



UNITED STATES,
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 13, 1997

MEMORANDUM TO: Chairman Jackson
Commissioner Rogers
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan

FROM: L. Joseph Callan *L. Callan*
Executive Director for Operations

SUBJECT: RESPONSE TO THE SEPTEMBER 10, 1996 SRM TO E. THOMAS
BOULETTE, CHAIRMAN, NUCLEAR SAFETY RESEARCH REVIEW
COMMITTEE (NSRRC)

Below please find the NSRRC Committee responses to the Commission's questions posed in the September 10, 1996 SRM to E. Thomas Boulette, Chairman, NSRRC.

In this SRM, the Commission requested that the NSRRC coordinate its activities with those of the ACRS in areas of joint interest to ensure that the activities are supportive and complimentary and not duplicative. The NSRRC was also asked to continue to review the progress of human factors research.

NSRRC Response: We have done as requested joining the ACRS subcommittee meetings where appropriate and meeting with the RES staff to review their program.

The Commission also recommended that the NSRRC identify those human factor aspects that can be treated adequately in PRA, as well as those human factor areas where progress for inclusion in PRA is likely.

NSRRC Response: None of the current HRA capabilities is perfect and all could benefit substantially from further work. However, human factors can only be treated adequately in evaluation of HRA within PRAs in dealing with simple human actions (i.e., performance of well-defined tasks by an individual). All others are subject to substantial uncertainty, which must be dealt with via the transitional means of defense in depth and conservatism. Greater progress in HF leading to improvements in HRA can be made by organizing the NRC's activities better. However, even if that is done, substantial amounts of time and money will be needed before there will be a prospect for major improvements.

Lastly, the Commission also asked the NSRRC to provide recommendations for integrating these human factors considerations into PRA methods.

NSRRC Response: In the preceding discussions, we have offered recommendations for doing this; specifically of requiring each HF project with RES to have products to be used in improving HRA capabilities and of reorganizing the HRA effort to be more comprehensive, realistic and ambitious.

cc: SECY
OGC
OCA
OPA

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To: **PLANNING AND PROCEDURES SUBCOMMITTEE**

From: D.A. Powers

March 22, 1997

Subject: **OBSERVATIONS ON REVISED PROCEDURES
FROM MARCH MEETING**

This memorandum is part of the continuing effort to monitor the progress ACRS is making in the change of its procedures. Procedural changes were recommended as a result of the subcommittee meeting in Boston. It was recognized that change in the ways of doing business would take time. It will also require that practices be monitored to avoid "backsliding" and to identify additional refinements in operating procedures. This memorandum records some observations about business practices at the March 1997 meeting.

The March meeting was extraordinarily productive despite there being several topics on the agenda that were quite controversial. Letter production was high at the meeting. This letter production went quite smoothly. Some observations and suggestions as to why the letter production was so smoothly done are listed below:

o **RISK-INFORMED REGULATION**

It took well-over five hours to produce the letter on risk-informed regulation, but in light of the importance ascribed to the issues involved and the attention ACRS had devoted to this area, there is no need to be concerned about this time. Production of the letter was, in fact, far easier than anyone had anticipated. The ease of producing this final letter was probably the result of:

- the subcommittee chairman had devoted a lot of time at the subcommittee meetings to solicit views of members in advance of producing a draft,
- the subcommittee chairman did provide a draft letter before the meeting,
- members provided the subcommittee chairman with written comments prior to the meeting and during the meeting to facilitate revisions of the draft letter, and
- the subcommittee chairman worked hard to incorporate all members views in the letter with an eye toward avoiding the need for additional comments in the letter.

In other words, members and the subcommittee chairman followed the revised procedures developed in Boston quite closely. This really helped us get things done. I think the subcommittee chairman deserves a vote of thanks from the full ACRS for his efforts in producing the letter and his efforts to organize and conduct a series of excellent subcommittee meetings. The subcommittee chairman's intense belief that additional comments should be avoided if at all possible is an interesting addition to the procedures discussed in Boston. ACRS may want to discuss this philosophical approach more.

Two concerns I have on this letter are minor, but worth recording. First, can indeed all members defend all points in the letter or was there compromise without persuasion? Second, we did have an instance of citing material not examined by the whole ACRS in the letter. I fear that we may be overly sensitive on this point. My view is that the whole ACRS need not examine every item of cited information. It only necessary that every item be readily available.

○ **PUBLISHING ROSA DATA**

The letter on publishing data from the ROSA facility was produced easily. This was probably because:

- the letter involved a single, well-defined issue,
- the subcommittee chairman produced a well written first draft letter, and
- the ACRS did not undertake a detailed, word-by-word editing of the letter.

○ **RISK ACCEPTANCE CRITERIA**

The letter on risk acceptance criteria was produced easily perhaps because: the ACRS had seen and discussed previous versions of this letter. We have, however, encountered delays because ACRS did not review the attachments to the letter in detail. My impression is that this was because the ACRS as a whole did not understand the strategy of the letter and its attachments well. It appears to me that if ACRS evolves into a more proactive, rather than reactive, body, it will be very important that everyone understand the strategy of initiatives we undertake.

Though letter production at the March meeting was high, it is still true that ACRS did not complete its agenda. Finalized letters were not all available by Friday night. We deprived ourselves of opportunities to reflect on what all was being created. We were, in fact, working on letters right up to the last minute. There was not time to discuss strategic planning or research needs.

Dana A. Powers
(505) 821-2735 voice
(505) 821-0245 fax

Advisory Committee on Reactor Safeguards
7964 Sartan Way, NE
Albuquerque, NM 87109-3128

FACSIMILE TRANSMITTAL

Please deliver the following message of 1 pages including the cover page to:

NAME: PLANNING AND PROCEDURES SUBCOMMITTEE

Fax #:

Voice #:

SUBJECT: EVENT AT THE CLINTON POWER STATION

The event at the Clinton Power Station on September 5, 1996 seemed to involve a litany of errors*. Among these errors were a variety of things associated with organizational aspects of the plant management. This is a topic near and dear to the heart of ACRS. I wonder if we shouldn't hear more about this event in connection with our discussions of the organizational issue?

* SER 1-97, Nonconservative Operations During Isolation of a Reactor Recirculation Pump Seal Leak, January 7, 1997.

Dana A. Powers
(505) 821-2735 voice
(505) 821-0245 fax

Advisory Committee on Reactor Safeguards
7964 Sartan Way, NE
Albuquerque, NM 87109-3128

FACSIMILE TRANSMITTAL

Please deliver the following message of 1 pages including the cover page to:

NAME: MICHAEL T. MARKLEY

Fax #:

Voice #:

SUBJECT: COMMISSION BRIEFING ON 10CFR50.59

On page 25, line 12, of the proposed guidance for the implementation of the 10CFR50.59 rule, there is a statement that implicates language to Criterion xvi of 10CFR 50 appendix B to the effect that "... the condition is to be promptly corrected, commensurate with its safety significance." I cannot find this language in the copy of appendix B I have. To the contrary, the version I have seems to say that everything of safety significance has to be corrected, and that things of great safety significance need an additional step to assure the malfunction isn't repeated. Do you know where the guidance on 50.59 is getting its language concerning Appendix B? If, indeed, the "commensurate with safety significance" phrase actually exists in Appendix B, then risk informed graded QA can be implemented **BOLDLY** without rulernaking!

*The language
may actually be in generic
letter 91-18. Could I get
a copy of that letter?*

questioned this mix. There are those who think all NRC research should be based on user need.

RESEARCH TOPICS - APPLIED

- Evaluation of LERF at each nuclear power plant site.
- Predictive metrics and leading indicators of plant performance.
- Quantification of shutdown risk.
- Use of "formal methods" in the regulation of digital electronics for safety systems

NAS COMMITTEE

During the March meeting the ACRS heard from the National Research Council's Committee on Application of Digital Instrumentation and Control Systems to Nuclear Power Plant Operations and Safety (NAS Committee). The NAS Committee identified research topics that ACRS might want to consider especially if ACRS can figure out what they mean:

- identify and pursue a balance between research on requirements and research on coding,
- define "adequate diversity" in digital instrumentation and control systems
- develop a sufficient level of expertise for gaining confidence in digital implementations of system functions and the limitations of quantitative assessment,
- support development of advanced techniques for analysis of digital systems to reduce uncertainty in quantitative assessments,
- support research exploring higher-level issues of human-system integration control and automation including research on operator models to more effectively specify system designs.
- develop a data base on problems of digital implementation in nuclear power plants and other safety-critical applications,
- research to support NRC acceptance of Commercial-Off-the Shelf hardware for safety applications.

The NAS Committee also raised two issues concerning the way that NRC conducts its research on digital instrumentation and control:

- o The NAS Committee strongly suggested that NRC staff and its contractors do not participate enough in technical meetings and standards panels. The criticism is particularly interesting since an examination of the credentials of NRC's staff and contractors involved in digital instrumentation and control issues suggests that their participation in technical meetings and standards panels may be well above participation in such activities by NRC staff involved in other areas of NRC research. Certainly, Apostolakis and Catton have raised similar concerns about participation of NRC staff in technical meetings dealing with probabilistic risk assessment and hydraulics.
- o the NAS Committee questioned the adequacy of NRC "peer review" practices. In particular, they questioned the practice of hiring a panel of consultants to conduct a detailed review of particular pieces of work. At first blush, this criticism surprises. It would appear that NRC's practice of hiring peer reviewers is a very positive step since it insures timely, independent, in-depth examinations of the work. It appears that the NAS Committee has more confidence in the voluntary review that could come from a broad dissemination of NRC-sponsored work. Others have made similar comments. Those involved in the NRC's source term research will no doubt recall the "chemist in Bangladesh" with fantastic, untapped insight. The NAS Committee did not indicate how NRC could assure voluntary review occurs on a timely basis. Nor did the NAS Committee provide any assurances that NRC work, which occupies such a small part of the digital world, would attract in-depth attention from the technical community.

One is tempted to excuse the NAS Committee concerns for a variety of reasons. But, these concerns are repetitions of concerns raised in the past. They may be, indeed, festering issues that ACRS ought to examine:

- What should be the level of technical participation of NRC staff within the various technical communities and is this level of technical participation an aspect of efforts now underway to improve the technical capabilities of NRC's research staff?
- How should NRC technical work, much of which is very applied and likely not to be at the forefront of technology by intent, be made available to the technical communities? Can NRC go beyond the public comment practices and try to get work in the archival literature? Has not the NRC together with other reactor safety research organizations in the world created its own technical community? Is this a good thing to have done, or would it be better to rely on the technical communities of the various specialized disciplines?

Perhaps, the ACRS could take some time at one of its meetings to discuss and refine these questions. The questions could, then, be put to the Director of Nuclear Regulatory Research on the occasion of the next meeting with him.

ACRS SPECIAL TRAVEL ENDORSEMENT FORM

THIS FORM IS TO BE USED TO REQUEST ACRS ENDORSEMENT OF SPECIAL TRAVEL REQUESTS BY MEMBERS WHEN NRC SUPPORT FOR PARTIAL OR FULL REIMBURSEMENT OF EXPENSES AND/OR TIME IS DESIRED. THIS PROCEDURE IN NO WAY LIMITS THE FREEDOM OF A MEMBER TO PARTICIPATE IN A MEETING AS AN INDIVIDUAL AT PERSONAL EXPENSE. PLEASE SUBMIT THIS FORM TO THE PLANNING AND PROCEDURES SUBCOMMITTEE AT LEAST 60 DAYS PRIOR TO THE MEETING. IF POSSIBLE. SUPPLEMENTAL INFORMATION MAY BE ADDED AS DETAILS DEVELOP.

Member Name: M. H. FONTANA Date Submitted: 3-28-97

Dates of Planned Trip: JUNE 1 - ~~4~~ 5 to JUNE 4, 1997

Destination: ORLANDO, FLA

Meeting or Facility to be Visited: ANS ANNUAL MTG & TOPICAL MTG
ON ADVANCED REACTION SAFETY

Purpose/Relevance to ACRS Business: DIRECTLY RELEVANT, EGP TO
AP600 CERTIFICATION

Participation (Invited Speaker, paper presented, etc.): GENERAL CHAIRMAN

Justification (Foreign Travel Only):

NRC SUPPORT REQUESTED

Air Fare: Yes ☒ No ☐ Per Diem: Yes ☐ No ☐ Days 2

Registration: \$ 400 Compensation: Yes ☒ No ☐ Days 2

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T. S. KRESS

Member Name: ~~M. H. FONTANA~~

Date Submitted: 3-28-97

Dates of Planned Trip: JUNE 1 - ~~4~~ to JUNE 4, 1997

Destination: ORLANDO, FLA

Meeting or Facility to be Visited: ANS ANNUAL MTG & TOPICAL MTG
ON ADVANCED REACTOR SAFETY

Purpose/Relevance to ACRS Business: DIRECTLY RELEVANT, ESR 70
AR600 CERTIFICATION

Participation (Invited Speaker, paper presented, etc.): GENERAL CHAIRMAN
INVITED PAPER

Justification (Foreign Travel Only):

NRC SUPPORT REQUESTED

Air Fare: Yes ☒ No ☐

Per Diem: Yes ☐ No ☐ Days 2

Registration: \$ 400.

Compensation: Yes ☒ No ☐ Days 2

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9/9/94

ACRS SPECIAL TRAVEL ENDORSEMENT FORM

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Member Name: Don W. Miller

Date Submitted: 3/28/97

Dates of Planned Trip: May 7, 1997 to May 8, 1997

Destination: Bloomington IL

Meeting or Facility to be Visited: Nuclear Utilities Software
Maximizing Group 16th Semi-Annual Workshop

Purpose/Relevance to ACRS Business:

Presentations and events are relevant to current issues
addressed by ACRS - specifically software based
systems in nuclear power plants - Configuration management
S/W QA, S/W life cycle, etc. - see attached memo.

Participation (Invited Speaker, paper presented, etc.):

Invited speaker on behalf of the American Nuclear Society
on May 7. Attend workshop on May 7 and May 8

Justification (Foreign Travel Only):

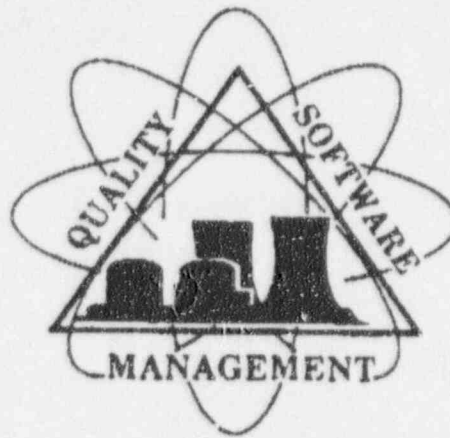
NRC SUPPORT REQUESTED

Air Fare: Yes _____ No X

Per Diem: Yes ✓ No _____ Days 1

Registration: \$ WAIVED

Compensation: Yes ✓ No _____ Days 1



Nuclear Utilities Software Management Group

Sixteenth Semi-Annual Workshop

Theme: Regulatory Compliance & Issues

May 7 - 8, 1997

**Hosted by:
Illinois Power Company
at the
Jumer Hotels Chateau
Bloomington, IL
(309) 662-2020**

Mr. Rick Rogers
Mr. Morgan Libby
Mr. Rich Lomax
Mr. William Olsen

Steering Committee Chairman
Steering Committee Member
Steering Committee Member
Program Manager

(864) 885-3011
(860) 832-4726
(402) 825-5201
(610) 582-5945

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**NUCLEAR UTILITIES SOFTWARE
MANAGEMENT GROUP**
"Regulatory Compliance & Issues"

SIXTEENTH SEMI-ANNUAL WORKSHOP

DAY ONE - WEDNESDAY, MAY 7, 1997

TIME	EVENT/PRESENTATION	MODERATOR	LOCATION
7:30 AM	REGISTRATION/CONTINENTAL BREAKFAST	BILL OLSEN PROGRAM MANAGER	GALLERIA
8:00 AM TO 8:45 AM	WELCOME AND INTRODUCTION OF HOST AND MEMBERS INTRODUCTIONS & OPENING REMARKS NUSMG BUSINESS	RICK ROGERS STEERING COMMITTEE CHAIRMAN	BONAPARTE
8:45 AM TO 9:30 AM	<u>KEY NOTE SPEAKER:</u> PRESIDENT - AMERICAN NUCLEAR SOCIETY	DON MILLER OHIO STATE UNIVERSITY	BONAPARTE
9:30 AM TO 9:50 AM	BREAK		
9:50 AM TO 10:30 AM	<u>PRESENTATION</u> NRC'S VIEWS ON SQA AND REGULATORY COMPLIANCE	LEE SPESSARD DEPUTY DIVISION DIRECTOR	BONAPARTE
10:30 AM TO 11:30 AM	<u>PRESENTATION</u> ✓ RULES AND REGULATIONS THAT IMPACT DOCUMENT MANAGEMENT AND ELECTRONIC RECORDS STORAGE	MARK REARDON SOUTHERN CALIFORNIA EDISON CO.	BONAPARTE
11:30 AM TO 12:00 PM	<u>PRESENTATION</u> AMERICAN NUCLEAR SOCIETY - HOW ANS SERVES THE INDUSTRY AND PROGRAMS OFFERED	DON MILLER OHIO STATE UNIVERSITY	BONAPARTE
12:00 PM TO 1:30 PM	LUNCH - PROVIDED BY ILLINOIS POWER COMPANY BUSINESS MEETING "PART A"	RICK ROGERS STEERING COMMITTEE CHAIRMAN	BONAPARTE II
1:30 PM TO 2:30 PM	<u>PRESENTATION</u> ✓ NEI ACTIVITY IN REGULATORY MATTERS	JIM DAVIS DIRECTOR OPERATIONS NUCLEAR GENERATION DIVISION - NEI	BONAPARTE
2:30 PM TO 2:45 PM	BREAK		
2:45 PM TO 5:00 PM	<u>BREAKOUT SESSION I A:</u> ✓ NUSMG COMMITTEE MEETING ON CONFIGURATION MANAGEMENT FOR NETWORK GUIDELINE DEVELOPMENT <u>BREAKOUT SESSION III:</u> ✓ NUSMG COMMITTEE MEETING ON SQA REQUIREMENTS FOR ELECTRONIC DATA STORAGE GUIDELINE DEVELOPMENT	RICHARD MERVINE BALTIMORE GAS & ELECTRIC JESSE ANTE PACIFIC GAS & ELECTRIC	LAFAYETTE RICHELIEU
6:00 PM TO 9:00 PM	VENUE PRESENTATIONS AND SOCIAL MIXER FOOD AND BEVERAGES PROVIDED		BONAPARTE LE

**NUCLEAR UTILITIES SOFTWARE
MANAGEMENT GROUP**
"Regulatory Compliance & Issues"

SIXTEENTH SEMI-ANNUAL WORKSHOP

DAY TWO - THURSDAY, MAY 8, 1997

TIME	EVENT/PRESENTATION	MODERATOR	LOCATION
7:30 AM	REGISTRATION/CONTINENTAL BREAKFAST	BILL OLSEN PROGRAM MANAGER	GALLERIA
8:00 AM TO 9:00 AM	<u>PRESNTATION</u> ✓ UNDERSTANDING AND APPLYING REGULATORY GUIDES ASSOCIATED WITH SOFTWARE LIFE CYCLE UPGRADES	RICH LOMAX NEBRASKA PUBLIC POWER DISTRICT	BONAPARTE
9:15 AM TO 10:00 AM	<u>PRESNTATION</u> ✓ SOFTWARE RELATED COMPLIANCE TRENDS AT NUCLEAR SITES (ROOT CAUSE ANALYSIS ASSOCIATED WITH ISSUES)	BILL OLSEN PROGRAM MANAGER	BONAPARTE
10:00 AM TO 10:15 AM	BREAK		
10:15 AM TO 11:00 AM	<u>PRESNTATION</u> YEAR 2000 ISSUES AND IMPACT ON THE NUCLEAR POWER INDUSTRY	MARVIN SOWERS ILLINOIS POWER COMPANY	BONAPARTE
11:00 AM TO 12:00 PM	<u>PRESNTATION</u> ✓ VENDOR'S APPLICATION OF SQA TO NUCLEAR PRODUCTS (INDUS INVITED)	TO BE ANNOUNCED	BONAPARTE
12:00 PM TO 1:30 PM	LUNCH PROVIDED BY NUSMG BUSINESS MEETING "PART II"	RICK ROGERS STEERING COMMITTEE CHAIRMAN	BONAPARTE II
1:30 PM TO 2:30 PM	<u>PRESNTATION</u> ✓ ADVANCED SQA TOPICS ✓ COMPLIANCE WITH GENERIC LETTER 83-11 ✓ WHEN & WHY TO DO A TOPICAL SUBMITTAL ✓ FOR METHODS REVIEW ✓ WHEN TO DO \$0.59 EVALUATION ✓ AND MORE	MORGAN LIBBY NORTHEAST UTILITIES	BONAPARTE
2:30 PM TO 2:45 PM	BREAK		
2:45 PM TO 4:00 PM	<u>BREAKOUT SESSION 2A:</u> SQA & REGULATIONS ASSOCIATED WITH ADMINISTRATIVE SOFTWARE PROGRAMS AT NUCLEAR POWER SITES <u>BREAKOUT SESSION 2B:</u> YEAR 2000 & REGULATORY ISSUES	KATHY PAVELCK NIAGARA MOHAWK WAYNE GLIDDEN DUQUESNE LIGHT CO.	BONAPARTE I BONAPARTE II

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Member Name: G. Apostolakis Date Submitted: March 31, 1997

Dates of Planned Trip: 4/14/97 to 4/15/97

Destination: Atlanta

Meeting or Facility to be Visited: INPO Offices

Purpose/Relevance to ACRS Business: Mr Stephen Rosen and Mr. Rick
Grantom of the South Texas Project are organizing a meeting
with senior INPO management to train them on PRA as a risk
management tool and to brief them on the risk-informed
activities that the industry is sponsoring. I have been
invited as the chair of the PRA subcommittee to talk about the
latest NRC activities on RIPBR and relevant ACRS views.
 Participation (Invited Speaker, paper presented, etc.): Invited speaker.

Justification (Foreign Travel Only):

NRC SUPPORT REQUESTED

Air Fare: Yes X No

Per Diem: Yes X No Days 2

Registration: \$ 0

Compensation: Yes No X Days

The Light company

South Texas Project Electric Generating Station P.O. Box 280 Wadsworth, Texas 77485

Houston Lighting & Power

April 2, 1997

Dr. George Apostolakis
Massachusetts Institute of Technology
77 Massachusetts Avenue
Room 24-221
Department of Nuclear Engineering
Cambridge, MA 02139-4307

Dear Professor Apostolakis:

We are pleased that you will be able to join Rick Grantom and myself in the seminar on Probabilistic Safety Analysis (PSA) at the Institute of Nuclear Power Operations (INPO) in Atlanta beginning at 1:00 p.m. on April 15, 1997. This seminar is being presented at the request of INPO management to provide key INPO personnel with

1. a background in the history of the development of PSA techniques, recent ACRS activities in the area of Risk-Informed, Performance Based regulation and related Nuclear Regulatory Commission Regulatory Guide development status - Professor Apostolakis
2. a utility management's perspective on the uses of PSA - Steve Rosen - Houston Lighting & Power/South Texas Project and
3. attributes of good PSA development and utilization practices at nuclear utilities - Rick Grantom - Houston Lighting & Power/South Texas Project

The audience will be INPO Senior and Evaluation Team management and evaluators. We think this will be a particularly useful and lively seminar and we look forward to seeing you there.

Sincerely,



S. L. Rosen
Manager,

Risk Management & Industry Relations

c: Rick Grantom
L. E. Martin
Bruce Keener (INPO)

Project Manager on Behalf of the Participants in the South Texas Project