1. Overview of U.S. Nuclear Regulatory Agency Permitting Programs

The U.S. Nuclear Regulatory Commission (NRC) administers licenses to operators for construction and operation of nuclear power plants under 10 CFR Part 52. Licensees are required to obtain a construction permit in additional to an operation license. Types of permits/licenses available to licensees include early site permits (ESP), design certification (DC). and combined licenses (COL).

Early Site Permit (ESP)

Early Site Permits (ESP) are partial construction permits, and require a separate license application from that required for a full construction permit and operation license. The ESP is not an authorization to build or operate a nuclear power plant, but reduces uncertainty in the licensing process by resolving site-related issues early in the process through providing site suitability approval for up to 20 years. The ESP permit application primarily requires submittal of site specific information including seismology, hydrology, and geography-specific information. Once awarded, the permit is valid for 10-20 years, but may require alteration or termination if the site is used for purposes other than the purpose for which the ESP was issued.

Design Certification (DC)

Design Certifications (DC) allow applicants to obtain pre-approval from the NRC of a reactor design that is essentially complete, allowing the applicant to resolve any design issues with the NRC early in the licensing process and reduce licensing process schedule and uncertainty. Reactor design information, site parameters, interface requirements, severe accident analysis, and advanced reactor analysis and testing requirements are evaluated by the NRC prior to decision to issue a DC for the reactor design. Safety, environmental impacts, operational programs, and site-specific design features are not evaluated as part of the DC determination. The evaluation focuses on the reactor design, not where any proposed reactor using that design would be situated. DCs are intended to promote nuclear power plant design standardization and providing a stable basis for licensing of proposed reactors using the DC-approved design. DCs are valid for 15 years. Licensees can propose changes to the reactor design during the period of validity of the DC, but the process of getting a design change approved by NRC after issuance of a DC can be arduous and time consuming.

Combined License (COL)

A Combined License (COL) is a singular license that provides the licensee with both a construction permit and an operating license for a proposed new nuclear reactor facility. COLs may be issued by NRC after an ESP and/or DC is issued. A COL is valid for 40 years and can be renewed for an additional 20 years. In

the review process, the NRC reviews the applicant's qualifications and applicant-provide information concerning the proposed facility design safety, environmental impacts, operational programs, and site safety. Once the COL is issued, the licensee is permitted to construct the proposed reactor facility and is permitted to operate the reactor facility, once constructed, provided that specific standards identified in the COL are satisfied. These standards are referred to as Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and serve the purpose of NRC with reasonable assurance that the facility has been constructed and will operate in conformity with the combined license and in accordance with NRC regulations.

1.1. Alternatives to BSEE Permits, Approvals, and Processes

Early Site Permits and Design Certification would not provide any benefit to either BSEE or applicants concerning the types of installations and activities BSEE permits. A Combined License program could potentially provide benefits to both BSEE and applicants.

1.1.1 Combined License/Construction and Operating Permit

BSEE could potentially adopt a combined permit approach in which BSEE receives and acts upon a singular permit application to construct and operate a proposed facility (i.e., installation-wide permit); all requirements relevant to the proposed installation would be identified in a single permit application process and would be incorporated into a single permit.

1.2. Points for Further Research

1.2.1 Combined License/Construction and Operating Permit

If a combined permit structure is considered as a potential alternative approach to BSEE permitting, assessment of the structure of BSEE's permitting program would be conducted to assess the viability of establishing a single permit for construction and operation of an installation and the viability of BSEE establishing a construction-verification program for the combined permit process for permitting of installations.

1.3. Implications for BSEE

1.3.1 Combined License/Construction and Operating Permit

Efficiency

Establishing a single permit program in which BSEE receives and acts upon a singular application for a combined permit to construct and permit to operate an installation may improve efficiency. BSEE would need to review only one set of applicant-provided documentation for each installation to be permitted, which could result in an expedited time frame for the review process.

Effectiveness

Establishing a single permit program could potentially improve effectiveness. Aggregating all permit conditions applicable to a permitted installation in a single [construction and operating] permit could potentially improve efficiency by allowing BSEE to consider the permit requirements, and applicable environmental and safety controls, for the installation as a whole, rather than BSEE considering the requirements for individual components/activities of the installation to be permitted. BSEE could potentially establish a systems view of the installation as a whole and better understand how controls applied to one component of a proposed installation relate to other components of the installation.

Suitability for Purpose

Establishing a single permit program could potentially improve safety and environmental performance. BSEE would have the opportunity to look at the permit conditions for construction and operation of the installation as a whole instead of permitting individual components and activities. However, once the combined permit is issued the applicant would be free to construct the installation in accordance with the combined permit requirements. BSEE could potentially implement changes to construction permit requirements and operating permit requirements during the combined application review process, but would not be able to implement changes to permit requirements once the combined permit is issued and the applicant commences construction. The concept of a combined construction and operating permit is that the applicant gains a level of certainty in being able to build the installation "as permitted" without being subject to changes in permit conditions once the permit is issued. BSEE could establish a construction verification program, similar in concept to the NRC's ITAAC, under which BSEE would physically inspect the installation "as constructed" to ensure that the installation has been constructed in accordance with the requirements of the combined permit, prior to certifying the operating permit. Improvement in safety and environmental performance would depend upon BSEE's establishing a process to ensure that all relevant permit conditions are included in the combined permit.

Implementation

BSEE would need to reorganize their approach to permitting and their current method of applying standards to individual activities/components of an installation in order to implement a single permit approach in which all of the relevant requirements for the installation being permitted are incorporated into a single permit. BSEE would not issue permits for individual components/activities of an installation but would rather permit the installation as a whole. Applicants could therefore have less flexibility to request changes to permit conditions during construction (e.g., well drilling) for activities that extend outside of the boundaries of the combined permit conditions. BSEE could also have less flexibility in their ability to implement changes to permit condition once the combined permit has been issued, and therefore would need to establish a process to ensure that all permit conditions relevant to construction and operation are included in the combined permit.