

AUG 22 1984

DMB 016

Docket No. 50-289

LICENSEE: GPU Nuclear Corporation

FACILITY: Three Mile Island, Unit 1

SUBJECT: SUMMARY OF MEETING HELD ON AUGUST 14, 1984 WITH GPU
NUCLEAR CORPORATION (GPUN) REGARDING FIRE PROTECTION

Representatives of GPUN met with members of the staff to discuss fire protection at TMI-1, particularly dealing with fire zones and the use of Rockbestos cable. A list of attendees, the transcript of the meeting, and GPUN's handouts are enclosed.

GPUN discussed the status of fire protection modifications and of its work on fire zones. With regard to the proposed Evaluation Criteria of Zone Boundary Accuracy (see handout), the staff noted that the criteria cannot be accepted as general criteria, but may be used in the analysis of TMI-1 only.

With regard to Rockbestos cable, although favorably disposed toward appropriate use in the plant, the staff noted that additional information is necessary. Specifically, electrical characteristics during and after a fire are required, which will be discussed between Rockbestos and NRC personnel in the near future.

In addition, GPUN will reference previous information in the Fire Hazards Analysis on configuration of combustibles in areas in question. Whether or not automatic fire suppression systems can be assured to function can only be decided for individual cases by considering the effects of their failure: will compensatory features or backup action (e.g., fire brigade) adequately protect safety systems? GPUN agreed to submit an actual exemption request package on one area (FZ-1 in the auxiliary building was suggested) with complete detail to permit staff evaluations, on a schedule to be discussed shortly with the staff.

GPUN advised that detailed exemptions are expected to be completed in the first quarter of 1985.

It is noted that the attached transcript contains errors and omissions due to inaudibility. It is requested that where understanding of the sense of the meeting may be affected that GPUN and ChEB correct the transcript to the extent possible and provide a copy to the undersigned.

"ORIGINAL SIGNED BY:"
Harley Silver, Project Manager
Operating Reactors Branch #4, DL

Enclosures: As Stated

cc w/enclosures: See next page

ORB#4-DL
HSilver:cd
8/22/84

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F PDR

MEETING SUMMARY DISTRIBUTION

Licensee: GPU Nuclear Corporation

*Copies also sent to those people on service (cc) list for subject plant(s).

Docket File
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NRC Meeting Participants:

VBenaroya
SPullani
DKubicki
TWambach

TMI-1 FIRE PROTECTION MEETING

HELD ON AUGUST 14, 1984

<u>Name</u>	<u>Affiliation</u>
Harley Silver	NRC/DL
Vic Benaroya	NRC/DE
John Stolz	NRC/DL
S. V. Pullani	NRC/R:I
D. Kubicki	NRC/DE
Tom Wambach	NRC/DL
M. Iqbal	GPUN
Mark Sanford	GPUN
R. W. Keaten	GPUN
Jack Wetmore	GPUN
R. F. Wilson	GPUN
Jack Thorpe	GPUN
D. G. Sudar	GPUN
Boris Gan	GPUN
T. A. O'Connor	GPUN
F. P. Barbein	GPUN
R. J. Cehm	Rockbestos
D. C. Hance	Bechtel

NRC - GPUN

TMI-1 FIRE PROTECTION MEETING

(APPENDIX R)

- INTRODUCTION/STATUS

- ROCKBESTOS CABLE

- FIRE ZONES/AREAS

- SUMMARY

AUGUST 14, 1984

TMI-1 APPENDIX R MODIFICATIONS STATUS

CATEGORY	PLANNED MODIFICATIONS	CURRENT STATUS	REMARKS
(1) SHUTDOWN NOT REQ'D./NRC APPROVAL NOT REQUIRED	A. INTAKE SCREEN AND PUMP HOUSE FIRE WALL & EMER- GENCY LIGHTING (PHASE I) UPGRADES	COMPLETED: SEPTEMBER 1983	
	B. INTAKE SCREEN AND PUMP HOUSE FIRE DETECTION SYSTEM	COMPLETED: 1983	

TMI-1 APPENDIX R MODIFICATIONS STATUS

---CATEGORY---	---PLANNED MODIFICATIONS---	---CURRENT STATUS---	---REMARKS---
(2) SHUTDOWN REQ'D. /NRC APPROVAL NOT REQUIRED	C. APPENDIX R FIRE BARRIERS*	AWARDING CONTRACT FOR ENGINEERING OF KNOWN SCOPE	SWITCHED TO ROCKBESTOS CABLE BASED ON SCOPE AND IMPACT ON PLANT NEED DECISION ON ROCKBESTOS CABLE AND RESO- LUTION OF FIRE AREAS VERSUS ZONES ISSUE TO IDENTIFY FULL SCOPE AND PROCEED

*MAY BECOME CATEGORY (3) BUT NO CHANGE IN COMPLETION SCHEDULE

TMI-1 APPENDIX R MODIFICATIONS STATUS

CATEGORY	PLANNED MODIFICATIONS	CURRENT STATUS	REMARKS
(2) (CONT'D.)	D. APPENDIX R CABLE REROUTING*	COMPLETED ROCKBESTOS CABLE TEST PROGRAM	SWITCHED TO ROCKBESTOS CABLE BASED ON SCOPE AND IMPACT ON PLANT
		COMPLETED PRELIMINARY ENGINEERING	
		DETAILED EVALUATION AND WALKDOWNS OF CABLE REROUTINGS IN PROGRESS	NEED DECISION ON ROCKBESTOS CABLE AND RESOLUTION OF FIRE AREAS VERSUS ZONES ISSUE TO PROCEED WITH DETAILED ENGINEERING

*MAY BECOME CATEGORY (3) BUT NO CHANGE IN COMPLETION SCHEDULE

IMI-1 APPENDIX B MODIFICATIONS STATUS

CATEGORY	PLANNED MODIFICATIONS	CURRENT STATUS	REMARKS
(2) (CONT'D.)	D. (CONTINUED)	<p>DETAILED DESIGN OF TYPICAL HIGH TEMPERATURE CONDUITS AND SUPPORTS IN PROGRESS TO BE COMPLETED DURING SEPTEMBER 1984</p>	<p>TO BE USED WITH ROCKBESTOS CABLE</p> <p>REPOWERING OF NUCLEAR SERVICES RIVER WATER PUMPS IN ISPH COMPLETED JUNE 1984</p>
	E. 480 VAC ESV CC FIREWALL	<p>ENGINEERING COMPLETED AND UNDER CONSTRUCTION</p> <p>TO BE COMPLETED IN 1984 IF PLANT IS AVAILABLE</p>	

IMI-1 APPENDIX B MODIFICATIONS STATUS

---CATEGORY---	---PLANNED MODIFICATIONS---	---CURRENT STATUS---	---REMARKS---
(2) (CONT'D.)	F. STRUCTURAL STEEL FIREPROOFING REPAIR	CONSTRUCTION IN PROGRESS 7 ROOMS COMPLETE 7 ROOMS IN PROGRESS	
(3) SHUTDOWN REQ'D. /NRC APPROVAL REQUIRED	G. REMOTE SHUTDOWN SYSTEM (INCLUDES COMMUNICATIONS UPGRADE)	COMPLETED PRELIMINARY ENGINEERING DETAILED ENGINEERING IN PROGRESS	SAFETY EVALU- ATION REPORT ISSUED JUNE 1984

TMI-1 APPENDIX R MODIFICATIONS STATUS

-----CATEGORY-----	-----PLANNED MODIFICATIONS-----	-----CURRENT STATUS-----	-----REMARKS-----
(4) SHUTDOWN NOT REQ'D./ NRC ACTION ON EXEMPTION REQUESTS REQ'D.	H. CONTROL BUILDING 306' EL. FIRE DETECTION SYSTEM	INSTALLED AND BEING TESTED	REQ'D. COMPLETION DATE 3/4/85 (I.E. 9 MTHS AFTER APPROVED SER)
	I. AUXILIARY BUILDING FIRE DETECTION SYSTEM ADDITIONS	TO BE RELEASED FOR CONSTRUCTION IN AUGUST 1984 EXPECTED COMPLETION LATE 1984	REQ'D. COMPLETION DATE 3/4/85

TMI-1 APPENDIX R EFFORT IN 1984

PLANNED MODIFICATION	ENGINEERING MAN HOURS		CONSTRUCTION MAN HOURS	
	PLANNED	YTD	PLANNED	YTD
APPENDIX R FIRE BARRIERS	1,300	100	0	0
APPENDIX R CABLE REROUTING	8,000	4,000	7,000	4,700
480 VAC ESV FIREWALL	300	300	6,500	200
STRUCTURAL STEEL FIREPROOFING REPAIRS	300	300	34,000	15,000
REMOTE SHUTDOWN SYSTEM	8,450	4,000	0	0
CONTROL BUILDING 306' EL. FIRE DETECTION	450	450	2,300	2,300
AUXILIARY BUILDING FIRE DETECTION SYSTEM ADDITIONS	650	650	3,800	1,000
TOTALS	19,450	9,800	53,600	23,200

ROCKBESTOS CABLE

- 0 REASONS FOR USE
- 0 SUMMARY OF TESTING
- 0 VIDEO TAPE OF TEST
- 0 THREE SPECIFIC PROPOSED APPLICATIONS
- 0 PROPOSED GUIDELINES FOR USE
- 0 COMPARISON TO APPENDIX R

COMPARISON OF FIRE RESISTANT CABLES AND FIRE BARRIERS

ISSUE	FIRE BARRIERS	ROCKBESTOS CABLE
SEISMIC/STRUCTURAL REQUIREMENTS	ADD SIGNIFICANT WEIGHT TO RACEWAYS (APPROX. 10 LB./FT.) REQUIRE EXTENSIVE SUPPORT ANALYSIS AND MODIFICATIONS	ADD ONLY WEIGHT OF NEW CABLES (\leq 1/2 LB./FT.) VIRTUALLY ELIMINATES RACEWAY SUPPORT MODIFICATIONS ELIMINATES DIFFICULT FIRE BARRIER TO WALL JOINTS
EFFECTS ON EXISTING CIRCUITS	REQUIRE DERATING ANALYSIS OF EXISTING POWER AND CONTROL CIRCUITS REPLACE/REROUTE DERATED APP. R AND NON-APP. R CIRCUITS REDUCE EFFECTIVENESS OF OTHER FIRE PROTECTION SYSTEMS FOR ELECTRICALLY INITIATED FIRES	REPLACE/REROUTE APPENDIX R CIRCUITS NO EFFECT ON NON-APP. R CIRCUITS NO INTERFERENCE WITH DETECTION OR SUPPRESSION OF ELECTRICALLY INITIATED FIRES

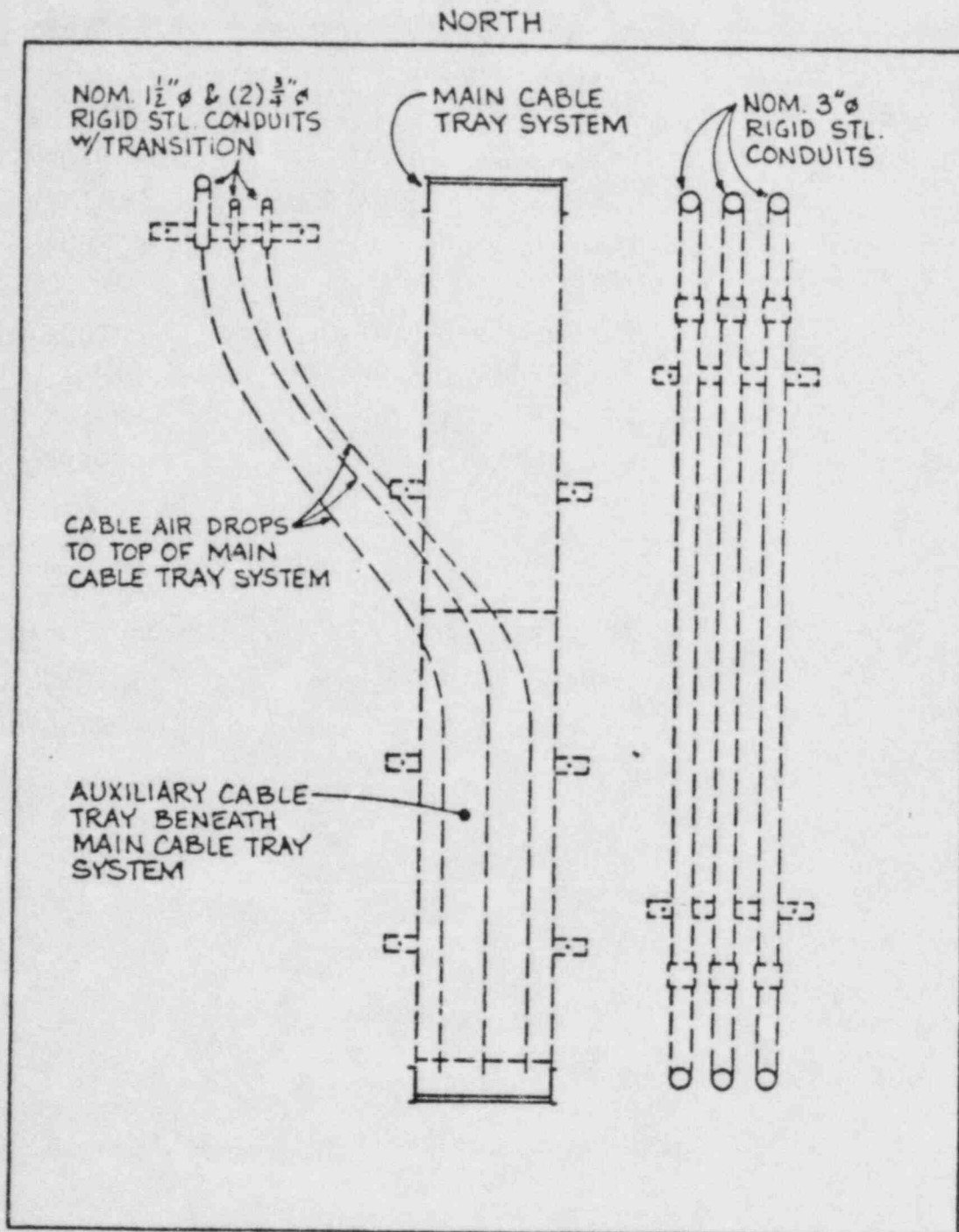
COMPARISON OF FIRE RESISTANT CABLES AND FIRE BARRIERS (CONT'D.)

ISSUE	FIRE BARRIERS	ROCKBESTOS CABLE
EFFECTS ON FUTURE MODIFICATIONS	RESTRICT ACCESS TO RACEWAYS	DOES NOT RESTRICT ACCESS TO RACEWAYS
	INCREASE SPACE REQUIRED FOR NEW RACEWAYS	MINIMIZES SPACE REQUIRED FOR NEW RACEWAYS
	REDUCE SPACE AVAILABLE FOR FUTURE MODIFICATIONS	LEAVE MAXIMUM SPACE AVAILABLE FOR FUTURE MODIFICATIONS
	REMOVALS AND RE-INSTALLATIONS HAVE POTENTIAL TO VIOLATE FIRE BARRIER INTEGRITY	ADDING NEW CIRCUITS DOES NOT DEGRADE EXISTING FIRE PROTECTION
	FUTURE MODIFICATIONS WILL REQUIRE MODIFICATIONS TO FIRE BARRIERS AND REQUALIFICATION	ADDING NEW CIRCUITS DOES NOT EFFECT EXISTING FIRE PROTECTION
IMPLEMENTATION EFFORT	EXTREMELY MANPOWER INTENSIVE EFFORT	EFFORT SIMILAR TO INSTALLING NORMAL CABLES AND CONDUITS
	REQUIRE LONGER CONSTRUCTION PERIOD	REQUIRE SHORTER CONSTRUCTION PERIOD
	RESULT IN HIGHER MAN-REM EXPOSURES	RESULT IN LOWER MAN-REM EXPOSURES

COMPARISON OF FIRE RESISTANT CABLES AND FIRE BARRIERS (CONT'D.)

ISSUE	FIRE BARRIERS	ROCKBESTIQS CABLE
QUALITY CONTROL OF MODIFICATIONS	EXTENSIVE EFFORT REQUIRED TO ASURE PROPER CONFIGURATIONS	SMALLER LABOR FORCE PERFORMING MORE FAMILIAR WORK IN FIELD
	FUTURE MODIFICATIONS REQUIRE REINSPEC- OF RESTORED FIRE BARRIERS	FUTURE MODIFICA- TIONS WILL NOT IMPACT EXISTING FIREPROOF CABLES
IN-SERVICE ISSUES	POTENTIAL FOR DAMAGE TO BARRIERS	RESISTANT TO INADVERTANT DAMAGE DURING OPERATION

PLAN VIEW OF TEST ASSEMBLY



SUMMARY OF ROCKBESTOS CABLE TESTING

TEST FEATURES	TEST AT VTEC	LARGE SCALE TEST AT UL	SMALL SCALE TEST AT UL
SAMPLES TESTED	SHEATHED AND UNSHEATHED POWER/CONTROL CABLES	SHEATHED AND UNSHEATHED POWER/CONTROL AND INSTRUMENTATION CABLES	SHEATED POWER/CONTROL AND INSTRUMENTATION CABLES
CONFIGURATION	APPRX. 30 FT EACH IN TIGHT COILS (2 SAMPLES)	CABLE TRAY AND CONDUIT CONFIGURATIONS TYPICAL OF TMI-1 (9 SAMPLES)	APPROX. 20 FT. EACH IN TIGHT COILS (2 SAMPLES)
FIRE EXPOSURE	1ST HOUR OF ASTM E-119 TIME VERSUS TEMP. CURVE	1ST HOUR OF ASTME-119 TIME VERSUS TEMP. CURVE	1ST HOUR OF ASTM E-119 TIME VERSUS TEMP. CURVE

SUMMARY OF ROCKBESTOS CABLE TESTING

TEST FEATURES	TEST AT VTEC	LARGE SCALE TEST AT UL	SMALL SCALE TEST AT UL
ELECTRICAL TESTING	ENERGIZED AT 390 AND 450 VAC DURING FIRE AND WETTING TEST	ENERGIZED AT 110 VAC DURING FIRE AND 93 HOUR COOLDOWN PERIOD STEADY STATE CURRENT MAINTAINED.	ENERGIZED AT 480 VAC DURING 1 HOUR FIRE AFTER 1 HOUR OVERLOAD TEST AT 960 VAC AND OVER 1700°F.
	LIGHT BULBS USED FOR ELECTRICAL LOADS	INRUSH CURRENTS SIMULATED FOR POWER/CONTROL CABLES 5 TIMES	
		DIELECTRIC VOLTAGE WITHSTAND TEST 17 DAYS AFTER FIRE	
HOSE EXPOSURE	WETTED WITH "GARDEN TYPE" HOSE	FIRE HOSE WITH TYPICAL TMI-1 NOZZLE	NOT APPLICABLE
		REPEATED APPLICATIONS AFTER FIRE TEST	
		CLOSE RANGE EXPOSURE AFTER COOLDOWN PERIOD	

EXAMPLES OF ROCKBESTOS CABLE USE

- LOCATION:
- OUTSIDE CONTAINMENT
 - AUTOMATIC FIRE DETECTION SYSTEM INSTALLED
 - AUTOMATIC FIRE SUPPRESSION SYSTEM INSTALLED
 - FIRE LOADING LESS THAN 1 HOUR

EXAMPLE: FUEL HANDLING BUILDING 281' EL. (FIRE ZONE FH-FZ-1)

FOR APPENDIX R HOT SHUTDOWN CIRCUITS:

- (1) USE SHEATHED ROCKBESTOS CABLE IN EXISTING CABLE TRAYS
- (2) USE UNSHEATHED ROCKBESTOS CABLE IN NEW CONDUITS OF NORMAL DESIGN

EXAMPLES OF ROCKBESTOS CABLE USE

LOCATION: - OUTSIDE CONTAINMENT
 - AUTOMATIC FIRE DETECTION SYSTEM INSTALLED
 - NO AUTOMATIC FIRE SUPPRESSION SYSTEM
 - FIRE LOADING LESS THAN 1 HOUR

EXAMPLE: AUXILIARY BUILDING VALVE GALLERY (FIRE ZONE AB-FZ-3)

FOR APPENDIX R HOT SHUTDOWN CIRCUITS:

- (1) USE UNSHEATHED ROCKBESTOS CABLE IN NEW CONDUITS
- (2) CONDUITS AND SUPPORTS DESIGNED TO WITHSTAND EXPOSURE TO A 1 HOUR FIRE WITHOUT DAMAGE TO CABLE
- (3) CONDUITS LOCATED ABOVE ANY COMPONENTS OR SUPPORTS WHICH COULD GENERATE SIGNIFICANT FALLING DEBRIS

EXAMPLES OF ROCKBESTOS CABLE USE

LOCATION: - INSIDE CONTAINMENT

EXAMPLE: REACTOR BUILDING OUTSIDE SECONDARY SHIELD, NORTH
(FIRE ZONE RB-FZ-1A)

FOR ALL APPENDIX R SAFE SHUTDOWN CIRCUITS, USE UNSHEATHED ROCKBESTOS
CABLES IN CONDUITS OF NORMAL DESIGN IN LIEU OF RADIANT ENERGY HEAT SHIELDS

ROCKBESTOS_CABLE_APPLICATION_GUIDELINES

I. OUTSIDE CONTAINMENT:

A. GENERAL RESTRICTIONS

1. FIRE LOADING LESS THAN 1 HOUR (I.E., SUBSTITUTE FOR 1 HOUR FIRE BARRIERS)
2. LOCATION PROTECTED BY AN AUTOMATIC FIRE DETECTION SYSTEM
3. DO NOT ROUTE UNSHEATHED ROCKBESTOS CABLES AND NORMAL CABLES IN THE SAME REACEWAY
4. (SEE ATTACHED PAGE)

B. LOCATIONS WITH AUTOMATIC FIRE SUPPRESSION SYSTEMS

1. USE SHEATHED ROCKBESTOS CABLES IN EXISTING CABLE TRAYS
2. USE UNSHEATHED ROCKBESTOS CABLES IN NEW CONDUITS OF NORMAL DESIGN

4. ACCEPTABLE METHODS OF PROTECTING APPENDIX R
SAFE SHUTDOWN CIRCUITS OUTSIDE CONTAINMENT:

	REQ'D FOR HOT SHUTDOWN AND COOLDOWN	REQ'D FOR HOT SHUTDOWN, COOLDOWN AND COLD SHUTDOWN	REQ'D FOR COLD SHUTDOWN ONLY
REROUTE TO LOCATION IN COMPLIANCE	X	X	X
USE ROCKBESTOS CABLES	X		
PROVIDE MEANS TO REPAIR WITHIN 72 HOURS			X
REROUTE INTO NEW CON- DUITS PROTECTED WITH 1 HOUR FIRE BARRIERS	X	X	X
USE ROCKBESTOS CABLE AND PROVIDE MEANS TO REPAIR WITHIN 72 HOURS		X	

ROCKBESTOS_CABLE_APPLICATION_GUIDELINES_(CONT'D.)

C. LOCATIONS WITHOUT AUTOMATIC FIRE SUPPRESSION SYSTEMS

1. USE UNSHEATHED ROCKBESTOS CABLES IN NEW HIGH TEMPERATURE CONDUITS
2. LOCATE CIRCUITS ABOVE OTHER COMPONENTS AND SUPPORTS

II. INSIDE CONTAINMENT

- A. USE FOR ALL APPENDIX R SAFE SHUTDOWN CIRCUITS
- B. USE ROCKBESTOS CABLES IN LIEU OF RADIANT ENERGY HEAT SHIELDS
- C. USE UNSHEATHED ROCKBESTOS CABLES IN CONDUITS OF NORMAL DESIGN
- D. USE SHEATHED ROCKBESTOS CABLE IN CABLE TRAYS
- E. DO NOT ROUTE UNSHEATHED ROCKBESTOS CABLES AND NORMAL CABLES IN THE SAME CONDUIT

ROCKBESTOS_CABLE

- o APPENDIX R WAS ISSUED BEFORE DEVELOPMENT OF FIRE-RESISTANT CABLE. THUS HAS NO PROVISIONS FOR ITS USE AS A MEANS OF PROTECTING SAFE SHUTDOWN CIRCUITS.

- o GPUN PLANS TO MEET THE INTENT OF APPENDIX R BY UTILIZING ROCKBESTOS CABLE FOR A MAJORITY OF THE APPENDIX R SAFE SHUTDOWN CIRCUITS

- o TO AVOID CONFLICTS WITH THE LANGUAGE OF APPENDIX R, GPUN WILL REQUEST EXEMPTIONS FROM SEVERAL APPENDIX R SECTIONS. SUBMITTAL TO NRC SCHEDULED FOR 1ST QUARTER 1985

ROCKBESTOS_CABLE

-----APPENDIX R SECTION-----

-----GPUNC PLAN-----

- 0 III.G.1.A:
ONE TRAIN FREE OF FIRE DAMAGE
III.G.2.c:
ONE TRAIN OUTSIDE CONTAINMENT
ENCLOSED IN ONE HOUR FIRE BARRIER
III.G.2.f:
REDUNDANT TRAINS INSIDE
CONTAINMENT SEPARATED BY
RADIANT ENERGY HEAT SHIELD
- 0 III.G.2.A:
SUPPORTS HAVE FIRE RESISTANCE
EQUIVALENT TO BARRIER
- UTILIZE ROCKBESTOS CABLE WHICH HAS
BEEN DEMONSTRATED TO REMAIN
FUNCTIONAL THROUGHOUT A ONE HOUR
FIRE AND SUBSEQUENT 93 HOUR PERIOD
- AREAS WITH AUTOMATIC WETPIPE
SUPPRESSION
--SUPPRESSION ASSURES SUPPORTS
WILL REMAIN FUNCTIONAL
- AREAS WITHOUT AUTOMATIC WETPIPE
SUPPRESSION
--ROCKBESTOS CABLE WILL BE IN
CONDUIT WITH SUPPORTS
DESIGNED TO REMAIN
FUNCTIONAL THROUGHOUT FIRE

FIRE_ZONES/AREAS

- 0 STATUS

- 0 GPUN PROPOSED EVALUATION CRITERIA OF ZONE
BOUNDARY ADEQUACY

- 0 ALTERNATIVES TO RESOLVE INTERACTION PROBLEMS

- 0 CATEGORIZATION OF TMI-1 BOUNDARIES

- 0 REQUIRED ACTIONS

DEFINITIONS

- 0 BRANCH TECHNICAL POSITION APCSB 9.5-1. "GUIDELINES FOR FIRE PROTECTION FOR NUCLEAR POWER PLANTS" (1976)

FIRE AREA: "THAT PORTION OF A BUILDING OR PLANT THAT IS SEPARATED FROM OTHER AREAS BY BOUNDARY FIRE BARRIERS (WALLS, FLOORS, OR ROOFS) WITH ANY OPENING OR PENETRATIONS PROTECTED WITH SEALS OR CLOSURES HAVING A FIRE RESISTANCE RATING EQUAL TO THAT OF THE BARRIERS."

FIRE ZONES: "SUBDIVISIONS OF FIRE AREAS IN WHICH THE FIRE SUPPRESSION SYSTEMS ARE DESIGNED TO COMBAT PARTICULAR TYPES OF FIRES. THE CONCEPT OF FIRE ZONES AIDS IN DEFINING TO THE FIRE FIGHTER THE FIRE PARAMETERS AND THE ACTIONS WHICH WOULD BE NECESSARY."

- 0 TMI-1 SAFETY EVALUATION REPORT (1984)

FIRE AREA: "A FIRE AREA IS GENERALLY BOUNDED BY CONSTRUCTION HAVING A FIRE RESISTANCE OF AT LEAST THREE HOURS OR BY EQUIVALENT PROTECTION, SUCH AS A JUSTIFIED FIRE BARRIER OF LESS FIRE RESISTANCE OR A WATER CURTAIN."

STATUS

- o GPUN HAS SUBMITTED EXEMPTION REQUEST BASED ON FIRE ZONE BOUNDARIES AS DEFINED IN THE TMI-1 FIRE HAZARDS ANALYSIS.

- o OPEN QUESTION IS WHETHER FIRE ZONE BOUNDARIES ANALYSIS ASSURES ADEQUATE SEPARATION/PROTECTION OF REDUNDANT SAFE SHUTDOWN TRAINS.

GPUN PROPOSED EVALUATION CRITERIA OF
ZONE BOUNDARY ADEQUACY

- A. ALL ZONE BOUNDARIES WILL BE ANALYZED AS DEFINED IN THE TMI-1 FHA.
- B. ZONE BOUNDARIES WHICH REQUIRE NO FURTHER EXAMINATION
1. ANY ZONE BOUNDARY WHICH IS FIRE RATED. RATED
2. ANY BOUNDARY NOT ADJACENT TO OTHER FIRE ZONES OR AREAS. NO INTER-ACTION
3. ANY ZONE BOUNDARY WHICH IS PROTECTED BY AUTOMATIC FIRE SUPPRESSION ON AT LEAST ONE SIDE OF THE BOUNDARY. FUNCTIONAL FIRE SUPPRESSION SYSTEM
4. ZONE BOUNDARY CONTAINED WITHIN THE AREA SERVED BY A COMMON AUTOMATIC SUPPRESSION SYSTEM. FUNCTIONAL FIRE SUPPRESSION SYSTEM
- C. ACCEPTANCE CRITERIA FOR OTHER BOUNDARIES WITH LOW COMBUSTIBLE LOADING (40K BTU/FT²)
1. NON-RATED PHYSICAL BOUNDARIES WITH PENETRATIONS SEALED WITH NON-COMBUSTIBLE MATERIAL OR PREVENTS PROPAGATION
2. ZONE BOUNDARY NOT RELIED ON TO SEPARATE / PROTECT REDUNDANT TRAINS, OR NO SAFE SHUTDOWN ISSUE.
3. PARTIAL NON-RATED BARRIERS AND SEPARATION DISTANCE PROVIDE ADEQUATE PHYSICAL HORIZONTAL SEPARATION WHERE VERTICAL SEPARATION IS NOT A CONCERN. LOW SINGLE FIRE PROBABILITY

CATEGORIZATION OF TMI-1 BOUNDARIES

CATEGORY	RATED	PHYSICAL BOUNDARY	AUTOMATIC FIRE SUPPRESSION		COMBUSTIBLE LOADING 40K BTU/ET2	PENETRATIONS	FIRE DET.	SLOW- BURN	EVALUATION COMBUSTIBLE CATEGORY
			ONE SIDE	BOTH SIDES					
I			•						
II	X	X		•					B1
III		X	X						B3
IV		•		X					B3/P4
V		•		X					B3
VI		X			X	X	X	X	B3/P4
VII		X			X	X		X	C

EVALUATION REQUIREMENTS

CATEGORIES I - V REQUIRE NO FURTHER EVALUATION

CATEGORIES VI & VII REQUIRE EVALUATION OF POTENTIAL INTERACTION OF REDUNDANT SAFE SHUTDOWN CIRCUITS.

• FEATURES NOT REQUIRED TO BE CONSIDERED IN THE EVALUATION

-----CATEGORIZATION OF TMI-1 BOUNDARIES-----

BUILDING	TOTAL NO.	NO. OF RATED BOUNDARIES	NO. OF EXTERNAL BOUNDARIES	NO. OF CATEGORY II-VI	NO. OF CATEGORY VII	NO. OF CATEGORY VII
AUX. & FUEL HANDLING BLDG	54	19	15	6	5	9
INTERMEDIATE BLDG	17	3	7	0	6	1
INTAKE SCREEN & PUMP HOUSE	9	2	6	1	0	0

REACTOR RX. BLDG. IS CONSIDERED ONE FIRE AREA; THEREFORE, FIRE ZONES DO NOT AFFECT BLDG. EVALUATING APPENDIX R NON-COMPLIANCES

ALTERNATIVES TO RESOLVE INTERACTION PROBLEMS

- o SEAL PENETRATIONS WITH NON-COMBUSTIBLE MATERIALS
- o INSTALL AUTOMATIC SUPPRESSION SYSTEM ON AT LEAST ONE SIDE OF THE BOUNDARY
- o REROUTE OR PROTECT AT LEAST ONE REDUNDANT CIRCUIT
- o INSTALL RATED FIRE BARRIER (I.E., RATING TO EXCEED FIRE LOADING IN THE ZONE)

REQUIRED ACTIONS

1. NRC TO PROVIDE CONCURRENCE WITH GPUN PROPOSED EVALUATION CRITERIA.
2. GPUN WILL REVIEW ALL ZONE BOUNDARIES AND PROVIDE RESULTS TO THE NRC.

0 SUMMARY/PROGRAM

SUMMARY OF IMI-1 APPENDIX R MODIFICATIONS PROGRAM

----- PLANNED MODIFICATION -----	----- ENGINEERING -----	----- CONSTRUCTION -----
A. INTAKE SCREEN AND PUMP HOUSE FIRE WALL AND EMERGENCY LIGHTING (PHASE I) UPGRADES	COMPLETE	COMPLETED SEPT. 1983
B. INTAKE SCREEN AND PUMP HOUSE FIRE DETECTION SYSTEM	COMPLETE	COMPLETED SEPT. 1983
C. APPENDIX R FIRE BARRIERS	COMPLETE ALL ENGNG. DURING 2ND QUARTER OF 1985	COMPLETE PLANNING AND LIMITED CONSTRUCTION DURING OPERATION COMPLETE CONSTRUCTION DURING FIRST REFUELING OUTAGE AFTER RESTART

SUMMARY OF TMI-1 APPENDIX R MODIFICATIONS PROGRAM

----- PLANNED MODIFICATION -----	----- ENGINEERING -----	----- CONSTRUCTION -----
D. APPENDIX R CABLE REROUTING	ENGINEERING IN PROGRESS COMPLETE IN SECOND QUARTER OF 1985	COMPLETE PLANNING AND LIMITED CONSTRUCTION DURING OPERATION COMPLETE CONSTRUCTION DURING FIRST REFUELING OUTAGE AFTER RESTART
	REVISE TMI-1 APP. R REPORT FOR AS-DESIGNED CONDITIONS IN FIRST QUARTER OF 1985	
E. 480 VAC ESV CC FIREWALL	COMPLETE	COMPLETE IN 1984, IF PLANT IS AVAILABLE, OR FIRST REFUELING OUTAGE AFTER RESTART

SUMMARY OF TMI-1 APPENDIX R MODIFICATIONS PROGRAM

----- PLANNED MODIFICATION -----	----- ENGINEERING -----	----- CONSTRUCTION -----
F. STRUCTURAL STEEL FIREPROOFING REPAIRS	COMPLETED	IN PROGRESS, 7 ROOMS COMPLETED OUT OF 14 TOTAL
G. REMOTE SHUTDOWN SYSTEM	COMPLETE ENGINEERING DURING FIRST QUARTER OF 1985	COMPLETE PLANNING AND LIMITED CONSTRUCTION DURING OPERATION COMPLETE CONSTRUCTION DURING FIRST REFUELING OUTAGE AFTER RESTART
H. CONTROL BUILDING 306* EL. FIRE DETECTION SYSTEM	COMPLETED	COMPLETE IN SEPT. 1984
I. AUXILIARY BUILDING FIRE DETECTION SYSTEM ADDITIONS	COMPLETE IN SEPT. 1984	COMPLETE IN 1984