A. F. MEYER AND ASSOCIATES, INC.

ENVIRONMENTAL, NOISE, AND OCCUPATIONAL HEALTH CONSULTANTS

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FINAL REPORT

MASTER

SAFETY ANALYSIS AND REVIEW SYSTEM, PHASE I

March 1981

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FINAL REPORT

SAFETY ANALYSIS AND REVIEW SYSTEM, PHASE I

by
Ellen T. Browne

March 1981

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ABSTRACT

This report summarizes work completed by A. F. Meyer and Associates, Inc. under contract to DOE in support of the implementation of the DOE Safety Analysis and Review System (SARS). It is intended to describe and summarize critical items identified during the course of this study and discussed in previous reports completed for other subtasks under this contract.

The following were among the issues identified as requiring further overview, assessment, and action by DOE:

- There needs to be firm guidance from DOE Headquarters (HQ) in regard to SARS-related responsibilities and requirements of the DOE field offices.
- A system must be established to track the applicability and progress of SARS for individual DOE operations. Currently, it is difficult, if not impossible, to identify projects with SARS requirements in their contracts. Thus, it is difficult to set accurate schedules for safety analysis reviews.
- A decision must be made by DOE officials as to whether review authority for moderate risk projects will be delegated to the field. As part of this, a detailed assessment of resources available for reviews, both at the field and HQ levels, needs to be accomplished.
- To be implemented effectively, SARS needs to be incorporated into the overall DOE project management system.

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1. INTRODUCTION: DESCRIPTION OF PROJECT

New emerging programs are developing within the Office of the Assistant Secretary for Fossil Energy (ASFE). Because of the potential for harm to people, property, and the environment associated with many of these programs, and Congressional concern therefor, DOE has instituted a Safety Analysis and Review System (SARS). FE is presently in the process of implementing this comprehensive system required under DOE Order 5481.1.

Under contract to DOE, A. F. Meyer and Associates, Inc. (AFMA) has assisted in overview of the system, implementation and assessment of the Headquarters (HQ) review procedures, and evaluation of specific analyses and reviews conducted in the field. A number of reports have been completed under this contract's subtasks. Among these are:

Quarterly Report on the Safety Analysis and Review System for the Department of Energy's Fossil Energy Programs, Phase I; December 1980.

Review of the ORNL Engineering Evaluation of IITRI Project on Design, Engineering, and Evaluation of Refractory Liners for Slagging Gasifiers; January 1981.

Informal Safety Analysis Review of the University of Tennessee Space Institute Magnetohydrodynamics Project; January 1981.

Evaluation of Alternative Review Plans for the Department of Energy Safety Analysis and Review System; February 1981.

Review of Hazards Analysis of IITRI's Refractory Test Unit for Slagging Gasifiers; February 1981.

Safety Analysis and Review System (SARS) Assessment Report; March 1981.

Assessment of Documentation Requirements Under DOE 5481.1, Safety Analysis and Review Systems (SARS); March 1981.

This Final Report is intended to summarize the key issues which arose throughout this study's duration rather than reiterate work described in other reports. For further background and detail than is presented herein, the individual reports cited above should be consulted.

2. SPECIFIC FINDINGS AND RECOMMENDATIONS

The study summarized in this Final Report was comprised of a number of discrete subtasks. In brief, they were:

- Develop a SARS review plan schedule for CY 1981, 1982, and 1983 by analyzing project and preliminary schedule data provided by DOE.
- Evaluate alternative means of conducting HQ reviews and provide data thereon in order for a policy decision to be made by HQ OPTA.
- Study requirements for documentation under DOE 5481.1 and technical staff support in analysis of SARS interim and final review documents.
- Provide an independent assessment of the adequacy of the ongoing safety analysis effort in meeting DOE and ASFE requirements.

In addition to development of the technical reports delineated in Section 1, completion of these subtasks allowed identification and investigation of a number of general areas of SARS implementation which require further study and action by DOE. It is these issues which are focused upon in the following paragraphs.

At present, no formal policy decision has been made in regard to field responsibility for the review of certain moderate and high risk projects. Further, there is an overall lack of communication and coordination between those performing the safety analyses and those in ASFE often expected to provide the independent reviews. This lack of communication, coupled with the lack of firm policy guidance, is causing considerable confusion in SARS implementation, and ultimately could result in project delays. Thus, a timely decision in regard to the respective responsibilities of DOE HQ and field organizations is urgently needed.

To accomplish the above, an in-depth assessment must first be made of the personnel and budgetary resources available for SARS reviews. This should be initiated as soon as practicable since the earliest that any increases in resources can be effected through the normal budget process is FY 1983.

In developing the SARS Review Plan Schedule, it was found to be very difficult, if not impossible, to obtain accurate data on SARS target dates for many projects. A questionnaire developed by AFMA for the purpose of gathering such information was never sent to the field offices by DOE HQ. Thus, other less exact sources of schedule data needed to be relied upon for developing the review schedules.

To remedy this situation for the future, a system must be established to track the progress of SARS implementation for individual FE projects. Without such a system, there is no precise way of determining the timing of safety analysis and review execution for projects already underway. In addition, there needs to be a mechanism to identify projects with SARS requirements in their contracts to facilitate the initial setting of schedules for these operations. In compiling the review schedules for this study, it was impossible to identify new projects which would be subject to SARS, and, therefore, to determine their schedules.

Another problem has arisen in regard to the documentation prepared under SARS thus far. In safety analyses informally reviewed under this contract, the error often has been made of equating hazards with failures, assuming that a failure needs to occur for a hazard to exist. Obviously, this is not true. There are numerous occupational hazards which exist in routine situations where no failure has occurred. It is important that these hazards also be taken into account, and that the safety analysis not merely present a Failure Mode and Effects Analysis (FMEA). It also has been found that environmental hazards are often inadequately addressed. To resolve these problems, further guidance from HQ is needed in regard to the recommended content and format of safety analysis reports.

In summary, there are a number of key areas which must be addressed by HQ if SARS is to be implemented in a timely and consistent manner throughout ASFE HQ and field offices. More thorough oversight of the system is needed, and the effort must be made at HQ to develop and institute the mechanisms for this control.