



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

October 3, 1991

MEMORANDUM FOR: Thomas T. Martin, Regional Administrator
R1

Stewart D. Ebnetter, Regional Administrator
R11

A. Bert Davis, Regional Administrator
R111

Robert D. Martin, Regional Administrator
R1V

John B. Martin, Regional Administrator
RV

FROM: William T. Russell, Associate Director for Inspection
and Technical Assessment
Office of Nuclear Reactor Regulation

SUBJECT: NRR/REGIONAL TECHNICAL COUNTERPART MEETING

In accordance with direction received during the June 1991 Senior Management Meeting, a technical counterpart meeting was held from September 3 - 5, 1991, at Downer's Grove, Illinois, near the Region III office. The purpose of the meeting was to provide the opportunity for regional managers and inspector staff representatives to meet with Headquarters technical division representatives to discuss the status of current and anticipated inspection activities regarding the following topic areas:

1. Shutdown Risk
2. Motor Operated Valves
3. Equipment Availability
4. Electrical Distribution System Functional Inspections

An agenda for the meeting is provided as Enclosure 1.

The overwhelming consensus was that the counterpart meeting was extremely beneficial and should be planned as a recurring event, perhaps annually. A summary of the discussions from each of the four topic areas follows, with more detailed discussions provided as Enclosures 2 through 5, respectively.

Shutdown Risk

In the Shutdown Risk session, representatives from NRR's Division of Systems Technology provided a briefing on the status of the program and the impact it is expected to have on the overall inspection program. Included in these

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discussions was a status of the implementation by licensees of Generic Letter (GL) 88-17, "Loss of Decay Heat Removal," and the guidance to be provided to resident inspectors for the inspection of licensees' outage activities starting this Fall. In addition, the long term schedule for future program activities was provided. Participants attending this session agreed that future counterpart meetings on Shutdown Risk will be necessary to ensure effective implementation of team inspections of shutdown operations tentatively planned for FY 1993 and beyond. A more detailed discussion of the areas discussed and the staff actions agreed to during this session are provided in Enclosure 3.

Motor Operated Valves

In the Motor Operated Valve session, representatives from NRR's Division of Engineering Technology led discussions that were extremely helpful in addressing several technical issues encountered during the MOV inspections completed to date.

In most cases a staff position was agreed to and in others the need for additional guidance was recognized. One objective of these discussions was to determine how the program can be improved to better assure that the objectives of GL 89-10, "Safety-Related Motor Operated Valve Testing and Surveillance," will be met by licensees. Based on the degree of participation and level of discussion, it was concluded that that objective had been met. Other areas discussed were related to the amount of regional resources required to implement the TI, expected difficulties by licensees in meeting the recommended schedule of GL 89-10 and staff reviews of licensees' responses to Supplement 3 to GL 89-10. Each of these areas is discussed in more detail in Enclosure 3 as well as staff action items resulting from this session.

Equipment Availability

In the Equipment Availability session, representatives from NRR's Division of Licensee Performance and Quality Evaluation led a discussion of recent maintenance related issues including: (1) the new maintenance rule, development of the associated regulatory guide and inspection procedures; (2) equipment availability; (3) the inspection program including Commission guidance and future direction; and (4) the reliability assurance program for advanced light water reactors. One area of particular interest was the Commission direction regarding the types of maintenance inspections the staff should and should not be conducting between now and the effective date of the maintenance rule, July 10, 1996. The regional representatives indicated that the meeting was very informative and productive and that additional future meetings should be conducted in this area. Additional details regarding the above issues and action items resulting from this session are provided in Enclosure 4.

Electrical Distribution System Functional Inspections (EDSFIs)

In the EDSFI session, representatives from NRR's Division of Reactor Inspection and Safeguards provided a status summary of the EDSFI Temporary Instruction and the program results and findings to date. Based on those results, it was agreed that a number of significant weaknesses have been identified in licensees'

Electrical Distribution Systems (EDSs) resulting from design implementation deficiencies and that the inspections should continue until all plants have been inspected. Some discretion regarding the scope of the inspections would be concurred in by NRR for individual plants on a case-by-case basis. One significant side-benefit noted from the program was that many licensees had initiated their own internal EDS audits and were identifying discrepancies similar to those in NRC inspections. Regional-led discussions were conducted regarding specific EDSFI findings in the following technical areas: emergency diesel generators, fast bus transfer, high ambient temperature effects on electrical equipment, degraded grid voltage setpoints/alarms and 4.16KV circuit breaker interrupting ratings. Additional details and a summary of the staff action items resulting from this session are provided in Enclosure 5.

I would like to express my appreciation to each of the regions for their support and participation in the meeting and would like to especially thank Region III for hosting the meeting and for their efforts in coordinating the arrangements.

If you have any thoughts or suggestions regarding this meeting or how future meetings might be conducted, please provide your comments to me or Brian Grimes.

William T. Russell, Associate Director for Inspection
and Technical Assessment
Office of Nuclear Reactor Regulation

Enclosures:

1. Meeting Agenda
2. Shutdown Risk Summary
3. Motor Operator Valves Summary
4. Equipment Availability Summary
5. EDSFI Summary

Distribution
Central Files

DRIS R/F

ADT R/F

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WRussell

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WHodges, R I

JRoe

FCongel

ERossi

AGibson, R E

HMiller, R III

SCollins, R IV

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Enclosures:

1. Meeting Agenda
2. Shutdown Risk Summary
3. Motor Operator Valves Summary
4. Equipment Availability Summary
5. EDSFI Summary

Distribution

Central Files

DRIS R/F	BGrimes	HMiller, RIII	BBoger
ADT R/F	JRichardson	SCollins, RIV	DCrutchfield
JSniezek	WHodges, RI	PZimmerman, RV	MCullingford
TMurley	JRoe	WBateman, EDO	
FMiraglia	FCongel	MPeranich	
WRussell	ERussi	TNovak, AEOD	
JPartlow	AGibson, RII	LSpessard, AEOD	
	FGillespie	SVarga	

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BGrimes
10/13/91

ADT:
WRussell
10/13/91

TUESDAY, SEPTEMBER 3

AGENDA

- Opening Remarks and Organization of Agenda Russell/Miller
- Preview/Overview of Main Meeting Topics
 - Shutdown Risks
 - MOV's
 - EDSFI's
 - Equipment AvailabilityHolahan
Richardson
Zech
Roe

- Inspection Program Plans -- review of plans regarding inspection scope and projected schedules in following areas:

- Check Valves
- IST
- Service Water
- Station Blackout
- Fire Protection
- Piping/Seismic Adequacy

General issues to be addressed with respect to each inspection program area are inspection program area are:

- Resource estimates -- estimates for recent TI's seem to be very low
- Licensing type activities as part of inspections
- NRR support for open/unresolved items and inspection followup

- Other General Discussion Items

- E&TS SALP assessment and module 37700
- Licensed operator fitness-for-duty-relationship between Part 55 and 25 requirements
- GG-15 regional team leader position implementation
- DRS staffing and career path issues
- Team inspection regulatory impact
- Field oversight of inspection activities -- impact on office coverage
- Recent experience in operability determinations

- Meeting Schedule

11:00 - 12:30	Opening and Discussion
12:30 - 1:30	Lunch
1:30 - 3:00	Discussion
3:00 - 3:15	Break
3:15 - 6:00	Discussion

September 4 -

7:45 am - 8:00 am	Opening (W. Russell)
8:00 am - 8:15 am	Overview presentation on Shutdown Risk (A. Thadani)
8:15 am - 8:30 am	Overview presentation on Motor Operated Valves (J. Richardson)
8:30 am - 8:45 am	BREAK and proceed to breakout sessions
8:45 am - 12:00	Shutdown Risk Breakout
	Staff Evaluation of Shutdown and Low Power
	Key Shutdown Risk Issues
8:45 am - 12:00	Motor Operated Valves Breakout
	Background and Regulatory Basis for GL 89-10 and Supplements
	Development and Implementation of TI 2515/109
	TI 2515/109 Inspection Findings and Discussion
	- Status of Licensee Programs
	- Scope
	- Design Basis Reviews
	- MOV Sizing and Switch Setting Calculations
	- Design Basis Testing
	- Periodic Verification and Post Maintenance Testing
	- MOV Failures, Corrective Action, and Trending
	- Schedule
12:00 - 1:00 pm	LUNCH
1:00 pm - 4:30 pm	Shutdown Risk Breakout
	GL 88-17 Inspections
	- Regional Feedback
	- Guidance for Evaluating Containment Closure Procedures
	TI for Inspecting Next Outage
	Plans for Mandatory Team Inspections

1:00 pm - 4:30 pm

Motor Operated Valves Breakout

T1 2515/109 Inspection Findings and Discussion - continued

- MOV Program Overall Administration
- Control of MOV Switch Settings
- Diagnostics
- Licensee Training Programs
- Maintenance
- Vendor Information and Operating Experience
- Supplement 3 to GL 89-10
- Other T1 2515/109 topics of interest

Additional MOV Topics Suggested for Discussion

- Use of Containment Isolation MOVs as Throttling Valves
- Control of EQ Requirements during Preventive Maintenance

Future Activities

- Continued T1 2515/109 Part 1 Inspections
- Commencement of T1 2515/109 Part 2 Inspections
- Licensee Guidance (meetings, information notices, and GL supplements)
- Interaction with EPRI on its MOV Performance Prediction Program
- Discussion of interest in additional inspector training
- Next counterpart meeting

4:30 pm - 4:45 pm

BREAK and re-group to general meeting

4:45 pm - 5:00 pm

Summary wrap-up on Shutdown Risk.
Key Findings, conclusions and action items
(A. Thadani)

5:00 pm - 5:15 pm

Summary wrap-up on Motor Operated Valves
(J. Richardson)

September 5 -

7:45 am - 8:00 am	Opening (W. Russell)
8:00 am - 8:15 am	Overview presentation on Electrical Distribution System Functional Inspections (G. Imbru)
8:15 am - 8:30 am	Overview presentation on Equipment Availability (J. Roe)
8:30 am - 8:45 am	BREAK and proceed to breakout sessions
8:45 am - 12:15 pm	EDSFI Breakout
	EDSFI Topics (DRIS)
	- Design document availability
	- TI evaluation
	- Contract related issues
	EDG Topics (Region I)
	- EDG capacity under transient/steady state conditions
	- EDG load sequencing
	- EDG testing
	- Breaker design bases to limit voltage condition and fault contribution when EDG in test and paralleled to the grid.
	Fast bus transfers (Region II)
	High ambient temperature affects upon batteries, chargers, inverters, and control panels (Region IV)
8:45 am - 12:15 pm	Equipment Availability Breakout
	New maintenance rule
	- Implications of the maintenance rule
	- Implementation schedule
	- Staff requirements memorandum
	- Commission directive
	Optimization of equipment maintenance
	- Reliability vs. availability
	- Preventive maintenance vs. LCOs
	Total unavailability vs. Risk (Risk Management)
	- Balancing equipment availability vs. plant risk
	- System status vs. risk
	- Rolling maintenance schedules
12:15 pm - 1:15 pm	LUNCH

1:15 pm - 4:30 pm

EDSFI breakout

Degraded grid voltage setpoints/alarms
(Region III)

4.16 kv circuit breaker interrupting rating
(Region V)

General Discussion

1:15 pm - 4:30 pm

Equipment Availability breakout

Inspection procedures

- Commission directive
- Inspection guidance (62700 series)
- Future direction
- Regional involvement

Reliability Assurance plan for future reactors

- Overview for advanced/passive reactors
- Relationship to maintenance rule

Regional Issues

4:30 pm - 4:45 pm

Break and re-group to general meeting

4:45 pm - 5:00 pm

Summary wrap-up on EDSFIs (G. Imbro)

5:00 pm - 5:15 pm

Summary wrap-up on Equipment availability
(J. Roe)

5:15 pm - 5:30 pm

Concluding comments (W. Russell)

SHUTDOWN RISK BREAKOUT SESSION SUMMARY

September 4, 1991

NRC headquarters staff met with regional managers and inspectors to brief them on the status of the shutdown risk program and discuss the impact the program is expected to have on the inspection program. Gary Holahan, Deputy Director, NRR Division of Systems Technology chaired the meeting and made a presentation on the status of the Shutdown Risk Program. Mark Caruso, Section Chief NRR Reactor Systems Branch and Task Manager for the Shutdown Risk Program made presentations and led the discussion on the topics, "Key Shutdown Risk Issues" and "Enhanced NRC Inspection Program for Shutdown Operations." Robert Perch, NRR Instrumentation and Controls Systems Branch made a presentation and led the discussion on the topic, "Additional Studies of Shutdown Issues." Warren Lyon, NRR Reactor Systems Branch made a presentation and led the discussion on the topic, "Implementation of Generic Letter 88-17." Several Regional/NRR coordination issues regarding future shutdown risk activities and Generic Letter 88-17 implementation were discussed at the meeting, including: guidance for upcoming inspections of outage activities; survey of containment design information regarding containment closure; tracking the status of Generic Letter 88-17 inspections; transfer of technical findings from the shutdown risk evaluation to regional inspectors. In addition, the meeting provided an effective forum for briefing Regional inspectors and Regional Management from all five regions in detail on the Shutdown Risk program. Future counterpart meetings on shutdown risk will be necessary to ensure effective implementation of mandatory team inspections of shutdown operations being planned for FY-1993 and beyond. The following is a summary of the observations and action items resulting from the meeting. A complete set of the overhead slides used at the meeting is enclosed.

OBSERVATIONS

1. Regional personnel generally supported the shutdown risk program and expressed a strong desire to better understand the technical findings coming out of shutdown risk studies.
2. Regional experience in the field is consistent with the key shutdown risk issues identified in the program. No new shutdown risk issues were identified during the meeting.
3. Regional personnel generally felt that Resident Inspectors would need more detailed guidance than that provided in the current Temporary Instruction for Interim Regional Inspections.

ACTION ITEMS

1. NRR provide Regional Division Directors with recent OGC guidance regarding applicability of General Design Criteria.
2. NRR Project Manager will follow-up On San Onofre 2/3 start-up tests regarding boron dilution.

3. NRR will provide Regions with the current draft report on outage planning and control developed from NRR site visits.
4. NRR will issue Temporary Instruction for Interim Regional Inspections on Decay Heat Removal capability and provide enhanced guidance for using the TI.
5. NRR will determine the need for regional site personnel to supplement licensee generated information on containment closure procedures. If, necessary, the request for information will be in form letter with checklist enclosed.
6. Region V will provide headquarters (c/o Mark Caruso SRXB/DST MS 8E-23) information regarding use of freeze plugs in the nuclear industry.
7. Regions I, III and V will send copies of completed inspection reports documenting implementation of Temporary Instruction 2515/103 (Generic Letter 88-17, "Loss of Decay Heat Removal") to the NRR Reactor Systems Branch c/o Warren Lyon (MS 8E-23). All Regions will include the NRR Reactor Systems Branch on distribution for future inspection reports addressing implementation of GL 88-17.

MOV BREAKOUT SESSION SUMMARY

September 4, 1991

NRC headquarters staff met with regional managers and inspectors to discuss issues associated with Generic Letter 89-10 which deals with the reliability and operability of motor operated valves (MOVs). The purpose of the meeting was to foster an interaction and exchange of views between NRC headquarters and regional staff based on inspections and audits performed to date using Temporary Instruction 2525/109 and to determine how the program can be improved to assure that the objectives of Generic Letter 89-10 are met. A copy of the handout used to stimulate discussion is enclosed. It was concluded that the meeting was very successful and the objectives were achieved. The discussions were lively and meaningful with a number of program improvements and specific actions identified. It is obvious that frequent communications between headquarters and regional staff are essential to the successful completion of this important program. It is strongly recommended that counterpart meetings, similar to this one, be held often enough to assure uniformity, consistency and continuity in the program. The following is a brief summary of the observations and action items resulting from the meeting.

OBSERVATIONS

1. Resources - The regions are using more resources than originally estimated in the Temporary Instruction (TI). A more realistic estimate may be about 18 inspection-days as opposed to 9 inspection-days (Region III). However, it was noted that some regions are performing non-mandatory elements of the TI (such as IST) during these inspections. It was also noted that the regions will need resources to follow up open items identified in the original inspection. The regions may need to consider reducing non-mandatory inspection efforts in the TI.
2. Team Inspections - Although it is not necessary to perform a team inspection for TI 2525/109, it may be beneficial to conduct team inspections at plants that have particular problems such as a BWR with many Anchor Darling gate valves.
3. Taking Valves Out of Service - Some plants are planning to perform valve tests during operation by taking the valve out of service and entering a voluntary LCO. This may be permitted by the Technical Specifications and 10CFR50.59 but must be used with caution. The increase in overall risk must be assessed before the equipment is taken out of service. This is also a topic of discussion in the breakout session on Equipment Availability.

4. Regional Reviews - There was some concern that regional inspectors are performing paper review inspections rather than performance-based inspections. It was pointed out that Generic Letter 89-10 does not require submittal of the program to NRC headquarters for approval prior to implementation. Rather, the program is to be made available on-site for inspection. The TI has two parts (program review and implementation) to be carried out by the regional inspector which is different from the more traditional method of headquarters issuing an SER approving a program and the regions inspecting the implementation of that program.
5. Program Scope - Although the scope of licensee programs are generally consistent with Generic Letter 89-10, some utilities are not providing very good bases for excluding certain MOVs from their program. All MOVs in safety-related systems are within the scope of the Generic Letter and exclusions need to be justified.
6. Design Basis Reviews - Licensees need to review plant procedures as part of their design-basis reviews. Some utilities are using stem friction factors based on a freshly lubricated condition. A degraded condition, resulting in higher stem friction over the maintenance interval, may result in the valve moving out of the acceptable "thrust window." Licensees need to establish margins to account for degradation over the maintenance interval. Additional guidance is needed including the relationship to the new maintenance rule. Other similar issues include ambient temperature effects on motor operation and thermal overload protection. Guidance is also needed regarding the capability of the MOV to function during an earthquake while experiencing design differential pressure. It was noted that this is not an important issue and should not be a major focus of design-basis reviews. Another issue was that, for some MOVs, there may be torque switch chatter due to flow vibration causing the valve to fail to close under design flow conditions.
7. MOV Sizing and Switch Setting Calculations - Rate of loading is an important aspect that must be considered in correlating static to flow tests. Guidance was provided (enclosed handout) for performing MOV electrical reviews. NRR is to look into the potential of penetration thermal overload protection (fuses or breakers) that may prevent current to an MOV reaching an adequate level during an accident.
8. Design Basis Testing - Licensees should place additional emphasis on identifying MOVs for which design basis testing is practicable. The inspection at Palo Verde revealed that they did not have acceptance criteria to evaluate test results. It was suggested that NRR publish (with CRGR review)

a document stating what our expectations are (including promptness of analyzing data after a test). This would give the regional inspectors a firm basis to evaluate the licensee's program and provide a degree of uniformity and consistency. On the other hand, we don't want to stop the inspections to develop such a document because the inspections are providing a motivation to industry to get on with the program in a timely manner and produce a quality product. We need to address the issue of finding valves that cannot perform their design function (operability) in terms of expectations and guidance. Licensees are still obligated to declare valves inoperable if it is shown the valve cannot perform its safety function. Licensees must also evaluate their switch setting methodology if an MOV fails a test. Licensees who have begun design-basis tests have found some MOVs to have thrust requirements greater than typically assumed in the past. Where a licensee groups MOVs to limit the number of design basis tests, the licensee must justify that grouping in light of actual plant test data.

9. Periodic Verification and Post Maintenance Testing - Many licensees are planning to perform static tests in an effort to periodically verify MOV capability. The staff has been informing licensees that static tests are not currently acceptable for this purpose because of the uncertainties between the performance of MOVs under static and design basis conditions. This is an area that both NRC Research and EPRI are evaluating. Some licensees have been found weak in their guidelines for post maintenance testing of MOVs.
10. MOV Failures, Corrective Action, and Trending - Some licensees have been found to be weak in evaluating MOV failures as well as performing and documenting corrective action. Many licensees are just beginning trending efforts in response to Generic Letter 89-10.
11. Schedule - Some licensees may have trouble meeting the recommended schedule of Generic Letter 89-10, especially where a large number of MOVs are to be tested under design basis conditions.
12. MOV Program Overall Administration - Licensees need to have significant management involvement in the establishment and implementation of the programs in response to Generic Letter 89-10. Some licensees have been found to have inadequate management involvement. Licensees also need to assign specific individuals who are accountable for the program.
13. Control of MOV Switch Settings - Licensees have various methods to ensure control of switch settings. However, some licensees have failed to maintain adequate control of switch settings such that torque switch settings were raised above the Limitorque maximum allowable value without adequate documented safety evaluations.
14. Maintenance - Some licensees have not justified their preventive maintenance frequency (including stem lubrication) in terms of their assumptions for stem friction coefficient. Some licensees do not have specific overhaul frequencies but base that decision on preventive maintenance results and diagnostic tests. Preventive maintenance and diagnostic tests have been

shown to be inadequate in some cases to identify significant degradation in MOVs. Licensees should overhaul MOVs before establishing a baseline with diagnostic equipment.

15. Supplement 3 to Generic Letter 89-10 - NRR has sent Requests for Additional Information (RAIs) to most BWR licensees regarding the MOVs within the scope of Supplement 3. Of the responses received, most licensees have at least one MOV that will require further discussion between the staff and the licensee. NRR is working to complete its review of these MOVs in the next few weeks.
16. Diagnostics - The MOVATS users group needs to verify stated accuracy values. An Information Notice will be issued shortly that will summarize the results of recent diagnostic equipment vendor inspections.
17. Licensee Training - Licensee training programs, in general, look good with facilities adequate and students well trained. Overall refresher training is weak and, in some cases, relies on utility first line supervisors to determine when additional training is needed. Licensees need to verify vendor certification of contractor personnel working on MOVs and that the vendor program is compatible with the licensee's program.
18. Vendor Information and Operating Experience - Region III is finding good programs after initially finding problems at the Byron plant (the word got around that NRC is looking at this aspect of the program). However, other regions are finding problems in this area.

ACTION ITEMS

1. NRR to analyze and summarize the 16 inspection reports completed to date. The summary will highlight common program weaknesses and inconsistencies. The summary report should be available for the Senior Management meeting in January. The results of this study should be sent to industry in the form of an Information Notice. The notice may include a reminder that when inoperable valves are found through testing, current regulations and technical specification action statements apply. (DET to complete by 12/1/91)
2. To the extent possible, NRR to provide guidance regarding stem friction factors to account for degradation over the maintenance interval. (DET to complete by 11/1/91)
3. NRR to consider publishing an MOV newsletter to distribute general information of interest. The news letter will not provide guidance or agency positions that would more properly be addressed in generic communications or other formal means. (DET to complete by 1/1/92)
4. The regions are requested to distribute all MOV inspection reports to the other regions as well as headquarters. (Regions to distribute when reports are published)

5. NRR will look into the potential of penetration thermal overload protection (fuses or breakers) that may limit current to an MOV during an accident. Guidance, as needed, will be developed. (DET to complete description of issue and request for assistance from other NRR divisions, as necessary, by 11/15/91)
6. NRR will consider publishing a document (perhaps a supplement to Generic Letter 89-10) stating what our expectations are (especially regarding design basis testing). This would give the regional inspectors a firm basis to evaluate the licensee's program and provide a degree of uniformity and consistency. This is related to Action Item 1. (DET to complete proposed document for management review by 2/1/92)
7. NRR will consider how Generic Letter 89-10 relates to the new maintenance rule and determine if any changes in the TI or Generic Letter are needed. (DET to complete by 12/15/91)
8. NRR to evaluate the need for further guidance to licensees and inspectors regarding the effect of degraded voltage or differential pressure on stroke-time testing as related to the licensee's safety analysis. (DET to complete description of issue and request for assistance from other NRR divisions, as necessary, by 12/1/91)
9. NRR will, within 45 days, identify particular valves that could be problems in BWRs so regions can establish inspection priorities. (DET to complete by 10/18/91)
10. NRR to work with regional management to determine the best way to handle verbal statements made by licensees during inspections that need documentation and follow up. (DET to complete by 12/1/91)

NRR ACTION ITEMS

- In the near future, conduct a meeting with regional representatives on the development of the Maintenance Regulatory Guide.
- Consider employing one or more regional contacts for a period of time to work with NRR and RES contacts in a working group to develop the Regulatory Guide and keep the Regions involved simultaneously.
- Expedite the issuance of Inspection Procedure 62703.
 - Revise inspection procedure 62703 to focus on results, confine inspection of programs to existing requirements, address industry weaknesses as identified by previous MTI inspections, and examine maintenance activities for technical adequacies and safety.
 - Develop a list of regional contacts to support the review of the Inspection Procedure within one week.
 - Conduct a working level meeting with regional contacts to review and approve the revised procedure, and request that regional Division Directors provide concurrence on the last day of the meeting.
 - Develop a Commission paper to describe the staff actions for the near term covering the inspection program, and request clarification/ Commission approval to revise the current maintenance inspection program as described above.
 - Issue the revised Inspection Procedure.

EQUIPMENT AVAILABILITY BREAKOUT SESSION SUMMARY

On September 5, 1991, the Equipment Availability session of the NRR technical topics counterpart meeting was conducted at the Radisson Suite Hotel in Downers Grove, Illinois. Division of Licensee Performance and Quality Evaluation representatives met with representatives of each region's management to discuss recent maintenance related issues including: (1) The new maintenance rule, development of the associated regulatory guide and inspection procedures (2) equipment availability (3) the inspection program including Commission guidance and future direction, and (4) the reliability assurance program for advanced light water reactors.

A summary of each section is provided as follows:

NEW MAINTENANCE RULE AND EQUIPMENT AVAILABILITY:

On June 28, 1991, the Commission voted to approve the staff's proposed revision to the enforcement policy and also directed the staff to proceed with the issuance of a new maintenance rule. On July 10, 1991, 10 CFR 50.65, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" was published in the Federal Register.

The rule requires monitoring the overall continuing effectiveness of maintenance programs to ensure that safety related structures, systems, and components (SSCs) will perform their intended functions and non-safety related SSC failures will not result in scrams or unnecessary actuation of safety related systems. The rule is to be implemented by each licensee no later than July 10, 1996.

The Commission also directed the staff to develop regulatory guidance for implementing provisions of the rule, including issuance of the draft guidance within two years of publication of the rule in the federal register.

During the meeting, discussion on the maintenance rule and equipment availability focused primarily on the suggestions for the regulatory guide development and on maintenance practices including voluntary entry into LCOs for the purpose of performing maintenance. Suggestions and topics discussed were as follows:

- The Regulatory Guide should clearly state that goals set by the utilities should address and be commensurate with assumptions in risk analyses submitted to the NRC or assumptions used to support characterizations of risk.
- The Regulatory Guide should provide clear and practicable definitions of reliability, availability, operability, and critical equipment. Distinguish between intended function and safety function, and functional and operable.

- The Regulatory Guide should address what is expected of trending programs, the treatment of statistics, and specifically address the criteria of an effective maintenance program, i.e. one or more maintenance preventable failures in what period of time.
- The Regulatory Guide should incorporate lessons learned from related work by industry working groups such as Operations and Maintenance groups, ASME, and others.
- The NRC working group associated with the development of the guide should pay particularly close attention to the industry working group's commitments and understandings with the NRC.
- Definitions of terms and how they should be addressed in the Regulatory Guide.
- Several utilities have programs in place which utilize PRAs to make assessments of reliability and risk. It was suggested that observation of these programs may be beneficial in preparing the Regulatory Guide. The example utilities were Susquehanna, Limerick, and Southern California Edison.
- NPRDS by itself was considered to not suffice as sufficient industry experience.

An active discussion took place regarding licensee entry into LCOs to do maintenance and the NRC inspection guidance provided in IP 9900. Numerous examples of LCO abuse were discussed by regional attendees. Regional representatives agreed to keep NRR informed of recent instances of LCO abuse and were encouraged to inform licensees of the NRC position regarding entering LCOs to perform maintenance as described in Inspection Procedure Guidance 9900.

INSPECTION PROGRAMS

Resulting from lessons learned from the Maintenance Team Inspection (MTI) process and a GAO audit, the staff drafted a revision to the Monthly Maintenance Inspection Procedure 62703. This draft incorporated several aspects of the Maintenance Team Inspection guidance recommended by GAO and lessons learned from the MTI process and was forwarded in late 1990 to the regions for review and comment.

On June 28, 1991, the Commission issued a staff requirements memorandum, M910628, directing the staff not to incorporate the programmatic inspection guidance used for the conduct of Maintenance Team Inspections into the interim guidance for maintenance inspections. The Commission directed instead that the staff reserve the use of this type of inspection guidance for special diagnostic-type maintenance inspections where wide-spread program deficiencies are perceived.

NRR management clearly emphasized the importance of terminating any process oriented inspections related to maintenance. The focus of current maintenance inspections should be results based. The staff will be seeking further clarification guidance from the Commission on current maintenance activities, and

the staff will, within the next few months, reissue new maintenance inspection guidance. The subsequent discussion focused on the following topics:

- Clarification of the Staff Requirements Memorandum 910628 for inspection programs,
- Staff plans for expediting issuance of interim inspection guidance for maintenance, and
- Staff plans to include active regional involvement in the development of the Maintenance Regulatory Guide and inspection program guidance.

RELIABILITY ASSURANCE

The session ended with a discussion of the Reliability Assurance Program for advanced reactors. The relationship to the new rule was discussed. A comparison between the new maintenance rule and reliability assurance program highlighted several similarities between the two programs.

Senior regional representatives expressed the view that the meeting was very informative and productive and that additional meetings of this type should be conducted. A copy of the handout used to discuss equipment availability at the meeting and the list of resulting NRR Action Items are attached.

EDSFI BREAKOUT SESSION SUMMARY
SEPTEMBER 5, 1991

On September 5, 1991 an NRC meeting was held in Region III to discuss administrative and technical topics affecting the NRC Electrical Distribution System Functional Inspection (EDSFI) program being implemented at nuclear plants. Regional and headquarters management and staff participated in this meeting. The Special Inspections Branch (RSIB) provided a brief overview of the EDSFI program. Management and staff discussed various administrative and technical issues including the adequacy of the Temporary Instruction (TI), contractor support, training of inspectors, technical assistance for resolution of findings, development of an EDSFI data base, allocation of budgetary resources for EDSFIs, and safety significant EDSFI findings.

ADMINISTRATIVE HIGHLIGHTS

RSIB provided a brief overview of the EDSFI program with regard to its scope, TI, findings and results. This presentation noted the number of safety significant findings identified during the EDSFIs, and the benefit of increased attention by licensees in evaluating and improving the design basis of their EDS.

AECL contractor support for the EDSFIs was concluded to be adequate. The regions were advised to evaluate the product rather than the contractor for future EDSFIs.

Changes to the TI were discussed. Deletion of instructions for the assessment of electrical separation and root cause analysis from the TI were debated. The consensus was that the TI was adequate.

Requests by the regions for technical assistance (TIA's) were acknowledged by the Electrical Systems Branch (SELB). The regions were encouraged to have technical discussions with SELB staff. However, they were advised to send TIAs for further action. It was also agreed that TIAs and responses to TIAs would be put on distribution to all regions and RSIB.

The need for additional inspector training for conducting EDSFIs and the need for specialized training courses at the TTC were debated. The consensus was that the training provided to the inspectors in the past was adequate and that regions on their own could send inspectors to specialized courses at local universities as necessary. Region III indicated that they had sent several of their inspectors to a course on breaker coordination at the University of Wisconsin.

The development of an EDSFI data base by RSIB was discussed. This data base will include all EDSFI findings including weaknesses. Senior management is very interested in the safety significance and trending of these findings in the light of accident precursors. Headquarters is looking at the effect of these findings on core melt probability. The regions expressed an interest in

identifying areas of weakness for consideration in the accident precursor study and in receiving the results of the study.

The ILPB expressed concern regarding the number of direct inspection hours being spent on the EDSFI. Regions may be exceeding their allocated resources for the EDSFIs by as much as 65% by doing more activities than those outlined in the TI. Regions were advised to review the size of their EDSFI teams and the inspection hours utilized.

The NRC policy of not giving written questions to the licensees during an inspection was debated. Regions and Headquarters felt that this policy made it difficult for the team to efficiently communicate concerns to the licensee. Headquarters agreed to revisit this policy. In the interim it was suggested that written requests for document collection may be transmitted to licensees during inspection preparation by attaching them to a letter to the licensee and placing a copy in the Public Document Room.

Regional comments on the draft guidance sent by RSIB (June 2, 1991) to the regions regarding the availability of design basis documentation during EDSFIs were discussed. There was general concurrence that EDSFI teams should request and expect licensees to provide design documents for the selected sample of the EDS equipment. In the absence of design documents the licensee should demonstrate the basis of operability of the selected systems and components. The guidance on which consensus was reached is attached.

Based on the results of the EDSFIs completed there was a consensus that the EDSFI program should be continued. Some concessions in the scope of the EDSFI may be made for new plants.

TECHNICAL HIGHLIGHTS

Region I addressed concerns regarding the inadequate testing of emergency diesel generators (EDGs). Deficiencies included inaccurate assessment of transient loads, lack of safety margins, and lack of environmental and mechanical considerations. As a result certain licensees could not demonstrate that their EDGs had sufficient capacity to sustain worst case loads during and after an accident.

Region I addressed the inadequate fault current interrupting capacity of Class 1E switchgear and breakers. Deficiencies included lack of consideration of short circuit contribution of EDGs when tested in parallel with the grid, high grid voltage conditions, and worst case faults.

Region I also expressed a concern regarding NRC involvement in the review of the switchyard. Region I felt that a review of the switchyard design was related to GDC-17 and, although the switchyard is not safety-related, problems with control circuits and switchyard batteries affected the reliability of offsite power. Region I was considering raising these concerns as a possible generic issue.

Region II addressed problems with fast bus transfers from the unit auxiliary generator to offsite sources during emergency conditions. Unsupervised fast

bus transfer schemes have the potential of a phase shift between the generator voltage and the offsite sources because of residual voltage on the 4160-Volt buses during bus transfer. Lack of synchronization could cause damage to the safety loads due to high torque and high current conditions. A synchronous check of these voltages should be performed before the transfer is completed.

Region III addressed potential operability concerns regarding degraded grid undervoltage protection relay setpoints which were too low to ensure timely transfer of safety buses to an alternate source. Prior to this transfer, some safety loads would not receive sufficient voltage to perform their safety functions.

Region IV addressed the effect of temperature on the capacity of batteries and General Electric (GE) Electro Motive Division EDGs. Lower temperatures may reduce the capacity of the battery, while higher temperatures may increase the short circuit contribution of the battery. Another topic discussed by Region IV was the effect of turbocharger inlet temperature and jacket water temperature. If the EDG turbocharger inlet and the jacket water design temperatures were exceeded, the EDG may be derated below its load profile. This may not have been accounted for in the facility design.

Region V addressed discrepancies in the fault current interrupting rating of GE 250 mva, 4.16-kV circuit breakers. These breakers were installed in applications where they would sustain fault current higher than that demonstrated by vendor testing.

ACTION ITEMS:

- ° DRIS send Appendix R, Reg. Guide 1.75 memorandum to all regions.
- ° DRIS send study on maintenance and testing of electrical equipment to all regions.
- ° TIAs and responses to TIAs would be distributed to all regions and RSIB.
- ° DRIS memorandum to poll regions regarding EDGs operating above 2000 hour rating.
- ° Memorandum requesting regional input on areas of weakness to be considered in accident precursor study.

Availability of Design Documentation During Inspections Draft Guidance

The Commission's regulations (10 CFR 50.2) require the specification of design input information which identifies safety functions and reference bounds for design. Criterion 1 of Appendix A to 10 CFR 50 requires that there be appropriate records of the design, fabrication, erection and testing of structures, systems, and components important to safety throughout the life of the unit. Criterion XVII of Appendix B to 10 CFR 50 and licensee commitments to ASME N45.2.9 require that sufficient records shall be maintained to furnish evidence of activities affecting quality, including design calculations. However, to encourage licensee self-initiated efforts to reconstitute design documents and in recognition of the lesser safety significance of some calculations and documents, the NRC has not required blanket regeneration of missing documents (see references). It is clear that inspection teams should expect that certain key design documentation should be available for the safety-significant inspection sample selected or that licensees have other valid technical bases to conclude that safety systems can perform their intended functions.

Inspections such as EDSFIs and Safety System Functional Inspections (SSFIs) determine whether selected safety systems are capable of performing their intended safety functions in the expected accident environments. To accomplish this objective, EDSFIs and SSFIs emphasize system functionality rather than regulatory compliance. Design calculations are an integral part of these inspections, and they provide validation for aspects of safety systems which are not normally challenged or periodically tested. EDSFIs and SSFIs rely upon representative samples, e.g., a load path, to evaluate the licensee's design process. For older plants, where design document retrieval may be difficult, one approach is to structure the inspection sample to include areas where design basis documentation would be expected to be available. For example, for systems modified since operating license issuance, the licensee should have a sufficient set of design documents to demonstrate that design margins for the modified systems have not been unacceptably reduced and to provide assurance that structures, systems or components will perform their intended safety functions. This approach was used on the first SSFIs, and the experience gained through the conduct of these has demonstrated that some licensees have made inappropriate plant modifications which have affected the functionality of safety systems. These modifications were made without the licensee having a firm understanding of the available design margins and the effect that these modifications had on these margins (Ref. SECY-90-365 dated October 26, 1990.) With this approach, it is important to ensure that the modifications reviewed are within the scope indicated by Temporary Instruction 2515/107, i.e. given a choice of two samples within the 2515/107 scope, an area where a modification has occurred may be a better choice.

In conduct of the EDSFI, it is expected that to evaluate system functionality the team will need to review some original design documents and verify the initial assumptions used as the bases for system design and component sizing. These design documents may consist of (1) calculations, such as short circuit, voltage regulation and emergency diesel generator load sequencing studies and (2) assumptions, such as the bases for the setpoints of degraded grid voltage relays. It is recognized that the licensees, particularly those with older facilities, will have difficulty producing original design documentation. In preparing for the inspection, the region should provide reasonably early notification to the licensee in order to facilitate document retrieval. As stated in NUREG-1397, it is not the intent of the NRC that licensees regenerate the complete set of design documentation for their facilities for the purpose of an inspection. However, the licensee should be expected to demonstrate to the team, for the system(s) within the limited scope of the inspection, that the intended system functions can be accomplished. This can be demonstrated in a variety of ways, such as calculations, including those of a simplified bounding type, system test data or soundly based engineering judgment.

For EDSFIs, operating experience and the results of inspections conducted to date provide sound justification for inspection emphasis upon aspects such as:

- degraded grid voltage relay setpoints
- diesel generator transient loading conditions
- design margin of equipment relative to worst case loads and fault current
- voltage regulation
- bus transfer logic
- safety-related setpoint basis
- short circuit contribution and protection
- ground fault protection
- coordination of protective equipment
- capacity for diesel generator support systems/equipment, e.g., fuel oil storage tank, HVAC

Inspection teams usually factor in previous experience in developing an inspection sample, and the above aspects reflect that. Development of any of these aspects into a functionality concern (as described in the following paragraph) is dependent on site specific matters, not industry experience in general.

As always, the burden of proof that the system will operate as intended rests with the licensee. The team should minimize this burden to the extent possible by requesting documentation (which will likely include calculations) only for those questions where the team, based either on simplified calculations or bounding analyses, engineering judgment or information gained from previous inspections, has some reasonable basis to question the system functionality. In the normal inspection process, the team attempts to confirm that design basis commitments have been implemented. In cases where the team and licensee disagree as to the adequacy of such implementation, an iterative process often evolves between the team and licensee wherein the licensee may locate existing design basis documentation, generate new such documentation, or provide other means of confirming functionality. Clearly any judgement as to functionality by the team leader will be subjective. However, the team must reach a conclusion regarding the system functionality by the end of the inspection. This conclusion should be based on the scope of the sample reviewed and the outcome

of the team's review. If the results of the sample reviewed during the inspection call into question system functionality, licensee and NRC management should evaluate these indications and determine a course of action.

The existence or availability of information to demonstrate that a structure, system, or component is operating within its design bases is not necessarily required to establish operability. Engineering judgment can be relied on to make a preliminary determination of operability and reportability, pending further evaluation. The basis for engineering judgments may include operating history; experience with similar structures, systems, and components; preoperational test data; routinely conducted surveillance and testing (to the extent they simulate design bases conditions); simplified bounding analyses; and other information. Additional guidance on operability determinations is being developed by NRR.

In summary, inspection teams have a regulatory basis for actions during inspections which result in licensees providing records, including newly generated calculations, which substantiate that the plant can fulfill its design basis commitments. A request by the team for a broad range of specific design documents without any identified concerns may be perceived as a backfit. However, the intent of this guidance is to have any licensee effort to confirm system functionality result from legitimate concerns identified by the team. To the extent that such licensee effort is perceived by the licensee as a backfit, this should be addressed through the normal channels for backfit review.

References:

- ° SECY-90-365 "Design Document Reconstitution Programs Initiated by Utilities" October 26, 1990.
- ° Letter to W. H. Rasin from W. T. Russell, November 9, 1990.

"While the NRC does not advocate the regeneration of the complete set of design documents, it is important that certain design documents are available to support plant operation. Category I design documents are those documents that are necessary to support or demonstrate the conservatism of technical specification values, such as pump flow calculations or setpoint calculations. ...those necessary for (a) engineering organizations to use in supporting plant operations and (b) the operators to use in quickly responding to events. Examples ...include, but are not limited to, electrical load lists, valve lists, instrument lists, fuse lists, breaker lists, Q-lists, diesel generator load sequencing, piping and instrumentation diagrams, flow diagrams, electrical single line diagrams and schematics, and breaker and fuse coordination studies."

"The NRC considers that all Category I essential documents that are inaccurate, unretrievable or not yet produced should be regenerated in an expeditious manner. However, a licensee may be able to generate test data or use other means to establish a high level of confidence that the system can fulfill its safety functions. If so, then the licensee may be able to schedule the regeneration of the Category I document in a period of time commensurate with its evaluated safety significance."

- ° Letter to Regional Administrators from T. E. Murley, February 5, 1990
"Criterion III of Appendix B to 10 CFR 50 and ASME N45.2.11 - 1974 require that there be an auditable trail from design bases (inputs) to design output documents to support the as-configured plant."
- ° NUREG-1397 "An Assessment of Design Control Practices and Design Reconstitution Programs in the Nuclear Power Industry," February, 1991.

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SSC's WHICH MIGHT BE ELIMINATED USING A RISK (PRA-BASED)
CRITERION FOR DETERMINING HOW TO APPLY THE MAINTENANCE RULE

1. SSCs used in Emergency Operating Procedures:

Mechanical Jumpers -- hoses, piping

Electrical Jumpers -- temporary power and control cabling

Non-safety equipment not otherwise included within the rule scope, such as condensate pumps, firewater pumps, non-safety electrical circuit breakers.

2. SSCs which could cause a reactor scram:

Condensate pumps, condensate booster pumps, condenser vacuum pumps/air ejectors, circulating water pumps, numerous BOP valves.

3. SSCs which could cause a safety system actuation:

Leak detection instrumentation, area radiation monitors, process radiation monitors, effluent radiation monitors. Numerous BOB SSCs which could interrupt feedwater flow.

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

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MEMORANDUM FOR: James H. Sniezek, Deputy Executive Director
for Nuclear Reactor Regulation Regional Operations
and Research
Office of the Executive Director for Operations

William T. Russell, Associate Director
for Inspection and Technical Assessment
Office of Nuclear Reactor Regulation

Jack Heltemes, Jr., Deputy Director
for Generic Issues and Rulemaking
Office of Nuclear Regulatory Research

Robert L. Baer, Chief
Engineering Issues Branch
Division of Safety Issues Resolution
Office of Nuclear Regulatory Research

FROM: Jack W. Roe, Director
Division of License Performance
and Quality Evaluation
Office of Nuclear Reactor Regulation

SUBJECT: A COMPARISON OF MAINTENANCE AND LICENSE RENEWAL RULES

During a recent staff briefing which included a comparison of the license renewal rule to the maintenance rule, we were asked to develop a discussion which addressed potential actions or activities that a licensee could take as part of its program to comply with the maintenance rule which could minimize future or additional actions which would be necessary if that licensee were to apply for a renewed license. Several aspects of both the maintenance rule (10 CFR 50.65) and the license renewal rule (10 CFR 54) are discussed in the enclosure. In general, many of the activities initiated to comply with the maintenance rule could be technically adequate to manage age-related degradation as required by the license renewal rule. However, since the license renewal rule requirements are significantly different than those contained in the maintenance rule, a licensee which complies with the maintenance rule would not, without additional action, meet the requirements of the license renewal rule. While the two rules are consistent, compliance with one rule does not, as has been suggested by several industry representatives, mean that the requirements of both rules have been met.

The staff has reviewed the maintenance and the license renewal rules in terms of each rule's objective, scope, and requirements. Based on the noted similarities and differences, the staff believes that a licensee considering license renewal could implement a maintenance program in accordance with 10 CFR Part 50.65 that would also address some of the requirements of the license renewal

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Multiple Addressee

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rule, 10 CFR Part 54. Such a maintenance program would have to include the Systems, Structures, and Components (SSCs) within the scope of the license renewal rule, and would have to include the detailed systematic assessment of the age-related degradation of SSC's important to license renewal, the Integrated Plant Assessment (IPA) described in 10 CFR Part 54.21. For example, the maintenance program would have to include "effective programs" (for each structure and component that could have age-related degradation unique to the period of extended operation) that, among other things, identify specific age-related degradation mechanisms, the extent of the degradation due to these mechanisms, the acceptance criteria against which the need for corrective action will be evaluated and provisions to ensure that timely corrective action will be taken when those acceptance criteria are not met. However, even if a maintenance program were so structured, it would not fulfill all of the requirements of 10 CFR 54.

Several licensees are developing programs described as life cycle management programs. Typically, these programs are intended to be an integrated approach to plant operation and include a broad spectrum of issues such as maintenance, procurement, equipment replacement, operations, and administrative controls. Such a life cycle management approach to implementing the maintenance rule could minimize subsequent efforts which would be necessary if the licensee decided to apply for a renewed license. The staff has recently met with one licensee that is developing such a program.

Activities are underway to expand our preliminary thoughts in the enclosure as to how a licensee could structure a review of its maintenance program to develop the required documentation for license renewal. Your thoughts on this preliminary assessment are requested. This package has been coordinated with RES and PDLR.

Jack W. Roe, Director
Division of Licensee Performance
and Quality Evaluation
Office of Nuclear Reactor Regulation

Enclosure:
As stated

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ENCLOSURE

REVIEW AND COMPARISON OF LICENSE RENEWAL AND MAINTENANCE RULES

Discussion

Since there are similarities between the two rules, a licensee could initiate actions as part of compliance with the maintenance rule which would reduce the potential future effort necessary to apply for a renewed license. As a practical matter, such an approach would focus on meeting the requirements of the renewal rule as part of the steps taken to comply with the maintenance rule. However, the requirements of the license renewal rule are significantly different than those contained in the maintenance rule. The area of similarity and potential confusion is focused on the licensee's maintenance programs and the technical adequacy of these programs to manage age-related degradation. Both rules contain language which includes a discussion of "effective programs". However, the license renewal rule contains a definition of effective programs which goes well beyond the technical adequacy aspects of an effective program as discussed in the maintenance rule.

While the rules are different, many aspects of the rules overlap and similarities were noted during the review. Similarities and overlaps between the two rules exist in numerous areas including: the scope, objectives, focus on effectiveness of the implemented programs, reviews and feedback mechanisms to modify the existing programs where change is needed, required evaluations of SSC degradation, root cause identification and corrective actions for unacceptable SSC performance. The technical aspects of ensuring equipment operability also have many similarities.

General Focus of Each Rule

The objective of the license renewal rule is to define the requirements which must be met in order for a licensee to receive a new license to operate a nuclear power plant beyond the 40-year limit of initial operating licenses. The license renewal requirements include a detailed systematic assessment, (i.e., an integrated plant assessment (IPA)) of systems, structures, and components (SSCs) important to license renewal. From the total list of SSCs identified as important to license renewal, the licensee is to identify those structures and components (SCs) both necessary to perform the required license renewal function and which could be subject to age-related degradation unique to license renewal. For those SCs important to license renewal with potential age-related degradation unique to license renewal, the licensee is to either (1) demonstrate that existing programs are adequate to manage age-related degradation or (2) provide new programs to manage the degradation and, thereby, to maintain the current licensing basis throughout the renewal term. It is important that the program address the age-related degradation mecha-

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nisms, the extent to which SSCs are degraded, and the programs established to mitigate the effects and manage these degradation mechanisms.

The objective of the maintenance rule is to continuously assess the effectiveness of maintenance activities by monitoring the condition or performance of certain SSCs against licensee-established goals in a manner which provides reasonable assurance that the SSCs will remain capable of performing their intended function. Other objectives are to: verify assumptions used in safety analysis and safety margins which exist due to redundancy are maintained or are not unacceptably degraded, minimize initiation of challenges to safety systems and balance the benefits gained from performing preventive maintenance with the risk derived from removing equipment from service.

Similarities of the Rules

(1) Scopes of the Rules

The SSCs within the scope of each rule are similar with some variation depending on the reactor and nuclear steam supply system type. The scope of each rule includes SSCs that are:

License Renewal Rule:

1. Safety Related
2. Non-Safety Related whose failure could prevent accomplishment of any safety related function
3. Addressed in Technical Specifications (LCOs)
4. Used for compliance with ATWS, EQ, Fire Protection PTS and SBO rules

Maintenance Rule:

1. Safety Related
2. Non-Safety Related
 - i. Addressed in EOPs and that mitigate accidents or transients,
 - ii. failure could prevent safety-related function,
 - iii. failure could cause scram or ESF actuation

The scope of the maintenance rule would include the additional balance of plant (BOP) SSCs which could cause a reactor scram or transients, and some BOP equipment included in emergency operating procedures (EOPs) that are not included in the scope of the license renewal rule. It could be expected that inherent within the maintenance rule scope are those license renewal SSCs that are relied on for Technical Specifications LCOs, Anticipated Transient Without Scram (ATWS), Environmental Qualification (EQ), Fire Protection, Pressurized Thermal Shock (PTS), and Station Blackout (SBO) considerations.

(2) Objectives of the Rules

The objectives of both rules include an evaluation of programs to assure that the current status of SSC degradation and the mechanisms of degradation and failure are well known and managed through an effective program which is capable of mitigating the degradation. In addition, based on an evaluation of

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this status, the SSC can be predicted to perform its intended function with confidence during a future period of time.

(3) Review and Feedback Mechanisms

Both rules require evaluations of program effectiveness as determined by the results of performance testing, condition monitoring, and trending activities (which are encouraged but not required). Based on the results of these reviews, program modifications are required to be implemented and follow-up actions are expected where weaknesses are noted. Root cause(s) of SSC inadequacies are encouraged to be determined during these evaluations and corrective actions are required to be taken to preclude recurrence.

(4) Use of Existing Programs

Both rules encourage monitoring for degradation through existing programs such as scheduled inspection and surveillance, condition monitoring, functional testing, and other existing programs.

Differences Between the Rules:

(1) Applicability to Plant Operation

The primary difference in the two rules is that the license renewal rule is two parts: requirements and processes to apply for and receive a new operating license, and operation during the renewal term. The maintenance rule focuses on operation, including operation during the renewal term.

(2) Objectives of the Rules

The license renewal rule requires a detailed systematic assessment of age-related degradation of SSCs important to license renewal and requires identification of additional actions, through existing or new programs, that manage aging. It focuses on maintaining the SSCs within the current licensing bases during the future period of extended operation. The maintenance rule focuses on ensuring reliability and availability of risk critical SSCs during the lifetime of the plant.

(3) Program-Versus Results-Based

The license renewal rule requires establishment and demonstration of effective programs which must ensure identification and mitigation of age-related degradation unique to license renewal (specific mechanisms and the extent) and contain acceptance criteria against which the need for corrective action will be taken when the criteria is not met. These programs must be implemented by operating procedures and reviewed by the Onsite Review Committee.

In this regard the maintenance rule is less restrictive. The focus of the maintenance rule is results oriented. A demonstration of the effectiveness of programmatic controls are not required until the results of the program indicates ineffectiveness (i.e. SSC failure or unacceptable degradation). The

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types or extent of control mechanisms used to maintain SSCs is not specified. Monitoring for early warning of degradation is encouraged but not required.

The license renewal rule requires the management of the effects of age-related degradation unique to license renewal with respect to the functions of SSCs important to license renewal. The license renewal rule requires that the effects of age-related degradation be evaluated and managed for each SSC which is important to license renewal. Those SSCs which are important to license renewal but which may be low contributors to risk must be included in the integrated plant assessment and any age-related degradation unique to license renewal managed. The maintenance rule statement of considerations encourages prioritizing licensee actions to maintain SSC condition, availability and reliability based on risk significance as determined through the use of approaches such as the PRA or other risk priority determinations. In this regard the licensee renewal is more restrictive.

Other Considerations

Each rule contains requirements that are unique to themselves. Some of these include the following:

Maintenance rule requires: Assessing the effects of the total plant equipment out of service on plant safety; incorporating industry-wide experience into goal setting criteria and taking industry-wide experience into account during plant assessments; and, balancing equipment availability with the objective of preventing failures.

License renewal rule requires: Justification of methods used to determine the identity of all SSCs important to license renewal and those that could be subject to age-related degradation unique to license renewal; identification and justification of any changes in the current licensing basis associated with age-related degradation unique to license renewal; and, a description of proposed plant modifications or administrative control procedures necessary to ensure that age-related degradation unique to license renewal is adequately managed during the renewal term.

Summary

Based on the noted similarities and differences, the staff believes that a licensee considering license renewal could implement a maintenance program in accordance with 10 CFR Part 50.65 that would also address the requirements of the license renewal rule 10 CFR Part 54. Such a maintenance program would have to include the Systems, Structures, and Components (SSCs) within the scope of the license renewal rule, and would have to address the detailed systematic assessment of the age-related degradation of SSC's important to license renewal by performing the Integrated Plant Assessment (IPA) described in 10 CFR Part 54.21. Our preliminary views are that (1) a preventive maintenance program under (a)(2) of the maintenance rule, which addresses each of the specified age related degradation mechanisms in the license renewal rule and is effective at preventing maintenance related failures or (2) an effective condition monitoring program under (a)(1) of the maintenance rule which addresses each degradation mechanism in the license renewal rule, would

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develop the information that could be used as part of the Integrated Plant Assessment for license renewal to justify that an SC would not have age related degradation unique to license renewal.

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NUCLEAR MANAGEMENT AND RESOURCES COUNCIL

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MAINTENANCE RULE QUESTIONS FOR COMMISSIONER CURTISS

1. Why do you feel that the NRC needed a rule?
2. What real safety issue provides the basis for the final rule?
3. Why the urgency to go to a final performance based rule rather than do a pilot (e.g. emergency diesel generators) first?
4. What is meant by licensee-established goals? How will an NRC inspector determine that the goals are sufficient "to provide reasonable assurance that structures, systems, and components are capable of fulfilling their intended functions?" *3 - Consistency w/ PRA / consistent w/ assumptions made on codes industry operating experience*
5. How does the Commission plan to assure consistency in interpretation of this regulation between regions, project managers, and inspectors? *Hands-on Commission involvement*
6. What enforcement mechanisms do you envision once the rule is fully implemented? *Not enforcing to a goal - focus is on response to indicators of problems*
7. How will the NRC judge the SSC's selected by the licensees? *license renewal - PRA*
8. Once goals are selected, why would they change? (e.g. EDG reliability = 0.95) Why do they need to be reviewed annually? *Feedback is to lead to adjusting of maint program*
9. What is the scope of use of industry-wide operating experience? *NPRDS, Survey/Millstone, shaft cracking of RCPs - Crystal River*
10. How does the licensee or the NRC inspector conclude that an acceptable balance is struck between preventing failures and minimizing unavailability of equipment? *We need*
11. Could a licensee choose to monitor unplanned automatic scrams rather than establishing goals for systems or subsystems that could cause a scram? *yes but the risk. See the SOC*
12. The rule appears to indicate that zero failures will be tolerated and that a reactor scram or initiation of a safety system is a safety problem. Is this right? What is the basis for the conclusion? *certain not one -*
13. Isn't the term "a maintenance preventable failure" almost boundless? *limited to critical components*
14. Why were both reliability and availability utilized in the rule? What is the relationship between reliability and availability to reasonable assurance? *EDGs -*
15. Is there a need for an associated Regulatory Guide? What do you see being included in the Regulatory Guide?

7/19/91

Reasonable
presumed
all discussed
in development
of the rule

3 points -
4: below

any fatal
issues?

cf. EDGs
NRC-established

not
unique
to rule

Inter-
System
Local
Survey
Ppe
cf. 5.6.5

-SRM

How would you
ensure consistency
application of
the P.S.

Feedback is to lead to
adjusting of maint program

Pinning DGs
to death -
GG?

certain not
one -

EDGs -

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