

TA 50
LANL CAI ISSUES

LANL CAI ISSUES

PRESENTED TO NMED
DECEMBER 20, 1994

LANL OST-14

ISSUES TO BE COVERED

- UPGRADES TO THE CAI SYSTEM
- PROPOSED MODIFICATIONS TO THE CAI HAZARDOUS WASTE PERMIT
- MIXED WASTE TREATMENT IN THE CAI
- DRE VERIFICATION AND THE FFCA TRIAL BURN MILESTONE
- RADIATION MONITORING AT THE CAI

LANL OST-14

DESIRED ACTIONS/RESULTS

- NMED RULING ON UPGRADES TO THE CAI
- NMED RULING ON PROPOSED MODIFICATIONS TO THE HW PERMIT
- INFORM NMED ON LANL'S DIRECTION CONCERNING MW TREATMENT
- STATUS DRE VERIFICATION / FFCA TRIAL BURN MILESTONE
- STATUS RADIATION MONITORING TO BE UTILIZED AT THE CAI

LANL OST-14

12/19/94



8714

LANL CAI ISSUES

UPGRADES TO THE CAI SYSTEM

- STARTED IN 1987
- NEARING COMPLETION
- NONE CONSIDERED BY LANL TO BE MORE THAN A CLASS 1 MODIFICATION
- NMED CONCURRENCE REQUESTED
- SUMMARIZED IN ATTACHED TABLE

MODIFICATIONS TO THE EXISTING HW PERMIT

- MODIFICATIONS REQUIRED
 - ▶ MODIFICATIONS FOR HAZARDOUS WASTE OPERATIONS
 - REQUIRED TO REFLECT CURRENT OPERATIONS
 - REQUIRED TO REFLECT CURRENT CONFIGURATION
 - ▶ MODIFICATIONS FOR MIXED WASTE OPERATIONS
 - REQUIRED TO REFLECT RADIATION MONITORING REQUIREMENTS TO TREAT MIXED WASTES

new permit

HAZARDOUS WASTE OPERATIONS MODIFICATIONS

- INTERNAL AUDIT IDENTIFIED NUMEROUS POTENTIAL ADMINISTRATIVE CHANGES NEEDED TO REFLECT CURRENT OPERATIONS AND ORGANIZATION
- NONE CONSIDERED BY LANL TO BE MORE THAN A CLASS 1 MODIFICATION
- LISTING IS BEING COMPILED

CST-16
Benchmarks

LANL CAI ISSUES

MIXED WASTE OPERATIONS MODIFICATIONS

- RADIATION MONITORING REQUIREMENTS NEED REVISING
 - RAD EMISSIONS REGULATED UNDER CAA
 - CURRENT MONITORING REQUIREMENTS CONFLICT WITH MIXED WASTE TREATMENT OPERATIONS
 - MONITORING LIMITS AS DEFINED UNDER CURRENT PERMIT MAY BE EXCEEDED
 - SUGGEST REMOVING WASTE FEED CUT OFF LIMITS BUT CONTINUING MONITORING AND REPORTING TO NMED

LANL CST-11

MIXED WASTE TREATMENT IN THE CAI

- CAI ORIGINALLY DESIGNED TO TREAT RADIOACTIVE WASTES
- LATER PROVEN TO EFFECTIVELY TREAT HAZARDOUS WASTES
- CURRENT PERMIT RECOGNIZES THE MIXED WASTE CAPABILITY OF THE CAI
- NO OPERATING CONDITIONS NEED TO BE ALTERED TO TREAT MIXED WASTES

LANL CST-11

MIXED WASTE TREATMENT IN THE CAI (CONT)

- NO NEW WASTE STREAMS WILL BE ADDED IN ORDER TO TREAT MIXED WASTES
 - ALL HAZARDOUS COMPONENTS ARE IN CURRENT PART A

LANL CST-11

LANL CAI ISSUES

DRE VERIFICATION / FFCA TRIAL BURN

- DRE VERIFICATION REQUIRED (V.I.B.b)
 - AFTER MODIFICATIONS
 - AFTER 8,000 hrs OF OPERATION
 - AFTER FIVE YEARS
- CAI NOT OPERATED SINCE 1987
- FIVE YEAR TIME LIMIT EXPIRED
NOVEMBER 1994

LANL CST-14

DRE VERIFICATION / FFCA TRIAL BURN (CONT)

- CLASS 1 PERMIT MODIFICATION
REQUESTED 11-7-94
 - ADD OPTION TO RE-VERIFY DRE PRIOR TO
COMMENCEMENT OF WASTE TREATMENT IF
THE UNIT HAS NOT OPERATED IN THE FIVE
YEAR TIME FRAME

LANL CST

DRE VERIFICATION / FFCA TRIAL BURN (CONT)

- FFCA (AGREEMENT) REQUIRED A TRIAL
BURN
 - MILESTONE CAI 200
 - DUE 2-14-95
 - REQUIREMENTS OF THE HAZARDOUS
WASTE PERMIT NOT FULLY UNDERSTOOD
DURING FFCA NEGOTIATIONS

LANL CST-15

LANL CAI ISSUES

DRE VERIFICATION / FFCA TRIAL BURN (CONT)

- MILESTONE IS BEING RE-NEGOTIATED WITH EPA
 - > REQUESTING A DRE VERIFICATION IN ORDER TO BE CONSISTENT WITH RCRA PERMIT REQUIREMENTS
 - > REQUESTING CHANGING MILESTONE DUE DATE TO AT LEAST 30 DAYS PRIOR TO RESUMING TREATMENT OPERATIONS
 - > EPA CONCURRENCE REQUESTED
- REGULATORY OVERSIGHT WILL SHIFT TO NMED IN OCTOBER 1995

LANL CRT-1

RADIATION MONITORING AT THE CAI

- BASED ON SUMMARY JUDGMENT ISSUED 8-18-94
 - > RADIOACTIVE EMISSIONS NOT LIMITED UNDER RCRA
 - > UPHOLDS MONITORING
 - ASSURE THAT ONLY PERMITTED HAZARDOUS WASTE IS DISPOSED OF UNDER THE HAZARDOUS WASTE PERMIT
 - PREVENT RESIDUAL RADIOACTIVITY FROM BEING EMITTED DURING A HAZARDOUS WASTE BURN
 - > BACKGROUND DEFINITION REITERATED
 - > WASTE SURVEY ALSO UPHELD

LANL CRT-1

RADIATION MONITORING AT THE CAI (CONT)

- WASTE SURVEY
 - > SOLIDS BY MULTIPLE AXIS DUAL ANALYSIS MEASUREMENT (MADAM)
 - > 55 GALLON DRUMS BY MADAM OR ANALYSIS
 - > OTHER LIQUIDS BY ANALYSIS

LANL CRT-1

LANL CAI ISSUES

RADIATION MONITORING AT THE CAI (CONT)

- MONITORING BY AN EG&G NUCLEAR INSTRUMENTS CONTINUOUS ALPHA/BETA/GAMMA MONITOR
 - BERTHOLD MODEL LB 150 DR DETECTOR
 - LOCATED BETWEEN 2ND STAGE HEPA_s AND THE CARBON BED ADSORBER
 - FLOW STRAIGHTENERS AND ISOKINETIC SAMPLING CAPABILITIES
 - MASS AND VELOCITY MEASUREMENT INSTRUMENTATION

LANL 02146

RADIATION MONITORING AT THE CAI (CONT)

- COMPENSATES FOR NATURAL RADON/THORON DAUGHTER DECAY
 - PSEUDOCOINCIDENCE
 - ALPHA ENERGY RANGE DISCRIMINATION
- DETECTION LIMIT A FUNCTION OF SEVERAL VARIABLE PARAMETERS
 - INVERSE OF THE SAMPLE FLOW RATE
 - SQUARE ROOT OF THE INVERSE OF THE MEASURING (COUNTING) TIME
 - SQUARE ROOT OF BACKGROUND

LANL 02146

SUMMARY OF LANL CAI MODIFICATIONS, UPGRADES, AND MAINTENANCE
BY AFFECTED SYSTEM

14 Dec 1994

System	Category	Title	Description	Permit Implications
CAI Building	None	Air Locks	Personnel and material air locks are being added and roll up doors replaced to comply with DOE Order 6430.1A (Containment Criteria).(Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: The change described does not pertain to the authorized unit as described in Permit Module V.
CAI Building	None	Ash Pit	A pit to accomodate the gravity ash drop out and removal system has been constructed under the primary combustion chamber. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: The change described does not pertain to the authorized unit as described in Permit Module V.
CAI Building	None	Building Exhaust	New building exhaust fan expansion joints constructed to replace deteriorated joints. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: The change described does not pertain to the authorized unit as described in Permit Module V.
CAI Building	None	Building HVAC	Replacement of the existing building evaporative cooler with a mechanical chiller system. Ventilation control upgrades including new PLC based data aquisition and connection to main CAI control room for process area, high bay, and storage bay exhaust systems. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: The change described does not pertain to the authorized unit as described in Permit Module V.
CAI Building	None	Siesmic Upgrades	TA-50-37 may be structurqally upgraded to withstand a more intense design earthquake. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: The change described does not pertain to the authorized unit as described in Permit Module V.
Combustion Chamber	Upgrade	Combustion Air Blower Replacement	Replacement of combustion air blowers with flanged units of same type (performed to allow for addition of HEPA filters to flange). Combustion air glovebox face removed. (Necessary due to control valve size changes occurring in this glovebox.) (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Replacement units are identical except for the flange. The change from indirect HEPA filtration of the glovebox to direct HEPA filtration on the blower provides filtration of combustion air equivalent to the previous condition (ie., functionally equivalent). Minor design changes are not permit modifications (53 FR 37924).
Combustion Chamber	Upgrade	Hearth Sweep-out System Addition	IGOR (Integrated Glovebox-Operated Robotics) system for hearth sweep-out and inspection of PCC, SCC and main duct added. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: The system upgrade is not used during incinerator operation (it is used mainly to clean ash off the incinerator hearth). Therefore it has no effect on DRE or any other relevant incinerator parameters.
HEPA Filters	Maintenance	Material Change	Third-stage HEPA moved and housing replaced with 316L stainless steel. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Material substitution as part of normal maintenance. Unit moved physically, but not relative to other unit processes; therefore the process and process diagram does not change.

SUMMARY OF LANL CAI MODIFICATIONS, UPGRADES, AND MAINTENANCE
BY AFFECTED SYSTEM

14 Dec 1994

System	Category	Title	Description	Permit Implications
Instrumentation and Controls	Maintenance	Backup Power	A new uninterruptible power supply and new transfer switching equipment have been installed to replace aging battery packs. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Instrumentation and Controls	Maintenance	Combustion Chamber O2 Monitor	Replacement of O2 monitors in the primary and secondary combustion chambers. The RCRA operating permit requires monitoring of upper (secondary) chamber oxygen monitoring. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Instrumentation and Controls	Maintenance	Control Systems Upgrade	pH meters on the scrub solution recycle line are being moved to new locations to provide better data acquisition and parameter control. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Instrumentation and Controls	Maintenance	Control Valve Replacement	Replacement of control valves on the combustion air and natural gas supply lines with new control valves. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Instrumentation and Controls	Maintenance	Cooling Loop Breakthrough Detection	A conductivity meter has been installed on the primary cooling water loop to detect breakthrough or leaking from the secondary cooling water loop. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Instrumentation and Controls	Maintenance	Electrical Rewiring	Entire electrical system rewired to separate high voltage and low voltage instrument wiring in order to eliminate induced signals. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Instrumentation and Controls	Maintenance	Flow Meter Replacement	A new gyroscopic/coriolis mass flow meter installed on the liquid feed line to provide instantaneous readings of liquid waste flow to the high intensity vortex burner. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Instrumentation and Controls	Maintenance	Flowmeter Replacement	Flow meters on the scrub solution recycle system have all been replaced with gyroscopic/coriolis mass flowmeters. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Instrumentation and Controls	Maintenance	HEPA Filter Pressure Drop Measurement	Individual differential pressure gauges added to each HEPA filter to detect blinding and breakthrough. Formerly, pressure drop was measured across the filter plenum, not individual filters. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).

SUMMARY OF LANL CAI MODIFICATIONS, UPGRADES, AND MAINTENANCE
BY AFFECTED SYSTEM

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System	Category	Title	Description	Permit Implications
Instrumentation and Controls	Maintenance	Instrument Air Supply	Instrument air compressor replaced by Ingersoll Rand duplex compressor specifically designed for instrument air systems. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Instrumentation and Controls	None	Neutron Monitors	Addition of neutron monitors in the CAI process area, external to the CAI process volume. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: The change described does not pertain to the authorized unit as described in Permit Module V.
Instrumentation and Controls	Upgrade	Burner Control Logic Enhancement	Addition of lead-lag logic control for fuel-to-air ratio control to compensate for sluggish air supply response versus rapid fuel supply response. (Previously performed manually.) (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Replacement of equipment with functionally equivalent components is a modification only if the permit is affected by such change. Addition of automatic process control to formerly manual operated systems is a functionally equivalent equipment replacement. (53 FR 37930, September 28, 1988)
Instrumentation and Controls	Upgrade	Burner Control Logic Enhancement	Removal of mechanical linkage control of fuel and combustion air so these may be controlled independently and automatically. (Previously performed manually.) (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Replacement of equipment with functionally equivalent components is a modification only if the permit is affected by such change. Addition of automatic process control to formerly manual operated systems is a functionally equivalent equipment replacement. (53 FR 37930, September 28, 1988)
Instrumentation and Controls	Upgrade	Burner Control Logic Enhancement	Addition of control loop relating liquid waste feed to equivalent natural gas feed rate. Will ensure that neither heat capacity nor combustion air capacity of burner is exceeded. (Previously performed manually.) (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Replacement of equipment with functionally equivalent components is a modification only if the permit is affected by such change. Addition of automatic process control to formerly manual operated systems is a functionally equivalent equipment replacement. (53 FR 37930, September 28, 1988)
Instrumentation and Controls	Upgrade	Burner Control Logic Enhancement	Addition of control loop to compensate for changes in the liquid waste supply which will adjust for differing liquid waste combustion air requirements. (Previously performed manually.) (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Replacement of equipment with functionally equivalent components is a modification only if the permit is affected by such change. Addition of automatic process control to formerly manual operated systems is a functionally equivalent equipment replacement. (53 FR 37930, September 28, 1988)
Instrumentation and Controls	Upgrade	Combustion Gas Monitor Removal	Removal of combustion gas monitor in the combustion gas glovebox, due to removal of the glovebox front. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: This monitor was removed because combustion gas no longer enters the combustion gas blowers through a glovebox. Therefore, combustion gases cannot accumulate and cause an explosion hazard, as before. (The combustion gas monitor was an alarm type indicator). There is no permit condition or monitoring requirement associated.

SUMMARY OF LANL CAI MODIFICATIONS, UPGRADES, AND MAINTENANCE
BY AFFECTED SYSTEM

14 Dec 1994

System	Category	Title	Description	Permit Implications
Instrumentation and Controls	Upgrade	Control System Upgrade	Replacement of mechanical process recorders and controllers with multipoint digital controllers. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Replacement of equipment with functionally equivalent components is a modification only if the permit is affected by such change. Replacement of mechanical-based control system with software-based control systems is a functionally equivalent equipment replacement. (53 FR 37930, September 28, 1988)
Instrumentation and Controls	Upgrade	Control System Upgrade	Change in offgas pressure control valve control logic from feedback to feedforward-based control. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: This change in the control logic changes the response time of the pressure control valve, making response quicker, and causes less fluctuation in valve response. Valve function is not otherwise affected. (Functionally equivalent component change. 53 FR 37930, September 28, 1988)
Instrumentation and Controls	Upgrade	Control System Upgrade	Replacement of mechanical relay-based control logic with a Programmable Logic Controller (PLC). The PLC will control some of the critical system interlocks and provide data acquisition. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Replacement of equipment with functionally equivalent components is a modification only if the permit is affected by such change. Replacement of mechanical-based control systems with software-based control systems is a functionally equivalent equipment replacement. (53 FR 37930, September 28, 1988)
Instrumentation and Controls	Upgrade	Offgas Alpha-Beta Monitor	Addition of offgas continuous alpha-beta monitor, for compliance with the RCRA permit monitoring requirement. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Monitor added to comply with permit monitoring condition. Equipment added is a requirement and does not affect the permit or the monitoring condition.
Instrumentation and Controls	Upgrade	Offgas CO/CO2/H2O Monitor	Addition of an offgas CO/CO2/H2O. This is to comply with the RCRA permit monitoring requirement for CO monitoring. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Monitor added to comply with permit monitoring condition. Equipment added is a requirement and does not affect the permit or the monitoring condition.
Instrumentation and Controls	Upgrade	Offgas NO/NOx/SO2 Monitor	Addition of an offgas NO/NOx/SO2. There is no RCRA permit monitoring requirement. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Addition of this monitor is for additional data gathering capability outside of the permit monitoring requirements. This change has no effect on the permit or any permit monitoring conditions.
Instrumentation and Controls	Upgrade	Offgas Total Hydrocarbon Monitor	Addition of an offgas total hydrocarbon monitor to comply with the RCRA permit monitoring requirement. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Monitor added to comply with permit monitoring condition. Equipment added is a requirement and does not affect the permit or the monitoring condition.
Misc. APC Systems	Maintenance	Material Change	Change in offgas ducting not otherwise mentioned with ducts constructed of AL-6XN, in addition to minor rerouting. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).

SUMMARY OF LANL CAI MODIFICATIONS, UPGRADES, AND MAINTENANCE
BY AFFECTED SYSTEM

14 Dec 1994

System	Category	Title	Description	Permit Implications
Misc. APC Systems	Maintenance	Material Change	Replacement of sampling trombone with identical unit constructed of AL-6XN. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Misc. APC Systems	Maintenance	Piping Change	Addition of offgas superheater drain valve, in order to drain off accumulated condensation for the prevention of internal corrosion of the unit. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988). There is no change in function or capacity associated with this change.
Misc. APC Systems	None	NESHAPS Sampling Train Upgrade	Changes to stack-gas sampling train to comply with NESHAPS sampling requirements. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: The NESHAPS stack-gas sampling train is not addressed by the RCRA operating permit, nor are the analytical results used to comply with any RCRA permit monitoring conditions.
Misc. APC Systems	Upgrade	Carbon Adsorber Redesign	Replacement of the carbon adsorber unit with a redesigned, dual-pass annular design unit constructed of Hastelloy C-22 and AL-6XN. Performance of the replacement unit has been modeled and determined to be functionally superior to the old unit. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Replacement of equipment with functionally equivalent components is a modification only if the permit is affected by such change. The new unit is functionally equivalent to the one it replaces and does not affect any aspect of the permit.
Misc. APC Systems	Upgrade	Flow Straightener Addition	Addition of flow straighteners downstream of the HEPA bank and between the I.D. blowers and offgas flow meter. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Addition of flow straighteners is required by the monitoring instruments which have also been added in order to meet permit monitoring requirements. The addition does not affect the permit or any monitoring conditions.
Misc. APC Systems	Upgrade	Sampling Duct Expansion	Added expanded sampling duct section on the sampling trombone and stack. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: This addition is required by the monitoring instruments which have also been added in order to meet permit monitoring requirements. The addition does not affect the permit or any monitoring conditions.
Piping	Maintenance	Material Change	Replacement of most pipes not otherwise mentioned with Hastelloy C-276 (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Piping	Maintenance	Material Change	Replacement of all process pumps. New pumps contain Hastelloy wetted parts. All units are sealless technology. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Piping	Maintenance	Material Change	Existing instrument air supply lines replaced with Duraplus plastic pipe, straightened, and consolidated. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).

SUMMARY OF LANL CAI MODIFICATIONS, UPGRADES, AND MAINTENANCE
BY AFFECTED SYSTEM

14 Dec 1994

System	Category	Title	Description	Permit Implications
Piping	Maintenance	Piping Change	Liquid feed line (1/2") replaced with a 3/8" line. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items, including minor design changes, are not modifications (53 FR 37924, September 28, 1988). There is no change in function or capacity associated with this change.
Piping	Maintenance	Routine Maintenance	Replaced original steam lance nozzles with identical parts. Addition of strainers to steam line and slight rerouting. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Piping	Process change	Piping Change	Movement of caustic addition line from process sump tank entry point to upstream of the scrubber liquid return pump. This change is to ensure proper mixing of the added caustic and better pH control. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). There is no change in function or capacity associated with this change.
Piping	Process Change	Piping Change	Main Ram Glovebox air supply HEPA replaced by direct piping of combustion air to the underfire air blower. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). There is no change in function or capacity associated with this change.
Piping	Upgrade	Piping Change	Added check valve on absorber column makeup water line to prevent backflow. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance, are not permit modifications (53 FR 37924, September 28, 1988). There is no change in function or capacity associated with this change.
Piping	Upgrade	Piping Change	Check valve added to combustion air line, for prevention of combustion air and or combustion gas backflow out of the PCC. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not permit modifications (53 FR 37924, September 28, 1988). There is no change in function or capacity associated with this change.
Piping	Upgrade	Piping Change	Added block valve on quench tower booster pump inlet. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). There is no change in function or capacity associated with this change.
Prime Mover	Upgrade	IDB Drive Upgrade	Addition of variable frequency drives to the induced draft blowers to allow for precise control of draft. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). There is no change in function or capacity associated with this change.
Process Liquid Handling	Maintenance	Process Liquid Filtration Upgrade	Addition of 1/16" perforated screen strainers to hydrocyclone overflow line for the protection of scrub solution recycle pumps downstream of the hydrocyclone. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items, including minor design changes, are not modifications (53 FR 37924, September 28, 1988). The addition is to protect fluid handling equipment downstream. There is no change in function or capacity associated with this change.

SUMMARY OF LANL CAI MODIFICATIONS, UPGRADES, AND MAINTENANCE
BY AFFECTED SYSTEM

14 Dec 1994

System	Category	Title	Description	Permit Implications
Support Systems		Scrub Solution Blowdown Treatment	Solution to scrub solution blowdown treatment being sought. POTENTIAL MOD ONLY (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: BASIS:
Support Systems	Maintenance	Caustic Supply Tank	Caustic tank replaced with new tank equipped with pre-mixed caustic supply hookups. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Support Systems	Maintenance	Cooling Tower Replacement	Old cooling towers replaced with new identical units. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Support Systems	Maintenance	Natural Gas Supply Upgrade	The natural gas supply line has been upgraded to 1.5 inches. A new meter was installed. (An earthquake shutoff valve may be added.) (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (53 FR 37924, September 28, 1988).
Support Systems	Upgrade	Ash Stabilization	POTENTIAL MOD ONLY Ash vitrification system may be added as a complement to the CAI. This could affect permit requirement V.G.1 "Ash Control", because cementation is the specified treatment. (Ref.: LANL CAI Modification Summary (8 Aug 94))	PERMIT MOD REQUIRED?: BASIS:
Waste Feed	Maintenance	MEGAS Replacement	Multiple Energy Gamma Assay System (MEGAS) for SNM assay replaced with Multiple Axis Dual Analysis Measurement (MADAM) system. Also, the MADAM and waste package X-ray systems have been moved from the waste feed glovebox. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). In addition, this system is not addressed by the permit.
Waste Feed	Maintenance	Routine Maintenance	Replacement of the old feed glovebox with a stainless steel glovebox. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Maintenance items are not modifications (52 FR 37924, September 28, 1988).
Waste Feed	Upgrade	Fire Suppression System Change	Main ram feeder glovebox carbon dioxide fire suppression system added. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). In addition, this system is not addressed by the permit.
Waste Feed	Upgrade	Fire Suppression System Change	Replacement of water-based feed glovebox fire suppression system with a foam-based system. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). In addition, this system is not addressed by the permit.

SUMMARY OF LANL CAI MODIFICATIONS, UPGRADES, AND MAINTENANCE
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14 Dec 1994

System	Category	Title	Description	Permit Implications
Waste Feed	Upgrade	HEPA Filter Addition	Main ram feeder glovebox HEPA filter added. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). In addition, this system is not addressed by the permit.
Waste Feed	Upgrade	Liquid Feed Tank Top Replacement	Liquid feed tank covers replaced with tops that allow solids addition. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). In addition, this system is not addressed by the permit.
Waste Feed	Upgrade	Ram Feeder Redesign	Ram feeder chain-drive mechanism replaced with hydraulic system. (Ref.: LANL CAI Summary of Modifications (8 Aug 94))	PERMIT MOD REQUIRED?: NO BASIS: Minor design changes, like maintenance items, are not modifications (53 FR 37924, September 28, 1988). In addition, this system is not addressed by the permit.