

approximately 140 gloveboxes over the course of about 10 years. The new decontamination/handling facility would perform decontamination, size-reduction, packaging, and/or other activities necessary to satisfy the waste acceptance or burial criteria.

The construction of these new facilities would result in an addition of approximately 1.0 ha (2.5 ac) to the permanent TA-55 footprint with 2.5 ha (6.2 ac) total area disturbed during construction. The actual removal of the gloveboxes from PF-4 and decontamination/decommissioning are not included as part of the construction process, and the workers and waste resulting from these activities are not included in the construction data presented in Section 3.1.4.3 of this EIS. Because the removal of the approximately 140 gloveboxes would take place over a 10-year period, the requirements and wastes from the activity are included with the operational values.

### **S.3.2 Development of Reasonable Alternatives and Environmental Impact Statement Scope**

#### **S.3.2.1 Planning Assumptions and Basis for Analysis**

This MPF EIS evaluates reasonable alternatives in order to decide: (1) whether to proceed with construction and operation of a MPF; and (2) if so, where to locate a MPF. Five alternatives are evaluated for a new MPF: (1) Los Alamos Site, New Mexico; (2) Nevada Test Site, (3) Carlsbad Site, New Mexico; (4) Savannah River Site, South Carolina; and (5) Pantex Site, Texas. For the five MPF site alternatives, the EIS evaluates the environmental impacts associated with constructing and operating the MPF to produce sufficient quantities of plutonium pits to support the U.S. nuclear stockpile. In addition, the EIS evaluates the environmental impacts associated with expanding operations at TA-55 while upgrading the existing TA-55 facilities (TA-55 Upgrade Alternative). Some of the more specific assumptions and considerations that form the basis of the analyses and impact assessments that are the subject of this EIS are presented below.

- C As required by the Council on Environmental Quality (CEQ) regulations, the MPF EIS evaluates a No Action Alternative. The No Action Alternative would utilize the capabilities currently being established at LANL for interim capacity to meet the Nation's long-term needs for pit manufacturing. Under the No Action Alternative, NNSA would not proceed with a MPF, which might limit the ability to maintain, long-term, the nuclear deterrent that is a cornerstone of U.S. national security policy. In previous NEPA documents (the *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management*, DOE/EIS-0236 and the *Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory*, DOE/EIS-0238 [LANL SWEIS]), DOE evaluated the environmental impacts associated with producing up to 50-80 ppy at LANL; however, the ROD for the LANL SWEIS limited production to 20 ppy. Thus, under the MPF EIS No Action Alternative, NNSA could produce up to 20 ppy for the foreseeable future.
- C In the LANL SWEIS, DOE committed to provide appropriate NEPA review to implement manufacturing capacity beyond 20 ppy. This MPF EIS provides NEPA coverage for nominal pit production up to approximately 80 ppy at LANL under the TA-55 Upgrade Alternative. Construction activities (primarily the addition of office space) associated with

the upgrade would begin in approximately 2008 and end in approximately 2012. However, production of 80 ppy would not be possible until replacement of all gloveboxes would be completed by approximately 2018.

- C If the Secretary decides to build and operate the proposed MPF at one of the five site alternatives, construction would begin in approximately 2011, peak in 2014, and last about 6 years. Mission start-up and initial operations would occur between 2017 and 2019, with full-scale production beginning in 2020. Because a MPF would be designed for a service life of at least 50 years, the EIS assesses the environmental impacts associated with the operation of a MPF for a period of 50 years, at which time the structures would undergo decontamination and decommissioning (D&D).
- C The MPF is in a conceptual design stage. As such, best available design information for the analysis is contained in this EIS (see the descriptions of a MPF in Sections S.3.1 and Appendix A). For the purpose of the environmental impact analysis, assumptions have been used such that construction requirements and operational characteristics of the MPF would maximize the environmental impacts. Thus, the potential impacts from the implementation of any MPF final designs are expected to be less severe than those analyzed in this EIS.
- C The exact size and composition of the enduring stockpile is determined on an annual basis as explained in Sections S.1.1.3. In the classified appendix to a MPF EIS, the NNSA has considered a range of future stockpiles. Based on current long-range planning consistent with the NPR, NNSA must be capable of supporting a stockpile of approximately 1,700-2,200 strategic deployed weapons in 2012 and beyond. Classified studies have examined capacity requirements that would result from a wide range of enduring stockpile sizes and compositions, pit lifetimes, emergency production needs (referred to as “contingency” requirements), and facility full-production start dates. Although the precise future capacity requirements are not known with certainty, enough clarity has been obtained through these ongoing classified studies that the NNSA has identified a range of pit production capacity requirements (125-450 ppy) that form the basis of the capacity evaluations in this EIS. The EIS evaluates the impacts of a MPF designed to produce three capacities: 125 ppy, 250 ppy, and 450 ppy. A pit lifetime range of 45-60 years is assumed.
- C For each of the capacities (125 ppy, 250 ppy, and 450 ppy), the EIS evaluates the environmental impacts associated with single-shift operations 5 days per week, as this represents the most likely long-term, normal operating scenario for the MPF. However, if national security requirements ever demand, the MPF could be operated in a two-shift mode to produce more pits than in the single-shift mode. Because the environmental impacts associated with single-shift production of 250 ppy would bound the impacts associated with two-shift production in a 125 ppy plant, no additional NEPA analysis would be necessary for this scenario. Likewise, because the environmental impacts associated with single-shift production of 450 ppy would bound the impacts associated with two-shift production in a 250 ppy plant, no additional analysis would be necessary for this scenario. For the 450 ppy capacity, the EIS assesses the environmental impacts of two-shift operations in a qualitative sensitivity analysis.
- C This EIS does not support decisions to select a specific location at any DOE site alternative for a MPF. However, initial reference locations have been identified at each site, consistent

with the environmental analysis in this EIS to evaluate the potential environmental impacts of a MPF. These reference locations were designated by the individual DOE site offices not to conflict or interfere with existing or planned future site operations. Other locations may be identified by the DOE office at the selected site, if the Secretary of Energy decides to proceed with a MPF. In general, undeveloped areas are used so that any potential environmental impacts would be greater than those projected for a specific location to be developed. These reference locations are defined for each site in Section S.3.3.2. The characterization of the affected environment addresses the entire candidate site and the affected region surrounding the site. Each region varies by resource, but generally extends to an 80-km (50-mi) radius from the center of each site.

- C Both construction and operational impacts are considered for all resources at all sites. Construction impacts are generally short-term (e.g., would occur over the 6-year construction period), while operational impacts are expected to be long-term (e.g., would occur annually over the 50-year operating period).
- C Generated wastes would be managed in accordance with applicable Federal, state, and local laws, regulations, and requirements, as well as DOE/NNSA's waste management orders and pollution prevention and waste minimization policy.
- C The EIS analyzes low-consequence/high-probability accidents and high-consequence/low probability accidents. A spectrum of both types of accidents is analyzed. For radiological accidents, impacts are evaluated for both the general population residing within an 80-km (50-mi) radius (including the maximally exposed individual) and for non-involved workers in collocated facilities. The accident analyses in this EIS are based on facility conditions that are expected to exist in 2020. The core set of accident scenarios is applicable to each location alternative with adjustments to certain parameter values (e.g., leak path factors and materials at risk) to reflect site-specific features. Added to the core set of accidents are other site-specific accidents, if any, caused by natural phenomena or accidents at collocated facilities, that have the potential for initiating accidents at a MPF. The impacts of accidents analyzed for each alternative reflect and bound the impacts of all reasonably foreseeable accidents that could occur if the alternative were implemented.
- C The plutonium Research and Development (R&D) mission and pit surveillance functions would remain at LANL and Lawrence Livermore National Laboratory and would be unaffected by the Proposed Alternative.
- C Proven technology is used as a baseline. No credit is taken for emerging technology improvements. The design goal of the MPF includes consideration of waste minimization and pollution prevention to minimize facility and equipment contamination, and to make future D&D as simple and inexpensive as possible. The EIS includes a general discussion of the environmental impacts from D&D, including a discussion of the D&D process, the types of actions associated with D&D, and the general types of impacts associated with D&D. Any discussion of specific D&D impacts are more appropriate for tiered NEPA documents because the extent of contamination, the degree of decontamination, and the environmental impacts associated with performing D&D, cannot be known without performing a detailed study of a MPF at the appropriate time.
- C Liquid TRU and low level waste (LLW) streams will be solidified as part of the MPF process, (i.e., the MPF would not generate any liquid TRU or LLW that requires

disposition). The solidified waste forms would meet applicable waste acceptance criteria prior to leaving the MPF. Any TRU waste generated by the MPF would be treated and packaged in accordance with the WIPP Waste Acceptance Criteria and transported to WIPP or a similar type facility for disposition. The preferred alternative in the *WIPP Disposal Phase Final Supplemental Environmental Impact Statement (SEIS)* (DOE 1997b) currently includes a 35-year operating period starting in March 1999. To accommodate all project TRU waste from MPF and other NNSA operations, DOE must ensure that either the WIPP or another similar type facility would be available for long-term disposition of TRU waste. Section 6.5.1.5 gives additional detail relative to the WIPP. All other wastes would be managed in accordance with applicable site procedures and disposed of in accordance with decisions made in the *Final Waste Management Programmatic Environmental Impact Statement for Managing, Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* Records of Decision.

- C The MPF would be capable of producing all existing pit types in the nuclear weapons stockpile, as well as any future new-design pits. The environmental impacts associated with manufacturing a particular type of pit, whether an existing design pit or future new-design pit, are considered to be similar.
- C The operation of a MPF would require transporting existing pits from Pantex, where more than 12,000 are presently stored, to a MPF, and transporting new pits from a MPF to Pantex where they would be assembled into weapons. In addition, small quantities of plutonium metal would be transported from LANL and SRS to a MPF location. All transportation of pits and plutonium metal is assumed to occur via the NNSA transportation fleet of SSTs over Federal and state highways to the extent practicable. The quantities of pits and other materials that would be transported to/from the MPF are provided in Appendix D.
- C A modern nuclear weapon consists of many components, most of which are nonnuclear. In general, any components for pits not produced at the MPF would be produced in existing facilities and shipped to a MPF for assembly into the pit. The environmental impacts associated with producing these components have been addressed in previous NEPA documents (see specifically the Nonnuclear Consolidation EA, DOE/EA- 0792, DOE 1993).
- C Because the NNSA will need a facility to manufacture beryllium components required for the MPF, this programmatic EIS assesses the environmental impacts of such manufacturing for completeness (see Section 5.7.1). Site-specific issues concerning the manufacturing of beryllium components will be addressed in the future NEPA documentation, as required.
- C The methodology used to assess the environmental impacts of constructing and operating a MPF is described in Appendix F.
- C As explained in Section S.3.3.3, the MPF EIS evaluates an upgrade to the TA-55 Facility at LANL to increase pit production capacity. Although this Upgrade Alternative does not meet the minimum capacity requirement of 125 ppy, it is evaluated as a “hedge” in the event of significant further reductions in the nuclear weapons stockpile size, or if future technical studies demonstrate that pit lifetimes significantly exceed 45-60 years. The TA-55 Facility is the only existing pit production facility capable of being upgraded to provide such a hedge (see Sections S.3.4.3 and S.3.4.4). As such, this is the only

reasonable Upgrade Alternative assessed in this EIS. It is noted that this Upgrade Alternative would be timed to minimize disruptions of LANL's interim small-scale pit production activities required to meet current DOD requirements.

- C The classified appendix with information relevant to this EIS has been prepared and will be considered by the decisionmaker during this NEPA process. To the extent allowable, the MPF EIS summarizes this information in an unclassified manner.

### **S.3.2.2 Development of the Environmental Impact Statement Site Alternatives**

Following the approval of the Critical Decision on Mission Need (CD-0) by the Secretary of Energy on May 24, 2002, the NNSA developed a site screening process to develop the reasonable site alternatives that are evaluated in this MPF EIS. The purpose of the site screening process was two-fold: (1) to identify reasonable site alternatives for the MPF EIS; and (2) to identify unsuitable site alternatives and document why these alternatives were not reasonable for the MPF EIS.

A two-step screening process was employed: first, all potential sites were evaluated against "go/no go" criteria; and second, those sites satisfying the go/no go criteria were evaluated against desired, weighted criteria. The desired criteria and weights were developed by members of the MPF project office. Federal employees from the NNSA and other relevant DOE program offices then "scored" the potential sites using the desired criteria. Aggregate scores for the alternatives were then tallied, and the reasonable site alternatives were determined.

Existing, major DOE sites were considered to serve as the host location for a MPF. Non-DOE or new sites were not considered to avoid potential contamination issues at a new location that had not previously been associated with plutonium or plutonium-bearing waste operations. Many DOE sites did not satisfy the go/no-go criteria and were eliminated during the first step of the screening process. The seven sites that were evaluated through both steps of the screening process were: Idaho National Engineering and Environmental Laboratory, LANL, NTS, Pantex, SRS, the Carlsbad Site, and the Y-12 National Security Complex.

The site screening analysis considered the following criteria: population encroachment, mission compatibility, margin for safety/security, synergy with existing/future plutonium operations, minimizing transportation of plutonium, NNSA presence at the site, and infrastructure. The first two criteria were deemed to be go/no go criteria; that is, a site either passed or failed on each of these two criteria. The sites that passed the go/no go criteria were then scored against all criteria. Based upon results from the site screening analysis, the following were determined to be reasonable alternatives for a MPF: (1) Los Alamos Site, New Mexico; (2) Nevada Test Site; (3) Carlsbad Site, New Mexico; (4) Savannah River Site, South Carolina; and (5) Pantex Site, Texas. Appendix G contains a copy of the site screening study.