U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

13.6.3 PHYSICAL SECURITY - EARLY SITE PERMIT

REVIEW RESPONSIBILITIES

Primary - Organization responsible for the review of physical security

Secondary - None

I. AREAS OF REVIEW

For ESP applications, the review involves the evaluation, pursuant to 10 CFR 100.21(f), of the site characteristics to provide reasonable assurance that adequate security plans and measures can be developed to meet applicable 10 CFR Part 73, 10 CFR 73.55 requirements, as well as guidance provided in NRC Regulatory Guide (RG) 4.7, Revision 2, "General Site Suitability Criteria for Nuclear Power Stations," issued April 1998.

In addition to the requirements outlined in 10 CFR Part 73, 10 CFR 73.55, this ESP review addresses security orders EA-02-026, "Interim Compensatory Measures (ICM) Order," dated February 25, 2002 and EA-03-086, "Design Basis Threat Order" dated April 29, 2003," generically referred to as the DBT Order. While these orders are not applicable to new applications, they are in the process of being codified and once codified, applicants must meet the requirements these orders impose. However, the requirements of these orders will not be utilized as the sole basis in determining an ESP application acceptability.

The specific areas of review are as follows:

1. Diagrams, to approximate scale, displaying the following:

A. Pedestrian land approaches.
B. Vehicular land approaches.
C. Railroad approaches.
D. Water approaches.
E. Potential "high-ground" adversary advantage areas.
F. Nearby road transportation routes.
G. Nearby pipelines.
H. Existing and/or planned culverts.
I. Location of vital equipment and vital areas.
J. Nearby hazardous facilities.
K. Location of proposed intake structure.
L. Location of proposed protected area (PA) boundary for power block structures and safety-related cooling tower.
M. Location of proposed owner-controlled area (OCA) and PA vehicle checkpoint.

2. A description of the physical land characteristics to indicate that adequate distances exist between vital equipment and vital areas and the probable location of a security boundary.

3. A description of the site characteristics that may require measures in order to control approaches to the facility (e.g., barge slips within the OCA, transportation routes, cliffs, depressions, hills, mounds, open waterways, and roadway or railroad that penetrate the OCA boundary)

4. A description of nearby facilities and pipelines to identify potential hazards in the site vicinity.

5. A description of planned culverts (greater than 254 square inches in cross-section area) that extend from outside to inside the proposed PA, the area for power block structures, and/or the area for safety related water sources (e.g., cooling towers).

Other SRP sections interface with this section as follows:

1. Review of the adequacy of the physical security hardware Inspection, Test, Analysis, and Acceptance Criteria (PS-ITAAC) as performed under SRP Section 14.3.12 - Physical Security Hardware.

The specific acceptance criteria and review procedures are contained in the referenced SRP sections.

II. ACCEPTANCE CRITERIA

Requirements

Acceptance criteria are based on meeting the relevant requirements of the following Commission regulations:

1. 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities"

2. 10 CFR Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants"

3. 10 CFR 73.1 (a)(1), "Radiological Sabotage"

4. 10 CFR 73.55, "Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage" and Appendices B, C, G and H

5. 10 CFR 74, "Material Control and Accounting of Special Nuclear Material"

6. 10 CFR Part 100, "Reactor Site Criteria"

7. 10 CFR 100.21, "Non-Seismic Siting Criteria"

SRP Acceptance Criteria

Specific SRP acceptance criteria acceptable to meet the relevant requirements of the NRC's regulations identified above are as follows for the review described in this SRP section. The SRP is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide acceptable methods of compliance with the NRC regulations.

1. Section (c) of 10 CFR 73.55 - Physical Barriers. The licensee shall locate vital equipment only within a vital area, which in turn, shall be located within a protected area such that access to vital equipment requires passage through at least two physical barriers as defined in 10 CFR 73.2. The physical barriers at the perimeter shall be separated from any other barrier designated as a physical barrier for a vital area within the protected area. Isolation zones in outdoor areas adjacent to the physical barrier at the perimeter of the protected area permit observation. An intrusion detection system detects penetration or attempted penetration of the protected area (PA) barrier. All exterior areas within the protected area are illuminated. The external walls, doors, ceiling and floors in the main control room are bullet resistant. Vehicle control measures which include vehicle barrier systems protect against the use of a land vehicle.

2. Section (d) of 10 CFR 73.55 - Access Requirements. The licensee shall control all points of personnel and vehicle access into a protected area, to include detection equipment capable of detecting firearms, explosives and incendiary devices. Unoccupied vital areas are locked and alarmed with activated intrusion detection systems that annunciate in both the central and secondary alarm stations upon intrusion into a vital area. The individual responsible for the last access control function (controlling admission to the protected area) must be isolated within a bullet-resisting structure.

3. Section (e) of 10 CFR 73.55 - Detection Aids. All alarms required pursuant to this part shall annunciate in a continuously manned central alarm station located within the protected area and in at least one other continuously manned station, not necessarily onsite, such that a single act cannot remove the capabilities of calling for assistance or otherwise responding to an alarm. The central alarm station shall be considered a vital area, shall be bullet-resisting, the interior will not be visible from the protected area perimeter, and associated onsite secondary power supplies for alarm annunciators and non-portable communication equipment must be located within vital areas. Alarm devices and transmission lines must be tamper indicating and self checking. Alarm annunciation shall indicate type of alarm and location. All emergency exits from protected and vital areas shall be alarmed.

4. Section (f) of 10 CFR 73.55 - Communication Requirements. Each security officer, watchman or armed response individual shall be capable of maintaining continuous

communications with an individual in each continuously manned alarm stations. Conventional telephone and radio or microwave transmitted two-way voice communications shall be established with local law enforcement authorities.

5. Section (g) of 10 CFR 73.55 - Testing and Maintenance. Each applicant shall develop test and maintenance provisions for intrusion alarms, emergency alarms, communication equipment, access control equipment, physical barriers, and other security-related devices or equipment.

Technical Rationale

The technical rationale for application of these acceptance criteria to the areas of review addressed by this SRP section is discussed in the following paragraphs:

1. 10 CFR 50.34(c) requires that license applications to operate a production or utilization facility include a physical security plan that describes how the applicant will meet the requirements of 10 CFR Part 73 (and 10 CFR Part 11 if applicable). See Technical Rationale for 10 CFR 73.55 (Item 2) below.

2. 10 CFR 73.55 establishes the detailed requirements for development and implementation of a physical security plan. The physical security plan defines the administrative, physical and operational measures that provide protection of the facility, and any associated special nuclear material, from both internal and external threats. Compliance with 10 CFR 73.55 provides high assurance that the plant is protected against theft of nuclear material or radiological sabotage.

3. 10 CFR 73.70(f) establishes the requirement for recording of each onsite alarm annunciation location of each alarm, false alarm, alarm check, and tamper indication that identifies the type of alarm, location, alarm circuit, date, and time.

4. 10 CFR 100.21(f) establishes that site characteristics must be such that adequate security plans and measures can be developed.

III. REVIEW PROCEDURES

The reviewer will select material from the procedures described below, as may be appropriate for a particular case.

These review procedures are based on the identified SRP acceptance criteria. For deviations from these acceptance criteria, the staff should review the applicant's evaluation of how the proposed alternatives provide an acceptable method of complying with the relevant NRC requirements identified in Subsection II.

1. The reviewer should ensure that the applicant has provided clear, approximate to scale diagrams, figures, drawings, etc. that provide a clear visual depiction of the proposed facility and site physical layout, to include, but not limited to the following: pedestrian land approaches, vehicular land approaches, railroad approaches, water approaches, potential "high-ground" adversary advantage areas, and any existing and/or planned culverts. The review should include a clear visual depiction of vital areas and vital equipment, intake structure; owner controlled and protected area (PA) checkpoints and PA boundary for power block structures and safety-related cooling tower, as well as, nearby roads, transportation routes, pipelines, hazardous facilities.

2. The reviewer should ensure that the applicant has provided a description of the site's characteristics as they currently exist to assure that the site is sufficiently large enough to provide adequate distances between vital equipment and vital areas and the probable location of a security boundary. Nominally a minimum distance of approximately 110 meters (360 feet) from any vital equipment or vital area would provide sufficient distance to allow for the appropriate emplacement of barriers, detection equipment, isolation zones, and vehicle barriers to protect vital equipment.

3. The reviewer should ensure that the applicant has provided a description of the applicable site characteristics that may require measures so as not to interfere with normal operations of the facility. Barge slips within the OCA, transportation routes, cliffs, depressions, hills, mounds, open waterways, and roadway or railroads that penetrate the OCA boundary have been previously identified as characteristics that may require a special measures or analysis. The review should confirm, if applicable, that the analysis with respect to waterways do or do not require restriction to waterway access. The applicant's evaluation should: 1) confirm transportation routes, roadways and railroads that penetrate the OCA, 2) prevent unauthorized proximity to vital areas, 3) protect against a vehicle bomb, and confirm that adequate standoff exists to mitigate over-pressure blast effects. The description should include special measures or arrangements developed to address potential "high-ground" adversary advantage areas (e.g. restricted/controlled access to these areas, increased surveillance and patrols, and enhanced coordination with LLEA, etc.).

4. The reviewer should ensure that the applicant has provided a description of nearby facilities or pipelines to identify potential hazards which may have the potentiality to interfere with normal operations of the facility, and require the development of special arrangements and measures in case of an event at such locations. The description, if applicable, should include analysis or calculations to confirm that the distances to those facilities and pipelines and the materials identified associated with them are such that they do not pose an impediment to the development of adequate security plans or measures.

5. The reviewer should ensure that the applicant has provided a description of all planned or existing culverts (greater than 254 square inches in cross section area) that extend from outside the proposed PA, the area for power block structures, and/or the area for safety-related cooling towers to assure appropriate measure or features are considered to prevent undetected access into the PA.

6. The reviewer should ensure that the applicant has provided a description of the proposed intake structure location and its reliance on providing safe-shut down capabilities. The description should include what measures or restrictions, if applicable, will be implemented assure the capability to achieve safe-shut down.

After this review, SRP Section 14.3 should be followed for the review of Tier I information for the design, including the postulated site parameters, interface criteria, and ITAAC.

IV. EVALUATION FINDINGS

The reviewer should verify that the applicant has provided sufficient information and that the review and calculations (if applicable) support conclusions of the following type to be included in the staff's safety evaluation report. The reviewer should also state the bases for these conclusions.

The evaluation finding should be substantially equivalent to the following statement:

> The applicant has provided a description of the site characteristics and the staff examined the site characteristics with respect to their potential to affect the establishment of adequate security plans and measures. The staff examined pedestrian, vehicular and waterway approaches, including existing and/or proposed culverts, as well as terrain features. Additionally, the staff reviewed nearby transportation routes, hazardous facilities, and railroad lines. Based upon the above evaluation, the staff concludes that the ESP site characteristics would allow an applicant for a COL to develop adequate security plans and measures for a reactor(s) that it might construct and operate on the ESP site in accordance with 10 CFR 100.21(f).

V. IMPLEMENTATION

The staff will use this SRP section in performing safety evaluations of DC applications and license applications submitted by applicants pursuant to 10 CFR Part 50 or 10 CFR Part 52. Except when the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the staff will use the method described herein to evaluate conformance with Commission regulations.

The provisions of this SRP section apply to reviews of applications docketed six months or more after the date of issuance of this SRP section, unless superseded by a later revision.

VI. REFERENCES

1. EA-02-026, "Interim Compensatory Measures (ICM) Order."

2. EA-03-086, "Design Basis Threat Order."

3. NRC Guidance on Implementation of the April 2003 Revised Design Basis Threat. U.S. Nuclear Regulatory Commission, Washington, DC. Safeguards Information

4. NUREG-1267, "Technical Resolution of Generic Safety Issue A-29," U.S. Nuclear Regulatory Commission, Washington, DC. Unclassified

5. Conventional Weapons Effects (CONWEP) software and manual, U.S. Army Corps of Engineers, Omaha, NE. Restricted to government agencies and their contractors.

6. Single Degree of Freedom Blast Design Spreadsheet (SBEDS) Version 3.1 software and Methodology Manual, U.S. Army Corps of Engineers, Omaha, NE. Unclassified.

7. Waterborne Sub-Surface Blast Effects to the Design Basis Threat, D. Sulfredge, Oak Ridge National Laboratory, Oak Ridge, TN. Safeguards Information.

8. Waterborne Surface Blast Effects to the Design Basis Threat, D. Sulfredge, Oak Ridge National Laboratory, Oak Ridge, TN. Safeguards Information.

9. Guidance for Using Underwater Explosion (UNDEX) Data for Estimating Loads on Submerged Targets, D. Sulfredge, Oak Ridge National Laboratory, Oak Ridge, TN, and B. Tegeler, U.S. Nuclear Regulatory Commission, Washington, DC. Unclassified.

10. NUREG/CR-4250, "Vehicle Barriers: Emphasis on Natural Features," Sandia National Laboratory, Albuquerque, NM. Unclassified.

11. FM 5-250, "Explosives and Demolitions," Department of the Army, Washington, DC. Restricted to government agencies and their contractors, export controlled.

12. DOETIC-11268, "Manual for the Prediction of Blast and Fragment Loading for Structures," U.S. Department of Energy, Washington DC. Unclassified.

13. TM 5-1300, "Structures to Resist the Effects of Accidental Explosions," Department of Defense, Washington, DC. Unclassified. (Also designated as Air Force AFR 08-22 and Navy NAVFAC P-3897)

14. Air Force Manual (AFMAN) 91-201, "Explosive Safety Standard," U.S. Air Force, Washington, DC. Unclassified.

15. NUREG/CR-6190, Protection Against Malevolent Use of Vehicles at Nuclear Power Plants, U.S. Army Corps of Engineers, Omaha, NE. Safeguards Information.

PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in the Standard Review Plan are covered by the requirements of 10 CFR Part 50 and 10 CFR Part 52, and were approved by the Office of Management and Budget, approval number 3150-0011 and 3150-0151.

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.
