



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

FEB 06 1986

MEMORANDUM FOR:

John G. Davis, Director, NMSS
Harold R. Denton, Director, NRR
Robert B. Minogue, Director, RES
James M. Taylor, Director, IE
Clemens J. Heltemes, Director, AEOD
Guy H. Cunningham, Executive Legal Director
Ronald M. Scroggins, Director, RM
Thomas E. Murley, Regional Administrator, Region-I
J. Nelson Grace, Regional Administrator, Region-II
James G. Keppler, Regional Administrator, Region-III
Robert D. Martin, Regional Administrator, Region-IV
John B. Martin, Regional Administrator, Region-V

FROM:

Victor Stello, Jr.
Acting Executive Director for Operations

SUBJECT:

DAVIS-BESSE EVENT LESSONS LEARNED

- Reference 1: Memorandum dated November 26, 1985, Dircks to Denton et al,
"Davis-Besse Event - NRC Lessons Learned"
- Reference 2: Memorandum dated January 13, 1986, Snizek to Davis et al,
"Agenda for NRC Lessons Learned Meeting"

On January 16, 1986, I discussed with you or representatives of your offices, actions we should take to improve our internal agency operations as a result of insights we have gained thus far from the Davis-Besse and (to a limited extent) the Rancho Seco events. Enclosed is the summary of that meeting which documents the decisions we reached and delineates which senior managers are responsible to develop and implement the initiatives taken and the time frames for accomplishing these important objectives. If for some reason these schedules cannot be met, discuss the specifics with me and I will consider what actions must be taken.

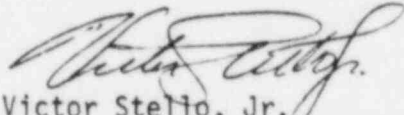
I was impressed by the frank and constructive nature of the comments provided by you in advance of the meeting (which helped determine the topics and focus the discussion during the meeting). In particular, I want to commend the spirit of interoffice cooperation that was apparent and contributed to the in depth treatment given the important and challenging topics covered in the meeting. The scope and depth of discussions clearly demonstrated the staff's ability to retrospectively examine our operations and initiate necessary improvements. This continued cooperation will be a crucial factor in accomplishing the specific tasks delineated in the meeting summary and is necessary for accomplishing efficient management in the future.

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I know from our discussions of these matters that all of you understand the importance of following through effectively in the areas for improvement that have been identified. Jim Conran of the ROGR staff is the cognizant individual within the EDO office responsible for monitoring the status of these tasks. Each program office and regional office should identify a point of contact to Mr. Conran.

I anticipate further meetings of this type regularly to discuss with you progress in these important areas.



Victor Stello, Jr.
Acting Executive Director
for Operations

Enclosure:
Meeting Summary and
Attachment

cc: J. Sniezek
J. Roe
T. Rehm

MEETING SUMMARY

B&W Design Reassessment

The general question of the need for reassessment of the adequacy of the B&W reactor design, in view of cumulative operating experience with the B&W design to date (including, in particular, the recent Davis-Besse and Rancho Seco problems), was the principal topic for deliberation and decisionmaking at the meeting. The strong consensus of the meeting participants was that reassessment of the B&W design is in order at this time. Two reassessment-type efforts that have already been put into motion were discussed: (1) an effort undertaken by the B&W owners group (BWOOG) to review the Davis-Besse event of June 1985 and the Rancho Seco event of December 1985; and (2) a recently-initiated task group effort within NRR to reevaluate the design of the integrated control system (ICS) and its interaction with nonnuclear instrumentation (NNI) systems.

On the basis of recent discussions with the BWOOG, NRR is of the view that both B&W and the utility members of the BWOOG recognize now that certain weaknesses or vulnerabilities inherent in the design and operation of the B&W reactor design must be addressed more effectively, and they intend to work closely together now in doing so. The BWOOG will report the status and progress-to-date of their efforts at a meeting with NRR now scheduled for early February. NRR will prepare a letter immediately to the BWOOG, to indicate the staff's high interest in and encouragement of that activity, to give added visibility and impetus to the BWOOG effort, and to make clear the NRC view that it is important that utilities through the BWOOG share in and will hopefully take lead responsibility for such design reassessment and improvement.

With regard to the NRR reassessment task group that has been established, it was noted that the group's original charter called for reevaluation of the ICS/NNI design and interface. NRR recommended that the effort be expanded to include issues that impact on the fast response to operational transients. The concern to be addressed is whether the B&W design response time is inherently too rapid to allow reliable and effective operator actions that may be required in the event of severe plant upsets/transients. Other design features unique to the B&W design (e.g., the SFRCS), which appear to contribute to too high a frequency of transients in B&W plants, or which can complicate unnecessarily the conditions that operators must respond to in such events, would also be examined carefully in the (proposed) broadened NRR reassessment effort.

The direct applicability of several ongoing RES projects to the proposed design reassessment effort was noted. Specific examples cited were: (1) the computerized Interactive Risk Analyzer development effort (this analyzer has been applied initially to one of the Arkansas Nuclear One unit designs); and (2) the Plant Analyzer that has been used for thermal-hydraulic analyses of transients in the Oconee, Bellefonte and Davis-Besse reactor designs. These tools could be used immediately by the staff to begin the recalculation of fast transients that must be done in the reassessment effort envisioned. It was

noted, however, that these kinds of analyses are very plant-specific focused and resource intensive. Significant cooperation of the industry and utilities will be required in providing the detailed kind of plant design information that will be required. NRC's experience in obtaining design data required for the analyses done for NRC by Oak Ridge National Laboratory and Idaho National Engineering Laboratory in connection with USI A-47 was recounted to illustrate this point.

With regard to other possible reassessment options, NRR and RES reported that EPRI seems reticent at this point regarding serious involvement or a lead role in any reassessment effort. The possibility of involving DOE in an independent reassessment was also discussed. It was noted that, if such an effort were to be seriously considered, very timely action would have to be taken to assure that funds are available in the DOE budget for the major task envisioned. RES agreed to promptly contact DOE to begin discussions of the feasibility of DOE involvement and any necessary preliminary planning required. The question of projected schedule for accomplishing the design reassessment efforts envisioned was then discussed. It was agreed that the staff's reassessment efforts should be conducted and concluded on a schedule that would permit agency decision on the B&W design adequacy issue by the end of 1986.

After thorough discussion of all these aspects of this question, the consensus was that the NRR ICS/NNI reassessment effort should be broadened as recommended by NRR and given the necessary priority to assure its completion on the schedule indicated above. NRR, in coordination with RES, will develop and provide to the EDO within 1 month the overall plan of action and projected schedule for accomplishing the necessary study efforts involved. The need to maintain that schedule was emphasized and acknowledged by all meeting participants. These projected schedules could be adjusted if the industry agrees to lead responsibility for this issue.

Improved Issue Tracking and Management System

A second major topic of the meeting was the question of need for, and projected schedule for the effective availability of, an improved tracking system to facilitate the cradle-to-grave monitoring and management of all important identified safety issues and approved licensing actions. There was consensus among the participants in this meeting that such an improved system was needed. It was noted that a strong initiative has been taken by RM, in cooperation with RES, IE NRR and NMSS, to develop and provide such a system (designated GIMS) on an expedited schedule. The close coordination and cooperation evident among the major offices recently in pursuing this important effort was acknowledged and commended. The necessity for continuing the effort on that basis and completing it expeditiously now was emphasized. The goal is to have a workable tool available as soon as possible for effective use by NRC senior management in the difficult and perennially troublesome task of resolution and closeout of safety issues that arise continually to compete for staff attention. The need for an improved system was identified prior to the Davis-Besse event in connection with a GAO audit (and criticism) of NRC's handling of generic issues. The circumstances surrounding the Davis-Besse event in June 1985 reinforced the need for an improved system; and Mr. Dircks had set the December

1985/January 1986 time frame as the date for completing development and beginning implementation of GIMS. Mr. Stello stressed that it is now imperative that a workable improved system be provided for effective use by NRC senior management in getting positive control of safety issue management without any further slippage in established schedules.

The following schedule is currently projected for availability/implementation of the new system:

1. By end-of-February, RM will have the computer system (hardware & software) required for the new Issue Tracking System up and running, although by that date it is expected that only about 15 percent of the data eventually required in all the data elements of the new system will actually be loaded. The first data entered into the new system will be from the current NRR TACS and LORDS systems for tracking NRR activities related to generic issues and other licensing actions.
2. By end-of-June, it is projected that another important NRR tracking systems (GIMCS) can be incorporated fully in the new GIMS system.
3. Current schedules call for having all applicable data currently available within NRC in various other existing information systems (e.g., the TMI Action Plan Tracking System; the ORLAS system for tracking the status of operating reactor licensing actions; the IE Bulletin tracking system; etc.) fully-loaded into the new system by end-of-July.

RM stated that the end-of-February date in (1) above seems quite firm at this point. Testing of the new system hardware and software is in progress now, and it appears that date will be met. The end-of-June and end-of-July dates cited in (2) and (3) above are much less certain, and can only be achieved if the program offices involved, who must actually provide input from their separate existing systems for loading into the new integrated systems, give very high priority to those efforts. NRR also cautioned that some of the data called for in the complete GIMS system (e.g., inspection/verification of completion of all required actions by individual licensees) may not now be available completely within the agency. If not, and if NRR/IE staff or licensees must be tasked to collect and provide such data, the time frame for providing a fully-loaded GIMS system could be lengthened significantly. It was agreed, however, that the schedule for collecting and loading data required by the new system that are currently available within other NRC information systems (or are readily obtainable by the staff) must be maintained as indicated above. All participants at the meeting agreed that their offices would give the necessary priority to completing that portion of the overall task by the end of July. The actual extent of required data not currently available within/to NRC (if any), will emerge as this coordinated effort goes forward. Further decisions regarding what additional measures must be taken (if any) to obtain any missing data, to assure full functioning of the GIMS system as an effective management tool, will be made if/when that need arises.

Performance Appraisal Meetings On Operating Facilities

An important point made in the context of the discussion of the improved issue tracking and management system topic above, was that the improved tracking system is necessary, but not sufficient, to assure that the necessary follow-through on all identified safety issues takes place. Considerable support was expressed by the participants at this meeting for proposals/ideas (submitted in formal comments provided in advance of the meeting) calling for intensive and dedicated meetings periodically, of the senior management of NRC program and regional offices, for the purpose of thrashing out and deciding expeditiously the many issues and problems identified by the NRC staff on a continuing basis. A specific forum suggested for doing this is a periodic (e.g., quarterly or semi annual) performance appraisal meeting to consider thoroughly the operations and performance of each operating facility. It was agreed that this suggestion should be implemented, on a trial basis first, in conjunction with the next regularly-scheduled Regional Administrators' meeting. The agenda for the next Regional Administrators' meeting will be extended by one-half day for this (dedicated) purpose. Program and regional offices will submit in advance proposals regarding issues/problems to be considered at this meeting; DEDROGR will coordinate this input and determine the agenda for this first trial-run meeting. Key HQ program directors (e.g., NRR, RES, ELD, RM) will be invited to attend the add-on, half-day session, as appropriate, to assure that a full complement of senior managers are present: (1) to support discussion of the full range of technical and legal aspects that may be involved in the topics chosen for consideration, (2) to examine fully the resource impact/implications of any specific actions proposed, and (3) to enable decisionmaking on the matters discussed before adjournment of the meeting to the extent practicable. The hope was expressed by participants at this meeting that implementing this format for senior management's consideration of issues would encourage the kind of staff work and the degree of coordination between mid-level program office and regional office managers in advance of the meeting, that will enable the senior managers to actually decide courses of action on the matters discussed at the meeting, not simply to hear about them or exchange views regarding them. It was agreed that if this was the case, something very useful and significant could come out of this experiment. Continuation and/or expansion of this concept will be decided finally based on assessment by the participants following the meeting of the effectiveness and efficiency of this format/mechanism for dealing with important issues.

Licensee Performance Indicators

The third major topic discussed at this meeting was development by NRC of licensee performance indicators, and criteria for imposing mandatory performance improvement measures if licensee performance is perceived to be lagging. For the short-term, IE has revised IE Manual Chapter 2515 to make the results of SALP evaluations a primary consideration in the allocation of inspection resources. The revised IE Manual Chapter provides specific guidance for increasing or decreasing inspection efforts in response to the latest SALP evaluations. The intent of the changes was to make clear that licensee performance which results in functional areas being rated Category 3 is acceptable only on a short-term basis, and that continued performance at such levels will not be tolerated. Letters transmitting SALP Reports containing

Category 3 ratings will now require the licensee to respond and provide the licensee's planned corrective actions to achieve improved performance in the functional areas rated Category 3.

For the longer term, the staff is developing additional guidelines on further actions to be taken when licensee performance is evaluated as Category 3. Staff is also developing a set of objective performance indicators for potential use in evaluating each of the SALP function areas and for signaling adverse performance trends throughout the SALP evaluation period.

With regard to the effort to identify an improved set of reliable performance indicators, it was noted that the results of recent efforts by INPO to develop a set of key maintenance performance indicators, for INPO's use in their continuing effort to improve the performance level of the industry as a whole, were reviewed at a recent meeting between INPO and NRC management in Atlanta. The general NRC reaction seemed to be that there was not a high degree of correlation evident to the NRC participants between licensee performance results viewed retrospectively (as determined on the basis of IE inspections and SALP ratings) and the way those same licensees would have "stacked up" had they been rated against the INPO-developed set of performance indicators. This reinforced the view that identification of an appropriate set of indicators for NRC's regulatory purposes will be a difficult task. It was agreed, nevertheless, that the staff must do the work necessary to try to identify the most reliable set of indicators possible, and make specific recommendations to the Commission on this important question without further significant delay. IE has the lead role in coordinating this longer-term effort as well. IE will assemble, by mid-March, an interoffice task group to formulate the final staff position on the subject. That group will provide to the EDO by mid-April their plan and schedule for completing the performance indicator development task.

Balance-of-Plant and Safety Ramifications of Regulatory Actions

A fourth main topic area was the need to expand NRC's regulatory activities in balance-of-plant (BOP) areas, and the closely-related question of the need to broaden the staff's analysis and understanding of potential safety impacts (both positive and negative) of regulatory actions and decisions. There was a strong consensus among meeting participants that NRC must increase the regulatory attention given to BOP system design and operation, and must take positive steps to improve our understanding of the possible negative safety impacts of our regulatory actions. Expanded use of PRA was an approach strongly favored by a number of meeting participants: (1) to identify candidate BOP areas where increased regulatory attention could produce the highest safety/risk benefit, and (2) to better understand (on the basis of a more comprehensive and integrated treatment of the operation and interaction of nonsafety and safety systems), the possible negative safety impact of proposed changes to plant design or operating procedures. Use of survey techniques to solicit suggestions from cognizant NRC staff members, knowledgeable members of the public, and even the operating utilities themselves, regarding BOP candidates for increased NRC scrutiny or instances where regulatory actions may have produced unintended adverse safety impact, was an alternate approach suggested. The possibility of combining these two approaches was also

considered (i.e., use insights gleaned from PRA analyses done to date to prepare a listing or ranking of safety/risk important plant features, and use this listing as a basis for soliciting comment or suggestions on expanding the scope of NRC's regulatory purview, etc.).

Some questioned whether PRA should be used primarily or even in a greatly-expanded role in the near future as the means of examining these questions, in view of the resource intensive nature and plant-specific focus of PRA noted earlier. The need was seen to update existing PRAs continually (i.e., implement a "living" PRA concept) if they were to be used as some suggested in this context.

After much discussion of these questions, the consensus seemed to be (for the short term, at least) (1) to continue to use PRA in the manner and to the degree it is currently used, to provide useful insights into safety issues being examined and regulatory actions being proposed, and to examine critically the cost benefit and backfit implications involved as well, and (2) to apply insights from PRA in combination with lessons learned from experience, and the suggestions/input gleaned from senior, seasoned, knowledgeable individuals both within and outside NRC to identify BOP areas in which to focus increased NRC attention on a priority basis and to guide the staff's efforts in broadening consideration of the possible impacts of our regulatory actions.

Another important question dealt with in these discussions was whether any rule changes are likely to be required to permit the NRC staff to extend the scope of its current regulatory activities into additional BOP/nonsafety-related areas. The ELD view was that rule changes are not required to provide a legal basis for the type of expansion of scope being addressed at this meeting (i.e., where the reason for expanding the scope of the staff's activities is NRC concern arising from demonstrable safety implications of the nonsafety/BOP plant features at issue). More specifically, where the NRC concern can be tied to a new understanding by the staff of some essential element of the existing licensing basis (e.g., recognition that the staff's previous assumptions regarding frequency or severity of challenge to safety systems may be incorrect because reliability of nonsafety equipment is not adequately assured), the technical and legal basis for extending the scope of regulatory involvement is established. Another point emphasized in this context was that, although rule changes may not be necessary, the backfit implications of any proposed extension of the current regulatory scope must be thoroughly considered and documented under the new backfit rule.

With regard to specific actions to be taken by the staff for improvement in these areas, IE will provide to the EDO by early March, preliminary proposals for expanding IE inspection activities in BOP/nonsafety-related areas. NRR will provide the EDO a preliminary plan for augmenting and improving the staff's evaluation of a nuclear plant as an integrated set of systems on a similar schedule.

Inadequate Use by Licensees of Operational Experience Information

The final major topic discussed at the meeting was the conclusion, based on an extensive AEOD study, that control room operators are not sufficiently aware of, and do not make adequate use of, lessons learned from operating experiences at other-than-their-own facilities. That conclusion is contained in a draft report that has been widely-circulated recently within the agency by AEOD for comment. It was noted by a number of meeting participants that a regulatory requirement for evaluation and use of operating experience by licensees is in place; but the AEOD conclusion (supported by disturbing examples cited in the report) is that the post-TMI scheme for assuring effective use of operating experience is simply not working as intended. A principal factor seems to be that the sheer volume of operating experience reports generated by all operating nuclear power plants is simply too great for operators at any single facility to absorb and evaluate; so improved mechanisms for distilling that large volume need to be considered. INPO has had a major role in monitoring and improving licensee performance in this area in the years since the TMI accident. Therefore, AEOD also provided their conclusions to INPO for their information.

It was agreed that serious consideration must be given now to whether NRC must take additional regulatory action in this area, and all offices to whom the draft report had been provided will review the report expeditiously and provide promptly to AEOD their views on this critical question. It was also noted, in this context, that IE has recently developed an improved plan for inspection/evaluation of licensees' corrective action systems generally. That plan appears to have relevance, and will be circulated for comment, in this same context.

Summary of Results and Conclusions

A summary of the key decisions made, lead assignments given, and preliminary schedules established as a result of discussions at this meeting is provided in Attachment 1 to this Meeting Summary.

ACTION ITEMS (PRELIMINARY)

FROM

LESSONS LEARNED MEETING ON DAVIS-BESSE

<u>ACTION</u>	<u>RESPONSIBLE OFFICE</u>	<u>COMPLETION DATE</u>
I. B&W Design Reassessment		
A. Prepare Letter to BWOG	NRR	2/1/86 (Completed)
B. Explore DOE Involvement	RES	2/1/86 (Completed)
C. Develop Plan/Schedule for NRC Reassessment Effort	NRR	2/14/86
D. Staff Recommendations/Conclusions Regarding B&W Design Adequacy		12/31/86
II. Improved Tracking System (GIMS)		
A. System Up and Running (15% Loaded)	RM	2/28/86
B. Achieve Automated Loading of GIMCS Data	RM/NRR	6/30/86
C. Complete Loading Data Available Within/To NRC	NRR/IE/RES/ NMSS/Regions	7/31/86
D. Identify Additional Information Required to Complete System	NRR/IE/RES/ NMSS/Regions	7/31/86
III. Develop Licensee Performance Indicators/Criteria		
A. Establish Interoffice Group for Long Term Study	IE	3/15/86
B. Preliminary Proposals for Operations/ Maintenance Performance Indicators	IE	4/15/86
C. Develop Detailed Plan/Schedule for Performance Indicator Development Task	IE	4/15/86
D. Staff Conclusions/Recommendations (Long Term)	IE	8/31/86

<u>ACTION</u>	<u>RESPONSIBLE OFFICE</u>	<u>COMPLETION DATE</u>
IV. Performance Appraisal Meetings		
A. Develop Schedule/Agenda for First Trial Meeting	DEDROGR	Next Regional Administrators Meeting
V. Broader Consideration of Balance-of-Plant and Ramifications of Regulatory Actions		
A. Develop Preliminary Proposals for Increased Inspection of BOP	IE	3/1/86
B. Develop Plan for More Fully-Integrated Evaluations of Nuclear Plant Systems	NRR	3/1/86
VI. Evaluate Licensee Use of Operating Experience		
A. Provide Comments on AEOD Draft Report	Program and Regional Offices	2/14/86
B. AEOD Final Report to EDO	AEOD	4/15/86