EIS

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Subject: TA-3 Machine Shops NEPA Document

Attachments: 8_Machine_Shops.doc

8_Machine_Shops.doc (319 KB)

Kirk, attached is the TA-3 Machine Shops NEPA Determination Document

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LA-UR-01-3040

Title: ESH-20 NEPA Determination Document 8
TA-3 Machine Shops

Los Alamos
NATIONAL LABORATORY

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1.0 Introduction

This document describes the *National Environmental Policy Act of 1969* (NEPA) operational envelope for operations, capabilities, and parameters analyzed for the TA-3 Machine Shops, a key facility in the *Site-Wide Environmental Impact Statement for the Continued Operation of Los Alamos National Laboratory* (SWEIS; DOE 1999a). The principal buildings and structures for this key facility are shown in Table 1. The purpose of this document is to determine whether a proposed project for this facility has NEPA coverage in the SWEIS as implemented by the Department of Energy (DOE) in the Record of Decision (ROD) for the SWEIS. As long as the TA-3 Machine Shops operate within the bounds of the impacts projected by the SWEIS, the facilities are in compliance with NEPA. If there is potential to exceed projected impacts, further NEPA review would be required.

Table 1. Principal Buildings and Structures of Main Machine Shops

Technical Area	Principal Buildings and Structures
TA-3	3-39, 3-102

Under the Laboratory Implementation Requirement (LIR) entitled "NEPA, Cultural Resources, and Biological Resources (NCB) Process," (LANL 2000a) proposed projects are screened by the authorized facility NCB reviewer as part of the NCB assessment. The screening requires the facility NCB reviewer to decide

- if the project is new or modified from a previous determination and
- if DOE has already made a determination that covers the proposed project.

The Facility NCB Reviewer uses the Facility NEPA Determination Document (LANL 2000b) for screening. Table 2 summarizes the capabilities, and the operations examples for the capabilities, that were published in the SWEIS to estimate the impacts. If the facility NCB reviewer finds that the proposed activity is one of the capabilities in the SWEIS and is within one of the operations examples for that capability as shown by Table 2, the reviewer could determine that the proposed activity is covered by the SWEIS and does not require further NEPA analysis.

Table 2. TA-3 Machine Shops[a]

Capability	Operational Examples
1. Fabrication of Specialty Components	1.1 Provide fabrication support for the dynamic experiments program and explosives research studies. 1.2 Support up to 100 hydrodynamic tests/year. Manufacture up to 50 joint test assembly sets/year. **1.3 Production manufacturing of non nuclear components.** 1.4 Provide general laboratory fabrication support as requested.
2. Fabrication Utilizing Unique Materials	2.1 Continue fabrication utilizing unique and unusual materials.
3. Dimensional Inspection of Fabricated Components	3.1 Provide appropriate dimensional inspection of above fabrication activities. 3.2 Undertake additional types of measurements/inspections.

a: Source: Modified from SWEIS 1998 Yearbook (LANL 1999).

However, a proposal that does not match a capability description in Table 2 or that is not included with one of the operations examples for that capability in Table 2 could still be covered by the SWEIS. The SWEIS analysis is based on information in background documents prepared

for each of the key facilities; these background documents provide more detailed descriptions of the ongoing and potential operations for each key facility. In addition, the levels of activity called the "operations examples" for each of the capabilities reflects scenarios that were developed for each capability to provide an estimate for calculating potential impacts. The SWEIS was not intended to set stringent limits on the level of activity for a particular capability. In most facilities the operations examples for every capability would not be reached at one time because of the ebb-and-flow-like nature of the work at LANL. Thus it would be possible to exceed the operations examples for one capability and still be within the parameter limits for the facility or the LANL operations limit. If the proposal reviewer can demonstrate this, the proposal would still have NEPA coverage through the SWEIS. This document presents the procedure for a more detailed review and supporting information from the SWEIS and background documents.

2.0 Procedure

A proposed project can be screened by the Facility NCB reviewer or ESH-20 reviewer to determine if it is included in the descriptions in Table 2. Under that procedure, if a proposal does not clearly fit those descriptions of capabilities and operations examples, it will be referred to ESH-20 for review under this procedure, which requires more familiarity with SWEIS supporting documentation and projected additive impacts of other proposed work at LANL. The ESH-20 reviewer will use the data on the TA-3 Machine Shops facilities and capabilities from the SWEIS document and the background documentation. The supporting documentation on the TA-3 Machine Shops facilities and capabilities is presented in Sections 3 and 4 below.

A flow chart that summarizes the procedure for the ESH-20 reviewer to use in screening a proposal is presented in Attachment 1. Upon receiving a proposal, the reviewer should answer the following:

1. Is this a new capability? Review the detailed descriptions of the tritium facilities and capabilities from the SWEIS (Section 3 of this document) and from the background documents (Section 4 of this document).
   a. If this is a new capability, go to 4.
   b. If this is not a new capability, go to 2.
2. Does the proposal fit within one of the operations levels for that capability in the SWEIS? Compare description to second column of Table 2.
   a. If the proposal is within the operations levels for that capability, go to 5.
   b. If the proposal is not within the operations examples, go to 3.
3. Is the proposal within the facility operations data envelope? Work with the facility manager and other Environment, Safety, and Health subject matter experts (SMEs) to calculate if the proposal is within the envelope of facility operations data (Table 3).
   a. If the proposal is within the facility operations data envelope, go to 5.
   b. If the proposal is not within the facility operations data envelope, go to 4.
4. ESH-20 will prepare a NERF to complete the NEPA process.
5. Proposal is covered by the SWEIS. Attach explanation/calculations to NCB Screening Checklist (Attachment 2) to complete the NEPA process.

Table 3. TA-3 Machine Shops Operations Data

Parameter	Units [a]	SWEIS ROD
Radioactive Air Emissions:		
• Plutonium-238	Ci/yr	Not Projected[b]
• Thorium-238	Ci/yr	Not Projected
• Thorium-230	Ci/yr	Not Projected
• Thorium-232	Ci/yr	Not Projected
• Uranium-234	Ci/yr	Not Projected
• Uranium-235	Ci/yr	Not Projected
• Uranium-238	Ci/yr	1.50×10^{-4}
NPDES Discharge:[c]	**MGY**	**No Outfalls**
Wastes:		
• Chemical	kg/yr.	474,000
• Low-level waste[c]	m^3/yr	606
• Mixed low-level waste	m^3/yr	0
• TRU waste/Mixed TRU waste	m^3/yr	0

a: Ci/yr. = curies per year; MGY = million gallons per year.
b: The SWEIS ROD did not contain projections for these radioisotopes
c: NPDES is National Pollutant Discharge Elimination System

3.0 SWEIS Data for TA-3 Machine Shops

This section provides information directly from the SWEIS. Section 3.1 is a description of the TA-3 machine shops from Chapter 2 of the SWEIS. Section 3.2 is a description of the capabilities at TA-55 at the time the SWEIS was written, while Section 3.3 is a description of the capabilities under the preferred alternative as selected under the Record of Decision.

3.1 SWEIS Description of Facilities for Machine Shops at TA-3

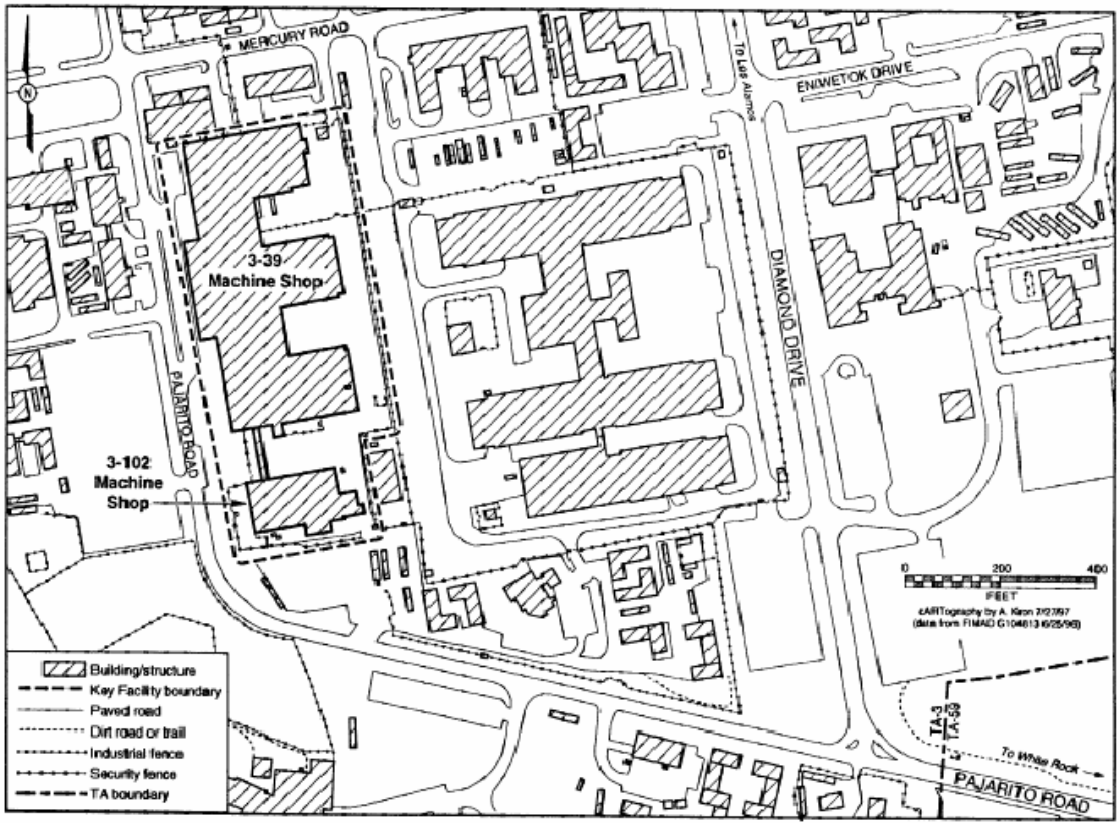
The main machine shops complex consists of two structures in the southwestern quadrant of TA-3: TA-3-39 and TA-3-102 as shown in Figure 1. The two buildings are connected by a 125-foot (38-meter) long corridor. The machine shops provide special (unique or unusual) parts in support of other activities throughout LANL.

Building TA-3-39, the Beryllium Shop, was constructed in 1953, has a total floor space of approximately 134,000 square feet (12,449 square meters), and contains a variety of milling machines, vertical and horizontal lathes, surface grinders, internal and external grinders and assorted saws, laser cutter with welders, welding operations, and measuring equipment. The Uranium Shop, TA-3-102, constructed in 1957, has a total floor space of approximately 12,500 square feet (1,161 square meters) and, like TA-3-39, contains a variety of metal fabrication machines.

The turnings and fines from depleted uranium fabrication result in a limited volume of radioactive waste. The use of depleted uranium is restricted to Building TA-3-102. While

depleted uranium represents the bulk of the materials used, many other potentially hazardous materials (with toxic and pyrophoric characteristics) are used in this facility. These include materials such as beryllium and lithium compounds.

Figure 1. Main Machine Shops at TA-3



3.2 SWEIS Description of Baseline Capabilities for TA-3 Machine Shops

Historically, LANL has maintained a prototype capability in support of research and development for nearly all of the components (parts) in nuclear weapons that are designed at LANL. The capabilities at the machine shops complex are: fabrication of specialty components, fabrication using unique or exotic materials, and dimensional inspection of the fabricated components. Each of these activities is described below.

3.2.1 Fabrication of Specialty Components

The fabrication of specialty components is the primary purpose for the existence of the machine shops complex. Specialty components are unique, unusual, or one-of-a-kind parts, fixtures, tools, or other equipment. These include components or equipment used in the destructive testing, replacement parts for the Stockpile Management Program, and gloveboxes for a variety of applications.

3.2.2 Fabrication Using Unique Materials

Fabrication using unique or exotic materials is one of the more important features of the machine shops complex. The list of unusual or unique materials routinely used includes depleted uranium, beryllium, and lithium (an extremely reactive material) and its compounds.

3.2.3 Dimensional Inspection of Fabricated Components

Dimensional inspection of the finished component is a standard step in the fabrication process and involves numerous measurements to ensure that the component is of the correct size and shape to fit into its allotted space and perform its intended function.

3.3 SWEIS Description of Capabilities Under the No-Action Alternative

Under the No Action Alternative, the following activities would occur at these facilities.

The Machine Shops would provide fabrication support for the dynamic experiments program and explosive research studies, support up to 30 hydrodynamic tests annually, manufacture 20 to 40 joint test assembly sets annually, and provide general laboratory fabrication support as requested. LANL would also continue its fabrication activities using unique and unusual materials and provide appropriate dimensional inspection of these activities.

3.4 SWEIS Description of Capabilities Under the Preferred Alternative

Under the Expanded Operations Alternative, the following activities would occur at these facilities. The Machine Shops would provide fabrication support for the dynamic experiments program and explosive research studies, support up to 100 hydrodynamic tests annually, manufacture 50 joint test assembly sets annually, and provide general laboratory fabrication support as requested. LANL would also continue its fabrication activities using unique and unusual materials and provide appropriate dimensional inspection of these activities at a level up to 3 times that of the No Action Alternative.

In addition, LANL would undertake additional types of measurements and inspections in its dimensional inspection of fabricated components.

4.0 Background Document Information for TA-3 Machine Shops

This section presents information from “Background Information for the Main Shops (TA-3) for the Site-Wide Environmental Impact Statement, Los Alamos National Laboratory” (LANL 1996).

4.1 Background Document Description of Facilities

The LANL main shops facilities are located within the southwestern quadrant of the central technical area (TA-3/South Mesa [SM]). These specific shops facilities are situated within a restricted area, thus inaccessible to the public. These facilities consist of two structures, the Main Shop (SM-39) and the Uranium Shop (SM-102).

4.1.1 Main Shop (SM-39)

SM-39 is constructed of poured concrete and cinder block with a tar/gravel flat roof. The approximately 138,000-sq. ft. building, including a 13,500-sq. ft. administrative office area was constructed in 1953. This facility contains a variety of milling machines, vertical and horizontal lathes, surface grinders, internal/external grinders and assorted saws, laser cutter/welders, welding operations, and CNC measuring equipment.

SM-39 houses the beryllium shop (not limited to beryllium) which is ventilated through a bag-house with additional HEPA (High Efficiency Particulate Air) filtration. Other small areas with local ventilation include; painting, welding, and grinding operations.

While small selected areas of the building are air conditioned for part accuracy or occupant comfort concerns, the majority of the building spaces are not. The building is heated with natural gas radiant heat, steam heat, and steam fired hot water (steam supplied by the TA-3 steam plant). The facility is serviced by both sanitary and chemical waste lines.

The structure is equipped with sprinkler system fire protection and emergency lighting. The building has a large loading dock and easily accommodates forklift and powered cart operations. While the principal occupants are ESA-WMM (Weapons Manufacturing & Materials) Group personnel; a Metrology Laboratory staffed by ESH-9 (Standards & Calibration) Group personnel is housed within this structure, also. This Metrology Laboratory provides calibration and certification function for the Laboratory's instruments and testers. This area has a tight HVAC temperature control of 0.5°F and a class 1000 clean room.

4.1.2 Uranium Shop (SM-102)

SM-102 was constructed in 1957 and consists of approximately 23,000-sq. ft., including a 125-ft. long corridor connecting it with SM-39. Its construction is similar to that of SM-39. This building houses the uranium shop which is ventilated via in-line HEPA filtration.

This facility, like SM-39, contains a variety of metal fabrication machines. While depleted uranium represents the bulk of the materials of which fabrications are produced, many other potentially hazardous (with toxic and pyrophoric characteristics) materials (as well as non-hazardous materials) are utilized in the fabrication of parts in this facility. And like SM-39 the structure is equipped with sprinkler system fire protection and emergency lighting.

Most of the building is air conditioned, and all is heated with steam (steam supplied by the TA-3 steam plant). The building is serviced by both sanitary and chemical waste lines.

4.2 Discussion of Missions/Programs Under the Expanded Operations Alternative

This section describes the operations levels under the Preferred Alternative, which was selected in the SWEIS ROD. This is the same as the Expanded Operations Alternative for this key facility. A description of the no action operations levels for each capability is followed by the expanded operations levels.

4.2.1 Nuclear Weapons Technology Support

This effort is supported by the Stockpile Management, the Above-Ground Experiments I and II, the Physics Design, and the Surety Technology Program Offices, either directly, or indirectly, via the Dynamic Experimentation Division, the operating organization for the explosive experiments.

Hydrodynamic testing is one of the principal means available to study the dynamics associated with primary implosion. For many years, DOE has relied upon hydrodynamic tests to obtain certain types of information about the behavior of nuclear weapon primaries during the complex interactions expected in an explosion. Hydrodynamic tests use full weapon geometry. The fissile material inside the weapon is replaced with another material. These tests are used to measure material motions and compression by using pins, optics, and radiography. Hydrodynamic tests are supplemented with static, dynamic, or high-explosive experiments. The information obtained is used to develop calculations to predict the safety, performance, or reliability of weapon systems.

The primary objective of the shops mission is in the fabrication support of LANL's research and testing in support of the nuclear weapons technology support efforts. Small weapon components and special tooling are manufactured from metal or plastic raw materials. The components fabricated will include the use of depleted uranium and uranium alloys as well as inert materials, such as copper, aluminum, beryllium, lithium compounds, rare earth metals, stainless steels, etc. The components manufactured will include those used in the primary device as well as parts to support the experimental apparatus necessary to examine the testing event.

A normal work load for the shops may include providing fabrication support for up to 30 major hydrodynamic test, perhaps as many as 200 additional dynamic experiments, and up to 50 safety/reliability studies in any given year. Note; any single (individual) test, experiment, or study may involve numerous explosions or shots. Additional support may involve calibrations, surveillances, dismantements, and similar activities, that are to "maximize the return" on the efforts identified above.

The elimination of underground testing has resulted in a heightened importance of the Laboratory's above ground testing of weapon components and surrogate devices. Details regarding the safety and reliability of our nuclear weapons, formerly available from the underground tests, must now be obtained from laboratory and field type experiments. Under the **Expanded Operations Alternative**, this may require an additional numbers of tests, and/or additional peripheral experimental apparatus for enhanced data collection. The shops must support any expanded testing program. Formerly, many different organizations provided components required for weapons testing program. Also, the LANL shops may be called upon to fabricate items not readily available in a timely manner from the primary sources.

Support for additional tests. The work load for the shops under an expanded program may include providing fabrication support for up to 100 major hydrodynamic test, perhaps as many as 300 additional dynamic experiments, and up to 100 safety/reliability studies in any given year. Note; any single (individual) test, experiment, or study may involve numerous explosions or

shots. Additional support may involve calibrations, surveillances, dismantlements, and similar activities, that are to "maximize the return" on the efforts identified above.

Support for additional experimental apparatus. The necessity of obtaining additional and/or different data will require new and perhaps more, as well as more complex, experimental apparatus. The shops will fabricate much of the new equipment needed in this effort. The additional workload and potential material throughput cannot be projected at this time.

Support for additional types of components. Many of the components used in the assembly of weapon devices are normally supplied by other organization from within the DOE complex. Some of these organizations are not now in a production mode. It is highly likely that LANL may be expected to fabricate non-routine components that are to be utilized in the testing programs. Many of these special items will be fabricated by the shops personnel.

4.2.2 Stockpile Management

This effort is funded directly by the Nuclear Materials & Reconfiguration Technology Programs. This effort includes the manufacturing of renewable joint test assembly components for devices removed from the stockpile for regular evaluation (routine dismantlement and examination). A normal manufacturing rate may be to produce as many as 150 component sets per year. The manufacture of these items will involve the use of depleted uranium, as well as inert materials.

This effort of manufacturing renewable components for devices removed from the stockpile for regular evaluation (routine dismantlement and examination) may under an expanded operation produce as many as 600 component sets per year. The manufacture of these items will involve the use of depleted uranium, as well as inert materials.

4.2.3 Nuclear Materials Production Support

These efforts are funded indirectly via the identified Operating Organizations. This mission indirectly supports the Laboratory's Nuclear Materials Production efforts. Recent activities in this area include the manufacture of gloveboxes for our Plutonium Facility (TA-55) and the production of Quadapoles for a prototype accelerator to be used in the Accelerator Produced Tritium (APT) efforts. The level of effort for this mission of the shops will vary widely during the ten years being examined, dependent upon the changing needs of the various laboratory organizations. This mission will normally use only inert materials.

The shops personnel do not have the ability to predict future work loads for this category. The level of effort for this mission of the shops will vary widely during the ten years being examined, dependent upon the changing needs of the various laboratory organizations. The shops are prepared to provide whatever fabrication support requested. This mission will normally use only inert materials.

4.2.4 Nonweapons Work (General Fabrication)

This work will be funded by the laboratory organization(s) requesting the specific support. This mission addresses the general fabrication support provided to any and all Laboratory organizations, including any Nonproliferation & Nuclear Threat Reduction efforts. While

accounting for about 1/4 of the overall main shops workload, the level of effort at any given time is variable, and is determined by the existing need.

This mission addresses the general fabrication support provided to any and all Laboratory organizations, including any Nonproliferation & Nuclear Threat Reduction efforts. The level of effort at any given time is variable, and is determined by the existing needs of the requesting organizations. This mission will normally use only inert materials.

4.2.5 Inventory Selection and Material Storage

In order to provide the fabrication support described above in a timely manner, it is necessary that an adequate inventory of bar stock, plates, etc., of the proper materials be maintained or sources of readily available materials be known.

4.3 Discussion of Operational Capabilities

The operational capabilities of the shops activities (1) fabrication of specialty components, (2) fabrication utilizing unique and/or exotic materials, and (3) dimensional inspection of the fabricated components, are very much entwined. All fabrications will involve at least two (2) of these capabilities, and many will involve all three (3). It is only the actual fabrication activity that generate (or result in) the potential environmental impact.

The things that make this operations different from most machine shops is the wide range of components (items) fabricated both in size and in complexity, the variety of materials utilized, and its association with our nuclear weapons programs. Table 4 identifies which operational capability supports or contributes to the success of each of the TA-3 Machine Shops missions or activities.

Table 4. Main Shops Complex Missions (Activities) Capabilities Summary

	Capability		
Mission/Program	Fabrication of Components	Fabrication Using Unique Materials	Dimensional Inspection of Fabricated Components
Nuclear Weapons Technology Support	X	X	X
Stockpile Management	X	X	X
Nuclear Materials Production	X	X	X
Nonweapons Work (General Fabrication), including support of nonproliferation and nuclear threat reduction	X	X	X
Inventory Selection and Material Storage		X	

4.3.1 Fabrication of Specialty Components

4.3.1.1 Description

Fabrication of specialty components for the entire Laboratory Complex is the primary purpose for the "Shops" existence. This effort advances the overall research and development mission of the Laboratory by the fabrication of new components (parts) to advance the scientific frontiers and prove the correctness of new ideas, etc. This fabrication may be performed from only rough

sketches or from detailed dimensional drawings. One of the unique abilities of the shop is the wide range in size of the parts and systems that can be produced, from very small to extremely large.

4.3.1.2 Program Supported

This operational capability is utilized in support of the Nuclear Weapons Technology Program, principally via the production of components used in destructive testing by the Dynamics Experiments (DX) Division. This capability also is used in the manufacture of replacement parts in the Stockpile Management Program. Recently, this capability contributed to the Nuclear Materials Production Support by the manufacture of gloves boxes, and is now involved in the production of Quadapoles for an accelerator to be utilized in the Accelerator Produced Tritium (APT) efforts. This capability is available to any of the many Laboratory Organizations needing nonexistent or hard-to-find parts and/or systems.

4.3.1.3 Radioactive Materials

Some components are fabricated from depleted uranium. Turnings and fines from these efforts result in a limited volume of radioactive waste. The use of depleted uranium (DU) is restricted to Building SM-102.

4.3.1.4 Nonradioactive Toxic or Hazardous Substances

Some hazardous material (beryllium, lithium compounds, etc.) are utilized by the Main Shops Complex in the fabrication of specialty components.

4.3.1.5 Hazardous Energy Sources

Hazardous energy sources in the shops complex includes electrical, motion (usually rotational), gravity (massive metal items), pressure (compressed air used in removing turnings and fines), and heat (heat treatment of steels, etc.).

4.3.2 Fabrications Utilizing Unique Materials

4.3.2.1 Description

The capability to handle unusual and unique materials in its fabrication role is one of the more important features of this shops complex. These unusual or unique materials routinely utilized here include, but is not limited to, depleted uranium (a very heavy and slightly radioactive metal), beryllium (a potentially hazardous substance), lithium and its compounds (an extremely reactive material).

4.3.2.2 Program Supported

This operational capability is primarily utilized in support of the Nuclear Weapons Technology Program, principally via the production of components used in destructive testing by the Dynamics Experiments (DX) Division. Depleted uranium is also utilized in the manufacture of replacement component sets. This capability, while not widely utilized, is available to all of the Shop missions

4.3.2.3 Radioactive Materials

Some components are fabricated from depleted uranium. Turnings and fines from these efforts result in a limited volume of radioactive waste. The use of depleted uranium (DU) is restricted to Building SM-102.

4.3.2.4 Nonradioactive Toxic or Hazardous Substances

Some hazardous material (beryllium, lithium compounds, etc.) are utilized by the Main Shops Complex in the fabrication of specialty components.

4.3.2.5 Hazardous Energy Sources

Hazardous energy sources in the shops complex includes electrical, motion (usually rotational), gravity (massive metal items), pressure (compressed air used in removing turnings and fines), and heat (heat treatment of steels, etc.).

4.3.3 Inspection of Fabricated Components

4.3.3.1 Description

Dimensional inspection of the finished component is a standard step in the fabrication process. This involves numerous measurements of the finished product to ensure that it is of the correct size and shape to fit into its allotted space and to perform its intended function.

4.3.3.2 Program Supported

This operational capability is utilized in support of all of the fabrication-related missions for the Main Shops Complex.

4.3.3.3 Radioactive Materials

Some components are fabricated from depleted uranium. Other than an occasional rejected part this inspection effort should not produce radioactive waste. The use of depleted uranium (DU) is restricted to Building SM-102.

4.3.3.4 Nonradioactive Toxic or Hazardous Substances

Some hazardous material (beryllium, lithium compounds, etc.) are utilized by the Main Shops Complex in the fabrication of specialty components. Other than an occasional rejected part this inspection effort should not directly produce toxic or hazardous waste.

4.3.3.5 Hazardous Energy Sources

Hazardous energy sources in the shops complex includes electrical, motion (usually rotational), gravity (massive metal items), pressure (compressed air used in removing turnings and fines), and heat (heat treatment of steels, etc.). The inspection effort should not be greatly affected by these energy sources.

4.4 Discussion of Operational Capabilities under the Expanded Operations Alternatives

4.4.1 Fabrication of Specialty Components

Fabrication of specialty components for the entire Laboratory Complex is the primary purpose for the "Shops" existence. This effort advances the overall research and development mission of the Laboratory by the fabrication of new components (parts) to advance the scientific frontiers and prove the correctness of new ideas, etc. One of the unique abilities of the shop is the wide range in size of the parts and systems that can be produced, from very small to extremely large.

Under the "No Action Alternative" the main shops complex is expected to provide fabrication support in the Nuclear Weapons Technology Support arena for up to 30 hydrodynamic test, as many as 200 additional dynamic experiments, and up to 50 safety/reliability studies per year. In addition they will manufacture up to 150 replacement component sets per year for the Stockpile Management Programs, while producing requested equipment to support the Nuclear Materials Production efforts. They will continue their general fabrication support of the Laboratory's non-weapons related work.

While the current staff is taxed to routinely perform this level of work, scheduled overtime and the introduction of a second shift is making it possible to meet the appropriate Laboratory goals.

The elimination of underground testing has resulted in a heightened importance of the Laboratory's above ground testing of weapon components and surrogate devices. Details regarding the safety and reliability of our nuclear weapons, formerly available from the underground tests, must now be obtained from laboratory and field type experiments. Under the **Expanded Operations Alternative**, this may require an additional numbers of tests, and/or additional peripheral experimental apparatus for enhanced data collection. The shops must support any expanded testing program. Formerly, many different organizations provided components required for weapons testing program. Also, the LANL shops may be called upon to fabricate items not readily available in a timely manner from the primary sources.

The current staff is not expected to be able to meet the workload required to satisfy these potential needs. Small increases can be met by scheduled overtime and the introduction of a second shift, but significant increases will require the employment of additional personnel. Additional, and perhaps new, equipment may be needed.

Fabrication support for additional tests and/or manufacture of more component sets. The work load for the shops under an expanded program may include providing fabrication support for up to 100 major hydrodynamic test, perhaps as many as 300 additional dynamic experiments, and up to 100 safety/reliability studies in any given year. Note; any single (individual) test, experiment, or study may involve numerous explosions or shots. Additional support may involve calibrations, surveillances, dismantlements, and similar activities, that are to "maximize the return" on the efforts identified above.

The Stockpile Management effort of manufacturing renewable components for devices removed from the stockpile for regular evaluation (routine dismantlement and examination) may under an expanded operation produce as many as 600 component sets per year. The manufacture of these items will involve the use of both depleted uranium and inert materials.

Fabrication support for additional experimental apparatus. The necessity of obtaining additional and/or different data will require new and perhaps more experimental apparatus. The shops will fabricate much of the new equipment needed in this effort. The additional workload and potential material throughput cannot be projected at this time.

Fabrication support for additional types of components. Many of the components used in the assembly of weapon devices are normally supplied by other organization from within the DOE complex. Some of these organizations are not now in a production mode. It is highly likely that LANL may be expected to fabricate non-routine components that are to be utilized in the testing programs. Many of these special items will be fabricated by the shops personnel.

4.4.2 Fabrication Utilizing Unique Materials

The capability to handle unusual and unique materials in its fabrication role is one of the more important features of this shops complex. These unusual or unique materials routinely utilized here include, but is not limited to, depleted uranium (a very heavy and slightly radioactive metal), beryllium (a potentially hazardous substance), lithium and its compounds (an extremely reactive material).

This operational capability is primarily utilized in support of the Nuclear Weapons Technology Program, and in the manufacture of replacement component sets. This capability, while not widely utilized, is available to all of the Shop missions

Any expanded operations in the utilization of unique materials will be felt primarily in the support of the Nuclear Weapons Technology Program efforts described above and in the manufacture of depleted uranium parts for the Stockpile Manage Programs.

4.4.3 Inspection of Fabricated Components

Dimensional inspection of the finished component is a standard step in the fabrication process. This involves numerous measurements of the finished product to ensure that it is of the correct size and shape to fit into its allotted space and to perform its intended function.

The workload involving this operational capability must match that of the fabrication assignment.

Dimensional inspection of the finished component is a standard step in the fabrication process. The workload involving this operational capability must match that of the expanded fabrication assignments. This may require that the Shops acquire some additional inspection capabilities

5.0 References

DOE 1999 “Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory,” US Department of Energy, Albuquerque Operations Office DOE/EIS-0238 (January 1999).

DOE 1996: “Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management,” US Department of Energy, Albuquerque Operations Office DOE/EIS-0236 (September 1996).

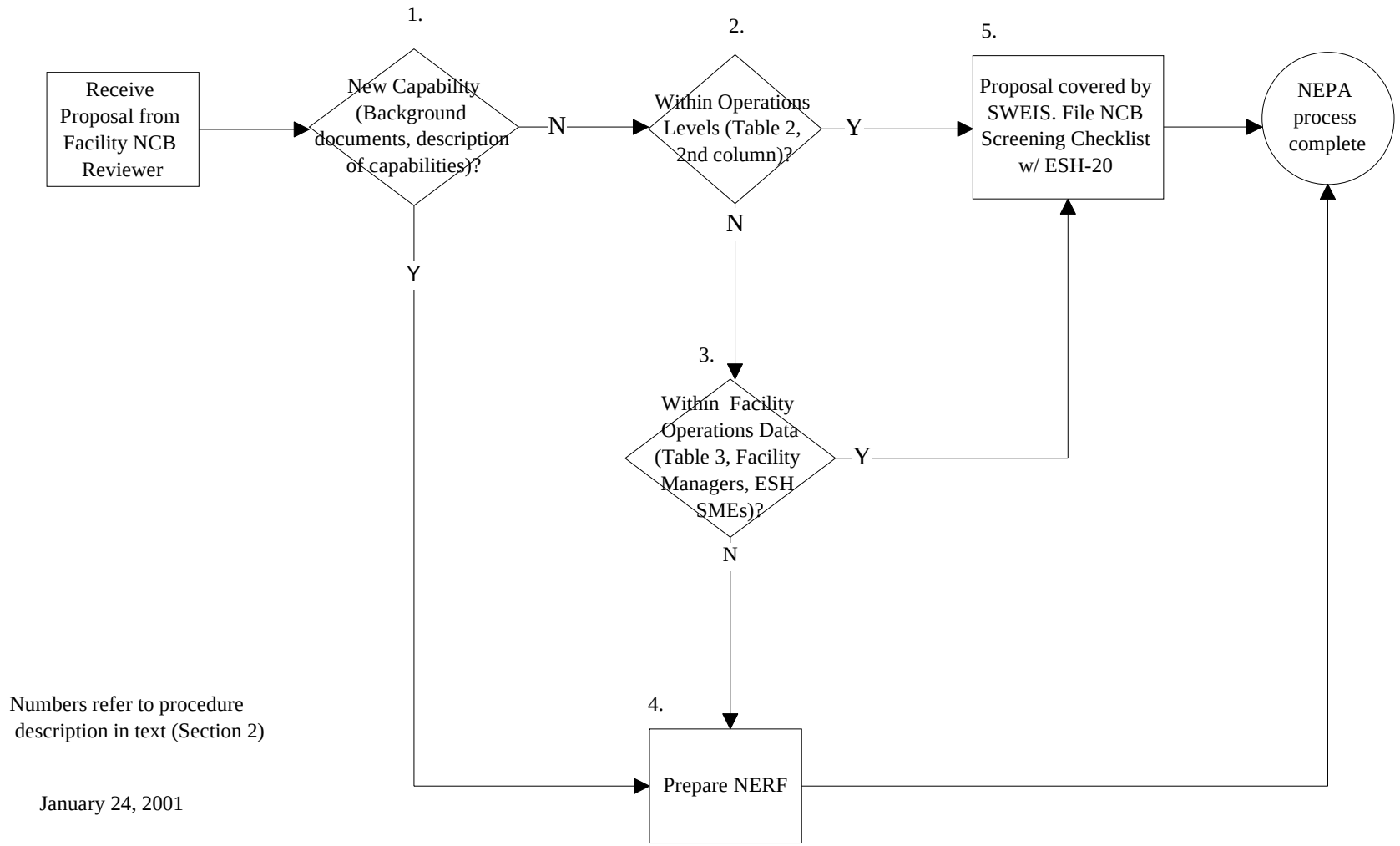
LANL 1996: “Background Information for the Main Shops (TA-3) for the Site-Wide Environmental Impact Statement, Los Alamos National Laboratory,” transmitted to Mr. Thomas Anderson, GRAM, Inc., by Doris Garvey, Project Leader, LANL Site-Wide Environmental Impact Statement (December 2, 1996).

LANL 2000a: “NEPA, Cultural Resources, and Biological Resources (NCB) Process Laboratory Implementation Requirement,” Los Alamos National Laboratory LIR 404-30-02.0 (01/20/2000).

LANL 200b: “Facility NCB Reviewer Determination Document 8, TA-03 Machine Shops.”

LANL 1999: “SWEIS 1998 Yearbook: Comparison of 1998 Data to Projections of the Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory,” Los Alamos National Laboratory LA-UR-99-6391 (December 1999).

Attachment 1: ESH-20 Screening Flow Chart



Attachment 2: NCB Screening Checklist

REVIEWER: DATE:

PROJECT TITLE:

PROJECT IDENTIFIER/Reference No:

DESCRIPTION/Comments:

Air or water emissions to environment: Yes ☐ No ☐
Describe issue or resolution:

LOCATION: FMU No: FMU No:

TA:__ Building:_____ TA:__ Building:_____ TA:__ Building:_____
TA:__ Building:_____ TA:__ Building:_____ TA:__ Building:_____
Other: _____

CRITERIA:

2a.	1. Schedule or location modified to avoid T&E concerns?	Yes ☐	No ☐
	2. After project modification is there an unresolved T&E issue?:	Yes ☐	No ☐
	3. For T&E buffer areas, map of project footprint is attached or has been sent to ESH-20?	Yes ☐	No ☐
2b.	Floodplain issue:	Yes ☐	No ☐
2c.	Wetland issue:	Yes ☐	No ☐
	Wetland BMPs implemented?	Yes ☐	No ☐
2d.	Modifications to a historic building:	Yes ☐	No ☐
2e.	Archaeological resources affected:	Yes ☐	No ☐
	Sites within project area were avoided (notify ESH-20 and provide map):	Yes ☐	No ☐

3a. NEPA Documentation:

CX (specify): LAN-__-_____ LAN-__-_____

Site-wide EIS (specify): Facility NCB Document No.: _____ Operations Level (Use Table 2): _____

3b. Conditions that preclude a cx or SWEIS reference:

Connected action:	Yes ☐	No ☐
Extraordinary circumstances	Yes ☐	No ☐
Siting/expansion - Treatment, Storage, Disposal facility?	Yes ☐	No ☐
Uncontrolled releases of contaminants	Yes ☐	No ☐

Reviewed by ESH-20 NCB staff:

NEPA: Name Date Comment:

Biological Resources: Name Date Comment:

Cultural Resources: Name Date Comment:

Other: Name Date Comment: