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MEMORANDUM FOR: Ernest Volgeneau, Director
Office of Inspection and Enforcement

FROM: Saul Levine, Director
Office of Nuclear Regulatory Research

SUBJECT: RESEARCH INFORMATION LETTER (RIL #20) - A STUDY OF PHYSICAL PROTECTION EQUIPMENT

This memorandum transmits the results of completed research on a Study of Physical Protection Equipment which is Phase I of a continuing NRC research activity entitled "Inspection Methods for Physical Protection." The study was performed by the Mitre Corporation, Bedford, Massachusetts for the Office of Nuclear Regulatory Research (RES) in response to a research request from your office. Attached to this memo is a document (Final Report: Study of Physical Protection Equipment) which summarizes this study and makes recommendations for follow-on work.

The purpose of this study was to provide the NRC inspector, licensing reviewer and field evaluator with new and improved methods and techniques for evaluating physical protection equipment that is in use or proposed for use at licensed nuclear facilities. The five major products of this study are as follows:

1. An NRC Catalog of Physical Protection Equipment (NUREG-0274) that provides a single reference source for important information on a large segment of all commercially available physical protection equipment and barrier structures.

2. An NRC Guide for Evaluation of Physical Protection Equipment (NUREG-0273) that is designed for use by inspectors in ascertaining, during preoperational and operational inspection visits to the facilities, that the equipment has been installed properly and is being properly operated and maintained.

3. An NRC book of Reference Materials (NUREG-0272) which is a document containing reference material relevant to the Equipment Catalog and the Evaluation Guide.

4. A set of Guidelines for Developing a Methodology to Measure Levels of Effectiveness for a Fixed-Site Physical Protection System (NUREG-0270). These technical guidelines contain recommendations for follow-on work that would utilize data obtained by NRC inspectors to measure the effectiveness of fixed-site physical protection components/systems for various levels of adversary threats.

5. A document titled "Final Report Study of Physical Protection Equipment" (NUREG-0271). This final report summarized the work performed in this study and makes recommendations for necessary follow-on work.

Evaluation and Application

This study and its results have been reviewed extensively while in progress by the RES project manager and various staff members from I&E, NMSS and NRR at quarterly progress meetings and orientation and critique meetings for users (I&E, NMSS, SD, NRR and SEC) at headquarters and regional offices. In addition, a Research Review Group (RRG), was convened on November 28, 1977, to evaluate the technical validity and completeness of the study. The RRG noted that both the Equipment Catalog and Evaluation Guide did not address security lighting, duress alarms and some items of guard equipment. Due to limited funds and time these items of safeguards equipment were excluded, with the intention of including these items in a follow-on study. The opinion of the users and RRG is that this study has been conducted within the defined scope of the contract and exhibits sufficient attention to technical detail to serve as satisfactory baseline for future efforts.

All of the above products have been distributed to the various NRC regional offices and are presently being used by inspectors as basic reference documents for evaluating physical protection equipment installed at licensed nuclear facilities. Data from these documents were also used in the development of a new NRC Regulatory Guide on Interior Intrusion Detection Alarm Systems by the Office of Standards Development. Other Federal agencies have requested the results of this study as a meaningful compendium of available physical protection equipment and evaluation equipment techniques. The results of this study will be used in Phase II of this safeguards research program as a basis for expanding and improving the data available to NRC staff regarding the characteristics and effectiveness of combinations of physical protection equipment, and their associated administrative and operational procedures. The Division of Document Control has been requested to print these reports for distribution only to other agencies and NRC staff.

Saul Levine

Saul Levine, Director
Office of Nuclear Regulatory Research

Enclosure: Final Report: Study
of Physical Protection Equipment