

**TOOELE CHEMICAL AGENT DISPOSAL FACILITY
(TOCDF)**

ATTACHMENT 22 A

**ATLIC
AGENT MONITORING PLAN**

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APPROVALS:



For Jim Rorie
Originator



Chris Scurlock
Checker



Robert Comstock
Approver



David deLesdernier
Manager

DATE

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REFERENCES

Drawings of Air Monitoring Locations:

EG-22A-G-1000, Sheet 1 thru 6 Title: Instrument Locations Plans-General Arrangement-
MINICAMS/ACAMS/DAAMS
ACAMS/DAAMS Heated Sample Line Assembly Drawing

Probe Assembly Drawings:

EG-22A-I-1002 1 Interior Sample Probe Assy, GA DAAMS only or ACAMS only
 EG-22A-I-1003 1 Interior Sample Probe Assy, Lewisite DAAMS only
 EG-22A-I-1004 1 Interior Sample Probe Assy, ACAMS w/ DAAMS
 EG-22A-I-1005 1 Interior Sample Probe Assy, ACAMS W/Stream Selector (Glove Box)
 EG-22A-I-1006 1 Interior Sample Probe Assy, MINICAMS W/Stream Selector (Glove Box)
 EG-22A-I-1007 1 Interior Sample Probe Assy, MINICAMS Only
 EG-22A-I-1008 1 Interior Sample Probe Assy, MINICAMS (Exhaust Stack)
 EG-22A-I-1009 1 Exterior Sample Probe Assy, MINICAMS (Filter Stack)
 EG-22A-I-1010 1 Exterior Sample Probe Assy, ACAMS/DAAMS (Filter Stack)
 EG-22A-I-1011 1 Exterior Sample Probe Assy, ACAMS/ w/Stream Selector, (Filter Bank)
 EG-22A-I-1012 1 Exterior Sample Probe Assy, Dual DAAMS (Filter Bank)
 EG-22A-I-1013 4 IGLOO Monitoring Room Sample Probe Assemblies
 EG-22A-I-1014 1 Interior Sample Probe Assy, Dual MINICAMS Only
 EG-22A-I-1015 1 Exterior Sample Probe Assy, MINICAMS/DAAMS/Stream Selector (Filter Bank)
 EG-22A-I-1016 1 Exterior Sample Probe Assy, Dual MINICAMS (Filter Stack)
 EG-22A-I-1017 1 Interior Sample Probe Assy. ACAMS only
 EG-22A-I-1018 1 Interior Sample Probe Assy. MINICAMS only

Exhaust Stack Penetration Drawings:

EG-22A-S-1036, Sheet 1 thru 5, Exhaust Stack Penetrations

APPENDICES

A ATLIC AGENT MONITORING PLAN DETAIL

LIST OF ACRONYMS AND TERMINOLOGY

Acronyms

ACAMS	Automatic Continuous Air Monitoring System
AEL	Airborne Exposure Limit
AL	Alarm Level
A/L	Airlock
AMP	Agent Monitoring Plan
ATLIC	Area 10 Liquid Incinerator
AWFCO	Automatic Waste Feed Cutoff
CAMDS	Chemical Agent Munitions Disposal System
CDC	Centers for Disease Control and Prevention, Dept of Health and Human Services
CDRL	Contract Data Requirements List
CFR`	Code of Federal Regulations
CMA	Chemical Materials Activity
CON	Control Room
COR	Corridor
CPA	Conversion Pad Assembly
CWM	Chemical Warfare material
DAAMS	Depot Area Air Monitoring System
DCD	Deseret Chemical Depot
DPE	Demilitarization Protective Ensemble
ECL	Engineering Control Level
GA	Nerve Agent GA, Tabun
GC/FPD	Gas Chromatograph / Flame Photometric Detector
GC/MSD	Gas Chromatograph / Mass Spectrometer Detector
GFP	Government Furnished Property
GPL	General Population Limit
HIST	Historical
HVAC	Heating, Ventilation, and Air Conditioning
IDLH	Immediately Dangerous to Life or Health
L	Lewisite
LCO	Limiting Condition of Operation
LOP	Laboratory Operating Procedure
LMQAP	Laboratory and Monitoring Quality Assurance Plan
LQCP	Laboratory Quality Control Plan, TOCDF Site Plan
LVS	Low-Volume Sampler
MCP	Monitoring Concept Plan
MINICAMS®	Miniature Continuous Air Monitoring System
MSB	Monitor Support Building
MSD`	Mass Spectroscopy Detection
NRT	Near Real-Time
OBS	Observation Corridor
ORR	Operational Readiness Review
P&A	Precision and Accuracy
PAS	Pollution Abatement System
PPE	Personnel Protective Equipment
QA	Quality Assurance
QC	Quality Control
QM	Quality Management

QP Field Quality Control Samples
RCRA Resource Conservation and Recovery Act
RDTE..... Research Development Test and Evaluation
RL Reporting Limit
RTAP..... Real Time Analytical Platform
SAF..... Site Analytical Facility
SEL..... Source Emission Limit
SOP..... Standard Operating Procedure
SPS Secondary Power (Distribution) System
STEL..... Short-Term Exposure Limit
TOCDF..... Tooele Chemical Agent Disposal Facility
UPS..... Uninterruptible Power Supply
VOC..... Volatile Organic Compound
VSL..... Vapor Screening Limit
WAP Waste Analysis Plan
WPL..... Worker Population Limit
Z..... A generic designation of an applicable monitoring level such as STEL, WPL, VSL, GPL or SEL.

Terminology

Action Level - A pre-determined set point that triggers a specified action.

AEL: Airborne exposure limit is the allowable concentration in the air for workplace and general population exposures. AELs include worker population limits (WPLs), short-term exposure limits (STELs), Vapor Screening Limit (VSL), immediately dangerous to life or health values (IDLHs), and general population limits (GPLs).

Alarm Level (AL): Alarm Level at which the ACAMS or MINICAMS (Near-Real Time) monitor will alarm to alert personnel of a potential upset conditions. All sampling and analytical monitors must, at a minimum, measure within $\pm 25\%$ of the true concentration 95% of the time. Alarm levels are defined in Attachment 22A, Appendix A.

Baseline (Initial): Before each individual agent campaign the monitoring system is operated in the configuration in which it will be used during the campaign. This is known as baseline operations. The purpose for the baseline is to provide evidence that the whole system will perform within required tolerances and requirements, and to document the configuration of the system at the time of the baseline. Once a system is baselined, the method parameters must be placed under configuration control based on the precision and accuracy study, at the start of the initial baseline study.

Category A Area: The toxic processing area supported by the cascade ventilation system designated for probable liquid and vapor agent contamination (for example, TOX area, LIC room).

Category B Area: The toxic processing area supported by the cascade ventilation system designated for possible vapor agent contamination only.

Category C Area: The nontoxic work area adjacent to Category A or B areas that are supported by the cascade ventilation system designated for possible low-level vapor agent contamination (for example, observation corridors).

Category D Area: The nontoxic work area designation for areas considered uncontaminated.

Category E Area: The area designated for a positive pressure, filtered air environment (for example, Control Room).

Distal End: Location where the air sample enters into the sampling system.

ECL: Engineering Control Level (ECL) is used to indicate that the sensitivity of the ACAMS or MINICAMS at this location has been changed to provide representative readings in agent contaminated areas that are higher than the VSL and lower than IDLH monitoring.

Engineering Control or Under Engineering Control: When the environment in a room or area is under negative atmospheric pressure and the evacuated air is processed to remove contamination, the area or room is considered to be “under engineering control.” An example is a munitions processing room that is expected to be contaminated with agent. The room is maintained under negative pressure to prevent agent leakage out of the room. The air that is evacuated from the room is filtered through carbon to remove the agent.

GA: Nerve agent GA (Tabun).

GPL: General Population Limit: The allowable time-weighted average concentration for the general population that represents the maximum concentration to which the general population may be exposed 24 hours per day, 7 days a week, for a 70-year lifetime. The limit applies to the entire population, including all ages and medical conditions. For G-agents, the GPL is 1×10^{-6} mg/m³ as a 24 hour TWA. For L, the GPL is 3×10^{-3} mg/m³ as a 72 hour TWA.

IDLH: Immediately Dangerous to Life or Health (IDLH): The maximum concentration from which, in the event of a respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape impairing (for example, severe eye irritation) or irreversible health effects. IDLH levels are 0.1mg/m³ for G-agents. For L, 0.36 mg/m³.

Interferent: An interferent is a chemical compound that will cause an Automatic Continuous Air Monitoring System (ACAMS), Miniature Continuous Air Monitoring System (MINICAMS), and Depot Area Air Monitoring System (DAAMS) to false alarm or malfunction in such a way that they could not detect agent. There are some interferents that mask agent so it is not detectable, including some paints, lubricants, and even some foods. The DAAMS analysis is better at discriminating between agent and an interferent than the ACAMS and/or MINICAMS. For this reason, DAAMS are paired with ACAMS and/or MINICAMS at many locations for the purpose of confirming or denying alarms.

L: Lewisite, or (chlorovinyl dichloroarsine).

Neat Agent: Neat agent is agent that has not been diluted since manufacture or preparation. It may not be “pure” but it is as manufactured. Once it is diluted, it is no longer considered neat.

QP: Quality Plant sample: The quantitative result obtained from challenging an ACAMS/MINICAMS/DAAMS or sample line with a solution prepared at a known concentration.

RDTE Dilute Solutions: RDTE Dilute Solutions are solutions of chemical agent in concentrations and quantities reduced by admixture (dilution) to levels that can be handled with the same precautions associated with hazardous industrial chemicals (acids, bases, or solvents), and are defined by the agent concentration and by the quantity in a single container. They are defined by the agent concentration and by the quantity in a single container. They are as follows:

<u>Agent</u>	<u>Maximum Total Quantity</u>	<u>Maximum Concentration</u>
G-agents	20.0 mg	2.0 mg/ml
Lewisite	50.0 mg	5.0 mg/ml

STEL: Short Term Exposure Limit is the maximum concentration to which unprotected chemical workers may be exposed to for up to 15 minutes continuously. For G-agents, the STEL is 1 x 10⁻⁴ mg/m³ four times daily. For L, the STEL is 3 x 10⁻³ mg/m³, one time daily.

STEL Concentration: A concentration equivalent to the STEL value but without time weighting (i.e., a one-cycle reading of a Near-Real Time monitor).

VSL: Vapor Screening Limit. A vapor concentration term that is independent of time. It may be used to define the level to which an item is monitored to determine the agent contamination level, or alternately, the readout of an NRT monitor. For G-agents, the VSL is 1 x 10⁻⁴ mg/m³. For L, the VSL is 3 x 10⁻³ mg/m³.

WPL: Worker Population Limits. The average allowable concentration that an unmasked worker could be exposed to for an 8 to 12 hour workday 40 hours per week for 30 years without adverse effects. The WPL for GA/L has been adjusted to reflect a 12-hour work shift. The 12-hour WPL for G-agents is 2 x 10⁻⁵ mg/m³, and L is 3 x 10⁻³ mg/m³.

Z: A generic designation of an applicable monitoring level such as STEL, WPL, VSL, GPL or SEL.

AGENT MONITORING PLAN

22A.1 INTRODUCTION

22A.1.1 The ATLIC will use a Liquid Incinerator system (LIC) that disposes chemical agents GA, Lewisite and Spent Decontamination Solution (SDS) through high-temperature incineration. Unlike TOCDF, it is not expected to use a dilution control device for analysis of the exhaust gas, as the gas will be cooled to 40°F after leaving the scrubber to remove moisture, and then reheated to approximately 200°F. Filter bank monitoring will be performed by sequencing Near Real Time Monitors (NRT) through the Mid-bed One position. DAAMS monitoring will be performed at the Mid-bed One and Two positions. For GA monitoring, ACAMS will be used with co-located DAAMS for confirmation and historical analyses where called for. Two silver fluoride pads or V to G pads will be placed in the sample stream for GA ACAMS and DAAMS to cause a reaction that result in a species with a narrower chromatographic peak. For Lewisite, MINICAMS will be used with co-located DAAMS for confirmation and historical analysis. A supply of 1, 2-ethanedithiol (EDT) will be used for Lewisite monitoring with the MINICAMS. The EDT will be introduced to the distal end of the sample line to react with the Lewisite to form a derivative that is more stable and transportable.

22A.2 POLICY/GOALS OF MONITORING OPERATIONS

22A.2.1 Purpose

22A.2.1.1 This Monitoring Plan contains monitoring requirements for GA and Lewisite, bulk processing, and provides identification of monitoring devices and sampling locations. The monitors are used to provide agent detection and measurement to aid in providing worker and general population protection, and to indicate ATLIC operations are in control. ACAMS will be used to monitor for GA agent and MINICAMS will be used to monitor for L.

This plan reflects the monitoring for each processing area when it is being used for agent work. When agent work in a given area is suspended, the monitoring for that area may be suspended as stated in Paragraphs 22A.9, 22A.17.3, 22A.17.5, 22A.20 or 22A.21.

22A.2.1.2 The primary purpose of Monitoring is to have near real-time and historical analytical data to limit/prevent and document exposure of personnel to chemical warfare agents and protect the environment from the introduction of agents. Agent monitoring is also performed for process control purposes to identify upset conditions in the processes and to measure agent concentrations in toxic areas which allow management to make decisions on protective clothing requirements for entries into toxic areas.

22A.2.2 Perimeter Monitoring

22A.2.2.1 Monitoring of the perimeter of the Deseret Chemical Depot (DCD) is conducted by Deseret Chemical Depot (DCD) personnel and analyzed at the SAF/GAL. Perimeter monitoring provides evidence and documents whether there is any chemical agent migration outside of DCD.

22A.2.3 ATLIC Station Numbering and Locations

22A.2.3.1 This Monitoring Plan provides a table of locations and station numbers (Appendix A) for agent monitors associated with ATLIC.

22A.2.4 Summarized Requirements

22A.2.4.1 Monitoring Operations monitors for GA and Lewisite bulk containers, processing and secondary waste. There are three configurations that monitor for GA employed at ATLIC:

ACAMS only, ACAMS with co-located DAAMS, and DAAMS only. ACAMS -only stations primarily are used in toxic areas to provide information to management for protective clothing determination for entries into toxic areas. ACAMS with co-located DAAMS serve two purposes: 1) the ACAMS is the primary monitor, which quantifies the amount of agent present. Concurrently, ACAMS provide an early warning system to facility personnel of a potential agent release at or above the alarm set points in Attachment 22A, Appendix A. The co-located DAAMS are used to confirm or deny the presence of agent. 2) DAAMS tubes are also analyzed from these stations on a monthly rotational basis to monitor areas at the WPL. Responses to ACAMS alarms are IAW Section 22A.32.

- 22A.2.4.2 There are three configurations that monitor for L employed at the ATLIC: MINICAMS only; MINICAMS with co-located DAAMS, and DAAMS only. MINICAMS -only stations primarily are used in toxic areas to provide information to management for protective clothing determination for entries into toxic areas. MINICAMS with co-located DAAMS serve two purposes: 1) the MINICAMS is the primary monitor, which quantifies the amount of agent present. Concurrently, MINICAMS provide an early warning system to facility personnel of a potential agent release at or above the alarm set points in Attachment 22A, Appendix A. The co-located DAAMS are used to confirm or deny the presence of agent. 2) the DAAMS only stations are analyzed on either a daily or monthly rotational basis to monitor areas at the WPL. Responses to MINICAMS alarms are IAW Section 22A.32.
- 22A.2.4.3 DAAMS-only stations for GA and L are used for historical purposes to monitor areas at the WPL. The DAAMS historical tubes are not connected to an alarm. Historical DAAMS are located in areas not expecting to have agent.

22A.3 RESPONSIBILITIES

- 22A.3.1 The Monitoring group supports the ATLIC by operating and maintaining monitoring equipment and routinely collecting liquid and solid samples in and around the ATLIC. Monitoring personnel may designate the sampling duties to a trained sample technician. The Monitoring Department utilizes a variety of monitoring equipment. Much of the equipment is Government Furnished Property (GFP), which is augmented by equipment, and supplies that are obtained from commercial vendors. Liquid and solid samples will be delivered to the Chemical Assessment Laboratory (CAL) or Site Analytical Facility (SAF) SAF for analysis. The analytical department personnel are responsible for performing the analysis or transferring the samples requiring analysis to a Utah certified subcontractor laboratory. Laboratory Quality Control personnel are responsible for inspecting and auditing all Laboratory (analytical and monitoring) operations.

22A.4 COORDINATION

There are several levels of coordination performed by the Monitoring Department. Other than normal working relationships within the ATLIC and at the CAL or SAF, there are three supervisory levels.

22A.4.1 Monitoring Manager

- 22A.4.1.1 The Monitoring Manager coordinates additions or deletions to the workload such as new sampling or monitoring requirements. S/he will be the control point for any changes in monitoring or sampling parameters such as changes of sampling times or sample flows.

22A.4.2 Monitoring Operations Supervisor

- 22A.4.2.1 The Monitoring Operations Supervisor works directly for the Monitoring Manager and coordinates the work load with the Team Leaders of all shifts. The supervisor will coordinate the timing of special monitoring and sampling operations with the Operations Supervisor and Facility Shift Manager.

22A.4.3 Monitoring Team Leader

22A.4.3.1 The Monitoring Team Leader for each shift will coordinate the timing of routine monitoring and sampling operations with the Control Center personnel. This coordination is specified in the applicable Laboratory Operating Procedures (LOP's). The Team Leader or designated certified monitoring technician and at least one team member will respond to all ACAMS and/or MINICAMS alarms in accordance with approved monitoring procedures and will be in direct contact with the Control Center.

22A.5 OBJECTIVES OF THE MONITORING PLAN

22A.5.1 The Monitoring Plan provides identification of monitoring devices and sampling locations. The monitors are used to provide agent detection and measurements to aid in providing worker and general protection, and to indicate facility operations are in control.

22A.6 AGENT MONITORING ACTIVITIES

22A.6.1 Monitoring activities are structured to support toxic operations. Maintenance and QC activities for ACAMS and/or MINICAMS are scheduled during times that do not interfere with operations. This is done by obtaining permission from the Control Center before any monitor or sampling device is taken out of service. The DAAMS for GA and L are used for the collection of samples of agent for confirmation of ACAMS for GA and MINICAMS for L alarms. DAAMS are the primary monitoring in areas not monitored with ACAMS or MINICAMS. The monitors listed in the Appendices must be operational when performing the operations they support except when off-line for challenging and corrective actions, as documented in approved procedures or if monitoring has been suspended in accordance with this plan.

22A.7 ATLIC MONITORING ACTIVITIES

22A.7.1 In the demilitarization area, hazard category classifications and personnel occupancy are the factors used to determine monitoring activities. When monitoring is conducted for personnel protection or to assess potential personnel exposure it must be sufficient to identify, verify, and quantify the agent. VSL and WPL monitoring is performed in areas where workers may have a potential exposure to chemical warfare agent. Selected "C" hazard category areas of the facility have WPL monitoring conducted on a daily basis for all work areas where chemical agent is present without secondary vapor containment and workers are not required to wear respirator protection, while other "C" hazard category areas have WPL monitoring conducted on a monthly basis in accordance with this plan.

22A.8 CATEGORIES OF ATLIC AREAS

22A.8.1 Toxic and Process Areas

22A.8.1.1 These areas are potentially contaminated as a result of the presence of uncontained liquid agent or agent vapor. This area is monitored using an ACAMS and/or MINICAMS. The agent concentrations determine the Personnel Protective Equipment (PPE) that is required for personnel entry. At times, the monitoring may be enhanced to allow the PPE for specific toxic areas to be reduced to enhance worker mobility. This requires Safety Manager/Designee or Temporary Change approval. This could include changing the ACAMS and/or MINICAMS to a more sensitive detection level or adding DAAMS in order to confirm or deny an ACAMS or MINICAMS alarm. Toxic Area ACAMS and/or MINICAMS are used to quantify potential exposure of personnel.

22A.8.2 Toxic Process Area Airlocks

22A.8.2.1 Airlocks serve as access/egress points between contaminated areas and clean work areas. To

limit the transfer of agent from "toxic" areas to "work areas", under normal conditions, items and personnel are cleared through an airlock. Procedures govern egress through airlocks to prevent items or personnel from exiting toxic areas until they have been monitored by an ACAMS and/or MINICAMS. Agent readings must be less than the level set by egress procedures to clear items and personnel from the airlock.

22A.8.3 Outside of Toxic Process Areas

22A.8.3.1 The Processing Bay is an area where agent vapor is not normally expected, but a potential exists for low-level vapor contamination. This area is considered as "under engineering control" and is monitored at the VSL and WPL level daily.

22A.8.3.2 The Observation corridor is considered to be "under engineering controls" and is monitored at the VSL daily and at the WPL level at least monthly.

22A.8.4 Work Areas

22A.8.4.1 At the ATLIC, there are many work areas where toxic operations are not conducted. These areas are not "under engineering control" and have little or no potential for vapor contamination. These areas are not monitored for agent. Examples of work areas include the Generator Room, Central Decon Room, and Acid Feed supply building.

22A.8.5 ATLIC Support Areas

22A.8.5.1 The Control Center and Entry Support areas require WPL monitoring. This is a safety requirement to verify that workers have not carried contamination into these areas.

22A.9 FILTER MONITORING

22A.9.1 Multiple Bank Carbon Filter units provide negative pressure ventilation for potentially contaminated areas throughout the enclosure. A description of the ATLIC ventilation carbon filters is located in Attachment 5 (Inspection Plan). Filter monitoring is performed at the VSL and WPL levels in order to detect evidence of filter degradation in order to allow changing of the filter media before there is a possibility of an agent leak to the atmosphere.

22A.9.1.1 The ATLIC filter stack shall be monitored with ACAMS and/or MINICAMS and DAAMS for any agents being processed in the furnace. Additionally, on the Filter stack, only DAAMS tubes shall be required to monitor for agents from past campaigns, if the contaminated charcoal has been removed after the completion date of the campaign. If the first two filters are not changed out after an agent campaign, then the Filter stack shall be monitored with ACAMS and MINICAMS and DAAMS for agents from these past campaigns. Filter stack DAAMS samples, shall be collected and analyzed every 12 hours. In addition, Filter Stack DAAMS tubes shall be collected and analyzed if an associated ACAMS and/or MINICAMS go into an alarm.

22A.9.1.2 The ATLIC filter mid-bed locations shall be monitored continuously with DAAMS for any agents being processed (filter online or offline). Filter mid-bed locations will be monitored using single point sampling. Sample stream switches shall be used to cycle an ACAMS and/or MINICAMS around the three filters at the mid-bed 1 position (between the first and second beds), for any agents being processed (filter online or offline). Locations of the mid-bed ACAMS and/or MINICAMS and DAAMS tubes are specified in Attachment 22A, Appendix A. DAAMS tubes monitoring the mid-bed shall be analyzed daily and if the mid-bed or filter stack ACAMS and/or MINICAMS goes into alarm.

22A.10 SAMPLING PARAMETERS

22A.10.1 The operational control limits for sampling parameters such as sample flow rate and duration of sample time are under configuration control and documented in precision and accuracy studies before "Base Line" monitoring is performed and can only be changed by the Monitoring Manager following approved procedures.

22A.11 DATA HANDLING

22A.11.1 Monitoring parameters, such as flow rates and sample collection start and end times are recorded and accompany the sample to the laboratory. Comments pertaining to equipment malfunction (such as failure to sequence) are currently recorded in logbooks at each station. Sample problems are also annotated with pertinent information. This information is used to identify the need for corrective action to prevent recurring deficiencies. The corrective action may consist of such things as additional training or changing the types of preventive maintenance for particular types of equipment. All raw data from ACAMS and MINICAMS, including calibrations and challenges, (except as noted in the Table in Appendix A) are gathered on the Facility Control System in the Control Center and maintained in a database. The ACAMS and MINICAMS strip-chart is used to evaluate agent concentration and alarm cycle time.

22A.12 QUALITY CONTROL

22A.12.1 ATLIC QM (Quality Management) Program

22A.12.1.1 Confidence in sampling methods that characterize actual ambient concentrations of agent in a given matrix is of utmost importance. An extensive QA Program is required to ensure the quality of monitoring data is adequate for its intended use. TOCDF Laboratory Quality Control Plan (LQCP) will be incorporated for the ATLIC. The TOCDF Laboratory Quality Control Plan (LQCP) and the ATLIC Agent Monitoring Plan (AMP) were prepared in accordance with the requirements of the LMQAP and MCP. The TOCDF LQCP and ATLIC AMP (Attachment 22A) must be at least as stringent as the programmatic guidance.

22A.12.2 Failure To Monitor

- 22A.12.2.1 All of the monitoring identified in this plan must be operating and in control during processing in a given area or it will be considered a "Missed Monitoring" and will be reported as such. The following are exceptions:
- 22A.12.2.2 During campaign changeover transition periods when monitors are being changed to a new agent campaign.
- 22A.12.2.3 When a Temporary Change has been approved (see Paragraph 22A.16.3).
- 22A.12.2.4 If the ACAMS or MINICAMS is offline for more than one and a half hours, the DAAMS becomes the primary monitor and therefore must be analyzed. exhaust stack.
- 22A.12.2.5 If mitigating measures have been taken to secure an area and processing has ceased, then monitoring at that station will not be considered a "missed monitoring." This does not apply to the exhaust stack.

22A.13 NOTIFICATION PROCEDURES

22A.13.1 The Facility Control System in the Control Center collects data from each ACAMS and MINICAMS and stores the readings in a temporary computer file. A computer in the

Control Center uses this file to access agent readings from each ACAMS and MINICAMS. The ACAMS and MINICAMS shall alarm at each location when detected agent concentrations meet or exceed the alarm set points. ACAMS and MINICAMS that monitor toxic areas under engineering control may not have a local alarm. (See Section 22A.26) This is because the ACAMS and MINICAMS would be constantly in alarm.

22A.13.2 In the event of an ACAMS or MINICAMS alarming at or above the alarm level, outside of engineering controls, the Control Center will notify the Monitoring Team Leader or designee. The Team Leader or designated certified monitoring technician along with one other Monitoring person will respond by going to the location of the ACAMS or MINICAMS that is in alarm. Monitoring personnel evaluate alarms by observing the chromatogram and troubleshooting for malfunctions, verifying the alarm level set point, challenging an ACAMS or MINICAMS with an agent standard to ensure that it is operating correctly, and collecting the associated DAAMS tubes for analysis. The Alarm Response Requirements are specified in Section 22A.32. If the alarm is confirmed by DAAMS, appropriate corrective measures are taken as specified in Attachment 3, (LQCP). When it is believed that the area has been decontaminated/cleaned, the area monitor will determine if the corrective measure was adequate. If results are less than the alarm level set point, normal operations may commence.

22A.13.3 All ACAMS and/or MINICAMS alarms for GA and L, which have co-located DAAMS, require analysis of the DAAMS tube(s). The analytical results of the DAAMS tubes, pulled due to an ACAMS and/or MINICAMS alarm, shall be reported to the Control Center. The Laboratory will maintain the official record of all DAAMS results.

22A.14 CONTROL LIMITS FOR ACAMS

22A.14.1 All ACAMS and MINICAMS that monitor the exhaust stack shall be challenged every 4 hours plus or minus 30 minutes in accordance with TE-LOP-524. The ACAMS and MINICAMS challenge results are collected electronically for all ACAMS and MINICAMS connected to Facility Control System. The data for the ACAMS and MINICAMS not connected to the Facility Control System are recorded manually and then archived. These data are used to assess the performance of individual units and the performance of the overall monitoring system. The LQCP details the pass/fail criteria. The performance of the ACAMS or MINICAMS is tracked daily and any ACAMS or MINICAMS that falls into the fail category is corrected or replaced.

22A.15 MONITOR/MONITORING LOCATIONS

22A.15.1 The monitors within the ATLIC site were placed in locations to maintain minimum distances to the actual sampling point while keeping the equipment out of hazardous areas. For the actual monitoring locations at the ATLIC, see Appendix A and the associated drawings.

22A.16 MONITORING PLAN

22A.16.1 List of Monitors

22A.16.1.1 Appendix A outlines the monitoring stations for operations of the ATLIC.

22A.16.2 Limiting Conditions of Operation (LCOs)

22A.16.2.1 The monitors identified for a given campaign must be operating at all times and are considered to be Limiting Condition of Operation (LCO). In the event that a monitor is not capable of operating, immediate corrective actions will be taken. (See Paragraph 22A.13.3).

22A.16.3 Temporary Changes

22A.16.3.1 Temporary changes may be made to the requirements of this plan by following the normal procedures, which provide proper approvals and documentation. This will allow for adding to, reducing the number of, or changing the configuration of agent monitors on a temporary basis. The Permittee shall notify the Director of the Division of Solid and Hazardous Waste orally if any reduced monitoring applicable to this Attachment prior to implementation.

22A.16.4 Additional Support

22A.16.4.1 Occasionally support from DCD, or other TOCDF facilities is required for additional monitoring support. This may include the use of a Real Time Analytical Platform (RTAP) or monitoring trailer for increased monitoring of an area, or for an upset condition.

22A.17 MONITORING STRATEGY

22A.17.1 Worker Population Limit (WPL) Monitoring

22A.17.1.1 Worker Population Limit (WPL) monitoring will be performed with DAAMS. The WPL monitoring is conducted daily for all work areas where chemical agent is present without secondary vapor containment and workers are not required to wear respirator protection. Also, the Category C areas where agent is not present are monitored on a monthly basis. WPL monitoring will be required for the first five days of each agent processing.

22A.17.2 Short Term Exposure Limit (STEL) and Vapor Screening Limit (VSL) Monitoring

22A.17.2.1 VSL monitoring will be performed at all workplace locations as specified in Appendix A

22A.17.2.2 DAAMS for GA and L will be used to confirm or deny a VSL exceedance. Incoming air will be minimized to prevent dilution of sample when clearing bagged items.

22A.17.2.3 STEL and VSL are equivalent in terms of concentration values, but are different in that STEL is based on a 15 minute time-weighted average and that VSL is independent of time.

22A.17.4 AEL Levels

	G-agents mg/m³	L mg/m³
STEL (15-Minutes)	0.0001	0.003
WPL ¹ (12-Hours)	0.00002	0.003
WPL (8-Hours)	0.00003	0.003
WPL (4-Hours)	0.00006	0.003
IDLH (30-Minutes)	0.1	0.36
VSL	0.0001	0.003
Notes: ¹ The 12-hour WPL monitoring level will be used for routine historical monitoring and for areas where munitions are stored outside of secondary containment.		

22A.17.5 Monitoring Cessation

- 22A.17.5.1 Confirmation monitoring may be suspended once agent has been confirmed to be present (NRT-only monitoring will be required to verify effectiveness of corrective actions). Once corrective actions have been resolved, confirmation monitoring shall be re-instituted. Any ACAMS or MINICAMS alarm, without co-located DAAMS for GA and L, is assumed to be agent.
- 22A.17.5.2 Agent specific monitoring may be halted if no corresponding waste is inside the ATLIC boundaries. Once an agent waste enters the ATLIC boundaries, monitoring must be reinstated for that agent in locations specified in Appendix A. This condition does not apply to the Filter stack.

22A.18 MONITORING EQUIPMENT

The following is a discourse of the types of equipment used for agent monitoring:

22A.18.1 ACAMS

- 22A.18.1.1 The ACAMS is a near-real-time monitor system with the ability to detect and report the concentration levels of 'GA' chemical agent in the air at either low levels or high levels depending on its monitoring configuration. The ACAMS is configured for the appropriate detection level and the current agent(s) locations. The ACAMS is equipped with remote, audible, and visible alarm systems. The ACAMS samples air during a preset sample period. Agent present in the sample air stream is collected on a solid sorbent bed during the sample period for gas chromatographic (GC) analysis. The results of the GC analysis of the sampled air are displayed on the front panel of the instrument. A permanent record of the

chromatogram and the agent concentration is recorded on a strip-chart. The ACAMS produces an audible and visible alarm when the agent concentration level is at or above the preset alarm level. The Facility Control System records the alarm time and agent concentration. The ACAMS are used to detect process upsets and are located in areas where concentrations of agents are of concern or where rapid response is required to allow personnel to work in lower levels of protective dress.

In process areas where high concentrations of agents are possible, a Low-Volume Sampler (LVS) may be utilized. The LVS operates in a process area by drawing air through the LVS, retaining a 1-ml sample. It then sends that 1-ml sample to the ACAMS, which analyzes it and reports the actual agent concentration of the area being sampled. This process is necessary to prevent saturating the ACAMS.

22A.18.2 MINICAMS

The MINICAMS is a near-real time air monitor system with the ability to detect and report the concentration levels of 'L' chemical agent in the air at either low levels or high levels depending on its monitoring configuration. The MINICAMS is configured for the appropriate detection level at the specified agent(s) sample locations. The MINICAMS is equipped with remote, audible, and visible alarm systems. The MINICAMS samples air during a preset sample period. Agent present in the sample air stream is collected on a solid sorbent bed during the sample period for gas chromatographic (GC) analysis. The results of the GC analysis of the sampled air are displayed on the front panel of the instrument. A permanent record of the chromatogram and the agent concentration is recorded on a strip-chart. The MINICAMS produces an audible and visible alarm when the agent concentration level is at or above the preset alarm level. The MINICAMS records the alarm time and agent concentration. The MINICAMS are used to detect process upsets and are located in areas where concentrations of agents are of concern or where rapid response is required to allow personnel to work in lower levels of protective dress.

In process areas where high concentrations of agents are possible, a Low-Volume Sampler (LVS) may be utilized. The LVS operates in a process area by drawing air through the LVS, retaining a 1-ml sample. It then sends that 1-ml sample to the MINICAMS, which analyzes it and reports the actual agent concentration of the area being sampled. This process is necessary to prevent saturating the MINICAMS.

22A.18.3 DAAMS

22A.18.3.1 An additional monitoring system used is the DAAMS. DAAMS involve passing sampled air through a sorbent bed where any agent is being collected. The sample periods are determined by P&A study results and are in the range of three minutes to twelve hours. DAAMS analysis is performed using a Class 1 quantitative method. However, when DAAMS are used in conjunction with an ACAMS for GA and/or MINICAMS for L, the results are used to confirm or refute the presence of agent. If an ACAMS or MINICAMS is not monitoring correctly and has associated DAAMS, the DAAMS tubes become the primary monitor and must be collected and analyzed. DAAMS samples provide independent confirmation of positive ACAMS and/or MINICAMS readings and a historical record of monitoring, in areas not monitored by ACAMS or MINICAMS, at the WPL and GPL locations.

22A.18.3.2 DAAMS tubes shall use a labeling system to track the specific station and agent of each tube. All confirmed DAAMS results, greater than the reporting limit (RL), shall be reported to the Control Center immediately. All confirmed sub-RL levels shall be tracked and trended by the laboratory.

22A.18.4 Sample Lines

- 22A.18.4.1 The agent sampling lines are heated to aid in the transmission of the sample. Appendices C&D show the configuration of the sampling assembly. They consist of Teflon sample lines with self-regulating heat tape. These ACAMS, MINICAMS and DAAMS sample lines shall be challenged at the distal end of the sample line shall be challenged every 30 days \pm 3 days, additionally, for Lewisite sample lines will be challenged two weeks after Lewisite operations have commenced and 30 days thereafter.
- 22A.18.4.2 All sample lines must be challenged and demonstrate transmission efficiency prior to the commencement of operations.
- 22A.18.4.3 Sample lines in toxic areas are challenged during campaign changeover.

22A.18.5 Sample Lines (Suffixed with "S")

- 22A.18.5.1 Monitoring stations whose station number is suffixed by an "S" (spool) are to be used for special or short term monitoring only. The purpose of the "S" stations is to allow monitoring in specific locations that do not have a regularly assigned ACAMS or MINICAMS. The station equipment consists of a sample line only.
- 22A.18.5.2 When the monitoring is performed, an adjacent ACAMS or MINICAMS will be connected to the "S" sample line. In some cases the lines are arranged on a spool to allow them to be reeled out and moved to the point that needs sampling. The ACAMS and MINICAMS that are used in conjunction with the "S" sample lines have switches that designate the station in use. The purpose of the switch is to identify the correct monitoring location to the Facility Control System. This causes the ACAMS or MINICAMS data to be cataloged to the correct sampling point and therefore provide accurate traceability of monitoring results.
- 22A.18.5.3 During the time the ACAMS or MINICAMS is connected to the spool sample line, the DAAMS that was associated with the original ACAMS or MINICAMS becomes the primary monitor for that location. This means that the DAAMS tubes must be analyzed, rather than serving the function of being confirmation DAAMS that only get analyzed in the event of an ACAMS alarm. Additionally, if the ACAMS and/or MINICAMS alarms while connected to the spool, there are no DAAMS tubes to serve the confirmation function. If there are readings on the ACAMS or MINICAMS while it is in the spool mode, it must be assumed to be agent.

22A.18.6 Silver Fluoride Pads – V to G Pads

- 22A.18.6.1 Silver fluoride pad assemblies, or V to G pads, are used with GA ACAMS and DAAMS stations when ATLIC is processing GA waste. They are designed to place the silver fluoride pads in the sample stream such that the pads are exposed to the sample stream. Silver Fluoride pads for GA are used to cause a chemical reaction that result in a species with a narrower chromatographic peak. All assemblies will contain at least two silver fluoride pads held in place. Additional pads do not aid or hinder the efficiency. A detailed description of each type is located in TE-LOP-528, V/G Conversion Pad Assembly.
- 22A.18.6.2 The exhaust stack silver fluoride pads shall be replaced every four hours plus or minus 30 minutes. The pads shall be challenged before replacement, so that the pads that have been in service are part of the challenge to ensure adequate transfer. If the pads challenge is outside 75-125% recovery, qualification of data is required.
- 22A.18.6.3 The filter mid-bed and filter vestibule silver fluoride pads must be changed at a minimum of every 28 days.

22A.18.6.4 In non-toxic areas, silver fluoride pads will be changed daily.

22A.18.7 EDT 1,2-ethanedithiol

22A.18.7.1 EDT gas (a 200 ppm mix of EDT in N₂) is used with L MINICAMS stations and will be introduced at the distal end of the L sample lines to react with the L to form an L- derivative that is more volatile and easily transported.

22A.19 Reserved

22A.20 Reserved

22A.21 MONITORING FOR AGENT FROM PAST CAMPAIGNS

22A.21.1 Monitoring in Category A and B areas, for past agent contamination may be discontinued when the airborne agent contamination for that area is less than 1.0 VSL for GA and 0.4 for Lewisite over a 24-hour period, at a minimum temperature of 70° F, with the ventilation system operating at the approved flow rates. A confirmed agent reading at or above 1.0 VSL for GA and 0.4 for Lewisite requires that the area must undergo additional decontamination.

22A.21.2 Monitoring in Category C areas for past agent campaign contamination may be discontinued when the Category C area has been monitored to less than 0.50 WPL^(12-hour) for GA and 0.40 WPL for Lewisite over a 24-hour period, with the adjacent A& B area ventilation systems operating at the approved flow rates at a minimum temperature of 70°F. Monitoring data shall be submitted to the Director of the Division of Solid and Hazardous Waste for approval prior to discontinuation of any agent monitor in a C area.

22A.22 ACAMS and MINICAMS DATA COLLECTION

22A.22.1 ATLIC ACAMS and MINICAMS are integrated into the Facility Control System. The Facility Control System stores all readings taken by each ACAMS or MINICAMS to a temporary computer file. From this file, a computer is able to compile trends from each ACAMS or MINICAMS for up to 72 hours and, upon demand, display these trends to graphics screens in the Control Center. Various automated reports are used to observe these trends to be used as a management tool to make improvements and determine the level of readiness of the overall ACAMS or MINICAMS system. This temporary file is compressed to an archival file that becomes the permanent record of agent readings. From the archival file, the computer is able to trend each connected ACAMS or MINICAMS for any desired time period. Results of all ACAMS or MINICAMS challenges are electronically recorded and, additionally, they are manually recorded in the ACAMS or MINICAMS logbook (see Section 22A.11.1 for any potential exceptions to manually recorded logbooks) at each instrument. These results provide a basis for statistical analysis to assess performance and for reporting to regulatory agencies. Some areas in the ATLIC as noted in Appendix A do not have Facility Control System, therefore, the ACAMS or MINICAMS chart recorder and instrument log are used to record readings and QC data that are then archived.

22A.23 DAAMS SYSTEM

22A.23.1 The DAAMS sampling system is capable of collecting agent GA by use of Chromosorb and L with Tenax sorbent beds. The sample is then analyzed using GC/FPD, MSD, LCMS or with LC/ICPMS analysis techniques. The total volume of air sampled is calculated from the

sampling time and the sample flow rate. Desorption of the DAAMS tube into a GC/FPD for analysis provides the total mass of agent collected. The average air concentration of agent is then calculated from this data. By increasing the sample time or flow rate, the average concentration sensitivity can be increased. DAAMS stations shall report agent concentration at or above their calculated reporting limit for the agent of interest. The lowest calibration standard used for analysis must be at or below the reporting limit.

22A.24 BACKUP EQUIPMENT

22A.24.1 The function of the ACAMS or MINICAMS is to rapidly detect agent. Should a needed instrument fail, the first response is to troubleshoot and repair it in place. Should the estimated repair time be excessive (as determined by the Control Center) the ACAMS or MINICAMS will be replaced with an ACAMS or MINICAMS from the contingency stock.

22A.25 MAINTENANCE

22A.25.1 The Monitoring Technicians and Instrument Technicians have completed mandatory ACAMS and MINICAMS training at the Chemical Demilitarization Training Facility (CDTF) or TOCDF and are qualified to maintain and operate ACAMS and MINICAMS. The manufacturers' manuals and LOPs provide necessary guidance.

22A.26 START UP OF MONITORING

22A.26.1 Agent monitoring in the ATLIC will be initiated in each area as needed. A Monitoring Plan for each campaign must have approval from the CMA Site Project Manager or Designee. The monitoring identified in the "campaign specific" plan will be started in sufficient time to allow baseline data collection. The operational readiness review (ORR) for the campaign shall include review of the plan and the baseline data. The information in this plan is the basis for all campaign specific plans.

22A.27 ACAMS and MINICAMS ALARM HORN

22A.27.1 There are cases where ACAMS or MINICAMS have an alarm in the Control Center but there is no local alarm. This is a safety measure. There are areas that have frequent alarms but it does not mean that the workers in the area must mask. It is important that the workers do not become accustomed to ignoring ACAMS and MINICAMS alarms. Some examples are: Toxic Area ACAMS and MINICAMS and airlock ACAMS and MINICAMS. In all of these cases an alarm does not indicate that the people in the location of the ACAMS or MINICAMS need to mask. ACAMS and MINICAMS that have the horn disconnected must have a sign at the ACAMS or MINICAMS indicating such.

22A.28 ACAMS and MINICAMS ALARM LEVEL

22A.28.1 The set point for the ACAMS and MINICAMS agent alarms is specified in the monitoring station tables (Attachment A). Due to the design characteristics of the ACAMS or MINICAMS and the software that operates the alarm, there may be slight variations in the actual alarm level for each ACAMS and MINICAMS.

22A.29 PORTABLE ACAMS, MINICAMS and DAAMS MONITORING TRAILERS

22A.29.1 There are a minimum of two Portable Monitoring Trailers housing ACAMS and/or

MINICAMS and DAAMS at TOCDF. They are for special short-term monitoring to support short-term activities.

22A.30 CARBON FILTERS ON ACAMS and MINICAMS

22A.30.1 In special circumstances, an ACAMS or MINICAMS purpose is not to provide monitoring on a continuous basis but for a specific need such as for monitoring charcoal change-out at the Filter Farm. When these types of ACAMS or MINICAMS are operating but not sampling the area for which they are intended, a charcoal filter may be installed at the ACAMS or MINICAMS.

22A.31 FUGITIVE EMISSIONS MONITORING

22A.31.1 If a leak is discovered in any equipment in an agent processing area at the ATLIC, that leak shall be monitored for agent using an ACAMS or MINICAMS. The method used for this monitoring will be a modified Method 21 from 40 CFR, Part 60 using an ACAMS or MINICAMS for agent.

Method Requirements	ATLIC Facility Capabilities	Mitigation/Justification
A portable or area instrument will be used to monitor leaks for Volatile Organic Compounds (VOCs)	The area ACAMS or MINICAMS will be used or a portable monitor that is configured for the specific VOC (agent).	N/A
The VOC instrument detector shall respond to the compounds being processed, and both the linear response range and measurable range of the instrument shall encompass the leak concentration.	The ACAMS and MINICAMS meet this criterion, their being calibrated with the compound of interest.	N/A
The scale of the instrument meter shall be readable to +/- 2.5% of the specified leak definition concentration when performing a no detectable emission survey.	The ACAMS and MINICAMS meter readout is digital, so the concentration is displayed with easy to read numbers.	N/A
The instrument shall be equipped with an electrically driven pump to insure that a sample is provided to the detector at a constant flow rate. The rate will be 0.10 to 3.0 LPM, measured at the probe tip.	The ACAMS and MINICAMS comply with this requirement, with a normal flow rate of 0.40 to 1.0LPM.	N/A
The instruments shall be intrinsically safe, as defined by U.S.A. standards for use in any explosive atmospheres that may be encountered in its use.	The ACAMS and MINICAMS sample line meets this requirement since the ACAMS and MINICAMS unit is not inside the explosive environment.	N/A
The instrument shall be equipped with a probe or probe extension for sampling not to exceed ¼ inch outside diameter, with a single opening for admission of a sample.	The ACAMS and MINICAMS meets this requirement ¼ inch outside diameter is the standard for ACAMS sample lines and	N/A

Method Requirements	ATLIC Facility Capabilities	Mitigation/ Justification
	probes.	
The instrument response factors for the VOC to be measured shall be less than 10. The response factor is the ratio of the known concentration of a VOC compound to the observed meter reading when measured using an instrument calibrated with the specified reference compound.	The ACAMS and MINICAMS meet this criterion.	N/A
The instrument response time shall be equal to or less than 30 seconds, with all sampling equipment connected and operating.	The ACAMS and MINICAMS do not meet this criterion. But, this is a special application and has been approved	The ACAMS and MINICAMS are the best available technology for agent sampling. Since the ACAMS and MINICAMS must collect a sample before analysis, the 5-15 minute response time is as fast as the analysis can be run, while still maintaining accurate results.
The calibration precision must be equal to or less than 10 percent of the calibration gas value.	The ACAMS and MINICAMS meet this criterion, except that the ACAMS and MINICAMS uses a liquid calibration standard. By TOCDF procedure the calibration challenge must be +/- 10 % of the target value.	N/A

NOTE

The challenge, calibration and operation of the ACAMS or MINICAMS will comply with Laboratory Operating Procedure (LOP) 524 in Attachment 3 (Sampling and Analytical Procedures) and this Attachment.

APPENDIX A

**ATLIC
AGENT MONITORING PLAN DETAIL**

AGENT MONITORING PLAN

Explanation of Column Titles

Station Number

The station number was assigned by Monitoring in accordance with the Monitoring Station Numbering Sheet. This is the number used by the Facility Control System. The numbers are specific to the geographic location being monitored. This number cannot be reassigned to any other location due to the restraints caused by the 40-year record-keeping requirement. When an S suffixes a station number, it indicates that the sample line is movable to various sample points. The S indicates spool. A K suffix to a station number indicates that the station monitors for GA, when a station is suffixed with an L, it indicates the station monitors for Lewsite.

ACAMS/MINICAMS/DAAMS Tag Number

This number identifies the tag number for the ACAMS, MINICAMS or DAAMS specific to that station number. If an ACAMS, MINICAMS or DAAMS is removed for repair and a new ACAMS, MINICAMS or DAAMS is installed at that station, the tag number will stay with the new ACAMS, MINICAMS or DAAMS. This is to prevent the need to update the Monitoring Plan each time maintenance is required. Temporary DAAMS are installed with an assigned sample number instead of a tag number. Monitoring will track the ACAMS, MINICAMS or DAAMS being repaired using the unit's serial number.

Unit Location

This designates the detector's physical location by room, floor plan number, and the drawing number (from the attached Monitoring Plan drawings).

Area Monitored

This designates the geographic location being monitored by room and floor plan number.

Power Type

UPS - Battery backup used on ACAMS and MINICAMS. DAAMS using the same station number will be connected to UPS.

Essential Power - Commercial power backed up by an emergency generator. All heat trace will use the essential power.

Secondary Power (Distribution) System (SPS) – The secondary power system refers to the standard power supply. Items such as cabinet and pump ventilation fans are connected to the SPS.

Sample Point Hazard Category

A through E, with "A" being a room where liquid agent is likely to be present to "E" where no agent will be found. See Terminology Section for complete definition.

Monitoring Level

Indicates the purpose of the ACAMS, MINICAMS or DAAMS stations and corresponding monitoring level or sensitivity of the monitor. If VSL is listed, the purpose of the ACAMS or MINICAMS is to monitor equipment/waste/personnel contamination levels. When ECL is listed, the location is being monitored at a more sensitive level than required by CMA direction. In other words, if ECL/VSL is listed, the monitors are in the VSL mode but are more sensitive than

required by the Programmatic Monitoring Concept Plan for that monitoring location. The agent concentrations for each monitoring level are specified in Attachment 22A, Appendix A.

Alarm Level

The alarm level at the ACAMS or MINICAMS station is the same as it is in the Control Center. The alarm level shown is in terms of the monitoring level shown in the previous column. The alarm levels are set below threshold levels to allow action to be taken to avoid exceeding threshold levels. The alarm level starts a specific course of actions. The specific requirements are identified in Section 22A.32 (Alarm Response Requirements). An alarm located in toxic areas, filter mid-beds, or other closed containers do not require the contingency procedures to be implemented.

Sample Line Length

Lengths of the sample lines are listed with an accuracy of $\pm 20\%$.

DAAMS Mode

The mode is an indication of the purpose of the DAAMS. Examples are:

ACAMS Confirmation: The DAAMS is used to confirm an ACAMS reading in the event of an agent alarm. Additionally the station with a monitoring level of VSL/WPL will have the DAAMS tubes analyzed at the WPL at least monthly to provide evidence that there isn't an agent concentration in the area below the detectible range of the ACAMS.

Historical: Historical monitoring is performed to measure very low concentrations of airborne analytes, where contamination is unlikely or workers are operating without personal protective equipment (PPE). Sampling is accomplished by the collection of an air sample over an extended period of time (usually the duration of a workday) and subsequent analysis is conducted offline at the laboratory. Historical monitoring is designed to trigger activities to investigate the source of contamination that may be found below the alarm level of the Near Real Time (NRT) monitor.

Primary DAAMS: In this case the DAAMS is the only agent monitor.

Comments

Additional information as needed.

The table that follows provides monitoring details sorted by Station Number (Table 1).

Table 1. Monitoring Details, Sorted by Station Number

STA #	ACAMS /MINIC AMS TAG #	DAAMS TAG #	UNIT LOC FLOOR PLAN # DRAWING #	AREA MONITORED FLOOR PLAN #	POWER TYPE SPS/UPS	SAMPLE POINT HAZ CAT	MONITORING LEVEL	ALARM LEVEL Z	SAMPLE LINE LENGTH ±20%	DAAMS MODE	COMMENT
TEN 721K	527	N/A	TOX Monitoring Room EG-22A-G-1000-S4 RM 110	Entry A/L A RM 107	UPS	A	VSL/ECL	NA	91	N/A	NOTE 8
TEN 721L	129	N/A	TOX Monitoring Room EG-22A-G-1000-S4 RM 110	Entry A/L A RM 107	UPS	A	VSL/ECL	NA	91	N/A	NOTE 8
TEN 722K	525	N/A	TOX Monitoring Room EG-22A-G-1000-S4 RM 110	Entry A/L B RM 105	UPS	B	VSL	0.5	100	N/A	
TEN 722L	128	N/A	TOX Monitoring Room EG-22A-G-1000-S4 RM 110	Entry A/L B RM 105	UPS	B	VSL	0.4	100	N/A	
TEN 727K	533	N/A	TOX Monitoring Room EG-22A-G-1000-S4 RM 110	TOX RM 106	UPS	A	VSL/ECL/IDLH	NA	98	N/A	NOTE 8
TEN 727L	134	N/A	TOX Monitoring Room EG-22A-G-1000-S4 RM 110	TOX RM 106	UPS	A	VSL/ECL/IDLH	NA	98	N/A	NOTE 8
TEN 728K	537	N/A	TOX Monitoring Room EG-22A-G-1000-S4 RM 110	LIC RM 109	UPS	A/B	VSL/ECL/IDLH	NA	90	N/A	NOTE 8
TEN 728L	137	N/A	TOX Monitoring Room EG-22A-G-1000-S4 RM 110	LIC RM 109	UPS	A/B	VSL/ECL/IDLH	NA	90	NA	NOTE 8

STA #	ACAMS /MINICAMS TAG #	DAAMS TAG #	UNIT LOC FLOOR PLAN # DRAWING #	AREA MONITORED FLOOR PLAN #	POWER TYPE SPS/UPS	SAMPLE POINT HAZ CAT	MONITORING LEVEL	ALARM LEVEL Z	SAMPLE LINE LENGTH ±20%	DAAMS MODE	COMMENT
TEN 741LS	148	692	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 101 Mid-Bed 1	UPS	N/A	VSL	0.4	100	MINICAMS CONFIRM	NOTE 1 NOTE 5
TEN 741KS	549	691	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 101 Mid-Bed 1	UPS	N/A	VSL	0.5	100	ACAMS CONFIRM	NOTE 1 NOTE 5
TEN 742K	N/A	715	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 101 Mid-Bed 2	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 742L	N/A	716	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 101 Mid-Bed 2	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 743K	N/A	705	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 101 Vestibule	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 743L	N/A	706	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 101 Vestibule	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 744LS	148	694	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 102 Mid-bed 1	UPS	N/A	VSL	0.4	100	MINICAMS CONFIRM	NOTE 1 NOTE 5
TEN 744KS	549	693	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 102 Mid-bed 1	UPS	N/A	VSL	0.5	100	ACAMS CONFIRM	NOTE 1 NOTE 5
TEN 745K	N/A	717	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 102 Mid-bed 2	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5

STA #	ACAMS /MINICAMS TAG #	DAAMS TAG #	UNIT LOC FLOOR PLAN # DRAWING #	AREA MONITORED FLOOR PLAN #	POWER TYPE SPS/UPS	SAMPLE POINT HAZ CAT	MONITORING LEVEL	ALARM LEVEL Z	SAMPLE LINE LENGTH ±20%	DAAMS MODE	COMMENT
TEN 745L	N/A	718	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 102 Mid-bed 2	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 746K	N/A	707	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 102 Vestibule	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 746L	N/A	708	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 102 Vestibule	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 747LS	148	714	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 103 Mid-bed 1	UPS	N/A	VSL	0.4	100	MINICAMS CONFIRM	NOTE 1 NOTE 5
TEN 747KS	549	713	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 103 Mid-Bed 1	UPS	N/A	VSL	0.5	100	ACAMS CONFIRM	NOTE 1 NOTE 5
TEN 748K	N/A	719	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 103 Mid-Bed 2	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 748L	N/A	720	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 103 Mid-Bed 2	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 749K	N/A	711	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 103 Vestibule	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5
TEN 749L	N/A	712	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter 103 Vestibule	UPS	N/A	WPL	N/A	100	HISTORICAL	NOTE 1 NOTE 5

STA #	ACAMS /MINICAMS TAG #	DAAMS TAG #	UNIT LOC FLOOR PLAN # DRAWING #	AREA MONITORED FLOOR PLAN #	POWER TYPE SPS/UPS	SAMPLE POINT HAZ CAT	MONITORING LEVEL	ALARM LEVEL Z	SAMPLE LINE LENGTH ±20%	DAAMS MODE	COMMENT
TEN 750AK	553	695	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter Stack	UPS	N/A	VSL	0.5	100	ACAMS CONFIRM	
TEN 750AL	154	697	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter Stack	UPS	N/A	VSL	0.4	100	MINICAMS CONFIRM	
TEN 750BK	554	696	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter Stack	UPS	N/A	VSL	0.5	100	ACAMS CONFIRM	Stand-By For TEN 750AK
TEN 750BL	155	698	Filter Monitoring Room EG-22A-G-1000-S6 RM 115	Filter Stack	UPS	N/A	VSL	0.4	100	MINICAMS CONFIRM	NOTE 2

AGENT MONITORING PLAN NOTES

1. See Paragraph 22A.9 for filter monitoring protocol.
2. Reserved
3. Used as a backup to the primary TEN (708,709) DAAMS when tubes are being pulled or maintenance is being performed on primary DAAMS.
4. These ACAMS/MINICAMS can be switched to monitor three different locations.
5. WPL samples must be collected and analyzed on a daily basis at this station.
6. The ACAMS, MINICAMS and DAAMS may be switched to monitor Vestibule 101.
7. Facility UPS not available will install individual UPS for each station.
8. Alarm levels will be determined by site safety plans, agent levels and levels of protective dress.

Hazard Level:

STEL	Short Term Exposure Limit
SEL	Source Emission Limit.
WPL	Worker Population Limit
ECL	Engineering Control Level
IDLH	Immediately Dangerous to Life and Health
VSL	Vapor Screening Limit