

Summary

The U.S. Department of Energy's (DOE's) National Environmental Policy Act (NEPA) Implementing Procedures at 10 CFR 1021.330(d) require evaluation of its site-wide environmental impact statements (EISs) at least every 5 years by preparation of a supplement analysis (SA), as provided in 10 CFR 1021.314. Based on the SA, a determination is made as to whether the existing EIS remains adequate, or whether preparation of a new site-wide EIS, or a supplement to the existing EIS, is appropriate. This SA evaluates whether the *Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components*, referred to as the Pantex Site-Wide EIS (SWEIS) should be supplemented, a new EIS should be prepared, or no further NEPA documentation is required.

DOE issued the SWEIS in November 1996. The SWEIS assessed impacts relative to each area of the human and natural environment potentially affected by operations performed at the Pantex Plant between 1996 and 2006. The SWEIS evaluated activities associated with ongoing operations, including pit¹ storage; transporting pits to and storing them on an interim basis at an alternate site; and transporting classified components between the Pantex Plant and other sites. The analysis assumed that the combined activities of assembly, disassembly, and modifications would not exceed 2,000 weapons per year, and assessed impacts of activity levels for 2,000, 1,000, and 500 weapons per year. These activity levels were considered to represent a reasonable, but conservative, estimate of work that could be required based on policy directives at that time. Availability of the Draft SWEIS for public comment was announced in April 1996 (61 *Federal Register* [FR] 15232); availability of the Final SWEIS was announced in December 1996 (61 FR 65563).

The Record of Decision (ROD) was published in the *Federal Register* on January 27, 1997 (62 FR 3880). DOE decided to implement the preferred alternative evaluated in the SWEIS by (1) continuing nuclear weapon operations involving assembly and disassembly of nuclear weapons at the Pantex Plant; (2) implementing facility projects, including upgrades and construction consistent with conducting these operations; and (3) continuing to provide interim pit storage at the Pantex Plant and increasing the storage level from 12,000 to 20,000 pits.

The SWEIS identifies the following programmatic missions for the Pantex Plant:

- Fabricate chemical high-explosive (HE) components for nuclear weapons
- Assemble nuclear weapons for the Nation's stockpile
- Maintain and evaluate nuclear weapons in the stockpile
- Disassemble nuclear weapons being retired from the stockpile
- Store plutonium pits from dismantled weapons on an interim basis.

The individual operations conducted at the Pantex Plant to support these programmatic missions and analyzed within the scope of the SWEIS include the assembly and disassembly of nuclear weapons, maintenance and modification activities regarding the nuclear weapons stockpile, stockpile evaluation, quality assurance testing of weapon components, and research and production of HE components for

¹ An assembly at the center of a nuclear device containing a sub-critical mass of fissionable material.

nuclear weapons. Related activities include certain quality assurance evaluations of weapons; research and development activities supporting nuclear weapons; sanitization of weapon parts, equipment, and related materials; waste management; environmental restoration (ER); and onsite transportation, as required.

The key areas of the Pantex Plant identified in the SWEIS that support these missions are:

- Zone 12, where assembly, disassembly, and surveillance operations are performed and nonnuclear components are staged
- Zone 11, where HE research and production occur and nonnuclear components are staged
- Zone 4 West, where nuclear weapons and classified components are staged, and pits are stored on an interim basis
- Zone 4 East, where HE is stored and nonnuclear components are staged
- The Burning Ground, where HE material is burned.

The *Programmatic Information Document* and the *Pantex Plant 10-Year Comprehensive Site Plan* provide descriptions of ongoing, planned, and proposed activities. These documents were reviewed to identify potential missions and specific project activities for the analyses in this SA. The *Programmatic Information Document* identifies the primary missions of the Pantex Plant as:

- Assemble nuclear weapons for the Nation's stockpile
- Disassemble nuclear weapons being retired from the stockpile
- Evaluate, repair, and retrofit nuclear weapons in the stockpile
- Sanitize components from dismantled nuclear weapons
- Provide interim storage for plutonium pits from dismantled nuclear weapons
- Develop, fabricate, and test explosives and explosive components for nuclear weapons and to support DOE initiatives
- Provide through the Enhanced Surveillance Program the predictive models and age-focused diagnostics required to anticipate weapons refurbishment
- Provide the production complex with advanced capabilities for designing, developing, and certifying components and systems through Advanced Design and Production Technologies.

Some of these missions, although broader in scope, are a natural extension of the missions identified in the SWEIS. No major changes in the plant's primary missions are anticipated during the next 5 years, the remaining timeframe associated with the SWEIS (2002–2006). Some potential new capabilities have been identified, none of which is developed or expected to be implemented before 2006. They are therefore not evaluated in this SA. The Pantex Plant is being considered as a site for a Modern Pit Facility, a new facility to manufacture plutonium pits. DOE announced its intent to prepare a Supplemental Programmatic EIS on Stockpile Stewardship and Management for a Modern Pit Facility in September 2002 (67 FR 59577) to decide whether to proceed with a Modern Pit Facility, and if so, where

it should be located. Five DOE sites, including the Pantex Plant, are being evaluated in the Supplemental EIS as potential locations for the facility.

In fiscal year 2001, two major administrative changes affected the Pantex Plant. First, the National Nuclear Security Administration was formed as a separate agency within DOE responsible for providing the United States with nuclear weapons, ensuring the safety and reliability of those weapons, and supporting programs that reduce global nuclear proliferation. Second, BWXT Pantex was selected as the plant's new management and operating contractor. Neither of these changes has affected the Pantex Plant's primary missions.

As indicated in Section 1.4 of the SA, actual activity levels through 2002, and predicted activity levels through 2006 are below the 2000-weapons-per-year analyzed in the SWEIS. Approximately 12,600 pits are currently in storage at the Pantex Plant, well below the SWEIS analysis limit of 20,000. A major effort to repackage pits into AL-R8 sealed insert (SI) containers is underway and anticipated to be completed by 2005. The SWEIS analyzed repackaging of pits into AT-400A containers. However, in a SA, DOE determined that using AL-R8 SI containers would remain within the parameters of the SWEIS and provided a number of benefits over using AT-400A containers, including lower worker dose during repackaging.

The ROD for the *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement (Storage and Disposition PEIS)* announced that surplus pits stored in Zone 4 (as well as surplus pits transferred from Rocky Flats Environmental Technology Site) would be stored in upgraded facilities in Zone 12 by 2004. An April 2002 amended ROD for the *Surplus Plutonium Disposition EIS and Storage and Disposition PEIS* (67 FR 19432) announced DOE's plans to continue to store surplus pits in Zone 4 pending disposition at the Savannah River Site. As discussed in the ROD, DOE had intended to relocate all pits in storage at the Pantex Plant to upgraded facilities in Zone 12 and to eventually discontinue use of Zone 4. However, further analysis of mission needs determined that Zone 4 would likely be needed well into the future, so cost savings initially postulated from closure of Zone 4 would not be realized; and there is adequate storage space in Zone 4 to accommodate both the surplus pits and dismantlement activities. Additionally, the Defense Nuclear Facilities Safety Board expressed concerns about storing both the surplus and strategic pits in Zone 4. As stated in the amended ROD, storage of surplus pits in Zone 4 is ongoing and consistent with current storage practices and was evaluated as part of the No Action Alternative in the *Storage and Disposition PEIS*.

Six proposed projects were at a sufficient stage of development in 1996 to be included in the SWEIS analysis. These projects are the Hazardous Waste Treatment and Processing Facility (HWTPF), Pit Reuse Facility, Gas Analysis Laboratory (GAL), Materials Compatibility Assurance Facility (MCAF), Nondestructive Evaluation Facility (NDEF), and Metrology and Health Physics Calibration and Acceptance Facility. These facility construction and upgrade projects were proposed for locations in or near Zones 11 and 12, and were needed to meet explosives, safety, seismic or tornado criteria; streamline efficiency of continued operations; maximize worker safety; reduce existing facility footprints; or meet regulatory requirements. The HWTPF has been constructed. The Pit Reuse Facility and the Metrology and Health Physics Calibration and Acceptance Facility have been redesigned for incorporation into modified, existing facilities. The GAL, MCAF, and NDEF have been combined into a single, new proposed facility, the NDE/Gas Laboratory.

An initial screening review was conducted of new, modified, or proposed projects and missions; new regulations; and updated environmental and operating basis information. This review identified whether associated levels of activity or potential for impact to a particular resource area, either individually or cumulatively, warranted additional analysis. No further analysis was conducted for those resource areas

for which it was evident from the initial screening that associated impacts would be minimal and within the baseline established in the SWEIS: visual resources, land resources, geology and soils, acoustics (noise), biotic resources, socioeconomic resources, human health, transportation, and environmental justice. Section 2.1 of the SA provides a discussion of these resource areas.

Other resource areas required a more detailed analysis to determine whether the potential impacts remain within the SWEIS baseline or had substantial new information available since the SWEIS was published with which to update the analyses. These resource areas, the evaluations of which are presented in Section 2.2 of the SA and summarized in the following paragraphs, are facilities and infrastructure, cultural resources, water resources, air quality, waste management, and facility accidents. These resource areas were evaluated to determine whether the potential impacts are outside the envelope of consequences established in the SWEIS, and if so, whether those impacts could be considered significant within the context of NEPA (40 CFR 1508.27), and as such require the preparation of a new or supplemental EIS.

Facilities and Infrastructure. New floor space at the Pantex Plant increased by only 1 percent during the 1996–2001 timeframe, less than had been projected in the SWEIS. Future construction could expand floor space by approximately 4 percent, approximately 2 percent less than the total floor space projected in the SWEIS. In addition, planned demolition of excess facilities during the period 2002–2006 could result in the loss of up to 8 percent of the floor space existing in 2001. Ongoing utility and transportation infrastructure requirements are anticipated to remain consistent with those identified in the SWEIS.

Cultural Resources. Since issuance of the SWEIS, DOE has been consulting with the Texas State Historic Preservation Officer (SHPO) regarding National Register eligibility for various cultural resources. These discussions resulted in the determination that two prehistoric sites on the Pantex Plant are potentially eligible for inclusion on the National Register. Preliminary discussions suggest that none of the World War II properties have sufficient integrity to be eligible for listing. DOE is continuing consultations with the SHPO regarding the formal eligibility of Cold War era resources, and has preserved a number of World War II era drawings and documents. In 1996, DOE conducted a search that found that no federally recognized Native American tribes have recognized title or treaty rights to Pantex Plant land. Because future construction activities at the plant would be conducted in accordance with existing agreements and the Cultural Resources Management Plan (when finalized), no adverse impacts on cultural resources are expected.

Water Resources. Regional groundwater withdrawals and long-term pumping continue to exceed the natural recharge rate of the Ogallala Aquifer, the major source of groundwater in the plant vicinity. In particular, the large water demands of the Amarillo area, including irrigation, are responsible for the drop in the water table. Groundwater withdrawals by the Pantex Plant have been reduced over time (withdrawals were 29 percent less in 2000 than in 1995) and are less than projected in the SWEIS.

A number of activities have occurred since the SWEIS was issued that affect water resources. All industrial wastewaters have been routed to the wastewater treatment facility (WWTF) for treatment and site wastewater discharges from the WWTF to Playa 1 have decreased. Treated effluent is planned to be used to irrigate DOE-owned agricultural land rather than being discharged to the playa. This is expected to return the playa hydrology to a more natural, ephemeral condition. This upgrade will also help to ensure that the Pantex Plant has sufficient wastewater treatment capacity for future expansion.

However, the permanent water areas in Playa 1 maintained by current effluent discharge and used by local and migratory waterfowl would be lost upon cessation of direct discharges by the upgraded WWTF. This loss of habitat would be partially mitigated by the like habitat provided by the new facultative lagoon and storage pond and by the existing WWTF lagoon that would be retained for irrigation water storage. In addition, it is anticipated that restored ephemeral conditions in the playa would lead to the

establishment of natural annual plant and invertebrate communities, which make playas among the most productive wetlands in the world. (The playas are isolated and not directly adjacent to navigable waters of the United States). During wet periods, resulting seed and invertebrate production would be available to foraging shorebirds and waterfowl.

Although construction of new facilities could increase site storm water runoff due to the creation of additional impervious surface area, the increase in developed area would constitute less than 0.1 percent of the DOE-owned land at the site, and new facilities would be located primarily in previously developed areas. Additionally, the proposed projects would not be expected to impact current water consumption and can be accommodated within the available Pantex Plant capacity. Water demands at the Pantex Plant are primarily those needed to meet the sanitary and domestic needs of facility personnel.

Groundwater monitoring data indicate that groundwater contamination attributable to the Pantex Plant is present only in the perched aquifer. Groundwater monitoring results in the SWEIS indicate that the perched aquifer contains HE compounds, volatile organic compounds (VOCs), and metals. Sampling data for the period 1998 to 2001 indicate that the areal extent of the RDX (a HE) plume in the perched aquifer has progressed slightly to the south-southeast relative to the plume delineation in the SWEIS. A groundwater treatability study initiated in 1995 to remediate HE compounds, VOCs, and metals in the perched aquifer was expanded in 2001 as an Interim Stabilization Measure to mitigate the offsite migration of contaminants in the perched groundwater. The system now has a total of 49 extraction and 9 injection wells. Through April 2002, the system treated nearly 580 million L (153 million gal), removing approximately 900 kg (2,000 lb) of HE compounds and more than 28 kg (62 lb) of hexavalent chromium from the perched groundwater. Characterization of the perched aquifer and monitoring of the Ogallala Aquifer are continuing. The goal of the ER program is to have all identified release sites remediated or undergoing remediation by 2008.

It is anticipated that water use, wastewater generation volumes, and overall impacts on water resources at the Pantex Plant would continue to be bounded by those projected in the SWEIS.

Air Quality. In May 2000, the Pantex Plant notified the Texas Natural Resource Conservation Commission, now the Texas Commission on Environmental Quality, that it had completed actions to reduce its potential to emit pollutants to levels below the major source criteria specified at 40 CFR 70.2. As a result of these actions, plant emissions are presently, and would be expected in the future to remain substantially below levels that would cause ambient air quality standards or effects screening levels for toxic pollutants to be exceeded. For example, emissions data for 2001 reflect substantial reductions in the emissions of nitrogen oxides and carbon monoxide from levels shown in the SWEIS.

Waste Management. Since issuance of the SWEIS, wastes being stored at the Pantex Plant have decreased by at least 46 percent for each waste type in inventory. Generation of most types of waste has declined since the SWEIS was issued, although generation of both hazardous and nonhazardous waste has exceeded SWEIS estimates, and nonhazardous waste generation has increased appreciably during this time. As discussed in Section 2.2.5 of this SA, increases in waste generation can be attributed primarily to ER activities. While ER activities have generated more waste than projected in the SWEIS, existing storage and disposal practices have adequately managed this waste. Waste generated in association with future projects, including the scheduled demolition of excess plant facilities, would be expected to have negligible impact on the waste management system, and would be expected to be less than identified in the SWEIS because fewer projects are being implemented during the timeframe evaluated in the SWEIS. Most decontamination and decommissioning waste would be classified as nonhazardous. These wastes would be sent to the onsite construction landfill or to permitted offsite commercial disposal facilities. Approximately 80 to 90 percent of the materials generated from decontamination and decommissioning activities would be recycled.

Facility Accidents. Minor operating changes have occurred relative to the 11 risk-dominant accident scenarios analyzed in the SWEIS. These accident scenarios bound the accident risks associated with operations at the Pantex Plant. Plant changes that could affect the accident scenarios include the operation of new or refurbished buildings, changes in radioactive material or HE limits at certain facilities, and changes in the frequency of certain operations that contribute to risk. However, as discussed in Section 2.2.6 of this SA, these changes do not affect the conclusion that the scenarios analyzed in the SWEIS continue to bound the risks associated with Pantex Plant operations. In addition, no new scenarios were identified that are appreciably different from the 11 scenarios discussed in the SWEIS. Similarly, even though the frequency of some activities that contribute to risk may increase, activities planned for the Pantex Plant are not expected to result in a substantial increase in the risks to human health or the environment.

Cumulative Impacts. The cumulative impacts analysis in the SWEIS considers impacts of continued Pantex Plant operations at the 2,000-weapons-activity level and storage of 20,000 pits, in association with the most adverse potential impacts at the Pantex Plant from the activities proposed in the *Stockpile Stewardship and Management Programmatic Environmental Impact Statement (SSM PEIS)*, the *Storage and Disposition PEIS*, and the *Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste (Waste Management PEIS)*. Each of these programmatic documents addresses activities that were planned for, or under way at, the Pantex Plant at the time the SWEIS was issued. As the following discussion indicates, the cumulative impacts from these activities are expected to remain within the bounds of the cumulative impacts analysis presented in the SWEIS.

- **SSM PEIS.** The SWEIS considers the potential impacts associated with three SSM PEIS alternatives involving the Pantex Plant: the No Action, Downsize Existing Capability, and Relocate Capability alternatives. Both the SWEIS and SSM PEIS discuss operations involving the entire Pantex Plant, but over different time periods. The SWEIS indicates that there would be no significant cumulative impacts at the Pantex Plant associated with the alternative to Downsize Existing Capabilities, the alternative that DOE subsequently selected in the SSM PEIS ROD (61 FR 68014).
- **Storage and Disposition PEIS.** The SWEIS considers the potential siting, construction, and operation of new collocated fissile material (plutonium and highly-enriched uranium) storage and plutonium disposition facilities at the Pantex Plant as bounding alternatives associated with potential *Storage and Disposition PEIS* activities. The analysis assumes impacts from construction of plutonium disposition facilities would take place during the same 10-year period evaluated in the SWEIS, with operation of the disposition facilities likely to occur later. For the collocated storage of plutonium and highly enriched uranium, the SWEIS analysis accounts for the possibility that associated impacts could occur either during the same 10-year period evaluated in the SWEIS, or at a later time. For either, the impacts analysis includes the transportation and storage of pits. The SWEIS identifies potential cumulative impacts to site utilities, land resources, water resources, air quality, biotic resources, cultural resources, socioeconomic resources, and waste management.

The *Storage and Disposition PEIS* ROD (62 FR 3014) selected the Pantex Plant as the consolidated storage site for plutonium pits, but did not select the site for any other facilities or activities. Likewise, the ROD for the tiered *Surplus Plutonium Disposition EIS* (65 FR 1608) did not select the site for any other surplus plutonium disposition facilities or activities. Therefore, the level of potential cumulative impacts associated with *Storage and Disposition PEIS* activities at the Pantex Plant would be expected to be less than that presented in the bounding SWEIS analysis.

- **Waste Management PEIS.** The SWEIS cumulative impacts analysis assumes impacts associated with the *Waste Management PEIS* would also occur during the same 10-year period considered in the SWEIS. The SWEIS identified that the most adverse impact at the Pantex Plant from proposed *Waste Management PEIS* activities would occur in association with the Decentralized Alternative for treatment and disposal of LLW and LLMW, and analyzed the impacts of this bounding case. A combination of decentralized and regionalized alternatives was ultimately selected by DOE in the *Waste Management PEIS* (65 FR 10061). The potential impacts of this decision fall within the conditions evaluated in the SWEIS.

This SA evaluates potential impacts associated with new information, new and proposed projects, and modifications to existing projects since the SWEIS was issued. An initial review clearly indicated that the associated impacts, including cumulative impacts, for visual resources, land resources, geology and soils, acoustics (noise), biotic resources, socioeconomic resources, human health, transportation, and environmental justice would not exceed those identified in the SWEIS. More detailed analyses were performed for facilities and infrastructure, cultural resources, water resources, air quality, waste management, and accidents, either to update these resource areas to include new information; or to determine whether their impacts remain within the baseline established in the SWEIS. The analyses demonstrate that little or no additional impacts are expected for these resource areas, and that the cumulative impacts analysis presented in the SWEIS effectively bounds the cumulative impacts associated with continued Pantex Plant operations.

Conclusions. The analyses in this SA indicate that for the time period evaluated, 1996–2006, both identified and projected impacts for all resource areas, including cumulative impacts, have been and would continue to be within the bounds of those identified in the 1996 SWEIS. These impacts have not resulted in substantial changes to the Pantex Plant SWEIS or ROD, nor do they represent significant new circumstances or information relative to environmental concerns. Therefore, there is no need to either supplement the Pantex Plant SWEIS, or to prepare a new SWEIS.