



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

November 30, 1990

Docket No. 50-416

FACILITY: Grand Gulf Nuclear Station, Unit 1

LICENSEE: Entergy Operations, Inc.

SUBJECT: SUMMARY OF NOVEMBER 6, 1990 MEETING REGARDING LICENSING ACTIONS

A meeting was held at the NRC offices in Rockville, Maryland, to discuss potential changes to the Technical Specifications (TS) for Grand Gulf Nuclear Station (GGNS). The following potential TS changes were discussed: secondary containment requirements when handling loads over spent fuel during cold shutdown and refueling; standby liquid control system poison concentration; increased cooling capacity to accommodate a full spent fuel storage pool; limitations on using the containment purge system during power operation, startup and hot standby; requirements for dewatering wells to maintain ground water level below the level assumed in design basis structural analyses; control room emergency filtration system isolation requirements; and additional pending and future licensing actions. Enclosure 1 is a list of attendees. Enclosure 2 is a handout prepared by the licensee.

Secondary containment requirements

The NRC staff summarized the status of review of the January 26, 1989 proposed change to the operating license (PCOL) regarding requirements for secondary containment when handling loads over spent fuel during plant outages. For Operational Condition (OC) 4, Cold Shutdown and OC 5, Refueling, the GGNS Technical Specifications (TS) require secondary containment when handling irradiated fuel in the primary or secondary containment, but do not require containment when handling new fuel or other loads weighing less than 1140 pounds (light loads) over spent fuel. The TS prohibit movement of loads in excess of 1140 pounds (heavy loads) over fuel in the upper containment fuel pool or the spent fuel pool, but there is no restriction on the movement of heavy loads over fuel in the reactor.

LER 88-016, dated October 21, 1988, identified this deficiency in the TS. The fuel handling accident analyzed in the FSAR assumes there is secondary containment. If the loads identified above are postulated to be dropped without secondary containment, the calculated offsite dose consequences are not bounded by the previously analyzed accident. The Standard Review Plan Section 15.7.4 gives an acceptance criterion for "the plant site and dose mitigating ESF systems" during a postulated fuel handling accident as offsite dose consequences equal to or less than 25% of the guideline values in 10 CFR Part 100. The load drop accidents without containment could result in doses exceeding this criterion.

As a corrective measure, the licensee proposed TS changes to require secondary containment in OC 4 and OC 5 when loads are carried over spent fuel. However, the proposed "specifications" stated containment would be required "when

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handling loads which must be postulated to drop and could subsequently result in offsite dose consequences exceeding 25% of 10 CFR Part 100 dose limits." The submittal described the results of calculations which showed that loads having a potential energy greater than 17,000 foot-pounds could, if dropped on spent fuel without secondary containment, have offsite dose consequences greater than 25% of 10 CFR Part 100. The staff suggested that a specific number (e.g., 17,000 foot-pounds) be used in the TS in lieu of the general acceptance criterion. The limiting parameter in a TS should be specific and one which can be measured (load weight and height).

The licensee has put administrative controls in place to assure that loads having a potential energy greater than 17,000 foot-pounds are not handled over spent fuel without secondary containment integrity, until TS are issued (LER 88-016, Revision 1, February 1, 1989). The revised LER 88-016 describes these controls, which use the calculated limiting potential energy to specify when containment is required.

The staff advised the licensee of the unsatisfactory aspects of the proposed TS shortly after they were submitted in February 1989. In meetings with the licensee on May 18 and June 22, 1989, the proposed specifications were discussed. As noted in the June 22, 1989 meeting, the licensee agreed to revise its proposed TS to use the 17,000 foot-pound limit rather than 25% of 10CFR Part 100. The staff requested this change by letter dated March 29, 1990. However, when the revised TS change was submitted on May 4, 1990, it contained the general criterion rather than the specific limit.

The licensee summarized its positions regarding the handling of light loads over spent fuel during plant shutdown and refueling outages as indicated in Enclosure 2, Sheets 1-3. The licensee wants to use the general criterion rather than the specific limit because this would allow flexibility to change the 17,000 foot-pound limit presently calculated. The staff indicated, however, that changes to the limit should not be made without prior NRC review and approval because this parameter determines when equipment needed to mitigate a design basis fuel handling accident is required to be operable (secondary containment).

With regard to the licensee's summary statement that "no technical issues have been raised" the staff said it planned to review the licensee's offsite dose consequence analyses which resulted in the 17,000 foot-pound specification when submitted, but there is presently no formal submittal.

The staff said it would consider the licensee's positions as stated in the meeting and advise the licensee of its conclusion. Subsequent to the meeting the staff advised the licensee that a specific limit should be used in the TS.

Standby liquid control system (SLCS) poison concentration

The NRC staff summarized the status of review of the June 19, 1989 proposed change to the operating license regarding the specification of acceptable concentrations of sodium pentaborate (neutron poison) in the SLCS. In an August 1988 Safety System Functional Assessment for the SLCS, the licensee identified a concern regarding the specification of sodium pentaborate minimum volume requirements. The present specification requires a minimum volume of 4530 gallons; however, at the minimum allowable poison concentration (13.6%) the minimum volume should be 4808 gallons in order to inject the design total amount of sodium pentaborate into the core (5803 pounds). The corrective action for this concern was a June 19, 1989 submittal requesting a TS change. The NRC staff considered the proposal to be essentially acceptable except for two areas; the proposed figure showing the acceptable solution concentrations and volumes did not show acceptable temperatures, and the requirement for heat tracing circuits on the pump suction piping had been deleted. The staff requested additional information addressing these areas by letter dated March 29, 1990. The licensee provided a revised application by letter dated May 31, 1990, which provided an acceptable temperature range on the figure showing concentration and volume requirements and restored requirements for heat tracing. In addition, the revised application added two new action statements to specify actions for inoperable heat tracing and sodium pentaborate concentrations greater than the specified maximum value, using the original figure which indicated acceptable concentrations up to about 30% at 130 degrees Fahrenheit. In a June 15, 1990 meeting, the staff questioned why the original figure had been put back in the proposed TS change and indicated it was confusing to have two figures showing acceptable concentrations and temperatures which were not consistent with one another.

The licensee summarized its May 31, 1990 submittal as indicated in Enclosure 2, Sheets 4-13. The staff said they would consider the information provided in this meeting and give its conclusions regarding proposed TS changes in the meeting summary. Following are staff conclusions:

Proposed Figure 3.1.5-2 (Sheet 6, Enclosure 2) - Acceptable temperature range (75-130 degrees F) should be retained and the abscissa should be changed to read "NET TANK VOLUME BASED ON 90 degrees F."

Proposed ACTION 3.1.5.c.1 - This ACTION statement should be changed to add an allowed outage time of 8 hours.

Proposed ACTION 3.1.5.d.1 and Figure 3.1.5-1 - Figure 3.1.5-1 should be changed to provide only the sodium pentaborate solution minimum temperature (saturation temperature plus a margin) versus concentration. The proposed ACTION should be changed to add the requirement that the solution temperature be raised above the minimum temperature of Figure 3.1.5-1 within eight hours if measurements show it to be less than the minimum temperature. In addition the allowed outage time for the solution concentration to be greater than 15.2% should be changed from 72 hours to 24 hours. An evaluation should be made to determine the maximum concentration

and minimum temperature to be allowed in the storage tank to assure that the required quantity of sodium pentaborate (5803 pounds) would be injected into the reactor, if SLCS is actuated when in the ACTION, taking into account precipitation in (1) the pump suction piping which is maintained at or above 75 degrees F by heat tracing, and (2) the pump discharge piping which is partly at the ambient temperature of the containment and partly at the ambient temperature of the drywell. The maximum concentration should be limited to a value that could be injected without excessive precipitation of the sodium pentaborate in the suction or discharge piping.

Heat tracing operability (Enclosure 2, Sheet 12) - The licensee indicated in this meeting that it planned to withdraw the changes proposed in the May 31, 1990 submittal regarding the requirements for heat tracing to be operable in all operational conditions when sodium pentaborate is in the storage tank. The staff understands that the original TS regarding heat tracing would be retained, including Surveillance Requirements (SR) 4.1.5.a.3 and 4.1.5.d.3 with footnote **. The staff agrees, but believes the specification of determining operability by measuring power availability to heat tracing circuitry as proposed in Insert C of the May 31 proposal is desirable.

Spent fuel storage capacity restriction

The staff summarized the status of review of this issue. When the high density spent fuel racks were approved (Operating License Amendment No. 17, August 17, 1986), storage was restricted to 2324 fuel assemblies out of the total spaces available (4348) because of inadequate cooling capacity. The licensee committed to propose an acceptable engineering solution by the third refueling outage and to implement it by the fifth refueling outage. By letter dated April 27, 1989, the licensee proposed to supplement the fuel pool cooling and cleanup (FPCC) system with the residual heat removal (RHR) system for the first 35 days after shutdown when fuel is unloaded from the core. The staff advised the licensee this would not meet acceptance criteria in the Standard Review Plan (SRP) which are based on the assumption that the spent fuel pool cooling system by itself will perform this safety function. In a February 15, 1990 meeting, the licensee proposed the use of one FPCC pump and both heat exchangers to meet the SRP criteria. The licensee will make a single failure analysis to assure adequate cooling assuming the worst single failure.

The licensee said the proposed solution is scheduled for submittal in February 1991. The submittal will include an application to change the TS to permit storage of more than 2324 fuel assemblies, up to the full capacity. The staff said this submittal date should allow ample time for review prior to the time it will be needed (After the fifth refueling outage - June 1992).

Limitations on use of containment purge system

The NRC staff summarized the status of review of this item. Limitations on the use of the containment purge system during power operation was identified as an open issue in the operating license review by License Condition 2.C.(16) which

required that prior to startup, following the first refueling outage, the licensee must provide an evaluation of the need to use the containment purge based on data obtained during the first fuel cycle. The licensee provided this report by letter dated October 3, 1986; however, the licensee considered the data to be inconclusive because reactor coolant activity and leakage was low during the first fuel cycle. The licensee proposed to continue to obtain data in the second fuel cycle. Cycle 2 data were reported by letter dated December 31, 1987. Proposed revisions to the containment purge TS were provided by letter dated December 6, 1988. The staff is preparing a Safety Evaluation Report (SER) and the licensee has committed to submit an application to amend the TS within 120 days following issuance of the SER.

The staff gave the following summary of its review to date:

The proposed replacement of the present TS limitation of using the containment 1000 hours per year with a general statement of permissible uses does not appear to be satisfactory. As an alternative, it is suggested that a specific statement of safety-related uses be included either in the TS or Bases. The criteria developed by the licensee based on data gathered during fuel cycle 2, appear to be relevant except for the criteria to maintain acceptable humidity and air temperature in the containment. These two uses are not safety-related and it was shown by test data that the containment purge system is not needed for these purposes (Licensee letter dated May 22, 1987).

The proposed deletion of SR 4.6.1.9.1 which requires determination of the cumulative time that the containment purge isolation valves have been open during the past 365 days is not acceptable; however, the interval for making this determination may be increased to, e.g., 92 days.

Requirements for dewatering wells

The design basis ground water level at Grand Gulf Nuclear Station is 109 feet above mean sea level (msl). Dewatering wells were installed in 1979 and 1980 to control ground water level in the power block area to less than the design basis level. Monitoring wells were also installed. In 1984 the licensee reported that the level exceeded the design basis level by 1.2 feet. The licensee calculated that ground water levels up to 114.5 feet msl would not compromise the structural integrity of the buildings. The licensee committed to retain dewatering capability for Units 1 and 2 until the Unit 2 excavation is backfilled, the clay seal completed, and a post-construction ground water level data base is obtained.

The staff Safety Evaluation of this issue was transmitted to the licensee by letter dated August 19, 1985. A report on the final projection of the maximum post-construction ground water level and resolution of excessive water levels was required by December 1990. Water levels that exceeded design ground water level were required to be reported to the NRC. Several excessive levels have been reported, the most recent being 13.3 feet. Most of these occur when the

dewatering well pump is not running for some reason. The licensee was requested to consider TS requirements for dewatering wells if they are needed to keep the ground water level within the level assumed in seismic analyses.

The licensee said it is preparing the requested report for submittal in December 1990.

Control room emergency filtration system (CREFS) isolation valves

In an October 23, 1990 meeting, the staff discussed the licensee's proposed TS change to identify six air-operated isolation valves in the CREFS TS which close in 4 seconds, and not identify the two fresh air inlet valves which are normally closed motor operated valves and close in about 75 seconds. These valves receive a LOCA signal to keep them closed for 10 minutes and are opened intermittently following an accident to maintain breathing air quality for the design basis 30 days. In effect, not identifying the fresh air inlet valves would remove them from the TS. Periodic tests of the valves would be in accordance with the GGNS Inservice Testing Program. In the October 23 meeting, the staff indicated that whether the valves should remain in the TS should depend on whether dose analyses showed that control room doses meet regulatory criteria assuming fresh air inlet valves do not close.

The licensee provided results of dose analyses assuming fresh air valves are open (Enclosure 2, Sheets 17 to 20). Results indicated that an intermittent or continuously open valve would result in control room doses less than the design basis case of unfiltered in-leakage.

The staff questioned whether leaving the present TS stand would not achieve the same result as the proposed change, since the licensee plans to change the Updated Final Safety Analysis (UFSAR) to delete the fresh air inlet valves from the table which presently lists them as isolation valves. The licensee will consider withdrawing the TS change request.

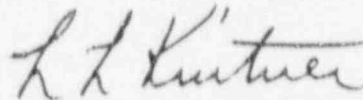
Pending and future licensing actions

Pending licensing actions are listed on Sheet 21 of Enclosure 2. The staff gave the following target dates for completion of the licensing actions:

- Reactor vessel pressure-temperature limits - 11/26/91
- Reactor water cleanup system isolation - 12/14/91
- Vice President title change - 12/31/90
- Fire protection (GL 88-12) - 3/30/91

The licensee said it planned to put the fire protection requirements into the UFSAR in December 1990 in preparation for removal of these requirements from the TS whereas the amendment to change the TS is scheduled for March 1991. The staff said in this case the TS would take precedence over the requirements in the UFSAR.

Future licensing actions are listed on Sheet 22 of Enclosure 2. The staff indicated that the proposed submittals would be assigned priorities and that some of them may have a long review interval. For example, from discussion of item 5, the licensee indicated it planned to request deletion of the table of isolation valves from the TS. Since this improvement has not been reviewed and approved generically, the staff indicated that this plant specific request would be processed following generic considerations.



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REGARDING
LICENSING ACTIONS FOR THE GRAND GULF NUCLEAR STATION

ENTERGY OPERATIONS, INC.

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J. Fowler, Supervisor of Plant Licensing
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S. Chan, Civil Engineer, Structural and Geosciences Branch, DET

HANDLING OF LIGHT LOADS

ISSUES

- FINAL WORDING OF THE TECH SPEC
- NO TECHNICAL ISSUES IDENTIFIED

BACKGROUND

- GGNS IDENTIFIED IN JULY, 1988 A CONDITION WHICH WOULD HAVE ALLOWED THE MOVEMENT OF NEW FUEL ASSEMBLIES OVER THE SPENT FUEL POOL WITHOUT SECONDARY CONTAINMENT
- THE UFSAR FUEL HANDLING ACCIDENT ASSUMED THAT SECONDARY CONTAINMENT WAS AN INITIAL CONDITION OF THE FUEL HANDLING ACCIDENT. FURTHER INVESTIGATION REVEALED OTHER "LIGHT LOADS" THAT, IF DROPPED WHILE BEING TRANSPORTED OVER IRRADIATED FUEL, MIGHT RESULT IN OFF-SITE DOSES THAT EXCEED THOSE POSTULATED FOR A FUEL HANDLING ACCIDENT.
- TECHNICAL SPECIFICATION RESTRICTED ONLY THE MOVEMENT OF IRRADIATED FUEL OR OTHER LOADS IN EXCESS OF 1140 LBS.
- LER 88-16 WAS WRITTEN AND OTHER GE PLANTS WERE ADVISED OF THE CONDITION THROUGH THE BWR OWNERS GROUP
- GE ISSUED A PRC IN OCTOBER, 1988 TO NOTIFY OTHER PLANTS OF THE POTENTIAL CONDITION; THE EVALUATION FOUND IT NOT TO BE REPORTABLE UNDER PART 21.
- TECH SPEC CHANGES WERE FILED IN JANUARY, 1989 AS FINAL CLOSURE FOR THE ISSUE

(1)

HANDLING OF LIGHT LOADS (CONT)

o CORRECTIVE ACTIONS

- TECHNICAL SPECIFICATION POSITION ISSUED
- PROCEDURES REVISED
- TECH SPEC CHANGES PROPOSED
- STAFF FEEDBACK:
 - 1) PROPOSED TS FOOTNOTE NEEDED TO BE SPECIFIC AND NOT JUST STATE THE ACCEPTANCE CRITERIA, AND
 - 2) THE PROPOSED TS FOOTNOTE SHOULD BE EASY FOR PLANT OPERATORS TO UNDERSTAND
- SECOND SUBMITTAL ALTHOUGH USING LESS SPECIFIC TERMINOLOGY:
 - 1) IS BELIEVED TO BE MORE "USER FRIENDLY" BY THE OPERATIONS STAFF
 - 2) IS CONSISTENT WITH THE APPROACH TAKEN IN THE IMPROVED TECHNICAL SPECIFICATIONS
 - 3) IS CONSISTENT WITH THE OVERALL APPROACH TO REMOVE CYCLE SPECIFIC VALUES FROM THE TECH SPECS
 - 4) ALLOWS REFINEMENT IN THE CALCULATIONS LEADING TO MORE OPERATING FLEXIBILITY IN THE FUTURE
- GGNS CONTINUED TO WORK WITH THE TECH SPEC BRANCH THROUGH THE TECH SPEC IMPROVEMENT PROGRAM TO REACH GENERIC RESOLUTION ON THE ISSUE

HANDLING OF LIGHT LOADS (CONT)

SUMMARY

- CONDITION WAS SELF IDENTIFIED; TIMELY CORRECTIVE ACTIONS WERE TAKEN

- PRUDENT AND SUFFICIENT STEPS HAVE BEEN TAKEN AT THE PLANT TO ASSURE THAT PLANT CONDITIONS ARE MAINTAINED CONSISTENT WITH THE ASSUMPTIONS OF THE FUEL HANDLING ACCIDENT ANALYSIS

- FOR NEARLY TWO YEARS, THE ONLY AREA OF DISAGREEMENT WITH NRR APPEARS TO BE THE WORDING OF THE TECH SPEC - GENERAL vs SPECIFIC; NO TECHNICAL ISSUES HAVE BEEN RAISED

- GGNS HAS WORKED WITH THE BWROG AND THE TECH SPEC BRANCH IN REACHING RESOLUTION THROUGH THE IMPROVED TECHNICAL SPECIFICATION PROGRAM

- REASONABLE EFFORT HAS BEEN MADE TO ACHIEVE CLOSURE OF THIS ISSUE

- WE BELIEVE THAT OUR CURRENT SUBMITTAL IS CONSISTENT WITH THAT RESOLUTION REACHED WITH THE TECH SPEC BRANCH AND SHOULD BE APPROVED

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STANDBY LIQUID CONTROL SYSTEM

- o CURRENT TECH SPECS ARE ADEQUATE
 - PRECIPITATION PREVENTED
 - ATWS REQUIREMENTS SATISFIED

- o PROPOSED CHANGES ARE ENHANCEMENTS TO IMPROVE SLCS OPERATIONAL READINESS

- o NO SAFETY ISSUES IDENTIFIED

STANDBY LIQUID CONTROL SYSTEM (CONTINUED)

o BACKGROUND

- GGNS PERFORMED SLCS SSFA IN AUGUST 1988
 - SSFA IDENTIFIED TWO POTENTIAL TECH SPEC IMPROVEMENTS
 - HEAT TRACING OPERABILITY VERIFICATION
 - PROBABILITY OF PRECIPITATION IN BETWEEN TEMPERATURE SURVEILLANCES
- GGNS SUBMITTED PROPOSED TECH SPEC CHANGES JUNE 1989
- NRC REQUESTED ADDITIONAL INFORMATION MARCH 29, 1990
- GGNS RESUBMITTED TECH SPEC CHANGES MAY 1990
- NRC PROVIDED COMMENTS ON RESUBMITTAL JULY 1990
 - TEMPERATURE RANGE SPECIFIED ON PROPOSED FIGURE 3.1.5-2 DOES NOT MATCH MINIMUM VOLUMES SHOWN
 - PROPOSED ACTION 3.1.5.d.1 AND FIGURE 3.1.5-1 SHOULD BE WITHDRAWN DUE TO LACK OF SUFFICIENT JUSTIFICATION

STANDBY LIQUID CONTROL SYSTEM (CONTINUED)

- o PROPOSED FIGURE 3.1.5-2
 - CURRENTLY STATES TEMPERATURE RANGE OF 75°F-130°F
 - FIGURE BASED ON NOMINAL 90°F SOLUTION TEMPERATURE SPECIFIED BY GE DESIGN SPECIFICATION
 - LEVEL/VOLUME INSTRUMENTATION CALIBRATED TO 90°F NOMINAL SOLUTION TEMPERATURE
 - TEMPERATURE AFFECTS MINIMUM VOLUME REQUIRED
 - GGNS PROPOSAL
 - REMOVE 75°F-130°F NOTE FROM FIGURE
 - REVISE BASES TO STATE FIGURE BASED ON 90°F NOMINAL SOLUTION TEMPERATURE

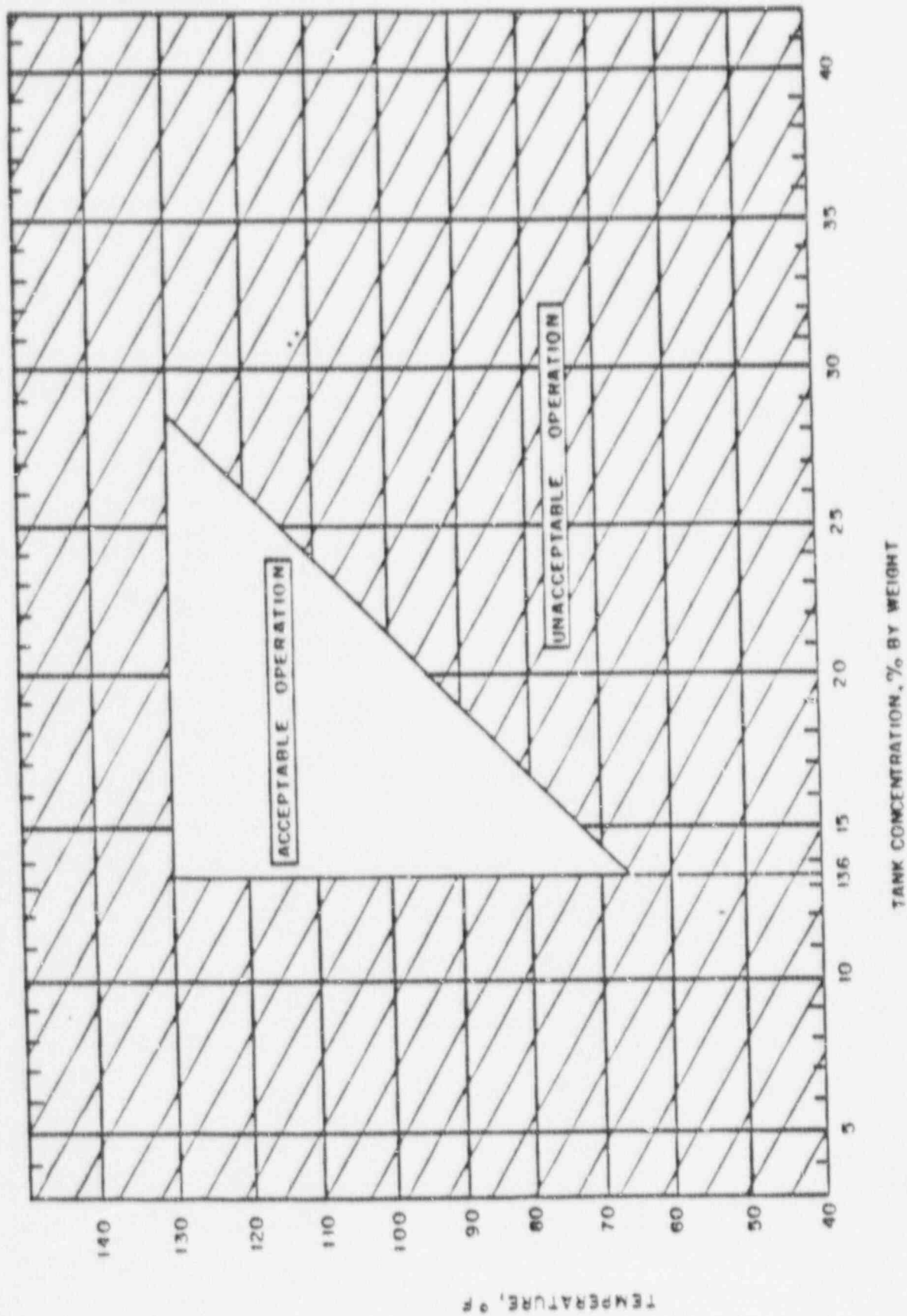


FIGURE 3.1.5-1 SODIUM PENTABORATE SOLUTION TEMPERATURE/CONCENTRATION REQUIREMENTS

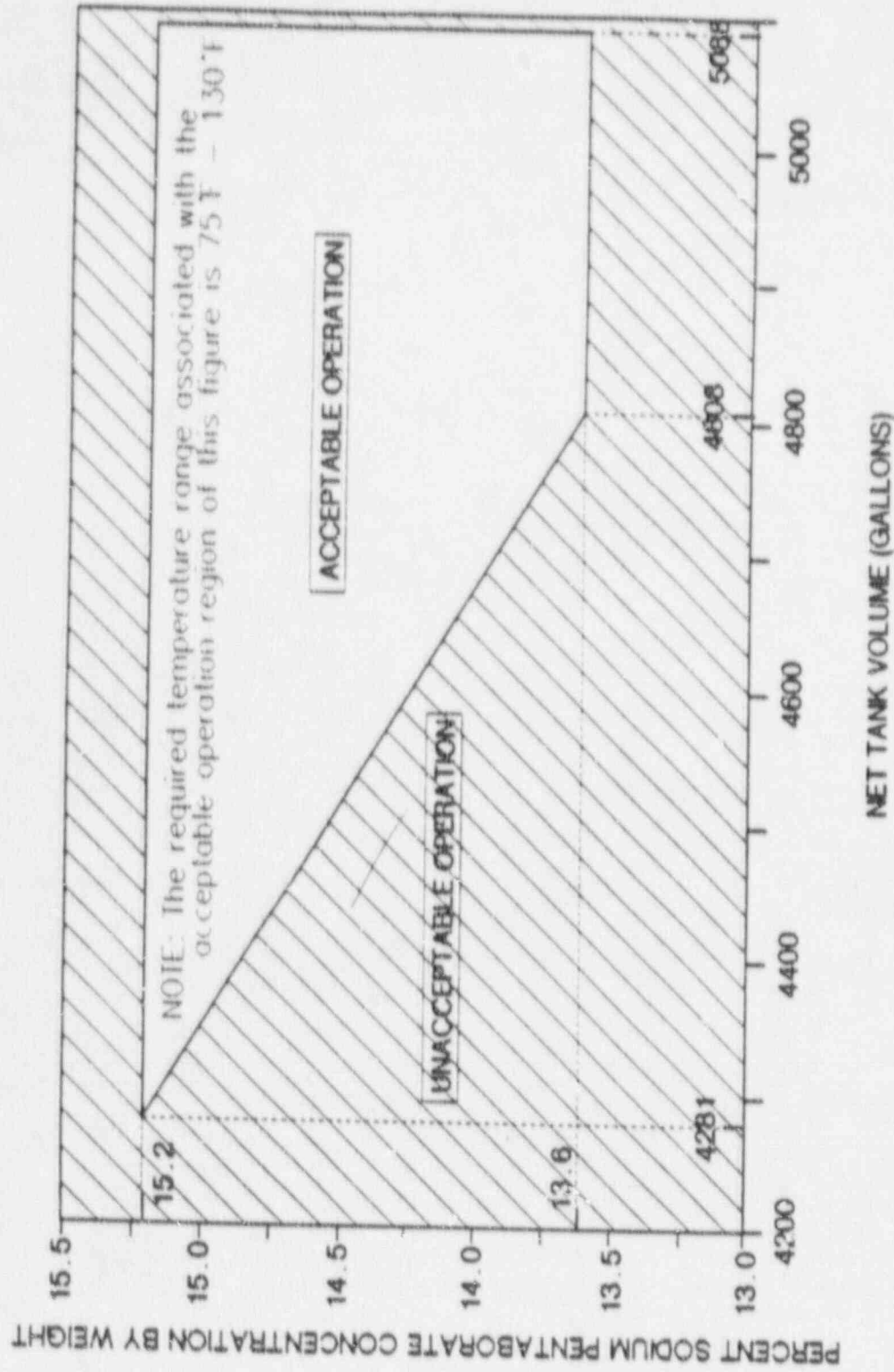
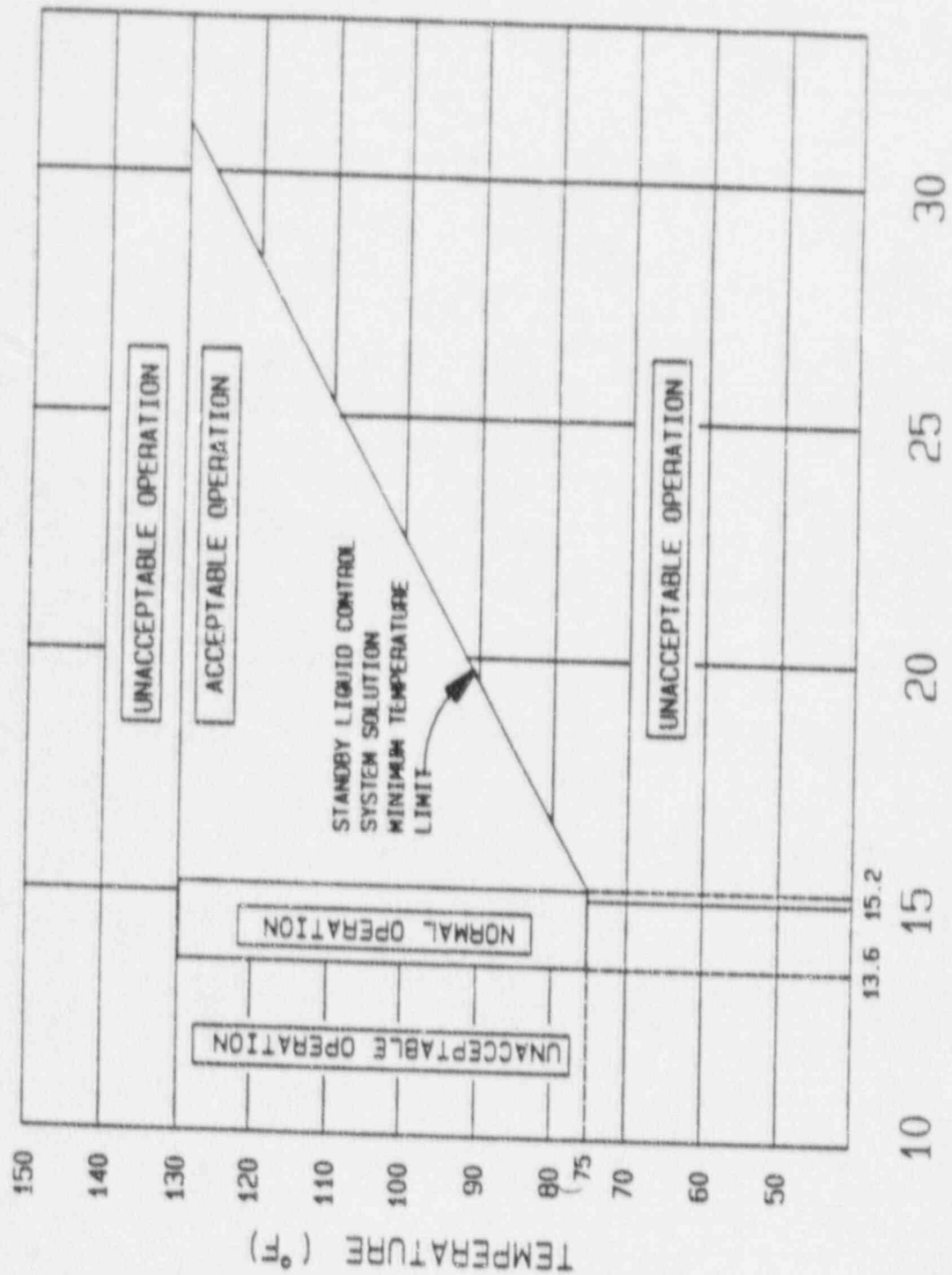


FIGURE 3.1.5-2
SODIUM PENTABORATE SOLUTION CONCENTRATION/AVAILABLE VOLUME REQUIREMENTS

②

STANDBY LIQUID CONTROL SYSTEM (CONTINUED)

- o PROPOSED ACTION 3.1.5.d.1 AND FIGURE 3.1.5-1
 - CURRENT TECH SPEC FIGURE 3.1.5-1 ALLOWS WIDE RANGE OF TEMPERATURE VS. CONCENTRATION
 - PROPOSED FIGURE 3.1.5-2 RESTRICTS CONCENTRATION TO 13.6-15.2% IN A 75°F-130°F TEMPERATURE BAND
 - NARROWER CONCENTRATION BAND IS MORE DIFFICULT TO MAINTAIN
 - 13.6% IS ATWS LIMIT
 - 15.2% IS MINIMUM TEMPERATURE (75°F) PRECIPITATION LIMIT (70°+5° MARGIN)
 - CURRENT TECH SPEC ALLOWS 8 HOURS TO RESTORE CONCENTRATION TO ACCEPTABLE LIMITS OR PLANT SHUTDOWN REQUIRED



SODIUM PENTABORATE SOLUTION TEMPERATURE/CONCENTRATION REQUIREMENTS
 CONCENTRATION (% BY WEIGHT)
 FIGURE 3.1.5-1

STANDBY LIQUID CONTROL SYSTEM (CONTINUED)

- PROPOSED ACTION AND FIGURE 3.1.5-1 ADDS ADDITIONAL RESTRICTIONS
 - TEMPERATURE SURVEILLANCE EVERY 4 HOURS VS. 24 HOURS
 - MUST RESTORE WITHIN 72 HOURS
 - SATURATION TEMPERATURE MARGIN MAINTAINED
- RESTRICTION OF 72 HOURS BASED UPON
 - DIFFICULTY OF RESTORING CONCENTRATION
 - SAFETY ANALYSES ALLOW UNLIMITED TIME
- GGNS PROPOSAL
 - RELABEL "ACCEPTABLE OPERATION" REGION TO "LIMITED OPERATION"
- NRC SHOULD APPROVE REQUEST AS REVISED

STANDBY LIQUID CONTROL SYSTEM (CONTINUED)

o HEAT TRACING

- CURRENT TECH SPEC REQUIRE HEAT TRACING OPERABLE WHEN SLCS IS REQUIRED
- NRC REQUESTED HEAT TRACING BE OPERABLE AT ALL TIMES REGARDLESS IF SLCS IS REQUIRED
- GGNS PROPOSED TECH SPEC CHANGES IN MAY 1990 SUBMITTAL TO ADDRESS
 - ADDED REQUIREMENT FOR HEAT TRACING TO BE OPERABLE WHENEVER SOLUTION IN SLCS TANK
 - ADDED ACTION AND SURVEILLANCE TO ADDRESS HEAT TRACING WHEN SLCS NOT REQUIRED OPERABLE
- UPON FURTHER REVIEW GGNS IS WITHDRAWING PROPOSED CHANGES
 - INCONSISTENT WITH TSIP
 - INCONSISTENT WITH REST OF TECH SPEC (UNUSUAL TO REQUIRE OPERABILITY WHEN SLCS NOT REQUIRED)
 - GENERIC TO ALL BWRS

STANDBY LIQUID CONTROL SYSTEM (CONTINUED)

o SUMMARY

- GGNS CURRENT TECH SPEC ENSURE SAFE OPERATION
- PROPOSED CHANGES ARE ENHANCEMENTS (ADDITIONAL RESTRICTIONS NOT REQUIRED BY TECH SPECS OR SAFETY ANALYSES)
- GGNS WILL RESUBMIT TECH SPEC PROPOSAL TO REFLECT TODAY'S PROPOSALS

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SPENT FUEL STORAGE CAPACITY RESTRICTION

o BACKGROUND

- HISTORY

- PCOL SUBMITTED ON HIGH DENSITY SPENT FUEL STORAGE RACKS MAY 6, 1985
- OL AMENDMENT 17 ISSUED AUGUST 18, 1986, LICENSING HIGH DENSITY SPENT FUEL STORAGE
 - TECH SPEC 3/4.7.9 - SPENT FUEL STORAGE POOL TEMPERATURE (140°F)
 - TECH SPEC 5.6.3 - FUEL STORAGE CAPACITY (SFP RESTRICTED TO 2324 OF 4348 ASSEMBLIES)
- COMMITTED TO DEVELOPE ENGINEERING SOLUTION PRIOR TO STARTUP FROM SHUTDOWN TO BRING SPENT FUEL POOL COOLING CAPABILITY INTO CONFORMANCE WITH SRP REQUIREMENTS FOR THE PHYSICAL LIMIT OF HIGH DENSITY SPENT FUEL RACKS (4348 ASSEMBLIES)

- PROPOSED SOLUTION

- GGNS PROPOSED SOLUTION AT RF03 (AECM-89/0029, APRIL 29, 1989)
 - ONE FPC TRAIN/SSW PROVIDES ADEQUATE COOLING AFTER OUTAGE DAY 35
 - COMMITMENT TO RHR ASSIST TO FUEL POOL COOLING WHEN NEEDED THROUGH OUTAGE DAY 35
 - NRC FEEDBACK RECEIVED FROM LPM
 - DISCUSSED ROLE OF RHR ASSIST TO FUEL POOL COOLING
 - REQUESTED "DEDICATION" OF RHR ASSIST DURING FIRST 35 DAYS OF OUTAGE

SPENT FUEL STORAGE CAPACITY RESTRICTION (CONTINUED)

o BACKGROUND (CONTINUED)

- FEBRUARY 15, 1990 NRC/GGNS MEETING

• MEETING PURPOSE

- TO PROPOSE A SPENT FUEL COOLING SOLUTION WHICH WILL ALLOW REMOVAL OF THE HIGH DENSITY SPENT FUEL STORAGE RACK TECH SPEC RESTRICTION
- TO DISCUSS THE ROLE OF RHR ASSIST TO SPENT FUEL COOLING

• GGNS PROPOSAL

- USE ONE FPC PUMP/2HX CONFIGURATION
- ANALYSIS SHOWS THE ONE FPC/2HX/SSW SPENT FUEL COOLING CONFIGURATION WILL REMOVE EXPECTED DECAY HEAT LOADS FOR HIGH DENSITY SPENT FUEL RACK STORAGE
- RHR ASSIST TO SPENT FUEL COOLING NEED NOT BE "DEDICATED"
- SUBMIT PCOL TO REMOVE TECH SPEC RESTRICTION (TECH SPEC 5.6.3)

SPENT FUEL STORAGE CAPACITY RESTRICTION (CONTINUED)

o BACKGROUND (CONTINUED)

- AGREEMENTS REACHED
 - GGNS TO RESUBMIT PROPOSED SPENT FUEL COOLING SOLUTION (ONE FPC PUMP/2HX/SSW)
 - RESUBMITTAL TO ADDRESS NRC FEEDBACK
 - MAXIMUM SSW WATER TEMPERATURE USED IN ANALYSIS
 - HX FOULING FACTORS AND TUBE PLUGGING FACTORS
 - SINGLE FAILURE
 - RESUBMITTAL TO INCLUDE TECH SPEC CHANGE TO INCREASE FUEL STORAGE CAPACITY FROM 2324 TO 4348

o CURRENT STATUS

- RESUBMITTAL UNDER PREPARATION
- RESUBMITTAL TO ADDRESS NRC FEEDBACK RECEIVED TO DATE
- DUE TO COMPLEX NATURE OF THE ISSUE GGNS IS TAKING MEASURED/CAREFUL APPROACH TO RESUBMITTAL
- RESUBMITTAL RECEIVING LOW PRIORITY STATUS DU

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30 DAY CONTROL ROOM DOSES

- o QUESTIONS FROM 10/23 MEETING
 - DO DOSE CALCULATIONS ASSUME OPENING CONTROL ROOM MAKEUP EVERY 72 HOURS FOR 2 HOURS?
 - DOSE CONSEQUENCES OF MAKEUP VALVE FAILURE TO CLOSE?

- o ANSWERS
 - DOSE CALCULATIONS ASSUMED EARLIER AND MORE FREQUENT OPENING
 - CONTROL ROOM DOSE IS MAXIMIZED BY ASSUMING NO MAKEUP - I.E. UNFILTERED INLEAKAGE IS PRIME CONTRIBUTOR TO DOSE

30 DAY CONTROL ROOM DOSES

o TWO CASES TYPICAL OF CALCULATIONS:

1. WITH MAKEUP

- FILTERED AIR MAKEUP AFTER 30 HRS. FOR 30 MIN. AND EVERY 10 HRS. FOR 30 MIN. THEREAFTER
- DURING 10 HRS. ISOLATION, ALL INLEAKAGE (590 CFM) IS UNFILTERED
- DURING .5 HR. MAKEUP, ALL INLEAKAGE (4000 CFM) IS UNFILTERED

2. WITHOUT MAKEUP

- THROUGHOUT 720 HR. PERIOD ALL INLEAKAGE (590 CFM) IS UNFILTERED

30 DAY CONTROL ROOM DOSES

o RESULTS (REM):

	<u>THYROID</u>	<u>WHOLE BODY</u>
WITH MAKEUP	24.06	0.62
WITHOUT MAKEUP	23.82	0.62

o COMPUTER CODE LIMITATIONS SKEW RESULTS

- 40 TIME STEP LIMIT
- "WITH MAKEUP" CASE RUN FOR 187.5 HRS
- DOSE AT LAST TIME STEP ASSUMED CONSTANT THEREAFTER
- "WITHOUT MAKEUP" ALLOWS FOR DECAY/DISSIPATION THROUGHOUT 720 HR. PERIOD

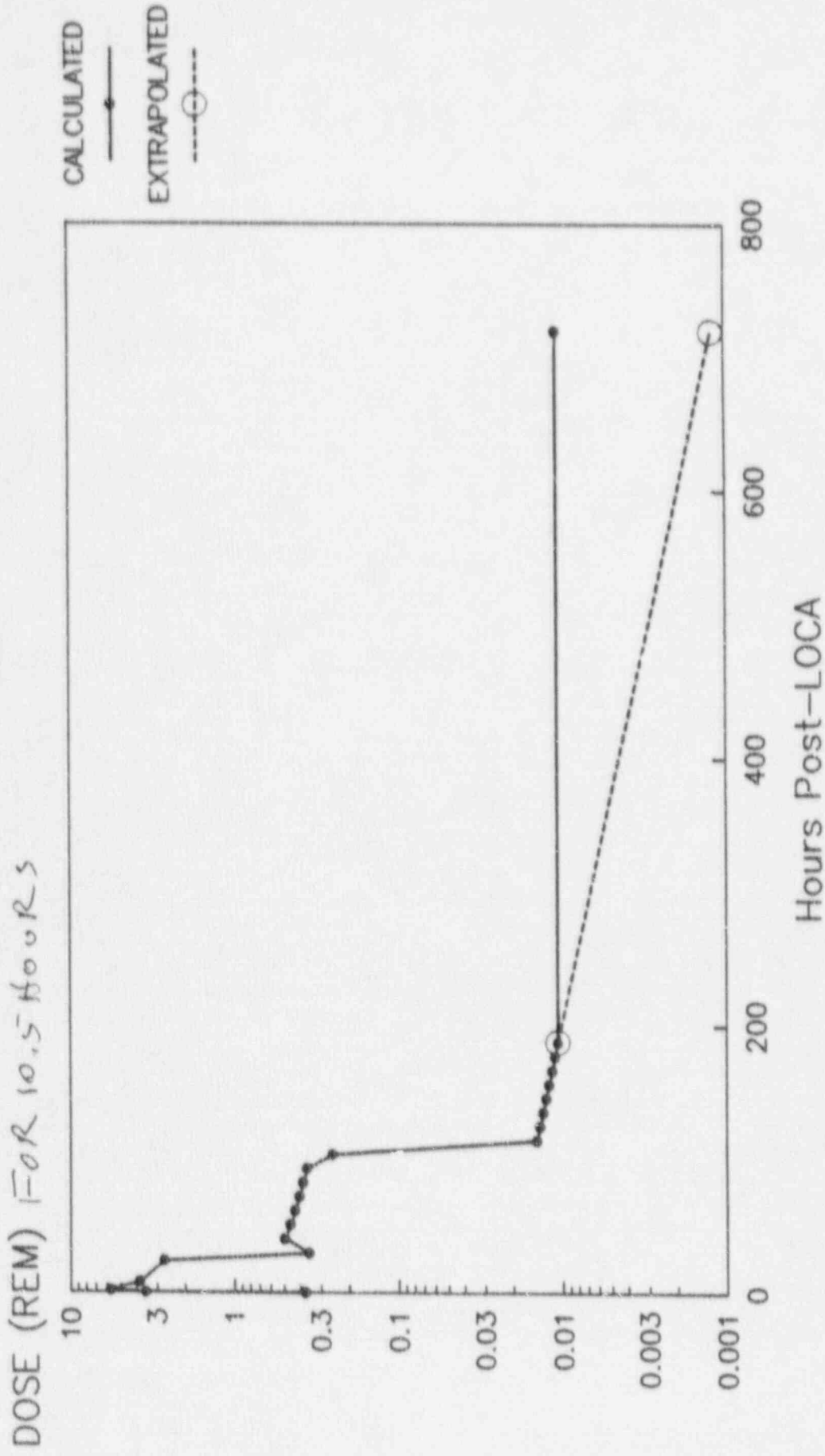
o "WITH MAKEUP" CASE CONSERVATISMS

- NO DECAY AFTER 187.5 HRS.
- MAKEUP STARTS AT 30 HRS. VS. 72 HRS. IN FSAR
- MAKEUP FOR A TOTAL OF APPROXIMATELY 32 HRS. COMPARED TO APPROXIMATELY 18 HRS. IN FSAR

Control Room Post-LOCA Doses

Recirc: 10 Hrs.; Makeup: .5 Hrs.

Typical Case



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PCOLS AWAITING APPROVAL

<u>PCOL SUBJECT</u>	<u>LATEST SUBMITTAL</u>
1. P-T LIMITS	4/26/90
2. RWCU ROOM NAME CHANGE	5/4/90
3. LOAD HANDLING RESTRICTIONS	5/4/90
4. CRFA ISOLATION VALVES	5/7/90
5. STANDBY LIQUID CONTROL	5/31/90
6. R.G. 1.97, WRNM DEFERRAL	6/22/90
7. VPNO TITLE CHANGE	8/9/90
8. CYCLE 5 RELOAD	8/15/90
9. FIRE PROTECTION (GL 88-12)	8/22/90

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TENTATIVE PCOL SUBMITTAL FORECAST (NEXT 6 MONTHS)

<u>PCOL DESCRIPTION</u>	<u>TARGET SUBMITTAL DATE</u>
1. RESPOND TO P-T LIMITS RAI	11/90
2. REVISION OF DIVISION III BATTERY LOAD PROFILE	12/90
3. GGNS UNIT 2 CANCELLATION	12/90
4. GL 88-01 ASSOCIATED TS CHANGES	12/90
5. VALVE P53-F003 TS STROKE TIME REVISION	01/91
6. HIGH DENSITY SPENT FUEL STORAGE	02/91
7. EXTEND TS INSTRUMENTS AOTs AND STIs	02/91
8. RELOCATION OF RETS (GL 89-01)	04/91
9. RELOCATION OF CORE OPERATING LIMITS (GL 88-16)	04/91
10. REMOVAL OF 3.25 LIMIT ON STIs (GL 89-14)	04/91
11. FUEL ASSEMBLY DESCRIPTION (GL 90-02)	04/91
12. REVISION OF REFUELING PLATFORM INTERLOCKS	04/91