

JAN 16 1987

MEMORANDUM FOR: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

FROM: Gary M. Holahan, Director
Operating Reactors Assessment Staff

SUBJECT: SUMMARY OF THE OPERATING REACTORS EVENTS
MEETING ON JANUARY 5, 1987 - MEETING 87-01

On January 5, 1987, an Operating Reactor Events meeting (87-01) was held to brief the Office Director, the Division Directors and their representatives on events which occurred since our last meeting on December 29, 1986. The list of attendees is included as Enclosure 1.

The events discussed and the significant elements of these events are presented in Enclosure 2. Enclosure 3 provides a summary of those presented events that will be input to NRC's performance indicator program as significant events.

Enclosure 4 provides a summary of 1986 scrams.

Original Signed By:

Gary M. Holahan, Director
Operating Reactors Assessment Staff

Enclosures:
As stated

cc w/Encl.:
See Next Page

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

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Gary M. Holahan
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Enclosures:
As stated

cc w/Encl.:
See Next Page

Harold R. Denton

- 2 -

cc: R. Vollmer
J. Taylor
C. Heltemes
R. Starostecki
D. Ross
T. Murley, Reg. I
J. Nelson Grace, Reg. II
J. Keppler, Reg. III
R. D. Martin, Reg. IV
J. B. Martin, Reg. V
W. Kane Reg. I
S. Ebnetter, Reg. I
R. Walker, Reg. II
C. Norelius, Reg. III
E. Johnson. Reg. IV
D. Kirsch, Reg. V
H. Thompson
F. Miraglia
R. Bernero
T. Speis
W. Russell
T. Novak
F. Schroeder
W. Houston
B. Sheron
B. Boger
D. Crutchfield
E. Rossi
G. Lainas
V. Benaroya
W. Regan
D. Vassallo
E. Jordan
J. Rosenthal
R. Baer
E. Weiss
R. Hernan
S. Showe
S. Rubin
G. Arlotto
E. Sylvester
D. Muller
M. Licitra
H. Bailey
G. Knighton
D. McDonald
D. Hickman
L. Rubenstein

ENCLOSURE 1

LIST OF ATTENDEES

OPERATING REACTORS EVENTS BRIEFING (87-01)

JANUARY 5, 1987

<u>NAME</u>	<u>DIVISION</u>	<u>NAME</u>	<u>DIVISION</u>
R. Vollmer	NRR	K. Wolley	IE/EPER/EAB
G. Holahan	ORAS/NRR	E. Trottier	IE/DQAVT
M. Virgilio	ORAS/NRR	W. Swenson	ORAS/NRR
D. Tondi	ORAS/NRR	W. Regan	PBFO/NRR
B. Marcus	DBL/NRR	E. Sylvester	DBL/NRR
D. Crutchfield	PWRB/NRR	G. Cwalina	DHFT/NRR
J. Clifford	TOSB/NRR	B. Kirkwood	DSRO/NRR
F. Cherny	DSRO/NRR	M. Goodman	PWRB/NRR
B. Boger	DHFT/NRR	J. Milhoan	OCM
C. Ader	OCM	G. Murphy	ORNL/NOAC
V. Benaroya	PAFO/NRR	F. Ashe	AEOD
H. Bailey	IE/EAB	G. Klingler	IE/DI/ORAB
J. Stone	IE/DQAVT	J. Stewart	IE/DEPER
A. Dromerick	IE/DEPER	E. Weiss	IE/DEPER
D. McDonald	PWRA/NRR	J. Henderson	IE/EGCB
G. Dick	PWRB/NRR	D. Vassallo	FOB/NRR
M. Davis	PBD7/NRR	J. Rosenthal	IE/EAB
R. Baer	IE/DEPE	S. Rubin	AEOD
C. Rossi	PWPA/NRR	D. Humenansky	OCM
R. Houston	DBL/NRR	F. Miraglia	PWRB/NRR
D. Muller	DBL/NRR	F. Schroeder	PWRB/NRR
M. Caruso	ORAS/NRR	S. Aggarwal	RES/DES
R. Emch	PPAS/NRR	D. Tarnoff	ORAS/NRR

ENCLOSURE 2

OPERATING REACTORS EVENTS BRIEFING 87-01

JANUARY 5, 1987

BRUNSWICK 1 & 2	EMERGENCY DIESEL GENERATOR ROOM COOLING DESIGN DEFICIENCY
PALO VERDE 2	SCRAM WITH COMPLICATIONS
TURKEY POINT 3	SCRAM WITH COMPLICATIONS

COOLING DESIGN DEFICIENCY

DECEMBER 24, 1986 (E. SYLVESTER, NRR)

PROBLEM:

- ° HVAC DAMPERS FAIL CLOSED UPON LOSS OF NON-SAFETY INSTRUMENT AIR
- ° EMERGENCY DIESEL GENERATOR BUILDING MAY LOSE COOLING AIR DURING LOSS OF OFFSITE POWER

CAUSE: DESIGN DEFICIENCY

SIGNIFICANCE:

POTENTIAL FOR COMMON CAUSE LOSS OF EMERGENCY DIESEL GENERATORS

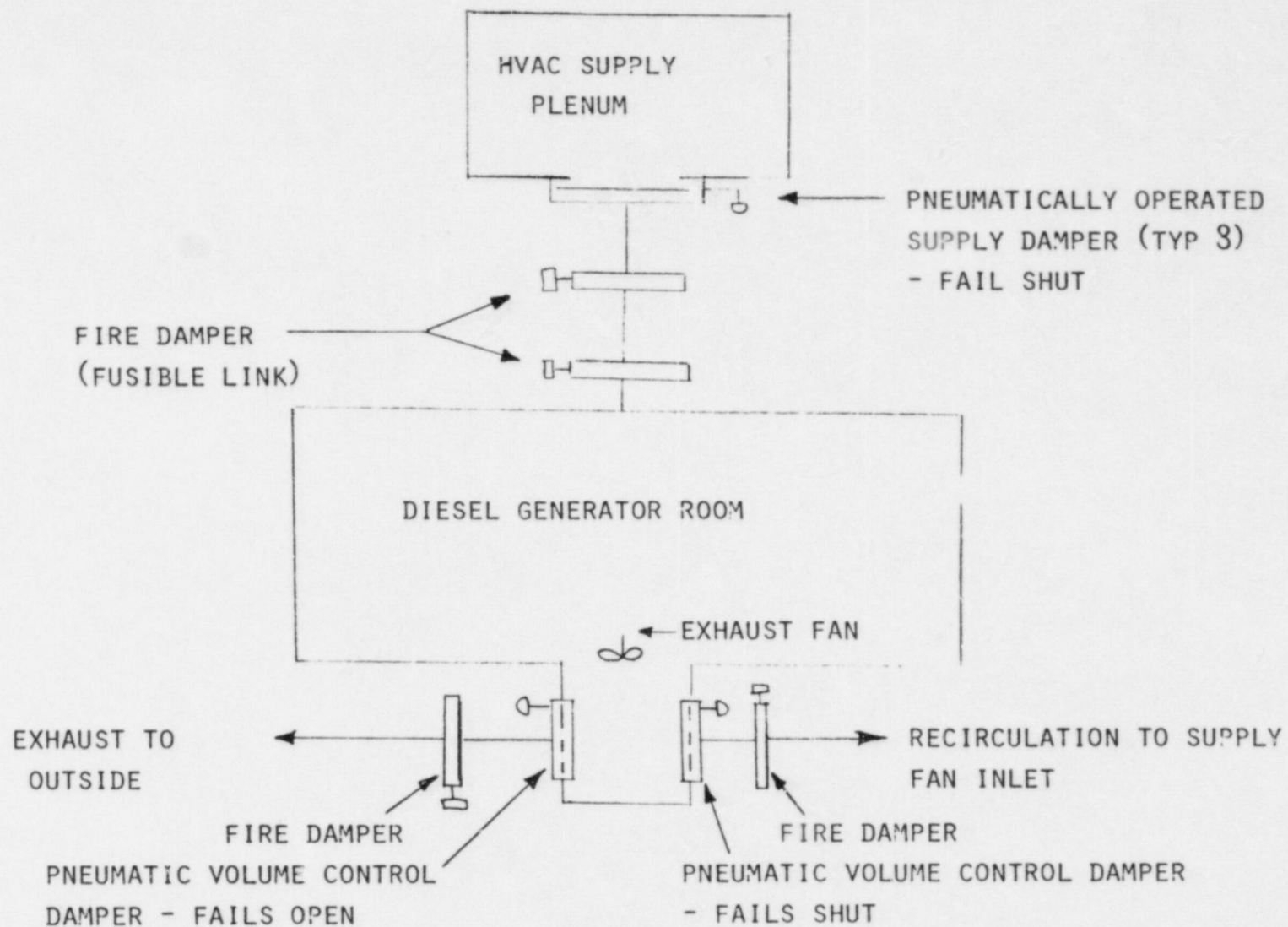
DISCUSSION:

- ° DESIGN REVIEW - EMERGENCY DIESEL GENERATOR HVAC DAMPERS CONTROLLED BY NON-SAFETY INSTRUMENT AIR
- ° LOSS OF OFFSITE POWER WILL CAUSE A LOSS OF NON-SAFETY INSTRUMENT AIR
- ° LOSS OF NON-SAFETY INSTRUMENT AIR WILL CAUSE DAMPERS TO SHUT
- ° DAMPER DESIGNED FUNCTION IS TO FAIL CLOSED IN THE EVENT OF A FIRE TO PREVENT FIRE SPREAD (TENTATIVE CONCLUSION)
- ° EDG INSTRUMENTATION AND CONTROLS QUALIFIED TO OPERATE WITH AMBIENT TEMPERATURE UP TO 104°F
- ° MODIFICATION AFTER PLANT BUILT ADDED TWO FIRE PROTECTION DAMPERS IN DUCT
- ° NEW FIRE PROTECTION DAMPERS HAVE FUSIBLE LINKS THAT MELT TO CLOSE DAMPER AT HIGH TEMPERATURE
- ° ORIGINAL (AIR OPERATED) DAMPER NOT NEEDED FOR FIRE PROTECTION
- ° LICENSEE HAS BLOCKED OPEN ORIGINAL (AIR OPERATED) DAMPERS
- ° UNITS CONTINUE OPERATION
- ° NRR STAFF CONFIRMED INDIAN POINT 2 & 3 AND SEABROOK (OTHER PLANTS WITH SAME A.E.) DO NOT HAVE SAME DESIGN DEFICIENCY

FOLLOWUP:

- ° LICENSEE IS INVESTIGATING LONG TERM SOLUTION
- ° NRR FOLLOWING-UP LICENSEE ACTIONS

BRUNSWICK EMERGENCY DIESEL GENERATOR ROOM HVAC



1/6/87

PALO VERDE 2 - SCRAM WITH COMPLICATIONS
DECEMBER 24, 1986 (H. BAILEY, IE)

PROBLEM: FAILURE OF TWO OF FOUR PLANT PROTECTION SYSTEM (PPS) LOGIC POWER SUPPLIES RESULTED IN INADVERTENT REACTOR SCRAM WITH SIMULTANEOUS PPS ACTUATIONS

CAUSE: EQUIPMENT FAILURE; ONE POWER SUPPLY DEGRADED WITHOUT INDICATION AND A SHORT IN THE SECOND

SIGNIFICANCE:

- ° ELECTRICAL DESIGN DEFICIENCY
- ° EXCESSIVE TIME REQUIRED TO STABILIZE PLANT AND RESET PPS ACTUATIONS RESULTING IN OPERATION OF SAFETY INJECTION AND CONTAINMENT SPRAY PUMPS DEADHEADED FOR OVER ONE HOUR
- ° BOTH SAFETY INJECTION (SI) AND RECIRCULATION ACTUATION SYSTEM (RAS) INITIATED SIMULTANEOUSLY

DISCUSSION:

- ° LOSS OF THE TWO DC POWER SUPPLIES RESULTED IN INADVERTENT REACTOR TRIP, MAIN STEAM ISOLATION, SAFETY INJECTION ACTUATION, AUXILIARY FEEDWATER ACTUATING CONTAINMENT SPRAY ACTUATION, RECIRCULATION ACTUATION SYSTEM ACTUATION
- ° PLANT STABILIZED WITH AUXILIARY FEEDWATER AND STEAM DUMP TO ATMOSPHERE
- ° PPS ACTUATION RESET AFTER MORE THAN ONE HOUR
- ° SIMULTANEOUS SI AND RAS RESULTED IN ISOLATION OF MINI-FLOW RECIRCULATION THROUGH SI AND CS PUMPS FOR OVER ONE HOUR
- ° SURVEILLANCE TESTS RUN ON SI AND CS PUMPS; ALL PASSED

FOLLOWUP:

- ° FAULTY POWER SUPPLY REPLACED; CE INVESTIGATING FAILURE
- ° NRR FOLLOWING LICENSEE'S INVESTIGATION OF FAILURE

1/5/87

TURKEY POINT 3 - SCRAM WITH COMPLICATIONS
DECEMBER 27, 1986 (D. MCDONALD, NRR)

PROBLEM: MANUAL SCRAM FOLLOWING FAILURE OF AUTO ROD INSERTION ON
LOSS OF TURBINE GOVERNOR CONTROL OIL PRESSURE WITH
STUCK OPEN PORV

CAUSE: MULTIPLE EQUIPMENT FAILURE

SIGNIFICANCE:

- ° POTENTIAL FOR OVERPRESSURIZATION
- ° POTENTIAL FOR SATURATED CONDITIONS IN REACTOR VESSEL

DISCUSSION:

- ° REACTOR AT 100% POWER
- ° GOVERNOR OIL PRESSURE DECREASED RAPIDLY-MWE DROPPED TO ZERO
IN ABOUT 10 SECONDS
- ° OPERATOR ATTEMPTED TO INCREASE GOVERNOR OIL PRESSURE
- ° TAVE INCREASED BECAUSE OF AUTO ROD INSERTION FAILURE
- ° OPERATOR TOOK MANUAL CONTROL OF RODS AND BEGAN DRIVING IN,
COMMENCED EMERGENCY BORATION (STARTED CHARGING PUMP)
- ° REACTOR MANUALLY TRIPPED WHEN TAVE DID NOT RESPOND AND STEAM
GENERATOR SAFETY VALVES LIFTED (APPROX. T+24 SECONDS)
- ° PRESSURIZER PRESSURE DROPPED RAPIDLY
- ° OPERATOR VERIFIED SPRAY VALVES CLOSED, OBSERVED PORV (PCV-3-456)
INDICATING MID POSITION, CLOSED BLOCK VALVE
- ° PRESSURE DECREASE STOPPED AT 1760 PSIG (APPROX. T+1 MIN. 30 SEC.)
- ° PROMPT OPERATOR ACTIONS MINIMIZED TRANSIENT
- ° LICENSEE ESTABLISHED AN EVENT RESPONSE TEAM TO DETERMINE CAUSE
OF FAILURES
 - GOVERNOR CONTROL OIL PRESSURE - TEMPORARY LOSS OF IMPELLER
OIL MOST PROBABLE
 - AUTO ROD INSERTION - FAILURE OF TURBINE 1ST-STAGE NI-SUMMER
(COLD SOLDER JOINT)
 - PORV - UNKNOWN

FOLLOWUP:

- ° LICENSEE CONTINUING TO EVALUATE PORV FAILURE TO DETERMINE CAUSE
- ° NRR PM CONTINUING TO FOLLOW LICENSEE ACTIVITIES RELATED TO PORV
FAILURE

REACTOR SCRAM SUMMARY
WEEK ENDING 01/04/87

I. PLANT SPECIFIC DATA

DATE	SITE	UNIT	POWER	RPS	CAUSE	COMPLI- CATIONS	YTD ABOVE 15%	YTD BELOW 15%	YTD TOTAL
01/01/87	DAVIS BESSE	1	40	A	EQUIP/MECH.	NO	1	0	1
01/01/87	HATCH	1	100	A	UNKNOWN	NO	1	0	1
01/02/87	MILLSTONE	2	100	A	PERSONNEL	NO	1	0	1
01/02/87	BIG ROCK POINT	1	0	A	EQUIPMENT	NO	0	1	1
01/04/87	COOPER	1	2	A	PERSONNEL	NO	0	1	1

II. COMPARISON OF WEEKLY STATISTICS WITH INDUSTRY AVERAGES

SCRAMS FOR WEEK ENDING
01/04/87

SCRAM CAUSE	POWER	NUMBER OF SCRAMS (5)	1987 WEEKLY AVERAGE YTD	1986 WEEKLY AVERAGE (3) (4)
** POWER >15%				
EQUIP. RELATED	>15%	1	1.8	4.3 (66%)
PERS. RELATED (6)	>15%	1	1.8	1.8 (28%)
OTHER (7)	>15%	1	1.8	0.4 (6%)
** Subtotal **		3	5.4	6.5
** POWER <15%				
EQUIP. RELATED	<15%	1	1.8	1.4 (58%)
PERS. RELATED	<15%	1	1.8	0.8 (33%)
OTHER	<15%	0	0.0	0.2 (9%)
** Subtotal **		2	3.6	2.4
*** Total ***		5	9.0	8.9

MANUAL VS AUTO SCRAMS

TYPE	NUMBER OF SCRAMS	1987 WEEKLY AVERAGE YTD	1986 WEEKLY AVERAGE
MANUAL SCRAMS	0	0.0	1.0
AUTOMATIC SCRAMS	5	8.8	7.9

NOTES

1. PLANT SPECIFIC DATA BASED ON INITIAL REVIEW OF 50.72 REPORTS FOR THE WEEK OF INTEREST. PERIOD IS MIDNIGHT SUNDAY THROUGH MIDNIGHT SUNDAY SCRAMS ARE DEFINED AS REACTOR PROTECTIVE ACTUATIONS WHICH RESULT IN ROD MOTION, AND EXCLUDE PLANNED TESTS OR SCRAMS AS PART OF PLANNED SHUTDOWN IN ACCORDANCE WITH A PLANT PROCEDURE.
2. RECOVERY COMPLICATED BY EQUIPMENT FAILURES OR PERSONNEL ERRORS UNRELATED TO CAUSE OF SCRAM.
3. 1986 INFORMATION DERIVED FROM ORAS STUDY OF UNPLANNED REACTOR TRIPS IN 1986. WEEKLY DATA DETERMINED BY TAKING TOTAL TRIPS IN A GIVEN CATEGORY AND DIVIDING BY 52 WEEKS/YEAR.
4. IN 1986, THERE WERE AN ESTIMATED TOTAL OF 461 AUTOMATIC AND MANUAL UNPLANNED REACTOR TRIPS AT 104 REACTORS (HOLDING OPERATING LICENSES). THIS YIELDS AN AVERAGE RATE OF 4.4 TRIPS PER REACTOR PER YEAR AND AN AVERAGE RATE OF 8.9 TRIPS PER WEEK FOR ALL REACTORS.
5. BASED ON 104 REACTORS HOLDING AN OPERATING LICENSE.
6. PERSONNEL RELATED PROBLEMS INCLUDE HUMAN ERROR, PROCEDURAL DEFICIENCIES, AND MANUAL STEAM GENERATOR LEVEL CONTROL PROBLEMS.
7. "OTHER" INCLUDES AUTOMATIC SCRAMS ATTRIBUTED TO ENVIRONMENTAL CAUSES (LIGHTNING), SYSTEM DESIGN, OR UNKNOWN CAUSE.

ENCLOSURE 3

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01/07/87

SIGNIFICANT EVENTS FREQUENCY PERFORMANCE INDICATOR No. 3

PLANT NAME	EVENT DATE	EVENT DESCRIPTION	SIGNIFICANCE	QTR
PALO VERDE 2	12/24/86	FAILURE OF TWO OF FOUR PPS LOGIC POWER SUPPLIES RESULTED IN INADVERTENT REACTOR SCRAM WITH MAIN STEAM ISOLATION, SAFETY INJECTION ACTUATION, RECIRCULATION ACTUATION SYSTEM ACTUATION. SI AND CS PUMPS RAN DEADHEADED FOR OVER ONE HOUR	SCRAM WITH COMPLICATIONS	1
TURKEY POINT 3	12/27/86	LOSS OF TURBINE GOVERNOR CONTROL OIL PRESSURE - DURING LOAD REDUCTION THE AUTOMATIC ROD INSERTION FEATURE OF THE ROD CONTROL SYSTEM FAILED TO INSERT RODS - AFTER THE SCRAM PRESSURIZER PORV FAILED TO RESET	SCRAM WITH COMPLICATIONS	1

ENCLOSURE 4

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01/01/80

SCRAM SUMMARY
01/01/86 TO 12/31/86

PLANT	NSSS VENDOR	AUTO SCRAMS >15%	AUTO SCRAMS <15%	MANUAL SCRAMS >15%	MANUAL SCRAMS <15%	SCRAMS WITH COMPL.	TOTAL SCRAMS 1986	TOTAL SCRAMS 1985
ARKANSAS 1	BW	2	0	0	0	0	2	6
CRYSTAL RIVER 3	BW	1	0	0	0	1	1	8
DAVIS BESSE 1	BW	0	1	0	0	0	1	5
OCONEE 1	BW	2	0	0	0	0	2	4
OCONEE 2	BW	5	0	0	0	0	5	4
OCONEE 3	BW	1	0	1	0	1	2	2
RANCHO SECO 1	BW	0	0	0	0	0	0	4
TMI 1	BW	3	1	0	0	0	4	2
ARKANSAS 2	CE	4	3	0	0	1	7	10
CALVERT CLIFFS 1	CE	4	0	0	0	0	4	6
CALVERT CLIFFS 2	CE	3	0	2	0	0	5	3
FORT CALHOUN 1	CE	1	0	1	0	0	2	0
MAINE YANKEE 1	CE	4	0	2	0	1	6	9
MILLSTONE 2	CE	4	0	0	0	0	4	1
PALISADES 1	CE	2	0	0	0	1	2	2
PALO VERDE 1	CE	13	0	0	0	2	13	11
PALO VERDE 2 *	CE	8	2	0	0	2	10	0
SAINT LUCIE 1	CE	2	1	1	0	0	4	1
SAINT LUCIE 2	CE	2	1	0	0	0	3	7
SAN ONOFRE 2	CE	6	2	1	0	2	9	10
SAN ONOFRE 3	CE	3	2	1	0	1	6	5
WATERFORD 3	CE	5	1	0	0	0	6	28
FORT ST. VRAIN 1	GA	1	0	1	0	1	2	0
BIG ROCK POINT 1	GE	1	0	0	0	0	1	4
BROWNS FERRY 1	GE	0	0	0	0	0	0	2
BROWNS FERRY 2	GE	0	0	0	0	0	0	0
BROWNS FERRY 3	GE	0	0	0	0	0	0	2
BRUNSWICK 1	GE	5	1	0	1	3	7	2
BRUNSWICK 2	GE	2	0	0	0	0	2	3
CLINTON 1 *	GE	0	0	0	0	0	0	0
COOPER 1	GE	2	0	0	0	0	2	1
DRESDEN 2	GE	3	1	0	0	0	4	9
DRESDEN 3	GE	5	0	1	0	0	6	5
DUANE ARNOLD 1	GE	0	1	0	1	0	2	0
FERMI 2	GE	1	1	0	1	0	3	8
FITZPATRICK 1	GE	2	0	0	0	0	2	8
GRAND GULF 1	GE	3	2	1	0	0	6	14
HATCH 1	GE	3	0	0	0	1	3	8
HATCH 2	GE	5	2	0	0	1	7	5
HOPE CREEK 1 *	GE	3	6	0	2	0	11	0
LACROSSE 1	GE	6	8	1	2	2	17	9
LASALLE 1	GE	1	0	0	0	0	1	9
LASALLE 2	GE	2	2	0	0	0	4	1
LIMERICK 1	GE	1	0	0	0	0	1	4

SCRAM SUMMARY
01/01/86 TO 12/31/86

PLANT	NSSS VENDOR	AUTO SCRAMS >15%	AUTO SCRAMS <15%	MANUAL SCRAMS >15%	MANUAL SCRAMS <15%	SCRAMS WITH COMPL.	TOTAL SCRAMS 1986	TOTAL SCRAMS 1985
MILLSTONE 1	GE	2	0	0	1	1	3	3
MONTICELLO 1	GE	2	0	0	0	0	2	3
NINE MILE POINT 1	GE	0	2	0	0	0	2	7
NINE MILE POINT 2*	GE	0	0	0	0	0	0	0
OYSTER CREEK 1	GE	1	1	0	1	1	3	6
PEACH BOTTOM 2	GE	4	0	1	0	0	5	7
PEACH BOTTOM 3	GE	4	2	1	1	0	8	1
PERRY 1*	GE	0	3	0	0	0	3	0
PILGRIM 1	GE	1	3	0	0	1	4	4
QUAD CITIES 1	GE	2	2	0	0	0	4	3
QUAD CITIES 2	GE	2	0	0	0	1	2	5
RIVER BEND 1	GE	16	2	0	0	1	18	5
SHOREHAM 1	GE	0	0	0	0	0	0	0
SUSQUEHANNA 1	GE	0	0	0	0	0	0	4
SUSQUEHANNA 2	GE	0	1	2	0	0	3	5
VERMONT-YANKEE 1	GE	0	2	0	0	0	2	1
WNP 2	GE	4	3	0	0	0	7	12
BEAVER VALLEY 1	W	2	2	0	1	0	5	8
BRAIDWOOD 1**	W	0	0	0	0	0	0	0
BYRON 1	W	3	0	1	1	0	5	25
BYRON 2*	W	0	0	0	1	0	1	0
CALLAWAY 1	W	5	1	1	0	0	7	20
CATAWBA 1	W	6	2	0	0	0	8	12
CATAWBA 2*	W	4	1	1	1	1	7	0
COOK 1	W	4	1	0	0	2	5	1
COOK 2	W	2	1	0	0	0	3	4
DIABLO CANYON 1	W	2	1	0	0	1	3	10
DIABLO CANYON 2	W	9	1	1	0	5	11	14
FARLEY 1	W	5	0	0	0	0	5	4
FARLEY 2	W	2	1	0	0	0	3	5
GINNA 1	W	4	0	0	0	0	4	8
HADDAM NECK 1	W	1	3	3	0	0	7	5
HARRIS 1*	W	0	0	0	0	0	0	0
INDIAN POINT 2	W	7	1	3	0	6	11	11
INDIAN POINT 3	W	7	2	0	0	1	9	10
KEWAUNEE 1	W	3	1	0	0	1	4	6
MCGUIRE 1	W	3	0	0	0	0	3	5
MCGUIRE 2	W	4	2	1	0	2	7	12
MILLSTONE 3 *	W	4	8	1	0	0	13	0
NORTH ANNA 1	W	4	2	1	0	1	7	2
NORTH ANNA 2	W	3	1	0	0	1	4	2
POINT BEACH 1	W	2	0	0	0	1	2	1
POINT BEACH 2	W	1	1	0	0	0	2	1
PRAIRIE ISLAND 1	W	1	1	0	0	0	2	3

SCRAM SUMMARY
01/01/86 TO 12/31/86

PLANT	NSSS VENDOR	AUTO SCRAMS >15%	AUTO SCRAMS <15%	MANUAL SCRAMS >15%	MANUAL SCRAMS <15%	SCRAMS WITH COMPL.	TOTAL SCRAMS 1986	TOTAL SCRAMS 1985
PRAIRIE ISLAND 2	W	3	0	0	0	0	3	0
ROBINSON 2	W	8	2	0	0	1	10	12
SALEM 1	W	8	1	0	0	3	9	1
SALEM 2	W	6	3	0	0	2	9	10
SAN ONOFRE 1	W	1	1	0	0	0	2	2
SEABROOK 1**	W	0	0	0	0	0	0	0
SEQUOYAH 1	W	0	0	0	0	0	0	1
SEQUOYAH 2	W	0	0	0	0	0	0	6
SUMMER 1	W	5	1	0	0	0	6	12
SURRY 1	W	0	1	3	0	0	4	6
SURRY 2	W	3	0	1	0	2	4	1
TROJAN 1	W	4	0	0	0	0	4	4
TURKEY POINT 3	W	5	1	1	0	1	7	7
TURKEY POINT 4	W	2	0	0	1	0	3	10
WOLF CREEK 1	W	5	2	0	0	2	7	15
YANKEE ROWE 1	W	2	0	0	0	0	2	2
ZION 1	W	2	0	0	0	0	2	4
ZION 2	W	3	1	0	0	1	4	1
*** Total ***		304	105	35	15	59	459	552

* LICENSED IN 1986

** LICENSE EXPECTED IN EARLY 1987