policy and strategic objectives to support the Record of Decision (ROD). The ROD will:

 Identify the future missions of the SSM program; and

• Determine the configuration (facility locations) of the nuclear weapons complex to accomplish the SSM program missions.

Project-specific NEPA documents will be prepared as necessary to implement any programmatic alternatives chosen in the ROD.

An analysis of the sensitivity of the proposed SSM program configuration to a range of hypothetical stockpile sizes will also be performed. DOE expects to use the stockpile size consistent with the START II protocol (approximately 3,500 weapons) as the baseline for the PEIS analysis since this is the current planning guidance for the Department and is consistent with the recently completed Nuclear Posture Review. Upper and lower excursion cases are also expected to be analyzed.

The SSM Program

Stockpile Management. Stockpile Management activities include dismantlement, maintenance, evaluation, and repair or replacement of weapons and weapons components in the existing stockpile. In the past, a large weapons production complex provided the capability and capacity to rapidly fix any problems found in the stockpile. However, the existing production complex may be inefficient and ineffective for a much smaller stockpile. Therefore, one of the primary goals of the Stockpile Management proposal will be to downsize and/or consolidate functions to provide an effective and efficient production capability for the smaller stockpile. The capabilities needed by the Department to carry out its Stockpile Management responsibilities are described below:

Weapons Assembly/Disassembly. Provides the capability to: dismantle retired weapons; assemble high explosives, nuclear components, and nonnuclear components into nuclear weapons; repair and modify weapons; perform weapons surveillance; and store strategic reserves of nuclear components (pits and secondaries).

Nonnuclear Components. Provides the capability to: fabricate nonnuclear components and perform nonnuclear component surveillance.

Nuclear Components. Provides the capability to: fabricate nuclear components; perform nuclear component surveillance; stage and store nuclear materials and components. Alternatives will be assessed for: Pit Reuse (minor). Nonintrusive modification and recertification of existing pits.

Replacement Pit Fabrication and Reuse (major). Fabrication of replacement pits and/or intrusive modification and recertification of existing pits.

Secondaries and Cases. Fabrication of replacement secondaries and cases.

High Explosives. Provides the capability to fabricate high explosives components and perform high explosives component surveillance.

Stockpile Stewardship. Stockpile Stewardship includes activities required to maintain a high level of confidence in the safety and reliability of nuclear weapons in the absence of underground nuclear testing, and to be prepared to resume testing if so directed by the President. While the nation's nuclear weapons stockpile is currently judged to be safe, secure, and reliable, the average age of the stockpile has never significantly exceeded the current age of 12 to 13 years. Furthermore, very few data exist for weapons older than 25 years. Because the Department cannot predict with certainty when age-related changes affecting weapon safety or reliability will occur, a conservative assumption would be that problems will arise more frequently as the weapons age beyond their original 20- to 25-year design lifetimes.

Historically, nuclear testing has provided unambiguous confidence in the safety and performance of weapons in the stockpile. Without underground nuclear testing, the Department must rely on experimental and computational capabilities, especially in weapons physics, to predict the consequences of the complex problems that are likely to occur in an aging stockpile.

Enhanced aboveground experimental and computational capabilities are needed to assess and predict the consequences of these problems. An improved science-based program with enhanced experimental and computational capabilities is necessary to maintain confidence in the safety and reliability of the nation's stockpile without nuclear testing. This program must be of sufficient technical challenge to attract the high-quality scientific and technical talent needed for future stewardship of the stockpile.

Substantial advances in experimental and computational capabilities are needed to fill in those areas of nuclear weapon science that are incomplete, particularly gaps in our understanding of physics and gaps in the data needed for computational simulations of weapons performance and model-based assessments of safety and reliability. Upgraded or new experimental capabilities are required to validate improved or new computational models.

Without these enhanced capabilities, the Department will lack the ability to evaluate some safety and reliability issues, which could significantly affect the stockpile. It is also possible that, without these enhanced capabilities, the Department would not be able to certify the acceptability of weapons components that had been repaired or modified to address future safety or reliability issues.

The capabilities needed by the Department to carry out its Stockpile Stewardship responsibilities are described below, along with a brief description of proposed facilities for each capability.

Primary Physics Issues. The study of issues related to the safety and reliability of the primary portion of nuclear weapons. Issues include physics validation, material behavior, improved understanding of implosion, and ability to assess age-related defects. The facilities proposed or under consideration are:

Contained Firing Facility. An addition to the Flash X-Ray hydrodynamic test facility at LLNL, this facility would provide hydrodynamic test capabilities and new diagnostics for improved studies of the behavior of weapons material. The PEIS will contain a full evaluation for site-specific construction and operational impacts.

Advanced Hydrotest Facility. If proposed, this facility would provide up to eight radiographic views of the primary's implosion symmetry. In the longer term, this facility may be essential for assuring weapon reliability and safety without nuclear testing.

Secondary Physics Issues. The study of issues related to the safety and reliability of the secondary portion of nuclear weapons. Issues include physics validation, material behavior, improved understanding of thermonuclear ignition, and ability to assess age-related defects. Some of these facilities may also investigate physics phenomena that relate to primaries. The facilities proposed or under consideration are:

National Ignition Facility (NIF). This facility would make it possible in the laboratory, for the first time ever, to study radiation physics in a regime close to that of nuclear weapon detonations. The PEIS will contain a full evaluation for site selection, and for site-specific construction and operational impacts.

¹ High Explosive Pulsed-Power Facility (HEPPF). If proposed, the HEPPF would provide experimental capabilities for