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February 19, 1976 NUCLEAR REGULATORY COMMISSION SECY- 75-194A

INFORMATION REPORT

COPY NO. 38

For: The Commissioners

From: Herbert J. C. Kouts, Director, Office of Nuclear Regulatory Research

Thru: Executive Director for Operations

Subject: SANDIA INDUSTRIAL SABOTAGE STUDY

Purpose: To inform the Commission of the current status of the classified (SECRET-NSI) Sandia study of "Safety and Security of Nuclear Power Reactors to Acts of Sabotage", of follow on work in this area, and of plans to release the Part II report to JCAE, ACRS and ERDA.

Discussion: SECY-75-194, dated April 28, 1975, transmitted to the Commission a report on the Case Study of a Typical PWR Plant, which is Part I of the Sandia Study, "Safety and Security of Nuclear Power Reactors to Acts of Sabotage" (S-NSI). The enclosed report on Part II of the study - Case Study of a Typical BWR Plant - has been completed. The form, content, conclusions and recommendations of Part II are not significantly different from Part I except for details at the level of interest to reactor systems and safeguards systems designers and analysts As with the distribution of Part I, if the Commission has no objection, we will provide one copy of Part II each to JCAE and to ERDA, and two copies of Part II to ACRS.

The contractor's principal Part II conclusions and recommendations can be briefly represented as follows:

Conclusions

(1) Certain generic characteristics of commercial reactors reduce the probability of successful sabotage (defense-in-depth design, engineered safety features, etc.).

(2) Nevertheless, a determined group with a high degree of technical competence could probably perform acts of sabotage which can endanger the public.

(3) The expected consequences of successful sabotage are a small fraction of the maximum consequences predicted by the Rasmussen Study.

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(4) Nuclear reactors appear far less susceptible to sabotage than most other civil or industrial targets.

Recommendations

(1) Nuclear plant design should reflect security requirements and requirements to accommodate effective reaction to sabotage, as well as safety requirements.

(2) Access control of personnel in vital areas during construction, operation, refueling and repair should be limited to those having a need to work there, followed by a comprehensive area search for foreign material after egress.

(3) Emergency plans should provide for effective reaction to acts of sabotage including identifying procedures and equipment required to effect the reaction.

An unclassified summary of the study (Parts I and II) including the contractor's conclusions and recommendations was completed in January 1976. It will be submitted to the Commission shortly.

The methodology and data developed in the Sandia study are being used by Sandia in a FY 1976 project to develop safeguards system design recommendations for LWR reactors using plutonium recycle fuels. This study will extend the analysis of nuclear reactor vulnerabilities and develop, for consideration, possible safeguards options for future regulations which would provide improved safeguards. This is one of several safeguards research efforts to develop a basis for safeguards regulations expressed in terms of objectives and performance criteria.

In addition, staff of the Offices of Standards Development and Nuclear Regulatory Research are developing plans for responding to an ACRS request that the study reports be reviewed by senior design experts of the nuclear industry. The purpose is to consider the need for and practicability of design features for reducing vulnerability of future nuclear power plants.

Coordination: This paper has been concurred in by NMSS, NRR, I&E, SD, ELD and EDO. Copies of the study were given to those offices, except ELD.

for Herbert J. C. Kouts, Director
Office of Nuclear Regulatory Research

Enclosure:
Sandia Study "Safety and Security of Nuclear Power Reactors to Acts of Sabotage - Case Study of a Typical BWR Plant - Part II" (SECRET-NSI)

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SAFETY AND SECURITY OF NUCLEAR POWER REACTORS TO ACTS OF SABOTAGE (U)

PART II - CASE STUDY OF A TYPICAL BWR PLANT

Report Prepared For
NRC Division of Reactor Safety Research
by Sandia Laboratories
Albuquerque, NM 87115

ABSTRACT (U)

A boiling water nuclear power plant is investigated in a study to evaluate the vulnerability of nuclear power plants to acts of sabotage which could result in a public radiological hazard.