-----Original Message-----
From: Melanee M Shurter [mailto:mshurter@lanl.gov]
Sent: Friday, March 25, 2005 5:00 PM
To: Owens, Kirk W.
Cc: sradz@lanl.gov
Subject: Fwd: Re: TA-55 Reinvestment Subproject

Hi Kirk,

Here is the subproject information you requested from John Isaacson on 3/18/05 for the TA-55 Reinvestment Project. Sorry for the delay - the project contact was out on travel until today. Please let me know if this is what you needed, or if you need something else.

Thanks,
Melanee

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SUBPROJECT SUPPORTING DATA

Summary

The subproject information presented here is intended to be a historical record of the development of the subprojects to be considered for TA-55 Complex Reinvestment and to form the basis for starting the Conceptual Design Report.

A considerable amount of work was invested in the Preconceptual Data Development including needs development, priority rankings, site drawings, walkdowns scope boundary investigations, conversations with systems engineers and NMT personnel – all at a high level suitable for the Preconceptual phase of a project. The subproject summaries are an attempt to document that effort so that it is not lost and would not have to be repeated during conceptual design. As stated in the MNS, we expect this approach to evolve into a Subproject Definition Package for each subproject, which would contain all of the detail developed during the CDR and be rolled up for the CDR and F&OR documents prior to CD-1.

The information presented here is in three sections:

- A spreadsheet that gives an overview, or "subproject at a glance" for all subprojects considered for this project submittal, grouped as Priority 1, 2, and 3.

- An overall Subproject Summary that spans all proposed subprojects and contains the information in headings that are common to all subprojects.

- Subproject Summary Data Sheets for all Priority 1 and 2 subprojects. Only Priority 1 subprojects are proposed for this project due to limitations of funds. Priority 2 data sheets are included in the event that additional funding is provided or the prioritization changes due to changes in mission needs. The work effort expended in the development process would not be lost.

TA-55 REINVESTMENT PROJECT
SUBPROJECT SUMMARY

Subproject Number/WBS: 0 **Overall Summary of Subproject Elements**	**Location/Building:** TA-55 COMPLEX Line item 06-015 RTBF
Subproject Title: CROSS SUBPROJECT SUMMARY	
Brief Description: The information in this summary is generally applicable to all of the Priority 1 and Priority 2 Subprojects. It is included in the subproject summary set to provide the users of the information one place in order to get a high level understanding of the major common elements that will be considered in executing the subprojects and to reduce repetitive information in the individual entries. Where a general set of information that is in this cross project summary does not apply to a specific subproject, it will be noted as an exception in that summary. If information elements are specific to that subproject only, they will be included in the subproject summary for that subproject. It is intended that the individual subproject summaries prepared for the CD-0 package will form the basis of the Subproject Definition Package (SDP) that will be developed in the Preliminary Design Phase.	
Subproject Interfaces:	N/A

ML Level: Will range from 3 to 1	**PC Category:** Will range from 1 to 3	**Safety Classification:** There are safety class and safety significant elements in some of the subprojects
USQ: Not applicable to these subprojects	**Cost/Duration:** Total Project Cost range of $115M - $185 M, 10 year schedule.	

1.0 INTRODUCTION AND SUMMARY

This project is proposed as Line Item LANL 06-015 and is included in the Ten Year Comprehensive Site Plan (TYCSP) as the Number 4 priority project in the Readiness in Technical Base and Facilities (RTBF) list.

The TA-55 Complex at Los Alamos National Laboratory (LANL), which was constructed in the mid 1970's, is the premier nuclear and plutonium facility in the nation. It consists of a high security Category I Special Nuclear Material (SNM) laboratory and processing facility as well as support systems and structures. It is the most modern and well-equipped nuclear facility at LANL; however, it is aging and critical systems are beginning to require excessive maintenance.

The goal is to support the Stockpile Stewardship Program and other efforts delineated in the Nuclear Posture, Defense Plutonium Strategy, Department of Energy (DOE) Strategic Plan, and other guidance documents through continued operation and programmatic milestones cost effectively for the next 30 years. An investment is necessary in the near term (e.g. the next ten years) to upgrade electrical, mechanical, safety, security, facility controls, and other selected facility related systems to accomplish that goal.

2.0 SCOPE OF WORK

The scope of work for the overall project is to modernize and upgrade facility and infrastructure portions of the TA-55 Complex that are failing or in danger of failing their safety and programmatic support requirements in the next ten years. The scope is

segmented into subprojects and grouped by importance into Priority 1 (23 Subprojects), Priority 2 (45 Subprojects) and Priority 3 (33 Subprojects) groups. The priorities are grouped according to impact on safety or programmatic elements of failure of the particular Subproject and some of the subprojects are inter-related either in sequencing or in timing. Only Priority 1 Subprojects are proposed for this project.

The subprojects are all infrastructure or facility related and are not programmatic support in nature. They include not only functional replacement but also upgrades in capability, reliability, and maintainability to suit the projected mission needs. This is the main driver for inclusion in the Readiness in Technical Base and Facilities (RTBF) planning rather than in Facilities Infrastructure Recapitalization Project (FIRP). They range from relatively simple emergency lighting replacement to relatively complex fire and criticality alarm systems and a proposed new building structure. The majority of the projected work is in and/or immediately surrounding the TA-55 PF-4 building, which houses the plutonium related activities.

Many of the subprojects involve operating systems within the complex that have a limited ability to be shut down for extended periods of time. Execution of these subprojects will have to be done by approaches such as building a parallel system and cutting over to the new system from the old or by demolition and replacement over laboratory shut down periods. A larger than normal planning effort will be required for those subprojects to reduce impact to ongoing and planned programs.

2.1 Documentation

The subprojects will proceed through all of the normal steps in the project sequence from conceptual design through startup. The information being acquired for this CD-0 package (drawings, reference document copies, specs, requirements etc) will be included in these summaries in such a fashion that the subproject summary documents can be carried forward into the Preliminary Design CD-1 package initiatives to support the Conceptual Design Report (CDR) activities and development of the Subproject Definition Package (essentially a mini CDR). The intent of this effort is to allow subsequent work to build on the background information developed for the CD-0 package and not have to research the same ground, thereby saving time and cost.

3.0 SUPPORTING INFORMATION

Supporting information has been developed along a variety of lines, from high level strategic planning through tactical approaches to work execution, from interviews with subject matter experts (SMEs) through full planning packages for some of the subprojects. Documentation may have Unclassified Controlled Nuclear Information (UCNI) in it and if it does, will be labeled and secured appropriately. It is probable that the information will not be considered validated for the most part but will at least show a pathway for the formality of design necessary to support NQA-1 level validation.

No classified supporting information is included in the document base for this effort and none is expected to be generated during the conduct of the subprojects. The proposed work scope does not deal with the weapons themselves or any programmatic equipment, it is limited to facility and infrastructure system, structure, or components (SSCs).

3.1 Strategic Planning for the Overall Project

Strategic planning has taken place ahead of this project in a number of ways. The primary lead has been by the DOE and the National Nuclear Security Administration (NNSA). The Laboratory has also done a considerable amount of strategic planning that affects this project.

3.1.1 DOE/NNSA Strategic Planning Enabling Documents

DOE Strategic Plan: released on September 30, 2003, the DOE stated its overall mission and strategic goals. This project falls primarily under the Defense Strategic Goal (Goal 1 Nuclear Weapons Stewardship).

Infrastructure Plan for the NNSA Nuclear Complex: released in April 2003, NNSA stated its' overall mission and Infrastructure Goal to modernize the Defense Programs (DP) Weapons Complex infrastructure and specifically calls out the TA-55 Infrastructure Reinvestment Project (Page 22).

Defense Plutonium Strategy: draft of January 11, 2001, stated that the TA-55 plutonium facility must be maintained (Section 1.3).

Nuclear Posture Review (NPR): released in 1995, updated December 2002, revised the Nation's nuclear weapons policy affecting DOE's nuclear weapons program. The NPR shifted planning for U.S. strategic forces from the threat-based approach of the Cold War era to a capabilities-based approach, relying on a significantly smaller nuclear stockpile to serve as a key deterrent to threats from nations that might wish to employ weapons of mass destruction.

3.1.2 LANL Strategic Planning Impacts

Ten Year Comprehensive Site Plan (TYCSP); issued annually (latest rev dated September 1, 2003) is the premier planning document for LANL and combines both strategic and tactical planning. This document presents an overview of major programs and projects along with their schedules and proposed budgets. This project is one of the eight featured RTBF projects shown in 5.2 of the plan and is listed as Number 4 Priority in Attachment A for the entire LANL site.

Integrated Nuclear Planning (INP): is an ongoing activity that was directed by DOE Defense Programs (DP) to integrate nuclear related activities at LANL. This is done through a series of workshops that develops goals and approaches for the contributing entities. This project was a subject of several workshops over the past several years as the project has matured. A major benefit of this planning is highlighting project interface issues among the various projects. This project is shown in the Los Alamos Integrated Nuclear Planning: History and Status to Date (Rev 0 9/30/03) document in the integration section and as a standalone project (Page 7).

4.0 JUSTIFICATION

The project itself is identified in the above strategic documents and is coordinated through the INP process. In addition, a number of workshops were conducted during 2003 and into 2004, which developed the need and basis for the scope of work (see Mission Needs Statement, Section 1.4).

5.0 RISKS

Project Management: This project has higher than normal inherent project management risk in the potential for impact to programs because of the long schedule, working in an operating nuclear facility, interrelationships of the subproject to themselves, other major projects being conducted in the same site areas, classification of information, access to restricted areas, safeguards and security needs and changes in priority of the work due to mission changes over the time of the project.

Design: This is a facility that has been in operation for over 30 years and history at LANL and other DOE sites has shown there should be some concern over the as-built condition of the facility and how well the documentation has been maintained. In addition, the condition of various systems is only known at the high level and system boundaries for the replacement and upgrade activities will be a problem for a number of the subprojects. Site access will be a risk for getting required information from drawings and walkdowns due to security restrictions and availability of systems engineers.

Construction: A large number of the subprojects will have to be installed in parallel with the existing components to avoid long term impacts on operations and maintain safety systems in operation until the cut over to the new systems can be accomplished. The old components can then be demolished. This is contrary to a normal project where the old components are removed and the new ones are then built to replace it. There is a cost impact to reversing the normal process but safety and operability must be maintained in many instances. In addition, some of the construction will take place in restricted areas, so cleared personnel such as craft workers will be needed and some of the construction will be limited to being performed by the Site Support Services contractor. Access will also pose a risk as shown above in the design section.

Contamination Control and Waste Management: A significant portion of the work scope will have to deal with demolition of existing facility components and the contamination control that will come with those systems. Waste that is generated for some of the subprojects will or may contain Transuranic (TRU) materials and those wastes are subject to special safeguards, control and handling.

5.1 Mitigation

Project Management: Risks will be mitigated by using a larger than normal Integrated Project Team to provide continuing and focused management oversight and support. The work will be replanned on an annual basis by a dedicated cost and schedule team and will heave significant DOE/NNSA participation. Level funding will be sought to reduce the variance imposed by funding uncertainty that can disrupt projects. A high level Project Director will be sought that has both position power and management support. Specialist leads such as a design manager and a construction manager will

also support them. The work will be closely coordinated with other TA-55 projects through the INP.

Design: Risks will be reduced for the design activities by having an in-depth condition assessment done during the CDR with greater than normal data gathering. This set of subproject notes will also help the designers as the set is migrated to an SDP document during the course of the CDR. It is proposed that several members of the CDR team be processed through the Personnel Security Assurance Program (PSAP) system to allow direct, unescorted access to PF-4 and that a dedicated Authorized Derivative Classifier (ADC) be provided.

Construction: Risks will be mitigated by close interaction with the Support Services Subcontractor (SSS) for PF-4 subprojects and by having the knowledgeable personnel from the SSS provide support to specialty and other contractors for the work not done by the SSS contractor. The funding profile will be limited so that an undue strain is not placed on the cleared craft personnel and if level funding can be maintained, a dedicated cleared craft staff might be put in place for the duration of the project.

Contamination Control and Waste Management: Problems in this area will be mitigated by the more detailed level condition assessments so that the construction team knows what they face before starting work and the waste facilities are prepared to accept the demolition generated materials.

6.0 INTERFACES

6.1 Programs

The primary mission for the TA-55 facility is to support nuclear programs, especially those that involve plutonium and/or weapons components. Major programmatic efforts in the facility are:

1. Pit Production/Manufacturing – Reconstitute pit manufacturing to meet stockpile support requirements. This activity includes reestablishing the technical capability to manufacture war reserve pits at LANL for the near term, and, establishing a manufacturing capacity required to support the enduring stockpile for the long term.
2. Radioisotope Power Systems Program – This advanced program supports the development, demonstration, fabrication, testing, and delivery of power systems that the U.S. requires to support space exploration and special national security activities.
3. Weapons/Pit Certification – Develop the capability for assessing the susceptibility of pits to neutron fluxes as a function of pit aging. This includes a major effort to develop validated, predictive response models for nuclear component survivability in neutron environments.
4. Pit and plutonium storage – The need for larger, long-term storage capacity for DP strategic material is dependent upon NN-60 continuing its disposition program on the current schedule (FY08 start for immobilization), which would allow excess plutonium to be removed from PF-4 at TA-55. Long-term DP storage needs will continue to be assessed as part of ongoing planning for existing and new DP nuclear facilities.

5. Actinide Research & Development – Chemistry laboratory research and development directed to acquiring knowledge of the behavior of actinide materials as they may related to any potential applications, and particularly to their recovery and/or purification.
6. Nonproliferation and Arms Control – LANL, along with Lawrence Livermore National Laboratory (LLNL), conduct research and development for NN in nuclear detection and measurement technology and provide technology and technical assistance.
7. Pit Disassembly and Conversion Facility – The primary objective is development and testing to demonstrate the feasibility of a process for disassembly, extraction, and conversion of plutonium from weapons components and other clean metal into forms suitable for disposition and storage.
8. Mixed Oxide Fuel Fabrication – One of the proposed paths for excess plutonium disposition is to fission it in a nuclear reactor in the form of mixed-oxide fuel (MOX). In support of this, LANL was tasked to support the fabrication of two lead test assemblies to be placed in a reactor to characterize the nature of the burnup and any issues related fuel performance.

6.2 Projects

There are a number of projects that are ongoing or proposed that will have some degree of interaction with this project. The LANL document "Integrated Nuclear Planning: History and Status to Date" from the IFC group gives the best overall view of the pertinent project interfaces in Table 1. These projects include:

1. Chemistry and Metallurgy Research (CMR) Replacement – New state-of-the-art actinide chemistry and research facility sited at TA-55 to replace existing and aging CMR Building. Moving the CMR facility to the TA-55 area will make nuclear operations more efficient and consolidated. Project scheduled from FY 06 through FY 09.
2. TA-18 Mission Relocation Project – Either the entire suite of TA-18 capabilities, or the SecCat III/IV operations will be moved to the TA-55 site, which will help eliminate security issues with the TA-18 site. Project not yet scheduled.
3. Radiography Facility – Install radiography capabilities in existing facility (PF-41) at TA-55, which will result in more secure and cost effective NDE of Pu and other nuclear assemblies. Project scheduled from FY 05 through FY 08.
4. Strategic Nuclear Materials (SNM) Storage – Need for increased storage capacity for SNM has given rise to the option of providing a long-term storage vault within the CMR building and providing a tunnel from TA-55's PF-4 and the CMR building. Project not yet scheduled.
5. Power Grid Infrastructure Project – Construct a third power line to serve the TA-55 site. Project will provide a redundant source of power, eliminate single point failure, and reduce lost time and costs due to outages, improve reliability and maintenance expenses. Project scheduled from FY 03 through FY 06.
6. TA-55 Utilities/Parking – Alleviate increasing parking issues that will be created during the construction of the CMR building. Options include a parking structure or paved parking lot across Pajarito Road or on the east side of the TA-55

Perimeter Intrusion Detection and Assessment System (PIDAS). Project scheduled from FY 06 through FY 09.

7. Radioactive Liquid Waste Treatment Facility (RLWTF) Project – Improves the RLWTF at TA-50 by improving process capabilities to meet projected regulatory requirements for discharge. Will integrate new processes in coordination with existing facility and operations. Project scheduled from FY 03 through FY 07.
8. Nuclear Materials Safeguards and Security Upgrades Project (NMSSUP) Phase II – Replaces and improves physical security features at TA-55 to respond to new threat scenarios. Fully integrated with Phase I, which updated the controls and data backbone of the security features. Project scheduled from FY 06 through FY 09.

7.0 OTHER SUBPROJECTS

This is not applicable for a summary level document as all subprojects are included.

8.0 OTHER INTERFACES

Safety Basis: There is a large body of information and documentation that must be acknowledged and responded to for project design and execution. The safety basis of the TA-55 Complex is one of the most important. There is an existing FSAR, an updated version being prepared to the FSAR, applicable TSRs and an Authorization Basis. It is believed that this project will be conducted within the safety basis documentation, and that modifications to that basis will not be needed. However, temporary mitigations and procedures may be needed during the construction phases as some of the work will involve penetration of primary containments such as the Zone 1 HVAC work.

Infrastructure/Utilities: Utility interfaces are not expected to be impacted to a great extent except for those subprojects that are specifically aimed at utilities such as the electrical system and the wet vacuum system. A planned parking structure will alleviate some of the parking problems. Telecommunications are not expected to be greatly affected.

9.0 RESOURCES AND CONSTRAINTS

1. Funding: the present proposal for the scope of work is limited by the expecting funding level. More work is needed than can be funded presently. Level funding is expected to allow the most effective use of the funds.
2. Q cleared personnel including craft: as the work will be done in one of the most highly secure area of the site, all craft must be Q cleared for certain subprojects.
3. S&S requirements for work in facility: increasing security requirements for the facility will reduce the effectiveness of the work staff and planning processes. While the need for the security is real and expected, there will be an impact on the work.
4. $20 M per year max load: a senior NMT manager has offered the opinion that the TA-55 Complex can only support about an additional $20 Million a year in additional infrastructure work due to the impact on the facility.

10.0 DESIGN AND REGULATORY BASIS

1. Codes and Standards: the work will be done to all applicable national codes and standards in addition to all applicable DOE requriements. This is not an unusual feature of this project but is normal for all work done at LANL.
2. Specifics applicable to nuclear and class 1 facilities: there are a number of specific DOE/NNSA, LANL and State of New Mexico requirements that must be met for this facility upgrade. They are detailed at a high level in the Programmatic Requirements Document and will be expanded to another level of detail in the Conceptual Design Report.
3. Contract provisions: the project must comply with the UC contract provisions and the driving milestones. Those milestones may affect how and when certain subprojects are done.

11.0 OTHER IMPACTS:

1. ES&H: there will be clear ES&H impacts, e.g. a determination of whether a new environmental impact or assessment evaluation will be needed or whether the work can be done under a Categorical Exclusion. Since this project will be an upgrade only, a Cat X determination is expected.
2. S&S: the changing structure in this area as a result of the September 11th actions and subsequent terrorist threats may bring significant and unplanned changes to the project as a result of new S&S requirements.
3. DCP process: the TA-55 Complex is instituting a more formal Design Change control process and while it is mostly in place, all subprojects will have to be done under the DCP system.

12.0 REFERENCES

What follows are the higher-level policy drivers for the overall project as referenced in the Mission Needs Statement. Additional references will be found in the individual subproject summaries.

A Project Management for the Acquisition of Capital Assets, DOE Manual 413.3-1 (March 28, 2003)
B DOE 420.1, Facility Safety
C Department Of Energy Strategic Plan (September 30, 2003)
D Defense Plutonium Strategy, January 2001 (Draft Final Copy for Approval)
E Nuclear Posture Review (December 31, 2001)
F Guidance on Integrated Planning, Letter from Thomas F. Gioconda to D. Dunsworth and LANL April 6, 2001.
G Infrastructure Plan for the NNSA Nuclear Complex, April 2003
H Ten-Year Comprehensive Site Plan FY 2004 to FY 2013, LA-CP-03-0653, September 1, 2003
I Integrated Nuclear Plan, LANL IFC Summary Rev 0 September 30, 2003
J Readiness In Technical Base and Facilities FY 2004 Implementation Plan LA-CP-03-0446 Jan 20, 2004

K Record of Decision for Stockpile Stewardship and Management Programmatic Environmental Impact Statement

L Quality Assurance: 10CFR 830.120, DOE O 414.1, DOE/NNSA Weapon Quality Policy (QC-1).

Subproject Summary Data

Subproject No.	Subproject Title	Project Priority	ML	PC	CAS asset ID / interface	Location	TA-55 System Walkdown Date	TA-55 Systems Engineer	Proposed Modifications	Upgrade Notes
01	Heating & Cooling Preheat Coils in Intake Stacks	1	2	2 & 3	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Replace preheat coils in intake stacks.	
02	HVAC Plenums & Associated Zone 1 400 Area	1	2	3	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Survey condition of system. Research requirements of N510 (Nuclear Air Cleaning) Replace to to corrosion.	Wet zone, corroded due to acid operations, problem getting filters installed in front because hardware is rusted.
03	Roof (Confinement)	1	1 & 3	3 & 1	55-0004 6288	PF-4		Larry Bornstein/Gerald Merkey	Replace built-up roof with new membrane system after sealing cracks.	Existing roof is starting to exhibit failures.
04	Confinement Doors (1st Door inside vault doors - entry to plant)	1	1	3	Upgrade to meet code. Not a maintenance issue?	PF-4		Larry Bornstein/Gerald Merkey	Replace doors with OSHA compliant unit and hardware to ease opening and closing	Non-OSHA compliant - too heavy to open; people prone to getting injured. **Maintenance project is currently underway to study and fix.**
05	HVAC Ductwork - Zone 1	1	1	3	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Add seismic restraints - additional hangers	Marginal capacity for PC-3. Relatively simple modification.
06	Criticality Alarm Zone	1	2	2	Should be in CAS?	PF-4 & PF-3	**5/19/2004**	Ron Polkinghorne/Ron Aguilar	Replace completely including sensing heads.	System is antiquated and gives false alarms. Hard to maintain; parts are not available.
07	Fire Water Sprinkler Piping (Internal PF-4)	1	2	3	Addition and upgrade, not maintenance.	PF-4		Gerald Merkey/Doug Bailey	Seismic bracing for internal supply, sprinkler piping, and standpipes. Install cross tie between north and south halves of building. Increase standpipe size from 4" to appx. 6".	Hydraulically fix PF-4 to provide increased fire water supply and distribution capacity.
08	Vault Water Tanks	1	2	3	Should be in CAS?	PF-4		Larry Bornstein/Doug Bailey	Replace Chilled Water System serving the Vault. System is undersized to meet the present heat loads.	Capacity unknown. SER commitment - will do a cost benefit study for upgrade. Provides vault cooling. Need to add redundancy and replace chiller that is failing.
09	Air Dryers	1	3	2	Should be in CAS?	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Replace Zone 1 air dryers (3 each); dispose of existing.	Units already purchased but need to be installed. Existing units were relocated from DP site and have been in service for over 40 years.
10	UPS Switchgear	1	2		55-0004 6576, 6575	PF-8		Steve Cox/G. A. Harrison	Replace auto transfer switch and switchgear	**Included in the Subproject # 77.**
11	Emergency Lighting	1	2	2	55-0004 1247	PF-4		Steve Cox/G. A. Harrison	Replace existing. Appx. 500 units. Self contained, wall mounted. **Work will be performed by TA-55 personnel/contractors. Not part of this Upgrade.**	System was replaced recently - about 2 yrs ago - but units fail frequently. Upgrade to more reliable units.
12	Stack Upgrade/Replacement	1	2	2	Should be in CAS?	PF-4	**5/19/2004**	Larry Bornstein	**Stack may be corroded, may not be tall enough, and controls/probes may need to be replaced as ANSI standard may require. $100K study to determine need and requirement.**	**Looming future requirement to possibly replace controls, probes, and stacks per new ANSI standard.** New system recently installed and is compliant with current regulations. State of NM may require new probes (rack type) and taller stack (add about 15 feet to height.).
13	Fire Alarm Panel & Wiring	1	2	2	55-0003/5740, 55-0004/ 6263, 6307, 6308	PF-3, PF-4		Gerald Merkey/Doug Bailey	Replace Fire Alarm Panel (remove from BRASS). Install new FACP, digital type system with repeater in OPS center.	
14	Fire Alarm Devices - Buildings	1	2	2	55-0003/5740, 55-0004/ 6263, 6307, 6308	PF-4		Gerald Merkey/Doug Bailey	Appx. 1000 devices. Replace horns, strobes, lights, pull stations, etc. Will require new wiring and conduits.	
15	Fire Alarm Devices - Gloveboxes	1	2	2	55-0004 6269	PF-4		Gerald Merkey/Doug Bailey	800 devices - replace. Located in wells of gloveboxes - can install without having to enter GB.	System is non-NFPA compliant and connected to BRASS. Panels are old and obsolete.

Subproject Summary Data

Subproject No.	Subproject Title	Project Priority	ML	PC	CAS asset ID / interface	Location	TA-55 System Walkdown Date	TA-55 Systems Engineer	Proposed Modifications	Upgrade Notes
16	Emergency Response, Facility Incident Command	1	3	2	None - New Building proposed so not in CAS	PF-1 Area			Need a facility / area 40'X80' bldg.	
17	HVAC Plenums (Non-Safety Class Portions)	1	3	1	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Replace 400 area recir. Only.	
18	Glovebox Stands	1	1 & 2	3	Upgrade to meet code. Not a maintenance issue.	PF-4		C. Sandoval/Doug Bailey	Brace approximately 275 gloveboxes of 479 to PC-3 to resist seismic event.	PC3 for modifications and new installations. For current capacity see FSAR. For Pu238, GBs are PC3, SC, and ML1. Reduces source term. Prioritization in FSAR, Table in Appendix 3K. Appx. $10K to $60K each, depending on configuration of GB.
19	Chiller Equipment, Pumps, Etc. (CCWS)	1	3	1	55-0006/ 6394	PF-6		C. Espinoza/Doug Bailey	Replace 3 chillers and 7 chilled water pumps.	
20	Cooling Towers (CCWS)	1	3	1	Should be in CAS?	PF-6		C. Espinoza/Doug Bailey	Replace 3 cooling towers and cooling water pumps.	
21	Elevators	1	3	1	Should be in CAS?	PF-4		Gerald Merkey	Replace freight elevator in PF-4 with piston type unit.	Existing elevator becomes unbalanced for heavy loads. Elevator is aging and for reliability needs to be replaced, upgraded.
22	Dumbwaiters	1	3	1	Should be in CAS?	PF-4		Gerald Merkey	Replace with new unit. Increased movement for materials to 7" impact tester.	Removed from Upgrade Project.
23	Industrial Waste	1	2	2	Upgrade to meet mission needs.. Not a maintenance issue.	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Add storage capacity.	Potential rod waste storage capcaity needed.
24	Heating & Cooling Systems (Except Preheat Coils in Intake Stacks)	2	3	1	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Replace	
25	Structure (Confinement System)	2	1	3	Should be in CAS?	PF-4		Gerald Merkey/F. Chavez	Paint exterior, fix and caulk minor cracks in concrete with elastomeric material.	
26	HVAC Plenums (Safety Class) Zone 1 200 Area	2	2	3	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Same as 400 area	
27	HVAC Plenums & Associated (Safety Class) Zone 1 100 Area	2	2	3	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	None - but due to Be work, may be risk for compliance with State of NM	
28	HVAC Ductwork Intakes, Bleedoff, Exhaust (Safety Class)	2	1	3	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Replace pre-filters on intakes. Replace BAT type filters w/ pleated or other as hard to obtain replacements.	Basement & Corridors x 2 (each half of bldg) = 4 total intakes. Same for exhaust (4 total).
29	HVAC Replace HEPAs in Zone 1	2	2		55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Replace HEPA filters only.	Included in the Zone 1 Plenum Replacement Subprojects.
30	Fire Suppression - Fusible Links (Glovebox Trains)	2	2	2	55-0004 6269	PF-4		Gerald Merkey/Doug Bailey	Test and likely replace fusible links in glovebox trains	
31	Fire Suppression PF-4 Sprinkler Heads	2	2	2	Should be in CAS?	PF-4		Gerald Merkey/Doug Bailey	Replace existing heads with new. See CMRU for unit cost to replace.	Hard to obtain replacements. Not practical to test to decide if replacement is warranted - more cost effective to replace.
32	Fire Suppression PF-4 Vault Pre-Action System	2	2	3	55-0004 6263	PF-4		Gerald Merkey/Doug Bailey	Update and modernize. Change from pre-action to wet pipe system.	Change to wet pipe will depend on probability of faulty discharge, criticality, safety, etc.
33	Fire Doors	2	3 & 1	2	55-0004 6287	PF-4	**5/19/2004**	Gerald Merkey/Doug Bailey	Replace	Existing fire doors are old and hard to maintain due to lack of parts.
34	Lab Walls	2	2	2	55-0004 6285	PF-4		Gerald Merkey/F. Chavez		PC3 where they support waste storage containers in 201B. **Maintenance Item**

Subproject Summary Data

Subproject No.	Subproject Title	Project Priority	ML	PC	CAS asset ID / interface	Location	TA-55 System Walkdown Date	TA-55 Systems Engineer	Proposed Modifications	Upgrade Notes
35	Lab Ceilings	2	2	2	Repair and maintenance. Should be in CAS?	PF-4		Gerald Merkey/F. Chavez	Repair leaks in floor above basement. Add drywall to both sides (fire protection) as needed.	**Maintenance Item.**
36	Penetrations in Labs	2	2	2	Repair and maintenance. Should be in CAS?	PF-4		Gerald Merkey/F. Chavez	Seal penetrations to preclude leaks into basement and other rooms.	**Maintenance Item.**
37	HVAC Ductwork (Non-Safety Class)	2	3	2	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Install fire shield for flexible ducts. Seismic bracing to be added to ductwork.	
38	HVAC Fans & Motors	2	1, 2 & 3	2 & 3	55-0004/ 6261, 6270, 6273, 6584, 6585, 6586, 6587, 7459	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Remove VFD's. Replace fans.	Non-safety class HVAC related. Fan housings are safety class.
39	Control System (Replace Pneumatics)	2	2 & 3	2 & 3	Upgrade to digital control. Should be in CAS?	PF-4	**5/19/2004**	Ron Polkinghorne/Ron Aguilar	Replace with DDC system.	Coordinate with Facility Control System and Subproject 59, HVAC Control Systems.
40	Electrical Distribution System	2	2	2	55-0004/ 6276, 6303, 6304, 6305 55-0006/ 6384, 6386, 6596, 6597	PF-4, PF-6, PF-8, PF-10, PF-11, PF-42		Steve Cox/G. A. Harrison	Replace transformers with non-PCB. Replace panel boards with modern enclosures and breakers and switches.	PF4 distribution from EA-9 and S-10. Bldgs include PF4, 6, 8, 10, 11, and 42. Formal assessment required to develop potential need and scope. Preliminary need related to obsolescence, lack of spare parts.
41	Facility Control System	2	2	2	Should be in CAS?	PF-3	**5/19/2004**	Ron Polkinghorne/Ron Aguilar	Replace existing with DDC unit, process controls system. Go to Ethernet type system so future technology upgrades will be more simple.	Existing system has obsolete computers and monitors and peripherals - unsupported by Hewlett Packard. Portions of FCS being replaced in FY2003/2004.
42	Instrument Air System	2	2	2	55-0008 6405, 6406, 6407, 6408, 6601, 6602	PF-8		Larry Bornstein/Doug Bailey	Otherwise, replace compressors and actuators.	No scope if #39 and DDC installed.
43	Paging System	2	2	2	Upgrade and mission need change.	PF-4		Ron Aguilar/S. Cox	Install new, UL listed system separated from Fire Alarm System. Needs horns, flashing lights, speakers, etc.	Normal + emergency paging / facility announcement system. Not separated from Fire Alarm System. Will need to separate.
44	Process Air	2	3	1	Should be in CAS?	PF-6	**5/19/2004**	Larry Bornstein/Doug Bailey	Design modifications, replace compressors.	Could be increased to PC2 if used to back up IAS, Air intake ML2 design feature. Existing system is old and beginning to be obsolete.
45	CAM Blowers	2	3	1	Should be in CAS?	PF-4		Larry Bornstein/Yvette Trujillo	Add blowers. Might be able to reuse existing.	Existing system has 4 CAMS in each room at corners. Add'l CAMs between GB lines for better coverage. Approx. 200-400 add'l CAMs. Mod will require larger blower system and more piping (maybe).
46	CAM Piping	2	2	2	Should be in CAS? Also adding upgrades.	PF-4		Larry Bornstein/Yvette Trujillo	Add headers and piping in each room. Add 2-1" headers in each lab with drops for new CAM Units.	Existing system has 4 CAMS in each room at corners. Add'l CAMs between GB lines for better coverage. Approx. 200-400 add'l CAMs. Mod will require larger blower system and more piping.
47	FHAS Blower System	2	3	1	Should be in CAS?	PF-4		Larry Bornstein/Yvette Trujillo	Replace blowers only; piping OK. 8 each.	Existing system is old and obsolete.
48	CCWSS, Cooling Towers, and Water Treatment	2	3	1	55-0042/ 6461	PF-42		C. Espinoza/Doug Bailey	**Duplicate of Subprojects 19 & 20.**	
49	Steam System	2	3	1	55-0006 6389, 6391, 6396	PF-8		Doug Bailey/Yvette Trujillo	Replace gas boilers (located exterior to plant) with electric package units.	Reduce life cycle costs and increase reliability, maintainability, and availability.
50	Positive Pressure Chilled Water	2	3	1	Should be in CAS?	PF-4	**5/19/2004**	Yvette Trujillo/C. Espinoza	Replace and upgrade pumps, valves, and equipment.	System is wearing out and becoming more expensive to maintain.
51	Non PF-4 Equipment Rooms	2							Placeholder.	**Removed from Subprojects.**
52	Diesel Generator	2	3	2	55-0008 6402	PF-8		Steve Cox/A. Herrera	Add new diesel generator.	In Subproject #77 UPS Replacement.
53	13.2 KV Distribution	2	2	2	55-0004 6276	PF-4		Steve Cox/G. A. Harrison	Replace transformer with a non-PCB type.	Replace panelboards with modern enclosures, breakers and switches.
54	Acid Waste System - Internal	2	2	2	55-0004/ 7460	PF-4	**5/19/2004**	Larry Bornstein/Yvette Trujillo	Replace existing piping with seamless, flangeless piping; double wall with leak detection.	May be accomplished in 2004-2007 under another project(s)). Existing piping has numerous flanges and fittings that are failing and leak.

Subproject Summary Data

Subproject No.	Subproject Title	Project Priority	ML	PC	CAS asset ID / interface	Location	TA-55 System Walkdown Date	TA-55 Systems Engineer	Proposed Modifications	Upgrade Notes
55	Acid Waste System - External	2	2	2	Not a CAS item, upgrade and startup.	PF-4		Larry Bornstein/Yvette Trujillo	Hook up new double wall piping. Remove existing single wall piping. Projected removed as work wil be performed in near future.	Waste Transfer Line to TA-50. New double wall line with leak detection was installed but has never been hooked up. May be hooked up in FY2003.
56	Caustic Waste System	2	2	2	55-0004/ 7460	PF-4		Larry Bornstein/Yvette Trujillo	Included in 54 above	
57	Sanitary Waste System	2	3		Not a CAS item, upgrade for future mission need.	PF-4		Larry Bornstein/Yvette Trujillo	Revalidate capacity and condition vis a vis projected growth and usage. **Project has been excluded from Upgrade Project.**	
58	Continuous Air Monitoring Units (200-400 Additional)	2	2	2	Upgrade but should be in CAS as a system.	PF-4	**5/19/2004**	Ron Polkinghorne/N. Montoya	Install approx. 200 new units. Replace approx. 200 old units with new units. Piping and blowers included in #45 and #46 above.	
59	HVAC Control Systems	2	2 & 3	2 & 3	Upgrade to digital control. Should be in CAS?	PF-4	**5/19/2004**	Ron Aguilar/L. Nelson	Included in #39 above.	ML-2 where associated with PF4 ventilation controls. Replace existing with DDC type system.
60	NPCWS - Piping	2	2 & 3	2	55-0004, 6590	PF-4	**5/19/2004**	Yvette Trujillo/L. Bornstein	Re-gasket flanges	
61	NPCWS - Coils, Chillers, Equipment, Pumps	2	2 & 3	2	Should be in CAS?	PF-4	**5/19/2004**	Yvette Trujillo/L. Bornstein	Replace Surge Tanks (4 of 7); replace 14 pumps; replace 7 heat exchangers.	Mild contamination, dirty and old. System is obsolete and hard to maintain.
62	Bubbler Bypass Features	2	2	2	Operability upgrade, not maintenance.	PF-4		Larry Bornstein/K Wood	Upgrade and replace. Enable fail shut configuration and bypass for maintenance.	Located in appx. 100 gloveboxes (maximum). GB exhaust filtering system. Problems related to fail open instead of closed. Some don't have bypasses which makes maintenance difficult. Affects programmatic capacity for inerting a GB.
63	Repair Switchgear Room Ceilings	2	2			PF-4		Gerald Merkey/F. Chavez	Repair by sealing leaks in penetrations in floor above.	Leaks from floor above causes contamination. **Not in Upgrade Project. Is Maintenance Item**
64	Lockers & Change Facilities	2	3	1	Operability upgrade, not maintenance.	PF-3	**5/4/2004**	Gerald Merkey	Need to improve and make larger; consider 2nd story on PF-3 to provide additional capacity.	
65	Operations Center	2	3	2	Operability upgrade, not maintenance.	PF-3	**5/19/2004**	Ron Polkinghorne/Ron Aguilar	Need to improve and make bigger	Consider second story to PF-3.
66	Warehouse Capability	2	3	1	Operability upgrade, not maintenance.	PF-5			Warehouse may be too small	Consider enlarging warehouse.
67	Health Physics Analytical Laboratory	2	2		Operability upgrade, not maintenance.	PF-3			Existing lab is in admin area. Consider installing in a better controlled space	Removed from Uprgrade Project.
68	MC&A Systems	2	2	2	Operability upgrade, not maintenance.	PF-4			Selected upgrades to improve reliability	
69	HVAC Plenums and Associated (Safety Class) Zone 1 - 300 Area	3			Should be in CAS?	PF-4	**5/19/2004**		None - but due to Be work, may be risk for compliance with State of NM	
70	Attic	3			Maintenance. Should be in CAS?				Install fall protection and walkways in attic	
71	Chlorine Gas Delivery System	3	2	2	Operability upgrade, not maintenance.				Install new system. Relatively small system. Provide double containment and alarms for piping. Gas cylinders stored outside.	Existing system was poorly installed and is complicated and expensive to maintain.
72	Fire Suppression System - Fire Loop Pumps	3			Should be in CAS?				Replace Fire Loop pumps in PF10 and 11	Not part of fire loop project. Coordinate with installation of package heater units in pump houses to maintain temperature in winter.

Subproject Summary Data

Subproject No.	Subproject Title	Project Priority	ML	PC	CAS asset ID / interface	Location	TA-55 System Walkdown Date	TA-55 Systems Engineer	Proposed Modifications	Upgrade Notes
73	Remove Selected GBs from Throughout the Building	3			Operability upgrade, not maintenance.				Remove obsolete and aging GBs that are no longer needed. Estimate is based on 50 units.	Costs seem low. Could be $1M per glovebox to D&D and dispose.
74	New GBs 400 Area	3			New installation. Not in CAS.				Selective replacement of GBs used for metal prep - basic facility capability. About 25 total.	Out of Scope
75	Laboratories - Doors	3			Should be in CAS?				Replace as needed	
76	Vault Racks & Shelving, Kardex Unit & SNM Storage Drawers	3			Operability upgrade, not maintenance. Existing should be in CAS.				Consider upgrading to increase storage capacity and improve configuration.	Coordinate with CMRR
77	UPS Replacement	1	2	2	55-0006/ 6378, 6379, 6382, 6598, 6599, 6600	PF-4/PF-8			New UPS, Battery System, Diesel Generator, and Load Bank	Replaces Subproject #10 (UPS Switchgear) and Subproject #52 (Diesel Generator)
78	Generator Related to UPS	3			55-0006/ 6378, 6379, 6382, 6598, 6599, 6600	PF-6			New Diesel generator	May be accomplished in FY04 with F&I funds
79	Hot Water System	3			55-0006/ 5591, 55-0028/ 5582	PF-6, PF-28			Satisfactory	
80	Utility Gas Systems	3	3	1	Not in CAS but should be? Not a maintenance issue.				Satisfactory; but remove if electric boilers installed.	Natural gas system for boilers in PF6, 10, and 11. Remove if electric package units are installed.
81	Non PF-4 HVAC	3			55-0001/6198,6201,6570, 6571, 55-0003/6253,6574 55-0005/ 6357, 55-0020/6422, 55-0039/821, 55-0041/ 962,1328, 55-0042/6467, 55-0107/6499,	PF-1, PF-3, PF-5, PF-20, PF-39, PF-41, PF-42, PF-107			Upgrade due to age and capacity	
82	HVAC Fans - Variable Frequency Drives	3	2 & 3	2 & 3	55-0004/ 6270	PF-4			See #1 and #30. Remove VFDs.	ML2 where associated with PF4 ventilation
83	Roofs	3	3	1	55-0002/ 6230, 55-0003/ 6259, 55-0005/ 6361, 55-0010/ 6416, 55-0011/ 6418, 55-0039/820, 55-0107/6502, 55-0114/7465, 55-0148/6521	PF-2, PF-3, PF-5, PF-10, PF-11, PF-20, PF-39, PF-107, PF-114, PF-148			Roof Replacement (PF-4?)	Roofing material only; excludes building structure.
84	Trolley Systems	3	2 & 3	2 & 3	55-0004/ 6291, 6292, 6293, 6294	PF-4			Install new trolley components - buckets, controls, power distribution. PAR systems is mfg.	Mfg. may not continue to support existing system components in future due to obsolescence. Consider new style of trolley, controls, etc. ML2 as primary containment (trolley shell).

Subproject Summary Data

Subproject No.	Subproject Title	Project Priority	ML	PC	CAS asset ID / interface	Location	TA-55 System Walkdown Date	TA-55 Systems Engineer	Proposed Modifications	Upgrade Notes
85	Industrial Gas Systems (Trailers) - Internal	3			Should be in CAS?				Replace headers in basement. Replace high pressure headers and low pressure headers as all are old and failing.	Provides Argon, Nitrogen, and Helium. Gas purity problems currently - affects programmatic work.
86	Industrial Gas Systems (Trailers) - External	3			Delete from list?				Satisfactory	FWO installing a trench and new line for N2
87	Wet Vacuum	3	2 & 3	2 & 3	Should be in CAS?				Replace pumps and related equipment (valves, controls) - 4 units.	Collection system in satisfactory condition. Pumps are old and failing.
88	Acid Distribution	3			Should be in CAS?				Replace flanged piping system with seamless piping. Focus on HNO2 system.	
89	Fire Suppression - Halon System	3			Should be in CAS?				Remove	System is obsolete
90	Water Storage Tank Exteriors	3			55-0004/7595, 7596	PF-4			Sandblast and paint - interior and exterior.	Routine activity
91	Training Center & Mockup for TA-55	3			New installation. Not in CAS.				Training center is in townsite. Need a center at TA-55	
92	Equipment & GB Mockup/Assembly Area	3			New installation. Not in CAS.				Need a cold mockup and pre-assembly / checkout area for new processes and equipment	
93	Communications Capacity	3			Upgrade, existing system should be in CAS?				Will there be enough; speeed?; capacity? Will existiing projects be able to keep up?	
94	Cafeteria	3			???				Capacity, location, coordination with CMRR	
95	Sanitary Waste	3			Upgrade, existing system should be in CAS?				Revalidate capacity considering site needs and growth	
96	Site Drainage	3			55-0004/ 7461	PF-4			Re-evaluate; eliminate scouring near PIDAS	
97	Tie in FITS & NTSF to Classified LAN	3			New installation. Not in CAS.				Tie existing facilities to classified LAN to improve productivity	
98	Perimeter Road & Site Paving	3			Should be in CAS?				Existing pavement and roads are deteriorating	
99	Upgrade Tunnel - PF-4 to PF-41	3			Upgrade, existing system should be in CAS?				Upgrade the tunnel between PF-4 and PF-41. Consider connecton to planned CMRR. This subproject may end up in the scope of the CMRR Project.	
1A	Facilities for Site Support Service Contractor	3			New installation. Not in CAS.				Exisitng facilities are too small	
1B	Radiation Protection Systems	3							Includes mostly stand-alone / plug-in systems and other similar equipment, such as Hand-foot monitors, PCM2's, and similar.	

TA-55 REINVESTMENT PROJECT
SUBPROJECT SUMMARY
UPDATED 6/07/04

Subproject Number/WBS: 01		**Location/Building:** TA-55/PF-4
Subproject Title: Heating & Cooling Systems (Preheat Coils in Intake Stacks)		
Brief Description: Replace two preheat coils in the intake stacks.		
Subproject Interfaces:	Subproject 12: Stack Upgrade/Replacement Subproject 59: HVAC Control Systems	
ML Level: 2	**PC Category:** 2/3	**Safety Classification**: Balance Of Plant

1.0 INTRODUCTION AND SUMMARY

There are two preheat coils in the intake stacks, HC-809/840 and HC-810/841. Each coil serves the two H&V units whose numbers are included in the coil numbers. The installation of these coils was over 25 years ago; the coils are near the end (if not beyond already) of their useful lives and need to be replaced.

2.0 SCOPE OF WORK

Disconnect the heating water piping from and remove the existing preheat coils from the intake stacks, located near column lines H-16 in the basement of PF-4. Replace-in-kind with new preheat coils in the intake stacks and reconnect the heating water piping as required. Refer to the PDF labeled “PF-4 Preheat Coil Schedule” for the design parameters for these two coils, and use these parameters for the replacement coils. Minor piping changes may be required for hookup of the new coils to the existing piping.

3.0 OTHER CONCERNS/ISSUES

The control of the heating system is automated; if the controls are as old as the preheat coils; they will probably need replacing also. The preheat coils receive heating water which must be valved off in order to disconnect the piping from the coils to allow their removal and replacement.

Due to their age (over 25 years old), the existing preheat coils are at if not beyond the end of their useful service life.

Reliable coils are required to preheat the air to the H&V units in the basement of PF-4, which in turn supply air to various other locations in the building. Failure of the preheat coils can cause heating problems with areas which may have sensitive temperature requirements in order to meet the Lab’s needs for ongoing operations and programs in PF-4.

4.0 SUPPORTING INFORMATION

Drawing showing the installation of the existing preheat coils is “Air Conditioning Details Preheat Coil Installation & Misc. Plutonium Building”, Lab Job 4498-55, Eng-C82299, sheet 134 (Fluor drawing number LA-KY-3313.1), Revision 1, 7-29-78, As-Built.

5.0 RELATED PROGRAMS/PROJECTS

Not Applicable.

TA-55 REINVESTMENT PROJECT
SUBPROJECT SUMMARY
UPDATED 6/02/04

Subproject Number/WBS: 02		**Location/Building:** TA-55/PF-4
Subproject Title: HVAC Plenums & Associated Zone 1 – 400 Area		
Brief Description: Remove and replace the existing Zone 1 filter plenums (2) for the 400 Area in Pf-4.		
Subproject Interfaces:	Subproject 05 HVAC Ductwork—Zone 1 Subproject 28 HVAC Ductwork Intakes, Bleed-off, Exhaust (Safety Class) Subproject 38 HVAC Fans & Motors	
ML Level: 2	**PC Category:** 3	**Safety Classification:** Safety Class

1.0 INTRODUCTION AND SUMMARY

The Zone 1, 400 Area, exhaust air is routed through the dual three stage filter plenum prior to discharge through the south exhaust stack. The two plenums are essentially stainless steel gloveboxes with bag in/bag out filters. The filters (HEPA) and mounting hardware are corroded due to corrosive operations and acid in the air stream and should be replaced for future continued operation.

2.0 SCOPE OF WORK

Replace both filter plenums in the cinder block structure with corrosion resistant material including new filter frames and filters that can be easily changed out. Install a new mist eliminator and prefilter with each filter plenum. Install new ductwork (inlet and outlet) inside the structure. Existing exhaust fans will not be replaced.

3.0 OTHER CONCERNS/ISSUES

Due to the corrosive characteristics of the exhaust air, considerable attention will have to be paid to material and filter selection. The removal and installation will be closely coordinated with ongoing operations to allow one of the filter plenums to be installed while the other plenum operates.

4.0 SUPPORTING INFORMATION

Ventilation System P&IDs , TA-55, Bldg 04, MECH: 400 AREA GLOVEBOX EXHAUST SYSTEM PIPING AND INSTRUMENTATION DIAGRAM SHEET 17.

TA-55 February 5, 2004 Site Tour Notes. David O'Flynn EMAIL dated February 16, 2004.

5.0 RELATED PROGRAMS/PROJECTS

Not Applicable.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 03		**Location/Building:** TA-55/PF-4
Subproject Title: Roof (Confinement)		
Brief Description: Remove and replace the roof on PF-4. Repair cracks as needed in concrete roof under membrane.		
Subproject Interfaces:	Subproject 25: Structure (Confinement System)	
ML Level: 3 for membrane; 1 for concrete work.	**PC Category:-**1 for membrane, 3 for concrete.	**Safety Classification:** Safety Class (Structure)

1.0 INTRODUCTION AND SUMMARY

Building PF-4 consists of approximately 169,000 square feet and is located in the center of the TA-55 complex. The roof of PF-4 covers approximately 76,000 square feet. An assessment of the roof was performed in March 1996. The assessment indicated the roof is a membrane roofing system supplied by Tremco. It is a granulated surface, one-ply sheet with a rubber modified asphalt adhesive. Although the roof was only two years old at the time of the inspection (approximately 8 years ago), the roof, if maintained, could be expected to last 20 to 30 years if a luminizer was applied over the present roofing system. The other method of extending the life of the roof would be to re-roof it with a new system. However, the present roof has to be removed to access and repair existing roof cracks. A new roof can then be applied.

2.0 SCOPE OF WORK

Strip roof and replace with membrane roof on approximately 76,000 square feet. Perform roof work in sections of the roof to avoid problem of having the complete roof exposed to elements during the repair. Patch cracks by grouting, cleaning, and sealing. Seal with paint, put in insulation, walkways, seal penetrations. Then apply the roof membrane

Need sampling condition assessment since we do not have a good estimate for the amount of cracking, depth of cracks.

3.0 OTHER CONCERNS/ISSUES

Membrane roof is not a safety class item, but the structure is the safety confinement including the concrete and grouting (primary boundary). An in-depth assessment must be performed on the roof structure after the roof is stripped away to determine extent of crack repair.

Specialty contractor that would patch cracks and install the new roof. Although work will be performed in exclusion area but may only require Q-cleared escorts.

4.0 SUPPORTING INFORMATION

ICF Kaiser Memorandum from David O'Flynn to Wade Cureton dated 3/18/96 with subject heading Architectural Assessment.

The re-roofing installation will meet the requirements of LANL Engineering Manual, Architectural Section, and Specification 07351, Elastomeric Membrane Roofing (Hypalon).

5.0 RELATED PROJECTS/PROGRAMS

NMSSUP Phase II.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 04			**Location/Building:** PF-4
Subproject Title: Confinement Doors (First Door Inside Vault Doors – Entry to Plant)			
Brief Description: Replace the two confinement doors in PF-4 with new confinement doors.			
Subproject Interfaces:			
ML Level: 1	**PC Category:** 3	**Safety Classification:** Safety Class	

1.0 INTRODUCTION AND SUMMARY

The two existing confinement doors (Door 149 and Door 344) are located in the East Airlocks in PF-4. Door 149 is located between Rooms 136 and 137 leading to the 100/200 corridors, and Door 344 is located between Rooms 338 and 339 leading to the 300/400 corridors. The existing doors were installed when PF-4 was built in 1978 and are becoming difficult to open and close.

New replacement doors that meet current codes and can be opened and closed easily should be installed.

2.0 SCOPE OF WORK

Install two (2) new metal confinement doors that meet current codes and standards. Doors will be replacements for existing 3'8'' wide x 8' high confinement doors.

3.0 OTHER CONCERNS/ISSUES

Age-related wear and tear has made these confinement doors difficult to open and/or close. Operations personnel are concerned the TA-55 personnel could be injured when trying to manipulate the doors. Since this is a major confinement point for entry to the plant, replacement doors are necessary.

4.0 SUPPORTING INFORMATION

LANL-AE-08L-113-07-A01-0013, Vault Door Replacements, TMSE Project, PBFR Backup Documentation, May 1999.

TA-55 FMU-7 Master Equipment List (MEL System 1212)

5.0 RELATED PROGRAMS/PROJECTS

Not Applicable

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/03/04

Subproject Number/WBS: 05		**Location/Building:** PF-4
Subproject Title: HVAC Ductwork – Zone 1		
Brief Description: Install seismic bracing on the Zone 1 HVAC Ductwork to meet Performance Category (PC) 3 requirements.		
Subproject Interfaces:	Subproject 02: HVAC Plenums and Associated Zone 1 400 Area Subproject 26: HVAC Plenums (Safety Class) Zone 1 200 Area Subproject 27: HVAC Plenums (Safety Class) Zone 1 100 Area	
ML Level: 1	**PC Category:** 3	**Safety Classification:** Safety Class - Primary Boundary

1.0 INTRODUCTION AND SUMMARY

Zone 1 ductwork is located on the laboratory level and in the basement. On the laboratory level, it is located overhead of the gloveboxes. It is connected to the gloveboxes (4" to 8" diameter stainless steel duct) vertically, and manifolds to 8" diameter runs below the ceiling. It then runs to a chase or larger manifold and penetrates the lab floor and goes to the basement. In the basement, the ductwork is larger (12" to 18" diameter) and runs to the Zone 1 HEPA filters. There is separate Zone 1 ductwork for areas 100, 200, 300, and 400. The ductwork is welded stainless steel, with some gasketed connections. Currently, it is supported by all-thread hangers.

2.0 SCOPE OF WORK

New seismic bracing will be installed transversely (perpendicular to the ductwork axis) and laterally (along the ductwork axis) on the ductwork. Requirements (to be confirmed during design) are estimated follows:

- Transverse: every 30 feet.
- Lateral: every 60 feet
- In the basement, the ductwork is 4 to 5 ft below the concrete ceiling. On the upper levels, this distance will be greater.
- Lateral bracing will be light angle and plate gussets to make an "X" 4 to 5 feet square (or larger), depending on location. These assemblies will be prefabricated, and seats (plate ear or attachment point with bolt holes and some dielectric to prevent corrosion between stainless steel and regular steel on bracing) around the ductwork that can be bolted on (without welding to the ductwork). Then the bracing is bolted to the seat. Base plates (with ears containing bolt holes) will be prefabricated and anchored to the concrete ceiling. Finally, the assemblies will be bolted in place.
- Transverse bracing will be similar, with a "V" shaped brace.

· Unistrut may be substituted for angle bracing, and could be used for seats.

· Prior to installation, braces should be shop painted, with field touch-up as required.

· Bracing assemblies will be safety class, since the associated ductwork is safety class. Therefore, the steel, bolts, welding rods, welding machines, etc., will have to have mill certifications and other kinds of paperwork to go along with it, to make sure the material meets all requirements. No replacement of ductwork will be required.

· Each brace must be custom designed to a specific location due to congestion and to avoid obstructions, so prior to fabrication, design engineering and layout will be required.

It is estimated there are approximately 20,000 lf of duct in PF-4 (about 3500 lf for each lab area, and 1500 lf in the basement under each lab, with four lab areas), translating to about 700 transverse braces and 350 lateral braces.

3.0 OTHER CONCERNS/ISSUES

This subproject assumes no ductwork replacement. If ductwork requires replacing due to corrosion or for other reasons, the replacement must be accomplished before the bracing is installed. Condition assessment and ultrasonic testing of the duct may also be required to determine duct replacement.

4.0 SUPPORTING INFORMATION

TA-55 February 5, 2004 Site Tour Notes. David O'Flynn EMAIL dated February 16, 2004.

5.0 RELATED PROGRAMS/PROJECTS

Actinide Research and Development.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 06			**Location/Building:** TA-55/PF-3 & PF-4
Subproject Title: Criticality Alarm Zone			
Brief Description: Replace existing Criticality Alarm System, comprised of 20 Continuous Air Sampling (CAS) Detectors and 20 CAS Ratemeters; interconnecting wiring will also be replaced.			
Subproject Interfaces:	Subproject 39 - Control System (Pneumatics to DDC) Subproject 41 - Facility Control System		
ML Level: 2	**PC Category:** 2	**Safety Classification:** Safety Significant	

1.0 INTRODUCTION AND SUMMARY

The existing Criticality Alarm System is comprised of 20 Continuous Air Sampling (CAS) Detectors installed in various locations throughout PF-4. The Detectors send signals back to the 20 CAS Ratemeters installed in a panel-mounted rack located in the Operations Center Control Room in PF-3. Operations personnel are experiencing false alarms, and spare parts are becoming difficult to obtain.

The work will be performed in the Operations Center Control Room in PF-3 and at the existing Detector locations throughout PF-4, which are monitored by Operations Personnel on a 7-day, 24-hour basis.

2.0 SCOPE OF WORK

Twenty new CAS Detectors will be installed on the first floor and in the basement of PF-4. Twenty new CAS Ratemeters will be installed in the Operations Center Control Room in PF-4. Matching existing locations, 16 Detectors will be located on the first floor and 4 Detectors will be located in basement. A new panel for mounting the 20 Ratemeters will be installed in the Control Room in PF-3 and new interconnecting wiring and conduit will also be installed between the Detectors and Ratemeters

3.0 OTHER CONCERNS/ISSUES

The operators in the Operations Center should have the ability to monitor and respond to upset/unusual conditions. By installing the new Detectors and Ratemeters, the operators will have reliable, maintainable equipment, which will enable them to respond to changing conditions in the processes/systems.

The installation of the new Detectors and Ratemeters including Panels, conduit, wiring, and mounting brackets must be done while the existing Criticality Alarm System remains in service. None of the existing system can be reused.

Additionally, the majority of the installation work must be performed by Q-cleared personnel, as they must be able to move between the PF-3 Operations Center and the PF-4 first floor and basement.

4.0 SUPPORTING INFORMATION

TA-55 MEL for System 1411-Criticality Alarm System.

Telecon with Dave Wannigman, TA-55, on 4/22/04 regarding contact for Thermo Electron (approved supplier for Detectors and Ratemeters).

5.0 RELATED PROJECTS/PROGRAMS

Not Applicable

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

<table>
<tr><td colspan="2">Subproject Number/WBS: 07</td><td colspan="2">Location/Building: TA-55/PF-4</td></tr>
<tr><td colspan="4">Subproject Title: Fire Water Sprinkler Piping (Internal PF-4)</td></tr>
<tr><td colspan="4">Brief Description: Flow rate and capacity can be considered marginal for certain areas of the Fire Protection System. Seismic restraints/supports on the piping should also be installed on all of the sprinkler and riser piping.</td></tr>
<tr><td>Subproject Interfaces:</td><td colspan="3">Subproject 14: Fire Alarm Devices</td></tr>
<tr><td>ML Level: 2</td><td>PC Category: 3</td><td colspan="2">Safety Classification: Safety Significant</td></tr>
</table>

1.0 INTRODUCTION AND SUMMARY

The Fire Protection Sprinkler System in PF-4 is split between the north and south halves of the building. The north side is fed through a 4" (Zone 195) line (riser) that comes off the 8" riser in the basement. The south side is fed through a 4" (Zone 159) line (riser) that comes off the 8" riser in the basement on the south side of the building.

The existing sprinkler system has pipe supports but these supports may not be qualified at Performance Category (PC) 3 as required.

2.0 SCOPE OF WORK

At both north and south ends of the basement where the Fire Protection System water supply enters the building through 8-inch risers, the 4-inch lines along with the alarm check valves and gate valves and tamper switches that supply sprinkler system water should be removed and replaced with 6-inch lines, alarm check valves, and gate valves with tamper switches that meet the present NFPA codes. A new 4-inch line will be added (approximately 250') between the north and south ends of the building to supply additional Fire Protection Water to the sprinklers when the sprinklers are activated.

As part of this Subproject, new seismic supports/restraints that meet PC-3 requirements will be added to the existing sprinkler piping in the basement and the first floor. Seismic restraints shall also be added to the existing risers in the basement and the new 6-inch risers installed in the basement that replace the existing 4-inch risers.

3.0 OTHER CONCERNS/ISSUES

Shutdown and tie-in of added piping and equipment (valves and switches) will have to be closely coordinated with ongoing operations.

4.0 SUPPORTING INFORMATION

As-Built Critical Facility Fire Protection System Drawings, Bldg 04, TA-55, dated 9-30-96.

TA-55 February 5, 2004 Site Tour Notes. David O'Flynn EMAIL dated February 16, 2004

5.0 RELATED PROJECTS/PROGRAMS

Not Applicable

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 08			**Location/Building:** TA-55/PF-4
Subproject Title: Vault Water Tanks			
Brief Description: Install new cooling units in the basement to adequately cool the PU-238 that must be stored in an environmentally controlled area.			
Subproject Interfaces:			
ML Level: 2	**PC Category:** 3	**Safety Classification:** Safety Significant	

1.0 INTRODUCTION AND SUMMARY

The existing method of cooling the PU-238 material is to immerse the material in a chilled water bath. The chilled water is supplied by the PPCCW (Positive Pressure Circulating Chilled Water) system. The system is not automatic and water must be added manually to the bath.

A new system as commercially available walk-in coolers with shelving would solve the cooling problems that presently exist. The coolers with their own independent refrigeration system could be installed in the basement in the same area as the Vault.

2.0 SCOPE OF WORK

Remove the existing tanks and pumping units that are supply the cooling to the Vault Water Tanks. Install 3 -4 separate walk-in coolers with industrial-type shelves in the basement that have a total storage floor space of approximately of 400 square foot. Each walk-in cooler would have its own refrigeration unit.

Install new electrical breakers, conduit, and switches required to operate the new coolers.

3.0 OTHER CONCERNS/ISSUES

The location of the walk-in coolers would have to be compatible with the existing equipment that is presently installed in the basement. The coolers will also have to fit inside the present vault in the PF-4 basement.

4.0 SUPPORTING INFORMATION

Telephone conversation between Anthony Drypolcher, NMT-4 Team Leader, and John Turlak, Jacobs Engineering, on May 25, 2004.

TA-55 February 5, 2004 Site Tour Notes. David O'Flynn EMAIL dated February 16, 2004.

5.0 RELATED PROJECTS/PROGRAMS

Not Applicable.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 09		**Location/Building:** PF-4/Basement
Subproject Title: Air Dryers		
Brief Description: Replace three 60-year-old dryers and one dryer control panel.		
Subproject Interfaces:		
ML Level: 3	**PC Category:** 2	**Safety Classification:** Balance of Plant

1.0 INTRODUCTION AND SUMMARY

There are two operational 1500 ACFM air dryers in the basement of Building PF-4, with a third being used for spare parts and a fourth abandoned-in-place. The dryers are original equipment, relocated from the TA-21 DP site. They are over 60 years old, and worn out. NMT has three new 2000 ACFM dryers (Electrodryer Model B4000) awaiting installation as replacements.

The existing 300 Area operational dryer will remain in-place as a backup for the three new dryers, both during dryer removal/installation, as well as when all the new dryers are up and running. The three new dryers will be installed in the locations of the three existing dryers; installation therefore will need to be phased to keep the building supplied with dry air during the construction work.

Existing interconnecting ductwork must be replaced with new ductwork, sized for the airflow requirements of the new dryers. This ductwork must be able to handle the requirements of two dryers at one time.

A new control panel will be designed and installed to control the one existing and three new dryers.

2.0 SCOPE OF WORK

Design and fabricate the control panel for the new installation. The new control panel must be designed and installed to control the one existing and three new dryers; the location for this new panel is next to the 100 Area dryer. No automatic/emergency switching features are needed, but verification of valve positioning is required. Controls should be simple and easy to use: starting and stopping each dryer will be manual; control of the flow from each dryer will also be manual, by adjusting the existing discharge valve from each dryer (if these existing valves are used, the control modules from each valve should be removed).

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Disconnect utilities and remove the abandoned 400 Area dryer and ductwork; replace ductwork as required, sized to handle two dryers at one time. Install new 400 Area dryer and install the new control panel by the 100 Area dryer. Connect utilities to the new dryer and control panel.

Disconnect utilities and remove the 100 Area dryer and ductwork; replace ductwork as required, sized to handle two dryers at one time. Install new 100 Area dryer, connect utilities and connect to control panel.

Disconnect utilities and remove the 200 Area dryer and ductwork; replace ductwork as required, sized to handle two dryers at one time. Install new 200 Area dryer, connect utilities and connect to control panel.

3.0 OTHER ISSUES/CONCERNS

The installation and removal of three dryers, control panel, controls, and ductwork will impact ongoing operations at TA-55, as the Zone 1 air dryers must continue to operate while new units are installed and phased into the ongoing operations.

With the new installation, three will be operational with a fourth an operational spare. If construction scheduling is a constraint, consideration could be given to replacing the abandoned dryer and one other at the same time. This would still maintain two operational dryers, but until the two new dryers are installed and on-line, there would not be an operational spare to back up the two existing dryers awaiting replacement.

Installation will also be hampered by the availability of Q-cleared personnel that are required to perform the work as it is within the confines of PF-4.

The dryers that have been purchased and would be installed under this Subproject should have a thorough inspection and checkout by the manufacturer, Electrodryer, to ensure the units being installed are in like-new condition. Any changes or modifications that will be required to bring the dryers to like-new condition should be performed before installation.

4.0 SUPPORTING INFORMATION

PF-4 Basement Floor Plan (UCNI), Filename BL-HVAC, 05 Dec 94

Los Alamos P.O. 40326-001-029F Air Dryers, Lectrodryer Job D9469

Los Alamos RFP 2001-019 (Jacobs internal paperwork; not returned to LANL)

5.0 RELATED PROJECTS/PROGRAMS

Not Applicable.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 12		**Location/Building:** TA-55/PF-4
Subproject Title: Stack Upgrade/Replacement		
Brief Description: There are two stacks (north and south) on PF-4; they handle exhaust from the basement, from first floor bleedoffs, and from gloveboxes. The stacks are currently adequate, but are corroding, and since they are approaching 30 years old, routine maintenance and surveillance difficulties and changes in technology and code requirements will require their replacement soon.		
Subproject Interfaces:	Subproject 05—HVAC Ductwork–Zone 1	
ML Level: 2	**PC Category:** 2	**Safety Classification:** Balance of Plant

1.0 INTRODUCTION AND SUMMARY

The north stack from the basement of PF-4 receives exhaust from four systems: the 100 Area Glovebox exhaust (HVP-852 and 853), the 200 Area Glovebox Exhaust (HVP-850 and 851), the North Basement Bleedoff (FF-820A&B), and the North Basement Exhaust (FF-828). The exhausts from these four systems discharge into a large concrete plenum which contains measuring probes. The discharge to the stack is through the roof of the plenum into a 40 x 18 sheet metal stack that rises up alongside PF-4 to above the roof and then to the atmosphere.

The system is adequate now, but there are several process changes being approved that will require upgrades to the exhaust stack system. The stack, nearing 30 years old, is corroded, and is approaching (if it hasn't already passed) the end of its useful life. Access is problematic for routine surveillance and sampling. Additionally, the pattern of the discharges into the plenum does not provide adequate mixing to allow accurate representative samples to be taken of the flow up to the stack. Also, access to the probes and the base of the stack is in the facility interior and also problematical.

New ANSI stack requirements and New Mexico State requirements will also require changes to be made to the installation, including a possible taller stack and sampling points external to the building, up in the stack itself instead of in the plenum before the air even enters the stack. The stack currently appears to be duct; an increase in height will required a stronger stack, possibly with guy wires and a stronger foundation on top of the plenum. For more uniform flow in the stack, a round stack would be more beneficial also, requiring total stack replacement (if the stack is corroding, it should be replaced anyway).

The south stack from the basement of PF-4 is the same as the description above, except it receives exhaust from these four systems: 300 Area Glovebox Exhaust (HVP-854 and 855), the 400 Area Glovebox exhaust (HVP-856 and 857), the South Bleedoff (FF-822A&B), and the South Basement Exhaust (FF-829).

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

2.0 SCOPE OF WORK (FOR EACH STACK)

Remove existing 40” x 18” stack and replace with a 28” round stack (the 40” x 18” maintains an exhaust velocity of between 3000 and 4000 feet/minute, as required by LANL standards; 28” round is the equivalent of 40 x 18). A taller stack will probably be required based on State codes and regulatory requirements (assume 75 feet high for estimating purposes). Provide structural bracing and/or guy wires as required to support the stack, based on wind loading and seismic requirements. This will include strengthening the plenum roof on which the new stack will sit. Install new lightning protection as required, and tie-in to existing lightning protection system for the building. Remove/abandon the existing probes in the plenum outside the basement and install new probe(s) as required in the replacement stack outside the building; install a platform on roof of building to access the new probe(s). Install new equipment for sampling (pump, tubing, electrical, instrumentation).

3.0 OTHER CONCERNS/ISSUES

The fans that exhaust air to the discharge plenum in the basement at the base of the stack have varying static pressures, ranging from 4” to 13”. Without a stack exhaust fan pulling air from this plenum, there is the possibility that the higher static pressure exhaust fans may be overpowering those with the lower static pressure, not allowing airflow through as required, since the static pressures generated by the four (each) exhaust systems in the basement (north and south) are what provide the motive force to move the exhaust air up the stacks.

4.0 SUPPORTING INFORMATION

Drawing C-82299, sheets 69 and 70 (north stack), and sheets 71 and 72 (south stack).

Telecon on May 25, 2004 between Jim Anderegg, Jacobs Engineering and Victor Martinez of LANL.

5.0 RELATED PROGRAMS/PROJECTS

Not Applicable

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/03/04

<table>
<tr><td colspan="2">Subproject Number/WBS: 13</td><td colspan="2">Location/Building: PF-3, PF-4</td></tr>
<tr><td colspan="4">Subproject Title: Fire Alarm Panel and Wiring</td></tr>
<tr><td colspan="4">Brief Description: Replace the Fire Alarm Control Panel, Drop Boxes, and connecting wiring in PF-3 and PF-4 installed in 1987.</td></tr>
<tr><td>Subproject Interfaces:</td><td colspan="3">Subproject 14: Fire Alarm Devices
Subproject 15 Fire Alarm Devices – Glovebox
Subproject 07 Fire Water Sprinkler Piping (Internal PF-4)</td></tr>
<tr><td>ML Level: 2</td><td>PC Category: 2</td><td colspan="2">Safety Classification: Balance of Plant.</td></tr>
</table>

1.0 INTRODUCTION AND SUMMARY

The Fire Detection System at TA-55 consists of seven separate supervisory subsystems, each controlled by a single supervisory panel commonly referred to as a Fire Alarm Control Panel. The Supervisory Panel 3225 (FACP), is located in PF-3 and protects the following areas in TA-55:

1. P-1, PF-2, PF-3, PF-4, PF-5, PF-6, PF-7, PF-8, PF-9, PF-10, PF-11, PF-185, PF-190, PF-191 and PF-192.

Panel 3225 supervises seven Transponder panels. The Transponder panels are connected to an unknown number of Jurisdictional panels. The inputs from the 199 zones of protection are routed to the Jurisdictional panels. Inputs from the glovebox zones of protection are routed through 92 approximately local Drop Box Stations to the Jurisdictional panels. There is one Drop Box Station panel for each Drop Box in the glovebox areas.

In the current system, detectors are grouped into zones. These zones of detection are routed to the Jurisdictional panels, directly or through the Drop Box Station panels. The Jurisdictional panels are also used to send control signals from Supervisory Panel 3225, through the Transponder panels, to the Facility Control System, via Field Multiplex Units of the Facility Control System. These control signals typically shut down facility mechanical equipment, such as fan units, in areas where a fire has been detected. Installation dates for the Jurisdictional panels is not documented. It is also assumed that these panels and not UL listed.

Each Drop Box in the glovebox areas has an associated Drop Box Station panel for Fire Alarm. Each Drop Box and its associated gloveboxes form one zone of the fire detection system. The fire detectors are connected to the Drop Box Station. Also connected to the Drop Box station panel are a local key out switch, a local push button alarm switch, a local alarm light, a local audible alarm light, and a local alarm silence switch. Trouble

and alarm signals are sent to the Supervisory Panel via a Jurisdictional panel and associated Transponder panel. Installation dates for the Drop Box Station panels are not documented. It is also assumed that these panels are not UL listed.

Transponder panels serve as an intermediary between the Jurisdictional panels and Supervisory Panel 3225. The Transponder panels serve several functions. First they monitor all the zone detection circuits in the Jurisdictional panels. They convert the current signals in each zone to a digital address/status signal, which is sent to Supervisory Panel 3225. The status signal will indicate a fault in a zone or detection of a fire in that zone. Second, they transmit control signals from the Supervisory Panel to the Jurisdictional panels, via 24-volt relay contact operation. Finally, the Transponder panels send 24-volt signals to the expandable thermal links in the air input system of each drop box. This signal activates the link, causing the drop box air supply to be cut off. Installation dates for the Jurisdictional panels is not documented. It is also assumed that these panels and not UL listed.

Supervisory Panel 3225 monitors 199 zones in the buildings noted above. It takes address and status inputs from the Transponder panels and sends controls signals back to the equipment via the Transponder panels. It also displays trouble status and alarms with amber and red indicating lights for each zone. It was installed in 1987. It is currently obsolete. Maintenance is unable to obtain new batteries to provide the required backup protection in case of 120V power loss. It is no longer cost-effective to maintain this panel.

The new fire alarm control panels will interface with sprinkler systems flow switches, hose rack flow switches, fire door operators, one solenoid operated pilot valve, and five Halon systems for supervision, control and status. They will also interface with elevator controls, HVAC fan systems and chilled water systems for system shutdown in cases where the system detects a fire. (Interface to the HVAC and chiller systems may be by the Facility Control System. Finally, the new system will interface with TA-64 Central Alarm Station and the TA-55 Operations Center via a Digital

2.0 SCOPE OF WORK

The scope of this project will be to replace Supervisory Panel (FACP) 3225 and approximately 92 Drop Box Station panels. The new system will be analog addressable, per current LANL Construction Specifications. The analog addressable system will eliminate the need for the Jurisdictional and Transponder panels (as existing system). The system must be sized to handle the existing 199 zones of detection and control, plus an unknown number of evacuation horns and strobe lights, manual pull stations, elevator system controls, HVAC controls, and fire door controls. This system will communicate alarm and status information, via Digital Alarm Communication Transmitters to the TA-64 Central Alarm Station and to the TA-55 Operations Center. New wiring will be installed for all existing circuits connected to the new panels. Install new conduit runs and GFE telecommunications cables from the new Supervisory Panel (FACP) 3225 to the PF-3 telecommunications room. Existing conduit runs are to be

reused to the extent possible. Remove the seven existing Transponder panels, the existing Jurisdictional panels, the 92 existing Drop Box Station panels, all existing interconnecting wiring, any existing terminal boxes not required by the new system, and the existing Supervisory Panel (FACP) 3225. Additional Drop boxes will be required for other detectors not associated with Dropboxes/Gloveboxes (For estimating purposes use approximately additional 20 in PF-4. Replacement of all existing detectors, pull stations, evacuation devices, and fire door controls; as well as the installation of new evacuation horns and lights, elevator controls, and HVAC controls will be included in the scope of the companion subprojects, Fire Alarm Devices and Fire Alarm Devices-Gloveboxes.

3.0 OTHER ISSUES/CONCERNS

The current system is not UL labeled, nor is it ADA compliant. The Supervisory Panel (FACP) 3225 was installed in 1987. All are obsolete and costly to maintain, when spare parts are available. Batteries for back up power to the Supervisory Panel are no longer available.

While each protection or control zone is being moved from the existing system to the new system, protection and control of Fire Alarm devices and related building equipment will be Out of Service. Thus, the facility may be exposed to damage from an undetected fire. The Out of Service time may range from several hours to several days.

This risk can be minimized by having Fire Watches cover the unprotected areas during construction. Coordination with LANL Fire Protection will be required to determine the extent of Fire Watches or other countermeasures necessary to adequately protect the facility.

4.0 SUPPORTING INFORMATION

LANL-AE-08L-113-07-A01-0003 Project Backup Listing.

Reference NMT-8 System Design Description – Fire Detection System, NMT8-SDD-3200, dated 02/01/96, for an overall description of the existing Fire Alarm System.

5.0 RELATED PROGRAMS/PROJECTS

Partial Site Wide Fire Alarm Replacement Project (PSWFARP), Buildings PF-3, PF-28, PF-39, PF-41, PF-42, and PF-264. This project will add Digital Alarm Communications

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

<table>
<tr><td colspan="2">Subproject Number/WBS: 14</td><td colspan="2">Location/Building: PF-3 & PF-4</td></tr>
<tr><td colspan="4">Subproject Title: Fire Alarm Devices - Buildings</td></tr>
<tr><td colspan="4">Brief Description: Remove and replace all Fire Alarm Devices in PF-4 with addressable type including evacuation probes and audible alarms. Glovebox devices are not included.</td></tr>
<tr><td>Subproject Interfaces:</td><td colspan="3">Subproject 13: Fire Alarm Panel and Wiring

Subproject 15: Fire Alarm Devices – Glovebox</td></tr>
<tr><td colspan="2">ML Level: 2</td><td>PC Category: 2</td><td>Safety Classification: Balance of Plant</td></tr>
</table>

1.0 INTRODUCTION AND SUMMARY

Existing detection and evacuation devices are not UL listed, nor ADA compliant. They also do not meet the current LANL standards for interfacing with the new Fire Alarm Panel that will be installed in a concurrent subproject. Thus they all need to be replaced and new evacuation strobes need to be installed. This will enable the system to be UL labeled, as well as ADA compliant.

2.0 SCOPE OF WORK

Exclusive of the gloveboxes in PF-4, replace all existing Heat detectors, Photoelectric Smoke detectors, Ionization Smoke detectors, manual alarm stations, solenoid-operated pilot valve, fire door operators, sprinkler system flow switches, sprinkler system flow sensing pressure switches, sprinkler system valve position supervisory switches, and hose rack flow switches. All new devices shall be individually addressable. Install new evacuation strobes and audible alarms, reusing existing conduit to the extent possible. Install new wiring from all devices to the Fire Alarm panel, installing new conduit as required for evacuation strobes. All new equipment shall be UL listed and ADA compliant.

Existing devices, conduit, and wiring that are being replaced shall be removed after all acceptance testing has been performed.

Buildings that are included in this Subproject along with their respective square footages are:

PF-3 29,000 sq. ft.

PF-4 151,520 sq. ft. (first floor and basement)

3.0 OTHER CONCERNS/ISSUES

While each protection or control zone is being moved from the existing system to the new system, protection and control of Fire Alarm devices and related building equipment will be Out of Service. Thus, the facility may be exposed to damage from an undetected fire. The Out of Service time may range from several hours to several days.

This risk can be minimized by having Fire Watches cover the unprotected areas during construction. Coordination with LANL Fire Protection will be required to determine the extent of Fire Watches or other measures necessary to adequately protect the facility.

4.0 SUPPORTING INFORMATION

LANL-AE-08L-113-07-A01-0003 Project Backup Listing.

Reference NMT-8 System Design Description – Fire Detection System, NMT8-SDD-3200, dated 02/01/96, for an overall description of the existing Fire Alarm System.

5.0 RELATED PROGRAMS/PROJECTS

Partial Site Wide Fire Alarm Replacement Project (PSWFARP), Buildings PF-3, PF-28, PF-39, PF-41, PF-42, and PF-264.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 15		**Location/Building:** TA-55**/** PF-4
Subproject Title: Fire Alarm Devices – Gloveboxes		
Brief Description: Remove and replace existing heat detectors in the gloveboxes for connection to new Fire Alarm Control Panels.		
Subproject Interfaces:	Subproject 13: Fire Alarm Panel and Wiring Subproject 14: Fire Alarm Devices Subproject 30: Fire Suppression — Fusible Links (Glovebox Trains)	
ML Level: 2	**PC Category:** 2	**Safety Classification:** Balance Of Plant

1.0 INTRODUCTION AND SUMMARY

The heat detectors and dropbox pushbuttons in the gloveboxes in PF-4 are obsolete and not UL listed. New Fire Alarm Control Panels (FACPs) are being installed in this building and the detectors connected to them must be UL listed and compatible with the new FACPs. This project will replace the existing detectors with new, compatible detectors that are UL listed.

2.0 SCOPE OF WORK

Replace approximately 700 Heat Detectors and 100 pushbutton stations. These sensors are located in well/stud at each glovebox in the rooms in the 100, 200, 300, and 400 Areas of PF-4 first floor. Pushbutton stations are located in the rooms near the Gloveboxes. Access to the sensors is from the exterior of the glovebox. Install new wiring in existing conduit, to the extent possible, from Sensor to approximately 50 local FACPs (drop box stations located inside the room in the laboratories). Install junction box and new conduit from existing conduit run to new local FACP (drop box station).

3.0 OTHER ISSUES/CONCERNS

The existing system cannot be shut down while the new system is being installed. The entire facility would then be at risk of damage due to an undetected fire. The existing system will have to remain in service while each zone is individually moved to the new system. Also, each zone must have an individual acceptance test before it is placed in service in the new system. Once all devices have been connected to the new system, a final system-wide acceptance test will be required. LANL Fire Protection will have to be consulted on the number and timing of acceptance tests.

A possible area of conflict is the reuse of existing conduit. This may not be possible in all cases. It is not practical, or safe, to run new circuits in existing conduit if there are

other existing, and in operation, Fire Alarm detection and control circuits. Thus, some sections of existing conduit may not be available for reuse. LANL must determine if these abandoned conduits are to be removed as part of this project, or left in place.

LANL will have to identify disposal procedures if the removed sensors are contaminated.

4.0 SUPPORTING INFORMATION

LANL-AE-08L-113-07-A01-0003 Project Backup Listing

NMT8-SDD-3200 NMT System Design Description – Fire Detection System dated 2/01/96.

5.0 RELATED PROGRAMS/PROJECTS

Partial Site Wide Fire Alarm Replacement Project (PSWFARP), Buildings PF-3, PF-28, PF-39, PF-41, PF-42, and PF-264. This project will add Digital Alarm Communications.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 16			**Location/Building:** TA-55/New
Subproject Title: Emergency Response, Facility Incident Command			
Brief Description: Install new (mall-type) building south of PF-1. Building would be 40' X 80 'and would consist of a large conference room with communications capability that could be used in an incident or other emergency situation			
Subproject Interfaces:			
ML Level: 3	**PC Category:** 2	**Safety Classification:** Safety Significant	

1.0 INTRODUCTION AND SUMMARY

At the present time, no central facility exists that can be used as a Central Command Headquarters during emergencies. Equipment as 2-way radios and other dedicated equipment required for Emergency Response are stored in portable buildings and available unoccupied areas in TA-55.

Without an Emergency Response, Facility Incident Command Building, the Emergency Response Personnel will continue to be hampered with assimilating their response equipment from various locations at TA-55.

A dedicated facility that can house communication equipment and emergency response personnel at TA-55 is required.

2.0 SCOPE OF WORK

Design and install a one-story building with approximate dimensions of 40' x 80'. Interior of the building would consist of storage areas and a large room (conference-type). Dedicated offices would not be required as this building would not permanently house personnel.

All services (water, electricity, gas, and sewer) would be installed to the building. A small kitchen area would be included in the design.

3.0 OTHER ISSUES/CONCERNS

The design of the building will also interface with the existing utilities as fire protection, electricity, sewer, communications and natural gas. Additionally, conflicts as traffic patterns and security will have to be coordinated with existing operations at the TA-55 complex.

The Emergency Response, Facility Incident Command Building will interface with the ongoing TA-55 Operations and their Safeguards and Security (Communications).

The design of the facility will follow the LANL Engineering Standards and applicable Codes and Standards for an Office Type Building.

4.0 SUPPORTING INFORMATION

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

TA-55 February 4, 2004 Workshop No. 4 Notes. David O'Flynn EMAIL dated February 13, 2004. Included Priority One Subprojects with attachment on Subproject Description.

5.0 RELATED PROJECTS/PROGRAMS

NMSSUP Phase II Project.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 17			**Location/Building:**TA-55**/**PF-4
Subproject Title: HVAC Plenums (Non-Safety Class Portions)			
Brief Description: Replace the two 400 Area Recirculation H&V Units, non-SC portions. These units are very large, walk-in type plenums; that recirculate air from lab spaces and corridors back to the labs to maintain air balance requirements.			
Subproject Interfaces:	Subproject 38: HVAC Fans & Motors		
ML Level: 3	**PC Category:** 1	**Safety Classification:** Balance of Plant	

1.0 INTRODUCTION AND SUMMARY

The 400 Area Recirculation Heating and Ventilation Units, Nos. 807 and 808, are located in the southeast corner of the basement of PF-4. Air is drawn from the southwest corridor of the first floor and from the 400 Area labs, and re-circulated to the 400 Area labs after passing through the H&V units, with a small portion of the air going to the south bleedoff plenum. The units are large plenums containing moisture eliminators, prefilters, HEPA filters, cooling coils, another bank of HEPA filters, fire protection piping for the filter banks, and instrumentation. Each unit was field-fabricated, and the center section between the units (enclosed by a roof and two end walls, each wall with an access door) is used for access to the unit interiors for inspection and filter changeout.

Although these units are approaching 30 years in age, the fact that they have essentially no moving parts should mean that many more years could be expected from them. However, due to the processes in the areas served by these H&V units, the plenums are corroded and the life expectancy past 2010 is not predictable. Therefore, these units should be replaced with new H&V units. There does not appear to be a problem with the design of these H&V units, therefore they should be replaced in-kind following the original design on the drawings referenced below. However, due to the corrosion that necessitates their replacement, the materials of fabrication should be revised to promote longer life of the replacement filters, if the processes in the areas requiring the conditioning of the air do not change.

2.0 SCOPE OF WORK

Fabricate and install two Heating and Ventilating Plenums, H&V units Nos. 807 and 808, per drawing C-82299, Sheets 96 and 97. The plenums are 33 feet long by 16 feet 3 inches wide by 8 feet 6 inches high, welded construction. The units each contain moisture eliminators, a bank of 21 (7W by 3H) prefilters, a bank of 21 (7W by 3H) HEPA filters, cooling coils, another bank of 21 HEPA filters, fire protection piping for the filter banks, and instrumentation. There are two 48W by 20H return air and one 48 square fan suction connections on each unit. The units shall be spaced 8 feet 2 inches apart, with a roof section and two end walls between the units, and with an access door in each end wall. There are viewports in the sidewalls and the access doors of the units.

3.0 OTHER ISSUES/CONCERNS

During the removal and replacement of the Plenums, one train (section) should remain in service while the other train (section) remains in service. Placing of one train in service and removing the other train for replacement will have to be done during a time when ongoing operations will not be affected.

4.0 SUPPORTING INFORMATION

P&ID Drawing No. AB589, Sheet No. M23; Plan Drawing No. C-82299, Sheet No. 72; Plenum Plans & Elevations Drawing No. C-82299, Sheet No. 96; Plenum Sections Drawing No. C-82299, Sheet No. 97; Plenum Plans & Elevations Drawing No. C-82299, Sheet No. 94 (this sheet contains a list of plenum reference drawings, for fabrication details).

5.0 RELATED PROJECTS/PROGRAMS

Not Applicable.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 18		**Location/Building:** TA-55/PF-4
Subproject Title: Glovebox Stands		
Brief Description: Modify the existing Glovebox stands to provide lateral support to meet Performance Category (PC) 3 requirements.		
Subproject Interfaces:		
ML Level: 1 & 2	**PC Category:** 3	**Safety Classification:** Safety Class

1.0 INTRODUCTION AND SUMMARY

Approximately 275 existing Gloveboxes located in the Laboratories of PF-4 require additional bracing to meet the structural integrity required by the PC-3 classification. These Gloveboxes must be rigidly supported in order to handle materials such as Pu-239. Gloveboxes that have been designated for handling of Pu-238 have already been structurally modified.

2.0 SCOPE OF WORK

Install lateral bracing on the existing steel supports located under the 275 Gloveboxes. Per previous seismic modifications, steel may have to be added to widen the Glovebox supporting structure and steel members can then be added for lateral support. This method would minimize the amount of modifications to existing process equipment.

On the Gloveboxes that cannot have their existing support structures modified, new Glovebox supporting frames can be fabricated off-site in sections and brought inside PF-4 for installation. Additionally, particular attention must be paid to the congested conditions underneath and around the Gloveboxes. Some of the equipment presently installed may have to be relocated in order for the bracing to be installed.

3.0 OTHER ISSUES/CONCERNS

Installation work will be done in very congested/very busy areas in the laboratories. Work must be done by Q-cleared personnel. Installation must be scheduled and closely coordinated with ongoing operations inside the laboratories.

4.0 SUPPORTING INFORMATION

TA-55 February 5, 2004 Site Tour Notes. David O'Flynn EMAIL dated February 16, 2004.

5.0 RELATED PROJECTS/PROGRAMS

Pit Production/Manufacturing

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 19			**Location/Building:** TA-55/PF-6
Subproject Title: Chiller Replacement			
Brief Description: Replace existing chillers and associated pumps and piping as required; driven by new refrigerant regulatory requirements and age of equipment.			
Subproject Interfaces:	Subproject 20: Cooling Towers Subproject 40: Electrical Distribution		
ML Level: 3	**PC Category:** 1	**Safety Classification:** Balance Of Plant	

1.0 INTRODUCTION AND SUMMARY

Three existing chillers (installed in the late 1980s) need to be replaced with new 400-ton chillers due to their use of now obsolete CFC refrigerant. The corresponding chilled water pumps, 3@40 HP, 2 @75HP, and 2@15HP, (installed at the same time) and some of the valves need to be replaced also, but the interconnecting piping headers and manifolds can remain. The control system should be replaced to upgrade components and increase system efficiency. The same capacities (tonnage, gpm and head, for chillers and pumps) are required. The exterior air-cooled chiller does not require replacement. Reliable chillers, chilled water pumps, and control components are required to supply chilled water to cool PF-4 and other buildings in the TA-55 complex. Failure of the chillers and pumping system can cause problems with areas such as the laboratories and the Control Center, which support ongoing operations and programs in PF-4.

All the material and equipment to be replaced must be reviewed for possible contamination.

2.0 SCOPE OF WORK

Remove existing piping, electrical, and instrumentation from and remove the existing chillers that are presently installed on the ground level of PF-6. Specific attention must be paid to the capturing of the refrigerant for proper disposal and removal of refrigeration oil and disposing of it properly. Remove the seven chilled water pumps, piping, and valves required for installation of new pumps.

Install three new centrifugal water chillers that operate on an approved refrigerant. Install new chilled water pumps (assume 7 pumps will be required). Install required piping, valves, insulation and supports to complete the chilled water supply system. Install new instrumentation as required by the chiller controls system. Complete the electrical connections to the chillers and pumping units as required for new equipment hookup. All installation work will be performed inside of PF-6.

3.0 OTHER ISSUES/CONCERNS

TA-55 Waste Management personnel will be involved with the removal and disposal of the refrigerant and oil (CFCs) when the existing chillers are removed.

The major requirement of the chillers is that the new refrigerant (non-CFC) be acceptable to DOE. There are no other specific requirements for the design and construction of the chillers, pumps, and associated control hardware other than the standard building codes and the LANL Engineering and Design Requirements.

Replacement of the existing chillers and pumps will entail a major construction impact, in terms of both cost and downtime. Downtime and the resulting facility inconvenience can be abated somewhat by phasing the replacement of the components.

4.0 SUPPORTING INFORMATION

Drawings for Chiller Replacement Bldg. PF-6, TA-55, Project 9280-55, ENG-C45399, 6/28/88.

TA-55 February 5, 2004 Site Tour Notes. David O'Flynn EMAIL dated February 16, 2004.

5.0 RELATED PROJECTS/PROGRAMS

Not Applicable.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 20			**Location/Building:** TA-55/PF-6
Subproject Title: Replacement of Cooling Towers			
Brief Description: Replace existing cooling towers, pumps, and piping as required; driven by age of equipment and to correspond with replacement of existing chillers.			
Subproject Interfaces:	Subproject 19: Chiller Replacement Subproject 40: Electrical Distribution		
ML Level: 3	**PC Category:** 1	**Safety Classification**: Balance of Plant	

1.0 INTRODUCTION AND SUMMARY

Three existing cooling towers rated at 1300 gpm each with 30HP variable pitch fans (installed in the late 1980s) should be replaced due to their age and to correspond with the replacement of the three existing chillers served by these towers. Existing cooling towers and vertical pumps were installed about 1990. Estimated life of cooling towers and pumps is in the range of 15 to 20 years (Standard Design Life Table in Condition Assessment Survey (CAS) Program prepared by Parsons Brinckerhoff for the DOE 01/96. Also, the Chillers that the cooling towers support will be replaced; new cooling towers and pumps will be required to support the chillers.

The corresponding cooling water pumps, 3@25HP, (installed at the same time) and some of the valves need to be replaced also, but the interconnecting piping headers and manifolds can remain. The control system should be replaced, to upgrade components and increase system efficiency. The same capacities (tonnage, gpm and head, for cooling towers and pumps) are required. Present towers are Marley Model #3, 91180.

All the material and equipment to be replaced must be reviewed for possible contamination.

2.0 SCOPE OF WORK

Remove the three cooling towers that are mounted on the roof of PF-6. Variable pitch fans, motors, and drives should also be removed when each tower is removed. Remove the stairs, handrails, and drain piping required for a replacement tower. Remove the three vertical cooling tower/condenser pumps and motor combinations on the first floor of PF-6. Some of the piping, valves, and supports will have to be removed to accommodate pump removal. The existing tower water chemical treatment will be removed. Instrumentation that interfaces with cooling tower controls (part of the chiller controls) will also be removed.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Three new cooling towers will be installed on the roof of PF-6 in the same location as the existing cooling towers. New cooling tower fans will also installed as part of the replacement process. Stairs, handrails, and connecting piping to existing systems will be installed.

Three new vertical cooling water/condensing pumps and motors will be installed on the first floor of PF-4 along with required interconnecting piping, valves, and supports. A new chemical treatment system should also be installed in PF-6. Instrumentation required to make the system operate with the chiller controls system will also be installed.

3.0 OTHER ISSUES/CONCERNS

The cooling tower and pump installation will interface with the operation of the chilled water system, as the complete chilled water system must remain operational while the removal and installation is being performed. Also, the removed equipment will be disposed of and Waste Management may be involved with the disposal.

Replacement of the existing cooling towers and pumps will entail a major construction impact, in terms of both cost and downtime. Downtime and the resulting facility inconvenience can be abated somewhat by phasing the replacement of the components.

As the building is outside the PF-4 limits, construction of the towers and pumps and associated piping and structures can be performed by badged personnel with Q-cleared escorts. This would free up Q-cleared construction personnel to perform work inside PF-4 or other sensitive areas.

4.0 SUPPORTING INFORMATION

Drawings for Chiller Replacement Bldg. PF-6, TA-55, Project 9280-55, ENG-C45399, 6/28/88.

TA-55 February 5, 2004 Site Tour Notes. David O'Flynn EMAIL dated February 16, 2004.

5.0 RELATED PROJECTS/PROGRAMS

Not Applicable.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 21			**Location/Building:** TA-55/PF-4
Subproject Title: Elevators			
Brief Description: Replace the existing elevator in PF-4 with a more reliable elevator. Elevator will be in the same location and travel between the basement and the first floor.			
Subproject Interfaces:			
ML Level: 3	**PC Category:** 1	**Safety Classification:** Balance Of Plant	

1.0 INTRODUCTION AND SUMMARY

PF-4 presently has a freight elevator installed on the east wall of the building. The elevator is 8' deep x 12' long X 8' high and is rated at 10,000 lbs. It is made of steel and has 2 landings (basement and first floor (laboratories). It is hydraulic (single ram) driven, and was installed during the original building construction in 1978. The elevator sees heavy usage as it is the main method for moving materials from the basement to the first floor (laboratory level).

As the elevator has a large footprint, placing of heavy loads inside can cause the elevator to become unbalanced and not operate. Additionally, spare parts have become difficult to locate and purchase. It is critical for material movement but has seen frequent servicing during recent years.

2.0 SCOPE OF WORK

Replace entire elevator including car, rails, and controls. The replacements should be capable of handling large, heavy loads (within the weight limits of the elevator) that may be off center, and not cause the elevator to become unbalanced.

3.0 OTHER ISSUES/CONCERNS

Operations will be impacted during the removal and installation of the new elevator.

Majority of the elevator installation will be performed by an elevator manufacturer that has personnel that are Q-cleared. Additionally, the installation work will have to be closely coordinated with the PF-4 operations personnel to ensure the elevator downtime will not impact ongoing operations. Work may be done on a weekend or when operations in PF-4 are curtailed with minimal plant impacted.

The replacement elevator and its associated components will have to meet requirements of the LANL Engineering Manual and associated Specifications.

4.0 SUPPORTING INFORMATION

Drawing AB309, Sheet A2, As-Built Critical Facility Plutonium Building, Arch: Basement Floor Plan.

TA-55 February 5, 2004 Site Tour Notes. David O'Flynn EMAIL dated February 16, 2004.

5.0 RELATED PROJECTS/PROGRAMS

The elevator supports all active programs in PF-4 where equipment, testing materials, and special material must be moved. These programs include Component fabrication, Pit Surveillance, Acitinide R&D, and other similar programs.

TA-55 REINVESTMENT PROJECT

SUBPROJECT SUMMARY

UPDATED 6/07/04

Subproject Number/WBS: 23			**Location/Building:** TA-55/PF-4
Subproject Title: Industrial Waste			
Brief Description: Install additional storage capacity for industrial waste collection in the basement.			
Subproject Interfaces:	Subproject 54: Acid Waste System-Internal Subproject 56: Caustic Waste System		
ML Level: 2	**PC Category:** 2	**Safety Classification**: Balance of Plant	

1.0 INTRODUCTION AND SUMMARY

All potentially radioactively contaminated waste streams are presently routed to a horizontal storage tank located in the basement of PF-4. The tank, of stainless steel construction, has a storage capacity of approximately 300 gallons and is located on top of the 400 Lab Recirculation Plenum.

Additional capacity is required to hold the waste while it is being characterized for transfer to the Radioactive Liquid Waste Facility, TA-50.

2.0 SCOPE OF WORK

Install a 300 gallon capacity Stainless Steel storage tank that can be attached to the bolted flange of the existing storage tank. Installation will require supports from the floor (approximately 10' high) and an additional level gauge and vent. All field connections to the tank would be bolted.

3.0 OTHER ISSUES/CONCERNS

Connections and tie-ins to the existing tank would have to be closely coordinated with the NMT operations. Existing equipment under the proposed new location may have to be relocated.

4.0 SUPPORTING INFORMATION

Data gathered during walkdown with FWO-FMU7 personnel on May 19, 2004.

TA-55 As-Built Upper Piping Plan PLBG: Basement Upper Piping Plan-Area O, Drawing AB312 6-19-98

5.0 RELATED PROJECTS/PROGRAMS

Radioactive Liquid Waste Treatment Facility (RLWTF) Project