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UNRESOLVED SAFETY ISSUES SUMMARY

AQUA BOOK

UNITED STATES NUCLEAR REGULATORY COMMISSION



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FOREWORD

THE "UNRESOLVED SAFETY ISSUES" SUMMARY IS DESIGNED TO PROVIDE THE MANAGEMENT OF THE NUCLEAR REGULATORY COMMISSION WITH A QUARTERLY OVERVIEW OF THE PROGRESS AND PLANS FOR COMPLETION OF GENERIC TASKS ADDRESSING "UNRESOLVED SAFETY ISSUES" REPORTED TO CONGRESS PURSUANT TO SECTION 210 OF THE ENERGY REORGANIZATION ACT OF 1974 AS AMENDED. THIS SUMMARY UTILIZES DATA COLLECTED FROM THE OFFICE OF NUCLEAR REACTOR REGULATION, OFFICE OF NUCLEAR REGULATORY RESEARCH, AND THE NATIONAL LABORATORIES AND IS PREPARED BY THE OFFICE OF RESOURCE MANAGEMENT.

THE DEFINITION OF WHAT CONSTITUTES COMPLETION OF AN UNRESOLVED SAFETY ISSUE (USI) HAS RECENTLY BEEN EXPANDED TO INCLUDE THE IMPLEMENTATION OF THE TECHNICAL RESOLUTION. THIS IS IN ACKNOWLEDGEMENT OF THE FACT THAT REAL SAFETY BENEFITS OCCUR ONLY AFTER THE IMPLEMENTATION HAS TAKEN PLACE. IMPORTANT ELEMENTS OF THIS IMPLEMENTATION PHASE ARE:

1. THE PROVISION OF A PUBLIC COMMENT PERIOD FOLLOWING THE ISSUANCE OF A DRAFT NUREG REPORT INCORPORATING THE STAFF'S TECHNICAL RESOLUTION FOLLOWED BY A DISCUSSION AND DISPOSITION OF THE COMMENTS RECEIVED IN A FINAL NUREG REPORT.
2. THE PROVISION FOR INCORPORATION OF THE TECHNICAL RESOLUTION INTO THE NRC'S REGULATIONS, STANDARD REVIEW PLAN, REGULATORY GUIDES, OR OTHER NRC OFFICIAL GUIDANCE OR REQUIREMENTS AS APPROPRIATE.
3. THE PROVISION FOR APPLICATION OF THE TECHNICAL RESOLUTION TO INDIVIDUAL OPERATING PLANTS IN THE FORM OF HARDWARE OR DESIGN CHANGES, TECHNICAL SPECIFICATION CHANGE, AND/OR CHANGE TO OPERATING PROCEDURES AS APPROPRIATE.

THE SCHEDULES IN THIS BOOK INCLUDE A MILESTONE AT THE END OF EACH ACTION PLAN WHICH REPRESENTS THE INITIATION OF THE IMPLEMENTATION PROCESS BOTH WITH RESPECT TO INCORPORATION OF THE TECHNICAL RESOLUTION IN THE NRC OFFICIAL GUIDANCE OR REQUIREMENTS AND ALSO THE APPLICATION OF CHANGES TO INDIVIDUAL OPERATING PLANTS. THE SCHEDULE FOR IMPLEMENTATION WILL NOT NORMALLY BE INCLUDED IN THE TASK ACTION PLAN(S) FOR THE RESOLUTION OF A USI SINCE THE NATURE AND EXTENT OF THE ACTIVITIES NECESSARY TO ACCOMPLISH THE IMPLEMENTATION CANNOT NORMALLY BE REASONABLY DETERMINED PRIOR TO THE DETERMINATION OF A TECHNICAL RESOLUTION. THE PROGRESS AND STATUS FOR IMPLEMENTATION OF UNRESOLVED SAFETY ISSUES FOR WHICH A TECHNICAL RESOLUTION HAS BEEN COMPLETED ARE REPORTED SPECIFICALLY IN A SEPARATE TABLE PROVIDED IN THIS SUMMARY.

KARL KNIEL, CHIEF OF THE GENERIC ISSUES BRANCH, DIVISION OF SAFETY TECHNOLOGY/HRR, IS RESPONSIBLE FOR MANAGING THE GENERIC TASKS INCLUDED IN THIS SUMMARY.

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ABBREVIATIONS

AAB:	Accident Analysis Branch (Former NRR Branch)	EEB:	Environmental Engineering Branch, Division of Engineering (NRR)
AB:	Administration Branch, Training and Administration Staff (IE)	EPFY:	Effective Full-Power Years
AC:	Alternating Current	EG&G:	Edgerton, Germeshausen & Grier
ACRS:	Advisory Committee on Reactor Safeguards	EP:	Emergency Preparedness
AD:	Assistant Director	EPRI:	Electric Power Research Institute
ADB:	Analysis and Development Branch, Division of Reactor Safety Research (RES)	EQB:	Equipment Qualification Branch, Division of Engineering (NRR)
AEB:	Accident Evaluation Branch, Division of Systems Integration (NRR)	FIN:	Financial
AEOD:	Office of the Analysis and Evaluation of Operational Data	FIRL:	Franklin Institute Research Laboratories
ATF:	Atomic Industrial Forum	FSI:	Fluid Structure Interaction
APTS:	Action Plan Tracking System	FSIF:	Full-Scale Test Facility
ARL:	Aldrich Research Laboratory	FW:	Feedwater
ASB:	Auxiliary Systems Branch, Division of Systems Integration (NRR)	GB:	Geosciences Branch, Division of Engineering (NRR)
ASME:	American Society of Mechanical Engineers	GE:	General Electric
ASTM:	American Society of Testing Materials	GIB:	Generic Issues Branch, Division of Safety Technology (NRR)
ATWS:	Anticipated Transient Without Scram	HFEB:	Human Factors Engineering Branch, Division of Health, Siting and Waste Mgmt. (RES)
B&W:	Babcock and Wilcox Company	HFS:	Division of Human Factors Safety (NRR)
BHC:	Brookhaven National Conservatory	HSST:	Heavy Section Steel Technology
BNL:	Brookhaven National Laboratory	ICBR:	Instrumentation and Control Branch, Division of Facility Operations (RES)
BOP:	Balance of Plant	ICSB:	Instrumentation and Control Systems Branch, Division of Systems Integration (NRR)
BWR:	Boiling Water Reactor	IE:	Office of Inspection and Enforcement
CE:	Combustion Engineering, Incorporated	IEEE:	Institute of Electrical and Electronics Engineers
CEE:	Chemical Engineering Branch, Division of Engineering (NRR)	INEL:	Idaho Nuclear Engineering Laboratory
CFR:	Code of Federal Regulations	IREP:	Integrated Reliability Evaluation Program
CI:	Condensation Isolation	ISI:	In-Service Inspection
CP:	Construction Permit	LER:	Licensee Event Report
CPB:	Core Performance Branch, Division of Systems Integration (NRR)	LGB:	Licensing Guidance Branch, Division of Safety Technology (NRR)
CR:	Contractor Report	LLL:	Lawrence Livermore Laboratory
CRGR:	Committee for Review of Generic Requirements	LOCA:	Loss-of-Coolant Accident
CSB:	Containment Systems Branch, Division of Systems Integration (NRR)	LPP:	Lead Plant Program
DC:	Direct Current	LTP:	Long Term Program
DE:	Division of Engineering (NRR)	LWR:	Light-Water Reactor
DFD:	Division of Facility Operations (RES)	MARK I-III:	Containment Types for Boiling Water Reactors
DIHS:	Division of Human Factors Safety (NRR)	MEB:	Mechanical Engineering Branch, Division of Engineering (NRR)
DHRS:	Decay Heat Removal System	MEBR:	Materials Engineering Branch, Division of Engineering Technology (RES)
DL:	Division of Licensing (NRR)	MIT:	Massachusetts Institute of Technology
DOE:	U. S. Department of Energy	MMRB:	Metallurgy and Materials Branch, Division of Reactor Safety Research (RES)
DOR:	Division of Operating Reactors (Former NRR Division)	MSLB:	Main Steam Line Break
DRA:	Division of Risk Analysis (RES)	MTEB:	Materials Engineering Branch, Division of Engineering (NRR)
DSI:	Division of Systems Integration (NRR)	NDE:	Non-Destructive Examination
DSS:	Division of Systems Safety (Former NRR Division)	NREP:	Neutron Resonance Escape Probability
DST:	Division of Safety Technology (NRR)	NRL:	Naval Research Laboratory
E:	Engineering	NRR:	Office of Nuclear Reactor Regulation
EB:	Enforcement Branch, Enforcement and Investigations Staff (IE)	NSS:	Nuclear Steam System
ECC:	Emergency Core Cooling	NUREG:	Nuclear Regulation

ABBREVIATIONS

OG:	Owner's Group	SSE:	Safe Shutdown Earthquake
OL:	Operating License	SSPB:	Standards Special Projects Branch (NRR)
ORAB:	Operating Reactors Assessment Branch, Division of Licensing (NRR)	STP:	Short-term Program
ORB:	Operating Reactors Branch, Division of Licensing (NRR)	TAP:	Task Action Plan
ORNL:	Oak Ridge National Laboratory	TH:	Hot Leg Temperature
OSD:	Office of Standards Development (Former NRC Office)	TM:	Task Manager
OTSG:	Once-Through Steam Generator	TMI:	Three Mile Island
PASNY:	Power Authority of the State of New York	USI:	Unresolved Safety Issue
PNL:	Pacific Northwest Laboratory (Battelle)	W:	Westinghouse Electric Corporation
PRA:	Probabilistic Risk Assessment	WH:	Water Hammer
PS:	Plant Systems	WUTA:	Washington University Technology Associates
PSB:	Power Systems Branch, Division of Systems Integration (NRR)		
PSU:	Plant Systems Unit (AEOD)		
PSYB:	Plant Systems Branch (Former NRR Branch)		
PTRB:	Procedures and Test Review Branch, Division of Human Factors Safety (NRR)		
PWR:	Pressurized Water Reactor		
Q:	Quality Control or Assurances		
RAB:	Radiological Assessment Branch, Division of Systems Integration (NRR)		
RCIC:	Reactor Core Isolation Cooling		
REF:	Reference		
RF:	Office of Nuclear Regulatory Research		
RFP:	Request for Proposal		
RHR:	Residual Heat Removal		
RPV:	Reactor Pressure Vessel		
PRA:	Probability and Risk Assessment		
RRAB:	Reliability and Risk Assessments Branch (NRR)		
RRRC:	Regulatory Requirements Review Committee		
RS:	Reactor Safety (Former NRR Branch)		
RSB:	Reactor Systems Branch, Division of Systems Integration (NRR)		
RSR:	Reactor Safety Research		
RSSMAP:	Reactor Safety Study Methodology Application Program		
SAI:	Science Applications, Inc.		
SCC:	Stress-Corrosion Cracking		
SEB:	Structural Engineering Branch, Division of Engineering (NRR)		
SEP:	Systematic Evaluation Program		
SEPB:	Systematic Evaluation Program Branch, Division of Licensing (NRR)		
SER:	Safety Evaluation Report		
SG:	Steam Generator		
SGWH:	Steam Generator Water Hammer		
SNL:	Sandia National Laboratory		
SRP:	Standard Review Plan		
SRV:	Safety Relief Valve		

PROGRAM OVERVIEW
PROJECTED DATES FOR ISSUING NRC STAFF REPORTS

Key:
 (1) LPP - Lead Plant Program
 (2) LTP - Long Term Program
 N/S - Not Scheduled

<u>USI NO.</u>	<u>TITLE</u>	<u>AUG. 20, 1982 AQWA BOOK</u>	<u>CURRENT</u>	<u>REMARKS</u>
A-1,	Water Hammer	August 1, 1983	November 30, 1983	NUREG/CR-2781 was issued in July 1982. Development of a technical findings NUREG is underway. This draft NUREG is being used to develop recommendations to CRGR for resolution.
A-3, A-4, A-5,	Steam Generator Tube Integrity	March 30, 1983	March 30, 1983	The draft NUREG report has been reviewed by the technical branches and their comments incorporated. The revised report is being prepared for management review and then will be issued for public comment. The NRC has formed a Task Force to prepare proposed requirements.
A-11,	Reactor Vessel Materials Toughness	October 15, 1982	October 15, 1982	NUREG-0774, Rev. 1, was completed and submitted for review. This revision addresses public comments received on the For Comment report. This report was issued in October 1982, thereby resolving this Unresolved Safety Issue.

PROGRAM OVERVIEW
PROJECTED DATES FOR ISSUING NRC STAFF REPORTS

<u>USI NO.</u>	<u>TITLE</u>	<u>AUG. 20, 1982 AQUA BOOK</u>	<u>CURRENT</u>	<u>REMARKS</u>
A-12,	Steam Generator & Reactor Coolant Pump Supports	December 30, 1982	June 6, 1983	Meetings were held with EPRI and Industry groups in December 1980, to resolve use of fracture mechanics methods for qualification of supports. NRC reviewer's comments on the final NUREG-0577 were not received until mid-January 1982, causing a delay in issuing the final report. Comments made by EPRI and the AIF subcommittee on material requirements have been incorporated into the final NUREG.
A-17,	Systems Interactions	See Item II.C.3 in Action Plan Tracking System	See Item II.C.3 in Action Plan Tracking System	Work planned under TAP A-17 will be performed under TMI Action Plan item II.C.3, Systems Interaction. The status of this item is reported in the quarterly updates of the TMI Action Plan Tracking System (APTS).
A-39,	SRV Pool Dynamic Loads	Mark II-September 30, 1982 Mark III-October 15, 1982	Mark II-September 30, 1982 Mark III-October 14, 1982	NUREG-0763 on in-plant SRV tests was completed and issued in June 1981. NUREG-0783 on Pool Temperature Limits was issued in October 1981. NUREG-0802 on SRV Quencher Loads was issued in October 1982. These three reports serve as the technical resolution of USI A-39.
A-40,	Seismic Design Criteria	July 15, 1983	March 16, 1984	A draft standard review plan change has been prepared and is under management review.
A-43,	Containment Emergency Sump	July 15, 1983	July 15, 1983	All technical support (NUREG/CRs) reports have been issued except the ARI report on insulation debris transport and screen blockage effects. A resolution NUREG is in the final stages of preparation and will undergo management concurrence. A CRGR briefing will be held November 24, 1982 to discuss the resolution of this USI.

PROGRAM OVERVIEW
PROJECTED DATES FOR ISSUING NRC STAFF REPORTS

<u>USI NO.</u>	<u>TITLE</u>	<u>AUG. 20, 1982 AQUA BOOK</u>	<u>CURRENT</u>	<u>REMARKS</u>
A-44,	Station Blackout	October 15, 1983	December 15, 1983	Draft contractor technical reports were provided in May 1982. Final reports are now in preparation.
A-45,	Shutdown Decay Heat Removal Requirements	October 30, 1985	October 30, 1985	A Task Action Plan was issued on October 7, 1981, and revised on June 2, 1982. A technical assistance contract package was approved on April 9, 1982 and implemented with Sandia on May 10, 1982.
A-46,	Seismic Qualification of Equipment in Operating Plants	May 1, 1984	April 30, 1984	This program was redirected to be made compatible with the Equipment Qualification Program Plan. The final Task Action Plan has been issued. Work has been initiated on all tasks with all contractors well into their subtasks.
A-47,	Safety Implications of Control Systems	N/S	N/S	An approved Task Action Plan was issued on Sept. 27, 1982. Technical assistance contracts have been established with ORNL and INEL.
A-48,	Hydrogen Control Measures and Hydrogen Burns on Safety Equipment	N/S	N/S	A draft Task Action Plan was issued on April 2, 1982 for NRC comments. Work has been suspended pending management decision on the scope of the TAP.
A-49,	Pressurized Thermal Shock	N/S	N/S	A-49 was designated by the Commission as an USI on December 28, 1981. The Task Action Plan was approved and issued on March 26, 1982. The draft short-term position is under preparation and will be completed in November 1982. As a result of the findings of the short-term program, the A-49 network is going to be extensively revised.

USI'S FOR WHICH TECHNICAL RESOLUTION IS COMPLETE

USI NO.	TITLE	DATE COMPLETED	REPORTS PUBLISHED	IMPLEMENTATION STATUS	IMPLEMENTATION TASK MANAGER/ TELEPHONE
A-2,	ASYMMETRIC BLOWDOWN LOADS ON REACTOR PRIMARY COOLANT SYSTEMS	DEC. 1980	NUREG-0609	ALL PWR PLANT ASSESSMENTS FOR ASYMMETRIC LOADS HAVE BEEN RECEIVED AND ARE CURRENTLY BEING EVALUATED BY STAFF AND CONTRACTOR EG&G. AS A BASIS FOR THIS EVALUATION, STAFF IS IMPLEMENTING CRITERIA DEVELOPED AS PART OF THE TASK ACTION PLAN A-2. THESE CRITERIA ARE INCLUDED IN NUREG-0609. B&W AND CE OWNERS' GROUPS HAVE RESPONDED TO THE QUESTIONS RAISED AS A RESULT OF OUR INITIAL REVIEW OF THEIR SUBMITTALS ON THE ASSESSMENT OF THE PRIMARY SYSTEM COMPONENTS AND SUPPORTS TO ASYMMETRIC LOCA LOADS. THESE RESPONSES ARE CURRENTLY BEING REVIEWED AND THE REVIEW IS EXPECTED TO BE COMPLETED BY NOVEMBER 1983. THE WESTINGHOUSE OWNERS GROUPS EXPECT A RESOLUTION OF THIS ISSUE ON THE BASIS OF 'LEAK BEFORE BREAK' CRITERIA. AN INTERNAL REPORT, RECOMMENDING ACCEPTANCE OF THE 'LEAK BEFORE BREAK' CONCEPT ISSUED BY THE STAFF IN FEBRUARY 1981, HAS BEEN DISCUSSED WITH THE ACRS AND IS UNDER REVIEW BY NRR MANAGEMENT PRIOR TO REVIEW BY CRGR.	JIM SHAW 492-7211
A-6,	MARK I SHORT TERM PROGRAM	DEC. 1977	NUREG-0408	COMPLETE - ALL PLANT UNIQUE ANALYSES AND EQUIPMENT MODIFICATIONS AS REQUIRED WERE REVIEWED AND ACCEPTED AND APPROPRIATE TECHNICAL SPECIFICATION CHANGES WERE MADE.	- - -

USI'S FOR WHICH TECHNICAL RESOLUTION IS COMPLETE

USI NO.	TITLE	DATE COMPLETED	REPORTS PUBLISHED	IMPLEMENTATION STATUS	IMPLEMENTATION TASK MANAGER/ TELEPHONE
A-7,	MARK I LONG TERM PROGRAM	JULY 1980 AUGUST 1982	NUREG-0661 NUREG-0661, SUPPL. No. 1	LICENSEES ARE IN THE PROCESS OF DESIGNING AND INSTALLING MODIFICATIONS TO MEET THE COMMISSION'S ORDER DATE FOR EACH OPERATING PLANT. THE LICENSEES ARE IN THE PROCESS OF PREPARING PLANT-UNIQUE ANALYSIS FOR SUBMITTAL TO THE STAFF FOR POST IMPLEMENTATION AUDIT REVIEW FOR COMPLIANCE WITH THE ACCEPTANCE CRITERIA CONTAINED IN APPENDIX A TO NUREG-0661. THREE LICENSEES/APPLICANTS HAVE SUBMITTED THEIR PLANT-UNIQUE ANALYSIS.	BYRON SIEGEL 492-7534
A-8,	MARK II CONTAINMENT PO: DYNAMIC LOADS	AUGUST 1981	NUREG-0808	THE REQUIREMENTS RECOMMENDED IN NUREG-0808 ARE BEING IMPLEMENTED DURING THE OPERATING LICENSE REVIEW FOR EACH PLANT WITH A MARK II CONTAINMENT. THESE REQUIREMENTS WILL ALSO BE INCLUDED AS AN ADDITION TO THE APPROPRIATE SECTION OF THE STANDARD REVIEW PLAN.	
A-9,	ATWS	SEPT. 1980	NUREG 0460, VOL. 4 46FR57521	TWO VERSIONS OF THE PROPOSED ATWS RULE HAVE BEEN ISSUED FOR COMMENT; THE STAFF VERSION AND AN ALTERNATE VERSION OF THE RULE PREPARED AT THE DIRECTION OF COMMISSIONER HENDRIE. FOLLOWING THE COMMENT PERIOD AND CONSIDERATION OF PUBLIC COMMENTS, A FINAL RULE WILL BE PREPARED FOR COMMISSION CONSIDERATION. A TASK FORCE HAS BEEN ASSIGNED TO FORM A BASIS FOR THE FINAL RULE.	DAVID PYATT, RES 443-5968

USI'S FOR WHICH TECHNICAL RESOLUTION IS COMPLETE

USI NO.	TITLE	DATE COMPLETED	REPORTS PUBLISHED	IMPLEMENTATION STATUS	IMPLEMENTATION TASK MANAGER/ TELEPHONE
A-10,	BWR FEEDWATER NOZZLE CRACKING	NOV. 1980	NUREG-0619	RESPONSES FROM LICENSEES TO AN IMPLEMENTATION LETTER HAVE BEEN RECEIVED AND RECOMMENDED TREATMENT OF THESE RESPONSES HAVE BEEN SUBMITTED TO NRC MANAGEMENT. ADDITIONAL INFORMATION HAS BEEN REQUESTED OF LICENSEES. IMPLEMENTATION ACTION IS PROCEEDING. THIRTEEN PLANTS HAVE RECEIVED LETTERS ACCEPTING THEIR PROPOSED MODIFICATION PLANS. TEN PLANTS ARE BEING REVIEWED AND NEGOTIATIONS ARE UNDER WAY TO OBTAIN LICENSEE COMMITMENTS TO IMPLEMENT ALL NUREG-0619 GUIDANCE. LACROSSE, BIG ROCK POINT, AND DRESDEN 1 DO NOT HAVE SUSCEPTIBLE PLANT SYSTEM CONFIGURATIONS AND ARE CONSIDERED COMPLETE WITH REGARD TO THIS ACTION. HUMBOLDT BAY, BY VIRTUE OF ITS STATUS (SHUTDOWN, NO FORSEEABLE RESTART), IS ALSO CONSIDERED COMPLETE.	PAUL O'CONNOR 492-7214
A-11,	REACTOR VESSEL MATERIALS TOUGHNESS	OCTOBER 15, 1982	NUREG-0744, VOLS. I AND II	GENERIC LETTER TRANSMITTING THIS NUREG REPORT IS BEING PREPARED BY DL.	AL DEGAZIO 492-6945
A-24,	QUALIFICATION OF CLASS 1E SAFETY RELATED EQUIPMENT	AUG. 1981	NUREG-0588	EQB HAS THE LEAD IN IMPLEMENTING THE POSITIONS IDENTIFIED IN THE REPORT.	JOSE CALVO 492-8563
A-26,	REACTOR VESSEL PRESSURE TRANSIENT PROTECTION	SEPT. 1978	NUREG-0224	ALL PLANTS WERE REQUESTED TO PROVIDE AN OVERPRESSURE PREVENTION SYSTEM THAT WOULD BE USED WHENEVER THE PLANT WAS IN A COLD SHUTDOWN CONDITION. ALL PWRs IMPLEMENTED THEIR SYSTEMS WITH PRELIMINARY APPROVAL FROM THE NRC, AND A COMPLETE REVIEW TOOK PLACE ON A POST-IMPLEMENTATION BASIS. THE REVIEW CONSISTS OF THREE PARTS: A) ELECTRICAL ASPECTS; B) REACTOR SYSTEM ASPECTS; C) TECHNICAL SPECIFICATIONS. PLANTS REMAINING TO BE EVALUATED ARE BEING REVIEWED BY CONTRACT WITH EG&G. THIS INCLUDES FIVE OF THE TWELVE REMAINING PLANTS. FOR THE OTHER SEVEN PLANTS, SIX SER'S HAVE BEEN COMPLETED AND ARE IN THE PROCESS OF BEING ISSUED.	AL DEGAZIO 492-8945

USI'S FOR WHICH TECHNICAL RESOLUTION IS COMPLETE

USI NO.	TITLE	DATE COMPLETED	REPORTS PUBLISHED	IMPLEMENTATION STATUS	IMPLEMENTATION TASK MANAGER/ TELEPHONE
A-31.	RESIDUAL HEAT REMOVAL REQUIREMENTS	1978	NO FORMAL REPORT SRP 5.4.7 REVISION	RRRC APPROVED IMPLEMENTATION PLAN JANUARY 31, 1978. IMPLEMENTATION FOR OPERATING REACTORS NOT COMPLETE.	TOM NOVAK 492-7817
A-36.	CONTROL OF HEAVY LOADS NEAR SPENT FUEL	JULY 1980	NUREG-0612	IMPLEMENTATION REQUIREMENTS WERE ISSUED TO ALL LICENSEES BY LETTER DATED DECEMBER 22, 1980. THE LETTER REQUESTED: INTERIM ACTIONS TO BE COMPLETED IN 90 DAYS, A PHASE I ACTION (REPORT, CONFIRMATION AND JUSTIFICATION) IN SIX MONTHS AND PHASE II (SPECIFIC REQUIREMENTS) IN NINE MONTHS. ALL LICENSEES (EXCEPT ONE) HAVE RESPONDED TO THE DECEMBER 22, 1980 GENERIC LETTER AND THEIR RESPONSES HAVE BEEN EVALUATED. NINE PLANTS HAD REQUESTED EXTENSIONS TO THE SEPTEMBER 22, 1981 RESPONSE DATE. KEWAUNEE IS SCHEDULED TO RESPOND BY 7/14/82.	BUD REQUA 492-7877
A-39.	DETERMINATION OF SAFETY RELIEF VALVE (SRV) POOL DYNAMIC LOADS AND TEMPERATURE LIMITS FOR BWR CONTAINMENT	MARK I-02-29-80 MARK II-09-30-82 MARK III-10-14-82	NUREG-0763 NUREG-0783 NUREG-0802	GENERIC LETTER TRANSMITTING ALL THREE NUREGS TO BWR APPLICANTS AND LICENSEES IS IN THE DL CONCURRENCE CHAIN.	BYRON SIEGEL 492-7534
A-42.	PIPE CRACKS IN BOILING WATER REACTORS	JULY 1980	NUREG-0313 REV. 1	IN FEBRUARY 1981, NUREG-0313, REV. 1 WAS ISSUED TO ALL HOLDERS OF BWR OPERATING LICENSES OR CONSTRUCTION PERMITS AND TO ALL APPLICANTS FOR OPERATING LICENSES. BY JULY 1, 1981, THE APPLICANTS/LICENSEES WERE TO PROVIDE THEIR PROGRAM FOR REPLACEMENT OF SERVICE SENSITIVE LINES AND WELDS, THEIR PROGRAM FOR AUGMENTED INSERVICE INSPECTION, THEIR PROGRAM FOR IMPROVING THE WATER CHEMISTRY ENVIRONMENT AND INCORPORATION OF ADEQUATE LEAK DETECTION CAPABILITY. ALL LICENSEES HAVE RESPONDED AND THEIR REPLIES ARE BEING EVALUATED BY A TECHNICAL SUPPORT CONTRACTOR (INEL). INITIAL TESTS ARE SCHEDULED TO BE COMPLETED IN THE SECOND AND THIRD QUARTERS OF FY83.	DICK CLARK 492-7162

WATER HAMMER (A-1)

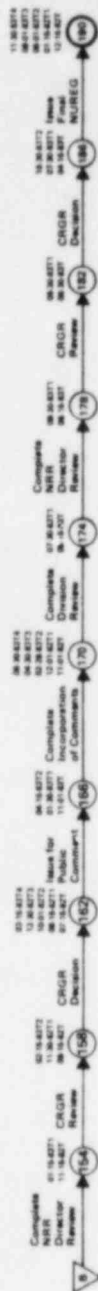
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KEY PERSONNEL		TASK REVIEWERS		SCHEDULED COMPLETION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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<p>• PROBLEM DESCRIPTION</p> <p>Since 1969 there have been over 150 incidents involving water hammer in BWRs and PWRs reported. The water hammer incidents have involved steam generators, ECC systems, and condensate systems. The incidents have resulted in such damage as rapid condensation of steam, partially empty lines, and rapid valve motion. Most of the damage reported has been to the piping system. There have been several incidents which have resulted in piping and valve damage.</p> <p>Task Action Plan, TAP A-1, subdivides resolution of the Unresolved Safety Issue (USI) into the following tasks:</p> <p>Task 1: Water Hammer Summary Reports</p> <p>Task 2: Resolution of Water Hammer Issue</p> <p>Task 3: Water Hammer Position for Operating Reactors</p> <p>Task 4: Water Hammer Safety Studies</p> <p>Task 1 and 4 have been completed and the reports are on the network charts which follow. The near term position for operating reactors is to permit continued operation since no major damage has occurred. The long term aspect of Task 3 is an integral part of the resolution of the issue.</p> <p>Task 2 represents the resolution aspect of the USI and will report in the final resolution.</p>		<p>• RES INTERFACE INFORMATION</p> <p>None.</p>		<p>• TECHNICAL ASSISTANCE CONTRACTS</p> <p>Resolution efforts for A-1 are being conducted under FIN No. A4481 at INEL. Both EOB-G Idaho and Quadrex staff are being utilized.</p>		<p>• POTENTIAL PROBLEMS</p>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
<p>• ACRS INTERFACE INFORMATION</p> <p>A presentation was made to the ECCS Subcommittee on 12/03/81 plans for resolution of A-1 were presented.</p>		<p>FIN NO. CONTRACTOR'S OBLIGATED EXPENDED</p> <table border="1"> <thead> <tr> <th>FIN NO.</th> <th>CONTRACTOR'S OBLIGATED</th> <th>EXPENDED</th> </tr> </thead> <tbody> <tr> <td>PT 81: A4481</td> <td>EOB-G Idaho</td> <td>\$ 36,355</td> </tr> <tr> <td>PT 82: A4481</td> <td>EOB-G Idaho</td> <td>\$ 44,069</td> </tr> <tr> <td></td> <td>11/81</td> <td>\$ 44,069</td> </tr> <tr> <td></td> <td>12/81</td> <td>\$ 7,813</td> </tr> <tr> <td></td> <td>01/82</td> <td>\$ 17,150</td> </tr> <tr> <td></td> <td>02/82</td> <td>\$ 175,150</td> </tr> <tr> <td></td> <td>03/82</td> <td>\$ 207,411</td> </tr> <tr> <td></td> <td>04/82</td> <td>\$ 232,963</td> </tr> <tr> <td></td> <td>05/82</td> <td>\$ 244,984</td> </tr> <tr> <td></td> <td>06/82</td> <td>\$ 245,000</td> </tr> <tr> <td></td> <td>07/82</td> <td>\$ 245,000</td> </tr> <tr> <td></td> <td>08/82</td> <td>\$ 245,000</td> </tr> <tr> <td></td> <td>09/82</td> <td>\$ 245,000</td> </tr> <tr> <td></td> <td>10/82</td> <td>\$ 245,000</td> </tr> <tr> <td></td> 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CONTRACTOR'S OBLIGATED	EXPENDED	PT 81: A4481	EOB-G Idaho	\$ 36,355	PT 82: A4481	EOB-G Idaho	\$ 44,069		11/81	\$ 44,069		12/81	\$ 7,813		01/82	\$ 17,150		02/82	\$ 175,150		03/82	\$ 207,411		04/82	\$ 232,963		05/82	\$ 244,984		06/82	\$ 245,000		07/82	\$ 245,000		08/82	\$ 245,000		09/82	\$ 245,000		10/82	\$ 245,000		11/82	\$ 245,000		12/82	\$ 245,000		01/83	\$ 245,000		02/83	\$ 245,000		03/83	\$ 245,000		04/83	\$ 245,000		05/83	\$ 245,000		06/83	\$ 245,000		07/83	\$ 245,000		08/83	\$ 245,000		09/83	\$ 245,000		10/83	\$ 245,000		11/83	\$ 245,000		12/83	\$ 245,000		01/84	\$ 245,000		02/84	\$ 245,000		03/84	\$ 245,000		04/84	\$ 245,000		05/84	\$ 245,000		06/84	\$ 245,000		07/84	\$ 245,000		08/84	\$ 245,000		09/84	\$ 245,000		10/84	\$ 245,000		11/84	\$ 245,000		12/84	\$ 245,000		01/85	\$ 245,000		02/85	\$ 245,000		03/85	\$ 245,000		04/85	\$ 245,000		05/85	\$ 245,000		06/85	\$ 245,000		07/85	\$ 245,000		08/85	\$ 245,000		09/85	\$ 245,000		10/85	\$ 245,000		11/85	\$ 245,000		12/85	\$ 245,000		01/86	\$ 245,000		02/86	\$ 245,000		03/86	\$ 245,000		04/86	\$ 245,000		05/86	\$ 245,000		06/86	\$ 245,000		07/86	\$ 245,000		08/86	\$ 245,000		09/86	\$ 245,000		10/86	\$ 245,000		11/86	\$ 245,000		12/86	\$ 245,000		01/87	\$ 245,000		02/87	\$ 245,000		03/87	\$ 245,000		04/87	\$ 245,000		05/87	\$ 245,000		06/87	\$ 245,000		07/87	\$ 245,000		08/87	\$ 245,000		09/87	\$ 245,000		10/87	\$ 245,000		11/87	\$ 245,000		12/87	\$ 245,000		01/88	\$ 245,000		02/88	\$ 245,000		03/88	\$ 245,000		04/88	\$ 245,000		05/88	\$ 245,000		06/88	\$ 245,000		07/88	\$ 245,000		08/88	\$ 245,000		09/88	\$ 245,000		10/88	\$ 245,000		11/88	\$ 245,000		12/88	\$ 245,000		01/89	\$ 245,000		02/89	\$ 245,000		03/89	\$ 245,000		04/89	\$ 245,000		05/89	\$ 245,000		06/89	\$ 245,000		07/89	\$ 245,000		08/89	\$ 245,000		09/89	\$ 245,000		10/89	\$ 245,000		11/89	\$ 245,000		12/89	\$ 245,000		01/90	\$ 245,000		02/90	\$ 245,000		03/90	\$ 245,000		04/90	\$ 245,000		05/90	\$ 245,000		06/90	\$ 245,000		07/90	\$ 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TASK 20



WATER HAMMER (A-1) Continued



TASK 1 REPORTS

MURRAY, GREG. "Water Hammer in Nuclear Power Plants"
July 1978

Chapman, R.L., "Water Hammer Studies," EG&G Internat Rpt., CAAP-73-053 (Rev. 1), July 1980 (Prepared for NRC Use).

TASK 2 REPORT

NAUREG/CB 2781, "Evaluation of Water Hammer Events in Light Water Reactor Piping," July 1982.

TASK 4.1 REPORT

Chapman, R. L., et al., "Review and Evaluation of Actual and Potential Water Hammer Events in Nuclear Plants," EG&G Pantarion Rpt., CAAP TR-042 (Rev. 1), September 1972.
Prepared for NRC (a)

TASK 4.2 REPORT

Watkins, J.C., Berry, R.A., "A State-of-the-Art Literature Review of Waste Hammer," EG&G Internat Intern Rpt., EE-A-70-044, April 1979 (Prepared for NRC Use)

TASK 4.3 REPORT

Saha, P., et al. "An Evaluation of Condensation-Induced Water Hammer in Pressurized Steam Generators," NUREG/CR 1806, September 1993.

TASK 4.4 REPORTS

Williamson, R. L., "An Analysis Tool for Predicting the Transient Hydrodynamics Resulting from the Rapid Filling of Vented Piping Systems," E&G International Rpt. NRE-E 79-008, February 1979.
Prepared for NRC Internal Use

Morton, D.N., "An Analytical Procedure for Performing Structural Analysis of Nuclear Piping Systems Subjected to Fluid Transients," EG&G Inc., Interim Rpt., NRC-8-79-013, February (Prepared for NRC Internal Use).

Genova, P. N., "An Investigation of the Stress Versus Collapsed Water Hammer Initiating Mechanism," EG&G Inertion Rpt., RE-A-78-228, January 1979 (Prepared for NRC Internal Use)

Berry, R. A., "An Analytical Tool for Predicting Transient Hydrolysis in Nuclear Piping Systems Containing Spring-Loaded Valves," EG&G Rep. NE-A-78-263 (Rev. 2), September 1978. Prepared for NRC Internal Use.

TASK 4.5 REPORT

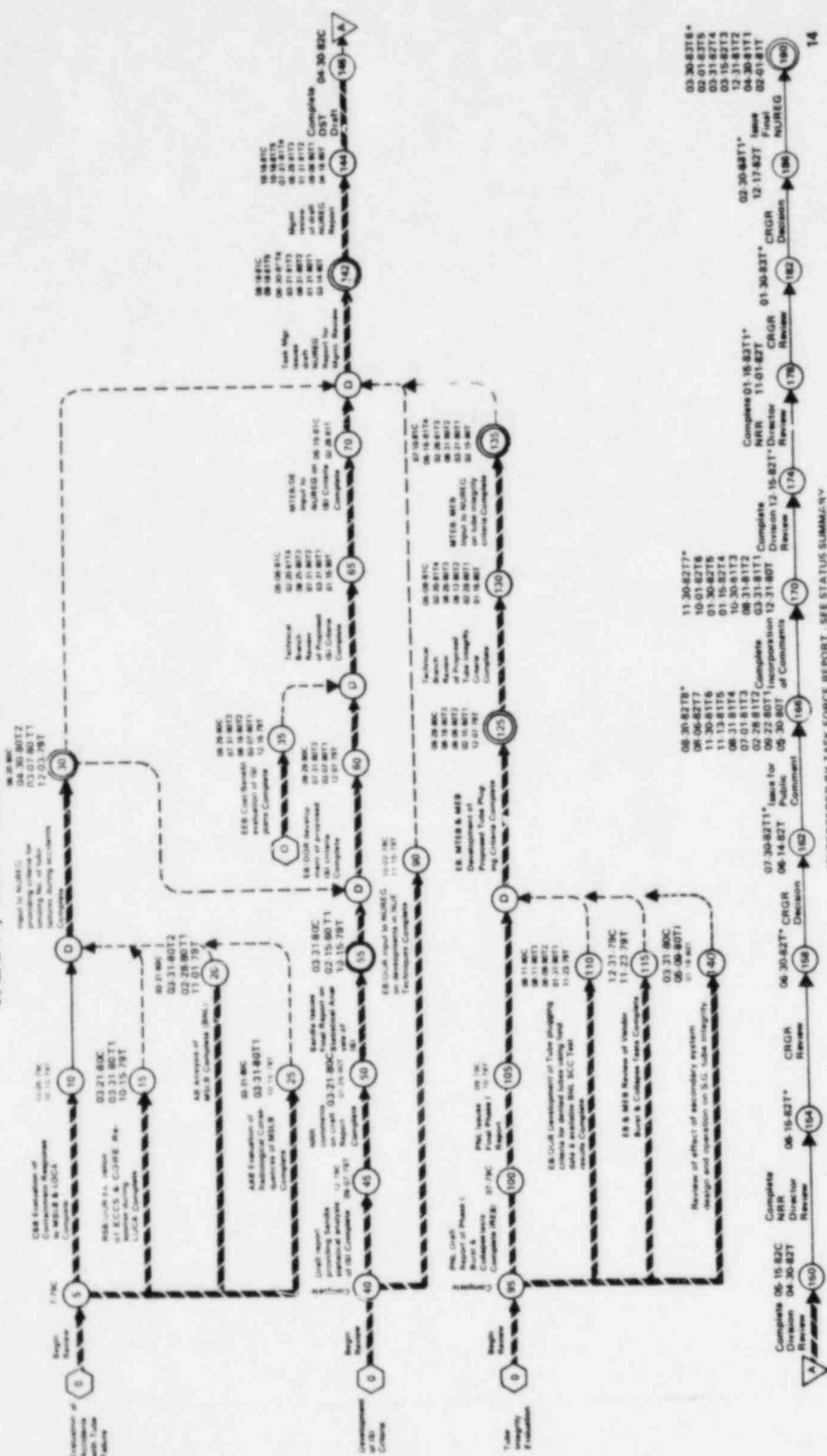
Seidel, B. F., "Supplemental Water Hammer Analysis and System Reviews," EGG preliminary Rpt. EGG-CAAP-6133, July 1980.
Prepared for NRC for Use as a Preliminary or Working "document".

WEST, CE & B&W STEAM GENERATOR TUBE INTEGRITY (A-3, A-4, A-5)

AS OF WEEK ENDING NOVEMBER 19, 1982

KEY PERSONNEL TASK MANAGER J. STROSNIER X36903 <i>P. Novak & J. Strosnier</i> MPA ANALYST B. ST. MARY X28330	TASK REVIEWERS <table border="1"> <thead> <tr> <th>NAME</th> <th>BRANCH</th> </tr> </thead> <tbody> <tr> <td>J. STROSNIER</td> <td>MEBR/RES</td> </tr> <tr> <td>W. PASEDAG</td> <td>AEB/DSI</td> </tr> <tr> <td>C. PARSZEWSKI</td> <td>CEB/DE</td> </tr> </tbody> </table>	NAME	BRANCH	J. STROSNIER	MEBR/RES	W. PASEDAG	AEB/DSI	C. PARSZEWSKI	CEB/DE	<table border="1"> <tbody> <tr> <td>J. RAJAN</td> <td>MEB/DE</td> </tr> <tr> <td>B. TUROVLIN</td> <td>CEB/DE</td> </tr> <tr> <td>F. ODAR</td> <td>ADB/RSR</td> </tr> <tr> <td>F. AKSTULEWICZ</td> <td>AEB/DSI</td> </tr> <tr> <td>J. ZWOLINSKI</td> <td>HFEB/DHFS</td> </tr> <tr> <td>I. FRANK</td> <td>MEBR</td> </tr> </tbody> </table>	J. RAJAN	MEB/DE	B. TUROVLIN	CEB/DE	F. ODAR	ADB/RSR	F. AKSTULEWICZ	AEB/DSI	J. ZWOLINSKI	HFEB/DHFS	I. FRANK	MEBR	SCHEDULED COMPLETION 1978 ANNUAL REPORT Early 1980 CURRENT 03-30-83
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J. ZWOLINSKI	HFEB/DHFS																						
I. FRANK	MEBR																						
• PROBLEM DESCRIPTION <p>Pressurized water reactor steam generator tube integrity can be degraded by corrosion induced wastage, cracking, reduction in tube diameter (denting) and vibration induced fatigue cracks. The primary concern is the capability of degraded tubes to maintain their integrity during normal operation and under accident conditions (LOCA or a main steam line break) with adequate safety margins.</p> <p>Westinghouse and Combustion Engineering steam generator tubes have suffered degradation due to wastage and stress corrosion cracking. Both types of degradation have been decreased by conversion from phosphate to an all-volatile secondary water treatment. Degradation due to denting which leads to primary side stress corrosion cracking continues to be a problem.</p> <p>B&W's once-through steam generators (OTSG's) were relatively free of trouble prior to the first tube leak incident at Oconee Unit 3 in July, 1976. Since then, all three Oconee units have experienced tube leak incidents. The leaks at the Oconee units are the result of cracks of unknown origins propagated in the circumferential direction by flow induced vibration and have been limited to tubes located adjacent to the open tube inspection lane.</p> <p>A second form of degradation characterized as an erosion/cavitation phenomena has been observed at Oconee and other B&W units.</p>	• RES INTERFACE INFORMATION <p>A. RES has funded, at the request of NRR, a major confirmatory program at PNL. The activity of this program consists of tests to verify the burst and cyclic strengths of degraded steam generator tubes and the leak rate data.</p> <p>B. RES is funding a program addressing the factors which determine Inconel 600 susceptibility to stress corrosion cracking in primary water. Metal condition, chemistry, temperature, stress and environment will be considered.</p> • ACRS INTERFACE INFORMATION <p># ACRS Subcommittee meeting is scheduled for 01/28/83.</p>	• TECHNICAL ASSISTANCE CONTRACTS <p>The following technical assistance contracts are generic in nature and will be applicable to the three Category "A" Technical Activities (A-3, A-4, and A-5) related to "R" steam generators.</p> <p>A. SANDIA - Provide statistical analysis of steam generator tube failures in operating reactors in order to establish the bases for the sampling plan for in-service inspection. Completed.</p> <p>B. BNL - Provide necessary computer code and perform parametric evaluation of effects of tube failure on current w/ MSLR. Completed.</p> <p>C. BNL - Provide technical consultation and assistance to review information in area of water chemistry and corrosion analysis, stress and/or burst strength calculations. Completed.</p> <p>D. PNL - Provide cost/benefit evaluation of ISI plans. Completed.</p> <p>E. PNL - Evaluate environmental consequences of multiple tube failures concurrent with MSLR. Completed.</p> <table border="1"> <thead> <tr> <th>FIN NO.</th> <th>CONTRACTOR</th> <th>OBLIGATED</th> <th>EXPENDED</th> </tr> </thead> <tbody> <tr> <td>2314</td> <td>PNL</td> <td>\$75,000</td> <td>\$75,000</td> </tr> <tr> <td>82315</td> <td>PNL</td> <td>\$95,000</td> <td>\$95,000</td> </tr> </tbody> </table>	FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED	2314	PNL	\$75,000	\$75,000	82315	PNL	\$95,000	\$95,000	• POTENTIAL PROBLEMS <p>Management review and concurrence and CROR approval are the only remaining actions necessary for issuance of the staff report, "NRC Recommendations Concerning Steam Generator Tube Degradation and Rupture Events."</p> • STATUS SUMMARY <p>The NRC has formed a Task Force to prepare its proposed requirements regarding steam generator tube integrity. These requirements will include new concerns resulting from the Giron tube failure (such as loose parts in the secondary system and plant response to SG tube failures) and also corrosion related failure mechanisms. The recommendations prepared by the staff under USI A-3, A-4, A-5 were primarily concerned with corrosion mechanisms such as wastage and denting. Consequently, as discussed with the Commission on June 30, 1982, the requirements from the USI program will be incorporated in the overall set of requirements being developed to address tube failure.</p> <p>The proposed requirements were discussed with the # Steam Generator Owners Group on July 28, 1982. Comments from the group were received September 30, 1982.</p> <p># Science Applications, Inc. performed a Value/Impact analysis of the recommendations and issued their final draft report on September 23, 1982.</p> <p># The staff's revised recommendations are in preparation for management review.</p>								
FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED																				
2314	PNL	\$75,000	\$75,000																				
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WEST CE & B&W STEAM GENERATOR TUBE INTEGRITY (A-3, A-4, & A-5)



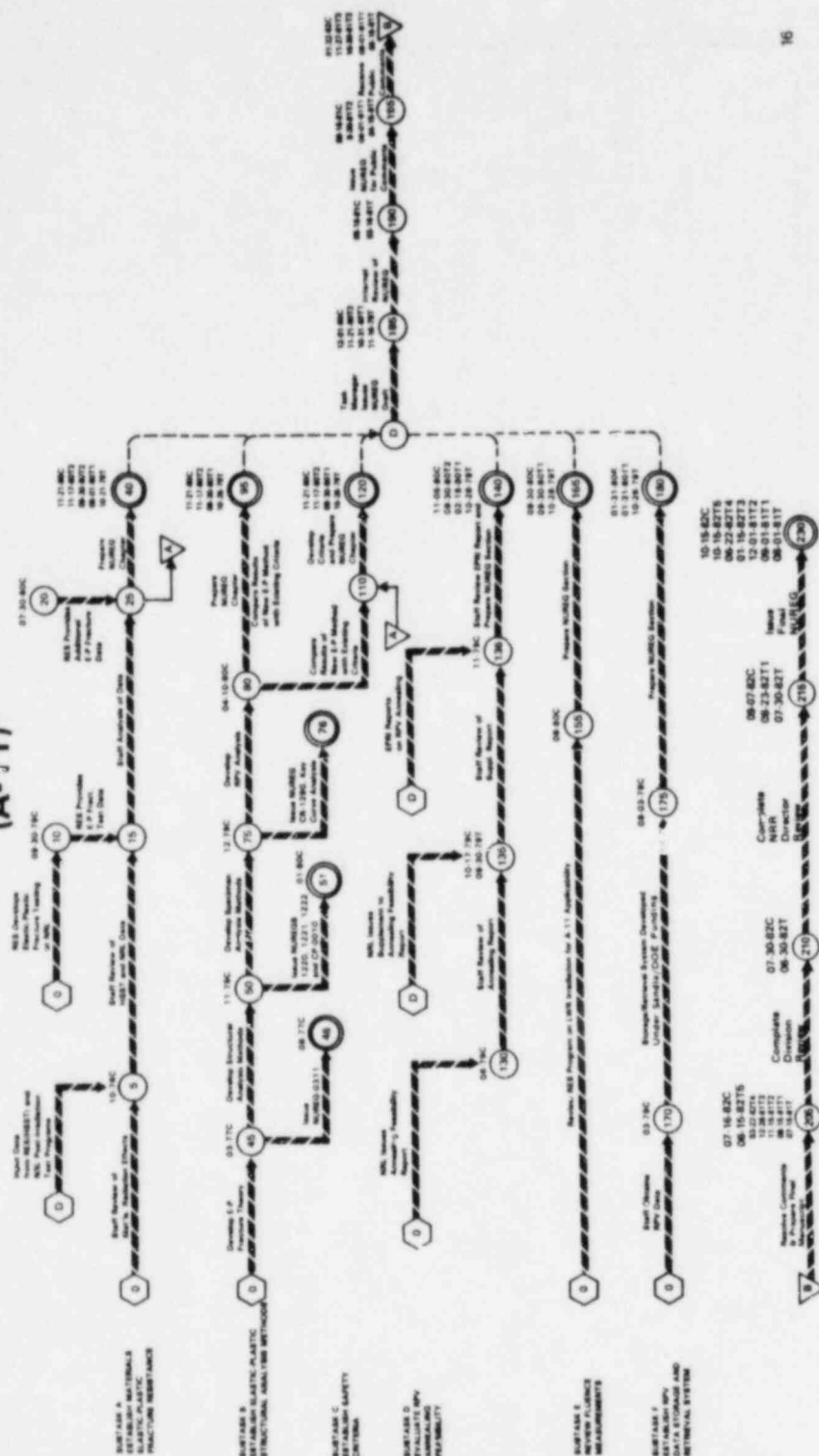
RECORDED BY TASK FORCE REPORT - SEE STATUS SUMMARY

REACTOR VESSEL MATERIALS TOUGHNESS (A-11)

AS OF WEEK ENDING NOVEMBER 19, 1982

KEY PERSONNEL		TASK REVIEWERS		SCHEDULED COMPLETION																					
TASK MANAGER RICHARD E. JOHNSON K24718 <i>Richard E. Johnson</i>		NAME BRANCH		1978 ANNUAL REPORT July 1978																					
MPA ANALYST L. LANIER K28012		W.S. HAZELTON MTEB/DE R.W. KLECKER MTEB/DE J. STROSNIDER MEBR/RES		CURRENT #10-15-82C																					
• PROBLEM DESCRIPTION Because the possibility of failure of nuclear reactor pressure vessels designed to the ASME Boiler and Pressure Vessel Code is remote, the design of nuclear facilities does not provide protection against reactor vessel failure. However, as plants accumulate more and more service time, neutron irradiation reduces the material fracture toughness and initial safety margins. Results from reactor vessel surveillance programs indicate that up to approximately 20 operating PWRs will have beltline materials with marginal toughness, relative to the requirements of Appendices G and H of 10 CFR Part 20, after comparatively short (approximately 10 EFPY) periods of operation. For most plants now in the licensing process, current criteria, together with the materials currently employed, are adequate to ensure suitable safety margins for reactor vessels throughout their design lives. However, a few plants under licensing review have reactor vessels that have been identified as having the potential for marginal fracture toughness within their design lives; these vessels will have to be reevaluated in the light of the new criteria for long term acceptability.		• RES INTERFACE INFORMATION Fracture test data was provided by RES and incorporated into NUREG-0744. HTS has reviewed NUREG-0744.		• TECHNICAL ASSISTANCE CONTRACTS NONE																					
• ACRS INTERFACE INFORMATION # Copies of NUREG-0744, Rev. 1, have been forwarded to the ACRS.		• POTENTIAL PROBLEMS NONE		• STATUS SUMMARY # NUREG-0744, Rev. 1, was printed and issued, which completes Task A-11.																					
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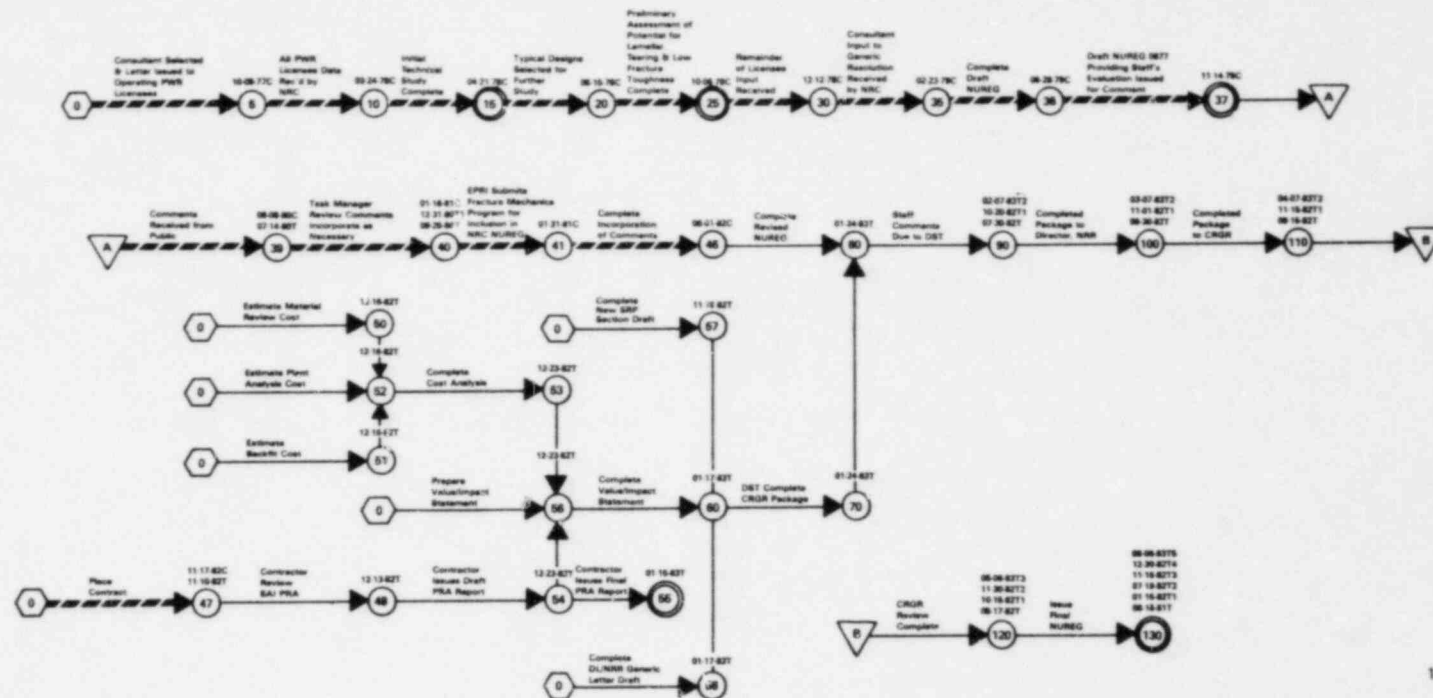
REFLECTOR VESSEL MATERIALS TOUGHNESS (A-11)



AS OF WEEK ENDING NOVEMBER 19, 1982


17 † INDICATES A CHANGE IN INFORMATION

FRACTURE TOUGHNESS OF STEAM GENERATOR AND REACTOR COOLANT PUMP SUPPORTS (A-12)



SYSTEMS INTERACTIONS IN NUCLEAR POWER PLANTS (A-17)


AS OF WEEK ENDING NOVEMBER 18, 1982

KEY PERSONNEL		TASK REVIEWERS		SCHEDULED COMPLETION																																	
TASK MANAGER PAUL MORIAN (Acting) X27487 		NAME BRANCH _____ _____ NO ASSIGNED REVIEWERS _____ _____		1978 ANNUAL REPORT Phase I - 09-79 _____ CURRENT N/A _____																																	
MPA ANALYST L. LANIER X28102																																					
• PROBLEM DESCRIPTION <p>The design of a nuclear power plant is accomplished by groups of engineers and scientists organized into engineering disciplines and into scientific disciplines. The review performed by the designers include interdisciplinary reviews to assure the functional compatibility of the plant structures, systems, and components. Safety reviews and accident analyses provide further assurance that system functional requirements will be met. These reviews include failure mode analyses.</p> <p>The NRC review and evaluation of safety systems is accomplished in accordance with the Standard Review Plan (SRP) which assigns primary and secondary review responsibilities to organizational units arranged by plant systems or by disciplines. Each element of the SRP is assigned to an organizational unit for primary responsibility and, where appropriate, to other units for secondary responsibilities.</p> <p>Thus, the design and analyses by the plant designers, and the subsequent review and evaluation by the NRC staff take into consideration the interdisciplinary areas of concern and account for systems interaction to a large extent. Furthermore, many of our regulatory criteria are aimed at controlling the risks from systems interactions. Examples include the single failure criterion and separation criteria.</p> <p>Nevertheless, there is some question regarding the interaction of various plant systems, both as to the supporting roles such systems play and as to the effect one system can have on other systems, particularly with regard to whether actions or consequences could adversely affect the presumed redundancy and independence of safety systems.</p> <p>The problem to be resolved by this task is to identify where the present design, analysis, and review procedures may not acceptably account for potentially adverse systems interaction and to recommend the regulatory action that should be taken to rectify deficiencies in the procedures.</p>		• RES INTERFACE INFORMATION <p>The Division of Risk Analysis has been consulted during the development and execution of this plan. The Division of Engineering Technology will participate in the development of a Regulatory Guide for Systems Interaction Analyses.</p>		• TECHNICAL ASSISTANCE CONTRACTS <p>Phase I work was performed by Sandia National Laboratories under FIN # A-1113191 by NRR for \$219K and under FIN # A-1084181 by OSD for \$320K. Expenditures were \$197K for FIN # A-1113191 and \$120K for FIN # A-1084181.</p>																																	
		• ACRS INTERFACE INFORMATION <p>The review is under the cognizance of the ACRS Subcommittee on Plant Arrangements. A meeting was held 02-20-80 in Washington, D.C. with the Subcommittee which recommended a demonstration of Phase I methodology before proceeding much further.</p> <p>A meeting was held 02-26-82 with the ACRS Subcommittee on Indian Point 3 to describe the PASNY systems interaction program on Indian Point 3. On 03-09-82, the ACRS documented their judgement that the PASNY plan was responsive.</p>		<table border="1"> <thead> <tr> <th>FIN NO.</th> <th>CONTRACTOR</th> <th>OBLIGATED</th> <th>EXPENDED</th> </tr> </thead> <tbody> <tr> <td># A0403</td> <td>LLNL</td> <td>\$200,000</td> <td>\$152,000</td> </tr> <tr> <td>A1306</td> <td>BNL</td> <td>\$ 15,000</td> <td>\$ 15,000</td> </tr> <tr> <td>R2329</td> <td>PNL</td> <td>\$ 10,000</td> <td>\$ 10,000</td> </tr> <tr> <td>A1286</td> <td>SANDIA</td> <td>\$ 22,000</td> <td>\$ 14,000</td> </tr> <tr> <td># A 0406</td> <td>LLNL</td> <td>\$263,000</td> <td>\$186,000</td> </tr> <tr> <td>A 3366</td> <td>BNC</td> <td>\$ 80,000</td> <td>\$ 80,000</td> </tr> <tr> <td>B-2328</td> <td>PNL</td> <td>\$ 80,000</td> <td>\$ 80,000</td> </tr> </tbody> </table>		FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED	# A0403	LLNL	\$200,000	\$152,000	A1306	BNL	\$ 15,000	\$ 15,000	R2329	PNL	\$ 10,000	\$ 10,000	A1286	SANDIA	\$ 22,000	\$ 14,000	# A 0406	LLNL	\$263,000	\$186,000	A 3366	BNC	\$ 80,000	\$ 80,000	B-2328	PNL	\$ 80,000	\$ 80,000
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		• POTENTIAL PROBLEMS <p>LWRs for implementation of interim guidance have not yet been selected.</p>		• STATUS SUMMARY <p>The anticipated Phase II program will not be pursued as an USI Work originally planned under TAP A-17 will now be performed under TMI Action Plan Item B-C-3, Systems Interaction. This activity will now be managed by the Systems Interaction Section, Reliability and Risk Assessment Branch, DST. The Section Leader is F. Coffman, X27487. The status of this item is reported in the quarterly updates of the TMI Action Plan Tracking System (APTS).</p> <p>The Chairman was briefed on 06/25/82 concerning the status of the systems interaction program and how it might proceed.</p> <p>Stop work orders were issued on contracts A-2366, B-2329, and A-1286.</p> <p>The documentation of a matrix diagram method is expected to be issued 12/82, under contract A-0403.</p> <p>The initial guidance document is expected to be issued 01/83.</p> <p>The staff requested by letter dated June 25, 1982 to Consumer's Power Company that it provide a description of the systems interaction program on Millard 2 for staff evaluation.</p> <p>The staff's audit of the PASNY systems interaction study on IP3 is proceeding on schedule with technical assistance on A-0406. The contractor's report is expected by August 1983.</p>																																	

INDICATES A CHANGE IN INFORMATION

DETERMINATION OF SAFETY RELIEF VALVE (SRV) POOL DYNAMIC LOADS AND TEMPERATURE LIMITS FOR BWR CONTAINMENT (A-39)

AS OF WEEK ENDING NOVEMBER 19, 1962

KEY PERSONNEL		TASK REVIEWERS		SCHEDULED COMPLETION													
TASK MANAGER	NAME	BRANCH	1978 ANNUAL REPORT														
<div style="text-align: center;">  T.M. SULLIVAN K27437 MPA ANALYST # L. LANIER X28102 </div>			<div style="text-align: right;">October 1978</div> <div style="text-align: right;"> MARK I - 02-29-80C # MARK II - 08-30-82C # MARK III - 10-14-82C </div>														
• PROBLEM DESCRIPTION Operation of BWR primary system pressure relief valves can result in hydrodynamic loads on the suppression pool retaining structures or structures located within the pool. These loads result from: 1. Initial vent clearing of a relief valve pipe; and 2. Steam quenching due to locally high pool temperature.	• RES INTERFACE INFORMATION NONE	• TECHNICAL ASSISTANCE CONTRACTS BNL has completed Mark II T-Quencher and Mark III X-Quencher review and is preparing input to the NUREG report.	• POTENTIAL PROBLEMS NONE														
• ACRS INTERFACE INFORMATION Discussions with the ACRS Subcommittee on Mark III SRV loads and Kuehling implant test results was presented on September 26, 1981.		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">FIN NO.</th> <th style="text-align: left;">CONTRACTOR</th> <th style="text-align: left;">OBLIGATED</th> <th style="text-align: left;">EXPENDED</th> </tr> </thead> <tbody> <tr> <td>A3080</td> <td>BNL</td> <td>FY 79 \$85,000 FY 80 \$50,000</td> <td></td> </tr> <tr> <td>A3321</td> <td>BNL</td> <td>FY 80 \$35,000 FY 81 \$70,000</td> <td></td> </tr> </tbody> </table>		FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED	A3080	BNL	FY 79 \$85,000 FY 80 \$50,000		A3321	BNL	FY 80 \$35,000 FY 81 \$70,000		• STATUS SUMMARY # USI A-39 was reviewed by the CRGR on August 11, 1982 and recommended for approval. # NUREGS-0763, 0763, and 0802 were approved for issuance by the EDO on October 14, 1982. # USI A-39 is now complete.	
FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED														
A3080	BNL	FY 79 \$85,000 FY 80 \$50,000															
A3321	BNL	FY 80 \$35,000 FY 81 \$70,000															

Part I

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    graph LR
      0((0)) -- "ICSB Review Complete" --> 5((5))
      5 -- "ICSB issues SBR to TM Acceptance Criteria" --> 15((15))
      15 -- "TM issues Acceptance Criteria" --> 25((25))
      25 -- "TM issues SBR" --> 28((28))
      28 -- "SBR Review for Mark 1 Completed" --> End[...]
  
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FSI for Mark I

Part II

Mark II T-Quencher
Test ReportMark II FSI
for T-Quencher

Part III

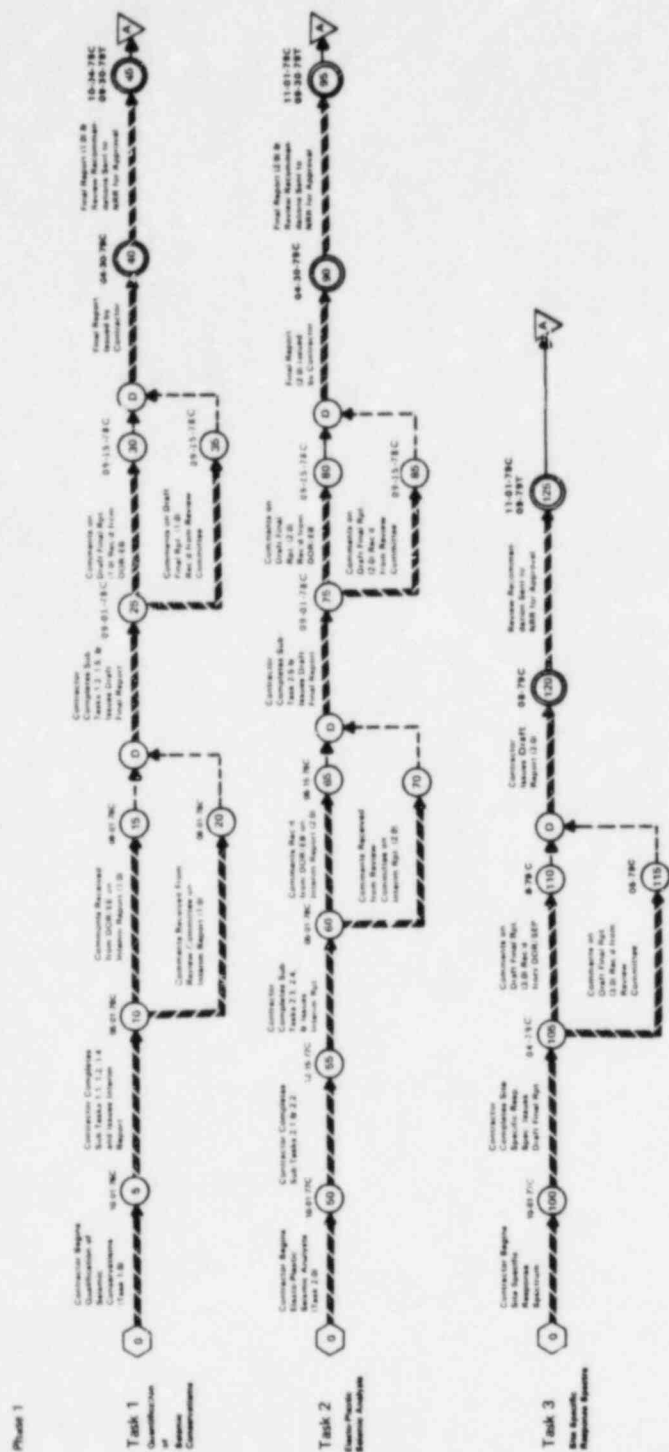
SRV Implant
Test Guidelines

SEISMIC DESIGN CRITERIA - SHORT TERM PROGRAM (A-40)

AS OF WEEK ENDING NOVEMBER 19, 1982

KEY PERSONNEL TASK MANAGER PATRICK SEARS X24216 <i>Patrick Sears</i> MPA ANALYST #1. LANIER X28102	TASK REVIEWERS <table border="1"> <thead> <tr> <th>NAME</th> <th>BRANCH</th> </tr> </thead> <tbody> <tr> <td>#N. CHOKSHI</td> <td>SEP/DE</td> </tr> <tr> <td>L. REITER</td> <td>GB/DE</td> </tr> </tbody> </table>	NAME	BRANCH	#N. CHOKSHI	SEP/DE	L. REITER	GB/DE	<table border="1"> <tbody> <tr> <td>G. BAGCHI</td> <td>EOB/DE</td> </tr> <tr> <td>#K. HERRING</td> <td>SEP/DE</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	G. BAGCHI	EOB/DE	#K. HERRING	SEP/DE							SCHEDULED COMPLETION <table border="1"> <tbody> <tr> <td>1978 ANNUAL REPORT</td> <td>PHASE I - 1979 PHASE II - 1981</td> </tr> <tr> <td>CURRENT</td> <td>#03.16.84</td> </tr> </tbody> </table>	1978 ANNUAL REPORT	PHASE I - 1979 PHASE II - 1981	CURRENT	#03.16.84
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1978 ANNUAL REPORT	PHASE I - 1979 PHASE II - 1981																						
CURRENT	#03.16.84																						
• PROBLEM DESCRIPTION <p>The seismic design process required by current NRC criteria includes the following sequence of events:</p> <ol style="list-style-type: none"> Define the magnitude or intensity of the earthquake which will produce the maximum vibratory ground motion at the site (the safe shutdown earthquake or SSE). Determine the free-field ground motion at the site that would result if the SSE occurred. Determine the motion of site structures by modifying the free-field motion to account for the interaction of the site structures with the underlying foundation soil. Determine the motion of the plant equipment supported by the site structures. Compare the seismic loads, in appropriate combination with other loads, on structures, systems, and components important to safety, with the allowable loads. <p>While this seismic design sequence includes many conservative factors, certain aspects of the sequence may not be conservative for all plant sites. At present, it is believed that the overall sequence is adequately conservative. The objective of this program is to investigate selected areas of the seismic design sequence to determine their conservatism for all types of sites, to investigate alternate approaches to parts of the design sequence, to quantify the overall conservatism of the design sequence, and to modify the NRC criteria in the Standard Review Plan if changes are found to be justified. In this manner, the program will provide additional assurance that the health and safety of the public is protected, and if possible, reduce costly design conservatisms by improving (1) current seismic design requirements, (2) NRC's capability to quantitatively assess the overall adequacy of seismic design for nuclear plants in general.</p>	• RES INTERFACE INFORMATION None.	• TECHNICAL ASSISTANCE CONTRACTS Lawrence Livermore Laboratory (LLL), under contract to RES, reviewed all reports by 04-30-79. LLL report on recommendations for changes to the seismic design criteria was completed on 12-28-79. (NUREG/CR-1161).	• POTENTIAL PROBLEMS None.																				
	• ACRS INTERFACE INFORMATION None.	<table border="1"> <thead> <tr> <th>FIN NO.</th> <th>CONTRACTOR</th> <th>OBLIGATED</th> <th>EXPENDED</th> </tr> </thead> <tbody> <tr> <td colspan="4">Contracts complete.</td> </tr> </tbody> </table>	FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED	Contracts complete.				• STATUS SUMMARY <p># The NRC staff has reached an agreement on acceptance of the proposed changes to the Standard Review Plan (SRP). The SRP changes are currently being prepared.</p> <p># A Value/Impact assessment will be made and submitted to the CRGR along with the proposed SRP changes.</p>												
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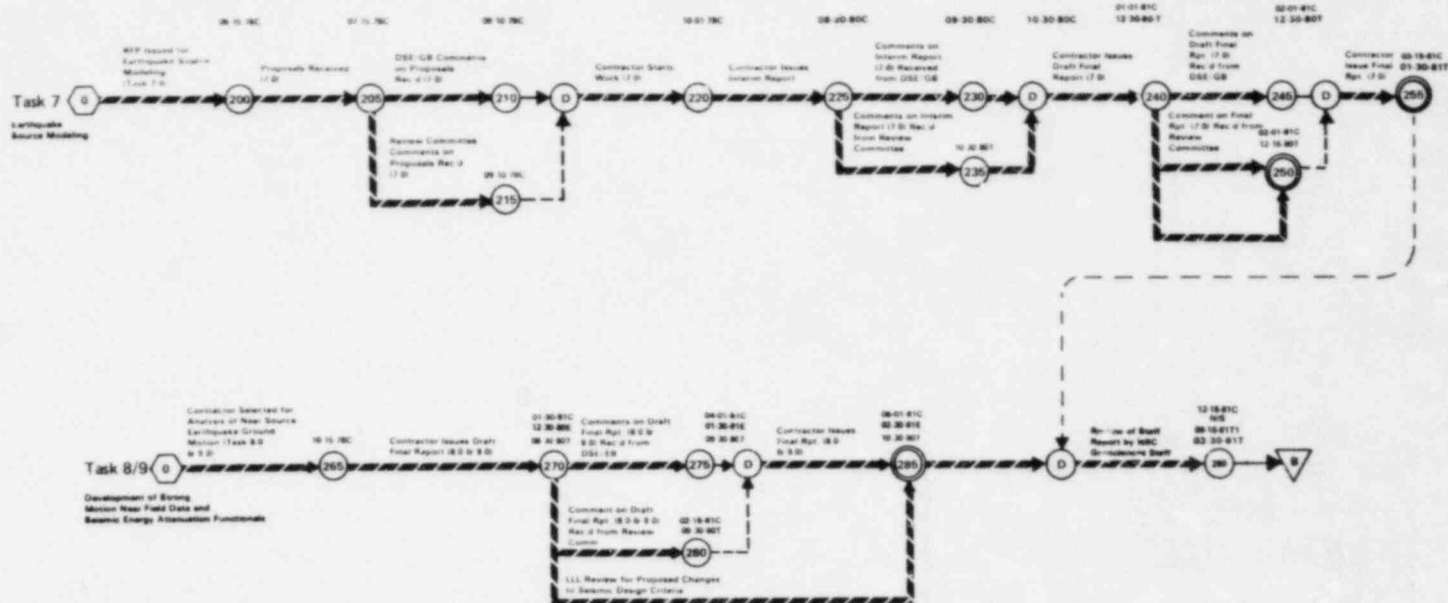
SEISMIC DESIGN CRITERIA - SHORT TERM PROGRAM (A-40)



(Phase 1 Cont.)

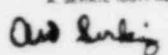


SEISMIC DESIGN CRITERIA - SHORT TERM PROGRAM (A-40)



CONTAINMENT EMERGENCY SUMP PERFORMANCE (A-43)

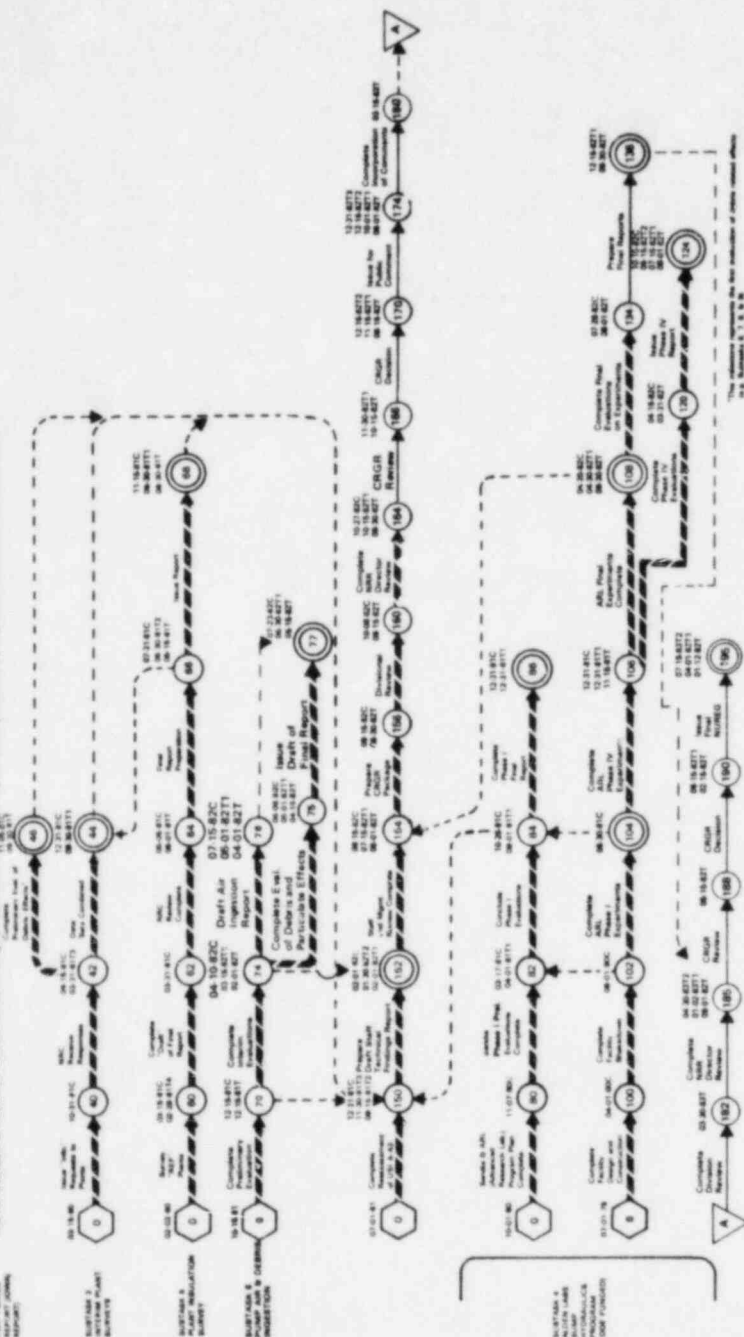
AS OF WEEK ENDING NOVEMBER 19, 1982

KEY PERSONNEL TASK MANAGER A. SERKIZ (DST) X24217  MPA ANALYST P.B. ST. MARY X28036	TASK REVIEWERS <table border="1"> <thead> <tr> <th>NAME</th> <th>BRANCH</th> </tr> </thead> <tbody> <tr> <td>P. ORR</td> <td>RSB/DSI</td> </tr> <tr> <td>P. NOYIAN</td> <td>GIB/DSI</td> </tr> <tr> <td>W. BUTLER</td> <td>CSB/DSI</td> </tr> </tbody> </table>	NAME	BRANCH	P. ORR	RSB/DSI	P. NOYIAN	GIB/DSI	W. BUTLER	CSB/DSI	SCHEDULED COMPLETION ORIGINAL April 1982 CURRENT 07-15-83																																																
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• PROBLEM DESCRIPTION <p>Following a Loss of Coolant Accident (LOCA) in a PWR, water flowing from the break in the primary system would collect on the floor of containment. During the injection mode, water for core cooling and containment spray is drawn from a large supply tank. When the water reached a low level in the tank, pumps are designed to draw from the containment. This is called the recirculation mode wherein water is drawn from the containment floor or sump and pumped to the primary system or containment spray headers. This program addresses the safety issue of adequate sump or suppression pool function in the recirculation mode. It is the objective of this program to develop improved criteria for design, testing, and evaluation which will provide better assurance that emergency sumps will function to satisfy system requirements.</p> <p>The principal concerns are somewhat interrelated but are best discussed separately. One deals with the various kinds of insulation used on piping and components made of containment. The concern being that break contained debris from the insulation could cause blockage of the sump or otherwise adversely affect the operation of the pumps, spray nozzles, and valves of the safety systems.</p> <p>The second deals with the hydraulic performance of the sump as related to the hydraulic performance to safety systems supplied therefrom. Preparational tests have been performed on a number of plants to demonstrate operability in the recirculation mode. Adverse flow conditions have been encountered requiring design and procedural modifications to eliminate them. These conditions, an entrainment, cavitation, and vortex formation, are aggravated by blockage. If not avoided or suppressed, they could result in pump failure during the core cooling phase following a LOCA.</p> <p>The concerns relative to debris, blockage, and hydraulic performance also apply to boiling water reactors during recirculation from the suppression pools, and will also be addressed.</p>	• RES INTERFACE INFORMATION <p>None: USI A-43 being managed by the Generic Issue Branch (GIB).</p> • ACRS INTERFACE INFORMATION <p>The ACRS staff is kept abreast of findings and developments on an informal basis. A briefing on the current findings and status of resolution was held December 3, 1981.</p> <p># An ACRS briefing on A-43 resolution and the proposed revision to R.G. 1.82 is being scheduled in December 1982.</p>	• TECHNICAL ASSISTANCE CONTRACTS <p>FIN No. A1237, "Containment Emergency Sump Performance", and FIN No. A1296, "Technical Assistance for Resolution of USI A-43", are being funded by RES and NRR respectively. This work is managed by the GIB Task Manager and these contracts are expected to be completed in early FY 83.</p> <table border="1"> <thead> <tr> <th>FIN NO.</th> <th>CONTRACTOR</th> <th>OBLIGATED</th> <th>EXPENDED</th> </tr> </thead> <tbody> <tr> <td>FY 81:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>A1237</td> <td>Sandis</td> <td>\$225,000</td> <td>\$101,000</td> </tr> <tr> <td>A1296</td> <td>Sandis</td> <td>\$120,000</td> <td>\$ 75,100</td> </tr> <tr> <td>FY 82:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>A1237</td> <td>Sandis</td> <td>Qtr 1 \$334,000</td> <td>\$103,000</td> </tr> <tr> <td></td> <td></td> <td>Qtr 2 \$315,000</td> <td>\$125,000</td> </tr> <tr> <td></td> <td></td> <td>Qtr 3 \$315,000</td> <td>\$245,000</td> </tr> <tr> <td></td> <td></td> <td>Qtr 4 \$327,000</td> <td>\$327,000</td> </tr> <tr> <td>#</td> <td></td> <td></td> <td></td> </tr> <tr> <td>A1296</td> <td>Sandis</td> <td>Qtr 1 \$ 71,900</td> <td>\$ 36,000</td> </tr> <tr> <td>#</td> <td></td> <td>Qtr 2 \$221,900</td> <td>\$119,000</td> </tr> <tr> <td>#</td> <td></td> <td>Qtr 3 \$351,900</td> <td>\$128,000</td> </tr> <tr> <td>#</td> <td></td> <td>Qtr 4 \$351,900</td> <td>\$281,000</td> </tr> </tbody> </table> • POTENTIAL PROBLEMS <p># Unanticipated additional requirements resulting from CRGR submittal and review.</p> • STATUS SUMMARY <p># 1: Proposed actions to resolve USI A-43 were submitted to CRGR on 10/27/82. CRGR briefing scheduled for 11/24/82.</p> <p># 2: NUREG-0897 (DRAFT) presents technical findings developed for A-43 resolution. Plans are to issue A-43 "For Comment" following CRGR review and approval.</p> <p># 3: All technical support reports (NUREG/CRAI) have been issued except ARL's report on insulation debris transport and screen blockage effects. This report is scheduled for issuance by 12/10/82.</p>	FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED	FY 81:				A1237	Sandis	\$225,000	\$101,000	A1296	Sandis	\$120,000	\$ 75,100	FY 82:				A1237	Sandis	Qtr 1 \$334,000	\$103,000			Qtr 2 \$315,000	\$125,000			Qtr 3 \$315,000	\$245,000			Qtr 4 \$327,000	\$327,000	#				A1296	Sandis	Qtr 1 \$ 71,900	\$ 36,000	#		Qtr 2 \$221,900	\$119,000	#		Qtr 3 \$351,900	\$128,000	#		Qtr 4 \$351,900	\$281,000
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CONTAINMENT EMERGENCY SUMP PERFORMANCE (A-43)

NOTE: The subtasks 1 report is no longer necessary since the background presented therein has been summarized in NUREG-0897, Revision of USI A-43, "Containment Emergency Sump Performance," which is in the final preparation stage.

NOTE: Subtask 2, has been deleted since findings presented in this Iowa report are superseded by experimental results from Subtask 4.

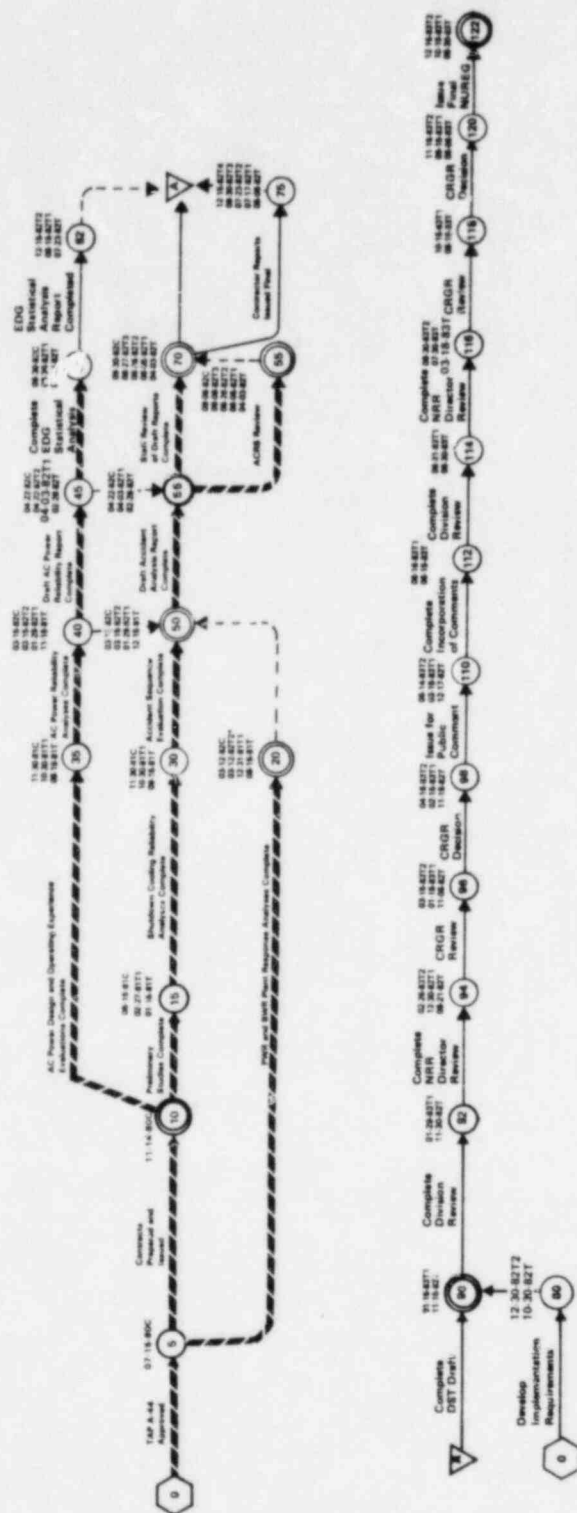


STATION BLACKOUT (A-44)

AS OF WEEK ENDING NOVEMBER 19, 1982

KEY PERSONNEL		TASK REVIEWERS		SCHEDULED COMPLETION	
TASK MANAGER P. BARANOWSKY (RES) X38960		NAME	BRANCH	ORIGINAL	JUNE 1982
MPA ANALYST L. LANIER X28102		# A. RUBIN	GIB/DST	CURRENT	# 12-15-82
		L. ENGLE	ORB/DI		
		O. CHOPRA	PSB/DSI		
• PROBLEM DESCRIPTION Electric power for safety systems at nuclear power plants is supplied by two redundant and independent divisions. Each of these electrical divisions includes an offsite alternating current (A.C.) source, an onsite A.C. source (usually diesel generators), and a direct current (D.C.) source. Appendix A to 10 CFR 50 defines a total loss of offsite power as an anticipated occurrence, and as such, it is required that an independent emergency onsite power supply be provided at nuclear power plants. The unlikely, but possible loss of A.C. power (that is, the loss of A.C. power from the offsite source and from the onsite source) is referred to as a station blackout. In the event of a station blackout, the capability to cool the reactor core would be dependent on the availability of systems which do not require A.C. power supplies, and on the ability to restore A.C. power in a timely manner. The concern is that the occurrence of a station blackout may be a relatively high probability event and that the consequences of this event may be unacceptable, for example, severe core damage may result.		• RES INTERFACE INFORMATION RES is managing the Task for NRR.		• TECHNICAL ASSISTANCE CONTRACTS Technical Assistance in the amount of \$50K is estimated for this task. The following elements are included in this program: ORNL FIN 80744 \$800K - Evaluate expected frequency and duration of offsite (preferred) power losses at nuclear power plants. Estimate the reliability and evaluate the dominant factors affecting the reliability of emergency A.C. power supplies. \$50K in funding was recently added to perform statistical correlation and trend analysis of diesel generator data. SNL FIN A1302 \$250K - Evaluate the risks posed by station blackout accidents and assess the effectiveness of safety improvements in reducing those risks.	
• ACRS INTERFACE INFORMATION Station Blackout is related to a number of ACRS concerns regarding the reliability of power systems. This task will be coordinated with the committee as the task progresses. Task action plan outline was discussed with AC/DC Power Reliability Subcommittee on January 22, 1981. Another subcommittee briefing was held on October 30, 1981. A program status briefing was given to this subcommittee on March 30, 1982. A presentation to the ACRS subcommittee summarizing the results of the contractor work was made Sept. 8, 1982.		FIN NO. CONTRACTOR OBLIGATED EXPENDED 50744 ORNL \$600K \$580K A1302 SNL \$250K \$240K *As of June 30, 1982		• POTENTIAL PROBLEMS Results of two extensive contractor work indicate that backup of reliability in the systems design at different plants. Implementation will need to be on a plant-specific or a plant group specific basis in order to be cost effective. • STATUS SUMMARY A Task Action Plan for this task was issued in July 1980 and work is proceeding in accordance with this plan. Draft contractor reports from Sandia and ORNL have been received and were reviewed by the NRC staff. Final reports are now in preparation. A contractor presentation summarizing the results of the studies was made to the staff on August 11, 1982.	

STATION BLACKOUT (A-44)

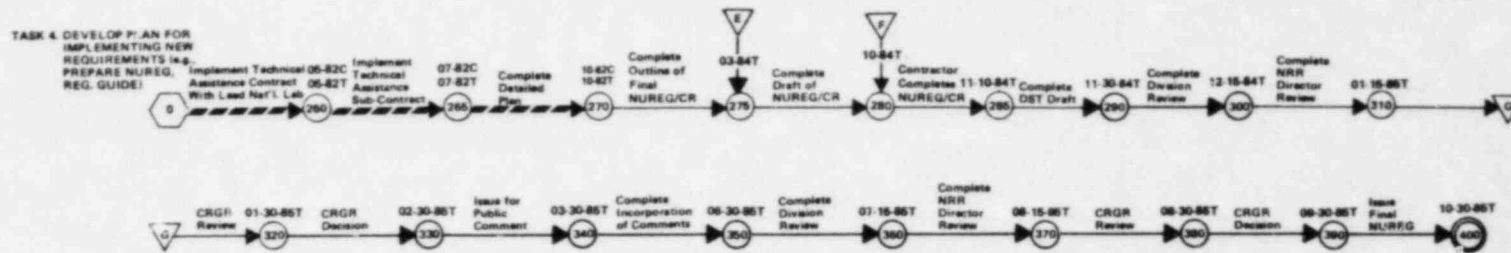


SHUTDOWN DECAY HEAT REMOVAL REQUIREMENTS (A-45)

AS OF WEEK ENDING NOVEMBER 19, 1982

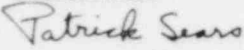
KEY PERSONNEL		TASK REVIEWERS		E. McPEEK		SSH-B/DL		SCHEDULED COMPLETION																							
TASK MANAGER		NAME		BRANCH		P. WAGNER		ORP-B/DL																							
ANDREW MARCHESE X24712						M. CUNNINGHAM		DRA/RES																							
<i>P. Noua J. A. Marchese</i>		T. MARSH		RSB/DSI																											
MPA ANALYST		F. ROSA		ICSB/DSI																											
B. ST. MARY X28336		M. SRINIVASAN		PSB/DSI																											
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								10/85 PRELIMINARY NETWORK																							
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								10-30-85																							
• PROBLEM DESCRIPTION		• RES INTERFACE INFORMATION		• TECHNICAL ASSISTANCE CONTRACTS		• POTENTIAL PROBLEMS																									
<p>Task A-45 was approved as a USI by the NRC in December 1980.</p> <p>Although many improvements to the steam generator auxiliary feedwater system were required of the reactor manufacturers by the NRC following the TMI-2 accident, the staff feels that providing an alternative means of decay heat removal could substantially increase the plants' capability to deal with a broader spectrum of transients and accidents and potentially could, therefore, significantly reduce the overall risk to the public. Consequently, Task A-45 will investigate alternative means of decay heat removal in PWR plants, including but not limited to using existing equipment where possible. The Unresolved Safety Issue will also investigate the need and possible design requirements for improving reliability of decay heat removal systems in boiling water reactors (BWRs).</p> <p>The overall purpose of Task A-45 is to evaluate the adequacy of current licensing design requirements, in order to ensure that nuclear power plants do not pose an unacceptable risk due to failure to remove shut-down decay heat. The objective will be to develop a comprehensive and consistent set of shutdown cooling requirements for existing and future LWRs, including the study of alternative means of shutdown decay heat removal and of diverse "dedicated" systems for this purpose. The approach taken to this problem comprises the following subtasks:</p> <ul style="list-style-type: none">- Development of criteria to judge acceptability of decay heat removal systems in existing & future plants.- Development of means for improvement of DHR systems.- Assessment of existing plants to identify those in which DHR systems require improvement.- Development of a plan for implementing new requirements, if any, for DHR systems required to meet the acceptance criteria above. <p>The interrelationship and relative timing of each of the sub-tasks is shown on the schedule network.</p>		<p>Close coordination and cooperation will be required on Task A-45 between NRR and RES. RES assistance will be required from the Division of Risk Analysis, Accident Evaluation, and Engineering Technology. The Division of Risk Analysis will provide technical input from their Sandia Laboratory Program on Alternate Decay Heat Removal Concepts, technical evaluations relative to reliability and risk assessment for shutdown decay heat removal systems, and input from Task A-44, "Station Blackout," relative to shutdown cooling systems. The Division of Accident Evaluation will provide technical input relative to the transient response of existing and improved shutdown decay heat removal systems to transient events and small LOCAs. This will also include performing (in house, contractors) detailed thermal/hydraulic analyses where required to support existing and improved decay heat removal systems behavior under transient and accident conditions. The Division of Engineering Technology will provide assistance in the preparation and publication (i.e., Rules, Regulatory Guides, Standard Review Plans) of a consistent and comprehensive set of shutdown decay heat removal requirements. At the outset, particular attention will need to be focused on the further development of Regulatory Guide 1.139, "Guidance for Residual Heat Removal to Achieve and Maintain Cold Shutdown," Revision 1.</p>		<p>Implemented a technical assistance contract on August 5, 1981 with BNL (FIN A-3381) for \$100K to make a determination whether it is feasible to separate all currently operating U.S. commercial LWR's into groups based on whether they have similar DHR design characteristics to the plants covered in WASH-1400, RSSMAP, and IREP.</p> <p>Implemented a technical assistance contract on May 10, 1982 with Sandia (FIN A1309) to provide overall project management, technical direction and integration for the entire Task A-45 program, including selection and management of subcontractors if needed.</p>		<p>Potential problem areas identified to date are:</p> <ul style="list-style-type: none">- Obtaining sufficient NRR manpower to work on Task A-45.- Development of appropriate reliability or quantitative goals for Task A-45 and translation of probabilistic results into licensing requirements.- Program funding must be approved and obtained.- Obtaining necessary operating experience on shutdown cooling systems including the most current DHR system design information resulting from Post TMI changes.- Uncertainty in the quality of information that will be available from ongoing reliability and risk assessments, on what schedule, and whether information can be extrapolated to all operating plants.- Close coordination and cooperation needed within NRR and between NRR and RES.- Number of plants that need to be assessed may be significantly greater than the plants that will have a PRA or reliability study performed.- Time to obtain approval of funding by NRR and the Senior Contract Review Board has been greater than expected by about six months (See Status Summary).																									
• STATUS SUMMARY		• ACRS INTERFACE INFORMATION		<table><thead><tr><th>FIN NO.</th><th>CONTRACTOR</th><th>OBLIGATED</th><th>EXPENDED</th></tr></thead><tbody><tr><td>88836</td><td>UCLA</td><td>\$ 10,000</td><td>\$ 10,000</td></tr><tr><td># A-3381</td><td>BNL</td><td>\$100,000</td><td>\$ 80,000</td></tr><tr><td># A1309</td><td>Sandia</td><td>\$537,000</td><td>\$528,000*</td></tr></tbody></table>		FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED	88836	UCLA	\$ 10,000	\$ 10,000	# A-3381	BNL	\$100,000	\$ 80,000	# A1309	Sandia	\$537,000	\$528,000*	<p># * Includes the following funding which has been committed to support subcontracting:</p> <table><tbody><tr><td>UCLA</td><td>\$180,000</td></tr><tr><td>ORNL</td><td>\$112,000</td></tr></tbody></table>		UCLA	\$180,000	ORNL	\$112,000	<p>The Director of NRR did not approve the requested funding level for Task A-45 technical assistance work and a "HOLD" was placed on the program in Nov. 1981. Various options were considered for Task A-45, most of which included reduced scope, funding and completion time. A recommended option was approved by the Director of NRR in Feb. 1982. A technical assistance contract package was approved by the Senior Contract Review Board on April 9, 1982 and implemented with the Contractor (Sandia) on May 10, 1982. Revision 1 of TAP A-45 consistent with the above actions was issued on June 2, 1982.</p> <p># The first interim milestone report on "Quantitative Probabilistic Goal for DHR System" will be issued in draft form for NRC staff review on November 30, 1982.</p>			
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SHUTDOWN DECAY HEAT REMOVAL REQUIREMENTS (A-45) (CONTINUED) PRELIMINARY NETWORK

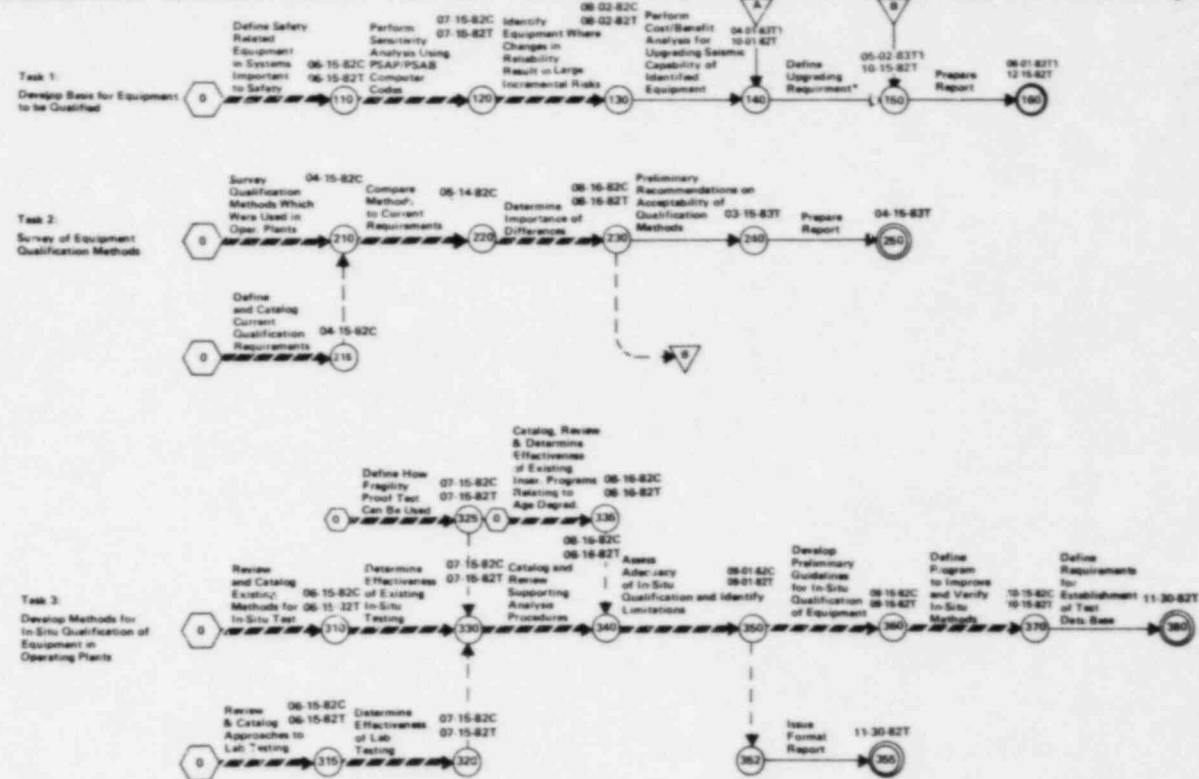


SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS (A-46)

AS OF WEEK ENDING NOVEMBER 19, 1982

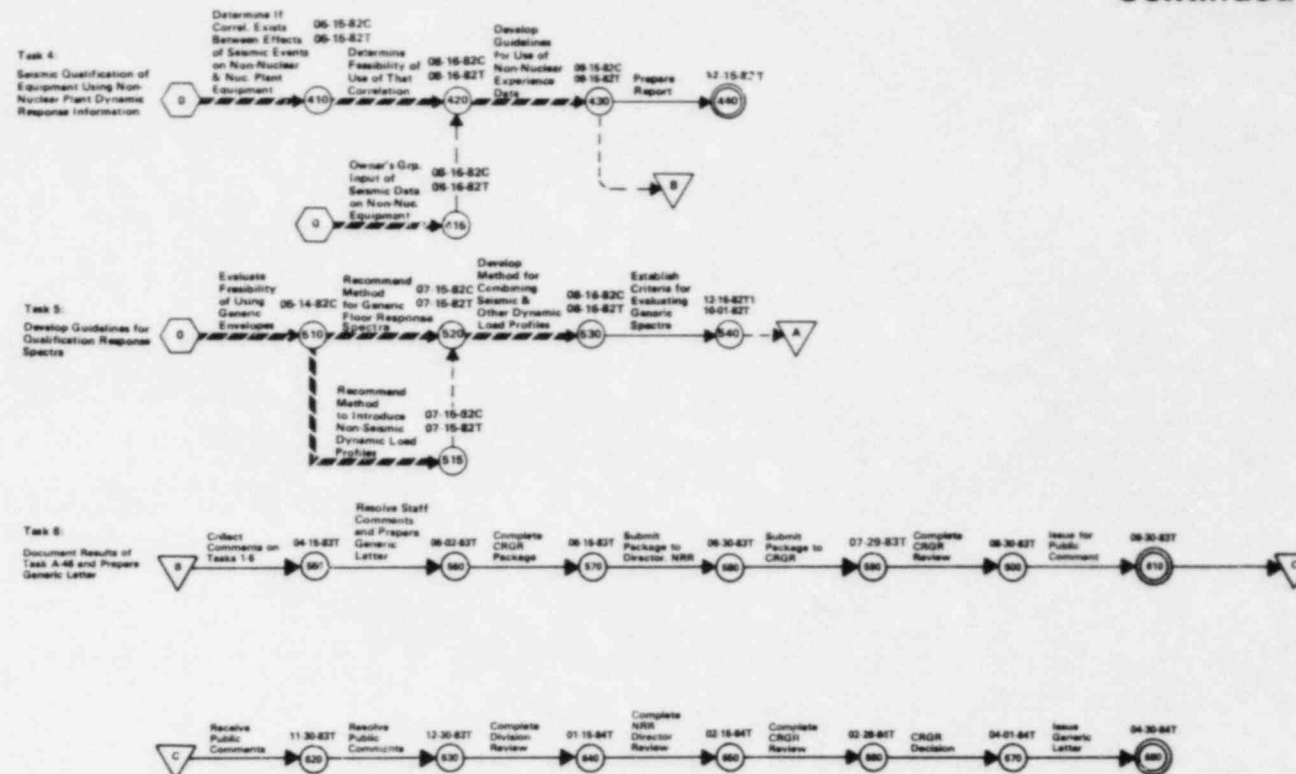
KEY PERSONNEL TASK MANAGER PATRICK SEARS X24216  MPA ANALYST B. ST. MARY X28330		TASK REVIEWERS <table border="1"> <thead> <tr> <th>NAME</th> <th>BRANCH</th> </tr> </thead> <tbody> <tr> <td>JERRY JACKSON</td> <td>EQB/DE</td> </tr> <tr> <td>KENNETH HERRING</td> <td>SEPS/DL</td> </tr> <tr> <td>JOHN KNOX</td> <td>PSB/DSI</td> </tr> </tbody> </table>		NAME	BRANCH	JERRY JACKSON	EQB/DE	KENNETH HERRING	SEPS/DL	JOHN KNOX	PSB/DSI	SCHEDULED COMPLETION <table border="1"> <thead> <tr> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>ORIGINAL</td> <td>12-15-82</td> </tr> <tr> <td>CURRENT</td> <td>#04-30-84</td> </tr> </tbody> </table>				ORIGINAL	12-15-82	CURRENT	#04-30-84		
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ORIGINAL	12-15-82																				
CURRENT	#04-30-84																				
• PROBLEM DESCRIPTION <p>Task A-46 was approved and ISI by the NRC December, 1980.</p> <p>The design criteria and methods for the seismic qualification of mechanical and electrical equipment in nuclear power plants have undergone significant change during the course of the commercial nuclear power program. Consequently, the margin of safety provided in existing equipment to resist seismicity induced loads and perform the intended safety functions may vary considerably. The seismic qualification of the equipment in operating plants must, therefore, be reassessed to ensure the ability to bring the plant to a safe shutdown condition when subject to a seismic event. The objective of this Unresolved Safety Issue is to establish an explicit set of guidelines that could be used to judge the adequacy of the seismic qualification of mechanical and electrical equipment at all operating plants in lieu of attempting to backfit current design criteria for new plants. This guidance will concern equipment required to safely shutdown the plant, as well as equipment whose function is not required for safe shutdown, but whose failure could result in adverse conditions which might impair shutdown functions. Also, explicit guidelines will be established for use in requalifying equipment whose seismic qualification was found to be inadequate.</p> <p>A preliminary breakdown of the tasks is as follows:</p> <p>Task 1 Develop Basis for Equipment to be Qualified</p> <p>Task 2 Survey of Equipment Qualification Methods</p> <p>Task 3 Develop Methods for In-Situ Qualification of Equipment in Operating Plants</p> <p>Task 4 Seismic Qualification of Equipment Using Non-Nuclear Plant Dynamic Response Information</p> <p>Task 5 Develop Guidelines for Qualification Response Spectra</p> <p>Task 6 Document Results of Task A-46 and Prepare a Final NUREG</p>		• RES INTERFACE INFORMATION <p>RES has placed a contract with Southwest Research Institute to survey seismic qualification methodology.</p>		• TECHNICAL ASSISTANCE CONTRACTS <p>EG&G is well into Task 3. They have completed 90% of their library search and contacted test laboratories concerning in-situ qualification of equipment.</p> <p>A plant owners group has collected a significant amount of data on equipment in non-nuclear plants which have undergone earthquakes. Similar data on equipment in nuclear plants has also been collected. LLNL, as a part of Task 4, is evaluating the feasibility of using these data for equipment qualification.</p> <p>BNL has completed work on developing methodology to select equipment to be qualified on a typical PWR. Work on a typical BWR has started.</p>																	
• ACRS INTERFACE INFORMATION <p>A preliminary Task Action Plan was presented to the ACRS. The staff plans to meet with the ACRS at appropriate times to present the status of program results.</p>		<table border="1"> <thead> <tr> <th>FIN NO.</th> <th>CONTRACTOR</th> <th>OBLIGATED</th> <th>EXPENDED</th> </tr> </thead> <tbody> <tr> <td>#A0423</td> <td>LLNL</td> <td>\$75K</td> <td>\$65K (act.)</td> </tr> <tr> <td>#A6474</td> <td>INEL</td> <td>\$165K</td> <td>\$128K (act.)</td> </tr> <tr> <td>#A3397</td> <td>BNL</td> <td>\$207K</td> <td>\$194K (act.)</td> </tr> </tbody> </table>		FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED	#A0423	LLNL	\$75K	\$65K (act.)	#A6474	INEL	\$165K	\$128K (act.)	#A3397	BNL	\$207K	\$194K (act.)	• STATUS SUMMARY <p>Work is progressing on all tasks with all contractors well into their subtasks. Meetings have taken place with members of the Owner's Group who have surveyed nuclear and non-nuclear equipment, and LLNL is evaluating the feasibility of using experience data to qualify equipment.</p>	
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SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS (A-46)



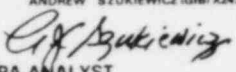
*Required Upgrading: (1) Upgrade None, (2) Upgrade High Risk Only, (3) Upgrade All.

SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS (A-46) Continued



SAFETY IMPLICATIONS OF CONTROL SYSTEMS (A-47)

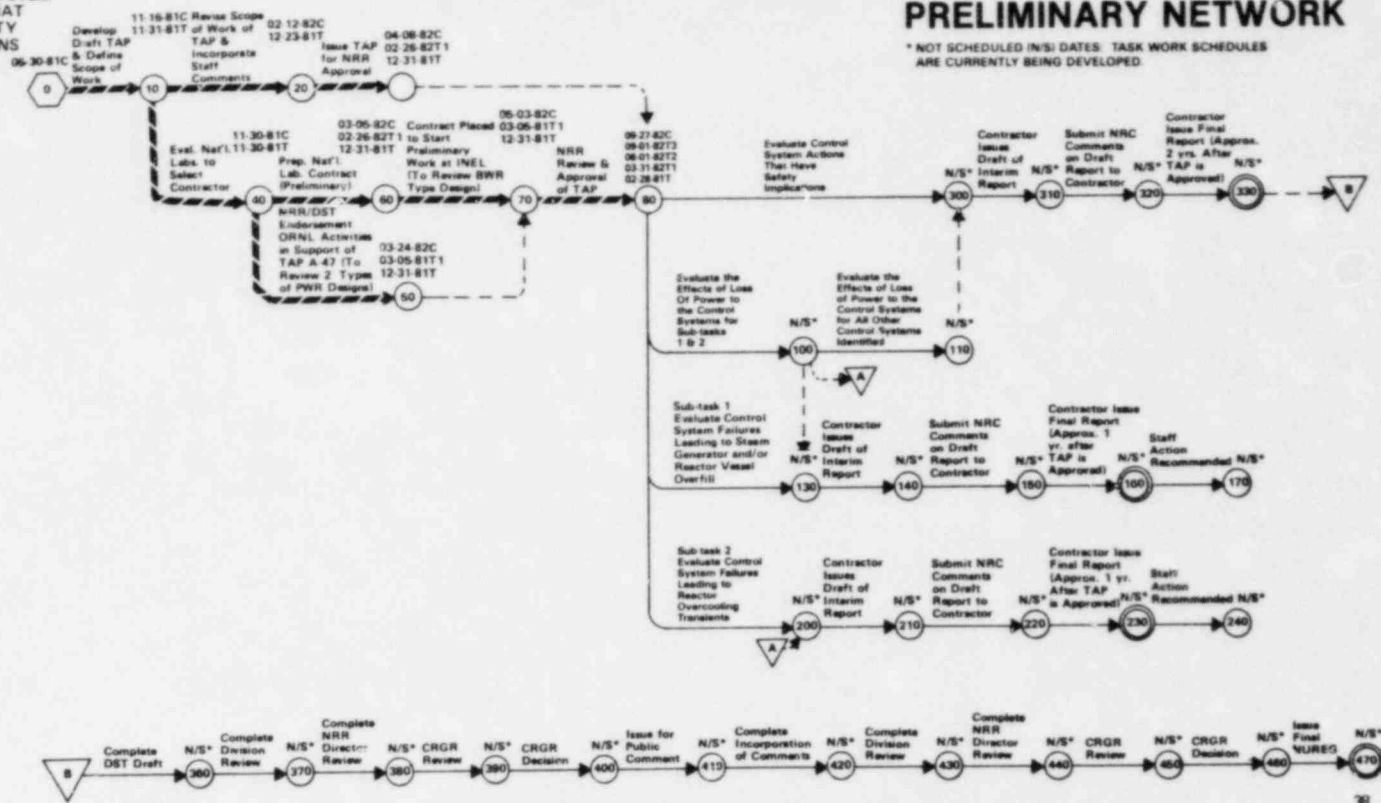
AS OF WEEK ENDING NOVEMBER 19, 1982

KEY PERSONNEL TASK MANAGER ANDREW SZUKIEWICZ (GIB) X24713  MPA ANALYST FR ST MARY X28130	TASK REVIEWERS <table border="1"> <thead> <tr> <th>NAME</th> <th>BRANCH</th> </tr> </thead> <tbody> <tr> <td>D. BIADEKAS</td> <td>CFD/RES</td> </tr> <tr> <td>C. ROSSI</td> <td>ICSB/DSI</td> </tr> <tr> <td>E. CHELLIAN</td> <td>RRAB/DST</td> </tr> </tbody> </table>	NAME	BRANCH	D. BIADEKAS	CFD/RES	C. ROSSI	ICSB/DSI	E. CHELLIAN	RRAB/DST	<table border="1"> <thead> <tr> <th>F. ORR</th> <th>RSB/DSI</th> </tr> </thead> <tbody> <tr> <td>M. CHIRAMAL</td> <td>PSU/AEOD</td> </tr> <tr> <td>J. T. BEARD</td> <td>ORAB/DL</td> </tr> <tr> <td>W. KENNEDY</td> <td>PTRB/DHFS</td> </tr> </tbody> </table>	F. ORR	RSB/DSI	M. CHIRAMAL	PSU/AEOD	J. T. BEARD	ORAB/DL	W. KENNEDY	PTRB/DHFS	SCHEDULED COMPLETION <table border="1"> <thead> <tr> <th>1978 ANNUAL REPORT</th> <th>NOT DETERMINED</th> </tr> </thead> <tbody> <tr> <td>CURRENT</td> <td>N/S</td> </tr> </tbody> </table>	1978 ANNUAL REPORT	NOT DETERMINED	CURRENT	N/S
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1978 ANNUAL REPORT	NOT DETERMINED																						
CURRENT	N/S																						
• PROBLEM DESCRIPTION <p>Task A-47 was approved as a USI by the NRC in December 1980.</p> <p>This issue concerns the potential for accidents or transients being made more severe as a result of control system failures or malfunctions. These failures or malfunctions may occur independently or as a result of the accident or transient under consideration and would be in addition to any control system failure that may have initiated the event. Although it is generally believed that control system failures are not likely to result in loss of safety functions which could lead to serious events or result in conditions that safety systems are not able to cope with, in-depth studies have not been performed to support this belief. The potential for an accident that would effect a particular control system and the effects of the control system failures will differ from plant to plant. Therefore, it is not likely that it will be possible to develop generic answers to these concerns, but rather plant-specific reviews will be required. The purpose of this Unresolved Safety Issue is to define generic criteria that may be used for plant-specific reviews. A specific subtask of this issue will be to study the steam generator overfill transient in PWRs and the reactor overfill transient in BWRs to determine and define the need for preventive and/or mitigating design measures to accommodate this transient.</p>	• RES INTERFACE INFORMATION <p>Close coordination will be required on Task A-47 between NRR and RES. RES assistance will be required from the Division of Facilities Operations and the Division of Risk Analysis. The Division of Facilities Operations will provide input from their research programs (currently being developed in conjunction with A-47) on control system interactions. The Division of Risk Analysis will provide input on their current ongoing ORNL program ("Evaluation of Pressurized Thermal Shock"). Other research activities are being evaluated to determine their significance to A-47 and may be identified later.</p> • ACRS INTERFACE INFORMATION <p>The ACRS Subcommittee on Electrical Power Systems (Dr. Kerri) met on the issue on 1/23/81 to initiate an approximate six month study at the request of Chairman Ahtee.</p> <p>Elements of the conceptual Task Action Plan were discussed with ACRS on 08-07-81.</p>	• TECHNICAL ASSISTANCE CONTRACTS <p>During the week of July 20, 1981, meetings were held with INEL, EG&G (Idaho Falls), Battelle Northwest and Lawrence Livermore Labs. for the purpose of discussing the A-47 objectives and to assess the type of activities that could best be conducted by these organizations. Similar meetings with ORNL and Sandia Labs. were held July 9, 1981. A Technical Assistance (T.A.) contract with ORNL (FIN 8-0487) was established through NRR/RES. RES will conduct a review of two different types of PWR designs, and perform the activities identified in Tasks 1, 2, 3 and 4 of Task Action Plan A-47. A separate T.A. contract to perform the review on one BWR type design was established with INEL (FIN A-6477). A T.A. contract to review a third PWR design will be established in late 1982. The technical assistance contracts will perform the following tasks:</p> <ol style="list-style-type: none"> 1. Evaluate Control System Failures Leading to Steam Generator and/or Reactor Overfill Transients 2. Evaluate Control System Failures Leading to Reactor Overcooling Transients 3. Evaluate (All Others) Control System Actions That Have Safety Implications 4. Evaluate the Effects of Loss of Power to the Control Systems <p>Additional Technical Assistance Contract work will be needed for Task A-47 and is being defined as part of the developing Task Action Plan.</p> <table border="1"> <thead> <tr> <th>FIN NO.</th> <th>CONTRACTOR</th> <th>OBLIGATED</th> <th>EXPENDED</th> </tr> </thead> <tbody> <tr> <td># A-6477</td> <td>INEL</td> <td>\$142,000</td> <td>\$ 73,000</td> </tr> <tr> <td># B-0487</td> <td>ORNL</td> <td>\$600,000</td> <td>\$534,000</td> </tr> </tbody> </table>	FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED	# A-6477	INEL	\$142,000	\$ 73,000	# B-0487	ORNL	\$600,000	\$534,000	• POTENTIAL PROBLEMS <p>Obtain necessary operating experience information on Non-Safety Control Systems for the Nuclear Steam System (NSS) and the Balance of Plant (BOP) systems.</p> <p>Obtain necessary design information (i.e., schematics and systems descriptions) for the Non-Safety Control System designs for the NSS and the BOP designs.</p> <p>Traditionally, licensees were not required to provide design or operating experience on Non-Safety Systems and therefore this information may be difficult to obtain.</p> • STATUS SUMMARY <p># A task manager has been selected. An approved Task Action Plan was issued on September 27, 1982.</p> <p># A work order was placed with INEL (May 1, 1982) to start preliminary work on a BWR plant review. Model development for computer simulation of the control systems on two PWR type plants is underway at ORNL.</p>								
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EVALUATE
CONTROL SYSTEM
ACTIONS THAT
HAVE SAFETY
IMPLICATIONS


SAFETY IMPLICATIONS OF CONTROL SYSTEMS (A-47) PRELIMINARY NETWORK

* NOT SCHEDULED IN/ST DATES: TASK WORK SCHEDULES
ARE CURRENTLY BEING DEVELOPED.



HYDROGEN CONTROL MEASURES AND EFFECTS OF HYDROGEN BURNS ON SAFETY EQUIPMENT (A-48)

AS OF WEEK ENDING NOVEMBER 18, 1982

KEY PERSONNEL		TASK REVIEWERS		SCHEDULED COMPLETION	
TASK MANAGER		NAME	BRANCH	ORIGINAL	NOT DETERMINED
#TSUNG MING SU X27477  MPA ANALYST 8 ST MARY X28330		NOT ASSIGNED			
				CURRENT	N/S
• PROBLEM DESCRIPTION Task A-48 was approved as a USI by the NRC in December 1980. Postulated reactor accidents which result in a degraded or melted core can result in generation and release to the containment of large quantities of hydrogen. The hydrogen is formed from the reaction of the zirconium fuel cladding with steam at high temperatures and/or by radiolysis of water. Experience gained from the TMI-2 accident indicates that we may want to require more specific design provisions for handling large hydrogen releases than currently required by the regulations particularly for smaller, low pressure containment designs. The USI will investigate means to predict the quantity and release rate of hydrogen following degraded core accidents and various means to cope with large releases to the containment such as venting of the containment or controlled burning. The potential effects of proposed hydrogen control measures on safety including the effects of hydrogen burns on safety related equipment will be investigated.		• RES INTERFACE INFORMATION TO BE DEVELOPED		• TECHNICAL ASSISTANCE CONTRACTS TO BE DEVELOPED	
		• ACRS INTERFACE INFORMATION TO BE DEVELOPED		• STATUS SUMMARY A draft Task Action Plan (TAP) was issued for NRC comments on 4/22/82. A revised Draft Task Action Plan was issued for NRC comment on 11/22/82. A detailed schedule is tentatively scheduled to be issued by 01/31/83.	

INDICATES A CHANGE IN INFORMATION

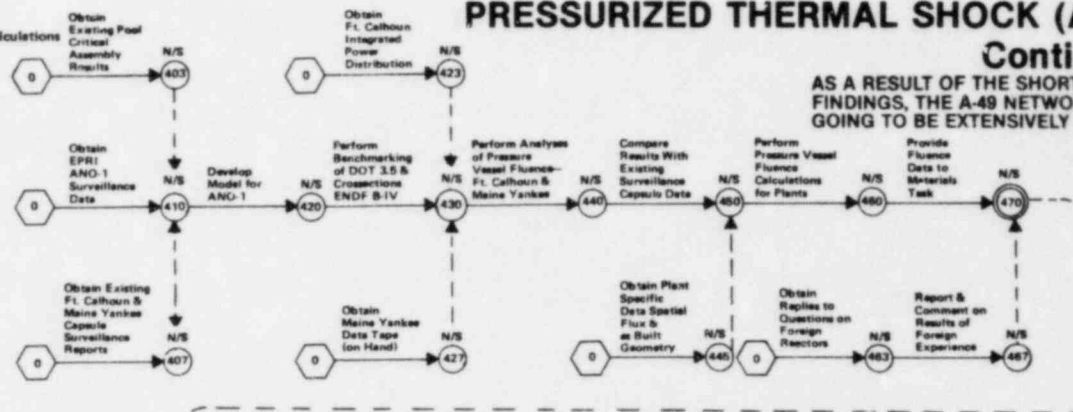
PRESSURIZED THERMAL SHOCK (A-49)

AS OF WEEK ENDING NOVEMBER 19, 1982

<p>KEY PERSONNEL</p> <p>TASK MANAGER ROY WOODS X24714</p> <p><i>Roy Woods</i></p> <p>MPA ANALYST #B ST MARY X29336</p>	<p>TASK REVIEWERS</p> <table border="1"> <thead> <tr> <th>NAME</th> <th>BRANCH</th> </tr> </thead> <tbody> <tr> <td>E. THROM</td> <td>RSB/NRR</td> </tr> <tr> <td>C. JOHNSON</td> <td>RES</td> </tr> <tr> <td>L. LOIS</td> <td>CPB/DSI</td> </tr> <tr> <td>J. STROSNIDER</td> <td>RES</td> </tr> <tr> <td>M. VAGINS</td> <td>RES</td> </tr> </tbody> </table>	NAME	BRANCH	E. THROM	RSB/NRR	C. JOHNSON	RES	L. LOIS	CPB/DSI	J. STROSNIDER	RES	M. VAGINS	RES	<table border="1"> <tbody> <tr> <td>R. JOHNSON</td> <td>GIB/DST</td> </tr> <tr> <td>R. KLECKER</td> <td>MTEB/DE</td> </tr> <tr> <td>N. RANDALL</td> <td>MTEB/DE</td> </tr> <tr> <td>G. VISSING</td> <td>ORB/IDL</td> </tr> <tr> <td>J. CLIFFORD</td> <td>PTRB/HFS</td> </tr> </tbody> </table>	R. JOHNSON	GIB/DST	R. KLECKER	MTEB/DE	N. RANDALL	MTEB/DE	G. VISSING	ORB/IDL	J. CLIFFORD	PTRB/HFS	<p>SCHEDULED COMPLETION</p> <table border="1"> <thead> <tr> <th></th> <th>ORIGINAL</th> <th>Not Determined</th> </tr> </thead> <tbody> <tr> <td>CURRENT</td> <td>Not Scheduled</td> <td></td> </tr> </tbody> </table>		ORIGINAL	Not Determined	CURRENT	Not Scheduled																	
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<p>• PROBLEM DESCRIPTION</p> <p>This task was designated a USI by the NRC in December, 1981. Neutron irradiation of reactor pressure vessel weld and plate materials decreases the fracture toughness of the materials. The fracture toughness sensitivity to radiation induced change is increased by presence of certain materials such as copper. Decreased fracture toughness makes it more likely that, if a severe overcooling event occurs followed by or concurrent with high vessel pressure, and if a small crack is present on the vessels inner surface, that crack could grow to a size that might threaten vessel integrity.</p> <p>Severe pressurized overcooling events are improbable since they require multiple failures and improper operator performance. However, certain precursor events have happened that could have potentially threatened vessel integrity if additional failures had occurred and/or if the vessel had been more highly irradiated. Therefore, the possibility of vessel failure due to a severe pressurized overcooling event cannot be ruled out.</p>	<p>• RES INTERFACE INFORMATION</p> <p>A major portion of the work is being performed under a contract with Oak Ridge National Laboratory through the Division of Risk Analysis, RES IFIN # B0466.</p> <p>Other major contributors are:</p> <ul style="list-style-type: none"> Primary System Integrity Research Program through the Division of Engineering Technology, RES and Code Applications Program through the Division of Accident Evaluation, RES <p>• ACRS INTERFACE INFORMATION</p> <p>Meetings have been held and will be scheduled as necessary with the Subcommittee on Metallic Components and with the full ACRS. The next scheduled meetings are September 8 and 9, 1982, respectively.</p>	<p>• TECHNICAL ASSISTANCE CONTRACTS</p> <p>Contract (B-2510) issued to PNL. PNL will provide their recommendations regarding the necessity of corrective actions, and will provide peer review of recommendations being considered by the NRC staff.</p> <p>The following RES contracts are providing technical assistance to the PTS program. These are in addition to the technical assistance contracts which were initiated to specifically address the PTS issue and listed in the table below.</p> <table border="1"> <thead> <tr> <th>FIN No.</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B0119</td> <td>HSET</td> </tr> <tr> <td>B8133</td> <td>LWR Pressure Boundary Integrity</td> </tr> <tr> <td>B5988</td> <td>Surveillance Dosimetry</td> </tr> <tr> <td>B0415</td> <td>Pressure Vessel Simulation</td> </tr> <tr> <td>B6224</td> <td>Dosimetry Meas. Data Base</td> </tr> <tr> <td>B7076</td> <td>JR Curve</td> </tr> <tr> <td>A3215</td> <td>Code Assessment and Application</td> </tr> <tr> <td>A6047</td> <td>Code Assessment and Applications</td> </tr> <tr> <td>A7027</td> <td>Analytical Res. in LWR Safety</td> </tr> <tr> <td>A7217</td> <td>TRAC Calc Assistance</td> </tr> <tr> <td>B0468</td> <td>Pressurized Thermal Shock</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>FIN NO.</th> <th>CONTRACTOR</th> <th>OBLIGATED</th> <th>EXPENDED</th> </tr> </thead> <tbody> <tr> <td>#B 2510</td> <td>PNL</td> <td>\$400K</td> <td>\$375K est.</td> </tr> <tr> <td>#A 272</td> <td>LANL</td> <td>\$210K-FY82</td> <td>\$ *</td> </tr> <tr> <td></td> <td></td> <td>\$210K-FY83</td> <td></td> </tr> <tr> <td>#A 3387</td> <td>BNL</td> <td>\$210K</td> <td>\$ *</td> </tr> </tbody> </table> <p>* Figures not available at the time of this publication.</p>	FIN No.	Description	B0119	HSET	B8133	LWR Pressure Boundary Integrity	B5988	Surveillance Dosimetry	B0415	Pressure Vessel Simulation	B6224	Dosimetry Meas. Data Base	B7076	JR Curve	A3215	Code Assessment and Application	A6047	Code Assessment and Applications	A7027	Analytical Res. in LWR Safety	A7217	TRAC Calc Assistance	B0468	Pressurized Thermal Shock	FIN NO.	CONTRACTOR	OBLIGATED	EXPENDED	#B 2510	PNL	\$400K	\$375K est.	#A 272	LANL	\$210K-FY82	\$ *			\$210K-FY83		#A 3387	BNL	\$210K	\$ *	<p>• POTENTIAL PROBLEMS</p> <p># As a result of the short term findings, the A-49 network is going to be extensively revised.</p> <p>• STATUS SUMMARY</p> <p>Draft short-term position is under preparation and will be completed in November 1982. Final PNL proposed position has been published as NUREG/CR-2837. ORNL has proposed the first three event sequences to be analyzed and they have been accepted by the staff. Review of the "150-day response" has been completed. Results of the review are being integrated into the November staff position report.</p> <p>The final Task Action Plan for A-49 was approved and issued on March 26, 1982.</p>
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Task 4:

Fluence Calculations



PRESSURIZED THERMAL SHOCK (A-49)

Continued

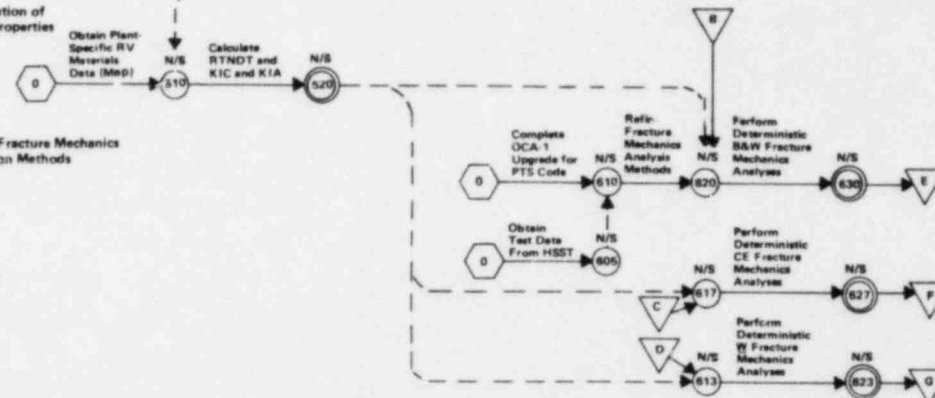
AS A RESULT OF THE SHORT-TERM FINDINGS, THE A-49 NETWORK IS GOING TO BE EXTENSIVELY REVISED.

Task 5:

Determination of Material Properties

Task 6:

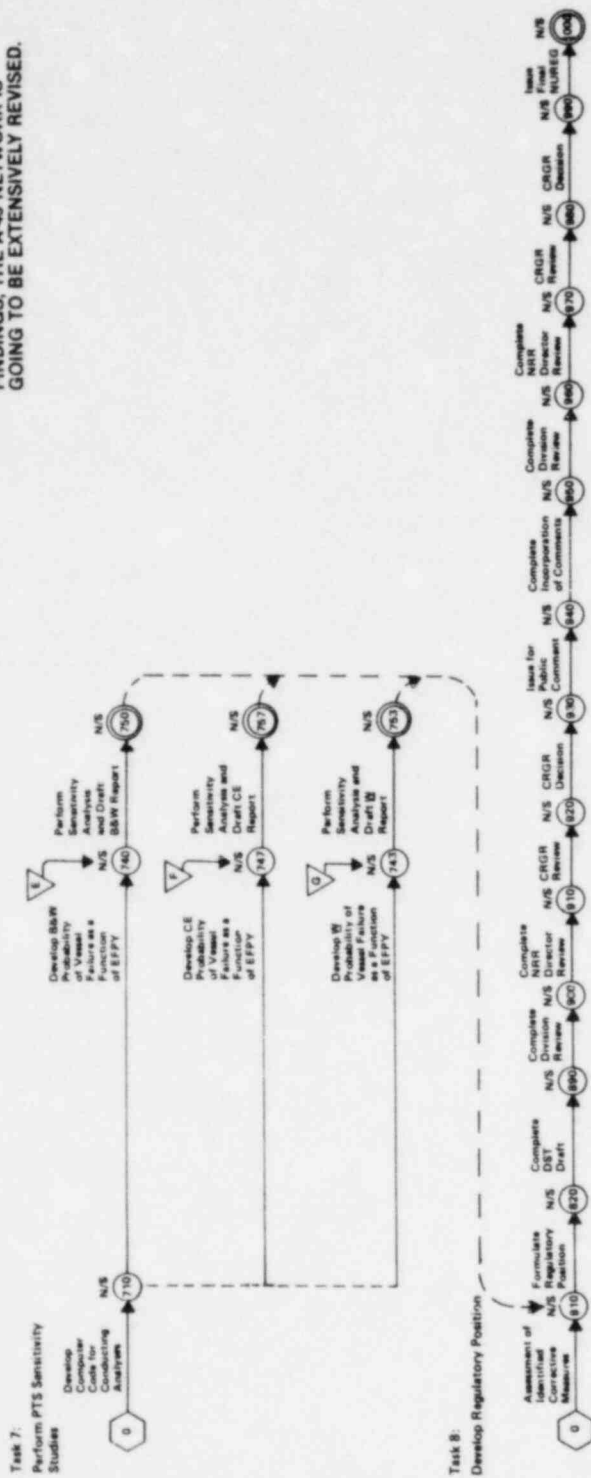
Develop Fracture Mechanics Calculation Methods



PRESSURIZED THERMAL SHOCK (A-49)

Continued

AS A RESULT OF THE SHORT-TERM FINDINGS, THE A-49 NETWORK IS GOING TO BE EXTENSIVELY REVISED.



NRC FORM 335 (7-77)		U.S. NUCLEAR REGULATORY COMMISSION BIBLIOGRAPHIC DATA SHEET		1. REPORT NUMBER (Assigned by DDC) NUREG-0606, Vol. 4, No. 4	
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13. TYPE OF REPORT				PERIOD COVERED (Inclusive dates) August 21, 1982 - November 19, 1982	
15. SUPPLEMENTARY NOTES				14. (Leave blank)	
16. ABSTRACT (200 words or less) Provide an overview of the status of the progress and plans for resolution of the generic tasks addressing "Unresolved Safety Issues" as reported to Congress.					
17. KEY WORDS AND DOCUMENT ANALYSIS					
17a. DESCRIPTORS					
17b. IDENTIFIERS OPEN ENDED TERMS					
18. AVAILABILITY STATEMENT Unlimited				19. SECURITY CLASS (This report) Unclassified	
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