samples and sampling points shall be determined using the methodology mentioned above for PCB spills, and is based on the size of the area to be sampled. Samples shall be analyzed for the parameters described by the EPA waste codes listed in Table 1.

3.1.12 If necessary, action and cleanup levels regarding contaminated soils shall be negotiated with the Director and presented in a detailed closure plan that shall be submitted to the Director one year prior to the commencement of closure activities.

3.2 Igloo A-101

3.2.1 Steam cleaning shall be used to decontaminate the secondary containment base of Igloo A-101. All wastes stored in A-101 are containerized (i.e. no waste piles). The only way for waste to contact the secondary containment base directly is if a container fails. This is not a common occurrence. The base is coated with a concrete sealant that is impermeable to moisture, and therefore impermeable to condensate. The condensate will be collected in the drain ditches that run the length of the igloo, down both sides. A portable sump pump will be used to containerize the condensate. The collected condensate shall be analyzed for explosive contamination.

3.2.2 Whether the condensate is a hazardous waste or not shall be based on the concentration of 2,4-dinitrotoluene (D030), and hexachlorobenzene (D032), the constituents of concern present in explosives. If the concentration of either of these two constituents is above that specified in Table 1 of 40 CFR 261.24, then the condensate shall be managed as a toxicity characteristic

hazardous waste and disposed of at an off-site TSDF. Sampling of the containment base shall be conducted to determine the effectiveness of the decontamination procedures. The number and the method of sampling shall be the same as for Building 528.

3.2.3 The possibility of soil contamination is remote, however the most likely place for contamination to exist is where the plugged drain ditches once exited the igloo, and at the boundary where the concrete apron meets the dirt. Samples shall be taken at one-foot intervals along the concrete apron/dirt boundary (the apron is in front of the igloo entrance). These samples shall be composited into two samples.

3.2.4 Action and cleanup levels shall be negotiated with the Director and presented in a detailed closure plan that shall be submitted by the Permittee to the Director one year prior to the commencement of closure activities.

3.3 Igloos C-815 and C-816, Service Magazines 1368 and 1370, and Above Ground Magazine 1205

3.3.1 Since these HWMUs store containerized wastes that do not contain free liquids and, wastes only contact the floor if a container fails (i.e. no waste piles), and neither of these areas has secondary containment capability, the floor sweepings shall be collected and analyzed for explosive contamination. If not present, the concrete bases of the HWMU shall be considered clean because the floor sweepings give a representative sample of what has been in contact with the floor surface.

3.3.2 If explosive contamination is present, the concrete floor shall be sandblasted. This method is chosen because there are no methods to contain liquids at any of these HWMUs. The spent grit blast will be collected and managed as a hazardous waste if upon analysis the blast grit is toxicity characteristic for the constituents 2,4-dinitrotoluene (D030) and/or hexachlorobenzene (D032) (constituents found in explosives).

3.3.3 Samples of the blasted concrete base shall be taken from Igloo C-815, Igloo C-816, Service Magazines 1368 and 1370 and Above Ground Magazine 1205. The sample number and method used shall be that described in the section relating to Building 528. Due to the small size of Service Magazines 1368 and 1370, only 9 samples shall be taken of each building. Samples taken in Igloos C-815 and C-816 and Above Ground Magazine 1205 shall be composited into four samples, while samples taken from the Service Magazines shall be composited into one sample.

3.3.4 Action and cleanup levels shall be negotiated with the Director and be presented in a detailed closure plan which shall be submitted by the Permittee to the Director one year prior to the commencement of closure activities.

3.4 1236 Deactivation Furnace (Bldg. 1320)

3.4.1 The components of the Deactivation Furnace which continually come into contact with

hazardous wastes are the, Rotary Kiln, Waste Feed Conveyor, Waste Feed Housing, Kiln Discharge Conveyor, All duct work associated with the Pollution Abatement System (PAS), Cyclone and Bag House and the Afterburner.

3.4.2 At closure, the waste feed conveyor and the waste feed housing shall be dismantled and fed through the 1236 Deactivation Furnace. During this time the furnace's operating parameters shall be those specified through permit conditions. The waste feed conveyor and the waste feed housing shall be fed through the furnace since these pieces of process equipment function prior to the rotary kiln (which is where PEP wastes are deactivated). This will ensure that any possible explosive residues that may be present on this process equipment are deactivated.

3.4.3 After the waste feed conveyor and the waste feed housing have been fed through the rotary kiln, the furnace shall be operated at parameters specified through permit conditions for one hour. During this time waste shall not be fed to the furnace. This will ensure that any possible PEP residue remaining in the furnace is deactivated.

3.4.4 The rotary kiln, kiln discharge conveyor, Pollution Abatement System (PAS) duct work, afterburner, cyclone, and bag house function after the rotary kiln. Therefore no explosive contamination will be present in the treatment residue (ash) contacting their surfaces. The process equipment listed above shall be dismantled and cleaned of any loose, accumulated treatment residue (ash) that may be present.

3.4.5 The collected treatment residue (ash) shall be containerized and managed in the same way as ash that was generated throughout the operational life of the furnace.

3.4.6 The disassembled 1236 Deactivation Furnace process equipment shall then be sold as scrap metal through the Defense Reutilization and Marketing Office (DRMO).

3.4.7 The room housing the waste feed conveyor shall be swept and the sweepings shall be collected and analyzed. Sweeping will be adequate because the furnace does not treat wastes containing free liquids. If the analysis of the floor sweepings does not show the presence of explosives, the room housing the waste feed conveyor shall be considered clean.

3.4.8 If analysis shows the floor sweepings to contain the Toxicity Characteristic waste mentioned in paragraph 3.3.2, or the presence of explosives, the room that housed the wastefeed conveyor shall be decontaminated by sandblasting the floor to the bare concrete. Solutions or steam cleaning cannot be used since there are no provisions for capturing liquids (i.e. no secondary containment). The spent blast grit shall be characterized and disposed properly based on the characterization.

3.4.9 Action and cleanup levels shall be negotiated with the Director and be presented in a detailed closure plan that shall be submitted by the Permittee to the Director one year prior to the commencement of closure activities.

3.4.10 A concrete apron is found at the unload area to the 1236 Deactivation Furnace Waste

Feed Conveyor Room (Building 1320). Soil samples shall be taken along the concrete apron/dirt boundary at one foot intervals. These samples shall be analyzed for the presence of explosives and the constituents of concern described by the EPA waste codes D004 through D011 (i.e. Toxicity Characteristic Metals).

3.5 Small Caliber Disassembly Lines (Buildings 1325 and 1335)

3.5.1 All filter media shall be removed and disposed of as hazardous waste. Any residues present on the process of material handling equipment shall be removed with brushes. The residues and the filter media shall be disposed of based on an analysis of its characteristics. The equipment shall be disposed of as scrap metal.

3.6 Hydrolysis Facility

3.6.1 All equipment that came into contact with the hydrolysis solution shall be rinsed with water to remove any contaminants. The rinse water shall be collected, sampled and properly managed. The equipment shall be disposed of as scrap metal.

3.7 Material Handling Equipment

3.7.1 If necessary, forklifts and trucks used to transport hazardous waste within the facility boundaries will be decontaminated on-site. The Permittee does not operate any disposal HWMUs and waste handled by material handling equipment (MHE) is in containers. The only way hazardous waste can contact the surface of MHE is if a container fails. The failure of a hazardous waste container is not a regular occurrence; therefore the MHE is not expected to be contaminated.

3.7.2 The determination as to the necessity of decontaminating MHE used in hazardous waste operations shall be made by a review of HWMU operating records, and spill report records. If it is demonstrated through this record review that no container failures occurred involving hazardous waste loading/unloading operations, no decontamination of MHE will be done.

3.7.3 The MHE shall be steam cleaned in a temporary facility erected with a containment system for the residues. Residues from the cleaning of the MHE shall be handled as hazardous waste until it can be properly characterized by sampling and analysis. Based upon the results of the analysis, the residues shall be appropriately managed.

3.8 OB/OD Unit

3.8.1 Methods for determining the presence of contamination, performing decontamination, and evaluating the effectiveness of decontamination procedures during closure of the OB/OD Unit are described in this section. Closure activities will be conducted in phases. Activities to be conducted during the first phase include the identification and removal of visible and/or readily identifiable waste residues from the area. This is followed by the classification, sorting, containerization, labeling, and storage of those materials.

3.8.2 The second phase of closure involves the sampling and analysis of soils and groundwater to determine whether contamination associated with OB/OD is present at statistically significant concentrations above risk-based or background levels (whichever are higher). A baseline characterization of the site shall be conducted prior to closure of the OB/OD unit. In addition, prior to closure of the OB/OD Unit, sampling will be needed to delineate the extent of contamination and to determine the extent of any remediation needed at closure.

3.8.3 The background area to be sampled is located on a 4-acre tract to the northeast of the OB/OD Unit, completely outside any potential impact area. This area was chosen because of the similar soil type (same alluvial fan morphology) as the OB/OD Unit, and the undisturbed nature (i.e., non-graded ridge and swale) with no roads or buildings. The determination of risk-based or background levels shall be discussed prior to closure and presented in a baseline Sampling and Analysis Plan (SAP). Equipment that may have become contaminated shall be decontaminated if sampling determines this is necessary. The analytical results from the equipment samples shall be compared to appropriate performance standards.

3.8.4 Should sample analysis indicate the presence of contaminants in the OB/OD Unit and/or soils at concentrations above risk-based or background levels (whichever are higher) that are statistically significant, remediation shall be required. Contaminated materials shall be classified, sorted, containerized, and sent off-site for treatment or (if appropriate) for disposal. If surface contamination of equipment is found, an appropriate cleaning agent shall be used. All of the equipment and decontamination residues shall be containerized prior to off-site transport.

3.8.5 The third phase of closure will involve verification sampling. Sampling shall be done to confirm that the closure remediation and decontamination were adequate. If contamination above risk-based or background levels (whichever are higher) is still present, additional remediation and decontamination shall be done, followed by an additional round of verification sampling.

3.8.6 The wastes generated during closure will fall into one of four categories: (1) reactive or explosive materials that must be treated by OB/OD; (2) solid materials or soils that are not reactive, or explosive, but which may be contaminated with constituents (e.g., lead, TNT, and RDX) remaining as a result of OB/OD and which require treatment to remove this contamination; (3) contaminated liquids resulting from closure activities, primarily equipment decontamination; and (4) solid, nonhazardous wastes that require no further treatment.

3.8.7 Any unstable materials detected shall be either detonated in-place or burned in the pans. Following removal of the burn pans and contaminated soil (if determined to be appropriate to meet risk-based levels or background conditions) and unexploded ordinance (UXO), the unit shall be re-graded using native soils to match the contours of the remainder of the surrounding area and it shall be re-vegetated.

3.8.8 As stated previously, four categories of wastes will be expected to be generated during closure. The categories are:

- 3.8.8.1. UXO - These are items that pose a risk of explosion or detonation. These materials may be detonated in place; however, if any such materials are brought to the staging area, they shall be segregated and moved to the open detonation (OD) area for detonation.
- 3.8.8.2. Contaminated Materials or Soils - These are materials, debris, and contaminated soils that are generated after OD activities have reached completion and cannot be reinitiated. These materials or soils are not reactive or explosive, but may be contaminated with constituents (e.g., lead, TNT, and RDX) remaining as a result of OB/OD and which require treatment to remove this contamination.
- 3.8.8.3. Contaminated Liquids - These are liquids resulting from closure activities, primarily equipment decontamination and any collected run-on or runoff.
- 3.8.8.4. Solid, Nonhazardous Wastes - These are wastes that require no further treatment and shall be disposed of in a Subtitle D Landfill.

3.8.9 UXO may be detonated in place at the OD area. Contaminated materials/soils shall be removed from the OB/OD Unit and brought to the temporary staging area located near the water tank and trailer outside the perimeter of the OB/OD Unit. Materials shall be sorted, if necessary, at the staging area as they arrive. Sorting is done to divide wastes into similar categories for management and disposition. The method used for sorting will include, if necessary, the use of screens of varying mesh size, selection and removal of discrete items by hand, and other methods that protect workers while permitting the separation of wastes. At the staging area, the contaminated materials/soils shall be placed in U.S. Department of Transportation (DOT)-approved drums, roll-off boxes, or other suitable containers for off-site transport. Similar materials will be consolidated to the maximum extent practical to minimize the number of containers that must be handled. Only compatible wastes of similar nature shall be placed in the same container.

3.8.10 These materials/soils shall be analyzed for the Toxicity Characteristic Leaching Procedure (TCLP) characteristics of arsenic, barium, cadmium, chromium, lead, mercury, and energetics. If these materials/soils exhibit a characteristic of a hazardous waste, they shall be managed in accordance with state and federal regulations. The hazardous materials/soils shall be sent off-site to a permitted treatment, storage, disposal, or recycling facility.

3.8.11 All liquids shall be consolidated into appropriate leak-proof shipping containers. A representative sample shall be collected for chemical analysis. If the liquid is determined to exhibit a hazardous characteristic, the liquids shall be sent off-site for treatment and disposal in accordance with state and federal regulations.

3.8.12 Any solid, nonhazardous wastes that do not require further treatment shall be managed in accordance with the State of Utah solid waste regulations. These solid wastes shall be sent to an

off-site solid waste management facility. Materials to be managed as solid wastes may include personal protective equipment and materials/soils that do not exhibit a characteristic of a hazardous waste.

3.8.13 Wastes shall be packed into metal or plastic shipping containers, except for unreacted and ignitable wastes that shall be detonated. The shipping containers shall meet appropriate DOT shipping and labeling requirements, as specified in 49 CFR Parts 172, 173, and 179. Items classified as hazardous waste shall be labeled in accordance with 49 CFR Section 172.304 and Utah Admin. Code R315-262-31.

3.9 Inventory Removal and Disposal of Burn Pans

3.9.1 The maximum amount of waste materials present at the OB area at any one time would be 12,000 pounds NEW of material. The quantity can be treated in one treatment event using 12 of the 15 burn pans. Prior to closure of the OB area, this material shall be treated. Therefore, no untreated material will be in the OB area when closure activities begin.

3.9.2 After treatment of the final volume of wastes the burn pans will contain treatment residuals. These materials shall be managed as follows:

3.9.2.1 The treatment residue in each burn pan shall be collected and a composite sample shall be analyzed for energetics.

3.9.2.2 If the treatment residue fails the reactivity characteristic test, it shall be re-burned. Step 1 shall be repeated until the treatment residue passes the reactivity characteristic test.

3.9.2.3 If the treatment residue passes the reactivity test, the treatment residue shall be analyzed for the TCLP. The TC constituents include arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, 2,4-dinitrotoluene, and nitrobenzene.

3.9.2.4 If the treatment residue results exceed the regulatory TC levels, the treatment residue shall be removed from the pan(s), placed into containers, and disposed of at an off-site hazardous waste landfill.

3.9.2.5 If the treatment residue results are below the regulatory TC levels, the treatment residue shall be removed from the pans and placed into containers. The material shall be disposed of in a solid waste landfill.

3.9.3 After all of the treatment residue has been removed from the burn pans, the burn pans shall be inspected, certified as explosive-free, and sold for recycling as scrap metal. The steel lids shall be certified as explosive-free and sold as scrap metal. The pan supports shall be disposed of as a solid waste after certification as explosive-free.

3.10 Inventory Removal and Decontamination of Static Silos

3.10.1 The below ground, concrete static silos shall be removed and either decontaminated, sampled and sent to either a solid waste disposal facility or a hazardous waste TSDF, depending on sampling results. The remaining soil shall be sampled, analyzed and remediated depending on the sampling results. Details of the removal, decontamination and remediation of all contaminated materials, soils and equipment shall be presented by amending this plan in accordance with Utah Admin. Code R315-264-112.

3.11 Determination of the Presence, Nature, and Extent of Contamination

3.11.1 For all sampling events certified explosive personnel shall be on site. Because of the nature of the operations at the OB/OD unit, the potential exists for surface and subsurface unexploded ordnance (UXO) and metal objects related to munitions, propellants, pyrotechnics and explosives from the treatment operations. A UXO survey shall be performed to provide access for the closure field investigation and sampling activities and a UXO survey and evaluation shall be performed prior to the excavation or removal of any unidentified contaminated soils. Prior to any sampling, the OB/OD Unit shall be swept using a magnetometer and cleared of all metal objects to ensure that the surface and subsurface are clear of UXO. Once this is done, sampling activities may commence.

3.11.2 At closure, the OB/OD Unit shall be inspected for the presence of visible and/or readily identifiable wastes and residues. The inspection shall include a search for stained, discolored, or other visibly affected soils. The presence of liquids, debris, UXO, and other related items shall be noted.

3.11.3 A baseline environmental characterization of the site was conducted during 1997-1998. In addition, prior to closure of the OB/OD Unit, sampling will be needed to delineate the extent of contamination and to determine the extent of any remediation needed at closure. For practical purposes, the results of the baseline investigation and routine monitoring sampling results shall be used for evaluating closure sampling activities. Many of the sampling strategies may to be incorporated into a pre-closure sampling plan.

3.12 Procedures/Methods to Perform Decontamination

3.12.1 Any contaminated residue/soil at the OB/OD Unit exceeding background or risk-based levels shall be treated on site or shall be removed using backhoes or other excavation equipment. Soil shall be removed in layers up to 2 feet in thickness. After a layer of contaminated soil is removed confirmation sampling/analysis shall be conducted to determine if clean-up goals have been attained. If goals are not attained, additional layers of soil shall be removed until closure goals are attained. If closure goals cannot be attained, the unit shall be closed in accordance with the Contingent Closure Plan as described in Section 6.0. At present, removal by excavation is proposed. Treatment technologies for contaminated soils cannot be determined at this time. Potential treatment technologies may include incineration, soil washing, open burning in pans, bioremediation, etc. The decision whether treatment is appropriate shall be determined in the future. This decision will depend on the contaminants present, the nature and extent of

contamination, and the status of available technology at the time of closure.

3.12.2 If treatment, either on-site or off-site, is considered to be an appropriate alternative to off-site disposal, the Closure Plan shall be amended in accordance with Utah Admin. Code R315-264-112 and submitted to the Director for approval. The residue or soil shall then be managed in accordance with the amended plan.

3.12.3 The staging location for closure activities shall be the area near the entrance by the water tank and trailer outside the perimeter of the OB/OD Unit. Contaminated materials shall be removed from the OB/OD Unit and brought to the staging area. The staging area shall consist of a graded, compacted earthen foundation surrounded by earthen berms or temporary concrete berms to prevent run-on and runoff from the staging area. The foundation and berms shall be overlain by a 30-mil thickness (minimum) liner of sufficient durability to withstand all activities to be conducted in this area (e.g., sorting, storage). Plywood or a similar material shall be laid on top of the liner to prevent tearing. The staging area shall be covered in a manner that prevents accumulation of precipitation while allowing work to continue. Full drums of contaminated material shall be temporarily stored at the staging area away from sorting activities to prevent contamination by loose material.

3.12.4 Materials shall be sorted, if necessary, at the staging area as they arrive. Sorting is done to divide wastes into similar categories for management and disposition. Materials shall be sorted into the following categories: UXO, contaminated materials/soils, contaminated liquids, and nonhazardous solid wastes. The method used for sorting will include, if necessary, the use of screens of varying mesh size, selection and removal of discrete items by hand, and other methods that protect workers while permitting the separation of wastes.

3.12.5 Hand tools shall be decontaminated first by brushing, scraping, and shaking, because all contaminated wastes/media are expected to be solids. Hand tools shall then be decontaminated in buckets or tubs using water and an appropriate cleanser.

3.12.6 Large equipment shall be decontaminated prior to leaving the remediation area and entering a clean area. Any contamination present is expected to be in the form of solids. These solids shall be mechanically removed from the equipment. After mechanical removal of the solids, high-pressure steam shall be used to complete decontamination of equipment.

3.12.7 All drilling equipment used for collection of soil samples shall be steam or pressure cleaned prior to beginning work, between soil boring locations, and prior to leaving the OB/OD Unit. All sampling equipment shall be decontaminated prior to sampling and between samples using the following decontamination steps:

- 1) Potable water rinse.
- 2) Alconox or liquinox detergent wash.
- 3) Potable water rinse.
- 4) Distilled/deionized water rinse.
- 5) 10% nitric acid rinse diluted with distilled and deionized water.

- 6) Distilled/deionized water rinse.
- 7) Isopropanol double rinse.
- 8) Distilled/deionized water rinse.
- 9) Air dry.
- 10) Wrap in aluminum foil.

3.12.8 All decontamination shall be conducted in an area near the entrance to the unit by the water tank and trailer inside the perimeter of the OD area. A decontamination pad shall be constructed in this area to prevent impact to the surrounding soils. The decontamination pad shall consist of a compacted earthen foundation surrounded by earthen berms to prevent any decontamination solutions from exiting the area. The foundation and berms shall be overlain by a 30-mil thickness (minimum) liner of sufficient durability to withstand decontamination activities.

3.12.9 Sand or similar material shall be placed on top of the liner to prevent tearing. Ramps shall be positioned at the entrance and exit of the decontamination pad to allow vehicles to pass over the berms. The pad shall be graded to slope toward a corner, where the liner forms a sump in a depression that has been dug in the ground, to allow collection of decontamination fluids.

3.12.10 Discolored and stained liquids (from equipment or tools decontamination) shall be collected using buckets or pumps. If only small quantities are present, an absorbent may be used to collect the liquid. If it is determined that unstable materials may be created by drying of liquids, absorbents shall not be used. The liquids shall be collected in 5-gallon (minimum) drums or other appropriate containers and transported to the staging area.

3.13 Procedures To Evaluate Effectiveness of Decontamination

3.13.1 During closure, excavation and sampling of the OB/OD Unit shall continue until all soil above background or risk-based levels has been removed. The effectiveness of decontamination shall be determined on the basis of the results of tests on soil samples. Decontamination shall be considered effective when concentrations of all samples are at or below background or risk-based levels (whichever is higher) and the distribution of contamination shows no pattern of increasing contaminant concentrations.

3.13.2 Hand tools, drilling equipment, and heavy equipment shall be sampled if there is significant potential for contamination with explosive or ordnance-related compounds. The preferred method is to collect samples from the final decontamination rinse. These samples shall be either the collected liquids from the final rinse or the cloths used for final wipe-down of the cleaned equipment. In addition, preferential samples shall be collected from areas where contaminants may have collected.

3.13.3 Closure sampling activities shall be conducted in accordance with a SAP, which shall be submitted as a separate document. Surface soil, subsurface soil, and sediment sampling shall be conducted immediately prior to closure and at completion of closure to demonstrate that closure has been successfully accomplished.

3.13.4 As discussed previously, a baseline environmental characterization of the OB/OD Unit was conducted during 1997-1998. In addition, prior to closure of the OB/OD Unit, sampling will be needed to delineate the extent of contamination and to determine the extent of any remediation needed at closure. For practical purposes the results of the baseline investigation and the routine monitoring results shall be used for evaluating closure sampling activities. Many of the sampling strategies may be incorporated in a pre-closure sampling plan.

3.13.5 Any contaminated residue/soil at the OB/OD Unit exceeding background or risk-based levels, whichever is higher, shall be treated on site or shall be removed using backhoes or other excavation equipment. Excavated soils shall be placed in containers in the staging area where they shall be sampled to determine whether they need to be disposed of as a hazardous waste. Soil shall be removed in layers up to 2 feet in thickness. After a layer of contaminated soil is removed, sampling and analysis shall be conducted to determine if clean-up goals have been attained. If goals are not attained, additional layers of soil shall be removed until closure goals are attained or the unit is closed in accordance with the Contingent Closure Plan described in Section 6.0. At present, removal by excavation is proposed. Treatment technologies for contaminated soils cannot be determined at this time. Potential treatment technologies may include incineration, soil washing, open burning in pans, bioremediation, etc. The decision whether treatment is appropriate shall be determined in the future. This decision will depend on the contaminants present, the nature and extent of contamination, and the status of available technology at the time of closure.

4.0 Description of Additional Activities Performed During Closure

4.1 Groundwater and Surface Water Monitoring

4.1.1 Closure sampling activities shall be conducted in accordance with an approved SAP. Both groundwater and surface water samples shall be collected immediately prior to closure and at completion of closure to demonstrate that closure has been successfully accomplished. If the unit cannot be clean closed and routine groundwater monitoring is required, it shall be conducted in accordance with an approved SAP.

4.1.2 Groundwater and surface water sample locations and collection methods, analytical parameters, analytical methods, and quality assurance/quality control (QA/QC) procedures shall be discussed in an approved SAP.

4.2 Run-on and Runoff Control

4.2.1 All decontamination shall be conducted in an area near the entrance inside the perimeter of the OB/OD Unit. A decontamination pad shall be in accordance with paragraph 3.12.8 and 3.12.9.

5.0 Schedule for Closure

5.1 The time required to complete closure activities for any one of the HWMUs shall not exceed 90 days. The time for closure will be shorter if the OB/OD HWMU is used to treat some of the wastes in storage that comprise the inventories of Igloos A-101, C-815 and C-816; Service Magazines 1368 and 1370; and Above Ground Magazine 1205. The time required to complete closure may be extended if requested approved by the Director in accordance with Utah Admin. Code R315-264-113.

5.2 The Permittee will notify the Director in writing at least 60 days prior to the date on which he expects to begin closure of a surface impoundment, waste pile, land treatment unit or landfill unit. The Permittee shall notify the Director in writing at least 45 days prior to the date on which he expects to begin closure of treatment or storage tanks, container storage areas or an incinerator. Closure of the OB/OD Unit will follow the schedule outlined in Table 2.

Table 2. Schedule for Closure of the OB/OD Unit*

Step	Description	Latest cumulative time (days)
1	Notify the Director of the Division of Waste Management and Radiation Control of intent to close	-60
2	Treatment of final wastes by OB/OD	0
3	Begin closure	0
4	Construction of decontamination pad and staging area	10
5	Cleanup of residues at the OB/OD Unit and store residue in on-site interim status storage facilities	30
6	Soil/groundwater/surface water/sediment sampling events	30
7	Digging of test pits to explore for and remove any explosive materials (if necessary)	40
8	OD of any explosive material found during test pit excavation (if necessary), decontaminate OB pans	40
9	Removal of contaminated soil in depths of 2 feet*	130
10	Perform confirmation soil sampling to determine if clean-up goals are met**	130
11	Dispose of any contaminated soil off site	140
12	Decontamination of equipment used during closure	140
13	Disposal of decontamination solutions and any solid waste off site	160
14	Regrading and seeding of OB/OD Unit following cleanup	160
15	U.S. Army certifies that closure is completed in accordance with plan	165
16	Independent registered professional engineer certifies closure completed in accordance with plan	180

*Note that should monitoring data available at the time of closure indicate that substantial remediation will need to be conducted, an extension of the 180-day timeframe for closure will be requested.

**Note that the steps of soil removal and confirmation sampling may be repeated several times as necessary to ensure clean closure.

6.0 OB/OD Unit Contingent Closure Plan

6.1 The Permittee plans to remediate the surface and subsurface soil at the OB/OD Unit to risk-based or background levels (whichever are higher) during the closure period. As part of this process, all UXO shall be removed or detonated in-place. If the soil cannot be remediated to risk-based or background levels the Permittee plans to implement the Contingent Closure Plan discussed in this section.

6.2 Under this Contingent Closure Plan, the OB/OD Unit shall be closed in a manner that will minimize or eliminate threats to human health and the environment, and the potential for escape of any possible hazardous waste, hazardous constituents, leachate, or waste decomposition products to groundwater, surface water, or the atmosphere upon cessation of operations. The unit shall not undergo partial closure; all closure activities shall take place following cessation of operations. The need for further maintenance after closure is addressed in the Contingent Post-Closure Plan in Section 9.0.

6.3 This Contingent Closure Plan shall be implemented only after it has been determined that the closure as described in Sections 3.8 through 3.13 is not feasible. Data describing the nature and extent of any contamination shall be evaluated in order to determine the extent to which the unit requires capping, run-on and run-off controls, and other closure actions. A final cover shall be placed over the unit if it is determined to contain hazardous waste or hazardous constituents above risk-based or background levels (whichever are higher).

6.4 For this Contingent Closure Plan, the Permittee proposes to install a final cover over the OB/OD Unit. It is currently proposed that this cover shall consist of a multilayer clay cap with a synthetic liner. The cover will be constructed with a permeability of less than or equal to 1×10^{-6} centimeter per second. The cap shall be installed following grading of the area. The synthetic liner shall be constructed of 50-mil high-density polyethylene (HDPE) and shall be placed over the unit after grading. The remainder of the cover shall consist of 12 inches of natural clay overlain by sufficient native topsoil to support growth of natural grasses. The area shall be reseeded with native grasses and contoured in an effort to promote drainage and minimize erosion. The entire cover, including the final topsoil cover material, shall be of sufficient thickness and elasticity to accommodate settling and subsidence. The cover design shall be provided and approved by the Director prior to being constructed.

6.5 The unit to be closed under this Contingent Closure Plan shall also have a run-on and runoff control system to divert run-on from entering the unit area and to keep runoff leaving the unit from adversely affecting adjacent areas. This system may consist of a dike that shall be a natural extension of the clay cover system, described above. The dike shall be designed to prevent runoff from entering the unit area during peak discharge from at least a 24-hour, 25-year storm event.

6.6 The runoff management system shall be designed to divert at least the water volume resulting from a 24-hour, 25-year storm.

6.7 A groundwater monitoring well has been installed near the unit. This same groundwater monitoring well shall be used to monitor the groundwater down-gradient of the unit during the post-closure period.

6.8 Access to the unit shall be controlled through locked gates, and a warning sign shall be placed at the gate. All other aspects of closure under this Contingent Closure Plan are identical to closure as described in Sections 3.8 through 3.13.

7.0 Certification of Closure

7.1 Within 60 days of the completion of closure of each HWMU, the Permittee shall provide the Director, by registered mail, a certification by an independent, registered professional engineer that the unit has been closed in accordance with the specifications of the approved closure plan. The certification shall be signed by the Installation Commander and by an independent, registered professional engineer. Documentation supporting the engineer's certification shall be furnished upon request.

8.0 Post-Closure and Closure Cost Estimate

8.1 A post-closure plan will not be needed for the seven storage HWMUs and the deactivation furnace (incinerator) since all wastes shall have been removed and the HWMUs shall have been decontaminated.

8.2 Closure and post-closure cost estimates are not provided because TEAD is an entity of the federal government and therefore exempt from this requirement.

9.0 Contingent Post-Closure Plan for OB/OD Unit

9.0.1 The Permittee plans to remediate the surface and subsurface soil at the OB/OD Unit to below risk-based or background levels (whichever are higher) during the closure period. As part of this process, all UXO shall be removed and detonated in-place. If the soil cannot be remediated to risk-based or background levels (whichever are higher) at the OB/OD Unit, the Permittee plans to implement the Contingent Closure Plan described in Section 6.0 and the Contingent Post-Closure Plan described herein. The post-closure care period will span the required 30 years. The following activities shall be conducted during the 30-year period.

9.1. Inspection Plan

9.1.1 Inspections shall be conducted during the post-closure care period to mitigate the potential for migration of contaminants into soil, groundwater, surface water, and air, and to protect public health, safety, and the environment. Inspections shall be conducted semiannually at a minimum. Inspections shall also occur following all 25-year storm events. Items to be inspected are as follows:

9.1.1.1 Security: The OB/OD Unit shall have a locked gate on the access roads leading

onto the ground. The gate and warning sign shall be checked for damage.

9.1.1.2 Erosion: The cover shall be inspected for signs of erosion damage, such as might be due to washouts. Erosion damage shall be repaired.

9.1.1.3 Settlement: The cover shall be inspected for ponding and other indications of settlement, subsidence, or displacement.

9.1.1.4 Vegetative Cover: The condition of the vegetative cover shall be inspected for adequacy and bare spots.

9.1.1.5 Run-on and Runoff Controls: Drainage channels designed to divert and collect storm water shall be checked to assure good drainage. The overall integrity of the dike system shall be checked.

- 9.1.1.6 Monitoring Wells: The condition of the well casing, cap, and lock shall be checked as the well is sampled.

9.1.2 The various inspection findings and actions shall be documented in the facility post-closure inspection logbook.

9.2. Post-Closure Monitoring

9.2.1 Groundwater monitoring at the closed OB/OD unit shall be conducted once every five years. Measurements to be performed, tests to be performed, constituents to be analyzed, methods to be used, and QA/QC controls to be applied will be detailed in an approved SAP.

9.3. Post-Closure Maintenance

9.3.1 Security: Signs shall be replaced as they become illegible. The gate shall be repaired or replaced as necessary to maintain the unit security.

9.3.2 Erosion: Washouts shall be repaired when they are detected. If the cap integrity is in question, repair activities shall be initiated immediately. Restoration of the vegetative cover shall be performed as needed.

9.3.3 Cover Settlement: Differential settlement shall be repaired by replacing cover materials and reseeded.

- 9.3.4 Vegetative Cover: Maintenance of the vegetative cover shall include seeding, watering, and fertilizing, as needed. Tree or bush growth shall be controlled by mowing. Mowing shall be performed as necessary to control the growth of the vegetative cover and to maintain it at a reasonable height above the cover.
- 9.3.5 Run-on and Runoff Controls: Drains and ditches shall be cleaned and maintained to

allow free drainage so that retention of storm water does not occur. High rate runoff areas (if any) shall be protected by placing coarse stone, if needed, to ensure that erosion is minimal.

- 9.3.6 Monitoring Wells: Any damage to monitoring wells shall be repaired. If necessary, a damaged monitoring well shall be replaced.

9.4. Post-Closure Security

9.4.1 Access to the unit shall be controlled through a locked gate and a warning sign at the gate. All other aspects of post-closure security under this Contingent Post-Closure Plan are identical to closure as described in Sections 3.8 through 3.13.

9.5. Post-Closure Contact

9.5.1 The point of contact during post-closure care will be the TEAD Environmental Management Division.

9.5.2 A copy of the post-closure plan will be stored by the Environmental Management Division. The Environmental Management Division is responsible for updating the plan as necessary.

9.6. Notices Required for Disposal Facilities

9.6.1 The following post-closure notices shall be appropriately filed and submitted if clean closure cannot be demonstrated:

9.6.1.1 A record of the type, location, and quantity of hazardous wastes disposed of shall be submitted to the local zoning authority (or the authority with jurisdiction over local land use) and to the Director no later than 60 days after certification of closure.

9.6.1.2 A notation in the deed to the facility property shall be made that shall, in perpetuity, notify any potential purchasers of the property that (1) the land has been used to manage hazardous waste; (2) use of the land is restricted to activities that will not disturb integrity of the final cover system or monitoring system during post-closure care period; and (3) a survey plat and record of waste disposal have been submitted to the local zoning authority (or the authority with jurisdiction over local land use) and to the Director. The survey plat shall indicate the location and dimensions of the unit with respect to permanently surveyed benchmarks. The plat shall be prepared and certified by a professional land surveyor and shall contain a note, prominently displayed, which states the owner's/operator's obligation to restrict disturbance of the disposal unit in accordance with applicable Utah Admin. Code R315-264-116 regulations. This notation must be placed within 60 days after certification of closure.

ATTACHMENT 9

CONTAINERS

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Appendix A Container Storage Configurations

1.0 Container Management for Building 528

1.1 Use and Management of Containers

1.1.1 Description of Containers [Utah Admin. Code R315-264-171, R315-264-172]

1.1.1.1 Hazardous wastes generated on site shall be stored and offered for transportation in containers conforming to Department of Transportation (DOT) specifications.

1.1.1.2 The applicable DOT specification code can be found on each container. Containers used to store and transport hazardous waste shall be either new, or recycled (that is the empty shipping container is saved and used to store and transport the material after use, e.g. trichloroethane).

1.1.1.3 The containers that are used are:

1. 55 gallon steel drums with removable heads.
2. 55 gallon steel drums without removable heads.
3. 55 gallon polyethylene drums without removable heads.
4. 85 gallon steel drums with removable heads (overpack drums).
5. 85 gallon polyethylene drums with removable heads (overpack drums).
6. 8, 15, 20 and 30 gallon polyethylene drums without removable heads.
7. 8, 15, 20 and 30 gallon steel drums with removable heads.
8. Other applicable DOT approved containers (to be determined on a case by case by the Tooele Army Depot (TEAD) Environmental Office (EO)).

1.1.1.4 The selection of the appropriate container for a particular waste is based on the compatibility of the container with the waste the container will hold. As an example, wastes that are corrosive (subcategory acidic) are stored and offered for transportation in polyethylene drums. Liquid wastes are collected in drums without removable heads.

1.1.2. Container Management Practices [Utah Admin. Code R315-264-172]

1.1.2.1 Containers used to store hazardous waste shall be managed in such a way as to not cause the containers to release their contents. To insure that hazardous waste does not escape the container it is stored in, the Permittee manages containers in the following manner:

1.1.2.1.1 Drums issued to store hazardous wastes shall be new or recycled. Recycled drums must be in good condition and meet DOT standards. This insures the drums are free from severe defects (corrosion, dents and holes). Recycled drums shall only be used to contain waste that is compatible with the previous contents of the drum.

1.1.2.1.2 Drums used to store hazardous waste shall be selected based on the compatibility of the material of fabrication of the drum (or drum liner) and the physical and chemical characteristics of the wastes they are to store.

1.1.2.1.3 The lids to containers shall be kept closed and opened only when waste is added, removed or sampled.

1.1.2.1.4 Liquid wastes shall be stored in drums without removable heads. This ensures that the liquid contents will not be released if the drums are accidentally tipped over.

1.1.2.1.5 Reactive hazardous wastes (explosive subcategory) shall be stored in containers designed specifically to hold explosives and propellants.

1.1.2.1.6 Containers filled with reactive hazardous wastes (explosive subcategory) shall be stored in container storage Hazardous Waste Management Units (HWMUs) designed specifically for Propellant, Explosives and Pyrotechnic (PEP) materials (i.e. ammunition igloos and service magazines).

1.1.2.2 Movement of containers of hazardous waste shall be tracked by a unique container number that appears on the hazardous waste container label. Each container and its associated hazardous waste label shall be issued concurrently by the TEAD EO. This enables the EO to track the movement of containers from satellite accumulation points to 90-day storage areas, and if necessary, to permitted container storage HWMUs. This system; 1) generates operating records, 2) insures that wastes in the 90-day storage area are moved to an off-site Treatment Storage and Disposal Facility (TSDF), or to an on-site permitted container storage HWMU before 90 days have expired, and 3) insures that the container contents match the container label since the container and label are issued to a pre designated location generating a defined and named waste stream.

1.1.2.3 To facilitate ease in movement and lessen the possibility of a forklift operator accidentally piercing a container with the forklift forks, containers shall be placed on pallets (maximum, three containers per pallet) before moving. When containers are weighed, tongs are attached to the forklift to lessen the possibility of dropping or rupturing a container.

1.1.2.4 Containerized hazardous waste is transported from the generation points to the less than 90-day storage yard, or to the permitted storage facility at building 528 by a 1 ton or appropriate flatbed truck. The perimeter of the bed of the truck is slotted to allow for side boards.

1.1.2.5 Waste is loaded on to the truck by forklift, with the containers being placed on pallets before loading. The routes the truck uses to transport waste across the facility are graded/compacted dirt roads, asphalt, or concrete paved roads.

1.1.2.6 Building 528 shall be used to store containerized hazardous wastes that do and do not have free liquids. The storage arrangement to be used in building 528 is as follows:

1.1.2.6.1 All containerized hazardous waste shall be stored on pallets to elevate the containers being stored from any liquids that may accumulate on the storage area base. 55 gallon drums shall be stored no more than three to a pallet, 85 gallon drums shall be stored no more than two to a pallet. No more than 170 gallons of combined container volume shall be stored per pallet.

1.1.2.6.2 There are four containment areas or bays in Building 528. Each containment area shall have a maximum of six rows of pallets.

1.1.2.6.3 At a maximum, each row shall be configured as seven pallets per row (with the exception being that the rows against the north wall shall be configured with eight pallets per row. Bay 3 and 4 shall each have one row of eight pallets).

1.1.2.6.4 At a maximum, pallets shall be stacked two high.

1.1.2.6.5 A minimum of 2.5 feet shall be maintained between rows to allow for container inspection.

1.1.2.6.6 The container stacking arrangement used in Building 528 is shown in Appendix A.

1.1.3. Secondary Containment System Design and Operation [Utah Admin. Code R315-270-15(a)(1), R315-264-175(a), R315-264-175(d)]

1.1.3.1 The design of Building 528 allows for the secondary containment of any liquids that may leak from containers stored there, the segregation of incompatible hazardous wastes and the prevention of the accumulation of precipitation.

1.1.3.2 A drawing of the base of Building 528 and the bays that are used to segregate incompatible wastes is in Appendix A. Bay 1 shall be used to store wastes that are sludges or solids and that are hazardous wastes by Toxicity Characteristic Metals (D004 through D011). Bay 2 shall be used to store corrosive wastes (D002 alkaline). Bay 3 shall be used to store ignitable and solvent wastes (D001 and F001 through F005). Bay 4 shall be used to store corrosive (D002, acidic) wastes. Hazardous wastes with U or P codes shall be placed in the appropriate bay using the aforementioned criteria.

1.1.3.3 Any wastes placed into storage that are reactive (D003, sulfide or cyanide producing) shall be stored in Bay 2.

1.1.4. Requirement for the Base or Liner to Contain Liquids [Utah Admin. Code R315-264-175(b)(1)]

1.1.4.1 The containment system of Building 528 is comprised of a square concrete slab, 75 feet on edge. The base is steel reinforced concrete six inches thick. The base shall be maintained free of cracks or gaps. A six inch high, six inch wide berm (or curb) runs along the perimeter of the base to provide containment. The base is crowned in the center to cause any liquids that may be spilled to drain to one of the four corners.

1.1.4.2 A six inch high, six inch wide berm divides the base into four bays to allow for the storage of wastes with free liquids and the segregation of incompatible wastes. Each bay is equal in available secondary containment storage volume and storage area. Each bay is square shaped and has an available storage area of $36.75 \text{ ft} \times 36.75 \text{ ft} = 1350 \text{ ft}^2$.

1.1.4.3 The impermeability of the concrete base is enhanced by a polyamide cured coating applied to the surface which is compatible with the types of waste that will be stored on the base.

1.1.4.4 An example of an acceptable coating is Semstone 245 High Performance Coating, or equivalent. The base of the secondary containment area shall receive at least two applications to provide a thickness of 40 mils when dry. The specifications of the example coating mentioned above, along with a compatibility table can be found in the TEAD EO.

1.1.5. Containment System Drainage [Utah Admin. Code R315-270-15(a)(2), R315-264-175(b)(2)]

1.1.5.1 Drainage of the base of Building 528 is provided by each cell draining to the corner that is diagonal to the corner of the cell that is at the center of the base (refer to figure in Appendix A).

1.1.6. Containment System Capacity [Utah Admin. Code R315-270-15(a)(3), R315-264-175(b)(3)]

1.1.6.1 The volume of available secondary containment provided by the base of Building 528 is 5,051 gallons per bay calculated as follows: Each of the four cells comprising the base is 36.75 feet in length and 36.75 feet in width, with a 6 inch high berm. The capacity of secondary containment for a single bay is $(36.75 \times 36.75)(\text{ft})^2 \times (12)^2 \times (12)^2 (\text{in})^2 (\text{ft})^2 \times 6 (\text{in}) \times 1 (\text{gal})/231 (\text{in})^3 = 5,051$ gallons of secondary containment capacity per bay. The total available secondary containment volume is: 4 cells x 5,051 gallons/cell = 20,205 gallons.

1.1.6.2 The volume of containers stored in Bays 3 and 4 is calculated as follows: Bays 3 and 4 each have one row that has 1 more pallet per row than Bays 1 and 2. Both Bays 3 and 4 store containers stacked 2 high, therefore the maximum volume of containers stored in either Bay 3 or Bay 4 is $2 \times ((6 \text{ rows/cell} \times 7 \text{ pallets/row} \times 170 \text{ gallons/pallet}) + (1 \text{ pallet} \times 170 \text{ gallons/pallet})) = 14,620$ gallons per bay.

1.1.6.3 The volume of containers stored in Bays 1 and 2 is calculated as follows: Bays 1 and 2 store containers of hazardous waste similar to the arrangement used in Bays 3 and 4, except the maximum number of pallets for all rows is 7, stacked 2 high. Therefore, the maximum volume of containers stored in either Bay 1, or Bay 2 is $2 \times (6 \text{ rows/cell} \times 7 \text{ pallets/row} \times 170 \text{ gallons/pallet}) = 14,280$ gallons per bay.

1.1.6.4 The total volume of waste stored in Building 528 is calculated as follows: Bays 1 and 2 = 2 cells x 14,280 gallons/cell = 28,560 gallons, Bays 3 and 4 = 2 cells x 14,620 gallons/cell = 29,240 gallons, Total capacity = 57,800 gallons.

1.1.6.5 The required secondary containment storage capacity is 10% of the volume of the waste to be stored which is 5,780 gallons. The available secondary containment capacity is 20,205 gallons which is more than enough to compensate for any secondary containment volume that is unavailable because of pallets or floor ramps.

1.1.7. Control of Run-on [Utah Admin. Code R315-270-15(a)(4), R315-264-175(b)(4)]

1.1.7.1 Run-on into the containment system of Building 528 is prevented by the elevation of the secondary containment base relative to the surrounding terrain and the building shell.

1.1.7.2 The building shell of 528 completely covers the secondary containment base and is constructed of walls of metal siding and a gable roof which limit precipitation from contacting the secondary containment base.

1.1.7.3 As stated in Attachment 1 (Facility Description) there is no flood hazard within the boundaries of TEAD. In addition, the base of Building 528 is above the surrounding grade. The entrance used to move containers in and out of the building slopes up from the surrounding grade to the overhead door entrance.

1.1.7.4 Photographs of Building 528 (the building shell and the secondary containment base) can be found in Appendix B.

1.1.7.5 There is also a lined containment ditch surrounding Building 528. To allow for drainage away from the building, the side of the ditch next to the building is higher than the side which is opposite and away from the building. The liner installed beneath the base of Building 528 also runs beneath the containment ditch and extends 1 foot beyond the outer edge.

1.1.8. Removal of Liquids from Containment System [Utah Admin. Code R315-270-15(a), R315-264-175(b)(5)]

1.1.8.1 Liquid accumulating in the corners of any cell can be removed by use of an absorbent material or by means of a portable pump, depending of the size of the spill.

1.1.8.2 The collected liquid shall be analyzed unless it has been determined by generator knowledge that it is not a hazardous waste. All containers in the storage area are labeled, and an analysis exists for the stored hazardous waste, so user knowledge as to the composition of any liquid hazardous waste accumulated in the secondary containment area will be sufficient in most circumstances.

1.1.9. Special Requirements for Ignitable and Reactive Wastes [Utah Admin. Code R315-264-176]

1.1.9.1 Figure 4 in Attachment 1 (Facility Description) shows that all HWMUs used to store ignitable or reactive wastes are located at least 50 feet from the property line.

2.0 Container Management for Ammunition Igloos A101, C-815 and C-816, Service Magazines 1368 and 1370 and Above Ground Magazine 1205; Container Storage Facilities for Reactive (explosive) Wastes Without Free Liquids

2.1 Use and Management of Containers

2.1.1. Test for Free Liquids [Utah Admin. Code R315-270-15(b)(1)]

2.1.1.1 Igloos A-101, C-815 and C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205 will be used to store hazardous wastes. There are no provisions for secondary

containment in the design of these structures, therefore these areas shall be limited to the storage of Reactive (explosive subcategory) hazardous wastes without free liquids, and debris contaminated with explosive residues without free liquids.

2.1.1.2 In most cases, Igloos A-101, C-815 and C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205 will be used to store PEP materials scheduled for demilitarization (thermal treatment) at either the Subpart X (Open Burning/Open Detonation), or Subpart O (Incinerator) Hazardous Waste Management Units operated by the Permittee. These storage areas will also be used to store treatability study samples that are Reactive (explosive subcategory).

2.1.1.3 The determination as to whether or not a waste contains free liquids can be made in 2 different ways:

2.1.1.3.1 Generator Knowledge - If the waste is an off-spec ammunition or off-spec PEP material previously stored at TEAD or Tooele Army Depot South Area (TEAD-S), the Permittee will have knowledge as to the characteristics of the waste relating to the presence or absence of free liquids. PEP materials that become hazardous waste were manufactured to government standards and this information is available through ammunition specification sheets and drawings. Therefore in most circumstances, knowledge can be applied to determine if a waste has free liquids.

2.1.1.3.2. Physical Analysis - If there is doubt as to whether a waste contains free liquids the waste will be analyzed for the presence of free liquids by using the Paint Filter Liquid Test (SW-846 method 9095).

2.1.2. Description of Containers [Utah Admin. Code R315-264-171, R315-264-172]

2.1.2.1 Containers used to store Reactive (explosive subcategory) hazardous waste in Igloos A-101, C-815, C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205, are such that if the wastes were to be transported over public highways, no repackaging would be required. In other words, wastes are placed into storage in the same containers they are shipped in. The containers used to store hazardous wastes comply with DOT regulations for class A, B, and C explosives.

2.1.2.2 Hazardous wastes stored in Igloos A-101, C-815 and C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205, will be generated both on and off site. Wastes generated on site come from: 1) off-spec PEP materials that were previously stored at TEAD as usable stock, or 2) wastes generated from the reconfiguration of munitions.

2.1.2.3 In the first case, the PEP materials were packaged to conform with DOT regulations for Class A, B, or C explosives at the time they were shipped to TEAD as usable product.

2.1.2.4 In the second case, the containers that shall be used to store PEP materials that are no longer useful because they were damaged during reconfiguration shall be:

1. Containers designed specifically for PEP materials.
2. 55 gallon steel drums with removable heads.

3. 85 gallon steel drums with removable heads.
4. 8 and 15 gallon steel drums with removable heads.

2.1.3. Container Management Practices [Utah Admin. Code R315-264-172]

2.1.3.1 Containers used to store hazardous waste shall be managed in such a way as not to cause the containers to release their contents. To insure that hazardous waste does not escape the container it is stored in, the Permittee manages containers in the following manner:

2.1.3.1.1 Drums issued to store hazardous wastes in shall be new drums. This ensures that the drums used to store hazardous waste are free from severe defects (corrosion, dents, and holes).

2.1.3.1.2 Drums used to store hazardous waste shall be selected based on the compatibility of the material of fabrication of the drum (or drum liner) and the physical and chemical characteristics of the wastes they are to store.

2.1.3.1.3 The lids to containers shall be kept closed and opened only when waste is added, removed or sampled.

2.1.3.1.4 Reactive hazardous wastes (explosive subcategory) shall be stored in containers designed specifically to hold explosives and propellants.

2.1.3.1.5 Containers filled with reactive hazardous wastes (explosive subcategory) shall be stored in container storage Hazardous Waste Management Units (HWMUs) designed specifically to hold PEP materials (i.e. ammunition igloos and service magazines).

2.1.3.2 Movements of containers of hazardous waste shall be tracked by a unique container number that appears on the hazardous waste container label. Each container and its associated hazardous waste label shall be issued concurrently by the TEAD EO. This enables the EO to track the movement of containers from satellite accumulation points to 90 day storage areas, and if necessary to permitted container storage HWMUs. This system; 1) generates operating records, 2) ensures that wastes in the 90 day storage area are moved to an off-site TSDF, or to an on-site permitted container storage HWMU before 90 days have expired, and 3) ensures that the container contents match the container label since the container and label are issued to a pre-designated location generating a defined and named waste stream.

2.1.3.3 To facilitate ease in movement and lessen the possibility of a forklift operator accidentally piercing a container with the forklift forks, containers are placed on pallets. Single containers are handled with tongs that are attached to the forklift to lessen the possibility of dropping or rupturing the container.

2.1.3.4 Containerized hazardous wastes are moved from generation points to the appropriate HWMU by flat bed truck, tractor trailer, or van. The perimeter of open trailers and truck beds are slotted to allow for the placing of side rails (i.e. side boards). The vans and trailers used to move PEP items have rollers fabricated into the floor of the cargo area. This allows for ease in loading and unloading, however during transportation pallets must be kept in place by wood blocks positioned in such a way as to prevent the rollers from moving.

2.1.3.5 The containers are loaded onto trucks by forklift by first placing the containers on pallets. All roads used by vehicles transporting hazardous waste are made of graded/compacted dirt, asphalt, or concrete.

2.1.3.6 The geometry of Igloos A-101, C-815 and C-816 and Service Magazines 1368 and 1370 (semi-circular in cross section) allows for varying storage capacity depending on container dimensions (small containers give a tighter packing arrangement). Since different types and sizes of containers are used to store hazardous waste, and all containers of hazardous waste shall be stored on pallets, a volume per pallet basis is used to determine the storage capacity of the HWMUs. The volume chosen is based on a theoretical ammunition pallet of 4 ft X 4 ft X 5 ft having a total volume of 80 cubic feet. The three most frequently used pallets are 40 inches X 48 inches, 42 inches X 53 inches and 36 inches X 40 inches. The Permittee used 4 feet wide because the ammunition containers banded to the pallet can extend over a few inches and used four feet long because the 48 and 40 inch long pallets are the most common and the 53 inch long pallet the least common.

2.1.3.7 The management practices and storage arrangement for containerized waste without free liquids that are stored in Igloo A-101 is as follows:

2.1.3.7.1 All containers of hazardous waste shall be stored on pallets to elevate the container above any accumulated liquids. Eighty cubic feet of combined container volume will be stored per pallet.

2.1.3.7.2 At a maximum, each row shall be configured as three pallets per row, with two pallets at floor level and one pallet stacked on top of the pallet closest to the storage areas central aisle space.

2.1.3.7.3 Each side of the igloo shall have at a maximum 9 rows.

2.1.3.7.4 A minimum of 2.5 feet shall be maintained between rows to allow for container inspection.

2.1.3.7.5 This arrangement allows for a storage capacity of: 2 sides x 9 row/side x 4 pallets/row x 80 cubic feet /pallet = 5,760 cubic feet.

2.1.3.7.6 A figure that shows the container storage arrangement used in Igloo A-101 is in Appendix A.

2.1.3.8 The management practices and storage arrangement for containerized wastes without free liquids that are stored in Igloo C-815 and Igloo C-816 are as follows:

2.1.3.8.1 All containers of hazardous waste will be stored on pallets to elevate the container above any accumulated liquids. Eighty cubic feet of combined container volume will be stored per pallet.

2.1.3.8.2 At a maximum, 54 pallets per row, 18 pallets long and three high will be stored.

2.1.3.8.3 Three rows spaced a minimum of 2.5 feet apart and from the walls.

2.1.3.8.4 Use of the above storage arrangement gives Igloos C-815 and C-816 a storage capacity of: 3 rows x 54 pallets/row x 80 cubic feet/pallet = 12,960 cubic feet.

2.1.3.8.5 A figure that shows the container storage arrangement used in Igloos C-815 and C-816 is in Appendix A.

2.1.3.9 The management practices and storage arrangements for containerized wastes without free liquids that are stored in Service Magazines 1368 and 1370 are as follows:

2.1.3.9.1 All containers of hazardous waste shall be stored on pallets to elevate the containers from any accumulated liquids. No more than 80 cubic feet of combined container volume shall be stored per pallet.

2.1.3.9.2 At a maximum, ten pallets shall be configured in a single row down the middle of each magazine with the maximum length of five pallets and a maximum height of two pallets.

2.1.3.9.3 A minimum of 2.5 feet shall be maintained clear between the rows and sidewalls to allow for container inspections.

2.1.3.9.4 Use of the above storage arrangement gives Service Magazines 1368 and 1370 a storage capacity of: 1 row x 10 pallets/row x 80 cubic feet/pallet = 800 cubic feet each.

2.1.3.9.5 A figure that shows the container storage arrangement used in Service Magazine 1368 and 1370 is in Appendix A.

2.1.3.10 The management practices and storage arrangements for containerized wastes without free liquids that are stored in Above Ground Magazine 1205 are as follows:

2.1.3.10.1 All containers of hazardous waste shall be stored on pallets to elevate the containers above any accumulated liquids. No more than 80 cubic feet of combined container volume shall be stored per pallet.

2.1.3.10.2 At maximum 150 pallets shall be stored per row, fifty pallets long and three high.

2.1.3.10.3 A maximum of six rows spaced a minimum of 2.5 feet apart and from the walls shall be stored in Above Ground Magazine 1205.

2.1.3.10.4 Use of the above storage arrangement gives Above Ground Storage Magazine 1205 a storage capacity of: 6 rows x 150 pallets/row x 80 cubic feet/pallet = 72,000 cubic feet.

2.1.3.10.5 A figure that shows the container storage arrangement used in Above Ground Storage Magazine 1205 is in Appendix A.

2.2. Container Storage Area Drainage [Utah Admin. Code R315-270-15(b)(2), R315-264-175(c)]

2.2.1 Drainage for the storage area in Igloos A-101, C-815 and C-816 is provided by the crowned floor and the varying drainage gradient of the gutters which run down the length of both sides of the igloos. Igloos A-101, C-815 and C-816 are orientated relative to the drain field of the surrounding area so that the back of the igloo is at a higher elevation than the front (entrance) so that water cannot drain into the igloo.

2.2.2 An additional operational procedure which enhances the limited drainage capabilities of Igloos A-101, C-815 and C-816 is the use of pallets to store containers. Pallets raise the container holding hazardous waste above any liquid that may be introduced into the storage area.

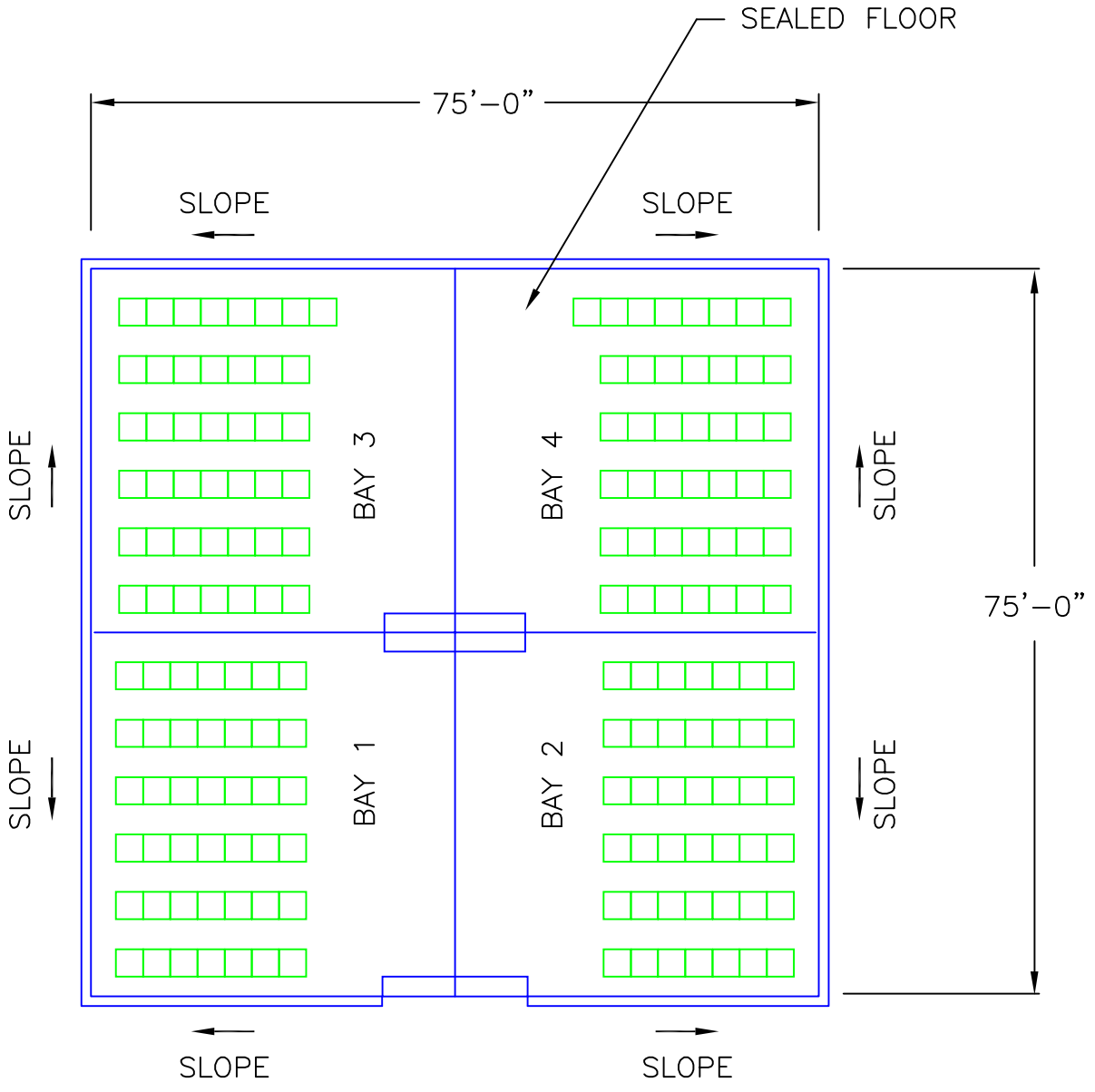
2.2.3 Similar methods are used to keep moisture out of Service Magazines 1368 and 1370. Pallets are used to store containers and the floor is sloped to cause the liquids to run towards the entrance. Water cannot drain into the service magazine.

2.2.4 The Above Ground Service Magazine 1205 is elevated off the ground and water cannot drain into the structure. In addition, the containers are on pallets that elevate them off the floor.

2.3. Special Requirements for Ignitable and Reactive Wastes [Utah Admin. Code R315-264-176]

2.3.1 Figure 4 in Attachment 1 (Facility Description) shows that all HWMUs used to store ignitable or reactive wastes are located at least 50 feet from the property line.

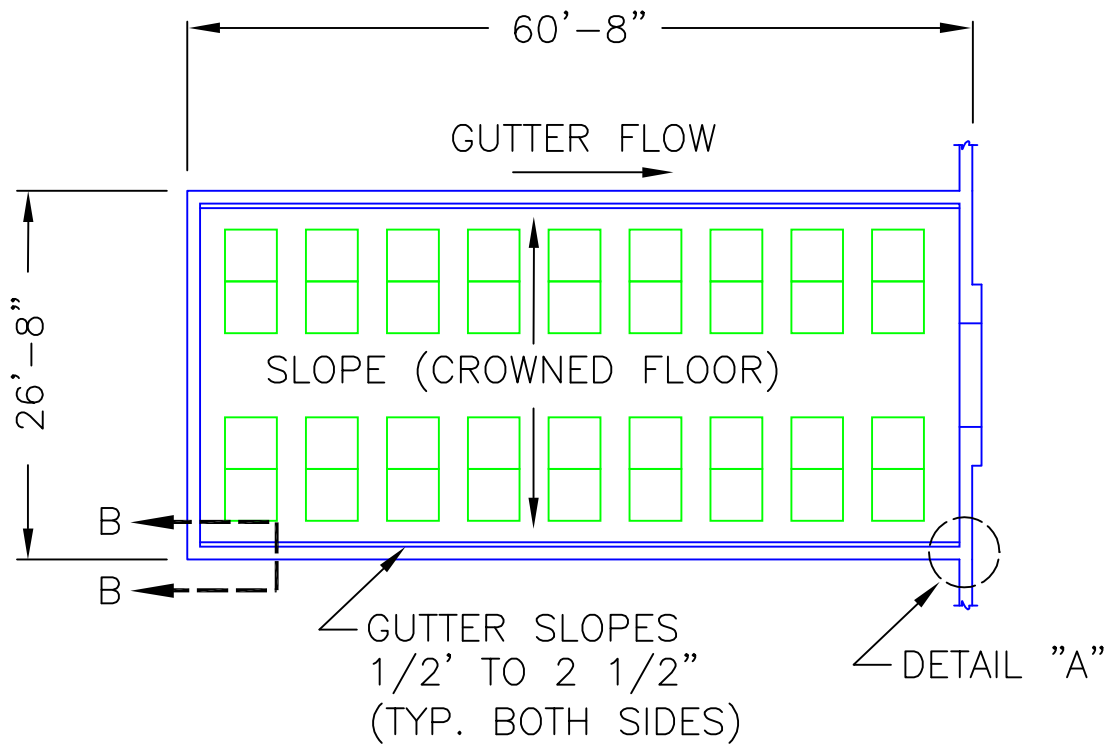
Appendix A
Container Storage Configurations



STACKING ARRANGEMENT:

- BAYS 1 & 2 – 6 ROWS OF 7 PALLETS, STACKED 2 HIGH (170 GL/PALLET)
- BAYS 3 & 4 – 5 ROWS OF 7 PALLETS, STACKED 2 HIGH (170 GL/PALLET)
- AND 1 6 ROW OF 8 PALLETS, STACKED 2 HIGH (170 GL/PALLET)

Bldg. 528
 Container Storage Configuration
 Figure A-1



STACKING ARRANGEMENT:

9 ROWS OF 2 PALLETS, STACKED 2 HIGH,
BOTH SIDES. TYPICAL PALLET IS 4' X 4'.

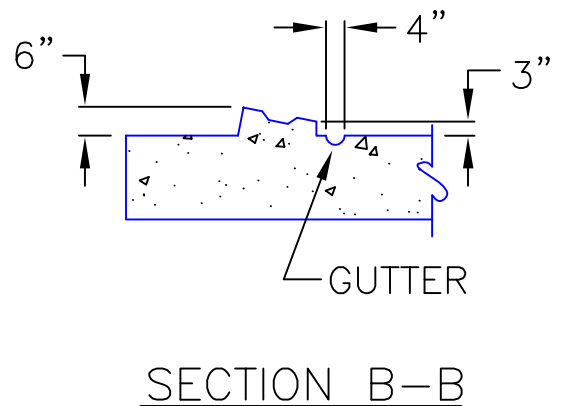
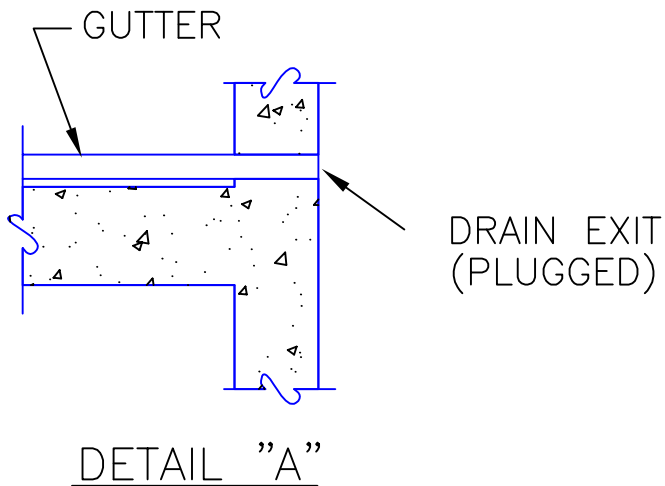
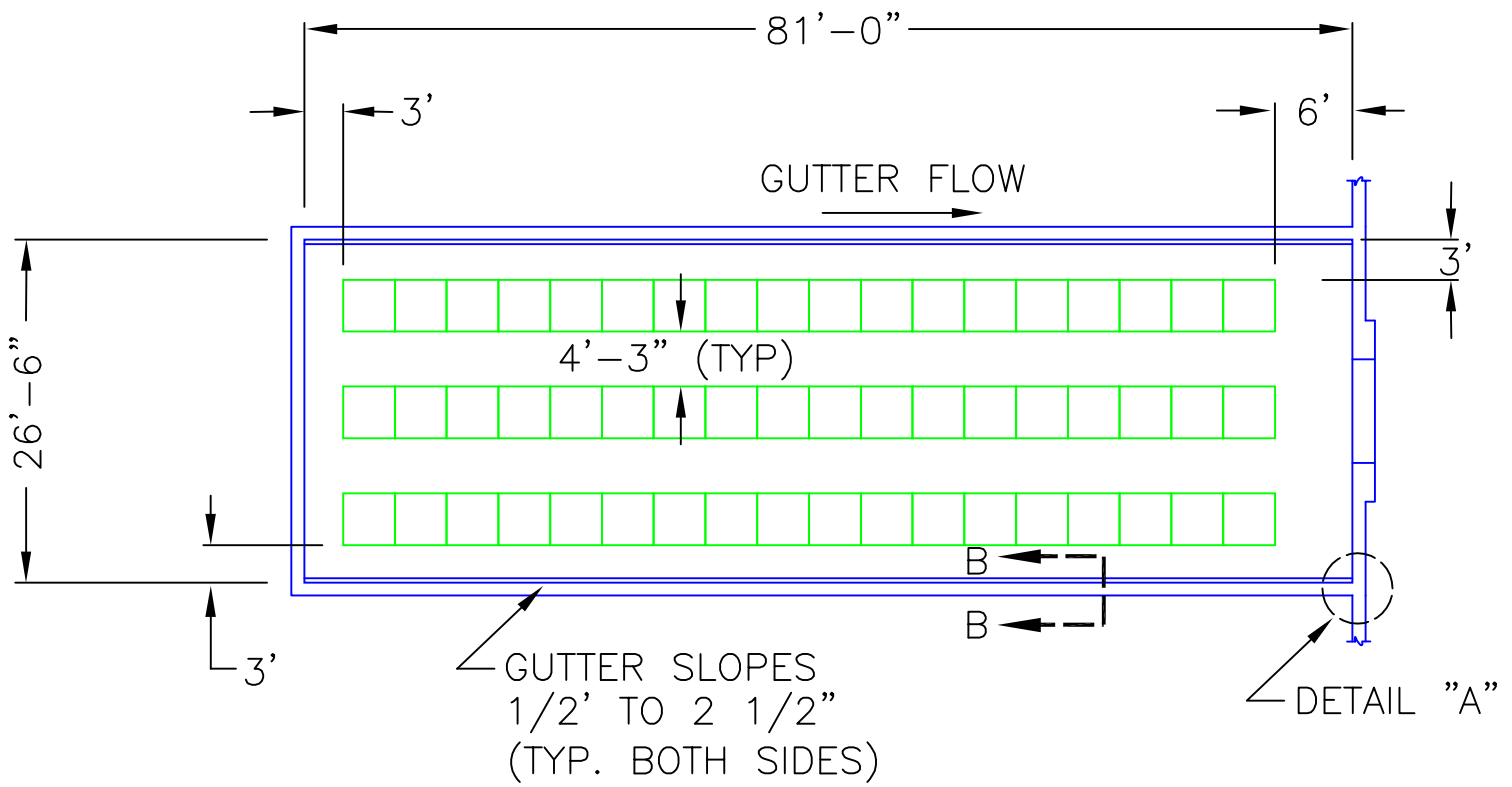


Figure A-2
Igloo A-101
Container Storage Configuration & Details

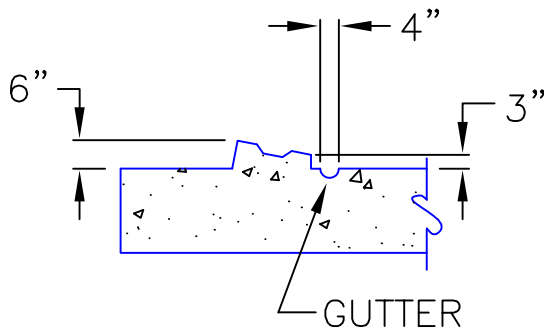


STACKING ARRANGEMENT

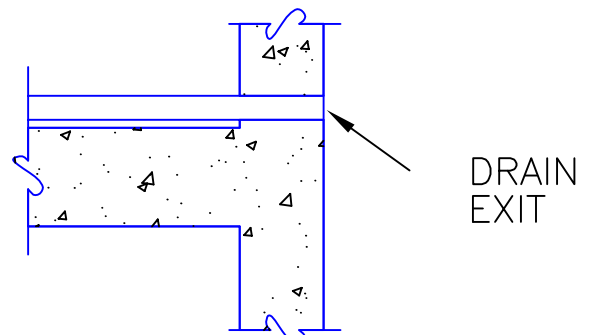
3 ROWS STACKED 3 PALLETS HIGH, AND 18 PALLETS DEEP

NOTE:

IGLOO FLOOR IS CROWNED AT CENTER OF FLOOR AND SLOPES TO GUTTERS LOCATED ON IGLOO SIDES.

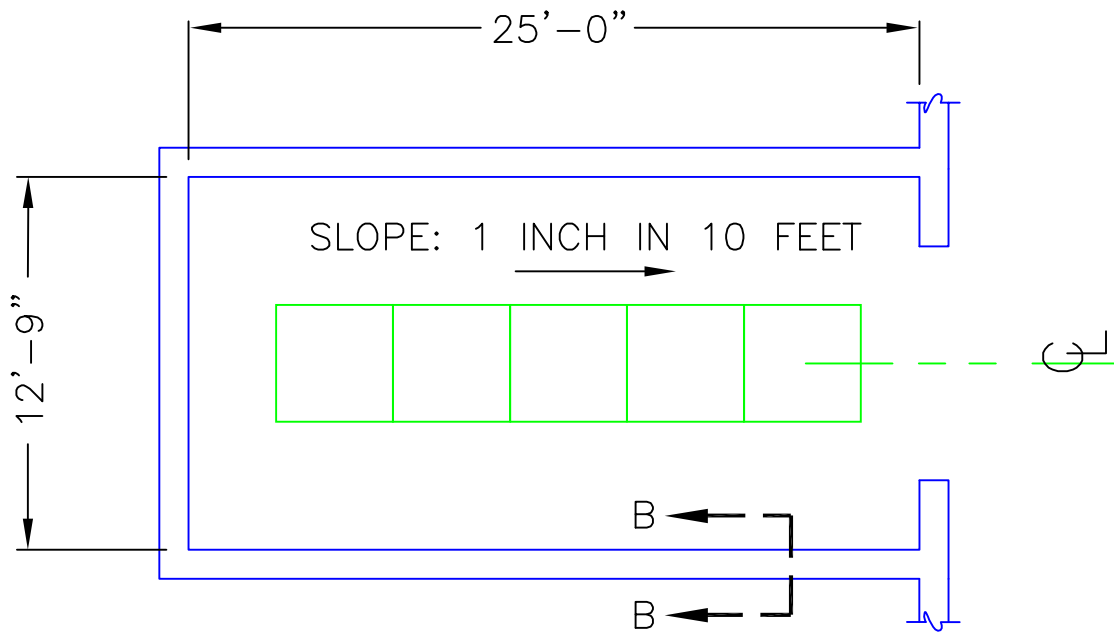


SECTION B-B



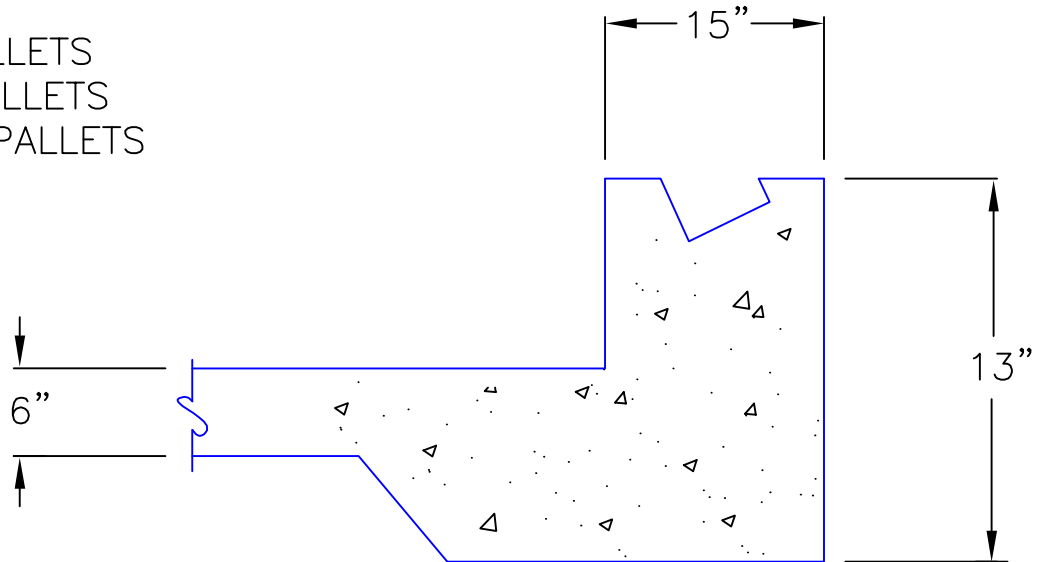
DETAIL "A"

Figure A-3
Igloo C-815 & C-816
Container Storage Configuration



STACKING ARRANGEMENT:

1 ROW OF PALLETS
 STACKED 2 PALLETS
 HIGH, AND 5 PALLETS
 DEEP.



SECTION B-B

Figure A-4
 Service Magazines 1368 & 1370
 Container Storage Configuration

STACKING ARRANGEMENT:
 6 ROWS STACKED 3
 PALLETS HIGH, EACH
 ROW 50 PALLETS LONG.
 A TYPICAL PALLET IS
 4 FT. BY 4FT.

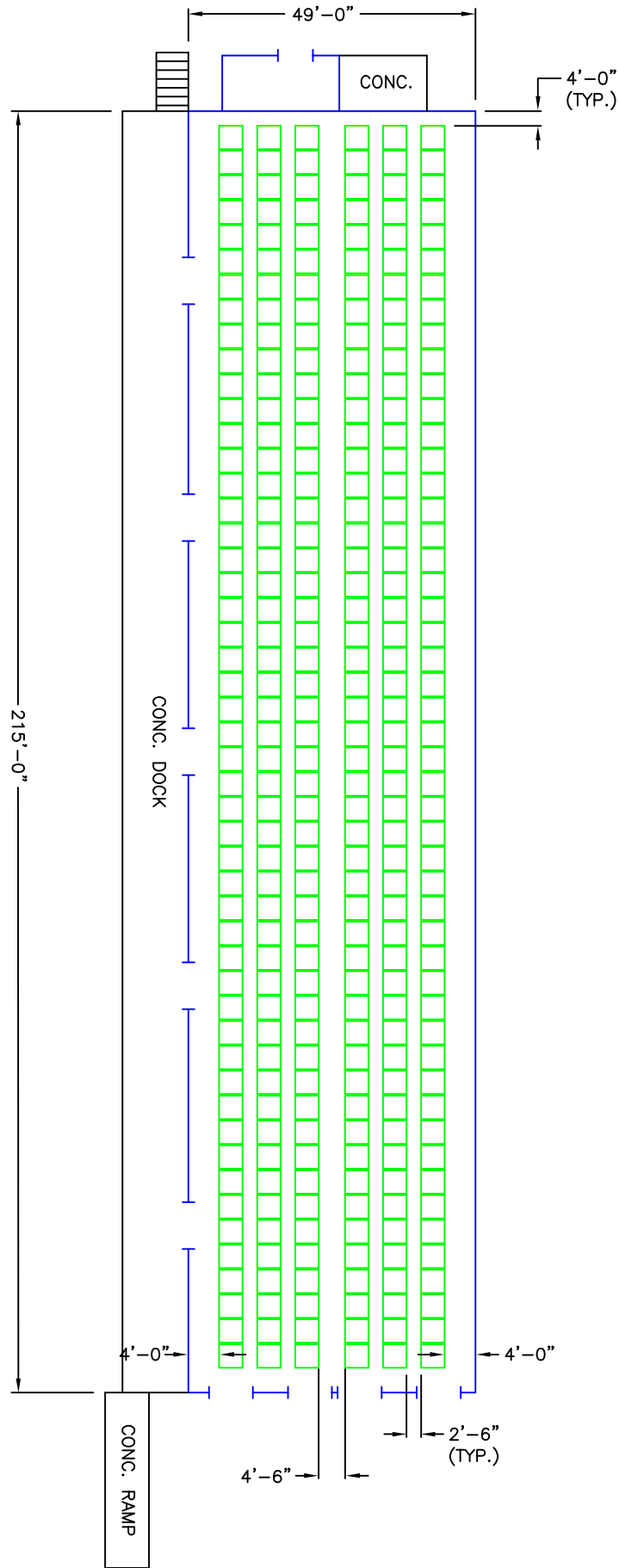


FIGURE A-5
 ABOVE GROUND SERVICE MAGAZINE 1205
 CONTAINER STORAGE CONFIGURATION

ATTACHMENT 10
APE 1236 DRAWINGS

Attachment 10
APE 1236 Drawings

Number	Date	Title
HWI-PERMIT-01	13-Dec-06	Site Layout (Isometric) w/ Ceramic Baghouse
HWI-PERMIT-02	13-Dec-06	APE 1236 w/ Ceramic Baghouse Site Layout (Plan)
HWI-PERMIT-03	21-Sep-10	APE 1236 w/ Ceramic Baghouse Site Layout Elevation
HWI-PERMIT-04	21-Sep-10	APE 1236 w/ Ceramic Baghouse Site Layout Elevation
HWI-PERMIT-05	13-Dec-06	APE 1236 w/ Ceramic Baghouse Furnace Site Elevation
HWI-PERMIT-06	13-Dec-06	APE 1236 w/ Ceramic Baghouse Furnace Assembly
HWI-PERMIT-07	13-Dec-06	Cast Retort Sections Details and Assembly
HWI-PERMIT-08	13-Dec-06	Cast Retort Sections Details and Assembly
HWI-PERMIT-09	9-Jan-07	Burner and Blower Assembly
HWI-PERMIT-10	9-Jan-07	Burner and Blower Assembly and Details
HWI-PERMIT-17	13-Dec-06	Afterburner Assembly
HWI-PERMIT-20	13-Dec-06	Cyclone Assembly
HWI-PERMIT-21	21-Sep-10	Ceramic Baghouse
HWI-PERMIT-22	13-Dec-06	Draft Fan
HWI-PERMIT-23	21-Sep-10	Stack Platform
HWI-PERMIT-24	10-Jan-08	Exhaust Stack
HWI-PERMIT-25	10-Jan-08	Exhaust Stack Details
HWI-PERMIT-31	9-Jan-07	Gas Monitoring Sample Probe
HWI-PERMIT-32	9-Jan-07	CO & O2 Monitoring Sample System
HWI-PERMIT-36	9-Jan-07	Furnace Control Diagram
HWI-PERMIT-45	13-Dec-06	Conduit Routing Layout

ATTACHMENT 11

FURNACE SYSTEM SHUTDOWN

FURNACE SYSTEM SHUT DOWN PROCEDURES

The description below is taken from the current operation manual for the upgraded APE 1236 Deactivation Furnace, section 5-18, titled: System “Shutdown Sequence”.

The system shutdown operation is perhaps the easiest function to perform. The operator must be certain that he has allowed enough time between the last munitions fed and the initiation of shutdown. This time period should be at least thirty (30 minutes).

To initiate a shutdown, the operator shall press the system stop push button which starts the following sequence:

- (1) All burner systems will shut off.
- (2) All fans will stay on until the temperature associated with the fan falls below its low limit.
- (3) The system draft fan will stay on for one minute after all temperatures are acceptable.
- (4) SHUT DOWN COMPLETE

ATTACHMENT 12

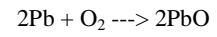
PARTICULATE GENERATION FACTORS

PARTICULATE GENERATION FACTORS

CHEMICAL NAME	FORMULA	REACTION	SOLID PRODUCTS	GASEOUS PRODUCTS	POTENTIAL PARTICULATE (LB PART./LB FEED)
Aluminum Powder	Al	$4Al + 3O_2 \rightarrow 2Al_2O_3$	Al ₂ O ₃	-	1.89
Ammonium Nitrate	NH ₄ NO ₃	$2NH_4NO_3 \rightarrow 2N_2 + O_2 + 4H_2O$	-	N ₂ , O ₂ , H ₂ O	0
Antimony Trisulfide	Sb ₂ S ₃	$2Sb_2S_3 + 9O_2 \rightarrow 2Sb_2O_3 + 6SO_2$	Sb ₂ O ₃	SO ₂	0.86
Barium Carbonate	BaCO ₃	$BaCO_3 \rightarrow BaO + CO_2$	BaO	CO ₂	0.78
Barium Chromate	BaCrO ₄	$2BaCrO_4 \rightarrow 2BaO + 2CrO_2 + O_2$	BaO, CrO ₂	O ₂	0.94
Barium Nitrate	Ba(NO ₃) ₂	$2Ba(NO_3)_2 \rightarrow 2BaO + 4NO_2 + O_2$	BaO	NO ₂ , O ₂	0.59
Barium Peroxide	BaO ₂	$2BaO_2 \rightarrow 2BaO + O_2$	BaO ₂	O ₂	0.91
Barium Stearate	Ba(C ₁₈ H ₃₅ O ₂) ₂	$BaC_{36}H_{70}O_4 \rightarrow BaO + 36CO_2 + 35H_2O + 86.5O_2$	BaO	CO ₂ , H ₂ O, O ₂	0.22
Black Powder Charcoal(75%)	C	$C + O_2 \rightarrow CO_2$	-	CO ₂	0
Sulfur(10%)	S	$S + O_2 \rightarrow SO_2$	-	SO ₂	0
Potassium Nitrate(15%)	KNO ₃	$4KNO_3 \rightarrow 2K_2O + 4NO_2 + O_2$	K ₂ O	NO ₂ , O ₂	0.47
Boron	B	$4B + 3O_2 \rightarrow 2B_2O_3$	B ₂ O ₃	-	3.22
Calcium Carbonate	CaCO ₃	$CaCO_3 \rightarrow CaO + CO_2$	CaO	CO ₂	0.56
Calcium Silicide	CaSi ₂	$2CaSi_2 + 5O_2 \rightarrow 2CaO + 4SiO_2$	CaO, SiO ₂	-	1.83
Calcium Resinate	Organic with calcium; assume all is calcium and products are CaO				1.00
Calcium Stearate	Ca(C ₁₈ H ₃₅ O ₂) ₂	$CaC_{36}H_{70}O_4 + 52O_2 \rightarrow CaO + 36CO_2 + 35H_2O$	CaO	CO ₂ , H ₂ O	0.09
Carborundum	SiC	No Reaction (pg. 642, ref.1)	SiC	-	1.00
Copper Powder	Cu	$2Cu + O_2 \rightarrow 2CuO$	CuO	-	1.25
Dichromated Aluminum	AlCr ₂ O ₂	$4AlCr_2O_2 + 3O_2 \rightarrow 2Al_2O_3 + 8CrO_2$	Al ₂ O ₃ , CrO ₂	-	1.34
Ground Glass	-	No Reaction	glass	-	1.00

Lead

Pb



PbO

-

1.08

PARTICULATE GENERATION FACTORS (Continued)

CHEMICAL NAME	FORMULA	REACTION	SOLID PRODUCTS	GASEOUS PRODUCTS	POTENTIAL PARTICULATE (LB PART./LB FEED)
Lead Azide	Pb(N ₂) ₃	PbN ₆ + 6.5O ₂ ---> PbO + 6NO ₂	PbO	NO ₂	0.77
Lead Oxide	PbO	No Reaction	PbO	-	1.00
Lead Nitrate	Pb(NO ₃) ₂	Pb(NO ₃) ₂ + H ⁺ ----> PbO + 2NO ₂ +H ₂ O	PbO	NO ₂ , H ₂ O	0.67
Lead Styphnate	PbC ₆ HN ₃ O ₈	PbC ₆ HN ₃ O ₈ +O ₂ --->PbO+CO ₂ +NO ₂ +H ₂ O	PbO	CO ₂ , NO ₂ , H ₂ O	0.50
Lead Thiocyanate	Pb(SCN) ₂	PbS ₂ C ₂ N ₂ + O ₂ ---> PbO + SO ₂ + CO ₂ +NO ₂	PbO	CO ₂ , NO ₂ , SO ₂	0.69
Magnesium/Aluminum	Mg	5Mg + O ₂ + N ₂ ---> 2MgO + Mg ₃ N ₂	MgO, Mg ₃ N ₂	-	1.49
	Al	4Al + 3O ₂ ---> 2Al ₂ O ₃	Al ₂ O ₃	-	1.89
Magnesium	Mg	5Mg + O ₂ + N ₂ ---> 2MgO + Mg ₃ N ₂	MgO, Mg ₃ N ₂	-	1.49
Nickel	Ni	2Ni + O ₂ ---> 2NiO	NiO	-	1.27
Potassium Chlorate	KClO ₃	KClO ₃ + 5H ⁺ ---> KOH + HCl + 2H ₂ O	KOH	HCl, H ₂ O	0.46
Potassium Nitrate	KNO ₃	KNO ₃ + H ⁺ ---> KOH + NO ₂	KOH	NO ₂	0.55
Potassium Perchlorate	KClO ₄	KClO ₄ + 8H ⁺ ---> KOH + HCl + 3H ₂ O	KOH	HCl, H ₂ O	0.40
Potassium Sulfate	K ₂ SO ₄	K ₂ SO ₄ + 3H ⁺ + O ₂ ---> 2KOH + H ₂ SO ₄	KOH	H ₂ SO ₄	0.71
Red Phosphorus	P	4P + 3O ₂ ---> P ₄ O ₆	P ₄ O ₆	-	1.77
Selenium	Se	Se + O ₂ ---> SeO ₂	SeO ₂	-	1.41
Silicon Carbide	SiC	No Reaction (pg. 642, ref.1)	SiC	-	1.00
Sodium Oxalate	NaC ₂ O ₄	2NaC ₂ O ₄ + O ₂ ---> 2Na ₂ O + 4CO ₂	Na ₂ O	CO ₂	0.56
Sodium Resinate	Organic with sodium; assume all is sodium and products are Na ₂ O		Na ₂ O	-	1.00
Sodium Sulfate	Na ₂ SO ₄	Na ₂ SO ₄ ---> Na ₂ O + SO ₂ + 0.5O ₂	Na ₂ O	SO ₂	0.44
Strontium Nitrate	Sr(NO ₃) ₂	2Sr(NO ₃) ₂ +6H ⁺ +O ₂ ---->2Sr(OH) ₂ +4HNO ₃	Sr(OH) ₂	HNO ₃	0.57
Strontium Oxalate	SrC ₂ O ₄ H ₂ O	2SrC ₂ O ₄ H ₂ O+O ₂ --->2Sr(OH) ₂ +4CO ₂ +2H ₂ O	Sr(OH) ₂	CO ₂ , H ₂ O	0.63

PARTICULATE GENERATION FACTORS (Continued)

CHEMICAL NAME	FORMULA	REACTION	SOLID PRODUCTS	GASEOUS PRODUCTS	POTENTIAL PARTICULATE (LB PART./LB FEED)
Strontium Peroxide	SrO ₂	$SrO_2 + 3H^+ \rightarrow Sr(OH)_2 + H_2O$	Sr(OH) ₂	H ₂ O	1.02
Sulfur	S	$S + O_2 \rightarrow SO_2$	-	SO ₂	0
Tin	Sn	$Sn + O_2 \rightarrow SnO_2$	SnO ₂	-	1.27
Tin Dioxide	SnO ₂	No reaction	SnO ₂	-	1.00
Zinc Stearate	Zn(C ₁₈ H ₃₅ O ₂) ₂	$ZnC_{36}H_{70}O_4 + 52O_2 \rightarrow ZnO + 36CO_2 + 35H_2$	ZnO	CO ₂ , H ₂ O	0.13
Zirconium Dioxide	ZrO ₂	No reaction	ZrO ₂	-	1.00
Zirconium/Nickel	Zr/Ni	$Zr + 2Ni + 2O_2 \rightarrow ZrO_2 + 2NiO$	ZrO ₂ , NiO	-	1.35
Zirconium	Zr	$Zr + O_2 \rightarrow ZrO_2$	ZrO ₂	-	1.35

ATTACHMENT 13
PROCESS CONTROL EQUIPMENT

Description of Waste Feed Cut Off

1.0 Waste feed cut off for the upgraded deactivation furnace (APE 1236) is controlled by an Allen-Bradley SLC 5/05 programmable logic controller (PLC).

1.1 The rotary kiln feed end and afterburner outlet temperatures shall be monitored by the PLC. Alarm set points are stored in the PLC memory registers. When the monitored temperature exceeds the specified limits, waste feeding shall be stopped. The baghouse temperature is monitored by the PLC and alarms in the same way.

1.2 The draft pressure at the feed end of the retort shall be monitored by the PLC. The draft pressure at the outlet of the afterburner shall be monitored by the PLC. When alarm set points are exceeded, the feeding shall stop. The baghouse differential pressure transmitter shall be monitored by the PLC and when alarm conditions exist, the feeding shall stop.

1.3 Auxiliary contacts on all of the fan motors determine the alarm status. When a fan motor fails, the waste feeding shall stop.

1.4 Motion sensors determine the alarm status of the two conveyors. The rotary kiln rotation shall be monitored. When motion stops, the PLC shall stop the feeding process.

1.5 Auxiliary contacts on the two double tipping valves determine the alarm status of the baghouse and cyclone motors. Feeding shall stop when a double tipping valve fails.

1.6 The PLC shall continually monitor for Waste Feed Cut Off (WFC) errors and Wonderware reports the status on the screen. When errors occur, the PLC shall stop the feeding process and send a signal to the Wonderware. At the same time visual and audible alarms activate.

1.7 The CEMS equipment shall monitor the CO and the oxygen emissions from the stack. The CO level is communicated to the PLC. The PLC corrects the CO level to 7% oxygen. When the corrected CO level rises above 100 ppm, the feeding shall stop.

1.8 When the weight on the scale exceeds the maximum levels, the waste feed rate monitoring system shall not function (feeding stops).

1.9 The following parameters shall be recorded on the hard drive:

1. Rotary kiln feed end temperature (°F).
2. Rotary kiln burner end temperature (°F).
3. Burner flameout.
4. Kiln rotation (rpm).
5. Kiln pressure (inches W.C.).
6. Afterburner temperature (°F).
7. Afterburner flameout.
8. Baghouse inlet temperature (°F).
9. Baghouse differential pressure (inches W.C.).
10. CO low range corrected value (ppm).
11. CO high range corrected value (ppm).
12. O₂ level (%).
13. Stack gas emission velocity (ft/s).

14. Stack outlet temperature (°F.)
15. Fuel oil consumed (running total) (gal).
16. Feed rate, hourly avg. (lb/hr).
17. Emergency stop status.

1.10 These readings shall be taken in the following manner:

1.10.1 CO shall be recorded every 15 seconds by the PLC. Four consecutive values shall be averaged to determine a one minute value which shall be recorded on the computer hard drive. The readings shall be averaged every minute and the PLC shall compute an hourly rolling average.

1.10.2 Waste Feed Rate inputs shall be monitored continuously. Hourly average shall be calculated and recorded every push off.

1.10.3 Stack Gas Temperature and Stack Gas Velocity shall be continuously read and recorded every minute in the data bank.

1.10.4 Currently, the only available options for the baghouse monitoring are ΔP monitoring and manual inspection of the baghouse. A more detailed description of the ΔP operation and a reference to inspection frequency are given below.

1.11 The data recorded on the hard drive shall be archived on electronic media.

2.0 BAGHOUSE FILTER ELEMENT MONITORING

2.1 Baghouse filter element condition monitoring shall be done by watching the differential (delta) pressure (ΔP) value across the baghouse. ΔP is solely dependent upon the air flow resistance through the filter elements.

2.2 ΔP is the difference in pressure measured across the baghouse taken on each side of the filter elements. Both readings are negative values created by the draft fan and measured in inches of water with the outlet side having the greater negative value. Too high of a reading indicates plugged or "blinded" condition in which filter element material becomes permanently coated with combustion residue and the pulse-jet cleaning cycle cannot release the material. Too low of a reading indicates an open element condition indicating a breach in the baghouse material. An experienced operator will know the "Steady State" ΔP reading during normal furnace operation and filter element cleaning cycles and will know immediately if an abnormal change occurs such as filter blinding or a breach in the filter element. An operator knowing the steady state reading of his furnace can easily monitor filter element condition.

2.3 ΔP on the APE 1236M2 baghouse shall be measured by a differential pressure transmitter which provides an analog input to the PLC.

3.0 FILTER MATERIAL

3.1 The filter elements are made from Cerafil XS-3000 ceramic material.

4.0 INSPECTION SCHEDULE

4.1 The entire APE-1236 furnace system shall receive a complete visual inspection prior to each start-up. The periodic checks and services specified in the Preventative Maintenance Section of the current Operation Manual shall be performed. The minimum Preventative Maintenance Service outlined in Table 13-1 below shall be performed.

Table 13-1
Preventive Maintenance Service

DESCRIPTION	INTERVAL	PROCEDURE
Lubricate	In accordance with Operation Manual	In accordance with Operation Manual
Fuel Supply	Before start-up	Ensure adequate fuel supply for current job.
Propane	Before start-up	Ensure adequate fuel supply for current job.
Enclosure Door Seals	Monthly	Ensure a weather tight seal.
Enclosure Lights	Daily	Condition
Waste Feed Monitor	Weekly	Test by placing a test weight (10% over max.) and ensuring that the red over-limit indicator light comes on and the system automatically prevents feeding.
Calibrate Gas Monitoring System	Each usage	System checks itself during each start-up.
Archive data on hard disk	Monthly or as required	Ensure all necessary data is archived prior to exceeding the capacity of the hard disk.
Air Compressor	Daily	Check automatic drain system.
.Feed Conveyor	Monthly	Check/adjust support rollers, links, bearings, sprockets, and associated hardware.

Discharge Conveyor	Monthly/Daily	Check/adjust support rollers, links, bearings, sprockets, and associated hardware. Remove foreign metal/material daily.
Retort Chains	Monthly	Check/adjust retort drive chains, bearings, and sprockets. Replace as required.
Draft Fan Drive Belts	Bi-monthly	Check/adjust drive belts. Replace as necessary.
Cyclone and Baghouse Double Tipping Valves	Monthly	Ensure that the hopper is not clogged and that the valves work freely.
Baghouse	As indicated by change in baghouse pressure	Inspect bag condition by opening the access door and visually inspecting elements for excess contamination (blinding) or holes. Replace individual elements as required.

5.0 CALIBRATION SCHEDULE

5.1 Table 13-2 summarizes the calibration audit schedule for the APE-1236 furnace system instruments. In all cases, the minimum calibration audit frequency shall be at least that recommended by the manufacturer.

5.2 A calibration audit shall be conducted by a qualified organization at the intervals indicated in Table 13-2. The weigh scale shall be calibrated by operators using calibrated certified weights. The O₂ and CO monitors shall be calibrated daily during operations and quarterly by operators using certified gases. An annual audit of the O₂ and CO monitors shall be conducted by a qualified organization. The other instruments shall be audited annually by a qualified organization. Instruments found to be out of calibration shall be replaced with a calibrated instrument of the same type.

5.3 A separate maintenance file shall be maintained for each instrument/monitor. The file shall contain all work, maintenance, calibration, testing, and inspection data as required for each instrument.

Table 13-2
Calibration Schedule

DESCRIPTION	MEASUREMENT DEVICE	MANUFACTURER	MODEL NUMBER	CALIBRATION FREQUENCY
Baghouse Δp	pressure transmitter/differential pressure, 0-15" WC	Foxboro	IDP10-D22A11FM1B1	annually
system draft pressure	pressure transmitter/gage pressure, 0-5" WC	Foxboro	IGP20-D12A11FM1B1	annually
rotary kiln feed end draft	pressure transmitter/gage pressure, 0-0.5" WC	Foxboro	IGP20-D12A11FM1B1	annually
rotary kiln feed end temperature	panelmeter, thermocouple with transmitter	Newport	INFCT-0001	annually
afterburner temperature	panelmeter, thermocouple with transmitter	Newport	INFCT-0001	annually
baghouse inlet temperature	panelmeter, thermocouple with transmitter	Newport	INFCT-0001	annually
baghouse outlet temperature	panelmeter, thermocouple with transmitter	Newport	INFCT-0001	annually
rotary kiln burner end temperature	panelmeter, thermocouple with transmitter	Newport	INFCT-0001	annually
stack air flow	insertion mass flow meter Series 454FT	Kurz	756004-13-23-00-0000-13-14-01-28-20-01-12	annually
stack temperature	insertion mass flow meter Series 454FT	Kurz	756004-13-23-00-0000-13-14-01-28-20-01-12	annually
O ₂ monitor	see Attachment 15	Southern Technologies	see Attachment 15	daily, quarterly, annually
CO monitor	see Attachment 15	Southern Technologies	see Attachment 15	daily, quarterly, annually
CO monitor	see Attachment 15	Southern Technologies	see Attachment 15	daily, quarterly, annually
waste feed scale	explosion proof electronic platform scale.	Hardy Instruments Scale	HI1746WS	weekly

ATTACHMENT 14
SYSTEM DESCRIPTION

APE 1236M2 Deactivation Furnace

1.0 The APE 1236M2 Deactivation Furnace is a rotary furnace system which has been designed by the United States Army for thermal destruction of ammunition ranging from small arms through 20 mm. Ammunition larger than 20 mm must be sectioned or disassembled prior to feeding into the furnace.

1.1 It has many safety and environmental features, which are used to protect the operators and the environment during operation.

1.2 The furnace has three major sections, which are the feed room, the enclosure building, and the air pollution control equipment.

2.0 Section #1: THE FEED ROOM

2.1 The Feed Room contains the main control panel, the continuous emissions monitoring unit, the waste feed rate monitoring system, and the feed conveyor.

2.1.1 Main Control Panel:

2.1.1.1 The main control panel contains various pieces of control equipment to monitor and control the furnace operation. Process controllers are used to control the rotary furnace feed end temperature, negative pressure in the rotary furnace, and afterburner temperature.

2.1.1.2 The control system is equipped with two burner control systems to monitor and control the rotary furnace and afterburner burners. The burner controllers are sequence controllers which supervise the pre-ignition air purge, ignition, main flame operation, and post operation air purge. The flame status is monitored by a flame detector.

2.1.1.3 Logic control for the furnace is performed by a programmable logic controller (PLC). The PLC receives both discrete (on/off) inputs from switches and analog inputs from transmitters. The PLC controls the motor starters, the waste feed rate monitoring system, safety interlocks, and alarms.

2.1.1.4 The computer system is a PC based machine running data acquisition software called Wonderware, which provides centralized and integrated data management, process graphics, operator interface, and report generation. Through an Ethernet data link, the Wonderware communicates with the PLC. All process parameters and information contained in the PLC is available to Wonderware. The Wonderware generates reports, logs data, and develops historical trends, displays process parameters, and logs alarms received from the PLC. The primary function of the Wonderware is to provide a human machine interface to record process data for internal use and regulatory compliance.

2.1.2 Continuous Emissions Monitoring System:

2.1.2.1 The rotary furnace system shall be equipped with a continuous emissions monitoring (CEM) system which measures oxygen and carbon monoxide in the exhaust stack. The CEM system includes a sampling system, which continuously pulls a stack gas sample and transports it to the analyzers. The sample extraction point is located in the stack approximately 20 feet (6 meters) above grade. The following are included in the sampling system:

1. Sample extraction probe.
2. Heat traced sample lines.
3. Calibration ports.
4. Dual stage sample conditioner.
5. Sample pump.
6. Flow meter.

2.1.2.2 The CEM system shall be calibrated by the operators daily when in operation.

2.1.2.3 The percent oxygen shall be continuously monitored by the oxygen analyzer located in the gas monitoring enclosure. The analyzer is a multi-range unit, which includes a 0-25% scale. The output from the analyzer is recorded at the main control panel and is used by the PLC to correct the carbon monoxide measurement to 7% oxygen content in the stack gas.

2.1.2.4 The parts per million (ppm) level of carbon monoxide in the stack shall be continuously monitored by the carbon monoxide analyzers located in the gas monitoring enclosure. The analyzers are non-dispersive infrared (NDIR) analyzers. One analyzer is a 0-200 ppm range and the other is a 0-3000 ppm range model. The outputs from the analyzers are corrected to 7% oxygen by the PLC. The corrected value is used in controlling the feed rate of ammunition into the rotary furnace.

2.1.3 Waste Feed Rate Monitoring System:

2.1.3.1 The waste feed rate monitoring system (WFRMS) controls how fast and how much ammunition is fed into the furnace. The WFRMS major components are an explosion proof scale for weighing the ammunition, a push off box, and a slide chute. The scale reports the measured weight to the PLC via a load cell. The PLC verifies that the weight is equal to or below the established limit for the item being incinerated. Once the PLC has verified that the weight is correct, the push off box pushes the ammunition item onto the slide chute, which is over the feed conveyor. The WFRMS is capable of cycling every 15 seconds. If an out of parameter condition arises, the WFRMS shall be stopped until the out of parameter condition is corrected.

2.1.4 Feed Conveyor:

2.1.4.1 The feed conveyor is used to move the ammunition from the feed room through the concrete barricade wall into the barricade area. The feed conveyor then deposits the ammunition into the rotary furnace feed chute.

3.0 SECTION #2: THE ENCLOSURE BUILDING

3.1 The enclosure building surrounds the barricaded area and contains the rotary furnace, the discharge conveyor and collection area. The enclosure building is designed to be under constant negative pressure so that any fugitive emissions from the kiln will be pulled back into the incineration system through the combustion air fans.

3.1.1 Rotary Furnace

3.1.1.1 The rotary furnace is designed to ignite the ammunition items and effectively burn out reactive components from the metal shells. The heat to ignite the ammunition is initially provided by fuel oil firing countercurrent to the movement of the ammunition through the rotary furnace. Combustion gases and entrained ash exit the furnace adjacent to the ammunition feed chute. Non-entrained ash and the metal components of the ammunition are discharged at the burner end of the rotary furnace.

3.1.1.2 The retort is level in the horizontal position. The ammunition is propelled through the furnace toward the flame at the burner end by means of spiral flights, which are an integral part of the furnace castings. As the ammunition approaches the flame and becomes heated, they either detonate or burn freely, depending upon the ammunition configuration and characteristics. High order detonations are contained by the thick cast steel walls. The spiral flights provide physical separation of ammunition or groups of ammunition, discouraging sympathetic propagation of detonations and defeating fragments generated by the detonations. Ammunition feed rates, residence time within the furnace (determined by speed of revolution of the furnace), and operating temperatures have been established for each ammunition item by controlled testing.

3.1.1.3 The rotary furnace is 20 feet long with an average integral diameter of 30.5 inches. The rotary furnace is made of four 5-foot long sections, called retorts, which are bolted together. The two center sections have a wall thickness of 3.25 inches and the two end sections have a wall thickness of 2.25 inches. The retorts are constructed of ASTM A217 chromium molybdenum steel for high strength and ductility at elevated temperatures. For additional personnel safety, the rotary furnace is surrounded by barricade walls.

3.1.1.4 The rotary furnace is equipped with a Hauck 783 proportioning burner at the discharge end of the rotary furnace. The burner has a capacity of 3 million BTU/hr and a nominal turndown ratio of 4:1.

3.1.1.5 The feed end temperature of the furnace ranges between 350°-500°F (177°-260°C) while the discharge end temperature ranges from 800°-1100°F (427°-593°C) during normal operation.

3.1.1.6 The rotary furnace shall operate under a slight negative pressure. This pressure is typically -0.15 to -0.25 inches of water column. The negative pressure in the rotary furnace is determined by the flue gas flow rate and pressure drops through the air pollution control system and draft fan. For those short instances where the pressure in the kiln goes positive, any emissions shall be captured in the enclosure building and subsequently routed back to the incinerator.

3.1.1.7 The rotation speed of the furnace is automatically controlled so that the munitions achieve detonation or burn in the center of the furnace.

3.1.2 Discharge Conveyor and Collection Area

3.1.2.1 The solid waste exits the rotary furnace at the discharge/burner end. The solid waste is typically the metal casings (brass or steel), melted lead projectiles, and residual ash. This waste is removed from the barricaded area via a wide belt, S shaped, discharge conveyor. The low end of the discharge conveyor is located underneath the discharge/burner end of the rotary furnace. The high end of the conveyor passes through the concrete barricade wall and deposits the waste into containers for disposal. The containers are temporarily held in the collection area within the enclosure building until they are removed to the sorting building for inspection.

4.0 SECTION #3: THE AIR POLLUTION CONTROL EQUIPMENT

4.1 The Air Pollution Control Equipment area contains equipment for managing the exhaust gases and consists of a cyclone, afterburner, high temperature cast ceramic filters baghouse, and the high temperature draft fan and stack.

4.1.1 Cyclone

4.1.1.1 The rotary furnace flue gases are transported to the cyclone by 24-inch (610-mm) diameter stainless steel ducting. The cyclone is placed between the rotary furnace and afterburner to remove particulate from the flue gas. The cyclone has a 90-95% removal efficiency for particles 10 microns and larger. The pressure drop across the cyclone is 2 to 5 inches of water column. Particles are removed from the cyclone at the bottom by a double tipping valve. The valve has two gates that are motor driven. The gates open alternatively so that only one gate is open at any time, thus the negative pressure is maintained. The particulate shall be deposited in a collection container for disposal.

4.1.2 Afterburner

4.1.2.1 The flue gases from the cyclone are transported to the afterburner by 24-inch (610-mm) diameter stainless steel ducting. The afterburner is built to AED specifications by a qualified manufacturer. Because it has been built to AED specifications the unit does not have a model number. The afterburner is designed to heat up to 4,000 SCFM (standard cubic feet per minute) of flue gas from 350°-500°F (177°-260°C) to an exit temperature range of 1500°-1800°F (760°-871°C) with a minimum flue gas residence time of 2 seconds. This increase in temperature further destroys any organics in the flue gas.

4.1.2.2 The afterburner is heated by a diesel fuel burner with a propane pilot ignition system. The afterburner is equipped with a Hauck WRO164 wide range burner. The burner has a capacity of 8 million BTU/hr and a nominal turndown ratio of 10:1.

4.1.3 High Temperature Cast Ceramic Filters Baghouse

4.1.3.1 JT Systems, Inc. built this baghouse to AED requirements. It is a Model JTS-GE-CF-154-HC Pulse Jet Dust Collector. The flue gases from the afterburner are transported to the baghouse by 120 feet of 30 inch (762mm) diameter stainless steel ducting. The steel ducting is long enough to produce a temperature drop from 1600°F at the exit of the afterburner to 750°F entering the baghouse. The baghouse is designed to filter small particulate ash and heavy metals from the flue gas. The baghouse is

capable of filtering below 0.03 gr/dscf using cast ceramic filters. The baghouse contains 136 filters that are 5.75 inches in diameter and 10 feet long. They are made of cerafil ceramic material. This results in a total filter area of 2,040 square feet with a filtration velocity of 5.0 ft/sec. The baghouse operates with a delta pressure range of 0.5 to 30.0 inches of water column and a temperature of 800°F (427°C).

4.1.4 High Temperature Draft Fan

4.1.4.1 Fan Equipment Co., Inc. manufactures the draft fan. It is a Model 360 HPS. The flue gases from the baghouse are transported to the high temperature draft fan by 20-inch (508-mm) diameter stainless steel ducting. The flue gases are drafted through the entire furnace system by an induced draft fan, which is located downstream of the baghouse. The draft fan is used to produce a negative pressure throughout the entire furnace system. The draft fan is capable of producing 8500 ACFM (Actual Cubic Feet per Minute) at 30 inches of water column.

4.1.5 Exhaust Stack

4.1.5.1 The cleaned and cooled flue gases from the draft fan are discharged into the exhaust stack and then the atmosphere. The stack is 20 inches (508 mm) in diameter and 37 feet (11.28 meters) tall. The exhaust stack has various instrumentation ports. The ports for continuous flue gas analyzers and gas velocity are located approximately 20 feet (6 meters) above grade. The flue gas analyzer port services the sampling system, which supplies the continuous oxygen and carbon monoxide analyzers. These analyzers are used to indicate incineration performance and are interlocked with the automated control system. The gas velocity port accommodates a mass flow meter, which provides the gas velocity in the stack and a stack gas temperature.

MISCELLANEOUS EQUIPMENT

Additional items that are a part of the furnace system are as follows:

Environmental Unit:

The environmental unit is used to keep the main control panel and gas monitoring enclosure at a constant temperature of 70°F (21°C) year round.

480 Volt 60 Hz Power Panel:

The 480-volt power panel provides power to the draft fan, the afterburner combustion air fan, the rotary furnace combustion air fan, all of the conveyor motors, all of the double tipping valve motors, fuel oil pump, air compressor, and the retort rotation motor.

Step down Transformer:

A 112.5 KVA, 3 phase, 480-volt delta 208/120-volt wye, dry type transformer is required to provide the needed power to the control system.

208 Volt 60 Hz Power Panel:

The 208-volt power panel provides power for other equipment on the site.

110 Volt 60 Hz Power Panel:

The 110 volt power panel provides power to the WFRMS, the PLC, all of the controllers, the gas monitoring enclosure, power supplies in the main control enclosure, all of the actuators, the heat trace sample line, and the environmental control unit.

1000 Gallon Propane Tank:

The propane tank is a 1000-gallon horizontal tank with regulator. The tank provides propane for the afterburner propane pilot ignition system.

4000 Gallon Fuel Oil Tank:

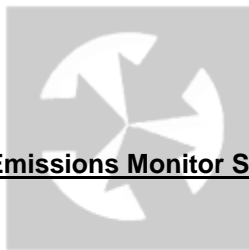
The fuel oil storage tank is a 4000-gallon skid mounted tank with pump. The tank provides the required fuel oil flow to operate both the retort burner and afterburner burner.

Air Compressor:

The air compressor provides compressed air to the baghouse, the gas monitoring enclosure, and the WFRMS. The air compressor is rated for 100-125 psi, 33.6 CFM, with an 80-gallon horizontal tank and a 7.5 HP, 480-volt motor.

ATTACHMENT 15

CONTINUOUS EMISSIONS MONITOR SYSTEM (CEMS)



Continuous Emissions Monitor System (CEMS)

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Overview

Four subsystems are required to make up a continuous emissions monitoring system.

I) Sample System

This system is comprised of the sample probe, transport line, double pass sample conditioner, sample pump and regulator as well as sample and exhaust manifolds.

The sample is drawn from the stack through the probe and transport line via the sample pump and is sent to the first pass of the sample conditioner. This first pass of the sample conditioner cools the sample down to the ambient temperature inside the cabinet to initially remove any moisture present in the gas. The exact volume and pressure of sample required by the analyzer(s) is then regulated by the backpressure regulator and sent to the second pass of the sample conditioner. This second pass is chilled by thermo-electric coolers to bring the sample temperature below dew point and remove any remaining moisture. Excess sample is sent directly to the exhaust manifold and vented outside the building. All moisture removed from the sample by the first and second pass of the conditioner is removed by two peristaltic pumps to avoid sample contamination by air intrusion.

II) Analyzers

The analyzer rack contains three separate analyzer units, one oxygen analyzer with a range of 0 – 25 percent and two analyzers for carbon monoxide with ranges of 0 – 200 ppm and 0 – 3000 ppm. Internal piping sends the required volume of gas sample from the sample system to each of the analyzers. This allows for simultaneous measurement of all three units. After being analyzed, the sample gas is vented out of the building via the exhaust manifold. Analog 4 – 20 mADC signals proportional to each gas value is then transmitted to the data logging equipment.

III) Calibration System

Since the analyzers require calibration on a regular basis a system to perform this function has been included. The system is comprised of four calibration gasses certified to a known value and solenoids to control the introduction of these gasses to the analyzers. The calibration gasses consist of a pure nitrogen zero gas, two carbon monoxide/nitrogen mixtures equal to or greater than 80 percent of the two carbon monoxide analyzer ranges and an oxygen/nitrogen mixture equal to or greater than 80 percent of the oxygen analyzer range. The calibration sequence is controlled by the Data Logging and Control System. This sequence floods the sample probe with the calibration gasses one at a time for five minutes each via a calibration line connected to the probe. The gas is then drawn into the sample system, conditioned and delivered to the analyzers just like the normal sample. The first calibration gas to be introduced will always be the pure nitrogen called zero gas. This allows the zero calibration of all three analyzers at once. The remaining gasses called span gasses are then introduced one at a time for five minutes each. After the last calibration gas time period is complete, the system remains in the calibration mode for an additional five minutes to purge all calibration gas from the sample system.

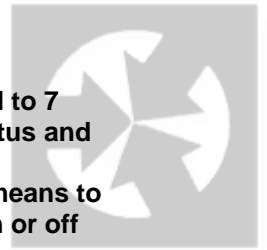
IV) Data Logging and Control System

Consisting of an Allen-Bradley SLC-5/05 processor and WonderWare SCADA software, this system performs all data logging and calculations required by the state and federal environmental regulations. This system also controls the calibration sequence and alarm functions. Switches, indicators and operator interface screens complete the system.

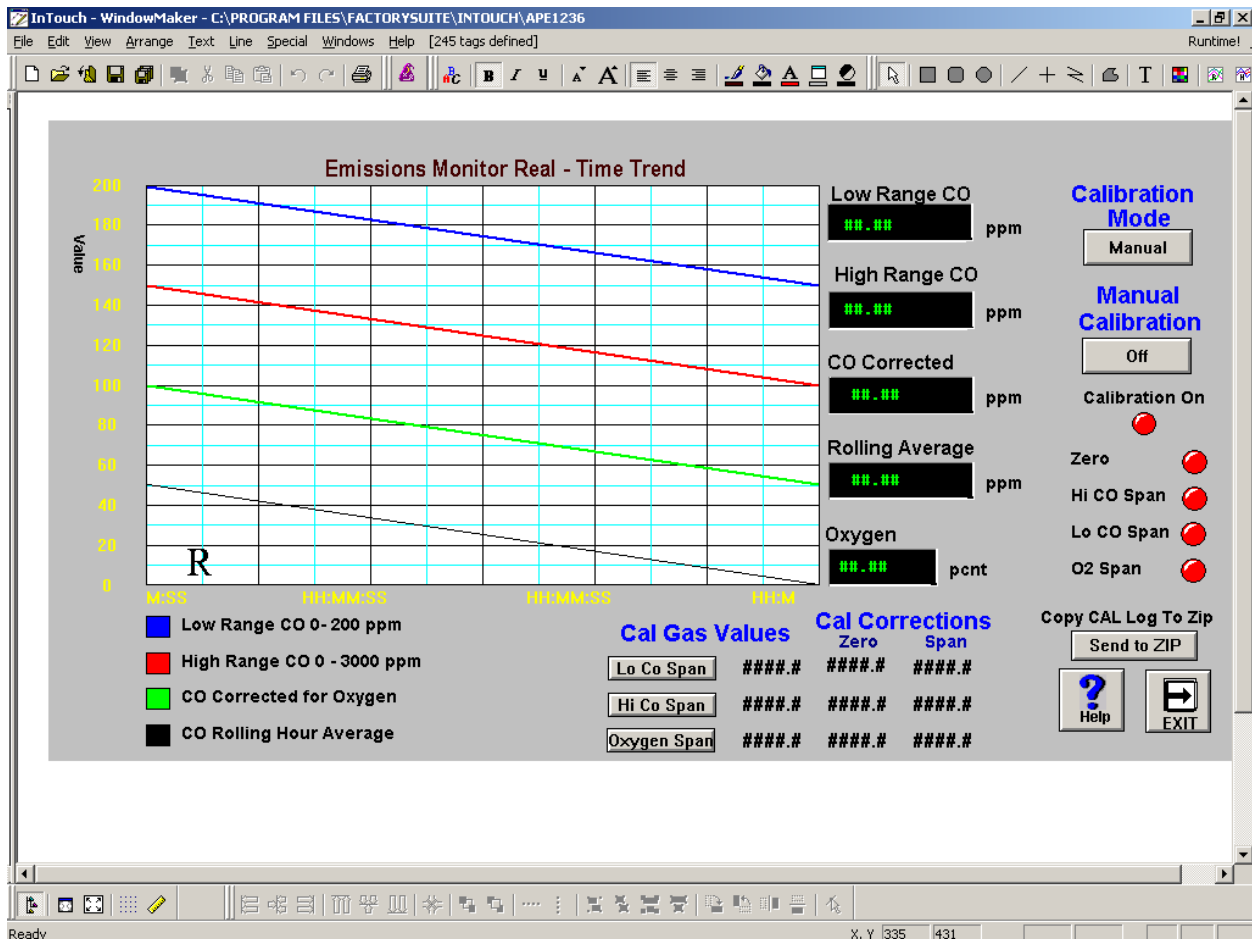
The following pages show the continuous emissions monitoring system interface screens available to the operators

Overview Screen

This screen gives operators real time values for all analyzers, carbon monoxide corrected to 7 percent oxygen, the hourly rolling average for carbon monoxide calibration sequence status and calibration correction values applied to the signals from the analyzers. Critical values are displayed on a real time trend window. This screen also provides the operators with the means to set calibration gas values, start a manual (unscheduled) calibration sequence and turn on or off the automatic (scheduled) calibration sequence.



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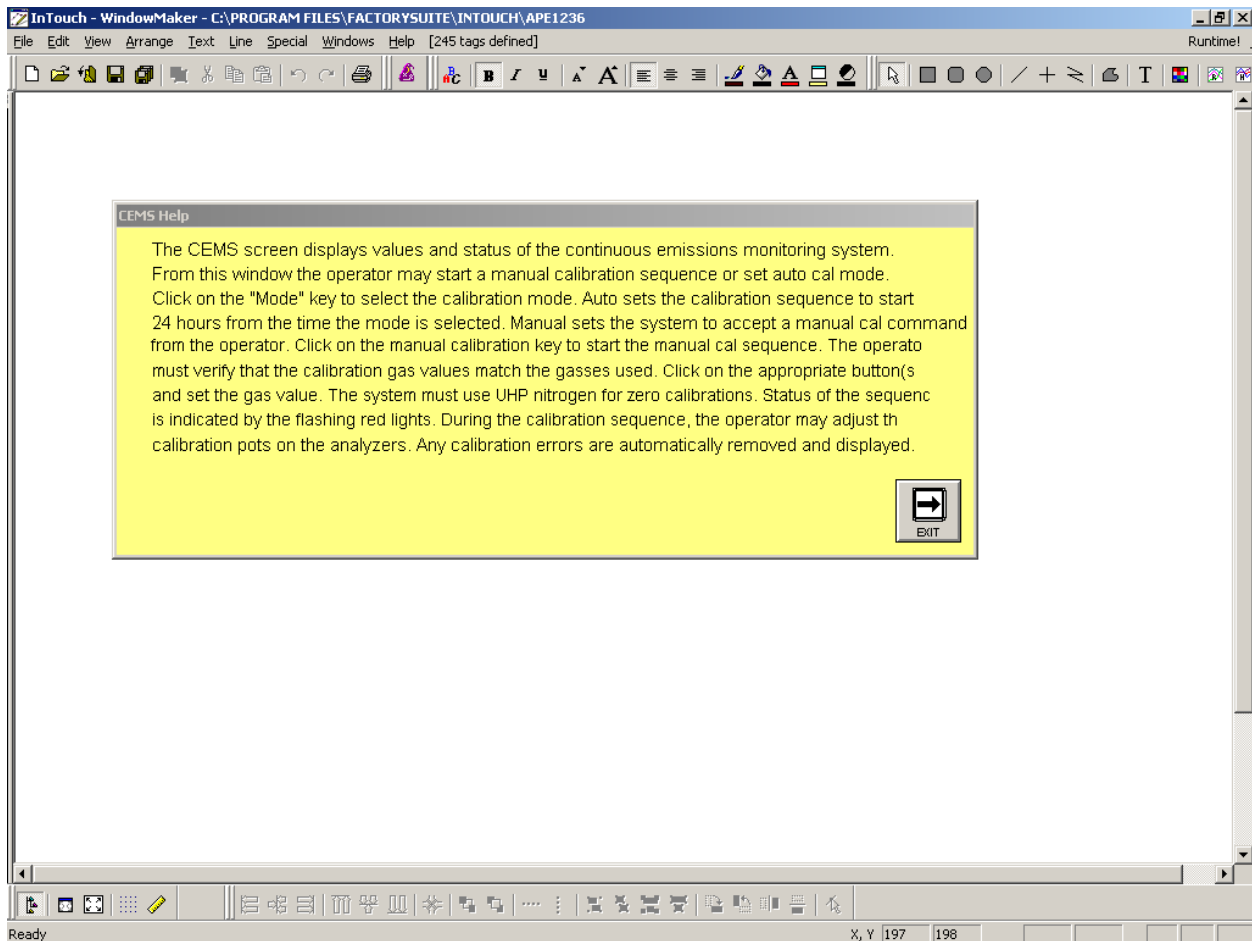




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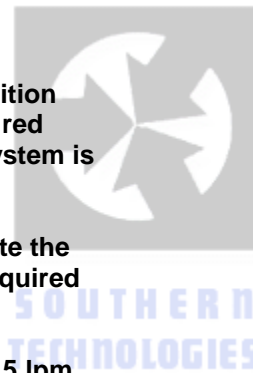
Help Screen

Clicking the help button on the overview screen displays the following popup screen. This help information instructs the operator on how to perform the most common functions.



Start Up and Operational Procedures

- 1) An Off-On switch is located on the CEMS panel. Placing this switch to the on position starts the warm up mode for the analyzers and is indicated by a slow flash of the red indicator light. This warm up period controlled by the data logging and control system is one hour long and is required to heaters in the analyzers to stabilize.
- 2) Five minutes before the end of the warm up period, the control system will activate the sample conditioner system. Once the conditioner's sample coolers are at their required temperatures, the sample pump will automatically start.
- 3) Verify the proper sample flow rate on the rate indicator. This should be approx. 2.5 lpm. If it is not, adjust the backpressure regulator located inside the cabinet and piped to the sample manifold to obtain the correct flow rate. The sample pressure should be 3 – 3.5 psi.
- 4) At the end of the warm up period, the red flashing indicator light will extinguish indicating online status of the CEMS.
- 5) At this point, the system requires a manual calibration. To perform this function, open the CEMS screen on the PC and verify that the calibration mode is set to manual. To change this, click on the mode button until "Manual" is displayed. Verify that the calibration gas values are correct. This information is located on certification tags attached to the individual bottles. If it is required to change the values, simply click on the appropriate button and enter the correct value(s).
- 6) Open the valves on the four calibration gas bottles and set the pressure to approx. 5 psig.
- 7) On the CEMS screen, start the calibration mode by clicking on the manual cal start button. The red indicator light on the panel will show steady on.
- 8) Indicating lights on the CEMS screen inform the operator the status of the calibration mode. The modes are zero first followed by three spans then purge. At five minutes for each mode, the calibration will take 25 minutes. During the zero calibration, observe the zero values on all three analyzers. When they stabilize, make any required adjustments using the "Zero" pots located on each analyzer until their respective readings are 0.
- 9) Following the zero calibration, each of the analyzers will go into span mode one at a time. Observe the status indicators on the screen then observe the corresponding analyzer reading. When this reading has stabilized, adjust as necessary using the appropriate "Span" pot until the reading matches the gas value. Repeat this procedure for the remaining analyzer spans.
- 10) At the end of zero and all span calibration modes, the unit will enter a purge mode. This is indicated on the CEMS screen by "Calibration On" and no other calibration mode lights. This purge is required to purge all calibration gasses and replace them with actual sample gas from the stack.
- 11) At the end of the five minute purge period, the CEMS is online and operational. Any automatic corrections the control system needed to make will be displayed on the CEMS screen.
- 12) If it is desired to have the control system perform automatic calibrations, place the calibration mode to "Automatic". The automatic calibration will start 24 hours from the time auto mode was selected.
- 13) To shutdown the CEMS simply place the OFF-ON Switch to the off position.





Alarms and Troubleshooting

The CEMS alarms are indicated in two places, a rapid flash of the red indicator and the alarm logs within Wonderware. The operator should familiarize himself with the procedures to view and acknowledge alarms in Wonderware as they will give the operator enough information to correct the problem or call appropriate service personnel.

Below is a troubleshooting guide for the most common problems that might be encountered.

1) Sample System

- A) Pump will not start after warm up period – The pump is controlled by the conditioner. Located on the front of this conditioner are two green LED's, labeled "Cool" and "Dry" Verify that both on illuminated.

The LED "cool" indicates that the conditioner is at temperature. If it is out, the conditioner temp control is bad and needs repair.

The LED "Dry" indicates that there is no water in the sample filter/intrusion bowl. If this is out, look for water in the bottom of the filter bowl. If water is present, remove bowl and dry the filter and bowl then reassemble. Make sure that the peristaltic pumps are operational and that the tubing is not clogged.

If both LED's are out, check the incoming power to the conditioner. This power is controlled by a relay mounted on the terminal strip mounting rail. The relay is energized from the control system PLC. Refer to the wiring diagram for the CEMS.

- B) Sample flow rate – The sample flow rate is controlled by the backpressure regulator. If the operator is unable to set the correct flow rate, the following should be checked.

High flow rate would indicate a plugged regulator or vent system. Verify that the regulator piping and the associated tubing are free of obstructions.

Low flow rates could be an indication of dirty sample filter, plugged sample transport line or a bad diaphragm in the regulator. Inspect each area and correct any problems encountered.

2) Analyzers

Analyzers will not calibrate – The sample system must be fully operational in order to calibrate the analyzers. If it is not, follow the steps outlined above before attempting a calibration sequence. If the sample system is operational, verify that the calibration gas cylinders are not empty and that the calibration lines are not plugged. Be sure to check the line from the panel to the probe. If all lines are clear, replace the solenoids. All solenoids should be replaced at the same time.

- 3) Additional trouble – Any problems not covered above should be referred to qualified service personnel.

ATTACHMENT 16
OPEN BURNING/OPEN DETONATION OPERATIONS

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1.0 OB/OD DESIGN AND OPERATION

1.1. Applicability as a Miscellaneous Unit

1.1.1 The Permittee conducts thermal treatment of conventional energetic material items at the Open Burn/Open Detonation (OB/OD) Area. The principal work activities at Tooele Army Depot (TEAD) are the shipping, receiving, maintenance and demilitarization of conventional munitions, and the testing and development of ammunition peculiar equipment and related demilitarization testing. The location of the OB/OD Area is shown in Figure 1 and a detailed map showing the OB/OD operations area is shown in Figure 2. Treatment by OB/OD falls under the miscellaneous units provisions in the Utah Admin. Code R315-264-600.

1.1.2 OB/OD is used for treatment of some energetic materials because this is the only safe and effective treatment process currently available for those energetic material items. The selection of OB/OD is based on energetic material item-specific information developed by the U.S. Army based on energetic material type and content, explosion potential, and historical experience. The U.S. Army is continuing to study and evaluate alternative treatment processes that may be used in the future, rather than OB/OD, to treat appropriate energetic materials. The Permittee reports progress in developing alternative technologies as part of the annual waste minimization certification.

1.1.3 Because the OB and OD treatment processes are a non-continuous (i.e., batch) process, the facility is not subject to steady-state or "normal" operating conditions. Wastes shall be treated by the Demil Team according to Standard Operating Procedures (SOPs). The SOPs detail the handling of the explosives from storage to unloading, the tools to be used, setting the charge, and, ultimately, burning or detonation.

1.1.4 There are major advantages for using OB and OD disposal practices. These include the following:

1.1.4.1 Safety is the most important consideration. Strict observance of proven OB and OD procedures has resulted in an excellent safety record being earned by the personnel who have helped to treat the many millions of pounds of waste military energetic materials safely over the last four decades at numerous Department of Defense (DOD) installations.

1.1.4.2 These types of operations are extremely versatile; large or small quantities of the myriad types of materials can be treated easily and safely.

1.1.4.3 Because of their inherent simplicity, OB and OD are extremely reliable processes not subject to equipment downtime.

1.1.4.4 Both OB and OD are very efficient treatments as demonstrated by testing. This is discussed in further detail in Attachment 17 (OB/OD Treatment Effectiveness, Alternative Technologies and Waste Minimization).

Figure 1

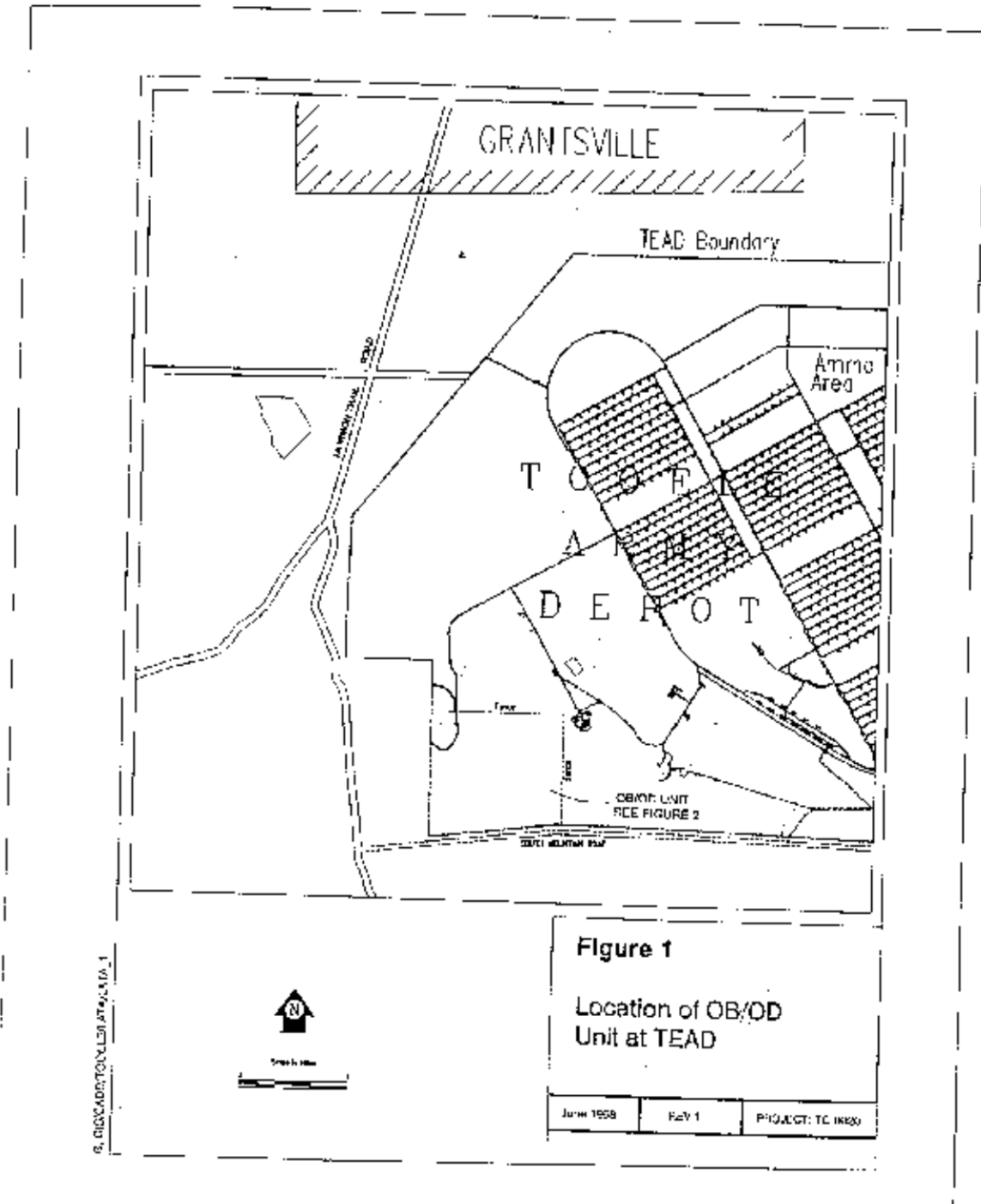
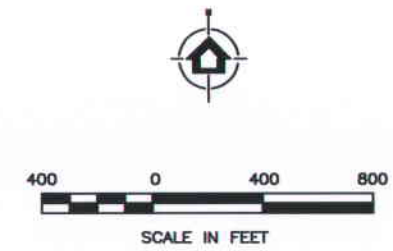
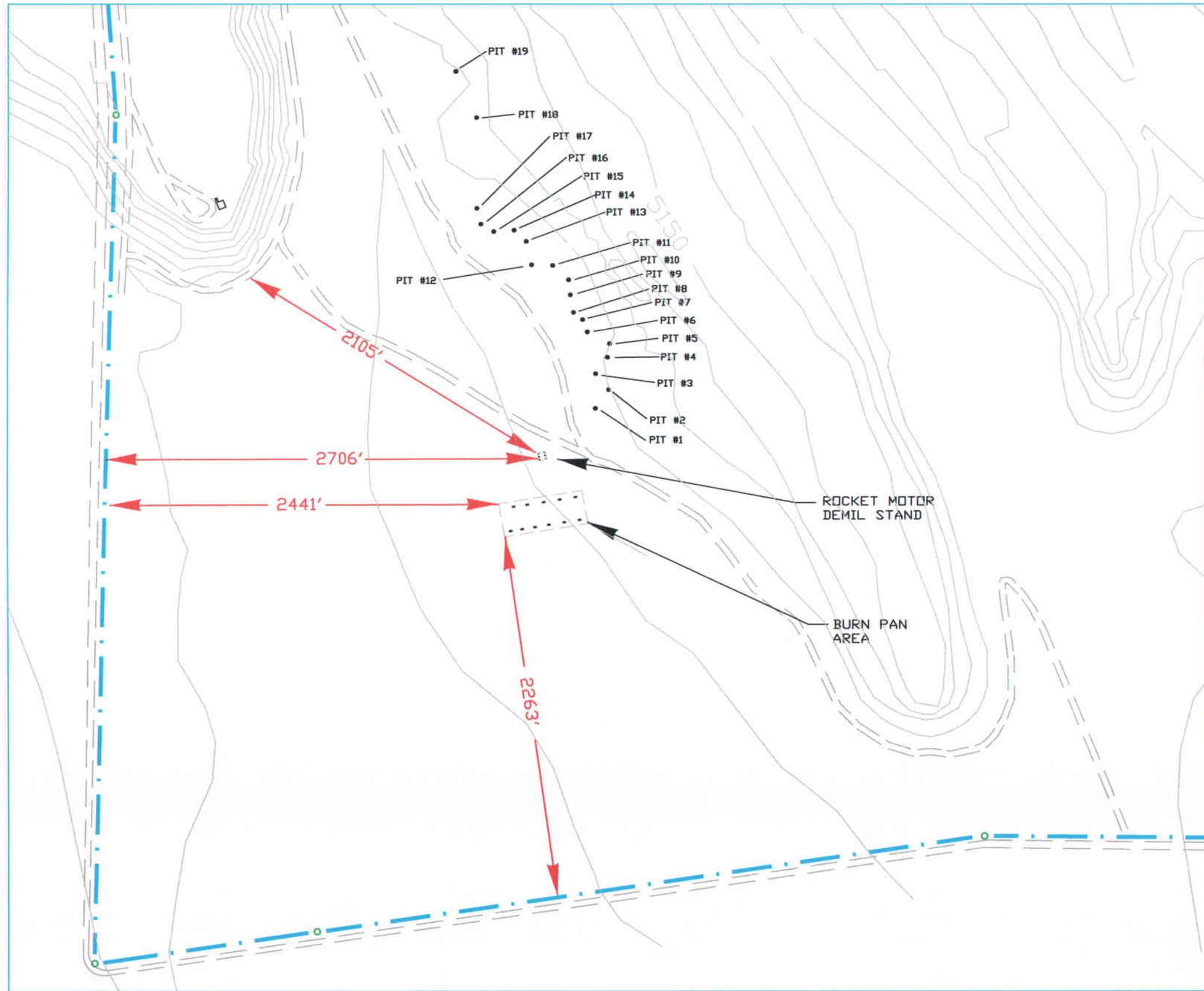


Figure 1



PUBLIC WORKS TOOELE ARMY DEPOT TOOELE, UTAH		
TOOELE ARMY DEPOT TOOELE, UTAH		
Operation Area of OB/OD		
DRAWN BY: BOB THURSTON	FEBRUARY 2008	Figure 2

1.2. Hazardous Waste Storage and Variance

1.2.1 The Permittee shall not treat nonreactive waste at the OB/OD Units other than incidental packaging.

1.2.2 Currently the Permittee only accepts waste from Tooele Army Depot South Area (TEAD-S) for treatment at the OB/OD Units. Munitions are treated the same day that they are received at the OB/OD Units. In the case of weather delays, munitions are treated as soon as possible (generally within 24 hours). Should treatment be delayed, the munitions will be stored in place, in accordance with the OB/OD/SF Standard Operating Procedures, until conditions permit treatment to commence. Weekly inspections for the munitions stored in the OB/OD units will be conducted as outlined in Attachment 4 (Inspection Plan).

1.3. OPEN BURN (OB)

1.3.1 Appropriateness of Treatment Technology

The reason that OB is an appropriate treatment technology for unserviceable munitions is discussed in Section 1.1.

1.3.2 Description of OB Unit

1.3.2.1 OB occurs at the OB unit. The OB unit is about 200 feet directly south of the OD unit. Figures in Appendix A show the burn pans at the OB Unit. Treatment at the OB unit is accomplished by the use of 14 burn pans. Items typically treated are bulk propellants. No donor charges shall be used in OB.

1.3.2.2 The 14 burn pans are designed and constructed similarly. The dimensions of each of the 14 pans are approximately 16 ft x 4 ft x 11 inches deep. A schematic of a typical burn pan is provided in Appendix A. Appendix A also has the detailed drawings of the burn pans used at the Facility. The burn pans are approximately 60 feet apart. Each pan is elevated approximately 1 foot above the ground. The position of the legs of the structure allows for easy inspection of the bottom of each pan and the surface of the ground beneath them. The pans are constructed of steel, and covers are placed over them when they are not in use, or when propellant is being stored in place.

1.3.2.3 Prior to conducting OB, certain meteorological conditions must be met. Figure 3 lists the meteorological parameters for the Facility. The Demil Team Leader, or his/her designated representative, shall ensure that all firing has ceased when aircraft approach the area. Designated observers have effective communications with the Range Supervisor any time an aircraft approaches the area. OB shall not be initiated until 10:00 a.m. and not after 5:00 p.m.. Meteorological data are obtained from the:

- Salt Lake City National Weather Services (<http://nimbo.wrh.noaa.gov/slc>); or
- AccuWeather (<http://accuweather.com>).

Figure 3. Meteorological Parameters for TEAD

Parameters	TEAD Requirement
Wind speed	3-20 mph/gusts to 30 mph
Cloud cover (see note)	<80%
Ceiling	>2,000 ft.
Precipitation	<75% chance
Thunderstorm/electrical storm	<50% chance
Clearing index	>500
Visibility	1 mile
<p>Source: AMC Regulation 755-8. Note: Cloud cover and ceiling limits are in conjunction with each other. Operations shall not be carried out when the cloud cover is greater than 80% and the cloud ceiling is less than 2,000 ft.</p>	

1.3.2.4 An on-site meteorological tower provides site-specific data. A determination is made prior to burning whether to cease operations or to continue based on the meteorological data. This information shall be recorded on a form. The demil operations shall be determined “GO” or “NO GO” by weather forecasts as described above. When forecasts indicate a “GO” condition, demil operations proceed. However, if the weather conditions deteriorate as observed by the Demil Team Leader or his/her designated representative for the operation, he/she contacts the Demil Planner. A determination is made whether to continue the operation with the propellant already in the pan or to store the propellant in the pan and then burn it as soon as permit conditions allow. Propellant shall not be placed in the pan after weather conditions have deteriorated.

1.3.2.5 The Demil Planner annotates on the Demilitarization Approval Form that each organization has been notified. The Demil Planner takes this Demilitarization Approval Form to the Directorate of Ammunition Operations or his/her designated representative for approval/disapproval. The Demil Planner phones the Demil Team Leader to inform whether the mission has been approved /disapproved. The Demil Team Leader phones the Demil Planner to describe when charges have been set and when they are ready to burn.

1.3.2.6 The preliminary steps prior to the actual OB activities are similar to those for the OD practice. Dry grass, leaves, and other extraneous combustible material in amounts sufficient to spread fires shall be removed within a radius of 61 m (200 feet) from the pans. Meteorological data are checked, and trays are arranged so that the propellants burn in the opposite direction from which the wind is blowing. Telephone or two-way radio communications shall be established and shall remain in operation during the entire OB operation.

1.3.2.7 The propellant to be burned is loaded into the pans. The propellant is poured into the pans with extreme care taken to prevent the occurrence of spills. The propellant is placed in the pan to a thickness no greater than 7.5 cm (3 in.). The area is then cleared of all personnel

except for those needed to install the igniting charge into the pans. When the area is determined to be clear, the igniting charges are laid in the pans and activated.

1.3.2.8 The burn operation is observed from a safe position, and fire-fighting equipment is made available to combat grass, brush, or equipment fires. Qualified personnel check pans and ensure that all propellant has been burned. At the end of each day's operation, all extraneous operations materials shall be removed from the OB unit. Ash and residue are gathered, containerized in an authorized container, labeled as hazardous waste, and stored at the satellite accumulation area (SAA) at the OB/OD Area.

1.3.2.9 The Demil Team shall operate the OB unit in accordance with Standard Operating Procedure (SOP) No. TE-0000-H-012. This SOP provides additional information on current procedures.

1.3.3. Leak Detection Provisions

1.3.3.1 This section addresses the concern that ash/residue or wastes may be released from the burn pan if it develops a leak, a break, or a crack. The potential for such a release shall be minimized through pre-burn and post-burn inspections of burn pan integrity. The burn pan is situated above ground on two I-beams to allow visual inspection for leaks. The use of I-beams facilitates the conduct of routine integrity inspections of the burn pans.

1.3.3.2 Any pan showing any evidence of deterioration shall not be used. Damaged pans shall be repaired prior to being returned to use. Additionally, the structural integrity of steel pans has been shown to be reliable in previous U.S. Army tests at the Tooele Army Depot.

1.3.3.3 Any ejecta shall be collected during the post-burn inspection and shall be reburned the same day.

1.3.4. Precipitation Cover

1.3.4.1 Each burn pan is equipped with a precipitation cover. The covers are tight fitting and shall remain on the burn pans during non-operational or storage periods to prevent accumulation of precipitation and wind dispersion of any ash and residue.

1.3.5 Control of Releases of Ash and Residue During OB

1.3.5.1 This section addresses the concern that the propellant, waste, or ashes will be ejected from the burn pan onto the ground during burning operations, potentially resulting in environmental contamination via the soil, surface water, and groundwater pathways. The potential for contamination is minimized during OB by several measures. First, the burn pan is of sufficient height to minimize the ejection of most waste. Second, post-burn inspection of the area surrounding the pan would reveal the presence of ejected materials, which are subsequently collected. A determination shall be made as to whether there is any remaining contamination by having experienced personnel carefully inspect the pans and the surrounding area after a burn.

1.3.5.2 It is considered unsafe to approach the burn pan for ash removal and inspection until a sufficient time has passed to allow all materials in the pan to cool. The pan shall be inspected after a burn to make sure that all the propellants have burned and the pan shall then be covered. Any visible ejecta from the pan shall be collected and placed back in the pan. Although every effort is made to pick up visible ejecta, it is possible that some very small particles may escape detection. After OB, pans are inspected, and any ash shall be collected and temporarily stored in appropriate containers at the SAA at the OB/OD Area. When the container is full, a composite sample shall be collected and analyzed. Full containers shall be removed within 3 days and taken to a 90-day or permitted storage unit.

1.3.6. Methods to Control Deterioration of Fabricated Devices

1.3.6.1 The most serious deterioration or malfunction during OB would be loss of burn pan integrity such as a burn pan leak. However, routine pan integrity inspections are conducted prior to and after each OB treatment event. In the event of an accidental release of waste propellants before or during a burn event, the released waste materials shall be collected and re-treated in a different burn pan. Specific response procedures are established and are contained in Attachment 7 (Contingency Plan). Procedures to prevent hazards are discussed in Attachment 6 (Preparedness and Prevention Plan).

1.3.7. Prevention of Accumulated Precipitation in Burn Pans

1.3.7.1 Precipitation accumulation in the burn pan during non-operational periods is prevented through the use of a precipitation cover. Covers are tight fitting, shall be secured in place over the pans, and shall remain on the pans during non-operational periods. Precipitation accumulation in the pan during OB events and cool downs is minimized by conducting OB events only at times when precipitation is not expected. OB treatment operations are not conducted during low overcast sky (i.e., cloud cover of 80% or more and cloud ceiling of less than 2,000 feet) and during precipitation or forecasted high probability of precipitation (greater than 75%). Following a waiting period (based on safety considerations) after the burn, the pan shall be inspected and its cover replaced.

1.3.7.2 If water has accumulated in the pans, it shall be drained out into an appropriate container prior to a burn. The drained water shall be sampled by Environmental Management Division personnel and placed into hazardous waste storage until the analysis can be reviewed to determine the correct disposition of the water.

1.3.8. Handling of Precipitation Accumulated in Fabricated Devices

1.3.8.1 If precipitation accumulates in the ash while the ash is in the burn pan prior to being removed the precipitation shall be removed with the ash and shall be considered part of the waste.

1.3.9. Controls to Prevent Wind Dispersion of Ash and Other Residue

1.3.9.1 Certain administrative controls shall be used to protect human health and the environment. These include controls to prevent wind dispersion of ash and other residue, such as operating only during moderate wind speeds (i.e., greater than 3 mph to less than 20 mph) to reduce the potential of fugitive particulate emissions. The propellants are generally in the form of pellets, and other energetic materials are contained in casings. Thus, wind dispersion of these energetic wastes is not a problem. The high walls of the burn pan minimize the potential for fugitive wind erosion of these materials.

1.3.9.2 The cover of the burn pan shall be replaced after completion of the burn (after a wait time for safety reasons). In addition, the high sides of the burn pan reduce the potential for wind erosion during pre- and post-burn conditions when the cover is off.

1.3.10. Inspection, Monitoring, and Maintenance

1.3.10.1 The OB unit shall be inspected before and after use in accordance with Attachment 4 (Inspection Plan).

1.3.11. Standing Operating Procedures

1.3.11.1 All OB activities at the Facility are conducted by the Demil Team in accordance with SOP No. TE-0000-H-012. The SOP prescribes the responsibilities, policies, and procedures for the operation of the OB unit. This SOP shall be amended, as necessary, to reference and be consistent with all conditions of RCRA. The SOP retains the environmental performance standards specified in this permit.

1.3.11.2 The Demil office shall maintain the official file for all treatment activities in the OB unit. As stated in Attachment 2 (Waste Analysis Plan) ash residue analysis results shall be maintained by the Environmental Management Division.

1.4 OPEN DETONATION (OD)

1.4.1. Appropriateness of Treatment Technology

1.4.1.1 The reason that OD is an appropriate treatment technology for unserviceable munitions is discussed in Section 1.1.

1.4.2. Description and Operation of OD Unit

1.4.2.1 The OD pits are in the southwestern corner of the Facility. The entire OB/OD Area is approximately 780 acres. OD is conducted in 19 pits. These pits are numbered 1 through 19. The figures in Appendix C show the location of the pits in relation to the static fire silos and burn pans. The area is a broad dissected alluvial fan emanating from the Stansbury Mountains. OD is conducted in subsurface pits that are covered with native soil. The depth of the pits is determined by the quantity of munitions treated. There are no engineered features at this OD unit to detect or prevent releases. Due to the nature of OD, engineered features could be destroyed by detonation.

1.4.2.2 Prior to conducting OD, certain meteorological conditions must be met. Acceptable meteorological conditions for conducting OD are indicated in Figure 3 and in the SOP. OD shall not be initiated until at least 10:00 a.m. and shall conclude at or before 5:00 p.m.. Meteorological data are obtained from the:

- Salt Lake City National Weather Services (<http://nimbo.wrh.noaa.gov/slc>); or
- AccuWeather (<http://accuweather.com>).

1.4.2.3 The Demil Team Leader or his/her designated representative shall ensure that all firing has ceased when aircraft approach the area. Designated observers have effective communications with the Range Supervisor any time an aircraft approaches the area

1.4.2.4 An on-site meteorological tower provides site-specific data. A determination is made prior to detonation whether to cease operations or to continue based on meteorological data. This information shall be recorded on a form. The demil operations shall be determined “GO” or “NO GO” by weather forecasts as described above. When forecasts indicate a “GO” condition, demil operations proceed. However, if the weather conditions deteriorate as observed by the Demil Team Leader or his/her designated representative he/she contacts the Demil Planner. A determination is made whether to continue the operation with the ammunition already in the pit or to store the ammunition in the pit and detonate it as soon as permit conditions allow. Ammunition shall not be placed in the pit after weather conditions have deteriorated.

1.4.2.5 The Demil Planner annotates on the Demilitarization Approval Form that each organization has been notified. The Demil Planner takes the Demilitarization Approval Form to the Directorate of Ammunition Operations or his/her designated representative for approval/disapproval. The Demil Planner phones the Demil Team Leader to inform whether the mission has been approved/disapproved. The Demil Team Leader phones the Demil Planner to tell when charges have been set and when the team is ready to detonate.

1.4.2.6 The design elements that are used to provide protection of human health and the environment include: using the appropriate burial depth depending on treatment quantity; burying the munitions to appropriate depths; locating the OD unit far from public roads and inhabited housing; limiting the treatment amounts to 750 lbs. NEW per pit, per event (including donor) ; only treating appropriate reactive materials; re-treating any unexploded ordnance (UXO); operating only during appropriate weather conditions; and restricting access to the unit by the use of warning signs, gates, and a surveillance team. A treatment event is defined as a day of open detonation operations with limits of 750 pounds per pit and ten pits per day assuming 7,500 pounds per hour worst case scenario as modeled in the HHRA.

1.4.2.7 The Permittee is limited to the pit explosive limits specified in Condition VI.B.4. and Table 1 for the 3.5-in. rocket fragment munitions. Any additional munitions shall be considered on a case-by-case basis for explosive limits. If it is determined that the munitions are of greater explosive quantity or different type, additional tests shall be conducted to determine debris/fragment throw range. A 20% factor is added to the maximum throw range as a safety factor.

1.4.2.8 Earth cover for the detonations is also specified in SOP No. TE-0000-G-010. Requirements are as follows:

- 0-50 lbs. NEW (including donor) requires no earth cover
- 51-750 lbs. NEW (including donor) requires 15 feet of earth cover.

1.4.2.9 TEAD OD SOP No. TE-0000-G-010 also specifies the distances that are required from above-ground (unburied) detonations to unprotected personnel. This is specified in Table 2. If the OD materials are buried, Table 3 is used. In lieu of the formula specified in Table 3, column A of Table 3 may be used for above-ground detonations. If the materials to be detonated are buried, the reduced distance provided by columns B through I of Table 3 can be used.

1.4.2.10 Prior to conducting OD operations, as in OB operations, dry grass, leaves, and other combustible materials are cleared within a 61 m (200 ft) radius from the pits.

Table 1. TEAD explosive limits for the 3.5-in. rocket fragment munitions

Pit no.	Distance boundary	Non frag	Less than 5''	Untested 5'' or greater	Tested 5'' or greater
1	2912 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
2	2992 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
3	3091 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
4	3194 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
5	3168 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
6	3141 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
7	3115 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
8	3058 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
9	3000 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
10	2945 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
11	2879 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
12	2814 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
13	2745 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
14	2676 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
15	2608 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
16	2521 Feet	750 lbs.	750 lbs.	0 lbs.	750 lbs.
17	2348 Feet	750 lbs.	0 lbs.	0 lbs.	0 lbs.
18	2213 Feet	750 lbs.	0 lbs.	0 lbs.	0 lbs.
19	2362 Feet	750 lbs.	0 lbs.	0 lbs.	0 lbs.

1.4.2.11 The placement of the initiating charges and the amount of initiating charge are determined by the amount and nature of material being treated and are specified in Army manuals. Munitions are detonated by either non-electrical or electrical methods. The only residues generated as a result of OD operations are metallic materials such as shell fragments (shrapnel) and occasionally pieces of energetic materials or UXO that were not completely

treated during OD. The OD unit is inspected for these materials following OD. After each day of detonation operations, a search of the surrounding area shall be made for unexploded munitions. Unexploded residue or items or material such as lumps of explosives or unfuzed ammunition shall be picked up and stored in a pit for the next detonation. Recovery and detonation of fuzed ammunition or suspected live munition items shall be treated in accordance with SOP No. TE-0000-G-010. All items or material (fuzed, unfuzed, and live munitions) found must be detonated within two working days of the time they are recovered or stored in the pit(s) until conditions of the permit are met to allow detonations.

1.4.2.12 Analysis of the OD treatment residue is not conducted at the Facility. The Permittee periodically recovers scrap metal, casing, fragment, and related items from the OD grounds as resources allow, and based on the Demil Team Leader’s judgment regarding safe operation of the range. The recovered material is disposed of through the Defense Logistics Agency (DLA) Disposition Services. The Demil team shall inspect and document the recovered material to ensure it is explosive free. The Ammunition Surveillance Inspector shall verify the documentation. Management of ash and residues is discussed further in Attachment 2 (Waste Analysis Plan).

1.4.2.13 The munitions are on pallets that are transported to the OD pit via forklift or roller conveyor. The palletized munitions are positioned in such a manner to ensure complete detonation. The palletized munitions requiring unpacking are removed to the unpack operation near or within the demolition pit using a forklift. A minimum of 10 feet of separation is maintained between unpack operations and materials stacked in the OD pit. Information about the specific item being treated is used to determine appropriate treatment. For example, bombs and mortar projectiles are as much as 80% (by weight) explosives and have relatively thin walls, as compared with artillery shells, which are 10 to 15% explosives and have relatively heavy walls. The Demil Team personnel maintain an extensive collection of Army Technical Manuals to provide guidance on appropriate OD procedures for specific items (e.g., Technical Manual - Ammunition and Explosives Standards, TM 9-1300-206, Headquarters, Department of the Army, August 1973).

Table 2. Distances from above-ground detonations to unprotected personnel

Material to detonate	Blast distance	Fragment/debris
Non-frag explosive material	$D = 328W^{1/3}$	1,250 feet
Bombs and projectile with a diameter less than 5 inches	$D = 328W^{1/3}$	2,500 feet
Bombs and projectiles with a diameter of 5 inches or more	$D = 328W^{1/3}$	4,000 feet
All other ammunition	$D = 328W^{1/3}$	2,500 feet

Note: W is the net explosive weight in pounds.

Table 3. Required blast overpressure protection distances to nonessential personnel*

NEW in lbs.	Distance in feet for various burial depth								
	0 FT COL A	1 FT COL B	2 FT COL C	3 FT COL D	4 FT COL E	5 FT COL F	7 FT COL G	10 FT COL H	15 FT COL I
1	328	79	16	16	16	16	16	16	16
5	561	261	104	41	28	28	28	28	28
10	707	398	191	92	44	35	35	35	35
20	890	464	326	182	102	57	45	45	45
30	1019	566	368	260	157	94	51	51	51
40	1122	650	439	329	208	131	62	56	56
50	1208	721	501	349	255	166	71	60	60
100	1522	984	737	553	414	326	165	76	76
150	1743	1171	911	708	550	428	256	105	87

*Required Blast Overpressure protection distances to nonessential personnel from ranges used for detonating ammunition for the purposes of demilitarization, demonstration, or explosives ordnance disposal.

1.4.3. Monitoring, and Maintenance Plan

1.4.3.1 The OD area shall be inspected before and after use in accordance with Attachment 4 (Inspection Plan).

1.4.3.2 After each day of detonation operations, a search of the surrounding area shall be made for unexploded munitions. Items or material such as lumps of explosives or unfuzed ammunition shall be picked up and prepared for the next detonation. Recovery and detonation of fuzed ammunition or suspected live munition items are treated in accordance with SOP No. TE-0000-G-010. All items or material (fuzed, unfuzed, and live munitions) found shall be detonated within two working days of the day they are found, or be stored within the pits(s) until permit conditions allow them to be detonated.

1.4.4. Run on and Runoff Management

1.4.4.1 Precipitation should not contact the waste during OD because OD is not conducted during or prior to rain. Should conditions create delays, once the pits have been loaded, munitions will be stored and remain in place until detonations are permitted. After OD the only remaining material, shrapnel, shall be visually inspected to make certain it does not contain any UXO. If UXO is found, the material shall be retreated.

1.4.5. Standard Operating Procedures (SOPs)

1.4.5.1 OD operations are conducted in accordance with TEAD SOP (SOP No. TE-0000-G-010). This SOP is periodically reviewed and updated. The SOP will be revised, as necessary, to be commensurate with conditions of this permit.

1.5. Static Firing

1.5.1 Static firing of rockets and missiles is similar to open burning as only the propellant is burned and the metal from the rocket or missile is recycled. The static firing unit is located mid-way between the demolition pits and the open burn pans. Appendix B shows the static firing silos at the OB/OD Area. Treatment is accomplished by the use of six silos. Items typically treated are solid propellant rockets and missiles. No donor charges are used in static firing.

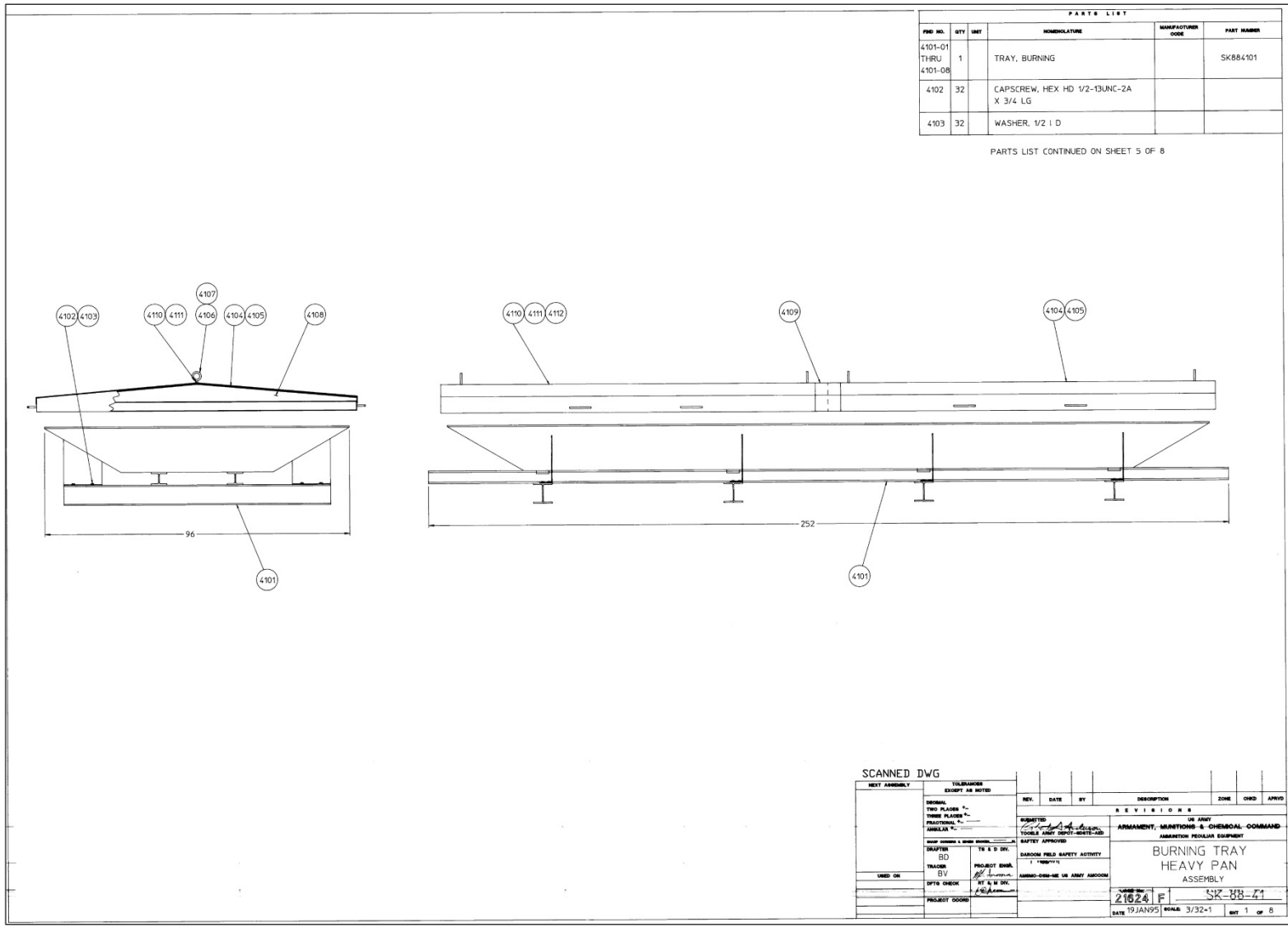
1.5.2 The silos are located, in two rows 40 feet apart and 20 feet between each silo, on a rebar-reinforced concrete pad 52 feet by 10 feet deep. Covers shall be placed over the silos when they are not in use or when items are being stored in place. Prior to conducting static firing, the same meteorological conditions as for open burning and open detonation must be met see Figure 3.

1.5.3 Operating procedures prior to the actual static firing activity are similar to those used in open burning. Dry grass, leaves and other extraneous combustible material in amounts sufficient to spread fires shall be removed within a radius of 61 meters (200 feet) from the silos. Meteorological conditions shall be checked and the silos inspected before each event. Carousels designed for each rocket are prepared and lowered into the silos. Rocket motors are lowered into the carousels and secured in place. The area is then cleared of all personnel except for those needed to install the firing wire to the rocket or missile igniter. When the area is determined to be clear, the rocket motors are electrically ignited from a safe position.

1.5.4 Firefighting equipment shall be available to combat grass, brush or equipment fires. Qualified personnel check the silos to ensure that all of the propellant has been burned.

1.5.5 Demil personnel shall operate the Static Fire Area in accordance with SOP No. TE-0000-J-168. This SOP provides additional information on current operating procedures.

APPENDIX A
DETAILED BURN PAN DRAWINGS

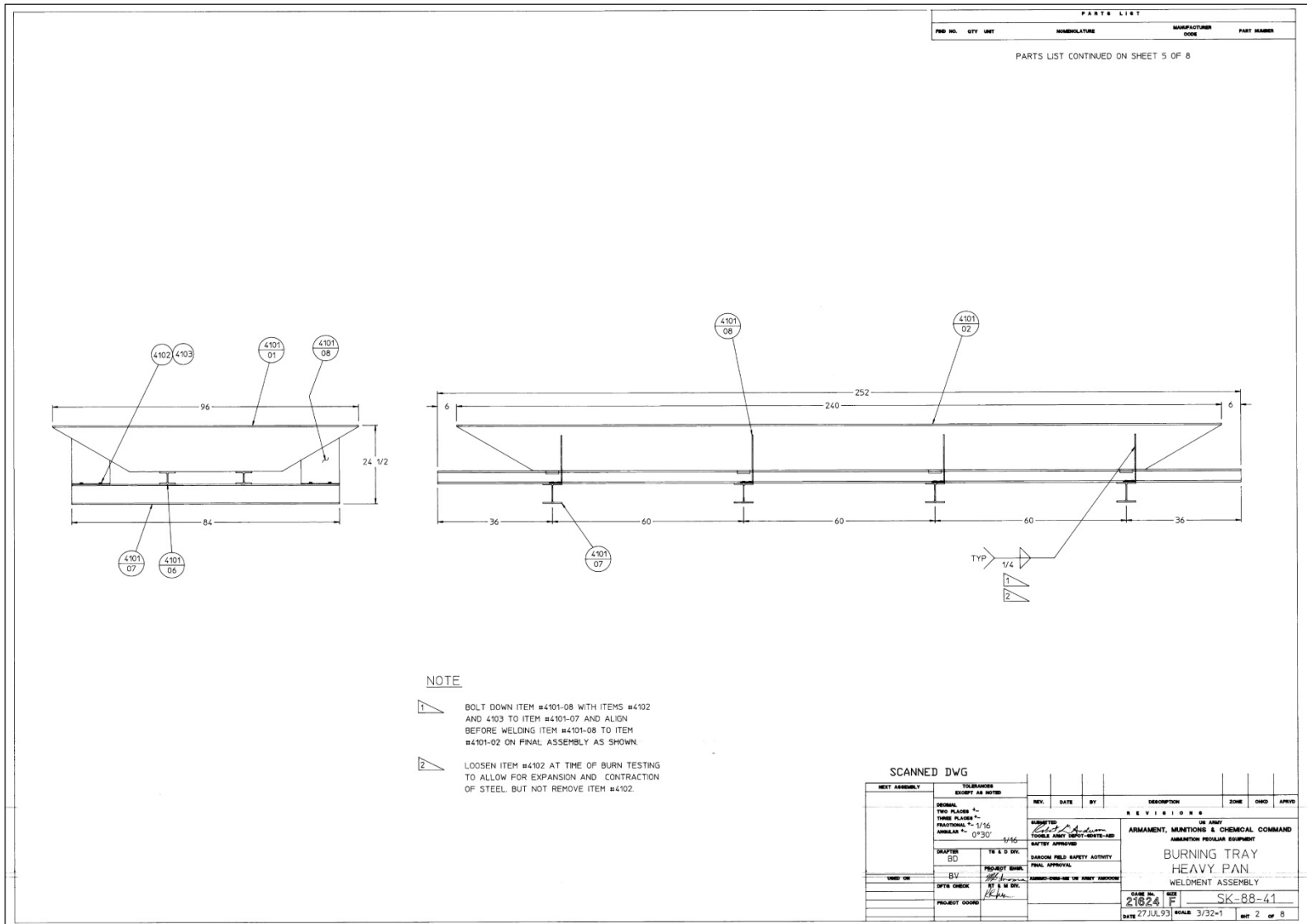


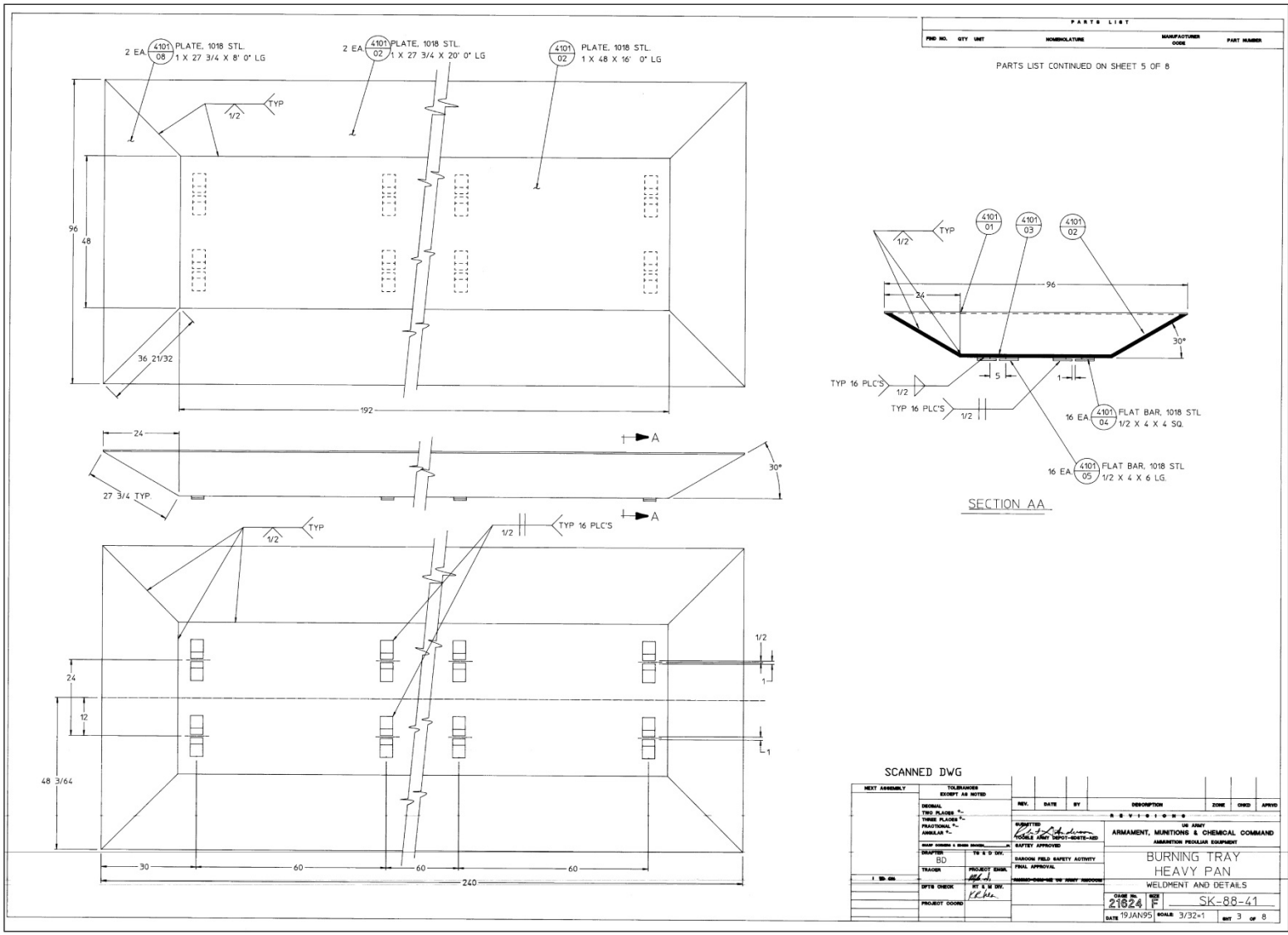
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4101-01 THRU 4101-08	1		TRAY, BURNING	SK884101
4102	32		CAPSCREW, HEX HD 1/2-13UNC-2A X 3/4 LG	
4103	32		WASHER, 1/2 I D	

PARTS LIST CONTINUED ON SHEET 5 OF 8

SCANNED DWG

NEXT ASSEMBLY TO BE ASSEMBLED SERIAL NO. TWO PLACES FRACTIONAL DIMENSIONAL UNIT CONVERSION DRAWN BY TRACED BY DTP/CHECK BY PROJECT CODE	TO & D. DRG. PROJECT ENGR. BY BY & W. DRG. PROJECT CODE	REV. DATE BY DESCRIPTION ZONE CHG. APPROV. 1 19JAN95 2 19JAN95 3 19JAN95	IN ARMY ARMAMENT, MUNITIONS & CHEMICAL COMMAND AMBUSTION PECULIAR EQUIPMENT BURNING TRAY HEAVY PAN ASSEMBLY 21924 F SK 88-21 DATE 19JAN95 WORK 3/32-1 SHEET 1 OF 8
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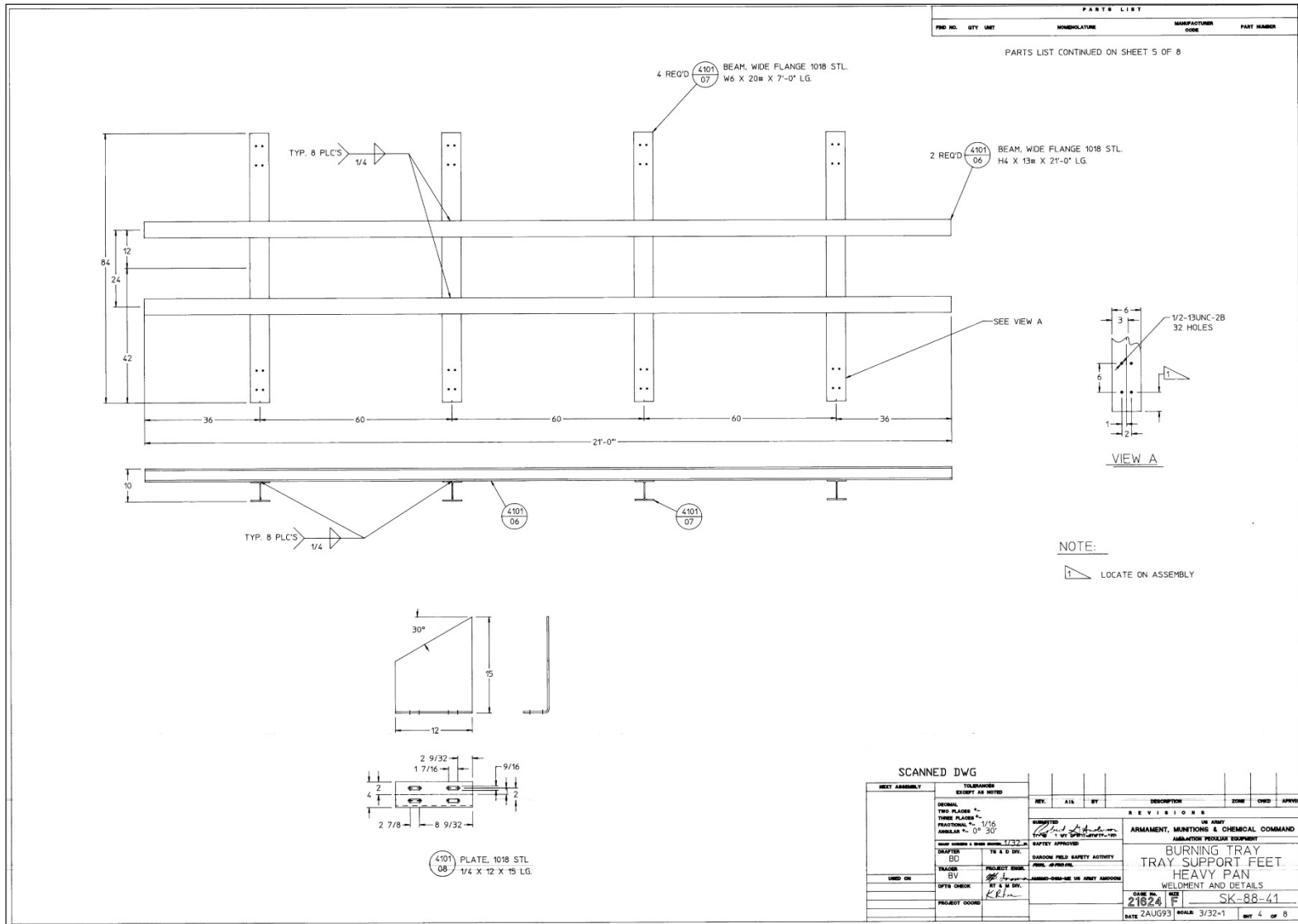




Attachment 16 – OB/OD Units
Tooele Army Depot

Appendix A

XXXXX, 2016
UT3213820894



PARTS LIST

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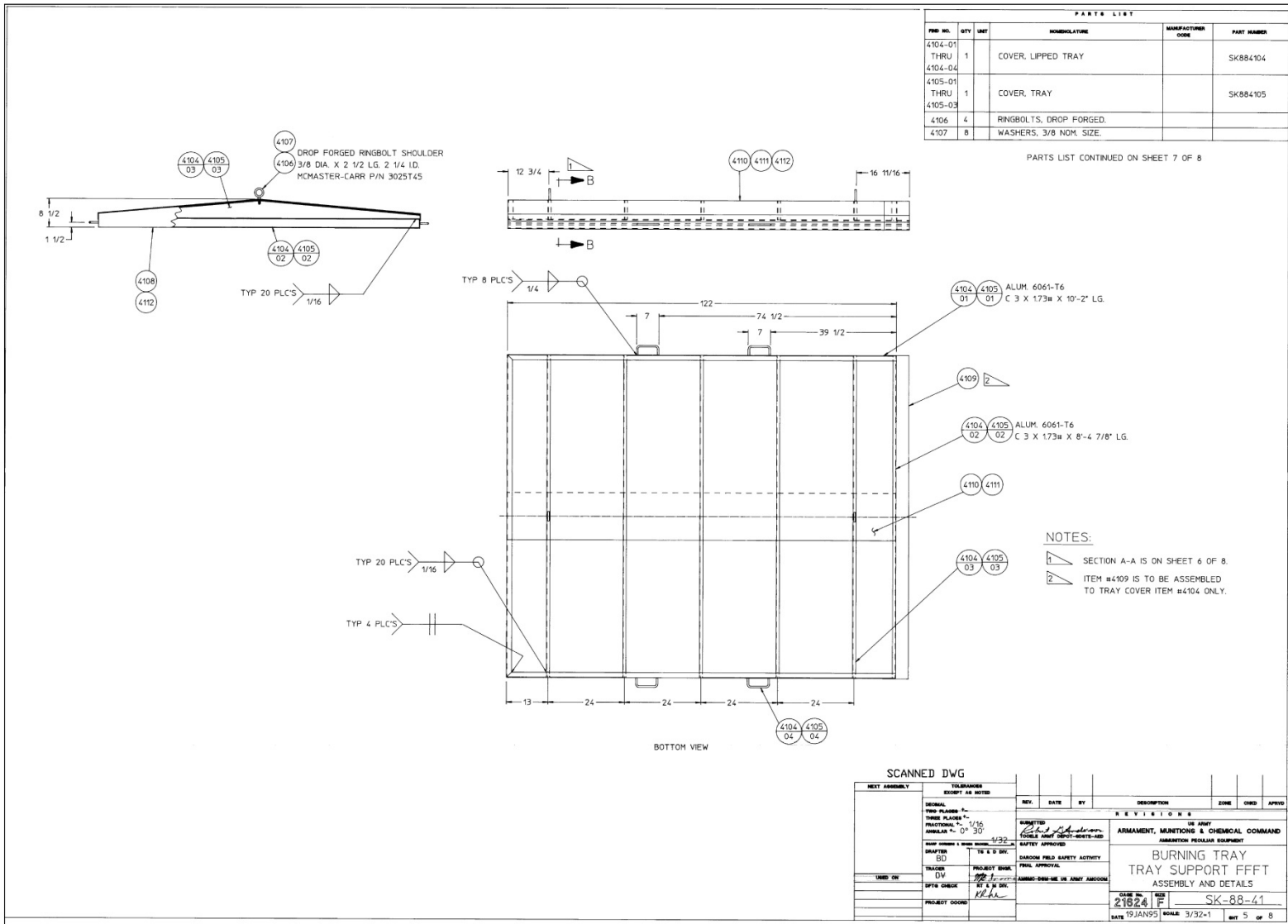
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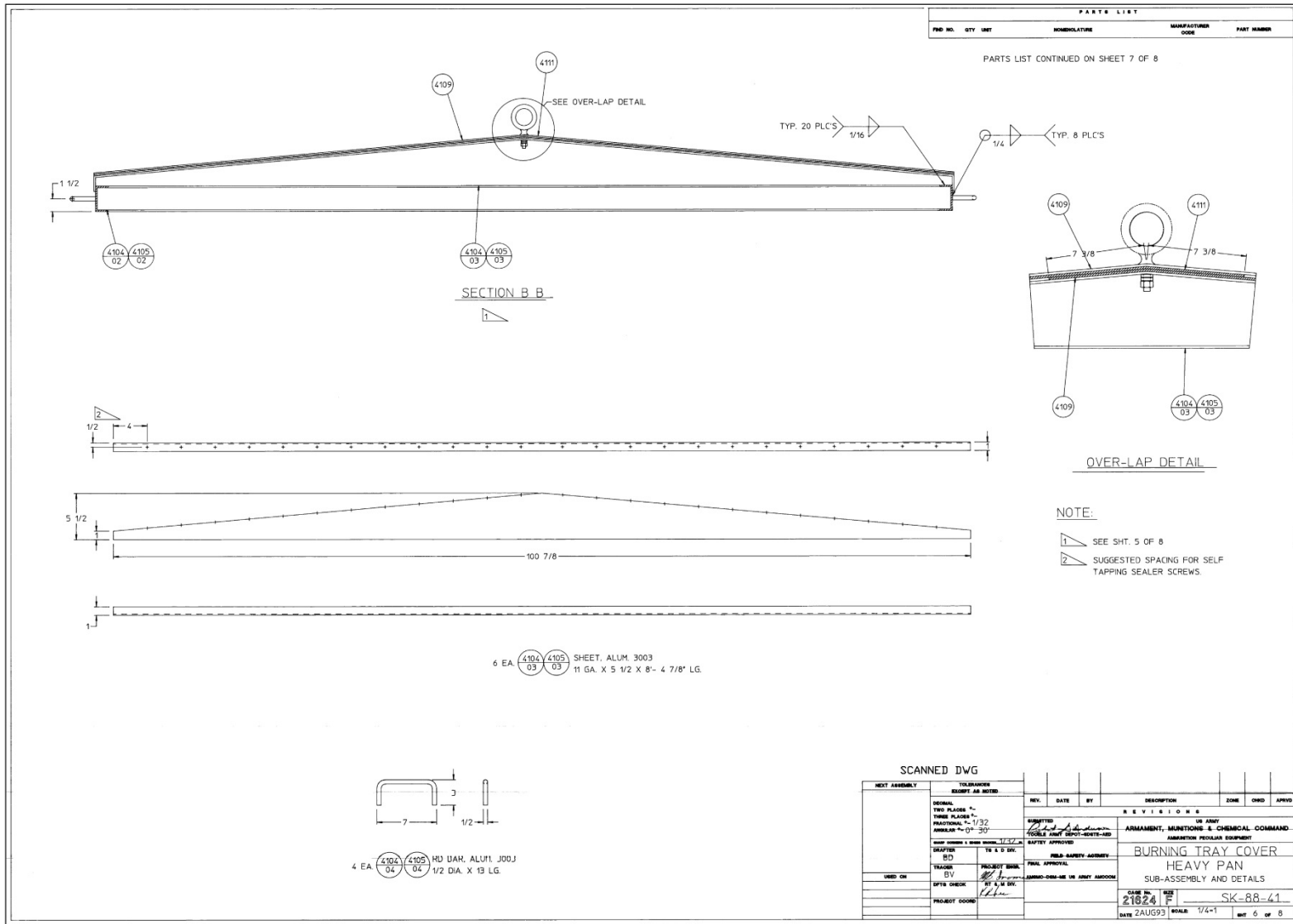
SCANNED DWG

REV.	ALL	BY	DESCRIPTION	ZONE	CHD	APPR
1			ARMAMENT, MUNITIONS & CHEMICAL COMMAND AMMUNITION PROBLEMS EQUIPMENT BURNING TRAY TRAY SUPPORT FEET HEAVY PAN WELDMENT AND DETAILS			

DESIGNED BY	PROJECT ENGINEER	DATE	21924
DRAWN BY	PROJECT ENGINEER	DATE	3/32-1
CHECKED BY	PROJECT ENGINEER	DATE	3/32-1
PROJECT COORD	PROJECT ENGINEER	DATE	3/32-1

DATE: 21AUG93 DRAWN: 3/32-1 SHEET: 4 OF 8

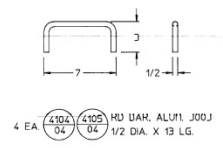




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PARTS LIST CONTINUED ON SHEET 7 OF 8

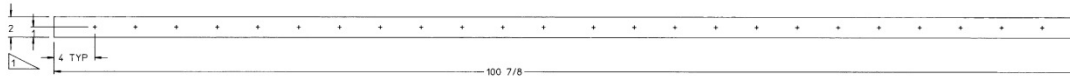
NOTE:
 1 SEE SHT. 5 OF 8
 2 SUGGESTED SPACING FOR SELF TAPPING SEALER SCREWS.



NEXT ASSEMBLY		TELENUMBER		REVISION	
DATE	BY	DATE	BY	DESCRIPTION	ZONE
				ARMAMENT, MUNITIONS & CHEMICAL COMMAND	
				INSPECTION PEDICULAR EQUIPMENT	
				BURNING TRAY COVER	
				HEAVY PAN	
				SUB-ASSEMBLY AND DETAILS	
				DATE 21824	SK-88-41
				DATE 2AUG93	SCALE 1/4-1

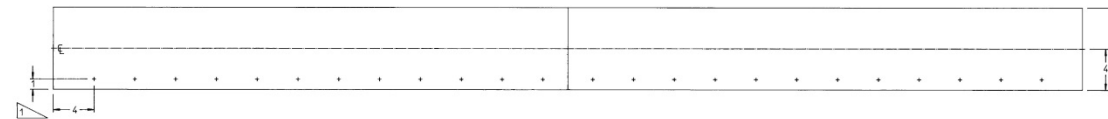
PARTS LIST				
PRT NO.	QTY	UNIT	NOMENCLATURE	PART NUMBER
2			CAP, END	SK884108
1			EXTENSION, COVER	SK884109

PARTS LIST CONTINUED ON 8 OF 8



2 REQ (4109) SHEET, ALUM. 3003
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NOTE:
1/4" SUGGESTED SPACING FOR SELF TAPPING SEALER SCREWS.

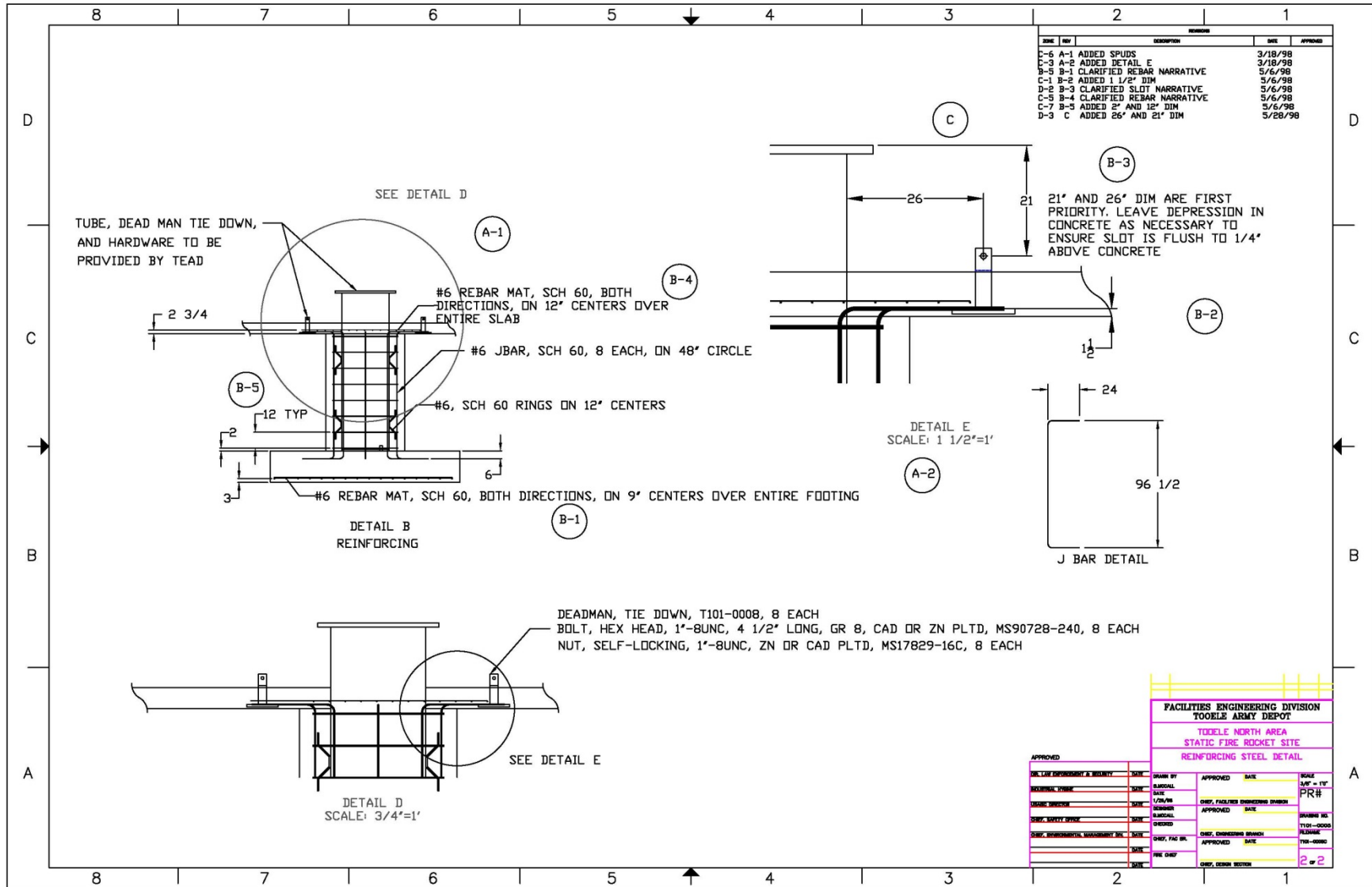


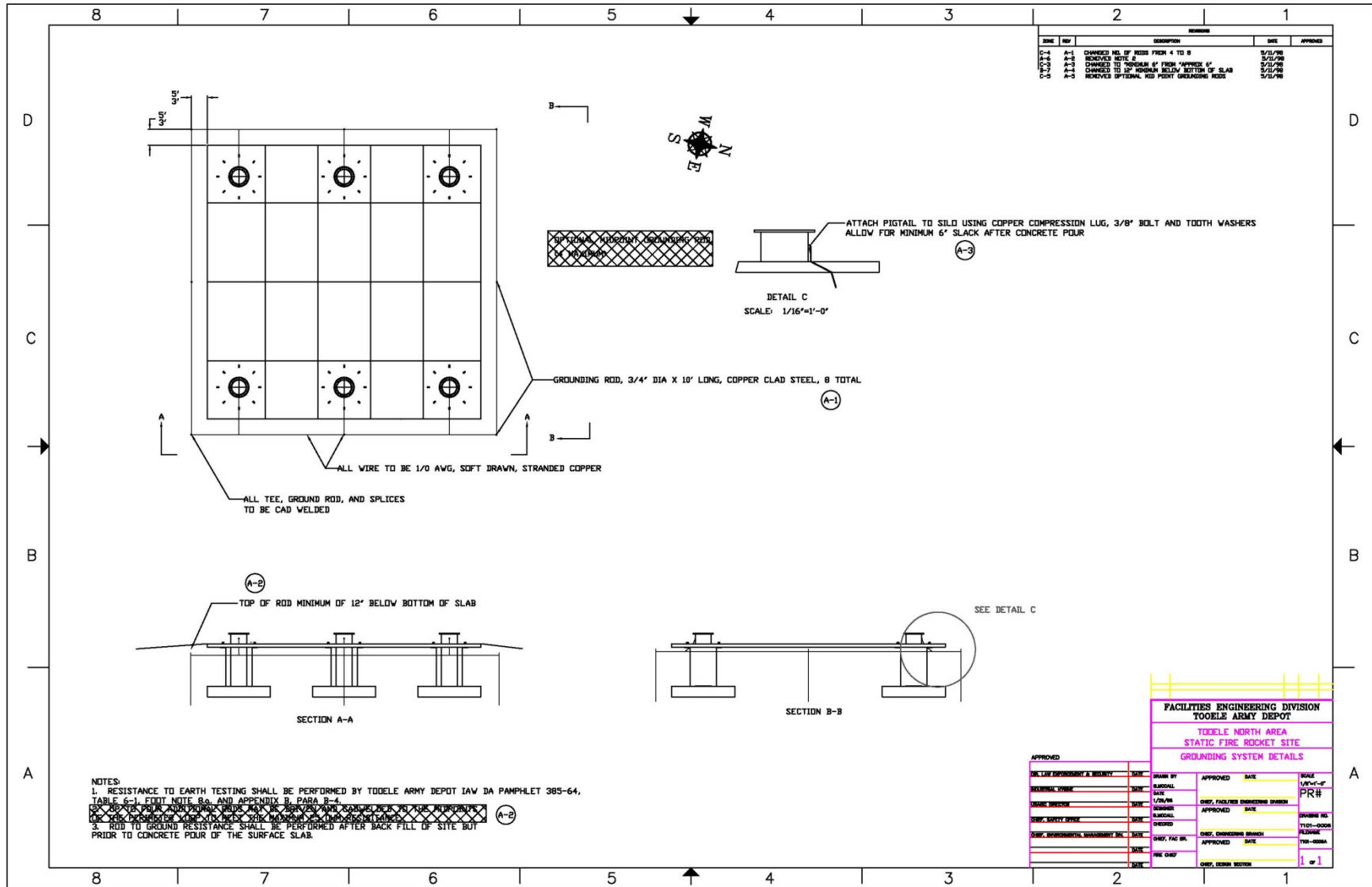
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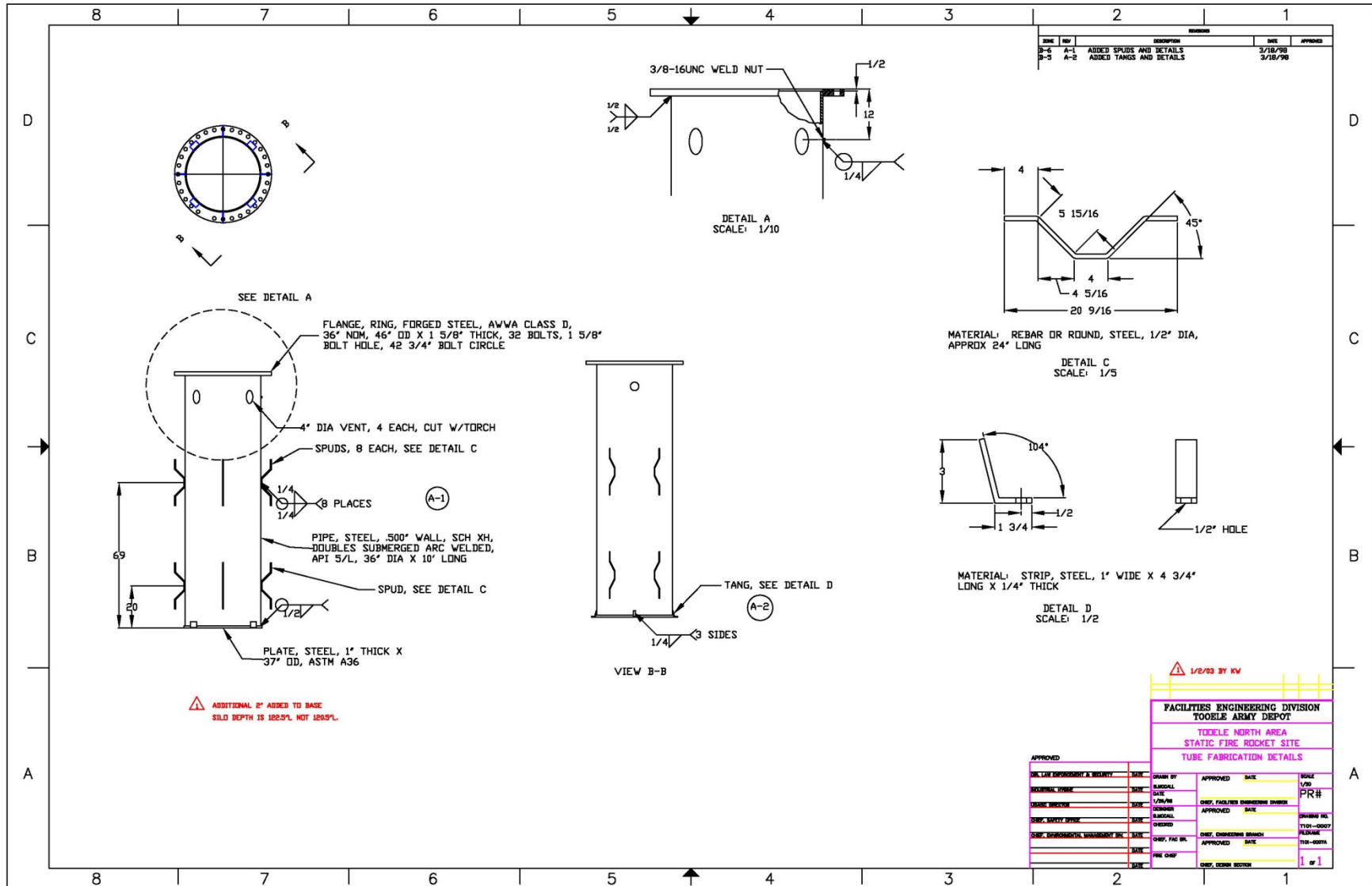
SCANNED DWG

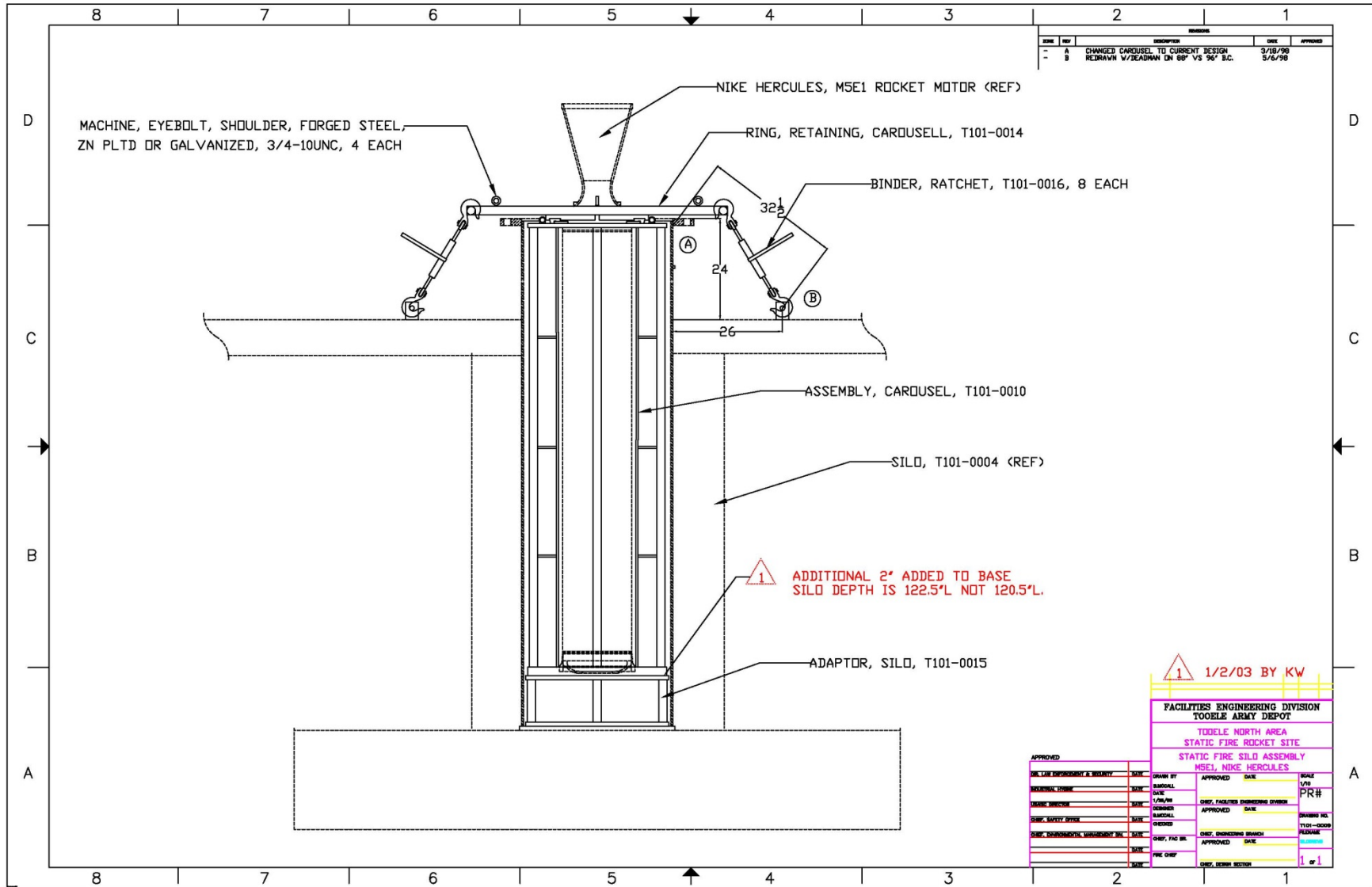
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SUBMITTED: <i>[Signature]</i> TO: ARMY ARMAMENT, MUNITIONS & CHEMICAL COMMAND AMMUNITION REGULAR EQUIPMENT						
SAFETY APPROVED BY: <i>[Signature]</i> SAFETY OFFICER BURNING TRAY COVER HEAVY PAN						
DETAILS DRAWING NO. 21824 DATE 19 JAN 95 SCALE 1/4"=1"						
PART NUMBER SK-88-41 REV 7 OF 8						

APPENDIX B
STATIC FIRE SILOS DRAWINGS







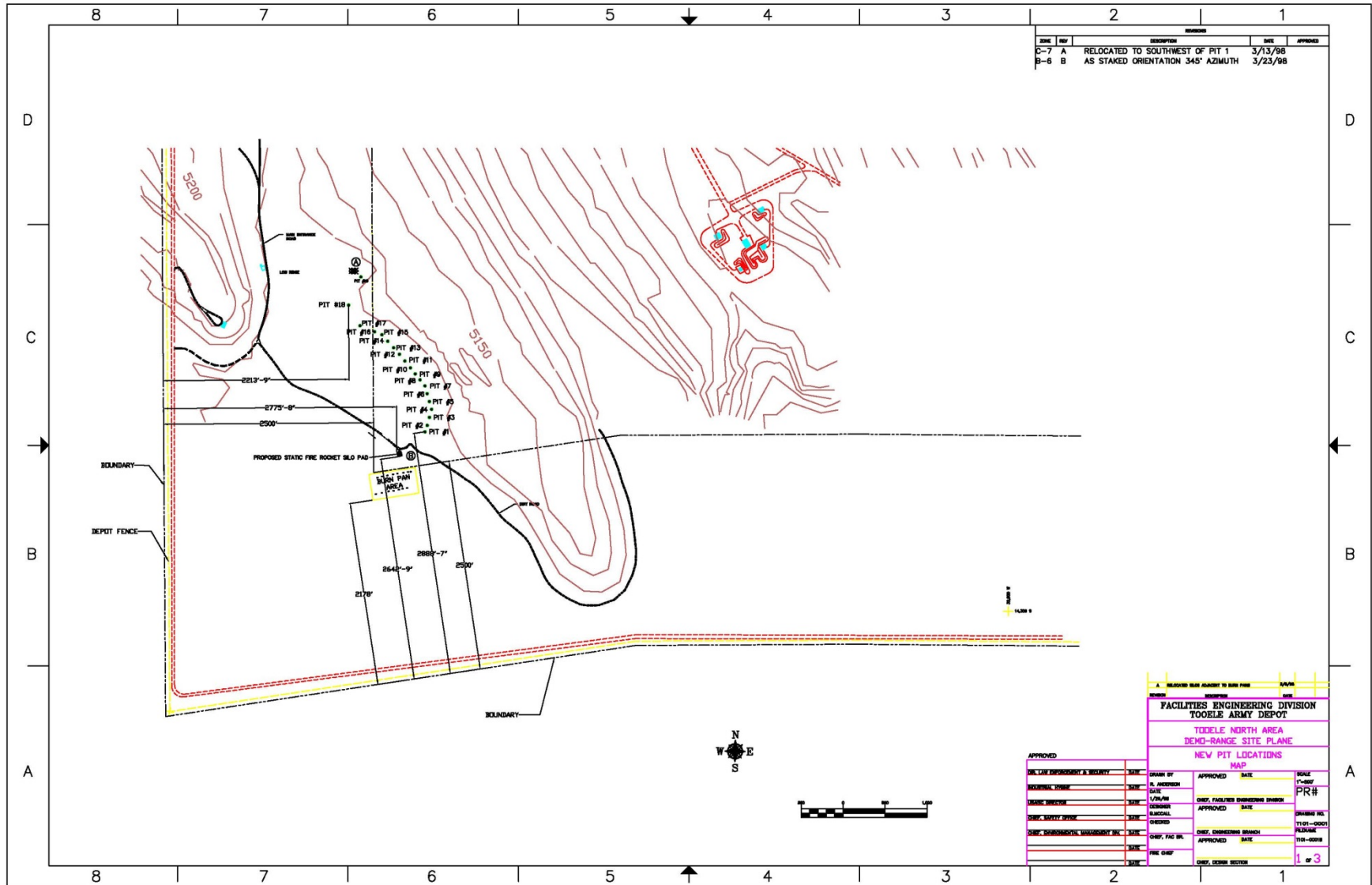


REV	DESCRIPTION	DATE	APPROVED
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B	REDRAWN V/BEADMAN DN 86° VS 96° D.C.	5/6/98	

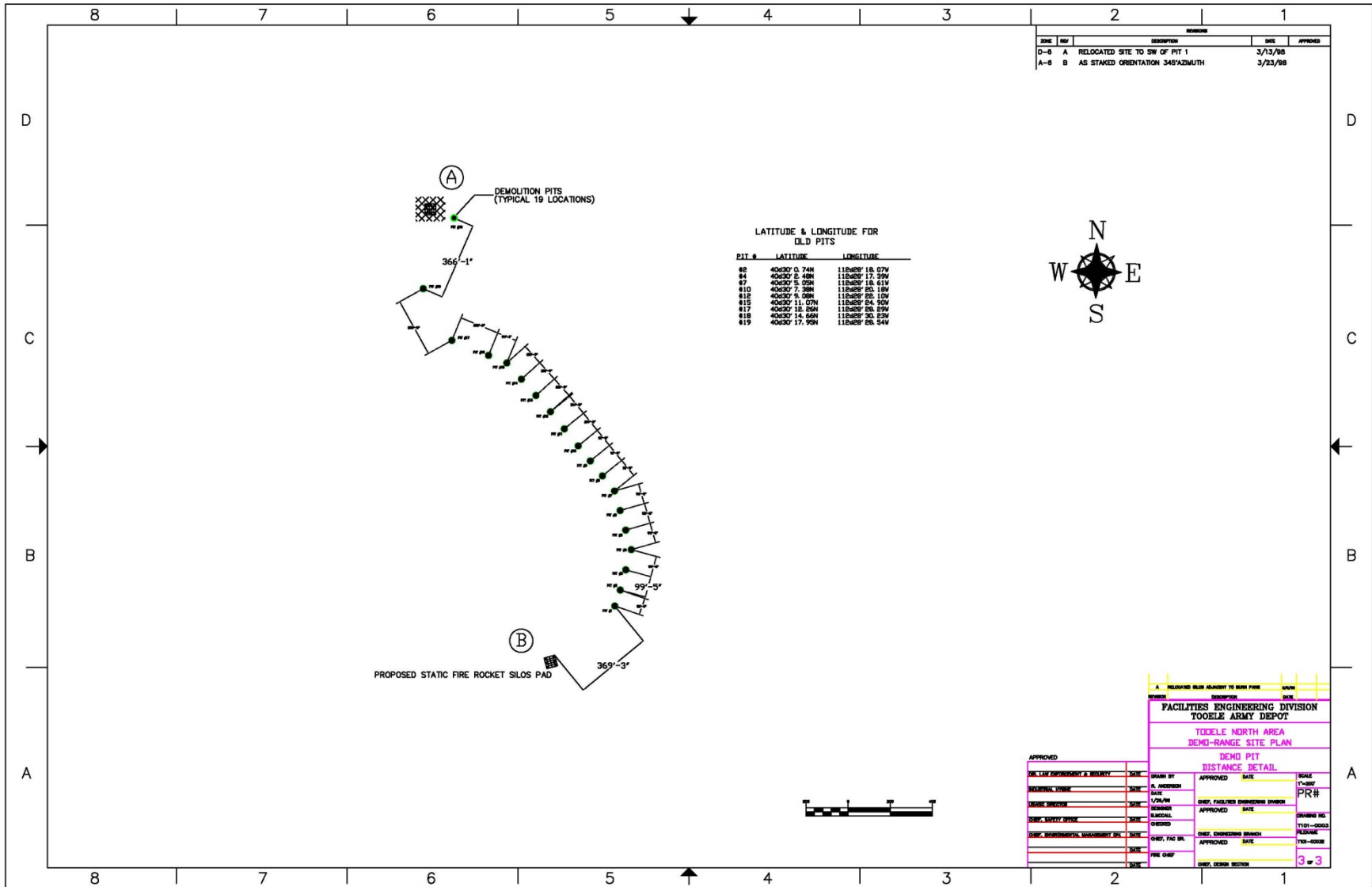
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1 1/2/03 BY KW
 FACILITIES ENGINEERING DIVISION
 TOOELE ARMY DEPOT
 TOOELE NORTH AREA
 STATIC FIRE ROCKET SITE
 STATIC FIRE SILO ASSEMBLY
 M5E1, NIKE HERCULES

APPENDIX C
DETONATION PITS DRAWINGS



Attachment 16 – OB/OD Units
Tooele Army Depot



ATTACHMENT 17

**OB/OD TREATMENT EFFECTIVENESS,
ALTERNATIVE TECHNOLOGIES
AND
WASTE MINIMIZATION**

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1.0 TREATMENT EFFECTIVENESS

1.0.1 The following information is provided to demonstrate the effectiveness of open burning and open detonation (OB/OD) treatment of energetic wastes at the Tooele Army Depot (TEAD).

1.1 List of Candidate Wastes for OB/OD Treatment

1.1.1 TEAD, as a major Army depot, needs the capability to use OB/OD for the demilitarization of most of the conventional munitions (and associated energetics) in the Department of Defense (DoD) inventory. A discussion of candidate wastes and a representative list of candidate munition families and items are provided in Attachment 2 (Waste Analysis Plan), and in the June 1997 TEAD Implementation Plan.

1.2 Chemical and Physical Characteristics of the Waste

1.2.1 Chemical composition summaries for candidate waste munition families and items are provided in the June 1997 TEAD Implementation Plan. All of the candidate energetic wastes for OB/OD treatment at TEAD are in a solid (nonvolatile) form.

1.3 Comparison of the Volume of Waste Treated and the Amount of Residue Generated

1.3.1 Table 1 provides a comparison of gross OD treatment quantities (including donor charges) to shrapnel scrap tonnage from routine range clean-up operations at the OD area based on the latest available TEAD data (i.e., 1996). A typical donor charge NEW to waste NEW of 1:1 is used at TEAD. The collection of scrap shrapnel from the OD area generally occurs after each OD treatment day. Surface exposed shrapnel of 8-9 inches in diameter and larger or 10-15 lbs and heavier (e.g., scrap metal fragments and related items) are recovered from the OB/OD Unit.

Table 1 Comparison of TEAD OD Treatment Quantities and Residue Generated OD, 1996

Operation	Gross wt.	Net explosive wt.
OD Treatment ^a	20	5
Shrapnel recovery	NA ^b	NA ^b

^a Does not include donor charge quantities. A typical donor charge NEW to waste NEW of 1:1 is used at TEAD

^b NA = not applicable.

1.3.2 A comparison of the annual OB treatment quantity for TEAD with estimated ash residue amounts is summarized in Table 2. These data are based on OB treatment quantities for 1996 commensurate with the OB treatment data previously described. Two approaches were used to estimate OB ash quantities.

1.3.3 The first approach uses ash generation factors based on OB field tests conducted at Dugway Proving Ground (DPG) (U.S. Army, January 1992). These ash generation factors

represent a unitless ratio of quantity of OB ash generated to the OB treatment quantity. Because only bulk propellants are treated by OB at TEAD, the NEW and gross treatment weights are equivalent. Ash generation factors (based on DPG tests and treatment of bulk propellants) ranged from 2.7E-4 to 1.8E-3 with an average of approximately 1.0E-3. The OB treatment quantity multiplied by the ash generation factor yields an estimate of the ash quantity.

1.3.4 The second approach used to estimate ash generation quantities is based on TEAD information. At TEAD, OB ash is usually placed in a 55-gallon drum at a satellite accumulation area. Typically it takes 2-3 years of OB operations to fill the drum. Based on these considerations, approximately 0.1 ton of ash is generated per year of OB treatment operations.

Table 2. Comparison of TEAD OB Treatment Quantities and Residue Generated OB, 1996

Operation	Quantity (tons)
OB Treatment	111 ^a
Ash residue recovery	
<ul style="list-style-type: none"> • Based on DPG generation factor <li style="padding-left: 20px;">+ Range <li style="padding-left: 20px;">+ Average • Based on TEAD observational information 	0.03–0.20 0.1 0.1

^aBecause only bulk propellants are treated by OB at TEAD, the NEW and gross treatment rates are equivalent.

1.4 Mass Balance of Treatment Effectiveness

1.4.1 Information presented in the previous sections provides one measure of the effectiveness of treatment. The ratio of the amount of residue generated to the gross treatment quantities for OB and OD is presented in Table 3. The OD results are based on the ratio of total shrapnel to the gross treatment quantity (the quantity of recovered shrapnel was not available). These data indicate a relatively low residue generation rate and, thus, a high level of treatment effectiveness.

Table 3. Summary of Mass Balance of Treatment Effectiveness

Operation	Ratio of residues generated to gross treatment quantity
OB (based on ash generation)	
<ul style="list-style-type: none"> • Based on DPG ash generation factor <li style="padding-left: 20px;">+ Range <li style="padding-left: 20px;">+ Average • Based on TEAD observational information 	<p style="text-align: center;">2.7E-4-1.8E-3</p> <p style="text-align: center;">1.E-3</p>
OD (based on total shrapnel but does not include donor charges))	7.5E-1

BangBox OB/OD emission test results can also be used to evaluate the treatment effectiveness of OB and OD (U.S. EPA, March 1998). The BangBox study data evaluation report concludes that the low conversion of nitrogen (N) to oxides, the high conversion of carbon (C) to carbon dioxide (CO₂) and carbon monoxide (CO), the absence of emission products with molecular weights larger than those of the energetics treated and the extreme dominance of low molecular weight organic compounds (low toxicity) demonstrate the treatment effectiveness of OB/OD. A summary of C and N conversion factors for OB/ and OD treatment is presented in Table 4.

Table 4. Summary of C and N Conversion Rates for OB/OD Based on BangBox Test Results (U.S. EPA, March 1998)

Treatment type	Conversion rates	
	% C as CO+CO ₂ ^a	% N as NO+NO ₂ ^b
OB		
<ul style="list-style-type: none"> • Ammonium perchlorate-based propellants • Organic-based propellants 	<p>96</p> <p>95</p>	<p>1.0</p> <p>0.3</p>
OD		
<ul style="list-style-type: none"> • Bulk explosives • Suppressed (buried) detonations • Encapsulated explosives 	<p>104^c</p> <p>81</p> <p>104^c</p>	<p>1.5</p> <p>2.4</p> <p>3.6</p>

^aA high rate of C conversion to CO and CO₂ is indicative of a high level of treatment effectiveness.

^bA low rate of N conversion to NO and NO₂ (which are potential harmful air pollutants) is indicative of a high level of treatment effectiveness.

^cValues of greater than 100% are attributed to data accuracy limitations.

Particulate (PM-10) average emission factors based on the BangBox results range from 0.016 (for OB treatment of organic-based propellants) to 0.26 for encapsulated explosives (U.S. EPA, March 1998). These data are summarized in Table 5.

Table 5. Summary of Particulate (PM 10) Emission Factors for OB and OD Based on BangBox Test Results (U.S. EPA, March 1998)

Treatment type	PM 10 emission factor (wt. emitted/wt. treated)
OB	
• Ammonium perchlorate-based propellants	0.059
• Organic-based propellants	0.016
OD	
• Bulk explosives	0.060
• Suppressed (buried) detonations	0.110
• Encapsulated explosives	0.260

In general, OB/OD does not destroy constituents. Therefore, we assume that the output quantity of metal emissions/residues is equivalent to input quantity of metals in the waste treated.

1.5 Deactivation Effectiveness

1.5.1 OB/OD soil and shrapnel reactivity tests (using the zero gap test and internal ignition test) have been conducted at TEAD. The test results indicate that OB/OD soils and shrapnel were not explosive. These results were provided in Appendices C.1 and C.2 of the June 1997 TEAD Implementation Plan (see U.S. Army, August 1992; U.S. Army, undated).

1.6 Demonstration of Treatment Effectiveness

1.6.1 Information presented in Section 1 provides various measures of OB/OD treatment effectiveness. The emphasis of this section is on the effectiveness of OB/OD to destroy energetic compounds.

1.7 OB/OD Destruction and Removal Efficiency

1.7.1 Deactivation effectiveness for OB and OD will be based on a destruction and removal efficiency (DRE) factor similar to that used to characterize the performance of hazardous waste

incinerators. The DRE values for OB/OD can be calculated as follows:

$$DRE_{\text{Energetics}} = (1.0 - EF_{\text{Energetics}}) 100 \quad \text{Eq.2-1}$$

where

DRE = Destruction and removal efficiency for energetics (percent)

EF_{Energetics} = Total emission factor for energetics based on available OB/OD emission tests (dimensionless)

1.7.2 Soil and shrapnel energetic reactivity tests conducted by TEAD also confirm the effectiveness of OB/OD treatment. These tests included use of the zero gap test and internal ignition test developed by the U.S. Bureau of Mines for explosive reactivity determination. TEAD test results indicated that soils and shrapnel at the OB/OD Unit are not reactive.

1.7.3 A summary of DRE results based on the BangBox OB/OD test (U.S. EPA, March 1998) is presented in Table 6. The available DRE test results indicate a consistent pattern of high DRE values (which approach the performance of a hazardous waste incinerator).

Table 6. Summary of OB/OD Destruction and Removal Efficiency (DRE) Based on BangBox Test Results (U.S. EPA, March 1998)

Treatment type	DRE (percent)
OB	
• Ammonium perchlorate-based propellants	99.9999+
• Organic-based propellants	99.9999+
OD	
• Bulk explosives	99.725
• Suppressed (buried) detonations	99.9999+
• Encapsulated explosives	99.9697

1.8 Non-detection of Energetics

1.8.1 The non-detection of energetics in OB/OD residues can be used as a screening basis to determine treatment effectiveness. However, the detection of energetics in OB/OD residues does not necessarily indicate reactivity. In addition, the non-detection criterion is not applicable since energetic waste is not a listed waste.

1.8.2 Typically, energetic concentrations must be greater than 10% to be considered reactive, based on U.S. Army tests. As discussed in Sections 1.5 and 2.1, OB/OD soil and shrapnel reactivity tests (using the zero gap test and internal ignition test) have been conducted at TEAD. The test results indicate that OB/OD soils and shrapnel are not reactive. These results were provided in Appendix C of the June 1997 TEAD Implementation Plan (see U.S. Army, August 1992; U.S. Army, undated).

1.9 OB Ash Residue Analysis

1.9.1 Available OB ash analytical data for TEAD are provided in Attachment 2 (Waste Analysis Plan). These analytical results indicate that energetic concentrations are significantly below the 10% reactivity criteria.

1.10 Waste Residues

1.10.1 Retreatment of OD ejecta and OB kickouts is based on visual inspection and generator knowledge of munitions specialists. Similarly, visual inspection and generator knowledge of munition specialists is used to verify that any OD scrap metal that will be shipped off site is nonhazardous. The OB ash residues are subject to the waste analysis test for metals and energetics as specified in Attachment 2 (Waste Analysis Plan) to determine if OB wastes being disposed off-site are hazardous. Because of the low volume of OB ash and waste stream consistency, it is expected that these tests will be conducted every 3 years.

2.0 ALTERNATIVE TECHNOLOGIES

2.0.1 The current alternatives to open burning and open detonation (OB/OD) treatment for the demilitarization of waste munitions in large quantities are rather limited and can be characterized as follows:

- Disassembly of munition items to reduce the gross weight subject to further treatment.
- Removal of the inert portions of munition items prior to treatment or conversely the removal of energetics prior to subsequent treatment. This approach may also involve the application of disassembly technologies.
- Thermal treatment at a deactivation furnace or energetic waste incinerator (EWI).

2.0.2 The available alternatives, however, do not provide a universal substitute for OB/OD treatment at this time. These current technologies all have significant safety, technical, and cost factors, which limit their applicability on a munition-specific and site-specific basis. The configuration of some munition items does not facilitate the disassembly and/or removal of inert portions prior to treatment. The type and energetic content of munitions can also limit the use of deactivation furnaces and EWIs.

2.0.3 TEAD uses alternative technologies to OB/OD whenever technically and economically practical, and worker safety is not jeopardized. These alternatives include disassembly, removal of energetics, and thermal treatment technologies.

2.0.4 Special purpose equipment is needed to support the disassembly of munitions and removal procedures for demilitarization. The equipment needed may have to be designed specifically for various munition types. TEAD designs and manufactures ammunition peculiar equipment (APE) for this purpose. The equipment is used to support on-site as well as Department of Defense (DoD) demilitarization needs at other installations.

2.0.5 A deactivation furnace (APE 1236 furnace) at TEAD is used for the treatment of waste small arms ammunition (up to and including 30 mm) as well as other small items such as fuzes and small quantities of bulk propellants. Use of the furnace is limited by its treatment capability and treatment limits imposed by this Permit. Additional information on the TEAD deactivation furnace is provided elsewhere in this Permit.

2.0.6 The U.S. Army established the Munitions Items Disposition Action System (MIDAS) Program to provide a central source of demilitarization and disposal information for munition items. The system can also be used to identify alternatives to OB and OD treatment. Following are the current five thrust areas for emergency demilitarization technologies derived from the MIDAS Program:

- Destructive technologies (e.g., molten metal technology, contained burns with scrubbers, and pyrotechnic incinerators).
- Disassembly technologies (e.g., advanced munitions cutting and disassembly technologies).
- Resource recovery and recycling (e.g., use of energetic material derived fuels in boilers).
- Removal technologies (e.g., high pressure water washout of large rocket motors).
- Waste stream treatment technologies (e.g., hydrothermal processing of energetic materials).

2.0.7 These emerging technologies, however, are still in the research and development phase and not available as an alternative to routine OB/OD operations at TEAD.

3.0 WASTE MINIMIZATION

3.0.1 Further demilitarization needs of the DoD may result in significant variability of gross waste munitions quantities (especially at major Army Depots such as TEAD). However, TEAD has established a waste minimization program to reduce the relative quantity and associated toxicity of waste that would require OB/OD treatment. This is accomplished by the use of disassembly/removal (pull-apart) technologies as well as the deactivation furnace as appropriate. The decision on the applicability of each of these waste minimization technologies is based on munition specific safety, technical, and cost factors.

3.0.2 TEAD conducts munitions pull-part operations at Building 1375. This facility has about 80,000 square feet of space available with a monorail system. The configuration of the pull-apart operations and APE equipment used varies based on the specific munitions items to be demilitarized. Metal casings and other inert components may be separated (for resource recovery and recycling) from the energetics. Also, in some cases, fuzes and or primers may be removed for thermal treatment in the deactivation furnace. Also, small arms ammunition and

small quantities of bulk propellants may also be treated in the deactivation furnace to reduce OB/OD treatment quantities.

3.0.3 In addition, TEAD conducts routine OD shrapnel collection operations as a resource recovery and recycling measure.

3.0.4 A summary of the treatment quantities for OB/OD and waste minimization alternatives is presented in Table 7. This table is based on the latest available TEAD operations data.

Table 7. TEAD Waste Munitions Quantities, 1996

Operation	Quantity (tons)	
	Gross	Net explosive weight
Pull-apart process	396 ^a	74
Deactivation furnace	158	4
OB treatment	111	111
OD treatment ^b	20	5
Shrapnel recovery	Not Available	Not applicable

^a Approximately 160 tons of the total were recovered metals which were used for resale and reuse.

^b Does not include the donor charge quantities. A typical donor charge NEW to waste NEW of 1:1 is used at TEAD.

4.0 REFERENCES

U.S. Army, January 1992. Final Report: Development of Methodology and Technology for Identifying and Quantifying Emissions Products from Open Burning and Open Detonation Thermal Treatment Methods. U.S. Army Armament, Munitions and Chemical Command, Rock Island, IL.

U.S. Army, August 1992. Explosive Sensitivity of Soils and Metal Fragments at TEAD OB/OD Grounds. Tooele Army Depot, Tooele, UT. (Appendix C.1 of the June 1997 TEAD Implementation Plan.)

U.S. Army, Undated. Detonation Ground Soils & Explosive - Contaminated Metal Have No Reactivity Characteristics Under RCRA Hazardous Waste Regulations. Tooele Army Depot, UT. (Appendix C.2 of the June 1997 TEAD Implementation Plan.)

U.S. EPA, March 1998. Documentation for Validated OB/OD BangBox Emission Factor Database (Draft). U.S. Environmental Protection Agency, Research Triangle Park, NC.

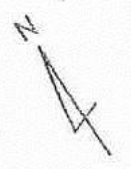
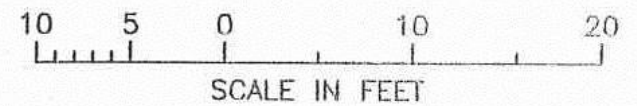
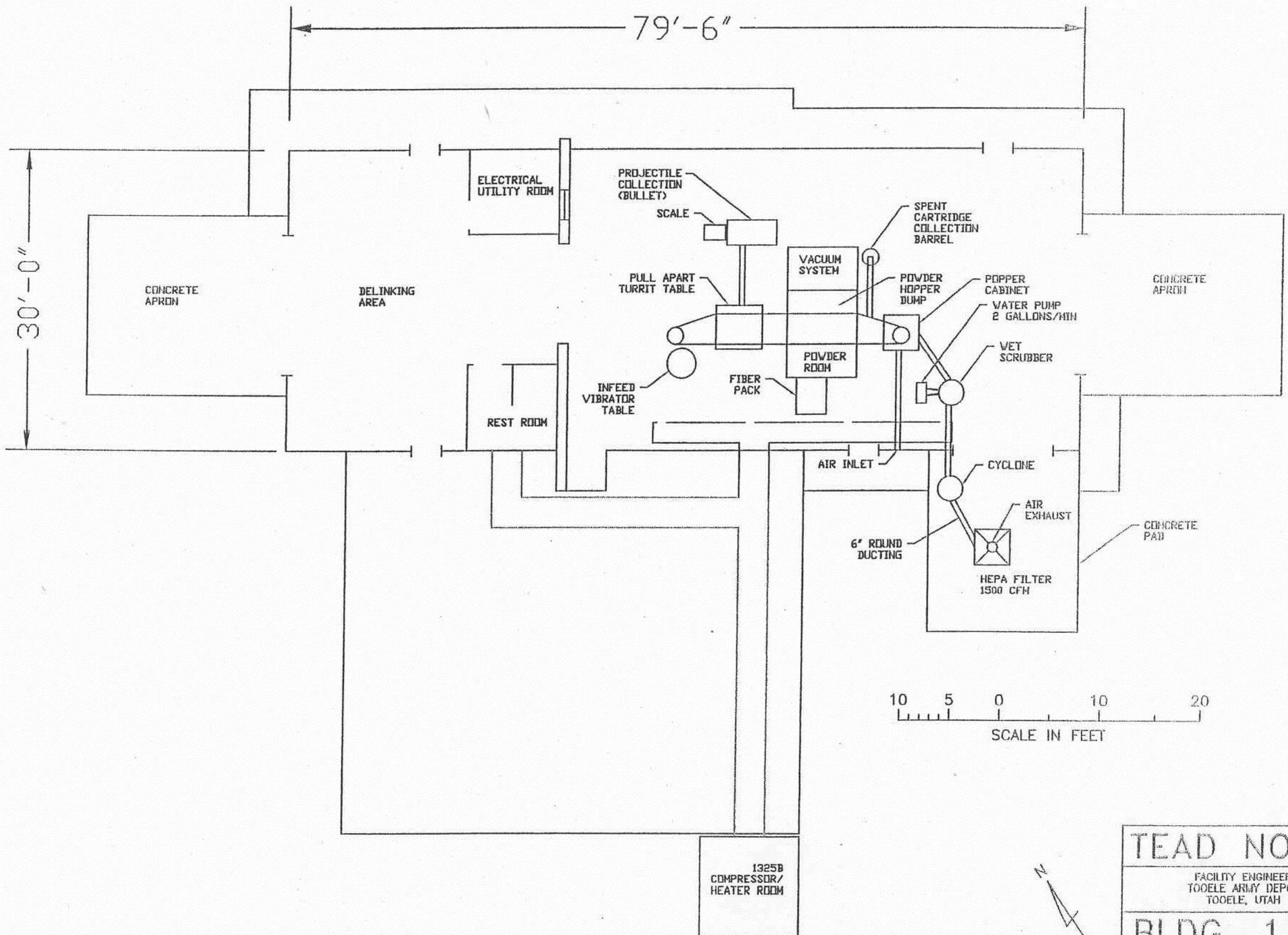
ATTACHMENT 18

SMALL CALIBER DISASSEMBLY LINE DRAWINGS

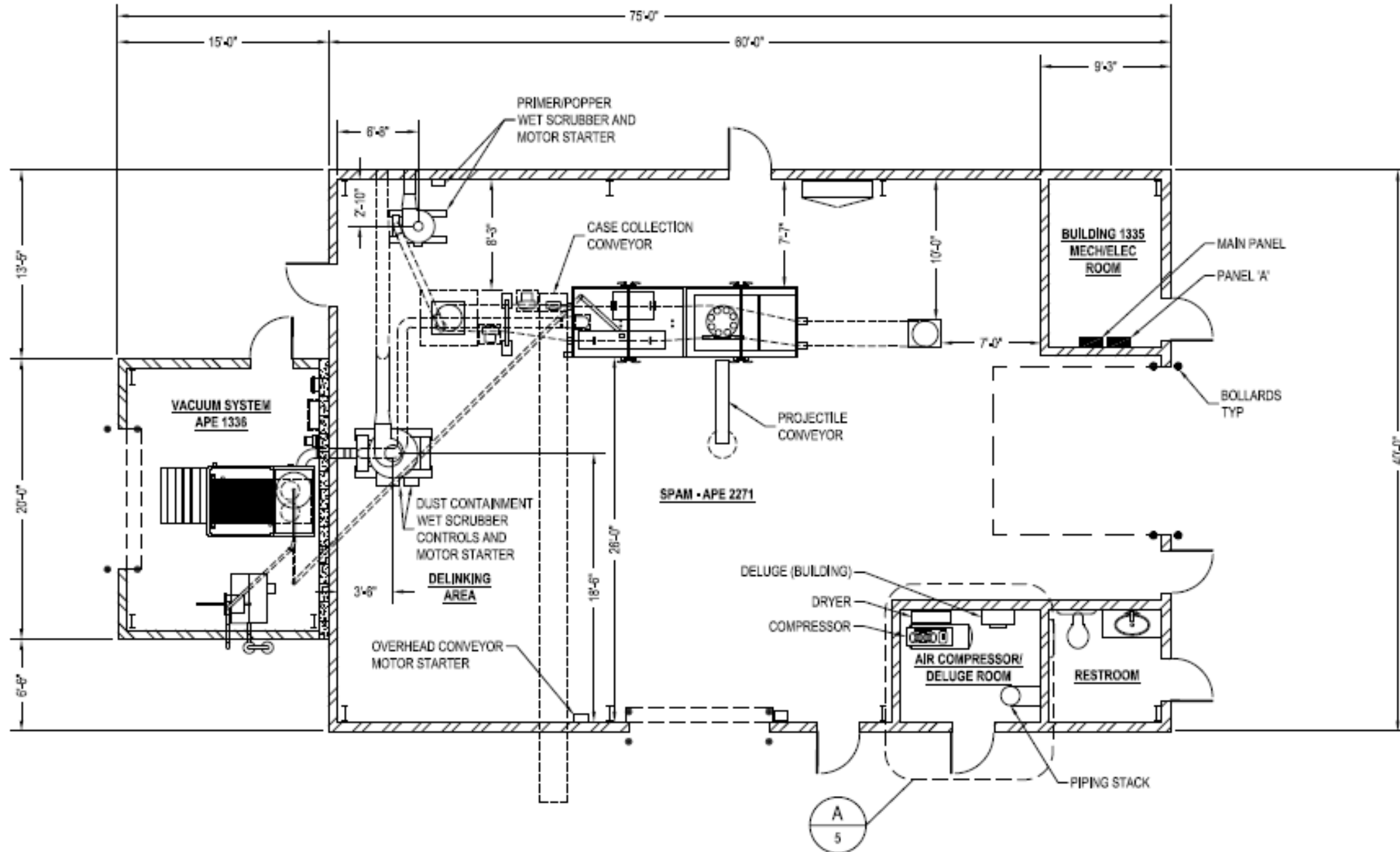
Buildings 1325 and 1335

Attachment 18
Small Caliber Disassembly Line Drawings

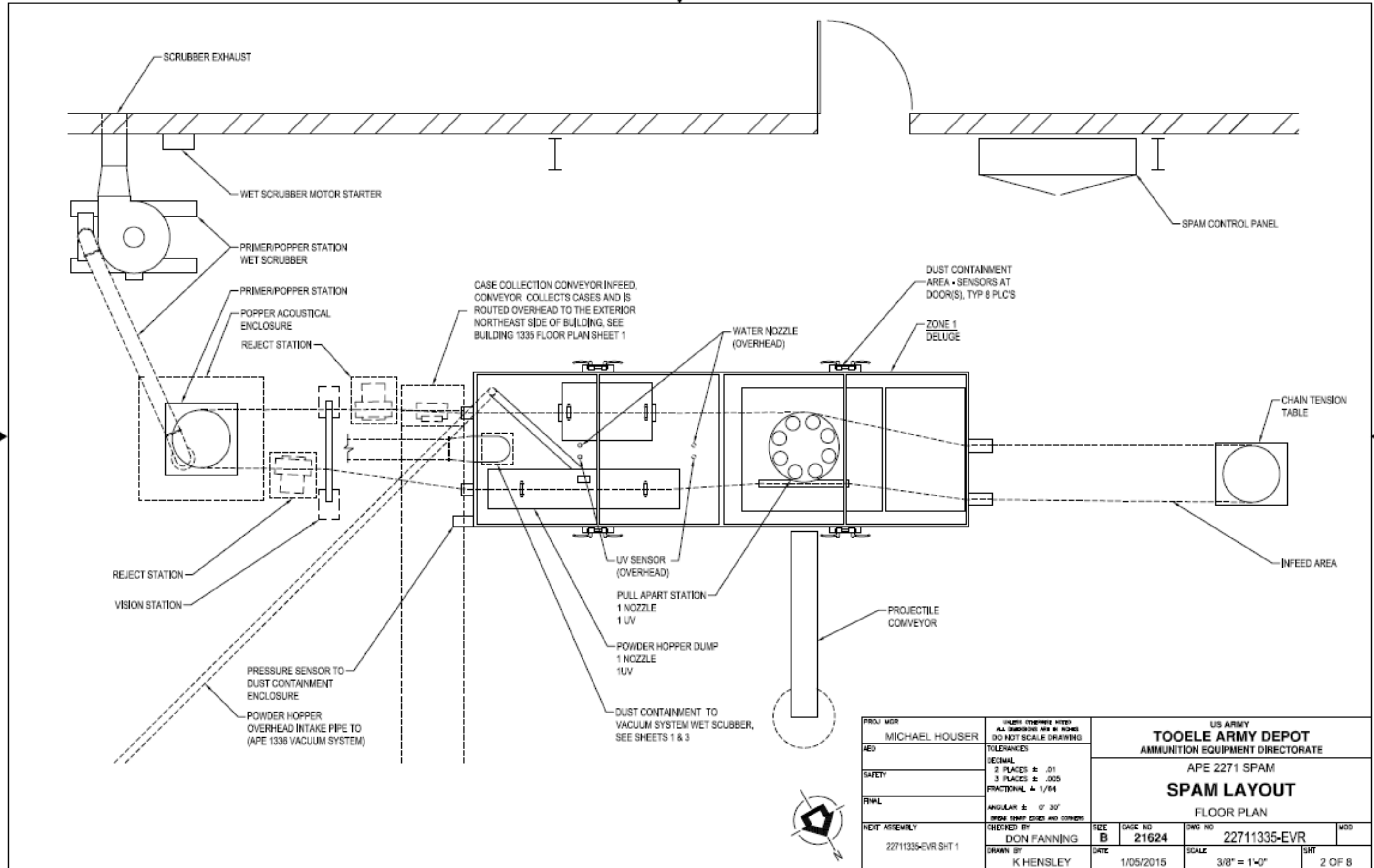
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EED-0284	25-Mar-95	Small Caliber Disassembly Line Pneumatic Layout
Building 1335		
22711335-EVR 1 of 8	5-Jan-15	APE 2271 SPAM / APE 1336 Vacuum System Building 1335 Layout
22711335-EVR 2 of 8	5-Jan-15	APE 2271 SPAM SPAM Layout
22711283-EVR 3 of 8	5-Jan-15	APE 1336 Vacuum System Vacuum System Layout
22711283-EVR 4 of 8	5-Jan-15	APE 2271 SPAM / APE 1336 Vacuum System Flow Chart
22711283-EVR 5 of 8	5-Jan-15	APE 2271 SPAM Electrical Layout
22711283-EVR 6 of 8	5-Jan-15	APE 2271 SPAM Pneumatic Layout
22711283-EVR 7 of 8	5-Jan-15	APE 1336 Vacuum System Electrical Layout
22711283-EVR 8 of 8	5-Jan-15	APE 1336 Vacuum System Pneumatic Layout



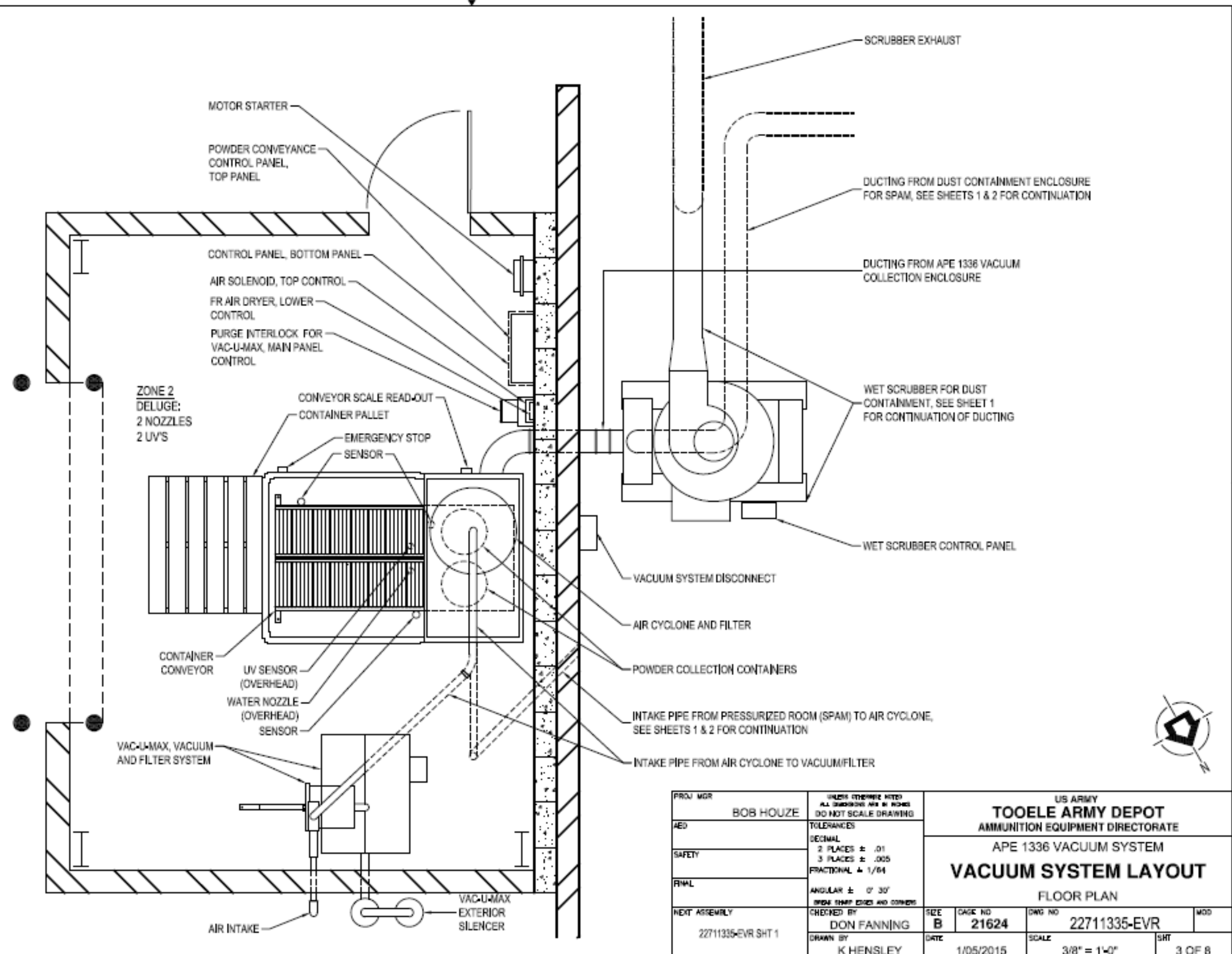
TEAD NORTH
FACILITY ENGINEER TOOELE ARMY DEPOT TOOELE, UTAH
BLDG. 1325
DATE: APRIL 10, 2003



PROJ MGR MICHAEL HOUSER	UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWING	US ARMY TOOELE ARMY DEPOT AMMUNITION EQUIPMENT DIRECTORATE		
AEO	TOLERANCES DECIMAL 2 PLACES ± .01 3 PLACES ± .005 FRACTIONAL ± 1/64	APE 2271 SPAM / APE 1336 VACUUM SYSTEM BUILDING 1335 LAYOUT FLOOR PLAN		
SAFETY	ANGULAR ± 0° 30' OPEN SHARP EDGES AND CORNERS	SIZE B	DATE NO 21624	DWG NO 22711335-EVR
FINAL		DATE 1/05/2015	SCALE 1/8" = 1'-0"	MOD 1 OF 8
NEXT ASSEMBLY	CHECKED BY DON FANNING			
	DRAWN BY K HENSLEY			



PROJ MGR MICHAEL HOUSER	UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWING	US ARMY TOOELE ARMY DEPOT AMMUNITION EQUIPMENT DIRECTORATE			
AED	TOLERANCES DECIMAL 2 PLACES ± .01 3 PLACES ± .005 FRACTIONAL ± 1/64	APE 2271 SPAM SPAM LAYOUT FLOOR PLAN			
SAFETY	ANGULAR ± 0° 30' SHARP POINT EDGES AND CORNERS	SIZE B	DATE NO 21624	DWG NO 22711335-EVR	MOD
FINAL		DATE 1/05/2015	SCALE 3/8" = 1'-0"	SHT 2 OF 8	
NEXT ASSEMBLY 22711335-EVR SHT 1	CHECKED BY DON FANNING				
	DRAWN BY K HENSLEY				



MOTOR STARTER
 POWDER CONVEYANCE CONTROL PANEL, TOP PANEL
 CONTROL PANEL, BOTTOM PANEL
 AIR SOLENOID, TOP CONTROL
 FR AIR DRYER, LOWER CONTROL
 PURGE INTERLOCK FOR VAC-U-MAX, MAIN PANEL CONTROL

ZONE 2 DELUGE:
 2 NOZZLES
 2 UV'S
 CONVEYOR SCALE READ-OUT
 CONTAINER PALLET
 EMERGENCY STOP SENSOR
 CONTAINER CONVEYOR
 UV SENSOR (OVERHEAD)
 WATER NOZZLE (OVERHEAD) SENSOR

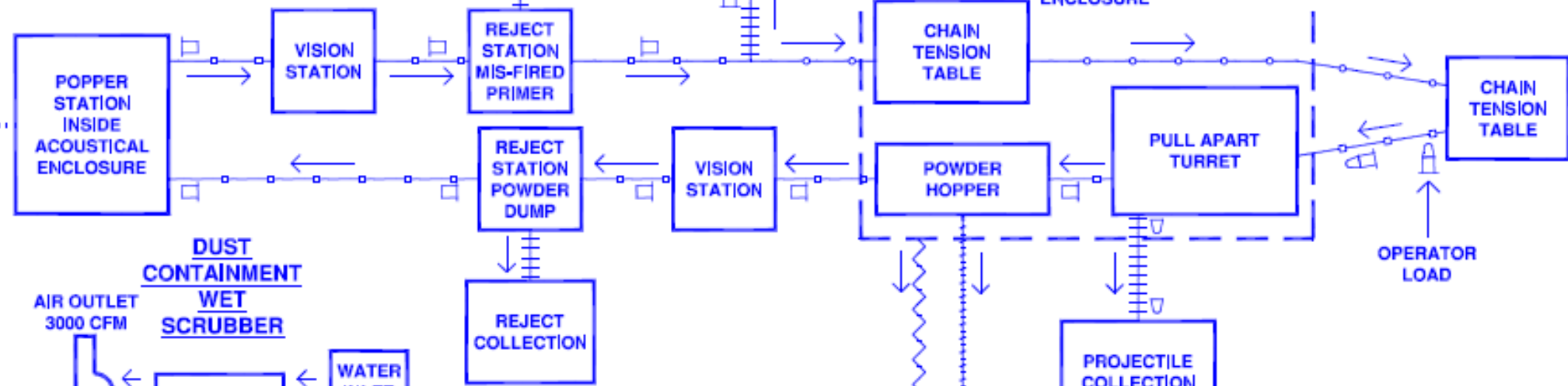
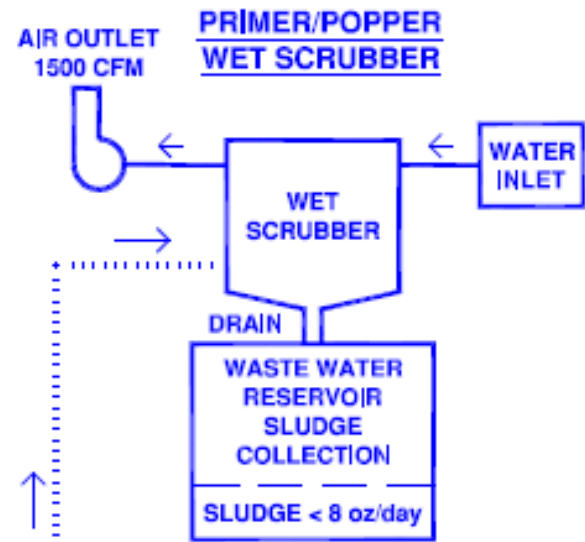
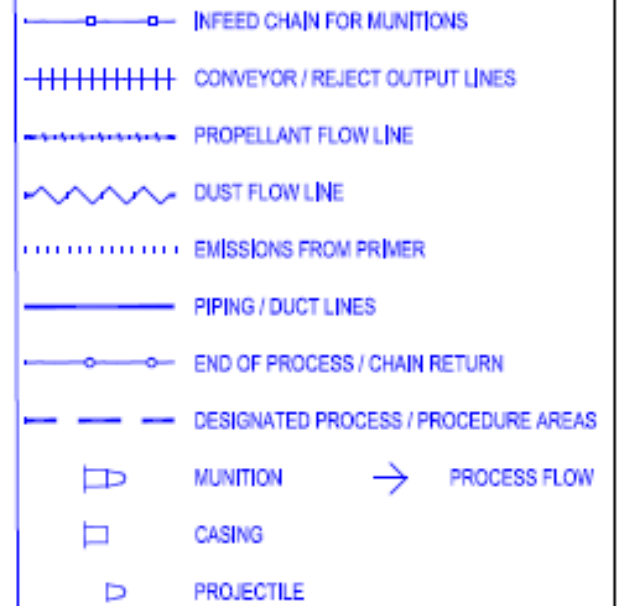
VAC-U-MAX, VACUUM AND FILTER SYSTEM
 AIR INTAKE
 VAC-U-MAX EXTERIOR SILENCER

SCRUBBER EXHAUST
 DUCTING FROM DUST CONTAINMENT ENCLOSURE FOR SPAM, SEE SHEETS 1 & 2 FOR CONTINUATION
 DUCTING FROM APE 1336 VACUUM COLLECTION ENCLOSURE
 WET SCRUBBER FOR DUST CONTAINMENT, SEE SHEET 1 FOR CONTINUATION OF DUCTING
 WET SCRUBBER CONTROL PANEL
 VACUUM SYSTEM DISCONNECT
 AIR CYCLONE AND FILTER
 POWDER COLLECTION CONTAINERS
 INTAKE PIPE FROM PRESSURIZED ROOM (SPAM) TO AIR CYCLONE, SEE SHEETS 1 & 2 FOR CONTINUATION
 INTAKE PIPE FROM AIR CYCLONE TO VACUUM/FILTER

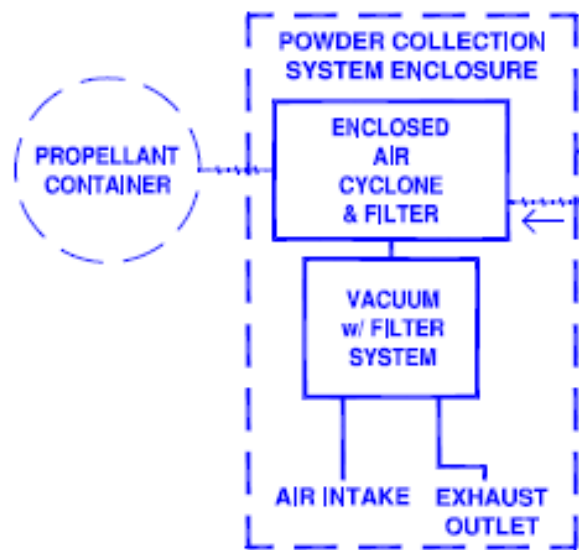
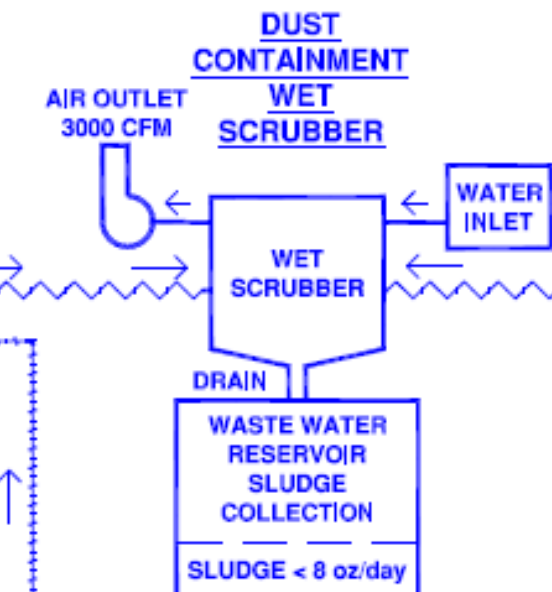
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SAFETY	ANGULAR ± 0° 30' SPREAD THOMP EDGES AND CORNERS	REV B	DATE NO 21624	DWG NO 22711335-EVR	MOD
FINAL	CHECKED BY DON FANNING	DATE 1/05/2015	SCALE 3/8" = 1'-0"	SHT 3 OF 8	
NEXT ASSEMBLY 22711335-EVR SHT 1	DRAWN BY K HENSLEY				

MUNITIONS VIA CONVEYOR CHAIN

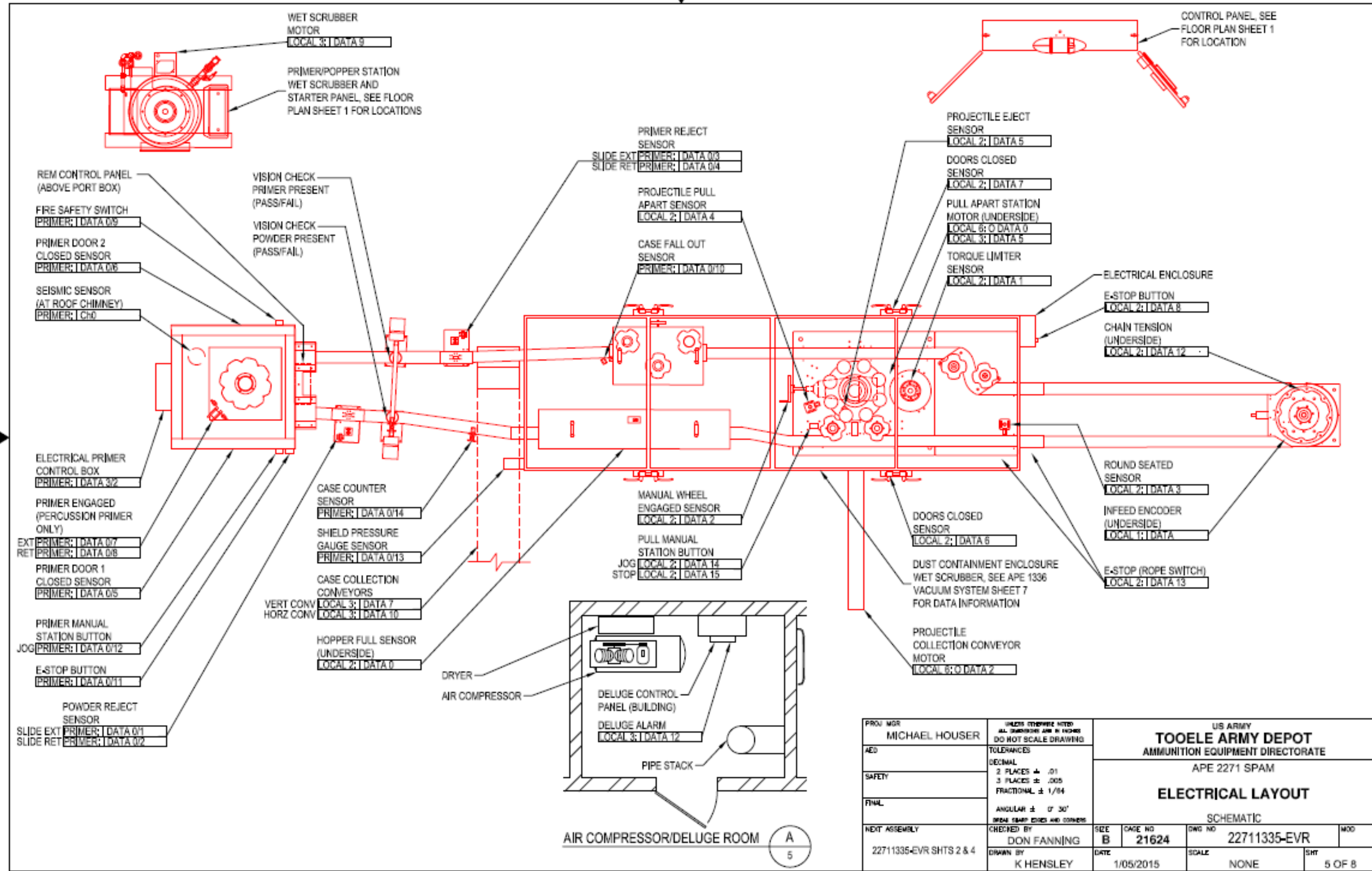
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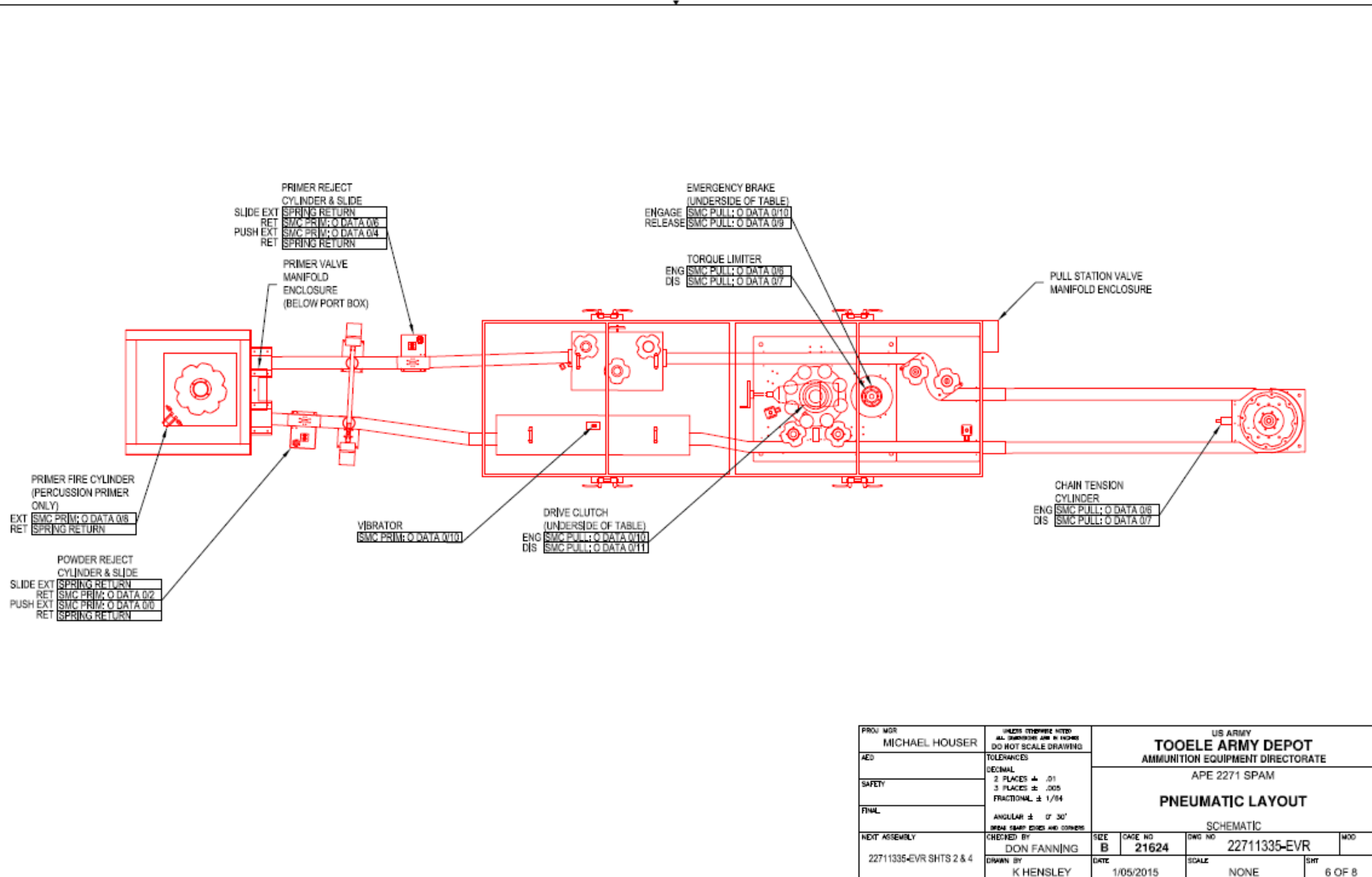
- NOTES:**
1. SLUDGE AND PROJECTILES w/ ENERGETIC'S (WASTE COLLECTION) IS DISPOSED OF AS HAZARDOUS.
 2. BRASS AND POWDER WASTE IS RECYCLED.



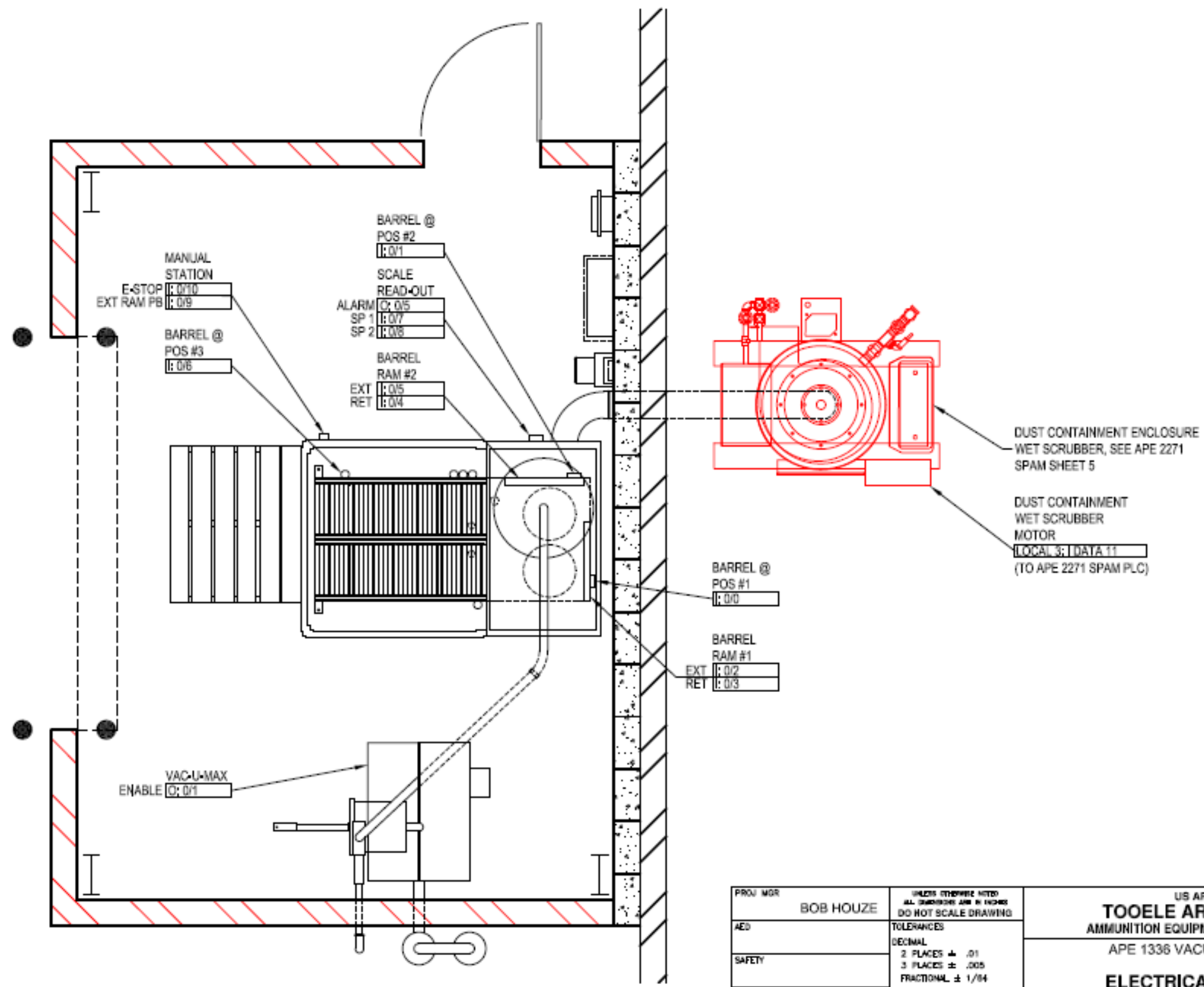
PROJ MGR MICHAEL HOUSER	DESIGN CHECKER NOTE ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWING	US ARMY TOOELE ARMY DEPOT AMMUNITION EQUIPMENT DIRECTORATE		
AED	TOLERANCES DECIMAL 2 PLACES ± .01 3 PLACES ± .005 FRACTIONAL ± 1/64	APE 2271 SPAM / APE 1336 VACUUM SYSTEM		
SAFETY	ANGULAR ± 0° 30' (BREAK TRAMP EDGES AND CORNERS)	FLOW CHART SCHEMATIC		
FINL		SIZE B	CAGE NO 21624	DWG NO 22711335-EVR
NEXT ASSEMBLY 22711335-EVR SHTS 1, 2, & 3	CHECKED BY DON FANNING	DATE 1/05/2015	SCALE NONE	MOO SHT 4 OF 8



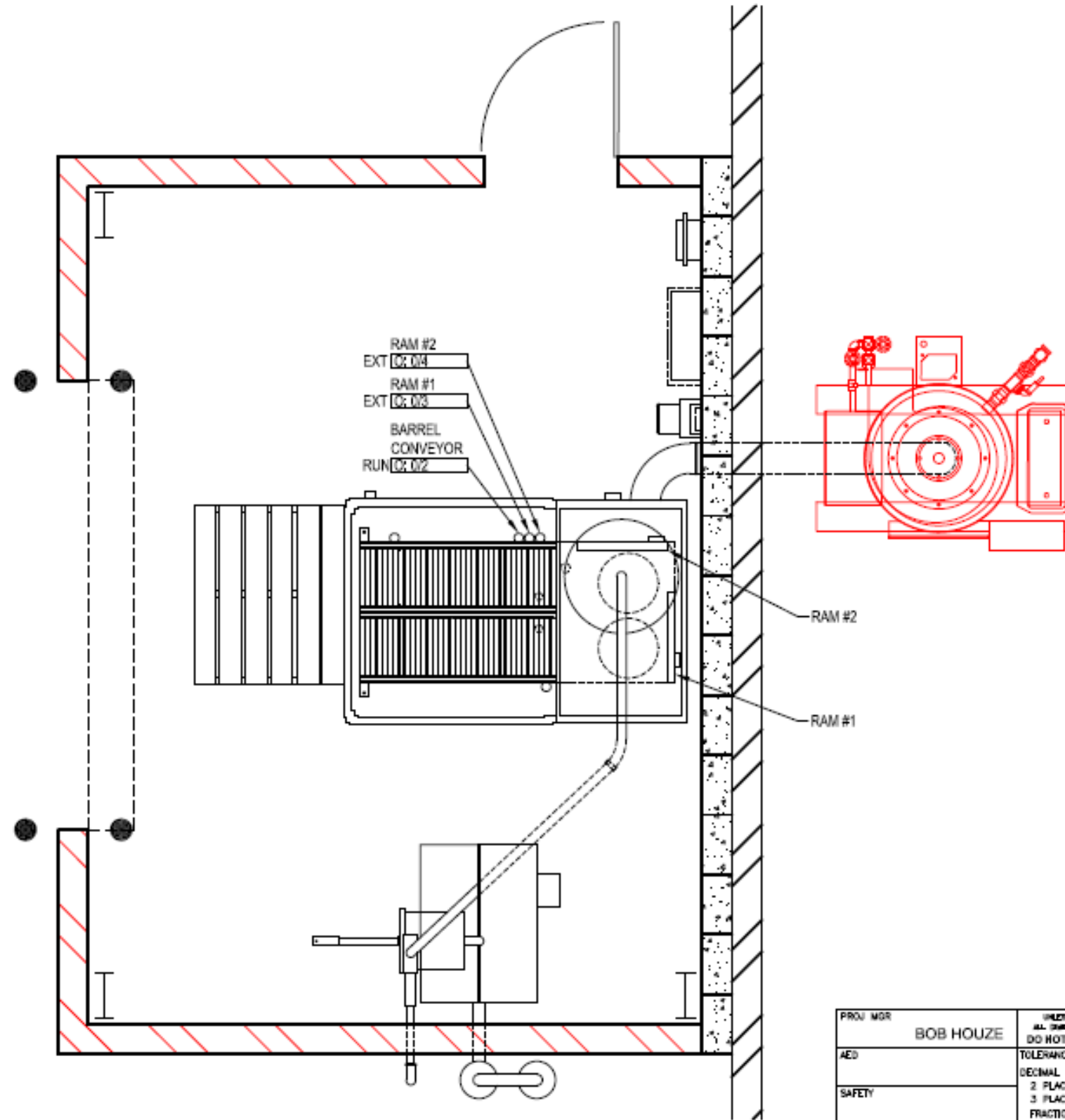
PROJ MGR MICHAEL HOUSER	UNLESS OTHERWISE NOTED: ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWING	US ARMY TOOELE ARMY DEPOT AMMUNITION EQUIPMENT DIRECTORATE APE 2271 SPAM ELECTRICAL LAYOUT SCHEMATIC		
AED	TOLERANCES	SIZE B	CAGE NO 21624	DWG NO 22711335-EVR
SAFETY	DECIMAL 2 PLACES ± .01 3 PLACES ± .005 FRACTIONAL ± 1/64	DATE 1/05/2015	SCALE NONE	MOD 5 OF 8
FINAL	ANGULAR ± 0° 30' BREAK SHARP EDGES AND CORNERS			
NEXT ASSEMBLY 22711335-EVR SHTS 2 & 4	CHECKED BY DON FANNING DRAWN BY K HENSLEY			



PROJ MGR MICHAEL HOUSER	UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWING	US ARMY TOOELE ARMY DEPOT AMMUNITION EQUIPMENT DIRECTORATE APE 2271 SPAM		
AED	TOLERANCES DECIMAL 2 PLACES ± .01 3 PLACES ± .005 FRACTIONAL ± 1/64	PNEUMATIC LAYOUT SCHEMATIC		
SAFETY	ANGULAR ± 0° 30' BREAK SHARP EDGES AND CORNERS			
FINAL	CHECKED BY DON FANNING	SIZE B	CAGE NO 21624	DWG NO 22711335-EVR
NEXT ASSEMBLY 22711335-EVR SHTS 2 & 4	DRAWN BY K HENSLEY	DATE 1/05/2015	SCALE NONE	MOO SHT 6 OF 8



PROJ MGR BOB HOUZE	UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWING	US ARMY TOOELE ARMY DEPOT AMMUNITION EQUIPMENT DIRECTORATE		
AED	TOLERANCES DECIMAL 2 PLACES \pm .01 3 PLACES \pm .005 FRACTIONAL \pm 1/64	APE 1336 VACUUM SYSTEM		
SAFETY	ANGULAR \pm 0' 30" BREAK SHARP EDGES AND CORNERS	ELECTRICAL LAYOUT		
FINAL		SCHEMATIC		
NEXT ASSEMBLY 22711335-EVR SHTS 3 & 4	CHECKED BY DON FANNING	SIZE B	CAGE NO 21624	DWG NO 22711335-EVR
	DRAWN BY K HENSLEY	DATE 1/05/2015	SCALE NONE	MOO SHT 7 OF 8



PROJ MGR BOB HOUZE	UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWING	US ARMY TOOELE ARMY DEPOT AMMUNITION EQUIPMENT DIRECTORATE		
AED	TOLERANCES DECIMAL 2 PLACES $\pm .01$ 3 PLACES $\pm .005$ FRACTIONAL $\pm 1/64$	APE 1336 VACUUM SYSTEM		
SAFETY	ANGULAR $\pm 0' 30''$ OPEN SHARP EDGES AND CORNERS	PNEUMATIC LAYOUT		
FINAL		SCHEMATIC		
NEXT ASSEMBLY 22711335-EVR SHTS 3 & 4	CHECKED BY DON FANNING DRAWN BY K HENSLEY	SIZE B	CAGE NO 21624	DWG NO 22711335-EVR SHT 8 OF 8
	DATE 1/05/2015	SCALE NONE		

ATTACHMENT 19

HYDROLYSIS SYSTEM DESCRIPTION

Cartridge Actuated Device Hydrolysis Prototype Production Plant (CAD HPPP)

1.0 The CAD HPPP is a chemical processing facility which has been designed to demilitarize explosive and propellant containing devices in an environmentally friendly manner. The process utilizes a warm Sodium Hydroxide (NaOH) solution to hydrolyze energetic species into non-energetic, benign by-products. Optimally, the energetic containing devices will utilize aluminum structures to house the energetic species thus allowing a single step processing mode. This is due to the fact that aluminum is rapidly dissolved in NaOH solutions. Once dissolved the NaOH solution accesses and hydrolyzes the energetic species present in the munition. Non-aluminum bodied munitions will require an up-front accessing step to provide a path for solution to energetic contact.

1.1 Non hydrolysable byproducts (non-aluminum metal, plastic and rubber) are removed from the solution, rinsed with water, and visually inspected for complete energetic destruction before disposal and/or recycle. The rinse water, and blowdown from the scrubber sump, supply make-up water for the main hydrolysis tank. The spent hydrolysis solution, which contains excess NaOH and low molecular weight organic salts, is disposed of as a hazardous waste.

1.2 The semi-automated facility is operated in batch mode and will process up to 1625 lbs (net) of munitions in a 10 hour day. Automated functions will be via programmable logic controller custom programming.

1.3 The CAD HPPP has been designed to protect the personnel and the environment during operation. Numerous safety features, both hardware and procedural, are present to assure safe and efficient operation of the facility.

2.0 EQUIPMENT OVERVIEW

2.1 The CAD HPPP utilizes commercially available chemical processing equipment including tanks, pumps, compressors, heating system, conveying system, ventilation equipment, pollution abatement system, instrumentation and computer control equipment.

2.2 Tanks

Concentrated (50 wt%) NaOH is stored in a 6500 gal, high density linked polyethylene, double-walled tank on the outside of the facility. Spent hydrolysate, to be disposed of at a commercial TSD facility, is transferred to a commercially available tanker truck also located outside of the facility. The hydrolysis reactions occur in a custom 1500 gallon, 316 SS tank located within the building. The hydrolysis tank is equipped with four rotating stations that accept perforated baskets containing the munitions to be processed. Rinse water is contained in a similarly designed 500 gallon tank equipped with two rotating stations.

2.3 Pumps

Concentrated NaOH is pumped from the outside storage tank into the hydrolysis tank via a centrifugal pump located in proximity to the storage tank. Hydrolysate fluid is recirculated within the hydrolysis tank via an air driven, double diaphragm pump. This same pump can be used to empty the hydrolysis tank into a tanker truck or other suitable tank outside. Rinse fluid is delivered to the hydrolysis tank with a similar air driven double diaphragm pump.

2.4 Heating Equipment

The hydrolysis solution is heated prior to the initiation of munition processing. A steam boiler rated for a minimum of 3.35 MBTU/Hr at 1600 lb/Hr provides the required heating. Heat transfer devices within the hydrolysis tank provide the required surface area to transfer heat into the hydrolyzing media.

2.5 Conveying Equipment

2.5.1 The CAD HPPP utilizes an automated conveying system to transfer munitions and byproducts through the processing steps. This system is similar to those used in commercial electroplating processes. Perforated stainless steel baskets contain the munitions to be processed. The perforated baskets are mounted to a carrying frame which provides the interface with the hydrolysis tank and the automated conveying system. The basket/frame assembly interfaces with a wheeled load cart to allow easy, manual movement of the basket/frame equipment. The load cart is equipped with a locking brake system to assure that un-wanted movement of the equipment doesn't occur when the equipment is un-attended.

2.5.2 An automated crane system transports the basket/frame assembly to an un-occupied station in the hydrolysis tank. The crane deposits the basket at the station which is equipped with an air driven rotation system. Once deposited, the compressed air driven motor spins the basket within the solution to assure adequate mixing to maintain high hydrolysis reaction rates.

2.5.3 The conveying system automatically removes the basket from the hydrolysis tank upon completion of the hydrolysis reactions. Materials that are unaffected by short term exposure to the caustic media (e.g., plastics, brass, stainless steel) remain in the perforated basket. These "tramp" materials are then rinsed in a freshwater tank to remove any residual hydrolyzing media. Upon completion of rinsing, the conveying system transports the baskets to the unloading station where operating personnel manually empty the tramp material from the baskets onto an inspection tray. The tramp material is then manually deposited into drums for disposal.

2.6 Ventilation Equipment

The aluminum hydrolysis reaction produces hydrogen. Ventilation is required to assure that hydrogen concentrations do not exceed the flammability limit. Room air is drawn over the surface of the hydrolysis bath via an induced draft blower located outside the processing building. The nominal flow rate of ventilation air is 18,000 CFM which is adequate to assure that the hydrogen concentration does not exceed 50% of the lower flammability limit (LFL) of hydrogen. The hydrogen LFL in atmospheric air is 4%. The ventilation blower is provided with a back-up power supply generator that will automatically activate if the electrical power supply is lost. This safety measure assures that hydrogen concentrations do not exceed 50% of the LFL even in emergency shutdown situations.

2.7 Pollution Abatement System

A wet scrubber based pollution abatement system is installed immediately upstream of the induced draft blower. The scrubber is designed to prevent the discharge of caustic bearing materials into the environment. The scrubber system is comprised of the scrubber housing, recirculation pump, and sump tank. Included in the scrubber housing are random-dump packing, spray nozzles, and mist eliminator pads. The scrubbing liquid for the scrubber system is provided by fresh water as required. The scrubbing liquid is pumped from the sump tank to the spray nozzles where it is sprayed onto the scrubber packing. The wet packing provides enough interactive surface area for the scrubbing liquid to remove any caustic material from the exhaust gas. Mist eliminator pads located above the spray nozzles are designed to remove mist particles as small as two microns in diameter at 99.3% efficiency. The scrubbing liquid is continuously recirculated between the sump tank and the scrubber housing. Evaporated liquid is replenished by fresh water as required.

2.8 Instrumentation

The CAD HPPP utilizes typical process instrumentation to assure safe and complete processing of munition items. Instrumentation includes thermocouples, pressure transmitters, pressure gauges and limit switches. Additionally, the system ventilation gas is constantly monitored for hydrogen to assure that concentrations do not exceed 50% of the LFL during the processing of munitions that contain aluminum.

2.9 Computer Control Equipment

The CAD HPPP utilizes a programmable logic control (PLC) system to monitor and control process functions. A custom program was developed specifically for the application. The PLC system includes In/Out (I/O) modules that interface with the process equipment and instruments. The system includes automated function programming, ladder logic and alarm and interlock logic to assure safe and efficient operations. The human interface (HMI) is by way of a standard computer located remotely in the CAD HPPP control room. The HMI includes numerous, custom developed screens that provide operators a graphical interface with the process. The HMI computer is also programmed to perform data logging functions to allow the capture of all process functions during system operation. The data will be downloaded and backed up at pre-determined frequencies to assure the accurate capture of the CAD HPPP operational history.

3.0 OPERATIONAL OVERVIEW

3.1 The munitions to be processed are transported from their storage location to the processing facility per standard TEAD transport procedures. Munition handlers weigh out the required quantity of individual munitions to make up a predetermined batch size. A predetermined number of batches sized to consume the desired quantity of NaOH are prepared prior to and during system operation as required. The munition batches are contained within the perforated baskets prior to processing.

3.2 The fresh hydrolysate solution is prepared in the hydrolysis tank prior to munition treatment. Water from the rinse tank is pumped to the hydrolysis tank. Additional make-up water, as required, is added to the tank from the facility water supply. Fresh concentrated NaOH (50 wt%) is then pumped from the outside storage tank into the hydrolysis tank to create a ~25 wt% solution in the hydrolysis tank.

3.3 The hydrolysis solution is initially heated to ~100⁰C with pressurized steam from the steam boiler. The heated solution is re-circulated within the tank to ensure good mixing and high heat transfer rates. The design solution heat up time is 1 hour. The steam condensate is returned to the boiler with a pump located at the hydrolysis tank. Thermocouples located within the tank continuously measure the solution temperature. The PLC operating program compares the solution temperature to the temperature set-point and automatically opens and closes a steam delivery valve as required to maintain the desired solution temperature.

3.4 System operators manually transport the munition batches to the designated load station located at the front of the processing line. The automated transport system picks up the basket/carrier assembly and deposits the munition batch into the pre-heated caustic solution. The baskets are rotated within the solution to allow adequate contact between the munition items and the hydrolyzing media. System operators manually “re-load” the pickup station with another batch of munitions to be processed.

3.5 Aluminum containing munitions produce hydrogen during the hydrolysis process. The mass rate of hydrogen evolution is proportional to the surface area of aluminum exposed to the hydrolyzing media.

The duration of hydrogen evolution is proportional to the mass of aluminum contained in the munitions. Ventilation air is continuously drawn through the hydrolysis tank to dilute the hydrogen concentration to safe levels. The introductions of the munition batches into the hydrolyzing tank are staggered by 30 minutes. This reduces the vent gas hydrogen concentration by preventing the peak generation rates (i.e., at treatment onset when the aluminum surface area is at a maximum) of multiple additions from coinciding.

3.6 The exothermic heat of the hydrolysis reactions may increase the temperature of the hydrolyzing media, ultimately, to its boiling point if the energy is not dissipated. Although reaching the boiling point poses no safety threat, it is desirable to mitigate hydrolysis tank foaming. Hydrolyzing media spilling over into the secondary containment pan creates a housekeeping issue. The process control program responds to the rising temperature by halting the addition of steam. Careful selection of the hydrolysis bath temperature control setpoint normally prevents hydrolysis bath temperatures from reaching the boiling point. Munition batch staggering also assists in media temperature control, as the hydrolysis of aluminum represents, by far, the most significant portion of the heat input.

3.7 The hydrolyzing media level will tend to drop due to the evaporation of water. Make up water comes from the scrubber sump tank or the rinse tank. An ultrasonic level transmitter constantly monitors the hydrolysis tank level. The process control program automatically activates the transfer of scrubbing liquid from the scrubber sump tank or rinse water from the rinse tank to the hydrolysis tank when the hydrolysis bath level drops below a predetermined set point. The scrubber sump tank and rinse tank are replenished with fresh water in a similar fashion.

3.8 Each munition batch is exposed to the media for ~ 2 hours. Munitions that possess thin aluminum containment bodies and small quantities of energetic material require less exposure time than those with thicker bodies and greater quantities of energetic material. The basket is continuously rotated within the media to assure high reaction rates. The computer control system tracks and controls the exposure time of each munition batch.

3.9 The completed munition batches consisting of un-hydrolyzable materials (e.g., plastic, rubber, stainless steel, brass) are automatically removed from the hydrolyzing media by the automated conveyor system in response to the process control program. The conveyor system removes the basket from the hydrolyzing tank station and deposits it at a rotating station in the rinse tank. The residual material is rinsed for ~ 10 minutes to remove the hydrolysate liquid from the solids.

3.10 The automated conveyor system transports the rinsed solids to a dedicated drop off station. System operators manually “wheel” the basket/carrier assembly to an inspection area where the basket contents are inspected. The solids are visually inspected for the presence of energetics. If the presence of un-hydrolyzed energetic material is suspected, the solids are loaded back into the barrel and re-processed. Energetic-free solids are loaded into containers for disposal or re-cycle.

3.11 The CAD HPPP will typically be operated on a 10 hr/day schedule. Assuming a 1 hr bath heat-up time, a ½ hr “stagger” time between batches and a 2 hr total exposure period, 13 batches are processed in each 10 hr day. The target basket net load will vary with munition type, the design maximum basket load is calculated to be 125 lbs. The total weight of munitions processed in a 10 hr day is 1625 lbs. However, the potential exists to run 24 hours per day resulting in a maximum capacity of 3,900 lbs. per day assuming 1.3 baskets could be processed per hour.

ATTACHMENT 20

HYDROLYSIS SYSTEM DRAWINGS

Attachment 20
Hydrolysis System Drawings

Drawing number	Sheet	Revision	Date	Title
59C002	1 of 1	B	4-2-13	Process Flow Diagram for CAD HPPP
59C003	1 of 3	D	9-2-08	CAD HPPP Piping & Instrumentation Diagram
59C003	2 of 3	A	4-2-13	CAD HPPP Piping & Instrumentation Diagram
59C003	3 of 3	A	4-2-13	CAD HPPP Piping & Instrumentation Diagram
GA041508	1 of 1	A	9-2-08	15,000 – 25,000 CFM Alkaline Scrubbing System
30159D00000	1 of 4	2	4-2-13	Tooele Bldg 1400 Equipment Layout Plan
30159D00000	2 of 4	1	4-2-13	Tooele Bldg 1400 Equipment Layout Plan
30159D00000	3 of 4	1	4-2-13	Tooele Bldg 1400 Equipment Layout Elevations
30159D00000	4 of 4	1	4-2-13	Tooele Bldg 1400 Equipment Layout Isometric
050425-A-CS-01	1 of 1	A	4-2-13	Cross Section General Atomics
050425-B-TL-01	1 of 1		7-15-08	Tankline Layout General Atomics
050425-C-TC-01	1 of 1	A	4-2-13	NaOH Tank Cover General Atomics
050425-D-DP-01	1 of 4		7-15-08	Drip Pan & Shields Assembly General Atomics
050425-R-BL-01	1 of 1		7-15-08	Barrel Layout General Atomics
050425-R-BR-01	1 of 1		7-15-08	Barrel Rotator Assembly General Atomics
050425-P-PA-01	1 of 1		7-15-08	Push Air Piping General Atomics
050425-V-VA-01-A	1 of 5	A	7-15-08	Ventilation Assembly General Atomics
59C004	1 of 1	B	4-2-13	Cad HPPP Electrical Single Line Drawing

ATTACHMENT 21

HYDROLYSIS SYSTEM INSTRUMENT LIST

Attachment 21
Hydrolysis System Instrument List

Tag Number	Description	Units
YB_003_O615	Enclosure Alarm Buzzer	on/off
HIS_651_O611	Station 5-8 Rotation	on/off
HIS_751_O610	Station 5-8 Rotation	on/off
HIS_660_O600	Push Air Blower	on/off
YS_961_I1401	Scrubber Alarm	on/off
YS_960_I1400	Scrubber Running	on/off
FS_800_I514	Low Exhaust System Flow Switch	on/off
PS_150_I513	Low Plant Air Pressure Switch	on/off
YS_750_I512	Conductivity Over Range	on/off
LS_850_I510	High Containment Pan Level	on/off
YS_600_I507	High NaOH Storage Tank Level Alarm	on/off
YS_002_I501	Emergency Stop Relay	on/off
HIS_710_I107	Manual Stop	on/off
AIT_750_I1205	Station 3-4 Conductivity	mS/cm
PT_150_I1204	Plant Air Pressure	psi
AIT_910_I1203	Hydrogen Analyzer	% of 4%LEL
FT_200_I1202	Cooling Fan	on/off
LT_600_I1201	NaOH Storage Tank Level	gallons
LT_952_I305	Scrubber Sump Level	inches
LT_650_I304	Station 5-8 Level	gallons
PDT_950_I303	Scrubber Differential Pressure	"H ₂ O
LT_750_I301	Station 3-4 Level	gallons
TE_800_I1603	Ventilation Gas Temp	°F
TE_650_I701	Station 5-8 Bath Temp	°F
TE_750_I700	Station 3-4 Bath Temp	°F

Attachment 22

Quality Assurance Program Plan (QAPP)

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Appendices:

Appendix 1	Sampling Protocol and Chain of Custody Procedures
Appendix 2	Sample Container Types/Volumes, Preservation and Holding Time Requirements

1.0 Program Organization and Responsibility

- 1.1 The Tooele Army Depot (TEAD) is a U.S. Army Depot under the Army Material Command. The TEAD is commanded locally by a Colonel who has overall responsibility for the operation of the depot.
- 1.2 The TEAD's Environmental Office (EO) is responsible for ensuring that data provided to the state and federal regulatory agencies meets the requirements of this Permit, its attachments and R315 of the Utah Code Annotated.
- 1.3 The on-site Quality Assurance (QA) Manager is an independent person who reports directly to the EO Chief. All data produced, both sampling and analytical will be reviewed by the QA manager and personnel reporting the results. All quality control data will be approved by the on-site QA manager prior to submission to the regulatory agencies.
- 1.4 The TEAD Safety Chief is the site safety officer and Industrial Hygiene Supervisor is the site health officer.

2.0 Background

- 2.1 The principal work activities at TEAD are the shipping, receiving, and demilitarization of conventional munitions, and the testing and development of ammunition peculiar equipment and related demilitarization testing.

3.0 Program Objective

- 3.1 The overall objective for the Quality Assurance Program Plan is to develop and implement procedures for field sampling, chain-of-custody, laboratory analysis, data validation and reporting. Minimum requirements for development of individual SAPs are outlined in this QAPP. Quality control measures are required to prevent, identify and correct errors that may occur at any point in process. The generated data is intended to support regulated activities.
- 3.2 Specific details to be used for the above referenced activities are described in other sections of this QAPP. The quality requirements for sampling are provided in Appendix 1.
- 3.3 This plan provides procedures for sampling activities performed by TEAD and contract personnel.
- 3.4 Specific sampling processes and data objectives will be detailed in the individual quality assurance project plans.
- 3.5 Test procedures and methods performed by laboratories are described in the following documents:
 1. Test Methods for Evaluating Solid Waste (SW-846), current edition.
 2. Standard Methods for the Examination of Water and Wastewater, current edition.
 3. Guidelines Establishing Test Procedures for the Analysis of Pollutants under the Clean Water Act.

4. Guidelines Establishing Test Procedures for the Analysis of Contaminates under the Safe Drinking Water Act.

3.6 The TEAD EO will verify the minimum requirements of this QAPP are met for all sampling and analysis events. Minimum quality requirements for all laboratory analyses are specified in this document. The quality requirements for sampling are provided in Appendix 1.

4.0 Data Usage

4.1 Data collected, analyzed and validated is used to support the waste management programs. The project lead reviews sampling and analytical data submitted to the regulatory agencies to meet the project goals and objectives.

5.0 Sampling Responsibility and Type

5.1 The nature and extent of sampling will be done in accordance with Attachment 2, Waste Analysis Plan (WAP) or will be determined by a project specific SAP. Types of sampling include:

- a. Identification of waste streams to determine whether or not the waste is a listed or characteristic hazardous waste.
- b. Closure Activities to determine whether or not all hazardous waste has been removed.
- c. Environmental Samples to determine whether or not the environment has been contaminated as a result of a spill or other activity.
- d. Groundwater monitoring to ensure that the TEAD detects any impact to groundwater by regulated activities.
- e. Other projects including but not limited to trial burns, Subpart X processes and site assessments.

6.0 Sampling Procedures

6.1 Sampling should be conducted following the protocols established in A Guide for Field Samplers (EPA Region VIII, 2004 or current version), Standard Operating Procedures for Hazardous Waste Streams (EPA Document 600/80-018), EPA Contract Laboratory Program Guidance for Field Samplers (EPA 540-R-09-03 January 2011), Standard Methods for the Examination of Water and Wastewater, 22nd Edition December 16, 2013, the WAP and other applicable guidance or procedures approved by the TEAD EO.

6.2 Samples will be preserved if applicable and returned to the designated laboratory for analysis. If waste characterization is unknown or personnel are unfamiliar with processes that created the wastes to be sampled and/or a determination is made that there may be a safety problem by preserving samples, then no sample preservation will occur and a shorter holding time will

be considered. The sample label will note any preservation including cold preservation or that the sample has not been preserved. Additional container, volume and preservation requirements are located in Appendix 2. Any problems which arise during sampling will be corrected on the spot before sampling is completed.

7.0 Data Quality Objectives

- 7.1 The objective of the QAPP is to develop and implement procedures for field sampling, chain-of-custody, laboratory analyses and reporting that are technically and legally defensible. Specific procedures to be used for sampling, chain-of-custody, calibration, laboratory analyses, reporting, internal quality control, audits, preventative maintenance, and corrective actions are described in other sections of the QAPP. The purpose of this section is to define goals for completeness, accuracy, precision, representativeness, and comparability. The use of EPA's User's Guide to the Contract Laboratory Program, (EPA 540-R-08-01, June 2008 and EPA 540-R-04-004, October 2004, EPA 540-R-10-011, January 2010)) Organic and Inorganic Validation Functional Guidelines may be used for determining data usability.
- 7.2 Test methods are determined by sample matrix, detection limit requirements and data usage. The TEAD WAP provides a list of approved sample methods.

8.0 Data Completeness

- 8.1 Completeness is defined as the amount of valid data obtained from a measurement system compared to the amount that is expected to be obtained. A goal of at least 95% completeness should be obtained.

9.0 Data Accuracy

- 9.1 Accuracy is the degree of agreement between a measurement and an accepted reference or true value. The accuracy is determined from analyses of samples spiked with a known concentration. The number of spiked samples and the spiking levels will be taken from the respective methods.

The formula used to assess the accuracy of a laboratory control spike (LCS) is:

$$\%R = (Q_{LCS} / Q_{KC}) \times 100$$

Where: %R = Percent Recovery
 Q_{LCS} = Quantity of Analyte Found in the Spiked Sample
 Q_{KC} = Known Concentration of the LCS

The formula used to assess the accuracy of the matrix spike/matrix spike duplicate (MS/MSD) samples is:

$$\%R = ((Q_{SS} - Q_{US}) / Q_S) \times 100$$

Where: %R = Percent Recovery
 Q_{SS} = Quantity of Analyte Found in the Spiked Sample

Q_{us} = Quantity of Analyte Found in the Unspiked Sample

Q_s = Quantity of Added Spike

- 9.2 Calculation of the accuracy for each analysis will be based on different criteria as discussed in this Quality Assurance Project Plan and the analytical methods. The matrix spike default values for water and soil are 75-125% and 60-140%, respectively. Project specific requirements may vary from the default values due to other considerations. The TEAD EO will review data and determine if project goals and data quality have been met, if not, the TEAD EO may discuss with the Division of Waste Management and Radiation Control (DWMRC) the impact to the data and if data is useable.
- 9.3 A matrix spike (MS) and matrix spike duplicate (MSD) sample shall be prepared and analyzed for every 20 samples of the same matrix type or once per day whichever is more frequent.
- 9.4 A laboratory control spike (LCS) and laboratory control spike duplicate (LCSD) will be performed per analytical batch. The default values for water and soil are 80-120% and 75-125%.

10.0 Data Precision and Bias

- 10.1 Precision is defined as the degree of mutual agreement among individual measurements made under prescribed conditions. Precision will use two different measurements depending on the number of data points being considered. Two data points will have the relative percent difference (RPD) calculated. Three or more data points will use the relative standard deviation (RSD) as a measure of the precision. External precision audits may be conducted by submitting blind duplicates to the laboratory and comparing the results with the acceptance criteria. The number of blind duplicates required will usually be 20 percent of all samples taken. Precision will be calculated for laboratory or field samples using the following equations:

$$\%RPD = \{(X_1 - X_2) / [(X_1 + X_2)/2]\} \times 100$$

Where: RPD = Relative Percent Difference
X₁ = Highest Analytical Result of Sample
X₂ = Lowest Analytical Result of Sample

$$RSD = (\text{standard deviation/average value}) \times 100$$

- 10.2 Calculation of the precision for each analysis will be based on different criteria as discussed in the project specific plans and the analytical methods used. The default values for precision for water and soil are <20%, < 40%, respectively. Project specific requirements may vary due to other considerations.
- 10.3 Bias is a measure of systematic error. When a sample of known concentration is tested repeatedly, the Bias is determined by how close the average test value is coming to the actual, known value.

11.0 Data Representativeness

11.1 To assure representativeness, all samples should be taken following protocols as set forth Section 6.0 of this QAPP. Also, site descriptions, site photo documentation, and sampling conditions and techniques should be documented in bound field notebooks as necessary.

12.0 Data Comparability

12.1 Comparability is a quantitative characteristic, which may be considered in planning sampling activities. The TEAD EO should work closely with any laboratory to ensure all data generated are consistent with and expressed in the same units as the data generated by other laboratories reporting similar analyses. This will allow for comparison of the data among different organizations.

12.2 Similarly, the TEAD EO should ensure that all data generated by field measurements are expressed in units that are consistent with standard practices. In addition to units, comparability should be assured in terms of sampling plans, analytical methodology, quality control and data reporting.

12.3 Proper preservatives, appropriate containers, and holding times for samples and analyses are given in Appendix 2.

12.4 Unless specifically outlined in a project specific plan, all soil/solids data will be reported on a dry weight basis.

13.0 Method Sensitivity

13.1 The methods specified must meet or exceed the regulatory requirements and method sensitivity specified by the project or risk requirements.

14.0 Uncertainty

14.1 Any data not meeting the required Data Quality Objectives (DQOs) will be discussed with the laboratory and the DWMRC to determine usability of the data. Any qualified data will be discussed in the analytical report.

15.0 Chain-of-Custody and Sample Tracking

15.1 Samplers may use either a legal chain-of-custody or sample tracking form to enable tracking the possession and handling of a sample during transfer (from sample collection through laboratory analysis and final disposal) so that its physical possession is known at all steps in the process.

15.2 A sample is under legal chain-of-custody if:

1. It is in the person's possession, or
2. It is in the person's view at all times, or
3. It is locked in a secure location.

16.0 Analytical Procedures

16.1 Utah-certified laboratories will provide analytical data for compliance with R444 of Utah Annotated Code (UAC). All methods associated with data results (sampling, preparation, analytical) will be based on whether or not the method provides comparable, representative, complete, precise, sensitive and accurate data for the sample matrix and the range of expected values for the constituents for which the samples are being analyzed. EPA analytical methods will be used for analyses. If EPA does not have a method, e.g., chemical agents, then the TEAD EO will contact the DWMRC to discuss which method would be the most appropriate.

17.0 Calibration Procedures and Frequency

17.1 Laboratory equipment calibration procedures will be in accordance with the method and manufacturer specification. Any equipment used for field measurements will be calibrated according to manufacturer's specifications prior to use. Documentation of the calibration is required. The TEAD EO will maintain documentation on all field equipment calibrations. The laboratory will maintain their calibrations and maintenance documents. Any problems associated with field equipment, will be identified to the TEAD EO and a corrective action will be implemented.

18.0 Data Analysis, Validation and Reporting

18.1 The primary data analysis, validation and reporting is performed by the laboratory that analyzes the samples. Internal validation is performed by a qualified TEAD EO or by a contractor. Upon completion of the sample analyses, the laboratory will submit the results to the TEAD EO for review and project validation. Utah certified laboratories will retain the sample analysis records according to UAC R444-14.

18.1.1 Any qualified data shall have an associated case narrative

18.2 Laboratory Analysis, Validation and Reporting

18.2.1 The Tooele Army Depot (TEAD) shall use a Utah-certified laboratory to perform sample preparation and analyses. Subcontracted laboratories must also be Utah certified.

18.2.2 Each laboratory analyst will ascertain if the analytical data are within prescribed control limits before the data is entered into the Laboratory Information Management System (LIMS). Data is then reviewed for quality assessment.

18.2.3 100% of all final analytical data will be cross-checked before the results are forwarded by the laboratory to the TEAD EO.

18.4 Data Validation Package Level shall be submitted by the laboratory based on the project specific plan i.e., risk assessment requires a Level IV validation package.

18.3 Laboratory Quality Control Procedures

18.3.1 The laboratory internal quality control procedures shall be in accordance with EPA guidelines. Internal quality control procedures include the use of duplicate analyses, spikes, calibration standards, internal standard, blanks, quality control charts, standard reference materials,

reagent checks, and sample splits. Laboratories must be Utah-certified for all parameters being reported.

19.0 Internal Quality Control Procedures

19.1 Field quality control samples will be submitted to the laboratory as appropriate and as often as practical during field investigations. Such quality control check samples may consist of:

1. One or more “blind” duplicate samples;
2. One or more field blanks;
3. One or more duplicate samples, or
4. “Spiked” samples prepared with known amounts of constituents or standard reference samples.

19.2 TEAD EO will determine sampling source(s), parameters to be audited and the appropriate field quality control samples in accordance with the project plan. Field quality control samples will be collected or prepared in accordance Section 6.0 of this QAPP.

19.3 Quality control samples, as identified above, may be collected or prepared for each sample event. The TEAD EO will determine the number and type of quality control samples to be collected prior to going to the field. The quality control samples will be handled in the same manner as all other samples being analyzed for the same parameter. Sample identification labeling will be consistent with the identification of actual samples. Project records concerning quality control check samples and results of their analyses will be maintained by the TEAD EO.

20.0 Preventive Maintenance

20.1 The TEAD EO will assess field equipment for proper operation and maintenance prior to use. Records of preventive maintenance performed will be maintained in a logbook with the equipment.

20.2 All contractors working for the TEAD will be responsible for preventative maintenance of their equipment.

20.3 Preventive maintenance procedures for laboratory equipment are the responsibility of the laboratory.

21.0 Data Assessment Procedures

21.1 Data quality will be evaluated using the accuracy, precision, representativeness and completeness criteria spelled out in Section 2.0 of this QAPP. The TEAD EO will evaluate field quality control sample results and analytical results submitted by to determine if goals were achieved.

21.2 If the quality control samples meet the TEAD criteria, the reported data will be accepted. If not, the laboratory will be consulted to determine what laboratory quality control/quality assurance samples were included with the sample batch. These samples will be included with the field set and reevaluated. If the combined set meets the acceptance criteria, the reported

data may be accepted. If not, the data from analyzing the sample set may be used as a basis for a data corrective action referral.

22.0 Corrective Action Procedures

22.1 If a quality control audit results in detection of unacceptable conditions or data, as defined by the criteria presented above, the TEAD EO will be responsible for developing and initiating corrective action. Corrective action may include:

1. Re-analysis of the sample batch.
2. Re-sampling and analysis.
3. Evaluation and amendment of sampling and analytical procedures.
4. Acceptance of data, with an acknowledgement of the level of uncertainty surrounding the analytical results.

References

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- A Guide for Field Samplers, current version, EPA Region VIII
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- Contract Laboratory Program Guidance for Field Samplers (EPA-540-R-09-03, January 2011)
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic
Methods Data Review, (EPA-540-R-08-01, June 2008)
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,
OSWER 9240.1-45, (EPA 540-R-04-004, October 2004)
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- Guide to Environmental Analytical Methods, 5th edition, Genium Publishing Corporation, March
2003.
- QA/QC Data Validation for Organics, EPA
- QA/QC Data Validation for Inorganic, EPA
- Standard Methods for the Examination of Water and Wastewater, 22th Edition, 2013, American
Public Health Association, American Water Works Association, Water Environment Federation
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- United States Environmental Protection Agency, 2002. USEPA Contract Laboratory Program
National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008. Washington, D.C.
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Acronyms

CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
COC	Chain of Custody
DQO	Data Quality Objective
DWMRC	Division of Waste Management and Radiation Control
EO	TEAD Environmental Office
EPA	Environmental Protection Agency
HSWA	Hazardous and Solid Waste Amendments
LCS	Laboratory Control Spike
LIMS	Laboratory Information Management System
MS/MSD	Matrix Spike/Matrix Spike Duplicate
OSHA	Occupational, Safety, Health Administration
QA	Quality Assurance
QC	Quality Control
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Program Plan
RCRA	Resource Conservation and Recovery Act
% R	Percent Recovery
% RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan
TEAD	Tooele Army Depot
UAC	Utah Annotated Code
UDEQ	Utah Department of Environmental Quality
WAP	Waste Analysis Plan

Appendix 1

Sampling and Chain-Of-Custody Procedures

The following are the procedures and protocols for management of sample integrity.

Pre-Sampling Procedures

Safety Protection Protocols

The TEAD EO will evaluate the personnel protection and safety equipment to be used.

Containers and Forms

Once the number, types of samples and parameters to be analyzed are determined, the laboratory will be contacted to insure that capabilities are available to complete the required analyses within the appropriate holding times. The TEAD EO will insure that the necessary supplies and forms are available, including:

1. Appropriate number and type of sample containers with preservative (if necessary).
Sample containers will be prepared in accordance with the method requirements.
2. Sample analysis request forms.
3. Sample tracking or chain-of-custody forms and seals, if applicable.
4. Sample labels, if applicable.
5. Trip blanks, if applicable.
6. Ice chests and ice packs, if applicable.

It is recommended that extra containers and sample request forms be taken to the sampling site. This will insure that the sampling will still be accomplished if breakage occurs or conditions dictate that more samples need to be taken.

Sampling Equipment Provision

Examples of appropriate sampling equipment are contained in Table 1 below.

Table 1
Sampling Equipment

Sampling Point →	Drum	Sacks & Bags	Open Bed Truck	Closed Bed Truck	Storage Tanks or Bins	Waste Piles	Ponds, Lagoons, and pits	Conveyor Belt	Pipe
Waste Type ↓									
Free flowing liquids and slurries	Coliwasa	N/A	N/A	Coliwasa	Weighted bottle	N/A	Dipper	N/A	Dipper
Sludges	Trier (Spoon)	Trier (Spoon)	Trier (Spoon)	Trier	Trier	N/A		N/A	N/A
Moist Powders or Granules	Trier (Spoon)	Trier (Spoon)	Trier (Spoon)	Trier	Trier	Trier	Trier (Bucket*)	Shovel	

Sampling Point →	Drum	Sacks & Bags	Open Bed Truck	Closed Bed Truck	Storage Tanks or Bins	Waste Piles	Ponds, Lagoons, and pits	Conveyor Belt	Pipe
Waste Type ↓									
Dry Powders or Granules	Trier (Spoon)	Trier (Spoon)	Trier	Trier	Trier	Trier (spoon)	Trier (Bucket*)	Shovel	
Sand or packed powders and granules	Auger (Spoon)	Auger (Spoon)	Auger (Spoon)	Auger				N/A	
Large grained solids	Large Trier spoon	Large Trier spoon	Large Trier spoon	Large Trier	Large Trier	Large Trier	Large Trier	Large Trier	Large Trier

Decontamination Supplies

The TEAD EO will specify decontamination procedures and supplies or will use disposable equipment. Containers for the disposal of waste generated as a result of the sampling will also be supplied.

Chain-of-Custody Procedures

Each person involved in the collection and the handling of samples will know chain-of-custody procedures. Samples collected may be introduced as documentation or evidence into legal proceedings. Chain-of-custody sample integrity will need to be maintained and the possession of samples be traceable from the time samples are collected until results are obtained from the lab. Chain-of-custody starts when the sampling team accepts the sampling containers. Sampling containers should be kept in a secure manner or in the sampler’s possession at all times. The TEAD EO is responsible for coordinating the chain-of-custody.

Sample Tracking Procedures

When chain-of-custody is not required, the TEAD EO will follow a sample tracking procedure. At a minimum, this procedure will include:

1. Sample Identification (e.g., sample number)
2. Sample description (e.g., location and depth, if applicable)
3. Sample date and time
4. Sample matrix (e.g., air, water etc.)
5. Samplers Name
6. Analytes, requested methods, and special instructions if needed
7. Contact information

Sample Seals

The following procedures apply to sample seals if chain-of-custody is required:

1. The sample seals are to be completed for each sample or the entire ice chest and include the Sample Number, date and collector's signature.
2. A sample seal will be placed over the top or around the "neck" of each sample container used. The seal should be around or over the lid of the container. The seal ensures the integrity of the sample. The laboratory analyst will break the seal before analyzing the material collected.
3. The sample seals do not have to be used on each sample container if the samples remain in the custody of the sampler and are delivered directly to the laboratory by the sampler. One seal can be used to seal the ice chest for the trip to the laboratory. The seal should not be broken until the laboratory representative, qualified to accept chain-of-custody samples, arrives.

Sample Tracking Forms

When samples are collected, the appropriate sample tracking forms will need to be completed. The sample tracking forms may be obtained from the TEAD EO.

Sample Identification

Sample tracking is performed for every sample collected. The method of identification of a sample depends on the type of measurement or analysis performed. When on-site measurements are made, the data are recorded directly in field logbooks, with identifying information. Samples are identified with a unique sample label. Field analyses, such as pH, are documented in a field logbook. The information on the sample label includes, as applicable:

1. Field identifier
2. Date
3. Time
4. Sample location
5. Sampler
6. Type of sample
7. Preservatives
8. Methods

Cleaning of Equipment

At each specific sampling point, the team should:

1. Use new or cleaned equipment.
2. Clean the sample equipment either in the field or laboratory, prior to use or re-use. This may be verified by the use of "rinsate blanks." These will be collected at a minimum rate of one blank per 20 samples. The sampling team should check with the TEAD EO prior to sampling to determine an acceptable method of "field cleaning" for the equipment to be used. Single use disposable equipment does not need to be cleaned prior to use.

Transporting Samples

The samples shall be transported either by sample personnel or by a commercial carrier with tracking ability, e.g., UPS, FEDEX.

Completion of the Sampling Event

The following are items to consider prior to leaving the sampling location:

1. Verify the number of samples taken.
2. Match the physical samples with the paper work. The team should check for proper samples in the correct containers and that the field sample numbers on the samples correspond with the numbers on the sample request form.
3. Verify the samples are properly preserved.
4. Clean and package all non-disposable equipment.
5. Verify time/date on sample tag, request forms.
6. Bag all disposable items that need to be discarded.
7. Ensure that all sample containers are free of any debris or residue on the outside of the container.

Completion of Laboratory Analysis

Upon completion of the sample analyses, the laboratory will submit the results to the TEAD EO for review.

The laboratory will retain the sample records according for a minimum of 5 years.

After sample results are accepted, the remaining sample(s) will either be disposed by the laboratory or given back to the sample team for final disposition.

Appendix 2

Sample Container Types/Volumes, Preservation and Holding Time Requirements

Analysis	Soil Sample Container	Water Sample Container	Holding Time	Preservative	Sample Handling
Metals	Wide-mouth glass jar with Teflon-lined lid or 1 kilogram capacity laboratory sample bag	500 mL Plastic	Analyze within 6 months, Mercury analyze within 28 days	none (soil) HNO ₃ to a pH<2 (water)	cool to 4° C (ice)
Energetics	Wide-mouth glass jar with Teflon-lined lid or 1 kilogram capacity laboratory sample bag	1 Liter amber glass	Extract 7 days (water) 14 days (soil); Analyze within	none	≤6° C (ice)
Dioxin/ Furans	Wide-mouth amber glass jar with Teflon-lined lid or 1 kilogram capacity laboratory sample bag	4 Liter amber glass jar with Teflon-lined lid	Extract 30 days; Analyze within 45 days	none	≤6° C (ice)
Perchlorate	Wide-mouth amber glass jar with Teflon-lined lid or 1 kilogram capacity laboratory sample bag	500 mL Plastic	28 days to analysis	none	cool to 4° C (ice)