



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 28 1980

MEMORANDUM FOR: Those on Attached List

FROM: Robert L. Shepard
Safeguards Research Branch
Division of Safeguards, Fuel Cycle
and Environmental Research

SUBJECT: MINUTES OF THE EFFECTIVENESS EVALUATION FOR
MC&A RESEARCH REVIEW GROUP MEETING

A meeting of the subject group was held in the 11th floor conference room of the Willste Building on June 3, 1980. The purpose of the meeting was to review the FY 1980 SAFER sponsored MC&A project at Lawrence Livermore National Laboratory (LLNL) and discuss proposed MC&A research for FY 1981 and beyond. The lists of attendees for the morning and afternoon sessions are enclosed (Encl. 1).

Program Review

The meeting agenda is enclosed (Encl. 2). Following introductions, R. Shepard, Chairman of the Effectiveness Evaluation MC&A Research Review Group (RRG), summarized the MC&A program and outlined the strategy for the RRG meeting. The program review included a current status overview, by individual task, and MC&A goals and plans beyond FY 1980.

A. Poggio, LLNL Project Leader, followed with a review of the application and further development of the automated safeguards assessment tools. The specific areas discussed were:

- Licensee Submittal Document (LSD)/Standard Format and Content (SFC) Guide comparison,
- LLNL technology transfer, using the NFS-Erwin assessment, and
- Structured Assessment Approach (SAA)/Safeguard Vulnerability Analysis Program (SVAP) upgrades.

The input data requirement differences between the LSD and SFC and the potential impact these differences will have on an SAA analysis were highlighted. The comparison revealed that the SFC guide contained the sufficient type and amount of information for a partial analysis to be performed at each SAA level. A rough estimation of the percentage of analysis output results for each SAA level is shown in Table I (Encl. 3).

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The technology transfer in which LLNL provided assistance to E. McAlpine and R. Shepard on the procedure for gathering and formatting the data for the NFS-Erwin analysis was described. The SAA analysis for levels 1-3 was presented and all assumptions used in the analysis were identified. In particular, the data used to describe the performance reliability of equipment was based on how equipment was assumed to operate at a facility as opposed to actually collecting performance data on equipment in its operating environment. The tampering analysis (level 4) remains to be completed. A report is being prepared which describes the complete SAA analysis.

Much of the SAA upgrades are directed toward restructuring the data gathering handbook (LSD) and developing data input capability on the Tektronix 4054. Several questions were asked in reference to the development of both SAA and SVAP. Dr. Poggio indicated that SAA and SVAP are being brought together via the data gathering handbook. Indications are that the ultimate tool used for assessing licensees' compliance may depend upon the kind and amount of input information obtained, i.e., utilizing SVAP when limited facility input information is available and SAA when extensive facility data is available for a full comprehensive assessment.

R. Al-Ayat followed with a brief review of the work being done in support of the Regulatory Improvement Branch (SGRI) on development of the Material Control and Accounting Upgrade Rule. The data base established for the "representative" MC&A system utilizing data from two operating licensed facilities--Vallecitos Nuclear Center and Babcock and Willcox Fuel Fabrication Plant at Lynchburg, Virginia--was described. Analysis of the "representative" base case system indicated that:

- the system will detect diversions of large quantities or discrete items,
- alarm and alarm resolution is much poorer for small quantity diversions than for large ones (e.g., one week resolution for large quantity diversions, scrap recovery resolution time is often shorter), and
- detection occurs quickly in the manufacturing area but requires approximately sixty days to detect in other areas of the plant.

Results of the value-impact analysis describing the benefits from potential upgrade rule recommendations were presented. Results indicated that, for example, the use of process monitoring data for safeguards purposes has the potential of stopping the repeating adversary (multiple attempts at diverting material), generating more timely diversion alarms, and improving the resolution of alarms relative to the base case. It was pointed out that cost impacts to the plant for these proposed upgrades will be determined in a July working session with plant personnel.

The morning briefing was concluded with a short review on guidance capabilities for MC&A systems and the role of an SNM accounting system for NRC safeguards by D. Dunn.

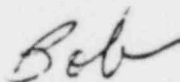
Proposed MC&A Research for FY 1981 and Beyond

LLNL's major goals and objectives for the MC&A research were presented. As stated by LLNL, the major program objective in the outyears is to bring the technical content of the MC&A program toward a more suitable mix of R&D and applications studies.

In the area of vulnerability assessment, it was proposed that research devoted to automation, application of assessment tools to NRC regulation, tool expansion and upgrade, and adaptation of assessment tools to minicomputers be continued through FY 1981, with complete transfer of the automated assessment technology to NRC staff in FY 1982. Other research initiatives proposed under the vulnerability assessment area were code validation studies, vulnerability grading, (i.e., ranking event sets based on timing and sequencing of individuals), design application studies, and research to build the data base for alternate fuel cycles.

Selected issues in the Aggregated System Modeling (ASM) area were identified. The selected issues were presented as tasks which could be categorized as either model usage or model refinement and extension. Under model usage, value-impact analysis for evaluating proposed MC&A upgrade alternatives was tabbed as a proposed activity to be continued in FY 1981 and expanded to include safeguard economic analyses in FY 1982. Under model refinements and extension, risk and consequences were cited as major additions to the current technique which could be used to evaluate various safeguard thresholds. The afternoon session concluded with some discussion on new research in the areas of system analysis and process monitoring. The estimated time and cost for the proposed research initiatives for FY 1981 and beyond was presented.

In summary, I believe the meeting was very constructive and I welcome additional comments concerning the meeting which review group members believe should be documented.



Robert L. Shepard
Safeguards Research Branch
Division of Safeguards, Fuel Cycle
and Environmental Research

Enclosures:

1. List of Attendees
2. Meeting Agenda
3. Table I

Minutes of the Effectiveness Evaluation for
MC&A Research Review Group Meeting

Addressees - Memorandum dated JUL 28 1983

J. Kent, SD
J. Telford, SD
H. Tovmassian, NMSS
D. Joy, NMSS
H. Smith, NMSS
K. Sanders, NMSS
R. Gramann, NMSS
J. Partlow, NMSS
E. McAlpine, NMSS
B. Altman, NMSS
R. Brightsen, NMSS
B. Mendelsohn, NMSS
R. Dube, NMSS
M. Killinger, NMSS
C. Ong, OPE
J. Blaylock, IE
J. Durst, RES
B. Taylor, RES
E. Richard, RES
A. Poggio, LLNL
D. Dunn, LLNL
R. Al-Ayah, LLNL

REVIEW OF FY 1980 MC&A RESEARCH PROGRAM - FIN NO. A0115

NRC Office - Silver Spring, MD

June 3, 1980

10:00 A.M.

Morning

List of Attendees:

Name	Organization	Telephone No.
Andy Poggio	LLNL	FTS 422-8557
Don Dunn	LLNL	FTS 532-7178
Rokaya Al Ayah	LLNL	FTS 422-8467
B. Taylor	NRC/SAFER	42-74375
R. Gramann	NRC/NMSS	42-74024
Ken Sanders	NRC/NMSS	42-74004
J. Blaylock	IE	44-35890
Don Joy	NRC/NMSS	42-74043
Hiroko Smith	NRC/NMSS	42-74181
Eugene W. Richard	NRC/RES	42-74387
Gerry Tomlin	NRC/RES	42-74375
Jackie Kent	NRC/SD	44-35904
Harry Tovmassian	NRC/NMSS	42-74181
J. Partlow	NRC/NMSS	42-74043
E. J. McAlpine	NRC/NMSS	42-74043
Cookie Ong	NRC/OPE	63-41427
Bill Altman	NRC/NMSS	42-74181
John Telford	NRC/SD	44-35903
R. L. Shepard	NRC/RES	42-74375
Ron Brightsen	NRC/NMSS	42-74043
Jay B. Durst	NRC/RES	42-74353
B. T. Mendelsohn	NRC/NMSS	42-74181
R. J. Dube	NRC/NMSS	42-74181
M. Killinger	NRC/NMSS	42-74181

REVIEW OF FY 1980 MC&A RESEARCH PROGRAM - FIN NO. A0115

NRC Office - Silver Spring, MD

June 3, 1980

1:30 P.M.

Afternoon

List of Attendees:

<u>Name</u>	<u>Organization</u>	<u>Telephone No.</u>
Andy Poggio	LLNL	FTS 422-8557
Don Dunn	LLNL	FTS 532-7178
Rokaya Al Ayah	LLNL	FTS 422-8467
Gerry Tomlin	NRC/RES	42-74375
Lynn Cleland	LLNL	FTS 422-4949
E. J. McAlpkne	NRC/NMSS	42-74043
Cookie Ong	NRC/OPE	63-41427
Bill Altman	NRC/NMSS	42-74181
R. L. Shepard	NRC/RES	42-74375
R. J. Dube	NRC/NMSS	42-74181

Review of FY 1980 MC&A Research Program

AGENDA

10:00 - 12:00

I. Introduction.....R. L. Shepard

II. Current Status of FY 1980 MC&A Program - An Overview Approximate Time

Task 1 - Application and Further Development of Automated Safeguards Assessment Tools.....Andy Poggio..... 30 min.

Task 2 - Development of Value-Impact Methodology.....R. Al-Ayat }30 min.

Task 3 - Analysis of Specific Regulatory Alternatives.....R. Al-Ayat }

Task 4 - Develop Improved Guidance Capabilities for Material Control and Accounting Systems.....D. Dunn }30 min.

Task 5 - Analysis of the Role of an Inter-Facility SNM Accounting System for NRC Safeguards Assurance.....D. Dunn }

III. Discussions

IV. Lunch

1:30 - 2:30

V. Opening.....A. Poggio

VI. Proposed MC&A Research For FY 1981 and beyond

Table 1: Estimate of Portion of Information which may be Elicited by the SFC Guide and an Estimate of Assessment Output Impact.

	<u>SAA Levels</u>			
	Level 1	Level 2	Level 3	Level 4
FOR SFC GUIDE				
<u>LSD INFORMATION CATEGORIES</u>				
Facility Layout and Locations	●			●
Piping System Elements	○			
Material Transfer Procedures	◐			
Control and Tamper Monitors	●	◐	◑	◒
Utility System Components		◑	◒	◓
Signal Transmission System Components		◑	◒	◓
Facility Personnel Access and Control	◐		◑	◒
Accounting System Components				◑
Facility Operational Modes	◑	◑	◑	◑
Component Probabilistic Data		◑		
S/G Interconnectivity Information		◑	◑	◑
Is an analysis possible?	Yes	Yes	Yes	Yes
Estimate of amount of output given partial absence of input information	◐	◑	◑	◑

= 100%
 = 75%
 = 50%
 = 25%
 = None