



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

April 26, 1991

Mr. David Trickett
Public Citizen
215 Pennsylvania Avenue, S. E.
Washington, D.C. 20003

Dear Dave:

Enclosed are the scram data for 1989 and 1990 which you requested. The data are based on the following definition of a scram: "A reactor scram is any automatic or manual actuation of the reactor protection system which results in control rod motion while the reactor core of the unit is either critical or subcritical".

The data are divided into two parts. The first part is a listing by unit docket number (the first three digits in the "LER Number" column) of the reactor scrams experienced in 1989 and 1990, including the event date, the licensee event report number, the type of scram and whether the scram occurred while the unit was either critical or subcritical.

The second part is by unit docket number and gives an event abstract for each of the scrams as captured by the Sequence Coding and Search System (SCSS). This system does not include data on the Ft. St. Vrain nuclear power plant and no data are included for the five subcritical automatic scrams experienced there in 1989 just prior to its permanent shutdown. Information on these scrams may be obtained from the referenced licensee event reports.

As you know, the individual safety significance of these scram events varies greatly and is determined on a case-by-case basis using more information that is contained in the SCSS abstract. In particular, scrams with the reactor subcritical have little safety significance.

Sincerely,

A handwritten signature in dark ink, appearing to read "Frank L. Ingram".

Frank L. Ingram
Assistant to the Director
Public Affairs

Enclosure:
As stated

1989 AND 1990 REACTOR SCRAM DATA FOR PUBLIC CITIZEN

Note: Sequence Coding and Search System does not
contain LER data on Fort St. Vrain

<u>Plant Name</u>	<u>Event Date</u>	<u>LER Number</u>	<u>Scram Type</u>	<u>Critical</u>
YANKEE-ROWE	01/11/89	02989002	AUTOMATIC	SUBCRITICAL
YANKEE-ROWE	04/06/89	02989005	MANUAL	CRITICAL
YANKEE-ROWE	04/23/89	02989007	AUTOMATIC	CRITICAL
YANKEE-ROWE	08/29/89	02989013	AUTOMATIC	CRITICAL
YANKEE-ROWE	12/05/90	02990011	AUTOMATIC	CRITICAL
BIG ROCK POINT	08/22/89	15589008	AUTOMATIC	CRITICAL
SAN ONOFRE 1	05/03/89	20689017	AUTOMATIC	SUBCRITICAL
SAN ONOFRE 1	07/24/89	20689019	MANUAL	CRITICAL
SAN ONOFRE 1	08/03/89	20689021	AUTOMATIC	CRITICAL
SAN ONOFRE 1	09/18/89	20689023	MANUAL	CRITICAL
SAN ONOFRE 1	04/30/90	20690007	AUTOMATIC	CRITICAL
SAN ONOFRE 1	05/15/90	20690011	MANUAL	CRITICAL
HADDAM NECK	09/03/90	21390018	MANUAL	CRITICAL
HADDAM NECK	09/20/90	21390020	MANUAL	CRITICAL
OYSTER CREEK	04/22/89	21989011	MANUAL	CRITICAL
OYSTER CREEK	05/18/89	21989015	AUTOMATIC	CRITICAL
OYSTER CREEK	06/25/89	21989016	AUTOMATIC	CRITICAL
OYSTER CREEK	07/11/89	21989017	AUTOMATIC	CRITICAL
OYSTER CREEK	09/22/89	21989021	AUTOMATIC	CRITICAL
OYSTER CREEK	02/20/90	21990004	MANUAL	CRITICAL
OYSTER CREEK	04/21/90	21990005	MANUAL	CRITICAL
OYSTER CREEK	06/25/90	21990008	AUTOMATIC	CRITICAL
NINE MILE PT. 1	08/06/90	22090017	MANUAL	CRITICAL
NINE MILE PT. 1	12/29/90	22090019	AUTOMATIC	CRITICAL
NINE MILE PT. 1	08/19/90	22090020	MANUAL	CRITICAL
NINE MILE PT. 1	11/17/90	22090026	AUTOMATIC	CRITICAL
DRESDEN 2	03/04/89	23789012	AUTOMATIC	CRITICAL
DRESDEN 2	07/12/89	23789019	AUTOMATIC	CRITICAL
DRESDEN 2	01/05/90	23790001	AUTOMATIC	CRITICAL
DRESDEN 2	01/16/90	23790002	AUTOMATIC	CRITICAL
DRESDEN 2	08/02/90	23790006	MANUAL	CRITICAL
DRESDEN 2	11/23/90	23790015	AUTOMATIC	SUBCRITICAL
GINNA	06/01/89	24489004	AUTOMATIC	CRITICAL
GINNA	03/23/90	24490003	AUTOMATIC	SUBCRITICAL
GINNA	05/10/90	24490007	AUTOMATIC	CRITICAL
GINNA	06/09/90	24490010	AUTOMATIC	CRITICAL
GINNA	09/26/90	24490012	AUTOMATIC	CRITICAL
GINNA	12/11/90	24490013	AUTOMATIC	CRITICAL
GINNA	12/12/90	24490016	AUTOMATIC	CRITICAL
GINNA	12/20/90	24490018	AUTOMATIC	CRITICAL
GINNA	12/21/90	24490019	AUTOMATIC	CRITICAL
MILLSTONE 1	04/07/89	24589005	AUTOMATIC	CRITICAL
MILLSTONE 1	06/02/89	24589015	AUTOMATIC	CRITICAL
MILLSTONE 1	10/19/89	24589021	AUTOMATIC	CRITICAL
MILLSTONE 1	09/14/90	24590015	AUTOMATIC	CRITICAL
INDIAN POINT 2	02/28/89	24789002	AUTOMATIC	CRITICAL
INDIAN POINT 2	12/13/89	24789013	AUTOMATIC	CRITICAL
DRESDEN 3	03/25/89	24989001	AUTOMATIC	CRITICAL
DRESDEN 3	03/30/89	24989002	AUTOMATIC	CRITICAL
DRESDEN 3	04/15/89	24989006	AUTOMATIC	CRITICAL
DRESDEN 3	03/10/90	24990005	AUTOMATIC	CRITICAL
TURKEY POINT 3	02/10/89	25089004	AUTOMATIC	CRITICAL
TURKEY POINT 4	12/23/89	25089020	AUTOMATIC	CRITICAL
TURKEY POINT 3	06/09/90	25090011	AUTOMATIC	CRITICAL
TURKEY POINT 3	06/15/90	25090013	AUTOMATIC	CRITICAL
TURKEY POINT 4	05/05/89	25189003	AUTOMATIC	SUBCRITICAL
TURKEY POINT 4	09/15/89	25189011	MANUAL	CRITICAL
TURKEY POINT 4	04/09/90	25190003	AUTOMATIC	CRITICAL
TURKEY POINT 4	05/26/90	25190004	MANUAL	CRITICAL
TURKEY POINT 4	08/12/90	25190008	AUTOMATIC	CRITICAL
QUAD CITIES 1	04/12/89	25489003	MANUAL	CRITICAL
QUAD CITIES 1	04/17/89	25489004	MANUAL	CRITICAL
QUAD CITIES 1	06/29/89	25489010	AUTOMATIC	CRITICAL

<u>Plant Name</u>	<u>Event Date</u>	<u>LER Number</u>	<u>Scram Type</u>	<u>Critical</u>
QUAD CITIES 1	03/10/90	25490004	AUTOMATIC	CRITICAL
PALISADES	02/28/89	25589004	AUTOMATIC	SUBCRITICAL
PALISADES	08/04/89	25589020	AUTOMATIC	CRITICAL
PALISADES	11/21/89	25589025	AUTOMATIC	SUBCRITICAL
PALISADES	01/09/90	25590001	MANUAL	CRITICAL
PALISADES	02/28/90	25590002	AUTOMATIC	CRITICAL
ROBINSON 2	02/27/89	26189004	AUTOMATIC	CRITICAL
ROBINSON 2	03/22/89	26189005	AUTOMATIC	CRITICAL
ROBINSON 2	03/30/89	26189006	AUTOMATIC	CRITICAL
ROBINSON 2	01/17/90	26190002	AUTOMATIC	CRITICAL
ROBINSON 2	05/17/90	26190007	AUTOMATIC	CRITICAL
MONTICELLO	06/19/89	26389009	AUTOMATIC	CRITICAL
MONTICELLO	11/15/89	26389038	AUTOMATIC	CRITICAL
MONTICELLO	10/29/90	26390017	AUTOMATIC	CRITICAL
QUAD CITIES 2	04/06/89	26589001	AUTOMATIC	CRITICAL
QUAD CITIES 2	10/12/89	26589005	AUTOMATIC	CRITICAL
QUAD CITIES 2	10/15/90	26590010	AUTOMATIC	CRITICAL
QUAD CITIES 2	10/27/90	26590011	AUTOMATIC	CRITICAL
FORT ST. VRAIN	03/22/89	26789004	AUTOMATIC	SUBCRITICAL
FORT ST. VRAIN	03/23/89	26789004	AUTOMATIC	SUBCRITICAL
FORT ST. VRAIN	03/23/89	26789004	AUTOMATIC	SUBCRITICAL
FORT ST. VRAIN	03/23/89	26789004	AUTOMATIC	SUBCRITICAL
FORT ST. VRAIN	03/23/89	26789004	AUTOMATIC	SUBCRITICAL
OCONEE 1	01/02/89	26989001	AUTOMATIC	CRITICAL
OCONEE 1	01/03/89	26989002	MANUAL	CRITICAL
OCONEE 1	08/10/89	26989013	AUTOMATIC	CRITICAL
OCONEE 1	04/26/90	26990006	AUTOMATIC	SUBCRITICAL
OCONEE 1	08/28/90	26990013	AUTOMATIC	CRITICAL
OCONEE 2	02/03/89	27089002	AUTOMATIC	CRITICAL
OCONEE 2	02/05/89	27089003	AUTOMATIC	CRITICAL
OCONEE 2	04/03/89	27089004	AUTOMATIC	CRITICAL
VERMONT YANKEE	03/21/90	27190004	AUTOMATIC	CRITICAL
VERMONT YANKEE	06/01/90	27190009	AUTOMATIC	CRITICAL
VERMONT YANKEE	11/01/90	27190015	AUTOMATIC	CRITICAL
SALEM 1	02/06/89	27289007	AUTOMATIC	CRITICAL
SALEM 1	02/18/89	27289012	AUTOMATIC	CRITICAL
SALEM 1	06/19/89	27289027	AUTOMATIC	CRITICAL
SALEM 1	04/03/90	27290010	AUTOMATIC	SUBCRITICAL
SALEM 1	04/09/90	27290012	AUTOMATIC	CRITICAL
SALEM 1	08/17/90	27290029	AUTOMATIC	CRITICAL
SALEM 1	09/10/90	27290030	AUTOMATIC	CRITICAL
DIABLO CANYON 1	10/06/89	27589009	AUTOMATIC	CRITICAL
DIABLO CANYON 1	02/20/90	27590002	MANUAL	CRITICAL
DIABLO CANYON 1	06/14/90	27590005	AUTOMATIC	CRITICAL
DIABLO CANYON 1	12/05/90	27590014	AUTOMATIC	CRITICAL
DIABLO CANYON 1	12/24/90	27590017	AUTOMATIC	CRITICAL
PEACH BOTTOM 2	05/19/89	27789012	AUTOMATIC	CRITICAL
PEACH BOTTOM 2	07/21/89	27789015	AUTOMATIC	CRITICAL
PEACH BOTTOM 2	10/05/89	27789023	AUTOMATIC	CRITICAL
PEACH BOTTOM 2	12/20/89	27789033	AUTOMATIC	CRITICAL
PEACH BOTTOM 3	01/28/90	27890002	MANUAL	CRITICAL
PEACH BOTTOM 3	03/06/90	27890003	AUTOMATIC	CRITICAL
PEACH BOTTOM 3	07/27/90	27890008	MANUAL	CRITICAL
SURRY 1	07/09/89	28089026	AUTOMATIC	CRITICAL
SURRY 1	12/21/89	28089044	MANUAL	CRITICAL
SURRY 1	05/22/90	28090004	AUTOMATIC	CRITICAL
SURRY 2	05/22/90	28090004	MANUAL	CRITICAL
SURRY 1	07/01/90	28090006	MANUAL	CRITICAL
SURRY 2	09/16/89	28189007	MANUAL	SUBCRITICAL
SURRY 2	09/18/89	28189009	AUTOMATIC	CRITICAL
SURRY 2	09/19/89	28189010	AUTOMATIC	CRITICAL
SURRY 2	05/31/90	28190003	MANUAL	CRITICAL
SURRY 2	08/27/90	28190004	MANUAL	CRITICAL
PRAIRIE ISLAND 1	07/21/89	28289010	AUTOMATIC	CRITICAL
PRAIRIE ISLAND 1	11/21/90	28290017	AUTOMATIC	CRITICAL
FORT CALHOUN	09/24/89	28589019	MANUAL	CRITICAL
FORT CALHOUN	11/19/90	28590026	MANUAL	CRITICAL
INDIAN POINT 3	02/04/89	28689004	AUTOMATIC	SUBCRITICAL

<u>Plant Name</u>	<u>Event Date</u>	<u>LER Number</u>	<u>Scram Type</u>	<u>Critical</u>
INDIAN POINT 3	10/19/89	28689015	MANUAL	CRITICAL
INDIAN POINT 3	12/27/90	28690003	MANUAL	CRITICAL
INDIAN POINT 3	06/29/90	28690004	AUTOMATIC	CRITICAL
OCONEE 3	03/06/89	28789002	AUTOMATIC	CRITICAL
OCONEE 3	08/18/89	28789004	AUTOMATIC	CRITICAL
OCONEE 3	01/19/90	28790001	AUTOMATIC	CRITICAL
OCONEE 3	03/07/90	28790002	AUTOMATIC	CRITICAL
OCONEE 3	11/13/90	28790003	MANUAL	CRITICAL
THREE MILE ISL 1	11/29/89	28989003	AUTOMATIC	CRITICAL
THREE MILE ISL 1	03/04/90	28990004	AUTOMATIC	CRITICAL
PILGRIM	03/04/89	29389011	AUTOMATIC	CRITICAL
PILGRIM	05/03/89	29389015	AUTOMATIC	CRITICAL
PILGRIM	07/18/89	29389023	MANUAL	CRITICAL
PILGRIM	08/30/89	29389026	AUTOMATIC	CRITICAL
PILGRIM	12/08/89	29389038	AUTOMATIC	CRITICAL
PILGRIM	05/13/90	29390008	AUTOMATIC	CRITICAL
PILGRIM	09/02/90	29390013	MANUAL	CRITICAL
ZION 1	01/27/89	29589002	AUTOMATIC	CRITICAL
ZION 1	01/27/90	29590004	AUTOMATIC	CRITICAL
ZION 1	08/13/90	29590017	AUTOMATIC	CRITICAL
COOPER STATION	01/25/89	29889001	AUTOMATIC	CRITICAL
COOPER STATION	09/28/89	29889025	AUTOMATIC	CRITICAL
COOPER STATION	11/25/89	29889026	AUTOMATIC	CRITICAL
COOPER STATION	10/17/90	29890011	AUTOMATIC	CRITICAL
POINT BEACH 2	03/29/89	30189002	AUTOMATIC	CRITICAL
POINT BEACH 2	08/20/89	30189004	AUTOMATIC	CRITICAL
CRYSTAL RIVER 3	06/14/89	30289020	AUTOMATIC	SUBCRITICAL
CRYSTAL RIVER 3	06/16/89	30289023	AUTOMATIC	CRITICAL
ZION 2	01/31/89	30489003	MANUAL	SUBCRITICAL
ZION 2	01/18/90	30490001	MANUAL	CRITICAL
ZION 2	09/07/90	30490010	AUTOMATIC	CRITICAL
ZION 2	09/22/90	30490011	AUTOMATIC	CRITICAL
ZION 2	11/11/90	30490013	AUTOMATIC	CRITICAL
KEWAUNEE	12/27/89	30589016	AUTOMATIC	CRITICAL
PRAIRIE ISLAND 2	05/26/89	30689002	AUTOMATIC	CRITICAL
PRAIRIE ISLAND 2	12/21/89	30689004	AUTOMATIC	CRITICAL
PRAIRIE ISLAND 2	12/26/89	30689004	AUTOMATIC	CRITICAL
PRAIRIE ISLAND 2	03/08/90	30690001	AUTOMATIC	CRITICAL
PRAIRIE ISLAND 2	03/09/90	30690002	AUTOMATIC	CRITICAL
PRAIRIE ISLAND 2	03/16/90	30690003	AUTOMATIC	CRITICAL
PRAIRIE ISLAND 2	10/07/90	30690009	AUTOMATIC	CRITICAL
PRAIRIE ISLAND 2	12/29/90	30690012	AUTOMATIC	CRITICAL
MAINE YANKEE	01/10/89	30989001	AUTOMATIC	CRITICAL
MAINE YANKEE	04/05/89	30989003	AUTOMATIC	CRITICAL
SALEM 2	02/05/89	31189003	AUTOMATIC	CRITICAL
SALEM 2	03/12/89	31189005	AUTOMATIC	CRITICAL
SALEM 2	03/29/89	31189006	AUTOMATIC	SUBCRITICAL
SALEM 2	04/11/89	31189008	AUTOMATIC	CRITICAL
SALEM 2	06/10/89	31189013	MANUAL	CRITICAL
SALEM 2	06/28/90	31190029	AUTOMATIC	CRITICAL
SALEM 2	09/04/90	31190036	AUTOMATIC	CRITICAL
RANCHO SECO	02/01/89	31289001	MANUAL	SUBCRITICAL
RANCHO SECO	03/28/89	31289004	AUTOMATIC	CRITICAL
ARKANSAS 1	01/20/89	31389002	AUTOMATIC	CRITICAL
ARKANSAS 1	05/01/89	31389018	AUTOMATIC	CRITICAL
ARKANSAS 1	11/10/89	31389037	AUTOMATIC	CRITICAL
ARKANSAS 1	11/14/89	31389038	AUTOMATIC	CRITICAL
ARKANSAS 1	12/28/89	31389048	AUTOMATIC	CRITICAL
ARKANSAS 1	12/18/90	31390022	AUTOMATIC	SUBCRITICAL
COOK 1	01/16/89	31589001	AUTOMATIC	CRITICAL
COOK 1	03/18/89	31589003	AUTOMATIC	CRITICAL
COOK 2	08/14/89	31689014	AUTOMATIC	CRITICAL
COOK 2	06/11/90	31690004	AUTOMATIC	CRITICAL
COOK 2	12/12/90	31690012	AUTOMATIC	CRITICAL
COOK 2	12/15/90	31690013	AUTOMATIC	CRITICAL
HATCH 1	06/10/90	32190012	MANUAL	CRITICAL
HATCH 1	06/20/90	32190013	AUTOMATIC	CRITICAL
HATCH 1	10/06/90	32190020	AUTOMATIC	CRITICAL

<u>Plant Name</u>	<u>Event Date</u>	<u>LER Number</u>	<u>Scram Type</u>	<u>Critical</u>
HATCH 1	10/15/90	32190021	MANUAL	CRITICAL
DIABLO CANYON 2	04/16/89	32389005	AUTOMATIC	CRITICAL
DIABLO CANYON 2	07/16/89	32389007	MANUAL	CRITICAL
DIABLO CANYON 2	08/28/89	32389008	MANUAL	CRITICAL
DIABLO CANYON 2	10/27/89	32389010	MANUAL	CRITICAL
BRUNSWICK 2	06/17/89	32489009	MANUAL	CRITICAL
BRUNSWICK 2	03/13/90	32490004	MANUAL	CRITICAL
BRUNSWICK 2	08/16/90	32490008	AUTOMATIC	CRITICAL
BRUNSWICK 2	08/19/90	32490009	AUTOMATIC	CRITICAL
BRUNSWICK 2	08/30/90	32490012	AUTOMATIC	CRITICAL
BRUNSWICK 2	09/27/90	32490015	AUTOMATIC	CRITICAL
BRUNSWICK 2	10/12/90	32490016	AUTOMATIC	CRITICAL
BRUNSWICK 1	02/11/89	32589002	AUTOMATIC	SUBCRITICAL
BRUNSWICK 1	02/11/89	32589002	AUTOMATIC	SUBCRITICAL
BRUNSWICK 1	09/27/90	32590017	AUTOMATIC	CRITICAL
SEQUOYAH 1	02/10/89	32789005	AUTOMATIC	CRITICAL
SEQUOYAH 1	12/10/89	32789035	AUTOMATIC	CRITICAL
SEQUOYAH 1	06/02/90	32790012	AUTOMATIC	CRITICAL
SEQUOYAH 1	09/14/90	32790021	AUTOMATIC	CRITICAL
SEQUOYAH 1	09/19/90	32790022	AUTOMATIC	CRITICAL
SEQUOYAH 2	04/15/89	32889005	AUTOMATIC	CRITICAL
SEQUOYAH 2	04/16/89	32889005	AUTOMATIC	CRITICAL
SEQUOYAH 2	04/19/89	32889005	AUTOMATIC	CRITICAL
SEQUOYAH 2	07/10/89	32889008	AUTOMATIC	CRITICAL
SEQUOYAH 2	04/10/90	32890008	AUTOMATIC	CRITICAL
SEQUOYAH 2	11/23/90	32890017	AUTOMATIC	CRITICAL
DUANE ARNOLD	01/18/89	33189001	MANUAL	CRITICAL
DUANE ARNOLD	02/02/89	33189003	AUTOMATIC	CRITICAL
DUANE ARNOLD	03/05/89	33189008	AUTOMATIC	CRITICAL
DUANE ARNOLD	06/12/89	33189009	AUTOMATIC	CRITICAL
DUANE ARNOLD	08/26/89	33189011	AUTOMATIC	CRITICAL
DUANE ARNOLD	03/29/90	33190002	MANUAL	CRITICAL
DUANE ARNOLD	04/01/90	33190004	AUTOMATIC	CRITICAL
DUANE ARNOLD	09/10/90	33190014	AUTOMATIC	CRITICAL
DUANE ARNOLD	09/13/90	33190015	MANUAL	CRITICAL
DUANE ARNOLD	09/18/90	33190016	AUTOMATIC	CRITICAL
DUANE ARNOLD	10/19/90	33190019	AUTOMATIC	CRITICAL
FITZPATRICK	11/05/89	33389020	AUTOMATIC	CRITICAL
FITZPATRICK	11/12/89	33389023	AUTOMATIC	CRITICAL
FITZPATRICK	01/19/90	33390001	AUTOMATIC	CRITICAL
FITZPATRICK	03/19/90	33390009	AUTOMATIC	CRITICAL
FITZPATRICK	10/19/90	33390023	MANUAL	CRITICAL
FITZPATRICK	12/12/90	33390026	AUTOMATIC	CRITICAL
FITZPATRICK	12/15/90	33390027	AUTOMATIC	CRITICAL
BEAVER VALLEY 1	01/17/89	33489001	AUTOMATIC	CRITICAL
BEAVER VALLEY 1	02/13/89	33489002	AUTOMATIC	CRITICAL
BEAVER VALLEY 1	05/18/89	33489007	AUTOMATIC	CRITICAL
BEAVER VALLEY 1	09/01/89	33489008	AUTOMATIC	SUBCRITICAL
BEAVER VALLEY 1	12/27/89	33489018	AUTOMATIC	CRITICAL
BEAVER VALLEY 1	03/30/90	33490007	AUTOMATIC	CRITICAL
ST. LUCIE 1	07/17/89	33589003	AUTOMATIC	CRITICAL
ST. LUCIE 1	09/13/89	33589005	AUTOMATIC	CRITICAL
ST. LUCIE 1	05/24/90	33590007	MANUAL	CRITICAL
MILLSTONE 2	05/08/90	33690006	MANUAL	CRITICAL
MILLSTONE 2	08/27/90	33690012	AUTOMATIC	CRITICAL
NORTH ANNA 1	02/25/89	33889005	AUTOMATIC	CRITICAL
NORTH ANNA 1	07/19/89	33889014	AUTOMATIC	CRITICAL
NORTH ANNA 1	12/05/89	33889017	AUTOMATIC	CRITICAL
NORTH ANNA 1	01/23/90	33890001	AUTOMATIC	CRITICAL
NORTH ANNA 2	11/02/90	33990010	AUTOMATIC	CRITICAL
FERMI 2	02/26/89	34189006	AUTOMATIC	CRITICAL
FERMI 2	03/07/89	34189007	MANUAL	CRITICAL
FERMI 2	12/18/89	34189036	AUTOMATIC	CRITICAL
FERMI 2	12/23/89	34189038	MANUAL	CRITICAL
FERMI 2	04/10/90	34190003	AUTOMATIC	CRITICAL
FERMI 2	10/06/90	34190011	AUTOMATIC	CRITICAL
TROJAN	08/09/89	34489017	AUTOMATIC	CRITICAL
TROJAN	08/09/90	34490034	AUTOMATIC	CRITICAL

<u>Plant Name</u>	<u>Event Date</u>	<u>LER Number</u>	<u>Scram Type</u>	<u>Critical</u>
DAVIS-BESSE	01/18/89	34689003	AUTOMATIC	CRITICAL
DAVIS-BESSE	05/30/89	34689005	AUTOMATIC	CRITICAL
DAVIS-BESSE	01/26/90	34690002	AUTOMATIC	CRITICAL
DAVIS-BESSE	12/13/90	34690016	AUTOMATIC	CRITICAL
FARLEY 1	11/12/89	34889006	AUTOMATIC	CRITICAL
FARLEY 1	07/20/90	34890005	MANUAL	CRITICAL
LIMERICK 2	11/10/89	35389013	AUTOMATIC	CRITICAL
LIMERICK 2	07/15/90	35390012	AUTOMATIC	CRITICAL
LIMERICK 2	09/10/90	35390015	AUTOMATIC	CRITICAL
HOPE CREEK	08/30/89	35489017	AUTOMATIC	CRITICAL
HOPE CREEK	12/30/89	35489025	AUTOMATIC	CRITICAL
HOPE CREEK	01/06/90	35490001	AUTOMATIC	CRITICAL
HOPE CREEK	03/19/90	35490003	AUTOMATIC	CRITICAL
HOPE CREEK	11/04/90	35490024	AUTOMATIC	CRITICAL
HOPE CREEK	11/17/90	35490028	AUTOMATIC	CRITICAL
SAN ONOFRE 2	02/09/89	36189004	AUTOMATIC	SUBCRITICAL
SAN ONOFRE 2	09/02/89	36189019	MANUAL	CRITICAL
SAN ONOFRE 2	12/06/90	3619001C	AUTOMATIC	CRITICAL
SAN ONOFRE 3	01/06/89	36289001	AUTOMATIC	CRITICAL
SAN ONOFRE 3	04/07/89	36289006	AUTOMATIC	CRITICAL
SAN ONOFRE 3	02/23/90	36290002	AUTOMATIC	CRITICAL
FARLEY 2	05/22/89	36489007	AUTOMATIC	CRITICAL
FARLEY 2	05/27/89	36489008	AUTOMATIC	CRITICAL
FARLEY 2	09/20/89	36489010	MANUAL	CRITICAL
FARLEY 2	10/18/89	36489012	AUTOMATIC	CRITICAL
FARLEY 2	10/19/89	36489013	AUTOMATIC	CRITICAL
FARLEY 2	11/18/89	36489015	AUTOMATIC	CRITICAL
FARLEY 2	05/12/90	36490001	AUTOMATIC	CRITICAL
HATCH 2	09/03/89	36689005	AUTOMATIC	CRITICAL
HATCH 2	01/12/90	36690001	AUTOMATIC	CRITICAL
HATCH 2	03/28/90	36690003	AUTOMATIC	CRITICAL
ARKANSAS 2	04/18/89	36889006	AUTOMATIC	CRITICAL
ARKANSAS 2	12/31/89	36889024	AUTOMATIC	CRITICAL
ARKANSAS 2	03/04/90	36890005	MANUAL	CRITICAL
ARKANSAS 2	03/05/90	36890006	MANUAL	SUBCRITICAL
ARKANSAS 2	06/26/90	36890014	AUTOMATIC	CRITICAL
ARKANSAS 2	08/21/90	36890019	AUTOMATIC	CRITICAL
ARKANSAS 2	09/28/90	36890020	MANUAL	CRITICAL
MCGUIRE 1	03/07/89	36989004	MANUAL	CRITICAL
MCGUIRE 1	08/26/89	36989022	AUTOMATIC	CRITICAL
MCGUIRE 1	01/08/90	36990001	AUTOMATIC	CRITICAL
MCGUIRE 1	10/13/90	36990027	AUTOMATIC	CRITICAL
MCGUIRE 1	11/17/90	36990032	AUTOMATIC	CRITICAL
MCGUIRE 2	03/03/89	37089001	AUTOMATIC	CRITICAL
MCGUIRE 2	03/14/89	37089002	AUTOMATIC	CRITICAL
MCGUIRE 2	04/06/89	37089003	AUTOMATIC	CRITICAL
MCGUIRE 2	12/27/90	37090008	MANUAL	CRITICAL
LASALLE 1	03/02/89	37389009	AUTOMATIC	CRITICAL
LASALLE 1	03/28/90	37390006	AUTOMATIC	CRITICAL
LASALLE 1	06/26/90	37390010	AUTOMATIC	CRITICAL
LASALLE 2	08/26/89	37489011	MANUAL	SUBCRITICAL
LASALLE 2	08/26/89	37489011	AUTOMATIC	CRITICAL
LASALLE 2	02/06/90	37490001	AUTOMATIC	CRITICAL
LASALLE 2	09/12/90	37490010	AUTOMATIC	CRITICAL
WATERFORD 3	07/15/89	38289013	MANUAL	CRITICAL
WATERFORD 3	08/19/89	38289017	AUTOMATIC	CRITICAL
WATERFORD 3	12/23/89	38289024	MANUAL	CRITICAL
WATERFORD 3	03/22/90	38290002	AUTOMATIC	CRITICAL
WATERFORD 3	03/29/90	38290003	AUTOMATIC	CRITICAL
WATERFORD 3	08/25/90	38290012	AUTOMATIC	CRITICAL
SUSQUEHANNA 1	01/04/89	38789001	AUTOMATIC	CRITICAL
SUSQUEHANNA 1	01/12/89	38789002	AUTOMATIC	CRITICAL
SUSQUEHANNA 1	02/07/89	38789005	MANUAL	CRITICAL
SUSQUEHANNA 1	12/24/89	38789027	AUTOMATIC	CRITICAL
SUSQUEHANNA 2	02/27/89	38889003	MANUAL	CRITICAL
SUSQUEHANNA 2	02/06/90	38890002	AUTOMATIC	CRITICAL
SUSQUEHANNA 2	05/28/90	38890005	AUTOMATIC	CRITICAL
ST. LUCIE 2	06/26/89	38989005	AUTOMATIC	CRITICAL

<u>Plant Name</u>	<u>Event Date</u>	<u>LER Number</u>	<u>Scram Type</u>	<u>Critical</u>
ST. LUCIE 2	09/23/89	38989007	MANUAL	CRITICAL
ST. LUCIE 2	01/14/90	38990001	AUTOMATIC	CRITICAL
SUMMER	04/01/89	39589006	AUTOMATIC	CRITICAL
SUMMER	05/28/89	39589011	MANUAL	CRITICAL
SUMMER	07/11/89	39589012	AUTOMATIC	CRITICAL
SUMMER	08/25/89	39589015	MANUAL	CRITICAL
SUMMER	12/02/89	39589020	AUTOMATIC	CRITICAL
WASH. NUCLEAR 2	01/30/89	39789002	AUTOMATIC	CRITICAL
WASH. NUCLEAR 2	06/29/89	39789028	AUTOMATIC	CRITICAL
WASH. NUCLEAR 2	08/06/89	39789031	AUTOMATIC	CRITICAL
WASH. NUCLEAR 2	08/17/89	39789035	AUTOMATIC	CRITICAL
WASH. NUCLEAR 2	09/25/90	39790021	MANUAL	CRITICAL
WASH. NUCLEAR 2	12/07/90	39790031	AUTOMATIC	CRITICAL
SHEARON HARRIS	01/16/89	40089001	AUTOMATIC	CRITICAL
SHEARON HARRIS	02/06/89	40089003	AUTOMATIC	CRITICAL
SHEARON HARRIS	02/07/89	40089004	AUTOMATIC	CRITICAL
SHEARON HARRIS	02/22/89	40089005	AUTOMATIC	CRITICAL
SHEARON HARRIS	03/14/89	40089006	AUTOMATIC	CRITICAL
SHEARON HARRIS	10/09/89	40089017	AUTOMATIC	CRITICAL
SHEARON HARRIS	12/07/89	40089018	MANUAL	SUBCRITICAL
NINE MILE PT. 2	04/22/89	41089009	AUTOMATIC	CRITICAL
NINE MILE PT. 2	04/13/89	41089014	AUTOMATIC	CRITICAL
NINE MILE PT. 2	09/08/89	41089024	AUTOMATIC	CRITICAL
NINE MILE PT. 2	10/13/89	41089035	AUTOMATIC	CRITICAL
NINE MILE PT. 2	10/18/89	41089036	AUTOMATIC	CRITICAL
NINE MILE PT. 2	12/01/89	41089040	AUTOMATIC	CRITICAL
NINE MILE PT. 2	05/14/90	41090009	MANUAL	CRITICAL
NINE MILE PT. 2	09/05/90	41090013	AUTOMATIC	CRITICAL
BEAVER VALLEY 2	02/12/89	41289003	AUTOMATIC	CRITICAL
BEAVER VALLEY 2	05/27/89	41289018	AUTOMATIC	SUBCRITICAL
BEAVER VALLEY 2	07/02/90	41290008	AUTOMATIC	CRITICAL
CATAWBA 1	03/05/89	41389008	AUTOMATIC	CRITICAL
CATAWBA 1	06/26/89	41389017	MANUAL	CRITICAL
CATAWBA 1	08/24/89	41389022	MANUAL	CRITICAL
CATAWBA 2	01/12/89	41489001	AUTOMATIC	CRITICAL
CATAWBA 2	01/21/89	41489002	MANUAL	CRITICAL
CATAWBA 2	02/21/89	41489003	AUTOMATIC	CRITICAL
CATAWBA 2	10/07/90	41490013	AUTOMATIC	CRITICAL
GRAND GULF	05/05/89	41689006	AUTOMATIC	CRITICAL
GRAND GULF	07/22/89	41689010	AUTOMATIC	CRITICAL
GRAND GULF	08/14/89	41689012	AUTOMATIC	CRITICAL
GRAND GULF	11/07/89	41689016	AUTOMATIC	CRITICAL
GRAND GULF	12/30/89	41689019	MANUAL	CRITICAL
GRAND GULF	07/24/90	41690011	AUTOMATIC	CRITICAL
GRAND GULF	09/16/90	41690017	AUTOMATIC	CRITICAL
GRAND GULF	11/24/90	41690026	MANUAL	CRITICAL
GRAND GULF	12/10/90	41690028	AUTOMATIC	CRITICAL
GRAND GULF	12/18/90	41690029	AUTOMATIC	CRITICAL
MILLSTONE 3	05/06/89	42389008	MANUAL	CRITICAL
MILLSTONE 3	05/11/89	42389009	AUTOMATIC	CRITICAL
MILLSTONE 3	01/18/90	42390005	MANUAL	CRITICAL
MILLSTONE 3	03/09/90	42390009	AUTOMATIC	CRITICAL
MILLSTONE 3	03/30/90	42390011	MANUAL	CRITICAL
MILLSTONE 3	04/16/90	42390013	MANUAL	CRITICAL
MILLSTONE 3	05/10/90	42390014	MANUAL	CRITICAL
MILLSTONE 3	06/06/90	42390019	AUTOMATIC	CRITICAL
MILLSTONE 3	12/31/90	42390030	MANUAL	CRITICAL
VOGTLE 1	02/10/89	42489005	MANUAL	CRITICAL
VOGTLE 1	05/09/89	42489012	AUTOMATIC	CRITICAL
VOGTLE 1	07/08/89	42489016	MANUAL	CRITICAL
VOGTLE 1	08/03/89	42489016	MANUAL	CRITICAL
VOGTLE 1	10/02/89	42489018	AUTOMATIC	CRITICAL
VOGTLE 1	01/24/90	42490001	AUTOMATIC	CRITICAL
VOGTLE 1	04/25/90	42490011	MANUAL	CRITICAL
VOGTLE 1	07/23/90	42490016	MANUAL	CRITICAL
VOGTLE 1	12/18/90	42490023	MANUAL	CRITICAL
VOGTLE 2	05/02/89	42589019	AUTOMATIC	CRITICAL
VOGTLE 2	05/12/89	42589020	AUTOMATIC	CRITICAL

<u>Plant Name</u>	<u>Event Date</u>	<u>LER Number</u>	<u>Scram Type</u>	<u>Critical</u>
VOGTLE 2	05/22/89	42589021	AUTOMATIC	CRITICAL
VOGTLE 2	07/26/89	42589024	AUTOMATIC	CRITICAL
VOGTLE 2	10/11/89	42589027	AUTOMATIC	CRITICAL
VOGTLE 2	11/05/89	42589029	MANUAL	CRITICAL
VOGTLE 2	12/02/89	42589031	AUTOMATIC	CRITICAL
VOGTLE 2	03/20/90	42590002	AUTOMATIC	CRITICAL
VOGTLE 2	05/06/90	42590007	AUTOMATIC	CRITICAL
VOGTLE 2	06/28/90	42590008	MANUAL	CRITICAL
VOGTLE 2	06/30/90	42590009	MANUAL	CRITICAL
PERRY	01/07/90	44090001	AUTOMATIC	CRITICAL
SEABROOK	06/22/89	44389008	MANUAL	CRITICAL
SEABROOK	06/20/90	44390015	AUTOMATIC	CRITICAL
SEABROOK	07/05/90	44390018	AUTOMATIC	CRITICAL
SEABROOK	08/22/90	44390022	AUTOMATIC	CRITICAL
SEABROOK	11/09/90	44390025	AUTOMATIC	CRITICAL
COMANCHE PEAK 1	03/05/90	44590002	AUTOMATIC	SUBCRITICAL
COMANCHE PEAK 1	04/21/90	44590009	AUTOMATIC	CRITICAL
COMANCHE PEAK 1	05/09/90	44590013	AUTOMATIC	CRITICAL
COMANCHE PEAK 1	05/27/90	44590017	MANUAL	CRITICAL
COMANCHE PEAK 1	08/08/90	44590023	AUTOMATIC	CRITICAL
COMANCHE PEAK 1	08/25/90	44590025	AUTOMATIC	CRITICAL
COMANCHE PEAK 1	09/07/90	44590027	MANUAL	CRITICAL
COMANCHE PEAK 1	09/08/90	44590028	AUTOMATIC	CRITICAL
COMANCHE PEAK 1	09/10/90	44590029	AUTOMATIC	CRITICAL
COMANCHE PEAK 1	09/15/90	44590030	MANUAL	CRITICAL
BYRON 1	01/31/89	45489002	MANUAL	CRITICAL
BYRON 1	03/01/90	45490002	AUTOMATIC	CRITICAL
BYRON 1	05/03/90	45490006	AUTOMATIC	CRITICAL
BYRON 1	08/19/90	45490011	AUTOMATIC	CRITICAL
BYRON 1	12/03/90	45490014	AUTOMATIC	CRITICAL
BYRON 2	01/18/90	45590001	AUTOMATIC	CRITICAL
BYRON 2	12/20/90	45590010	MANUAL	CRITICAL
BRAIDWOOD 1	03/06/89	45689004	AUTOMATIC	CRITICAL
BRAIDWOOD 1	07/18/89	45689006	AUTOMATIC	CRITICAL
BRAIDWOOD 2	07/18/89	45689006	AUTOMATIC	CRITICAL
BRAIDWOOD 1	01/12/90	45690001	AUTOMATIC	CRITICAL
BRAIDWOOD 1	06/08/90	45690008	AUTOMATIC	CRITICAL
BRAIDWOOD 1	09/29/90	45690018	AUTOMATIC	CRITICAL
BRAIDWOOD 1	12/01/90	45690021	AUTOMATIC	CRITICAL
BRAIDWOOD 1	12/30/90	45690023	AUTOMATIC	CRITICAL
BRAIDWOOD 2	05/11/89	45789002	AUTOMATIC	CRITICAL
BRAIDWOOD 2	09/07/89	45789004	AUTOMATIC	CRITICAL
BRAIDWOOD 2	06/09/90	45790010	AUTOMATIC	CRITICAL
RIVER BEND	02/20/89	45889007	AUTOMATIC	CRITICAL
RIVER BEND	02/25/89	45889008	AUTOMATIC	CRITICAL
RIVER BEND	09/30/89	45889035	AUTOMATIC	CRITICAL
RIVER BEND	12/01/89	45889042	AUTOMATIC	CRITICAL
RIVER BEND	03/15/90	45890008	AUTOMATIC	CRITICAL
RIVER BEND	04/07/90	45890014	AUTOMATIC	CRITICAL
RIVER BEND	12/12/90	45890047	AUTOMATIC	CRITICAL
CLINTON 1	05/26/89	46189022	MANUAL	CRITICAL
CLINTON 1	06/01/89	46189022	MANUAL	CRITICAL
CLINTON 1	06/28/89	46189028	AUTOMATIC	CRITICAL
CLINTON 1	07/14/89	46189029	MANUAL	CRITICAL
CLINTON 1	07/31/89	46189032	MANUAL	CRITICAL
CLINTON 1	05/17/90	46190012	MANUAL	CRITICAL
CLINTON 1	07/09/90	46190013	AUTOMATIC	CRITICAL
WOLF CREEK	01/23/89	48289002	AUTOMATIC	CRITICAL
WOLF CREEK	02/02/89	48289004	AUTOMATIC	CRITICAL
WOLF CREEK	02/06/90	48290001	AUTOMATIC	CRITICAL
WOLF CREEK	05/14/90	48290011	AUTOMATIC	CRITICAL
WOLF CREEK	05/17/90	48290012	AUTOMATIC	CRITICAL
WOLF CREEK	05/19/90	48290013	AUTOMATIC	CRITICAL
CALLAWAY	05/29/89	48389006	AUTOMATIC	CRITICAL
CALLAWAY	06/23/89	48389008	MANUAL	CRITICAL
CALLAWAY	05/01/90	48390005	AUTOMATIC	CRITICAL
CALLAWAY	06/11/90	48390007	AUTOMATIC	CRITICAL
CALLAWAY	06/12/90	48390007	MANUAL	SUBCRITICAL

<u>Plant Name</u>	<u>Event Date</u>	<u>LER Number</u>	<u>Scram Type</u>	<u>Critical</u>
CALLAWAY	11/24/90	48390016	AUTOMATIC	CRITICAL
CALLAWAY	12/30/90	48390017	AUTOMATIC	CRITICAL
SOUTH TEXAS 1	01/03/89	49889001	AUTOMATIC	CRITICAL
SOUTH TEXAS 1	01/20/89	49889005	AUTOMATIC	CRITICAL
SOUTH TEXAS 1	07/04/89	49889015	AUTOMATIC	CRITICAL
SOUTH TEXAS 1	03/29/90	49890005	AUTOMATIC	CRITICAL
SOUTH TEXAS 1	07/30/90	49890006	MANUAL	CRITICAL
SOUTH TEXAS 1	06/20/90	49890014	AUTOMATIC	CRITICAL
SOUTH TEXAS 1	06/28/90	49890015	AUTOMATIC	CRITICAL
SOUTH TEXAS 1	07/02/90	49890016	AUTOMATIC	CRITICAL
SOUTH TEXAS 1	07/16/90	49890020	AUTOMATIC	CRITICAL
SOUTH TEXAS 1	09/29/90	49890023	MANUAL	CRITICAL
SOUTH TEXAS 1	11/24/90	49890025	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	04/05/89	49989009	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	04/15/89	49989013	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	06/02/89	49989016	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	07/13/89	49989017	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	08/23/89	49989019	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	08/29/89	49989020	MANUAL	CRITICAL
SOUTH TEXAS 2	09/05/89	49989021	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	09/19/89	49989022	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	09/22/89	49989023	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	10/13/89	49989026	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	02/02/90	49990002	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	03/26/90	49990004	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	04/14/90	49990005	AUTOMATIC	CRITICAL
SOUTH TEXAS 2	09/17/90	49990013	AUTOMATIC	CRITICAL
PALO VERDE 1	03/05/89	52889004	AUTOMATIC	CRITICAL
PALO VERDE 1	08/14/90	52890006	AUTOMATIC	CRITICAL
PALO VERDE 2	02/16/89	52989003	AUTOMATIC	CRITICAL
PALO VERDE 2	07/12/89	52989009	AUTOMATIC	CRITICAL
PALO VERDE 2	10/31/89	52989010	AUTOMATIC	CRITICAL
PALO VERDE 2	02/23/90	52990001	MANUAL	CRITICAL
PALO VERDE 3	03/03/89	53089001	AUTOMATIC	CRITICAL
PALO VERDE 3	04/14/90	53090004	AUTOMATIC	CRITICAL
PALO VERDE 3	10/20/90	53090007	AUTOMATIC	CRITICAL

Records printed: 507

THIS SESSION IS READY TO BEGIN.

LER GROUP \$PUBLIC1 IS NOW "ACTIVE" WITH 237 LERs

THE 237 KEYS IN THE CURRENT ACTIVE GROUP WILL BE SORTED

CURRENT OPTIONS FOR LIST COMMAND

NODOCK
NOCOMM
NOMAT
NOWATCH
NOREF
NODEC
ABSTRACT
NOTPD
NOFLOW

YOU HAVE REQUESTED LISTING 237 RECORDS, ARE YOU SURE?

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FORM 1 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
029 1989 002 0 8902170016 213101 01/11/89

ABSTRACT

POWER LEVEL - 000%. ON 1/11/89, AT 1937 HOURS, WITH THE PLANT IN MODE 3, WHILE CONDUCTING CONTROL ROD DROP TIME MEASUREMENTS FOLLOWING A REFUELING OUTAGE, THE REACTOR PROTECTION SYSTEM AUTOMATICALLY ACTUATED. AT THE TIME OF THE EVENT THE NO. 1 VITAL BUS INVERTER WAS OUT OF SERVICE FOR MAINTENANCE, WITH THE VITAL BUS INVERTER POWER SUPPLY IN BYPASS. IN THIS CONFIGURATION POWER TO THE VITAL BUS WAS SUPPLIED FROM EMERGENCY MCC-5. THE REACTOR WAS SUBCRITICAL AND THE GROUP A CONTROL RODS WERE AT 82 INCHES, BEING WITHDRAWN TO 90 INCHES. THE ROOT CAUSE OF THIS EVENT IS ATTRIBUTED TO A VOLTAGE FLUCTUATION ON THE VITAL BUS WHICH INDUCED A FALSE HIGH STARTUP RATE SCRAM SIGNAL, OPENING THE SCRAM BREAKERS, BK-1 AND BK-2. THE UNPLANNED OPENING OF BK-1 AND 2 CONSTITUTES AN ACTUATION OF THE RPS. THE VOLTAGE FLUCTUATION OCCURRED WHEN THE NO. 1 BOILER FEED PUMP WAS STARTED. NORMALLY, THE VITAL BUS INVERTER WOULD HAVE PREVENTED THE VOLTAGE FLUCTUATION ON THE EMERGENCY MCC-5 FROM AFFECTING THE RPS. THE OPERATORS TOOK ACTION TO PRECLUDE THE STARTING OF HEAVY LOADS WHILE THE VITAL BUS INVERTER WAS IN BYPASS. TO PREVENT A RECURRENCE OF THIS EVENT CONDITIONAL PRECAUTIONS WILL BE ADDED TO THE APPROPRIATE PLANT OPERATING PROCEDURES. THIS IS THE FIRST OCCURRENCE OF THIS NATURE. NO FURTHER CORRECTIVE ACTIONS ARE DEEMED NECESSARY. THE RPS FUNCTIONED AS DESIGNED.

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FORM 2 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
029 1989 005 0 8905160098 213945 04/06/89

ABSTRACT

POWER LEVEL - 100%. ON 4/6/89 AT 1123 HOURS WITH THE PLANT AT 100%

DESIGN WILL BE INITIATED TO DETERMINE IF HUMAN FACTORS ENGINEERING IS APPROPRIATE. THIS IS THE SECOND EVENT OF THIS NATURE. A PREVIOUS REACTOR SCRAM DUE TO INADVERTENT MISPOSITIONING OF THE NRW TRIP SWITCH WAS REPORTED AS LER 86-13. THERE WAS NO ADVERSE EFFECT ON THE HEALTH AND SAFETY OF THE PUBLIC AS A RESULT OF THIS EVENT.

FORM 5 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
029 1990 011 0 9101090143 221095 12/05/90

ABSTRACT

POWER LEVEL - 100%. ON 12/5/90, AT 0702 HOURS, WITH THE PLANT IN MODE 1 AT 100% POWER, FOLLOWING PERFORMANCE OF VALVING TO SUPPORT REPAIR OF A CONTROL AIR LEAK, AN AUTOMATIC REACTOR SCRAM OCCURRED. CLOSURE OF A CONTROL AIR ISOLATION VALVE (CA-V-1239) RESULTED IN AN UNANTICIPATED LOSS OF AIR TO THE HEATER DRAIN TANK HIGH LEVEL DUMP VALVE CAUSING IT TO OPEN. THIS RESULTED IN SEQUENTIAL AUTOMATIC TRIPPING OF THE HEATER DRAIN PUMP ON LOW HEATER DRAIN TANK LEVEL AND THE BOILER FEED PUMPS (BFPS) ON LOW SUCTION PRESSURE. THE LOSS OF FEEDWATER FLOW FROM THE BFPS RESULTED IN A LOW LEVEL CONDITION IN THE STEAM GENERATORS WHICH INITIATED THE AUTOMATIC REACTOR SCRAM. THE ROOT CAUSE OF THIS EVENT HAS BEEN ATTRIBUTED TO PERSONNEL ERROR. AN INCOMPLETE NOTATION ON A PLANT DRAWING AND THE VALVE IDENTIFICATION TAG CONTRIBUTED TO THE ERROR. AS CORRECTIVE ACTIONS THE DRAWING AND VALVE TAG HAVE BEEN CORRECTED AND A WALKDOWN OF THE CONTROL AIR SYSTEM DRAWINGS IS IN PROGRESS. ALL PLANT SYSTEMS FUNCTIONED AS DESIGNED DURING THE EVENT. THERE WAS NO ADVERSE EFFECT ON THE HEALTH OR SAFETY OF THE PUBLIC AS A RESULT OF THIS EVENT.

FORM 6 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
155 1989 008 0 8909270133 215298 08/22/89

ABSTRACT

POWER LEVEL - 074%. ON 8/22/89 THE UNIT WAS OPERATING AT APPROXIMATELY 74% POWER FOLLOWING START-UP FROM THE REFUELING OUTAGE A WEEK EARLIER. AT 0635 HOURS, OPERATORS NOTICED A SLOW REACTOR PRESSURE INCREASE AND ADJUSTED THE INITIAL PRESSURE REGULATOR TO RESTORE PRESSURE TO NORMAL. AT 0645 HOURS, REACTOR PRESSURE INCREASED RAPIDLY CAUSING A REACTOR TRIP ON HIGH NEUTRON FLUX. ALL CONTROL RODS INSERTED AND PLANT COOLING WAS MAINTAINED WITH THE MAIN CONDENSER. NO ENGINEERED SAFETY SYSTEMS OTHER THAN THE REACTOR PROTECTION SYSTEM WERE ACTUATED DURING THE EVENT. CAUSE OF THE TRIP WAS A RAPID CLOSURE OF THE TURBINE ADMISSION VALVES DUE TO GROSS LEAKAGE IN THE TURBINE INITIAL PRESSURE REGULATOR BELLOW ASSEMBLY. AFTER REPAIR OF THE BELLOW ASSEMBLY AND SUCCESSFUL TESTING, THE PLANT WAS RESTARTED ON 8/22/89 AT 2211 HOURS.

FORM 7 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
206 1989 017 0 8906090317 214248 05/03/89

ABSTRACT

POWER LEVEL - 000%. AT 0401 ON 5/3/89, WITH UNIT 1 IN MODE 3, WHILE PERFORMING CONTROL ROD DROP TESTING FOR THE FIRST TIME USING A NEW

PROTECTION SYSTEM (RPS) ACTUATION. THE ACTUATION OCCURRED WHILE CONTROL BANK II WAS BEING WITHDRAWN. INVESTIGATION HAS DETERMINED THAT THE ROOT CAUSE OF THE IR HIGH SUR ACTUATION WAS NOISE SPIKES GENERATED BY SEVERAL SOURCES ASSOCIATED WITH ROD CONTROL BANK II. THE PREDOMINANT CAUSE OF THE NOISE FROM THESE SOURCES IS BELIEVED TO BE DISSIPATION OF STORED ENERGY WHICH RESULTS FROM THE COLLAPSE OF MAGNETIC FIELDS WHEN DC POWERED COILS ARE DE-ENERGIZED. THE 2 PREDOMINATE SOURCES WERE: 1) THE PULSE-TO-ANALOG (P-A) DC STEPPER MOTOR AND, 2) THE ROD POSITION DEVIATION ALARM RELAYS. OTHER SOURCES OF NOISE INCLUDED: 1) THE CONTROL ROD DRIVE MECHANISM (CRDM) CONTROL CIRCUIT CAM ACTUATED SWITCHES AND CONTACTOR COILS, AND 2) THE ROD BOTTOM SIGNAL RELAYS. TROUBLESHOOTING ESTABLISHED A DIRECT CAUSE AND EFFECT RELATIONSHIP BETWEEN OPERATION OF EACH OF THESE COMPONENTS AND THE NOISE SPIKES OBSERVED ON THE IR CHANNELS. FOR CORRECTIVE ACTION, CIRCUIT MODIFICATIONS CONSISTING OF NOISE SUPPRESSION DEVICES (I.E., RESISTOR-CAPACITOR FILTERS AND DIODES) HAVE BEEN INSTALLED.

FORM 8 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 206 1989 019 0 8903310024 215104 07/24/89

ABSTRACT

POWER LEVEL - 076%. ON 7/24/89, AT 1215 WHILE AT 76% POWER, UNIT 1 WAS MANUALLY TRIPPED DUE TO A LOSS OF FEEDWATER FLOW TO STEAM GENERATOR (SG) "A" AND RESULTANT LOW LEVEL ALARM AT 1215. OPERATORS AUTHORIZED MAINTENANCE TECHNICIANS TO PERFORM TESTING OF THE SG "A" HIGH LEVEL ALARM AND STEAM FLOW/FEED FLOW MISMATCH REACTOR TRIP ALARM. DURING THE HIGH LEVEL ALARM PORTION OF THE TEST, THE SG "A" HIGH LEVEL ALARM ANNUNCIATED AS ANTICIPATED. THE HIGH LEVEL ALARM WAS PROMPTLY FOLLOWED BY THE SG "A" STEAM/FEED MISMATCH ALARM, WHICH WAS NOT ANTICIPATED AT THIS POINT IN THE TEST SEQUENCE. AFTER OBSERVING THAT SG "A" LEVELS WERE RAPIDLY DECREASING AND THE SG "A" MAIN FEEDWATER FLOW CONTROL VALVE (FCV) HAD TRIPPED CLOSED OPERATORS UNSUCCESSFULLY ATTEMPTED TO OPEN THE FCV AND, IN ACCORDANCE WITH PROCEDURES, MANUALLY TRIPPED THE REACTOR. SG "A" MAY HAVE DRIED OUT FOR A BRIEF PERIOD SHORTLY AFTER THE REACTOR HAD BEEN TRIPPED UNTIL THE AUXILIARY FEEDWATER SYSTEM ACTUATED AT 1217. ALL REQUIRED SYSTEMS FUNCTIONED NORMALLY. THE EFFECTS OF A RECENT DESIGN CHANGE ON THE FCV CIRCUITRY WERE NOT RECOGNIZED TO RESULT IN A LOSS OF FEEDWATER FLOW AND WERE, THEREFORE, NOT TRANSFERRED INTO STATION PROCEDURES OR OPERATOR TRAINING. THE ROOT CAUSE IS ATTRIBUTED TO WEAKNESSES IN SCE'S PROCESSES FOR ENSURING THAT DESIGN CHANGE INFORMATION IS ADEQUATELY INCORPORATED INTO PROCEDURES.

FORM 9 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 206 1989 021 1 9003200230 217402 08/03/89

ABSTRACT

POWER LEVEL - 091%. AT 1800 ON 8/3/89, WITH UNIT 1 AT 91% POWER, A REACTOR TRIP OCCURRED DUE TO ACTUATION OF THE REACTOR PROTECTION SYSTEM (RPS) ON LOW REACTOR COOLANT SYSTEM (RCS) FLOW IN ONE LOOP. ALL SYSTEMS RESPONDED NORMALLY TO THE TRIP AND THE OPERATORS (UTILITY, LICENSED) STABILIZED THE PLANT IN MODE 3. THE RPS OPERATED IN ACCORDANCE WITH DESIGN, WITH NO MALFUNCTIONS NOTED. THE BRIEF LOW RCS FLOW SIGNAL OCCURRED IN LOOP "C" AND WAS CAUSED BY A LOSS OF INSULATION RESISTANCE OF THE FLOW TRANSMITTER CABLE. THE LOSS OF INSULATION RESISTANCE RESULTED FROM TIME-TEMPERATURE-DEGRADATION.

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 SURVEILLANCE TEST OF THE NSLIV AUTOMATIC CONTROL SYSTEM. THE MANUAL TRIP WAS INITIATED, AS REQUIRED BY PROCEDURE, TO PREVENT A POSSIBLE CHALLENGE TO THE MAIN STEAM LINE SAFETY VALVES ON NUMBER 1 STEAM LINE. FULL CLOSURE OF THE VALVE OCCURRED WHEN INSTRUMENTATION AND CONTROL PERSONNEL PERFORMING THE CONTROL SYSTEM FUNCTIONAL TEST MISSED A PROCEDURE STEP. THE MISSED STEP REQUIRES THE INSERTION AND REMOVAL OF A TEST PLUG INTO A TEST JACK TERMINAL TO BLOCK A TRIP SIGNAL PRIOR TO OPERATING THE CONTROL SWITCH, THE VALVE WOULD NOT HAVE CLOSED. AFTER THE PLANT TRIP, ALL PLANT SYSTEMS FUNCTIONED AS DESIGNED. THE ROOT CAUSE OF THE EVENT HAS BEEN ATTRIBUTED TO PERSONNEL ERROR IN THAT THE TECHNICIAN PERFORMING THE PROCEDURE MISSED A STEP. CORRECTIVE ACTIONS INCLUDED COUNSELING THE TECHNICIANS ON THE IMPORTANCE OF FOLLOWING PROCEDURE STEPS AS WRITTEN, AND UNDERSTANDING THE EXPECTED RESULTS OF EACH STEP PRIOR TO ITS PERFORMANCE. ALL SPECIAL SURVEILLANCE PROCEDURES OF THIS TYPE WILL BE REVIEWED FOR HUMAN FACTORS CONSIDERATIONS AND REVISED AS NECESSARY TO IMPROVE USABILITY.

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 FORM 3 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 029 1989 007 0 8906050266 214083 04/23/89

ABSTRACT

POWER LEVEL - 100%. ON 4/23/89, AT 1830 HOURS, DURING NORMAL STEADY STATE OPERATION, (MODE 1, AT 100% POWER) THE CONTROL ROOM OPERATOR OBSERVED THAT GROUP C CONTROL RODS COULD NOT BE MOVED. THE OPERATING CREW DETERMINED THAT THE CONTROL RODS' CAM MOTOR WAS INOPERABLE. AN ELECTRICIAN WAS CALLED IN. THE ELECTRICIAN PERFORMING TROUBLESHOOTING REQUESTED THE CONTROL ROOM OPERATOR WITHDRAW THE GROUP ONE STEP FOR TROUBLESHOOTING PURPOSES. THE CAM MOTOR AND CONTROL RODS APPEARED TO OPERATE PROPERLY WHILE BEING PULLED ONE STEP. ALMOST IMMEDIATELY THE CONTROL ROOM RECEIVED INDICATION OF DROPPED RODS. WITHIN 5 TO 10 SECONDS AFTER THE RODS DROPPED AN AUTOMATIC SCRAM OCCURRED AS A RESULT OF LOW MAIN COOLANT PRESSURE. AN UNUSUAL EVENT WAS DECLARED AT 1910 HOURS AND TERMINATED AT 1915 HOURS. NRC NOTIFICATION WAS MADE AT 1938 HOURS. A THOROUGH INVESTIGATION WAS CONDUCTED TO DETERMINE THE CAUSE OF THE DROPPED RODS. THE CAUSE OF THE INOPERABLE CAM MOTOR WAS ATTRIBUTED TO A BROKEN COMPRESSION CONNECTOR FOUND ON THE MOTOR'S BRAKE SOLENOID CIRCUIT. THE CONNECTOR WAS REPLACED IN KIND. NO ABNORMALITIES WERE FOUND DURING THE INSPECTION OR TESTING OF THE CONTROL RODS' CIRCUITS AND COMPONENTS. CONTROL ROD EXERCISING WAS PERFORMED WITHOUT ANY ABNORMAL INDICATIONS. A ROOT CAUSE FOR THIS EVENT COULD NOT BE POSITIVELY DETERMINED.

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 FORM 4 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 029 1989 013 0 8910030514 215338 08/29/89

ABSTRACT

POWER LEVEL - 001%. ON 8/29/89, AT 1738 HOURS, FOLLOWING A MAINTENANCE OUTAGE, WHILE IN MODE 2 AT APPROXIMATELY 1% POWER WITH MAIN COOLANT SYSTEM PRESSURE AT 2000 PSIG, A REACTOR SCRAM RESULTED WHEN THE TRAIN B NONRETURN VALVE (NRV) TRIP SWITCH WAS INADVERTENTLY PLACED IN THE TRIP POSITION. PLANT RESPONSE FOLLOWING RECEIPT OF THE TRIP SIGNAL WAS NORMAL. THE ROOT CAUSE OF THIS EVENT IS ATTRIBUTED TO PERSONNEL ERROR. A CONTRIBUTING CAUSE WAS A PROCEDURAL DEFICIENCY. THE CONTROL ROOM OPERATOR INADVERTENTLY TURNED THE TRAIN B NRV TRIP SWITCH TO THE TRIP POSITION WHILE PERFORMING PROCEDURE STEPS THAT WERE NOT REQUIRED FOR THE PLANT OPERATING CONDITIONS. THE PROCEDURE HAS BEEN REVISED

FROM TO FROM. AS CORRECTIVE ACTION, THE CABLE WAS REPLACED AND THE RCS LOOP "C" FLOW INSTRUMENT WAS VERIFIED TO BE OPERATING PROPERLY. THE REMAINING TWO RCS LOOP FLOW INSTRUMENTATION CABLES WERE TESTED AND WERE FOUND TO BE SATISFACTORY. THE RCS LOOP FLOW INSTRUMENTATION CABLING AND THE REMAINING CABLING HAVING THE SAME INSULATION, WHICH REMAIN IN SERVICE IN IMPORTANT-TO-SAFETY APPLICATIONS, ARE NOT REQUIRED TO BE ENVIRONMENTALLY QUALIFIED (EQ). THE REMAINING CABLES HAVING SIMILAR INSULATION WILL BE PERIODICALLY TESTED FOR INSULATION DEGRADATION. A SAMPLE OF THESE CABLES WILL BE REMOVED FROM SERVICE DURING THE NEXT REFUELING OUTAGE AND REPLACED.

FORM 10 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 206 1989 023 0 8910300220 215692 09/18/89

ABSTRACT

POWER LEVEL - 091%. AT 1921 ON 9/18/89, WITH UNIT 1 IN MODE 1 AT 91% POWER, 4 CONTROL (CRS) FROM SHUTDOWN BANK 2 DROPPED INTO THE CORE. APPROX. 23 SEC. LATER, THE REMAINING 12 SHUTDOWN BANK CRS (4 FROM SHUTDOWN BANK 2 AND 8 FROM SHUTDOWN BANK 1) DROPPED INTO THE CORE. OPERATIONS PERSONNEL RESPONDED BY MANUALLY TRIPPING REACTOR, VERIFYING THAT ALL SYSTEMS RESPONDED NORMALLY TO THE TRIP, AND COMPLETING REQUIREMENTS OF THE REACTOR TRIP RESPONSE PROCEDURE. AT 1942, THE PLANT WAS STABILIZED IN MODE 3 (HOT STANDBY) AND THE REACTOR TRIP RESPONSE PROCEDURE WAS EXITED. INVESTIGATION INTO THE CAUSE OF THE DROPPED CRS REVEALED THAT: 1) SHUTDOWN BANK 2 CONTACTOR COIL 2MS1 FAILED, RESULTING IN THE DE-ENERGIZATION OF 4 MOVEABLE GRIPPER COILS AND SUBSEQUENT DROP OF INITIAL 4 CRS; AND 2) AS THE FAULT FROM 2MS1 PROGRESSED, CURRENT PASSING THROUGH THE (+) 125 VDC FUSE TO BOTH SHUTDOWN BANK 1 AND 2 CONTACTOR COILS INCREASED TO THE POINT AT WHICH THE FUSE BLEW, DE-ENERGIZING MOVEABLE GRIPPER COILS FOR THE REMAINING 12 CRS AND CAUSING THE CRS TO DROP INTO THE CORE. THE FAILED CONTACTOR COIL AND FUSE WERE REPLACED WITH IN-KIND PARTS. INSULATION RESISTANCE OF ALL SHUTDOWN BANK AND CONTROL BANK CONTACTOR COILS WAS CHECKED AND DETERMINED TO BE SATISFACTORY. A THERMOGRAPHIC INSPECTION WAS PERFORMED AND NO ANOMALOUS CONDITIONS WERE IDENTIFIED. THE ROOT CAUSE OF THE CONTACTOR COIL 2MS1 FAILURE IS UNKNOWN.

FORM 11 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 206 1990 007 1 9011020028 219807 04/30/90

ABSTRACT

POWER LEVEL - 091%. AT 2202 ON 4/30/90, WITH UNIT 1 AT 91% POWER, A REACTOR TRIP OCCURRED DUE TO ACTUATION OF THE REACTOR PROTECTION SYSTEM (RPS) ON A SPURIOUS LOW REACTOR COOLANT SYSTEM (RCS) FLOW SIGNAL IN LOOP B. ALL SYSTEMS RESPONDED NORMALLY TO THE TRIP AND THE OPERATORS STABILIZED THE PLANT IN MODE 3. THE RPS OPERATED IN ACCORDANCE WITH DESIGN WITH NO MALFUNCTIONS NOTED; THEREFORE THERE WAS NO SAFETY SIGNIFICANCE TO THIS EVENT. THE ROOT CAUSE OF THIS EVENT IS BELIEVED TO BE THE EXISTENCE OF VOIDS IN THE LOOP B RCS FLOW TRANSMITTER COIL INSULATION, WHICH CAUSED A GROUND IN THE COIL. IT HAS BEEN DETERMINED THAT THE VOIDS WERE DUE TO AN ISOLATED MANUFACTURING DEFECT. SCE BELIEVES THAT THE GROUND IN THE FLOW TRANSMITTER COIL CAUSED THE INSTRUMENT LOOP TO BE SENSITIVE TO THE PRESENCE OF MAGNETIC FIELDS ADJACENT TO THE INSTRUMENT LOOP CABLES. THE OCCURRENCE OF A MAGNETIC FIELD, WHICH COULD BE CAUSED BY THE NORMAL OPERATION OF PLANT EQUIPMENT, NEAR THE FLOW TRANSMITTER SIGNAL

CONNECTION TO CAUSE AN INDUCED CURRENT IN THE FLOW INSTRUMENTATION CIRCUIT SUFFICIENT TO ACTUATE THE LOW FLOW TRIP SIGNAL, THEREBY CAUSING THE REACTOR TRIP. CORRECTIVE ACTIONS INCLUDED REPLACEMENT OF THE DEFECTIVE TRANSMITTER AND VERIFYING THAT ALL RCS LOOP FLOW INSTRUMENTS WERE OPERATING PROPERLY.

FORM 12 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
206 1990 011 0 9006200030 218499 05/15/90

ABSTRACT

POWER LEVEL - 092%. ON 5/15/90, AT 0243 WITH UNIT 1 AT 91.5% POWER, THE REACTOR WAS MANUALLY TRIPPED DUE TO A LOW AND DECREASING LEVEL IN STEAM GENERATOR (SG) "C" RESULTING FROM A LOSS OF FEEDWATER FLOW. THE LOSS OF FEEDWATER FLOW OCCURRED DURING MAINTENANCE ON AN AUX. FEEDWATER (AFW) PUMP WHILE DE-TERMINATING A VALVE CONTROL CIRCUIT WHICH RESULTED IN AN INADVERTENT SHORT CIRCUIT TO GROUND. SHORT CIRCUIT INITIATED AUTOMATIC TRANSFER OF A VITAL BUS AND A MOMENTARY POWER INTERRUPTION TO THE SG "C" HIGH LEVEL ACTUATION WHICH, IN TURN, INITIATED CLOSURE OF SG "C" MAIN FCV. HIGH LEVEL ACTUATION CIRCUITRY RESET WHEN IT WAS RE-ENERGIZED AT THE COMPLETION OF THE TRANSFER. CONTROL ROOM OPERATOR THEN RESET THE FCV CONTROLS IN ORDER TO GAIN MANUAL CONTROL OF THE FCV IN ACCORDANCE WITH PROCEDURES. HOWEVER, THE CONTROL OPERATOR WAS UNABLE TO RE-ESTABLISH FEEDWATER FLOW BEFORE SG "C" REACHED THE LEVEL AT WHICH PROCEDURES REQUIRE THE REACTOR TO BE TRIPPED. CLOSURE OF FCV RESULTED FROM A RELAY/BISTABLE RACE WHICH OCCURRED WHEN SG "C" HIGH LEVEL FCV CLOSURE CIRCUITRY WAS RE-ENERGIZED. THE POTENTIAL FOR THIS INTERACTION WAS NOT PREVIOUSLY RECOGNIZED. CORRECTIVE ACTIONS INCLUDE: 1) TEMPORARILY DISABLING THE SG HIGH LEVEL CLOSURE OF THE FCV AND 2) TESTING OF THE VITAL BUSES WHICH ARE SUSCEPTIBLE TO BRIEF POWER INTERRUPTIONS REVEALED NO OTHER UNACCEPTABLE INTERACTIONS.

FORM 13 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
213 1990 018 0 9010090212 219663 09/03/90

ABSTRACT

POWER LEVEL - 080%. ON 9/3/90, AT 0457 HOURS, WITH THE PLANT IN MODE 1 AT 80% POWER, THE MAIN FEEDWATER REGULATING VALVE FOR THE NO. 1 STEAM GENERATOR FAILED OPEN. IMMEDIATE OPERATOR ACTION CONSISTED OF MANUALLY TRIPPING THE PLANT, CLOSING THE MAIN STEAM TRIP VALVE AND ISOLATING FEEDWATER TO THE NO. 1 STEAM GENERATOR. THIS EVENT ALSO RESULTED IN AUTOMATIC ACTUATION OF THE AUXILIARY FEEDWATER SYSTEM. SUBSEQUENT DISASSEMBLY AND INSPECTION OF THE VALVE REVEALED THAT THE PLUG HAD SEPARATED FROM THE VALVE STEM. IT WAS ALSO NOTED THAT FRAGMENTS OF THE VALVE STEM WERE CARRIED DOWNSTREAM IN THE FEEDWATER SYSTEM. AN ENGINEERING EVALUATION DETERMINED THAT THE LOOSE PARTS WERE NOT A CONCERN FOR ONE OPERATING CYCLE. THE ROOT CAUSE WAS IMPROPER PART FABRICATION AT THE FACTORY. CORRECTIVE ACTION CONSISTED OF MODIFYING THE STEM-PLUG ASSEMBLIES ON ALL FOUR FEEDWATER REGULATING VALVES WITH A WELDED JOINT WHERE THE PLUG ATTACHES TO THE STEM. THIS EVENT IS REPORTABLE UNDER 10CFR50.73(a)(2)(iv) SINCE IT RESULTED IN MANUAL ACTUATION OF THE REACTOR PROTECTION SYSTEM AND AUTOMATIC ACTUATION OF AN ENGINEERED SAFETY FEATURE.

FORM 14 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 050%. ON SEPTEMBER 20, 1990, AT 0715 HOURS, WITH THE PLANT IN MODE 1 AT 50 PERCENT POWER THE "B" CONDENSATE PUMP WAS SHUT DOWN FOR TROUBLESHOOTING. THE "A" CONDENSATE PUMP WAS UNABLE TO PROVIDE SUFFICIENT PRESSURE TO THE SUCTION OF THE MAIN FEED PUMP REQUIRING CONTROL ROOM OPERATORS TO MANUALLY TRIP THE PLANT. THE ROOT CAUSES OF THE EVENT CONSISTED OF THE DEGRADATION OF THE RUBBER FLEXIBLE COUPLINGS IN THE CONDENSATE PUMP SUCTION PIPING TO THE POINT THAT FLOW WAS RESTRICTED AND PERSONNEL ERROR SINCE THE PUMP WAS SHUT DOWN AT A HIGHER POWER LEVEL THAN THAT REQUIRED BY PROCEDURE. CORRECTIVE ACTION INCLUDED REPLACING THE FLEXIBLE RUBBER COUPLINGS WITH STAINLESS STEEL COUPLINGS AND RE-EMPHASIZING THE IMPORTANCE OF PROCEDURAL COMPLIANCE TO ALL OPERATORS. THIS EVENT IS REPORTABLE UNDER 10CFR50.73(A)(2)(IV) SINCE IT RESULTED IN MANUAL ACTUATION OF THE REACTOR PROTECTION SYSTEM.

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FORM 15 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
219 1989 011 0 8906010306 214086 04/22/89

ABSTRACT

POWER LEVEL - 002%. ON 4/22/89 AT 1850 HOURS, THE MECHANICAL VACUUM PUMP WAS PLACED INTO SERVICE IN ORDER TO MAINTAIN CONDENSER VACUUM DURING A PLANNED SHUTDOWN EVOLUTION. THE EQUIPMENT OPERATOR WHO PLACED THE VACUUM PUMP INTO SERVICE FAILED TO PROPERLY ALIGN THE SEAL WATER MAKEUP SUPPLY. AT 1935 HOURS A GRADUAL DECREASE IN THE MAIN CONDENSER VACUUM WAS NOTED. THE RATE OF DECREASE IN CONDENSER VACUUM PREVENTED ANY SIGNIFICANT ATTEMPTS TO CORRECT THE PROBLEM SO THE GROUP SHIFT SUPERVISOR DIRECTED THE OPERATORS TO MANUALLY SCRAM THE REACTOR AT 1945 HOURS. THE CAUSE OF THIS OCCURRENCE IS ATTRIBUTED TO OPERATOR ERROR. THE OPERATOR FAILED TO ESTABLISH A COMPLETE VALVE LINEUP TO THE SEAL WATER MAKEUP SUPPLY IN ACCORDANCE WITH THE OPERATING PROCEDURE. STARTING THE MECHANICAL VACUUM PUMP IS A SIMPLE EVOLUTION BUT INFREQUENTLY PERFORMED BY INDIVIDUAL OPERATORS. OPERATORS ARE NOT REQUIRED TO HAVE A PROCEDURE IN HAND WHEN PERFORMING A SIMPLE OR ROUTINE EVOLUTION. THIS CONTRIBUTED TO THE OVERSIGHT BY THE OPERATOR. WITHOUT SEAL WATER MAKEUP THE MECHANICAL VACUUM PUMP OPERATED PROPERLY UNTIL THE SEAL WATER TANK EMPTIED WHICH THEN CAUSED A SIGNIFICANT AIR LEAK TO THE MAIN CONDENSERS. THIS CAUSED THE DECREASE IN CONDENSER VACUUM WHICH RESULTED IN THE REACTOR SCRAM. THE SAFETY SIGNIFICANCE OF THIS EVENT IS MINIMAL BECAUSE THE REACTOR WAS AT LOW POWER (APPROXIMATELY 2%) WHEN THE EVENT OCCURRED.

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FORM 16 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
219 1989 015 0 8906290110 214440 05/18/89

ABSTRACT

POWER LEVEL - 100%. ON 5/18/89 AT 1103 HRS THE REACTOR AUTOMATICALLY SHUT DOWN DUE TO A TRIP OF THE MAIN TURBINE GENERATOR. AN INSTRUMENT TECHNICIAN HAD BEEN ASSIGNED THE TASK OF CALIBRATING THE PLANT MEGAVAR RECORDER. HE DISCUSSED THE ACTIVITY WITH SHIFT MANAGEMENT BUT DID NOT MENTION THAT INPUT LEADS TO THE RECORDER WOULD BE DISCONNECTED. THE TECHNICIAN STARTED THE EVOLUTION 1 1/2 HRS LATER WITHOUT INFORMING CONTROL ROOM. A HI/LOW VAR ALARM WAS RECEIVED. OPERATORS DID NOT

CHALLENGE THAT HE WAS ACTUALLY INCREASING MEGAVOLTS BECAUSE HE WAS NOT OBSERVING BUS VOLTAGES, WHICH WERE INCREASING. A GENERATOR OVEREXCITATION CONDITION RESULTED WHICH TRIPPED THE MAIN GENERATOR, CAUSED A REACTOR SCRAM, AND RESULTED IN A FAST START OF BOTH DIESEL GENERATORS. THE OPERATORS PROCEEDED TO COOLDOWN THE PLANT WITH THE ISOLATION CONDENSERS UNTIL THE SHUTDOWN COOLING SYSTEM WAS PLACED INTO SERVICE AT 1523 HRS. THE PLANT REACHED COLD SHUTDOWN CONDITIONS AT APPROX. 1700 HRS. THE ROOT CAUSE OF THIS EVENT WAS PERSONNEL ERROR BY BOTH OPERATIONS AND MAINTENANCE PERSONNEL. TO PREVENT A RECURRENCE OF A SIMILAR EVENT, ADMINISTRATIVE CONTROLS HAVE BEEN IMPLEMENTED AND INCREASED EMPHASIS HAS BEEN PLACED ON COMMUNICATIONS BETWEEN THE WORK GROUP AND THE CONTROL ROOM.

FORM 17 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 219 1989 016 0 8907310134 214866 06/25/89

ABSTRACT

POWER LEVEL - 097%. ON JUNE 25, 1989 AT 0008 HOURS, THE MAIN GENERATOR TRIPPED DUE TO A PHASE DIFFERENTIAL CONDITION CAUSED BY A FAULT IN ONE OF THE MAIN OUTPUT TRANSFORMERS. WHEN THE GENERATOR TRIPPED A TURBINE TRIP SIGNAL WAS GENERATED WHICH RESULTED IN AN ANTICIPATORY REACTOR SCRAM. THE PLANT WAS COOLED DOWN WITH THE MAIN CONDENSERS AND THE SHUTDOWN COOLING SYSTEM AND REACHED A COLD SHUTDOWN CONDITION AT 1100 HOURS. THE CAUSE OF THIS EVENT WAS EQUIPMENT FAILURE. EXAMINATION OF THE TRANSFORMER DETERMINED THAT AN INTERNAL WINDING HAD FAILED THEREBY CAUSING THE PHASE DIFFERENTIAL CONDITION WHICH CAUSED THE GENERATOR TRIP. THIS TRANSIENT WAS WITHIN THE DESIGN BASIS OF THE PLANT AND HAD NO SAFETY SIGNIFICANCE. PREPARATIONS HAVE BEEN MADE TO REMOVE THE FAILED TRANSFORMER AND INSTALL A SPARE. UNTIL THE SPARE IS INSTALLED THE PLANT WILL BE OPERATED AT HALF LOAD. NO OTHER CORRECTIVE ACTION WAS DETERMINED NECESSARY.

FORM 18 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 219 1989 017 1 9003260545 217417 07/11/89

ABSTRACT

POWER LEVEL - 000%. ON 7/11/89 AT 0055 HOURS, THE MAIN GENERATOR TRIPPED DUE TO A PHASE DIFFERENTIAL CONDITION CAUSED BY A FAULT IN THE OPERATING MAIN OUTPUT TRANSFORMER (THE OTHER MAIN TRANSFORMER FAILED ON 6/25/89). WHEN THE GENERATOR TRIPPED, A TURBINE TRIP SIGNAL WAS GENERATED WHICH RESULTED IN AN ANTICIPATORY REACTOR SCRAM. THE PLANT WAS COOLED DOWN UTILIZING THE MAIN CONDENSER AND THE SHUTDOWN COOLING SYSTEM AND REACHED THE COLD SHUTDOWN CONDITION AT 0950 HOURS. THE CAUSE OF THIS EVENT WAS EQUIPMENT FAILURE. EXAMINATION OF THE TRANSFORMER DETERMINED THAT AN INTERNAL WINDING HAD FAILED, CAUSING THE PHASE DIFFERENTIAL CONDITION WHICH CAUSED THE GENERATOR TRIP. THE PLANT RESPONDED AS DESIGNED AND OPERATOR ACTION WAS PROMPT AND APPROPRIATE. THIS TRANSIENT WAS WITHIN THE DESIGN BASIS OF THE PLANT AND HAD NO SAFETY SIGNIFICANCE. THE ENTIRE ELECTRICAL SYSTEM WAS EVALUATED FOR ADVERSE EFFECTS DUE TO THE FAULT, AND AN EVALUATION WAS COMPLETED TO DETERMINE IF A GENERIC PROBLEM EXISTED BETWEEN THE TWO FAILED TRANSFORMERS AND THE OTHER POWER TRANSFORMERS AT THE STATION. AS A RESULT, IT WAS DETERMINED THE FAILURE WAS CONFINED TO THE TWO MAIN OUTPUT TRANSFORMERS AND DID NOT INVOLVE ANY OTHER TRANSFORMERS. THE PLANT WAS RETURNED TO POWER OPERATION ON 7/19/89 USING THE SPARE TRANSFORMER INSTALLED DUE TO THE PREVIOUS FAILURE OF THE OTHER MAIN

FORM 19 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 219 1989 021 1 9001220235 216442 09/22/89

ABSTRACT

POWER LEVEL - 000%. ON SEPTEMBER 22, 1989, AT APPROXIMATELY 1418 HOURS, MECHANICAL TEST EQUIPMENT WAS INADVERTENTLY LEFT CONNECTED TO ONE OF THE REACTOR PRESSURE VESSEL (RPV) WATER LEVEL INSTRUMENTS AFTER TESTING WAS COMPLETE. WHILE BEING PLACED BACK IN SERVICE, THE REFERENCE LEG OF THE INSTRUMENT WAS VENTED TO THE TEST EQUIPMENT CAUSING A FALSE HIGH RPV WATER LEVEL SIGNAL TO BE GENERATED IN ALL FIVE LEVEL INSTRUMENTS ATTACHED TO THAT COMMON REFERENCE LEG. THE FALSE HIGH RPV WATER LEVEL CAUSED A TRIP OF THE TURBINE GENERATOR WHICH RESULTED IN A REACTOR SCRAM. THE TECHNICIAN PERFORMING THE VALVE MANIPULATION RECOGNIZED THE PROBLEM AND CLOSED THE ROOT VALVE. THE CAUSE OF THIS EVENT WAS PERSONNEL ERROR SINCE THE TEST EQUIPMENT WAS NOT REMOVED AS REQUIRED BY THE SURVEILLANCE PROCEDURE. THIS EVENT HAD MINIMAL SAFETY SIGNIFICANCE BECAUSE THE REACTOR PROTECTION SYSTEM IS DESIGNED TO PROTECT THE REACTOR FROM ANY TURBINE TRIP CONDITION, AND THE EXCESS FLOW CHECK VALVES IN THE INSTRUMENT LINE WOULD HAVE PREVENTED ANY SIGNIFICANT LOSS OF COOLANT. ALL ENGINEERED SAFETY FEATURES WOULD HAVE FUNCTIONED NORMALLY DUE TO REDUNDANT RPV LEVEL INSTRUMENTATION. ALL INSTRUMENTS INVOLVED IN THIS EVENT WERE CALIBRATION CHECKED TO ENSURE NO PROBLEMS HAD RESULTED FROM THE MOMENTARY DEPRESSURIZATION. THE TECHNICIANS INVOLVED IN THIS EVENT WERE COUNSELED.

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FORM 20 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 219 1990 004 0 9003290123 217466 02/20/90

ABSTRACT

POWER LEVEL - 000%. ON 2/20/90, WHILE PERFORMING A SURVEILLANCE ON A REACTOR VESSEL INSTRUMENT, AN INSTRUMENT & CONTROLS (I&C) TECHNICIAN KEYED A HAND-HELD RADIO NEAR THE ANALOG TRIP UNITS FOR THE ALTERNATE ROD INJECTION (ARI) SYSTEM CAUSING THE SYSTEM TO ACTUATE DUE TO RADIO FREQUENCY INTERFERENCE (RFI). CONTROL ROOM OPERATORS NOTED THAT AIR OPERATED VALVES SUPPLIED FROM THE SCRAM AIR SYSTEM WERE REPOSITIONING AND THAT CONTROL RODS WERE DRIFTING INTO THE CORE. THE OPERATORS INITIATED A MANUAL REACTOR SCRAM AS REQUIRED BY PROCEDURE DUE TO THE DRIFTING CONTROL RODS. THE CAUSE OF THIS OCCURRENCE HAS BEEN ATTRIBUTED TO PERSONNEL ERROR BY THE TECHNICIAN PERFORMING THE SURVEILLANCE PROCEDURE. THE ACCESS DOOR TO THE AREA WHERE THE ARI SYSTEM COMPONENTS ARE LOCATED IS WELL MARKED WITH REFERENCE TO THE RESTRICTION ON THE USE OF RADIOS IN THE AREA. THIS EVENT IS DETERMINED TO HAVE MINIMAL SAFETY SIGNIFICANCE BECAUSE A MANUAL SCRAM WAS INITIATED BY THE OPERATORS WITHIN 5 SECONDS OF ROD MOVEMENT. CHEMISTRY SAMPLES INDICATE THAT NO FUEL DAMAGE RESULTED FROM THIS EVENT. THE USE OF RADIOS BY I&C TECHNICIANS MUST NOW BE APPROVED BY THE TECHNICIAN'S SUPERVISOR. APPROPRIATE SITE PERSONNEL WILL RECEIVE TRAINING ON THIS EVENT AND AN INVESTIGATION WILL BE CONDUCTED INTO MINIMIZING THE ARI SYSTEM'S SENSITIVITY TO RFI.

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FORM 21 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 219 1990 005 0 9005250108 218738 04/21/90

POWER LEVEL - 100%. ON APRIL 21, 1990 AT 0955 HOURS, POWER WAS LOST TO UNIT SUBSTATION (USS) 192 WHEN A POWER SUPPLY CABLE SHORTED TO GROUND. SEVERAL SAFETY RELATED COMPONENTS WERE AFFECTED BY THE LOSS OF POWER, AND DRYWELL UNIDENTIFIED LEAK RATE INCREASED TO GREATER THAN 5 GPM DUE TO LOSS OF POWER TO THE DRYWELL EQUIPMENT DRAIN TANK PUMP CONTROL CIRCUIT. THE PLANT WAS SHUTDOWN DUE TO LOSS-OF-POWER TO REQUIRED ELECTRICAL BUSES, AND ON APRIL 22ND AT 1005 HOURS, THE REACTOR REACHED COLD SHUTDOWN. USS 192 WAS ISOLATED FROM THE FAILED SUPPLY CABLE AND REENERGIZED FROM USS 1A2 VIA THE CROSSCONNECT BREAKER. DURING THE COOLDOWN, THE A ISOLATION CONDENSER WAS DECLARED INOPERABLE DUE TO THE INABILITY TO ELECTRICALLY CYCLE A DC ISOLATION VALVE BECAUSE OF THERMAL BINDING. THIS THERMAL BINDING PROBLEM WILL BE CORRECTED BY MODIFICATIONS SCHEDULED FOR THE NEXT REFUELING OUTAGE. THE CAUSE OF THE CABLE FAILURE IS SUSPECTED TO BE A DEFECT IN THE INSULATION OF THE CABLE. A NEW SUPPLY CABLE WAS INSTALLED AND THE USS WAS REPOWERED FROM IT'S NORMAL SOURCE. A REPRESENTATIVE SAMPLE OF OTHER CABLES SUPPLYING SAFETY RELATED COMPONENTS WERE TESTED, AND NO GENERIC CONCERNS WERE FOUND.

FORM 22 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 219 1990 008 0 9008010237 219003 06/25/90

ABSTRACT

POWER LEVEL - 000%. ON JUNE 25, 1990, AT APPROXIMATELY 6:18 AM, A REACTOR SCRAM OCCURRED ON LOW CONDENSER VACUUM. THE SCRAM OCCURRED DURING INITIATION OF BACKWASHING OF THE "A" NORTH MAIN CONDENSER. THE SCRAM WAS CAUSED BY THE FAILURE OF THE BACKWASH OUTLET VALVE TO OPEN, CAUSING A LOSS OF CIRCULATING WATER TO THE "A" CONDENSER. THE BACKWASH OUTLET VALVE FAILED TO OPEN DUE TO A BREAKER TRIP OF THE MOTOR OPERATOR. THE PLANT WAS STABILIZED IN A HOT STANDBY CONDITION AND SUBSEQUENTLY TAKEN TO COLD SHUTDOWN. THE MOTOR OPERATOR, THE BREAKER AND THE VALVE WERE ALL INSPECTED AND TESTED SATISFACTORILY. THE AUXILIARY CONTACTS ON THE MOTOR CLOSE COIL WERE REPLACED AND AUXILIARY CONTACTS ON THE MOTOR OPEN COIL WERE REALIGNED. THE REMAINING 20 CIRCULATING WATER VALVES MANIPULATED DURING BACKWASHING EVOLUTIONS WERE TESTED AND VERIFIED TO BE OPERATING PROPERLY.

FORM 23 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 220 1990 017 0 9009130070 219483 08/06/90

ABSTRACT

POWER LEVEL - 019%. ON AUGUST 6, 1990, WITH THE REACTOR MODE SWITCH IN THE RUN POSITION, REACTOR POWER AT 19 PERCENT, NINE MILE POINT UNIT 1 (NMP1) EXPERIENCED TURBINE BEARING VIBRATION PROBLEMS WHEN STARTING UP THE TURBINE-GENERATOR. THE TURBINE WAS MANUALLY TRIPPED, CONDENSER VACUUM WAS BROKEN, AND A MANUAL REACTOR SCRAM WAS INSERTED. CONSEQUENTLY, A HIGH PRESSURE COOLANT INJECTION (MODE OF FEEDWATER CONTROL) SIGNAL WAS RECEIVED DUE TO LOW REACTOR WATER LEVEL (53 INCHES) AND A MAIN STEAM ISOLATION VALVE ISOLATION OCCURRED ON DECREASING CONDENSER VACUUM (7 INCHES MERCURY HG). THE IMMEDIATE CAUSE OF THIS EVENT WAS THE FAILURE OF TURBINE BEARING #5 DUE TO A BLANK FOUND INSTALLED IN THE BEARING OIL SUPPLY LINE. AN INCIDENT INVESTIGATION DETERMINED THAT THE CAUSE OF THE EVENT WAS INADEQUATE REVIEW OF A POLICY CHANGE AND PERSONNEL ERROR. IMMEDIATE CORRECTIVE ACTIONS INCLUDED REPAIR OF THE BEARING, INSPECTION OF THE OTHER

ADDITIONALLY, A REVIEW OF THE NMPC TURBINE MAINTENANCE LOG WAS PERFORMED TO IDENTIFY ANY OTHER POTENTIAL WEAKNESSES.

FORM 24 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
220 1990 019 0 9101290395 220836 12/29/90

ABSTRACT

POWER LEVEL - 010%. ON 12/29/90, AT 1719 HOURS, NINE MILE POINT UNIT 1 (NMP1) EXPERIENCED A FULL REACTOR SCRAM WHEN A TRIP SIGNAL WAS RECEIVED ON REACTOR PROTECTION SYSTEM (RPS) CHANNEL 11 DUE TO A SPIKE ON INTERMEDIATE RANGE MONITOR (IRM) 12. AT THE TIME OF THE EVENT THE MODE SWITCH WAS IN THE "STARTUP" POSITION, REACTOR POWER WAS AT APPROXIMATELY 10% AND A RPS TRIP HAD BEEN INSERTED ON CHANNEL 12 DUE TO THE FAILURE OF A MAIN STEAM ISOLATION VALVE (MSIV) TO MEET ITS SURVEILLANCE TEST REQUIREMENTS. WHEN THE SCRAM OCCURRED THE UNIT WAS CONDUCTING A FORCED SHUTDOWN DUE TO THE MSIV FAILURE AND INCREASED DRYWELL LEAKAGE. THE CAUSE OF THE EVENT WAS A SPIKE ON IRM 12 (RPS CHANNEL 11) COINCIDENT WITH A HALF-TRIP INSERTED ON RPS CHANNEL 12 DUE TO THE MSIV FAILURE. THE CORRECTIVE ACTION FOR THE IRM SPIKE IS THE CONTINUATION OF THE NEUTRON MONITORING TROUBLESHOOTING AND UPGRADE EFFORTS.

FORM 25 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
220 1990 020 0 9010020046 219605 08/19/90

ABSTRACT

POWER LEVEL - 021%. ON AUGUST 19, 1990, WITH THE REACTOR MODE SWITCH IN THE RUN POSITION, REACTOR POWER AT APPROXIMATELY 21.5 PERCENT, NINE MILE POINT UNIT 1 (NMP1) EXPERIENCED TURBINE VIBRATION PROBLEMS WHEN CONDUCTING POWER ASCENSION PROCEDURE N1-PAT-12-1, "MAIN TURBINE-GENERATOR ROTOR SYSTEM TORSIONAL SCREENING TEST". THE TURBINE WAS MANUALLY TRIPPED, SUBSEQUENTLY A MANUAL REACTOR SCRAM WAS INSERTED PRIOR TO BREAKING VACUUM TO PRECLUDE AN AUTOMATIC REACTOR SCRAM ON LOW CONDENSER VACUUM. CONSEQUENTLY, A HIGH PRESSURE COOLANT INJECTION (HPCI) (MODE OF FEEDWATER CONTROL) SIGNAL WAS RECEIVED DUE TO LOW REACTOR WATER LEVEL (53 INCHES) AND A MAIN STEAM ISOLATION VALVE ISOLATION OCCURRED ON DECREASING CONDENSER VACUUM (7 INCHES MERCURY HG). A ROOT CAUSE INVESTIGATION DETERMINED THAT THE MOST LIKELY CAUSE OF THE LOW PRESSURE (L.P.) TURBINE ROTOR VIBRATION WAS THAT A SLOW ACCELERATION RATE THROUGH AN L.P. TURBINE CRITICAL SPEED RANGE LED TO THE L.P. TURBINE ROTOR DEVELOPING AN INTERSTAGE PACKING RUB AND BOWED ROTOR. IMMEDIATE CORRECTIVE ACTION WAS TO TERMINATE N1-PAT-12-1. ADDITIONALLY, REVISION TO THE TURBINE TORSIONAL TEST IS BEING PURSUED BY ENGINEERING AND GENERAL ELECTRIC TO ADDRESS THE TECHNICAL PROBLEMS ENCOUNTERED DURING THE INITIAL RUN.

FORM 26 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
220 1990 026 0 9012280132 220572 11/17/90

ABSTRACT

POWER LEVEL - 096%. ON NOVEMBER 17, 1990, AT 2109 WITH REACTOR POWER

ISOLATION AND ELECTROMECHANICAL RELIEF VALVE (ERV) INITIATION DUE TO MAIN STEAM ISOLATION VALVE (MSIV) ISOLATION. THE MSIV ISOLATION OCCURRED AS A RESULT OF AN INCORRECT FUSE BEING REMOVED DURING A SURVEILLANCE TEST OF A MAIN STEAM LINE RADIATION MONITOR. THE PLANT WAS SAFELY SHUTDOWN AND NO ADVERSE SAFETY CONSEQUENCES RESULTED. THE PRIMARY CAUSE OF THIS EVENT WAS DETERMINED TO BE PERSONNEL ERROR, SPECIFICALLY POOR WORK PRACTICES. IMMEDIATE CORRECTIVE ACTIONS INCLUDED PLACING THE PLANT IN A SAFE SHUTDOWN CONDITION AND RESETTNG THE REACTOR SCRAM. SUBSEQUENT CORRECTIVE ACTIONS INCLUDED COUNSELING AND DISCIPLINE OF OPERATIONS PERSONNEL INVOLVED IN THE TEST PERFORMANCE.

FORM 27 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
237 1989 012 0 8904060431 213498 03/04/89

ABSTRACT

POWER LEVEL - 092%. ON 3/4/89 WITH UNIT 2 IN THE RUN MODE AT 92% RATED CORE THERMAL POWER, THE REACTOR SCRAMMED ON LOW REACTOR WATER LEVEL FOLLOWING THE TRIP OF BOTH OPERATING REACTOR FEEDWATER PUMPS (RFPs). AT THE TIME, OPERATIONS DEPT. PERSONNEL WERE GROUND CHECKING ON THE 125V DC BATTERY SYSTEM. THE CAUSE OF THE EVENT HAS BEEN DETERMINED TO BE PERSONNEL ERROR. THE HIGH VOLTAGE OPERATOR (HVO) PERFORMING THE GROUND CHECK OPENED THE WRONG BREAKER WHICH RESULTED IN THE TRIP OF THE RFPs. THE GROUND DETECTION PROCEDURE STATES THAT THE BREAKER IS ONLY TO BE OPENED WITH PERMISSION OF THE OPERATING ENGINEER. THE HVO DID NOT HAVE THE PROCEDURE IN HAND AT THE TIME OF THE EVENT. THE LABELING OF THE BREAKER ALSO CONTRIBUTED TO THE EVENT. THE PLANT RESPONDED AS DESIGNED DURING THE EVENT, THEREFORE THE EVENT WAS DEEMED TO BE OF MINIMAL SAFETY SIGNIFICANCE. A DISCUSSION WAS HELD WITH THE HVO AND ALL OTHER SHIFT PERSONNEL TO EMPHASIZE ATTENTION TO DETAIL, COMMUNICATIONS AND PROCEDURAL ADHERENCE. THE CRITICAL BREAKERS HAVE BEEN RELABELLED SO THEY WILL STAND OUT FROM THE REMAINING BREAKERS. THE GROUND DETECTION PROCEDURES ARE BEING REVIEWED AND WILL BE REVISED AS REQUIRED TO ASSURE THAT CRITICAL BREAKERS ARE CLEARLY IDENTIFIED AND THE CONSEQUENCES OF THEIR OPERATION UNDERSTOOD. THESE PROCEDURES WILL BE POSTED AT THE APPROPRIATE DC SWITCHGEAR LOCATIONS WHEN THE REVISIONS ARE APPROVED.

FORM 28 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
237 1989 019 0 8908160015 214977 07/12/89

ABSTRACT

POWER LEVEL - 063%. ON 7/12/89 AT 1049 HOURS WITH UNIT 2 OPERATING AT 63% POWER WHILE PERFORMING DRESDEN TECHNICAL STAFF SURVEILLANCE (DTS) 500-2, FUNCTIONAL TESTING OF REACTOR PROTECTION SYSTEM (RPS) MOTOR GENERATOR (MG) SET AND RPS RESERVE POWER SUPPLY, CHANNEL 'A' HALF PRIMARY CONTAINMENT GROUP I ISOLATION AND HALF SCRAM SIGNALS COULD NOT BE RESET PROMPTLY DUE TO DIFFICULTIES ENCOUNTERED IN RESETTNG THE 'A' MAIN STEAM LINE (MSL) LOGRITHMIC PRIMARY CONTAINMENT GROUP I ISOLATION AND REACTOR SCRAM. THE CAUSE OF THE MSL AREA HIGH TEMPERATURE TRIP WAS ATTRIBUTED TO SETPOINT DRIFT. THE ROOT CAUSE OF THE MSL LRM RESET DIFFICULTIES (WHICH OCCURRED DURING TRANSFER OF POWER SUPPLIES IN ACCORDANCE WITH DTS 500-2) IS UNDER INVESTIGATION. AS CORRECTIVE ACTION, THE 'A' MSL LRM WAS REPLACED, IN ADDITION TO ALL OF THE CHANNEL 'B' MSL TUNNEL AREA TEMPERATURE SWITCHES. THE SAFETY SIGNIFICANCE OF THIS EVENT WAS MINIMAL SINCE THE PRIMARY CONTAINMENT

GROUP 1 CONDITION HAD NOT OCCURRED AND PROCEEDED WITH A CONTROLLED SCRAM RECOVERY. A PREVIOUS EVENT INVOLVING A SCRAM DURING THE PERFORMANCE OF DTS 500-2 WAS REPORTED BY LER 89-02/050249.

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FORM 29 LER SCSS DATA 04-18-91
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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
237 1990 001 0 9002090035 216710 01/05/90

ABSTRACT

POWER LEVEL - 099%. AT 2241 HOURS ON 1/5/90, WITH UNIT 2 OPERATING AT 99.3% POWER, A PRIMARY CONTAINMENT GROUP I ISOLATION AND SUBSEQUENT REACTOR SCRAM OCCURRED WHILE AN INSTRUMENT MECHANIC (IM) WAS PERFORMING DRESDEN INSTRUMENT SURVEILLANCE (DIS) 250-1, MAIN STEAM LINE HIGH FLOW ISOLATION SWITCH CALIBRATION. THE ROOT CAUSE OF THE UNPLANNED GROUP I ISOLATION HAS BEEN ATTRIBUTED TO A PROCEDURAL DEFICIENCY WITHIN DIS 250-1 SUCH THAT INADEQUATE CONTROLS WERE PROVIDED TO PREVENT A POTENTIAL PRESSURE TRANSIENT LARGE ENOUGH TO CAUSE A TRIP ON INSTRUMENTS IN BOTH TRIP CHANNELS, LOCATED ON A COMMON INSTRUMENT SENSING LINE HEADER. CORRECTIVE ACTION INCLUDED A SPECIAL TEST OF THE TRIPPED HIGH FLOW SWITCH AND ISOLATION MANIFOLD, POSSIBLE HARDWARE CHANGES TO ASSIST THE IM IN PERFORMING THE SURVEILLANCE, AND A STUDY TO INVESTIGATE FEASIBILITY OF REPLACING THE PRESENT SWITCHES WITH AN ANALOG TRIP. THE SAFETY SIGNIFICANCE OF THIS EVENT IS MINIMAL SINCE THE HIGH FLOW SWITCHES RESPONDED AS DESIGNED AND TRIPPED IN RESPONSE TO PRESSURE TRANSIENT INDUCED TO THE COMMON HEADER, THUS INITIATING THE AUTOMATIC GROUP I ISOLATION AND REACTOR SCRAM. A PREVIOUS EVENT WAS REPORTED BY LER 87-016/050249.

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FORM 30 LER SCSS DATA 04-18-91
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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
237 1990 002 0 9002230211 216898 01/16/90

ABSTRACT

POWER LEVEL - 100%. AT APPROXIMATELY 1724 HOURS ON 1/16/90, AN AUTOMATIC UNIT 2 REACTOR SCRAM ON A LOW REACTOR WATER LEVEL (TECH SPEC SETPOINT OF EIGHT INCHES ABOVE INSTRUMENT 0) SIGNAL OCCURRED. THE 2D CONDENSATE/CONDENSATE BOOSTER PUMP FAILED DUE TO AN INTERNAL MOTOR FAULT APPROXIMATELY 13 SECONDS PRIOR TO THE SCRAM, PRECIPITATING AUTOMATIC TRIP OF THE RUNNING REACTOR FEED PUMPS ON LOW SUCTION PRESSURE AND THUS RESULTING IN REDUCTION OF REACTOR WATER LEVEL TO THE LOW LEVEL SCRAM SETPOINT. ADDITIONALLY, RESERVE AUXILIARY TRANSFORMER (TR) 22 TRIPPED DURING AUTOMATIC TRANSFER OF HOUSE LOADS, RESULTING IN INTERRUPTION OF NORMAL AC AUXILIARY POWER UNTIL THE EMERGENCY DIESEL GENERATORS AUTOMATICALLY LOADED. COLD SHUTDOWN CONDITIONS WERE ACHIEVED BY 0210 HOURS ON 1/17/90. COMPREHENSIVE ROOT CAUSE INVESTIGATIONS WERE IMMEDIATELY INITIATED FOR ALL COMPONENT PERFORMANCE PROBLEMS, AND CORRECTIVE ACTIONS IMPLEMENTED. THE SAFETY SIGNIFICANCE OF THIS TRANSIENT WAS MITIGATED BY THE FACT THAT REACTOR WATER LEVEL WAS MAINTAINED WELL ABOVE THE AUTOMATIC EMERGENCY CORE COOLING SYSTEM INITIATION SETPOINT AT ALL TIMES, AND MULTIPLE SYSTEMS WERE AVAILABLE FOR REACTOR PRESSURE CONTROL INCLUDING ISOLATION CONDENSER, HIGH PRESSURE COOLANT INJECTION, AND MAIN STEAM RELIEF VALVES. A PREVIOUS EVENT INVOLVING A UNIT 3 LOSS OF OFFSITE POWER IS REPORTED BY LER 89-1/050249.

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FORM 31 LER SCSS DATA 04-18-91
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ABSTRACT

POWER LEVEL - 087%. ON AUGUST 2, 1990, DURING NORMAL POWER OPERATION IN THE RUN MODE, THE 2-203-3A MAIN STEAM TARGET ROCK SAFETY-RELIEF VALVE (TRSRV) ACOUSTIC MONITOR ALARMED, INDICATING THAT THE VALVE HAD SPURIOUSLY OPENED AND WAS RELIEVING REACTOR PRESSURE TO THE SUPPRESSION CHAMBER. THE REACTOR WAS SUBSEQUENTLY MANUALLY SCRAMMED FROM 87% POWER AT 0116 HOURS. ALL CONTAINMENT COOLING SERVICE WATER AND LOW PRESSURE COOLANT INJECTION PUMPS WERE MANUALLY STARTED FOR MAXIMUM SUPPRESSION CHAMBER COOLING. THE MAXIMUM AVERAGE COOLDOWN RATE WHEN AVERAGED OVER A ONE HOUR PERIOD REACHED 129.3 DEGREES F/HR, AND MAXIMUM BULK SUPPRESSION CHAMBER TEMPERATURE WAS 122 DEGREES F. THE OPENING OF THE TRSRV WAS APPARENTLY CAUSED BY STEAM CUTS ON THE FIRST STAGE PILOT VALVE DISC. ANALYSES WERE PERFORMED TO VERIFY THAT THE COOLDOWN RATE AND THE BULK SUPPRESSION CHAMBER TEMPERATURE ATTAINED DURING THIS EVENT WERE WITHIN DESIGN LIMITS. A SATISFACTORILY LEAK TESTED, REBUILT TRSRV WAS INSTALLED. THE TECHNICAL STAFF WILL MONITOR THE TRSRV TAIL PIPE TEMPERATURES TO VERIFY PROPER PILOT VALVE OPERATION. IN ADDITION, ANY TRSRV PILOT VALVE OF GREATER THAN EIGHT MONTHS SERVICE WILL BE REPLACED DURING FUTURE SHORT UNIT OUTAGES WITH PRIMARY CONTAINMENT DRYWELL ACCESSIBILITY. THE TRSRVS ARE ROUTINELY REPLACED AT EACH REFUEL OUTAGE. A PREVIOUS TRSRV FAILURE EVENT WAS REPORTED BY LER 50-237/76-34.

FORM	32	LER SCSS DATA	04-18-91
DOCKET	YEAR	LER NUMBER	REVISION
237	1990	015	0
DCS NUMBER		NSIC	EVENT DATE
9101020273		221096	11/23/90

ABSTRACT

POWER LEVEL - 000%. AT 1017 HOURS ON 11/23/90, AN AUTOMATIC REACTOR SCRAM OCCURRED DUE TO A SPURIOUS HIGH CORE FLUX SIGNAL FROM INTERMEDIATE RANGE MONITORS (IRM) 13 AND 15. DURING THE PERFORMANCE OF DRESDEN INSTRUMENT SURVEILLANCE (DIS) 1500-5, LOW PRESSURE COOLANT INJECTION LOGIC (LPCI) TEST LOGIC RELAY 2-1530-115 AY GENERATED AN ABNORMALLY LARGE VOLTAGE SPIKE ON THE 125 VOLT DC POWER SYSTEM. THROUGH ELECTROMAGNETIC INDUCTION THIS VOLTAGE SPIKE WAS TRANSFERRED TO THE 24/48 VOLT DC POWER SYSTEM. THE 24/48 VOLT DC SYSTEM PROVIDES POWER TO THE CONTROL LOGIC FOR ALL EIGHT IRM CHANNELS. THE SPIKE CAUSED THE IRM CHANNELS TO EXCEED THE HIGH CORE FLUX SCRAM SETPOINT THUS CAUSING A REACTOR SCRAM. CORRECTIVE ACTIONS INCLUDED REPLACEMENT OF THE SUSPECT RELAY AND THE INITIATION OF FURTHER INVESTIGATION. THE SAFETY SIGNIFICANCE OF THIS EVENT IS MINIMAL SINCE UNIT 2 WAS ALREADY SHUTDOWN FOR A REFUELING OUTAGE WHEN THE EVENT OCCURRED.

FORM	33	LER SCSS DATA	04-18-91
DOCKET	YEAR	LER NUMBER	REVISION
244	1989	004	0
DCS NUMBER		NSIC	EVENT DATE
8907170091		214600	06/01/89

ABSTRACT

POWER LEVEL - 053%. ON JUNE 1, 1989 AT 1332 EDST, WITH THE REACTOR AT APPROXIMATELY 53% POWER, A TURBINE TRIP WITH SUBSEQUENT REACTOR TRIP OCCURRED DUE TO A ATWS MITIGATION SYSTEM ACTUATION CIRCUITRY (AMSAC) ACTUATION. THE CONTROL ROOM OPERATORS VERIFIED THE REACTOR AND TURBINE TRIPS AND PERFORMED THE ACTIONS OF E-0 (REACTOR TRIP OR SAFETY INJECTION) AND ES-0.1 (REACTOR TRIP RESPONSE). THE PLANT WAS STABILIZED IN THE HOT SHUTDOWN CONDITION. THE INTERMEDIATE CAUSE OF

INFORMATION USED TO GENERATE PROCEDURE CHANGES CONCERNING THE AHSAC MODIFICATION. AFTER THE CAUSE OF THE EVENT WAS IDENTIFIED, THE PROCEDURE WAS CHANGED BASED ON FORMALLY APPROVED INFORMATION TO PREVENT RECCURENCE.

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FORM 34 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
244 1990 003 0 9004270283 217995 03/23/90

ABSTRACT

POWER LEVEL - 000%. ON MARCH 23, 1990 AT 1804 EST WITH THE REACTOR SUBCRITICAL DURING A PLANNED SHUTDOWN FOR THE ANNUAL REFUELING AND MAINTENANCE OUTAGE, A REACTOR TRIP OCCURRED FROM SOURCE RANGE (SR) HI FLUX. THE TWO REACTOR TRIP BREAKERS OPENED AS REQUIRED AND ALL SHUTDOWN AND CONTROL RODS THAT WERE WITHDRAWN INSERTED AS DESIGNED. THE REACTOR TRIP WAS DUE TO SR CHANNEL N-31 INDICATING HIGHER THAN NORMAL COUNT RATE WHEN IT RE-ENERGIZED DURING THE CONTROLLED SHUTDOWN. THE UNDERLYING CAUSE OF THE HIGHER THAN NORMAL COUNT RATE WAS A LOW INTERNAL RESISTANCE ON THE SOURCE RANGE DETECTOR. IMMEDIATE CORRECTIVE ACTION WAS TO STABILIZE THE PLANT IN HOT SHUTDOWN. SUBSEQUENT ACTION WAS TO CHANGE OUT THE FAULTY SOURCE RANGE DETECTOR.

FORM 35 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
244 1990 007 0 9006220036 218502 05/10/90

ABSTRACT

POWER LEVEL - 088%. ON MAY 10, 1990, AT 0219 EDST, WITH THE REACTOR AT APPROXIMATELY 88% FULL POWER, A REACTOR TRIP OCCURRED FROM "A" STEAM GENERATOR (S/G) LOW LEVEL COINCIDENT WITH "A" S/G FEED FLOW/STEAM FLOW MISMATCH. THE TWO REACTOR TRIP BREAKERS OPENED AS REQUIRED AND ALL SHUTDOWN AND CONTROL RODS INSERTED AS DESIGNED. THE REACTOR TRIP WAS DUE TO A MALFUNCTIONING "A" S/G MAIN FEEDWATER REGULATING VALVE CONTROL SYSTEM. THE UNDERLYING CAUSE OF THE MALFUNCTIONING "A" S/G MAIN FEEDWATER REGULATING VALVE CONTROL SYSTEM WAS ATTRIBUTED TO THE SHORTING OF TWO HIGH GAIN AC AMPLIFIER TRANSISTORS IN THE FLOW CONTROLLER, DUE TO THE TRANSISTOR CANS TOUCHING EACH OTHER. IMMEDIATE CORRECTIVE ACTION WAS TO STABILIZE THE PLANT IN HOT SHUTDOWN. SUBSEQUENT ACTION WAS TO PHYSICALLY SEPARATE THE TWO TRANSISTOR CANS SO THAT THEY COULD NOT TOUCH EACH OTHER.

FORM 36 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
244 1990 010 0 9007170232 218836 06/09/90

ABSTRACT

POWER LEVEL - 097%. ON 6/9/90, AT 0411 EDST WITH THE REACTOR AT APPROXIMATELY 97% FULL POWER, A REACTOR TRIP OCCURRED FROM "A" STEAM GENERATOR (S/G) LOW LEVEL COINCIDENT WITH "A" S/G STEAM FLOW/FEED FLOW MISMATCH. THE TWO REACTOR TRIP BREAKERS OPENED AS REQUIRED AND ALL SHUTDOWN AND CONTROL RODS INSERTED AS DESIGNED. THE REACTOR TRIP WAS DUE TO A MALFUNCTIONING "A" S/G MAIN FEEDWATER REGULATING VALVE CONTROL SYSTEM. THE UNDERLYING CAUSE OF THE MALFUNCTIONING "A" S/G FEEDWATER REGULATING VALVE CONTROL SYSTEM WAS A FAULTY FEEDWATER FLOW CONTROLLER. THE REASON FOR THE FAULT IS UNDETERMINED AT THIS TIME

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 FORM 37 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 244 1990 012 0 9011060419 219814 09/26/90

ABSTRACT

POWER LEVEL - 097%. ON SEPTEMBER 26, 1990, AT 1100 EOST WITH THE REACTOR AT APPROXIMATELY 97% FULL POWER, A REACTOR TRIP OCCURRED FROM AN OPENING OF THE "A" REACTOR TRIP BREAKER, FOLLOWED IN APPROXIMATELY SEVEN (7) SECONDS BY A LOW PRESSURIZER PRESSURE REACTOR TRIP SIGNAL AND THE OPENING OF THE "B" REACTOR TRIP BREAKER. THE "A" REACTOR TRIP BREAKER OPENING WAS CAUSED BY THE INADVERTENT DROPPING OF A FLASHLIGHT ON TWO OF THREE TURBINE AUTOSTOP TRIP RELAYS. THE LOW PRESSURIZER PRESSURE REACTOR TRIP WAS CAUSED BY THE REACTOR COOLANT SYSTEM COOLDOWN DUE TO THE REACTOR BEING TRIPPED WITH THE TURBINE STILL ON THE LINE. IMMEDIATE CORRECTIVE ACTION WAS TO STABILIZE THE PLANT IN HOT SHUTDOWN. CORRECTIVE ACTION TO PREVENT RECURRENCE WILL BE BASED UPON THE RECOMMENDATIONS OF A HUMAN PERFORMANCE ENHANCEMENT SYSTEM (HPES) EVALUATION OF THE DROPPED FLASHLIGHT EVENT. CORRECTIVE ACTION FOR SUBSEQUENT HARDWARE MALFUNCTIONS WILL ALSO BE TAKEN.

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 FORM 38 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 244 1990 013 0 9101140089 220643 12/11/90

ABSTRACT

POWER LEVEL - 097%. ON DECEMBER 11, 1990 AT 1517 EST WITH THE REACTOR AT APPROXIMATELY 97% FULL POWER, A TURBINE TRIP WITH SUBSEQUENT REACTOR TRIP OCCURRED DUE TO A INADVERTENT ATWS MITIGATION SYSTEM ACTUATION CIRCUITRY (AMSAC) ACTUATION. THE CONTROL ROOM OPERATORS VERIFIED THE REACTOR AND TURBINE TRIPS AND PERFORMED THE APPROPRIATE ACTIONS OF E-0 (REACTOR TRIP OR SAFETY INJECTION) AND ES-0.1 (REACTOR TRIP RESPONSE). THE PLANT WAS SUBSEQUENTLY STABILIZED IN THE HOT SHUTDOWN CONDITION. THE INTERMEDIATE CAUSE OF THE AMSAC ACTUATED TURBINE TRIP WAS DETERMINED TO BE DUE TO A LOW VOLTAGE POTENTIAL OF A LOGIC OUTPUT FROM THE AMSAC LOGIC CIRCUITRY. THE UNDERLYING CAUSE WAS DETERMINED TO BE A VENDOR CIRCUIT DESIGN DEFICIENCY. CORRECTIVE ACTION TAKEN WAS TO INSTALL THE JUMPER OMITTED IN THE CIRCUIT DESIGN.

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 FORM 39 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 244 1990 016 0 9101160176 220646 12/12/90

ABSTRACT

POWER LEVEL - 003%. ON DECEMBER 12, 1990 AT 2322 EST WITH THE REACTOR AT APPROXIMATELY 3% FULL POWER, A REACTOR TRIP OCCURRED FROM ONE (1) OUT OF TWO (2) INTERMEDIATE RANGE NUCLEAR INSTRUMENT HIGH FLUX TRIP. THE TWO REACTOR TRIP BREAKERS OPENED AS REQUIRED AND ALL SHUTDOWN AND CONTROL RODS INSERTED AS DESIGNED. THE REACTOR TRIP WAS DUE TO ONE (1) OUT OF TWO (2) INTERMEDIATE RANGE NUCLEAR INSTRUMENT SYSTEM HIGH FLUX TRIP BISTABLE BECOMING DE-ENERGIZED DURING THE TRANSFER OF BUS 14 POWER FROM ITS NORMAL SUPPLY TO THE "A" EMERGENCY DIESEL GENERATOR. IMMEDIATELY, CORRECTIVE ACTION WAS TO STABILIZE THE PLANT IN HOT SHUTDOWN PER EMERGENCY OPERATING PROCEDURES. THE UNDERLYING CAUSE OF

FORM 40 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
244 1990 018 0 9101290229 220862 12/20/90

ABSTRACT

POWER LEVEL - 022%. ON DECEMBER 20, 1990 AT 1321 EST, WITH THE REACTOR AT APPROXIMATELY 22% FULL POWER, A TURBINE RUNBACK OCCURRED DUE TO A DROPPED CONTROL ROD. THE CONTROL ROOM OPERATORS PERFORMED THE APPROPRIATE ACTIONS OF ABNORMAL PROCEDURES AP-TURB.2 (AUTOMATIC TURBINE RUNBACK) AND AP-RCC.2 (RCC/RPI MALFUNCTION) TO STABILIZE THE PLANT. THE CONTROL ROOM OPERATORS MANUALLY TRIPPED THE TURBINE TO PREVENT REVERSE POWER TO THE GENERATOR. SUBSEQUENTLY THE REACTOR WAS TAKEN SUBCRITICAL TO ACCOMMODATE ANTICIPATED CORRECTIVE MAINTENANCE ACTIVITIES. THE MAIN STEAM ISOLATION VALVES WERE THEN CLOSED TO LIMIT A PLANT COOLDOWN. THE UNDERLYING CAUSE OF THE EVENT WAS ATTRIBUTED TO DEGRADED POWER BRIDGE THYRISTOR SUPPRESSION FILTER CAPACITORS IN THE CIRCUIT SUPPLYING POWER TO THE STATIONARY, MOVABLE AND LIFT COILS OF THE AFFECTED CONTROL ROD. CORRECTIVE ACTION WAS TO REPLACE THE DEGRADED CAPACITORS IN THE POWER CABINET SUPPLYING POWER TO THE AFFECTED ROD.

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FORM 41 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
244 1990 019 0 9101290215 220963 12/21/90

ABSTRACT

POWER LEVEL - 016%. ON DECEMBER 21, 1990 AT 1237 EST, WITH THE REACTOR AT APPROXIMATELY 16% FULL POWER, A REACTOR TRIP OCCURRED DUE TO LO LO LEVEL (< OR = 17%) IN THE "A" STEAM GENERATOR. THE CONTROL ROOM OPERATORS IMMEDIATELY PERFORMED THE APPROPRIATE ACTIONS OF E-0 (REACTOR TRIP OR SAFETY INJECTION) AND ES-0.1 (REACTOR TRIP RESPONSE). BOTH MAIN STEAM ISOLATION VALVES WERE SUBSEQUENTLY CLOSED TO LIMIT AN RCS COOLDOWN AND THE PLANT WAS STABILIZED IN HOT SHUTDOWN. THE INTERMEDIATE CAUSE OF THE EVENT WAS THE "A" MAIN FEEDWATER PUMP TRIPPING DUE TO FEED PUMP SEAL WATER LOW DIFFERENTIAL PRESSURE CAUSED BY A CONDENSATE LOW HEADER PRESSURE TRANSIENT. THE UNDERLYING CAUSE OF THE EVENT WAS A DEFICIENCY IN THE OPERATING PHILOSOPHY FOR THE PROPER NUMBER OF CONDENSATE PUMPS RUNNING DURING LOW POWER CONDITIONS. CORRECTIVE ACTION WILL BE TO CHANGE THE APPROPRIATE PROCEDURES INVOLVED, TO BE CONSISTENT WITH THE NEW OPERATING PHILOSOPHY.

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FORM 42 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
245 1989 005 0 8905150298 213948 04/07/89

ABSTRACT

POWER LEVEL - 090%. ON 4/7/89 AT 1238 HOURS, WHILE THE UNIT WAS AT 80% REACTOR POWER (530F AND 1030 PSIG), AS PART OF THE SHUTDOWN FOR A SCHEDULED REFUELING OUTAGE, A REACTOR SCRAM OCCURRED ON TURBINE STOP VALVE CLOSURE. AS A RESULT OF THE SCRAM A GROUP II ISOLATION OCCURRED AND THE STANDBY GAS TREATMENT SYSTEM (SGH), WHICH IS AN ENGINEERED SAFEGUARDS SYSTEM, INITIATED. THE TURBINE STOP VALVE CLOSURE SIGNAL

CONDENSATE LEVEL WAS LOST AND STEAM ENTERED THE DRAIN PIPING. THIS TRANSIENT CAUSED VIBRATION OF THE ASSOCIATED PIPING WHICH CAUSED THE FALSE MOISTURE SEPARATOR HIGH LEVEL SWITCH (LS) ACTUATION. ALL SYSTEMS FUNCTIONED AS REQUIRED AND NO SAFETY CONSEQUENCES RESULTED FROM THIS EVENT.

FORM 43 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
245 1989 015 0 8907100037 214501 06/02/89

ABSTRACT

POWER LEVEL - 001%. ON 6/2/89 AT 1037 HOURS DURING REACTOR STARTUP, A REACTOR SCRAM OCCURRED DUE TO MAIN CONDENSER LOW VACUUM. AT THE TIME OF THE EVENT, REACTOR CONDITIONS WERE 580 PSIG AND 480F AT APPROXIMATELY ONE (1) PERCENT POWER. THE CAUSE OF THE EVENT WAS LACK OF ATTENTION TO DETAIL ON THE PART OF THE REACTOR OPERATOR. THE PLANT RESPONDED AS DESIGNED AND ALL APPLICABLE POST-SCRAM PROCEDURES WERE CORRECTLY FOLLOWED. THERE WERE NO CONSEQUENCES.

FORM 44 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
245 1989 021 0 8911220182 215816 10/19/89

ABSTRACT

POWER LEVEL - 070%. ON 10/19/89 AT 1515 HOURS WITH THE PLANT AT 70% POWER (530F AND 1000 PSIG) A FULL REACTOR SCRAM OCCURRED AS A RESULT OF A MAIN TURBINE TRIP (TURBINE STOP VALVES GREATER THAN 10% CLOSURE). THE MAIN TURBINE TRIP WAS THE RESULT OF A HIGH REACTOR WATER LEVEL TURBINE TRIP SIGNAL (+45"). THE HIGH REACTOR WATER CONDITION WAS THE RESULT OF "A" FEEDWATER REGULATING VALVE BECOMING STUCK IN THE OPEN POSITION WHICH OCCURRED WHILE RETURNING "B" FEEDWATER REGULATING VALVE TO SERVICE. DURING THE LEVEL DECREASE WHICH FOLLOWED THE SCRAM, STANDBY GAS TREATMENT SYSTEM INITIATED AS EXPECTED. ALL SYSTEMS FUNCTIONED AS EXPECTED. NO SAFETY CONSEQUENCES RESULTED FROM THIS EVENT.

FORM 45 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
245 1990 015 0 9010230202 210695 09/14/90

ABSTRACT

POWER LEVEL - 100%. ON 9/14/90, WITH THE PLANT AT 100% POWER (530F AND 1030 PSIG), A FULL REACTOR SCRAM OCCURRED ON LOW REACTOR WATER LEVEL (+8 INCHES) AFTER THE FEEDWATER REGULATING VALVES BEGAN TO CLOSE. THE FEEDWATER REGULATING VALVES WERE RESPONDING TO A HIGH INDICATED REACTOR WATER LEVEL SIGNAL FROM THE "A" CHANNEL OF THE FEEDWATER CONTROL SYSTEM, WHICH WAS CONTROLLING FEEDWATER FLOW. AT THE TIME OF THE SCRAM, A TECHNICIAN WAS PERFORMING A CALIBRATION ON A PRESSURE SWITCH WHICH SENSES PRESSURE FROM AN INSTRUMENT LINE COMMON TO THE REFERENCE LEG OF THE "A" FEEDWATER CONTROL SYSTEM. ALL SAFETY SYSTEMS FUNCTIONED AS REQUIRED AND NO SAFETY CONSEQUENCES RESULTED FROM THIS EVENT.

FORM 46 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 100%. ON FEBRUARY 28, 1989, WHILE THE PLANT WAS AT FULL POWER, A REACTOR TRIP OCCURRED ON AN OVERPOWER DELTA T SIGNAL. IMMEDIATELY PRIOR TO THE TRIP, AN INSTRUMENT AIR LINE FOR THE CONTROL OF THE HEATER DRAIN TANK DISCHARGE CONTROL VALVES PARTED AT A SOLDERED CONNECTION. THE RESULTANT LOSS OF INSTRUMENT AIR CAUSED THE DISCHARGE VALVES TO GO TO THE FULL OPEN POSITION. A HEATER DRAIN TANK LOW LEVEL SIGNAL TRIPPED THE HEATER DRAIN TANK PUMPS. A THIRD CONDENSATE PUMP, WHICH WOULD HAVE NORMALLY STARTED UNDER THESE CIRCUMSTANCES, HAD ITS AUTO-START CONTROLS OUT OF SERVICE DUE TO A ROUTINE SURVEILLANCE TEST. PUMP LOSS WAS OBSERVED IN THE CONTROL ROOM, AND PLANT OPERATORS REDUCED TURBINE LOAD AND INSERTED RODS WHILE SIMULTANEOUSLY PLACING THE THIRD CONDENSATE PUMP IN SERVICE MANUALLY. APPROXIMATELY THREE MINUTES INTO THE EVENT THE REACTOR TRIPPED. WITH THE LOAD BEING REDUCED AND RODS INSERTED, THE DELTA FLUX IN THE CORE INCREASED FROM - 4% TO GREATER THAN - 20%. BECAUSE OF THE DELTA FLUX PENALTY, THE REACTOR TRIPPED WHEN THE LOOP DELTA T EXCEEDED THE LOWERED TRIP SETPOINT DURING THE TRANSIENT. ALL RODS INSERTED ON THE REACTOR TRIP SIGNAL, AND ALL SAFETY SYSTEMS FUNCTIONED AS DESIGNED.

FORM 47 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 247 1989 013 0 9001250351 215483 12/13/89

ABSTRACT

POWER LEVEL - 100%. ON 12/13/89, WHILE THE PLANT WAS AT 100% POWER, A MOMENTARY DECREASE IN MAIN TURBINE GOVERNOR OIL PRESSURE, BROUGHT ABOUT BY OPERATOR ACTION, ACTUATED THE "TURBINE TRIPPED" LOGIC (TURBINE STILL RESET) WHICH IN TURN GENERATED A REACTOR TRIP SIGNAL. THE SUBSEQUENT REACTOR TRIP GENERATED A TURBINE TRIP SIGNAL CAUSING A TURBINE AND GENERATOR TRIP. FOLLOWING THE TRIP AND DATA REVIEW, IT WAS DETERMINED THAT REACTOR COOLANT SYSTEM LETDOWN ISOLATION DID NOT OCCUR, AND THAT LOOP 23 PRESSURIZER SPRAY FLOW WAS UNEXPECTEDLY REDUCED TO AN INSUFFICIENT AMOUNT DUE TO AN INCORRECT BWP 35 VALVE POSITION, CAUSING LOWER THAN EXPECTED TEMPERATURES IN THE ASSOCIATED SPRAY LINE.

FORM 48 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 249 1989 001 1 8907250110 214841 03/25/89

ABSTRACT

POWER LEVEL - 089%. AT APPROX. 0133 HOURS ON 3/25/89, A FAULT OCCURRED WITHIN 345 KV SWITCHYARD POWER CIRCUIT BREAKER (PCB) 8-15. LOCAL BREAKER BACKUP LOGIC CIRCUITRY THEN AUTOMATICALLY ISOLATED PCB 8-15; THIS DE-ENERGIZED UNIT 3 RESERVE AUX. TRANSFORMER (TR) 32, CAUSING A LOSS OF OFFSITE POWER (LOOP) TO UNIT 3. THE AUTOMATIC TRANSFER OF 4 KV BUS 32 FROM TR 32 TO UNIT 3 AUXILIARY TR 31 DID NOT OCCUR QUICKLY ENOUGH TO PREVENT UNDERVOLTAGE TRIPS OF THE 3B REACTOR FEED PUMP (RFP) AND THE 3B REACTOR RECIRCULATION PUMP. WHEN THE STANDBY 3C RFP STARTED, REACTOR WATER LEVEL ROSE TO THE MAIN TURBINE AND RFP TRIP SETPOINT AND A REACTOR SCRAM ON TURBINE STOP VALVE CLOSURE RESULTED. THE MAIN STEAM ISOLATION VALVES (MSIVS) WERE MANUALLY CLOSED TO CONSERVE REACTOR INVENTORY AND THE ISOLATION CONDENSER WAS USED FOR REACTOR PRESSURE CONTROL. MILOLY CONTAMINATED CONDENSATE WAS

LEVEL 44 LOW LEVEL CONTAMINATION TO THE AREA SURROUNDING THE ISOLATION CONDENSER VENT. COLD SHUTDOWN CONDITIONS WERE ACHIEVED BY 2230 HOURS ON 3/25/89. CORRECTIVE ACTIONS INCLUDED INSPECTION, TESTING AND REPAIR OF VARIOUS BREAKERS AND LOGIC CIRCUITS AND SURVEYS/CLEANUP OF THE AREAS AFFECTED BY THE ISOLATION CONDENSER VENT. SIMILAR EVENT: 237/85-034.

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FORM 49 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
249 1989 002 0 8905050348 213805 03/30/89

ABSTRACT

POWER LEVEL - 070%. ON 3/20/89 AT 1253 HOURS WITH UNIT 3 OPERATING AT 70% RATED CORE THERMAL POWER, A REACTOR SCRAM OCCURRED WHILE THE TECHNICAL STAFF WAS PERFORMING DRESDEN TECHNICAL SURVEILLANCE (DTS) 500-2, FUNCTIONAL TESTING OF RPS MG SET AND RPS RESERVE POWER SUPPLY. THE CAUSE OF THE SCRAM WAS DUE TO A SPURIOUS TRIP OF ELECTRICAL PROTECTION ASSEMBLY (EPA) BREAKER 3A-1 ON REACTOR PROTECTION SYSTEM (RPS) BUS B WITH A CONCURRENT LOCK-UP CONDITION OF THE 3A MAIN STEAM LINE (MSL) RADIATION MONITOR. THE RPS BUS B TRIP OCCURRED AT THE SAME TIME ATTEMPTS TO RESET THE HALF SCRAM ON RPS CHANNEL A WERE TAKING PLACE. THE NUCLEAR STATION OPERATOR (NSO) WAS UNABLE TO RESET THE RPS CHANNEL A HALF SCRAM DUE TO THE LOCK-UP CONDITION ON THE 3A MSL RADIATION MONITOR. THE LOCK-UP CONDITION HAS THE POTENTIAL OF OCCURRING UPON RE-ENERGIZING THE MONITOR FOLLOWING A MOMENTARY (LESS THAN APPROXIMATELY ONE SECOND) POWER INTERRUPTION. DURING THE LOCK-UP CONDITION THE RADIATION MONITOR REMAINS IN A TRIPPED CONDITION. THE CONDITION IS CORRECTED BY DE-ENERGIZING THE MONITOR FOR APPROXIMATELY TEN SECONDS AFTER WHICH TIME THE MONITOR IS RE-ENERGIZED. A SECOND AND THIRD REACTOR SCRAM OCCURRED AT 1338 HOURS AND 1742 HOURS RESPECTIVELY. THE SECOND SCRAM WAS CAUSED BY OPERATIONS DEPARTMENT PERSONNEL TRANSFERRING OVER POWER SUPPLIES TO RPS BUS A IN AN ATTEMPT TO CLEAR THE RADIATION MONITOR LOCK-UP CONDITION.

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FORM 50 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
249 1989 006 0 8905220193 213883 04/15/89

ABSTRACT

POWER LEVEL - 092%. ON 4/15/89 AT 0320 HOURS WITH UNIT 3 OPERATING AT 92% RATED CORE THERMAL POWER, A REACTOR SCRAM OCCURRED DURING SURVEILLANCE TESTING OF THE MAIN TURBINE STOP VALVES (TSVS). THE CAUSE OF THE SCRAM WAS DETERMINED TO BE COMPONENT FAILURE. HIGH CONTACT RESISTANCE ON A NORMALLY OPEN CONTACT PREVENTED ITS REQUIRED CLOSURE DURING TESTING OF THE #2 TSV. THIS FAILURE RESULTED IN THE REMAINING THREE TSVS STARTING TO CLOSE WHEN #2 TSV STARTED TO CLOSE. ALSO DURING THIS EVENT THE MAIN GENERATOR OUTPUT CIRCUIT BREAKERS FAILED TO OPEN ON REVERSE POWER. THUS THE MAIN TURBINE WAS MANUALLY TRIPPED AT 0323 HOURS. THE ROOT CAUSE OF THIS FAILURE WAS ALSO ATTRIBUTED TO COMPONENT FAILURE. UPON INSPECTION OF THE MAIN GENERATOR SECONDARY REVERSE POWER RELAY, DIRT WAS FOUND BETWEEN THE BEARING AND CONTACT PIVOT ARM ON THE RELAY DIRECTIONAL UNIT PREVENTING PROPER OPERATION. AS CORRECTIVE ACTIONS, TWO TSV CONTROL RELAYS WERE REPLACED. THE MAIN GENERATOR SECONDARY REVERSE POWER RELAY WAS CLEANED AND VERIFIED TO OPERATE PROPERLY. TO HELP PREVENT FUTURE FAILURES OF REVERSE POWER RELAY WAS CLEANED AND VERIFIED TO OPERATE PROPERLY. TO HELP PREVENT FUTURE FAILURES OF REVERSE POWER RELAYS THE CALIBRATION PROCEDURE WILL BE REVISED TO SPECIFICALLY ADDRESS

FORM 51 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 249 1990 005 0 9004180282 217792 03/10/90

ABSTRACT

POWER LEVEL - 094%. AT APPROXIMATELY 2030 HOURS ON 3/10/90, AN AUTOMATIC UNIT 3 SCRAM ON AN AVERAGE POWER RANGE MONITOR (APRM) HIGH FLUX SIGNAL OCCURRED. THE AIR LINE TO THE PILOT SOLENOID FOR OUTBOARD MAIN STEAM ISOLATION VALVE (MSIV) 3-203-2A HAD FAILED PRIOR TO THE SCRAM CAUSING CLOSURE OF THE MSIV AND A RESULTING REACTOR VESSEL PRESSURE TRANSIENT WHICH LED TO THE SCRAM ON APRM HIGH FLUX. THE RESULTING MAIN STEAM LINE FLOW INCREASE AND CORRESPONDING LOW REACTOR WATER LEVEL CONDITION RESULTED IN GROUP I, II AND III PRIMARY CONTAINMENT ISOLATIONS VIA MAIN STEAM LINE HIGH FLOW (GREATER THAN 120% OF RATED STEAM FLOW) SWITCH AND +8 INCH REACTOR WATER LOW LEVEL SWITCH ACTUATIONS. CORRECTIVE ACTION INCLUDED SAFETY SIGNIFICANCE OF THIS TRANSIENT WAS MITIGATED BY THE FACT THAT REACTOR WATER WAS MAINTAINED WELL ABOVE THE AUTOMATIC EMERGENCY CORE COOLING SYSTEM (ECCS) INITIATION SETPOINT AT ALL TIMES AND MULTIPLE SYSTEMS WERE AVAILABLE FOR REACTOR PRESSURE CONTROL INCLUDING ISOLATION CONDENSER, HIGH PRESSURE COOLANT INJECTION (HPCI) AND MAIN STEAM RELIEF VALVES. ALTHOUGH PREVIOUS FAILURES OF INBOARD MSIV PNEUMATIC LINES AT THE MANIFOLD BLOCK HAVE OCCURRED, THIS IS BELIEVED TO BE THE FIRST FAILURE OF AN OUTBOARD AIR LINE FITTING CONNECTION.

FORM 52 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 250 1989 004 0 8903230293 213325 02/10/89

ABSTRACT

POWER LEVEL - 000%. ON FEBRUARY 10, 1989, AT 1151, WITH UNIT 3 REACTOR CRITICAL AT 0% POWER (APPROXIMATELY 1 E-6 AMPS IN THE INTERMEDIATE RANGE) A REACTOR TRIP OCCURRED. WHILE PERFORMING PROCEDURE OP 14004.1 A BISTABLE WAS PLACED IN TEST CAUSING THE REACTOR PROTECTION SYSTEM (EIIIS:JC) TO SEE POWER LEVEL GREATER THAN 10%, ENABLING THE P-7 REACTOR TRIPS. P-7 IS A TRIP PERMISSIVE, ENABLED WHENEVER EITHER REACTOR POWER OR TURBINE POWER IS GREATER THAN 10%. THIS, COINCIDENT WITH THE TURBINE TRIP SIGNAL FROM THE UNLATCHED TURBINE, CAUSED THE REACTOR TRIP. THE CAUSE OF THE TRIP WAS A DEFECTIVE PROCEDURE IN THAT THE STEP WHICH RESULTED IN THE TRIP WAS NOT IDENTIFIED AS HAVING THE POTENTIAL TO CAUSE A TRIP. A CONTRIBUTING CAUSE WAS INADEQUATE CONTROL OF PROCEDURE REPLACEMENTS WHICH ALLOWED TWO APPLICABLE PROCEDURES TO BE IN EFFECT AT THE SAME TIME. AN EVENT RESPONSE TEAM WAS FORMED TO DETERMINE ROOT CAUSE(S) AND CORRECTIVE ACTIONS. THE OLD PROCEDURE WAS REVISED TO CORRECT THE ERRORS AND WAS COMPLETED TO SATISFY THE SURVEILLANCE REQUIREMENT. THE NEW PROCEDURES ARE BEING FIRST-USE VERIFIED, AND WORK CONTROLS WILL BE DEVELOPED TO ENSURE OLD PROCEDURES ARE CANCELLED IN A TIMELY MANNER.

FORM 53 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 250 1989 020 1 9006120016 218400 12/23/89

ABSTRACT

THE SUDDEN LOSS OF STEAM FLOW FROM THE 4A STEAM GENERATOR CAUSED AN INCREASE IN PRESSURE IN THAT STEAM GENERATOR. THE PRESSURE INCREASE CAUSED THE STEAM GENERATOR LEVEL TO "SHRINK" TO THE LOW-LOW LEVEL SETPOINT OF 15%. THE AUX. FEEDWATER SYSTEM RESPONDED AS DESIGNED. CORROSION ACROSS TERMINAL BOARD CONTACTS SUPPLYING VITAL 125 VDC POWER TO ONE OF TWO 4A MSIV OPENING SOLENOID VALVES CAUSED A FUSE TO BLOW. UPON DE-ENERGIZATION, THE OPENING SOLENOID FAILED TO THE VENT POSITION. THIS ALLOWED AIR TO BLEED FROM THE BOTTOM OF THE MSIV PISTON. THE MSIV DISC DROPPED DOWN INTO THE STEAM FLOW, RESULTING IN RAPID CLOSURE OF THE MSIV. THE ACCELERATED CORROSION RATE WAS DUE TO STRAY DC LEAKAGE CURRENTS. UPON INSPECTION OF THE TERMINAL BOARDS SUPPLYING VITAL 125 VDC POWER TO THE OPENING AND CLOSING SOLENOID VALVES FOR THE 3A, 3B AND 3C MSIVS, CORROSION WAS IDENTIFIED ON ONE OF THE TWO TERMINAL BOARDS FOR EACH THE 3B AND 3C MSIVS. THE 3B AND 3C MSIVS WERE DECLARED INOPERABLE AND UNIT 3 ENTERED TECH SPEC (TS) 3.0.1 AT 2300 ON 12/24/89. THE TWO TERMINAL BOARDS WERE REPLACED, THE 3B AND 3C MSIVS WERE DECLARED OPERABLE, AND UNIT 3 EXITED TS 3.0.1 AT 0455 ON 12/25/89.

FORM 54 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 250 1990 011 1 9008310218 219385 06/09/90

ABSTRACT

POWER LEVEL - 026%. ON JUNE 9, 1990, AT 0648 EDT, WITH UNIT 3 IN MODE 1 (POWER OPERATION) AT 26 PERCENT POWER AND UNIT 4 IN MODE 1 AT 100 PERCENT POWER, UNIT 3 EXPERIENCED A HI-HI STEAM GENERATOR WATER LEVEL TURBINE TRIP AND SUBSEQUENT REACTOR TRIP. ALL SAFETY SYSTEMS PERFORMED AS DESIGNED. AFTER THE TRIP, THE OPERATORS STABILIZED THE UNIT IN MODE 3 (HOT STANDBY) BY USING APPLICABLE PROCEDURES. THE CAUSE OF THIS EVENT WAS A MALFUNCTION OF THE 3C FEEDWATER REGULATOR HAND/AUTO STATION OPEN PUSHBUTTON SWITCH FOR VALVE CONTROLLER FC-3-498F. THE SWITCH IS A MOMENTARY ACTION SWITCH DESIGNED TO SPRING BACK TO THE "NO CONTACT" POSITION UPON RELEASE. THE SWITCH WAS FOUND SPRUNG BACK TO THE "NO CONTACT" POSITION, BUT THE SWITCH CONTACTS WERE STILL CLOSED. THIS RESULTED IN A FULL OPEN DEMAND SIGNAL CAUSING THE 3C FEEDWATER REGULATING VALVE TO FULLY OPEN. THE FAILED 3C FEEDWATER REGULATING VALVE HAND/AUTO STATION AND THE HAND/AUTO STATION FOR THE 3B FEEDWATER REGULATING VALVE WERE REPLACED WITH HAND/AUTO STATIONS HAVING NEW STYLE SWITCHES. THE HAND/AUTO STATION FOR THE 3A FEEDWATER REGULATING VALVE HAD BEEN REPLACED IN JUNE, 1989. ON JUNE 9, 1990, AT 0716 EDT, THE NRC WAS NOTIFIED OF THIS EVENT IN ACCORDANCE WITH 10 CFR 50.72(b)(2)(ii).

FORM 55 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 250 1990 013 0 9007230140 218896 06/15/90

ABSTRACT

POWER LEVEL - 010%. ON JUNE 15, 1990, AT 1203 EDT, WITH UNIT 3 IN MODE 1 (POWER OPERATION) AT 10 PERCENT POWER AND UNIT 4 IN MODE 1 AT 100 PERCENT POWER, UNIT 3 EXPERIENCED A REACTOR TRIP WHEN THE OPERATOR RAISED POWER ABOVE 10 PERCENT WITH THE TURBINE IN A TRIPPED CONDITION. REACTOR POWER ABOVE 10 PERCENT AUTOMATICALLY RESETS THE P-10 REACTOR TRIP PERMISSIVE (REACTOR POWER GREATER THAN 10 PERCENT) WHICH IN CONJUNCTION WITH A TURBINE TRIP PROVIDES A REACTOR TRIP. THE UNIT WAS STABILIZED IN MODE 3 (HOT STANDBY) IN ACCORDANCE WITH APPROVED PLANT PROCEDURES. THIS EVENT WAS CAUSED BY COGNITIVE PERSONNEL ERROR IN

BE REVIEWED WITH RESPECT TO REACTOR TRIP SET POINTS. THIS EVENT WILL BE REVIEWED WITH ALL APPLICABLE OPERATIONS PERSONNEL TO INCREASE AWARENESS OF THE POTENTIAL FOR UNDESIRABLE RESULTS DUE TO A FAILURE TO MENTALLY REVIEW THE CONSEQUENCES OF ACTIONS BEING PERFORMED. IN ADDITION, THE NECESSITY OF ADEQUATE COMMUNICATIONS BETWEEN THE DIFFERENT OPERATORS AND THE PLANT SUPERVISOR NUCLEAR IS ALSO BEING STRESSED DURING THE OPERATOR REVIEW SINCE INADEQUATE COMMUNICATIONS WAS DETERMINED TO HAVE BEEN A SIGNIFICANT CONTRIBUTING CAUSE OF THIS EVENT. ON JUNE 15, 1990, AT 1253 EDT, THE NRC WAS NOTIFIED OF THIS EVENT IN ACCORDANCE WITH 10 CFR 50.72(b)(2)(II).

FORM 56 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 251 1989 003 1 8910240294 215631 05/05/89

ABSTRACT

POWER LEVEL - 000%. ON 5/5/89, AT 0152, WITH UNIT 4 IN HOT STANDBY, AND DURING ROD DROP TESTING, AN RPS ACTUATION OCCURRED WHILE PERFORMING PROCEDURE 4-SMI-071.4. THE REACTOR TRIPPED WHEN I&C PERSONNEL (NON-LICENSED UTILITY PERSONNEL) PLACED BISTABLE BS-4-446-1 IN THE TEST POSITION IN ACCORDANCE WITH PROCEDURE 4-SMI-071.4. THIS SIMULATED A REACTOR POWER GREATER THAN 10%, ENABLING THE LOW POWER PERMISSIVE'S REACTOR TRIPS. AN INVESTIGATION DETERMINED THAT REACTOR TRIP LOGIC WAS COMPLETED BY A TURBINE TRIP SIGNAL GENERATED BY INDICATION OF CLOSED TURBINE STOP VALVES. ALTHOUGH THE TURBINE STOP VALVES (TSV) WERE PHYSICALLY VERIFIED TO BE IN OPEN POSITION, THE RPS INDICATED THEY WERE CLOSED DUE TO PRESENCE OF LIFTED LEADS IN THE TSVS POSITION SENSING CIRCUITRY. THE EVENT RESPONSE TEAM HAS IDENTIFIED THE PHYSICAL ROOT CAUSE AS THE PRESENCE OF LIFTED LEADS IN THE TSV'S. POSITION SENSING CIRCUITRY DUE TO INADEQUATE ADMINISTRATIVE CONTROLS. A CONTRIBUTING FACTOR WAS DETERMINED TO BE THAT THE SEQUENCE OF EVENTS GENERAL ALARM SUMMARY DID NOT IDENTIFY THE TSVS IN THE "ALARM CONDITION." THE SUBJECT LEADS WERE LANDED. A NEW ADMINISTRATIVE SITE PROCEDURE WAS DEVELOPED TO IMPROVE CONTROL OF PROCESS SHEETS AND INSTALLATION LISTS. THE GENERAL ALARM SUMMARY SOFTWARE HAS BEEN MODIFIED TO PREVENT LOSS OF ALARM STATUS.

FORM 57 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 251 1989 011 0 8910190123 215534 09/15/89

ABSTRACT

POWER LEVEL - 100%. AT 0426, ON 9/15/89, WITH UNIT 4 OPERATING AT 100% POWER, A MANUAL REACTOR TRIP WAS INITIATED. A HIGH PRESSURE (HP) TURBINE STOP VALVE AUTO STOP OIL LINE WELD LEAK IDENTIFIED AT 0045 LED TO CLOSURE OF THE STOP VALVE. WHEN THE CONTROL RODS FAILED TO INSERT IN AUTOMATIC OR MANUAL IN RESPONSE TO THE SUDDEN TURBINE POWER DECREASE, AS CALLED FOR BY A T-AVE/T-REF MISMATCH SIGNAL, A MANUAL REACTOR TRIP WAS INITIATED. A FAILURE OF THE 4C STEAM GENERATOR FEEDWATER CONTROL VALVE TO CLOSE DURING A SUBSEQUENT FEEDWATER ISOLATION (SLOW CLOSURE) SIGNAL RESULTED IN OVERFEED OF THE STEAM GENERATOR AND "SHRINK" OF THE REACTOR COOLANT SYSTEM INVENTORY. A MANUAL SAFETY INJECTION SIGNAL WAS INITIATED BY PROCEDURE BECAUSE PRESSURIZER LEVEL DROPPED BELOW 12%. THE AUTO STOP OIL LINE WELD FAILURE WAS DUE TO AN INADEQUACY IN THE REFUELING PREVENTIVE MAINTENANCE PROGRAM. THE AUTOMATIC ROD CONTROL SPEED SIGNAL OUTPUT SUMMATOR WAS OUT OF CALIBRATION. THE FEEDWATER CONTROL VALVE FAILURE TO CLOSE IS DUE TO AN INADEQUATE PROCEDURE USED DURING A PRESENT

FORM 58 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
251 1990 003 0 9005160071 218153 04/09/90

ABSTRACT

POWER LEVEL - 100%. ON 4/9/90 AT 1814 EDT, WITH UNIT 4 IN MODE 1 (POWER OPERATION) AT 100% POWER, A REACTOR PROTECTION SYSTEM ACTUATION OCCURRED DUE TO A FAILURE OF A REACTOR COOLANT PUMP (RCP) UNDERFREQUENCY RELAY POWER SUPPLY CAPACITOR. THE REACTOR TRIP OCCURRED BECAUSE ONE OF THREE REACTOR COOLANT PUMP POWER SUPPLY BREAKERS OPENED WITH THE REACTOR AT GREATER THAN 45% POWER. THE FAULTY UNDERFREQUENCY RELAY WAS REPLACED AND UNIT 4 WAS RETURNED TO SERVICE. THE RCP POWER SUPPLY UNDERFREQUENCY RELAYS ON BOTH UNIT 3 AND UNIT 4 HAVE BEEN REPLACED WITH NEW MODELS. A REVIEW OF THE FAILURE MODES OF THE REPLACEMENT RELAYS WILL BE PERFORMED AND PLANNED MAINTENANCE WILL BE DEVELOPED AS APPROPRIATE. ON 4/9/90, AT 1914 EDT, A 4 HOUR REPORT OF THE EVENT WAS MADE TO THE NRC IN ACCORDANCE WITH 10 CFR 50.72.

FORM 59 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
251 1990 004 0 9006190055 218504 05/26/90

ABSTRACT

POWER LEVEL - 001%. ON MAY 26, 1990, AT 0556 EDT, DURING START-UP OF BOTH UNITS, WITH UNIT 3 IN MODE 3 (HOT STANDBY) AND UNIT 4 IN MODE 2 (START-UP) AT APPROXIMATELY ONE (1) PERCENT POWER, A LICENSING TRAINEE UNDER THE DIRECTION OF THE UNIT 4 REACTOR OPERATOR MANUALLY TRIPPED THE UNIT 4 REACTOR. THIS OCCURRED DURING THE RESTORATION PHASE OF THE TURBINE VALVE TEST ON UNIT 4. THE UNIT 4 REACTOR WAS MANUALLY TRIPPED IN AN ERRONEOUS RESPONSE TO STEP 7.2.59 OF PROCEDURE 4-OSP-089 "MAIN TURBINE VALVES OPERABILITY TEST." SUBSEQUENT TO THE TRIP, THE OPERATORS VERIFIED THE UNIT TO BE IN A STABLE CONDITION BY USING APPLICABLE EMERGENCY OPERATING PROCEDURES. THIS EVENT WAS CAUSED BY COGNITIVE PERSONNEL ERROR ON THE PART OF PLANT LICENSED OPERATORS. TO PRECLUDE RECURRENCE OF THIS EVENT, PROCEDURES 3-OSP-089 AND 4-OSP-089 HAVE BEEN REVISED TO CLARIFY THE INTENT OF STEP 7.2.59. IN ADDITION, THIS EVENT IS BEING REVIEWED WITH APPLICABLE OPERATIONS PERSONNEL. ON MAY 26, 1990, AT 0634 EDT, THE NRC WAS NOTIFIED OF THIS EVENT IN ACCORDANCE WITH 10 CFR 50.72(B)(2)(II)

FORM 60 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
251 1990 008 0 9009250140 219487 08/12/90

ABSTRACT

POWER LEVEL - 100%. AT 1625, ON AUGUST 12, 1990, WITH UNIT 4 IN MODE 1 AT 100 PERCENT POWER, THE 4B CONDENSATE PUMP MOTOR AUTOMATICALLY TRIPPED ON OVERCURRENT. THE 4A CONDENSATE PUMP AUTOMATICALLY STARTED AS DESIGNED. THE 4A STEAM GENERATOR FEEDWATER PUMP TRIPPED UNEXPECTEDLY AND INITIATED A TURBINE RUNBACK. THE TURBINE RUNBACK AND THE REDUCED FEEDWATER FLOW CAUSED THE STEAM GENERATOR LEVELS TO DECREASE. OPERATOR ACTIONS WERE TAKEN IN AN ATTEMPT TO RESTORE STEAM

SUBSEQUENT AUTOMATIC TURBINE TRIP. THE UNIT WAS STABILIZED IN MODE 3 (HOT STANDBY) USING EXISTING SITE PROCEDURES. THE 4B CONDENSATE PUMP MOTOR TRIP WAS CAUSED BY A PHASE-TO-PHASE SHORT. FPL POSTULATES THAT A WEAK SPOT IN THE INSULATION WAS CREATED WHEN THE MOTOR WAS REWOUND IN 1980. THE WEAK SPOT DEGRADED TO THE POINT THAT MOISTURE COULD PENETRATE THE INSULATION. THE MOISTURE PROVIDED AN ELECTRICAL SHORT ACROSS THE COILS. THE UNEXPECTED 4A STEAM GENERATOR FEEDWATER PUMP (SGFP) TRIP WAS CAUSED BY AN INCORRECT SETPOINT ON AN AGASTAT TIME DELAY BREAKER TRIP RELAY. THE 4A AND 4B SGFP BREAKER TRIP RELAYS HAVE BEEN RECALIBRATED. THE CONDENSATE PUMP IS BEING REPAIRED.

FORM 61 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 254 1989 003 0 8905160294 213950 04/12/89

ABSTRACT

POWER LEVEL - 064%. ON 4/12/89, QUAD CITIES UNIT ONE WAS IN THE RUN MODE AT APPROXIMATELY 74% OF RATED CORE THERMAL POWER. AT 1136 HOURS, A MANUAL REACTOR SCRAM WAS INITIATED DUE TO MAIN TURBINE BYPASS VALVES OPENING. ONE BYPASS VALVE HAD OSCILLATED OPEN DURING THE NIGHT BEFORE, BUT AT 1126 HOURS, ALL NINE BYPASS VALVES HAD OPENED IN SEQUENCE. NRC NOTIFICATION WAS COMPLETED AT 1210 HOURS TO COMPLY WITH 10CFR50.72(B)(2)(II). AN INVESTIGATION REVEALED THAT THE CAUSE FOR THIS EVENT WAS COMPONENT FAILURE. A CIRCUIT BOARD WITHIN THE COMBINED MAXIMUM FLOW LIMIT CIRCUIT HAD A DECREASING OUTPUT. THE BOARD LIMITS THE OPENING OF CONTROL VALVES, AND AS A RESULT OF THE DECREASING OUTPUT, CAUSED THE CONTROL VALVES TO CLOSE. THE BYPASS VALVES WERE OPENING AS DESIGNED TO CONTROL REACTOR PRESSURE. THE CIRCUIT BOARD WAS REPLACED. THIS REPORT IS PROVIDED TO SATISFY 10 CFR 50.73(A)(2)(IV).

FORM 62 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 254 1989 004 0 8905240440 213983 04/17/89

ABSTRACT

POWER LEVEL - 010%. ON APRIL 17, 1989, QUAD CITIES UNIT ONE WAS IN THE RUN MODE AT 10 PERCENT OF RATED CORE THERMAL POWER FOLLOWING A MAINTENANCE OUTAGE. AT 0330 HOURS, THE REACTOR WAS MANUALLY SCRAMMED DUE TO THE 1-203-3D ELECTROMATIC RELIEF VALVE BEING STUCK OPEN. THIS OCCURRED WHILE THE OPERATING DEPARTMENT WAS PERFORMING ROUTINE RELIEF VALVE TESTING. AT 0331 HOURS, AN UNUSUAL EVENT WAS INITIATED. NRC NOTIFICATION WAS COMPLETED AT 0347 HOURS TO COMPLY WITH 10 CFR 50.72(A)(1)(I). AT 0753 HOURS, THE UNIT WAS IN COLD SHUTDOWN, AND THE UNUSUAL EVENT WAS TERMINATED. AN INVESTIGATION REVEALED THAT THE CAUSE FOR THIS EVENT WAS COMPONENT FAILURE. THE PILOT VALVE SHOWED SIGNS OF STEAM LEAKAGE AND THE DRAIN ORIFICE IN THE DISC RETAINER OF THE MAIN VALVE WAS PLUGGED. THE ELECTROMATIC RELIEF VALVE AND THE PILOT VALVE WERE REPLACED. THE ELECTROMATIC RELIEF VALVES ARE TESTED EVERY SIX MONTHS OR AFTER MAINTENANCE. THIS REPORT IS PROVIDED TO SATISFY 10 CFR 50.73(A)(2)(II) AND 10 CFR 50.73(A)(2)(IV).

FORM 63 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 254 1989 010 1 8909120444 215207 06/29/89

POWER LEVEL - 094% ON 6/29/89, QUAD CITIES UNIT ONE WAS IN THE RUN MODE AT 94% OF RATED CORE THERMAL POWER. AT 2239 HOURS, A REACTOR SCRAM OCCURRED DUE TO TURBINE STOP VALVE CLOSURE. THE STOP VALVE CLOSURE WAS THE RESULT OF A TURBINE TRIP. ALL SAFETY FEATURE ACTUATIONS OCCURRED AS DESIGNED. EMERGENCY NOTIFICATION SYSTEM (ENS) NOTIFICATION WAS COMPLETED AT 2330 HOURS ON 6/29/89, TO COMPLY WITH THE REQUIREMENTS OF 10 CFR 50.72(B)(2)(II). AN INVESTIGATION REVEALED THE CAUSE FOR THIS EVENT WAS A LOOSE CONNECTION ON THE 1-5600-PS-1058 CONDENSER LOW VACUUM PRESSURE SWITCH INDICATING LAMP. WHEN THE LENS COVER FOR THE LAMP WAS PUT ON, THE LOOSE WIRE INDUCED A VOLTAGE IN THE K2018 RELAY AND ENERGIZED THE MASTER TRIP BUS. THIS RESULTED IN A TURBINE TRIP.

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FORM 64 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
254 1990 004 0 9004180239 217734 03/10/90

ABSTRACT

POWER LEVEL - 098% ON MARCH 10, 1990, QUAD CITIES UNIT ONE WAS IN THE RUN MODE AT APPROXIMATELY 98 PERCENT OF RATED CORE THERMAL POWER. AT 0114 HOURS, A REACTOR SCRAM OCCURRED DUE TO A TURBINE-GENERATOR (TG) LOAD MISMATCH. THE TURBINE-GENERATOR LOAD MISMATCH WAS THE RESULT OF A GENERATOR TRIP. ALL SAFETY FEATURE ACTUATIONS OCCURRED AS DESIGNED. EMERGENCY NOTIFICATION SYSTEM (ENS) PHONE NOTIFICATION WAS COMPLETED AT 0209 HOURS ON MARCH 10, 1990, TO COMPLY WITH THE REQUIREMENTS OF 10 CFR 50.72(B)(2)(II). AN INVESTIGATION REVEALED THE CAUSE FOR THIS EVENT WAS A FAILURE OF THE NEGATIVE SEQUENCE TIME OVERCURRENT RELAY. WHEN A FAULT OCCURRED ON LINE 0402, THE RELAY ACTUATED RESULTING IN A GENERATOR TRIP. THE FAULT WAS MOST LIKELY A RESULT OF A LIGHTNING STRIKE. THE RELAY WAS REPAIRED. THIS REPORT IS BEING SUBMITTED IN ACCORDANCE WITH 10 CFR 50.73 (A)(2)(IV).

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FORM 65 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
255 1989 004 0 8900000000 214312 02/28/89

ABSTRACT

POWER LEVEL - 000%. ON 2/28/89, AT 2135, WITH THE PLANT IN THE HOT STANDBY CONDITION (PRIMARY COOLANT SYSTEM AT 532F AND 2060 PSIA) A REACTOR TRIP OCCURRED. THE INADVERTENT TRIP OCCURRED DURING THE PERFORMANCE OF TECH SPECS SURVEILLANCE PROCEDURE RO-21, "CONTROL ROD DRIVE SYSTEM INTERLOCKS". AS A RESULT OF THE EVENT, ALL CONTROL RODS (AA7ROD) WERE RESTARTED. ALL OTHER EQUIPMENT PERFORMED PROPERLY. AT THE TIME OF THE EVENT, PLANT OPERATORS WERE PREPARING TO VERIFY THAT A REACTOR PROTECTION SYSTEM HIGH RATE OF POWER CHANGE WOULD RESULT IN PROHIBITING CONTROL ROD WITHDRAWAL. DURING THIS PORTION OF THE TEST, ONE OF THE FOUR REACTOR PROTECTION SYSTEM CHANNELS IS BYPASSED AND OPERATORS SIMULATE A HIGH RATE OF POWER CHANGE SIGNAL ON THE WIDE RANGE INSTRUMENT ASSOCIATED WITH THE PREVIOUSLY BYPASSED CHANNEL. A REACTOR TRIP WAS INITIATED WHEN OPERATORS NOT UTILIZING THE APPROPRIATE WIDE RANGE INSTRUMENTATION CHANNEL CAUSED TWO ACTIVE REACTOR PROTECTION SYSTEM CHANNELS TO RECOGNIZE THE SIMULATED SIGNAL. A CONTROL ROD WAS INSERTED AS DESIGNED. THIS EVENT HAS BEEN ATTRIBUTED TO RO-21 NOT PROVIDING SUFFICIENT GUIDANCE TO ASSIST OPERATORS IN DETERMINING THE CORRECT RELATIONSHIP BETWEEN ASSOCIATED WIDE RANGE NUCLEAR INSTRUMENTATION AND REACTOR PROTECTION SYSTEM CHANNELS.

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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
255 1989 020 0 8909120376 215208 08/04/89

ABSTRACT

POWER LEVEL - 080%. ON 8/4, AT 1945, A REACTOR TRIP FROM 80% POWER OCCURRED DUE TO A BLOWN FUSE (JB2FU) IN A FLOW INDICATING CONTROLLER (SJ2FIC) THAT CAUSED THE FEEDWATER REGULATING VALVE (SJ2LCV) FOR THE B STEAM GENERATOR TO CLOSE, THEREBY DECREASING FEEDWATER FLOW TO THE STEAM GENERATOR AND RESULTING IN A REACTOR TRIP ON LOW STEAM GENERATOR LEVEL. THE PLANT RESPONSE TO THE TRIP WAS CONSIDERED NORMAL WITH NO SAFETY SIGNIFICANT DEVIATIONS OR ANOMALIES OBSERVED. ON 8/5/89 AT 0300, AN UNANTICIPATED START OF AUXILIARY FEEDWATER PUMP P-88 (BA2P) OCCURRED WHILE THE PLANT WAS IN THE HOT SHUTDOWN CONDITION. THE SPURIOUS SIGNAL WAS CAUSED BY A FAILURE BY THE OPERATORS TO RESET THE AFAS SIGNAL FOLLOWING THE REACTOR TRIP. CORRECTIVE ACTIONS TO BE TAKEN IN RESPONSE TO THESE INCIDENTS INCLUDE A REVIEW OF THE FUSE CONTROL PROGRAM AND A REVISION TO POST TRIP OPERATING PROCEDURES THAT WILL ADD INSTRUCTIONS TO THE OPERATORS FOR RESETTNG ALARMS AND ACTIVATED ACTUATION SIGNALS.

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FORM 67 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
255 1989 025 0 8912280118 216257 11/21/89

ABSTRACT

POWER LEVEL - 000%. ON 11/21/89 AT 0225 POWER OPERATED RELIEF VALVE (PORV), PRV-1042B (AB2RV) INSTANTANEOUSLY OPENED FOLLOWING THE MANUAL OPENING OF ITS ASSOCIATED MOTOR OPERATED BLOCK VALVE (MOV), MO-10242 (AB2ISV). BOTH MOV AND PORV, AND THE REDUNDANT VALVES MO-1043A AND PRV-1043B, HAD RECENTLY BEEN REPLACED DURING ONGOING MAINTENANCE OUTAGE. THE MOV WAS OPENED WITH THE REACTOR SUBCRITICAL AND THE PRIMARY COOLANT SYSTEM (PCS) AT 2154 PSIA TO PERMIT ASME SECTION XI LEAK TESTING OF THE WELDS MADE DURING VALVE INSTALLATION. APPROX. 24 SECS FOLLOWING THE OPENING OF THE PORV, THE REACTOR AUTOMATICALLY TRIPPED DUE TO THE RECEIPT OF ALL 4 THERMAL MARGIN LOW PRESSURE (TMLP) SIGNALS. APPROX. 3 MINS LATER A SAFETY INJECTION ACTUATION SIGNAL (SIAS) WAS RECEIVED WHEN PCS PRESSURE DROPPED TO THE SAFETY INJECTION SYSTEM ACTUATION PRESSURE OF 1605 PSIA. ALL SAFETY INJECTION EQUIPMENT THEN STARTED OR OTHERWISE PERFORMED ITS DESIGN FUNCTION. BOTH DIESEL GENERATORS STARTED ON LOW BUS VOLTAGE, BUT NO EQUIPMENT WAS AUTOMATICALLY LOADED ONTO THE DIESEL GENERATORS. WITH THE PCS AT 1565 PSIA THE PORV CLOSED AND THE MOV FULLY CLOSED. AN UNUSUAL EVENT WAS DECLARED DUE TO THE PORV OPENING AT 0256. THE PORV AND THE MOV WHICH OPENED WERE REMOVED FROM THE PLANT AND INSPECTED AND TESTED. THE VALVE OPERATING CHARACTERISTICS WERE DETERMINED, AND THE PLANT OPERATORS TRAINED AND OPERATING PROCEDURES MODIFIED TO REFLECT THOSE CHARACTERISTICS.

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FORM 68 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
255 1990 001 0 9002230093 216882 01/09/90

ABSTRACT

POWER LEVEL - 035%. ON 1/9/90 AT 0514 WITH POWER AT A STEADY STATE OF 35 PERCENT, THE REACTOR WAS MANUALLY TRIPPED FOLLOWING THE LOSS OF ALL MAIN FEEDWATER FLOW. MAIN FEEDWATER WAS LOST AT 0512 WHEN "A" MAIN

REPAIR AND REPAIR. THE PLANT RESPONSE TO THE TRIP WAS CONSIDERED NORMAL WITH NO SAFETY SIGNIFICANT DEVIATIONS OR ANOMALIES OBSERVED. THE ROOT CAUSE OF THE EVENT HAS NOT YET BEEN CONCLUSIVELY DETERMINED. TROUBLESHOOTING IS ONGOING. A SUPPLEMENTAL LICENSEE EVENT REPORT WILL BE SUBMITTED PENDING THE RESULTS OF THE INVESTIGATION.

FORM 69 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
255 1990 002 0 9004180204 217777 02/25/90

ABSTRACT

POWER LEVEL - 080%. AT 1926 HOURS ON FEBRUARY 28, 1990, PALISADES EXPERIENCED AN UNANTICIPATED TRIP OF THE "B" MAIN FEEDWATER PUMP (MFP). DURING RECOVERY FROM THE PUMP TRIP, A REACTOR TRIP WAS INITIATED BY AN AUTOMATIC ACTUATION OF THE REACTOR PROTECTION SYSTEM (RPS). PRIOR TO THE FEEDWATER PUMP TRIP THE REACTOR HAD BEEN OPERATING AT 80 PERCENT POWER, WITH BOTH FEEDWATER PUMPS OPERATING AND THE PRIMARY COOLANT SYSTEM (PCS) AT 556 DEGREES F AND 2060 PSIA. WHEN THE REACTOR TRIP OCCURRED, THE PLANT WAS OPERATING AT 55 PERCENT REACTOR POWER. THE INITIATING EVENT FOR THE REACTOR TRIP WAS COOLDOWN OF THE PCS DURING RECOVERY FROM LOSS OF A MAIN FEEDWATER PUMP. THE REACTOR TRIP WAS NOT CAUSED BY PERSONNEL ERROR. HOWEVER, OPERATOR ACTIONS WHICH COULD HAVE BEEN TAKEN TO CONTROL THE EFFECTS OF THE COOLDOWN TRANSIENT AND PREVENT THE REACTOR TRIP WERE IMPAIRED BY A MOMENTARY LOSS OF AUDIBLE ANNUNCIATOR SYSTEM AND A MALFUNCTION OF THE AUTOMATIC START FEATURE FOR CHARGING PUMP "C". THE CAUSE OF THE MFP TRIP REMAINS INDETERMINATE. INVESTIGATION OF THE FEEDWATER PUMP TRIP REMAINS IN PROGRESS. TEMPORARY MONITORS HAVE BEEN INSTALLED ON THE MFPS IN ORDER TO PROVIDE ADDITIONAL INFORMATION SHOULD THERE BE ANY FURTHER MFP ABNORMALITIES OR TRIPS. LICENSED OPERATORS WILL RECEIVE TRAINING ON THE CIRCUMSTANCES SURROUNDING THE REACTOR TRIP.

FORM 70 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
261 1989 004 1 8906120260 214256 02/27/89

ABSTRACT

POWER LEVEL - 030%. ON 2/27/89, AT 1617 HOURS, UNIT 2 RECEIVED A SAFETY INJECTION SIGNAL AND, SUBSEQUENTLY, AN AUTOMATIC REACTOR TRIP FROM 30% POWER WHEN THE TURBINE EXPERIENCED MOMENTARY LOSS OF LOAD. AT THE TIME, MAINTENANCE PERSONNEL WERE INVESTIGATING A POWER SUPPLY TROUBLE ALARM IN THE TURBINE CONTROL SYSTEM WHEN A TECHNICIAN INADVERTENTLY CAUSED A SHORT CIRCUIT, CAUSING THE GOVERNOR VALVES TO CLOSE. THE STEAM DUMP SYSTEM RESPONDED. WHEN THE ELECTRICAL SHORT WAS CORRECTED, THE GOVERNOR VALVES REOPENED, RESULTING IN HIGH STEAM FLOW, BUT THE STEAM-DUMP VALVES HAD NOT MODULATED CLOSED AND A SAFETY INJECTION SIGNAL WAS INITIATED ON HIGH STEAM FLOW WITH LOW STEAM LINE PRESSURE/LOW AVERAGE REACTOR COOLANT TEMPERATURE. THE TECHNICIAN WHO CAUSED THE SHORT FOUND THAT THE MULTIMETER BEING USED WRONGLY CONFIGURED TO MEASURE AMPERAGE VERSUS VOLTAGE. THIS HAD APPARENTLY CREATED THE SHORT IN THE TURBINE DC POWER SUPPLY. THE LICENSEE DECLARED AN UNUSUAL EVENT AT 1618 HOURS, THEN TERMINATED THE EVENT AT 1651 HOURS, AND UNIT 2 WAS RETURNED TO POWER OPERATIONS ON 2/28/89. THE CAUSE OF THE EVENT HAS BEEN ATTRIBUTED TO INATTENTIVENESS BY THE MAINTENANCE TECHNICIAN TO THE CONFIGURATION OF THE MULTIMETER. PLANT SAFETY WAS MAINTAINED THROUGHOUT THE EVENT. THE PROBLEM OF IMPROPER STEAM DUMP MODULATION WAS THE RESULT OF THE SATURATION OF THE STEAM

FORM 71 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 261 1989 005 0 8904260179 213719 03/22/89

ABSTRACT

POWER LEVEL - 100%. ON MARCH 22, 1989, WITH UNIT NO. 2 OPERATING AT ONE HUNDRED PERCENT (X) POWER, A REACTOR TRIP OCCURRED DUE TO THE INADVERTENT CLOSURE OF A MAIN STEAM ISOLATION VALVE (MSIV), WHICH ISOLATED FLOW FROM "A" STEAM GENERATOR. ALL PLANT SYSTEMS PERFORMED AS DESIGNED THROUGHOUT THE EVENT, AND THE PLANT WAS STABILIZED USING EMERGENCY OPERATING PROCEDURES. THE NRC OPERATIONS CENTER WAS NOTIFIED OF THE EVENT IN ACCORDANCE WITH 10CFR50.72 AT 0256 HOURS VIA THE ENS. THE EVENT IS ATTRIBUTED TO PERSONNEL ERROR ON THE PART OF THE LICENSED CONTROL OPERATOR WHO MANIPULATED THE INCORRECT SWITCH DURING THE PERFORMANCE OF A SURVEILLANCE TEST. THE CONTROL OPERATOR HAS BEEN DISCIPLINED FOR INATTENTION TO DETAIL. ADDITIONALLY, THE HUMAN FACTORS ASPECTS ASSOCIATED WITH THE EVENT ARE BEING REVIEWED. THIS LER IS SUBMITTED PURSUANT TO 10CFR50.73(A)(2)(IV).

FORM 72 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 261 1989 006 0 8905100285 213808 03/30/89

ABSTRACT

POWER LEVEL - 100%. ON MARCH 30, 1989, AT 0320 HOURS, THE UNIT EXPERIENCED A REACTOR TRIP FROM 100% POWER. THE REACTOR TRIP SIGNAL WAS INITIATED BY A TURBINE TRIP, WHICH RESULTED FROM THE LOSS OF BOTH THE MAIN AND BACKUP +15 VOLT TURBINE ELECTRO-HYDRAULIC (E-H) CONTROL POWER SUPPLIES. LOSS OF BOTH THE MAIN AND BACKUP POWER SUPPLIES INITIATES AN AUTOMATIC TURBINE TRIP, WHICH IN TURN WILL INITIATE A REACTOR TRIP WHEN THE UNIT IS ABOVE 10% POWER. AT 0400 HOURS, THE LICENSEE MADE NOTIFICATION TO THE NRC OF THE REACTOR TRIP PURSUANT TO 10CFR50.79(b)(2)(II) VIA THE EMERGENCY NOTIFICATION SYSTEM. SUBSEQUENT INVESTIGATION AND TROUBLESHOOTING IDENTIFIED BLOWN FUSES IN BOTH THE MAIN AND BACKUP POWER SUPPLIES AND FIVE DEFECTIVE OR SUSPECT POWER SUPPLY REGULATING TRANSISTORS. THE POWER SUPPLY FUSES AND TRANSISTORS WERE REPLACED. ALSO, ADJUSTMENTS WERE MADE TO OVERVOLTAGE PROTECTIVE CIRCUITRY SETTINGS. SUBSEQUENT POST- MAINTENANCE TESTING SHOWED ALL EQUIPMENT TO BE OPERATING PROPERLY. THIS LICENSEE EVENT REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENT OF 10CFR50.73(A)(2)(IV).

FORM 73 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 261 1990 002 0 9002220126 216884 01/17/90

ABSTRACT

POWER LEVEL - 100%. ON JANUARY 17, 1990, AT 2026 HOURS, A REACTOR PROTECTION SYSTEM (RPS) ACTUATION OCCURRED WITH THE UNIT AT 100% POWER. THE REACTOR TRIP OCCURRED DURING PERFORMANCE OF A ROUTINE OPERATIONS SURVEILLANCE TEST ON THE POWER RANGE NUCLEAR INSTRUMENTATION CHANNELS. THE OPERATOR PERFORMING THIS TEST HAD INADVERTENTLY PLACED THE BISTABLES FOR TWO INDEPENDENT CHANNELS OF THE OVERTEMPERATURE DIFFERENTIAL TEMPERATURE (OT DELTA T) REACTOR TRIP FEATURE INTO THE TRIPPED POSITION, COMPLETING THE REQUIRED LOGIC TO

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DURING THE COURSE OF THE TEST PROCEDURE, THE OPERATOR HAS BEEN COUNSELED REGARDING PROCEDURE ADHERENCE AND ATTENTION TO DETAIL. IN ADDITION, THE MANAGER - OPERATIONS HAS COMMUNICATED TO OPERATIONS PERSONNEL THE IMPORTANCE OF PROMPTLY IDENTIFYING AND CORRECTING SITUATIONS WHICH MIGHT LATER RESULT IN A PERSONNEL ERROR OR INJURY. ALSO, A REVIEW WILL BE PERFORMED TO ESTABLISH AND DOCUMENT THE ASPECTS OF HUMAN FACTORS, PROCEDURE FORMAT, AND WORK PRACTICES WHICH MAY HAVE CONTRIBUTED TO THE OCCURRENCE OF THIS EVENT. THE NRC WAS NOTIFIED OF THIS EVENT PURSUANT TO 10CFR50.72(B)(2)(II) AT 2105 HOURS VIA THE EMERGENCY NOTIFICATION SYSTEM. THIS LICENSEE EVENT REPORT IS SUBMITTED PURSUANT TO 10CFR50.73(A)(2)(IV).

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FORM 74 LER SCSS DATA 04-18-91
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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
261 1990 007 0 9006250332 218697 05/17/90

ABSTRACT

POWER LEVEL - 100%. ON MAY 17, 1990, AT 0606 HOURS, AN AUTOMATIC REACTOR TRIP WAS RECEIVED FROM A STEAM FLOW-FEEDWATER FLOW MISMATCH COINCIDENT WITH A LOW LEVEL IN STEAM GENERATOR (SG) "B". THE CAUSE OF THE EVENT WAS AN EQUIPMENT FAILURE IN THAT THE SG "B" FEEDWATER REGULATING VALVE (FRV) MALFUNCTIONED IN A MANNER WHICH IMPEDED FLOW TO SG "B". DISASSEMBLY AND INSPECTION REVEALED THAT A SPRING PIN HAD SHEARED WHICH ALLOWED THE VALVE PLUG TO UNTHREAD FROM THE VALVE STEM. A POSSIBLE CONTRIBUTING FACTOR WAS A PROCEDURAL DEFICIENCY IN THAT THE VENDOR RECOMMENDED STEM-TO-PLUG TORQUE REQUIREMENT WAS NOT PROVIDED WITHIN THE FRV CORRECTIVE MAINTENANCE PROCEDURE. THE STEM AND PLUG WERE TORQUED TO THE REQUIRED VALUE AND A NEW STEM AND LONGER SPRING PIN WERE INSTALLED. THE FRVS FOR SGS "A" AND "C" WERE ALSO DISASSEMBLED AND INSPECTED, WITH PRECAUTIONARY REPLACEMENT OF BOTH SPRING PINS, AND REPLACEMENT OF THE VALVE STEM FOR THE SG "C" FRV. A PROCEDURE REVISION HAS BEEN MADE TO INCORPORATE THE RECOMMENDED TORQUE VALUE. THIS EVENT WAS REPORTED VIA THE EMERGENCY NOTIFICATION SYSTEM AT 0717 HOURS PURSUANT TO 10CFR50.72 (B)(2)(II). THIS LICENSEE EVENT REPORT IS SUBMITTED PURSUANT TO 10CFR50.73 (A)(2)(IV).

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FORM 75 LER SCSS DATA 04-18-91
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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
263 1989 009 0 8907260021 214810 06/19/89

ABSTRACT

POWER LEVEL - 059%. DURING THE SHUTDOWN OF A REACTOR FEED PUMP (RFP), THE DISCHARGE CHECK VALVE, FW 67-2, FAILED TO SEAT. THIS PROVIDED A RECIRCULATION PATH FOR THE OPERATING RFP AND CAUSED REACTOR WATER LEVEL TO DECREASE TO THE SCRAM SET POINT. REACTOR WATER LEVEL WAS RESTORED WITH THE OPERATING RFP AND NORMAL PROCEDURES WERE USED TO RECOVER FROM THE SCRAM. EXCESSIVE COMPONENT WEAR WHICH WOULD ALLOW THE TOP OF THE VALVE DISC TO WEDGE UNDER THE LIP OF THE SEATING SURFACE IS PRESUMED TO BE THE FAILURE MODE. IF EXCESSIVE CLEARANCES HAD BEEN RECOGNIZED DURING A 1987 INSPECTION OF FW 67-2, REPAIRS COULD HAVE PREVENTED THIS EVENT. THE ROOT CAUSE OF THIS EVENT WAS INADEQUATE ACCEPTANCE CRITERIA FOR VALVE INSPECTION. CHECK VALVE PARTS WERE REPLACED OR REBUILT. OTHER SIMILAR VALVES WERE TESTED. THE RFP SHUT DOWN PROCEDURE WAS CHANGED TO INCLUDE CLOSING THE RFP DISCHARGE VALVE TO HELP ASSURE NO BACK FLOW THROUGH THE PUMP. FUTURE ACTIONS INCLUDE DEVELOPING ACCEPTANCE CRITERIA FOR CHECK VALVE INSPECTIONS, MINIMIZING OPERATION AT CRITICAL SYSTEM FLOW RATES, AND INVESTIGATING A CHECK VALVE MODIFICATION.

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
263 1989 038 0 8912200016 216180 11/15/89

ABSTRACT

POWER LEVEL - 100%. A REACTOR SCRAM OCCURRED FROM 100% POWER. CHANNEL "A" OF THE REACTOR PRESSURE SYSTEM WAS TRIPPED FOR ROUTINE SURVEILLANCE. A SPURIOUS, MOMENTARY HIGH REACTOR PRESSURE SIGNAL TRIPPED CHANNEL "B" OF THE REACTOR PROTECTION SYSTEM. ALL TESTING VERIFIED THE CALIBRATION AND OPERABILITY OF THE PRESSURE SWITCH. COMPUTER EVENT LOGS INDICATED A MOMENTARY TRIP SIGNAL WITH CHARACTERISTICS RESEMBLING A BUMP TO THE SWITCH. ALTHOUGH NO INDIVIDUAL COULD BE LOCATED WHO WAS AWARE OF HAVING BUMPED THE SWITCH, THIS REMAINS THE PROBABLE CAUSE OF THIS EVENT. THE SWITCH WAS REPLACED IN KIND. BENCH TESTING OF THE REMOVED SWITCH VERIFIED PROPER OPERATION. THIS EVENT WILL BE ADDED TO GENERAL EMPLOYEE TRAINING TO RAISE AWARENESS OF THE CONSEQUENCES OF BUMPING PLANT INSTRUMENTS. TECHNICAL SPECIFICATION CHANGES WILL BE PURSUED TO REDUCE THE TOTAL TIME HALF SCRAMS ARE REQUIRED DURING MAINTENANCE AND TESTING. THE CLARITY AND VISIBILITY OF POSTED WARNINGS TO PLANT PERSONNEL IN THE AREA OF THESE SWITCHES WILL BE IMPROVED.

FORM 77 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
263 1990 017 0 9012050132 220120 10/29/90

ABSTRACT

POWER LEVEL - 100%. A REACTOR SCRAM OCCURRED FROM 100% POWER DUE TO A SPURIOUS REACTOR HIGH PRESSURE SIGNAL WHICH ACTIVATED BOTH CHANNELS OF THE REACTOR PROTECTION SYSTEM HIGH PRESSURE SCRAM LOGIC. SUBSEQUENT INVESTIGATION REVEALED THAT WORKERS HAD BEEN MOVING SCAFFOLDING IN THE IMMEDIATE AREA OF THE A SAFEGUARDS SENSING LINE WHICH IS COMMON TO THE ACTIVATED SWITCHES. FOLLOW-UP TESTING DEMONSTRATED THAT A RELATIVELY SMALL EXTERNAL IMPACT ON THE SENSING LINE AT THE WORK LOCATION CREATES A HYDRAULIC SHOCK IN THE SENSING LINE SUFFICIENT TO TRIP THE PRESSURE SWITCHES. THE CAUSE OF THIS EVENT WAS FAILURE TO RECOGNIZE AND IDENTIFY THE SENSITIVITY OF THE SENSING LINE TO BUMPING. WORK IN THE AREA OF BOTH A AND B SENSING LINES WAS RESTRICTED BY PLACING SIGNS ON THE SENSING LINE AND INSTALLING PHYSICAL BARRIERS. SCAFFOLDING AND OTHER EQUIPMENT WAS REMOVED FROM THE SENSING LINE AREAS PRIOR TO STARTUP. PAINTING IN THE AREAS WAS POSTPONED UNTIL THE NEXT SCHEDULED REFUELING OUTAGE AND PAINTING AND SCAFFOLDING PROCEDURES WERE REVISED TO IDENTIFY SENSITIVE INSTRUMENT LINES.

FORM 78 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
265 1989 001 0 8905150206 213953 04/06/89

ABSTRACT

POWER LEVEL - 080%. ON APRIL 6, 1989, QUAD CITIES UNIT TWO WAS IN THE RUN MODE AT 80 PERCENT OF RATED CORE THERMAL POWER. AT 0332 HOURS, A REACTOR SCRAM OCCURRED DUE TO A TURBINE STGP VALVE CLOSURE. THIS OCCURRED WHILE THE OPERATING DEPARTMENT WAS PERFORMING WEEKLY TURBINE/GENERATOR TESTING. NRC NOTIFICATION WAS COMPLETED AT 0404 HOURS TO COMPLY WITH 10 CFR 50.72. AN INVESTIGATION REVEALED THAT THE CAUSE FOR THIS EVENT WAS COMPONENT FAILURE. THE PILOT SOLENOID VALVE

CONTINUED TO SHOW THE PILOT SOLENOID VALVE ENERGIZED. THUS, WHEN THE B MASTER TRIP SOLENOID WAS TESTED, A TURBINE TRIP OCCURRED. THE FAILED SOLENOID WAS REBUILT AND THE COIL AND LIMIT SWITCH WERE REPLACED. THE PILOT SOLENOIDS ARE TESTED WEEKLY. THIS REPORT IS PROVIDED TO SATISFY 10 CFR 50.73(A)(2)(IV).

FORM 79 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
265 1989 005 0 8911150265 215835 10/12/89

ABSTRACT

POWER LEVEL - 055%. ON 10/12/89, QUAD CITIES UNIT 2 WAS IN THE RUN MODE AT 55% OF RATED CORE THERMAL POWER. AT 0140 HOURS, A REACTOR (RCT) SCRAM (JC) OCCURRED DUE TO TURBINE (TRB) STOP VALVE (SHV) CLOSURE. THIS OCCURRED WHEN THE STATION'S ELECTRICAL MAINTENANCE DEPARTMENT WAS REMOVING A LIMIT SWITCH (ZIS) FROM THE NUMBER TWO MAIN STOP VALVE (SHV)(MSV). NRC NOTIFICATION WAS COMPLETED AT 0227 HOURS TO COMPLY WITH 10CFR50.72(B)(2)(II). AN INVESTIGATION REVEALED THAT THE CAUSE FOR THIS EVENT WAS PERSONNEL ERROR. THE WORK ANALYST, WHILE DEVELOPING THE ELECTRICAL WORK PACKAGES, OVERLOOKED THE REMOVAL OF TWO CONNECTIONS (CON) ON THE MSV LIMIT SWITCH. THIS CAUSED THE NUMBER 1, 3, AND 4 TURBINE MAIN STOP VALVES TO CLOSE AND SUBSEQUENTLY THE REACTOR SCRAM. THE MAINTENANCE WORKERS WERE IMMEDIATELY COUNSELED. FURTHER CORRECTIVE ACTIONS WILL INVOLVE TRAINING, A PROCEDURE REVISION, ISSUANCE OF AN OPERATING MEMO, AND A TRAINING LESSON PLAN REVISION. THIS REPORT IS PROVIDED TO SATISFY 10CFR50.73(A)(2)(IV).

FORM 80 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
265 1990 010 0 9011260172 220019 10/15/90

ABSTRACT

POWER LEVEL - 100%. ON 10/15/90, QUAD CITIES UNIT 2 WAS IN THE RUN MODE AT 100 PERCENT OF RATED CORE THERMAL POWER. AT 1210 HOURS, A REACTOR SCRAM OCCURRED DUE TO TURBINE STOP VALVE CLOSURE. THE TURBINE STOP VALVE CLOSURE WAS A RESULT OF A TURBINE TRIP CAUSED BY MOISTURE SEPARATOR HIGH LEVEL. ALL SAFETY FEATURE ACTUATIONS OCCURRED AS DESIGNED. EMERGENCY NOTIFICATION SYSTEM (ENS) NOTIFICATION WAS COMPLETED AT 1530 HOURS ON 10/15/90, TO COMPLY WITH THE REQUIREMENTS OF 10CFR50.72(B)(2)(II). AN INVESTIGATION REVEALED THE CAUSE OF THIS EVENT WAS DUE TO A PARTIALLY BLOCKED DRAIN LINE ON THE 2C MOISTURE SEPARATOR LEVEL SWITCH. BECAUSE WATER WAS NOT DRAINING PROPERLY FROM THE LEVEL SWITCH CHAMBER, THE LEVEL IN THE CHAMBER INCREASED TO THE HIGH LEVEL SETPOINT. THIS RESULTED IN A TURBINE TRIP.

FORM 81 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
265 1990 011 0 9012060175 221047 10/27/90

ABSTRACT

POWER LEVEL - 000%. ON 10/27/90 AT 1559 HOURS, UNIT TWO REACTOR SCRAMMED FROM INTERMEDIATE RANGE MONITORS (IRM) 13 AND 16 HIGH-HIGH SIGNALS. THE STATION WAS IN THE PROCESS OF RETURNING TO NORMAL OPERATION FOLLOWING THE DISCONTINUATION OF A TURBINE TORSIONAL TEST. WHILE REDUCING REACTOR PRESSURE TO RETURN THE TURBINE

REACTOR PRESSURE DECREASED BELOW 800 PSIG, THE NSO BEGAN WITHDRAWING CONTROL RODS TO INCREASE REACTOR PRESSURE. THE ROD WITHDRAWALS RESULTED IN A SHORT PERIOD AND THE IRM SCRAM. THE PRIMARY CAUSE OF THE EVENT WAS PERSONNEL ERROR. CONTRIBUTING CAUSES WERE INEFFECTIVE COMMUNICATIONS AND MANAGEMENT OVERSIGHT, INSUFFICIENT TRAINING, AND THE ON-SITE REVIEW PROCESS. CORRECTIVE ACTIONS COMPLETED INCLUDED: AN IN-DEPTH DISCUSSION OF THE EVENT, ADDITIONAL MANAGEMENT OVERSIGHT, REMEDIAL TRAINING, AND AN INDEPENDENT IN-DEPTH INVESTIGATION OF THE EVENT. FURTHER CORRECTIVE ACTIONS WILL INCLUDE: TRAINING ON THIS EVENT DURING LICENSE REQUALIFICATION, PROCEDURE ENHANCEMENT, PERSONNEL COUNSELING, ASSESSMENT OF REACTIVITY MANAGEMENT TRAINING, COMMUNICATIONS ENHANCEMENT, PROCEDURALIZED TURN-OVER CHECKLISTS, AND A COMMITTEE TO ADDRESS PROCEDURE ADHERENCE. THIS REPORT IS BEING SUBMITTED IN ACCORDANCE WITH 10CFR 50.73(A)(2)(IV).

FORM 82 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 269 1989 001 0 8902070173 212926 01/02/89

ABSTRACT

POWER LEVEL - 100%. ON JANUARY 2, 1989, AT 1523 HOURS, UNIT 1 EXPERIENCED A REACTOR TRIP FROM 100% FULL POWER. INVESTIGATION REVEALED THAT THE CAUSE OF THE TRIP WAS PERSONNEL ERROR DUE TO THE TRIPPING OF TWO REACTOR PROTECTIVE SYSTEM (RPS) CHANNELS DURING THE PERFORMANCE OF A RPS CALIBRATION PROCEDURE. A CONTRIBUTING CAUSE TO THE EVENT WAS PROCEDURAL INCOMPLETENESS. AT THE TIME OF THE TRIP, SEVERAL INTEGRATED CONTROL SYSTEM (ICS) STATIONS, INCLUDING THE FEEDWATER MASTERS, WERE IN MANUAL CONTROL. THIS CONDITION CONTRIBUTED TO AN OVERFEED SITUATION IN THE STEAM GENERATORS CAUSING A TRIP OF THE MAIN FEEDWATER PUMPS. HOWEVER, NO OVERCOOLING CONDITION WAS EXPERIENCED FROM THIS OVERFEED DUE TO THE HIGH DECAY HEAT LOAD. THE IMMEDIATE CORRECTIVE ACTION WAS TO STABILIZE THE UNIT AT HOT SHUTDOWN CONDITIONS. OTHER SIGNIFICANT CORRECTIVE ACTIONS INCLUDED: THE REPLACEMENT OF FAILED COMPONENTS IN THE ICS BTU LIMIT AND EMERGENCY FEEDWATER CIRCUITRY, THE COUNSELING OF CONTROL ROOM OPERATORS INVOLVED IN THE INCIDENT AND THE COUNSELING AND ADMINISTERING OF DISCIPLINARY ACTIONS TO I&E TECHNICIANS INVOLVED IN THE INCIDENT.

FORM 83 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 269 1989 002 0 8902140434 212987 01/03/89

ABSTRACT

POWER LEVEL - 026%. ON 1/3/89 WITH UNIT 1 AT 26% POWER DURING POWER ESCALATION AFTER A PREVIOUS TRIP A FIRE OCCURRED IN 1TA SWITCHGEAR. THE SWITCHGEAR FIRE RESULTED IN THE TRIPPING OF 2 REACTOR COOLANT PUMPS (RCP) FED FROM THE 1TA SWITCHGEAR. AN UNUSUAL EVENT WAS DECLARED. THE REACTOR WAS MANUALLY TRIPPED AND THE 2 REMAINING RCPs WERE SECURED IN PREPARATION FOR USING WATER TO EXTINGUISH THE SWITCHGEAR FIRE. COOLDOWN RATES SPECIFIED BY TECH SPECS WERE VIOLATED AS A RESULT OF OVERFEEDING THE SGS WHILE MITIGATING A RCS PRESSURE INCREASE. AFTER THE FIRE WAS DISTINGUISHED THE RCS WAS NOT OPERATED WITHIN THE THERMAL SHOCK OPERATING REGION(TSOR). THE ROOT CAUSE OF THE SWITCHGEAR FIRE WAS EQUIPMENT FAILURE OF UNKNOWN CAUSE. THE ROOT CAUSE OF THE VESSEL OVERCOOLING WAS PERSONNEL ERROR. THE ROOT CAUSE OF THE RCS NOT BEING OPERATED IN THE TSOR REGION FOR THE REQUIRED TIME PERIOD IS MANAGEMENT DEFICIENCY. THE ROOT CAUSE OF THE TS VIOLATION FOR EXCEEDING THE TEMPERATURE DIFFERENTIAL BETWEEN THE PRESSURIZED

OPERATIONS ON ENTERING THE ISUR REGION AND WHEN IT WAS NECESSARY TO DO SO. IN ADDITION, AN ANALYSIS OF THE PRESSURIZER SPRAY NOZZLES STEAM GENERATOR AND THE REACTOR VESSEL WAS PERFORMED.

1
FORM 84 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
269 1989 013 0 8909150357 215241 08/10/89

ABSTRACT

POWER LEVEL - 040%. ON 8/10/89, AT 1541 HOURS, UNIT 1 TRIPPED DUE TO AN INADVERTENTLY INDUCED REACTOR PROTECTIVE SYSTEM (RPS) ACTUATION. AT THE TIME OF THE TRIP, UNIT 1 WAS AT 40% FULL POWER DUE TO A PREVIOUS POWER REDUCTION TO ADD OIL TO THE 1A2 REACTOR COOLANT PUMP MOTOR. DURING THIS REDUCED POWER OPERATION WITH THREE PUMPS, THE STEADY STATE QUADRANT POWER TILT LIMIT WAS EXCEEDED IN ONE CORE QUADRANT. AS REQUIRED BY TECH SPECS, ACTIONS WERE INITIATED TO BOTH REDUCE THE QUADRANT POWER TILT WITHIN LIMITS AND TO REDUCE THE OVERPOWER TRIP SETPOINTS BASED ON FLUX AND FLUX/FLOW/IMBALANCE. WHILE PERFORMING THE PROCEDURE TO LOWER THE OVERPOWER TRIP SETPOINTS, AN INSTRUMENTATION AND ELECTRICAL TECHNICIAN INCORRECTLY POSITIONED A FLOW TEST CIRCUIT SELECTOR SWITCH. SINCE ANOTHER RPS CHANNEL WAS TRIPPED PER PROCEDURE, A REACTOR TRIP WAS INITIATED WHEN THE CHANNEL WAS RETURNED TO SERVICE WITH THE INCORRECTLY POSITIONED SWITCH. THE ROOT CAUSE OF THIS EVENT IS CLASSIFIED AS INAPPROPRIATE ACTION, FAILURE TO FOLLOW PROCEDURE. THE IMMEDIATE CORRECTIVE ACTION WAS TO STABILIZE THE UNIT AT HOT SHUTDOWN CONDITIONS.

1
FORM 85 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
269 1990 006 0 9005300009 218385 04/26/90

ABSTRACT

POWER LEVEL - 000%. ON 4/26/90, UNIT 1 WAS SUBCRITICAL AND PREPARING FOR A REFUELING OUTAGE WITH ALL CONTROL RODS IN EXCEPT GROUP 1 WAS 50% WITHDRAWN. AT 1932 HOURS, WHEN A SECOND REACTOR COOLANT PUMP (RCP) WAS SECURED AN UNANTICIPATED REACTOR PROTECTIVE SYSTEM (RPS) TRIP OCCURRED. THIS WAS THE FIRST SHUTDOWN FOLLOWING IMPLEMENTATION OF A TECH SPEC REVISION WHICH REQUIRES A REACTOR TRIP IF ONLY TWO RCPs ARE RUNNING WITH A REACTOR POWER LEVEL ABOVE 0.0% FULL POWER. DEFICIENT COMMUNICATIONS AND INCORRECT ASSUMPTIONS BETWEEN THE RESPONSIBLE GROUPS ALLOWED KEY TECHNICAL ASPECTS THAT AFFECT PLANT OPERATION TO GO THROUGH THE REVIEW PROCESS UNDETECTED. THE ROOT CAUSE OF THIS EVENT WAS MANAGEMENT DEFICIENCY. IMMEDIATE REVIEW OF REVISED TS. CORRECTIVE ACTION WILL PROPOSE CHANGE TO THE TS TO MOVE THE RPS SETPOINT.

1
FORM 86 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
269 1990 007 0 9010050174 219653 08/23/90

ABSTRACT

POWER LEVEL - 100%. ON 8/23/90, AT 14:27:26 HOURS, WHILE OPERATING AT 100% POWER, THE REACTOR TRIPPED DUE TO HIGH REACTOR COOLANT SYSTEM (RCS) PRESSURE. THE UNIT WAS OPERATING AT A STEADY STATE PRIOR TO THE TRIP. ALL FOUR REACTOR PROTECTIVE SYSTEM (RPS) CHANNELS

THE UNIT WAS BROUGHT SAFELY TO HOT SHUTDOWN. THE "B" CBP TRIP WAS CAUSED BY A "NOT OPEN" SIGNAL FROM THE PUMP'S DISCHARGE VALVE 1C-84. PREVENTIVE MAINTENANCE HAD BEEN COMPLETED ON THE VALVE LESS THAN FIVE MINUTES PRIOR TO RECEIVING THE "NOT OPEN" SIGNAL. THE REASON FOR THE "NOT OPEN" SIGNAL COULD NOT BE DETERMINED, THEREFORE, THE ROOT CAUSE OF THIS EVENT IS CLASSIFIED AS "UNKNOWN". ADDITIONALLY, AT THE TIME OF THE "B" CBP TRIP, THE "A" CBP WAS IN STANDBY AND ALIGNED FOR AUTOMATIC START. THE "A" CBP FAILED TO START DUE TO FAULTY BEARING OIL PRESSURE INSTRUMENTATION. THEREFORE, A CONTRIBUTING CAUSE OF THIS TRIP IS "EQUIPMENT FAILURE/MALFUNCTION" DUE TO THE MALFUNCTION OF THE BEARING OIL PRESSURE INSTRUMENTATION WHICH PREVENTED THE STANDBY CBP FROM STARTING.

FORM 87 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 270 1989 002 0 8903170287 213293 02/03/89

ABSTRACT

POWER LEVEL - 100%. ON FEBRUARY 3, 1989 AT 1545 HOURS WHILE OPERATING AT 100% REACTOR POWER, THE UNIT 2 MAIN TURBINE (MT) TRIPPED RESULTING IN AN ANTICIPATORY REACTOR TRIP. THE MT TRIP WAS INITIATED BY A LOSS OF 125 VDC POWER TO THE ELECTRO HYDRAULIC CONTROL (EHC) SYSTEM. THE LOSS OF DC POWER OCCURRED DUE TO THE INCORRECT WIRING OF A CIRCUIT DURING IMPLEMENTATION OF A NUCLEAR STATION MODIFICATION (NSM). THIS COMBINED WITH A PRE-EXISTING GROUND ON A CONDUCTOR SUPPLYING POWER FROM THE EHC TO THE "242" MOISTURE SEPARATOR REHEATER HIGH WATER LEVEL SWITCH, CAUSED A LOSS OF 125 VDC POWER TO THE EHC. THE IMMEDIATE CORRECTIVE ACTION WAS TO STABILIZE THE UNIT AT HOT SHUTDOWN. SUPPLEMENTAL CORRECTIVE ACTIONS INCLUDED DETERMINING THE CAUSE OF THE TRIP, CORRECTING THE WIRING PROBLEM AND REPAIRING THE DEGRADED CONDUCTOR. THE ROOT CAUSES OF THIS TRIP WERE: A MANAGEMENT DEFICIENCY OF NOT PROPERLY IMPLEMENTING THE INDEPENDENT VERIFICATION PROGRAM AND OF ASSIGNING AN UNQUALIFIED PERSON TO PERFORM A TASK; AND AN EQUIPMENT FAILURE.

FORM 88 L R SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 270 1989 003 0 8903170289 213294 02/05/89

ABSTRACT

POWER LEVEL - 100%. ON FEBRUARY 5, 1989, AT 0023 HOURS WHILE OPERATING AT 100% FULL POWER, THE UNIT 2 MAIN TURBINE (MT) TRIPPED RESULTING IN AN ANTICIPATORY REACTOR TRIP. THE MT TRIPPED IMMEDIATELY FOLLOWING THE PERFORMANCE OF STEP 2.2 OF PROCEDURE PT/2/8/290/05 (SECONDARY SYSTEMS PROTECTION TEST), WHICH PLACED THE MASTER TRIP SOLENOID TEST LEVER IN THE TRIP "A" POSITION. A WORK REQUEST WAS WRITTEN TO INVESTIGATE THE MASTER TRIP SOLENOID TEST SWITCH. HOWEVER, INVESTIGATION INTO THE INCIDENT DID NOT IDENTIFY THE CAUSE OF THE MT TRIP. THE IMMEDIATE CORRECTIVE ACTION WAS TO STABILIZE THE UNIT AT HOT SHUTDOWN. THE SUPPLEMENTAL CORRECTIVE ACTIONS INCLUDED TROUBLESHOOTING THE ELECTRO HYDRAULIC CONTROL SYSTEM AND REPLACING THE MASTER TRIP SOLENOID TEST SWITCH AS A PRECAUTIONARY MEASURE. THE ROOT CAUSE OF THE UNIT TRIP COULD NOT BE DETERMINED BECAUSE THE SCENARIO WAS NOT REPEATABLE. THEREFORE, THIS INCIDENT IS CLASSIFIED AS UNKNOWN.

FORM 89 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 100%. ON APRIL 3, 1989, AT 1007 HOURS, OCONEE UNIT 2 TRIPPED FROM 100% FULL POWER. PLANT RESPONSE TO THE TRIP WAS NORMAL, WITH NO RADIOLOGICAL RELEASES OR ENGINEERED SAFEGUARDS ACTUATIONS. THE TRIP RESULTED FROM A FALLING OBJECT STRIKING THE CONDENSATE BOOSTER PUMP (CBP) EMERGENCY LOW SUCTION PRESSURE PRESSURE SWITCH. THE IMPACT SHIFTED THE INSTRUMENT SETPOINT RESULTING IN A TRIP OF CBPS FOLLOWED BY MAIN FEEDWATER PUMP TRIP AND ANTICIPATORY REACTOR TRIP. EMERGENCY FEEDWATER ACTUATED AND MAINTAINED DECAY HEAT REMOVAL. THE ROOT CAUSE IS MANAGEMENT DEFICIENCY, POOR HOUSEKEEPING.

FORM 90 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 271 1990 004 0 9004260223 217782 03/21/90

ABSTRACT

POWER LEVEL - 025%. ON 03/21/90 AT 2248 WITH REACTOR AT APPROXIMATELY 25% POWER, WHILE BRINGING THE TURBINE (EIIS=TA) UP TO SPEED IN PREPARATION FOR PLACING GENERATOR IN SERVICE, A SCRAM OCCURRED DUE TO EXCEEDING THE REACTOR HIGH PRESSURE SET POINT. THE SCRAM WAS FOLLOWED BY PRIMARY CONTAINMENT ISOLATION SYSTEM (PCIS, EIIS=JE) GROUP I ISOLATION AT 2250. THE SCRAM AND THE ISOLATION WERE THE RESULT OF A FAILURE OF THE PRESSURE CONTROL SYSTEM (EIIS=JI) TO CONTROL REACTOR PRESSURE. BASED ON RESULTS OF FOLLOWUP TESTING, THE ROOT CAUSE APPEARS TO BE A LACK OF RESPONSE OF THE #1 TURBINE CONTROL VALVE AT LOW HYDRAULIC OIL PRESSURE. THE ROOT CAUSE OF THE GROUP I ISOLATION WAS THE FAILURE OF THE #1 BYPASS VALVE TO GO COMPLETELY CLOSED. THE IMMEDIATE CORRECTIVE ACTIONS WERE TO INCREASE THE DIFFERENTIAL PRESSURE ACROSS THE CONTROL VALVE ACTUATOR AND LUBRICATE THE LINKAGE FOR ALL THE BYPASS VALVES. UPON INITIATING THESE IMMEDIATE CORRECTIVE ACTIONS THE TURBINE-GENERATOR WAS SUCCESSFULLY BROUGHT BACK ON LINE.

FORM 91 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 271 1990 009 0 9007030031 218701 06/01/90

ABSTRACT

POWER LEVEL - 100%. ON 06/01/90, AT 1353 HOURS, WITH THE REACTOR AT 100% POWER, A CONTRACT ELECTRICIAN WORKING ON A NORMAL/EMERGENCY LIGHTING PANEL ALLOWED A GROUND WIRE TO COME IN CONTACT WITH A LIVE BUS. THE RESULTING SHORT CIRCUIT CAUSED THE VITAL AC MOTOR GENERATOR SET (EIIS=EF) TO LOSE THE FIELD EXCITATION AND SUBSEQUENTLY A LOSS OF GENERATOR OUTPUT. ON THE LOSS OF GENERATOR OUTPUT, THE VITAL AC BUS TRANSFERRED TO ITS ALTERNATE SOURCE. THIS CAUSED A PRESSURE TRANSIENT IN THE REACTOR COOLANT SYSTEM DUE TO THE TRANSFER FROM THE ELECTRIC PRESSURE REGULATOR TO THE MECHANICAL PRESSURE REGULATOR, RESULTING IN A REACTOR SCRAM. ON 06/03/90, AT 0103 HOURS, THE REACTOR MODE SWITCH WAS RETURNED TO THE RUN POSITION AND THE IN GENERATOR PHASED TO THE GRID. THE ROOT CAUSE OF THIS EVENT WAS PERSONNEL ERROR DUE TO A LACK OF MENTAL ATTENTION. CORRECTIVE ACTIONS WILL INCLUDE ELECTRICAL CONTRACTOR RETRAINING AND INCREASED EMPHASIS SAFETY AND ATTENTION TO DETAIL. AN EVALUATION WILL BE PERFORMED ON THE VITAL AC MG SET TO DETERMINE IF COLLAPSE OF THE GENERATOR FIELD AS A RESULT OF THE FAULT WAS THE APPROPRIATE EQUIPMENT RESPONSE. A PLANT OPERATIONAL REVIEW SUB-COMMITTEE WILL EVALUATE THE NEED FOR A FORMAL GUIDE TO THE GOVERNING

FORM 92 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 271 1990 015 0 9012100223 220887 11/04/90

ABSTRACT

POWER LEVEL - 094%. ON 11/4/90 AT 0120 HOURS, WITH REACTOR POWER AT 94%, WHILE PERFORMING WEEKLY TESTING OF THE TURBINE EMERGENCY GOVERNOR (JCA), A REACTOR SCRAM OCCURRED AS A RESULT OF A TURBINE CONTROL VALVE FAST CLOSURE SIGNAL. THE TURBINE CONTROL VALVE FAST CLOSURE SIGNAL WAS GENERATED BY THE ACCELERATION RELAY AFTER OPERATORS REMOVED A TRIP LOCKOUT FROM THE EMERGENCY TRIP VALVE. THIS OPERATOR ACTION WAS TAKEN BASED ON EMERGENCY TRIP VALVE POSITION INFORMATION LATER IDENTIFIED AS ERRONEOUS DUE TO A MISSING SET SCREW ON A COLLAR IN THE TURBINE FRONT STANDARD LINKAGE. SINCE THE COLLAR WAS NOT ATTACHED TO THE LINKAGE, A SPRING WAS NOT ABLE TO ACT UPON THE LINKAGE AND THE EMERGENCY TRIP VALVE LIMIT SWITCH DID NOT CHANGE STATE AS THE VALVE MOVED. THE PLANT WAS STABILIZED WITHOUT INCIDENT FOLLOWING THE TRANSIENT AND THE TURBINE (TA*) WAS PLACED ON THE TURNING GEAR AT 0241 HOURS. THE TURBINE VENDOR (GE) ASSISTED PLANT PERSONNEL IN REPAIRING AND TESTING THE MALFUNCTIONING LINKAGE PRIOR TO RESTORING THE TURBINE CONTROL SYSTEM (TG*) TO SERVICE. THE REACTOR WAS RETURNED TO CRITICAL ON 11/4/90 AT 2222 HOURS. A PROCEDURE IS BEING REVISED TO PROVIDE ADDITIONAL OPERATOR ACTIONS TO BE TAKEN IF LIGHT INDICATIONS ARE ABNORMAL. TURBINE OUTAGE MAINTENANCE IS BEING EXPANDED TO INCLUDE AN INSPECTION OF SIMILAR LOCKING COLLARS AND POSITION INDICATING.

FORM 93 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 272 1989 007 0 8903140533 213242 02/06/89

ABSTRACT

POWER LEVEL - 100%. ON 2/6/89 AT 1055 HOURS, DURING ROUTINE POWER OPERATION, THE UNIT EXPERIENCED A REACTOR TRIP ON NO. 14 STEAM GENERATOR (S/G) LOW LEVEL CONCURRENT WITH STEAM FLOW/FEED FLOW MISMATCH. AT THE TIME OF THE EVENT, NO. 14 S/G STEAM PRESSURE CHANNEL I FUNCTIONAL SURVEILLANCE WAS IN PROGRESS. THE ROOT CAUSE OF THIS EVENT HAS BEEN ATTRIBUTED TO PERSONNEL ERROR. POST TRIP DATA INDICATES THAT THE NUCLEAR CONTROL OPERATOR (NCO) DID NOT SELECT THE CORRECT CHANNEL DURING PERFORMANCE OF I&C PROCEDURE 1PD-2.6.060, "CHANNEL FUNCTIONAL TEST - 1PT-544 #14 STEAM GENERATOR STEAM PRESSURE PROTECTION CHANNEL I". PRESSURE COMPENSATION FOR DETERMINING STEAM FLOW IS ELIMINATED WHEN THE CHANNEL TEST SWITCH IS PLACED IN THE TEST POSITION AS PER PROCEDURE. THIS CAUSES STEAM FLOW INDICATION TO DROP RADICALLY CAUSING A SIGNAL TO INITIATE CLOSURE OF THE 14BF19 FEEDWATER CONTROL VALVE THEREBY DECREASING FEED FLOW. WITH THE WRONG CHANNEL APPARENTLY CHOSEN AS THE CONTROLLING CHANNEL, THE 14BF19 VALVE RECAN CLOSING. ONCE S/G LEVEL DROPPED TO 25% THE REACTOR TRIP OCCURRED. SINCE THE SIGNAL FOR STEAM FLOW/FEED FLOW MISMATCH WAS PROCEDURALLY PREVIOUSLY ACTUATED. THIS EVENT HAS BEEN REVIEWED BY OPERATIONS MANAGEMENT. APPROPRIATE CORRECTIVE DISCIPLINARY ACTION HAS BEEN TAKEN. THIS EVENT WILL BE REVIEWED BY THE NUCLEAR TRAINING CENTER FOR INCORPORATION INTO APPLICABLE TRAINING PROGRAMS.

FORM 94 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 000%. ON 2/18/89, A REACTOR TRIP OCCURRED. AT THE TIME OF THE EVENT, REACTOR POWER AT 10(-3) AMPS (CRITICAL). THE TRIP SIGNAL WAS THE RESULT OF A TURBINE TRIP WITH POWER ABOVE PERMISSIVE P-7 (10% POWER). WORK IN PROGRESS INCLUDED FUNCTIONAL TESTING OF THE TURBINE IMPULSE CHAMBER PRESSURE TRANSMITTER. THE ROOT CAUSE OF THIS EVENT HAS BEEN ATTRIBUTED TO PERSONNEL ERROR. AN I&C TECHNICIAN PERFORMING THE TRANSMITTER FUNCTIONAL TEST DID NOT COMPLY WITH THE PROCEDURE REQUIREMENTS. CONTRARY TO THE REQUIREMENTS OF THE PROCEDURE, THE TECHNICIAN DID NOT NOTIFY SUPERVISION WHEN THE STATUS PANEL INDICATIONS WERE NOT CORRECT AND CONTINUED PERFORMING THE PROCEDURE. THE TECHNICIAN WAS NOT AWARE THAT THE CONTINUANCE OF THE PROCEDURE WOULD RESULT IN A TRIP. WHEN THE BI-STABLES ARE TRIPPED, AS A RESULT OF FUNCTIONAL TESTING, A SIGNAL INDICATING REACTOR POWER ABOVE P-7 IS GENERATED. IF THE TURBINE IS NOT LATCHED, AS WAS THE CASE IN THIS EVENT, A REACTOR TRIP WILL OCCUR. MAINTENANCE DEPT. MANAGEMENT HAS COMPLETED A REVIEW OF THIS EVENT AND HAS COMPLETED APPROPRIATE CORRECTIVE DISCIPLINARY ACTION WITH THE INDIVIDUAL(S) INVOLVED. THIS EVENT WILL BE REVIEWED WITH MAINTENANCE DEPT. PERSONNEL STRESSING THE NEED FOR PROCEDURAL COMPLIANCE. I&C PROCEDURES ASSOCIATED WITH THE TURBINE IMPULSE PRESSURE TRANSMITTER CHANNELS HAVE BEEN MODIFIED.

FORM 95 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 272 1989 027 0 8907210308 214844 06/19/89

ABSTRACT

POWER LEVEL - 045%. ON 6/19/89 AT 2100 HOURS, A REACTOR TRIP ON NO. 13 STEAM GENERATOR (S/G) "LOW-LOW LEVEL" OCCURRED. THE NO. 13 MAIN STEAMLINE ISOLATION VALVE, 13MS167, HAD CLOSED. PRIOR TO THE EVENT, REACTOR POWER WAS BEING INCREASED 3% PER HOUR. AT THE TIME OF THE EVENT, A POST MAINTENANCE SURVEILLANCE FOR THE 12MS18 MAIN STEAMLINE BYPASS STOP VALVE WAS IN PROGRESS. THE ROOT CAUSE OF THIS EVENT HAS BEEN ATTRIBUTED TO INADEQUATE DESIGN OF THE CONTINUITY CHECK CIRCUITRY FOR THE MS167 VALVES. SURVEILLANCE TESTING OF VALVE 12MS18 WAS IN PROGRESS PRIOR TO THE EVENT. WHEN THE SOLID STATE PROTECTION SYSTEM (SSPS) TRAIN "A" OUTPUT INTERFACE CABINET SWITCH WAS TURNED TO "OPERATE OUTPUT", THE 13MS167 VALVE CLOSED FOLLOWED BY THE TRIP. THE "OPERATE OUTPUT" FUNCTION CAUSES CLOSURE OF THE MS18 VALVE WHILE CHECKING CONTINUITY OF THE MS167 VALVE CLOSURE CIRCUIT. THIS DESIGN CAN CAUSE INADVERTENT CLOSURE OF THE MS167 VALVES AS OCCURRED DURING THIS EVENT AND A SIMILAR UNIT 2 EVENT ON 4/11/89 (REF. LER 311/89-008-00). A DESIGN CHANGE HAS BEEN IMPLEMENTED WHICH CORRECTS THE CIRCUIT DESIGN CONCERN BY ADDING A CONTACT WHICH PREVENTS THE 74-3A RELAY FROM RESETTING DURING THE TESTING OF THE MS18 VALVES. THIS CONTACT DOES NOT PREVENT THE MS167 VALVES FROM FUNCTIONING IN THE EVENT OF A VALID MAIN STEAM ISOLATION SIGNAL.

FORM 96 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 272 1990 010 0 9005070358 218116 04/03/90

ABSTRACT

POWER LEVEL - 000%. ON 4/3/90 AT 1558 HOURS, DURING REACTOR STARTUP OPERATIONS, A REACTOR TRIP SIGNAL WAS INITIATED DUE TO LOW-LOW LEVEL IN NO. 12 STEAM GENERATOR (S/G). AT THE TIME OF THE TRIP SIGNAL, THE

PERSONNEL ERROR. THE NUCLEAR CONTROL OPERATOR (NCO) DID NOT ENSURE OPTIMUM INITIAL CONDITIONS PRIOR TO SWAPPING FROM NO. 11 S/G TO NO. 12 S/G FOR MAINTAINING RCS TEMPERATURE. SUBSEQUENTLY, NO. 12 S/G LEVEL CONTINUED TO DECREASE, AFTER THE TRANSFER, DUE TO INADEQUATE AFW FLOW WITH THE TRIP SETPOINT EVENTUALLY BEING REACHED. CONTRIBUTING TO THIS EVENT WAS INADEQUATE COMMAND AND CONTROL BY THE NUCLEAR SHIFT SUPERVISOR (NSS) DURING THE TRANSIENT. THIS EVENT WAS REVIEWED WITH SUBSEQUENT OPERATING SHIFTS PRIOR TO THEIR ASSUMING THE WATCH. LESSONS LEARNED FROM THIS EVENT WAS STRESSED. THIS EVENT HAS BEEN REVIEWED BY OPERATIONS DEPARTMENT MANAGEMENT AND PERSONNEL INVOLVED HAVE BEEN HELD ACCOUNTABLE. THIS EVENT WILL BE REVIEWED BY THE PSE&G NUCLEAR TRAINING CENTER FOR INCORPORATION INTO APPLICABLE TRAINING PROGRAMS.

FORM 97 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
272 1990 012 0 9005110218 218159 04/09/90

ABSTRACT

POWER LEVEL - 090%. ON 4/9/90 AT 1433 HOURS, DURING NORMAL POWER OPERATIONS, A REACTOR TRIP ON NO. 12 STEAM GENERATOR (S/G) LOW-LOW LEVEL OCCURRED. PRIOR TO THE TRIP, AT 1430 HOURS, AFTER NOTING THAT NO. 12 STEAM GENERATOR FEEDWATER PUMP (SGFP) WAS IDLING, A TURBINE RUNBACK WAS INITIATED AT 200%/MIN THEN WAS REDUCED TO 15%/MIN ONCE STEAM FLOW AND FEED FLOW WERE MATCHED. UPON REACHING 60% POWER, THE RUNBACK STOPPED. HOWEVER, NO. 12 S/G LEVEL CONTINUED TO DECREASE. A SECOND RUNBACK TO 50% POWER (AT 8%/MIN) WAS INITIATED, HOWEVER, PRIOR TO ITS COMPLETION, THE LOW-LOW LEVEL TRIP SETPOINT (16%) WAS REACHED. THE UNIT WAS STABILIZED IN MODE 3. THE ROOT CAUSE OF THIS EVENT IS EQUIPMENT FAILURE. FLOW FROM THE NO. 12 SGFP HAD CEASED UPON FAILURE OF THE GOVERNOR VALVE CONTROL LINKAGE. THE PILOT ROD THAT DIVERTS OIL FLOW TO POSITION THE SERVO MOTOR PISTON HAD DROPPED OFF. THE LOSS OF THE PILOT ROD PREVENTED THE WOODWARD GOVERNOR FROM CONTROLLING THE TURBINE. THE NO. 12 SGFP GOVERNOR VALVE LINKAGE WAS REPAIRED AND NO. 11 SGFP GOVERNOR VALVE LINKAGE INSPECTED WITH NO RELATED PROBLEMS NOTED. ADDITIONAL CORRECTIVE ACTION INCLUDE: 1) MAINTENANCE PROCEDURE M24A WILL BE REVISED; 2) A PROCEDURE, TO DEFINE PREVENTIVE MAINTENANCE REQUIREMENTS WILL BE PREPARED; 3) RECURRING TASKS WILL BE ESTABLISHED AS APPLICABLE; AND 4) A REVIEW OF SIMILAR PUMP GOVERNOR LINKAGE ARRANGEMENTS WITH NO ADDITIONAL PROBLEMS IDENTIFIED.

FORM 98 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
272 1990 029 0 9009200129 219500 08/17/90

ABSTRACT

POWER LEVEL - 025%. ON 8/17/90, DURING POWER ASCENSION, THE REACTOR TRIPPED DUE TO NO. 14 STEAM GENERATOR (S/G) LOW-LOW LEVEL. THE TRIP OCCURRED DURING THE TRANSFER OF THE FOUR GROUP BUSES FROM THE STATION POWER TRANSFORMER (SPT) TO THE AUX. POWER TRANSFORMER (APT). AFTER SUCCESSFULLY TRANSFERRING THE 1H AND 1E GROUP BUSES, 1G GROUP BUS WAS BEING TRANSFERRED. THE OPERATOR INITIATED CLOSURE OF THE 1BGGD CIRCUIT BREAKER (APT SIDE). THE 12GSD BREAKER OPENED; HOWEVER, THE 1BGGD BREAKER FAILED TO CLOSE RESULTING IN DEENERGIZATION OF THE 1G GROUP BUS. CONSEQUENTLY THE NO. 14 REACTOR COOLANT PUMP (RCP) CIRCUIT BREAKER OPENED ON UNDERVOLTAGE. THE REACTOR SUBSEQUENTLY TRIPPED ON NO. 14 S/G LOW-LOW S/G LEVEL. THE ROOT CAUSE OF THIS EVENT IS ATTRIBUTED TO EQUIPMENT FAILURE. THE 1BGGD CIRCUIT BREAKER FAILED TO

POSITIVE INTERLOCK ASSEMBLY WAS FOUND TO BE OUT OF ADJUSTMENT/WORN PREVENTING THE REQUIRED CLOSING OF THE BREAKER'S POSITIVE INTERLOCK SWITCH AFTER THE BREAKER WAS RACKED INTO ITS NORMAL OPERATING POSITION. THE 1BGGD CIRCUIT BREAKER ENCLOSURE POSITIVE INTERLOCK ASSEMBLY DEFICIENCIES WERE CORRECTED.

FORM 99 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
272 1990 030 0 9010230119 219705 09/10/90

ABSTRACT

POWER LEVEL - 079%. ON 9/10/90 AT 1201 HOURS A REACTOR TRIP ON NO. 13 STEAM GENERATOR (S/G) LOW-LOW LEVEL OCCURRED. PRIOR TO THE EVENT, THE PIPE BETWEEN THE NO. 11TD900 VALVE AND THE MAIN STEAM LINE SHEARED PROVIDING A STEAM FLOW PATH TO ATMOSPHERE. TO REDUCE THE STEAM FLOW, THE NO. 11MS29 VALVE (MS GOVERNOR VALVE) WAS CLOSED. AT 80% POWER, THE 14MS29 VALVE IS CLOSED ("PARTIAL ARC CONTROL SCHEME"). BOTH THE NOS. 11B14MS29 VALVES DIRECT STEAM TO THE UPPER HALF OF THE TURBINE. THEREFORE, WITH BOTH VALVES CLOSED, A SIGNIFICANT DP ACROSS THE HP TURBINE DEVELOPED. CONTRIBUTING TO THIS DP WAS OPENING THE 11TD4 VALVE WHICH RESULTED IN BLEEDING STEAM AWAY FROM THE UPPER HALF OF THE HP TURBINE. THE TURBINE SHAFT DEFLECTED CREATING AN ELIPTICAL OSCILLATION RESULTING IN DESTRUCTION OF THE AUX. SPEED SENSOR WHICH GENERATED AN OVERSPEED SIGNAL CAUSING CLOSURE OF THE MS29 VALVES. CLOSURE OF THE MS29 VALVES LED TO THE TRIP ON NO. 13 S/G LOW-LOW LEVEL. THE ROOT CAUSE OF THIS EVENT IS ATTRIBUTED TO PERSONNEL ERROR. OPS. DEP'T. MANAGEMENT DID NOT LAYOUT AN APPROVED PLAN OF ACTION IN ADDRESSING THE PIPE BREAK ASSOCIATED WITH THE 11TD900 VALVE. CONTRIBUTING FACTORS WERE PROCEDURAL INADEQUACY AND INADEQUATE TRAINING. THIS EVENT HAS BEEN REVIEWED BY SENIOR MANAGEMENT. THOSE INDIVIDUALS INVOLVED IN THIS EVENT HAVE BEEN REVISED TO CLEARLY IDENTIFY THE CONCERNS WITH TURBINE VALVE TESTING BELOW 85% POWER.

FORM 100 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
275 1989 009 1 9103010089 221043 10/06/89

ABSTRACT

POWER LEVEL - 100%. ON 10/6/89, AT 1302 PDT, WITH UNIT 1 IN MODE 1 (POWER OPERATION) AT 100% POWER, AN AUTOMATIC SAFETY INJECTION/REACTOR TRIP WAS ACTUATED FROM A STEAM LINE DIFFERENTIAL PRESSURE SIGNAL. AT 1321 PDT, A 1-HOUR EMERGENCY REPORT WAS MADE IN ACCORDANCE WITH 10 CFR 50.72(A)(1)(I). DURING THE REMOVAL FROM SERVICE PROCESS FOR CALIBRATION OF A PRESSURE TRANSMITTER FOR AN ATMOSPHERIC STEAM DUMP VALVE (ADV) CONTROL, PRESSURE OSCILLATIONS WERE CREATED IN THE COMMON SENSING LINE WITH A PROTECTION SET STEAM GENERATOR PRESSURE TRANSMITTER. THIS CAUSED REPEATED ACTUATIONS OF A STEAM LINE DIFFERENTIAL PRESSURE BISTABLE. BISTABLE ACTUATION, COMBINED WITH A PREVIOUSLY TRIPPED STEAM PRESSURE BISTABLE, SATISFIED THE 2/3 COINCIDENCE LOGIC TO GENERATE A STEAM LINE DIFFERENTIAL PRESSURE SI SIGNAL. THE I&C REMOVAL FROM SERVICE/CALIBRATION PROCEDURE WAS INADEQUATE IN THAT IT DID NOT VERIFY THE CONDITION OF OTHER CHANNEL BISTABLES TO ENSURE THAT COINCIDENT LOGIC COULD NOT BE SATISFIED. I&C PROCEDURES WERE REVISED TO ASSURE THAT WORK ON EQUIPMENT SHARING & COMMON PROCESS TAP IS NOT PERFORMED IF ANY OF THE SHARED INSTRUMENTATION IS IN A CONFIGURATION THAT PRODUCES A PROTECTION ACTUATION OR CONTROL FUNCTION. ACTIONS FOR ASSOCIATED EVENTS INCLUDED DEVELOPING A POLICY FOR GUIDANCE ON TRIPPED BISTABLES AND DEVELOPING

FORM 101 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
275 1990 002 0 9003270377 217470 02/20/90

ABSTRACT

POWER LEVEL ~ 100%. ON 2/20/90, AT 0530 PST, WITH UNIT 1 OPERATING AT 100% POWER, PLANT OPERATORS INITIATED A MANUAL REACTOR TRIP AFTER BOTH MAIN FEEDWATER PUMPS (MFPS) HAD TRIPPED. PLANT OPERATORS INITIATED ACTIONS PER PLANT PROCEDURES AND STABILIZED THE UNIT IN MODE 3 (HOT STANDBY) AT 0600 PST. A DETAILED INVESTIGATION WAS PERFORMED USING INFORMATION FROM ALL EVENT RECORDERS AND INTERVIEWS WITH PERSONNEL INVOLVED. THIS INVESTIGATION CONCLUDED THAT THE IMMEDIATE CAUSE OF THE EVENT WAS ALL MAIN FEEDWATER CONTROL VALVES TRIPPING SHUT WHICH CAUSED BOTH MFPS TO TRIP ON HIGH DISCHARGE PRESSURE. THE INVESTIGATION CONCLUDED THAT THE MOST PROBABLE CAUSE OF THE VALVES TRIPPING CLOSED WAS EITHER A NON-REPEATABLE SOLID STATE PROTECTION SYSTEM (SSPS) CARD FAILURE OR AN INADVERTENT ACTUATION CAUSED BY INSTRUMENTATION AND CONTROLS (I&C) TECHNICIANS WORKING IN THE SSPS RACKS. IMMEDIATE CORRECTIVE ACTIONS INCLUDED EXTENSIVE TESTING AND INSPECTION OF THE SSPS TO DETERMINE THE ROOT CAUSE, REPLACEMENT OF THE TWO SUSPECT SSPS CARDS AND A CAUTIONARY TAILBOARD OF I&C TECHNICIANS REGARDING THE POTENTIAL HAZARDS ASSOCIATED WITH SSPS TESTING.

FORM 102 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
275 1990 005 0 9007200173 218897 06/14/90

ABSTRACT

POWER LEVEL ~ 100%. ON 6/14/90, AT 1555 PDT, WITH UNIT 1 IN MODE 1 (POWER OPERATION), UNIT 1 EXPERIENCED A REACTOR TRIP ON POWER RANGE HIGH POSITIVE RATE DURING A LOAD REJECTION FROM 100 PERCENT POWER. THE LOAD REJECTION OCCURRED DUE TO AN OFFSITE 500 KV TRANSMISSION SYSTEM TRANSIENT. UNIT 1 REACTOR TRIPPED DUE TO INCREASING REACTOR COOLANT PUMP (RCP) SPEED AND REACTOR COOLANT FLOW WHICH RESULTED IN LOWER COOLANT TEMPERATURES IN THE UPPER REGIONS OF THE CORE. THE INCREASE IN RCP SPEED WAS CAUSED BY AN INCREASED 12 KV BUS FREQUENCY THAT WAS CAUSED BY MAIN TURBINE SPEEDUP FROM LOAD LOSS. THE RCPS TRIPPED ON UNDERFREQUENCY AS THE GENERATOR FREQUENCY DECREASED AFTER THE TURBINE TRIP, PLACING THE REACTOR INTO NATURAL CIRCULATION. A FOUR-HOUR, NON-EMERGENCY REPORT WAS MADE IN ACCORDANCE WITH 10 CFR 50.72(B)(2)(II) ON 6/14/90, AT 1756 PDT. THE ROOT CAUSE OF THIS EVENT WAS A FALSE RELAY OPERATION AT MIDWAY SUBSTATION WHICH CAUSED THE OPENING OF THE UNIT 1 OUTPUT BREAKER CAUSING THE LOAD REJECTION AND THE SUBSEQUENT REACTOR TRIP. THE UNIT 1 SECOND OUTPUT BREAKER HAD BEEN CLEARED FOR 500 KV SWITCHYARD MAINTENANCE. THE MISOPERATING RELAY WAS FOUND AND ISOLATED. THE RELAY WILL BE INVESTIGATED AND RETURNED TO SERVICE, AND A MEMORANDUM HAS BEEN SENT TO POWER CONTROL ADVISING THEM OF CONDITIONS WHICH MAY PUT THE PLANT AT HIGH RISK OF TRIPPING IF CERTAIN SWITCHYARD WORK IS PERFORMED.

FORM 103 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
275 1990 014 0 9101100061 220622 12/05/90

AT 50% POWER, THE UNIT EXPERIENCED A REACTOR TRIP DUE TO A TURBINE TRIP WITH REACTOR POWER GREATER THAN 50%. A FOUR-HOUR, NON-EMERGENCY REPORT WAS MADE IN ACCORDANCE WITH 10 CFR 50.72(B)(1)(II) ON 12/6/90, AT 0020 PST. THE TURBINE TRIPPED AS A RESULT OF A RUNBACK INITIATED BY A FALSE INDICATION OF A LOW STATOR COOLING WATER FLOW CONDITION. THE INDICATED LOW STATOR COOLING WATER FLOW CONDITION RESULTED WHEN A FLOW SWITCH STUCK IN THE LOW FLOW POSITION AFTER STARTING THE STANDBY STATOR COOLING WATER PUMP. THE RUNBACK FAILED TO REDUCE THE GENERATOR LOAD TO BELOW THE SETPOINT OF THE UNIT RUNBACK CHECK RELAY, 51RU. THIS RESULTED IN A GENERATOR TRIP, FOLLOWED BY A TURBINE TRIP AND SUBSEQUENT REACTOR TRIP. DURING THE EVENT, CIRCULATING WATER PUMP 1-2 FAILED TO RESTART ON AUTO TRANSFER TO THE START-UP BUS. THE ROOT CAUSE OF THE EVENT WAS DETERMINED TO BE INADEQUATE EVALUATION OF THE RUNBACK LIMIT FOR THE DIGITAL ELECTRO-HYDRAULIC CONTROLLER (DEHC). THE RUNBACK LIMIT WAS NOT SUFFICIENTLY LOW TO ASSURE THAT THE TURBINE WOULD RUNBACK TO A POINT BELOW THE RESET POINT OF THE 51RU RELAY. CORRECTIVE ACTIONS FOR THE EVENT INCLUDE: (1) UPGRADING THE STATOR COOLING WATER FLOW SWITCHES; (2) INITIATING A WORK REQUEST TO MODIFY THE SETPOINT FOR THE TURBINE VALVE POSITION SOFTWARE; AND (3) ISSUING A MAINTENANCE BULLETIN.

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FORM 104 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 275 1990 017 0 9101290151 220915 12/24/90

ABSTRACT

POWER LEVEL - 088%. ON 12/24/90, AT 0318 PST, WITH UNIT 1 IN MODE 1 (POWER OPERATION) AT 88% POWER, A REACTOR TRIP AND SAFETY INJECTION OCCURRED DUE TO LOW PRESSURIZER PRESSURE. DURING THE RECOVERY FROM THE TRIP, REACTOR COOLANT SYSTEM (RCS) COOLDOWN EXCEEDED THE ALLOWABLE RATE OF 100F PER HOUR OF TECH SPEC 3.4.9. AN UNUSUAL EVENT WAS DECLARED AT 0320 PST. A ONE-HOUR EMERGENCY REPORT REQUIRED BY 10 CFR 50.72(A)(1)(I) WAS MADE ON 12/24/90, AT 0342 PST. ON 12/24/90, AN EVENT INVESTIGATION TEAM WAS FORMED TO INVESTIGATE THE EVENT. THE CAUSE OF THE TRIP WAS A PRESSURIZER SPRAY VALVE THAT FAILED OPEN DUE TO ITS FEEDBACK LINKAGE BECOMING DISCONNECTED. THE FEEDBACK LINKAGE BECAME DISCONNECTED BECAUSE A LOCKING DEVICE WAS NOT INSTALLED ON THE SCREW HOLDING THE LINKAGE TO THE VALVE STEM. THE FAILURE OF THE PILOT STEM OF A CONDENSER STEAM DUMP VALVE CONTRIBUTED TO THE OVERCOLDING OF THE RCS. THE ROOT CAUSE FOR THE PILOT VALVE FAILURE IS UNDER INVESTIGATION AND WILL BE REPORTED IN A SUPPLEMENTAL LER. CORRECTIVE ACTIONS FOR THE EVENT INCLUDE REVISING MAINTENANCE PROCEDURE I-2.25-1 TO ADDRESS THE USE OF APPROPRIATE LOCKING DEVICES ON FEEDBACK LINKAGES, REVISING ABNORMAL OPERATING PROCEDURE AP-13 FOR DEALING WITH FAILED OPEN PRESSURIZER SPRAY VALVES, REVISING EMERGENCY PROCEDURE E-0 ON CLOSING THE MAIN STEAM ISOLATION VALVES, REVISING DESIGN DRAWINGS, AND SENDING A LETTER TO THE VENDOR.

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FORM 105 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 277 1989 012 1 8908180320 215015 05/19/89

ABSTRACT

POWER LEVEL - 024%. AT 0721 ON 5/19/89 WITH UNIT 2 AT 24% THERMAL POWER THE FEEDWATER LEVEL CONTROL SYSTEM WAS TRANSFERRED FROM SINGLE ELEMENT TO THREE ELEMENT CONTROL. IMMEDIATELY, THE "REACTOR HI-LO LEVEL" ALARM ANNUNCIATED, FOLLOWED BY BOTH "B" AND "C" REACTOR FEED

LOW FLUX CODED AS REESTABLISHED, LEVEL DECREASED BELOW 0 INCHES RESULTING IN AN AUTOMATIC SCRAM AND GROUP II AND III ISOLATIONS. THE "C" RFP WAS RESTARTED AND LEVEL DECREASE STOPPED ABOVE 48 INCHES. AT THIS LEVEL, ALTERNATE ROD INSERTION BACKUP SCRAM INITIATED AND BOTH REACTOR RECIRCULATION PUMPS TRIPPED. THE HIGH PRESSURE COOLANT INJECTION AND REACTOR CORE ISOLATION COOLING SYSTEMS ALSO RECEIVE INITIATION SIGNALS AT THIS LEVEL, BUT DID NOT ACTUATE AS THE LOGIC WAS NOT SATISFIED. REACTOR WATER LEVEL WAS RESTORED TO < 0 INCHES AND THE UNIT STABILIZED IN THE HOT SHUTDOWN CONDITION. THE SCRAM AND GROUP II AND III ISOLATIONS WERE RESET AND ESSENTIAL SYSTEMS RETURNED TO SERVICE. THE ROOT CAUSE OF THIS EVENT WAS FAILURE OF THE FEEDWATER LEVEL CONTROL ELECTOR SWITCH. THE FAILED SWITCH WAS REPLACED, FEEDWATER CONTROL AMPLIFIERS WERE CALIBRATED AND PROCEDURES WERE ENHANCED. THIS EVENT WILL BE REVIEWED WITH THE APPROPRIATE PLANT PERSONNEL. THREE SIMILAR LERS WERE IDENTIFIED.

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FORM 106 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 277 1989 015 1 9001250197 216591 07/21/89

ABSTRACT

POWER LEVEL ~ 079%. AT 2231 ON 7/21/89 WITH UNIT 2 AT 79% THERMAL POWER, AN ATTEMPT WAS MADE TO REMOVE A MALFUNCTIONING REACTOR PRESSURE VESSEL (RPV) PRESSURE REGULATOR SET FROM THE ELECTRONIC PORTION OF THE MAIN TURBINE (MT) ELECTRO-HYDRAULIC CONTROL (EHC) PRESSURE REGULATING SYSTEM. IMMEDIATELY, THE MT BYPASS AND CONTROL VALVES OPENED, CAUSING MAIN STEAM LINE PRESSURE TO DECREASE TO APPROXIMATELY 480 PSIG. AT 850 PSIG MAIN STEAM LINE PRESSURE, A GROUP I ISOLATION OCCURRED CAUSING THE MAIN STEAM ISOLATION VALVES (MSIV) TO CLOSE. AS A RESULT, A FULL REACTOR SCRAM OCCURRED. RPV LEVEL DECREASE DUE TO SHRINK FOLLOWING MSIV CLOSURE RESULTED IN A GROUP II AND III ISOLATION AS LEVEL DECREASED BELOW 0 INCHES. TWO MAIN STEAM RELIEF VALVES (MSRV) LIFTED ONCE AUTOMATICALLY, FOLLOWED BY MANUAL OPERATOR CYCLING OF MSRVs TO CONTROL RPV PRESSURE BETWEEN 930 PSIG AND 1060 PSIG. THE HIGH PRESSURE COOLANT INJECTION (HPCI) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM WERE PLACED IN OPERATION TO CONTROL RPV PRESSURE AND LEVEL. THE ROOT CAUSE OF THIS EVENT WAS A MALFUNCTION OF THE ELECTRONIC PORTION OF THE "A" RPV PRESSURE REGULATOR SET. NO ACTUAL SAFETY CONSEQUENCES OCCURRED AS A RESULT OF THIS EVENT. THE MAJORITY OF THE "A" REGULATOR ELECTRONIC COMPONENTS WERE REPLACED. THIS EVENT HAS BEEN REVIEWED WITH APPROPRIATE PLANT PERSONNEL. ONE PREVIOUS SIMILAR LER WAS IDENTIFIED.

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FORM 107 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 277 1989 023 0 8911150135 215843 10/05/89

ABSTRACT

POWER LEVEL ~ 100%. AT 1806 HOURS ON 10/5/89, WITH UNIT 2 AT 99.5% THERMAL POWER, ST 1.3A-2 "PCIS GROUP I LOGIC SYSTEM FUNCTIONAL TEST" WAS IN PROGRESS. AS PART OF THE TEST, THE OUTBOARD MAIN STEAM ISOLATION VALVE (MSIV) AC SOLENOID PILOT VALVES WERE DE-ENERGIZED, WHICH RESULTED IN THE UNEXPECTED CLOSURE OF THE "D" OUTBOARD MSIV. SUBSEQUENTLY, AN AUTOMATIC REACTOR SCRAM OCCURRED AT 1806 HOURS DUE TO AN APRM HIGH FLUX SIGNAL UPON THE RESULTANT RAPID INCREASE IN REACTOR PRESSURE. A REACTOR WATER CLEAN UP ISOLATION OCCURRED SHORTLY AFTER THE SCRAM. OTHER SAFETY SYSTEMS OPERATED AS DESIGNED. THE CAUSE OF THE "D" MSIV CLOSURE WAS THE BINDING OF ITS DC SOLENOID PILOT VALVE

WAS INCOMPLETE TECHNICAL GUIDANCE SUPPLIED BY THE SOLENOID MANUFACTURER FOR THE INSTALLATION OF THE PLUNGER SPRING IN THE SOLENOID VALVE. THE CORRECT TECHNICAL INFORMATION HAS BEEN RECEIVED FROM THE MANUFACTURER AND THE MAINTENANCE PROCEDURE USED TO INSTALL THESE SOLENOID VALVES ON THE MSIV'S WILL BE REVISED TO REFLECT THIS INFORMATION. THE "D" DC SOLENOID VALVE WAS REPLACED. ST 1.3A-2 WAS COMPLETED SATISFACTORILY PRIOR TO RETURNING UNIT 2 TO SERVICE. THE UNIT 3 SOLENOID VALVES WILL BE INSPECTED PRIOR TO UNIT 3 RESTART.

FORM 108 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
277 1989 033 0 9001310028 216582 12/20/89

ABSTRACT

POWER LEVEL - 100%. ON 12/20/89 AT 1752 HOURS WITH UNIT 2 OPERATING AT 100% POWER, A FULL SCRAM SIGNAL WAS RECEIVED WHEN A TECHNICIAN PERFORMING A SURVEILLANCE ON AVERAGE POWER RANGE MONITOR (APRM) "D" INADVERTENTLY OPERATED A SWITCH ON APRM "A" (APRM "D" ACTUATES A "B" CHANNEL HALF SCRAM SIGNAL WHILE APRM "A" ACTUATES AN "A" CHANNEL HALF SCRAM SIGNAL). THE REACTOR FEEDWATER PUMPS (RFP) TRIPPED FOLLOWING THE SCRAM. THE HIGH PRESSURE COOLANT INJECTION (HPCI) AND THE REACTOR CORE ISOLATION COOLING (RCIC) SYSTEMS ACTUATED AS DESIGNED TO MAINTAIN REACTOR WATER LEVEL, OTHER SAFETY SYSTEMS OPERATED AS DESIGNED. CONTROL ROD 38-39 SETTLED TO POSITION 02 SHORTLY FOLLOWING THE SCRAM AND WAS LATER RE-INSERTED. THE ROOT CAUSE OF THE EVENT HAS BEEN ATTRIBUTED TO PROCEDURAL DEFICIENCIES AND INATTENTION TO DETAIL BY THE TECHNICIAN PERFORMING THE SURVEILLANCE. THE TECHNICIAN INVOLVED IN THIS EVENT WAS COUNSELED AND DISCIPLINED. APRM SURVEILLANCE PROCEDURES WHICH TEST APRM CHANNELS ADJACENT TO OTHER APRM CHANNELS HAVE BEEN REVISED TO PROVIDE PHYSICAL BARRIERS BETWEEN APRM CHANNELS DURING TESTING AND TO INSTRUCT OPERATORS TO BYPASS ADJACENT APRM CHANNELS WHEN PERMISSIBLE. CURRENT PANEL LABELING WILL BE EVALUATED AND IMPROVED AS APPROPRIATE. THERE WAS ONE PREVIOUS SIMILAR EVENT.

FORM 109 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
278 1990 002 1 9005070060 218080 01/28/90

ABSTRACT

POWER LEVEL - 100%. ON JANUARY 28, 1990 THE UNIT 3 REACTOR WAS MANUALLY SCRAMMED DUE TO A LEAK OF ELECTROHYDRAULIC CONTROL SYSTEM (EHC) FLUID AT THE NUMBER ONE MAIN TURBINE CONTROL VALVE. REACTOR COOLANT LEVEL FLUCTUATIONS FOLLOWING THE SCRAM RESULTED IN THREE GROUP II AND III PRIMARY CONTAINMENT ISOLATION SYSTEM (PCIS) ACTUATIONS. THE CAUSE OF THE EHC FLUID LEAK WAS FAILURE OF AN O-RING ON THE FLUID INLET PORT TO THE SERVO VALVE WHICH CONTROLS THE NUMBER ONE MAIN TURBINE CONTROL VALVE. THE REACTOR LEVEL FLUCTUATIONS WERE AGGRAVATED BY THE NEED FOR RAPID DEPRESSURIZATION VIA THE MAIN TURBINE BYPASS VALVES, INABILITY TO RESTART THE "C" REACTOR FEEDWATER PUMP (RFP) AND THE SUBSEQUENT BATCH FEEDING OF REACTOR COOLANT VIA THE HIGH PRESSURE COOLANT INJECTION (HPCI) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEMS. INABILITY TO RESET THE "C" RFP WAS DUE TO A RFP TURBINE HYDRAULIC CONTROL PROBLEM. THE CAUSE OF THIS PROBLEM WAS THE LOCK NUT ON THE RFP INTERLOCK DUMP VALVE SETTING ADJUSTMENT BOLT BECOMING UNSECURED DUE TO SYSTEM VIBRATION. NO ACTUAL SAFETY CONSEQUENCES OCCURRED AS A RESULT OF THIS EVENT. THE EHC FLUID LEAK WAS STOPPED AND THE LEAKING SERVO VALVE WAS REPLACED. INVESTIGATION INTO THE

FORM 110 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 278 1990 003 0 9004170130 217585 03/06/90

ABSTRACT

POWER LEVEL - 100%. ON MARCH 6, 1990 AT 0250 HOURS WITH UNIT 3 OPERATING AT 100% POWER A REACTOR SCRAM OCCURRED DUE TO A MAIN TURBINE TRIP. THE 'A' STATOR COOLING PUMP TRIPPED. THE TURBINE TRIPPED WHEN THE MAIN GENERATOR LOSS OF STATOR COOLING RUNBACK TRIP TIMER TIMED OUT PREMATURELY. THE STATOR COOLING PUMP TRIPPED DUE TO A SHARP CORNER OF THE PUMP MOTOR POWER LEAD LUG WEARING THROUGH ITS TAPE INSULATION AND ARCING FROM THE PUMP MOTOR POWER LEAD TO GROUND. THE TRIP TIMER HAD AN IMPROPER SETTING DUE TO A DEFICIENT TEST PROCEDURE. DURING REACTOR COOLDOWN ON MARCH 7, THE BOTTOM HEAD DRAIN AND RECIRCULATION LOOP TEMPERATURES WERE NOT LOGGED AS REQUIRED BY TECHNICAL SPECIFICATIONS BECAUSE THE BOTTOM HEAD DRAIN AND RECIRCULATION LOOP TEMPERATURE INDICATIONS WERE NOT CONSIDERED TO BE REPRESENTATIVE OF ACTUAL REACTOR COOLANT TEMPERATURES. BASED ON THESE TEMPERATURE INDICATIONS ONLY, IT APPEARS THAT THE REACTOR VESSEL PRESSURE VS. TEMPERATURE LIMITS OF TECHNICAL SPECIFICATIONS WERE EXCEEDED. NO ACTUAL SAFETY CONSEQUENCES OCCURRED AS A RESULT OF THIS EVENT. THE STATOR COOLING PUMPS HAVE BEEN REPAIRED. THE LOSS OF STATOR COOLANT TRIP TIMER HAS BEEN PROPERLY SET. PROCEDURE RT 5.40 WILL BE REVISED. AN INVESTIGATION OF THE BOTTOM HEAD DRAIN TEMPERATURE INDICATION WILL BE PERFORMED AND THE RESULTS REPORTED IN A REVISION TO THIS LER.

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FORM 111 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 278 1990 008 0 9009040256 219413 07/27/90

ABSTRACT

POWER LEVEL - 080%. ON 7/27/90 AT 0350 HOURS, WITH UNIT 3 OPERATING AT 100% POWER, AN OFFGAS RECOMBINER ISOLATION OCCURRED CAUSING THE MAIN CONDENSER VACUUM TO BEGIN DECREASING. A FAST REACTOR POWER REDUCTION WAS INITIATED IN ACCORDANCE WITH THE PROCEDURE FOR A LOSS OF MAIN CONDENSER VACUUM. AT 0403 HOURS, WITH UNIT 3 AT APPROXIMATELY 80% POWER, A MANUAL SCRAM WAS INITIATED BY PLACING THE MODE SWITCH IN SHUTDOWN FOLLOWING THE RECEIPT OF AN 'A' CHANNEL REACTOR AUTO HALF SCRAM SIGNAL. A GROUP II AND III ISOLATION OCCURRED AS A RESULT OF THE MANUAL SCRAM. OTHER SAFETY SYSTEMS PERFORMED AS DESIGNED. AN OFFSITE RADIOACTIVE GASEOUS RELEASE AMOUNTING TO 23.5% OF TECHNICAL SPECIFICATION LIMITS OCCURRED DURING POST SCRAM RECOVERY. THERE WERE NO ADVERSE HEALTH THREATS TO ONSITE PERSONNEL OR THE GENERAL PUBLIC. THE CAUSE OF THE FAILURE APPEARS TO BE A COMPONENT/SYSTEM FAILURE IN THE OFFGAS RECOMBINER CONDENSATE COOLING WATER PRESSURE CONTROL SYSTEM. THE DESIGN OF THE SYSTEM WILL BE EVALUATED TO DETERMINE THE EXACT CAUSE OF THE FAILURE AND THE APPROPRIATE MEASURES REQUIRED TO CORRECT THE PROBLEM. THERE WAS ONE PREVIOUS SIMILAR EVENT.

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FORM 112 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 280 1989 026 0 8908140325 214982 07/09/89

POWER LEVEL - 60%. ON 7/7/89 WITH UNIT 1 AT 63% POWER, INSTRUMENT TECHNICIANS WERE CALIBRATING POWER RANGE NUCLEAR INSTRUMENTATION (NI) WHEN A FAILURE OF THE NI OCCURRED. THIS RESULTED IN A SPURIOUS NI DROPPED ROD SIGNAL AND AUTOMATIC INITIATION OF A 30% POWER TURBINE RUNBACK. FOLLOWING THE TURBINE RUNBACK OPERATORS HAD DIFFICULTY STABILIZING STEAM GENERATOR LEVELS DUE TO INAPPROPRIATE OPERATOR RESPONSE AND EQUIPMENT MALFUNCTION. A TURBINE TRIP/REACTOR TRIP OCCURRED DUE TO A HIGH-HIGH LEVEL CONDITION IN THE "B" STEAM GENERATOR TWO MINUTES AND 45 SECONDS AFTER INITIATION OF THE TURBINE RUNBACK. THE FAILURE OF THE POWER RANGE NI WAS DUE TO A BLOWN CONTROL POWER FUSE CAUSED BY THE USE OF A VOLTMETER WITH AN UNGROUNDED POWER SUPPLY. THE PERSONNEL INVOLVED WERE DISCIPLINED. THIS EVENT AND SIMILAR EVENTS RELATED TO IMPROPER USE OF METERS WILL BE DISCUSSED DURING THE INSTRUMENT TECHNICIANS CONTINUING TRAINING CLASSES. INSTRUMENT TECHNICIANS HAVE BEEN ISSUED INSTRUCTIONS TO USE GROUNDED METERS FOR TESTING UNLESS SPECIFICALLY DIRECTED OTHERWISE.

FORM 113 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 280 1989 044 0 9001300204 216587 12/21/89

ABSTRACT

POWER LEVEL - 100%. ON DECEMBER 21, 1989 AT 2156 HOURS WITH UNIT 1 AT 100% POWER, A MANUAL REACTOR TRIP WAS INITIATED BY THE UNIT 1 LICENSED CONTROL ROOM OPERATOR (CRO). LOSS OF POWER TO A SEMI-VITAL BUS CAUSED NUMEROUS CONTROL ROOM ALARMS TO ANNUNCIATE AND DE-ENERGIZED THE CONTROL ROD POSITION INDICATION SYSTEM WHICH RESULTED IN ERRONEOUS INDICATIONS OF CONTROL RODS INSERTING INTO THE REACTOR. THESE INDICATIONS PROMPTED THE OPERATOR TO IMMEDIATELY INITIATE A MANUAL REACTOR TRIP/TURBINE TRIP PER APPROVED PROCEDURES. OPERATORS PERFORMED THE APPROPRIATE PLANT PROCEDURES AND QUICKLY STABILIZED THE PLANT FOLLOWING THE TRIP. THE LOSS OF POWER TO THE SEMI-VITAL BUS WAS CAUSED BY A FAULT ON THE "A" RESERVE STATION SERVICE TRANSFORMER THAT ISOLATED THE TRANSFORMER FROM THE STATION'S POWER DISTRIBUTION SYSTEM. THE TRANSFORMER SUPPLIED THE SEMI-VITAL BUS THROUGH THE 1J 4160V EMERGENCY BUS. THE FAULT WAS CAUSED BY MATERIAL BLOWN FROM THE TURBINE BUILDING ROOF STRIKING THE PRIMARY LEADS TO THE TRANSFORMER. THE #3 EMERGENCY DIESEL GENERATOR AUTOMATICALLY RESTORED POWER TO THE EMERGENCY BUS SECONDS AFTER THE BUS WAS DE-ENERGIZED. A FOUR HOUR NON-EMERGENCY REPORT WAS MADE TO THE NUCLEAR REGULATORY COMMISSION PER 10CFR 50.72.

FORM 114 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 280 1990 004 0 9100000000 220903 05/22/90

ABSTRACT

POWER LEVEL - 100%. ON 5/22/90 AT 1150 HOURS WITH UNITS 1 AND 2 AT 100% POWER, A FAULT OCCURRED ON THE UNIT 1 "A" MAIN TRANSFORMER AS A RESULT OF AN INADVERTENT ACTUATION OF THE TRANSFORMER'S DELUGE SYSTEM. THE FAULT INITIATED A UNIT 1 GENERATOR DIFFERENTIAL LOCKOUT WHICH IMMEDIATELY INITIATED A TURBINE TRIP/REACTOR TRIP. THE FAULT ALSO RESULTED IN THE LOCKOUT OF THE "A" RESERVE STATION SERVICE TRANSFORMER (RSST). APPROX. 10 SECONDS LATER, THE UNIT 2 CONTROL ROOM OPERATOR INITIATED A MANUAL REACTOR TRIP AFTER OBSERVING ERRATIC CONTROL ROD INDIVIDUAL ROD POSITION INDICATIONS (IRPI). OPERATORS PERFORMED THE APPROPRIATE PLANT PROCEDURES AND QUICKLY STABILIZED THE UNITS FOLLOWING THE TRIPS. THE ERRATIC UNIT 2 TRIP INDICATIONS WERE DUE TO

EMERGENCY DIESEL GENERATOR
AUTOMATICALLY RESTORED POWER TO THE UNIT 1 "J" EMERGENCY BUS WHICH WAS
DE-ENERGIZED BY THE "A" RSST LOCKOUT. A FOUR HOUR NON-EMERGENCY
REPORT WAS MADE TO THE NRC IN ACCORDANCE WITH 10CFR50.72.

FORM 115 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
280 1990 006 0 9008010066 219029 07/01/90

ABSTRACT

POWER LEVEL - 100%. ON 7/1/90 AT 1802 HOURS, WITH UNIT 1 AT 100%
POWER, THE "A" RESERVE STATION SERVICE TRANSFORMER TRIPPED DUE TO
ACTUATION OF ITS SUDDEN PRESSURE RELAY. THE TRANSFORMER TRIP
DEENERGIZED THE 1J 4160V EMERGENCY BUS AND THE #3 EMERGENCY DIESEL
GENERATOR STARTED AND LOADED ONTO THE 1J BUS AS DESIGNED IN
APPROXIMATELY NINE SECONDS. AN INDIVIDUAL ROD POSITION INDICATION
(IRPI) CONTROL ROD STOP AND TURBINE RUNBACK SIGNAL WAS RECEIVED, AND
THE UNIT LOAD WAS AUTOMATICALLY REDUCED TO APPROXIMATELY 95% POWER.
AFTER THE TURBINE RUNBACK, WITH PLANT CONDITIONS STABLE AT 95% POWER,
OPERATORS OBSERVED INSTRUMENT AIR (IA) PRESSURE DECREASING RAPIDLY.
BEFORE INSTRUMENT AIR COULD BE RESTORED, THE REACTOR OPERATOR (RO)
RECEIVED INDICATION OF THE "C" MAIN STEAM TRIP VALVE (MSTV) BEGINNING
TO CLOSE AND MANUALLY TRIPPED THE REACTOR AT 1807 HOURS. INSTRUMENT
AIR WAS RESTORED APPROXIMATELY TWO MINUTES FOLLOWING THE MANUAL TRIP
BY BYPASSING AND ISOLATING A FAILED IA DRYER. THE UNIT WAS BROUGHT TO
STABLE HOT SHUTDOWN CONDITIONS USING THE "A" AND "C" STEAM GENERATOR
ATMOSPHERIC POWER OPERATED RELIEF VALVES (PORVS). A FOUR HOUR
NON-EMERGENCY REPORT WAS MADE TO THE NRC IN ACCORDANCE WITH
10CFR50.72.

FORM 116 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
281 1989 007 0 8910170261 215546 09/16/89

ABSTRACT

POWER LEVEL - 000%. ON SEPTEMBER 16, 1989 AT 1228 HOURS WITH UNIT 2
SUBCRITICAL, DURING A REACTOR STARTUP, A MANUAL REACTOR TRIP WAS
INITIATED WHEN IT WAS DETERMINED THAT IMPROPER BANK OVERLAP EXISTED
BETWEEN THE "A" AND "B" CONTROL ROD BANKS. THE REACTOR TRIP WAS
INITIATED TO INSERT ALL CONTROL RODS AND TO RESET THE CONTROL ROD STEP
COUNTERS TO ZERO. A FOUR HOUR NON-EMERGENCY REPORT WAS MADE TO THE
NUCLEAR REGULATORY COMMISSION PER 10CFR50.72. TROUBLESHOOTING DID NOT
REVEAL THE CAUSE OF THE IMPROPER BANK OVERLAP. DURING THE SUBSEQUENT
REACTOR STARTUP, NO PROBLEMS WERE ENCOUNTERED WITH CONTROL ROD BANK
OVERLAP.

FORM 117 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
281 1989 009 0 8910180019 215547 09/18/89

ABSTRACT

POWER LEVEL - 014%. ON SEPTEMBER 18, 1989, AT 1042 HOURS, WITH UNIT
REACTOR AT 14% POWER AND THE TURBINE AT 1800 RPM UNDER NO LOAD
CONDITIONS, A REACTOR TRIP SIGNAL WAS GENERATED. A GENERATOR
DIFFERENTIAL LOCKOUT RELAY 86 BU TRIPPED THE TURBINE, AND SI

THE UNIT WAS STABILIZED THE PLANT FOLLOWING THE TRIP. THE 86 RU GENERATOR BACKUP LOCKOUT RELAY TRIP WAS CAUSED BY THE SPURIOUS ACTUATION OF THE GENERATOR BACKUP IMPEDANCE RELAY (KD-41). THE EXACT CAUSE OF THE SPURIOUS ACTUATION OF THE RELAY COULD NOT BE DETERMINED, HOWEVER FAULTS WERE DISCOVERED IN THE RELAY. THE FAULTED KD-41 RELAY WAS REPLACED AND APPROPRIATE TESTING WAS PERFORMED. THE GENERATOR STARTUP PROCEDURE HAS BEEN REVISED TO ENSURE THAT REACTOR POWER IS LESS THAN 10% PRIOR TO CLOSING THE EXCITER FIELD BREAKER. A FOUR HOUR NON-EMERGENCY REPORT WAS MADE TO THE NUCLEAR REGULATORY COMMISSION IN ACCORDANCE WITH 10CFR50.72.

FORM 118 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
281 1989 010 0 8910170199 215548 09/19/89

ABSTRACT

POWER LEVEL - 025%. ON 9/19/89 WITH UNIT 2 REACTOR POWER AT 25%, SHORTLY AFTER PLACING UNIT 2 ON LINE, AN AUTOMATIC REACTOR TRIP WAS GENERATED AT 0051 HOURS AS A RESULT OF A LO LO STEAM GENERATOR LEVEL. A FOUR HOUR NON-EMERGENCY REPORT WAS MADE TO THE NRC AT 0120 HOURS PER 10CFR50.72. A RAPID TURBINE LOAD INCREASE OCCURRED DURING STARTUP WHICH LED TO OSCILLATIONS IN THE STEAM GENERATOR (S/G) WATER LEVELS, EVENTUALLY LEADING TO THE LO LO S/G WATER LEVEL TRIP. THE CAUSE OF THE RAPID TURBINE LOAD INCREASE WAS THE OPERATOR RAISING THE GOVERNOR VALVE POSITION LIMITER MORE RAPIDLY THAN DESIRED. THE OPERATORS PERFORMED THE APPROPRIATE EMERGENCY PROCEDURES, AND QUICKLY STABILIZED THE UNIT FOLLOWING THE REACTOR TRIP. THE LESSONS LEARNED FROM THIS EVENT AND SUBSEQUENT UNIT STARTUP HAVE BEEN DISSEMINATED TO ALL OPERATIONS PERSONNEL.

FORM 119 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
281 1990 003 0 9007050105 218702 05/31/90

ABSTRACT

POWER LEVEL - 100%. ON MAY 31, 1990 AT 2005 HOURS WITH UNIT 2 AT 100% POWER, A MANUAL REACTOR TRIP WAS INITIATED BY THE UNIT 2 LICENSED CONTROL ROOM OPERATOR. A MALFUNCTION OF THE "A" MAIN FEEDWATER REGULATING VALVE (MFRV) POSITIONER CAUSED THE VALVE TO CLOSE, DECREASING FEEDWATER FLOW TO THE "A" STEAM GENERATOR (S/G) TO NEAR ZERO. OPERATORS PERFORMED THE APPROPRIATE PLANT PROCEDURES AND QUICKLY STABILIZED THE PLANT FOLLOWING THE TRIP. SAFETY SYSTEMS FUNCTIONED AS DESIGNED WITH THE EXCEPTION THAT ONE INDIVIDUAL ROD POSITION INDICATOR (IRPI) ROD BOTTOM BISTABLE LIGHT FAILED TO ILLUMINATE AND SEVERAL OTHERS DID NOT ILLUMINATE IMMEDIATELY. THE FAILURE OF THE MFRV WAS CAUSED BY BLOCKADE OF THE POSITIONER AIR SUPPLY INLET FILTER/ORIFICE ASSEMBLY. THE FAILURE OF THE ROD BOTTOM LIGHT TO ILLUMINATE WAS CAUSED BY A FAULTY LIGHT BULB. THE DELAYED ILLUMINATION OF THE OTHER ROD BOTTOM LIGHTS WAS THE RESULT OF A SEMI-VITAL BUS VOLTAGE FLUCTUATION. THE MAINTENANCE PROCEDURE WILL BE REVISED TO REQUIRE REPLACEMENT OF THE FILTER/ORIFICE ASSEMBLIES DURING EACH REFUELING. OPERATION OF THE LOAD TAP CHANGER FOR THE "C" RESERVE STATION SERVICE TRANSFORMER (RSST) IS UNDER EVALUATION. A FOUR HOUR NON-EMERGENCY REPORT WAS MADE TO THE NUCLEAR REGULATORY COMMISSION PER 10CFR 50.72.B.2.II.

FORM 120 LER SCSS DATA

04-18-91

ABSTRACT

POWER LEVEL - 100%. ON 8/27/90 AT 0925 HOURS, WITH UNIT 2 OPERATING AT 100% POWER, THE "A" MAIN FEEDWATER REGULATING VALVE (MFRV) CLOSED FOLLOWING THE INADVERTENT GROUNDING OF ITS CONTROL SIGNAL DURING PERIODIC SURVEILLANCE TESTING. CLOSURE OF THE "A" MFRV RESULTED IN A MISMATCH BETWEEN "A" STEAM GENERATOR (S/G) FEEDWATER FLOW AND STEAM FLOW CAUSING SEVERAL ANNUNCIATORS TO ALARM. THE REACTOR OPERATOR IMMEDIATELY ATTEMPTED TO REOPEN THE "A" MFRV BY INCREASING THE CONTROLLER DEMAND IN MANUAL BUT THE VALVE DID NOT RESPOND. SINCE A LOW S/G LEVEL COINCIDENT WITH STEAM FLOW-FEEDWATER FLOW MISMATCH REACTOR TRIP WAS IMMINENT, THE REACTOR OPERATOR MANUALLY TRIPPED THE REACTOR AT APPROXIMATELY 27% LEVEL IN THE "A" S/G. THE OPERATORS FOLLOWED APPROPRIATE PLANT PROCEDURES AND QUICKLY STABILIZED THE UNIT FOLLOWING THE MANUAL TRIP. A FOUR HOUR NON-EMERGENCY REPORT WAS MADE TO THE NUCLEAR REGULATORY COMMISSION IN ACCORDANCE WITH 10CFR50.72.

FORM 121 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 282 1989 010 0 8908280290 215124 07/21/89

ABSTRACT

POWER LEVEL - 100%. ON JULY 21, 1989 UNIT 1 WAS AT 100% POWER. DURING THE AFTERNOON, A "HOT LACQUER" SMELL WAS NOTICED COMING FROM 4160V BUS 11. 4160V BUS 11 SUPPLIES NO. 11 REACTOR COOLANT PUMP AND NO. 11 FEEDWATER PUMP. THE PROBLEM WAS INVESTIGATED AND DETERMINED TO BE OF NO IMMEDIATE CONCERN BUT WORTHY OF INCREASED AWARENESS. AN "OPERATIONS NOTE" WAS ISSUED TO ALERT OPERATORS OF THE PROBLEM. DURING A SUBSEQUENT INVESTIGATION FOR THE SOURCE OF THE SMELL, AN OPERATOR PULLED OPEN THE POTENTIAL FUSE DRAWER FOR 4160V BUS 11, CAUSING UNDERVOLTAGE RELAYS TO TRIP. AFTER A 5 SECOND TIME DELAY TIMED OUT, THE BREAKER FOR NO. 11 REACTOR COOLANT PUMP TRIPPED AND THE REACTOR TRIPPED AT 2345 ON JULY 21, 1989 DUE TO SINGLE LOOP LOSS OF FLOW REACTOR TRIP SIGNAL. THE UNIT WAS RETURNED TO SERVICE AT 2204 ON JULY 22, 1989. 4160V BUS DOORS HAVE BEEN LABELED, CAUTIONING PERSONNEL OF THE CONSEQUENCES OF OPENING THE POTENTIAL FUSE DRAWERS. POTENTIAL FUSE DRAWER FRONTS WILL ALSO BE LABELED.

FORM 122 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 282 1990 017 0 9012260256 220525 11/21/90

ABSTRACT

POWER LEVEL - 100%. ON NOVEMBER 21, 1990, UNIT 1 WAS AT 100% POWER. AT ABOUT 1540 AN OPERATOR MAKING ROUNDS OF THE TURBINE BUILDING NOTICED THAT NO. 11 BUS DUCT COOLING FAN WAS NOT RUNNING AND THAT ITS SUPPLY BREAKER HAD TRIPPED. HE NOTIFIED THE CONTROL ROOM OF HIS FINDINGS, AND HE WAS THEN INSTRUCTED TO START NO. 12 BUS DUCT COOLING FAN TO RE-ESTABLISH THE FLOW OF COOLING AIR THROUGH THE GENERATOR BUS DUCTS. WHEN NO. 12 BUS DUCT COOLING FAN WAS STARTED AT 1545, THE MAIN GENERATOR TRIPPED, RESULTING IN A TURBINE TRIP/REACTOR TRIP. THE TURBINE BUILDING OPERATOR HAD DETERMINED THAT THERE WAS NO BUS DUCT COOLING FAN RUNNING, BUT BUS DUCT TEMPERATURE APPEARED NORMAL. ACTUAL BUS DUCT TEMPERATURE WAS HIGHLY ELEVATED, BUT THE TEMPERATURE SENSORS ARE LOCATED IN THE BUS DUCT COOLER SUCTION DUCT SUCH THAT REPRESENTATIVE BUS DUCT TEMPERATURE IS NOT SENSED IF A FAN IS NOT

WHICH THEN INITIATED A GENERATOR TRIP ON HIGH TEMPERATURE OF 85C. AN INVESTIGATION WAS BEGUN AND THE CAUSE OF THE TRIP WAS DETERMINED. THE UNIT WAS RETURNED TO SERVICE AT 1541 THE NEXT DAY.

FORM 123 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
285 1989 019 0 8911010208 215697 09/24/89

ABSTRACT

POWER LEVEL - 006%. ON 9/24/89, FORT CALHOUN STATION UNIT 1 WAS OPERATING AT APPROXIMATELY 70% POWER IN MODE 1. AT 1259 HOURS INDICATION OF HIGH TEMPERATURE FOR REACTOR COOLANT PUMP RC-3A UPPER MOTOR THRUST BEARING WAS RECEIVED IN THE CONTROL ROOM. AFTER MAXIMIZATION OF BOTH THE COOLING WATER FLOW TO THE OIL COOLERS AND THE OIL FLOW TO THE BEARING FAILED TO REDUCE THE INDICATED TEMPERATURE, THE SHIFT SUPERVISOR INITIATED A CONTROLLED PLANT SHUTDOWN AT 1320 HOURS. AT 1518 HOURS, WITH REACTOR POWER BETWEEN 5 AND 6 PERCENT, RC-3A THRUST BEARING TEMPERATURE INDICATION SPIKED TO 267 DEGREES. THE REACTOR WAS IMMEDIATELY MANUALLY TRIPPED AND RC-3A WAS SHUT DOWN. THIS TRIP IS REPORTABLE PURSUANT TO 10 CFR 50.73(A)(2)(IV). INVESTIGATION REVEALED THE CAUSE OF THE INDICATED HIGH TEMPERATURE TO BE DAMAGED CABLE FOR THE BEARING RESISTIVE TEMPERATURE DEVICE (RTD), ALTHOUGH CAUSE OF THE DAMAGE COULD NOT BE DETERMINED. THERE WAS NO EVIDENCE OF ACTUAL EXCESSIVE BEARING TEMPERATURE. THE DAMAGED CABLE AND THE RTD WERE REPLACED. OTHER SIMILAR RTD WIRING WILL BE INSPECTED AND INVESTIGATION INTO THE CAUSE OF THE CABLE DAMAGE WILL BE COMPLETED DURING THE 1990 REFUELING OUTAGE.

FORM 124 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
285 1990 026 1 9101110004 220652 11/19/90

ABSTRACT

POWER LEVEL - 100%. ON NOVEMBER 19, 1990 WHILE THE PLANT WAS OPERATING AT 100% POWER, A PIPE JOINT AT AN ISOLATION VALVE IN THE TURBINE BUILDING INSTRUMENT AIR HEADER FAILED. THE RESULTING LOSS OF INSTRUMENT AIR PRESSURE CAUSED A FEEDWATER TRANSIENT WHICH ULTIMATELY RESULTED IN MANUAL TRIPPING OF THE REACTOR. THE ROOT CAUSE FOR THIS EVENT WAS IMPROPER INSTALLATION OF THE ISOLATION VALVE (INADEQUATE JOINT INSERTION COUPLED WITH POOR SOLDERING TECHNIQUE) UNDER A MODIFICATION IN 1984. THE CONTRIBUTING CAUSE WAS INADEQUATE CONTROL OF THE INSTALLATION PROCESS. THE COMPLETED CORRECTIVE ACTIONS FOR THIS EVENT INCLUDED REPAIRING THE FAILED JOINT INSTALLING BRACES AROUND ALL APPLICABLE HEADER ISOLATION VALVES, CHECKING THE TURBINE BUILDING HEADER FOR LEAKS, AND REPAIRING ONE ADDITIONAL LEAK. THE ADMINISTRATIVE CONTROLS OVER MODIFICATIONS HAVE BEEN IMPROVED SINCE 1984. THE LONG TERM CORRECTIVE ACTIONS FOR THIS EVENT INCLUDE REINSTALLING THE ISOLATION VALVES USING BETTER TECHNIQUES PROVIDING BETTER TRAINING ON SOLDERED JOINTS, AND DISCUSSING THIS EVENT IN LICENSED AND NON-LICENSED OPERATING PERSONNEL REQUALIFICATION TRAINING.

FORM 125 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
286 1989 004 0 8903150504 213198 02/04/89

REACTOR CRITICAL AT LESS THAN 5-10 AMPS IN THE INTERMEDIATE RANGE, A REACTOR TRIP WAS INITIATED BY AN I&C TECHNICIAN TROUBLESHOOTING NUMBER 32 SOURCE RANGE. ALL PLANT SYSTEMS FUNCTIONED PROPERLY. IT WAS DETERMINED THAT AN I&C TECHNICIAN REMOVED INSTRUMENT FUSES FOR THE SOURCE RANGE RESULTING IN A LOSS OF VOLTAGE TO THE HIGH FLUX TRIP BISTABLE. THE SOURCE RANGE HAS BEEN REPAIRED AND PLACED BACK IN SERVICE.

FORM 126 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
286 1989 015 0 8911300071 216004 10/19/89

ABSTRACT

POWER LEVEL - 100%. ON OCTOBER 19, 1989, WITH THE REACTOR AT 100 PERCENT POWER, CONTROL ROOM OPERATORS INITIATED A MANUAL REACTOR TRIP WHEN THEY OBSERVED 12 CONTROL RODS FULLY INSERT INTO THE REACTOR CORE. INSTRUMENTATION AND CONTROLS TECHNICIANS WERE PERFORMING SURVEILLANCE TEST 3PT-M62, "480 VOLT UNDERVOLTAGE AND DEGRADED GRID" AT THE TIME OF THE EVENT. ALL SYSTEMS FUNCTIONED PROPERLY FOLLOWING THE TRIP WITH THESE EXCEPTIONS: THE COMPUTER GENERATED "SEQUENCE OF EVENTS" RECORD WAS LOST; THE STATION AUXILIARY TRANSFORMER TAP CHANGER RESPONDED SLUGGISHLY; OPERATORS ENCOUNTERED DIFFICULTY IN RESTARTING CONTROL ROD DRIVE MECHANISM COOLING FAN #31; THE CONDENSATE POLISHER FACILITY BYPASS VALVE DID NOT OPEN; A LEAK DEVELOPED ON A PRESSURIZER SAFETY VALVE LOOP DRAIN VALVE. WHILE THE PLANT STAFF WAS UNABLE TO DETERMINE THE EXACT ROOT CAUSE OF THE EVENT, THE INITIATING OCCURRENCE WAS A "NON-SI BLACKOUT" ACTUATION ON 480 VOLT BUS 5A. IT HAS BEEN CONCLUDED THAT THIS RESULTED FROM A PERSONNEL ERROR SUSTAINED DURING THE PERFORMANCE OF SURVEILLANCE TEST 3PT-M62. FOLLOWING A SAFETY REVIEW BY THE PLANT OPERATIONS REVIEW COMMITTEE AND APPROXIMATELY 110 HOURS OF PLANNED CORRECTIVE MAINTENANCE, PLANT OPERATORS BROUGHT THE REACTOR CRITICAL ON OCTOBER 23, 1989, SYNCHRONIZED THE GENERATOR TO THE BUS ON OCTOBER 24, 1989, AND REACHED FULL POWER ON OCTOBER 25, 1989.

FORM 127 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
286 1990 003 0 9005040247 218081 03/31/90

ABSTRACT

POWER LEVEL - 100%. ON MARCH 29, 1990, THE AUTHORITY DISCOVERED THAT A NON-CATEGORY I, SEISMIC CLASS III NITROGEN SUPPLY LINE HAD BEEN INSTALLED IN A SAFETY-RELATED, CATEGORY I, SEISMIC CLASS I LINE BETWEEN TWO CONTAINMENT ISOLATION VALVES. ALTHOUGH THE NITROGEN SUPPLY LINE WAS NON-CATEGORY I, IT HAS BEEN SUCCESSFULLY TESTED IN ACCORDANCE WITH THE CONTAINMENT ISOLATION LEAK TEST PROCEDURE ON A PERIODIC BASIS SINCE IT WAS ORIGINALLY INSTALLED. THE AUTHORITY HAS IDENTIFIED THE ROOT CAUSE OF THIS EVENT TO BE A LESS THAN ADEQUATE ENGINEERING REVIEW OF THE MODIFICATION THAT ORIGINALLY INSTALLED THE NITROGEN SUPPLY LINE. THE PROBLEM WAS CORRECTED BY REMOVING THE PIPE CONNECTION AND THE RESTORATION OF THE LINE TO ITS ORIGINAL CLASSIFICATION.

FORM 128 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 100%. ON JUNE 29, 1990 WITH THE REACTOR AT 100 PERCENT POWER, A UNIT TRIP WAS INITIATED AS THE RESULT OF ACTUATION OF THE MAIN GENERATOR LOCKOUT RELAYS. ALL PLANT SYSTEMS FUNCTIONED PROPERLY FOLLOWING THE TRIP. IT WAS DETERMINED THAT THE ACTUATION OF THE GENERATOR LOCKOUT RELAYS RESULTED FROM THE MECHANICAL FAILURE OF PROTECTIVE RELAY, MCT1, WHICH PROVIDES EXPANDED BREAKER PROTECTION FOR THE 345KV ELECTRICAL OUTPUT BREAKERS. THIS RELAY WAS REPLACED AND TESTED SUCCESSFULLY. THE REACTOR WAS BROUGHT CRITICAL ON JUNE 30, 1990 AT 1852 HOURS AND FULL POWER OPERATIONS REACHED ON JULY 2, 1990 AT 0515 HOURS.

FORM 129 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 287 1989 002 0 8904180103 213557 03/06/89

ABSTRACT

POWER LEVEL - 100%. ON MARCH 6, 1989 AT 0657 HOURS WHILE OPERATING AT 100% REACTOR POWER, THE UNIT 3 MAIN TURBINE (MT) TRIPPED, RESULTING IN AN ANTICIPATORY REACTOR TRIP. THE MT TRIP WAS INITIATED BY A GENERATOR LOCKOUT WHICH WAS DUE TO A LOSS OF GENERATOR EXCITATION. THE REASON FOR THE LOSS OF EXCITATION COULD NOT BE DETERMINED. ADDITIONALLY, THREE PIPE SUPPORTS WERE DAMAGED FOLLOWING THE TRIP AS A RESULT OF A WATER HAMMER IN THE MAIN STEAM TURBINE BYPASS LINE. THE IMMEDIATE CORRECTIVE ACTION WAS TO STABILIZE THE UNIT AT HOT SHUTDOWN. SUBSEQUENT CORRECTIVE ACTIONS INCLUDED DETERMINING THE CAUSE OF THE TRIP AND IMPLEMENTING A PLAN FOR THE REPAIR OF THE THREE PIPE SUPPORTS. THE ACTUAL ROOT CAUSE OF THE TRIP COULD NOT BE DETERMINED, THEREFORE THIS EVENT IS CLASSIFIED AS UNKNOWN.

FORM 130 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 287 1989 004 0 8909270141 215304 08/18/89

ABSTRACT

POWER LEVEL - 100%. ON 8/18/89 AT 1233 HOURS, OCONEE UNIT 3 TRIPPED FROM 100% FULL POWER. THE REACTOR TRIP WAS AN ANTICIPATORY TRIP RESULTING FROM A FALSE ELECTROHYDRAULIC CONTROL (EHC) SYSTEM LOW HYDRAULIC PRESSURE TRIP SIGNAL. THE FALSE SIGNAL WAS GENERATED WHEN WATER DROPS MADE MOMENTARY CONTACT ACROSS THE TERMINAL STRIP ASSOCIATED WITH THE LOW HYDRAULIC PRESSURE TRIP CIRCUIT. THE STATION JANITORIAL SERVICE VENDOR AND OPERATIONAL PERSONNEL HAD WASHED THE FLOOR AROUND THE EHC HYDRAULIC POWER UNIT CABINET PRIOR TO THE UNIT TRIP. THE CABINET DOOR WAS INADEQUATELY SHUT, POTENTIALLY ALLOWING MOISTURE TO ENTER THE HYDRAULIC POWER UNIT CABINET. PLANT RESPONSE TO THE TRIP WAS NORMAL WITH NO RADIOLOGICAL RELEASES OR ENGINEERED SAFEGUARD ACTUATIONS. THE ROOT CAUSE OF THIS INCIDENT IS CLASSIFIED AS AN INAPPROPRIATE ACTION, POOR WORK PRACTICE. IMMEDIATE CORRECTIVE ACTIONS WERE TO STABILIZE THE UNIT AT HOT SHUTDOWN CONDITIONS.

FORM 131 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 287 1990 001 1 9003070007 217079 01/19/90

100% FP AFTER CONTROL ROD GROUP 6 DROPPED INTO THE CORE. A TEST WAS IN PROGRESS AT THE TIME TO VERIFY PROPER OPERATION OF THE CONTROL ROD POWER SUPPLIES. DURING THE TESTING OF GROUP 6 POWER SUPPLY, TRANSFER OF POWER TO THE AUXILIARY POWER SUPPLY WAS INITIATED. THE NORMAL POWER SUPPLY APPARENTLY FAILED TO DISENGAGE PROPERLY AND LATER TECHNICIAN ACTIONS RESULTED IN OPPOSING PHASES BEING ENERGIZED. THE RESULTING OPPOSING ELECTROMAGNETIC FIELDS CAUSED THE RODS IN GROUP 6 TO FALL INTO THE CORE. OPERATORS REALIZED THE ROD GROUP HAD DROPPED FROM CONTROL ROOM INDICATORS, BUT WERE NOT ABLE TO MANUALLY TRIP THE REACTOR BEFORE THE REACTOR PROTECTIVE SYSTEM AUTOMATICALLY TRIPPED THE UNIT ON LOW REACTOR COOLANT SYSTEM PRESSURE. IN SPITE OF SEVERAL POST-TRIP FAILURES AND ABNORMAL PROBLEMS THE UNIT WAS STABILIZED AT HOT SHUTDOWN CONDITIONS. AN IMMEDIATE INVESTIGATION WAS INITIATED TO ASSESS THE CAUSES AND EFFECTS OF THE TRIP. THE ROOT CAUSE OF THIS EVENT IS CLASSIFIED AS UNKNOWN, POSSIBLE EQUIPMENT MALFUNCTION. THE MAJOR CORRECTIVE ACTIONS WERE TO PROVIDE MORE INSTRUCTIONS IN PROCEDURES TO CORRECT A CONTRIBUTING CAUSE OF MANAGEMENT DEFICIENCY.

1

FORM 132 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 287 1990 002 0 9004200276 217794 03/07/90

ABSTRACT

POWER LEVEL - 100%. AT 1406 HOURS ON MARCH 7, 1990, OCONEE UNIT 3 EXPERIENCED A REACTOR TRIP FROM 100% FULL POWER DUE TO HIGH REACTOR COOLANT SYSTEM (RCS) PRESSURE. A VALVE LIMIT SWITCH LINKAGE ARM HAD BECOME DISCONNECTED, PROBABLY DUE TO VIBRATION DURING START-UP, CAUSING A CLOSED INDICATION WHICH SATISFIED PART OF THE CONTROL LOGIC FOR AUTOMATIC CLOSURE OF A FEEDWATER BLOCK VALVE. THE REST OF THE LOGIC WAS SATISFIED WHEN A ROUTINE TEST SUPPLIED A LOW REACTOR POWER INPUT TO THE CONTROL LOGIC. THE BLOCK VALVE CLOSED, RESULTING IN A PARTIAL LOSS OF FEEDWATER AND, SUBSEQUENTLY THE REACTOR PROTECTIVE SYSTEM TRIPPED ON HIGH RCS PRESSURE. TRIP RESPONSE WAS NORMAL EXCEPT THAT ONE CONTROL ROD DRIVE BREAKER EXCEEDED ITS EXPECTED TRIP TIME AND WAS REPLACED. THE LIMIT SWITCH LINKAGE WAS RECONNECTED AND THE UNIT WAS RESTARTED. THE ROOT CAUSE IS IDENTIFIED AS EQUIPMENT FAILURE.

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FORM 133 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 287 1990 003 0 9012260225 220528 11/13/90

ABSTRACT

POWER LEVEL - 100%. ON NOVEMBER 13, 1990, AT APPROXIMATELY 2256 HOURS, WHILE AT 100% FULL POWER, OCONEE UNIT 3 CONTROL ROD GROUP 7 DROPPED INTO THE CORE. FROM CONTROL ROOM INDICATORS OPERATIONS PERSONNEL RECOGNIZED THAT THE ROD GROUP HAD DROPPED AND WERE ABLE TO TRIP THE REACTOR FROM 60% FULL POWER BEFORE THE REACTOR PROTECTIVE SYSTEM COULD AUTOMATICALLY TRIP THE REACTOR ON LOW REACTOR COOLANT SYSTEM PRESSURE. THE POST TRIP RESPONSE WAS NORMAL. INVESTIGATION OF THE DROPPED CONTROL ROD GROUP REVEALED A FAILED SOLID STATE PROGRAMMER, WHICH CONTROLS POWER TO THE CONTROL ROD DRIVE STATORS. THE PROGRAMMER WAS REPLACED AND THE UNIT WAS RETURNED TO CRITICAL AT 0433 HOURS ON NOVEMBER 14, 1990. THE ROOT CAUSE OF THIS EVENT IS IDENTIFIED AS EQUIPMENT FAILURE.

1

FORM 134 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 100%. AT APPROXIMATELY 0806 HOURS ON NOVEMBER 29, 1989, A RAPID REDUCTION IN TURBINE LOAD OCCURRED. THIS RAPID REDUCTION IN LOAD RESULTED IN INCREASING TEMPERATURE AND PRESSURE IN THE REACTOR COOLANT SYSTEM CAUSING THE REACTOR TO TRIP ON HIGH RCS PRESSURE WITHIN ABOUT 4 SECONDS. THE REACTOR PROTECTION SYSTEM FUNCTIONED CORRECTLY AND OPERATOR RESPONSE WAS APPROPRIATE. THE POST TRIP RESPONSE WAS NORMAL. MAIN STEAM HEADER PRESSURE WAS REDUCED TO RESEAT A MAIN STEAM SAFETY VALVE (MS-V-21A). LEVEL CONTROL FOR B OTSG WAS CONSIDERED SLUGGISH AND THE FEEDWATER VALVE WAS CONTROLLED MANUALLY. THESE ACTIONS ARE IN ACCORDANCE WITH PROCEDURES AND TRAINING. THE RAPID LOAD REDUCTION WAS THE RESULT OF EHC ACTION. THE POWER LOAD UNBALANCE CIRCUIT THAT PROTECTS THE TURBINE FROM OVERSPEED AND THE SPEED ERROR CIRCUIT WERE SUSPECTED SINCE EITHER OF THESE CIRCUITS CAN RESULT IN RAPID CONTROL VALVE CLOSURE. THE FUNCTION AND CALIBRATION OF THESE CIRCUITS WERE CHECKED. MINOR CALIBRATION DRIFT WAS FOUND. THE DRIFT WAS NOT ABNORMAL AND WOULD NOT HAVE CAUSED THE TRANSIENT. A LOOSE SHIELD WIRE WAS FOUND ON THE INPUT TO THE SPEED ERROR CIRCUIT FROM THE TURBINE PRIMARY SPEED SENSOR. IT IS POSTULATED THAT THE LOOSE CONNECTION WAS DISTURBED BY OPENING AND CLOSING THE CABINET DOORS. THIS WAS DETERMINED TO BE THE PROBABLE CAUSE.

FORM 135 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 289 1990 004 0 9004100364 217733 03/04/90

ABSTRACT

POWER LEVEL - 000%. ON THE MORNING OF 3/4/90, ALL THE TESTS AND MEASUREMENTS FOR ZERO POWER PHYSICS TESTING WERE COMPLETED AND THE REACTOR CONTROL PARAMETERS WERE BEING ADJUSTED TO PREPARE FOR POWER ESCALATION. THE DESIRED ROD POSITION TO BEGIN POWER ESCALATION WAS 60% WITHDRAWN ON GROUP 6. BORON WAS ADDED TO THE RCS TO BALANCE THE ROD WITHDRAWAL NECESSARY TO ACHIEVE THIS ROD CONFIGURATION. THE OPERATOR WAS MAINTAINING REACTOR POWER AT 3×10^{-8} DURING THE BORON ADDITION BY WITHDRAWING CONTROL RODS AS NECESSARY. DURING THIS EVOLUTION GROUP 5 WAS WITHDRAWN TO ITS "OUT LIMIT." THE OPERATOR NOTED THAT NOT ALL RODS HAD NOT REACHED THE FULL OUT POSITION AND THAT FURTHER ROD TRAVEL WAS PREVENTED BECAUSE OF THE "GROUP" OUT LIMIT. TO CORRECT THIS PROBLEM THE OPERATOR PLACED THE RODS WHICH HAD REACHED THEIR INDIVIDUAL FULL OUT LIMIT ON THE AUXILIARY POWER SUPPLY. THESE RODS WERE THEN INSERTED TO ALIGN THEM BETTER WITH THE REMAINDER OF THE GROUP AND TO CLEAR THE "GROUP" OUT LIMIT. THE OPERATOR THEN WITHDREW GROUP 5 TO THE FULL OUT POSITION, NOT REALIZING THAT GROUP 6 WAS ALSO BEING WITHDRAWN. THE OPERATOR NOTED POWER WAS INCREASING AND BEGAN TO INSERT RODS AT APPROXIMATELY THE SAME TIME (02:25) RPS CHANNELS "A" AND "D" REACHED THE HI FLUX TRIP SETPOINT OF 0.5% OF FULL POWER AND THE REACTOR TRIPPED.

FORM 136 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 293 1989 011 0 8904060007 213499 03/04/89

ABSTRACT

POWER LEVEL - 010%. ON 3/4/89 AT 1749 HOURS, AN AUTOMATIC ACTUATION OF A PORTION OF THE PRIMARY CONTAINMENT ISOLATION CONTROL SYSTEM (PCIS)

TRIPPED DUE TO VIBRATION INDICATIONS OF TWO BEARINGS. THE PCIS ACTUATION INCLUDED THE AUTOMATIC CLOSING OF THE MAIN STEAM ISOLATION VALVES (MSIVS). THE RPS ACTUATION AND REACTOR SCRAM OCCURRED AS DESIGNED BECAUSE THE MSIVS WERE CLOSING. THE PCIS ACTUATION OCCURRED BECAUSE THE MAIN STEAM SYSTEM/REACTOR VESSEL (RV) LOW PRESSURE TRIP SETPOINT (900 PSIG) WAS REACHED WHILE THE REACTOR MODE SELECTOR SWITCH WAS IN THE RUN POSITION. THE PRESSURE DECREASE WAS DUE TO THE AUTOMATIC CLOSING AND RE-OPENING OF THE TURBINE BYPASS VALVES THAT OCCURRED BECAUSE OF A BYPASS VALVES VACUUM TRIP AND AN UNEXPLAINED RESET OF THE VACUUM TRIP. THE CAUSE FOR THE VACUUM TRIP AND RESET OF THE TRIP COULD NOT BE DETERMINED DURING EXTENSIVE INVESTIGATION. SUBSEQUENT CONTROLLED TESTING, ATTEMPTING TO DUPLICATE THE 3/4/89 CONDITIONS, WAS PERFORMED WITH SATISFACTORY RESULTS. UNRELATED TO THE CAUSE FOR THE EVENT WAS THE FAILURE (SPURIOUS UPSCALE TRIP) OF A DIFFERENTIAL PRESSURE TRANSMITTER (ROSEMOUNT INCORPORATED MODEL 1153 DB7RCN0012) THAT WAS REPLACED AND SENT TO THE MANUFACTURER FOR EXAMINATION.

FORM 137 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 293 1989 015 0 8906140112 214265 05/03/89

ABSTRACT

POWER LEVEL - 024%. ON 5/3/89 AT 0326 HOURS, A HIGH REACTOR VESSEL (RV) WATER LEVEL OCCURRED THAT RESULTED IN AN AUTOMATIC TURBINE TRIP, GENERATOR TRIP, AND REACTOR SCRAM AT 24% REACTOR POWER. THE EVENT INCLUDED A DESIGNED AUTOMATIC TRANSFER OF THE POWER SOURCE FOR THE 4160 VAC AUX. POWER DISTRIBUTION SYSTEM (APDS). DURING THE EVENT 1 INBOARD MAIN STEAM ISOLATION VALVE (MSIV) AND 4 SAMPLING SYSTEM ISOLATION VALVES CLOSED AUTOMATICALLY. THE HIGH RV WATER LEVEL WAS PRIMARILY CAUSED WHILE TROUBLESHOOTING THE ACTUATOR CONTROLS OF A FEEDWATER SYSTEM REGULATING VALVE. THE SAMPLING SYSTEM ISOLATION VALVES CLOSED BECAUSE OF A TRANSIENT VOLTAGE DECREASE (APDS TRANSFER) THAT 120 VAC COILS OF RELATED RELAYS. A RANDOM FAILURE OF THE DC PILOT (125 VDC) FOR THE MSIV AND THE EFFECTS OF THE APDS TRANSFER TO THE MSIV'S AC PILOT SOLENOID CONTROL RELAY, CAUSED THE MSIV TO CLOSE. CORRECTIVE ACTIONS INCLUDE RESTRICTED USE OF THE TROUBLESHOOTING PROCEDURES, REPLACEMENT OF SOME ACTUATOR COMPONENTS FOR BOTH REGULATING VALVES, REPLACEMENT OF THE FAILED DC PILOT SOLENOID ASSEMBLY AND ADJUSTMENT OF THE COIL DROP OUT VOLTAGE (OR COIL REPLACEMENT) FOR APPROPRIATE CONTROL RELAYS. THE DC PILOT SOLENOID ASSEMBLY (MODEL 6910-020) WAS EXAMINED BY THE MANUFACTURER (AUTOMATIC VALVE CORPORATION). THIS EVENT OCCURRED WITH THE REACTOR MODE SELECTOR SWITCH IN THE RUN POSITION WITH THE FEEDWATER SYSTEM IN SINGLE ELEMENT (RV WATER LEVEL) CONTROL.

FORM 138 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 293 1989 023 0 8908230283 215018 07/18/89

ABSTRACT

POWER LEVEL - 035%. ON JULY 19, 1989 AT 1038 HOURS, A MANUALLY INITIATED REACTOR PROTECTION SYSTEM (RPS) SCRAM SIGNAL AND REACTOR SCRAM OCCURRED. THE SCRAM SIGNAL RESULTED IN AN AUTOMATIC SEQUENCE OF EXPECTED DESIGNED RESPONSES THAT INCLUDED A TURBINE-GENERATOR TRIP, AUTOMATIC OPENING OF TWO 345 KV SWITCHYARD AIR CIRCUIT BREAKERS, AND AN AUTOMATIC TRANSFER OF STATION ELECTRICAL LOADS. THE DIRECT CAUSE FOR THE SCRAM WAS THE DELIBERATE MOVEMENT OF THE REACTOR MODE SELECTOR

CONDENSER VACUUM. THE PRIMARY CAUSE FOR THE DECREASING VACUUM WAS ATTRIBUTED TO AN INADEQUACY IN THE APPROVED PROCEDURE THAT WAS BEING USED TO RECONFIGURE THE STEAM JET AIR EJECTORS OF THE MAIN CONDENSER GAS REMOVAL SYSTEM. CORRECTIVE ACTIONS TAKEN INCLUDED THE FOLLOWING: REVISION OF THE PROCEDURE TO INCLUDE SPECIFIC STEPS FOR INTERCHANGING A STEAM JET AIR EJECTORS DURING OPERATION, AND CLEANING THE SALTWATER PORTIONS OF THE CIRCULATING WATER SYSTEM TO REMOVE MACRO-FOULING DUE TO MARINE ORGANISMS. THE UNIT WAS RETURNED TO COMMERCIAL SERVICE ON JULY 26, 1989 AT 0936 HOURS. THIS EVENT OCCURRED WHEN THE REACTOR VESSEL (RV) PRESSURE WAS 990 PSIG AND THE RV WATER TEMPERATURE WAS 520 DEGREES FAHRENHEIT. THIS REPORT IS SUBMITTED IN ACCORDANCE WITH 10 CFR 50.73(A)(2)(IV).

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FORM 139 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 293 1989 026 0 8910060191 215354 08/30/89

ABSTRACT

POWER LEVEL - 065%. ON 8/30/89 AT 1917 HOURS, AN AUTOMATIC REACTOR PROTECTION SYSTEM (RPS) SCRAM SIGNAL AND REACTOR SCRAM OCCURRED WHILE AT 65% REACTOR POWER. AS EXPECTED, THE SCRAM SIGNAL RESULTED IN AN AUTOMATIC SEQUENCE OF DESIGNER RESPONSES THAT INCLUDED A TURBINE-GENERATOR TRIP, AUTOMATIC OPENING OF TWO 345 KV SWITCHYARD AIR CIRCUIT BREAKERS, AND AN AUTOMATIC TRANSFER OF STATION ELECTRICAL LOADS. THE DIRECT CAUSE FOR THE SCRAM SIGNAL WAS HIGH REACTOR VESSEL/MAIN STEAM SYSTEM PRESSURE (1069 PSIG) THAT OCCURRED AS A RESULT OF AN AUTOMATIC TURBINE RUNBACK. THE TURBINE RUNBACK WAS CAUSED BY THE FAILURE OF A NONSAFETY-RELATED 24 KV POTENTIAL TRANSFORMER (PT) IN CONJUNCTION WITH A NONSAFETY-RELATED VOLTAGE BALANCE RELAY THAT WAS WIRED IN ACCORDANCE WITH AN ARCHITECT-ENGINEER (BECHTEL) DRAWING THAT CONTAINED AN ERROR SINCE ORIGINAL CONSTRUCTION (C.1971). THE PT (STYLE EED2553, A SERIAL NUMBER 70F3376) WAS MANUFACTURED BY THE WESTINGHOUSE ELECTRIC CORPORATION. THE PT WAS REPLACED, THE DRAWING ERROR WAS CORRECTED AND THE VOLTAGE BALANCE RELAY WAS REWIRED IN ACCORDANCE WITH THE REVISED DRAWING. THE PROCEDURE USED TO FUNCTIONALLY TEST THE VOLTAGE BALANCE RELAY WAS STRENGTHENED. APPLICABLE PORTIONS OF THE STATION ELECTRICAL SYSTEM WERE TESTED AND/OR EVALUATED FOR IMPACT OF OVERVOLTAGE WITH SATISFACTORY RESULTS. THIS REPORT IS SUBMITTED IN ACCORDANCE WITH 10CFR50.73(A)(2)(IV).

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FORM 140 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 293 1989 038 0 9001180124 216387 12/08/89

ABSTRACT

POWER LEVEL - 095%. ON DECEMBER 8, 1989 AT 0308 HOURS, AN UNPLANNED AUTOMATIC REACTOR PROTECTION SYSTEM (RPS) SCRAM SIGNAL AND REACTOR SCRAM OCCURRED AT 95 PERCENT REACTOR POWER. THE SCRAM SIGNAL RESULTED IN RESPONSES THAT INCLUDED A TURBINE-GENERATOR TRIP. THE DIRECT CAUSE FOR THE SCRAM SIGNAL WAS A (FALSE) LOW REACTOR VESSEL (RV) WATER LEVEL SIGNAL THAT OCCURRED WHILE RETURNING A LOCAL RV WATER LEVEL INDICATOR (DIFFERENTIAL PRESSURE TYPE) TO SERVICE FOLLOWING A SATISFACTORY CALIBRATION PERFORMED BY A QUALIFIED TECHNICIAN. THE CAUSE FOR THE EVENT WAS A MINOR HYDRAULIC TRANSIENT THAT OCCURRED WHILE CAREFULLY AND SLOWLY OPENING A LOW SIDE (ACTIVE LEG) NEEDLE TYPE MANIFOLD VALVE IN ACCORDANCE WITH THE APPROVED PROCEDURE. THE LEVEL INDICATOR SHARES SENSING LINES COMMON TO ADJACENT RPS LEVEL

ALTERNATE ACTIONS BEING EXPLORED ARE IMPROVEMENTS FOR CALIBRATING THE LOCAL LEVEL INDICATORS INCLUDING POSSIBLE CHANGE OF THE MANIFOLD VALVE HANDLE(S) OR REPLACEMENT OF THE RELATED NEEDLE TYPE MANIFOLD VALVES WITH METERING TYPE VALVES. THE CALIBRATION PROCEDURE IS BEING REVISED TO BE PERFORMED WHILE SHUTDOWN. THIS EVENT OCCURRED DURING POWER OPERATION WITH THE REACTOR MODE SELECTOR SWITCH IN THE RUN POSITION. THE RV PRESSURE WAS 1027 PSIG WITH THE RV WATER TEMPERATURE AT 547F.

FORM 141 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
293 1990 008 0 9006200183 218515 05/13/90

ABSTRACT

POWER LEVEL - 100%. ON MAY 13, 1990 AT 1603 HOURS, AN AUTOMATIC SCRAM RESULTING FROM A LOAD REJECTION OCCURRED WHILE AT 100 PERCENT REACTOR POWER. THE LOAD REJECTION INCLUDED A TRIP OF THE GENERATOR FIELD BREAKER, ACTUATION OF THE TURBINE MECHANICAL HYDRAULIC CONTROL SPEED GOVERNOR, CLOSURE OF THE FOUR TURBINE CONTROL VALVES AND OPENING OF THE THREE BYPASS VALVES, AND THE BRIEF ACTUATION OF THE MAIN STEAM/TARGET ROCK TWO-STAGE RELIEF VALVES AT APPROXIMATELY 1100 PSIG (LOW END OF THE 1115 PSIG SETPOINT RANGE INCLUDING TOLERANCE). THE LOAD REJECTION WAS CAUSED BY A MOMENTARY FAULT ON THE OFFSITE 345 KV TRANSMISSION SYSTEM. THE GENERATOR'S LOSS-OF-FIELD RELAY (240) DETECTED THE FAULT AND IMMEDIATELY TRIPPED THE GENERATOR WITHOUT AN EXPECTED (INHERENT) 15 CYCLE TIME DELAY BECAUSE ONE OF IT'S COMPONENTS, THE TELEPHONE RELAY ('X') COIL, WAS DEFECTIVE. THE RELAY (240) WAS LAST CALIBRATED AND FUNCTIONALLY TESTED ON OCTOBER 26, 1989. AT THAT TIME, THE OPERATION OF THE ('X') COIL WAS TESTED IN ACCORDANCE WITH THE VENDOR MANUAL. THE RELAY'S TIME DELAY WAS BUILT-IN AND NOT ADJUSTABLE, AND WAS NOT REQUIRED TO BE TIMED. THE RELAY WAS INSTALLED DURING PLANT CONSTRUCTION (C. 1972). THE CAUSE FOR THE OPEN COIL IS BEING INVESTIGATED BUT IS BELIEVED TO BE RANDOM OR AGE RELATED FAILURE. THE RELAY IS THE ONLY ONE OF ITS TYPE (WESTINGHOUSE TYPE KLF-1) INSTALLED AT PILGRIM STATION AND WAS REPLACED WITH ANOTHER KLF-1 RELAY HAVING AN ADJUSTABLE TIME DELAY.

FORM 142 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
293 1990 013 0 9010160047 219716 09/02/90

ABSTRACT

POWER LEVEL - 060%. ON 9/2/90 AT 2233 HOURS, AN UNPLANNED MANUAL REACTOR SCRAM WAS INITIATED WITH REACTOR POWER AT 60%. OPERATORS MANUALLY SCRAMMED THE REACTOR DUE TO DIFFICULTIES EXPERIENCED IN CONTROLLING REACTOR VESSEL (RV) WATER LEVEL. A FUSE BLEW IN A FEEDWATER CONTROL CIRCUIT POWER SUPPLY CAUSING BOTH FEEDWATER REGULATING VALVES (FRVS) TO LOCKUP WITHOUT CONTROL ROOM INDICATION. A MODIFICATION WAS IMPLEMENTED WHILE SHUTDOWN WHICH IMPROVES THE RELIABILITY OF THE POWER SUPPLY AND PROVIDES CONTROL ROOM INDICATION OF A FRV LOCKUP FROM A LOSS OF CONTROL POWER. AFTER THE SHUTDOWN OTHER EQUIPMENT PROBLEMS WERE EXPERIENCED. STARTUP FRV FAILED OPEN DUE TO AIR LEAKS AND FAILURE OF ITS AIR BOOSTER RELAY THAT WAS LATER REPLACED. RCICS WAS DECLARED INOPERABLE DUE TO THE TURBINE TRIPPING ON THREE START ATTEMPTS. TURBINE TRIPS WERE ATTRIBUTED TO AN IMPROPER MANUAL START SEQUENCE SPECIFIED IN RCICS OPERATING PROCEDURE AND/OR LOOSENESS OF THE MECHANICAL OVERSPEED TRIP LINKAGE. THE RCICS SUCTION PIPING EXPERIENCED A PRESSURE TRANSIENT DUE TO THE INJECTION CHECK

SYSTEM SHUTDOWN COULD NOT BE DETERMINED. A RESIDUAL HEAT REMOVAL
SYSTEM SHUTDOWN COOLING SUCTION ISOLATION VALVE WOULD NOT OPEN
NORMALLY. CAUSE WAS CONTACT FAILURE ON THE VALVE'S SEAL-IN RELAY.

FORM 143 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
295 1989 002 0 3903080477 213200 01/27/89

ABSTRACT

POWER LEVEL - 099%. WHILE INVESTIGATING FAILURE OF A SAFEGUARDS TEST LIGHT, THE UNIT 1 TURBINE TRIPPED WHICH RESULTED IN A REACTOR TRIP. ALL SAFETY RELATED EQUIPMENT OPERATED AS EXPECTED. AS THE OPERATOR WAS HOLDING A TEST PUSHBUTTON AND DEPRESSING THE TEST LIGHT, A TECHNICIAN PLACED LEADS ACROSS TWO ADJACENT TERMINALS IN THE CIRCUIT TO SIMULATE THE COIL OF THE CIRCUIT. WHEN THE TEST LEADS WERE PLACED IN THE CIRCUIT, A TURBINE TRIP SIGNAL WAS DEVELOPED AND TRIPPED THE TURBINE. INVESTIGATION INDICATED THAT THE MOST LIKELY CAUSE OF THE EVENT WAS THE TECHNICIAN PLACING THE LEADS ACROSS INCORRECT TERMINAL POINTS. THE CAUSE OF THE TEST LIGHT FAILING TO LIGHT WAS A BLOWN BULB AND FAULTY SOCKET. THE BULB AND FAULTY SOCKET WERE REPLACED. THE CIRCUIT WAS TESTED AND VERIFIED OPERATING CORRECTLY PRIOR TO STARTUP OF THE REACTOR. THE ELECTRICAL MAINTENANCE DEPARTMENT WILL REVIEW THIS EVENT AND STRESS THE IMPORTANCE OF AWARENESS DURING TROUBLESHOOTING.

FORM 144 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
295 1990 004 0 9003050301 217044 01/27/90

ABSTRACT

POWER LEVEL - 039%. UNIT 1 WAS IN MODE 1 AT APPROXIMATELY 39% POWER. THE NUCLEAR STATION OPERATOR (NSO) PLACED THE LEVEL CONTROL VALVE FOR THE 1D STEAM GENERATOR (S/G) INTO MANUAL CONTROL FOR TROUBLESHOOTING ON THE CONTROLLING S/G LEVEL CHANNEL. THE NSO CONTINUED TO PERFORM OTHER DUTIES, INCLUDING A 50 GALLON DILUTION OF THE REACTOR COOLANT SYSTEM (RCS) BORON CONCENTRATION, AND WITHDRAWAL OF CONTROL RODS ONE HALF STEP FOR TEMPERATURE CONTROL. APPROXIMATELY 35 MINUTES AFTER PLACING THE 1D S/G LEVEL CONTROL VALVE INTO MANUAL, AT 0816, UNIT 1 EXPERIENCED A TURBINE TRIP/REACTOR TRIP RESULTING FROM HIGH WATER LEVEL ON 1D S/G. THE CAUSE OF THE EVENT WAS PERSONNEL ERROR. THERE WAS NO SAFETY SIGNIFICANCE TO THIS EVENT, AS ALL SAFEGUARDS AND REACTOR PROTECTION EQUIPMENT OPERATED AS DESIGNED. STANDING ORDER 90-04 WAS ISSUED WHICH REQUIRES A NSO TO BE STATIONED CONTINUOUSLY AT THE S/G CONTROL PANEL WHENEVER A MAIN FEEDWATER REGULATING VALVE IS IN MANUAL CONTROL.

FORM 145 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
295 1990 017 0 9009190081 219465 08/13/90

ABSTRACT

POWER LEVEL - 095%. UNIT 1 WAS AT STEADY STATE AT 1030 MWE. UNIT 2 WAS IN HOT SHUTDOWN, WITH PERIODIC TEST (PT)-5A, "REACTOR PROTECTION LOGIC REACTOR AT HOT SHUTDOWN" IN PROGRESS. DUE TO DIFFICULTIES ENCOUNTERED IN TESTING, THE NEED AROSE TO TRIP UNIT 2 LOCALLY. RM

ALL SAFETY SYSTEMS OPERATED AS DESIGNED. THERE WAS THEREFORE NO SAFETY SIGNIFICANCE TO THIS EVENT. CORRECTIVE ACTIONS INCLUDE TAILGATE SESSIONS, BETTER LABELING AT THE TURBINE PEDESTALS, REPAIRING THE TURBINE STOP VALVE BYPASS VALVES, AND AN INVESTIGATION TO DETERMINE THE FEASIBILITY OF BYPASSING THE TURBINE BEARING LIFT OIL PUMP SPEED SWITCH TRIP AT LOW TURBINE SPEED.

FORM 146 LER SC DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
298 1989 001 0 8903030463 213143 01/25/89

ABSTRACT

POWER LEVEL - 100%. ON 1/25/89, AT 6:53 A.M., AN AUTOMATIC REACTOR SCRAM DUE TO HIGH NEUTRON FLUX OCCURRED WHILE AT 100% POWER UNDER NORMAL STEADY STATE CONDITIONS. THE ENSUING REACTOR PRESSURE VESSEL WATER LEVEL TRANSIENT RESULTED IN ACTUATION OF GROUPS 2, 3, AND 6 ISOLATIONS (PRIMARY CONTAINMENT, REACTOR WATER CLEANUP, AND SECONDARY CONTAINMENT INCLUDING STANDBY GAS TREATMENT SYSTEM INITIATION). WATER LEVEL WAS IMMEDIATELY RESTORED AND MAINTAINED BY THE CONDENSATE/FEEDWATER SYSTEM; NO AUTOMATIC OR MANUAL ECCS SYSTEM ACTUATIONS WERE REQUIRED. IT WAS INITIALLY THEORIZED, BASED ON AVAILABLE PLANT DATA, THAT THE NEUTRON FLUX TRANSIENT WAS DUE EITHER TO ELECTRONIC NOISE IN THE NEUTRON MONITORING SYSTEM OR A PRESSURE SPIKE AS A RESULT OF A MAIN TURBINE PRESSURE CONTROL SYSTEM MALFUNCTION. SUBSEQUENTLY, PROBLEMS WERE EXPERIENCED WHEN ATTEMPTING TO EQUALIZE THROUGH THE INBOARD MAIN STEAM ISOLATION VALVE (MSIV) ON THE "A" MAIN STEAM LINE. UPON DISASSEMBLY OF THE INBOARD VALVE, IT WAS DETERMINED THAT THE STEM DISC HAD SEPARATED FROM THE STEM DURING OPERATION, AND THAT THE MAIN DISC SEATED, CAUSING A PRESSURE SPIKE AND THE RESULTING FLUX TRANSIENT. THE SAFETY SIGNIFICANCE OF THIS EVENT IS CONSIDERED TO BE MINIMAL. THE TRANSIENT RESPONSE OF THE PLANT WAS VERY SIMILAR TO THE RESPONSE RECORDED FOR AN OVERSEAS BWR WHICH SUFFERED A SIMILAR FAILURE.

FORM 147 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
298 1989 025 0 8911020271 215747 09/28/89

ABSTRACT

POWER LEVEL - 100%. ON SEPTEMBER 28, 1989, AT 11:36 AM, A MAIN TURBINE TRIP OCCURRED, FOLLOWED IMMEDIATELY BY A REACTOR SCRAM. THE REACTOR VESSEL WATER LEVEL TRANSIENT THAT RESULTED FROM THE SCRAM CAUSED CONTAINMENT ISOLATION GROUPS 2 (PRIMARY CONTAINMENT), 3 (REACTOR WATER CLEANUP) AND 6 (SECONDARY CONTAINMENT) TO OCCUR. THE TURBINE TRIP SIGNAL THAT INITIATED THE EVENT WAS TURBINE HYDRAULIC CONTROL OIL RESERVOIR LOW LEVEL, WHICH OCCURRED APPROXIMATELY TWO MINUTES AFTER THE CONTROL OIL PUMPS WERE SHIFTED. IT WAS LATER VERIFIED THAT RESERVOIR LEVEL HAD REMAINED IN THE NORMAL RANGE THROUGHOUT THE EVENT. THE EXACT CAUSE FOR THE TURBINE HYDRAULIC CONTROL OIL RESERVOIR LOW LEVEL TRIP SIGNAL COULD NOT BE POSITIVELY IDENTIFIED. IT WAS CONCLUDED THE TRIP SIGNAL WAS CAUSED BY SPURIOUS ACTUATION OF THE LEVEL SWITCH DUE TO EQUIPMENT VIBRATION AS A RESULT OF SHIFTING CONTROL OIL PUMPS. THE IMMEDIATE ACTIONS TAKEN WERE TO STABILIZE THE PLANT FOLLOWING THE SCRAM. TO MINIMIZE THE POSSIBILITY OF RECURRENCE, A TEMPORARY INSTRUCTION WAS ISSUED TO LIMIT CONTROL OIL PUMP SHIFTING, AND A CONTROL OIL SYSTEM FLUSH WAS SCHEDULED FOR THE NEXT OUTAGE. ADDITIONALLY, SEVERAL SYSTEM RELIABILITY IMPROVEMENTS WILL BE EVALUATED.

FORM 149 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 298 1989 026 0 9001050082 216288 11/25/89

ABSTRACT

POWER LEVEL - 100%. ON 11/25/89, AT 10:15 P.M., WITH THE PLANT AT FULL POWER, A REACTOR SCRAM OCCURRED WHEN THE OUTBOARD MAIN STEAM ISOLATION VALVES (MSIVS) CLOSED AS A RESULT OF DEPRESSURIZATION OF THE INSTRUMENT AIR (IA) SYSTEM. THE DECREASE IN IA SYSTEM PRESSURE OCCURRED WHEN THE AIR DRYER POST FILTER ASSEMBLY RUPTURED. INVESTIGATION REVEALED THAT THE POST FILTER MEDIA (PAPER CARTRIDGES) HAD BEEN IGNITED BY EITHER HOLE AIR OR HOT PARTICLES FROM THE DRYER. BURNING CARTRIDGES RESULTED IN OVERHEATING OF THE FILTER ASSEMBLY HOUSING. THE ASSOCIATED HEAT INDUCED STRESS, COUPLED WITH INTERNAL (SYSTEM) AIR PRESSURE, CAUSED THE HOUSING TO DEFORM AND RUPTURE. CORRECTIVE ACTIONS TAKEN INCLUDED COMPLETE DISASSEMBLY, INSPECTION AND REFURBISHMENT OF THE "B" AIR DRYER, INCLUDING REPLACEMENT OF THE POST FILTER ASSEMBLY, AS WELL AS AN EXTENSIVE INSPECTION OF THE "A" AIR DRYER. FILTER CARTRIDGES CAPABLE OF WITHSTANDING HIGH TEMPERATURE CONDITIONS WERE INSTALLED IN BOTH POST FILTER ASSEMBLIES. APPROXIMATELY FIFTEEN FEET OF PIPING DOWNSTREAM OF THE POST FILTER WAS REPLACED DUE TO CONCERNS ABOUT THE POSSIBLE EFFECTS OF OVERHEATING. CHECKS WERE MADE OF THE IA SYSTEM DOWNSTREAM OF THE POST FILTERS TO VERIFY SYSTEM CLEANLINESS. ADDITIONALLY, COMPONENTS IN THE VICINITY OF THE RUPTURED POST FILTER ASSEMBLY WERE INSPECTED TO ENSURE THAT DERRIS FROM THE EVENT WAS NOT PRESENT.

FORM 149 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 298 1990 011 0 9011260132 220077 10/17/90

ABSTRACT

POWER LEVEL - 100%. ON 10/17/90, AT 1:49 PM, WITH THE PLANT IN OPERATION AT FULL POWER, A REACTOR SCRAM AND SEVERAL ESF ACTUATIONS, INCLUDING GROUP ISOLATIONS AND EMERGENCY CORE COOLING SYSTEM ACTUATIONS, OCCURRED DUE TO A GROUND FAULT ON THE 345 KV PHASE A TRANSMISSION LINE, CAUSING THE 345 KV OUTPUT BREAKERS TO OPEN. THE GROUND FAULT OCCURRED WHEN GUSTING WIND CONDITIONS CAUSED A POWER CABLE (5/C-#10) TO A TEMPORARY CONSTRUCTION ELEVATOR WHICH WAS INSTALLED TO FACILITATE REFURBISHMENT OF THE REACTOR BUILDING ROOF, TO COME INTO CONTACT WITH THE 345 KV A PHASE TRANSMISSION LINE AND THE TRANSMISSION TOWER SHIELD LINE. POWER TO THE STATION WAS IMMEDIATELY RESTORED THROUGH THE STARTUP TRANSFORMER. THIS POWER SOURCE, HOWEVER, WAS INTERRUPTED WITHIN THREE SECONDS OF THE INITIAL GROUND FAULT WHEN A PIECE OF THE POWER CABLE MADE CONTACT BETWEEN THE 345 KV PHASE C TRANSMISSION LINE AND THE 161 KV PHASE A TRANSMISSION LINE. UPON SENSING LOSS OF VOLTAGE ON THE 4160 VAC CRITICAL BUSES, SUPPLY BREAKERS FROM THE EMERGENCY TRANSFORMER CLOSED, REPOWERING THE 4160 VAC CRITICAL SWITCHGEAR. THE ROOT CAUSE OF THIS EVENT IS FAILURE TO ESTABLISH AND IMPLEMENT SUFFICIENT WORK CONTROL MEASURES FOR THE REACTOR BUILDING ROOF REFURBISHMENT ACTIVITY, CONSIDERING THE LOCATION SELECTED FOR STAGING OF THE WORK.

FORM 150 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 301 1989 002 0 8905030409 213730 03/29/89

POWER LEVEL - 100%. ON 04/20/89, AT 0843 HOURS, UNIT 2 EXPERIENCED A MAIN STEP-UP TRANSFORMER LOCKOUT, MAIN GENERATOR BREAKER TRIP AND CONCURRENT TURBINE AND REACTOR TRIPS. THE UNIT HAD BEEN OPERATING AT 100% POWER. THE LOCKOUT OCCURRED SHORTLY AFTER THE SPURIOUS ACTUATION OF THE UNIT 2 X01C PHASE FIRE DELUGE SPRAY SYSTEM. THE DELUGE SPRAY APPARENTLY INDUCED A FLASHOVER FROM THE TRANSFORMER TO GROUND, WHICH WAS DETECTED BY TRANSFORMER DIFFERENTIAL PROTECTIVE RELAYS. THE SPRAY SYSTEM ACTUATED WHILE TROUBLESHOOTING A WIRING PROBLEM DISCOVERED DURING MODIFICATION WORK WHICH REPLACED THE TRANSFORMER DELUGE HEAT ACTUATION DEVICES WITH NEW ELECTRONIC DETECTORS. THE EMERGENCY DTESELS AUTOMATICALLY STARTED BECAUSE OF BUS UNDERVOLTAGE. THE UNDERVOLTAGE CONDITION WAS THE RESULT OF THE PREMATURE ACTUATION OF THE GENERATOR STUCK BREAKER PROTECTION RELAY, WHICH ISOLATED A UNIT 1 BUS SECTION CROSS-CONNECTION. THE VOLTAGE DECREASED ON THE REMAINING TRANSMISSION LINE TO UNIT 2 DUE TO A MAINTENANCE OUTAGE AT A NEARBY PLANT AND THE LINE LOSSES ASSOCIATED WITH TRANSMISSION FROM OTHER DISTANT SUPPLIES. AN UNUSUAL EVENT WAS DECLARED AT 0854 HOURS. THE EVENT WAS TERMINATED AT 1205 HOURS. REPAIRS WERE EFFECTED AND THE UNIT RETURNED TO SERVICE ON APRIL 2.

FORM 151 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 301 1989 004 0 8909270169 215305 08/20/89

ABSTRACT

POWER LEVEL - 000%. ON 8/20/89, AT 1631, UNIT 2 EXPERIENCED A MAIN STEP-UP TRANSFORMER LOCKOUT, MAIN GENERATOR BREAKER TRIP, AND CONCURRENT TURBINE AND REACTOR TRIPS. THE UNIT HAD BEEN OPERATING AT 100% POWER. THE LOCKOUT OCCURRED SHORTLY AFTER WATER SPRAY HAD BEEN INITIATED TO THE TRANSFORMER OIL COOLERS TO REDUCE TEMPERATURES ON THE X01 TRANSFORMERS. THE UNIT TRANSFORMER LOCKOUT WAS INITIATED BY THE APPARENTLY RANDOM ACTUATION OF THE 2X01 "B" PHASE "SUDDEN PRESSURE" TRIP SYSTEM. THE UNIT RESPONDED IN A NORMAL MANNER TO THE TRIP WITH SEVERAL MINOR PROBLEMS. AN UNUSUAL EVENT WAS DECLARED AT 1644 DUE TO LOSS OF ELECTRICAL LOAD. THE UNUSUAL EVENT WAS TERMINATED AT 1856. AFTER EXTENSIVE INVESTIGATION AND THOROUGH CHECKOUT AND TESTING OF THE 2X02 "B" PHASE TRANSFORMER, THE UNIT WAS RETURNED TO SERVICE ON 8/21/89.

FORM 152 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 302 1989 020 0 8907180161 214624 06/14/89

ABSTRACT

POWER LEVEL - 000%. ON JUNE 14, 1989, CRYSTAL RIVER UNIT 3 WAS SUBCRITICAL IN MODE 3 (HOT STANDBY). A REACTOR COOLANT SYSTEM HEATUP WAS IN PROGRESS AND SAFETY CONTROL ROD GROUP ONE WAS FULLY WITHDRAWN. AT 1054 THE "B" CONTROL ROD DRIVE (CRD) AC BREAKER OPENED SPURIOUSLY. AT 1100, WHILE TROUBLESHOOTING THE "B" CRD AC BREAKER, A PLANT OPERATOR (REACTOR OPERATOR LICENSED) INADVERTENTLY CONTACTED THE MANUAL SHUNT TRIP LEVER FOR THE "A" CRD AC BREAKER. THIS ACTION OPENED THE "A" CRD AC BREAKER AND RESULTED IN A REACTOR TRIP. SAFETY CONTROL ROD GROUP ONE INSERTED INTO THE CORE AND THE PLANT WAS STABILIZED USING PLANT ABNORMAL PROCEDURES. THE CAUSE OF THE EVENT WAS PERSONNEL ERROR IN MANUALLY CONTACTING THE "A" CRD AC BREAKER MANUAL SHUNT TRIP LEVER. CONTRIBUTING CAUSES INCLUDED THE FACT THAT THE LEVER PROTRUDED FROM THE CABINET AND WAS UNPROTECTED, AS WELL AS THE SPURIOUS OPENING OF THE "B" CRD AC BREAKER. TO PRECLUDE

THE 3000 AC BREAKER WAS REPLACED AND THE
BREAKER OF INTEREST WAS TESTED. NO PROBLEMS WERE NOTED. THE REMOVED
BREAKER WILL BE CHECKED BY THE BREAKER MANUFACTURER.

FORM 153 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
302 1989 023 0 3907200301 214627 06/16/89

ABSTRACT

POWER LEVEL - 012%. ON 6/16/89 CRYSTAL RIVER UNIT #3 WAS IN MODE 1 (POWER OPERATION) AT 12% REACTOR POWER WITH THE MAIN TURBINE LATCHED AND ROLLING. AT 1325, THE UNIT #3 START-UP TRANSFORMER BECAME DE-ENERGIZED WHICH RESULTED IN A REACTOR/TURBINE TRIP. BOTH EMERGENCY DIESEL GENERATORS STARTED DUE TO THE UNDER VOLTAGE CONDITION SENSED ON BOTH 4160 V. BUSES. THE DIESEL GENERATORS RE-ENERGIZED THEIR RESPECTIVE BUSES. A LOSS OF MAIN FEEDWATER OCCURRED DUE TO THE LOSS OF UNIT #3 START-UP TRANSFORMER. THE EMERGENCY FEEDWATER INITIATION AND CONTROL SYSTEM ACTUATED TO SUPPLY FEEDWATER TO BOTH ONCE THROUGH STEAM GENERATORS. HOWEVER, THE MOTOR DRIVEN EMERGENCY FEEDWATER PUMP DID NOT AUTOMATICALLY START AND WAS MANUALLY STARTED. THE CAUSE OF THE DEGRADATION OF OFF-SITE POWER WAS INADVERTENT ACTUATION OF A 230 KV FEEDER TEST TRIP CIRCUIT COINCIDENT WITH FAILURE OF A FAULT DETECTOR RELAY. THE CAUSE OF THE START FAILURE OF THE EMERGENCY FEEDWATER PUMP WAS A FAILED RELAY AND A LOOSE CONNECTION TO A SECOND RELAY IN THE AUTOMATIC START CIRCUIT. FLORIDA POWER CORPORATION IS EVALUATING RELAY IN THE AUTOMATIC START CIRCUIT. FLORIDA POWER CORPORATION IS EVALUATING THE CONTINUED NEED FOR THE TEST TRIP CIRCUIT PUSHBUTTONS IN THE OFF-SITE POWER SUPPLY CONTROL CABINETS. A TESTING PROGRAM FOR THE RELAYS WHICH INITIATE EMERGENCY FEEDWATER ON A LOSS OF OFF-SITE POWER WILL BE DEVELOPED.

FORM 154 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
304 1989 003 0 8903080147 213144 01/31/89

ABSTRACT

POWER LEVEL - 000%. DURING STARTUP THE REACTOR OPERATOR RECEIVED A ROD URGENT FAILURE ALARM WHILE ATTEMPTING TO WITHDRAW CONTROL ROD BANK C. AFTER INVESTIGATION, DURING WHICH NO APPARENT CAUSE COULD BE DETERMINED FOR THE CONTINUED ROD URGENT FAILURE, IT WAS SUSPECTED THAT AN ERROR DETECTOR CARD HAD FAILED, GIVING A FALSE ERROR INDICATION. THE TECH STAFF ENGINEER PROPOSED "SWAPPING" THE SUSPECT CARD WITH THAT FROM A NEIGHBORING CABINET. IN ORDER TO ACCOMPLISH THIS, THE STATIONARY GROUP A FIRING CIRCUIT CARDS WERE PULLED FROM POWER CABINETS SCU AND 1AC. PULLING THE FIRING CIRCUIT CARDS REMOVED CURRENT FROM THE STATIONARY COILS OF THE GROUP A RODS, CAUSING THEM TO DROP INTO THE CORE. THE REACTOR OPERATOR, UPON SEEING THAT RODS HAD BEEN DROPPED, MANUALLY TRIPPED THE REACTOR. THE CAUSE OF THIS EVENT WAS PERSONNEL ERROR, BOTH COGNITIVE (SINCE THE ENGINEER WAS NOT AWARE OF THE RESULT OF PULLING THE CARDS) AND PROCEDURAL (SINCE NO PROCEDURES EXISTED TO AID IN ROD CONTROL SYSTEM TROUBLESHOOTING). A REQUEST WAS SENT TO THE ZION TRAINING DEPARTMENT REQUESTING THAT ROD CONTROL SYSTEM COURSES PLACE MORE EMPHASIS ON TROUBLESHOOTING IN THE CABINETS, AND TO INCLUDE A REVIEW OF PERTINENT LER'S AND OVR'S. A PROCEDURE WILL BE WRITTEN TO GIVE GUIDANCE AND PRECAUTIONS FOR TROUBLESHOOTING IN THE ROD CONTROL SYSTEM. THE CARD WAS REPLACED, AND UNIT 2 WAS BROUGHT CRITICAL WITH NO FURTHER ROD CONTROL PROBLEMS.

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 304 1990 001 0 9002230335 216902 01/18/90

ABSTRACT

POWER LEVEL - 040%. ON 1/18/90, AT APPROXIMATELY 0235, ZION UNIT 2 WAS OPERATING IN A STEADY CONFIGURATION AT APPROXIMATELY 40% POWER. A CONDENSER TUBE LEAK TEST WAS BEING PERFORMED. DUE TO A DEFICIENCY IN THE PROCEDURE FOR THIS TEST AND SUBSEQUENT CORRECTIVE ACTION, A CONDENSER VACUUM EXCURSION WAS EXPERIENCED. THIS CAUSED THE TURBINE CONTROL SYSTEM TO OSCILLATE GOVERNOR VALVES #2 AND #3 OVER A 5% RANGE. THE UNIT OPERATOR ATTEMPTED TO ALLEVIATE THIS OSCILLATION CONDITION BY SWITCHING ALTERNATIVELY BETWEEN TURBINE MANUAL AND TURBINE AUTOMATIC CONTROL. DUE TO CONTINUED OSCILLATION OF THE GOVERNOR VALVES, THE OPERATOR BELIEVED THAT THE TURBINE CONTROL SYSTEM WAS UNABLE TO CONTROL THE TURBINE AND THEREFORE INITIATED A MANUAL REACTOR TRIP. THE GOVERNOR OSCILLATION WAS PRIMARILY INTRODUCED INTO THE TURBINE CONTROL SYSTEM FROM THE CONDENSER VACUUM EXCURSION THROUGH THE IMPULSE PRESSURE FEEDBACK CIRCUIT. THERE WERE NO SAFETY CONSEQUENCES AS A RESULT OF THIS EVENT. THE TEST PROCEDURE WAS REWRITTEN TO CHANGE THE ORDER OF THE VALVE LINE-UP PREVENTING FUTURE CONDENSER VACUUM EXCURSIONS.

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FORM 156 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 304 1990 010 0 9010190205 219715 09/07/90

ABSTRACT

POWER LEVEL - 098%. ON 9/7/90 ZION UNIT 2 TRIPPED ON A SUDDEN LOSS OF CONDENSER VACUUM. INSPECTIONS FOUND A FAILED CONDENSER EXPANSION BOOT IN THE A-BAY OF THE CONDENSER, A FAILED LOW PRESSURE TURBINE RUPTURE DISC, AND THAT BOTH OF THE FEED WATER PUMPS' RUPTURE DISCS HAD BEEN DEFORMED. INTERNAL INSPECTION OF THE CONDENSER DETERMINED THAT THE INITIATING EVENT HAD BEEN A FAILURE OF THE BOOT. THE ROOT CAUSE ANALYSIS DETERMINED THAT THE CONDENSER EXPANSION BOOT HAD A LIFE EXPECTANCY OF 5 TO 7 YEARS BUT HAD BEEN IN SERVICE FOR 9 YEARS. AGGRAVATING THE AGED CONDITION WAS IMPROPER TORQUING AND EXPOSURE TO EXCESSIVE TEMPERATURE. ALL SAFETY SYSTEMS RESPONDED AS DESIGNED. CORRECTIVE ACTION INCLUDED REPLACEMENT OF THE DAMAGED COMPONENTS, ADDING THE BOOTS TO THE PREVENTIVE MAINTENANCE PROGRAM TO ENSURE THAT THEY ARE REPLACED AT 5 YEAR INTERVALS, AND TO FOLLOW VENDOR INSTALLATION RECOMMENDATIONS.

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FORM 157 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 304 1990 011 0 9010290183 219891 09/22/90

ABSTRACT

POWER LEVEL - 039%. ON 9/22/90, AT APPROXIMATELY 2151, UNIT 2 WAS AT 39% AND RAMPING UP IN POWER WHEN THE 2W MAIN POWER TRANSFORMER EXPERIENCED AN INTERNAL FAULT. A MAJOR OIL FIRE RESULTED FROM THE 2W TRANSFORMER EXPLOSION. THE FIRE WAS SUCCESSFULLY CONTAINED BY THE DELUGE SYSTEM, AND WAS EXTINGUISHED BY THE FIRE BRIGADE. NEITHER THE 2E MAIN POWER, STATION AUXILIARY, OR UNIT AUXILIARY TRANSFORMERS WERE DAMAGED DURING THE EVENT. THE NSSS AND SECONDARY SYSTEMS SHUTDOWN RESPONSE WAS NORMAL. THE 2W MAIN POWER TRANSFORMER EXPERIENCED HEAVY MECHANICAL DAMAGE DUE TO THE PRESSURE SPIKE RESULTING FROM THE FAULT.

EXPOSURES THAT OCCURRED AFTER THE INITIAL FAULT. NO DAMAGE WAS FOUND TO THE MAIN GENERATOR. THE ROOT CAUSE IS STILL UNDER INVESTIGATION AND WILL REQUIRE DISASSEMBLY OF THE 2W TRANSFORMER. SUSPECTED PRIMARY CAUSAL FACTORS INCLUDE STATIC ELECTRICIFICATION, WINDING-TO-WINDING FAILURE, AND NITROGEN BREAKOUT FROM THE TRANSFORMER OIL. THE TRANSFORMER IS CURRENTLY BEING REPLACED WITH A SPARE UNIT, AND THE BUS DUCTS AND ASSOCIATED EQUIPMENT ARE BEING REPAIRED. ADDITIONAL PRECAUTIONARY MEASURES BEING PURSUED INCLUDE TRANSFORMER COOLER BANK SEQUENCING, ADDITION OF BUS DUCT LIGHTNING ARRESTERS, AND ADDITION OF A SEPARATE BUS DUCT GROUND CABLE.

FORM 158 LER SCSS DATA 04-13-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
304 1990 013 0 9012140064 220137 11/11/90

ABSTRACT

POWER LEVEL - 099%. ON 11/11/90 AT 1014 ZION UNIT 2 TRIPPED DUE TO A SENSED LOSS OF MAIN TURBINE BEARING OIL PRESSURE. THE DIAPHRAGM IN THE BEARING OIL SECTION OF THE TURBINE TRIP DEVICE (TTD) HAD RUPTURED. THIS SENSED LOSS OF BEARING OIL PRESSURE ACTUATED THE TTD WHICH TRIPPED THE TURBINE. THE TURBINE BEARINGS WERE NOT DAMAGED, AS THEY DID NOT LOSE OIL PRESSURE. THE ROOT CAUSE ANALYSIS DETERMINED THAT THE DIAPHRAGM HAD BEEN IN SERVICE PAST ITS SERVICE LIFE EXPECTANCY. SIGNS OF CRACKING AND HARDNESS WERE VISIBLE. FOLLOWING VERIFICATION OF THE NEW DIAPHRAGM SHELF LIFE, IT WAS PLACED INTO THE TTD. AFTER PERFORMING PT-101 "MAIN TURBINE PROTECTIVE DEVICE TRIP TEST", SECTION 5.2 "LOW BEARING OIL PRESSURE TRIP TEST", THE UNIT WAS RETURNED TO SERVICE. CURRENTLY A PREVENTIVE MAINTENANCE PROCEDURE IS BEING CREATED TO ENSURE THAT THE TTD IS PROPERLY MAINTAINED AT EACH REFUEL OUTAGE.

FORM 159 LER SCSS DATA 04-13-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
305 1989 016 0 9001310373 216627 12/27/89

ABSTRACT

POWER LEVEL - 100%. AT 1658 CST ON DECEMBER 27, 1989, WITH THE REACTOR AT 100% POWER, THE PLANT EXPERIENCED A TURBINE/REACTOR TRIP. THE REACTOR TRIP WAS CAUSED BY BOTH TURBINE STOP VALVES CLOSING COINCIDENT WITH THE PLANT POWER LEVEL GREATER THAN 10%. THE TURBINE STOP VALVES CLOSED AS A RESULT OF A DECREASE IN ELECTRO-HYDRAULIC (EH) TRIP FLUID HEADER PRESSURE. THE DECREASE IN EH PRESSURE COULD BE CAUSED BY EITHER OF TWO VALVES OPENING IN RESPONSE TO SIGNALS ALLOWING THE EH FLUID TO BE DUMPED. THE ROOT CAUSE OF THE DECREASE IN EH TRIP FLUID HEADER PRESSURE COULD NOT BE DETERMINED. A MULTI-DISCIPLINED COMMITTEE WAS FORMED TO REVIEW THE EVENT USING FORMAL ROOT CAUSE ANALYSIS TECHNIQUES. BASED ON THE REVIEW OF ALL APPLICABLE PLANT PARAMETER DATA, THE TEAM GENERATED SEVERAL POSSIBLE SCENARIOS THAT MAY HAVE OCCURRED. A SPECIFIC SCENARIO WHICH WAS THE INITIATING EVENT COULD NOT BE CONCLUSIVELY DETERMINED. THE REPORT GENERATED BY THE COMMITTEE INCLUDED SEVERAL RECOMMENDATIONS FOR FOLLOW-UP INSPECTIONS AND MAINTENANCE DURING THE NEXT REFUELING OUTAGE (SCHEDULED FOR MARCH OF 1990). THE PLANT WAS STABILIZED IN THE HOT SHUTDOWN CONDITION. AS EXPECTED, THE AUXILIARY FEEDWATER PUMPS STARTED, WHICH IS AN ESF ACTUATION, IN RESPONSE TO THE TRIP. THIS EVENT IS BEING REPORTED AS REQUIRED BY 10 CFR 50.73(A)(2)(IV).

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 306 1989 002 0 8907050374 214528 05/26/89

ABSTRACT

POWER LEVEL - 100%. ON 5/26/89, UNIT 2 WAS AT 100% POWER. AT 0605 UNIT 2 TRIPPED ON STEAM GENERATOR LOW LEVEL. INVESTIGATION OF PLANT DATA REVEALED THAT THE TURBINE CONTROL VALVES HAD CLOSED JUST PRIOR TO THE TRIP. INVESTIGATION OF THE TURBINE CONTROL SYSTEM LED TO THE POWER SUPPLY DRAWERS, WHERE FAILED COMPONENTS WERE FOUND ON A SPEED ERROR AMPLIFIER CARD. THE FAILED COMPONENTS WERE AN ELECTROLYTIC CAPACITOR AND AN INDUCTOR. THE SPEED ERROR AMPLIFIER CARD WAS REPLACED AND INSPECTION OF ALL OTHER CIRCUIT CARDS WAS COMPLETED. THE SPEED ERROR AMPLIFIER WAS TESTED AND THE CONTROL SYSTEM RETURNED TO SERVICE. UNIT 2 WAS RETURNED TO SERVICE AT 0353 ON MAY 27, 1989. CAUSE OF THE EVENT WAS FAILURE OF AN ELECTROLYTIC CAPACITOR. THE CAPACITOR FAILURE SHORTED THE CONTROL SYSTEM POWER SUPPLY TO GROUND, CAUSING LOSS OF ELECTRONIC CONTROL POWER TO THE TURBINE CONTROL VALVES. THIS CAUSED THE CONTROL VALVES TO CLOSE. THE SHORT CIRCUIT CLEARED ABOUT 7 SECONDS LATER, ALLOWING THE CONTROL VALVES TO REOPEN, BUT THE LOW STEAM GENERATOR LEVEL TRIP SETPOINT HAD BEEN REACHED AND UNIT 2 TRIPPED. THE SPEED ERROR AMPLIFIER CARD WAS REPLACED. OTHER CIRCUIT CARDS WERE INSPECTED.

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FORM 161 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 306 1989 004 1 9003270415 217460 12/21/89

ABSTRACT

POWER LEVEL - 100%. UNIT 2 TRIPPED ON 12/21/89, FROM WHAT APPEARED TO BE FAULTY VOLTAGE REGULATION BY ONE OF THE CONTROL ROD DRIVE MECHANISM MOTOR-GENERATOR SETS. ONE SUBSTATION CIRCUIT BREAKER DID NOT OPERATE PROPERLY AND POWER WAS LOST TO NON-SAFEGUARDS 4KV BUSES, WHICH SUPPLY THE REACTOR COOLANT PUMPS. THE REACTOR WAS COOLED BY NATURAL CIRCULATION FOR ABOUT 3 HOURS. THE VOLTAGE REGULATOR FOR THE MG SET WAS REPLACED AND TESTED. SINCE THE OUTDOOR TEMPERATURE AT THE TIME OF THE TRIP WAS -22F, THE COLD WAS BLAMED FOR THE BREAKER MALFUNCTION. HEATING WAS APPLIED TO THE SUBSTATION BREAKERS AND TESTING SHOWED PROPER OPERATION. THE UNIT WAS RESTARTED. ON 12/26/89, A NEARLY IDENTICAL TRIP AND LOSS OF NON-SAFEGUARDS 4KV BUSES OCCURRED. EXTENSIVE INVESTIGATION UNCOVERED MALFUNCTIONS IN THE MG SETS, IN THE ROD CONTROL SYSTEM, AND IN THE SUBSTATION BREAKER CONTROL SYSTEM. AFTER REPAIRS AND EXTENSIVE TESTING, UNIT 2 WAS RETURNED TO SERVICE ON 1/10/90.

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FORM 162 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 306 1990 001 0 9004180289 217798 03/08/90

ABSTRACT

POWER LEVEL - 100%. ON MARCH 8, 1990, UNIT 2 WAS AT 100% POWER. AN OPERATIONS INSTRUCTOR AND A TRAINEE WERE MAKING OPERATOR ROUNDS IN THE TURBINE BUILDING. THE BUS DUCT COOLER LOCAL PANEL TEST WAS TO BE DEMONSTRATED TO THE TRAINEE. WHEN THE TEST BUTTON WAS DEPRESSED, A RELAY FAILED TO OPERATE PROPERLY AND A GENERATOR LOCKOUT SIGNAL WAS PRODUCED, RESULTING IN A TURBINE TRIP AND REACTOR TRIP AT 1104. PLANT RESPONSE TO THE TRIP WAS AS EXPECTED FOR A SECONDARY-SIDE INITIATED REACTOR TRIP; SOME WATER HAMMER OCCURRED IN SECONDARY SIDE PIPING.

OF A TEST RELAY TO OPERATE PROPERLY, ALLOWING A TRIP SIGNAL TO BE GENERATED. THE CIRCUIT IS DESIGNED SO THAT WHEN THE TEST BUTTON IS DEPRESSED, RELAY K3 DEENERGIZES, REMOVING THE TRIP RELAY (23-X) FROM THE CIRCUIT PRIOR TO SIMULATING A HIGH TEMPERATURE CONDITION. THE K3 RELAY CONTACTS FAILED TO OPEN AS DESIGNED. THUS, WHEN THE HIGH TEMPERATURE CONDITION WAS SIMULATED, A TRIP SIGNAL WAS GENERATED, PRODUCING A GENERATOR LOCKOUT AND RESULTING IN A TURBINE TRIP AND REACTOR TRIP.

FORM 163 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
306 1990 002 0 9004190017 217799 03/09/90

ABSTRACT

POWER LEVEL - 006%. ON MARCH 9, 1990, UNIT 2 WAS BEING RESTARTED FOLLOWING THE UNIT TRIP ON MARCH 9 (UNIT 2 LER 90-001). REACTOR POWER WAS ABOUT 6% AND THE TURBINE HAD JUST BEEN TRIPPED AS PART OF TURBINE CONTROL SYSTEM TESTING THAT IS PERFORMED AT EACH STARTUP. WHEN THE TURBINE WAS RELATCHED, AT 0128, THE REACTOR TRIPPED. CAUSE OF THE TRIP WAS DETERMINED TO BE A FAILED RELAY, WHICH WAS THEN REPLACED. LOGIC TESTING THEN TOOK PLACE TO PROVE OPERABILITY OF THE NEW RELAY. AFTER THE LOGIC TESTING, VISUAL OBSERVATION OF SOME PERMISSIVE RELAYS SHOWED THAT TWO RELAYS, ONE IN EACH TRAIN, WERE NOT IN THEIR PROPER POSITIONS. THESE TWO RELAYS WERE REPLACED AND TESTED FOR PROPER OPERATION. THE UNIT WAS RESTARTED AND RETURNED TO SERVICE AT 0928 ON MARCH 10, 1990. CAUSE OF THE EVENT WAS FAILURE OF A WESTINGHOUSE N8FD RELAY. THE FAILED RELAYS WERE REPLACED.

FORM 164 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
306 1990 003 1 9009250190 219540 03/16/90

ABSTRACT

POWER LEVEL - 100%. ON MARCH 16, 1990, UNIT 2 WAS OPERATING AT 100% POWER. AT 0921 A REACTOR TRIP OCCURRED FOLLOWING THE RESETTING OF A ROD CONTROL SYSTEM URGENT FAILURE ALARM WHICH HAD BEEN GENERATED BY CONNECTING TEST EQUIPMENT TO THE ROD CONTROL SYSTEM. ELECTRONIC NOISE HAD BEEN OBSERVED ON TEMPORARY MONITORING EQUIPMENT INSTALLED ON UNIT 2 ROD CONTROL SYSTEM. IN AN ATTEMPT TO IDENTIFY OR ELIMINATE POSSIBLE SOURCES OF THIS NOISE, AN I&C TECHNICIAN PLANNED TO DISCONNECT AND RECONNECT VARIOUS INPUTS TO A RECORDER. THE TECHNICIAN CONNECTED AN OSCILLOSCOPE TO A POINT IN THE ROD CONTROL SYSTEM. WHEN THE OSCILLOSCOPE WAS CONNECTED, THE "V-REF" CONTROL SIGNAL WAS FORCED TO A LOW VALUE BY THE LOW INPUT IMPEDANCE OF THE OSCILLOSCOPE. THE "V-REF" SIGNAL FOR ONLY TWO RODS, E-03 AND I-11, WAS AFFECTED AND THEY DROPPED APPROXIMATELY 10 STEPS INTO THE CORE AS THE URGENT FAILURE CIRCUITRY RESPONDED TO PREVENT ROD MOTION BY APPLYING "HOLD" CURRENT TO THE ROD MECHANISMS. APPROXIMATELY 10 SECONDS LATER, THE URGENT FAILURE ALARM WAS RESET. WHILE THE RESET PUSHBUTTON WAS DEPRESSED, THE "HOLD" CURRENT WAS REMOVED FROM RODS E-03 AND I-11, AND THEY BEGAN TO DROP INTO THE CORE, RESULTING IN A HIGH NEGATIVE FLUX RATE REACTOR TRIP. RESPONSE TO THE TRIP WAS NORMAL AND CORRECT. AFTER EVALUATION OF THE EVENT, THE UNIT WAS RETURNED TO SERVICE AT 0128 THE NEXT DAY.

FORM 165 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 000%. ON OCTOBER 7, 1990 UNIT 2 WAS CRITICAL AT ZERO POWER AFTER REFUELING. ZERO POWER PHYSICS TESTING HAD JUST BEEN COMPLETED. THE REACTIVITY COMPUTER USED FOR PHYSICS TESTING WAS TO BE DISCONNECTED FROM NUCLEAR INSTRUMENTATION (NIS) POWER RANGE CHANNEL N41. AN INSTRUMENT AND CONTROL TECHNICIAN, WHEN ASKED TO DO THE WORK, REVIEWED THE PROCEDURE AND THE LOGIC DIAGRAMS TO DETERMINE WHAT HIS ACTIONS SHOULD BE. WITH PROCEDURE IN HAND, HE PROCEEDED TO REMOVE THE CONTROL POWER AND INSTRUMENT POWER FUSES FROM THE FRONT PANEL OF THE NIS DRAWER, CAUSING A UNIT 2 REACTOR TRIP AT 1712 BECAUSE HE HAD INADVERTENTLY REMOVED THE FUSES FROM NIS INTERMEDIATE RANGE CHANNEL N35 INSTEAD OF POWER RANGE CHANNEL N41. THE TRIP AND RECOVERY FROM THE TRIP WERE UNEVENTFUL. CAUSE OF THE EVENT WAS PERSONNEL ERROR IN REMOVING FUSES FROM THE WRONG NIS CHANNEL DRAWER. CHANNEL N35 IS IMMEDIATELY ABOVE CHANNEL N41 ON THE NIS RACK. THE TECHNICIAN FAILED TO USE SELF-CHECKING WHEN REMOVING THE FUSES.

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FORM 166 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION OCS NUMBER NSIC EVENT DATE
306 1990 012 0 9101310104 220872 12/29/90

ABSTRACT

POWER LEVEL - 100%. ON 12/29/90, UNIT 2 WAS AT 100% POWER, AT 2234, UNIT 2 TRIPPED. CONTROL ROOM ANNUNCIATORS, AND THE SEQUENCE OF EVENTS GENERATED BY THE PLANT PROCESS COMPUTER, INDICATED THAT THE CAUSE OF THE REACTOR TRIP WAS A NEGATIVE FLUX RATE TRIP FROM THE REACTOR PROTECTION SYSTEM. AN INVESTIGATION INTO THE CAUSE OF THE NEGATIVE FLUX RATE TRIP REVEALED THAT TWO CIRCUIT CARDS IN THE ROD CONTROL SYSTEM POWER CABINET 1BD HAD FAILED. THE FIRST FAILURE WAS OF A TRANSISTOR IN THE URGENT FAILURE ALARM CIRCUIT. THE SECOND FAILURE WAS THE OPENING OF A SOLDER CONNECTION ON THE STATIONARY GRIPPER REGULATION CARD, CAUSING THE REFERENCE VOLTAGE TO GO TO ZERO. IN RESPONSE TO THE REFERENCE VOLTAGE GOING TO ZERO, THE URGENT FAILURE ALARM CIRCUIT SHOULD HAVE GENERATED AN URGENT FAILURE ALARM AND A "HOLD" CURRENT THAT WOULD BE APPLIED TO THE STATIONARY GRIPPERS FOR ALL THE RODS SUPPLIED BY THAT POWER CABINET. THIS HOLD CURRENT WOULD HAVE PREVENTED THE RODS FROM DROPPING INTO THE REACTOR. BUT SINCE THE URGENT FAILURE ALARM CIRCUIT HAD ALSO FAILED, NO CURRENT WAS SUPPLIED TO THE STATIONARY GRIPPERS IN CONTROL ROD BANK D AND THEY FELL INTO THE CORE, CAUSING THE NEGATIVE FLUX RATE TRIP. THE FAILED CARDS IN THE ROD CONTROL SYSTEM WERE REPLACED. UNIT 2 WAS RETURNED TO SERVICE AT 1330 ON 12/30/90.

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FORM 167 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION OCS NUMBER NSIC EVENT DATE
309 1989 001 0 8902210346 213055 01/10/89

ABSTRACT

POWER LEVEL - 100%. AT 2019 ON 1/10/89, THE REACTOR AUTOMATICALLY TRIPPED FROM 100% POWER ON LOSS OF LOAD DUE TO A TURBINE TRIP. THE TURBINE TRIPPED DUE TO A SPURIOUS LOW VOLTAGE CONDITION ON A CONTROL POWER BUS FOR THE ELECTRO-HYDRAULIC CONTROL (EHC) SYSTEM. THE EHC SYSTEM POSITIONS THE TURBINE CONTROL VALVES. CONTROL POWER FOR EHC IS PROVIDED FROM FIVE DC POWER BUSES. LOSS OF VOLTAGE ON ANY ONE OF THESE BUSES ACTUATES A RELAY THAT TRIPS THE MAIN TURBINE. A WESTINGHOUSE TECHNICAL REPRESENTATIVE (THE EHC SYSTEM VENDOR) PHYSICALLY INSPECTED THE POWER DISTRIBUTION PANEL AND ELECTRONICALLY

AS A PRECAUTIONARY MEASURE, SEVERAL POTENTIALLY SUSPECT ELECTRONIC COMPONENTS WERE REPLACED. A TEMPORARY STRIP CHART RECORDER WAS CONNECTED TO THREE OF THE BUSES TO ASSIST FURTHER TROUBLESHOOTING EFFORTS IN THE EVENT OF A REPEAT OCCURRENCE. THE OTHER TWO BUSES ARE NOT EXTERNALLY ACCESSIBLE FOR RECORDING.

FORM 168 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
309 1989 003 0 8905110271 213957 04/05/89

ABSTRACT

POWER LEVEL - 100%. ON 4/5/89, A PLANT TRIP OCCURRED WHEN GENERATOR PROTECTIVE RELAYS 86P AND 86BU ACTUATED ON A LOSS OF LOAD CONDITION TO TRIP THE REACTOR AND TURBINE. THE CAUSE OF THE PLANT TRIP WAS ATTRIBUTED TO A CENTRAL MAINE POWER COMPANY (CMP) RELAY INSPECTOR RETURNING A 345 KV BREAKER FAILURE RELAY TO SERVICE. AFTER TESTING THE RELAY, THE INSPECTOR DID NOT CLOSE THE RELAY INPUT SWITCHES BEFORE CLOSING THE OUTPUT (TRIP) SWITCHES. WITH ALL OUTPUT SWITCHES CLOSED, A CHARGED INPUT CABLE WAS RECONNECTED TO THE RELAY, CAUSING IT TO ACTUATE. THE RELAY IN TURN TRIPPED UNIT TIE BREAKERS WHICH ISOLATED THE PLANT FROM THE GRID RESULTING IN THE LOSS OF LOAD CONDITION. ALL PLANT SYSTEMS RESPONDED NORMALLY TO THE PLANT TRIP. A CAUTION HAS BEEN ADDED TO THE ASSOCIATED CMP TEST INSTRUCTION ENSURING THE OUTPUT (TRIP) SWITCHES ARE CLOSED LAST WHEN RESTORING THE RELAY TO SERVICE.

FORM 169 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
311 1989 003 0 8903140524 213206 02/05/89

ABSTRACT

POWER LEVEL - 060%. ON 2/5/89, FOLLOWING POWER REDUCTION FROM 90% TO 60%, THE UNIT EXPERIENCED A REACTOR TRIP ON NO. 23 STEAM GENERATOR (S/G) LOW LEVEL CONCURRENT WITH STEAM FLOW/FEED FLOW MISMATCH. AT THE TIME OF THE EVENT, NOS. 23A AND 23B CIRCULATING WATER PUMPS AND NO. 23 HEATER DRAIN PUMP WERE OUT OF SERVICE. FOUR MINUTES PRIOR TO THE UNIT TRIP, NO. 22 S/G FEED PUMP (SGFP) HAD TRIPPED DUE TO LOW SUCTION PRESSURE. IT WAS FOUND THAT THE LOW SUCTION TRIP SET POINT FOR THE #22 SGFP RESPONDED HIGH DUE TO FAILURE OF THE LOW SUCTION PRESSURE SWITCH. THE ROOT CAUSE OF THIS EVENT HAS BEEN ATTRIBUTED TO INADEQUATE PROCEDURES ASSOCIATED WITH OPERATING THE PLANT WITH CIRC. WATER SYSTEM REDUCED CAPACITY CONCURRENT WITH AN INOPERABLE HEATER DRAIN PUMP. PROCEDURE AOP-COND-2 HAS BEEN REVISED TO CLARIFY OPERATOR ACTIONS WITH INOPERABLE CIRC. PUMPS AND HEATER DRAIN PUMPS. THE SGFP LOW SUCTION PRESSURE FIRST OUT ANNUNCIATOR RELAY WAS INSTALLED AND TESTED. THE SPEED CONTROL AND ELECTRIC OVERSPEED WERE ALSO CHECKED FOR BOTH SGFPS. THE NO. 22 SGFP LOW SUCTION PRESSURE SWITCH WAS REPAIRED AND THE NO. 21 SGFP SWITCH WAS CHECKED AND FOUND SATISFACTORY. THE #21 SGFP MECHANICAL OVERSPEED DEVICE WAS CHECKED AND THE PUMP WAS OPERATED TO SIMULATE A TRANSIENT PRIOR TO IT BEING PLACED IN SERVICE. THE 23MS15 VALVE WAS ADJUSTED AND TESTED SUCCESSFULLY.

FORM 170 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
311 1989 005 0 8904180088 213562 03/12/89

POWER LEVEL - 100%. ON 3/12/89, BOTH STEAM GENERATOR FEED PUMPS (SGFPS) REDUCED THEIR TURBINE SPEED TO IDLE. THE REACTOR SUBSEQUENTLY TRIPPED ON NO. 23 STEAM GENERATOR (S/G) FEED FLOW/STEAM FLOW MISMATCH WITH LOW S/G LEVEL. AFTER THE REACTOR TRIPPED, A SAFETY INJECTION (SI) OCCURRED ON HIGH STEAMLINE FLOW COINCIDENT WITH LOW STEAMLINE PRESSURE. THE ROOT CAUSE OF THIS EVENT HAS BEEN ATTRIBUTED TO AN EQUIPMENT FAILURE. A CONTROL POWER FUSE, IN THE "D" VITAL INSTRUMENT INVERTER LOW VOLTAGE POWER SOURCE, CAME OUT OF ITS FUSE HOLDER RESULTING IN INVERTER FAILURE AND DEENERGIZATION OF "D" VITAL INSTRUMENT BUS. INVESTIGATIONS CONCLUDED THE FUSE MORE THAN LIKELY HAD COME OUT OF THE FUSE HOLDER DUE TO IMPROPER INSTALLATION AT SOME POINT IN THE PAST. THE FUSE ASSEMBLY DID NOT SHOW ANY SIGN OF DAMAGE OR IMPAIRMENT WHICH WOULD CAUSE THE FUSE TO DISLODGE. SUBSEQUENTLY, THE INVERTER FUSE WAS REINSTALLED AND SUCCESSFULLY CHECKED FOR CONTINUITY AND TIGHTNESS. THE STATIC INVERTER WAS STARTED, TESTED SATISFACTORILY AND RETURNED TO SERVICE. ENGINEERING IS INVESTIGATING THE FEASIBILITY OF SEPARATING THE PRESSURE CHANNELS TO OTHER VITAL INVERTERS THEREBY ELIMINATING THE POSSIBILITY OF THE OCCURRENCE OF A SIMILARLY CAUSED SI. NEW VITAL INVERTERS ARE SCHEDULED TO BE INSTALLED DURING THE NEXT UNIT 2 REFUELING OUTAGE.

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FORM 171 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 311 1989 006 0 8905040171 213816 03/29/89

ABSTRACT

POWER LEVEL - 000%. ON 3/29/89 A UNIT SHUTDOWN WAS REQUIRED TO COMPLY WITH TECH SPEC ACTION STATEMENT 3.7.7.B. THIS ACTION STATEMENT WAS FIRST ENTERED ON 3/28/89 AT 0900 HOURS IN SUPPORT OF REPLACEMENT OF THE AUX. BLDG. VENTILATION SYSTEM (ABVS) (VF) CHARCOAL FILTER ADSORBER BANK. CHARCOAL BANK TEST RESULTS, CONDUCTED IN ACCORDANCE WITH TECH SPEC SURVEILLANCE 4.7.7.B, SHOWED THE EFFICIENCY OF THE BANK TO NOT MEET TECH SPEC SURVEILLANCE 4.7.7.F. WITH THE UNIT IN MODE 3, HOT STANDBY, A REACTOR TRIP SIGNAL ON NO. 21 STEAM GENERATOR (S/G) "STEAM FLOW/FEED FLOW MISMATCH COINCIDENT WITH LOW S/G LEVEL" OCCURRED. THE ROOT CAUSE OF THE REQUIRED SHUTDOWN HAS BEEN ATTRIBUTED TO EQUIPMENT PROBLEMS. THE ROOT CAUSE OF THE REACTOR TRIP SIGNAL ACTUATION HAS BEEN ATTRIBUTED ALSO TO AN EQUIPMENT PROBLEM. PSE&G SYSTEM ENGINEERING WILL RE-REVIEW THE VENTILATION SYSTEM PREVENTIVE MAINTENANCE REQUIREMENTS TO ENSURE THEY ARE ADEQUATE. A DETAILED INVESTIGATION OF THE CIRCUMSTANCES SURROUNDING THIS EVENT BY PSE&G MANAGEMENT HAS BEEN COMPLETED. THE NO. 21 S/G STEAMLINE FLOW CHANNEL I TRANSMITTER WAS SUCCESSFULLY RECALIBRATED.

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FORM 172 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 311 1989 008 0 8905170078 213860 04/11/89

ABSTRACT

POWER LEVEL - 100%. ON 4/11/89 AT 2043 HOURS, A REACTOR TRIP ON NO. 24 STEAM GENERATOR (S/G) "LOW-LOW LEVEL" OCCURRED. THE NO. 24 MAIN STEAMLINE ISOLATION VALVE, 24MS167, HAD CLOSED. AT THE TIME OF THE EVENT, THE REQUIRED TECH SPEC SURVEILLANCE 4.0.5-V FOR THE 21MS18 MAIN STEAMLINE BYPASS STOP VALVE WAS IN PROGRESS. THE ROOT CAUSE OF THIS EVENT HAS BEEN ATTRIBUTED TO AN EQUIPMENT FAILURE. AN "OPERATE RESET" LATCHING RELAY (74-4A), ASSOCIATED WITH THE SOLID STATE PROTECTION SYSTEM (SSPS), FAILED DURING THE 21MS19 SURVEILLANCE RESULTING IN CLOSURE OF THE 24MS167 VALVE. THE FAILED "74-4A" RELAY WAS REPLACED.

MECHANICAL DEFECTS ARE PRESENT. FOLLOWING THE REACTOR TRIP, THE 24MS15, MAIN STEAMLINE SAFETY VALVE, LIFTED TWICE. THE VALVE REMAINED PARTIALLY OPEN FOR APPROXIMATELY ONE HOUR. INVESTIGATION REVEALED THAT THE AS FOUND LIFT SET PRESSURE WAS 901 PSIG (AFTER THE SECOND LIFT). A PROPER LIFT SETPOINT OF 1070 PSIG COULD NOT BE ACHIEVED. THE VALVE WAS SUBSEQUENTLY REPLACED WITH A SPARE VALVE. IT APPEARS THAT THE VALVE SEATING SURFACE DURING THE FIRST LIFT BECAME DAMAGED ALLOWING INCREASED LEAKAGE. THE REPLACED 24MS15 VALVE HAS BEEN SHIPPED TO CROSBY VALVE & GAGE CO. FOR INSPECTION AND REPAIR.

FORM 173 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
311 1989 013 1 8909180326 215254 06/10/89

ABSTRACT

POWER LEVEL - 100%. ON 6/10/89, A REACTOR TRIP WAS MANUALLY INITIATED FROM 15% REACTOR POWER DUE TO THE LOSS OF THE MAIN CONDENSER ON HIGH BACK PRESSURE. AT 2306 HOURS, THE "SCREENWASH TROUBLE" OVERHEAD ANNUNCIATOR IN CONTROL ROOM ALARMED DUE TO HIGH DIFF. LEVEL (DL) ACROSS SEVERAL CIRCULATING WATER SYSTEM (CWS) SCREENS. A POWER RUNBACK WAS INITIATED. WITHIN 5 MIN. OF THE ALARM, 5 OF THE 6 CIRCULATING PUMPS TRIPPED ON HIGH DL ACROSS THEIR ASSOCIATED SCREENS. TURBINE WAS MANUALLY TRIPPED WITH THE REACTOR AT 48% POWER. THE FUNCTIONAL TURBINE BYPASS VALVES (STEAM DUMP) WERE ARMED AND OPENED. CONDENSER BACK PRESSURE INCREASED TO WHERE THE PERMISSIVE TO USE STEAM DUMPS WAS EXCEEDED. THE STEAM DUMP VALVES CLOSED AND THE FIRST MAIN STEAM SAFETY VALVE IN EACH STEAMLINE LIFTED. DIRECTION WAS GIVEN TO MANUALLY TRIP THE REACTOR. ROOT CAUSE HAS BEEN ATTRIBUTED TO EXTERNAL CAUSES AND INADEQUATE CORRECTIVE ACTION FROM A SIMILAR PRIOR EVENT. LARGE ACCUMULATIONS OF GRASS AND DEBRIS ON THE SCREENS CAUSED THE HIGH DL. ON 8/11/83, A SIMILAR EVENT OCCURRED. CORRECTIVE ACTION FROM THE PRIOR EVENT DID NOT REQUIRE ANY LONG TERM ACTIONS. A REVIEW OF PREVENTIVE MAINTENANCE (PM) HISTORY FOR CLEANING TRASH RACKS WAS CONDUCTED. IT WAS FOUND THAT NO SPECIFIC PM REQUIREMENT EXISTED. A PM TASK FOR SPECIAL CLEANING OF TRASH RACKS EVERY REFUELING OUTAGE HAS BEEN ESTABLISHED.

FORM 174 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
311 1990 029 1 9102080111 220939 06/28/90

ABSTRACT

POWER LEVEL - 075%. AT 0032 HOURS ON 6/28/90, DURING SALEM UNIT 2 POWER ASCENSION OPERATIONS, A REACTOR TRIP OCCURRED FOLLOWING THE LOSS OF BOTH STEAM GENERATOR FEEDWATER PUMPS (SGFPs) RESULTING FROM FAILURE OF 2F 4160-480/277 VOLT TRANSFORMER. DUE TO THE LOSS OF BOTH SGFP'S "LOW STEAM GENERATOR LEVEL COINCIDENT WITH STEAM FLOW/FEED FLOW MISMATCH" HAD OCCURRED CAUSING THE REACTOR TRIP. A MAIN STEAMLINE ISOLATION WAS MANUALLY INITIATED TO REDUCE AN EXCESSIVE COOLDOWN RATE FOLLOWING THE REACTOR TRIP. MAIN STEAM ISOLATION VALVES (MSIVs) 21 AND 24MS167 DID NOT CLOSE ON THE INITIAL ATTEMPT; HOWEVER, THE OPERATOR AGAIN DEPRESSED THE MAIN STEAMLINE ISOLATION PUSHBUTTONS (THIS TIME FOR AN EXTENDED PERIOD) AND THE VALVES CLOSED. THE UNIT WAS STABILIZED IN MODE 3 (HOT STANDBY). THE ROOT CAUSE OF THE TRANSFORMER FAILURE WAS INADEQUATE PREVENTIVE MAINTENANCE. THE PREVENTIVE MAINTENANCE PROGRAM IS BEING REVISED TO PROVIDE ROUTINE, DOCUMENTED INSPECTION AND CLEANING OF TRANSFORMER COILS. ALSO, THE ROUTINE ELECTRICAL TRANSFORMER TESTING IS BEING REVISED TO INCLUDE FOUR

REVIEW OF CONCERN REVEALED THE MSIV ISOLATION LOGIC DID NOT MEET DESIGN BASIS AS PER IEEE STANDARD 279. THE MSIV CIRCUITRY WAS MODIFIED ON SALEM UNITS 1 AND 2 TO RESOLVE THE IDENTIFIED CONCERNS.

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FORM 175 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
311 1990 036 0 9010120193 219722 09/04/90

ABSTRACT

POWER LEVEL - 060%. ON 9/4/90 AT 0226 HOURS, DURING NORMAL POWER OPERATION, NO. 21 STEAM GENERATOR FEED PUMP (SGFP) TRIPPED ON LOW SUCTION PRESSURE. A TURBINE RUNBACK TO 60% POWER AT 15%/MIN WAS INITIATED. AT THE COMPLETION OF THE RUNBACK, STEAM GENERATOR (S/G) LEVEL BEGAN INCREASING. AS PER PROCEDURE, THE FOUR BF19 VALVES (S/G FEEDWATER CONTROL VALVES) WERE PLACED IN MANUAL MODE TO GAIN CONTROL OF S/G LEVEL. HOWEVER, JUST AFTER THE 24BF19 VALVE WAS PUT IN MANUAL CONTROL, NO. 24 S/G REACHED ITS HIGH LEVEL SETPOINT INITIATING A TURBINE TRIP AT 0231 HOURS ON 9/4/90. WITH REACTOR POWER ABOVE PERMISSIVE P-9 (50% POWER), A REACTOR TRIP FOLLOWED. THE ROOT CAUSE OF THE REACTOR TRIP IS ATTRIBUTED TO EQUIPMENT FAILURE. THE 21BF19 AUTO/MAN CONTROLLER FAILED, CAUSING VALVE CLOSURE DURING THE RECOVERY OPERATION AFTER THE NO. 21 SGFP HAD TRIPPED. THE SETPOINT FOR THE SUCTION PRESSURE SWITCH HAD DRIFTED HIGH. WHEN THE 23HD15 VALVE (HEATER DRAIN PUMP DISCHARGE CONTROL VALVE) FAILED CLOSED (RUPTURED DIAPHRAGM) A SIGNIFICANT SGFP SUCTION PRESSURE DROP OCCURRED. THIS COUPLED WITH THE HIGH SETPOINT RESULTED IN THE NO. 21 SGFP TRIP. PRECEDING THE RUPTURE OF THE VALVE DIAPHRAGM, THE VALVE CONTROLLER FAILED. THE FAILED PRESSURE SWITCH, THE 23HD15 VALVE DIAPHRAGM, AND THE 23HD15 VALVE CONTROLLER'S PNEUMATIC RELAY WERE REPLACED. THE 21BF19 VALVE AUTO/MAN CONTROLLER WAS REPLACED.

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FORM 176 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
312 1989 001 1 8908020059 214862 01/31/89

ABSTRACT

POWER LEVEL - 093%. AT 1725 HOURS ON 1/31/89, A POST MAINTENANCE TEST OF AUXILIARY FEEDWATER (AFW) PUMP P-313 WAS IN PROGRESS. DURING THE PERFORMANCE OF THIS TEST, THE PUMP REACHED AN OVERSPEED CONDITION RESULTING IN AN OVERPRESSURIZATION OF BOTH AFW TRAINS. AT 2156 HRS, BOTH AFW TRAINS WERE DECLARED INOPERABLE. CONTROL ROOM OPERATORS BEGAN A PLANT SHUTDOWN AT 2212 HOURS AND TRANSITION TO DECAY HEAT COOLING. THE REACTOR WAS IN HOT STANDBY AT 0146 HOURS ON 2/1/89. AT 0155 HRS, THE REACTOR WAS MANUALLY TRIPPED TO ASSURE THAT A GREATER THAN 1% SHUTDOWN MARGIN WAS ACHIEVED WITHIN THE TECHNICAL SPECIFICATION (TS) IMPOSED 4 HR TIME LIMIT. AT 1554 HRS, CONTROL ROOM OPERATORS ESTABLISHED DECAY HEAT COOLING 1 HR AND 59 MIN AFTER THE SPECIFIED TS TIME REQUIREMENT. THE MANDATORY SHUTDOWN OF THE PLANT AS REQUIRED BY TS IS REPORTABLE PURSUANT TO 10 CFR 50.73(A)(2)(I)(A). THE FAILURE TO ESTABLISH DECAY HEAT COOLING WITHIN 12 HRS SUBSEQUENT TO THE REACTOR TRIP AS REQUIRED BY TS IS REPORTABLE PURSUANT TO 10 CFR 50.73(A)(2)(I)(B). A SITE TEAM CONDUCTED A ROOT CAUSE INVESTIGATION OF THE PUMP OVERSPEED AND ASSOCIATED OVERPRESSURIZATION OF THE AFW SYSTEM. THE INVESTIGATION DISCLOSED THAT THE TURBINE GOVERNOR FAILED TO CONTROL TURBINE SPEED AND THE MECHANICAL OVERSPEED TRIP MECHANISM FAILED TO CLOSE THE TURBINE STEAM INLET VALVE.

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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 312 1989 004 0 8905010104 213732 03/28/89

ABSTRACT

POWER LEVEL - 093%. ON MARCH 29, 1989, AT 1516 HOURS, WHILE OPERATING AT 93% POWER, THE PLANT'S MAIN FEEDWATER PUMPS (MFPs) EXPERIENCED SPEED CONTROL PROBLEMS. THIS RESULTED IN A RAPID LOSS OF FEEDWATER FLOW TO THE STEAM GENERATORS. THE CORRESPONDING INCREASE IN REACTOR COOLANT SYSTEM (RCS) PRESSURE CAUSED THE PLANT TO AUTOMATICALLY SHUT DOWN. BECAUSE OF THE MFP CONTROLLER PROBLEMS, THE INTEGRATED CONTROL SYSTEM (ICS) RESPONSE TO THE PRE-TRIP UNDERFEED CAUSED THE POST-TRIP FEEDWATER REFEED TO THE RCS TO BE GREATER THAN EXPECTED. THIS RESULTED IN A PRESSURIZER LEVEL DROP TO THE ELEVATION OF THE LEVEL INDICATOR TAP. THE PLANT DID NOT EXIT THE POST-TRIP WINDOW, AND NORMAL POST-TRIP LEVELS WERE ESTABLISHED 14 MINUTES AFTER THE TRIP.

FORM 178 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 313 1989 002 0 8904120107 213465 01/20/89

ABSTRACT

POWER LEVEL - 100%. ON 1/20/89 A REACTOR TRIP OCCURRED DUE TO A FAILURE IN THE MAIN GENERATOR EXCITER. FOLLOWING THE TRIP, TWO REACTOR COOLANT PUMPS (RCPS) TRIPPED ON UNDERVOLTAGE WHEN BUS H1 FAILED TO FAST TRANSFER TO OFFSITE POWER; THE MAIN FEEDWATER (MFW) STARTUP VALVES AND LOW LOAD CONTROL VALVES FOR BOTH 'A' AND 'B' MFW TRAINS FAILED TO CLOSE DUE TO MISWIRING IN THE INTEGRATED CONTROL SYSTEM; THE 'B' MFW BLOCK VALVE FAILED TO CLOSE DUE TO AN INCORRECT TORQUE SWITCH SETTING; MFW PUMP P1B FAILED TO RUN BACK TO THE DESIGNED POST-TRIP MINIMUM SPEED DUE TO AN UNDETERMINED CAUSE; AND MFW PUMP P1A POST-TRIP MINIMUM SPEED WAS HIGHER THAN DESIGNED MINIMUM SPEED DUE TO AVAILABILITY OF STEAM FROM A MOISTURE SEPARATOR REHEATER. THE MFW SYSTEM COMPONENT FAILURES CAUSED AN OVERFILL OF THE 'B' ONCE-THROUGH STEAM GENERATOR (SG). DURING THE TRANSIENT, OPERATORS INITIATED HIGH PRESSURE INJECTION (HPI) TO COMPENSATE FOR REACTOR COOLANT SYSTEM (RCS) SHRINKAGE CAUSED BY OVERCOOLING DUE TO OVERFEEDING THE SGS. AFTER SECURING HPI THE COMBINATION OF A PARTIALLY FAILED OPEN CHECK VALVE AND THE RCP OPERATING CONFIGURATION ALLOWED BACKLEAKAGE OF REACTOR COOLANT INTO HPI SYSTEM PIPING OUTSIDE CONTAINMENT. DURING RECOVERY FROM THE TRANSIENT, THE EMERGENCY FEEDWATER SYSTEM AUTOMATICALLY ACTUATED ON 'B' SG LOW LEVEL.

FORM 179 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 313 1989 018 0 8906050380 214112 05/01/89

ABSTRACT

POWER LEVEL - 050%. ON 5/1/89, THE REACTOR TRIPPED ON A TURBINE TRIP CAUSED BY MAINTENANCE PERSONNEL INADVERTENTLY JARRING A TURBINE CONTROL PANEL CONTAINING MERCURIO SWITCHES FOR TURBINE TRIP FUNCTIONS. MAINTENANCE PERSONNEL HAD GONE INSIDE THE MAIN TURBINE HOUSING TO REPLACE AN ELECTRO-HYDRAULIC FLUID FILTER FOR A TURBINE THROTTLE VALVE. AS PERSONNEL EXITED THE WORK AREA BY CLIMBING DOWN FROM A CATWALK TO THE TOP OF A LADDER APPROXIMATELY FIVE FEET BELOW, THE CONTROL PANEL WAS BEING USED AS AN INTERMEDIATE STEPPING PLACE WITHOUT INCIDENT. HOWEVER, AT 1556 HOURS, THE UNIT TRIPPED WHEN SWITCHES FOR THE TURBINE SOLENOID TRIP FUNCTION CHANGED STATE AS THE PANEL WAS

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ISOLATED SENSING LINE IN THE CONTROL SYSTEM. ALSO, A MAIN STEAM SAFETY VALVE (MSSV) FAILED TO COMPLETELY RESEAT AFTER LIFTING DUE TO A MISSING COTTER PIN. THE MISSING PIN ALLOWED A NUT TO VIBRATE DOWN THE VALVE STEM WHILE THE VALVE WAS RELIEVING STEAM, PREVENTING THE VALVE FROM FULLY CLOSING. THE TURBINE CONTROL PANEL HAS BEEN LABELED WITH A CAUTION THAT IT IS A UNIT TRIP HAZARD. THE ISOLATED SENSING LINE HAS BEEN UNISOLATED. THE MSSV MISSING COTTER PIN WAS REPLACED AND COTTER PINS WERE VERIFIED INSTALLED ON THE OTHER MSSV.

FORM 180 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
313 1989 037 0 8912180061 216191 11/10/89

ABSTRACT

POWER LEVEL - 074%. ON 11/10/89 AT APPROX. 2255, A REACTOR TRIP OCCURRED AS A RESULT OF THE INADVERTENT GROUNDING OF A REACTOR PROTECTION SYSTEM (RPS) POWER SUPPLY DURING SURVEILLANCE TESTING. THE GROUNDING RESULTED IN THE LOSS OF THE RPS POWER SUPPLY AND DEENERGIZED THE REACTOR POWER AUCTIONEERING CIRCUIT FOR THE INTEGRATED CONTROL SYSTEM (ICS) WHICH RESULTED IN A REACTOR POWER/FEEDWATER FLOW MISMATCH. THE ICS AUTOMATIC RESPONSE TO THIS MISMATCH WAS TO REDUCE FEEDWATER FLOW TO THE STEAM GENERATORS AND TO WITHDRAW CONTROL RODS. THESE ACTIONS RESULTED IN A RISE IN REACTOR COOLANT SYSTEM (RCS) TEMPERATURE AND PRESSURE AND A REACTOR TRIP AT 2355 PSIG. THE INITIAL PLANT RESPONSE FOLLOWING THE TRIP WAS AS EXPECTED, WITH ALL POST TRIP PARAMETERS BEING NORMAL. HOWEVER, DUE TO VARIOUS STEAM LEAKAGE PATHS IN THE SECONDARY SYSTEM, THE STEAM GENERATOR PRESSURES GRADUALLY DECAYED TO APPROXIMATELY 860 PSIG AND RCS TEMPERATURE DECREASED TO 535 DEGREES. THE CAUSE OF THIS EVENT WAS AN INADEQUATE PROCEDURE WHICH REQUIRED CONNECTING A TEST LEAD TO A SOLDERED CONNECTION IN THE BACK OF THE RPS CABINET. THIS CONNECTION WAS WITHIN ONE EIGHTH INCH OF THE CONNECTION WHICH WAS INADVERTENTLY GROUNDED. THE RPS CALIBRATION PROCEDURE WAS REVISED TO SPECIFY TAKING THE REQUIRED READING FROM A MORE SUITABLE LOCATION.

FORM 181 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
313 1989 038 0 8912270264 216193 11/14/89

ABSTRACT

POWER LEVEL - 074%. ON 11/14/89 AT APPROX. 2323, A REACTOR TRIP OCCURRED AS A RESULT OF THE INADVERTENT CLOSURE OF A MAIN FEEDWATER ISOLATION VALVE. WHILE ATTEMPTING TO CLOSE THE SUCTION ISOLATION VALVE FROM THE CONDENSATE STORAGE TANK TO THE STEAM DRIVEN EMERGENCY FEED PUMP DURING MOVATS TESTING, A LICENSED PLANT OPERATOR INADVERTENTLY CLOSED THE MAIN FEEDWATER ISOLATION VALVE FOR THE "B" STEAM GENERATOR. THIS ACTION CAUSED THE "B" MAIN FEEDWATER PUMP TO TRIP ON HIGH DISCHARGE PRESSURE AND RESULTED IN A REACTOR TRIP DUE TO A HIGH REACTOR COOLANT SYSTEM (RCS) PRESSURE OF 2355 PSIG. THE INITIAL PLANT RESPONSE FOLLOWING THE TRIP WAS NORMAL. HOWEVER, DUE TO VARIOUS STEAM LEAKAGE PATHS IN THE SECONDARY SYSTEM, STEAM GENERATOR PRESSURES GRADUALLY DECAYED TO 935 PSIG AND 891 PSIG FOR THE "A" AND "B" GENERATORS RESPECTIVELY. RCS TEMPERATURE DECREASED TO 540.2 DEGREES. THESE VALUES ARE SLIGHTLY BELOW THOSE NORMALLY ANTICIPATED DURING POST TRIP CONDITIONS. THE ROOT CAUSE OF THIS EVENT WAS PERSONNEL ERROR IN THAT THE OPERATOR FAILED TO ENSURE THAT HE WAS MANIPULATING THE CORRECT VALVE. DISCIPLINARY ACTION WAS TAKEN AGAINST THE OPERATOR RESPONSIBLE FOR MANIPULATING WRONG VALVE. ALSO, A

FORM 182 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 313 1989 048 0 9002060382 216630 12/28/89

ABSTRACT

POWER LEVEL - 042%. ON 12/28/89, AT APPROXIMATELY 1529, AN AUTOMATIC REACTOR TRIP AND ACTUATION OF THE EMERGENCY FEEDWATER SYSTEM (EFW) OCCURRED AS A RESULT OF THE LOSS OF ALL MAIN FEEDWATER FLOW WHICH RESULTED FROM THE INADVERTENT TRIPPING OF A MAIN FEEDWATER PUMP (MFP). EARLIER IN THE DAY, THE 'A' MFP HAD TRIPPED ON OVERSPEED DUE TO A MALFUNCTION IN THE PUMP CONTROL CIRCUITRY. ANOTHER MALFUNCTION IN THE TRIP OIL SYSTEM HAD CAUSED AN 11 SECOND DELAY IN THE SENSING OF THE TRIP BY THE INTEGRATED CONTROL SYSTEM (ICS). AT THE TIME OF THE EVENT, TROUBLESHOOTING WAS IN PROGRESS TO DETERMINE THE CAUSE OF THE DELAY. OPERATIONS PERSONNEL HAD LATCHED, AND THEN TRIPPED THE 'A' MFP WITH NO OBSERVED DELAY IN TRIP INDICATION BY THE ICS. DURING THE PERFORMANCE OF A SECOND TEST, AN OPERATOR MISTAKENLY TRIPPED THE OPERATING MFP ('B'). THIS ACTION RESULTED IN A TOTAL LOSS OF FEEDWATER FLOW WHICH INITIATED AN AUTOMATIC REACTOR TRIP AND ACTUATION OF THE EFW SYSTEM. THE ENGINEERED SAFETY FEATURES ACTUATED, AS DESIGNED, AND PRIMARY AND SECONDARY PARAMETERS WERE MAINTAINED WITHIN ACCEPTABLE LIMITS. THE ROOT CAUSE OF THIS EVENT WAS DETERMINED TO BE PERSONNEL ERROR. DISCIPLINARY ACTION WAS TAKEN AGAINST THE OPERATOR WHO TRIPPED THE WRONG MFP. ADDITIONAL ACTIONS ARE ALSO BEING TAKEN TO MINIMIZE THE OCCURRENCE OF PERSONNEL ERRORS.

FORM 183 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 313 1990 022 0 9101230196 220815 12/18/90

ABSTRACT

POWER LEVEL - 000%. ON DECEMBER 18, 1990, WHILE CONDUCTING A PLANT HEATUP IN PREPARATION FOR STARTUP, AN AUTOMATIC REACTOR TRIP WAS INITIATED BY THE REACTOR PROTECTION SYSTEM (RPS) UPON SENSING NO REACTOR COOLANT PUMPS (RCPS) RUNNING IN THE "B" REACTOR COOLANT SYSTEM (RCS) LOOP. AT THE TIME OF THE TRIP, RCPS P-32C AND P-32D WERE RUNNING IN RCS LOOP 'A' AND P-32A WAS RUNNING IN LOOP 'B'. RCPS WERE BEING BALANCED TO REDUCE VIBRATION IN ACCORDANCE WITH AN APPROVED PROCEDURE. THE OPERATORS WERE REQUESTED TO SHIFT FROM P-32A TO P-32B IN RCS LOOP 'B'. AFTER REVIEWING THE RCP OPERATING PROCEDURE, THE INVOLVED OPERATORS ASKED THE SHIFT SUPERVISOR (SS) IF HE WISHED TO STOP P-32A AND START P-32B. THE SS GAVE AN AFFIRMATIVE RESPONSE. AT THAT TIME, A TRAINEE UNDER THE SUPERVISION OF A SENIOR REACTOR OPERATOR, STOPPED P-32A. A REACTOR TRIP THEN OCCURRED DUE TO ZERO PUMPS RUNNING IN THE 'B' RCS LOOP. THE ROOT CAUSE OF THIS EVENT WAS PERSONNEL ERROR. AN INADEQUATE PROCEDURE WAS A CONTRIBUTING FACTOR. THE RCP OPERATING PROCEDURE CONTAINED NO CAUTIONS REGARDING THE POSSIBILITY OF INITIATING TRIP WHEN STOPPING RCPS. A CREW BRIEFING WAS HELD WITH THE CREW INVOLVED TO DISCUSS THIS EVENT AND ITS SIGNIFICANCE. THE RCP OPERATING PROCEDURE WILL BE REVISED TO INCLUDE ADDITIONAL GUIDANCE REGARDING SHIFTING RCPS.

FORM 184 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 315 1989 001 0 9903010413 213145 01/14/89

POWER LEVEL - 071%. ON 01/16/89 THE PLANT HEATING BOILER (PHB) WAS BEING OPERATED FOR TESTING PURPOSES AFTER MAINTENANCE. THE UNIT SUPERVISOR GAVE INSTRUCTIONS TO A REACTOR OPERATOR (RO) FOR PLACING AUXILIARY STEAM LOAD ON THE PHB. THESE INSTRUCTIONS INCLUDED OPENING THE STEAM SUPPLY TO THE START-UP AIR EJECTORS IF THE NORMAL STEAM LOADS WERE NOT ENOUGH. AFTER PLACING THE NORMAL STEAM LOADS ON THE PHB, THE RO IDENTIFIED THE CONTROL SWITCH FOR THE STEAM SUPPLY TO THE START-UP AIR EJECTORS. A FEW MINUTES LATER THE CONTROL ROOM WAS NOTIFIED THAT THE PHB NEEDED MORE LOAD. THE RO PROCEEDED TO OPEN THE STEAM SUPPLY TO THE START-UP AIR EJECTORS. BUT HE ERRONEOUSLY OPERATED THE CONTROL SWITCH FOR THE CONDENSER AIR OFF-TAKES TO THE START-UP AIR EJECTORS DUE TO INADEQUATE SELF CHECKING. THIS CAUSED A RAPID DECREASE IN CONDENSER VACUUM WHICH RESULTED IN A UNIT TRIP. PREVENTIVE ACTION WILL INCLUDE OPERATOR TRAINING TO EMPHASIZE THE IMPORTANCE OF SELF CHECKING. THE LABELING OF THE INVOLVED CONTROL SWITCHES WILL BE ENHANCED FOR HUMAN FACTOR CONCERNS. APPROPRIATE ADMINISTRATIVE ACTION WAS TAKEN WITH THE INVOLVED OPERATOR.

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FORM 185 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 315 1989 003 0 8904280195 213734 03/18/89

ABSTRACT

POWER LEVEL - 010%. ON MARCH 18, 1989 AT 0611 HOURS WHILE UNIT ONE WAS SHUTTING DOWN IN PREPARATION FOR REFUELING, AN ENGINEERED SAFETY FEATURES (ESF) ACTUATION (REACTOR TRIP SEQUENCE) OCCURRED. THE REACTOR TRIP WAS DUE TO A STANDING HIGH FLUX TRIP ON THE INTERMEDIATE RANGE (IR) NUCLEAR INSTRUMENTATION CHANNEL I (N-35) WHICH HAD NOT RESET PRIOR TO POWER DROPPING BELOW PERMISSIVE P-10 (APPROXIMATELY 9 PERCENT) WHICH AUTOMATICALLY UNBLOCKS THE IR HIGH FLUX REACTOR TRIP. THE LOW VALUE FOR THE TRIP RESET SETPOINT WAS DUE TO THE METHODOLOGY USED TO DETERMINE THE CURRENT EQUIVALENT VALUES OF THE TRIP SETPOINT WHICH RESULTED IN A CONSERVATIVELY LOW SETPOINT FOR BOTH THE REACTOR TRIP AND THE TRIP RESET. TO PREVENT RECURRENCE, CHANGES ARE BEING MADE IN THE METHOD USED TO DETERMINE THE CURRENT EQUIVALENT VALUES FOR THE TRIP AND TRIP RESET SETPOINTS THAT WILL ENSURE THE TRIP SETPOINT IS CONSERVATIVE AND WILL ALSO ENSURE THE RESET SETPOINT WILL BE ABOVE P-10. THESE CHANGES WILL BE IN EFFECT PRIOR TO UNIT ONE GOING ABOVE P-10.

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FORM 186 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 316 1989 014 0 8909220109 215257 08/14/89

ABSTRACT

POWER LEVEL - 100%. ON 8/14/89 AT 1601 HOURS, A REACTOR PROTECTION SYSTEM (RPS) ACTUATION (REACTOR TRIP) OCCURRED WHEN OPERATORS TRANSFERRED THE CONTROL ROOM INSTRUMENTATION DISTRIBUTION (CRID) IV (VITAL BUS) INVERTER TO ITS NORMAL CLASS 1E POWER SUPPLY AND THE INVERTER FAILED. WHEN THE CRID IV INVERTER FAILED, A REACTOR TRIP SIGNAL WAS INITIATED DUE TO THE REACTOR COOLANT PUMP (RCP) CIRCUIT BREAKER POSITION INDICATION OPEN (FED FROM CRID IV). PRIOR TO THE TRIP (AT APPROXIMATELY 1540 HOURS), THE CRID INVERTER HAD TRANSFERRED TO ITS ALTERNATE NON-CLASS 1E POWER SUPPLY AT THE SAME TIME THAT A CONTROL POWER FUSE HAD BLOWN ON POWER RANGE NUCLEAR INSTRUMENTATION SYSTEM (NIS) CHANNEL IV (N-44). SUBSEQUENT INVESTIGATION DETERMINED THAT THE CRID INVERTER FAILURE WAS DUE TO A FAILED SILICON CONTROLLER

DECLARED OPERABLE. ALL CDS ITS FED FROM THE CRID WERE INSPECTED
AND, WHERE NECESSARY, FUSES AND/OR POWER SUPPLIES WERE REPLACED.

FORM 187 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
316 1990 004 0 9007200197 218899 06/11/90

ABSTRACT

POWER LEVEL - 086%. ON JUNE 11, 1990 AT 1417 HOURS, THE UNIT 2 REACTOR TRIPPED FROM A POWER RANGE, NEUTRON FLUX, HIGH NEGATIVE RATE SIGNAL. THIS SIGNAL REQUIRES A 2 OUT OF 4 (2/4) LOGIC TO INITIATE A TRIP. ALTHOUGH THE CAUSE OF THE TRIP IS NOT CONCLUSIVELY KNOWN, IT IS BELIEVED THAT A DROP OF MORE THAN ONE (1) CONTROL ROD CAUSED THE REACTOR TO TRIP. AT THE TIME OF THE REACTOR TRIP, A TECHNICIAN WAS WALKING ON TOP OF THE ROD CONTROL SYSTEM POWER CABINETS. IT COULD NOT BE DETERMINED WHETHER THE PRESENCE OF THE TECHNICIAN CONTRIBUTED TO THE POSTULATED ROD CONTROL SYSTEM FAILURE. NO HARDWARE FAILURE THAT WOULD HAVE RESULTED IN THE DROPPING OF CONTROL RODS WAS IDENTIFIED. PRIOR TO UNIT RESTART, ALL CONTROL RODS WERE SUCCESSFULLY EXERCISED. FOLLOWING THE REACTOR TRIP, NO MALFUNCTIONS OF SAFETY-RELATED SYSTEMS OR COMPONENTS OCCURRED. IN ADDITION, ALL SAFETY EQUIPMENT RESPONDED AS DESIGNED. THE NRC WAS NOTIFIED VIA THE EMERGENCY NOTIFICATION SYSTEM (ENS) AT APPROXIMATELY 1537 HOURS ON JUNE 11, 1990.

FORM 188 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
316 1990 012 0 9101160001 220661 12/12/90

ABSTRACT

POWER LEVEL - 100%. ON DECEMBER 12, 1990 AT 0318 HOURS, THE UNIT 2 REACTOR TRIPPED AS A RESULT OF STEAM-TO-FEEDWATER FLOW MISMATCH (DIFFERENCE BETWEEN STEAM AND FEED FLOWS ON ONE OF TWO MEASURED CHANNELS OF EACH PARAMETER FOR A STEAM GENERATOR (SG)) IN COINCIDENCE WITH LOW SG LEVEL (ONE OF TWO SG NARROW RANGE CHANNELS FOR A SG) CONDITIONS IN THE NUMBER 4 SG. THESE CONDITIONS AROSE FOLLOWING A TRIP OF ONE OF THE TWO TURBINE DRIVEN MAIN FEEDWATER PUMPS (TD-MFWP) DUE TO AN ERRONEOUS ACTUATION OF THE TURBINE THRUST BEARING WEAR/SHAFT POSITION DETECTION ALARM AND TRIP DEVICE. NO MALFUNCTIONS OF SAFETY-RELATED SYSTEMS OR COMPONENTS OCCURRED. THE TURBINE THRUST BEARING WEAR/SHAFT POSITION DETECTION DEVICE WAS REMOVED FROM THE MFWP TURBINE DRIVER AND INSPECTED. THIS DEVICE, AND THE SIMILAR DEVICE ON THE OTHER TURBINE DRIVER, WERE BENCH CALIBRATED AND PROPERLY SET-UP ON THE MFWP TURBINES AT TURNING GEAR AND NO-LOAD OPERATING SPEEDS.

FORM 189 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
316 1990 013 0 9101150352 220662 12/15/90

ABSTRACT

POWER LEVEL - 100%. ON DECEMBER 15, 1990, AT 0840 HOURS DURING A TECHNICAL SPECIFICATION (TS) SURVEILLANCE, THE 2-AB PLANT BATTERY WAS DECLARED INOPERABLE WHEN A SINGLE CELL'S VOLTAGE DECREASED BELOW A TEST LIMIT. EFFORTS TAKEN TO RESTORE THE CELL VOLTAGE WERE UNSUCCESSFUL AND A REACTOR SHUTDOWN WAS INITIATED. DURING THE

UNNECESSARY ACTUATION OF THE ANTICIPATED TRANSIENT WITHOUT SCRAM MITIGATION SYSTEM ACTUATION CIRCUITRY (AMSAC). ALL EQUIPMENT PERFORMED AS EXPECTED AND THERE WERE NO COMPONENT FAILURES FOLLOWING THE TRIP. THE REACTOR ENTERED MODE 5 AT 0600 HOURS ON 12-16-90 TO EXIT THE BATTERY TS ACTION STATEMENT AND THE BATTERY CELL OF CONCERN WAS REMOVED FROM SERVICE VIA A JUMPER. A PROPOSED TS AMENDMENT IS BEING PREPARED TO REQUEST CHANGING THE SURVEILLANCE TO ALIGN WITH INDUSTRY STANDARDS AND CONFORM TO STANDARD TS. THE AMSAC ACTUATION OCCURRED DUE TO AN IMPROPER SETPOINT. ALL AMSAC INPUT SETPOINTS WERE VERIFIED AND CORRECTED AS NEEDED.

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FORM 190 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
321 1990 012 0 9007160174 218813 06/10/90

ABSTRACT

POWER LEVEL - 025%. ON 6/10/90 AT APPROX. 0826 CDT, UNIT 1 WAS IN THE RUN MODE AT AN APPROX. POWER LEVEL OF 609 CMWT. AT THAT TIME, A PROCEDURALLY CONTROLLED MANUAL SCRAM WAS DIRECTED BY MANAGEMENT TO ALLOW FOR TERMINATION OF OFFGAS SYSTEM FLOW TO FACILITATE FULL INVESTIGATION AND RESOLUTION OF OFFGAS OPERATIONAL PROBLEMS. THE GROUP 2 PRIMARY CONTAINMENT ISOLATION SYSTEM VALVES ISOLATED AND AN AUTOMATIC REACTOR PROTECTION SYSTEM ACTUATION WAS RECEIVED ON LOW LEVEL DUE TO THE EXPECTED VOID COLLAPSE AS A RESULT OF THE MANUAL SCRAM. LEVEL WAS RESTORED USING THE "B" REACTOR FEEDWATER PUMP. THE OFFGAS SYSTEM PROBLEMS RESULTED IN A REDUCTION OF HYDROGEN AND OXYGEN RECOMBINATION AND AN EVENTUAL HYDROGEN IGNITION IN THE CARBON ADSORBER BEDS. AT 1331 CDT, IT WAS CONFIRMED COMBUSTION WAS TAKING PLACE AND, AT 1338 CDT, A NOTIFICATION OF UNUSUAL EVENT (NUE) WAS DECLARED FOR A FIRE LASTING LONGER THAN 10 MINUTES (AFTER DISCOVERY). THE OFFGAS SYSTEM WAS PURGED WITH NITROGEN FOR SEVERAL DAYS. EXHAUSTIVE TESTING WAS COMPLETED AT APPROX. 1315 CDT ON 6/16/90 DEMONSTRATING THE FIRE WAS EXTINGUISHED AND THE NUE WAS TERMINATED AT 1325 EDT. THE CAUSE OF THE FIRE IN THE OFFGAS SYSTEM WAS COMPONENT MALFUNCTION DUE TO A COMBINATION OF COMPONENT FAILURE, DISCREPANCIES IN AS-BUILT EQUIPMENT CONFIGURATION, AND LESS THAN ADEQUATE SYSTEM OPERATING PROCEDURES.

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FORM 191 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
321 1990 013 0 9007240074 218858 06/20/90

ABSTRACT

POWER LEVEL - 025%. ON 6/20/90 AT APPROXIMATELY 0245 CDT, UNIT 1 WAS IN THE RUN MODE AT AN APPROXIMATE POWER LEVEL OF 600 CMWT (APPROXIMATELY 24.6% RATED THERMAL POWER). AT THAT TIME, THE REACTOR SCRAMMED ON LOW REACTOR VESSEL WATER LEVEL. WATER LEVEL DECREASED TO THE SCRAM SETPOINT WHEN THE 1B REACTOR FEEDWATER PUMP (RFP) FAILED TO RESPOND TO AN INCREASING DEMAND SIGNAL FROM THE MASTER FEEDWATER CONTROL UNIT OR THE 1B RFP CONTROL UNIT (THE 1A RFP HAD BEEN REMOVED FROM SERVICE EARLIER). GROUP 2 AND 5 PRIMARY CONTAINMENT ISOLATION SYSTEM (PCIS) SIGNALS WERE RECEIVED AND ALL GROUP 2 AND THE INBOARD GROUP 5 PRIMARY CONTAINMENT ISOLATION VALVES (PCIVS) CLOSED. THE HIGH PRESSURE COOLANT INJECTION (HPCI) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEMS AUTOMATICALLY INITIATED AND INJECTED PER DESIGN. UNIT 1 AND UNIT 2 STANDBY GAS TREATMENT (SBGT) SYSTEMS RECEIVED AUTOMATIC INITIATION SIGNALS AND THE 1A TRAIN STARTED (THE 2A TRAIN WAS ALREADY RUNNING AT THE TIME OF THE EVENT.) THE CAUSE OF THIS EVENT IS UNKNOWN. THE 1B RFP RESPONDED AS IF HIGH PRESSURE STEAM TO THE 1B DEF

THE EVENT. CORRECTIVE ACTIONS FOR THIS EVENT INCLUDED TESTING OF THE MASTER AND 1B RFP CONTROL LOOPS, VISUAL INSPECTION AND TESTING OF THE 1B RFP TURBINE CONTROLS, AND TESTING OF THE 1B RFP DURING UNIT STARTUP.

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FORM 192 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
321 1990 020 0 9011070036 219860 10/06/90

ABSTRACT

POWER LEVEL - 022%. ON 10/6/90, AT APPROXIMATELY 0337 CDT, UNIT 1 WAS IN THE RUN MODE AT APPROXIMATELY 536 CMWT (APPROXIMATELY 22 PERCENT OF RATED THERMAL POWER) AND DECREASING AS PART OF A SCHEDULED SHUTDOWN TO SUPPORT MAINTENANCE ON A RECIRCULATION PUMP SEAL. AT THAT TIME, A MAIN TURBINE TRIP OCCURRED ON HIGH VIBRATION AND A FULL REACTOR PROTECTION SYSTEM ACTUATION AND RECIRCULATION PUMP TRIP WERE INITIATED ON TURBINE STOP VALVE (TSV) CLOSURE. A SECOND RPS ACTUATION AND A PRIMARY CONTAINMENT ISOLATION SYSTEM GROUP 2 ISOLATION OCCURRED PER DESIGN WHEN REACTOR VESSEL WATER LEVEL DECREASED TO REACTOR LOW WATER LEVEL 3. REACTOR FEEDWATER PUMPS RESTORED AND MAINTAINED REACTOR VESSEL WATER LEVEL AND THE TURBINE BYPASS VALVES AUTOMATICALLY CONTROLLED REACTOR PRESSURE. CAUSES OF THE EVENT INCLUDE A VALVE MALFUNCTION, A LESS THAN OPTIMAL DESIGN OF TSV CLOSURE SCRAM BYPASS PRESSURE SWITCHES, AND A FIELD CENTRAL PROCESSING UNIT (CPU) BOARD. CORRECTIVE ACTIONS INCLUDE CHANGING A VALVE MOTOR OPERATOR TORQUE SWITCH SETTING, REPLACING A CPU BOARD, AND EVALUATING REPLACEMENT OF THE PRESSURE SWITCHES.

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FORM 193 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
321 1990 021 0 9011200001 220053 10/15/90

ABSTRACT

POWER LEVEL - 070%. ON 10/15/90 AT APPROXIMATELY 1507 CDT, UNIT 1 WAS IN THE RUN MODE AT AN APPROXIMATE POWER OF 1698 CMWT (APPROXIMATELY 70% RATED THERMAL POWER). AT THAT TIME, THE UNIT WAS MANUALLY SCRAMMED DUE TO HIGH VIBRATION OF THE MAIN TURBINE (EII CODE TA). FOLLOWING THE MANUAL SCRAM, REACTOR VESSEL WATER LEVEL DECREASED AS EXPECTED DUE TO VOID COLLAPSE CAUSED BY THE RAPID POWER REDUCTION. THIS RESULTED IN A REDUNDANT REACTOR PROTECTION SYSTEM (EII CODE JC) ACTUATION, A GROUP 2 PRIMARY CONTAINMENT ISOLATION SYSTEM (PCIS, EII CODE JM) ISOLATION SIGNAL ON LOW WATER LEVEL (LEVEL 3), AND CLOSURE OF GROUP 2 PRIMARY CONTAINMENT ISOLATION VALVES (PCIVS). THE REACTOR FEEDWATER PUMPS (RFPs, EII CODE SJ) AND THE REACTOR CORE ISOLATION COOLING (RCIC, EII CODE BN) SYSTEM WERE USED TO RESTORE AND MAINTAIN REACTOR VESSEL WATER LEVEL. REACTOR PRESSURE WAS CONTROLLED BY THE TURBINE BYPASS VALVES (EII CODE JI). THE CAUSE OF THE MAIN TURBINE HIGH VIBRATION HAS NOT BEEN DETERMINED. A POTENTIAL CAUSE WAS THE CLOSURE OF REHEAT STEAM SOURCE VALVES (RSSVS, EII CODE SB) 1N38-F101A AND B TO THE SECOND STAGE MOISTURE SEPARATOR REHEATER (MSR, EII CODE SB). CLOSURE OF THE RSSVS WOULD CAUSE A RAPID DROP IN THE TEMPERATURE OF THE LOW PRESSURE TURBINE INLET STEAM AND COULD RESULT IN MOVEMENT OF THE LOW PRESSURE TURBINE ROTOR IN RELATION TO THE TURBINE SHELL AS THE TWO BODIES OF METAL COOLED AT DIFFERENT RATES. THE CAUSE FOR RSSV CLOSURE HAS NOT BEEN DETERMINED.

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FORM 194 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 052%. ON APRIL 16, 1989, AT 2004 PDT, A REACTOR TRIP DUE TO LOW LOW STEAM GENERATOR (SG) WATER LEVEL OCCURRED FOLLOWING A MAIN GENERATOR TRIP AND TRANSFER OF ALL ELECTRICAL BUSES. AT 2056 PDT, A 4-HOUR NON-EMERGENCY REPORT WAS MADE TO THE NRC IN ACCORDANCE WITH 10 CFR 50.72. AN EVENT INSPECTION TEAM (EIT) WAS ESTABLISHED TO INVESTIGATE THE EVENT. BASED ON INSPECTIONS, TESTS PERFORMED AND A REVIEW OF AVAILABLE INFORMATION, THE EIT DETERMINED THAT ACTUATION OF THE GENERATOR BACKUP PROTECTIVE RELAY CAUSED THE MAIN GENERATOR TRIP. COINCIDENT WITH THE GENERATOR BREAKERS OPENING, ALL VITAL BUSES TRANSFERRED TO STANDBY POWER. A CIRCULATING WATER PUMP FAILED TO RESTART ON THIS TRANSFER PREVENTING THE ACTUATION OF THE CONDENSER STEAM DUMPS. SG PRESSURE INCREASED CAUSING SG LEVEL TO SHRINK TO THE LOW LOW SG WATER LEVEL REACTOR TRIP SETPOINT. ADDITIONAL INSTRUMENTATION WAS INSTALLED FOR THE UNIT RESTART. NO ABNORMALITIES WERE OBSERVED DURING THE RESTART OF THE UNIT. THE GENERATOR BACKUP RELAY ACTUATION WAS CAUSED BY A TEMPORARY VOLTAGE TRANSIENT. THE CIRCULATING WATER PUMP FAILURE TO RESTART WAS CAUSED BY A FAILURE TO ADEQUATELY CONTROL EQUIPMENT REMOVED FROM SERVICE. APPLICABLE PROCEDURES ARE BEING REVISED, AND OPERATIONS ISSUED AN INCIDENT SUMMARY TO ALL APPLICABLE PERSONNEL.

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FORM	195	LER SCSS DATA	04-18-91
DOCKET	YEAR	LER NUMBER	REVISION
323	1989	007	0
DCS NUMBER	NSIC	EVENT DATE	
8909230428	215069	07/16/89	

ABSTRACT

POWER LEVEL - 027%. ON 7/16/89, AT 0258 PDT, DIABLO CANYON POWER PLANT (DCPP) UNIT 2 WAS MANUALLY TRIPPED IN ACCORDANCE WITH DCPP ABNORMAL OPERATING PROCEDURE AP-20, "CONDENSER TUBE LEAK." A 4 HOUR NON-EMERGENCY REPORT WAS MADE TO THE NRC AT 0358 PDT ON 7/16/89, IN ACCORDANCE WITH 10 CFR 50.72(B)(2)(II). DCPP UNIT 2 WAS IN A PLANNED MAINTENANCE CURTAILMENT AT ABOUT 50 PERCENT POWER FOR CLEANING MAIN CONDENSER TUBE SHEETS. ON 7/16/89 A SHORT TIME AFTER RESTARTING CIRCULATING WATER PUMP 2-1, A CONDENSATE PUMP DISCHARGE HIGH CATION CONDUCTIVITY ALARM ANNUNCIATED IN THE CONTROL ROOM. THE SHIFT FOREMAN DIRECTED THE CONTROL ROOM OPERATORS TO ENTER PROCEDURE AP-20, WHICH REQUIRES POWER TO BE REDUCED. AT 27 PERCENT POWER, FEEDWATER CONDUCTIVITY INCREASED AND THE REACTOR WAS MANUALLY TRIPPED PER PROCEDURE. THE CAUSE OF THIS EVENT WAS FAILURE OF A CONDENSER TUBE SHEET PLUG. THE PLUG WAS NOT RECOVERABLE FOR EXAMINATION, AND THEREFORE THE REASON FOR FAILURE COULD NOT BE DETERMINED. THE MOST LIKELY ROOT CAUSE FOR THE FAILURE WAS EITHER IMPROPER PLUG INSTALLATION OR USE OF A MATERIAL SUSCEPTIBLE TO CORROSION. OTHER TUBE SHEET PLUGS WERE INSPECTED AND FOUND TO BE INSTALLED CORRECTLY AND OF THE PROPER MATERIAL. A NEW PLUG WAS INSTALLED IN THE TUBE SHEET.

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FORM	196	LER SCSS DATA	04-18-91
DOCKET	YEAR	LER NUMBER	REVISION
323	1989	008	0
DCS NUMBER	NSIC	EVENT DATE	
8910030097	215359	08/28/89	

ABSTRACT

POWER LEVEL - 100%. ON 8/28/89, AT 2057 PDT, WITH UNIT 2 IN MODE 1 AT 100% POWER, OPERATORS INITIATED A MANUAL REACTOR TRIP AFTER OBSERVING

TRANSFORMERS AND ELEVATED, FLUCTUATING MOTOR CURRENT FOR RCP 2-1. OPERATORS TRIPPED THE REACTOR AND THEN TRIPPED RCP 2-1. FEEDER GROUND ALARMS FOR RCP 2-1 AND BOTH CWPS CLEARED. AT 2115 PDT, THE UNIT WAS STABILIZED IN MODE 3 WITH AN RCS TEMPERATURE OF APPROXIMATELY 525F. IN ACCORDANCE WITH 10 CFR 50.72(B)(2)(II) A 4-HOUR NON-EMERGENCY REPORT WAS COMPLETED AT 2205 PDT ON 8/28/89. THE EVENT WAS CAUSED BY AN INADEQUATE ELECTRICAL CONNECTION ON RCP 2-1. ALL 12KV ELECTRICAL CONNECTORS, INCLUDING THE FAILED CONNECTOR, WERE REPLACED ON RCP 2-1. ALL OTHER 12KV CONNECTORS FOR UNIT 2 RCPS WERE EXAMINED TO THE EXTENT PRACTICABLE WITH NO ABNORMALITIES FOUND.

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FORM 197 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 323 1989 010 0 8912040049 215962 10/27/89

ABSTRACT

POWER LEVEL - 100%. ON 10/27/89, AT 0655 PDT, THE UNIT 2 TURBINE AND REACTOR WERE MANUALLY TRIPPED AND THE FIRE ALARM SOUNDED FOLLOWING CONFIRMED REPORTS OF SMOKE AND ARCING IN THE MAIN ELECTRICAL GENERATOR EXCITER HOUSING. AS A PRECAUTION, OPERATORS REQUESTED BACKUP FIREFIGHTING ASSISTANCE FROM THE CALIFORNIA DEPARTMENT OF FORESTRY. PLANT OPERATORS ALSO VENTED THE HYDROGEN FROM THE GENERATOR AND EVACUATED THE TURBINE BUILDING OF ALL NONESSENTIAL PERSONNEL. PG&E DECLARED AN UNUSUAL EVENT AT 0703 PDT, 10/27/89. THE PG&E FIRE BRIGADE RESPONDED, ENTERED THE EXCITER HOUSING AND VENTILATED THE ENCLOSURE OF SMOKE. NO FURTHER ACTION WAS REQUIRED. AT 0828 PDT, 10/27/89, WITH UNIT 2 IN MODE 3 (HOT STANDBY) THE UNUSUAL EVENT WAS TERMINATED. THE SMOKE WAS CAUSED BY AN EXCITER BEARING FAILURE THAT RESULTED IN DAMAGE TO THE PERMANENT MAGNET GENERATOR. TO PREVENT RECURRENCE, THE ANNUNCIATOR RESPONSE MANUAL WAS CHANGED TO REQUIRE AN IMMEDIATE UNIT TRIP UPON ANY GENERATOR RADIO FREQUENCY MONITOR ALARM COINCIDENT WITH A CHANGE IN BEARING TEMPERATURE OR BEARING VIBRATION. ALSO, THE EXCITER BEARING TEMPERATURE INDICATOR WAS REMOVED. ALL CONTROL OPERATORS WILL RECEIVE TRAINING REGARDING THIS EVENT AND THE NEW ANNUNCIATOR RESPONSE REQUIREMENTS.

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FORM 198 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 324 1989 009 1 9001020123 216243 06/17/89

ABSTRACT

POWER LEVEL - 076%. AT 2047 HOURS ON JUNE 17, 1989, A MANUAL REACTOR SCRAM WAS INITIATED ON UNIT 2, IN ACCORDANCE WITH I&E BULLETIN 88-07, DUE TO A LOSS OF BOTH REACTOR RECIRCULATION PUMPS. BOTH PUMPS WERE DEENERGIZED WHEN TROUBLESHOOTING ON UNIT 2 STARTUP AUXILIARY TRANSFORMER (SAT), WHICH SUPPLIES POWER TO THE PUMPS, CAUSED THE SAT TO TRIP ON A HIGH RESISTANCE GROUND FAULT. A PLANNED POWER DECREASE WAS IN PROGRESS PRIOR TO THE LOSS OF THE SAT AND THE POWER LEVEL AT THE TIME OF THE SCRAM WAS 76%. AS A RESULT OF THE REACTOR SCRAM AND THE LOSS OF THE SAT, UNIT 2 EXPERIENCED A LOSS OF OFF-SITE POWER. THE DIESEL GENERATORS AUTOMATICALLY STARTED AND POWERED THE UNIT 2 EMERGENCY (E) BUSES PER DESIGN. DUE TO THE MOMENTARY LOSS OF POWER ON THE E-BUSES AND/OR VESSEL LOW LEVEL (AS APPLICABLE), CONTAINMENT ISOLATION GROUPS 1, 2, 3, AND 6 AUTOMATICALLY ISOLATED. REACTOR PRESSURE WAS CONTROLLED BY THE SAFETY RELIEF VALVES, HIGH PRESSURE COOLANT INJECTION SYSTEM, AND THE REACTOR CORE ISOLATION COOLING SYSTEM. THE INVESTIGATION DETERMINED THAT THE CAUSE WAS PERSONNEL ERROR BY THE TECHNICIAN PERFORMING TROUBLESHOOTING ON THE SAT. THE

13 A POTENTIAL TRANSFORMER AND THE RESULTING HIGH CURRENT CAUSED THE
SAT TO TRIP.

FORM 199 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
324 1990 004 2 9010090209 219636 03/13/90

ABSTRACT

POWER LEVEL - 007%. AT 0536 ON MARCH 13, 1990, A MANUAL SCRAM WAS INITIATED DUE TO THE FAILURE OF SAFETY/RELIEF VALVE (SRV) B21-F013G TO CLOSE DURING STARTUP TESTING; REACTOR POWER WAS APPROXIMATELY 7% AND REACTOR PRESSURE WAS APPROX. 250 PSIG. THE 11 UNIT SRV'S WERE BEING CYCLED IN ACCORDANCE WITH PLANT PROCEDURES TO VERIFY OPERABILITY PER TECH SPEC 3.5.2. TEN OF THE ELEVEN SRV'S HAD BEEN SUCCESSFULLY TESTED PRIOR TO THIS FAILURE. A NORMAL SCRAM RECOVERY WAS CONDUCTED PER PLANT PROCEDURES AND NO AUTOMATIC SAFETY ACTUATIONS OR ISOLATIONS OCCURRED. REACTOR VESSEL LEVEL WAS MAINTAIN USING THE FEEDWATER SYSTEM. THE INVESTIGATION DETERMINED THAT THE SOLENOID VALVE WHICH ALLOWS REMOTE MANUAL OPERATION OF B21-F013G WAS INOPERABLE. THE SOLENOID WOULD ALLOW THE SRV TO BE OPENED, BUT WOULD NOT ALLOW TIMELY CLOSURE OF THE SRV. THE SOLENOID VALVE WAS REPLACED. THE UNIT RETURNED TO THE REQUIRED TESTING CONDITIONS AND THE SRV WAS SUCCESSFULLY TESTED. THE SOLENOID VALVE WAS SENT TO WYLE LABORATORY AND THE ROOT CAUSE WAS DETERMINED TO BE FAILURE OF THE SOLENOID DISC TO PROPERLY REALIGN WITH ITS SEAT AFTER DE-ENERGIZATION. A POTENTIAL CAUSE OF THE FAILURE TO RFSEAT IS "DIRT" WHICH WAS EMBEDDED IN THE RUBBER PAD LOCATED ON THE BACKSEAT. AN INVESTIGATION INTO THE SOURCE OF THE MATERIAL IS CONTINUING. A SUPPLEMENT WILL BE ISSUED BY MARCH 19 1991, TO PROVIDE THE RESULTS OF THIS INVESTIGATION.

FORM 200 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
324 1990 008 1 9012210115 220537 08/16/90

ABSTRACT

POWER LEVEL - 100%. ON 8/16/90, UNIT 2 REACTOR WAS AT 100% POWER. REACTOR LEVEL CONTROL SYSTEM WAS OPERATING IN AUTOMATIC. AT 0942, REACTOR AUTOMATICALLY SHUTDOWN ON A "TSV FAST CLOSURE" 7PS TRIP SIGNAL CAUSED BY A TURBINE TRIP ON REACTOR HIGH WATER LEVEL. THE HPCI TURBINE STOP VALVE CYCLED CLOSED AND THEN OPEN, WATER INTRUSION INTO THE HPCI OIL WAS NOTED, THE RCIC BAROMETRIC CONDENSER VACUUM PUMP EXPERIENCED AN ELECTRICAL FAULT, AND A LOSS OF THE RECIRCULATION PUMPS RESULTED IN TEMPERATURE TRANSIENTS IN THE VESSEL. HPCI AND RCIC OPERABILITY WERE NOT AFFECTED. THE RECIRCULATION PUMPS ARE NOW BEING POWERED FROM THE START UP AUXILIARY TRANSFORMER TO PREVENT THEIR LOSS DURING FUTURE REACTOR TRIPS. THE CAUSE OF THIS EVENT WAS FAILURE OF PRIMARY POWER FUSE C32-F5, WHICH SUPPLIED POWER TO THE STEAM FLOW INPUTS OF THE THREE ELEMENT FEEDWATER CONTROL LOGIC. LOSS OF THE STEAM FLOW INPUTS RESULTED IN A MAXIMUM DEMAND SIGNAL TO THE RFPs AND A RAPID INCREASE IN REACTOR LEVEL UP TO THE HIGH LEVEL TURBINE TRIP POINT WHICH, IN TURN, CAUSED A REACTOR SCRAM ON TSV POSITION. PRIMARY POWER FUSE C32-F5 AND ITS ASSOCIATED CIRCUIT WERE EVALUATED. THE FUSE HAS BEEN REPLACED. THE FAILED FUSE WAS ANALYZED BY THE HEEEC WITH THE INITIAL CONCLUSION THAT THE FUSE FAILED DUE TO SHORT DURATION EXPOSURE TO A CURRENT IN EXCESS OF 20 AMPS. SIMILAR EVENTS: 2-88-018, 1-88-023, AND 2-90-008.

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
324 1990 009 0 9009250282 219542 08/19/90

ABSTRACT

POWER LEVEL ~ 100%. WHILE TESTING THE MAIN CONDENSER LOW VACUUM INSTRUMENTATION AND ISOLATION LOGIC, AN ISOLATION SIGNAL WAS GENERATED WHICH CLOSED THE MAIN STEAM ISOLATION VALVES. CLOSURE OF THE MAIN STEAM ISOLATION VALVES INITIATED A UNIT 2 REACTOR SCRAM AT 2155 ON 8/19/90. REACTOR PRESSURE PEAKED AT APPROXIMATELY 1133 PSIG AND THE MINIMUM WATER LEVEL REACHED WAS APPROXIMATELY 112 INCHES. NO SAFETY LIMITS WERE EXCEEDED IN THE PLANT RESPONSE TO THE LEVEL AND PRESSURE TRANSIENTS. THE OPERATING CREW WAS ABLE TO CONTROL THE PLANT BY USING REDUNDANT EQUIPMENT OR ALTERNATE METHODS. THE SAFETY RELIEF VALVE OPENING SEQUENCE AND ACTUATION PATTERN WERE QUESTIONED. THE ACTUATION PATTERN IS NOT A CONCERN. HOWEVER, SAFETY RELIEF VALVE, B21-F013C (SETPOINT 1105 PSIG) DID NOT OPEN. THE PILOT VALVE ASSEMBLIES WERE REPLACED ON SAFETY RELIEF VALVES B21-F013A, B21-F013C, B21-F013G, B21-F013H, AND B21-F013K. SIMILAR PROBLEMS ENCOUNTERED DURING THIS SCRAM HAVE BEEN REPORTED IN LERS 2-88-005, 2-88-019, 2-87-004, 1-87-011, 2-86-001, 2-86-013, 2-86-017, 2-85-003, 2-85-011, AND 1-85-033.

FORM 202 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
324 1990 012 1 9011080128 219862 08/30/90

ABSTRACT

POWER LEVEL ~ 008%. ON AUGUST 30, 1990, UNIT 2 REACTOR START-UP WAS IN PROGRESS. THE REACTOR WAS AT APPROXIMATELY 8% POWER AND 300 PSIG. THE EMERGENCY CORE COOLING SYSTEMS WERE OPERABLE IN STANDBY LINE UP EXCEPT FOR THE HIGH PRESSURE COOLANT INJECTION SYSTEM WHICH WAS INOPERABLE AWAITING THE PERFORMANCE OF THE HPCI SYSTEM OPERABILITY TEST. AT 1656 THE START-UP LEVEL CONTROL VALVE (SULCV) FAILED CLOSED RESULTING IN A LEVEL TRANSIENT. AT 1657 THE REACTOR PROTECTION SYSTEM (RPS) LOW LEVEL #1 SETPOINT (165") WAS REACHED CAUSING A REACTOR SCRAM. PRIMARY CONTAINMENT ISOLATION SYSTEM GROUPS 2, 6 AND 8 ALSO RECEIVED AN ISOLATION SIGNAL AND ACTUATED PER DESIGN. SCRAM RECOVERY WAS IN ACCORDANCE WITH THE EMERGENCY FLOWCHARTS AND PROCEDURES. APPROXIMATELY 20 MINUTES AFTER THE SCRAM, LEVEL WAS STABILIZED. THE CAUSE OF THE SULCV FAILURE IS BELIEVED TO BE WORN O-RING SEALS. THE SEALS HAVE BEEN REPLACED AND THE SULCV IS OPERATING PROPERLY. THE WORN SEALS ARE BEING ANALYZED TO DETERMINE THE CAUSE OF THE FAILURE. THE SAFETY SIGNIFICANCE OF THIS EVENT IS MINIMAL. LEVEL WAS RECOVERED WITHOUT THE NEED FOR SAFETY SYSTEM INJECTION AND THE UNIT IS DESIGNED FOR A LEVEL TRANSIENT FROM FULL POWER.

FORM 203 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
324 1990 015 0 9011020052 219863 09/27/90

ABSTRACT

POWER LEVEL ~ 100%. ON 9/27/90, WHILE OPERATING AT 100% POWER UNIT 2 EXPERIENCED GENERATOR VOLTAGE OSCILLATIONS WHICH RESULTED IN A LOSS OF THE MAIN GENERATOR DUE TO LOSS OF EXCITATION. THIS RESULTED IN A REACTOR SCRAM DUE TO CONTROL VALVE FAST CLOSURE SIGNAL. THE PRIMARY CAUSE OF THE SCRAM WAS A VOLTAGE REGULATOR THAT HAD BECOME POTENTIALLY UNSTABLE DUE TO PAST IMPROPER ADJUSTMENTS. SYSTEMS FUNCTIONED AS

ON AN MSIV. CAUSE OF THE SCRAM WAS INADEQUATE CONFIGURATION CONTROL ON THE VOLTAGE REGULATOR ADJUSTMENTS AND URAL CIRCUIT SETTINGS. POTENTIALLY CONTRIBUTING TO THE EVENT WAS THE GRID SYSTEM CONFIGURATION ON THAT DATE, THE SYSTEM VOLTAGE SCHEDULE, AND PROCEDURE CONTROLS FOR MAINTAINING GENERATOR EXCITATION. CORRECTIVE ACTIONS INCLUDE ADJUSTMENTS OF THE VOLTAGE REGULATOR, UPDATING THE VENDOR TECHNICAL MANUAL TO ENSURE PROPER FUTURE SYSTEM PERFORMANCE, AND EVALUATIONS OF THE GRID STABILITY REQUIREMENTS AND DESIGN BASIS RELATIVE TO SYSTEM CAPACITANCE VALUES. THE EVENT SAFETY SIGNIFICANCE IS CONSIDERED MINIMAL. TRANSIENT PARAMETERS EXPERIENCED WERE WELL WITHIN ANALYZED TRANSIENT PARAMETERS FOR THIS TYPE EVENT.

FORM 204 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 324 1990 016 0 9011150240 220154 10/12/90

ABSTRACT

POWER LEVEL - 100%. ON OCTOBER 12, 1990, THE UNIT 2 REACTOR WAS AT 100% POWER AND 1005 PSI. THE EMERGENCY CORE COOLING SYSTEMS WERE OPERABLE IN STANDBY READINESS. A FUNCTIONAL CHECK WAS IN ON A THERMOCOUPLE MV/I MODULE IN THE FEEDWATER CONTROL CABINET, H12-P612, LOCATED IN THE CONTROL ROOM BACK-PANELS. FUSE 2-C32-F3 IS PART OF THE CIRCUITRY WHICH POWERS THE REFERENCED MODULE. AT 14:01:52 A HIGH REACTOR LEVEL WAS DETECTED. THIS RESULTED IN A REACTOR SCRAM ON TURBINE STOP VALVE FAST CLOSURE, PER DESIGN. THE CONTROL RODS INSERTED AND TURBINE BYPASS VALVES ACTED TO CONTROL REACTOR PRESSURE AT 1005 PSI. THE SCRAM WAS CAUSED BY A FAILURE OF THE GOULD SHAWMUT FUSE 2-C32-F3 IN THE FWCS. THE FAILURE RESULTED IN A FALSE LOW LEVEL SIGNAL TO THE B TURBINE DRIVEN REACTOR FEED PUMP (TDRFP) CONTROL CIRCUITRY WHICH, IN RESPONSE, INCREASED THE B TDRFP OUTPUT AND RESULTED IN A MAIN TURBINE TRIP ON REACTOR HIGH WATER LEVEL. THE REASON THE FUSE BLEW IN THE FWCS HAS NOT BEEN DETERMINED. THE GOULD SHAWMUT FUSES HAVE BEEN SENT TO THE CP&L HARRIS ENERGY & ENVIRONMENTAL CENTER FOR FURTHER TESTING AND EXAMINATION. IN ADDITION, AN EVENT RECORDER IS CURRENTLY MONITORING THE POWER SUPPLY CIRCUITRY TO THE 2-C32-F3 FUSE. PAST SIMILAR EVENTS INCLUDE LERS 2-90-08, 2-88-018 AND 1-88-023. THE SAFETY SIGNIFICANCE OF THIS EVENT IS MINIMAL.

FORM 205 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 325 1989 002 1 8906300259 214456 02/07/89

ABSTRACT

POWER LEVEL - 000%. UNIT 1 WAS IN THE 1988/1989 REFUEL/MAINTENANCE OUTAGE. ON FEBRUARY 7 AT 1305, FEBRUARY 8 AT 2327 AND FEBRUARY 11 AT 0051 AND 0320 HOURS, FULL REACTOR PROTECTION SYSTEM (RPS) TRIPS WERE RECEIVED DUE TO SUSPECTED ELECTRICAL NOISE IN THE INTERMEDIATE RANGE NEUTRON MONITORING (IRM) CIRCUITRY. THE SHORTING LINKS WERE REMOVED PER THE SPECIAL PROCEDURE (SP) "CRD DATA COLLECTION" (SP-89-001), WHICH ALLOWS A FULL RPS TRIP GIVEN A SINGLE RPS CHANNEL TRIP. NO ACTIVITIES WERE IN PROGRESS WHICH WOULD ADD POSITIVE REACTIVITY TO THE CORE. PAST SIMILAR EVENTS WERE REPORTED IN LERS 1-85-031, 1-86-014, 1-87-010 AND 1-88-009. IN 1987, GE DETERMINED THAT EXISTING CABLE ROUTING HAD RESULTED IN ELECTRICAL NOISE BEING INDUCED IN THE IRM CABLES. MODIFICATIONS WERE PERFORMED TO REDUCE THE AMOUNT OF NOISE EXPERIENCED BY THE IRMS. ANOTHER INVESTIGATION BY GE HAS RESULTED IN THE INSTALLATION OF 8 ADDITIONAL ELECTRICAL NOISE SUPPRESSION CIRCUITS ON UNIT 1. AN INVESTIGATION TO DETERMINE IF SIMILAR CIRCUMSTANCES WOULD

THESE EVENTS HAD NO SAFETY SIGNIFICANCE SINCE THE SYSTEM FUNCTIONED IN ITS DESIGNED MANNER.

FORM 206 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
325 1990 017 0 9011020102 219865 09/27/90

ABSTRACT

POWER LEVEL - 022%. DURING A SCHEDULED UNIT 1 SHUT DOWN FOR A REFUEL/MAINTENANCE OUTAGE ON SEPTEMBER 27, 1990, THE REACTOR SCRAMMED ON HIGH PRESSURE AT 0348. DURING THE PERFORMANCE OF PERIODIC TEST (PT) 40.2.10, TURBINE CONTROL/STOP VALVES (TCV/TSV) LEAK TIGHTNESS TESTING. PRIOR TO THE EVENT, THE REACTOR WAS AT APPROXIMATELY 22% POWER AND THE EMERGENCY CORE COOLING SYSTEMS (ECCS) WERE OPERABLE IN STANDBY READINESS. EVENT RECOVERY WAS IN ACCORDANCE WITH SITE EMERGENCY OPERATING PROCEDURES. NO ECCS OR ENGINEERED SAFETY FEATURE ACTUATIONS OR ISOLATIONS OTHER THAN SCRAM SIGNALS OCCURRED. THE EVENT WAS OCCURRED BY ERRONEOUS PROCEDURAL GUIDANCE, INCORPORATED INTO THE PT FROM A VENDOR DOCUMENT, AND DEFECTIVE SWITCHES ON THE TSVS WHICH ALLOWED THE TCVS TO OPEN WHEN THE TSVS WERE CLOSING. THIS RESULTED IN THE TURBINE BYPASS VALVES (BPV) OPEN DEMAND SIGNAL BEING LIMITED BY THE MAXIMUM COMBINE FLOW CIRCUITRY OF THE TURBINE CONTROL SYSTEM. THE CLOSURE OF THE TBVS OCCURRED REACTOR PRESSURE TO INCREASE TO THE SCRAM SETPOINT. MAXIMUM POWER ATTAINED DURING THE SCRAM WAS 28%. THIS EVENT HAD MINIMAL SAFETY SIGNIFICANCE AS THE REACTOR IS ANALYZED FOR A HIGH PRESSURE SCRAM FROM FULL POWER. PAST HIGH PRESSURE SCRAM EVENTS WERE REVIEWED AND FOUND NOT TO BE RELATED TO THIS EVENT. THE PROCEDURE WILL BE REWRITTEN AND THE SWITCHES WILL BE REPAIRED.

FORM 207 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
327 1989 005 1 8906270186 214406 02/10/89

ABSTRACT

POWER LEVEL - 100%. ON 2/10/89 WITH UNIT 1 IN MODE 1, A REACTOR TRIP OCCURRED AT 2036 EST. THE TRIP SIGNAL WAS A RESULT OF A STEAM GENERATOR (SG) STEAM FLOW TO FEEDWATER FLOW MISMATCH OF GREATER THAN 40% OF THE NOMINAL VALUE OF STEAM FLOW AT FULL POWER COINCIDENT WITH A LOW SG LEVEL (25%) SIGNAL ON SG LOOP 3. TWO INSTRUMENT MAINTENANCE (IM) TECHNICIANS WERE IMPLEMENTING WORK REQUEST (WR)-B238429 ON FLOW RECORDER (FR)-2-200/201, "CONDENSER BYPASS/MAKEUP FLOW." THE RECORDER PEN NEEDED TO BE RESTRUNG WHICH REQUIRED IT TO BE REMOVED FROM THE CASE. THE TECHNICIANS FULLY REMOVED THE RECORDER IN ITS CASE WHICH REQUIRED LIFTING THE POWER SUPPLY LEADS. AFTER REINSTALLATION, THE TECHNICIANS DETERMINED THE TERMINATING LEADS WERE TOO CLOSE TO EACH OTHER. THE TECHNICIAN INADVERTENTLY SHORTED A SCREWDRIVER BETWEEN THE TERMINALS, TRIPPING OPEN BREAKER NO. 39 ON 120-VAC VITAL INSTRUMENT BOARD I-II WHICH IS THE POWER SUPPLY TO A PLUG MOLD SUPPLYING THE RECORDER. THE PLUG MOLD IS ALSO THE COMMON POWER SUPPLY TO THE FLOW INDICATING CONTROLLERS (FIC)-3-35, -90, AND -103 WHICH CONTROL MAIN FEEDWATER REGULATING VALVES (MFWVS) FCV-3-35, -90, AND -103 FOR SG LOOPS 1, 3, AND 4. ROOT CAUSE OF THE REACTOR TRIP SIGNAL WAS PERSONNEL ERROR, IN THAT, APPROPRIATE PRECAUTIONS WERE NOT TAKEN IN PERFORMING TERMINATIONS OF ENERGIZED EQUIPMENT.

ABSTRACT

POWER LEVEL - 100%. ON DECEMBER 10, 1989, AT 1051 EASTERN STANDARD TIME (EST) WITH UNIT 1 IN MODE 1, A TURBINE TRIP/REACTOR TRIP OCCURRED. THE TRIP RESULTED FROM A HIGH-HIGH FEEDWATER LEVEL OF 75 PERCENT IN THE NO. 3 STEAM GENERATOR (S/G). THE TRIP WAS PRECEDED BY A SECONDARY SIDE TRANSIENT AND TURBINE RUNBACK TO APPROXIMATELY 80-PERCENT LOAD AS A RESULT OF A HIGH LEVEL IN THE NO. 3 HEATER DRAIN TANK (HDT). DURING THE RUNBACK, A LOW FEEDWATER FLOW WAS OBSERVED, AND MAIN FEEDWATER PUMP (MFP) 1A WAS PLACED IN MANUAL TO BOOST FEEDWATER FLOW TO MATCH STEAM FLOW. HOWEVER, AS THE S/G LEVELS RECOVERED, NO. 3 LOOP DID NOT ISOLATE UNTIL AFTER THE 60-PERCENT SETPOINT, AND THE TURBINE/REACTOR TRIP OCCURRED AS THE NO. 3 S/G LEVEL REACHED 75 PERCENT. PLANT SHUTDOWN PROCEEDED IN AN ORDERLY MANNER CONSISTENT WITH PROCEDURES. A POSTTRIP REVIEW TEAM CONCLUDED THAT THE TRIP WAS CAUSED BY A FAILURE OF S/G LOOP 3 MAIN FEEDWATER REGULATING VALVE TO CLOSE AND MAINTAIN LOOP 3 S/G AT A 60-PERCENT LEVEL; A CONTRIBUTING CAUSE WAS THE INABILITY OF THE MFP 1A TO ADEQUATELY RESPOND TO CHANGING FEEDWATER DEMANDS. THE INITIATING EVENT WAS THE FAILURE OF LEVEL CONTROL VALVES TO MAINTAIN PROPER LEVELS IN THE NO. 3 HDT. CORRECTIVE ACTIONS TAKEN CONSISTED OF TROUBLESHOOTING, REPAIR, AND/OR ADJUSTMENTS TO MALFUNCTIONING EQUIPMENT. LONGER-TERM CORRECTIVE ACTIONS INCLUDE EAGLE 21 INSTALLATION TO IMPROVE OPERATING MARGINS.

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FORM 209 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 327 1990 012 0 9007100034 218792 06/02/90

ABSTRACT

POWER LEVEL - 011%. ON JUNE 2, 1990, WITH UNITS 1 AND 2 AT APPROXIMATELY 11 AND 100 PERCENT POWER RESPECTIVELY, A REACTOR TRIP OCCURRED ON UNIT 1 ABOUT 17 MINUTES AFTER A GENERATOR/TURBINE TRIP HAD OCCURRED AS A RESULT OF ELECTRICAL PROBLEMS. CONTROL ROOM OPERATORS REDUCED REACTOR POWER AND ANNOUNCED THE TURBINE TRIP ON THE PLANT PUBLIC ACCESS (PA) SYSTEM. THE PLANT WAS STABILIZING AS REACTOR POWER REACHED APPROXIMATELY 15 PERCENT WHEN MAIN FEEDWATER (MFW) FLOW WAS LOST. TWO AUXILIARY UNIT OPERATORS (AUOS) HAD MISHEARD THE PA ANNOUNCEMENT AS "UNIT TRIP" RATHER THAN "TURBINE TRIP" AND HAD ISOLATED THE STEAM SUPPLIES TO THE MFW PUMPS. OPERATORS STARTED THE AUXILIARY FEEDWATER PUMPS WHILE CONTINUING TO REDUCE REACTOR POWER, BUT THE REACTOR TRIPPED ON LOW-LOW STEAM GENERATOR LEVEL. THE ROOT CAUSE OF THE REACTOR TRIP HAS BEEN ATTRIBUTED TO INADEQUATE COMMUNICATION BETWEEN CONTROL ROOM OPERATORS AND AUOS. AS CORRECTIVE ACTION, OPERATIONS MANAGEMENT HAS ISSUED A NIGHT ORDER CLARIFYING WHAT SPECIFIC ACTIONS SHOULD BE TAKEN BY AUOS FOLLOWING A REACTOR OR TURBINE TRIP ONLY WITH UNIT OPERATOR GUIDANCE. A RELATED WEAKNESS IN AUO TRAINING REGARDING ACTIONS TO BE TAKEN FOLLOWING A TURBINE TRIP OR REACTOR TRIP WAS IDENTIFIED AND CORRECTED DURING THE INVESTIGATION OF THIS EVENT.

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FORM 210 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 327 1990 021 0 9010230284 219736 09/14/90

REACTOR TRIP OCCURRED AT 0357 EASTERN DAYLIGHT TIME. THE TRIP WAS GENERATED FROM A LOW-LOW STEAM GENERATOR WATER LEVEL SIGNAL IN LOOP 2. THE LOW LEVEL WAS THE RESULT OF A FEEDWATER TRANSIENT INITIATED BY THE FAILURE OF A VITAL INVERTER. THE INVERTER FAILURE OCCURRED AFTER THE COMPLETION OF MAINTENANCE ACTIVITIES ON THE INVERTER AND DURING THE TRANSFER OF THE INVERTER FROM ITS MAINTENANCE POWER SUPPLY TO ITS NORMAL POWER SUPPLY. DURING THE TRANSFER, THE INVERTER OUTPUT VOLTAGE DROPPED TO ZERO BECAUSE OF THE RANDOM FAILURE OF THE INVERTER'S SILICON-CONTROLLED RECTIFIERS. THIS DEENERGIZED THE 1-II VITAL INSTRUMENT POWER BOARD. THE LOSS OF POWER RESULTED IN THE MAIN FEEDWATER REGULATOR VALVES CLOSING AND THE MAIN FEEDWATER PUMPS DROPPING TO MINIMUM SPEED. THIS REDUCED FEEDWATER FLOW TO ALL FOUR STEAM GENERATORS. PLANT SYSTEMS RESPONDED PROPERLY AND THE SHUTDOWN POSED NO DANGER TO PLANT EMPLOYEES OR THE GENERAL PUBLIC. THE UNIT WAS STABILIZED IN ACCORDANCE WITH PLANT PROCEDURES. THE VITAL INVERTER WAS REPAIRED AND RETURNED TO SERVICE ON SEPTEMBER 15, 1990.

FORM 211 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 327 1990 022 0 9010290176 219869 09/19/90

ABSTRACT

POWER LEVEL - 060%. ON SEPTEMBER 19, 1990, WITH UNIT 1 OPERATING AT APPROXIMATELY 60 PERCENT REACTOR POWER, 2235 POUNDS PER SQUARE INCH GAUGE (PSIG), AND 564 DEGREES FAHRENHEIT (F), A TURBINE TRIP FOLLOWED BY A REACTOR TRIP OCCURRED AT 0357 EASTERN DAYLIGHT TIME. THE TURBINE TRIPPED AS A RESULT OF "A" PHASE MAIN TRANSFORMER DIFFERENTIAL RELAY (SUDDEN PRESSURE) OPERATION CAUSED FROM CORRODED AND SHORTED TERMINALS ON THE TRANSFORMER GAS RELAY. BECAUSE THE REACTOR POWER WAS GREATER THAN THE REACTOR TRIP INTERLOCK FOR AUTOMATIC BLOCK OF REACTOR TRIP ON TURBINE TRIP PERMISSIVE (P-9), A REACTOR TRIP OCCURRED AS A RESULT OF THE TURBINE TRIP. OPERATORS RESPONDED TO THE TRIP USING EMERGENCY OPERATING PROCEDURE 1-E-0, "REACTOR TRIP OR SAFETY INJECTION," AND STABILIZED THE REACTOR AT HOT STANDBY CONDITIONS (MODE 3) AT 547 DEGREES F AND 2235 PSIG. ALL REACTOR PROTECTION SYSTEMS OPERATED AS DESIGNED, AND NO ANOMALIES OCCURRED. THE SUDDEN PRESSURE RELAY WAS REPLACED, AND THE EQUIPMENT WAS RETURNED TO SERVICE.

FORM 212 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 328 1989 005 0 8905190516 213886 04/15/89

ABSTRACT

POWER LEVEL - 030%. THIS REPORT DETAILS 3 UNIT 2 REACTOR TRIPS WHICH OCCURRED ON APRIL 15, 16, AND 19, 1989 FOLLOWING THE COMPLETION OF THE UNIT 2 CYCLE 3 REFUELING OUTAGE. FOR ALL 3 EVENTS OPERATOR ACTIONS (PERFORMED IN ACCORDANCE WITH PLANT PROCEDURES) CAUSED STEAM GENERATOR (SG) WATER LEVELS TO BEGIN FLUCTUATING AND, A REACTOR TRIP DUE TO LOW-LOW WATER LEVEL IN ONE OF THE SGS. FOR THE 4/15 EVENT, UNIT 2 WAS AT 30% REACTOR POWER AND IN THE PROCESS OF PERFORMING A MAIN TURBINE OVERSPEED TEST WHEN THE REACTOR TRIPPED DUE TO LOW-LOW WATER LEVEL IN SG NO. 4. FOR THE 4/16 EVENT, OPERATIONS WAS PERFORMING A SWAPOVER FROM AUXILIARY FEEDWATER (AFW) TO MAIN FEEDWATER (MFW) SUPPLY TO THE SGS WHEN THE REACTOR TRIPPED DUE TO LOW-LOW WATER LEVEL IN SG NO. 1. FOR THE 4/19 EVENT, DURING NORMAL POWER ESCALATION (18% REACTOR POWER), OPERATIONS WAS SWAPPING OVER FROM THE MFW BYPASS VALVES TO THE MFW MAIN REGULATING VALVES WHEN THE REACTOR TRIPPED DUE TO LOW-LOW WATER LEVEL IN SG NO. 2. THE 4/15 CAUSE WAS ALLOWING SG 1 (SVF)

CAUSE WAS AN OUT-OF-CALIBRATION CONDITION ON 2-PT-3-1 (MFW PUMP DISCHARGE PRESSURE). THE CAUSE FOR THE 4/19 TRIP WAS OPERATING LOOPS 1&2 BYPASS VALVES IN MANUAL AND NOT ALLOWING SUFFICIENT TIME FOR THE SYSTEM TO STABILIZE AFTER EACH TRANSIENT.

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FORM 213 LER SCSS DATA 04-18-91
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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
328 1989 008 0 8908140121 214994 07/10/89

ABSTRACT

POWER LEVEL - 100%. ON 7/10/89, AT 1134 EDT, WITH UNIT 2 IN MODE 1 (100% REACTOR POWER, APPROX. 2,235 PSIG, AND TAVG AT 578F), A REACTOR TRIP OCCURRED. THE TRIP OCCURRED ON HIGH NEGATIVE FLUX AS NOTED ON THE FIRST-OUT-ANNUNCIATOR. PLANT SHUTDOWN PROCEEDED IN AN ORDERLY MANNER CONSISTENT WITH PROCEDURES WITH NO OVERCOOLING TRANSIENT. A POSTTRIP REVIEW TEAM WAS FORMED THAT CONDUCTED PERSONNEL INTERVIEWS AND DEVELOPED RECOMMENDATIONS FOR IMMEDIATE CORRECTIVE/INVESTIGATIVE ACTIONS. THESE ACTIONS ARE DETAILED IN THE REPORT AND INCLUDE TROUBLESHOOTING ON THE ROD CONTROL SYSTEM AS WELL AS OTHER DEFICIENCIES NOTED BY THE OPERATORS. PERSONNEL STATEMENTS, STRIP CHART RECORDERS, TROUBLESHOOTING WORK REQUESTS, PREVIOUS TRIP REPORTS, WESTINGHOUSE OWNER'S GROUP TRIP DATA BASE, AND A TRIP MODELING ROUTINE OF THE WATTS BAR SIMULATOR WERE PART OF THE RESOURCES UTILIZED IN THE TEAM'S EVALUATION. ALSO, PLANT MANAGEMENT REQUESTED WESTINGHOUSE TO ASSIST IN PROVIDING EXPERTISE IN TROUBLESHOOTING THE ROD CONTROL SYSTEM. THE TEAM'S CONCLUSION IS THAT THE TRIP WAS A DROPPED ROD EVENT BECAUSE OF A SPURIOUS CONTROL SIGNAL FAULT. NEITHER THE TRIP ITSELF NOR THE TEAM'S RECOMMENDED RESTART PLAN POSE ANY COMPROMISE TO THE SAFE OPERATION OF THE UNIT. AT 1857 WITH UNIT 2 IN MODE 3 (0% REACTOR POWER, 2235 PSIG, AND 547F), A SECOND REACTOR TRIP SIGNAL WAS GENERATED BY A SOURCE RANGE SPIKE APPROX. 7 HRS AFTER THE HIGH FLUX TRIP. SOURCE RANGE CHANNEL HAD NOT BEEN BYPASSED.

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FORM 214 LER SCSS DATA 04-18-91
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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
328 1990 008 0 9005160103 218169 04/10/90

ABSTRACT

POWER LEVEL - 100%. ON APRIL 10, 1990, WITH UNIT 1 DEFUELED AND UNIT 2 IN MODE 1 AT 100 PERCENT POWER, A REACTOR TRIP OCCURRED ON UNIT 2 AT 0134 EASTERN DAYLIGHT TIME. THE TRIP RESULTED FROM A GENERAL WARNING ALARM ON BOTH TRAINS OF THE SOLID STATE PROTECTION SYSTEM (SSPS) AND WAS CAUSED BY SURVEILLANCE TEST STEPS BEING PERFORMED OUT OF SEQUENCE DURING A MONTHLY SSPS TRAIN "B" FUNCTIONAL TEST. WHEN THE OUT-OF-SEQUENCE SITUATION WAS DISCOVERED, THE PROCESS USED TO EVALUATE THE SITUATION WAS NOT AS SPECIFIED IN PLANT INSTRUCTIONS. AS A CONSEQUENCE WHEN THE OMITTED STEPS WERE PERFORMED OUT OF SEQUENCE, A REACTOR TRIP OCCURRED. PLANT SYSTEMS RESPONDED PROPERLY AND THE SHUTDOWN POSED NO DANGER TO PLANT EMPLOYEES OR THE GENERAL PUBLIC. THE ROOT CAUSE OF THE EVENT HAS BEEN ATTRIBUTED TO PERSONNEL ERROR ON THE PART OF THE TEST DIRECTOR AND HIS SUPERVISOR IN NOT FOLLOWING PROCEDURES ADDRESSING AN OUT-OF-SEQUENCE SITUATION. AS CORRECTIVE ACTION, APPROPRIATE DISCIPLINARY ACTION HAS BEEN GIVEN TO BOTH THE TEST DIRECTOR AND THE SUPERVISOR. IN ADDITION, A SITE WIDE MESSAGE HAS BEEN DISTRIBUTED TO PROVIDE LESSONS LEARNED FROM THE EVENT AND TO EMPHASIZE THE PROPER RESPONSE TO PROBLEMS ENCOUNTERED DURING WORK.

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 328 1990 017 0 9012280292 220588 11/23/90

ABSTRACT

POWER LEVEL - 010%. ON NOVEMBER 23, 1990, AT 0431 EASTERN STANDARD TIME WITH UNIT 2 IN MODE 1, A REACTOR TRIP OCCURRED AS A RESULT OF LOW-PRESSURIZER PRESSURE. TWO MINUTES EARLIER, THE 6.9KV UNIT BOARD 2D HAD DEENERGIZED, LEADING TO THE LOSS OF THE NO. 4 REACTOR COOLANT PUMP (RCP). THE LOSS OF THE UNIT BOARD HAS BEEN DETERMINED TO HAVE BEEN CAUSED BY STICKING CONTACTS ON THE FAST TRANSFER 62-224 RELAY. WHEN THE RCP TRIPPED, OPERATIONS' PERSONNEL IMMEDIATELY BEGAN TO TAKE ACTION TO REDUCE POWER. THE SHIFT OPERATING SUPERVISOR BEGAN SEARCHING FOR A PROCEDURE COVERING THE LOSS OF AN RCP. OPERATIONS' PERSONNEL DID NOT ASSUME THEIR NORMALLY ASSIGNED TASK, AND THEY DID NOT COMMUNICATE EFFECTIVELY WITH ONE ANOTHER WHILE PERFORMING THE TASKS THEY ASSUMED. THE LEAD REACTOR OPERATOR (LRO) MANUALLY BEGAN REDUCING POWER FASTER THAN THE TURBINE WAS BEING RUN BACK BECAUSE OF A PERCEIVED URGENCY TO SHUT THE UNIT DOWN; THIS RESULTED IN A POWER MISMATCH, THE AVERAGE TEMPERATURE AND REFERENCE TEMPERATURE AND, SUBSEQUENTLY, LOW-PRESSURIZER PRESSURE. THE CAUSE OF THE REACTOR TRIP WAS A MISUNDERSTANDING OF THE CONSEQUENCES OF LOSING ONE RCP BELOW 35 PERCENT POWER BY THE LRO, AND SUBSEQUENT POOR COMMUNICATION AND COMMAND AND CONTROL BY OPERATIONS' PERSONNEL.

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FORM 216 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 331 1989 001 0 8903020553 213152 01/18/89

ABSTRACT

POWER LEVEL - 100%. ON 1/18/89 AT 0337 HOURS AN ELECTRO HYDRAULIC CONTROL (EHC) RESERVOIR LOW LEVEL ALARM WAS RECEIVED IN THE CONTROL ROOM. THE AUX. OPERATOR WAS SENT TO INVESTIGATE THE LOW LEVEL ALARM. THE EHC RESERVOIR WAS LOW AND THERE WAS A LEAK ON A HIGH PRESSURE SUPPLY LINE TO THE TURBINE CONTROL VALVE #3 (CV-3) WHICH COULD NOT BE ISOLATED. CONTROL ROOM PERSONNEL BEGAN LOWERING REACTOR POWER BY REDUCING RECIRCULATION FLOW AND INSERTING CONTROL RODS. WITH REACTOR POWER AT 41% AND EHC RESERVOIR LEVEL DECREASING, THE REACTOR WAS MANUALLY SCRAMMED AT 0352 HOURS. THERE WERE NO COMPONENT OR SYSTEM FAILURES OTHER THAN THE LEAK IN THE EHC PIPING. THE LEAK WAS IN A FLEXIBLE HOSE INSTALLED DURING THE CYCLE 9/10 REFUELING OUTAGE. THIS HOSE WAS REMOVED AND EXAMINED FOR CRACKS USING A LIQUID PENETRANT INSPECTION. A 1/2" CIRCUMFERENTIAL CRACK IN THE TUBING WAS IDENTIFIED. A REPRESENTATIVE OF THE HOSE MANUFACTURER WAS CONSULTED AND ALL OF THE FLEXIBLE HIGH PRESSURE EHC TUBING THAT WAS INSTALLED DURING THE CYCLE 9/10 REFUELING WAS REPLACED.

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FORM 217 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 331 1989 003 0 8903150444 213210 02/02/89

ABSTRACT

POWER LEVEL - 100%. ON 2/2/89, WITH THE PLANT OPERATING AT 100% POWER, DURING THE PRELIMINARY STEPS OF A HYDROGEN INJECTION SPECIAL TEST PROCEDURE, A REACTOR SCRAM OCCURRED. THE CAUSE OF THIS SCRAM WAS HIGH MAIN STEAM LINE RADIATION LEVELS CAUSED BY A LARGER THAN EXPECTED QUANTITY OF HYDROGEN BEING INJECTED INTO THE FEEDWATER SYSTEM. THE ROOT CAUSE OF THIS EVENT WAS FAILURE TO RE-VERIFY TEST PROC.

REVISION OF THE SPECIAL TEST ADMINISTRATIVE CONTROL PROCEDURE. THE REVISION WILL INCLUDE THE REQUIREMENT FOR INDEPENDENT VERIFICATION OF TEST RIGS AND SPECIAL VALVE LINEUPS WHICH WILL BE USED DURING SPECIAL TESTS. THIS REQUIREMENT WILL BE APPLIED TO SPECIAL TESTS, EXCEPT THOSE WHICH HAVE NO POTENTIAL FOR AFFECTING SAFETY-RELATED SYSTEMS OR STRUCTURES. THE REACTOR SCRAM OCCURRED AS DESIGNED UPON RECEIPT OF MULTIPLE MAIN STEAM LINE HIGH RADIATION SIGNALS. ALL RODS INSERTED TO THE FULL-IN POSITION. THROUGHOUT THE EVENT, VESSEL LEVEL AND PRESSURE WERE MAINTAINED WITHIN SAFE OPERATING LIMITS VIA PROPER RESPONSE OF FEEDWATER LEVEL CONTROL AND THE SAFETY RELIEF VALVES AS WELL AS APPROPRIATE RESPONSE BY OPERATIONS PERSONNEL.

FORM 218 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 331 1989 008 0 8904170217 213580 03/05/89

ABSTRACT

POWER LEVEL - 100%. ON MARCH 5, 1989 WITH THE REACTOR OPERATING AT 100% POWER, CALIBRATION OF THE MAIN STEAM LINE RADIATION MONITORS WAS IN PROGRESS WHEN THE 'B' OUTBOARD MAIN STEAM LINE ISOLATION VALVE (MSIV) UNEXPECTEDLY CLOSED DUE TO A FAILED DC SOLENOID. THE ISOLATION OF THE 'B' MAIN STEAM LINE (MSL) RESULTED IN FLOW IN THE REMAINING THREE MAIN STEAM LINES EXCEEDING THE HIGH FLOW LIMIT OF 40%. IN ACCORDANCE WITH DESIGN THIS RESULTED IN ISOLATION OF ALL MAIN STEAM LINES. WHEN MSIV'S REACHED THE LESS THAN 90% OPEN POSITION, AN AUTOMATIC REACTOR SCRAM OCCURRED. REACTOR PRESSURE PEAKED AT APPROXIMATELY 1126 PSIG AND WAS CONTROLLED WITH THE USE OF FOUR PRESSURE RELIEF VALVES. ALL SAFETY SYSTEMS PERFORMED AS EXPECTED AND OPERATOR RESPONSE WAS APPROPRIATE. THE CAUSE OF THE FAILED SOLENOID COIL WAS MOISTURE INTRUSION. THE SOURCE FOR THE MOISTURE WAS CONDENSATION FROM A NEARBY MINOR STEAM LEAK. THE SOLENOID ENCLOSURE WAS SUSCEPTIBLE TO MOISTURE INTRUSION AS A RESULT OF INADEQUATE TORQUING OF A THREADED COVER FOR THE ENCLOSURE DURING PREVIOUS MAINTENANCE ACTIVITIES IN DECEMBER 1989. THE LACK OF PROPER TORQUING WAS DUE TO AN INADEQUATE MAINTENANCE REPAIR PROCEDURE. THE FAILED SOLENOID WAS REPLACED. OTHER MSIV FAST CLOSURE SOLENOIDS WERE INSPECTED FOR MOISTURE INTRUSION AND THE ENCLOSURES WERE PROPERLY TORQUED. THE REPAIR PROCEDURE HAS BEEN REVISED.

FORM 219 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 331 1989 009 0 8907190295 214636 06/12/89

ABSTRACT

POWER LEVEL - 100%. ON 6/12/89, WHILE AT FULL POWER A REACTOR PROTECTION SYSTEM (RPS) ACTUATION AND REACTOR SCRAM OCCURRED. TWO ITT BARTON MODEL 764 FLOW TRANSMITTERS WHICH HELP TO DETERMINE THE AVERAGE POWER RANGE MONITOR UPSCALE SETPOINT WERE AFFECTED BY HAND-HELD RADIO FREQUENCY INTERFERENCE. PRIMARY CONTAINMENT ISOLATION SYSTEM GROUPS II THROUGH V ISOLATED AND THE STANDBY GAS TREATMENT SYSTEM INITIATED AS EXPECTED ON LOW LEVEL FOLLOWING VOID COLLAPSE. SOME FEEDWATER CONTROL PROBLEMS DURING RECOVERY RESULTED IN VESSEL LEVEL APPROACHING THE LOW LEVEL SETPOINT 38 MINUTES AFTER THE REACTOR SCRAM. DUE TO CONSERVATIVE INSTRUMENT SETPOINTS, AN RPS TRIP AND THE AFOREMENTIONED SAFETY SYSTEMS WERE INITIATED. THE ROOT CAUSE OF THE SCRAM WAS THE UNANTICIPATED RESPONSE OF THE FLOW TRANSMITTERS TO HAND-HELD RADIO FREQUENCIES. THE TRANSMITTERS WERE IN A LOW TRAFFIC

VALVE POSITION INDICATOR IN THE CONTROL ROOM. A LOOSE ADJUSTMENT SPRING LOCKNUT ON A FEEDWATER VALVE PNEUMATIC POSITIONER ALSO CONTRIBUTED. CORRECTIVE ACTIONS WERE TO PLACE FURTHER RESTRICTIONS ON HAND-HELD RADIO USE SHORTEN THE CALIBRATION FREQUENCY OF THE POSITION INDICATOR, AND REQUIRE THE USE OF LOCTITE WHEN ADJUSTING THE PNEUMATIC POSITIONER.

FORM 220 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
331 1989 011 1 8911070016 215750 08/26/89

ABSTRACT

POWER LEVEL - 100%. ON AUGUST 26, 1989, AT 1642 HOURS WITH THE PLANT OPERATING AT 100% POWER, OPERATIONS PROCEDURE, "POWER/LOAD UNBALANCE AND RELAY CIRCUITS TEST" WAS IN PROGRESS. THIS TEST IS PERFORMED FOR CONTINUED RELIABLE OPERATION OF THE MAIN TURBINE. CONTRARY TO WHAT WAS EXPECTED, A TRIP OF THE MAIN TURBINE CONTROL VALVES AND SUBSEQUENT REACTOR SCRAM OCCURRED AT 1643 HOURS. SUBSEQUENT DETAILED INVESTIGATIONS IDENTIFIED BRIDGING OF A MERCURY-WETTED RELAY IN THE POWER/LOAD UNBALANCE CIRCUITRY AS THE MOST PROBABLE ROOT CAUSE FOR THE TURBINE TRIP AND SUBSEQUENT REACTOR SCRAM. APPROXIMATELY FIVE MINUTES FOLLOWING THE SCRAM, PROBLEMS WERE ENCOUNTERED ON THE "B" ESSENTIAL AND NON-ESSENTIAL BUSES. SUBSEQUENT INVESTIGATION REVEALED THE ROOT CAUSE TO BE A FAILED TRIP COIL ON AN ASSOCIATED BREAKER. THE PLANT WAS BROUGHT TO A NORMAL SAFE SHUTDOWN CONDITION AND THE APPROPRIATE NOTIFICATIONS WERE MADE. THERE WAS NO EFFECT ON THE SAFE OPERATION OF THE PLANT.

FORM 221 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
331 1990 002 0 9005070103 218017 03/29/90

ABSTRACT

POWER LEVEL - 100%. ON MARCH 29, 1990 WITH THE REACTOR OPERATING AT 100% POWER, A MANUAL REACTOR SCRAM WAS INITIATED AT 0407 HOURS IN RESPONSE TO A RISING REACTOR WATER LEVEL. THE RISING WATER WAS DUE TO FEED REGULATING VALVE LOCK-UP. AT APPROXIMATELY 0245 HOURS ON MARCH 29, 1990, OPERATING AIR WAS ISOLATED TO AN INSTRUMENT AIR HEADER ISOLATION VALVE DUE TO A PERSONNEL ERROR MADE IN THE TAGOUT PREPARATION PROCESS. AS THIS OPERATING AIR PRESSURE SLOWLY BLEW OFF, THE AIR HEADER ISOLATION VALVE FAILED SHUT. THIS LOSS OF INSTRUMENT AIR CAUSED THE FEED REGULATING VALVES TO LOCK-UP. REACTOR LEVEL SLOWLY INCREASED TO THE 195" HIGH LEVEL ALARM POINT AT 0405 HOURS. AS ACTIONS TO LOWER REACTOR LEVEL TO WITHIN THE NORMAL OPERATING RANGE WERE UNSUCCESSFUL AND VARIOUS OTHER CONTROL VALVES BEGAN TO FAIL DUE TO THE LOSS OF INSTRUMENT AIR, THE OPERATIONS SHIFT SUPERVISOR CONSERVATIVELY ELECTED TO DIRECT INITIATION OF A MANUAL SCRAM. FOLLOWING THE REACTOR SCRAM, ALL AUTOMATIC FUNCTIONS AND MANUAL ACTIONS WERE COMPLETED SATISFACTORILY. CORRECTIVE ACTIONS FOR THIS EVENT INCLUDE A REQUIRED INDEPENDENT REVIEW OF INSTRUMENT AND SERVICE AIR TAGOUTS, COMPLETION OF DRAWING UPDATES, AND A REVIEW OF THE DESIGN DOCUMENT CHANGE PROCESS FOCUSING ON POTENTIAL PROCESS IMPROVEMENTS.

FORM 222 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
331 1990 004 0 9005010072 218019 04/01/90

POWER LEVEL - 005%. ON 4/1/90 AT 0532 HOURS, DURING REACTOR STARTUP, A MOMENTARY INCREASE IN INDICATED FLUX ON AVERAGE POWER RANGE MONITOR (APRM) CHANNELS "C" AND "D" TO GREATER THAN 15% OF RATED POWER RESULTED IN AN AUTOMATIC REACTOR SCRAM. THE PLANT WAS AT APPROXIMATELY 8% THERMAL POWER. THE APRM SCRAM WAS ORIGINATED FROM LOCAL POWER RANGE MONITOR (LPRM) 32-09C, WHICH FEEDS ITS OUTPUT SIGNAL TO APRM CHANNELS "C" AND "D". THESE APRM CHANNELS FEED OPPOSITE SIDES OF THE REACTOR PROTECTION SYSTEM (RPS) LOGIC. THE MOST PROBABLE CAUSE WAS METALLIC PARTICLES FORMED IN THE LPRM DETECTOR, WHICH SHORTED THE ANODE TO THE CATHODE. THIS RESULTED IN A MOMENTARY SPIKE WHICH WAS SENSED AS A POWER INCREASE BY THE APRMS, AND SUBSEQUENTLY THE RPS LOGIC. WHEN THE SWITCH IS IN STARTUP MODE, THE UPSCALE TRIP SETPOINT IS SET AT 15% OF RATED POWER. THE PLANT RESPONDED TO THE SCRAM AS DESIGNED WITH NO OBSERVED EQUIPMENT FAILURES. FOLLOWING THE SCRAM, A REVIEW OF THE EVENT AND TROUBLESHOOTING OF THE FAILED LPRM WERE PERFORMED. THE LPRM WAS BYPASSED AND REACTOR STARTUP COMMENCED WITHOUT FURTHER COMPLICATIONS. THIS EVENT IS BEING REPORTED PURSUANT TO 10CFR 50.73(A)(2)(IV).

FORM 223 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 331 1990 014 0 9010170065 219739 09/10/90

ABSTRACT

POWER LEVEL - 027%. ON SEPTEMBER 10, 1990 WITH THE REACTOR AT APPROXIMATELY 27% POWER, A TURBINE TRIP OCCURRED AS A RESULT OF A SENSED HIGH LEVEL IN A MOISTURE SEPARATOR REHEATER. REACTOR STEAM PRODUCTION AT THE TIME OF THE TURBINE TRIP WAS SLIGHTLY IN EXCESS OF THE BYPASS VALVE CAPACITY, RESULTING IN A RISING REACTOR PRESSURE, AND A REACTOR SCRAM APPROXIMATELY ONE MINUTE LATER. PLANT RESPONSE TO THE CONDITIONS PRESENT OCCURRED APPROPRIATELY. PRIMARY CONTAINMENT ISOLATION GROUPS 2-5 RESPONDED IN ACCORDANCE WITH DESIGN WHEN REACTOR WATER LEVEL DECREASED AS A RESULT OF VOID REDUCTION IN RESPONSE TO THE REACTOR SCRAM. THE ROOT CAUSE OF THE EVENT WAS VALVE MISALIGNMENT FOLLOWING MAINTENANCE. THE CORRECTIVE ACTIONS INCLUDED AN IMMEDIATE VALVE LINEUP VERIFICATION AND ENHANCEMENTS TO THE VALVE LINEUP PROCEDURE.

FORM 224 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 331 1990 015 0 9010220256 219740 09/13/90

ABSTRACT

POWER LEVEL - 037%. ON SEPTEMBER 13, 1990, WITH THE REACTOR AT APPROXIMATELY 37% POWER, OPERATIONS PERSONNEL MANUALLY SCRAMMED THE REACTOR (REACTOR PROTECTION SYSTEM INITIATION) WHEN RAPIDLY DECREASING INSTRUMENT AIR PRESSURE RESULTED IN REACTOR VESSEL LEVEL CONTROL DIFFICULTIES. THE FEEDWATER REGULATING VALVES, WHICH RECEIVE THEIR MOTIVE POWER FROM INSTRUMENT AIR, "LOCKED UP" IN THEIR CURRENT POSITION, RESULTING IN A GRADUAL INCREASING TREND IN REACTOR VESSEL LEVEL. PRIMARY CONTAINMENT ISOLATION SYSTEM GROUPS TWO THROUGH FIVE INITIATED AS DESIGNED ON REDUCED LEVEL FOLLOWING THE SCRAM. THE PLANT WAS RETURNED TO A STABLE CONDITION WITH NO FURTHER PROBLEMS. THE CAUSE OF THE INSTRUMENT AIR PRESSURE LOSS WAS THE FAILURE OF A THREE-INCH SOLDERED COPPER FITTING JOINT AT AN AIR DRYER INLET. EXAMINATION OF THE JOINT FOUND INADEQUATE SOLDER COVERAGE. LARGER JOINTS ARE DIFFICULT TO SOLDER, AND CODE-REQUIRED VISUAL EXAMINATION

THESE PERIODS WERE INSPECTED AND REPAIRED AS NECESSARY, AND A SAMPLING INSPECTION OF OTHER SOLDERED JOINTS IS ONGOING. INSPECTION CRITERIA FOR CERTAIN DIFFICULT JOINTS IS BEING MODIFIED TO INCLUDE ULTRASONIC TESTING.

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FORM 225 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
331 1990 016 0 9010220257 219741 09/18/90

ABSTRACT

POWER LEVEL - 050%. ON SEPTEMBER 18, 1990, WITH THE PLANT OPERATING AT APPROXIMATELY 50% POWER, A REACTOR SCRAM OCCURRED WHEN THREE INBOARD MAIN STEAM ISOLATION VALVES (MSIVS) CLOSED UNEXPECTEDLY. JUST PRIOR TO THE MSIVS CLOSING, THE 'A' SIDE OF THE MAIN STEAM LINE RADIATION MONITOR (MSLRM) SURVEILLANCE TEST HAD BEEN SATISFACTORILY COMPLETED WITH ISOLATION SIGNALS RESET. UPON INITIATING THE 'B' SIDE TEST, THE 'B', 'C', AND 'D' INBOARD MSIVS CLOSED RESULTING IN THE SCRAM. THE CAUSE OF THIS EVENT WAS A LOOSE WIRING CONNECTION IN THE INBOARD MSIV CONTROL LOGIC WHICH EFFECTIVELY PUT THE 'B', 'C', AND 'D' INBOARD MSIVS IN A HALF (A SIDE) TRIPPED CONDITION (AC SOLENOIDS DE-ENERGIZED) EVEN THOUGH THE LOGIC WAS RESET. DURING PERFORMANCE OF THE MSLRM SURVEILLANCE, WHEN THE 'B' LOGIC TRIP WAS INSERTED, THE DC SOLENOIDS ON THE INBOARD MSIVS DE-ENERGIZED CAUSING THE 'B', 'C' AND 'D' INBOARD VALVES TO GO CLOSED. IMMEDIATE CORRECTIVE ACTIONS WERE TO REPAIR THE CONNECTION AND PERFORM AN EXTENSIVE INSPECTION OF APPROPRIATE CONTROL ROOM PANELS FOR ADDITIONAL LOOSE CONNECTIONS. LONG TERM CORRECTIVE ACTION WILL INVOLVE PERIODIC INSPECTIONS OF APPROPRIATE PANELS. THIS EVENT HAD NO EFFECT ON THE SAFE OPERATION OF THE PLANT. SAFETY SYSTEMS RESPONDED AS DESIGNED IN RESPONSE TO THE SCRAM SIGNAL AND THE PLANT WAS QUICKLY BROUGHT TO A STABLE CONDITION.

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FORM 226 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
331 1990 019 0 9011280139 220158 10/19/90

ABSTRACT

POWER LEVEL - 065%. ON OCTOBER 19, 1990 THE REACTOR WAS IN SINGLE LOOP OPERATION AT APPROXIMATELY 65% POWER, TWO NIGHT SHIFT ELECTRICIANS ASSIGNED TO THE TASK OF TROUBLESHOOTING THE SOURCE OF AN APPARENT FAULT ON THE 'B' RECIRCULATION MG SYSTEM DRIVE MOTOR PULLED WHAT THEY PERCEIVED TO BE THE POTENTIAL TRANSFORMER FOR THE CIRCUIT. THE POTENTIAL TRANSFORMER ACTUALLY SENSES THE AVAILABLE SUPPLY VOLTAGE FROM ONE WINDING OF THE STARTUP TRANSFORMER TO ONE OF THE ESSENTIAL ELECTRICAL BUSES. THIS CAUSED THE BUS TO SENSE AN UNDERVOLTAGE CONDITION AND AUTOMATICALLY INITIATED A DEAD BUS TRANSFER FROM THE STARTUP TRANSFORMER TO THE STANDBY TRANSFORMER. WHEN POWER WAS RESTORED TO 1A4, LOSS-OF-POWER RELAYS IN THE CONDENSATE DEMINERALIZER SYSTEM (EEIS CODE SG), CAUSED 3 OUT OF 4 INSERVICE DEMINERALIZER BEDS (FUNCTION COMPONENT FDM) TO ISOLATE. THIS RESULTED IN THE LOSS OF FEEDWATER AND A REACTOR SCRAM ON LOW REACTOR VESSEL LEVEL. THE INITIATING EVENT, REMOVAL OF THE POTENTIAL TRANSFORMER, WAS CAUSED BY PERSONNEL ERROR. THE ROOT CAUSE OF THE SCRAM WAS AN UNDESIRABLE DESIGN FEATURE OF THE CONDENSATE DEMINERALIZER CONTROL LOGIC.

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FORM 227 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 100%. A REACTOR SCRAM OCCURRED FROM FULL POWER AT 3:23 P.M. ON 11/5/89. AN UNIDENTIFIED FAILURE IN AN ELECTRONIC CONTROL CARD OF THE ELECTRO-HYDRAULIC CONTROL (EHC)(JJ) SYSTEM FOR THE MAIN TURBINE (TA) IS BELIEVED TO HAVE OPENED THE BYPASS VALVES AND CLOSED THE INTERCEPT AND CONTROL VALVES. THIS REDUCTION IN STEAM FLOW CAUSED A PRESSURE TRANSIENT RESULTING IN A REACTOR HIGH FLUX SCRAM SIGNAL FROM THE AVERAGE POWER RANGE MONITOR (APRM)(IG). THE HIGH PRESSURE COOLANT INJECTION (HPCI)(BJ) SYSTEM WAS INOPERABLE PRIOR TO THE SCRAM. THE AUTOMATIC FEATURES OF THE PLANT RESPONDED NORMALLY TO THE SCRAM EXCEPT THAT 1 SAFETY RELIEF VALVE PASSED A SMALL AMOUNT OF STEAM AT A PRESSURE 5% BELOW ITS DESIGN LIFTING PRESSURE. THE REACTOR CORE ISOLATION COOLING (RCIC)(BN) SYSTEM WAS USED TO RESTORE REACTOR WATER LEVEL. 1 CONTROL ROD WAS NOT FULLY INSERTED, REQUIRING MANUAL INSERTION FROM POSITION 02. SELECTED ELECTRONIC CONTROL CARDS WERE REPLACED IN THE EHC SYSTEM. THE PLANT WAS RESTARTED 11/10/89, AND SCRAMMED 11/12/89 (LER-89-023) FOR UNRELATED REASONS. THE PLANT WAS RESTARTED 11/13/89 AND RUN AT 25% POWER TO OBSERVE THE EHC SYSTEM. IT WAS SHUTDOWN 11/20/89 FOR FURTHER WORK ON THE EHC SYSTEM. FOLLOWING TESTING AND REPLACEMENT OF ELECTRONIC CIRCUIT BOARDS, THE PLANT WAS RESTARTED ON 11/22/89.

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FORM	228	LER SCSS DATA	04-18-91

DOCKET	YEAR	LER NUMBER	REVISION
333	1989	023	0
DCS NUMBER		NSIC	EVENT DATE
8912200361		216204	11/12/89

ABSTRACT

POWER LEVEL - 010%. AT 5:34 P.M. ON 11/12/89, A REACTOR SCRAM OCCURRED DURING A SCHEDULED SURVEILLANCE TEST OF SAFETY RELIEF VALVES (SRV)(AD). IN PREPARATION FOR THE TEST, INDICATED REACTOR POWER WAS AT APPROXIMATELY 10% AND PRESSURE WAS BEING CONTROLLED AT 575 PSIG USING THE MAIN BYPASS VALVES. THE FIRST SRV WAS OPENED IN ACCORDANCE WITH PROCEDURE. UPON CLOSING THE VALVE, THE REACTOR SCRAMMED DUE TO A PRESSURE TRANSIENT WHICH RESULTED IN A HIGH FLUX 15% AVERAGE POWER RANGE MONITOR (APRM)(IG) TRIP. IN THE START-UP/HOT STANDBY MODE, THE APRM TRIP POINT IS SET AT A NOMINAL 15%. ACTUAL TRIP POINT SETTINGS RANGED FROM 13.5% TO 14.5% TO ALLOW FOR INSTRUMENT DRIFT. THIS LEFT A MARGIN OF ONLY 3.5% BETWEEN INDICATED REACTOR POWER OF 10% AND THE TRIP POINT. THE SMALL PRESSURE TRANSIENT CAUSED BY OPENING AND THEN CLOSING THE VALVE WAS SUFFICIENT TO CAUSE A NEUTRON FLUX SPIKE AND SCRAM THE REACTOR. THE SURVEILLANCE TEST PROCEDURE DID NOT PROVIDE INSTRUCTION CONCERNING AN APPROPRIATE MARGIN, NOR DID IT PROVIDE A CAUTION TO THE OPERATOR CONCERNING THE POSSIBLE PRESSURE TRANSIENT AND THE NEED FOR AN ADEQUATE MARGIN. CORRECTIVE ACTION REVISED THE PROCEDURE TO PROVIDE FOR VALVE TESTING AT 940 PSIG WHEN THE REACTOR MODE SWITCH WILL BE IN THE RUN MODE. IN THE RUN MODE, THE FLOW BIASED SCRAM WILL BE IN EFFECT. THE APRM HIGH FLUX TRIP POINT OF 120% WILL BE IN SERVICE.

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FORM	229	LER SCSS DATA	04-18-91

DOCKET	YEAR	LER NUMBER	REVISION
333	1990	001	0
DCS NUMBER		NSIC	EVENT DATE
9002260448		216910	01/19/90

ABSTRACT

POWER LEVEL - 100%. A REACTOR SCRAM FROM FULL POWER OCCURRED AT 10:45 A.M. ON JANUARY 19, 1990 DURING THE CALIBRATION OF REACTOR WATER LEVEL INSTRUMENTATION. THE INSTRUMENT WHICH WAS BEING CALIBRATED HAD BEEN

LEAK VALVE ACTUATION CAUSED A FALSE LOW WATER LEVEL TO BE SENSED BY THE RPS. THIS FALSE LOW LEVEL TRANSIENT WAS CAUSED BY RAPID VALVE MOVEMENT BY THE FIELD TECHNICIAN PERFORMING THE VALVE MANIPULATIONS. CORRECTIVE ACTIONS INCLUDE REVIEW OF THIS EVENT WITH ALL I&C TECHNICIANS, GROOMING OF THE COMMUNICATION SYSTEM TO ELIMINATE NOISE, AND REPAIR OF EQUIPMENT THAT MALFUNCTIONED DURING THE TRANSIENT. RELATED LERS: 85-012 AND 97-020.

FORM 230 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION CCS NUMBER NSIC EVENT DATE
 333 1990 009 0 9006260261 217809 03/19/90

ABSTRACT

POWER LEVEL - 100%. THE REACTOR SCRAMMED FROM FULL POWER AT 3:56 P.M. ON 3/19/90. A FALSE LOW REACTOR WATER LEVEL SIGNAL IN THE FEEDWATER CONTROL CIRCUIT (J5) INCREASED FEED PUMP SPEED. THIS RESULTED IN HIGH REACTOR WATER LEVEL FOLLOWED BY A TURBINE TRIP AND AUTOMATIC REACTOR SCRAM INITIATED BY TURBINE STOP VALVE CLOSURE (58). ALL SYSTEMS PERFORMED AS DESIGNED EXCEPT FOR FLOW OSCILLATIONS IN THE HIGH PRESSURE COOLANT INJECTION SYSTEM (HPCI) (BJ) (LER-90-010) AND ONE ROD INSERTING ONLY TO POSITION (02). HPCI INJECTION WAS CONTINUED USING MANUAL OPERATOR CONTROL. A NORMAL PLANT COOLDOWN FOLLOWED. THE CAUSE OF THE SCRAM WAS AN OVERSIGHT BY THE VENDOR IN THE ASSEMBLY OF THE AMPLIFIER COMPONENT (PURCHASED 10 YEARS AGO) OF THE STRIP CHART RECORDER FOR NARROW RANGE WATER LEVEL. A ONE-QUARTER INCH METAL STAR LOCK WASHER WAS FOUND WEDGED BETWEEN THE PRINTED CIRCUIT BOARD AND THE MOUNTING TRACK GROOVE IN THE METAL AMPLIFIER BOX. THE WASHER WAS ALSO IN CONTACT WITH A SIGNAL WIRE ON THE BOARD. THE RESULTING ELECTRICAL GROUND CREATED A SHORT CIRCUIT TO AN INSTALLED GROUND ON THE FEEDWATER LEVEL CONTROL CIRCUIT AND A FALSE LOW REACTOR WATER LEVEL SIGNAL. THE PLANT WAS RETURNED TO SERVICE WITH THE GENERATOR ON LINE AT 8:27 P.M. ON MARCH 21, 1990.

FORM 231 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION CCS NUMBER NSIC EVENT DATE
 333 1990 023 0 9011280222 220159 10/19/90

ABSTRACT

POWER LEVEL - 048. AT 0912 ON 10/19/90 THE REACTOR WAS MANUALLY SCRAMMED FROM 45 PERCENT POWER AS A CONSERVATIVE MEASURE DUE TO INABILITY TO CLEAR THE CIRCULATING WATER SYSTEM TRAVELLING SCREENS. THE RATE OF SUPPLY OF CIRCULATING WATER HAD BEEN REDUCED DUE TO CLOGGING OF THE COOLING WATER INTAKE SCREENS (K6) BY LEAVES AND LAKE WEEDS. ONE OF THREE 50% CAPACITY SCREENS WAS OUT OF SERVICE FOR SCHEDULED PREVENTIVE MAINTENANCE. A SHIFT IN WIND DIRECTION CONTRIBUTED TO AN UNUSUALLY LARGE DEBRIS ACCUMULATION ON THE REMAINING TWO SCREENS. THE SCREEN DIFFERENTIAL PRESSURE ALARM AND SCREENWASH SYSTEMS, WHICH WOULD HAVE PROVIDED EARLY INDICATION OF FOULING, HAD BEEN UNINTENTIONALLY DISABLED DURING THE MAINTENANCE OF THE OUT OF SERVICE SCREEN DUE TO A PROCEDURAL DEFICIENCY. SHEAR PINS ON THE REMAINING TWO SCREENS FAILED. IT WAS NECESSARY TO REMOVE TWO OF THE THREE MAIN CONDENSER CIRCULATING WATER PUMPS (K5) FROM SERVICE TO CLEAR AND REPAIR THE SCREENS. THIS NECESSITATED THE POWER REDUCTION AND SUBSEQUENT MANUAL SCRAM. THE PLANT RETURNED TO SERVICE AT 0418 ON 10/21/90 (43 HOURS, 6 MINUTES OFF LINE). APPROPRIATE STEPS HAVE BEEN ADDED TO PROCEDURES. THE DIFFERENTIAL PRESSURE INSTRUMENTATION HAS BEEN ADDED TO OPERATOR LOG SHEETS. PLANT RISK ANALYSIS AND VULNERABILITY

FORM 232 LER SCSS DATA 04-13-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
333 1990 026 0 9101160193 220668 12/12/90

ABSTRACT

POWER LEVEL - 100%. A REACTOR SCRAM FROM FULL POWER OCCURRED AT 1352 ON 12/12/90 DURING CALIBRATION OF REACTOR WATER LEVEL INSTRUMENTATION. THE INSTRUMENT BEING CALIBRATED SHARED COMMON REFERENCE AND VARIABLE LEVEL LEGS WITH INSTRUMENTS OF THE REACTOR PROTECTION SYSTEM (JCS). THE REACTOR SCRAMMED AS THE INSTRUMENT HIGH PRESSURE ISOLATION VALVE WAS BEING CRACKED OPEN DURING RETURN TO SERVICE. THE SCRAM RESULTED FROM A FALSE LOW REACTOR WATER LEVEL SIGNAL. DURING THE ACTUAL LEVEL TRANSIENT FOLLOWING THE SCRAM DIFFICULTY WAS EXPERIENCED WITH RESTARTING THE REACTOR FEEDWATER PUMPS AND A FAILURE OF THE REACTOR FEEDWATER LOW FLOW CONTROL VALVE OCCURRED. A SECOND SCRAM OCCURRED DUE TO AN ACTUAL LOW REACTOR WATER LEVEL AT 1416 DUE TO FAILURE OF THE REACTOR FEEDWATER LOW FLOW CONTROL VALVE AIR OPERATOR DIAPHRAGM. THE PLANT RETURNED TO SERVICE AT 0658 ON 12/17/90 AFTER BEING OFF LINE FOR 4 DAYS, 17 HOURS, AND 6 MINUTES. A ROOT CAUSE INVESTIGATION OF THIS SCRAM IS IN PROGRESS AND IS EXPECTED TO BE COMPLETED PRIOR TO THE END OF THE FALL 1991 REFUELING OUTAGE. UNTIL THEN, FUTURE CALIBRATIONS WILL BE CONDUCTED DURING SCHEDULED OUTAGES. RELATED LERS: 90-001 AND 90-027.

FORM 233 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
333 1990 027 0 9101180175 220817 12/15/90

ABSTRACT

POWER LEVEL - 006%. A REACTOR SCRAM FROM SIX PERCENT POWER OCCURRED DURING A START-UP ON DECEMBER 15, 1990 AT 2140. THE CAUSE WAS A FAILURE OF A FABRIC-WOVEN BUNY-N DIAPHRAGM WHICH HAD BEEN IN SERVICE FOR 15 YEARS IN THE AIR OPERATOR FOR THE REACTOR FEEDWATER LOW FLOW CONTROL VALVE AND AIR LEAKAGE FROM THE OPERATOR STEM PACKING GLAND. THE FAILURE OF THE VALVE TO STROKE FULL OPEN RESULTED IN AN INABILITY TO SUPPLY SUFFICIENT FEEDWATER FLOW TO THE REACTOR. THIS RESULTED IN DECREASING REACTOR WATER LEVEL AND THE NECESSITY TO USE THE REACTOR FEED PUMP (RFP) DISCHARGE VALVE TO CONTROL WATER LEVEL. AFTER SEVERAL CONTROLLED JOGS IN THE OPEN DIRECTION OF THE RFP DISCHARGE VALVE, THE INCREASE IN WATER FLOW RESULTED IN A HIGH NEUTRON FLUX SCRAM OF THE REACTOR DUE TO EXCEEDING THE 15 PERCENT POWER LIMIT WHILE THE MODE SWITCH WAS IN THE START-UP MODE POSITION. CORRECTIVE ACTIONS INCLUDED REPAIRING THE REACTOR FEEDWATER LOW FLOW CONTROL VALVE OPERATOR, REVISING THE START-UP PROCEDURE TO VERIFY FULL STROKE CAPABILITY OF THE VALVE, AND ADDING A CAUTION LIMITING THE ACCEPTABLE OPEN DEMAND SIGNAL FOR THE VALVE TO 70 PERCENT. THE PLANT WAS RESTORED TO SERVICE AT 0658 ON 12/17/90. RELATED LER: 90-026.

FORM 234 LER SCSS DATA 04-13-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
334 1989 001 0 8902230014 213095 01/17/89

ABSTRACT

POWER LEVEL - 090%. ON 1/17/89, POST-MAINTENANCE TESTING OF THE "C" BYPASS FEEDWATER REGULATING VALVE (BRV) WAS IN PROGRESS. THE REACTOR

PERFORM THIS STEP AND SHOWED WITH THE PROCEDURE, INADVERTENTLY POINTING TO THE WRONG STEP. THE PLANT OPERATOR READ THE STEP INDICATED BY THE REACTOR OPERATOR, NOTED THE BREAKER NUMBER IN THAT STEP AND WENT TO OPEN IT. THIS RESULTED IN THE INADVERTENT DE-ENERGIZATION OF THE "A" MAIN FEEDWATER REGULATING VALVE (MFRV). THE "A" MFRV CLOSED, ISOLATING FEEDWATER TO THE "A" STEAM GENERATOR, RESULTING IN A REACTOR TRIP. THE AUXILIARY FEEDWATER PUMPS STARTED AND RESTORED LEVEL TO THE "A" STEAM GENERATOR. THE OPERATORS STABILIZED THE PLANT USING THE REACTOR TRIP RESPONSE PROCEDURES. THE INVOLVED OPERATORS HAVE BEEN COUNSELLED CONCERNING THIS EVENT. THERE WERE NO SAFETY IMPLICATIONS DUE TO THIS EVENT. THIS EVENT IS BOUNDED BY BEAVER VALLEY UFSAR SAFETY ANALYSIS SECTION 14.1.8, LOSS OF NORMAL FEEDWATER.

FORM 235 LER SCSS DATA 04-13-91
DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
334 1989 002 0 8903210146 213311 02/13/89

ABSTRACT
POWER LEVEL - 090% ON 2/13/89, THE "C" MAIN FEEDWATER REGULATING VALVE (MFRV) STROKED PARTIALLY CLOSED DURING POWER OPERATION. THIS RESULTED IN A FEEDWATER FLOW/STEAM FLOW MISMATCH. OPERATORS UNSUCCESSFULLY ATTEMPTED TO MANUALLY RE-OPEN THE VALVE. "C" STEAM GENERATOR LEVEL DECREASED TO ITS LOW LEVEL SETPOINT CAUSING A REACTOR TRIP DUE TO FEED/STEAM FLOW MISMATCH COINCIDENT WITH THE LOW LEVEL. AUXILIARY FEEDWATER ACTUATED AND RESTORED LEVEL IN THE "C" STEAM GENERATOR. OPERATORS STABILIZED THE PLANT USING THE REACTOR TRIP RESPONSE PROCEDURE. INVESTIGATION DETERMINED THAT THE "C" MFRV ELECTRO-PNEUMATIC TRANSDUCER HAD FAILED, PREVENTING THE VALVE FROM OPENING BEYOND 25%. THE TRANSDUCERS ON ALL THREE MFRVS WERE CHANGED OUT. THE STATION IS REVISING ITS PREVENTIVE MAINTENANCE PROGRAM TO PERIODICALLY CHANGE OUT THESE TRANSDUCERS. THERE WERE NO SAFETY IMPLICATIONS DUE TO THIS EVENT. THIS EVENT IS BOUNDED BY UFSAR SAFETY ANALYSIS, "LOSS OF NORMAL FEEDWATER", SECTION 14.1.8.

FORM 230 LER SCSS DATA 04-13-91
DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
334 1989 007 0 8906270389 214453 05/18/89

ABSTRACT
POWER LEVEL - 090% ON 5/18/89, WITH THE UNIT IN POWER OPERATION (OPERATING MODE 1) AT 90 PERCENT REACTOR POWER, A BREAKER LABELING VERIFICATION EVOLUTION WAS IN PROGRESS. DURING THIS VERIFICATION, AT 0232 HOURS, THE ELECTRICAL SUPPLY BREAKER TO THE ANTICIPATED TRANSIENT WITHOUT SCRAM (ATWS) MITIGATING SYSTEM ACTUATION CIRCUITRY (AMSAC) PANEL WAS ACCIDENTALLY OPENED. THIS LOSS OF POWER TO AMSAC RESULTED IN A LOSS OF TURBINE IMPULSE PRESSURE SIGNAL TO THE STEAM DUMP CONTROL SYSTEM, OPENING STEAM DUMPS VALVES, AND LOWERING STEAM LINE PRESSURE. THIS CAUSED A LOW STEAM LINE PRESSURE RATE COMPENSATED SAFETY INJECTION SIGNAL AND A REACTOR TRIP, AT 0235 HOURS. THE OPERATORS UTILIZED THE EMERGENCY OPERATING PROCEDURES TO STABILIZE THE PLANT IN HOT STANDBY (OPERATING MODE 3). AN UNUSUAL EVENT WAS DECLARED AT 0235 HOURS AND TERMINATED AT 0310 HOURS. THE ROOT CAUSE FOR THIS EVENT WAS A DESIGN DEFICIENCY. THIS DEFICIENCY WAS CORRECTED BY MODIFYING THE PROCESS INSTRUMENTATION CIRCUITRY TO MAKE THE IMPULSE PRESSURE CHANNEL SIGNALS (CONTROL) INDEPENDENT OF AMSAC. THERE WERE NO SAFETY IMPLICATIONS TO THE PUBLIC AS A RESULT OF THIS EVENT. THE AMSAC SYSTEM IS A NON SAFETY RELATED BACKUP TO THE REACTOR PROTECTION

FORM 237

LER SCSS DATA

04-19-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
334 1989 008 0 8910060216 215520 09/01/89

ABSTRACT

POWER LEVEL - 000%. ON 9/1/89, UNIT 1 WAS PERFORMING A PLANNED SHUTDOWN IN PREPARATION FOR THEIR SEVENTH REFUELING OUTAGE. THE REACTOR WAS SUBCRITICAL WITH CONTROL ROD INSERTION IN PROGRESS. AT 2210 HOURS, THE "A" MAIN FEEDWATER REGULATING VALVE, WHICH HAD BEEN CLOSED EARLIER DURING THE SHUTDOWN, WAS OBSERVED TO BE OPEN. DESPITE OPERATOR ACTIONS (SHUTTING DOWN THE MAIN FEEDWATER PUMP), AT 2211 HOURS, "A" STEAM GENERATOR LEVEL INCREASED TO ITS HIGH-HIGH LEVEL SETPOINT, INITIATING AN AUTOMATIC FEEDWATER ISOLATION (FWI). OPERATORS VERIFIED ALL REQUIRED FWI VALVES CLOSED. AT 2213 HOURS, A REACTOR TRIP WAS INITIATED DUE TO SOURCE RANGE HIGH FLUX. OPERATORS HAD NOT INSTALLED THE SOURCE RANGE INSTRUMENT POWER FUSES ON CHANNEL N32 DURING THE SHUTDOWN AS THE DETECTOR WAS OUT OF SERVICE DUE TO AN EXPIRED CALIBRATION. WHEN INTERMEDIATE RANGE FLUX DECREASED TO THE POINT WHERE THE SOURCE RANGES AUTOMATICALLY ENERGIZED, CHANNEL N32 INITIATED A TRIP SIGNAL DUE TO LACK OF INSTRUMENT POWER. ALL CONTROL RODS FULLY INSERTED IN RESPONSE TO THE TRIP SIGNAL. THERE WERE NOT SAFETY IMPLICATIONS DUE TO THIS EVENT. ALL REQUIRED SAFETY FUNCTIONS ACTUATED AS DESIGNED.

THIS SESSION HAS USED 4.93 SECONDS OF CPU TIME AND
HAS BEEN ACTIVE FOR 216.58 SECONDS

THE ESTIMATED COST OF THE RUN IS \$ 1.85

THIS SESSION IS READY TO BEGIN.

LER GROUP \$PUBLIC2 IS NOW "ACTIVE" WITH 255 LERs

THE 255 KEYS IN THE CURRENT ACTIVE GROUP WILL BE SORTED

CURRENT OPTIONS FOR LIST COMMAND

NODOCK
NOCOMM
NOMAT
NOWATCH
NOREF
NODEC
ABSTRACT
NOTPD
NOFLOW

YOU HAVE REQUESTED LISTING 255 RECORDS, ARE YOU SURE?

1

FORM 1 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
334 1989 018 0 9002020077 216653 12/27/89

ABSTRACT

POWER LEVEL - 029%. ON 12/27/89, AT 0001 HOURS, THE UNIT WAS IN POWER OPERATION (OPERATING MODE 1) AT 29% POWER, FOLLOWING THE INITIAL STARTUP FROM THE REFUELING OUTAGE. THE 1A ROD DRIVE MOTOR GENERATOR (RDMG) SET WAS IN OPERATION AND THE 1B RDMG SET WAS OUT OF SERVICE AWAITING POST MAINTENANCE TESTING. OUTAGE MAINTENANCE ACTIVITIES ON THE 1B RDMG SET INCLUDED BEARING REPLACEMENT AND BREAKER TRIP CHECKS. A CAUTION TAG HAD BEEN PLACED ON THE 1B RDMG SET OUTPUT BREAKER STATING THAT TRIP CHECKS WERE STILL REQUIRED. AT 0121 HOURS, A REACTOR TRIP OCCURRED ON POWER RANGE HIGH NEGATIVE RATE FLUX TRIP. THE OPERATORS STABILIZED THE PLANT IN HOT SHUTDOWN (OPERATING MODE 3) UTILIZING EMERGENCY OPERATING PROCEDURES E-0 AND ES-0.1. THE CAUSE FOR THE TRIP WAS DUE TO A TRIP OF THE 480 VOLT AC FEEDER BREAKER (1A5) TO THE 1A RDMG SETS. UPON A LOSS OF POWER TO THE 1A RDMG SET, THE CONTROL RODS DROPPED INTO THE CORE CAUSING A NEGATIVE RATE REACTOR TRIP. ELECTRICAL MAINTENANCE WAS REQUESTED TO INVESTIGATE THE CAUSE OF THE FEEDER BREAKER TRIP. THERE WERE NO SAFETY IMPLICATIONS AS A RESULT OF THIS EVENT. THE UPDATED FINAL SAFETY ANALYSIS REPORT DISCUSSES SIMILAR EVENTS OF THIS TYPE IN SECTION 14.1.3 "ROD CLUSTER CONTROL ASSEMBLY MISALIGNMENT".

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FORM 2 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
334 1990 007 0 9005030270 218021 03/30/90

ABSTRACT

POWER LEVEL - 100%. ON 3/30/90 AT 1541 HOURS, WITH THE UNIT IN POWER OPERATION AT 100% REACTOR POWER, ALARMS INDICATING A LOOP "C" STEAM FLOW/FEEDWATER FLOW MISMATCH, FOLLOWED BY A "C" STEAM GENERATOR (SG)

1544 HOURS, A REACTOR TRIP ON "SG "C" LOW LEVEL & FEEDWATER FLOW LOW" OCCURRED. CONTROL ROOM PERSONNEL ENTERED EMERGENCY OPERATING PROCEDURES, E-0 AND ES-0.1, TO STABILIZE THE PLANT IN HOT STANDBY. THE CAUSE FOR THE REACTOR TRIP WAS THE CLOSURE OF FCV-FW-498, IN RESPONSE TO INSUFFICIENT INSTRUMENT AIR PRESSURE SUPPLYING THE VALVE POSITIONER. AIR PRESSURE HAD DEGRADED DUE TO MOISTURE IN THE FILTER IN THE INSTRUMENT AIR REGULATOR FOR THE VALVE POSITIONER. HIGH MOISTURE WAS PRESENT DUE TO THE INSTRUMENT AIR DRYER BEING UNAVAILABLE. THE MOISTURE IN THE INSTRUMENT AIR SYSTEM HAS BEEN REMOVED AND THE INSTRUMENT AIR DRYER HAS BEEN RETURNED TO SERVICE. THERE WERE NO SAFETY IMPLICATIONS AS A RESULT OF THIS EVENT. THE PLANT SYSTEMS RESPONDED AS DESIGNED (ALL RODS INSERTED, TURBINE TRIP OCCURRING AND AUXILIARY FEEDWATER INITIATING ON LOW SG LEVEL), WITH THE EXCEPTION OF FCV-FW-498, TO PLACE THE PLANT IN HOT STANDBY. THIS EVENT IS BOUNDED BY UFSAR, SECTION 14.1.8.

FORM 3 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 335 1989 003 0 8908220241 215024 07/17/89

ABSTRACT

POWER LEVEL - 004%. ON 7/17/89, ST. LUCIE UNIT 1 WAS IN MODE 2 AND PERFORMING A TURBINE STARTUP. STEAM GENERATOR (SG) LEVELS WERE MAINTAINED WITH THE 1A AND 1B AUXILIARY FEEDWATER (AFW) PUMPS. AT 0254, THE 1B MAIN FEEDWATER (MFW) PUMP WAS STARTED, AFW WAS SECURED AND THE TURBINE WAS ROLLED SHORTLY THEREAFTER SG LEVELS WERE OBSERVED TO BE DECREASING, AND AFW WAS RESTORED. THE UNIT AUTOMATICALLY TRIPPED AT 0300 ON LOW SG LEVEL DUE TO MISMATCHES BETWEEN STEAM LOADS AND FEED FLOW RATES. THE AUDIBLE ANNUNCIATOR FOR THE LOW SG LEVELS PRE-TRIP ALARMS FAILED BEFORE THE TRIP. STANDARD POST TRIP ACTIONS WERE PERFORMED AND THE UNIT WAS STABILIZED IN MODE 3. MFW FLOW TO THE SGS WAS PREVENTED BECAUSE THE MFW BLOCK VALVES HAD NOT BEEN OPENED. PROCEDURES WILL BE CHANGED TO VERIFY THEIR PROPER LINE UP BEFORE STARTING THE TURBINE. AFFECTED AUDIBLE ANNUNCIATORS WERE RETURNED TO SERVICE. A COGNITIVE PERSONNEL ERROR AMONG THE UTILITY LICENSED OPERATORS LED TO THE AUTOMATIC REACTOR TRIP.

FORM 4 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 335 1989 005 0 8910180338 215565 09/13/89

ABSTRACT

POWER LEVEL - 098%. ON SEPTEMBER 13, 1989, AT 1409, WHILE IN MODE 1 AT 98% POWER, UNIT 1 TRIPPED ON LOSS OF LOAD. PRIOR TO THE TRIP, THERE WERE TWO NUCLEAR PLANT WORK ORDERS (NPWO) BEING WORKED CONCURRENTLY ON THE REACTOR PLANT PROTECTION SYSTEM (RPS). ONE OF THE NPWO'S INVOLVED REMOVING TCB-1 FOR MAINTENANCE WHILE THE OTHER NPWO WAS FOR REPLACING A "C" CHANNEL POWER SUPPLY IN THE RPS CABINET. IN ORDER TO REPLACE THE POWER SUPPLY, BREAKER CB-3 INSIDE THE RPS CABINET WAS OPENED. WHEN THIS WAS DONE, TCB-7 AND TCB-3 OPENED AND WITH TCB-1 ALREADY OPEN, A TURBINE AND REACTOR TRIP OCCURRED. THE ROOT CAUSE OF THE REACTOR TRIP WAS DETERMINED TO BE AN INADEQUATE NPWO WORK DESCRIPTION, INADEQUATE COMMUNICATIONS TO OPERATIONS BY I&C AND THE PROCEDURE FOR UNIT RELIABILITY-SENSITIVE SYSTEMS DID NOT CLEARLY SHOW THAT ITS USE WAS REQUIRED. CORRECTIVE ACTIONS REVIEW/REVISE SENSITIVE SYSTEMS PROCEDURES, WRITE STANDARD WORK DESCRIPTIONS TO BE ATTACHED TO NPWO'S FOR RPS POWER SUPPLY REPLACEMENTS, ADD CAUTION STATEMENTS TO

FORM 5 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
335 1990 007 0 9006260003 218762 05/24/90

ABSTRACT

POWER LEVEL - 091%. ON 5/24/90 ST. LUCIE UNIT 1 WAS IN MODE 1 AT 91% POWER PERFORMING MAIN TURBINE MAINTENANCE ON A HYDRAULIC CONTROL VALVE (MOOG) IN THE DIGITAL ELECTRO-HYDRAULIC (DEH) CONTROL SYSTEM ON THE #3 GOVERNOR VALVE. WHEN DEH FLUID WAS RE-ESTABLISHED TO THE VALVE, AN EXCESSIVE UNISOLABLE LEAK DEVELOPED. THE ASSISTANT NUCLEAR PLANT SUPERVISOR INSTRUCTED THE REACTOR CONTROL OPERATORS TO MANUALLY TRIP THE REACTOR AND TURBINE AT 0452. THE STANDARD POST TRIP ACTIONS WERE PERFORMED AND THE UNIT WAS STABILIZED IN MODE 3, HOT STANDBY. THE INITIATOR OF THIS EVENT WAS THE SEVERE LEAKAGE OF DEH FLUID FROM THE ASSOCIATED MOOG VALVE OF THE #3 GOVERNOR VALVE. AN INVESTIGATION REVEALED THE O-RINGS INSIDE THE BASE OF THE MOOG VALVE WHICH SEAL THIS VALVE TO THE #3 GOVERNOR VALVE MOUNTING PLATE HAD RUPTURED. THE CAUSE OF THE RUPTURE WAS DUE TO THE INSTALLATION OF IMPROPERLY SIZED O-RINGS. THE PARTS LIST USED TO OBTAIN REPLACEMENT O-RINGS FOR MAINTENANCE HAD THE INCORRECT PART NUMBER LISTED FOR THESE O-RINGS. THE ROOT CAUSE FOR THIS EVENT IS INADEQUATE TECH MANUALS AND DRAWINGS FOR THE DEH SYSTEM WHICH LACK THE PART NUMBERS FOR REPLACEMENT PARTS. AN OFFICIAL PARTS LIST WAS REQUESTED FROM THE VENDOR FOR ALL O-RINGS USED ON THE TURBINE/GENERATOR SET, AS WELL AS ALL OTHER SUPPORTING WESTINGHOUSE SYSTEMS.

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FORM 6 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
336 1990 006 0 9006180193 218570 05/08/90

ABSTRACT

POWER LEVEL - 100%. ON 5/8/90 AT 00:49 HOURS WITH THE UNIT IN MODE 1 AT 100% POWER, PLANT OPERATORS MANUALLY TRIPPED THE REACTOR DUE TO DECREASING LEVELS IN THE #1 STEAM GENERATOR. THE SECONDARY PLANT OPERATOR OBSERVED A RAPIDLY DECREASING LEVEL IN THE #1 STEAM GENERATOR, WITH THE FEEDWATER REGULATING VALVE, 2-FW-51A, INDICATING FULL OPEN. WITH CONTROL OF MAIN FEED FLOW TO #1 STEAM GENERATOR APPARENTLY LOST AND SINCE STEAM GENERATOR LEVEL WAS DECREASING, THE UNIT WAS MANUALLY TRIPPED. OPERATORS THEN PERFORMED EOP 2525, "STANDARD POST TRIP ACTIONS" AND EOP 2526, "REACTOR TRIP RECOVERY". ALL EQUIPMENT RESPONDED AS EXPECTED AND THE UNIT WAS PLACED IN A STABLE CONDITION. MAIN FEED FLOW TO THE #1 STEAM GENERATOR WAS RESTORED AND CONTROLLED WITH THE FEEDWATER REGULATING BYPASS VALVE, 2-FW-41A. THE #1 FEEDWATER REGULATING VALVE, 2-FW-51A, WAS DISASSEMBLED AND INSPECTED. DURING THE DISASSEMBLY IT WAS DISCOVERED THAT THE STEM HAD SEPARATED FROM THE PLUG. THIS EVENT IS BEING REPORTED PURSUANT TO THE REQUIREMENTS OF PARAGRAPH 50.73(A)(2)(IV) DUE TO THE MANUAL REACTOR TRIP ON DECREASING STEAM GENERATOR LEVEL. SIMILAR LER'S: 87-009.

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FORM 7 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
336 1990 012 0 9010040140 219657 08/27/90

WHILE PERFORMING SURVEILLANCE PROCEDURE SP 2601D "POWER RANGE SAFETY CHANNEL AND DELTA T POWER CHANNEL CALIBRATION" WITH 'A' RPS CHANNEL INOPERABLE (TRIPPED), THE PLANT OPERATOR DID NOT BYPASS THE SECOND CHANNEL BEFORE TESTING IT, WHICH CAUSED AN AUTOMATIC PLANT TRIP. OPERATORS THEN PERFORMED EMERGENCY OPERATING PROCEDURE EOP 2525. ALL EQUIPMENT RESPONDED AS EXPECTED AND THE UNIT WAS PLACED IN A STABLE CONDITION. THE CAUSE OF THE EVENT WAS OPERATOR ERROR IN THAT THE OPERATOR FAILED TO PERFORM THE PRESCRIBED STEPS WHEN INITIATING THE DAILY POWER RANGE SAFETY CHANNEL AND DELTA T POWER CHANNEL CALIBRATION. THE LICENSED REACTOR OPERATOR INVOLVED HAS BEEN INSTRUCTED IN THE PROPER SEQUENCE OF BYPASS SWITCH OPERATIONS AND THE ENTIRE OPERATIONS DEPARTMENT HAS DISCUSSED THE IMPORTANCE OF EVALUATING PLANT CONDITIONS AND SELF-VERIFICATION AT SUBSEQUENT DEPARTMENT MEETINGS. IN ADDITION, PROCEDURE SP 2601D HAS BEEN REVISED TO INCORPORATE A SEPARATE SECTION ON PERFORMING THE CALIBRATIONS WITH ONE RPS CHANNEL INOPERABLE, INCLUDING A SIGNATURE REQUIREMENT FOR VERIFICATION THAT THE BYPASS LIGHTS ARE ENERGIZED ON THE CHANNEL TO BE TESTED. THIS EVENT IS BEING REPORTED PURSUANT TO THE REQUIREMENTS OF PARAGRAPH 50.73(A)(2)(IV), REPORTING ANY EVENT OR CONDITION THAT RESULTED IN MANUAL OR AUTOMATIC ACTUATION OF ANY ENGINEERED SAFETY FEATURE SYSTEM.

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FORM 8 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 338 1989 005 0 8903290172 213377 02/25/89

ABSTRACT

POWER LEVEL - 076%. AT 1407 HOURS ON 2/25/89, UNIT 1 AUTOMATICALLY TRIPPED FROM 76% POWER (MODE 1). THE INITIATING SIGNAL FOR THE REACTOR TRIP WAS "C" STEAM GENERATOR STEAM FLOW GREATER THAN FEEDWATER FLOW MISMATCH COINCIDENT WITH A LOW STEAM GENERATOR LEVEL. THE STEAM FLOW GREATER THAN FEEDWATER FLOW MISMATCH WAS CAUSED BY THE CLOSURE OF THE "C" MAIN FEEDWATER REGULATING VALVE ON THE LOSS OF CONTROL AIR. THIS EVENT IS REPORTABLE PURSUANT TO 10CFR50.73(A)(2)(IV). FOLLOWING THE REACTOR TRIP, INDICATIONS OF PRIMARY TO SECONDARY LEAKAGE WERE DETECTED. "C" STEAM GENERATOR WAS IDENTIFIED AS THE SOURCE OF THE LEAKAGE. THE EMERGENCY PLAN WAS ENTERED AND AN ALERT WAS DECLARED. THE PLANT WAS SUBSEQUENTLY COOLED DOWN AND DEPRESSURIZED TO MODE 5 AND THE ALERT WAS TERMINATED. DURING THE COOLDOWN, A PROBLEM WAS ENCOUNTERED PLACING THE RESIDUAL HEAT REMOVAL SYSTEM IN SERVICE DUE TO A FAULTY AUTO-CLOSURE RELAY ON THE RHR SUCTION ISOLATION VALVE (1-RH-MOV-1701). THIS IS REPORTABLE PURSUANT TO 10 CFR50.73(A)(2)(V). FOLLOWING THE EVENT, CALCULATIONS WERE MADE THAT INDICATED THAT PRIMARY THE SECONDARY LEAKAGE WAS 74 GPM. THIS IS REPORTABLE PURSUANT TO 10CFR50.73(A)(2)(I)(A). THIS EVENT POSED NO SIGNIFICANT SAFETY IMPLICATIONS BECAUSE SAFETY EQUIPMENT FUNCTIONED AS DESIGNED. RADIOLOGICAL RELEASES WERE WELL BELOW TECH SPEC LIMITS.

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FORM 9 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 338 1989 014 0 8903160218 214996 07/19/89

ABSTRACT

POWER LEVEL - 090%. AT 1740 HOURS, ON 7/19/89, UNIT 1 EXPERIENCED AN AUTOMATIC REACTOR TRIP FROM 90% POWER. THE REACTOR TRIP SIGNAL OCCURRED DUE TO A LOSS OF ELECTRO HYDRAULIC CONTROL (EHC) SYSTEM PRESSURE WHICH GENERATED A TURBINE TRIP AND A SUBSEQUENT REACTOR TRIP SINCE POWER WAS GREATER THAN 10%. THIS EVENT IS REPORTABLE PURSUANT

THE LOSS OF EHC SYSTEM PRESSURE RESULTED IN THE CLOSURE OF THE TURBINE STOP VALVES WHICH GENERATED THE TURBINE TRIP SIGNAL. A REACTOR TRIP SIGNAL WAS AUTOMATICALLY INITIATED, AS DESIGNED, SINCE POWER WAS GREATER THAN 10%. NO SAFETY INJECTION SIGNAL (MANUAL OR AUTOMATIC) WAS INITIATED AS REQUIRED DURING THIS EVENT. UNIT 1 WAS PLACED ON LINE AT 2136 HOURS ON 7/20/89. A ROOT CAUSE EVALUATION IS BEING PERFORMED TO DETERMINE THE ROOT CAUSE OF THE TURBINE TRIP SOLENOID OPERATED VALVE 20-ET O-RING FAILURE. RECOMMENDATIONS RESULTING FROM THE ROOT CAUSE EVALUATION ON THE O-RING FAILURE WILL BE EVALUATED AND IMPLEMENTED AS NECESSARY. THIS EVENT POSED NO SIGNIFICANT SAFETY IMPLICATIONS BECAUSE SAFETY RELATED EQUIPMENT FUNCTIONED AS DESIGNED AND KEY REACTOR PARAMETERS STABILIZED FOLLOWING THE REACTOR TRIP.

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FORM 10 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 338 1989 017 0 9000000000 218824 12/05/89

ABSTRACT

POWER LEVEL - 007%. AT 2236 HOURS ON 12/5/89, UNIT 1 EXPERIENCED AN AUTOMATIC REACTOR TRIP FROM APPROXIMATELY 7% POWER. THE REACTOR TRIP OCCURRED DUE TO A LOW LOW LEVEL IN THE "B" STEAM GENERATOR (S/G). THIS EVENT IS REPORTABLE PURSUANT TO 10CFR50.73(A)(2)(IV). PRIOR TO THE REACTOR TRIP, REACTOR POWER WAS BEING REDUCED DUE TO ELECTRO HYDRAULIC CONTROL (EHC) SYSTEM PRESSURE TRANSIENTS. APPROXIMATELY 16 MINUTES BEFORE THE REACTOR TRIP, THE MAIN GENERATOR OUTPUT BREAKER WAS OPENED AND THE TURBINE WAS MANUALLY REMOVED FROM SERVICE. THE EHC SYSTEM PRESSURE TRANSIENT WAS CAUSED BY LEAKING TURBINE OVERSPEED PROTECTION CIRCUITRY (OPC) VALVES. THE OPC VALVES WERE REPLACED AND OTHER EHC SYSTEM MODIFICATIONS/REPLACEMENTS WERE IMPLEMENTED. AN EVENT INVESTIGATION IS BEING PERFORMED TO DETERMINE ADDITIONAL EHC SYSTEM UPGRADES. UNIT 1 WAS PLACED ON LINE AT 0434 HOURS ON 12/21/89. THIS EVENT POSED NO SIGNIFICANT SAFETY IMPLICATIONS BECAUSE SAFETY RELATED EQUIPMENT FUNCTIONED AS EXPECTED AND KEY REACTOR PARAMETERS STABILIZED FOLLOWING THE REACTOR TRIP. THE HEALTH AND SAFETY OF THE GENERAL PUBLIC WERE NOT AFFECTED.

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FORM 11 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 338 1990 001 0 9002220365 216914 01/23/90

ABSTRACT

POWER LEVEL - 100%. AT 1522 HOURS ON JANUARY 23, 1990, UNIT 1 EXPERIENCED AN AUTOMATIC TRIP FROM 100 PERCENT POWER. THE INITIATING SIGNAL FOR THE REACTOR TRIP WAS A LOW LEVEL IN THE "C" STEAM GENERATOR WITH A STEAM FLOW GREATER THAN FEEDWATER FLOW MISMATCH. THE MISMATCH RESULTED FROM CLOSURE OF THE "C" MAIN FEEDWATER REGULATING VALVE. THE CLOSURE WAS CAUSED BY A FAILED PRINTED CIRCUIT DRIVER CARD IN THE VALVE CONTROLLER. AFTER EVENT INVESTIGATION AND CORRECTIVE ACTION, UNIT 1 WAS RETURNED TO CRITICAL ON JANUARY 24, 1990 AT 0241 HOURS. THIS EVENT CONSTITUTES AN AUTOMATIC ACTUATION OF THE REACTOR PROTECTION SYSTEM AND IS REPORTABLE PURSUANT TO 10 CFR 50.73 (A)(2)(IV). NO SIGNIFICANT SAFETY CONSEQUENCES RESULTED FROM THE REACTOR TRIP BECAUSE PLANT SAFETY SYSTEMS FUNCTIONED AS DESIGNED. THE REACTOR COOLANT SYSTEM PARAMETERS STABILIZED AT THEIR NORMAL POST TRIP VALUES. THERE WAS NO RELEASE OF RADIOACTIVE MATERIALS DUE TO THE TRIP. THE HEALTH AND SAFETY OF THE PUBLIC WERE NOT AFFECTED AT ANY

FORM 12 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
339 1990 010 0 9012030131 220163 11/02/90

ABSTRACT

POWER LEVEL - 009%. AT 1741 HOURS, ON NOVEMBER 2, 1990, UNIT 2 EXPERIENCED AN AUTOMATIC REACTOR TRIP FROM APPROXIMATELY 9 PERCENT POWER. THE REACTOR TRIP WAS CAUSED BY A LOW LOW LEVEL IN "A" STEAM GENERATOR. THE REACTOR TRIP OCCURRED APPROXIMATELY EIGHT MINUTES FOLLOWING AN AUTOMATIC TRIP OF THE TURBINE FROM APPROXIMATELY 15 PERCENT POWER. THIS EVENT IS REPORTABLE PURSUANT TO 10CFR50.73(A)(2)(IV). A FOUR HOUR REPORT WAS MADE IN ACCORDANCE WITH 10CFR50.72(B)(2)(II). THE CAUSE OF THE EVENT WAS PERSONNEL ERROR SINCE FAILURE TO RESET THE FEEDWATER REGULATING BYPASS VALVES AFTER REINITIATION OF MAIN FEEDWATER RESULTED IN THE LOW LOW STEAM GENERATOR LEVEL AND THE SUBSEQUENT REACTOR TRIP. A CONTRIBUTING CAUSE OF THE EVENT WAS THAT A SPECIFIC PROCEDURE FOR RESPONDING TO A TURBINE TRIP WITHOUT A REACTOR TRIP WAS NOT AVAILABLE. AS AN IMMEDIATE CORRECTIVE ACTION, EMERGENCY PROCEDURE 2-E-0, REACTOR TRIP OR SAFETY INJECTION, WAS ENTERED AND THE PLANT WAS STABILIZED. IN ADDITION, A ROOT CAUSE EVALUATION IS BEING PERFORMED. FURTHER CORRECTIVE ACTIONS WILL BE IMPLEMENTED, AS REQUIRED, BASED ON THE RESULTS OF THE ROOT CAUSE EVALUATION. THIS EVENT POSED NO SIGNIFICANT SAFETY IMPLICATIONS BECAUSE SAFETY RELATED EQUIPMENT FUNCTIONED AS DESIGNED AND KEY PARAMETERS STABILIZED FOLLOWING THE REACTOR TRIP. THERE WAS NO RELEASE OF RADIOACTIVE MATERIALS DUE TO THE REACTOR TRIP. THE HEALTH AND SAFETY OF THE PUBLIC WERE NOT AFFECTED.

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FORM 13 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
341 1989 006 0 8904050121 213477 02/26/89

ABSTRACT

POWER LEVEL - 100%. ON FEBRUARY 26, 1989, A TURBINE TRIP AND REACTOR SCRAM OCCURRED DURING OPERATION OF A RESET PUSHBUTTON FOR THE MAIN TURBINE MECHANICAL OVERSPEED TEST. THE OPERATOR HAD NOT RECEIVED THE EXPECTED INDICATION AT ONE POINT IN THE TEST AND WANTED TO VERIFY THAT THE LOGIC WAS RESET. WHEN THE RESET PUSHBUTTON WAS DEPRESSED A SECOND TIME, A TURBINE TRIP OCCURRED FOLLOWED BY A REACTOR SCRAM. THE CAUSE OF THE TURBINE TRIP WAS A POOR DESIGN OF THE MAIN TURBINE OVERSPEED TRIP LINKAGE, AS RECOGNIZED BY THE MANUFACTURER. ADDITIONALLY, THE LACK OF KNOWLEDGE OF THE CONSEQUENCES OF USING THIS RESET PUSHBUTTON OUT OF SEQUENCE CONTRIBUTED TO THE EVENT. THE TRAINING DEPARTMENT HAS INCORPORATED A DISCUSSION OF THE LINKAGE OPERATION INTO THE TURBINE CONTROLS LECTURE. THE OPERATOR HAS BEEN COUNSELLED. ALSO, A CRITIQUE OF THIS EVENT IS BEING GIVEN IN LICENSED OPERATOR TRAINING. AN EVALUATION OF THE NECESSITY FOR A DESIGN CHANGE TO IMPROVE THE HUMAN FACTORS CONSIDERATIONS OF THIS RESET WILL BE PERFORMED.

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FORM 14 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
349 1989 007 0 8904140432 213586 03/07/89

ABSTRACT

ATTEMPTS TO REDUCE THE VIBRATION BY REDUCING THE TURBINE LOAD WERE UNSUCCESSFUL. THEREFORE, THE REACTOR WAS SCRAMMED AND THE TURBINE SHUTDOWN IN ACCORDANCE WITH THE SITE PROCEDURES. ALL SYSTEMS RESPONDED PER THEIR DESIGN DURING THE SCRAM. THE TURBINE WAS BALANCED DURING THE SUBSEQUENT OUTAGE. DURING THE FIRST REFUELING OUTAGE, PARTS OF THE TURBINE WILL BE DISASSEMBLED AND/OR INSPECTED.

FORM 15 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
341 1989 036 0 9001300245 216604 12/18/89

ABSTRACT

POWER LEVEL - 020%. ON 12/18/89, INSTRUMENT & CONTROLS (I&C) PERSONNEL SIGNED ON SURVEILLANCE 44.020.151, "NSSSS - REACTOR WATER CLEANUP DIFFERENTIAL FLOW FUNCTIONAL TEST". AN I&C TECHNICIAN STATIONED IN THE CONTROL ROOM REQUESTED THE CONTROL ROOM OPERATOR TO RESET NUCLEAR STEAM SUPPLY SHUTOFF SYSTEM (NSSSS) DIVISION I AND II MAIN STEAM ISOLATION VALVE (MSIV) LOGIC, AS DIRECTED BY THE PROCEDURE. AT 2230 HOURS, THE CONTROL ROOM OPERATOR INADVERTENTLY DEPRESSED THE CLOSED PUSH BUTTONS ON THE A, B AND C INBOARD MSIV'S AND A REACTOR SCRAM RESULTED. THE IMMEDIATE ACTIONS OF THE REACTOR SCRAM ABNORMAL OPERATING PROCEDURE (20.000.21) WERE PERFORMED AND THE PLANT WAS IN A STABLE CONDITION AT 2240 HOURS. THE CAUSE OF THIS EVENT WAS OPERATOR ERROR. NUCLEAR TRAINING IS REVIEWING RESETTNG THE NUCLEAR STEAM SUPPLY SYSTEM ISOLATION LOGIC WITH CONTROL ROOM PERSONNEL. THE OPERATOR INVOLVED WAS REMOVED FROM LICENSED DUTIES AND PARTICIPATED IN AN ACCELERATED REQUALIFICATION TRAINING PROGRAM. A CRITIQUE OF THIS EVENT WILL BE ISSUED AS REQUIRED READING.

FORM 16 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
341 1989 038 1 9009050391 219392 12/23/89

ABSTRACT

POWER LEVEL - 042%. ON DECEMBER 23, 1989, SMOKE WAS DISCOVERED IN THE VICINITY OF THE HIGH PRESSURE TURBINE. THE FIRE BRIGADE WAS DISPATCHED, AND REACTOR WAS MANUALLY SCRAMMED. THE BRIGADE DISCOVERED THE LAGGING INSULATION PADS WERE BURNING AND EXTINGUISHED THE FIRE. INVESTIGATION HAS DETERMINED THAT THE INSULATION PADS WERE SOAKED WITH OIL AND THE TURBINE CASING HAD HEATED UP TO THE OIL'S FLASH POINT. AN OIL SPILL HAD OCCURRED SEVERAL WEEKS EARLIER DURING A FLUSH OF THE TURBINE LUBE OIL SYSTEM DURING TURBINE REASSEMBLY. APPARENTLY, THE SPILL WAS NOT ADEQUATELY CLEANED UP. THE DAMAGED INSULATION PADS WERE REPLACED AND AN INSPECTION FOR OTHER DAMAGE PERFORMED. NO OTHER DAMAGE WAS NOTED. AN ACCOUNTABILITY MEETING WAS HELD BETWEEN MANAGEMENT AND THE PERSONNEL INVOLVED IN THE MAINTENANCE ON THE TURBINE. PROCEDURES HAVE BEEN REVISED TO ASSURE THAT OIL LEAKS ARE DETECTED/CLEANED UP AND TO PRESCRIBE APPROPRIATE INSPECTIONS. THIS INCIDENT COUPLED WITH OTHER INCIDENTS WHICH OCCURRED DURING STARTUP FROM THE FIRST REFUELING OUTAGE LED TO FERMI 2 DEVELOPING AN ACCOUNTABILITY ACTION PLAN. THE ACCOUNTABILITY ACTION PLAN WAS IMPLEMENTED BY SITE ORGANIZATIONS AND EVALUATED BY QUALITY ASSURANCE AS COMMITTED TO IN DETROIT EDISON LETTER NRC-89-0300, DATED DECEMBER 26, 1989.

FORM 17 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 100%. ON APRIL 10, 1990 AT 0156 HOURS, THE REACTOR PROTECTION SYSTEM (RPS) MOTOR-GENERATOR (MG) SET "A" TRIPPED DUE TO A COIL FAILURE IN THE K1 RELAY. THE APPROPRIATE ISOLATIONS AND ACTUATIONS OCCURRED AS A RESULT OF THIS. WHILE THE OPERATORS WERE VERIFYING PLANT RESPONSE AND PREPARING TO RESTORE POWER, THE INBOARD MAIN STEAM ISOLATION VALVES (MSIVS) CLOSED. THIS RESULTED IN A REACTOR SCRAM AND SUBSEQUENT TURBINE TRIP. THE RPS MG SET RELAY FAILED WHEN ITS COIL TERMINATION FAILED. CLOSURE OF THE MSIVS IS ATTRIBUTED TO LOSS OF PNEUMATIC PRESSURE DUE TO PNEUMATIC SUPPLY ISOLATIONS. LEAKAGE WITHIN THE ISOLATED SYSTEM WAS TRACED TO TWO SOURCES LEAKAGE THROUGH THE TRAVERSING IN-CORE PROBE (TIP) INDEXER BOXES AND ADDITIONAL LEAKAGE THROUGH THE TIP PURGE SYSTEM WHICH HAD BEEN ADDED TO THE DRYWELL PNEUMATIC SYSTEM LOADS DURING THE FIRST REFUELING OUTAGE. AS CORRECTIVE ACTION, THE FAILED RELAY AND THE IDENTICAL RELAY ON MG SET "B" WERE REPLACED. THE FAILED RELAY WAS FURTHER ANALYZED TO CONFIRM ITS FAILURE MECHANISM. FIVE OF THE SIX RELIEF VALVES ON THE TIP PURGE SYSTEM WERE GAGGED. ALSO THE PRESSURE REGULATOR OF THE PURGE SYSTEM WAS SET LOWER TO ALLOW MORE THAN FIFTEEN MINUTES FOR OPERATORS TO RESTORE THE PNEUMATIC SUPPLY FOLLOWING ITS ISOLATION.

FORM 18 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 341 1990 011 0 9011090342 220062 10/06/90

ABSTRACT

POWER LEVEL - 001%. ON OCTOBER 6, 1990, FERMI 2 WAS IN STARTUP AND HOLDING WHILE PLANT PERSONNEL WERE INVESTIGATING REACTOR WATER LEVEL INDICATION DISCREPANCIES. THE DISCREPANCY WAS NOTED DURING A CHANNEL CHECK PRIOR TO HEAT-UP. INSTRUMENTATION & CONTROLS TECHNICIANS CONDUCTING TROUBLESHOOTING ON THE LEVEL DIFFERENCE NOTICED AT THE REMOTE LOCATION THAT THE "B" REFERENCE LEG INSTRUMENTS INDICATED APPROXIMATELY 20 INCHES LOWER THAN THE EQUIVALENT RPS INSTRUMENTATION ASSOCIATED WITH "A" REFERENCE LEG AT APPROXIMATELY 1750 HOURS. THE I&C TECHNICIANS WERE IN THE PROCESS OF NOTIFYING THE CONTROL ROOM WHEN AT 1754 HOURS, A REACTOR SCRAM ON LOW REACTOR WATER LEVEL OCCURRED. THE CAUSE OF THIS EVENT WAS ATTRIBUTED TO AIR VOIDS IN THE "A" REFERENCE LEG. INITIAL TROUBLESHOOTING WAS PERFORMED AS CLOSE TO PRE-SCRAM CONDITIONS AS POSSIBLE AND, BASED ON THE RESULTS, THE PLANT WAS PLACED IN COLD SHUTDOWN AND THE DRYWELL WAS DEINERTED FOR FURTHER INVESTIGATION FOLLOWING THE REACTOR SCRAM. THE SOURCES OF LEVEL INDICATION DIFFERENCE WERE INVESTIGATED AND CORRECTIVE ACTIONS WERE FORMULATED. THE CORRECTIVE ACTIONS, THE ROOT CAUSE EVALUATION, AND THE STARTUP PLAN WERE REVIEWED BY THE ON-SITE SAFETY REVIEW ORGANIZATION PRIOR TO STARTUP.

FORM 19 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 344 1989 017 1 8912260001 216209 08/09/89

ABSTRACT

POWER LEVEL - 050%. ON 8/9/89 AT 1220 HOURS THE PLANT WAS OPERATING AT 50% POWER WHEN A REACTOR TRIP SIGNAL WAS GENERATED. THE REACTOR TRIPPED WHEN THE LOGIC FOR OVER TEMPERATURE DELTA TEMPERATURE (OT DELTA T) WAS SATISFIED FROM A SPURIOUS SIGNAL. THE OTHER SIGNAL

INSTRUMENTATION, POWER RANGE". THE TRIP WAS CAUSED BY RECEIPT OF A SPURIOUS SIGNAL, APPARENTLY FROM CHANNEL 4 OF THE OT DELTA T CIRCUIT. THE SIGNAL WAS CONSIDERED SPURIOUS BECAUSE REACTOR COOLANT SYSTEM CONDITIONS WERE ACCEPTABLE WHEN THE TRIP OCCURRED. A COMPREHENSIVE INVESTIGATION WAS CONDUCTED WITH NO EXACT CAUSE IDENTIFIED. THE CONTINUED INVESTIGATION DID IDENTIFY CONDITIONS WHICH COULD HAVE CAUSED A SPURIOUS SIGNAL. THESE CONDITIONS INCLUDED INTERMITTENT FAILURE OF A COMPARATOR MODULE OR AN INTERMITTENT OPEN IN A TERMINATION CONNECTION WHICH GENERATED A TRANSITORY SIGNAL LARGE ENOUGH TO CAUSE THE BISTABLE TO TRIP. A POTENTIAL CONTRIBUTING FACTOR WAS A LOWER OT DELTA T SETPOINT THAN IN PREVIOUS OPERATING CYCLES. IMMEDIATE CORRECTIVE ACTIONS PRIOR TO RETURN TO POWER INCLUDED REPLACEMENT OF 3 CHANNEL 4 OT DELTA T MODULES (EVEN THOUGH NO INDICATION OF FAILURE EXISTED) AND PERFORMANCE OF PICTS FOR INPUTS INTO ALL 4 OF THE OT DELTA T CHANNELS.

FORM 20 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 344 1990 034 0 9009130189 219455 08/09/90

ABSTRACT

POWER LEVEL - 100%. ON AUGUST 9, 1990, THE TROJAN NUCLEAR PLANT WAS OPERATING IN MODE 1 (POWER OPERATION) AT 100 PERCENT RATED THERMAL POWER. THE GENERATOR LOAD WAS APPROXIMATELY 1135 MW. AT 1648 THE "B" FEEDWATER PUMP TRIPPED ON INDICATION OF HIGH THRUST BEARING WEAR. IN RESPONSE TO THE LOSS OF THE FEEDWATER PUMP, THE MAIN TURBINE BEGAN AN AUTOMATIC RUNBACK AND THE CONTROL RODS BEGAN AUTOMATICALLY STEPPING IN TO REDUCE REACTOR POWER. THE TURBINE RUNBACK CONTINUED FOR ONE MINUTE, TWENTY SECONDS; THEN THE REACTOR AUTOMATICALLY TRIPPED ON LOW-LOW LEVEL IN THE "D" STEAM GENERATOR. FOLLOWING THE REACTOR TRIP, AUTOMATIC FEEDWATER ISOLATION AND AUXILIARY FEEDWATER INITIATION OCCURRED. THE "B" FEEDWATER PUMP TRIP WAS INITIATED BY PROTECTIVE INSTRUMENTATION WHICH RECEIVED INDICATION OF EXCESSIVE THRUST BEARING WEAR IN THE PUMP'S TURBINE DRIVER. THE EXCESSIVE BEARING WEAR INDICATION WAS THE RESULT OF INCORRECTLY SET INSTRUMENTATION, NOT ACTUAL WEAR. THE THRUST BEARING WEAR INDICATING INSTRUMENTS WERE RECALIBRATED AND THE PUMP WAS REASSEMBLED. THE PLANT WAS RETURNED TO POWER OPERATION ON AUGUST 11, 1990. THIS EVENT HAD NO EFFECT UPON PUBLIC HEALTH AND SAFETY. THE REACTOR PROTECTIVE SYSTEM AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM FUNCTIONED AS REQUIRED. THE PLANT RESPONDED AS EXPECTED TO THE TRIP.

FORM 21 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 346 1989 003 1 8903220189 213378 01/18/89

ABSTRACT

POWER LEVEL - 100%. ON 1/18/89, AT 1344 HOURS, WITH CONTROL ROD DRIVE (CRD) TRIP BREAKER TESTING IN PROGRESS, THE REACTOR TRIPPED FROM 100% RATED THERMAL POWER (RTP). THE TRIP WAS INITIATED BY A SPURIOUS CRD TRIP CONFIRM SIGNAL WHICH CAUSED THE INTEGRATED CONTROL SYSTEM (ICS) TO INITIATE THE RAPID FEEDWATER REDUCTION (RFR). THIS RESULTED IN FEEDWATER FLOW BEING REDUCED TO ABOUT 6% WHILE THE REACTOR WAS STILL AT 100%. THIS CAUSED THE REACTOR COOLANT SYSTEM (RCS) PRESSURE TO INCREASE RAPIDLY UNTIL IT REACHED THE HIGH PRESSURE TRIP SETPOINT OF 2300 PSIG WHERE THE REACTOR PROTECTION SYSTEM (RPS) TRIPPED THE REACTOR. THE POST-TRIP RESPONSE OF THE PLANT WAS NORMAL WITH NO MAJOR

DOCKET CASE NO. 1. THE DOCKETS WILL BE RETURNED TO THE VENDOR FOR TROUBLESHOOTING. IF ANYTHING OTHER THAN A RANDOM COMPONENT FAILURE IS DETERMINED, A REVISION TO THIS REPORT WILL BE ISSUED. THIS EVENT IS REPORTABLE PER 10CFR50.73(A)(2)(IV) AS AN AUTOMATIC ACTUATION OF RPS.

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FORM 22 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
346 1989 005 0 8907050105 214461 05/30/89

ABSTRACT

POWER LEVEL - 100%. ON 5/30/89, DAVIS-BESSE EXPERIENCED A REACTOR TRIP FROM 100% POWER. THE EVENT BEGAN AS A TRIP OF THE MAIN TURBINE DUE TO LOSS OF CONDENSER VACUUM WHEN THE CIRCULATING WATER (CW) PUMPS 2 AND 4 TRIPPED ON HIGH PHASE DIFFERENTIAL CURRENT. THE POST-TRIP RESPONSE OF THE PLANT WAS GOOD. THE CAUSE OF THE HIGH DIFFERENTIAL CURRENT WAS IN A FAILED SPLICE IN ONE PHASE OF A 13.8KV FEEDER CABLE WHICH WAS SENSED BY THE PROTECTIVE RELAYING FOR THE CV PUMPS. THE FAILED SPLICE WAS REMOVED FOR DETERMINATION OF CAUSE. THE FAILURE OF THE SPLICE WAS DETERMINED TO BE CAUSED BY IMPROPER INSTALLATION. WITH THE FAULTY LOAD CABLE ISOLATED FROM THE 13.8KV BUS, THE PLANT WAS RESTARTED AND BROUGHT BACK ON LINE BY 1530 HOURS ON MAY 31, 1989.

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FORM 23 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
346 1990 002 1 9007180022 218867 01/26/90

ABSTRACT

POWER LEVEL - 073%. ON 1/26/90, AT 0846 HOURS, DURING PERFORMANCE OF SURVEILLANCE TEST DB-MI-03205, RCP CURRENT MONITOR INPUTS TO SFRC5 ACH1 AND RPS CHANNEL 1, THE STATION EXPERIENCED A REACTOR TRIP FROM 73% FULL POWER. PRIOR TO THE TRIP, THE STATION HAD BEEN OPERATING WITH 3 OF THE 4 RCPS RUNNING. PLANT RESPONSE TO THE TRIP WAS NORMAL WITH KEY PARAMETERS REMAINING IN THE NORMAL POST-TRIP BAND. STEAM GENERATOR HEADER PRESSURE WAS INTENTIONALLY REDUCED TO APPROX. 970 PSIG TO AID IN FULLY RESEATING TWO MAIN STEAM SAFETY VALVES SOLIDLY. AFTER STABILIZATION OF THE PLANT, THE LETDOWN ISOLATION VALVE, MU2B, WOULD NOT REOPEN. THE INABILITY TO RESTORE THE LETDOWN FLOW RESULTED IN SLOWER THAN NORMAL PLANT COOLDOWN AND MODE 5 WAS ACHIEVED OF 1/27/90, AT 0345 HOURS. IMMEDIATE NOTIFICATION WAS MADE PER 10CFR50.72(B)(2)(II) ON 1/26/90, AT 1007 HOURS. THE REACTOR TRIP IS REPORTABLE AS AN LER PER 10CFR50.73(A)(2)(IV). AN ACTION PLAN IMPLEMENTED TO DETERMINE THE CAUSE OF THE RCP CURRENT MONITOR CIRCUIT TRANSIENT CONCLUDED THAT THERE WERE 2 MAJOR FACTORS. THEY WERE THE INADEQUACY OF THE TEST SWITCHES TO PROVIDE CURRENT ISOLATION AND THE USE OF A STANDARD ISOLATION PLUG WHICH RESULTS IN UNINTENDED FORCES ON THE KNIFE SWITCH WHICH CARRIES THE BYPASS CURRENT. THE CAUSE OF MU2B FAILURE WAS DETERMINED TO BE THERMAL BINDING OF THE DISC IN THE VALVE SEAT. THE VALVE WAS REPLACED WITH A FULLY FLEXIBLE WEDGE GATE VALVE UNDER MWO 2-89-0053-00.

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FORM 24 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
346 1990 016 0 9101180086 220711 12/13/90

ABSTRACT

REACTOR TRIP MODULE LOGIC AND REACTOR TRIP BREAKER 8 WAS IN PROGRESS WHEN THE TRIP OCCURRED. REACTOR TRIP BREAKER 8 HAD BEEN PREVIOUSLY TRIPPED AS PART OF THE RPS FUNCTIONAL TEST. SEVEN OF EIGHT CONTROL RODS IN ROD GROUP 7 DROPPED INTO THE CORE CAUSING REACTOR POWER TO INITIALLY DECREASE TO APPROXIMATELY 48 PERCENT. RCS PRESSURE AND TEMPERATURE DECREASED DUE TO A RESULTING MISMATCH BETWEEN REACTOR POWER AND FEEDWATER FLOW. RPS SUBSEQUENTLY TRIPPED THE REACTOR ON LOW RCS PRESSURE. PLANT RESPONSE TO THE REACTOR TRIP WAS NORMAL WITH KEY PARAMETERS REMAINING IN THE NORMAL POST-TRIP BAND. THE APPARENT CAUSE OF THE GROUP ROD DROP WAS A DEGRADATION IN THE "A" SIDE POWER TRAIN OF THE CONTROL ROD DRIVE (CRD) SYSTEM SUCH THAT WITH THE "B" SIDE REACTOR TRIP BREAKER OPEN, THE CURRENT SUPPLIED TO THE CRD MOTOR STATORS WAS NOT SUFFICIENT TO SUPPORT MOTION OF THE GROUP 7 CONTROL RODS. AN ACTION PLAN WAS DEVELOPED TO IDENTIFY THE SPECIFIC CAUSE. ACTION PLAN IMPLEMENTATION IS CURRENTLY IN PROGRESS. IMMEDIATE NOTIFICATION WAS MADE PER 10CFR50.72(B)(2)(II) ON DECEMBER 13, 1990, AT 0944 HOURS. THE REACTOR TRIP IS BEING REPORTED PURSUANT TO THE REQUIREMENTS OF 10CFR50.73(A)(2)(IV). A REVISION TO THIS LER WILL BE SUBMITTED WHEN THE ROOT CAUSE IS DETERMINED.

FORM 25 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 348 1989 006 0 8912130377 216086 11/12/89

ABSTRACT

POWER LEVEL - 034%. AT 1658 ON 11/12/89, WITH THE UNIT OPERATING AT 34% POWER, A SAFETY INJECTION AND REACTOR TRIP WERE INITIATED DUE TO LOW STEAM LINE PRESSURE. TROUBLESHOOTING OF AN OSCILLATION IN THE #3 TURBINE-GENERATOR GOVERNOR VALVE WAS IN PROGRESS. AS PART OF TROUBLESHOOTING THIS PROBLEM, A CIRCUIT CARD THAT CONTROLS THE #3 GOVERNOR VALVE WAS REPLACED WITH AN IMPROPERLY CONFIGURED CARD. THIS CAUSED THE DIGITAL ELECTRO-HYDRAULIC CONTROL (DEHC) SYSTEM TO OPEN ALL THREE OF THE OTHER GOVERNOR VALVES. THIS IN TURN RESULTED IN A DECREASE IN STEAM LINE PRESSURE. THE RATE OF DECREASE CAUSED THE RATE SENSITIVE FEATURE OF THE LOW STEAM LINE PRESSURE SAFETY INJECTION AND REACTOR TRIP. A NOTIFICATION OF UNUSUAL EVENT WAS DECLARED AT 1658. THE NOTIFICATION OF UNUSUAL EVENT WAS TERMINATED AT 1900. THIS EVENT WAS CAUSED BY COGNITIVE PERSONNEL ERROR. THE CIRCUIT CARD THAT WAS INSTALLED FOR THE #3 GOVERNOR VALVE HAD BEEN CONFIGURED FOR THE #4 GOVERNOR VALVE. THE PERSON INVOLVED HAS BEEN COUNSELED. AS A FURTHER ENHANCEMENT, WHEN TROUBLESHOOTING THE DEHC SYSTEM DURING POWER OPERATION, THE GOVERNOR VALVE POSITION LIMITER WILL BE RESTRICTED TO LIMIT THE AMOUNT OF VALVE OPENING. THIS LER ALSO PROVIDES THE SPECIAL REPORT INFORMATION REQUIRED BY TECH SPECS 3.5.2.

FORM 26 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 348 1990 005 0 9008080256 219041 07/20/90

ABSTRACT

POWER LEVEL - 100%. AT 2218 ON 07-20-90, WITH THE UNIT OPERATING AT 100% POWER, THE REACTOR WAS TRIPPED MANUALLY FOLLOWING THE AUTOMATIC TRIP OF THE 1A STEAM GENERATOR FEED PUMP (SGFP). THE 1A SGFP TURBINE TRIPPED ON OVERSPEED DUE TO THE FAILURE OF THE SPEED SENSOR CONVERTER. THE REACTOR WAS TRIPPED MANUALLY IN ANTICIPATION OF AN AUTOMATIC REACTOR TRIP. THE UNIT WAS STABILIZED IN MODE 3 (HOT STANDBY). THE UNIT RETURNED TO POWER OPERATION AT 0446 ON 07-24-90.

LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 353 1989 013 0 8912190009 216215 11/10/89

ABSTRACT

POWER LEVEL - 098%. ON 11/10/89, A UNIT 2 REACTOR SCRAM OCCURRED FOLLOWING A MAIN TURBINE TRIP. ALL CONTROL RODS FULLY INSERTED AS DESIGNED. THE TURBINE TRIP RESULTED FROM A UNIT 2 GENERATOR TRIP CAUSED BY ACTUATION OF THE A-PHASE OVERALL DIFFERENTIAL CURRENT RELAY. FOLLOWING THE SCRAM, REACTOR VESSEL PRESSURE INCREASED TO 1125 PSIG AND LEVEL DECREASED TO APPROXIMATELY 0 INCHES INSTRUMENT LEVEL. OPERATORS RESTORED NORMAL OPERATING VESSEL LEVEL AND PRESSURE. THE HIGH PRESSURE COOLANT INJECTION (HPCI) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEMS RECEIVED MOMENTARY INITIATION SIGNALS DUE TO SPIKING OF LEVEL TRANSMITTERS. THE RCIC SYSTEM DID NOT INITIATE AND THE HPCI SYSTEM PARTIALLY INITIATED DUE TO THE SHORT DURATION OF THE INITIATION SIGNALS. BOTH SYSTEMS WERE OPERABLE AND ABLE TO RESPOND TO A VALID INITIATION SIGNAL THROUGHOUT THE EVENT. BOTH SYSTEMS WERE SECURED AND ALL INITIATION LOGICS WERE RESET. AN "UNUSUAL EVENT" EMERGENCY CLASSIFICATION WAS DECLARED AND ALL APPROPRIATE NOTIFICATIONS WERE MADE. THE CAUSE OF THE OVERALL DIFFERENTIAL CURRENT RELAY ACTUATION WAS A MISCALCULATION OF THE TRIP SETPOINT PERFORMED DURING THE ORIGINAL UNIT 2 DESIGN. THE CALCULATION WAS CORRECTED AND THE AFFECTED RELAYS' SETPOINTS WERE ADJUSTED. THE MISCALCULATION WAS VERIFIED TO BE AN ISOLATED EVENT AND NO FURTHER ACTIONS TO PREVENT RECURRENCE ARE PLANNED. OPERATORS RESTARTED UNIT 2 ON 11/14/89.

FORM 28 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 353 1990 012 0 9008160188 219284 07/15/90

ABSTRACT

POWER LEVEL - 065%. ON JULY 15, 1990, A UNIT 2 REACTOR SCRAM OCCURRED FOLLOWING A MAIN TURBINE STOP VALVE (TSV) CLOSURE, A REACTOR PROTECTION SYSTEM (RPS) ACTUATION. THE TSV CLOSURE RESULTED FROM A LOSS OF MAIN CONDENSER VACUUM DUE TO A FAILED LOW PRESSURE TURBINE BEARING CAVITY WASTE OIL DRAIN PIPE. REACTOR PRESSURE VESSEL (RPV) PRESSURE INCREASED TO 1005 PSIG AND LEVEL DECREASED FROM A NORMAL OPERATING LEVEL OF +35 INCHES TO +6 INCHES INSTRUMENT LEVEL. PRIMARY CONTAINMENT AND REACTOR VESSEL ISOLATION CONTROL SYSTEM (PCRIVCS), AN ENGINEERED SAFETY FEATURE (ESF), ACTUATION SIGNALS WERE RECEIVED AND NO VALVE MOTION OCCURRED, AS EXPECTED, DUE TO PLANT CONDITIONS. OPERATORS RESTORED RPV PRESSURE AND LEVEL TO NORMAL POST SCRAM OPERATING LEVELS. AN "UNUSUAL EVENT" EMERGENCY CLASSIFICATION WAS DECLARED AND ALL APPROPRIATE NOTIFICATIONS WERE MADE IN ACCORDANCE WITH 10CFR50.72(A)(3) AND 10CFR50.72(B)(2)(II). THE PIPE FAILURE WAS DETERMINED TO BE CAUSED BY INSUFFICIENT PIPE SUPPORT RESULTING IN VIBRATION INDUCED METAL FATIGUE. THE FAILED PIPE WAS REPLACED AND THE REMAINING FIVE SIMILAR PIPES WERE INSPECTED. PIPE SUPPORTS WERE ADDED TO ALL SIX LOW PRESSURE TURBINE BEARING CAVITY WASTE OIL DRAIN PIPES. NUCLEAR ENGINEERING AND SERVICES DEPARTMENT PERSONNEL ARE EVALUATING THE NEED FOR FURTHER CORRECTIVE ACTIONS ON UNIT 2 AND ANY SIMILAR ACTIONS ON UNIT 1.

FORM 29 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 100%. ON SEPTEMBER 10, 1990, A UNIT 2 REACTOR PROTECTION SYSTEM (RPS) ACTUATION OCCURRED RESULTING FROM AN ACTUATION OF THE PRIMARY CONTAINMENT AND REACTOR VESSEL ISOLATION CONTROL SYSTEM (PCRIVICS) ENGINEERED SAFETY FEATURE (ESF) ACTUATIONS. A PCRIVICS GROUP I MAIN STEAM ISOLATION VALVE (MSIV) ISOLATION SIGNAL OCCURRED DUE TO A SPURIOUS TRIP SIGNAL ON THE 'D' CHANNEL OF THE STEAM LEAK DETECTION SYSTEM (SLDS) WHEN A TEMPERATURE SWITCH MOMENTARILY SPIKED WHEN AN OPERATOR REPOSITIONED THE SWITCH WHILE INSTRUMENTATION AND CONTROL TECHNICIANS WERE SIMULTANEOUSLY TESTING THE 'A' CHANNEL OF THE SLDS. REACTOR PRESSURE VESSEL (RPV) PRESSURE INCREASED TO 1120 PSIG AND RPV LEVEL DECREASED FROM A NORMAL OPERATING LEVEL OF +35 INCHES TO -48 INCHES INSTRUMENT LEVEL. ADDITIONAL PCRIVICS ACTUATION SIGNALS WERE RECEIVED AND APPROPRIATE VALVE AND DAMPER MOTION OCCURRED. THE REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM RECEIVED AN INITIATION SIGNAL ON LOW LOW RPV LEVEL AND INJECTED INTO THE RPV. OPERATORS RESTORED RPV PRESSURE AND LEVEL TO NORMAL POST SCRAM OPERATING LEVELS BY 0941 HOURS. THE CAUSE OF THE EVENT WAS A SPURIOUS TRIP SIGNAL FROM A STEAM LEAK DETECTION SYSTEM TEMPERATURE SWITCH. THE ISOLATION SIGNALS WERE RESET BY 0948 HOURS. THE TEMPERATURE SWITCH WAS REPLACED AND THE FAILURE MECHANISM OF THE TEMPERATURE SWITCH IS UNDER INVESTIGATION.

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FORM	30	LER SCSS DATA	04-18-91

DOCKET	YEAR	LER NUMBER	REVISION
354	1989	017	0
		DCS NUMBER	NSIC
		8910050397	215369
		EVENT DATE	08/30/89

ABSTRACT

POWER LEVEL - 082%. ON 8/30/89 AT 0112, A REACTOR SCRAM OCCURRED AS A RESULT OF A LOW REACTOR PRESSURE VESSEL (RPV) WATER LEVEL (+12.5") SIGNAL. THE TRANSIENT WAS INITIATED BY THE FAILURE OF A 1/2" SOLDERED CONNECTION WHERE THE SCRAM PILOT AIR LINE FROM CONTROL ROD DRIVE (CRD) HYDRAULIC CONTROL UNIT (HCU) 34-59 JOINED A 1-1/2" AIR HEADER INTERCONNECTING A BANK OF HCU'S ON THE SOUTH SIDE OF THE REACTOR BUILDING. THIS FAILURE RESULTED IN THE RAPID DEPRESSURIZATION OF THE SCRAM AIR HEADER, AND IN RESPONSE, CONTROL RODS BEGAN TO INSERT. THE ENSUING VOID COLLAPSE RESULTED IN AN UNRECOVERABLE LOW LEVEL TRANSIENT AND THE SUBSEQUENT SCRAM. FAILURE ANALYSIS FOLLOWING THE SCRAM DETERMINED THE ROOT CAUSE OF THE INITIAL AIR LINE FAILURE TO BE DEFICIENCIES IN INITIAL INSTALLATION OF THE AIR LINE DURING PLANT CONSTRUCTION. IMMEDIATE CORRECTIVE ACTIONS INCLUDED RADIOGRAPHY OF SIMILAR JOINTS PRIOR TO RESTARTING THE PLANT, LEAK CHECKING ALL SOLDERED CONNECTIONS AT ALL 185 SCRAM PILOT AIR HEADER RISERS, AND PULL TESTING ALL 185 TEE JOINTS TO DEMONSTRATE THE ABILITY OF THE JOINTS TO WITHSTAND NORMAL OPERATING STRESSES. LONG TERM CORRECTIVE ACTIONS INCLUDE COMPLETION OF AN ONGOING TESTING PROGRAM FOR INSTRUMENT AIR PIPING PRIOR TO THE END OF THE CURRENT REFUELING OUTAGE.

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FORM	31	LER SCSS DATA	04-18-91

DOCKET	YEAR	LER NUMBER	REVISION
354	1989	025	0
		DCS NUMBER	NSIC
		9002080103	216683
		EVENT DATE	12/30/89

ABSTRACT

POWER LEVEL - 100%. ON 12/30/89 AT 1947, DURING THE PERFORMANCE OF THE TBWD SECTION OF THE MAIN TURBINE MONTHLY FUNCTIONAL TEST PROCEDURE, A TURBINE TRIP OCCURRED. THIS TRIP WAS FOLLOWED IMMEDIATELY BY A

TEXT OF THIS REPORT. INVESTIGATION SUBSEQUENT TO THE EVENT DETERMINED THAT A TBWD LIMIT SWITCH HAD MALFUNCTIONED DURING THE TEST, RESULTING IN THE TURBINE TRIP CIRCUITRY SENSING THAT THE TURBINE END THRUST BEARING HAD ACTUALLY FAILED. WHILE THE INITIATING CAUSE OF THIS EVENT WAS THE TBWD LIMIT SWITCH FAILURE, THE ROOT CAUSE OF THIS EVENT WAS THE INADEQUATE PRIORITIZATION OF A DESIGN CHANGE WHICH HAD BEEN PENDING SINCE 1988. THIS DESIGN CHANGE WOULD HAVE MODIFIED THE TBWD CIRCUITRY TO PREVENT A TURBINE TRIP SIGNAL WHILE TESTING THE TBWD. CORRECTIVE ACTIONS INCLUDED IMPLEMENTING THIS DESIGN CHANGE, REPAIRING THE TBWD LIMIT SWITCH, REVIEWING ALL OTHER "SCRAM REDUCTION" DESIGN CHANGES FOR ADEQUATE PRIORITIZATION, REVIEWING OTHER TURBINE TRIP TEST PROCEDURES FOR ADMINISTRATIVE ADEQUACY, AND INCORPORATING THIS EVENT INTO APPROPRIATE TRAINING PROGRAMS.

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FORM 32 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 354 1990 001 0 9002130341 216700 01/06/90

ABSTRACT

POWER LEVEL - 097%. ON 1/6/90 AT 0120, DURING PERFORMANCE OF A SURVEILLANCE PROCEDURE WHICH TESTS THE MAIN TURBINE COMBINED INTERMEDIATE VALVES (CIV), THE "A" MOISTURE SEPARATOR EXPERIENCED A HIGH LEVEL CONDITION. IN RESPONSE TO THIS HIGH LEVEL CONDITION, THE ASSOCIATED DUMP VALVE OPENED, BUT NOT IN TIME TO PREVENT A TURBINE TRIP ON MOISTURE SEPARATOR HIGH LEVEL. IMMEDIATELY FOLLOWING THE TURBINE TRIP, THE REACTOR SCRAMMED ON A TURBINE CONTROL VALVE CLOSURE SIGNAL FROM THE REACTOR PROTECTION SYSTEM. ALL CONTROL RODS WERE VERIFIED TO BE INSERTED, AND PLANT SYSTEMS RESPONDED AS EXPECTED, WITH MINOR EXCEPTIONS AS NOTED IN THE TEXT OF THIS REPORT. INVESTIGATION SUBSEQUENT TO THE SCRAM DETERMINED THAT MULTIPLE CAUSES COMBINED TO RESULT IN THE SCRAM - MOISTURE SEPARATOR LEVEL CONTROLLERS WHICH WERE NOT OPTIMALLY TUNED AND THE CYCLING OF A CIV PRIOR TO STABILIZATION OF MOISTURE SEPARATOR LEVEL AFTER CYCLING A PREVIOUS CIV. CORRECTIVE ACTIONS INCLUDED TUNING OF THE MOISTURE SEPARATOR DRAIN CONTROL INSTRUMENTATION LOOPS, PROCEDURALLY INCREASING THE TIME BETWEEN CYCLING OF CIV'S DURING THE SUBJECT SURVEILLANCE, COUNSELLING THE NUCLEAR CONTROL OPERATOR (NCO, RO LICENSED) WHO PERFORMED THE SURVEILLANCE, AND INCLUDING A REVIEW OF THE EVENT DURING THE NEXT LICENSED OPERATOR REQUALIFICATION CYCLE.

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FORM 33 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 354 1990 003 0 9004260078 218025 03/19/90

ABSTRACT

POWER LEVEL - 098%. ON MARCH 19, 1990 AT 1850, A REACTOR SCRAM OCCURRED ON LOW REACTOR VESSEL LEVEL (+12.5") WHEN ALL FEEDWATER PUMPS TRIPPED IN RESPONSE TO A LOSS OF THE PRIMARY AND SECONDARY CONDENSATE PUMPS. FOLLOWING THE SCRAM, REACTOR VESSEL LEVEL DECREASED TO BELOW THE HIGH PRESSURE COOLANT INJECTION (HPCI) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEMS INITIATION SETPOINT (VESSEL LEVEL 2, -38"). THE HPCI AND RCIC SYSTEMS AUTOMATICALLY INITIATED AND WERE UTILIZED TO RESTORE VESSEL INVENTORY TO NORMAL LEVEL. INVESTIGATION SUBSEQUENT TO THE EVENT DETERMINED THAT THE PRIMARY AND SECONDARY CONDENSATE PUMPS TRIPPED IN RESPONSE TO A PERTURBATION IN THE STATION ELECTRICAL DISTRIBUTION SYSTEM CAUSED BY AN ELECTRICAL FAULT IN OFF-SITE 500KV TRANSMISSION LINE. THIS ELECTRICAL FAULT WAS CAUSED BY FLASHOVER

REDUCTION WAS PROPAGATED THROUGH ALL STATION ELECTRICAL DISTRIBUTION SYSTEMS. INVESTIGATION AND TESTING BY PSE&G NUCLEAR ELECTRIC ENGINEERING DEPARTMENT CONCLUDED THAT THE VOLTAGE REDUCTION SENSED AT THE 120VAC (CONTROL POWER) LEVEL WAS OF SUFFICIENT MAGNITUDE AND DURATION TO CAUSE THE TRIPPING OF THE CONDENSATE SYSTEM, WHICH ULTIMATELY RESULTED IN THE TRIPPING OF THE OPERATING FEEDWATER PUMPS.

FORM 34 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 354 1990 024 0 9012110224 220472 11/04/90

ABSTRACT

POWER LEVEL - 100%. ON 11/4/90 AT 0042, A REACTOR SCRAM OCCURRED DUE TO AVERAGE POWER RANGE MONITOR (APRM) FIXED NEUTRON FLUX UPSCALE (118 POWER), WHICH WAS INITIATED BY CLOSURE OF THE B INBOARD MAIN STEAM ISOLATION VALVE (MSIV). THE B MSIV CLOSURE RESULTED FROM FAILED FITTING ON A PRIMARY CONTAINMENT INSTRUMENT GAS (PCIG) SUPPLY LINE TO THE MSIV, CAUSING IT TO CLOSE. THE REACTOR PROTECTION SYSTEM FUNCTIONED NORMALLY TO SHUT DOWN THE REACTOR. SECOND SCRAM SIGNAL OCCURRED ON LOW LEVEL (12.5") IN THE REACTOR VESSEL WHEN A NUCLEAR CONTROL OPERATOR (NCO, RO LICENSED) PLACED THE C FEEDPUMP IN THE POSITIONER MODE, AND DID NOT ADEQUATELY MONITOR REACTOR VESSEL WATER LEVEL. ALSO, DURING THE COURSE OF RECOVERY FROM THE SCRAM, THE CONDENSER MECHANICAL VACUUM PUMPS WERE STARTED TO MAINTAIN VACUUM IN THE MAIN CONDENSER DUE TO UNAVAILABILITY OF THE STEAM SEAL SYSTEM. THE SYSTEM ALIGNMENT RESULTED IN CONDENSER GAS BEING RELEASED VIA THE SOUTH PLANT VENT (SPV) WITHOUT THE NORMAL OFFGAS TREATMENT (NO HOLDUP TIME), AND INITIATED AN SPV RADIATION ALARM. CORRECTIVE ACTIONS INCLUDE PERFORMING DESIGN ENHANCEMENTS ON THE INBOARD MSIV PIPING, EVALUATING POTENTIAL DESIGN CHANGES FOR THIS PIPE CONFIGURATION, REPAIRING DEFECTIVE EQUIPMENT, PROCEDURAL ENHANCEMENT ADDITIONAL ADMINISTRATIVE GUIDANCE, LICENSED OPERATOR TRAINING ON THE EVENT, AND COUNSELLING FOR THE NCO INVOLVED IN THE SECOND SCRAM.

FORM 35 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 354 1990 028 0 9012210101 220544 11/17/90

ABSTRACT

POWER LEVEL - 100%. ON 11/17/90 AT 0352, DURING PERFORMANCE OF A SURVEILLANCE PROCEDURE WHICH TESTS THE MAIN TURBINE COMBINED INTERMEDIATE VALVES (CIV), THE 'A' MOISTURE SEPARATOR EXPERIENCED A HIGH LEVEL CONDITION. IN RESPONSE TO THIS HIGH LEVEL CONDITION, THE ASSOCIATED DUMP VALVE BEGAN TO OPEN, BUT LEVEL CONTINUED TO RISE, AND THE MAIN TURBINE TRIPPED ON MOISTURE SEPARATOR HIGH LEVEL. IMMEDIATELY FOLLOWING THE TURBINE TRIP, THE REACTOR SCRAMMED ON A TURBINE CONTROL VALVE CLOSURE SIGNAL FROM THE REACTOR PROTECTION SYSTEM. ALL CONTROLS RODS WERE VERIFIED TO BE INSERTED, AND PLANT SYSTEMS RESPONDED AS EXPECTED. INVESTIGATION SUBSEQUENT TO THE SCRAM DETERMINED THAT THE INITIATING CAUSE OF THIS EVENT TO BE A MALFUNCTION OF THE LEVEL CONTROL SYSTEM FOR THE 'A' MOISTURE SEPARATOR. SEVERAL FACTORS APPEAR TO HAVE CONTRIBUTED TO THIS MALFUNCTION: SLUGGISH OPERATION OF THE EMERGENCY DUMP VALVE, MISOPERATION OF MOISTURE SEPARATOR LEVEL SWITCHES, POTENTIALLY LEAKING CHECK VALVES ON THE NORMAL DRAIN LINE, AND A POSSIBLE OBSTRUCTION IN EITHER THE NORMAL DRAIN OR EMERGENCY DRAIN PATHS. INTERIM CORRECTIVE ACTIONS CONSISTED OF TROUBLESHOOTING OF THE LEVEL CONTROL SYSTEM, REVIEWING MOISTURE SEPARATOR LEVEL

FORM 36 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 361 1989 004 0 8903220427 213316 02/09/89

ABSTRACT

POWER LEVEL - 000%. ON 2/9/89, UNIT 2 ENTERED MODE 2 AT 0405 AND ATTAINED CRITICALITY AT 0455, WITH GROUP 4 CONTROL ELEMENT ASSEMBLIES (CEAS) AT 135 INCHES WITHDRAWN. JUST PRIOR TO 0505, THE OPERATORS PERCEIVED ALL 4 CHANNELS OF THE CORE PROTECTION CALCULATORS (CPCS) TO BE INOPERABLE BASED UPON A MISUNDERSTANDING OF THE FUNCTION OF THE CPC ALARM AND ANNUNCIATOR LIGHTS. AS A RESULT, THE OPERATORS CONSIDERED THAT TECHNICAL SPECIFICATION (TS) 3.0.3 HAD BEEN INVOKED AT 0405, UPON ENTRY INTO MODE 2, AND THAT A CONTROLLED REACTOR SHUTDOWN WAS REQUIRED. AT 0505, INSERTION OF GROUP 4 CEAS WAS INITIATED, TAKING THE REACTOR SUBCRITICAL. AT 0509, WITH POWER AT 2.0 E-4% AND GROUP 4 CEAS AT 102 INCHES, A CPG-GENERATED REACTOR TRIP OCCURRED. THE STANDARD POST-TRIP ACTION PROCEDURE WAS IMPLEMENTED, AND THE PLANT WAS STABILIZED IN MODE 3 AT 0515. THERE WAS NO SAFETY SIGNIFICANCE ASSOCIATED WITH THE REACTOR TRIP SINCE ALL PROTECTIVE SYSTEMS OPERATED IN ACCORDANCE WITH DESIGN. THE OPERATORS PERCEPTION OF CPC OPERABILITY PRIOR TO CRITICALITY AND INOPERABILITY AFTER CRITICALITY, RESULTED FROM FAILURE TO CORRECTLY RESOLVE THE DIFFERENCE BETWEEN TWO SETS OF CPC ALARM LIGHTS; ONE OF WHICH WAS EXTINGUISHED INDICATING CPC OPERABILITY, AND THE OTHER WAS ILLUMINATED INDICATING CPC INOPERABILITY.

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FORM 37 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 361 1989 019 0 8910120066 215512 09/02/89

ABSTRACT

POWER LEVEL - 027%. AT 0534 ON 9/2/89, 1989, DURING A PLANNED SHUTDOWN OF UNIT 2 AT THE END OF CYCLE 4, A MANUAL TRIP WAS INITIATED DUE TO THE APPROACH OF AXIAL SHAPE INDEX (ASI) TO THE CORE PROTECTION CALCULATOR (CPC) AUXILIARY TRIP SETPOINT. ASI DESCRIBES THE AXIAL POWER DISTRIBUTION OF THE REACTOR CORE. THERE IS NO SAFETY SIGNIFICANCE TO THIS EVENT SINCE THE REACTOR PROTECTION SYSTEM FUNCTIONED IN ACCORDANCE WITH DESIGN. AT THE END OF A FUEL CYCLE, THE EFFECT OF A DECREASE IN PLANT POWER ON ASI IS GREATER THAN AT ANY OTHER TIME IN THE CYCLE. AS A RESULT, STRICT CONTROLS MUST BE EMPLOYED TO MAINTAIN ASI WITHIN LIMITS AND PREVENT A TRIP. ALTHOUGH ACTION WAS TAKEN TO CONTROL ASI, IT WAS NOT SUFFICIENT TO MAINTAIN ASI WITHIN ITS LIMITS. THE GUIDANCE IN THE OPERATING PROCEDURE GOVERNING PLANT SHUTDOWN WAS NOT SUFFICIENTLY SPECIFIC TO PROVIDE ASSURANCE THAT THE OPERATORS COULD SUCCESSFULLY CONTROL ASI DURING A PLANT SHUTDOWN AT END-OF-CYCLE. AN EVALUATION OF THIS EVENT WAS PERFORMED BY THE CORE ANALYSIS ENGINEERING GROUP. AS A RESULT OF THIS EVALUATION, THE ABOVE CAUSES WERE DETERMINED AND A PROPER STRATEGY FOR END-OF-CYCLE PLANT SHUTDOWNS WAS DEVELOPED, WHICH WILL BE INCORPORATED INTO THE PLANT SHUTDOWN PROCEDURE. THIS EVENT WILL BE DISCUSSED WITH APPROPRIATE OPERATIONS PERSONNEL AND ADDITIONAL ASI TRAINING WILL BE INCLUDED.

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FORM 38 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 100%. AT 2200 ON DECEMBER 6, 1990, UNIT 2 AUTOMATICALLY TRIPPED FROM 100% POWER ON A REACTOR PROTECTION SYSTEM LOSS OF LOAD (LOL) SIGNAL. THE LOL SIGNAL WAS CAUSED BY A TURBINE TRIP, WHICH OCCURRED AS A RESULT OF A MOMENTARY LOSS OF POWER FROM THE NON-1E UNINTERRUPTIBLE POWER SYSTEM (UPS), MOMENTARILY DE-ENERGIZING BUS Q-069. EMERGENCY FEEDWATER ACTUATION SYSTEM (EFAS) 1 AND EFAS 2 ACTUATIONS PROPERLY OCCURRED. ONE 6.9 KV BUS DID NOT AUTOMATICALLY TRANSFER TO OFFSITE POWER FOLLOWING THE TRIP, DE-ENERGIZING 2 REACTOR COOLANT PUMPS (RCPS); TWO OTHER RCPS CONTINUED TO PROVIDE FORCED CIRCULATION. APPROXIMATELY 1 TO 2 MINUTES FOLLOWING THE TRIP, A COMPLETE LOSS OF POWER ON Q-069 OCCURRED. APPROPRIATE ACTIONS WERE INITIATED IN ACCORDANCE WITH PROCEDURES TO COMPENSATE FOR THE OPERATION OF CONTROL SYSTEMS WHICH WERE AFFECTED BY THE LOSS OF POWER ON Q-069. ONE MAIN STEAM SAFETY VALVE FOR EACH STEAM GENERATOR MAY HAVE LIFTED FOR A SHORT TIME AND PROPERLY RESEATED. BUS Q-069 POWER WAS RESTORED AT 2220 VIA THE MANUAL BYPASS SWITCH. RECOVERY OF THE PLANT OTHERWISE PROCEEDED NORMALLY. IT IS POSTULATED THAT FAILURE OF 1) A CAPACITOR IN THE NON-1E UPS INVERTER OUTPUT AND 2) A TRANSISTOR IN THE STATIC SWITCH TRANSFER LOGIC CONTROL CIRCUIT COMBINED TO CAUSE THE LOSS OF POWER ON BUS Q-069 (BOTH AT THE ONSET OF THE EVENT AND AT 1-2 MINUTES POST-TRIP). THE ROOT CAUSE EVALUATION IS CONTINUING.

FORM 39 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 362 1989 001 3 8912260017 216246 01/06/89

ABSTRACT

POWER LEVEL - 100%. AT 2335 ON 1/6/89 WITH UNIT 3 AT 98% POWER, REACTOR TRIPPED ON LOW SG LEVEL AFTER A PARTIAL LOSS OF NON-1E UNINTERRUPTIBLE POWER SUPPLY (UPS) POWER OCCURRED WHICH CAUSED FEEDWATER REGULATING VALVES TO REDUCE FLOW TO SG E089 AND RESULTED IN ACTUATION OF EMERGENCY FEEDWATER TO SG E039. EMERGENCY FEEDWATER TO SG E088 ALSO ACTUATED DUE TO THE RESULTING LEVEL "SHRINK" IN SG E088, WHICH IS EXPECTED FOLLOWING A TRIP FROM HIGH POWER. SINCE STEAM BYPASS CONTROL SYSTEM WAS IN MANUAL TO PERFORM TURBINE VALVE TESTING, HEAT REMOVAL FROM THE SGS WAS GREATER THAN NORMAL. AT 2336, AS A RESULT OF LOWER SG TEMPERATURE, RCS PRESSURE DECREASED BELOW SIAS SETPOINT (1806 PSIA), RESULTING IN AN SIAS ACTUATION. THERE WAS NO SAFETY INJECTION FLOW INTO RCS SINCE RCS PRESSURE REMAINED ABOVE SHUTOFF HEAD OF INJECTION PUMPS. 2 OF 3 NON-1E UPS PHASES WERE LOST BECAUSE OF A COMMON FAULT IN THE ASSOCIATED INVERTER'S CONSTANT VOLTAGE TRANSFORMER (CVT) OUTPUT WINDINGS. A TEMPORARY JUMPER, WHICH HAD NOT BEEN PROPERLY REMOVED DURING PREVIOUS MAINTENANCE, WAS FOUND BETWEEN UPS UNGROUNDED NEUTRAL AND GROUND. THERE WERE 2 PRIOR FAILURES OF A CVT IN THE SAME INVERTER AFTER INSTALLATION OF THE TEMPORARY JUMPER, BUT NEITHER RESULTED IN A SAFETY SYSTEM ACTUATION. CAUSE OF TRANSFORMER FAILURE WAS THE BREAKDOWN OF INSULATION BETWEEN ENERGIZED WINDINGS AND GROUNDED IRON CORE.

FORM 40 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 362 1989 005 1 8912070084 216094 04/07/89

ABSTRACT

POWER LEVEL - 100%. AT 0555 ON 4/7/89, WITH UNIT 3 AT 100% POWER, AN

PLANT CONDITIONS WERE STABILIZED, AND RECOVERY PROCEEDED NORMALLY. THE EMERGENCY FEEDWATER ACTUATION SYSTEM (EFAS) FOR BOTH STEAM GENERATORS (SGS) ACTUATED AS A RESULT OF THE EXPECTED DECREASE IN SG LEVEL BELOW THE ACTUATION SETPOINT. AT 0630, LEVELS OF BOTH SGS WERE VERIFIED TO BE ABOVE THE RESET SETPOINT, AND EFAS WAS RESET. THE RPS OPERATED IN ACCORDANCE WITH DESIGN, AND ALL EFAS COMPONENTS WERE VERIFIED TO HAVE ACTUATED AS REQUIRED. FOLLOWING THE TRIP, THE CEDMCS MOTOR-GENERATOR (MG) SET #1 LOAD CONTACTOR WAS FOUND TO BE OPEN, CONTRARY TO ITS NORMAL, EXPECTED POSITION. THE CEDMCS BUS IS POWERED BY TWO PARALLEL AND FULLY REDUNDANT MG SETS, VIA OUTPUT CIRCUIT BREAKERS AND LOAD CONTACTORS. SUBSEQUENT TESTING DEMONSTRATED THAT UNDER CERTAIN CONDITIONS, THE OPENING OF ONE MG SET LOAD CONTACTOR COULD RESULT IN A DROP IN CEDMCS BUS VOLTAGE OF SUFFICIENT MAGNITUDE TO CAUSE THE CEDMCS BUS UNDERVOLTAGE (UV) RELAYS TO DEENERGIZE. MONITORING EQUIPMENT WAS INSTALLED ON THE MG SETS TO ESTABLISH POSSIBLE CAUSE AND CORRECTIVE ACTIONS FOR THE SPURIOUS OPENING OF THE MG SET LOAD CONTACTOR.

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FORM 41 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 362 1990 002 1 9011080154 219908 02/23/90

ABSTRACT

POWER LEVEL - 100%. AT 2257 ON FEBRUARY 23, 1990, WITH UNIT 3 AT 100% POWER, DURING THE PERFORMANCE OF MAIN STEAM ISOLATION SYSTEM (MSIS) SUBGROUP RELAY TESTING, A SPURIOUS MSIS ACTUATION OCCURRED. THIS MSIS ACTUATION INITIATED CLOSURE OF THE MAIN STEAM ISOLATION VALVES (MSIVS) AND RELATED IN A REACTOR TRIP ON HIGH PRESSURIZER PRESSURE. THE PLANT TRANSIENT INCLUDED: 1) LIFTING OF THE MAIN STEAM SAFETY VALVES (MSSVS); (2) INITIATION OF THE EMERGENCY FEEDWATER ACTUATION SYSTEM (EFAS); AND 3) THE BRIEF OPENING OF A PRESSURIZER SAFETY VALVE (PSV). HOWEVER, DURING THE TRANSIENT, RCS PRESSURE NEVER EXCEEDED THE MINIMUM PSV SET POINT VALUE ALLOWED BY TECHNICAL SPECIFICATION (TS) 3.4.2. OPERATORS STABILIZED THE PLANT IN MODE 3. FOLLOWING THIS EVENT, IT WAS DETERMINED THAT THE LIFT SET POINTS FOR THE UNITS 2 AND 3 PSVS WERE OUTSIDE THE TS REQUIREMENTS. THERE IS NO SAFETY SIGNIFICANCE TO THIS EVENT SINCE: 1) ALL REACTOR PROTECTION SYSTEM, MSIS, AND EFAS COMPONENTS WERE VERIFIED TO ACTUATE IN ACCORDANCE WITH DESIGN; AND 2) THE PLANT RESPONSE WITH THE AS-FOUND PSV LIFT SET POINTS WAS DETERMINED TO BE ACCEPTABLE. CONTACTS ON THE MSIS MANUAL ACTUATION PUSHBUTTON (PB) WERE FOUND TO BE DEGRADED SUCH THAT ONE TRIP LEG OF MSIS DID NOT RESET DURING THE SUBGROUP RELAY TESTING.

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FORM 42 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 364 1989 007 0 8906280019 214412 05/22/89

ABSTRACT

POWER LEVEL - 035%. AT 1019 ON 5/22/89, WITH THE UNIT OPERATING AT APPROX. 35% POWER, THE REACTOR TRIPPED DUE TO LO-LO STEAM GENERATOR LEVEL. THE LO-LO STEAM GENERATOR LEVEL OCCURRED BECAUSE THE 2A STEAM GENERATOR FEED PUMP (SGFP), WHICH WAS PROVIDING FEEDWATER FLOW TO THE STEAM GENERATORS, TRIPPED. THE UNIT WAS STABILIZED IN MODE 3 (HOT STANDBY). THE SGFP TRIP WAS CAUSED BY A LOOSE ELECTRICAL CONNECTOR ON THE 2A SGFP THRUST BEARING WEAR DEVICE. ALTHOUGH THE EXACT CAUSE COULD NOT BE DETERMINED, IT IS BELIEVED THAT THE CONNECTOR WAS NOT FULLY TIGHTENED FOLLOWING MAINTENANCE PERFORMED DURING THE PRECENT

THROUGH BEARING WEAR TRIP SIGNAL TO BE GENERATED. THUS, THE 2A SGFP TRIPPED WHICH CAUSED THE LO-LO STEAM GENERATOR LEVEL AND AN AUTOMATIC REACTOR TRIP RESULTED. TO PREVENT RECURRENCE OF THIS PROBLEM, A PREVENTIVE MAINTENANCE TASK WILL BE DEVELOPED TO INSPECT SGFP INSTRUMENTATION CONNECTIONS FOR TIGHTNESS FOLLOWING MAJOR UNIT OR SGFP OUTAGES. THE UNIT RETURNED TO POWER OPERATION ON 5/22/89 AT 2234.

FORM 43 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
364 1989 008 0 8906270168 214413 05/27/89

ABSTRACT

POWER LEVEL - 088%. AT 0906 ON 5-27-89, WITH THE UNIT OPERATING AT 88% POWER AND A THREE PERCENT PER HOUR POWER INCREASE IN PROGRESS, THE REACTOR TRIPPED DUE TO A TURBINE TRIP. THE TURBINE TRIP RESULTED FROM A GENERATOR TRIP CAUSED BY LOSS OF EXCITATION. THE LOSS OF EXCITATION WAS CAUSED BY THE FAILURE OF THE #9 EXCITER BEARING WHICH RESULTED IN THE FAILURE OF THE SHAFT DRIVEN PERMANENT MAGNET GENERATOR (PMG). THE #9 BEARING FAILED WHEN CONTRACT PERSONNEL FAILED TO INSTALL AN INSULATING WASHER ON ONE OF THE FOUR BOLTS ON A BEARING OIL LINE FLANGE. THIS EVENT WAS CAUSED BY AN INADEQUATE PROCEDURE. ALTHOUGH A PROCEDURE DID EXIST FOR THE REASSEMBLY OF THE BEARING OIL PIPING, THERE WAS NO METHOD FOR VERIFYING PROPER INSULATION CAPABILITY FOLLOWING REASSEMBLY. BECAUSE THE BEARING OIL LINE FLANGE BOLT INSULATING WASHER WAS NOT INSTALLED AS REQUIRED, THE #9 EXCITER BEARING EVENTUALLY FAILED. A NEW BEARING AND PMG STATOR HAVE BEEN INSTALLED. A PROCEDURE (FNP-0-EMP-1171.02, GENERATOR SHAFT/PEDESTAL INSULATION VERIFICATION) HAS BEEN DEVELOPED TO VERIFY PROPER INSULATION OF THE #9 BEARING. THE UNIT RETURNED TO POWER OPERATION ON 5-31-89 AT 2021.

FORM 44 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
364 1989 010 0 8910190282 215672 09/20/89

ABSTRACT

POWER LEVEL - 061%. AT 0722 ON 9/20/89, WITH THE UNIT OPERATING AT APPROXIMATELY 61% POWER, THE REACTOR WAS TRIPPED MANUALLY FOLLOWING THE LOSS OF THE OPERATING STEAM GENERATOR FEED PUMP (SGFP). THE 2A SGFP TURBINE TRIPPED DUE TO A LOW AUTO-STOP OIL PRESSURE SIGNAL. THE SHIFT SUPERVISOR DIRECTED A MANUAL REACTOR TRIP IN ORDER TO PREVENT AN UNNECESSARY CHALLENGE TO THE REACTOR PROTECTION SYSTEM. THE UNIT WAS STABILIZED IN MODE 3 (HOT STANDBY). THE LOW AUTO-STOP OIL SIGNAL WAS CAUSED BY THE INADVERTENT OPENING OF THE OVERSPEED TRIP TEST VALVE. OPENING THIS VALVE LOWERED AUTO-STOP OIL PRESSURE BY DIVERTING AUTO-STOP OIL TO THE OVERSPEED TEST DEVICE. AUTO-STOP OIL PRESSURE DROPPED BELOW THE AS-FOUND TRIP SET POINT OF THE LOW AUTO-STOP OIL PRESSURE SWITCH CAUSING A SGFP TRIP. THE TRIP SETPOINT WAS FOUND TO BE HIGHER THAN IT SHOULD HAVE BEEN. THE UNIT RETURNED TO POWER OPERATION AT 2033 ON 9/26/89.

FORM 45 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
364 1989 012 0 8911220017 215888 10/18/89

THE LO-LO STEAM GENERATOR LEVEL TRIPPED WHEN THE TURBINE GENERATOR GOVERNOR VALVES CLOSED. THIS EVENT RESULTED FROM A DIGITAL ELECTRO-HYDRAULIC CONTROL (DEHC) SYSTEM DESIGN FEATURE ENHANCEMENT WHICH CAUSES THE GOVERNOR VALVE POSITION LIMITER TO LOWER TO ZERO AS A BACKUP TO CLOSING THE GOVERNOR VALVES WHEN BOTH OVERSPEED PROTECTION CHANNEL (OPC) POWER SUPPLIES FAIL. THIS EVENT WAS CAUSED BY A DESIGN ERROR IN THE DEHC SYSTEM. THE OPERATOR ALLOWED A MOMENTARY DATA LOSS TO BE CREATED WHEN THE OPERATOR RESET THE "RE-ENABLE HIGHWAY" FUNCTION AT THE DEHC OPERATORS' CONSOLE. THIS RESULTED IN THE SAME SYSTEM CONTROL ACTION TAKEN WHEN BOTH OPC POWER SUPPLIES FAIL. THE VALVE POSITION LIMITER WHICH LOWERS TO ZERO AS A BACKUP TO CLOSING THE GOVERNOR VALVES WHEN THE OPC POWER SUPPLIES FAIL HAS BEEN REMOVED FROM THE UNIT 1 AND UNIT 2 DEHC SYSTEMS. WESTINGHOUSE HAS BEEN DIRECTED TO DETERMINE IF THERE ARE OTHER DEHC FEATURES AVAILABLE TO THE OPERATOR WHICH MAY CAUSE A TURBINE TRIP OR TURBINE VALVE CLOSURE.

FORM 46 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 364 1989 013 0 8911220055 215889 10/19/89

ABSTRACT

POWER LEVEL - 002%. AT 1823 ON 10-19-89, WITH THE UNIT OPERATING AT APPROXIMATELY TWO PERCENT POWER, THE REACTOR TRIPPED DUE TO LO-LO LEVEL IN THE 2C STEAM GENERATOR. THE UNIT OPERATOR IMPROPERLY TRANSFERRED FROM AUXILIARY FEEDWATER (AFW) TO MAIN FEEDWATER (MFW) DURING A PLANT STARTUP. THIS EVENT WAS CAUSED BY PERSONNEL ERROR IN THAT THE UNIT OPERATOR INCORRECTLY TRANSFERRED STEAM GENERATOR LEVEL CONTROL FROM AFW TO MFW. A CONTRIBUTING CAUSE WAS THAT THE PERSONNEL INVOLVED FAILED TO PROPERLY RESTORE AIR TO THE 2C MFW BYPASS VALVE. THE PERSONNEL INVOLVED HAVE BEEN COUNSELED CONCERNING IMPROPER FEEDWATER TRANSFER AND RESTORATION OF AIR TO FEEDWATER VALVES. A TRAINING CHANGE NOTICE DESCRIBING THIS EVENT WILL BE ISSUED TO ALL LICENSED PERSONNEL.

FORM 47 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 364 1989 015 0 8912280001 216216 11/18/89

ABSTRACT

POWER LEVEL - 100%. AT 0433 ON 11-18-89, WITH THE UNIT OPERATING AT 100% POWER, THE REACTOR TRIPPED DUE TO A TURBINE TRIP. THE TURBINE TRIP IS ATTRIBUTED TO A VOLTAGE TRANSIENT IN THE POWER CIRCUIT TO THE DEHC SYSTEM. A VOLTAGE TRANSIENT IN THIS CIRCUIT IS SUSPECTED TO HAVE CAUSED THE DEHC SYSTEM TO ERRONEOUSLY SENSE A LOSS OF DC POWER. THE VOLTAGE TRANSIENT IS ATTRIBUTED TO THE FAILURE OF THE DEHC INVERTER. THE UNIT RETURNED TO POWER OPERATION AT 0455 ON 11-19-89 USING THE ALTERNATE POWER SUPPLY. THE INVERTER WAS REPAIRED AND RETURNED TO SERVICE.

FORM 48 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 364 1990 001 0 9006140214 218568 05/12/90

REACTOR TRIP DUE TO LOW-LOW WATER LEVEL IN THE 2A STEAM GENERATOR. THE LOW-LOW WATER LEVEL OCCURRED WHEN THE STEAM SUPPLY VALVES FOR THE ON-SERVICE STEAM GENERATOR FEEDWATER PUMP (SGFP) CLOSED. TESTING BEING PERFORMED IN ACCORDANCE WITH FNP-2-STP-151.4 (MAIN TURBINE PROTECTIVE DEVICE TEST) RESULTED IN LOW ELECTRO-HYDRAULIC (EH) FLUID PRESSURE WHICH CAUSED THE SGFP VALVES TO CLOSE. THIS EVENT WAS CAUSED BY PROCEDURAL INADEQUACY. FNP-2-STP-151.4 DID NOT PROVIDE ADEQUATE GUIDANCE CONCERNING THE INITIAL CONDITIONS REQUIRED TO PERFORM THE PROCEDURE. TESTING PERFORMED SUBSEQUENT TO THE REACTOR TRIP SHOWED THAT IT IS NOT APPROPRIATE TO PERFORM THIS PROCEDURE WHILE FEEDWATER IS BEING PROVIDED BY A SGFP. FNP-2-STP-151.4 HAS BEEN REVISED TO PROVIDE ADDITIONAL INITIAL CONDITIONS TO PREVENT PERFORMING THE PROCEDURE WHEN AN SGFP IS IN SERVICE.

FORM 49 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
366 1989 005 0 8910040398 215373 09/03/89

ABSTRACT

POWER LEVEL - 070%. ON 9/3/89 AT APPROXIMATELY 2239 CDT, UNIT 2 WAS IN THE RUN MODE AT AN APPROXIMATE POWER LEVEL OF 1695 CMWT (APPROXIMATELY 70% OF RATED THERMAL POWER). AT THAT TIME, LICENSED OPERATIONS PERSONNEL WERE CHANGING REACTOR VESSEL WATER LEVEL CONTROL FROM SINGLE ELEMENT TO THREE ELEMENT CONTROL FOLLOWING COMPLETION OF PROCEDURE 57SV-SUV-004-2S, "EXCESS FLOW CHECK VALVE OPERABILITY," FOR THE MAIN STEAM LINE FLOW INSTRUMENTS' EXCESS FLOW CHECK VALVES. WHEN THE MASTER CONTROLLER WAS PLACED IN AUTOMATIC FOLLOWING THE CHANGE FROM SINGLE ELEMENT TO THREE ELEMENT CONTROL, THE CONTROLLER'S OUTPUT SIGNAL SUDDENLY WENT TO ZERO. BOTH REACTOR FEED PUMPS DECREASED FEEDWATER FLOW TO THE REACTOR VESSEL IN RESPONSE TO THE CONTROLLER'S ZERO OUTPUT SIGNAL. REACTOR VESSEL WATER LEVEL DECREASED AND THE REACTOR SCRAMMED ON LOW WATER LEVEL. THE ROOT CAUSE OF THIS EVENT IS COMPONENT FAILURE. THE SELF SYNCHRONIZED CONTROL UNIT, THE MAIN OPERATING UNIT OF THE MASTER CONTROLLER, FAILED WHEN THE MASTER CONTROLLER WAS PLACED IN AUTOMATIC. THE FAILURE OF THE SELF SYNCHRONIZED CONTROL UNIT CAUSED THE MASTER CONTROLLER'S OUTPUT SIGNAL TO GO TO ZERO. CORRECTIVE ACTIONS FOR THIS EVENT INCLUDED REPLACING THE SELF SYNCHRONIZED CONTROL UNIT.

FORM 50 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
366 1990 001 1 9006210099 218530 01/12/90

ABSTRACT

POWER LEVEL - 100%. ON 1/12/90 AT APPROXIMATELY 1610 CST, UNIT 2 WAS IN THE RUN MODE AT AN APPROXIMATE POWER OF 2436 CMWT (APPROXIMATELY 100% OF RATED THERMAL POWER). AT THAT TIME, THE REACTOR SCRAMMED BECAUSE THE MAIN STEAMLINE ISOLATION VALVES (MSIVS) WERE LESS THAN 90% OPEN. THE MSIVS HAD ISOLATED ON A GROUP 1 PRIMARY CONTAINMENT ISOLATION SYSTEM (PCIS) SIGNAL WHICH RESULTED FROM A FALSE LOW CONDENSER VACUUM SIGNAL. HIGH PRESSURE COOLANT INJECTION (HPCI) SYSTEM AUTOMATICALLY INITIATED AND INJECTED ON LOW REACTOR WATER LEVEL AS REQUIRED. FOLLOWING WATER LEVEL RECOVERY, HPCI INJECTION VALVE 2E41-F006 CLOSED AUTOMATICALLY ON HIGH WATER LEVEL; HOWEVER, IT COULD NOT BE RE-OPENED WHEN OPERATIONS PERSONNEL SUBSEQUENTLY ATTEMPTED TO START HPCI MANUALLY. THE REACTOR CORE ISOLATION COOLING SYSTEM AND TWO CONTROL ROD DRIVE SYSTEM PUMPS WERE USED TO CONTROL WATER LEVEL FOLLOWING THE FAILURE OF VALVE 2E41-F006 TO OPEN. THE ROOT CAUSES OF

VALVE 2E41-F006 SEPARATED FROM ITS STEM ISOLATING THE COMMON SENSING LINE FOR VACUUM SWITCHES 2B21-N056C AND D. CONSEQUENTLY, THESE SWITCHES THEN SENSED A LOW CONDENSER VACUUM AND, BECAUSE THEY INPUT TO THE A AND B TRIP SYSTEMS RESPECTIVELY OF THE ISOLATION LOGIC, THE MSIVS ISOLATED. THE CAUSE OF VALVE 2E41-F006 FAILING TO OPEN IS COMPONENT FAILURE.

FORM 51 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
366 1990 003 0 9004300271 218027 03/28/90

ABSTRACT

POWER LEVEL - 100%. ON 3/28/90 AT APPROX. 0815 CST, UNIT 2 WAS IN THE RUN MODE AT AN APPROX. POWER LEVEL OF 2436 MW (APPROX. 100% OF RATED THERMAL POWER). AT THAT TIME, A PLANT I&C TECHNICIAN WAS VALVING-IN PRESSURE TRANSMITTER 2E32-N050 FOLLOWING A ROUTINE CALIBRATION PER PROCEDURE 57CP-CAL-103-25, "ITT BARTON MODEL 764 DIFFERENTIAL PRESSURE TRANSMITTER." VALVING-IN THE PRESSURE TRANSMITTER, WHICH SHARES A COMMON SENSING LINE WITH REACTOR PROTECTION SYSTEM (RPS) AND PRIMARY CONTAINMENT ISOLATION SYSTEM (PCIS) WATER LEVEL TRANSMITTERS 2B21-N080C AND D, CAUSED A PRESSURE PERTURBATION IN THE SENSING LINE WHICH CAUSED WATER LEVEL TRANSMITTERS 2B21-N080C AND D TO SPIKE DOWNSCALE. THIS RESULTED IN A FALSE LOW WATER LEVEL SIGNAL BEING SENT TO THE A2 AND B2 TRIP CHANNELS IN THE RPS AND THE PCIS. FULL SCRAM AND PARTIAL GROUP II PCIS ISOLATION SIGNALS WERE GENERATED PER DESIGN. THE UNIT SCRAMMED AND THE OUTBOARD GROUP II PRIMARY CONTAINMENT ISOLATION VALVES (PCIVS) CLOSED. THE CAUSE OF THIS EVENT IS AN INADEQUATE PROCEDURE. PROCEDURE 57CP-CAL-103-25 DID NOT PROVIDE ADEQUATE INSTRUCTIONS TO PREVENT THE PRESSURE PERTURBATION THAT RESULTED WHEN PRESSURE TRANSMITTER 2E32-N050 WAS VALVED-IN. FURTHERMORE, THE PROCEDURE DID NOT PROVIDE ADEQUATE RETURN TO SERVICE INSTRUCTIONS (E.G., OPEN LINKS, INSTALL JUMPERS, LIFT LEADS) NECESSARY TO PREVENT A SCRAM AND PCIS ACTUATION IN THE EVENT OF A PERTURBATION IN THE COMMON SENSING LINE.

FORM 52 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
368 1989 006 0 8905300012 214001 04/18/89

ABSTRACT

POWER LEVEL - 100%. ON 4/18/89, A 14 INCH, HIGH PRESSURE TURBINE EXTRACTION STEAM LINE RUPTURED RESULTING IN A REACTOR TRIP ON HIGH REACTOR COOLANT SYSTEM (RCS) PRESSURE. DURING THE TRANSIENT, THE STEAM TURBINE DRIVEN EMERGENCY FEEDWATER (EFW) PUMP TRIPPED ON OVERSPEED AFTER RECEIVING AN AUTOMATIC START SIGNAL. THE 'A' TRAIN FEEDWATER CONTROL SYSTEM (FWCS) MALFUNCTIONED CAUSING A SLIGHT OVERFILL OF 'A' STEAM GENERATOR (SG). ONE OF TWO ATMOSPHERIC STEAM DUMP VALVES (ADVS), LOCATED DOWNSTREAM OF THE SG MAIN STEAM ISOLATION VALVES (MSIVS), COULD NOT BE OPENED FROM THE CONTROL ROOM. DUE TO THE LOSS OF CONDENSER VACUUM, THE MSIVS WERE MANUALLY CLOSED AND UPSTREAM ADVS WERE USED FOR DECAY HEAT REMOVAL. ONE OF THE UPSTREAM ADVS APPARENTLY FAILED OPEN, RESULTING IN A MINOR UNEXPECTED RCS COOLDOWN. THE PLANT WAS STABILIZED AND A COOLDOWN WAS PERFORMED. THE FAILED LINE WAS INSPECTED AND THE ROOT CAUSE WAS PIPE WALL THINNING DUE TO EROSION-CORROSION. ADDITIONAL EXTRACTION STEAM PIPING WAS INSPECTED RESULTING IN SEVERAL AREAS BEING REPLACED. A DEGRADED RAMP GENERATOR IN THE GOVERNOR SPEED CONTROL CIRCUIT OF THE STEAM TURBINE DRIVEN EFW PUMP WAS REPLACED. THE 'A' TRAIN FWCS WAS FOUND TO HAVE SOME UTILITY

FORM 53 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 368 1989 024 0 9002080162 216686 12/31/89

ABSTRACT

POWER LEVEL - 100%. ON 12/31/89, A REACTOR TRIP OCCURRED FROM 100% OF RATED THERMAL POWER WHEN 'B' STEAM GENERATOR (SG) WATER LEVEL REACHED A HIGH LEVEL SETPOINT AND THE REACTOR PROTECTION SYSTEM GENERATED A REACTOR TRIP SIGNAL. DURING THE TRANSIENT ONE OF THE RUNNING CONDENSATE PUMPS WHICH WAS EXPECTED TO TRIP DID NOT TRIP. OTHERWISE, THE PLANT RESPONDED PROPERLY WHEN THE REACTOR TRIP OCCURRED. THE OPERATIONS STAFF RESPONDED APPROPRIATELY AND IN A TIMELY MANNER TO THE REACTOR TRIP. OF PRIMARY CONCERN WAS THE POTENTIAL FOR REACTOR COOLANT SYSTEM OVERCOOLING OR A SG OVERFILL EVENT, HOWEVER, PROPER SYSTEM OPERATION PREVENTED EITHER FROM OCCURRING. NO SIGNIFICANT SAFETY CONCERNS WERE IDENTIFIED. THE ROOT CAUSE OF THIS EVENT IS BELIEVED TO BE A LOOSE TERMINAL ON AN ELECTRICAL MODULE IN THE 'B' FEEDWATER CONTROL SYSTEM (FWCS) CABINET. THE TERMINAL WAS NOT PROPERLY RETERMINATED WHEN MAINTENANCE ACTIVITIES WERE PERFORMED DURING 2R7 REFUELING OUTAGE. THE LOOSE TERMINAL WAS ON AN ELECTRICAL MODULE IN THE 'B' MAIN FEEDWATER (MFW) FLOW LOOP TO THE 'B' FWCS. TO VERIFY THAT THE LOOSE TERMINAL COULD CAUSE A TRANSIENT SIMILAR TO THIS EVENT, SIMULATED SIGNALS FOR 100% POWER CONDITIONS FOR THE INPUTS TO THE 'B' FWCS WERE INPUT AND THE CONNECTION ON THE TERMINAL LOOSENED. A VERY SIMILAR RESPONSE TO THE TRANSIENT WHICH INITIATED THE REACTOR TRIP OCCURRED.

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FORM 54 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 368 1990 005 0 9004170065 217598 03/04/90

ABSTRACT

POWER LEVEL - 000%. ON 3/4/90, WHILE TRANSITIONING FROM MODE 2 (STARTUP) TO MODE 3 (HOT STANDBY), THREE OF THE FOUR LOGARITHMIC (LOG) POWER LEVEL INSTRUMENTATION CHANNELS WERE DECLARED INOPERABLE DUE TO ABNORMAL NOISE INDICATIONS AND ERRATIC BEHAVIOR. TO COMPLY WITH TECH SPECS THE REACTOR TRIP CIRCUIT BREAKERS WERE OPENED RESULTING IN A MANUAL REACTOR TRIP. FOLLOWING THE TRIP IT WAS OBSERVED THAT THE CONTROL ELEMENT ASSEMBLY (CEA) #61 HAD NOT FULLY INSERTED AND INDICATED APPROXIMATELY ELEVEN INCHES WITHDRAWN. THE REACTOR SHUTDOWN MARGIN (SDM) WAS VERIFIED TO BE ADEQUATE AS REQUIRED BY TECH SPECS. A LOOSE CONNECTION ASSOCIATED WITH A SURGE CAPACITOR ON THE 6900 VOLT 'D' REACTOR COOLANT PUMP (RCP) MOTOR WAS FOUND TO BE ARCING AND INDUCING ELECTRICAL NOISE INTO THE INSTRUMENTATION CIRCUITS. WHEN 'D' RCP WAS SECURED THE INSTRUMENT CHANNELS INDICATIONS RETURNED TO NORMAL. THE CAUSE OF CEA #61 NOT FULLY INSERTING WAS NOT CONCLUSIVELY DETERMINED. HOWEVER, EVALUATIONS INDICATED THE MOST LIKELY CAUSE WAS DUE TO SOME TYPE OF FOREIGN MATERIAL BECOMING WEDGED BETWEEN A CEA FINGER AND FUEL GUIDE TUBE INSIDE DIAMETER. THE SURGE CAPACITOR ON 'D' RCP MOTOR WAS REPLACED AND THE LOOSE CONNECTION REPAIRED. CEA #61 WAS SUCCESSFULLY FREED AND TESTED.

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FORM 55 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 368 1990 006 0 9004160202 217748 03/05/90

POWER LEVEL - 000%, ON 3/5/90, WHILE PERFORMING THE LOGARITHMIC (LOG) POWER LEVEL NUCLEAR INSTRUMENTATION CHANNEL FUNCTIONAL TEST (OP 2105.015) IN PREPARATION FOR A REACTOR STARTUP, TWO OF THE CHANNELS DID NOT SATISFY THE REQUIREMENTS OF THE TEST PROCEDURE AND WERE DECLARED INOPERABLE. WITH THESE CONDITIONS THE MINIMUM NUMBER OF OPERABLE CHANNELS REQUIRED BY TECH SPECS WAS NOT MET. CONTROL ROOM OPERATORS MANUALLY INITIATED A REACTOR TRIP BY OPENING THE REACTOR TRIP CIRCUIT BREAKERS. A BANK OF OPERATORS MANUALLY INITIATED A REACTOR TRIP BY OPENING THE REACTOR TRIP CIRCUIT BREAKERS. A BANK OF CONTROL ELEMENT ASSEMBLIES, WHICH HAD BEEN WITHDRAWN A FEW INCHES FOR TESTING, FULLY INSERTED. ON 3/6/90, AFTER A REVIEW OF OP 2105.015, IT WAS DETERMINED THAT THE ACCEPTANCE CRITERIA WAS INCORRECT. IT WAS ALSO DETERMINED THAT OP 2105.015 DID NOT ADEQUATELY PERFORM A CHANNEL FUNCTIONAL TEST AS DEFINED BY TECH SPECS. MONTHLY TEST PROCEDURES PERFORMED BY INSTRUMENTATION AND CONTROLS (I&C) TECHNICIANS USING DIFFERENT PROCEDURES (OP 2304 SERIES) HAVE THE CORRECT VALUES FOR CHANNEL INDICATIONS AND DO SATISFY THE REQUIREMENTS OF A CHANNEL FUNCTIONAL TEST. FUNCTIONAL TESTS OF THE LOG POWER LEVEL CHANNELS WERE SATISFACTORILY PERFORMED PRIOR TO REACTOR STARTUP ON 3/7/90, USING THE I&C PROCEDURES.

FORM 56 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 368 1990 014 1 9011210263 220075 06/26/90

ABSTRACT

POWER LEVEL - 030%. AT ABOUT 2348 HOURS ON 6/26/90, A REACTOR TRIP OCCURRED FROM APPROX. 30% OF RATED THERMAL POWER ON LOW DEPARTURE FROM NUCLEATE BOILING RATIO. THE CAUSE OF THE REACTOR TRIP WAS ATTRIBUTED TO AN ERRONEOUS INDICATION RECEIVED BY CONTROL ELEMENT ASSEMBLY CALCULATOR (CEAC) #1 FROM REED SWITCH POSITION TRANSMITTER (RSPT) #1 ON A PART LENGTH CONTROL ELEMENT ASSEMBLY (CEA 29). A LARGE PENALTY FACTOR WAS CALCULATED BY CEAC #1 AND RESULTED IN THE GENERATION OF A REACTOR TRIP SIGNAL FROM THE CORE PROTECTION CALCULATORS (CPCS). THE ROOT CAUSE OF THE HIGH INDICATION HAS NOT BEEN DETERMINED. A TEMPORARY MODIFICATION WAS INSTALLED FOR CEA 29, RSPT #1 WHICH PROVIDED A FIXED SIGNAL FOR THE CEA AT A FULL OUT VALUE. THE SAFETY FUNCTION OF THE CEA WAS UNAFFECTED WITH THE TEMPORARY MODIFICATION INSTALLED. TRAINING WAS PROVIDED TO THE OPERATIONS STAFF RESPONSIBLE FOR THE APPROACH TO CRITICALITY. ADDITIONALLY, APPROPRIATE PROCEDURE REVISIONS WERE MADE AND A CAUTION CARD INSTALLED ON THE CONTROL PANEL TO ADDRESS PLACING CEAC #1 IN AN INOPERABLE CONDITION IF THE PART LENGTH CEAS WERE GOING TO BE INSERTED. PLACING CEAC #1 IN AN INOPERABLE CONDITION BLOCKS ANY CEA POSITION SIGNALS SENT TO THE CPCS AND THEREBY, PREVENTS AN UNNECESSARY REACTOR TRIP. THE CEAC/CPC SYSTEMS FUNCTIONED AS DESIGNED.

FORM 57 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 368 1990 019 0 9010010100 219614 08/21/90

ABSTRACT

POWER LEVEL - 100%. ON AUGUST 21, 1990 AT 0216 HOURS, WHILE OPERATING AT FULL POWER THE 'B' STEAM GENERATOR (S/G) MAIN STEAM ISOLATION VALVE (MSIV) CLOSED FULLY RESULTING IN AN AUTOMATIC REACTOR TRIP GENERATED BY THE CORE PROTECTION CALCULATORS (CPCS). THE CPC TRIP WAS INITIATED DUE TO A SENSED TEMPERATURE DIFFERENCE BETWEEN THE REACTOR COOLANT

REACTOR FOR HEAT REMOVAL. THE 'B' S/G MAIN STEAM SAFETY VALVES OPENED TO LIMIT S/G SECONDARY PRESSURE AND RESEATED PROPERLY FOLLOWING THE REACTOR TRIP. OTHER PLANT SYSTEMS RESPONDED PROPERLY TO THE TRANSIENT. SUBSEQUENT INVESTIGATIONS REVEALED THE MSIV CLOSURE WAS DUE TO THE FAILURE OF A NORMALLY ENERGIZED, 125 VOLT DC SOLENOID ON AN AIR SUPPLY VALVE TO THE MSIV. THE ROOT CAUSE OF THE SOLENOID FAILURE COULD NOT BE DETERMINED. THE SOLENOID WAS REPLACED AND THE MSIV WAS STROKE TESTED FOR OPERABILITY. APPROXIMATELY ONE HOUR AFTER THE TRIP THE INDICATION ON THE 'A' S/G BLOWDOWN LINE RADIATION MONITOR WAS NOTED TO BE SLIGHTLY ELEVATED. ANALYSIS OF S/G SECONDARY WATER CONFIRMED THAT A VERY SMALL PRIMARY TO SECONDARY LEAK EXISTED. THE LEAK RATE STABILIZED AT THIS VALUE AND HAS NOT INCREASED. THERE WAS NO ACTUAL SAFETY SIGNIFICANCE AS THE RESULT OF THIS EVENT.

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FORM 58 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 368 1990 020 0 9011020140 219912 09/28/90

ABSTRACT

POWER LEVEL - 082%. AT 2142 HOURS ON 9/28/90, DURING A PLANNED POWER REDUCTION FROM FULL POWER, MAIN CONDENSER CIRCULATING WATER PUMP 2P-3B WAS SECURED. THE PUMP DISCHARGE VALVE FAILED TO AUTOMATICALLY CLOSE ALLOWING A FLOWPATH FOR CIRCULATING WATER FLOW TO BYPASS THE MAIN CONDENSER. AT 2143 HOURS AN AUTOMATIC MAIN TURBINE TRIP ON HIGH CONDENSER PRESSURE OCCURRED AND CONTROL ROOM PERSONNEL MANUALLY TRIPPED THE REACTOR IN ANTICIPATION OF AN AUTOMATIC REACTOR TRIP. THE EMERGENCY FEEDWATER SYSTEM, ACTUATED AUTOMATICALLY AND WAS USED TO RESTORE AND MAINTAIN NORMAL STEAM GENERATOR WATER LEVELS. THE PLANT WAS SUBSEQUENTLY STABILIZED IN MODE 3 (HOT STANDBY) CONDITIONS. INVESTIGATIONS REVEALED THAT THE VALVE FAILED TO CLOSE DUE TO A MECHANICAL KEY WHICH DISENGAGED FROM THE MOTOR SHAFT ALLOWING THE MOTOR PINION GEAR TO TURN FREELY ON THE SHAFT. VIBRATION CAUSED A SETSCREW USED TO SECURE THE KEY TO LOOSEN. THE ROOT CAUSE WAS DETERMINED TO BE INADEQUATE WORK INSTRUCTIONS LEADING TO THE PREVIOUS INSTALLATION OF A SETSCREW THAT WAS TOO SMALL TO ALLOW PROPER LOCKWIRING. THE PROCEDURE FOR MOTOR PINION GEAR INSTALLATION HAS BEEN CHANGED TO INCLUDE DETAILED INSTRUCTIONS ON MOTOR PINION GEAR INSTALLATION. HOWEVER, THE PROCEDURE WILL BE EVALUATED TO DETERMINE IF ADDITIONAL GUIDANCE CONCERNING THE SELECTION OF SETSCREWS IS WARRANTED.

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FORM 59 LER SCSS DATA 04-18-91

 DOCKET YL ? LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 369 1989 004 0 8905020429 213752 03/07/89

ABSTRACT

POWER LEVEL - 100%. ON MARCH 7, 1989 AT 2345, AN ALERT CONDITION WAS DECLARED ON UNIT 1 BECAUSE OF INDICATION OF PRIMARY TO SECONDARY LEAKAGE IN EXCESS OF 50 GPM. AT 2346, UNIT 1 WAS MANUALLY TRIPPED FROM MODE 1, POWER OPERATION, APPROXIMATELY 83% POWER BECAUSE OF INDICATIONS OF A STEAM GENERATOR TUBE LEAK IN THE B STEAM GENERATOR. ALL MAJOR PLANT EQUIPMENT FUNCTIONED PROPERLY, AND THE UNIT WAS STABILIZED IN ACCORDANCE WITH STATION ABNORMAL OPERATING PROCEDURES. THE INITIAL NOTIFICATIONS TO THE STATE, LOCAL COUNTY AUTHORITIES AND THE RESIDENT NRC INSPECTOR WERE MADE AT 2359. THE NRC REGION II OFFICE WAS NOTIFIED AT 0044 ON MARCH 8, 1989. THE TECHNICAL SUPPORT CENTER AND OPERATIONAL SUPPORT CENTER WERE FULLY STAFFED AND ACTIVATED BY 0132. THE CRISIS MANAGEMENT CENTER WAS STAFFED AND ACTIVATED AT

THIS ANALYSIS OF THE TUBE FAILURE WILL BE ADDRESSED IN AN ADDENDUM TO THIS LER.

FORM 60 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
369 1989 022 1 9006110089 218401 08/26/89

ABSTRACT

POWER LEVEL ~ 100%. ON AUGUST 26, 1989 AT 0934, A UNIT 1 REACTOR TRIP OCCURRED BECAUSE OF A REACTOR COOLANT (NC) LOW FLOW SIGNAL THAT IS INTERLOCKED WITH A PERMISSIVE SIGNAL WHICH BLOCKS A REACTOR TRIP WHEN THE UNIT IS LESS THAN 48 PERCENT POWER (P-8 PERMISSIVE). UNIT 1 WAS OPERATING IN MODE 1, POWER OPERATION, AT 100 PERCENT POWER PRIOR TO THE TRIP. A LOW NC FLOW SIGNAL WITH P-8 PERMISSIVE CAUSED REACTOR TRIP BREAKER "A" TO TRIP THE UNIT. THE SIGNAL WAS CAUSED BY A FAILED UNIVERSAL BOARD IN THE SOLID STATE PROTECTION SYSTEM (SSPS) CABINET FOR TRAIN "A". THE TURBINE GENERATOR AUTOMATICALLY TRIPPED BECAUSE OF THE REACTOR TRIP. ALL SYSTEMS AND EQUIPMENT RESPONDED AS EXPECTED FOLLOWING THE TRIP WITH ONE EXCEPTION. OPERATIONS PERSONNEL IMPLEMENTED THE REACTOR TRIP RECOVERY PROCEDURE TO RECOVER FROM THE TRANSIENT. AT ABOUT 1000, OPERATIONS PERSONNEL MADE THE REQUIRED NOTIFICATION TO THE NRC. AT 2220, INSTRUMENTATION AND ELECTRICAL PERSONNEL DISCOVERED THE FAILED UNIVERSAL BOARD AND REPLACED IT. THE SSPS CABINET WAS TESTED AFTER THE BOARD WAS REPLACED TO ENSURE THE TRAIN WOULD OPERATE PROPERLY. UNIT 1 WAS RETURNED TO MODE 1, POWER OPERATION, ON AUGUST 28, 1989 AT 1230. THIS EVENT IS ASSIGNED A CAUSE OF EQUIPMENT FAILURE / MALFUNCTION. THIS EVENT IS NUCLEAR PLANT RELIABILITY DATA SYSTEM REPORTABLE. THE BOARD WILL BE SENT TO WESTINGHOUSE FOR REPAIR AND FAILURE ANALYSIS.

FORM 61 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
369 1990 001 0 9002140045 216921 01/08/90

ABSTRACT

POWER LEVEL ~ 100%. ON 1/8/90, AT 1015, A UNIT 1 TURBINE TRIP/REACTOR TRIP OCCURRED WHEN BOTH MAIN FEEDWATER PUMPS TRIPPED ON LOW SUCTION PRESSURE. UNIT 1 WAS OPERATING IN MODE 1 AT 100% POWER PRIOR TO THE TRIP. A TROUBLE ALARM WAS RECEIVED FOR CFP "A" SPEED CONTROLLER AND IMMEDIATELY CFP "A" STARTED REDUCING SPEED. OPERATIONS PERSONNEL INITIATED A MANUAL TURBINE RUNBACK TO COMPENSATE FOR THE LOSS OF FEEDWATER FLOW FROM CFP "A". THEN CFP "A" SPEED CONTROLLER WITHIN MINUTES STARTED INCREASING SPEED. THIS ATTRIBUTED TO THE LOW SUCTION PRESSURE THAT TRIPPED BOTH CFP "A" AND "B". SPEED CONTROLLER MALFUNCTION WAS DUE TO THE STRAINER IN THE CONTROLLER BECOMING CLOGGED WITH SLUDGE. SPEED CONTROLLER CONTROL OIL IS SUPPLIED BY THE FEEDWATER PUMP TURBINE LUBE AND HYDRAULIC OIL (LF/LP) SYSTEM WHICH SHARE THE OIL PURIFIER IN THE MAIN TURBINE LUBRICATING AND PURIFICATION OIL (LT) SYSTEM. THERE WERE SEVERAL ANOMALIES AS PLANT EQUIPMENT RESPONDED TO THE TURBINE TRIP/REACTOR TRIP. OPERATIONS PERSONNEL IMPLEMENTED REACTOR TRIP RECOVERY PROCEDURE TO RECOVER FROM THE TRANSIENT. AT 1148, OPERATIONS PERSONNEL MADE THE REQUIRED NOTIFICATION TO THE NRC. UNIT 1 THEN ENTERED A REFUELING OUTAGE FOR TURBINE REPAIR. CAUSE IS OTHER/UNKNOWN BECAUSE IT COULD NOT BE DETERMINED HOW EXCESSIVE WATER IN THE LT AND LF SYSTEM RESULTED IN SLUDGE COLLECTING IN THE STRAINER.

ABSTRACT

POWER LEVEL - 100%. ON OCTOBER 13, 1990, AT 1033, UNIT 1 EXPERIENCED A REACTOR TRIP/TURBINE TRIP. UNIT 1 WAS IN MODE 1, POWER OPERATION, AT 100 PERCENT POWER AT THE TIME OF THIS EVENT. THE FIRST OUT (FO) ANNUNCIATOR INDICATED AN "SSPS GENERAL WARNING - RX TRIP." PRIOR TO THE REACTOR TRIP, INSTRUMENTATION AND ELECTRICAL (IAE) PERSONNEL WERE PERFORMING THE BI-MONTHLY PERIODIC TEST ON THE SOLID STATE PROTECTION SYSTEM (SSPS) TRAIN B. THE "GENERAL WARNING" SIGNAL WAS GENERATED BECAUSE OF THE FAILURE/MALFUNCTION OF A REACTOR TRIP BREAKER CELL SWITCH. THE ONLY SAFETY SYSTEM ACTUATION THAT OCCURRED AS A RESULT OF THE TRIP WAS THE START OF THE AUXILIARY FEEDWATER (CA) PUMPS. OPERATIONS (OPS) PERSONNEL IMPLEMENTED THE REACTOR TRIP/SAFETY INJECTION PROCEDURE AND THEN ENTERED THE REACTOR TRIP PROCEDURE. OPS PERSONNEL IMPLEMENTED THE UNIT FAST RECOVERY PROCEDURE TO RECOVER FROM THE REACTOR TRIP. AT 1200, OPS PERSONNEL MADE THE REQUIRED NOTIFICATION TO THE NUCLEAR REGULATORY COMMISSION (NRC). IAE PERSONNEL REPLACED THE FAILED CELL SWITCH. OPS CONTROL ROOM PERSONNEL RETURNED UNIT 1 TO MODE 1 (POWER OPERATION) ON OCTOBER 14, 1990, AT 1825. THIS EVENT HAS BEEN ASSIGNED A CAUSE EQUIPMENT FAILURE/MALFUNCTION BECAUSE OF THE FAILED CELL SWITCH. THIS EVENT IS NUCLEAR PLANT RELIABILITY DATA SYSTEM REPORTABLE AND PART 21 REPORTABLE. THE SWITCH WILL BE SENT OFFSITE FOR FURTHER FAILURE ANALYSIS.

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FORM 63 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 369 1990 032 0 9012210150 220547 11/17/90

ABSTRACT

POWER LEVEL - 100%. ON NOVEMBER 17, 1990, AT 0319, UNIT 1 EXPERIENCED A TURBINE TRIP, FOLLOWED BY A REACTOR TRIP. THE TRIP WAS INITIATED BY THE B LOW PRESSURE (LP) TURBINE HIGH EXHAUST HOOD TEMPERATURE SIGNAL. PRIOR TO THE EVENT, UNIT 1 WAS OPERATING IN MODE 1 (POWER OPERATION) AT 100 PERCENT POWER. OPERATIONS (OPS) CONTROL ROOM PERSONNEL IMPLEMENTED PROCEDURE EP/1/A/5000/01, REACTOR TRIP OR SAFETY INJECTION, AND THEN ENTERED PROCEDURE EP/1/A/5000/1.3, REACTOR TRIP. OPS PERSONNEL MADE THE REQUIRED NOTIFICATION TO THE NRC PER PROCEDURE RP/0/A/5700/10, NRC IMMEDIATE NOTIFICATION REQUIREMENTS. THE MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS STARTED AS REQUIRED, DUE TO A LOW LOW STEAM GENERATOR (S/G) WATER LEVEL. THERE WERE NO OTHER SAFETY SYSTEM ACTUATIONS. OPS CONTROL ROOM PERSONNEL ENTERED PROCEDURE OP/1/A/6100/05, UNIT FAST RECOVERY. ON NOVEMBER 17, 1990, AT 1821, UNIT 1 ENTERED MODE 1. IT WAS DETERMINED BY INSTRUMENT AND ELECTRICAL (IAE) PERSONNEL THAT THE TRIP SIGNAL WAS RECEIVED BECAUSE OF A DAMAGED LP TURBINE EXHAUST HOOD TEMPERATURE INSTRUMENT. TO PREVENT RECURRENCE OF THIS EVENT, MAINTENANCE ENGINEERING SERVICES (MES) PERSONNEL WILL EVALUATE THE USE OF A DUAL ELEMENT THERMOCOUPLE OR POSSIBLE USE OF A TWO OUT OF TWO LOGIC FOR THE TEMPERATURE SIGNAL. THIS EVENT HAS BEEN ASSIGNED A CAUSE OF UNKNOWN SINCE IT CANNOT BE DETERMINED WHAT CAUSED THE TEMPERATURE INSTRUMENT TO BECOME DAMAGED.

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FORM 64 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 370 1989 001 0 8904180249 213676 03/03/89

POWER LEVEL - 100%. ON 3/3/89, AT 0819, WHILE OPERATIONS PERSONNEL WERE PERFORMING A ROUTINE ROD CLUSTER CONTROL ASSEMBLY MOVEMENT TEST ON THE UNIT 2 ROD CONTROL SYSTEM, A HIGH NEGATIVE NEUTRON FLUX RATE REACTOR TRIP OCCURRED BECAUSE OF CONTROL RODS DROPPING INTO THE CORE. THE TURBINE GENERATOR AUTOMATICALLY TRIPPED BECAUSE OF THE REACTOR TRIP. OPERATIONS PERSONNEL IMPLEMENTED THE REACTOR TRIP RECOVERY PROCEDURE TO RECOVER FROM THE TRANSIENT. AT 0855, OPERATIONS PERSONNEL MADE THE REQUIRED NOTIFICATION TO THE NRC. SINCE IT COULD NOT BE DETERMINED WHAT CAUSED THE CONTROL RODS TO DROP, AN INDEPENDENT TECHNICAL REVIEW WAS PERFORMED ON THE EVENT; CONSEQUENTLY, A DECISION WAS MADE BY STATION MANAGEMENT PERSONNEL AT APPROXIMATELY 0230 ON MARCH 4, 1989 TO RESTART THE REACTOR. UNIT 2 WAS RETURNED TO POWER OPERATION ON MARCH 4, 1989 AT 0555. THIS EVENT IS ASSIGNED A CAUSE OF UNKNOWN BECAUSE IT COULD NOT BE DETERMINED DURING THE COURSE OF THIS INVESTIGATION WHAT CAUSED THE CONTROL RODS TO DROP INTO THE CORE.

FORM 65 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 370 1989 002 0 8904200281 213596 03/14/89

ABSTRACT

POWER LEVEL - 098%. ON MARCH 14, 1989 AT 0412, THE UNIT 2 TRAIN B MAIN FEEDWATER PUMP TURBINE (CFPT) TRIPPED. A UNIT 2 RUNBACK RESULTED BECAUSE OF THE LOSS OF THE 2B CFPT. OPERATIONS PERSONNEL IMPLEMENTED PROCEDURE AP/2/A/5500/03, LOAD REJECTION, AND HAD COMPLETED ALL IMMEDIATE ACTIONS WHEN VALVE 2CM-420, GENERATOR LOAD REJECTION BYPASS, FAILED TO OPEN AS REQUIRED ON A RUNBACK SIGNAL. THE FAILURE OF VALVE 2CM-420 TO OPEN PREVENTED ADDITIONAL SUCTION FLOW TO BE PROVIDED FOR THE 2A CFPT, AND CONSEQUENTLY, LEVELS IN B AND C STEAM GENERATORS (SGS) BEGAN TO DECREASE. AT 0415, THE UNIT 2 REACTOR TRIPPED BECAUSE OF A LOW-LOW LEVEL IN 2B SG. THE MAIN TURBINE TRIPPED BECAUSE OF THE REACTOR TRIP. ALL THREE AUXILIARY FEEDWATER PUMPS AUTOMATICALLY STARTED AS REQUIRED TO RECOVER SG LEVELS. UNIT 2 WAS IN MODE 1, POWER OPERATION, AT 98% POWER AT THE TIME THIS INCIDENT OCCURRED. THIS EVENT HAS BEEN ASSIGNED A CAUSE OF OTHER, EQUIPMENT FAILURE/MALFUNCTION BECAUSE OF A FAILURE OF SUCTION PRESSURE SWITCHES ON 2B CFPT AND A BROKEN AIR SUPPLY LINE TO VALVE 2CM-420.

FORM 66 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 370 1989 003 1 8912140098 216150 04/06/89

ABSTRACT

POWER LEVEL - 100%. ON APRIL 6, 1989 AT 0503, A UNIT 2 REACTOR TRIP OCCURRED BECAUSE OF LOW-LOW LEVEL IN STEAM GENERATOR 2C. THE UNIT WAS OPERATING IN MODE 1 (POWER OPERATION) AT 100% POWER PRIOR TO THE TRIP. THE LOW-LOW LEVEL CONDITION WAS CAUSED BY THE FAILURE OF THE BELLOWS IN THE POSITIONER FOR VALVE 2CF-20, STEAM GENERATOR 2C MAIN FEEDWATER (CF) REGULATING VALVE. THE TURBINE GENERATOR AUTOMATICALLY TRIPPED BECAUSE OF THE REACTOR TRIP. OPERATIONS PERSONNEL IMPLEMENTED THE REACTOR TRIP RECOVERY PROCEDURE TO RECOVER FROM THE TRANSIENT. AT 0542, OPERATIONS PERSONNEL MADE THE REQUIRED NOTIFICATION TO THE NRC. INSTRUMENTATION AND ELECTRICAL PERSONNEL COMPLETED THE REPLACEMENT OF THE FAILED FEEDBACK BELLOWS IN THE POSITIONER FOR VALVE 2CF-20 AND THE OTHER 3 UNIT 2 S/G CF FLOW CONTROL VALVES AT 1459. THE FAILED BELLOWS WAS SENT TO THE DUKE POWER COMPANY METALLURGY LABORATORY FOR ANALYSIS. THE REFUELING OUTAGE PREVENTIVE MAINTENANCE (PM) FOR THE CF REGULATING VALVES WILL BE REVISED TO REPLACE THE FEEDBACK BELLOWS.

FORM 67 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
370 1990 008 0 9101310207 220845 12/27/90

ABSTRACT

POWER LEVEL - 000%. ON 12/27/90 OPERATIONS (OPS) AND PERFORMANCE (PRF) REACTOR GROUP PERSONNEL WERE PERFORMING ROUTINE ROD MOVEMENT TESTING ASSOCIATED WITH ZERO POWER PHYSICS TESTING (ZPPT). OPS PERSONNEL ATTEMPTED TO INSERT SHUTDOWN BANK E FROM THE FULLY WITHDRAWN POSITION. SHUTDOWN BANK E FELL INTO THE CORE AT 0141:25, TAKING THE REACTOR SUBCRITICAL. AT 0142:15, OPS PERSONNEL INITIATED A MANUAL REACTOR TRIP. OPS PERSONNEL THEN IMPLEMENTED THE REACTOR TRIP AND UNIT FAST RECOVERY PROCEDURES TO RECOVER FROM THE TRANSIENT. AT 0225, OPS PERSONNEL MADE THE REQUIRED NOTIFICATION TO THE NRC. SINCE IT COULD NOT BE DETERMINED WHAT CAUSED SHUTDOWN BANK E TO DROP, AN INDEPENDENT TECHNICAL REVIEW WAS PERFORMED ON THE EVENT AND, CONSEQUENTLY, ON 12/28/90 AT 0918, A DECISION WAS MADE BY STATION MANAGEMENT PERSONNEL TO RESTART THE REACTOR. UNIT 2 WAS RETURNED TO MODE 2 (STARTUP) OPERATION ON 12/29/90, AT APPROXIMATELY 1234. THIS EVENT IS ASSIGNED A CAUSE OF POSSIBLE EQUIPMENT FAILURE/MALFUNCTION BECAUSE IT COULD NOT BE DETERMINED DURING THE COURSE OF THIS INVESTIGATION WHAT CAUSED THE SHUTDOWN BANK E TO DROP INTO THE CORE. MAINTENANCE ENGINEERING SUPPORT (MES) PERSONNEL WILL DEVELOP A PLAN TO PERFORM FURTHER TESTING IN AN ATTEMPT TO FIND A CAUSE.

FORM 68 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
373 1989 009 1 8907110299 214561 03/02/89

ABSTRACT

POWER LEVEL - 086%. ON 3/2/89, AT 2302 HRS A PHASE TO GROUND FAULT OCCURRED AT "C" PHASE LIGHTNING ARRESTOR ON THE PRIMARY SIDE OF THE UNIT 2 SYSTEM AUX. TRANSFORMER. FAULT WAS AUTOMATICALLY ISOLATED BY THE TRIPPING OF SWITCHYARD OIL CIRCUIT BREAKERS (OCB) 4-6 AND 6-1 AND UNIT 2 FEEDER BREAKERS. ALL LOADS BEING FED FROM THE SAT TRANSFERRED TO UNIT 2 UNIT AUX. TRANSFORMER EXCEPT FOR BUS 243 WHICH WAS SUPPLIED BY 2B DIESEL GENERATOR WHICH SATISFACTORILY AUTO-STARTED ON UNDERVOLTAGE. UNIT 2 REMAINED ON-LINE AFTER THE INCIDENT. AS A RESULT OF TRANSIENT ON THE 345 KV SYSTEM, UNIT 1 GENERATOR PROTECTIVE RELAYING SENSED A HIGH GENERATOR DIFFERENTIAL CURRENT ON PHASE A AND ISOLATED UNIT 1 GENERATOR. UNIT 1 TURBINE TRIPPED ON LOAD REJECTION RESULTING IN A REACTOR SCRAM FROM TURBINE CONTROL VALVE FAST CLOSURE. UNIT 1 PROCEEDED INTO NORMAL POST-SCRAM CONDITIONS WITH THE EXCEPTION OF TEMPORARY LOSS OF THE SERVICE AIR COMPRESSOR AND PLANT PROCESS COMPUTER. PROBLEMS WERE ALSO ENCOUNTERED WITH THE RESETTING OF THE SCRAM LOGIC. CAUSE OF THIS EVENT WAS THE PHASE TO GROUND FAULT THAT OCCURRED FROM THE LIGHTNING ARRESTOR TOP CAP TO A SPARGER HEAD ON THE TRANSFORMER DELUGE SYSTEM. THIS WAS EVIDENT FROM ARC BURNING IDENTIFIED AT TOP OF LIGHTNING ARRESTOR AND AT SPARGER HEAD. FAULT WAS CAUSED BY DEBRIS THAT HAD BLOWN ONTO THE LIGHTNING ARRESTOR LEAD.

FORM 69 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 100%. ON 3/28/90 AT 0337 HOURS UNIT 1 WAS IN OPERATIONAL CONDITION 1 (RUN) AT 100% POWER. AT THIS TIME THE "B" PHASE INSULATOR BETWEEN THE UNIT 1 EAST/WEST MAIN POWER TRANSFORMERS AND THE SWITCHYARD, FAILED AND FLASHED OVER TO GROUND. AS A RESULT OF THIS FLASHOVER, THE "B" AND "C" PHASE DIFFERENTIAL CURRENT RELAYS BOTH TRIPPED CAUSING THE UNIT 1 MAIN GENERATOR TO LOCKOUT, WHICH RESULTED IN A MAIN TURBINE TRIP. THIS IMMEDIATELY CAUSED THE UNIT 1 REACTOR TO SCRAM. THREE SAFETY RELIEF VALVES ACTUATED TO CONTROL REACTOR PRESSURE. THE "B" PHASE INSULATOR WAS REPLACED ON 3/29/90. THE REMAINING INSULATORS WERE INSPECTED AND NO SIGNIFICANT PROBLEMS WERE NOTED. ONE ADDITIONAL INSULATOR WAS REPLACED DUE TO MINOR CHIPPING. UNIT 1 WAS STARTED BACK UP AND THE GENERATOR SYNCHRONIZED TO THE GRID AT 0310 HOURS ON 3/31/90. THIS EVENT IS REPORTABLE PURSUANT TO THE REQUIREMENTS OF 10CFR50.73(A)(2)(IV) DUE TO THE ACTUATION OF AN ENGINEERED SAFETY FEATURE SYSTEM.

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FORM 70 LER SCSS DATA 04-18-91

DOCKET	YEAR	LER NUMBER	REVISION	DCS NUMBER	NSIC	EVENT DATE
373	1990	010	0	9008010023	219070	06/26/90

ABSTRACT

POWER LEVEL - 075%. ON 6/26/90 AT 0453 HOURS WITH UNIT 1 IN OPERATIONAL CONDITION 1 (RUN) AT 75% POWER, A REACTOR SCRAM OCCURRED DURING THE PERFORMANCE OF LASALLE LIMITED PROCEDURE LLP-90-027, "UNIT 1 TURBINE STOP VALVE (TSV) SCRAM FUNCTIONAL TEST". THE SCRAM OCCURRED AS DESIGNED, DUE TO THE CLOSING OF TURBINE STOP VALVES 1, 3, AND 4 AFTER #2 TSV WAS CYCLED AND ITS OPEN LIMIT SWITCH FAILED. IT WAS DISCOVERED DURING THE SCRAM INVESTIGATION THAT THE #2 TSV OPEN LIMIT SWITCH (SVOS-2, NON REACTOR PROTECTION SYSTEM LIMIT SWITCH) HAD FAILED TO THE NOT OPEN POSITION. THIS FAILURE OCCURRED 5/22/90 AT 0359 HOURS, THE LAST TIME THIS PROCEDURE WAS PERFORMED. AT THIS TIME, THE VALVE TEST LOGIC OF TURBINE ELECTRO HYDRAULIC CONTROL SYSTEM (EHC) SEALED IN THE MASTER/SLAVE INTERLOCK. THIS PREVENTS THE OTHER TSVS FROM CLOSING WHILE #2 TSV IS TESTED. ON 6/26/90 AT 0453 HOURS, #2 TSV WAS TESTED AND CLOSED TO ABOUT 90% OPEN. WHEN THE VALVE FULLY OPENED, LIMIT SWITCH SVOS-2 TOGGLED TO THE OPEN POSITION (DUE TO A LOOSE MOUNTING OF THE SWITCH, CAUSED BY VIBRATIONS). THIS BROKE THE SEAL-IN INTERLOCK. A SECOND LATER, IT TOGGLED BACK TO GIVE A NOT OPEN ALARM AND COMMANDED THE OTHER TSVS TO GO FULL CLOSE. THE EMERGENCY CORE COOLING SYSTEMS (ECCS) AND THE REACTOR CORE ISOLATION COOLING SYSTEM WERE AVAILABLE DURING THE EVENT. THE 1B TDRFP WAS TESTED AND FUNCTIONED AS DESIGNED.

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FORM 71 LER SCSS DATA 04-18-91

DOCKET	YEAR	LER NUMBER	REVISION	DCS NUMBER	NSIC	EVENT DATE
374	1989	011	1	9001090077	216359	08/26/89

ABSTRACT

POWER LEVEL - 010%. ON 3/26/89, A CONTROLLED SHUTDOWN WAS IN PROGRESS ON UNIT 2. WHILE CONDUCTING LOS-TG-SA2, "TURBINE VALVE LEAK TIGHTNESS SURVEILLANCE," A REACTOR PROTECTION SYSTEM (RPS) ACTUATION OCCURRED AT 0414 HOURS. WHEN THE ACTUATION SIGNAL WAS RECEIVED, TWO OF THE FOUR SCRAM GROUP LIGHTS OF THE RPS BUS "A" REMAINED ENERGIZED. THIS PREVENTED SOME OF THE RODS FROM RECEIVING THE NORMAL AUTOMATIC SCRAM ACTUATION. ROD MOTION APPEARS TO HAVE INITIATED FOR THESE RODS DUE TO THE CHANNEL "A" BACKUP SCRAM ACTUATION WHICH OCCURRED AT THE SAME

DE SCRAM SUBSEQUENTLY. AT THIS TIME ALL THE REMAINING SCRAM VALVES DEENERGIZED, INDICATING THAT THE SCRAM HAD OCCURRED. BEFORE THE TURBINE VALVE TEST WAS STARTED, THE HATHAWAY SEQUENCE OF EVENTS ALARM TYPER WAS TURNED OFF DUE TO ITS CONSTANT PRINTING CAUSED BY ALARM RELAY CHATTERING. AS A RESULT, THE MAIN SOURCE OF INFORMATION TO BE USED IN ANALYZING THE REACTOR TRIP WAS NOT AVAILABLE. AT THE TIME OF THE TRIP, NO PLANT PARAMETERS EXCEEDED THEIR TRIP SETPOINTS. AS A RESULT OF THE MISSING INFORMATION, SEVERAL SCENARIOS WERE DEVELOPED USING AVAILABLE INFORMATION IN AN ATTEMPT TO DETERMINE THE CAUSE OF THE REACTOR TRIP. AT THIS TIME A DEFINITE CAUSE FOR THE TRIP HAS NOT BEEN DETERMINED.

FORM 72 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 374 1990 001 0 9003150291 217392 02/06/90

ABSTRACT

POWER LEVEL - 100%. ON 2/6/90 AT 0926 HOURS, WHILE UNIT 2 WAS IN OPERATIONAL CONDITION 1 (RUN) AT 99.8% POWER, DURING THE PERFORMANCE OF LASALLE INSTRUMENT SURVEILLANCE LIS-NR-403, "UNIT 2 AVERAGE POWER RANGE MONITOR (APRM) ROD BLOCK AND SCRAM FUNCTIONAL TEST," A FULL REACTOR SCRAM OCCURRED. NORMALLY THE SURVEILLANCE ONLY CAUSES HALF-SCRAMS. AT THE TIME OF THE OCCURRENCE, F APRM WAS TRIPPED, PER THE PROCEDURE, WHICH TRIPPED REACTOR PROTECTION SYSTEM (RPS) CHANNEL "A". WHILE THE RPS CHANNEL "A" HALF SCRAM CONDITION WAS IN EFFECT, E APRM SPIKED SPURIOUSLY, CAUSING RPS CHANNEL "B" TO TRIP AND A FULL REACTOR SCRAM OCCURRED. ADDITIONALLY, IT WAS ALSO DETERMINED THAT ALL OTHER EXPECTED AUTOMATIC ACTIONS OCCURRED AS EXPECTED INCLUDING PRIMARY CONTAINMENT ISOLATION SIGNALS WHEN REACTOR WATER LEVEL REACHED 12.5 INCHES DECREASING. INITIATION OF THE EVENT WAS NOT DUE TO AN ACTUAL TRANSIENT ON A PARAMETER WHICH IS MONITORED TO PROTECT THE REACTOR CORE BUT DUE TO SPURIOUS SPIKE OF APRM E. TROUBLESHOOTING E APRM WILL CONTINUE UNDER WORK REQUEST L96857 IN AN ATTEMPT TO DETERMINE THE CAUSE OF THE SPURIOUS SPIKES. UNIT 1 WAS NOT AFFECTED BY THIS EVENT. THIS EVENT IS REPORTABLE PURSUANT TO 10CFR50.73(A)(2)(IV) DUE TO AN ACTUATION OF AN ENGINEERED SAFETY FEATURE.

FORM 73 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 374 1990 010 0 9010170178 219755 09/12/90

ABSTRACT

POWER LEVEL - 100%. ON 9/12/90 AT 0305 HOURS, WITH UNIT 2 IN OPERATIONAL CONDITION 1 (RUN) AT 99.9% POWER, THE UNIT 2 NUCLEAR STATION OPERATOR (NSO, LICENSED REACTOR OPERATOR) WAS PERFORMING THE TURBINE GENERATOR WEEKLY SURVEILLANCE (LOS-TG-W1). AFTER THE NSO HAD PERFORMED THE GENERATOR REGULATOR MODE TRANSFER SWITCH PORTION OF THIS SURVEILLANCE, HE NOTICED A SEVERE TRANSIENT ON SEVERAL GENERATOR OUTPUT INDICATIONS. A FEW SECONDS AFTER THIS, THE 2E MAIN POWER TRANSFORMER "B" PHASE DIFFERENTIAL RELAY ACTUATED WHEN THE CURRENT TRANSFORMER FEEDING THIS RELAY SHORTED OUT TO GROUND. AS A RESULT, THE UNIT 2 MAIN GENERATOR LOCKED OUT CAUSING THE MAIN TURBINE TO TRIP. THIS IMMEDIATELY CAUSED THE UNIT 2 REACTOR TO SCRAM. FIVE SAFETY RELIEF VALVES ACTUATED TO CONTROL REACTOR PRESSURE. THE INITIAL CAUSE OF THE TRANSIENT COULD NOT BE DETERMINED. THE "B" PHASE CURRENT TRANSFORMER THAT FEEDS THE "B" PHASE DIFFERENTIAL RELAY SCHEME WAS REPLACED. ALL AFFECTED CIRCUITS ASSOCIATED WITH THE GENERATOR'S

AND SYNCHRONIZED THE GENERATOR WAS SYNCHRONIZED TO THE GRID AT 0430 HOURS ON 9/21/90. THIS EVENT IS REPORTABLE PURSUANT TO THE REQUIREMENTS OF 10CFR50.73(A)(2)(IV) DUE TO THE ACTUATION OF AN ENGINEERED SAFETY FEATURE SYSTEM.

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FORM 74 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
382 1989 013 0 8908170315 215030 07/15/89

ABSTRACT

POWER LEVEL - 100%. ON JULY 19, 1989, WATERFORD STEAM ELECTRIC STATION UNIT 3 WAS OPERATING AT 100% POWER WHEN A RAPIDLY DECREASING LEVEL WAS OBSERVED IN STEAM GENERATOR NUMBER 1. THE MAIN FEEDWATER REGULATING VALVE FOR THIS STEAM GENERATOR WAS FOUND CLOSED. THE CONTROLLER FOR THE VALVE WAS SWITCHED TO MANUAL AND THE VALVE WAS OPENED IN AN ATTEMPT TO RESTORE THE STEAM GENERATOR LEVEL. WHEN IT BECAME APPARENT THAT THE LEVEL COULD NOT BE RESTORED BEFORE RECEIVING A LOW STEAM GENERATOR LEVEL REACTOR TRIP, A MANUAL REACTOR TRIP WAS INITIATED. THE ROOT CAUSE FOR THE EVENT WAS ATTRIBUTED TO A CIRCUIT FAILURE IN THE POSITION CONTROL CIRCUITRY FOR THE MAIN AND STARTUP FEEDWATER REGULATING VALVES FOR STEAM GENERATOR NUMBER 1. THE CIRCUIT CARD CONTAINING THE FAILED COMPONENT WAS REPLACED AND THE SYSTEM RESTORED TO NORMAL. DURING THE COURSE OF THIS EVENT NO THREAT TO THE HEALTH OR SAFETY OF THE PUBLIC OR PLANT PERSONNEL EXISTED.

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FORM 75 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
382 1989 017 1 9001030256 216334 08/19/89

ABSTRACT

POWER LEVEL - 023%. AT 1319 HOURS ON AUGUST 19, 1989, AN AUTOMATIC REACTOR TRIP OF WATERFORD STEAM ELECTRIC STATION UNIT 3 OCCURRED WHILE OPERATING AT 23% POWER. THE TRIP WAS INITIATED BY THE PLANT PROTECTION SYSTEM (PPS) IN RESPONSE TO VARIATIONS IN CORE AXIAL SHAPE INDEX (ASI), A MEASURE OF CORE POWER DISTRIBUTION, INDUCED BY THE DOWN POWER REQUIRED FOR AN ABNORMAL CONTROL ELEMENT ASSEMBLY (CEA) CONFIGURATION. THIS EVENT IS REPORTABLE AS AN AUTOMATIC REACTOR PROTECTION SYSTEM ACTUATION. THE ROOT CAUSE OF THIS EVENT IS EQUIPMENT MALFUNCTION. DURING ROUTINE CEA OPERABILITY TESTING, CEA 18 WOULD NOT MOVE IN EITHER DIRECTION. AFTER REPAIRS WERE MADE TO CEA CONTROL CIRCUITRY, CEA 18 WAS INSERTED BELOW THE TECHNICAL SPECIFICATION (TS) LIMIT OF 145 INCHES WHILE VERIFYING RESPONSE. CEA 18 WOULD NOT WITHDRAW, NECESSITATING A REACTOR POWER REDUCTION PER TSS. WHILE ATTEMPTING TO CONTROL ASI SUBSEQUENT TO THE POWER REDUCTION, THE REACTOR TRIPPED. THE DEFECTIVE EQUIPMENT HAS BEEN REPLACED AND TESTED SATISFACTORILY. BECAUSE PROTECTIVE FEATURES FUNCTIONED AS DESIGNED, THE HEALTH AND SAFETY OF THE GENERAL PUBLIC OR PLANT PERSONNEL WAS NOT ADVERSELY AFFECTED BY THIS EVENT.

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FORM 76 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
382 1989 024 0 9001250231 216495 12/23/89

ABSTRACT

POWER LEVEL - 100%. AT 1109 HOURS ON DECEMBER 23, 1989, CONTROL ROOM

FEED REGULATING VALVE (MFRV) #1 UNEXPECTEDLY FAILED SHUT. SHORTLY AFTER THE REACTOR TRIP MFRV #1 OPENED INADVERTENTLY. A REACTOR COOLANT SYSTEM (RCS) COOLDOWN AND A CORRESPONDING RCS PRESSURE DROP TO APPROXIMATELY 1640 PSIA RESULTED, GENERATING A SAFETY INJECTION ACTUATION SIGNAL (SIAS). AN EMERGENCY FEEDWATER ACTUATION SIGNAL (EFAS) WAS ALSO GENERATED DURING THE POST-TRIP TRANSIENT. THE ROOT CAUSE OF THIS EVENT APPEARS TO BE AN ANOMALY IN THE MFRV PNEUMATIC CONTROL SYSTEM BROUGHT ABOUT BY COLD WEATHER EFFECTS ON SYSTEM COMPONENTS. A VENDOR DIAGNOSTIC TEAM WILL BE CONTRACTED TO PROVIDE AN INDEPTH INVESTIGATION TO AID IN ROOT CAUSE DETERMINATION. IF THE ROOT CAUSE CAN BE POSITIVELY IDENTIFIED IT WILL BE DESCRIBED IN A REVISION TO THIS REPORT. ALL SAFETY SYSTEMS FUNCTIONED AS DESIGNED; THEREFORE, THIS EVENT DID NOT THREATEN THE HEALTH AND SAFETY OF THE GENERAL PUBLIC OR PLANT PERSONNEL.

FORM 77 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 382 1990 002 0 9004270164 218033 03/22/90

ABSTRACT

POWER LEVEL - 100%. AT 2133 HOURS ON MARCH 22, 1990, AN AUTOMATIC REACTOR TRIP OCCURRED AT WATERFORD STEAM ELECTRIC STATION UNIT 3 WHILE THE PLANT WAS OPERATING AT 100% POWER. THE REACTOR TRIP WAS INITIATED BY THE PLANT PROTECTION SYSTEM WHEN TWO CONTROL ELEMENT ASSEMBLIES (CEAS) DROPPED TO THE FULLY INSERTED POSITION WHILE THEIR DRIVE MECHANISMS WERE BEING TRANSFERRED FROM THEIR NORMAL POWER SUPPLY TO THE CONTROL ELEMENT DRIVE MECHANISM SYSTEM (CEDMCS) HOLD BUS. THIS EVENT IS REPORTABLE BY REASON OF THE OCCURRENCE OF AN AUTOMATIC REACTOR PROTECTION SYSTEM ACTUATION. THE ROOT CAUSE OF THIS EVENT WAS AN EQUIPMENT MALFUNCTION. INSPECTIONS SUBSEQUENT TO THE TRIP REVEALED THAT SEVERAL ELECTRICAL CONNECTORS USED TO TRANSMIT POWER FROM THE CEDMCS PANELS TO A CEA DRIVE MECHANISM WERE DAMAGED FROM MISALIGNMENT DURING PREVIOUSLY PERFORMED MAINTENANCE. THIS CONDITION DISRUPTED THE POWER SUPPLY CIRCUITRY OF THE CEA DRIVE MOTORS AFFECTED, CAUSING DISENGAGEMENT OF THE DRIVE MECHANISMS FOR THESE CEAS. THE DAMAGED COMPONENTS IN THE POWER SUPPLY CIRCUITRY WERE REPLACED AND OPERATIONALLY CHECKED TO BE SATISFACTORY. ALL PLANT PROTECTIVE FEATURES FUNCTIONED AS DESIGNED AND NO THREAT WAS POSED TO THE HEALTH OR SAFETY OF THE GENERAL PUBLIC OR PLANT PERSONNEL DURING THIS EVENT.

FORM 78 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 382 1990 003 1 9010240411 219916 03/29/90

ABSTRACT

POWER LEVEL - 100%. AT 0730 HOURS ON MARCH 29, 1990, WITH WATERFORD STEAM ELECTRIC STATION UNIT 3 AT 99.9% POW, A SEVERE TRANSIENT ON THE 230 KV POWER TRANSMISSION GRID AT TAFT, LOUISIANA, RESULTED IN A REACTOR TRIP. THE TRANSIENT WAS INITIATED WHEN AN OCCIDENTAL CHEMICAL COMPANY EMPLOYEE CAUSED A FAULT AT THE 230 KV SUBSTATION OWNED BY THE CHEMICAL COMPANY. THE REACTOR COOLANT PUMPS SLOWED TO LESS THAN 96.5 % OF NORMAL SPEED AS VOLTAGE DROPPED. THIS GENERATED A LOW MULTIPLIER IN THE CORE PROTECTION CALCULATORS AND A REACTOR TRIP OCCURRED DUE TO AN ANTICIPATORY DEPARTURE FROM NUCLEATE BOILING RATIO TRIP SIGNAL. THIS EVENT IS REPORTABLE AS AN AUTOMATIC REACTOR PROTECTION SYSTEM ACTUATION. THIS SUPPLEMENT IS SUBMITTED FOR POTENTIAL GENERIC INTEREST WITH RESPECT TO OFF-SITE GRID CONDITIONS.

OPERATED AUTOMATICALLY WHICH DE-ENERGIZED THE 'B' SAFETY BUS. EMERGENCY DIESEL GENERATOR 'B' STARTED AND RE-ENERGIZED THE 'B' SAFETY BUS AS DESIGNED. THE ROOT CAUSE OF THIS EVENT WAS A GRID VOLTAGE DROP ON THE LOUISIANA POWER AND LIGHT COMPANY 230 KV SYSTEM CAUSED BY A FAULT AT OCCIDENTAL CHEMICAL COMPANY. BECAUSE PLANT PROTECTIVE FEATURES FUNCTIONED AS DESIGNED, THIS EVENT DID NOT THREATEN THE HEALTH OR SAFETY OF THE GENERAL PUBLIC OR PLANT PERSONNEL.

FORM 79 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
382 1990 012 0 9010030251 219647 08/25/90

ABSTRACT

POWER LEVEL - 100%. AT 1802 HOURS ON AUGUST 25, 1990, WITH WATERFORD STEAM ELECTRIC STATION UNIT 3 AT 100% POWER, A SEVERE VOLTAGE TRANSIENT ON THE SOUTHEASTERN LOUISIANA 230 KV POWER TRANSMISSION GRID RESULTED IN A REACTOR TRIP. THE TRANSIENT WAS INITIATED WHEN A FAULT ATTRIBUTED TO A LIGHTNING STRIKE OCCURRED AT THE WATERFORD 230 KV SWITCHYARD. ONE CIRCUIT BREAKER EXPLODED AND BURNED. THE RAPID REDUCTION IN LOAD ON THE MAIN GENERATOR, COMBINED WITH AN INOPERABLE STEAM BYPASS CONTROL SYSTEM CAUSED REACTOR COOLANT SYSTEM TEMPERATURE AND PRESSURE TO INCREASE. A REACTOR TRIP OCCURRED DUE TO HIGH PRESSURIZER PRESSURE. THIS EVENT IS REPORTABLE AS AN AUTOMATIC REACTOR PROTECTION SYSTEM ACTUATION. AS A RESULT OF THIS SYSTEM TRANSIENT, VOLTAGE ON THE WATERFORD 230KV SWITCHYARD DECAYED TO 33 KV OVER A TWO SECOND PERIOD. AN INVESTIGATION CONCLUDED THAT THE IN-PLANT SAFETY BUS VOLTAGE LEVEL DID NOT DROP LOW ENOUGH FOR A SUFFICIENT DURATION TO ACTUATE THE UNDERVOLTAGE RELAYS ASSOCIATED WITH THE EMERGENCY DIESEL GENERATORS. THE ROOT CAUSE OF THIS EVENT WAS THE SEVERE GRID DISTURBANCE, WHICH IS ATTRIBUTED TO A LIGHTNING STRIKE. BECAUSE PLANT PROTECTIVE FEATURES FUNCTIONED AS DESIGNED, THIS EVENT DID NOT THREATEN THE HEALTH OR SAFETY OF THE GENERAL PUBLIC OR PLANT PERSONNEL.

FORM 80 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
387 1989 001 0 8902070150 212951 01/04/89

ABSTRACT

POWER LEVEL - 060%. AT 0240 HOURS ON JANUARY 4, 1989, UNIT 1 EXPERIENCED AN AUTOMATIC SHUTDOWN FOLLOWING A REACTOR PROTECTION SYSTEM ACTUATION. IN ANTICIPATION OF THE SCRAM, OPERATIONS REDUCED POWER FROM 100% TO 60% TO MINIMIZE THE EFFECT OF THE ANTICIPATED TRANSIENT. OPERATIONS INADVERTENTLY ISOLATED INSTRUMENT AIR TO INSTRUMENTATION WHICH EVENTUALLY RESULTED IN A LOSS OF MAIN CONDENSER VACUUM, A MAIN TURBINE TRIP, AND AN ENSUING REACTOR SHUTDOWN. ALL EQUIPMENT OPERATED PER DESIGN DURING THE TRANSIENT AND CSF SYSTEMS WERE NOT CHALLENGED. THE EVENT HAS BEEN DETERMINED TO BE REPORTABLE PER 10CFR50.73(A)(2)(IV), IN THAT AN UNPLANNED RPS ACTUATION OCCURRED. A CONTRIBUTING FACTOR LEADING INTO THIS EVENT WAS THE REDUCED RELIABILITY OF THE UNIT 1 I/A SYSTEM DUE TO PLANNED MAINTENANCE ACTIVITIES. LOSS OF STATUS CONTROL AND OMISSIONS FROM THE UNIT 1 I/A OPERATING PROCEDURE ARE CONSIDERED THE ROOT CAUSES. CORRECTIVE ACTIONS WILL CONSIST OF IMPLEMENTING PROGRAMMATIC CHANGES TO PROVIDE AN IMPROVEMENT IN THE SYSTEM OF TRACKING EQUIPMENT AND VALVE STATUS. THE UNIT 1 I/A OPERATING PROCEDURE WILL BE REVISED TO INCLUDE THE OMITTED SECTION.

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
387 1989 002 1 8911220127 215911 01/12/89

ABSTRACT

POWER LEVEL - 020%. AT 0415 HOURS ON 1/12/89, WITH UNIT 1 OPERATING AT APPROXIMATELY 20% POWER, A REACTOR SCRAM OCCURRED DUE TO ACTUATION OF THE REACTOR PROTECTION SYSTEM (RPS). OPERATIONS WAS IN THE PROCESS OF TRANSFERRING FROM STARTUP LEVEL CONTROL TO AUTO FEEDWATER LEVEL CONTROL WHEN CONTROL OF LEVEL WAS LOST DUE TO A RAPID INCREASE IN FEEDWATER FLOW RATE. THE REACTOR LEVEL REACHED THE +54" LEVEL WHICH RESULTS IN A TRIP OF THE MAIN TURBINE. THE LARGE COLD WATER ADDITION CAUSED REACTOR POWER TO INCREASE PAST 24%, WHICH RESULTED IN THE RPS ACTUATION UPON TURBINE TRIP. THE REQUIRED PLANT EQUIPMENT RESPONSE DURING THE TRANSIENT WAS PER DESIGN. THE CAUSE OF THE EVENT WAS ATTRIBUTED TO COGNITIVE OPERATOR ERROR. A COOLDOWN OF 101F WAS EXPERIENCED OVER THE FIRST HOUR FOLLOWING THE SCRAM. THIS EXCEEDED THE TECH SPEC MAXIMUM COOLDOWN RATE OF 100F PER HOUR DURING A ONE HOUR PERIOD, BUT WAS NOT IMMEDIATELY IDENTIFIED. AS A RESULT, TECH SPEC ACTION REQUIREMENTS WERE NOT PROPERLY IMPLEMENTED. AN ENGINEERING ANALYSIS CONCLUDED THAT NO ADVERSE EFFECTS ON THE REACTOR COOLANT SYSTEM STRUCTURAL INTEGRITY OCCURRED AS A RESULT OF THE TEMPERATURE DEVIATION. TRAINING WAS CONDUCTED FOR ALL LICENSED OPERATORS PRIOR TO ASSUMING SHIFT DUTIES BEFORE THE NEXT STARTUP. ENHANCEMENTS FOR CLARITY PURPOSES WERE MADE TO THE OPERATING PROCEDURE.

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FORM 82 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
387 1989 005 0 8903160019 213318 02/07/89

ABSTRACT

POWER LEVEL - 000%. ON 2/7/89 WITH UNIT 1 IN CONDITION 2 AND WITH A NORMAL STARTUP EVOLUTION IN PROGRESS, THE 'A' CONDENSATE PUMP WAS STARTED AND AN EXTENSION ELECTRICAL TRANSIENT OCCURRED. BOTH REACTOR RECIRCULATION PUMPS TRIPPED AND THE UNIT WAS MANUALLY SCRAMMED PER PROCEDURE DUE TO LOSS OF RECIRCULATION. RECIRCULATION WAS RESTORED AND PLANT RECOVERY WAS COMPLETE WITHIN ABOUT TWO HOURS. THE EVENT HAS BEEN DETERMINED REPORTABLE PER 10CFR50.73(A)(2)(IV) IN THAT THE REACTOR WAS MANUALLY SCRAMMED AND VARIOUS CONTAINMENT ISOLATION VALVES CLOSED. THE PLANT RESPONDED TO THE ELECTRICAL TRANSIENT PER DESIGN AND THERE WAS NO COMPROMISE TO PUBLIC HEALTH OR SAFETY. EQUIPMENT FAILURE CAUSED THE ELECTRICAL TRANSIENT WHEN AN ELECTRICAL FAULT OCCURRED AT THE TERMINALS FOR THE 'A' CONDENSATE PUMP MOTOR. UNIT 1 WAS PLACED IN COLD SHUTDOWN, THE FAILED ELECTRICAL COMPONENTS WERE REPLACED, AND THE 'A' CONDENSATE PUMP WAS RETURNED TO SERVICE. THE CONNECTIONS ON THE REMAINING THREE CONDENSATE PUMP MOTORS ON UNIT 1 WERE INSPECTED AND FOUND TO BE SATISFACTORY.

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FORM 83 LER SCSS DATA 01-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
387 1989 027 0 9001250354 216614 12/24/89

ABSTRACT

POWER LEVEL - 100%. AT 0824 HOURS ON 12/24/89, UNIT 1 EXPERIENCED A REACTOR PROTECTION SYSTEM (RPS) ACTUATION RESULTING IN AN AUTOMATIC SCRAM FROM 100% POWER. A LOSS OF ELECTRICAL POWER SUPPLY (PRIMARY AND BACKUP) TO THE 230KV SWITCHYARD SERVICES RESULTED IN TRIPPING OF MAIN

THEIR TURBINE CONTROL VALVE FAST CLOSURE AS PER DESIGN. ALL MAJOR EQUIPMENT OPERATED DURING THE TRANSIENT PER DESIGN AND NO ADDITIONAL ENGINEERED SAFETY FEATURE (ESF) SYSTEMS WERE CHALLENGED. THIS EVENT HAS BEEN DETERMINED TO BE REPORTABLE PER 10CFR50.73(A)(2)(IV), IN THAT AN UNPLANNED ESF ACTUATION OCCURRED. BOTH POWER SUPPLIES TO THE 230KV SWITCHYARD WERE LOST DUE TO UNRELATED EVENTS. THE PRIMARY SOURCE WAS LOST BY A VEHICLE HITTING A POWER LINE POLE. THE BACKUP SOURCE WAS LOST DUE TO AN ELECTRICAL COMPONENT FAILURE IN THE BACKUP GENERATOR EXCITER FIELD CIRCUIT. BOTH POWER SUPPLIES WERE RESTORED TO SERVICE. A TASK FORCE IS EVALUATING THE EXISTING 230KV SWITCHYARD STATION SERVICES POWER SUPPLIES FOR RELIABILITY AND FOR CONSIDERATION OF POSSIBLE IMPROVEMENTS.

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FORM 84 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 388 1989 003 0 8904040282 213452 02/27/89

ABSTRACT

POWER LEVEL - 100%. AT 0612 ON 2-27-89, UNIT 2, OPERATING AT 100% POWER, EXPERIENCED UNPLANNED ENGINEERED SAFETY FEATURE ACTUATIONS AS A RESULT OF THE LOSS OF NORMAL POWER TO THE "B" REACTOR PROTECTION SYSTEM (RPS) BUS. THIS INTERRUPTION OF POWER, PER DESIGN, CAUSED THE STANDBY GAS TREATMENT SYSTEM AND CONTROL ROOM EMERGENCY OUTSIDE AIR SUPPLY SYSTEM TO INITIATE. ALL OTHER EQUIPMENT FUNCTIONED PER DESIGN WITH THE EXCEPTION OF THE REACTOR RECIRC PUMP "A" CHILLED WATER RETURN INBOARD PRIMARY CONTAINMENT ISOLATION VALVE, HV-2879282, WHICH FAILED TO CLOSE. INSTEAD OF EXERCISING THE OPTION OF CONTINUED OPERATION AT A REDUCED POWER LEVEL WITH THE ASSOCIATED OUTBOARD CHILLED WATER ISOLATION VALVE CLOSED, THE DECISION WAS MADE TO SHUT THE UNIT DOWN AND REPAIR THE INBOARD VALVE. A CONTROLLED SHUTDOWN WAS INITIATED AT 1410 AND COMPLETED AT 2126 ON 2/27/89. THE CAUSE OF THE POWER INTERRUPTION TO THE "B" RPS BUS WAS AN INTERNAL SHORT CIRCUIT TO GROUND IN THE "B" RPS MOTOR/GENERATOR SET MOTOR WHICH CAUSED ITS FEEDER BREAKER TO TRIP. THE MOTOR WAS REPLACED AND NORMAL POWER TO THE BUS WAS RESTORED. INABILITY OF THE AIR OPERATED CHILLED WATER ISOLATION VALVE TO CLOSE HAS BEEN ATTRIBUTED TO A FAILURE OF ITS OPERATING AIR SOLENOID CONTROL VALVE, SV-2879282. THE SOLENOID VALVE WAS REPLACED AND THE CHILLED WATER ISOLATION VALVE, HV-279282, WAS TESTED SATISFACTORILY.

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FORM 85 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 388 1990 002 0 9003070116 217094 02/06/90

ABSTRACT

POWER LEVEL - 100%. AT 0906 HOURS ON FEBRUARY 6, 1990, WITH UNIT 2 OPERATING AT 100% POWER, A MAIN GENERATOR POWER/LOAD UNBALANCE SIGNAL, CREATED WHEN THE 500 KV SWITCHYARD MAIN DISTRIBUTION BREAKER OPENED, CAUSED A MAIN TURBINE TRIP. IN ACCORDANCE WITH PLANT DESIGN, THE TURBINE CONTROL VALVES CLOSED AND AN AUTOMATIC REACTOR SCRAM OCCURRED. ALL MAJOR EQUIPMENT OPERATED PER DESIGN DURING THE TRANSIENT, ECCS SYSTEMS WERE NOT CHALLENGED AND NO ABNORMAL OPERATOR ACTIONS WERE REQUIRED TO PLACE THE UNIT IN A STABLE CONDITION. THE CAUSE OF THIS EVENT WAS ATTRIBUTED TO A LOOSE "STATES" LINK IN THE DIFFERENTIAL CURRENT RELAY CIRCUIT OF THE 500 KV SWITCHYARD CIRCUIT BREAKER WHICH CONNECTS UNIT 2 TO THE POWER GRID. HIGH CIRCUIT RESISTANCE CAUSED BY THE LOOSE CONNECTION RESULTED IN PROTECTIVE RELAY OPERATION WHICH OPENED THE 500 KV CIRCUIT BREAKER, ISOLATING THE MAIN GENERATOR FROM

LINKS ON ALL RELATED ACCESSIBLE RELAY AND
CONTROL PANELS TO CONFIRM THAT THE CONNECTIONS ARE PROPER IN ORDER TO
PRECLUDE A RECURRENCE.

FORM 86 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
388 1990 005 0 9007020128 218769 05/28/90

ABSTRACT

POWER LEVEL - 100%. AT 0256 HOURS ON 5/28/90, AN AUTOMATIC ACTUATION OF THE RPS OCCURRED ON UNIT 2. THE UNIT HAD BEEN OPERATING AT 100% RATED POWER PRIOR TO THE ACTUATION. FEEDWATER CONTROL SYSTEM TRANSMITTER PDT-C32-2N0048 FAILED DOWNSCALE WHICH RESULTED IN THE FEEDWATER MASTER CONTROLLER INCREASING TO 100% DEMAND. REACTOR WATER LEVEL INCREASED FROM THE STEADY STATE LEVEL OF +35 INCHES TO +54 INCHES. WHEN VESSEL LEVEL REACHED +54 INCHES, THE MAIN AND FEED PUMP TURBINES TRIPPED. TRIPPING OF THE MAIN TURBINE RESULTED IN A FAST CLOSURE OF THE TURBINE STOP AND CONTROL VALVES. FAST CLOSURE OF THE TURBINE STOP AND CONTROL VALVES RESULTED IN A REACTOR SCRAM. THE LOWEST VESSEL LEVEL OBSERVED DURING THE TRANSIENT WAS APPROXIMATELY -26 INCHES. THE RCIC SYSTEM WAS MANUALLY INITIATED TO RESTORE REACTOR VESSEL LEVEL TO AN ACCEPTABLE VALUE. A COMPONENT FAILURE IN THE AMPLIFIER CIRCUIT CARD FOR FEEDWATER CONTROL SYSTEM TRANSMITTER PDT-C32-2N0048 CAUSED THE TRANSMITTER TO FAIL DOWNSCALE WHICH IN TURN RESULTED IN THE FEEDWATER MASTER CONTROLLER INCREASING TO 100% DEMAND. THE EVENT HAS BEEN DETERMINED TO BE REPORTABLE PER 10CFR50.73(A)(2)(IV), IN THAT AN AUTOMATIC ACTUATION OF THE RPS OCCURRED WHEN THE FEEDWATER LEVEL TRANSMITTER FAILED. THE FAILED AMPLIFIER CIRCUIT CARD IS BEING SENT TO ROSEMOUNT TO PERFORM A FAILURE ANALYSIS TO DETERMINE EXACT CAUSE OF FAILURE.

FORM 87 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
389 1989 005 0 8908010387 214894 06/26/89

ABSTRACT

POWER LEVEL - 022%. ON JUNE 26, 1989 AT 2347 HOURS, ST. LUCIE UNIT 2 REACTOR TRIPPED ON LOSS OF LOAD FROM 22% POWER DURING TURBINE STARTUP. THE LOSS OF LOAD REACTOR TRIP WAS A RESULT OF A TURBINE TRIP DUE TO HIGH STEAM GENERATOR LEVEL IN THE 2A STEAM GENERATOR. THE TRIP WAS UNCOMPLICATED AND THE UNIT WAS QUICKLY STABILIZED IN MODE 3, HOT STANDBY. THE ROOT CAUSE OF THE EVENT WAS COGNITIVE PERSONNEL ERROR BY UTILITY- LICENSED OPERATORS DUE TO LESS THAN ADEQUATE COMMUNICATION BETWEEN THE SHIFT CREW PERFORMING THE TURBINE STARTUP EVOLUTION. THE UTILITY-LICENSED OPERATORS WERE COUNSELED ON THE NEED FOR WELL CONTROLLED EVOLUTIONS, IN WHICH GOOD COMMUNICATION IS OF THE UTMOST IMPORTANCE BY ALL PARTICIPANTS, AS A SHORT TERM CORRECTIVE ACTION. THE PLANT TRAINING GROUP WILL EVALUATE THIS EVENT TO DETERMINE APPROPRIATE TRAINING REQUIREMENTS AND METHODS.

FORM 88 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
389 1989 007 0 8910310177 215708 09/23/89

ABSTRACT

OPERATOR (RCO) MANUALLY REDUCED MAIN TURBINE LOAD TO MATCH REACTOR POWER. AT 0613, AS THE CONTROL RODS WERE BEING INSERTED, FOUR CEAS IN REGULATING GROUP 5, THE LEAD BANK, DROPPED IN THE CORE. THE RCO IMMEDIATELY TRIPPED THE REACTOR FROM 96% POWER DUE TO THE MULTIPLE DROP CEAS. THE STANDARD POST TRIP ACTIONS WERE COMPLETED AND THE UNIT WAS QUICKLY STABILIZED IN HOT STANDBY, MODE 3. THE MOST PROBABLE CAUSE OF THE EVENT WAS A BLOWN FUSE CAUSING THE INITIAL DROPPED CEA. THE APPARENT CAUSE FOR THE FOUR CEAS TO DROP WAS DUE TO THE TRIPPING OF THE CEA SUBGROUP BREAKER. THE ROOT CAUSE FOR THE SUBGROUP BREAKER TRIP HAS NOT BEEN CONCLUSIVELY IDENTIFIED; HOWEVER, TESTING THE SUBGROUP BREAKER REVEALED THAT THE BREAKER TRIPPED AT A CURRENT LESS THAN DESIGNED. THE FOLLOWING CORRECTIVE ACTIONS HAVE BEEN IMPLEMENTED: REPLACED THE BLOWN FUSE AND REPLACED THE CEA SUBGROUP BREAKER.

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FORM 89 LER SCSS DATA 04-18-91
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 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 389 1990 001 0 9002230298 216923 01/14/90

ABSTRACT

POWER LEVEL - 050%. ON 1/14/90, ST. LUCIE UNIT 2 WAS IN MODE 1 AND PERFORMING POWER ASCENSION TOWARDS 100% POWER FOLLOWING A REACTOR STARTUP FROM A MAINTENANCE OUTAGE. TURBINE STARTUP PROCEDURE WAS BEING UTILIZED. THE 2B STEAM GENERATOR FEED PUMP AND 2B CONDENSATE PUMP WERE IN SERVICE. REACTOR POWER WAS APPROACHING 50% WITH THE TURBINE POWER INCREASING AT 4.0 MEGAWATTS PER MINUTE WHEN THE 2B STEAM GENERATOR FEED PUMP LOW SUCTION PRESSURE ALARM WAS RECEIVED. UTILITY LICENSED OPERATORS ATTEMPTED TO START THE 2A CONDENSATE PUMP BUT IT WOULD NOT START. THE 2B STEAM GENERATOR FEED PUMP TRIPPED ON LOW SUCTION PRESSURE. PUMP WAS UNABLE TO BE RESTARTED. THE STEAM GENERATOR WATER LEVELS DECREASED TO THE AUTOMATIC TRIP SETPOINT AND THE UNIT AUTOMATICALLY TRIPPED AT 2323. THE 2C AFW PUMP TRIPPED ON OVERSPEED UPON RECEIVING AN AFW ACTUATION SIGNAL. STANDARD POST TRIP ACTIONS WERE PERFORMED AND THE UNIT WAS STABILIZED IN MODE 3. THE SECOND CONDENSATE PUMP COULD NOT BE STARTED PRIOR TO THE TRIP BECAUSE ITS CONTROL FUSES HAD NOT BEEN RE-INSTALLED FOLLOWING OUTAGE WORK. PROCEDURES HAVE BEEN CHANGED TO ENSURE THE AVAILABILITY OF THE SECOND CONDENSATE AND FEEDWATER PUMP FURTHER IN ADVANCE OF BEING NEEDED AND TO CLARIFY THE POWER ASCENSION PROCEDURE. A COGNITIVE PERSONNEL ERROR BY UTILITY LICENSED OPERATORS LED TO THE AUTOMATIC REACTOR TRIP.

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FORM 90 LER SCSS DATA 04-18-91
 0*****
 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 395 1989 006 0 8905100159 213964 04/01/89

ABSTRACT

POWER LEVEL - 030%. ON 4/1/89 AT 0447 HOURS WITH THE PLANT OPERATING AT APPROX. 30% POWER, A TURBINE TRIP OCCURRED AS A RESULT OF HIGH MOISTURE SEPARATOR REHEATER LEVEL. FEEDWATER TEMPERATURE DROPPED BELOW THE FEEDWATER ISOLATION SETPOINT ON ALL 3 STEAM GENERATORS DUE TO THE LOSS OF FEEDWATER HEATING RESULTING FROM THE TURBINE TRIP. APPROXIMATELY 30 MINUTES AFTER THE TURBINE TRIP, WITH ACTUAL FEEDWATER FLOW AS EXPECTED FOR 30% POWER, INDICATED FLOW TO "C" STEAM GENERATOR BEGAN DRIFTING DOWN. WHEN THE TRANSMITTER INDICATED FEEDWATER FLOW WAS BELOW THE ISOLATION SETPOINT, THE "C" FEEDWATER ISOLATION VALVE CLOSED ON LOW FLOW COINCIDENT WITH LOW TEMPERATURE SIGNALS. STEAM GENERATOR WATER LEVEL BEGAN DECREASING AND APPROXIMATELY TWO MINUTES

THESE MALFUNCTIONS WERE RESPONSIBLE FOR THE CONFLICTS SEEN BETWEEN ACTUAL PLANT CONDITIONS AND INDICATED DATA DURING EACH TURBINE TRIP.

FORM 91 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 395 1989 011 1 9002010227 216654 05/28/89

ABSTRACT

POWER LEVEL ~ 100%. AT 0252 HOURS, 5/28/89, A MANUAL REACTOR TRIP WAS INITIATED FOLLOWING THE FAILURE OF A PRESSURIZER SAFETY VALVE. THE VALVE (XVS-8010-C) BECAME UNSEATED CAUSING A RAPID DEPRESSURIZATION OF THE REACTOR COOLANT SYSTEM. THE MANUAL REACTOR TRIP WAS INITIATED AT APPROXIMATELY 2000 PSIG AND THE SAFETY VALVE RESEATED PRIOR TO REACHING THE SAFETY INJECTION SETPOINT OF 1850 PSIG. THE REACTOR COOLANT SYSTEM PRESSURE RECOVERED AND WAS STABILIZED AT APPROXIMATELY 2000 PSIG. DURING THE TRANSIENT, A CONDENSER STEAM DUMP VALVE FAILED TO CLOSE AND AN OPERATOR HAD TO FAIL THE AIR TO THE VALVE FOR CLOSURE. PRESSURIZER SAFETY VALVES (XVS-8010-B AND C) WERE REPLACED AND THE REACTOR WAS RESTARTED AT 0049 HOURS, JUNE 11, 1989. NOTE: VALVE 8010 B WAS REPLACED DUE TO MINOR LEAKAGE PAST THE SEAT. THE LICENSEE HAS DETERMINED THAT THE REASON FOR THE MISOPERATION OF XVS-8010-C IS THAT THE EXPECTED MARGIN BETWEEN NORMAL OPERATING PRESSURE AND THE PRESSURIZER SAFETY VALVE RELIEF SETPOINT PRESSURE WAS REDUCED TO ZERO. IT WAS ALSO DETERMINED THAT THE MOST PREVALENT FACTOR IN THIS MARGIN REDUCTION WAS A LOOP SEAL DISCHARGE. THIS DISCHARGE RESULTED IN A REDUCED VALVE SETPOINT BECAUSE OF THE STEAM MEDIUM IMPOSED ON THE VALVE. AS SUCH, THE LICENSEE IS FOCUSING THE CORRECTIVE ACTION PLAN ON THE ELIMINATION OF LOOP SEAL CAPABILITY FOR THE PRESSURIZER SAFETY VALVES. SIMILAR EVENT: 395/89-015.

FORM 92 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 395 1989 012 0 8908140351 215002 07/11/89

ABSTRACT

POWER LEVEL ~ 100%. ON JULY 11, 1989, A TURBINE TRIP/REACTOR TRIP OCCURRED WHILE OPERATING AT 100% REACTOR POWER. TECHNICIANS WORKING INSIDE THE "GENERATOR STATOR COOLING WATER" CABINET INADVERTENTLY SHORTED THE POWER LEADS ON THE TEMPERATURE CONVERTER CAUSING THE AC POWER FUSE TO BLOW. THIS GAVE A FALSE INDICATION OF LOSS OF GENERATOR STATOR COOLING WATER WHICH CAUSED A TURBINE TRIP AND A REACTOR TRIP DUE TO THE TURBINE TRIPPING ABOVE 50% REACTOR POWER. IN ADDITION TO THE AFOREMENTIONED LOSS, THREE OTHER GENERATING STATIONS TRIPPED WHILE ATTEMPTING TO COMPENSATE FOR THE VARS LOST ON THE GRID WITH THE TURBINE TRIP/REACTOR TRIP. AS A RESULT OF THE LOSS OF FOUR GENERATING STATIONS, THE OFFSITE VOLTAGE TO THE ENGINEERING SAFETY FEATURE (ESF) BUSES DECREASED BELOW THE MINIMUM ACCEPTABLE VALUE AND A NOTIFICATION OF UNUSUAL EVENT (NUE) WAS DECLARED AT 1510 HOURS. THE LICENSEE'S DISPATCHERS IMMEDIATELY TOOK ACTION TO PLACE ADDITIONAL GENERATING UNITS ON-LINE. BOTH EMERGENCY DIESEL GENERATORS CAME ON-LINE AND SUPPLIED THEIR RESPECTIVE ESF BUSES. THE OFFSITE VOLTAGE TO THE ESF

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FORM 93 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
395 1989 015 2 8912270294 216225 08/25/89

ABSTRACT

POWER LEVEL - 100%. AT 1000 HOURS ON AUGUST 25, 1989, THE "A" PRESSURIZER SAFETY VALVE BODY INLET TEMPERATURE INCREASED TO GREATER THAN 450F AND A PLANT SHUTDOWN WAS INITIATED. SHORTLY AFTER THE LOAD REDUCTION WAS STARTED, THE "A" PRESSURIZER SAFETY VALVE OPENED AT A SYSTEM PRESSURE OF APPROXIMATELY 2260 PSIG. AT 1003 HOURS, THE ACOUSTIC LEAK MONITOR ALARMED, THE REACTOR COOLANT SYSTEM (RCS) BEGAN TO RAPIDLY DEPRESSURIZE AND AT APPROXIMATELY 1004 HOURS THE SHIFT SUPERVISOR DIRECTED A MANUAL REACTOR TRIP. THE PRESSURIZER SAFETY VALVE RESEATED PRIOR TO REACHING THE SAFETY INJECTION SETPOINT OF 1850 PSIG. ALL PLANT PARAMETERS RECOVERED TO THEIR EXPECTED POST TRIP VALUES EXCEPT RCS PRESSURE WHICH WAS CONTROLLED AROUND 2000 PSIG TO AVOID LIFTING THE SAFETY VALVE AGAIN. THE PLANT WAS TAKEN TO COLD SHUTDOWN, THE "A" PRESSURIZER SAFETY VALVE REPLACED, AND THE REACTOR WAS RESTARTED AT 0635 HOURS ON SEPTEMBER 1, 1989. FURTHER INVESTIGATION BY THE LICENSEE HAS SHOWN THAT A LOSS OF LOOP SEAL ON THE "A" PRESSURIZER SAFETY VALVE WAS THE CAUSE OF THE VALVE'S MISOPERATION. LER 89-011, DATED JUNE 27, 1989, DOCUMENTS A SIMILAR EVENT INVOLVING THE "C" PRESSURIZER SAFETY VALVE. THE LICENSEE HAS DETERMINED THAT A LOSS OF LOOP SEAL WAS A CONTRIBUTING FACTOR IN THE EVENT AND WILL SUBMIT THIS FINDING IN A SUPPLEMENTAL REPORT. THE EXPECTED SUBMISSION DATE OF THIS REPORT IS JANUARY 3, 1990.

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FORM 94 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
395 1989 020 0 9001100063 216412 12/02/89

ABSTRACT

POWER LEVEL - 100%. ON 12/2/89, AT APPROX. 2202 HOURS, OPERATIONS PERSONNEL STARTED A LOAD REDUCTION TO 90% POWER FOR THE MONTHLY TURBINE CONTROL VALVE TESTING. WHEN THE OPERATOR PUSHED THE LOAD SELECTOR DECREASE BUTTON FOR THE SECOND 2% REDUCTION IN POWER THE TURBINE COMMENCED A RAPID POWER DECREASE (2209 HOURS). OPERATIONS PERSONNEL ATTEMPTED TO COUNTER LOSS OF-LOAD BY SELECTING MANUAL INCREASE; HOWEVER, TURBINE CONTROLS FAILED TO RESPOND AND THE TURBINE WAS MANUALLY TRIPPED WHEN TURBINE POWER DECREASED BELOW P-9 (POWER PERMISSIVE < 50% RATED THERMAL POWER). THE EXCITER FIELD BREAKER INITIALLY FAILED TO OPEN FROM THE MAIN CONTROL BOARD (MCB). AN OPERATOR WAS IMMEDIATELY DISPATCHED TO LOCALLY OPEN THE BREAKER. THE BREAKER FINALLY OPENED AFTER SEVERAL ATTEMPTS TO CYCLE THE BREAKER FROM THE MCB. MAIN FEEDWATER WAS MANUALLY SECURED AT 2220 HOURS WHEN THE TURBINE RUNBACK TRANS IENT CAUSED A HIGH LEVEL IN THE DEAREATER. WHEN MAIN FEEDWATER WAS RESTORED AT 2221 HOURS, THE ADDITION OF COOLER (290F) WATER CAUSED A RAPID RCS COOLDOWN AND STEAM GENERATOR LEVELS TO SHRINK TO BELOW THE LOW-LOW STEAM GENERATOR LEVEL REACTOR TRIP SETPOINTS. A REACTOR TRIP OCCURRED AT 2222 HOURS ON "C" STEAM GENERATOR LOW-LOW LEVEL. WITH THE EXCEPTION OF THE PREVIOUSLY MENTIONED PROBLEMS THE PLANT RESPONSE WAS NORMAL. A FAILED TURBINE CONTROL CIRCUIT BOARD WAS REPLACED AND THE EXCITER FIELD BREAKER PM'D PRIOR TO AUTHORIZING THE PLANT RESTART.

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
397 1989 002 0 8903130165 213225 01/30/89

ABSTRACT

POWER LEVEL - 100%. ON 1/30/89, AT 0514 HRS, A REACTOR SCRAM OCCURRED DUE TO TURBINE CONTROL VALVE FAST CLOSURE ACTUATION OF THE REACTOR PROTECTIVE SYSTEM LOGIC. THIS LOGIC WAS ACTUATED WHEN THE MAIN GENERATOR 500KV OUTPUT BREAKERS TRIPPED AS A RESULT OF HIGH CURRENTS CREATED WHEN A PORCELAIN INSULATOR ON THE OUTPUT SIDE OF 25/500KV MAIN TRANSFORMER TR-M1 SHORTED TO GROUND. PLANT OPERATORS RESPONDED TO MANEUVER THE PLANT TO A SAFE SHUTDOWN CONDITION. THE DAMAGED 500KV INSULATOR STACK WAS REPLACED. ALL OTHER 500KV AND 115KV INSULATORS IN THE TRANSFORMER YARD WERE CLEANED AND INSPECTED. TRANSFORMER TR-M1 WAS TESTED TO DETERMINE ITS ACCEPTABILITY FOR CONTINUED USE. THE IMMEDIATE CAUSE OF THE INSULATOR FAILURE WAS THE BUILD UP OF A CHEMICAL RESIDUE DEPOSITED BY THE VAPOR PLUME FROM THE CIRCULATING WATER SYSTEM COOLING TOWERS. THIS RESIDUE WAS FOUND TO BE CONDUCTIVE WHEN WET. THE RESIDUE CONSISTED OF RIVER WATER MINERALS AND SULFATE COMPOUNDS GENERATED BY SULFURIC ACID ADDITION USED TO CONTROL THE PH OF CIRCULATING WATER. TWO ROOT CAUSES WERE IDENTIFIED: 1) EQUIPMENT DESIGN DEFICIENCY (PROBLEM NOT ANTICIPATED). THE INSULATORS USED AT WNP-2 ARE NOT OF THE TYPE OR NUMBER RECOMMENDED FOR CONTAINMENTED ENVIRONMENTS. 2) EQUIPMENT MAINTENANCE DEFICIENCY. NO FORMAL MAINTENANCE/INSPECTION PROGRAM EXISTED WHICH IDENTIFIED THIS EQUIPMENT.

FORM 96 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
397 1989 028 0 8908080199 214963 06/29/89

ABSTRACT

POWER LEVEL - 025%. 6/29/89, AT 0020 HOURS, DURING TESTING OF THE MAIN TURBINE OVERSPEED PROTECTION TROLLER (OPC), A TURBINE THROTTLE VALVE CLOSURE REACTOR SCRAM OCCURRED. AT THE TIME OF THE SCRAM, THE TURBINE WAS OPERATING IN THROTTLE VALVE CONTROL COASTING DOWN FROM THE ACTUATION SETPOINT OF 1854 RPM. AFTER 3 UNSUCCESSFUL ATTEMPTS TO INPUT AN 1800 SPEED DEMAND, THE OPERATOR DECIDED TO WAIT UNTIL ACTUAL TUPBINE SPEED HAD DROPPED BELOW 1800 RPM TO TRY AGAIN. AFTER TURBINE SPEED DROPPED BELOW 1800 RPM, THE OPERATOR KEYED IN ANOTHER 1800 RPM REFERENCE DEMAND AT 50 RPM PER MINUTE AS SPECIFIED IN THE PROCEDURE. THIS INPUT WAS ACCEPTED BY THE TURBINE CONTROL SYSTEM. THE OPERATOR, AS EXPECTED BY THE PROCEDURE, THEN RETURNED TURBINE CONTROL TO THE "IN SERVICE" POSITION WITH THE OPC KEYLOCK SWITCH. THIS RESULTED IN RAPID OPENING OF THE TURBINE GOVERNOR AND THROTTLE VALVES AND SUBSEQUENT PRESSURIZATION OF THE TURBINE FIRST STAGE CHAMBER SINCE THROTTLE VALVES WERE LESS THAN 95% OPEN AT THIS POINT, THIS CAUSED ACTUATION OF THE TURBINE FIRST STAGE PRESSURE SWITCHES CAUSING THE SCRAM LOGIC TO BE MET RESULTING IN A TURBINE THROTTLE VALVE CLOSURE REACTOR SCRAM. THE ROOT CAUSE OF THE EVENT WAS AN INADEQUATE PROCEDURE IN THAT THE TURBINE OPERATING PROCEDURE DID NOT PREVENT THE OPC TEST FROM BEING DONE WITH THE TURBINE IN THE THROTTLE VALVE CONTROL MODE. CORRECTIVE ACTIONS TAKEN CONSIST OF DEVIATION OF THE OPERATING PROCEDURE.

FORM 97 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
397 1989 031 0 8909190149 215274 03/06/89

POWER LEVEL - 100%. AT 2027 HOURS ON 8/6/89, A LOW REACTOR PRESSURE VESSEL (RPV) LEVEL REACTOR SCRAM WAS INITIATED BY THE REACTOR PROTECTIVE SYSTEM IN RESPONSE TO AN ACTUAL LOW WATER LEVEL CONDITION CAUSED BY AN UNPLANNED TRIP OF REACTOR FEEDWATER PUMP 1B (RFW-P-1B). SCRAM OCCURRED DURING SURVEILLANCE TESTING OF THE AUXILIARY AND EMERGENCY LUBE OIL PUMPS FOR REACTOR FEEDWATER TURBINE 1B (RFW-DT-1B) WITH THE PLANT AT 100% POWER. WHEN A SOLENOID OPERATED DRAIN VALVE WAS ACTUATED TO DEPRESSURIZE ONLY THE AUTO START PRESSURE SWITCH FOR THE AUXILIARY LUBE OIL PUMP, THE ENTIRE "B" FEEDWATER PUMP LUBE OIL SYSTEM WAS SUBJECTED TO A LOW LUBE OIL PRESSURE TRANSIENT SUFFICIENT TO CAUSE A LOW LUBE OIL TRIP OF RFW-P-1B. REMAINING FEEDWATER PUMP WAS UNABLE TO SUPPLY ENOUGH CAPACITY TO MAINTAIN RPV LEVEL ABOVE THE REACTOR SCRAM SETPOINT. ROOT CAUSE INVESTIGATION IS STILL IN PROGRESS. TWO MAJOR AREAS HAVE BEEN IDENTIFIED: 1) INAPPROPRIATE RRC FCV RUNBACK SETPOINT COUPLED WITH THE CHANGE IN FEEDWATER PUMP GOVERNOR MAXIMUM SPEED CAPABILITY; 2) INADVERTENT TRIP OF RFW-P-1B ON LOW LUBE PRESSURE DURING TESTING OF THE AUXILIARY AND EMERGENCY OIL PUMPS. CORRECTIVE ACTION CONSISTS OF REVISION OF THE OPERATING PROCEDURE FOR REACTOR FEEDWATER PUMPS TO INCORPORATE INSTRUCTION TO ENSURE THAT TEST PUSHBUTTON IS DEPRESSED FOR A SUFFICIENT LENGTH OF TIME DURING FEEDWATER TURBINE STARTUP.

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FORM 98 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 397 1989 035 0 8909220118 215277 08/17/89

ABSTRACT

POWER LEVEL - 067%. AT 0819 HOURS, ON 8/17/89, A REACTOR SCRAM OCCURRED DURING A SURVEILLANCE BEING PERFORMED ON A REACTOR LEVEL INSTRUMENT ASSOCIATED WITH THE AUTOMATIC DEPRESSURIZATION SYSTEM (ADS). THE SCRAM OCCURRED WHEN AN I&C TECHNICIAN PREMATURELY OPENED THE ISOLATION VALVE FROM THE REFERENCE INSTRUMENT LEG OF THE DEVICE BEING TESTED. THIS CAUSED A PRESSURE TRANSIENT IN THE REFERENCE AND VARIABLE INSTRUMENT LINES WHICH INITIATED A REACTOR SCRAM BY THE REACTOR PROTECTION SYSTEM (RPS) ON REACTOR WATER LEVEL LOW - LEVEL 3. THE ROOT CAUSE OF THIS EVENT WAS A PERSONNEL ERROR AND EQUIPMENT DESIGN DEFICIENCY. IMMEDIATE CORRECTIVE ACTION INCLUDED PLANT SHUT DOWN TO HOT STANDBY AND A MEMO FROM THE PLANT MAINTENANCE MANAGER SUMMARIZING IMMEDIATE CORRECTIVE ACTIONS. FURTHER CORRECTIVE ACTION INCLUDES IMPROVED TRAINING AND INCREASED VISIBILITY FOR "CRITICAL" SURVEILLANCES. A DESIGN STUDY WILL ALSO BE INITIATED TO EVALUATE THE DESIGN OF THE LEVEL TRIP SYSTEM AND ITS INTERFACING INSTRUMENTATION. SINCE ALL SAFETY SYSTEMS OPERATED AS DESIGNED AND PLANT OPERATORS ACTED PROMPTLY TO PLACE THE PLANT IN A SAFE SHUTDOWN CONDITION, THIS EVENT POSED NO THREAT TO THE HEALTH AND SAFETY OF THE PLANT PERSONNEL OR THE PUBLIC.

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FORM 99 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 397 1990 021 0 9011060294 219924 09/25/90

ABSTRACT

POWER LEVEL - 045%. AT 0557 HOURS ON SEPTEMBER 25, 1990 PLANT OPERATORS MANUALLY SCRAMMED THE REACTOR AFTER EXPERIENCING MAIN TURBINE HYDRAULIC CONTROL OIL PRESSURE PROBLEMS IN THE DIGITAL ELECTRO-HYDRAULIC (DEH) SYSTEM. THE DEH SYSTEM PROVIDES AUTOMATIC AND MANUAL CONTROL OF THE MAIN TURBINE GENERATOR BY POSITIONING THE

PORTION OF THE TURBINE LUBE OIL (TO) SYSTEM. THIS RESULTED IN A DECREASE IN PRESSURE IN THE DEH SYSTEM. THE PRELIMINARY ROOT CAUSE OF THE EVENT WAS TRACED TO THE IMPROPER INSTALLATION OF A STABILIZER STRAP THAT MAY HAVE CONTRIBUTED TO THE FAILURE. THE INSTALLATION COMBINED WITH THE UNANTICIPATED VIBRATION IN THE AREA OF THE PIPE NIPPLE LED TO FATIGUE FAILURE. IMMEDIATE CORRECTIVE ACTION WAS TAKEN TO PLACE THE PLANT IN A COLD SHUTDOWN CONDITION. ALL SYSTEMS AND COMPONENTS PERFORMED AS DESIGNED. PLANT MAINTENANCE PERSONNEL REPLACED THE BROKEN NIPPLE AND REINSTALLED THE RELIEF VALVE AND THE STABILIZER STRAP. THE EVENT POSED NO THREAT TO THE HEALTH AND SAFETY OF EITHER THE PUBLIC OR PLANT PERSONNEL.

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FORM 100 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 397 1990 031 0 9101160184 220683 12/07/90

ABSTRACT

POWER LEVEL - 100%. ON DECEMBER 7, 1990 AT 1010 HOURS, A REACTOR SCRAM OCCURRED DUE TO ACTUATION OF THE REACTOR PROTECTION SYSTEM (RPS) LOGIC. THE INITIATING SCRAM SIGNAL WAS "TURBINE GOVERNOR VALVE FAST CLOSURE" DUE TO A MAIN TURBINE/GENERATOR TRIP WITH REACTOR POWER GREATER THAN 30 PERCENT. THE LOGIC WAS ACTUATED WHEN THE MAIN GENERATOR 500 KV OUTPUT BREAKERS TRIPPED AS A RESULT OF HIGH CURRENTS CREATED WHEN A PROCELAIN INSULATOR IN THE TRANSFORMER YARD SHORTED TO GROUND. THE INSULATOR IS ON THE OUTPUT SIDE OF 25/500 KV MAIN TRANSFORMER TR-M2 ("B" PHASE). THE ELECTRICAL FAULT (FLASHOVER) WAS DUE TO CIRCULATING WATER (CW) SYSTEM COOLING TOWER WATER CHEMICAL DEPOSITS HAVING BUILT UP ON THE INSULATOR, WITH WET AND ICING CONDITIONS CONTRIBUTING TO PROVIDE A CONDUCTIVE PATH OVER THE SURFACE OF THE INSULATOR. AT 1019 HOURS, AN "UNUSUAL EVENT" WAS DECLARED AS DIRECTED BY THE EMERGENCY CLASSIFICATION PROCEDURE DUE TO THE RESULTING FAULT-CAUSED EXPLOSION WITHIN THE PROTECTED AREA (TRANSFORMER YARD) AT 1030 HOURS, THE REACTOR SCRAM WAS RESET AND, AT 1100 HOURS, THE "UNUSUAL EVENT WAS TERMINATED. THE ROOT CAUSES OF THIS EVENT WERE: 1) A LESS THAN ADEQUATE CORRECTIVE ACTION PLAN PERTAINING TO THE SCHEDULE AND SCOPE FOR INSPECTING AND CLEANING THE 500 KV INSULATORS, AND 2) A LESS THAN ADEQUATE PLANT DESIGN.

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FORM 101 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 400 1989 001 2 8903270363 213384 01/16/89

ABSTRACT

POWER LEVEL - 100%. THE PLANT WAS OPERATING IN MODE 1, POWER OPERATION, AT 100% REACTOR POWER ON 1/16/89. PLANT PERSONNEL WERE IN THE PROCESS OF REMOVING A CLEARANCE ON A VALVE IN THE AUX. STEAM CONDENSATE TANK VENT LINE SYSTEM TO THE MAIN CONDENSER. DURING THE COURSE OF THE RESTORATION A DIRECT VENT PATH TO THE ATMOSPHERE FROM THE MAIN CONDENSER WAS ESTABLISHED DUE TO A MISPOSITIONED VALVE AND RESULTED IN A RAPID LOSS OF CONDENSER VACUUM. A REDUCTION OF TURBINE LOAD ENSUED AND A TURBINE TRIP OCCURRED AT 1518 HOURS DUE TO LOW CONDENSER VACUUM. THE TURBINE TRIP WAS IMMEDIATELY FOLLOWED BY AN AUTOMATIC REACTOR TRIP AND A PLANT SHUTDOWN. THE AUX. FEEDWATER SYSTEM ACTUATED ON STEAM GENERATOR LO-LO LEVEL TO MAINTAIN WATER LEVELS AND THE MAIN STEAM ISOLATION VALVES WERE CLOSED TO LIMIT PLANT COOLDOWN AND THE PLANT WAS STABILIZED IN MODE 3, HOT STANDBY. THE CAUSE OF THE EVENT WAS PERSONNEL ERROR IN NOT HAVING A SHIFT FOREMAN

PERSONNEL HAVE BEEN COUNSELLED. THE EVENT HAS BEEN DISCUSSED STRESSING THE NEED FOR GOOD WORKING PRACTICES. A SHIFT FOREMAN CLEARANCE PLACED ON THE MANUAL VALVE, AND REPAIR TO THE MOTOR OPERATED VALVE WILL BE COMPLETED.

FORM 102 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
400 1989 003 0 8903210164 213320 02/06/89

ABSTRACT

POWER LEVEL - 100%. ON 2/6/89, WITH THE PLANT OPERATING AT 100% POWER, AT 0008 THE SHAFT OF THE A MAIN FEEDWATER PUMP (MFP) SHEARED, CAUSING A SUDDEN REDUCTION IN FEEDWATER FLOW TO THE STEAM GENERATORS. WITHIN SECONDS THE MFP TRIPPED, CAUSING A TURBINE RUNBACK. THE OPERATORS TOOK MANUAL CONTROL OF THE FEEDWATER REGULATING VALVES AND ATTEMPTED TO RAISE STEAM GENERATOR LEVELS, BUT THE REACTOR TRIPPED ON LOW STEAM GENERATOR LEVEL APPROXIMATELY ONE MINUTE AFTER THE TRANSIENT BEGAN. THE PLANT RESPONSE TO THE REACTOR TRIP WAS NORMAL, WITH ALL AUXILIARY FEEDWATER PUMPS AUTOMATICALLY STARTING TO MAINTAIN STEAM GENERATOR LEVELS, AND THE OPERATOR MANUALLY CLOSING THE MAIN STEAM ISOLATION VALVES TO CONTROL THE PRIMARY PLANT COOLDOWN. THE MAIN GENERATOR EXCITER FIELD BREAKER DID NOT TRIP OPEN, AND WAS OBSERVED TO BE SMOKING. THE BREAKER WAS LOCALLY OPENED AND AN EXTINGUISHER USED ON THE BREAKER TO PREVENT IGNITION. THE EXCITER FIELD BREAKER WAS FOUND TO HAVE A BURNED OUT TRIP COIL WHICH WAS SUBSEQUENTLY REPAIRED. THE MFP SHAFT WAS FOUND TO BE SHEARED NEAR THE COUPLING BETWEEN THE PUMP AND THE COUPLING. THE DAMAGED SHAFT WAS SENT TO A COMPANY LABORATORY, AND THE PRELIMINARY CAUSE WAS DETERMINED TO BE LONG TERM CYCLIC FATIGUE. THE EVENT CAUSED INTERNAL DAMAGE TO THE PUMP MOTOR, AS WELL AS MINOR MISSILE DAMAGE TO COMPONENTS IN THE NEAR VICINITY.

FORM 103 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
400 1989 004 0 8903160060 213321 02/07/89

ABSTRACT

POWER LEVEL - 047%. THE PLANT WAS OPERATING IN MODE 1, POWER OPERATION, WITH MAIN FEEDWATER TRAIN "B" IN SERVICE AT 47% REACTOR POWER. AT 1055 ON 2/7/89, THE SUDDEN LOSS OF ALL 3 CIRCULATING WATER PUMPS (CWPS) RESULTED IN THE LOSS OF ALL FLOW TO THE MAIN CONDENSER. THE PLANT TRIPPED AT 1058 AS A RESULT OF A SUDDEN LOSS OF VACUUM IN THE MAIN CONDENSER. THE LOW PRESSURE TURBINE RUPTURE DISKS RUPTURED AS DESIGNED, A RESULT OF THE LOSS OF VACUUM IN THE MAIN CONDENSER. THE AUXILIARY FEEDWATER SYSTEM ACTUATED SUBSEQUENT TO THE REACTOR TRIP AS A RESULT OF TRIP OF THE ONLY OPERATING MAIN FEEDWATER PUMP. MAIN STEAM ISOLATION VALVES WERE CLOSED TO LIMIT PLANT COOLDOWN AND THE PLANT STABILIZED IN HOT STANDBY (MODE 3). THIS EVENT WAS CAUSED BY AIR ENTERING THE CWP'S SEAL WATER SYSTEM AND CAUSING THE PUMPS TO TRIP ON LOSS OF SEAL FLOW. AIR ENTERED THE SEAL WATER SYSTEM DUE TO A FAILURE IN THE LEVEL CONTROL SYSTEM FOR THE POTABLE WATER HYDROPNEUMATIC TANK. CORRECTIVE ACTIONS INCLUDED REPAIRING FAILED COMPONENTS IN THE POTABLE WATER SYSTEM, REPLACING THE RUPTURE DISKS FOR THE TURBINE, IDENTIFYING ADDITIONAL MODIFICATIONS FOR THE SEAL WATER SYSTEM AND THE POTABLE WATER SYSTEM. ALL SYSTEMS FUNCTIONS AS EXPECTED. THIS EVENT IS REPORTED IN ACCORDANCE WITH 10CFR50.73(A)(2)(IV) AS AN ENGINEERED SAFETY FEATURE ACTUATION AND A REACTOR PROTECTION SYSTEM ACTUATION.

FORM 104 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 400 1989 005 0 8903280293 213385 02/22/89

ABSTRACT

POWER LEVEL - 100%. ON 2/22/89, AT 1314, WITH THE PLANT AT 100% POWER AND 878 NET MWE, A REACTOR TRIP ON LOW STEAM GENERATOR LEVEL COINCIDENT WITH STEAM/FEEDWATER FLOW MISMATCH OCCURRED DURING THE PERFORMANCE OF A CALIBRATION TEST PROCEDURE FOR STEAM GENERATOR LEVEL CHANNEL L-474. THE SECTION OF THE PROCEDURE BEING PERFORMED CAUSED AN ISOLATION OF FEEDWATER TO A STEAM GENERATOR, CAUSING THE STEAM/FEED FLOW MISMATCH. A LOW LEVEL SIGNAL WAS ALREADY PRESENT WHEN THE CHANNEL WAS REMOVED FROM SERVICE FOR THE TEST, SO THE TRIP SIGNAL OCCURRED ALMOST IMMEDIATELY AFTER THE ISOLATION VALVES CLOSED. THE PLANT WAS STABILIZED IN HOT STANDBY AT 557F AFTER THE TRIP, WITH ALL 3 AUX. FEEDWATER PUMPS AUTOMATICALLY STARTING DUE TO LOW STEAM GENERATOR LEVELS. THE CAUSE OF THE TRIP WAS PERFORMANCE OF A SECTION OF THE PROCEDURE INTENDED TO BE CONDUCTED DURING SHUTDOWN. CAUTIONS IN THE PROCEDURE, INTENDED TO ALERT PERSONNEL OF THE IMPACT ON PLANT OPERATION, WERE REVIEWED BY THE TECHNICIANS, AND BY THE OPERATORS ON SHIFT INCLUDING THE SHIFT FOREMAN, BUT THE CAUTIONS WERE NOT SUFFICIENTLY EXPLICIT TO BE UNDERSTOOD BY THESE INDIVIDUALS. THE PLANT WAS RETURNED TO SERVICE AT 2255 OF THE SAME DAY. THE PROCEDURES WHICH TEST THE FEEDWATER CONTROL LOGIC WILL BE REVISED TO ENSURE EXPLICIT INSTRUCTIONS ARE PROVIDED AS TO THE EFFECT ON PERFORMANCE OF THE TEST ON THE FEEDWATER VALVE LINEUP.

FORM 105 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 400 1989 006 0 8904240141 213680 03/14/89

ABSTRACT

POWER LEVEL - 100%. THE PLANT WAS OPERATING AT FULL POWER PRODUCING 890 NET MWE ON 3/14/89. FIRE PROTECTION TECHNICIANS HAD DIFFICULTY IN RESETTLING THE FIRE SYSTEM DELUGE VALVE THAT SUPPLIES THE SPRINKLER SYSTEM OVER THE MAIN FEEDWATER PUMPS (MFPS). THEIR SUBSEQUENT ACTIONS RESULTED IN A SMALL AMOUNT OF WATER BEING SPRAYED ON THE "B" MFP. SHORTLY AFTERWARD, AN INTERNAL SHORT OCCURRED IN THE MOTOR JUNCTION BOX. THE ENERGY FROM THE SHORT BLEW THE DOOR FROM JUNCTION BOX. THE PLANT CONTROLS AUTOMATICALLY RESPONDED AS DESIGNED BUT THE REACTOR TRIPPED ON LOW LEVEL IN THE "A" STEAM GENERATOR APPROX. 71 SECONDS AFTER THE "B" MFP TRIP. DAMAGE WAS CONFINED TO THE MOTOR LEAD CONNECTIONS AND STEAM PLANT PERFORMANCE INSTRUMENT TUBING IN THE TRAJECTORY OF THE JUNCTION BOX DOOR. THE PLANT TRIP WAS CAUSED BY PLANT DESIGN CONSIDERATIONS. THE SHORTING OF "B" MFP MOTOR LEAD WAS DUE TO GAPS IN THE ELECTRICAL ENCLOSURE FOR THE "B" MFP MOTOR THAT ALLOWED WATER TO ENTER THE JUNCTION BOX. PREVIOUS EXPOSURE OF THE JUNCTION BOX INTERNALS TO WATER SPRAY CAUSED THE DETERIORATION OF WIRING INSULATION. THE DAMAGE TO "B" MFP WAS REPAIRED AND THE WATER TIGHTNESS OF THE "A" MFP ENCLOSURE CORRECTED. THE PROCEDURES USED BY FIRE PROTECTION PERSONNEL WILL BE REVISED AND APPLICABLE PERSONNEL RETRAINED.

FORM 106 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 400 1989 017 1 8912130259 216106 10/09/89

TRANSFORMER PHASE DIFFERENTIAL RELAY TRIPPED THE LOCKOUT RELAY OF THE MAIN GENERATOR, TRIPPING THE GENERATOR AND CAUSING A TURBINE AND REACTOR TRIP FROM 100% POWER. THE REACTOR WAS STABILIZED. ACTUATION OF THE GENERATOR AND MAIN POWER TRANSFORMER DIFFERENTIAL RELAY AND SUBSEQUENT GENERATOR TRIP WAS CAUSED BY MULTIPLE GROUND FAULTS. THE GROUND FAULTS DESTROYED THE NEUTRAL GROUNDING BUS AND CAUSED THREE FIRES: AN OIL FIRE AT THE "B" MAIN POWER TRANSFORMER, A HYDROGEN FIRE UNDERNEATH THE MG AND A THIRD SMALL OIL FIRE IN THE GENERATOR HOUSING. AN ALERT WAS DECLARED, AND THE SITE FIRE BRIGADE RESPONDED TO THE FIRES, ASSISTED LATER BY OFF SITE FIRE DEPARTMENTS. ALL FIRES APPEARED OUT BY 0145. THE INITIATOR OF THE GROUND FAULTS HAS BEEN IDENTIFIED AS ALUMINUM DEBRIS IN THE ISOLATED PHASE BUS DUCT, WHICH WAS DEPOSITED IN THE BUS DUCT FROM PREVIOUS FAILURES OF THE DUCT COOLING SYSTEM DAMPERS. ARCING FROM THE ALUMINUM DEBRIS IN THE BUS LED TO A DOUBLE PHASE TO GROUND FAULT AT THE "B" MAIN POWER TRANSFORMER. MAGNETIC FORCES FROM THIS FAULT BROKE INSULATORS IN "A" PHASE AND "B" PHASE OF THE ISOLATED PHASE BUS DUCT. THE "A" PHASE CONDUCTOR CONTACTED THE BUS ENCLOSURE CREATING ANOTHER GROUND FAULT. THE TURBINE-DRIVEN AUXILIARY FEEDWATER PUMP STARTED AFTER REACTOR TRIP, BUT THE PUMP TRIPPED SHORTLY THEREAFTER.

FORM 107 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 400 1989 018 0 9001110187 216413 12/07/89

ABSTRACT

POWER LEVEL - 000%. THE PLANT WAS IN COLD SHUTDOWN, MODE 5, ON 12/7/89, CONTROL ROD BANK "A" WAS BEING WITHDRAWN FOR SURVEILLANCE TESTING OF THE DIGITAL ROD POSITION INDICATOR (DRPI) PER PROCEDURE OST-1112 AND ROD DROP TESTS PER PROCEDURE EST-704 TO SATISFY TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS 4.1.3.3 AND 4.1.3.4 RESPECTIVELY. AN OPERATOR MONITORING THE DRPI NOTICED THAT ROD B-10 WAS INDICATING 6 STEPS WITHDRAWN WHEN THE REST OF CONTROL BANK "A" INDICATED 12 STEPS WITHDRAWN. THE CONTROL BANK WAS WITHDRAWN A FEW MORE STEPS AND THIS SAME OPERATOR NOTICED THAT ROD B-10 INDICATED IT WAS AT THE BOTTOM, WHILE THE REST OF THE CONTROL BANK INDICATED 18 STEPS ON DRPI. THE OPERATOR INFORMED THE REACTOR OPERATOR WHO IMMEDIATELY OPENED THE REACTOR TRIP BREAKERS AS REQUIRED PER OST-1112 FOR ABNORMAL ROD MOVEMENT. ALL RODS INSERTED AND ALL SYSTEMS RESPONDED AS REQUIRED. THE CAUSE OF THE EVENT WAS DUE TO A CABLE FAILURE ON DRPI DATA TRAIL "B" FOR ROD B-10.

FORM 108 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 410 1989 009 0 8906020268 214170 04/22/89

ABSTRACT

POWER LEVEL - 100%. ON APRIL 22, 1989 AT 1941 HOURS, NINE MILE POINT UNIT 2 (NMP2) EXPERIENCED A REACTOR SCRAM AS A RESULT OF A NEUTRON MONITORING SYSTEM TRIP. SPECIFICALLY, WHEN PREPARING TO PERFORM WEEKLY TURBINE BACKUP OVERSPEED TRIP TESTING AN OPERATOR KEYED A RADIO WITHIN THE VICINITY OF THE ELECTRO HYDRAULIC CONTROL (EHC) CABINET. THIS ACTION CAUSED EHC SYSTEM DISTURBANCES RESULTING IN INADVERTENT MOVEMENTS OF THE TURBINE CONTROL AND BYPASS VALVES. THIS MALFUNCTION CREATED A PRESSURE SPIKE WHICH CAUSED ALL SIX AVERAGE POWER RANGE MONITORS (APRMS) TO EXCEED THEIR UPSCALE TRIP SETPOINT. AT THE TIME OF THE EVENT REACTOR POWER WAS AT 100% RATED THERMAL POWER. THE ROOT

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POTENTIAL PROBLEMS WITH RADIO USE; (2) INSTALLATION OF PERMANENT CAUTION SIGNS AT EACH ENTRANCE TO THE RELAY ROOM; AND (3) ISSUANCE OF A MEMORANDUM FROM THE STATION SUPERINTENDENT TO ALL STATION PERSONNEL CONCERNING USE OF RADIOS/BEEPERS. IN ADDITION, OTHER AREAS OF THE STATION WHICH HAVE BEEN IDENTIFIED AS RADIO TRANSMISSION SENSITIVE HAVE BEEN POSTED.

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FORM 109 LER SCSS DATA 04-18-91
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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
410 1989 014 0 8905300041 214009 04/13/89

ABSTRACT

POWER LEVEL - 100%. ON APRIL 13, 1989 AT 1101 HOURS WITH THE REACTOR MODE SWITCH IN RUN, AND THE REACTOR AT 100% RATED THERMAL POWER, NINE MILE POINT UNIT 2 EXPERIENCED A REACTOR SCRAM. THIS EVENT WAS A RESULT OF A TURBINE TRIP DUE TO THE ACTUATION OF THE GENERATOR PROTECTION CIRCUITRY. THE GENERATOR PROTECTION CIRCUITRY INITIATED A FAST TRANSFER OF HOUSE SERVICE LOADS TO THE STATION RESERVE TRANSFORMERS. ONE OF THE 13.8KV ELECTRICAL BUSES FAILED TO TRANSFER WHICH CAUSED A LOSS OF FEEDWATER. REACTOR WATER LEVEL DECREASED AS THE TURBINE CONTROL BYPASS VALVES MODULATED TO CONTROL REACTOR PRESSURE, WHICH CAUSED THE AUTOMATIC ACTUATION OF THE HIGH PRESSURE CORE SPRAY (CSH) AND REACTOR CORE ISOLATION COOLING (ICS) SYSTEMS. THE CAUSE FOR THE TURBINE TRIP WAS DETERMINED TO BE A DISCONNECTED WIRE LOCATED IN THE MAIN GENERATOR POTENTIAL TRANSFORMER CUBICAL. THIS CREATED A SIGNAL TO THE TRIPPING AND ALARM RELAYS CAUSING A TURBINE TRIP. THE CAUSE FOR THE 13.8KV BUS FAST TRANSFER FAILURE WAS DETERMINED TO BE THE POSITIVE INTERLOCKING ROLLER FOR THE BREAKER NOT FULLY ENGAGED. CORRECTIVE ACTIONS INCLUDE: (1) RELANDED THE DISCONNECTED WIRE AND TIGHTENED OTHER POTENTIAL TRANSFORMER CONNECTIONS; (2) REVISING THE ELECTRICAL MAINTENANCE PROCEDURE (N2-EPM-GMS-R693) TO CHECK CONNECTION INTEGRITY IN HIGH VIBRATION AREAS.

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FORM 110 LER SCSS DATA 04-18-91
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DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
410 1989 024 0 8910120144 215577 09/08/89

ABSTRACT

POWER LEVEL - 088%. AT 18:00:45 HOURS ON SEPTEMBER 8, 1989, WITH THE REACTOR MODE SWITCH IN "RUN" AND THE REACTOR AT 88% RATED THERMAL POWER (930 MWE), NINE MILE POINT #2 EXPERIENCED A DOWNSHIFT OF REACTOR RECIRCULATION PUMPS TO SLOW SPEED. THIS PLACED THE UNIT ABOVE THE 100% ROD LINE WITH CORE FLOW <45% (RESTRICTED AREA OF OPERATION). THE CONTROL ROOM ANNUNCIATORS NOTIFIED THE OPERATIONS PERSONNEL OF THE DOWNSHIFT. OPERATIONS PERSONNEL IMMEDIATELY PERFORMED THE REQUIRED ACTIONS PER N2-OP-29, REACTOR RECIRCULATION SYSTEM, BY PLACING THE REACTOR MODE SWITCH TO "SHUTDOWN", INITIATING A REACTOR SCRAM. OPERATIONS PERSONNEL PROCEEDED WITH SCRAM RECOVERY PER N2-OP-101C, PLANT SHUTDOWN. 10CFR50.72 NOTIFICATION WAS MADE ON SEPTEMBER 8, 1989, AT 2013. THE ROOT CAUSE FOR RECIRCULATION PUMP TRIP IS A FAILURE OF A 24 VOLT DC POWER SUPPLY (C33A-K613) WITHIN THE FEEDWATER CONTROL SYSTEM. CORRECTIVE ACTION WAS TO REPLACE THE FAULTY POWER SUPPLY.

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FORM 111 LER SCSS DATA 04-18-91
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ABSTRACT

POWER LEVEL - 054%. ON OCTOBER 13, 1989, AT 0949 HOURS NINE MILE POINT UNIT 2 (NMP2) EXPERIENCED A ACTUATION OF AN ENGINEERED SAFETY FEATURE (ESF), SPECIFICALLY AN AUTOMATIC REACTOR SCRAM AS A RESULT OF A MAIN TURBINE TRIP. AT THE TIME OF THE EVENT, THE REACTOR WAS OPERATING AT 54% RATED POWER WITH THE MODE SWITCH IN "RUN" (OPERATIONAL CONDITION 1). THE ROOT CAUSE WAS DETERMINED TO BE PERSONNEL ERROR IN THAT AN ADEQUATE EVALUATION OF PLANT IMPACT WAS NOT PERFORMED. A CONTRIBUTING CAUSE WAS FAILURE OF ADMINISTRATIVE PROCEDURES TO ADDRESS A COMPREHENSIVE PLANT IMPACT REVIEW. CONTROL ROOM OPERATORS CARRIED OUT IMMEDIATE CORRECTIVE ACTIONS. OTHER CORRECTIVE ACTIONS INCLUDE REVISION OF PLANT IMPACT EVALUATION FORM AND REPAIR OF MOTOR GENERATOR LOGIC CIRCUIT. THE RESPONSIBLE CHIEF SHIFT OPERATOR (CSO) WAS DIRECTED TO WRITE A SPECIAL REPORT CONCERNING THIS EVENT. MEETINGS WERE HELD TO STRESS THE IMPORTANCE OF PLANT IMPACT EVALUATIONS. ADMINISTRATIVE PROCEDURES WILL BE REVISED. A LESSONS LEARNED TRANSMITTAL WILL BE ISSUED.

FORM 112 LER SCSS DATA 04-18-91

DOCKET	YEAR	LER NUMBER	REVISION	DCS NUMBER	NSIC	EVENT DATE
410	1989	036	0	8911220160	215896	10/18/89

ABSTRACT

POWER LEVEL - 001%. ON OCTOBER 18, 1989, AT 06:15:41 HOURS, NINE MILE POINT UNIT 2 (NMP2) EXPERIENCED AN UPSCALE TRIP OF THE INTERMEDIATE RANGE MONITORS (IRMS) RESULTING IN AN AUTOMATIC ACTUATION OF THE REACTOR PROTECTION SYSTEM (RPS) AND A FULL REACTOR SCRAM. AT THE TIME OF THE EVENT, THE REACTOR MODE SWITCH WAS IN THE START/HOT STANDBY POSITION WITH REACTOR POWER IN THE INTERMEDIATE RANGE (1%). THE ROOT CAUSE FOR THIS EVENT WAS DETERMINED TO BE INADEQUATE CONTROL OF ACTIVITIES ASSOCIATED WITH THE PLANT SHUTDOWN ON THE PART OF CONTROL ROOM PERSONNEL. A CONTRIBUTING FACTOR WAS A PROCEDURAL DEFICIENCY. CORRECTIVE ACTIONS INCLUDE (1) INSTRUCTING OPERATING SHIFT PERSONNEL ON THIS EVENT, (2) REVISING THE OPERATIONS TRAINING PROGRAM, AND (3) REVISING PLANT SHUTDOWN PROCEDURE N2-OP-101C.

FORM 113 LER SCSS DATA 04-18-91

DOCKET	YEAR	LER NUMBER	REVISION	DCS NUMBER	NSIC	EVENT DATE
410	1989	040	0	9001120007	216414	12/01/89

ABSTRACT

POWER LEVEL - 097%. ON 12/1/89, NINE MILE POINT UNIT 2 (NMP2) WAS OPERATING AT APPROX. 97% RATED THERMAL POWER WITH THE MODE SWITCH IN THE "RUN" POSITION (OPERATIONAL CONDITION 1). AT 1310 HOURS, NMP2 EXPERIENCED AN AUTOMATIC REACTOR SCRAM CAUSED BY AVERAGE POWER RANGE MONITOR (APRM) HIGH NEUTRON FLUX SIGNALS ON BOTH DIVISIONS OF THE REACTOR PROTECTION SYSTEM (RPS). AT 1313 HOURS, THE TURBINE WAS TRIPPED ON REVERSE POWER BY THE MAIN GENERATOR ANTIMOTERING DEVICE. IMMEDIATE CORRECTIVE ACTIONS WERE TAKEN BY OPERATIONS TO CARRY OUT ALL SCRAM RECOVERY ACTIONS AND TO PLACE THE PLANT IN A STABLE "HOT SHUTDOWN" MODE (OPERATIONAL CONDITION 3). OPERATIONS THEN INITIATED AN INVESTIGATION OF THE EVENT. THE IMMEDIATE CAUSE WAS A MALFUNCTION OF THE ELECTROHYDRAULIC CONTROL SYSTEM (EHC) WHICH RESULTED IN THE POWER TRANSIENT THAT CAUSED THE SCRAM. CORRECTIVE ACTION WAS TO REPLACE 3 RELAY BOARDS IN THE EHC CONTROL CIRCUIT AND CORRECT A GROUND LOOP IN THE TURBINE SPEED SENSING CIRCUIT.

FORM 114 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 410 1990 009 0 9006220191 218539 05/14/90

ABSTRACT

POWER LEVEL - 045%. ON MAY 14, 1990, AT APPROXIMATELY 2052 HOURS, WITH THE REACTOR MODE SWITCH IN THE "RUN" POSITION AND THE REACTOR OPERATING AT 100% RATED THERMAL POWER, NINE MILE POINT UNIT 2 (NMP2) WAS EXPERIENCING NUMEROUS OFF-NORMAL PLANT CONDITIONS. OPERATIONS PERSONNEL WERE RESPONDING TO SEVERAL ABNORMAL OFFGAS SYSTEM (OFG) INDICATIONS AND ALARMS, AND MAIN CONDENSER VACUUM WAS DECREASING. AT APPROXIMATELY 2058 HOURS, OPERATORS INITIATED REACTOR POWER REDUCTION IN RESPONSE TO DECREASING CONDENSER VACUUM. AT 2119 HOURS WITH REACTOR POWER AT APPROXIMATELY 45% RATED THERMAL POWER, THE REACTOR MODE SWITCH WAS PLACED IN THE "SHUTDOWN" POSITION, INITIATING A REACTOR SCRAM. THE CAUSE OF THIS EVENT WAS THE PARTIAL LOSS OF THE INSTRUMENT AIR SYSTEM (IAS) DUE TO PIPE FAILURE INDUCED BY STRESS-CORROSION CRACKING. IMMEDIATE CORRECTIVE ACTIONS INCLUDED: PERFORMING A WALKDOWN OF THE SUSPECTED BRANCH OF THE IAS TO LOCATE SOURCE OF AIR LOSS; GENERATING A WORK REQUEST TO REPLACE THE FAILED AIR LINE; AND REQUESTING A FAILURE ANALYSIS BE PERFORMED TO IDENTIFY CAUSE OF PIPE FAILURE.

FORM 115 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 410 1990 013 0 9010160051 219760 09/05/90

ABSTRACT

POWER LEVEL - 064%. ON SEPTEMBER 5, 1990, AT 0400 HOURS, WITH THE REACTOR MODE SWITCH IN "RUN" AND AT APPROXIMATELY 64% RATED THERMAL POWER (645 MWE), NINE MILE POINT UNIT 2 EXPERIENCED AN ENGINEERED SAFETY FEATURE ACTUATION. SPECIFICALLY, AN AUTOMATIC REACTOR SCRAM CAUSED BY A TURBINE GENERATOR TRIP WHICH WAS INITIATED BY A GENERATOR FIELD GROUND. THE ROOT CAUSE OF THE TURBINE GENERATOR FIELD GROUND IS BEING INVESTIGATED. THE IMMEDIATE CORRECTIVE ACTION WAS TO RESPOND TO THE REACTOR SCRAM AND TURBINE TRIP IN ACCORDANCE WITH PLANT PROCEDURES. A WORK REQUEST WAS ISSUED TO INVESTIGATE THE TURBINE GENERATOR FIELD GROUND. THE ROOT CAUSE AND THE LONG TERM CORRECTIVE ACTIONS WILL BE SUBMITTED AS A SUPPLEMENT TO THIS REPORT.

FORM 116 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 412 1989 003 0 8903220424 213272 02/12/89

ABSTRACT

POWER LEVEL - 055%. ON 2/12/89, WITH THE UNIT IN POWER OPERATION, A POWER REDUCTION FROM 90% REACTOR POWER TO 50% REACTOR POWER WAS IN PROGRESS AS PART OF END OF CORE LIFE PROGRAMS. AT 0048 HOURS, OPERATORS NOTICED ERRATIC OPERATION OF THE "C" MAIN FEEDWATER REGULATING VALVE (MFRV). THE OPERATORS PLACED THE "C" MFRV IN MANUAL TO CONTROL STEAM GENERATOR LEVEL. AT 0108 HOURS AT APPROX. 55% REACTOR POWER, THE "A" MAIN FEEDWATER PUMP WAS SHUTDOWN TO REDUCE THE PRESSURE DIFFERENTIAL ACROSS THE VALVE ALLOWING EASIER VALVE MOVEMENT AND CONTROL. AT 0120 HOURS, A TURBINE TRIP/REACTOR TRIP OCCURRED DUE TO A HIGH WATER LEVEL IN THE "C" STEAM GENERATOR. THE OPERATORS STABILIZED THE PLANT IN HOT SHUTDOWN UTILIZING THE EMERGENCY OPERATING

INCIDENT WAS ATTRIBUTED TO HYDRAULIC FORCES AND VIBRATION ACTING OVER TIME. THE MFRVS WERE ALL DISASSEMBLED, INSPECTED AND REPAIRED AS NECESSARY. THIS EVENT WAS REPORTED TO THE NUCLEAR REGULATORY COMMISSION AT 0300 HOURS, IN ACCORDANCE WITH 10CFR50.72.8.2.II. THERE WERE NO SAFETY IMPLICATIONS TO THE PUBLIC AS A RESULT OF THIS EVENT. THIS TYPE OF EVENT HAS PREVIOUSLY BEEN ANALYZED AS STATED IN THE UPDATED FINAL SAFETY ANALYSIS REPORT, SECTION 15.1.2, "FEEDWATER SYSTEM MALFUNCTIONS CAUSING AN INCREASE IN FEEDWATER FLOW".

FORM 117 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
412 1989 018 0 8906300033 214477 05/27/89

ABSTRACT

POWER LEVEL - 000%. ON 5/27/89, THE PLANT WAS IN HOT STANDBY, PREPARING TO ENTER THE STARTUP MODE. THE REACTOR TRIP BREAKERS WERE CLOSED IN PREPARATION FOR THE MODE CHANGE. REACTOR PRESSURE WAS 1300 PSIG AND INCREASING TOWARDS ITS NORMAL OPERATING VALUE OF 2235 PSIG. TURBINE IMPULSE PRESSURE PROTECTION CHANNEL III TESTING WAS IN PROGRESS. PERSONNEL PERFORMING THE TEST REMOVED THE CHANNEL FROM SERVICE, IN ACCORDANCE WITH PROCEDURE. WHEN THE CHANNEL WAS REMOVED FROM SERVICE, ITS INPUT TO THE SOLID STATE PROTECTION SYSTEM (SSPS) WAS PUT IN THE TRIPPED CONDITION, AS DESIGNED. SSPS RESPONDED TO THIS HIGH TURBINE POWER SIGNAL BY UNBLOCKING THE LOW PRESSURE REACTOR TRIP (SETPOINT 1945 PSIG). A LOW PRESSURE REACTOR TRIP OCCURRED IMMEDIATELY, OPENING THE REACTOR TRIP BREAKERS. THIS EVENT WAS DUE TO PERSONNEL ERROR AND A LACK OF PROCEDURAL GUIDANCE. ALTHOUGH THE PROCEDURE HAD THE TECHNICIANS VERIFY THE LOW PRESSURE REACTOR TRIP BISTABLES WERE OFF PRIOR TO REMOVING THE CHANNEL FROM SERVICE, THEIR FOREMAN INSTRUCTED THEM TO PROCEED. THIS PROCEDURE IS BEING REVISED TO CLARIFY THE ACTIONS TO BE TAKEN IN RESPONSE TO DEVIATIONS FROM THE TEST'S ANTICIPATED PLANT STATUS. THIS EVENT IS BEING INCLUDED IN PERSONNEL TRAINING. REVIEW OF THE STATION RECORDS SHOWED 2 PREVIOUS SIMILAR EVENTS. REACTOR TRIPS DUE TO LOW PRESSURE ARE DISCUSSED IN BEAVER VALLEY UNIT 2 UFSAR SECTION 7.2.

FORM 118 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
412 1990 008 0 9009060114 219056 07/02/90

ABSTRACT

POWER LEVEL - 090%. ON 7/02/90 AT 0700 HOURS, WITH THE UNIT IN POWER OPERATION AT 87% REACTOR POWER, A POWER INCREASE TO 90% WAS INITIATED. AT APPROX. 0800 HOURS, RELAY PERSONNEL BEGAN CLEARING THE 345 KV BUS BACKUP TIMER PROTECTION ASSOCIATED WITH THE MAIN TRANSFORMER TO PERFORM A CALIBRATION OF PRIMARY 345 KV LEADS SECONDARY BACKUP FAULT UNIT (SBFU) PROTECTION RELAY, 50-J3202. RELAY 50-J3202 IS WITHIN A CURRENT LOOP INPUTTING A SIGNAL TO DIFFERENTIAL PROTECTION RELAY 87-204. RELAY 87-204 COMPARES SIGNALS FROM THE 345 KV DISTRIBUTION LINES AND THE OUTPUT OF THE MAIN TRANSFORMER. AT 0915 HOURS, WITH THE UNIT AT 90% REACTOR POWER, A REACTOR TRIP OCCURRED. THE REACTOR TRIP WAS THE RESULT OF AN IMMEDIATE TURBINE/GENERATOR TRIP. OPERATIONS PERSONNEL UTILIZED THE EMERGENCY OPERATION PROCEDURES TO STABILIZE THE UNIT IN HOT STANDBY. THE CAUSE FOR THE TURBINE/GENERATOR TRIP WAS ACTUATION OF RELAY 87-204. THIS RELAY ACTUATED AS A RESULT OF A PERSONNEL ERROR DURING THE CALIBRATION OF RELAY 50-J3202. THE RELAY TECHNICIAN OPENED A 4-POLE SHORTING SWITCH, DE-ENERGIZING 1 INPUT TO RELAY 87-204, CAUSING ACTUATION. THE 4-POLE SHORTING SWITCH WAS RECH

FORM 119 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
413 1989 008 1 8905240488 214010 03/05/89

ABSTRACT

POWER LEVEL - 100%. ON 3/5/89, AT 2140 HOURS, A UNIT 1 REACTOR TRIP OCCURRED AFTER EXCEEDING THE OVER POWER DELTA TEMPERATURE SETPOINT. IN PREPARATION FOR AUX. SAFEGUARDS TESTING OF STEAM LINE ISOLATION VALVES, THE OPERATOR AT THE CONTROLS MISTAKENLY DEPRESSED THE CLOSE PUSHBUTTON FOR THE MAIN STEAM LOOP A ISOLATION VALVE WHILE ATTEMPTING TO CLOSE THE STEAM GENERATOR 1A POWER OPERATED RELIEF ISOLATION VALVE. THE TWO PUSHBUTTONS ARE ADJACENTLY LOCATED. THE POWER OPERATED RELIEF ISOLATION VALVE HAD FAILED TO CLOSE ON TWO PREVIOUS PUSHBUTTON ACTUATIONS DURING THIS TEST. THE MAIN STEAM ISOLATION VALVE WAS IMMEDIATELY REOPENED, BUT AS OTHER RELIEF VALVES HAD ALSO OPENED, SAFETY INJECTION SUBSEQUENTLY ACTUATED ON LOW RATE COMPENSATED STEAM PRESSURE. UNIT RESPONSE TO THE TRIP AND SAFETY INJECTION WAS AS DESIGNED. CONTROL ROOM PERSONNEL ENTERED THE APPROPRIATE EMERGENCY PROCEDURES TO STABILIZE THE UNIT AND RECOVER FROM THE SAFETY INJECTION. THE APPLICATION OF PROTECTIVE COVERS TO CERTAIN CONTROL DEVICES HAS BEEN REVIEWED. THE POWER OPERATED RELIEF ISOLATION VALVE ACTUATOR DEVICES HAS BEEN REVIEWED. THE POWER OPERATED RELIEF ISOLATION VALVE ACTUATOR WAS FOUND TO HAVE A WORN STEM NUT WHICH WAS SUBSEQUENTLY REPLACED. THE UNIT WAS OPERATING IN MODE 1, POWER OPERATION, AT 100% POWER AT THE TIME OF THE TRIP.

FORM 120 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
413 1989 017 0 8908010458 214899 06/26/89

ABSTRACT

POWER LEVEL - 100%. ON JUNE 26, 1989, AT APPROXIMATELY 0635 HOURS, WITH UNIT 1 IN MODE 1, POWER OPERATION, AT 100% POWER, 1CF28, STEAM GENERATOR (S/G) 1A MAIN FEEDWATER (CF) CONTROL VALVE, SLOWLY BEGAN CLOSING, CAUSING S/G 1A LEVEL TO DECREASE. THE S/G 1A LEVEL DEVIATION ALARM WAS RECEIVED AND 1CF30 S/G 1A CONTROL BYPASS VALVE, WAS OPENED TO SUPPLY ADDITIONAL CF FLOW. AN OPERATOR WAS DISPATCHED AND DISCOVERED THAT AIR WAS LEAKING FROM THE 1CF28 CONTROL AIR MANIFOLD. A WORK REQUEST WAS ISSUED TO INVESTIGATE AND REPAIR THE AIR LEAK AS S/G 1A LEVEL CONTINUED TO DECREASE. 1CF28 EVENTUALLY CLOSED AND REACTOR POWER WAS REDUCED IN AN ATTEMPT TO MATCH CF FLOW WITH DEMAND. A MANUAL REACTOR TRIP WAS INITIATED AT 0718 HOURS, FROM 86% REACTOR POWER, JUST PRIOR TO A S/G LOW LOW LEVEL REACTOR TRIP SIGNAL. EMERGENCY PROCEDURE EP/1/A/5000/01, REACTOR TRIP OR SAFETY INJECTION, WAS ENTERED. THE TURBINE TRIPPED DUE TO THE REACTOR TRIP AND AUXILIARY FEEDWATER ACTUATION OCCURRED. A GASKET IN THE VALVE'S CONTROL AIR MANIFOLD WAS FOUND TO BE TORN, WHICH APPARENTLY OCCURRED DURING INSTALLATION OF THE GASKET, DUE TO INAPPROPRIATE ACTIONS. THE TORN GASKET WAS REPLACED AND ALL OTHER UNIT 1 S/G CF CONTROL VALVES WERE INSPECTED FOR AIR LEAKS.

FORM 121 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 100%. ON 8/24/89, UNIT 1 WAS IN MODE 1, POWER OPERATION, AT 100% POWER, AT 1930 HOURS, 1CF28, STEAM GENERATOR (S/G) 1A MAIN FEEDWATER (CF) CONTROL VALVE, BEGAN CLOSING, CAUSING A STEAM GENERATOR 1A LEVEL DEVIATION ALARM. THE CONTROL ROOM OPERATORS (CROS) RESPONDED BY OPENING 1CF30, S/G 1A CF CONTROL BYPASS VALVE, AND DISPATCHING OPERATIONS PERSONNEL AND INSTRUMENTATION AND ELECTRICAL (IAE) PERSONNEL TO INVESTIGATE THE PROBLEM. THE CRO BEGAN POWER REDUCTION TO COMPENSATE FOR THE REDUCED CF FLOW TO S/G 1A. AT 1944 HOURS, S/G 1A LEVEL BEGAN DROPPING RAPIDLY. THE CRO THEN INITIATED A MANUAL REACTOR TRIP AND ENTERED EMERGENCY PROCEDURE EP/1/A/5000/01, REACTOR TRIP OR SAFETY INJECTION. BY 2110 HOURS, S/G 1A WAS RETURNED TO THE NORMAL OPERATING LEVEL. 1CF28 MALFUNCTIONED DUE TO A FAILED GASKET IN THE POSITIONER CONTROL AIR MANIFOLD. THE GASKET APPEARED TO HAVE FAILED DUE TO IMPROPER DESIGN AND/OR INSTALLATION DEFICIENCY. THE POSITIONER WAS REPLACED ON 1CF28 AND ON THE REMAINING THREE UNIT 1 CONTROL VALVES BEFORE UNIT 1 RETURNED TO MODE 1, POWER OPERATION, AT 0753 HOURS ON 8/25/89. THE CF CONTROL VALVE POSITIONERS ARE BEING INSPECTED WEEKLY FOR AIR LEAKS, AND AN IMPROVED GASKET DESIGN HAS BEEN IMPLEMENTED ON UNIT 1.

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FORM	122	LER SCSS DATA	04-18-91

DOCKET	YEAR	LER NUMBER	REVISION
414	1989	001	0
		DCS NUMBER	NSIC
		8902240116	213115
		EVENT DATE	
		01/12/89	

ABSTRACT

POWER LEVEL - 094%. ON 1/12/89, AT 0943 HOURS, A BUSSMANN FNA FUSE FAILED IN A MAIN FEEDWATER CONTROL VALVE CIRCUIT CAUSING THE VALVE TO FAIL CLOSED. CONTROL ROOM OPERATORS OPENED THE MAIN FEEDWATER BYPASS VALVE IN AN ATTEMPT TO PROVIDE ADDITIONAL FEEDWATER. THE UNEXPECTED CLOSURE ISOLATED FEEDWATER FLOW TO STEAM GENERATOR 2D AND QUICKLY RESULTED IN AN AUTOMATIC REACTOR TRIP. UNIT 2 WAS IN MODE 1, POWER OPERATION, AT 94% POWER WHEN THIS INCIDENT OCCURRED. PREVIOUS MECHANICAL FAILURES OF BUSSMANN FNA FUSES IN 1986 AT MCGUIRE AND CATAWBA PROMPTED DESIGN ENGINEERING TO IDENTIFY SUITABLE REPLACEMENTS FOR ALL CLASS 1E APPLICATIONS. SCHEDULING OF NON-SAFETY FNA FUSE REPLACEMENT WAS DECIDED TO BE LEFT TO THE DISCRETION OF THE STATION AS THAT WAS CONSIDERED TO BE A RELIABILITY ISSUE. THIS INCIDENT HAS BEEN ATTRIBUTED TO A MANUFACTURING DEFICIENCY. THE FUSE WHICH CLOSED THE MAIN FEEDWATER CONTROL VALVE FAILED MECHANICALLY. THIS ALSO BEEN ATTRIBUTED TO A MANAGEMENT DEFICIENCY. ALTHOUGH THE MECHANICAL FAILURES ON THE BUSSMANN FNS FUSE HAD BEEN PREVIOUSLY IDENTIFIED, NON-SAFETY APPLICATIONS AND SUITABLE REPLACEMENTS WERE NOT IMPLEMENTED IN A TIMELY MANNER. FOLLOWING THIS INCIDENT, ALL BUSSMANN FNA FUSES ON BOTH UNITS, MAIN FEEDWATER CONTROL AND BYPASS CONTROL VALVES WERE REPLACED WITH LITTELFUSE FLQ FUSES.

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FORM	123	LER SCSS DATA	04-18-91

DOCKET	YEAR	LER NUMBER	REVISION
414	1989	002	0
		DCS NUMBER	NSIC
		8903060032	213157
		EVENT DATE	
		01/21/89	

ABSTRACT

POWER LEVEL - 021%. ON 1/21/89, AT 1848:40 HOURS, THE UNIT 2 REACTOR WAS MANUALLY TRIPPED DUE TO DECREASING LEVEL IN STEAM GENERATOR (S/G) B. THIS TRANSIENT WAS INITIATED BY THE MECHANICAL MALFUNCTION OF A TEMPERATURE TRANSMITTER FOR THE GENERATOR STATOR COOLING WATER (KG) SYSTEM. THE FAILED TRANSMITTER CAUSED 2KGS, GENERATOR STATOR COOLING

UNIT 2 REACTOR POWER TRIPPED AUTOMATICALLY AT APPROX. 1633 HOURS. DURING THE SUBSEQUENT TRANSIENT, THE S/G LEVELS BEGAN A LARGE OSCILLATION. THE MAIN FEEDWATER PUMP TURBINE (CFPT) DISCHARGE PRESSURES BEGAN RISING DUE TO CF REGULATING VALVES CLOSING IN RESPONSE TO INCREASING S/G LEVELS. TO GAIN QUICKER RESPONSE OF CFPT 2A SPEED CONTROL, THE BALANCE OF PLANT OPERATOR SWAPPED FROM THE WESTINGHOUSE TO THE GE CONTROLLER. THIS SWAP WAS PERFORMED WITH A DEVIATION BETWEEN THE TWO CONTROLLERS. CFPT 2A AND CFPT 2B TRIPPED ON HI DISCHARGE PRESSURES. CONTROL OF THE CFPTS COULD NOT BE REGAINED. AS S/G B LEVEL WAS DECREASING TOWARDS THE LO LO LEVEL SETPOINT, THE REACTOR WAS MANUALLY TRIPPED AT APPROX. 21% POWER. PRIOR TO THIS INCIDENT, THE UNIT WAS OPERATING AT APPROX. 95% POWER. THIS INCIDENT HAS BEEN ATTRIBUTED TO AN EQUIPMENT MALFUNCTION.

FORM 124 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
414 1989 003 1 8905010063 213763 02/21/89

ABSTRACT

POWER LEVEL - 094%. ON FEBRUARY 21, 1989, AT 0112 HOURS, IAE TECHNICIANS PLACED A JUMPER TO CHECK RELAY CONTACTS WHILE INVESTIGATING THE FAILURE OF THE "90 PERCENT OPEN" LIGHT TO ILLUMINATE DURING THE MAIN STEAM ISOLATION VALVE MOVEMENT TEST. THIS JUMPER RESULTED IN A SHORT CIRCUIT, CLOSING 2SM3, STEAM GENERATOR (S/G) 2C MAIN STEAM ISOLATION VALVE. THE RESULTING PRESSURE INCREASE IN S/G 2C CAUSED A REACTOR TRIP ON S/G LO LO LEVEL, AND CAUSED 2SV7, S/G 2C PORV, AND THREE S/G 2C CODE SAFETY RELIEF VALVES TO OPEN. THE OPENING OF THESE VALVES RESULTED IN A RAPID DECREASE IN STEAM LINE PRESSURE, WHICH RESULTED IN A SAFETY INJECTION ON LOW STEAM LINE PRESSURE (RATE COMPENSATED). THIS INCIDENT IS CLASSIFIED AS MANAGEMENT DEFICIENCY DUE TO THE LACK OF A POLICY FOR AN INDEPENDENT ASSESSMENT OF ACTIONS TO BE TAKEN UNDER TROUBLESHOOTING PROCEDURES, WITH CONTRIBUTING CAUSES OF EQUIPMENT MALFUNCTION DUE TO THE OPENING SETPOINT FOR 2SV7 BEING FOUND TO BE TOO HIGH, AND LACK OF ATTENTION TO DETAIL PRIOR TO JUMPER PLACEMENT. CORRECTIVE ACTIONS WILL INCLUDE PROVIDING A TROUBLESHOOTING REVIEW GUIDELINE. THE OPEN SETPOINT FOR 2SV7 WAS RECALIBRATED. UNIT 2 WAS IN MODE 1, POWER OPERATION, AT 94% POWER AT THE TIME OF THIS INCIDENT.

FORM 125 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
414 1990 013 0 9011150259 220036 10/07/90

ABSTRACT

POWER LEVEL - 098%. ON OCTOBER 7, 1990, AT APPROXIMATELY 1659 HOURS, WITH UNIT 2 IN MODE 1, POWER OPERATION, AND OPERATING AT 98% REACTOR POWER LEVEL, A REACTOR (RX) TRIP OCCURRED DUE TO LOW-LOW LEVEL IN THE 2D STEAM GENERATOR (S/G). THE REACTOR TRIP OCCURRED AFTER THE 2A MAIN FEEDWATER PUMP TURBINE (CFPT-2A) TRIPPED ON INDICATED HIGH DISCHARGE PRESSURE WHICH INITIATED A TURBINE RUNBACK. THE MAIN TURBINE RAN BACK PAST ITS SETPOINT OF 70% LOAD, TERMINATING AT APPROXIMATELY 60% WHEN THE RX TRIPPED. SUBSEQUENT INVESTIGATION OF THE EVENT REVEALED THAT THE CFPT-2A TRIP OCCURRED DUE TO AN ERRONEOUS HIGH DISCHARGE PRESSURE SIGNAL WHICH RESULTED FROM FAILED DIAPHRAGMS IN TWO OF THE THREE FEEDWATER PUMP DISCHARGE PRESSURE SWITCHES. SUBSEQUENT CORRECTIVE ACTIONS INCLUDED STABILIZING THE UNIT AND REPLACING THE DEFECTIVE PRESSURE SWITCHES. THIS INCIDENT IS ATTRIBUTED TO AN EQUIPMENT FAILURE. ADDITIONAL CORRECTIVE ACTIONS INCLUDED REVIEW AND

FORM 126 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 416 1989 006 0 8906050397 214180 05/05/89

ABSTRACT

POWER LEVEL - 005%. ON MAY 5, 1989 AT 0948 HOURS, THE REACTOR TRIPPED ON LOW REACTOR WATER LEVEL. A CONTROLLED PLANT SHUTDOWN WAS IN PROGRESS WHEN OPERATORS EXPERIENCED LEVEL CONTROL PROBLEMS. ATTEMPTS TO CONTROL THE VESSEL OVERFEED CONDITION WERE UNSUCCESSFUL AND THE OPERATING REACTOR FEED PUMP TURBINE (RFPT) TRIPPED ON HIGH WATER LEVEL. SUBSEQUENT ATTEMPTS TO RESTART THE TRIPPED RFPT AND RESTORE LEVEL WERE UNSUCCESSFUL. THE CAUSE OF THE VESSEL OVERFEED WAS DETERMINED TO BE THE FEEDWATER HEATER OUTLET VALVES INDICATING CLOSED WHEN IN FACT THEY WERE SLIGHTLY OPEN. THE RFPT TRIP RESET LOGIC MISLED THE OPERATORS WHEN THEY ATTEMPTED TO RESTART THE TRIPPED RFPT. DESIGN CHANGES TO THE FEEDWATER CONTROL LOGIC ARE BEING EVALUATED TO PREVENT RECURRENCE. ALSO TRAINING ON THE EVENT WILL BE CONDUCTED TO MAKE OPERATORS AWARE OF THE LESSONS LEARNED. ALL PLANT SAFETY SYSTEMS PERFORMED AS EXPECTED. THE MINIMUM WATER LEVEL REACHED WAS APPROXIMATELY 14 FEET ABOVE THE TOP OF ACTIVE FUEL. ALL EMERGENCY CORE COOLING SYSTEMS WERE OPERABLE AND AVAILABLE TO RESPOND IF NECESSARY.

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FORM 127 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 416 1989 010 0 8909280005 215076 07/22/89

ABSTRACT

POWER LEVEL - 100%. ON JULY 22, 1989, A SEVERE ELECTRICAL STORM PASSED OVER GRAND GULF NUCLEAR STATION. DURING THE STORM, THE REACTOR AUTOMATICALLY SCRAMMED DUE TO A HIGH NEUTRON FLUX SIGNAL ON THE AVERAGE POWER RANGE MONITORS (APRMS). ADDITIONALLY, A SPIKE TO THE REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM LOGIC CAUSED RCIC TO AUTOMATICALLY ACTUATE AND INJECT INTO THE REACTOR VESSEL. REACTOR WATER LEVEL DECREASED TO -15 INCHES AND WAS RAISED TO THE LEVEL 8 HIGH LEVEL TRIP (+53.5 INCHES) IN APPROXIMATELY 2 MINUTES. A CHANNEL CHECK OF APRM INDICATIONS WAS PERFORMED DURING PLANT RESTART ON JULY 23, 1989 TO CONFIRM PROPER RESPONSE. NO ABNORMALITIES WERE OBSERVED. SYSTEM ENERGY REQUISITIONED A SPECIALIST IN LIGHTNING PROTECTION TO PERFORM A PLANT SURVEY AND STUDY OF THE EXISTING PLANT LIGHTNING PROTECTION SYSTEM. THE CONTRACTOR HAS SUBMITTED PROPOSALS TO PROVIDE LIGHTNING DISSIPATION ARRAYS ON VULNERABLE STRUCTURES. SYSTEM ENERGY IS PRESENTLY EVALUATING IMPLEMENTATION METHODS AND CONSTRUCTING A SCHEDULE FOR IMPLEMENTATION. CURRENT PROGRESS INDICATES THAT IMPLEMENTATION WILL LIKELY BE COMPLETED BY DECEMBER 31, 1989. IN ANY CASE, IMPLEMENTATION WILL BE COMPLETED NO LATER THAN THE STARTUP FROM THE FOURTH REFUELING OUTAGE (RF04).

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FORM 129 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 416 1989 012 0 8909210080 215283 08/14/89

ABSTRACT

ON CONDENSER LOW VACUUM RESULTING IN A REACTOR SCRAM DUE TO THE FAST CLOSURE OF THE MAIN TURBINE STOP AND CONTROL VALVES. DURING THE COURSE OF THE EVENT TWO SUBSEQUENT RPS ACTUATIONS OCCURRED ON LOW REACTOR WATER LEVEL SIGNALS. A MAIN STEAM ISOLATION VALVE (MSIV) ISOLATION SIGNAL WAS ACTUATED ON LOW CONDENSER VACUUM. THE REACTOR CORE ISOLATION COOLING SYSTEM WAS MANUALLY INITIATED TO CONTROL REACTOR WATER LEVEL. NO ECCS WERE INITIATED MANUALLY OR AUTOMATICALLY. ALL CONTROL RODS FULLY INSERTED WITH THE EXCEPTION OF CONTROL ROD 32-45 WHICH STOPPED AT POSITION 08. ALL MSIVS PROPERLY CLOSED WITH THE EXCEPTION OF 821-F0229 WHICH CLOSED APPROXIMATELY 35 MINUTES FOLLOWING A MANUAL CLOSURE SIGNAL. COMPONENTS IN THE CONTROL ROD HYDRAULIC CONTROL UNIT WERE REPLACED TO CORRECT THE CONTROL ROD MALFUNCTION. THE FAILURE MECHANISM OF THE MSIV WAS DETERMINED TO BE GENERIC TO OTHER INSTALLED MSIVS AND IS REPORTED SEPARATELY IN LER 89-013. A 3 FOOT SECTION OF THE CONDENSER EXPANSION BELT HAD TORN HORIZONTALLY NEAR THE LOWER RETAINING CLAMPS. THE HEMP REINFORCEMENT FIBERS HAD APPARENTLY DEGRADED DUE TO MOISTURE INTRUSION THROUGH THE RUBBER. THE BELTS ON ALL 3 CONDENSER SECTIONS WERE REPLACED WITH BELTS USING A POLYESTER REINFORCEMENT FIBER.

FORM 129 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 416 1989 016 0 8912140405 216158 11/07/89

ABSTRACT

POWER LEVEL - 100%. ON NOVEMBER 7, 1989, A SEVERE THUNDER STORM WAS IN PROGRESS IN THE SITE VICINITY. DURING THE STORM, LIGHTNING STRUCK THE SITE CAUSING A SPIKE ON PLANT INSTRUMENTATION. THE REACTOR AUTOMATICALLY SCRAMMED DUE TO THE SPIKE SIMULATING A HIGH FLUX SIGNAL ON THE AVERAGE POWER RANGE MONITORS (APRMS). THE SPIKE CAUSED TWO HIGH PRESSURE CORE SPRAY (HPCS) LOW WATER LEVEL CHANNELS TO TRIP. HPCS DID NOT INITIATE DUE TO THE SHORT DURATION OF THE SPIKE. ALSO, REACTOR CORE ISOLATION COOLING (RCIC) RECEIVED AN INITIATION SIGNAL, BUT DID NOT INJECT DUE TO THE TRIP THROTTLE VALVE BEING IN THE CLOSED POSITION IN PREPARATION FOR AN I&C SURVEILLANCE. REACTOR WATER LEVEL DECREASED TO -18 INCHES AND WAS SUBSEQUENTLY RAISED TO 51 INCHES BY THE FEEDWATER SYSTEM. A FUNCTIONAL CHECK OF APRM INDICATIONS AND HPCS TRIP UNITS WAS PERFORMED PRIOR TO PLANT STARTUP. NO ADVERSE EFFECTS WERE OBSERVED. A DESIGN CHANGE PACKAGE WAS ISSUED TO INSTALL A LIGHTNING DISSIPATION SYSTEM ON VULNERABLE STRUCTURES. IMPLEMENTATION OF THE SYSTEM IS DUE TO BE COMPLETED BY STARTUP FROM THE FOURTH REFUELING OUTAGE (RF04).

FORM 130 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 416 1989 019 0 9002060019 216656 12/30/89

ABSTRACT

POWER LEVEL - 083%. ON DECEMBER 30, 1989, A TOTAL LOSS OF PLANT SERVICE WATER (PSW) WAS EXPERIENCED DUE TO A LOSS OF POWER TO THE SUPPLY WELLS. REACTOR POWER WAS REDUCED BY DECREASING RECIRCULATION FLOW THROUGH THE REACTOR CORE AND A REACTOR SHUTDOWN SEQUENCE WAS COMMENCED. WHILE REDUCING REACTOR POWER, THE OPERATORS DETERMINED THAT PSW WOULD NOT BE READILY RESTORED AND THE REACTOR WAS MANUALLY SCRAMMED. THE REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM WAS INITIATED FOR REACTOR VESSEL LEVEL CONTROL. THE MAIN STEAM LINE ISOLATION VALVES WERE CLOSED IN ACCORDANCE WITH PROCEDURES. THIS ACTION CAUSED A HIGH PRESSURE SCRAM SIGNAL AND AN ATWSFACT DDT

WALLS DROPPED. THE SSW BASIN LEVEL DROPPED BELOW THE TECH. SPEC. LIMIT DUE TO LEAKAGE OF SSW INTO PSW. EVENTUALLY, PSW WAS RESTORED AND SSW BASIN INVENTORY WAS RECOVERED. THE POWER LOSS TO THE SUPPLY WELLS WAS DUE TO A MALFUNCTION OF THE MICROWAVE INFORMATION AND CONTROL SYSTEMS. PERIODIC MICROWAVE OPERATIONAL CHECKS ARE BEING ESTABLISHED.

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FORM 131 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
416 1990 011 0 9008280383 219375 07/24/90

ABSTRACT

POWER LEVEL - 100%. ON JULY 24, 1990 AT 1355, THE REACTOR TRIPPED ON HIGH REACTOR WATER LEVEL. REACTOR POWER WAS IN THE PROCESS OF BEING REDUCED IN AN ATTEMPT TO CONTROL "B" REACTOR FEED PUMP TURBINE (RFPT) OSCILLATIONS CAUSED BY A MALFUNCTION OF THE "B" RFPT CONTROLLER. THE CAUSE OF THE MALFUNCTIONING "B" RFPT CONTROLLER WAS DETERMINED TO BE AN INTERMITTENT FAILURE OF THE LINEAR VARIABLE DIFFERENTIAL TRANSFORMER (LVDT) AND THE ASSOCIATED CIRCUIT BOARD TO THE ELECTRONIC AUTOMATIC POSITIONER (EAP). THE EAP DAHL CONTROLLER WAS CALIBRATED IN ACCORDANCE WITH THE VENDOR RECOMMENDED SETTING. THE CALIBRATION PROCEDURE FOR THE REACTOR FEED PUMP TURBINE "A" AND "B" EAP DAHL CONTROL CIRCUIT HAS BEEN IMPROVED AND THE CALIBRATION FREQUENCY HAS BEEN INCREASED. ALL PLANT SAFETY SYSTEMS PERFORMED AS EXPECTED. THE MINIMUM WATER LEVEL REACHED WAS APPROXIMATELY 126.7 INCHES ABOVE THE TOP OF ACTIVE FUEL. THE RCIC WAS MANUALLY STARTED AND FUNCTIONED AS DESIGNED.

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FORM 132 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
416 1990 017 1 9010260079 219932 09/16/90

ABSTRACT

POWER LEVEL - 100%. A DIVISION I LOAD SHEDDING AND SEQUENCING SYSTEM MALFUNCTION CAUSED A BALANCE OF PLANT (BOP) LOAD SHED ON SEPTEMBER 16, 1990. THE LOSS OF MAJOR PLANT EQUIPMENT, WHICH RECEIVED POWER FROM THE SHEDDED BOP BUSES, RESULTED IN A REACTOR SCRAM, DUE TO MAIN TURBINE CONTROL VALVE FAST CLOSURE. SUBSEQUENT TO THE SCRAM, REACTOR WATER LEVEL DECREASED TO -41.6 INCHES WHERE AN AUTOMATIC HIGH PRESSURE CORE SPRAY SYSTEM ACTUATION OCCURRED. DURING RESTORATION OF MAIN STEAM ISOLATION VALVES, AS A PART OF SCRAM SUBSEQUENT ACTIONS, A SECOND REACTOR SCRAM OCCURRED DUE TO LOW REACTOR WATER LEVEL. THE LOAD SHED IS ATTRIBUTED TO A DEFECTIVE LIGHT BULB BEING PLACED IN THE LOAD SHED PANEL. THE SHORTED LIGHT BULB CAUSED AN OVERCURRENT WHICH SUBSEQUENTLY CAUSED DEGRADATION OF A COMPUTER CHIP WHICH INITIATED THE LOAD SHED. THE CARDS WHICH CONTAINED DEGRADED COMPUTER CHIPS, DUE TO THE OVERCURRENT, WERE REPLACED. THE DIVISION I LOAD SHED PANEL WAS TESTED SATISFACTORILY AND OPERABILITY WAS VERIFIED. ALL SAFETY SYSTEMS FUNCTIONED AS DESIGNED. THE MINIMUM WATER LEVEL REACHED WAS -54.1 INCHES WHICH WAS APPROXIMATELY 112 INCHES ABOVE THE TOP OF ACTIVE FUEL.

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FORM 133 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
416 1990 026 0 9101030322 220609 11/24/90

MANUAL SCRAM WAS INSERTED FOLLOWING A LOCKUP OF THE ROD PATTERN CONTROL SYSTEM (RPCS). THE LOCKUP WAS CAUSED BY MULTIPLE CONTROL RODS DRIFTING OUT OF SEQUENCE DUE TO THE EXCESSIVE DIFFERENTIAL PRESSURE OF THE CONTROL ROD DRIVE (CRD) COOLING WATER. CRD SYSTEM COOLING WATER FLOW WAS MAXIMIZED TO INCREASE REACTOR WATER LEVEL. OPERATORS WERE AWARE THAT AN ELEVATED CRD COOLING WATER DIFFERENTIAL PRESSURE COULD CAUSE RODS TO DRIFT. THE TRANSIENT OF REACTOR WATER LEVEL HAS BEEN ATTRIBUTED TO OPEN DRAIN VALVES IN THE MAIN STEAM LINES COUPLED WITH VACUUM ESTABLISHED IN THE MAIN CONDENSER. A CONTRIBUTING FACTOR TO THE TRANSIENT WAS THE UNAVAILABILITY OF CONDENSATE DURING THE REACTOR STARTUP SEQUENCE DUE TO DEPRESSED CONDENSATE TEMPERATURE. THE STARTUP PROCEDURE WAS JUDGED TO BE INADEQUATE. THE STARTUP PROCEDURE HAS BEEN AMENDED TO SPECIFY MAIN STEAM LINE DRAIN VALVE LINEUPS AND THE MINIMUM HOTWELL TEMPERATURE REQUIREMENT. REACTOR CONTROL SYSTEMS FUNCTIONED PROPERLY; NO EQUIPMENT WAS OBSERVED AS HAVING MALFUNCTIONED. THE LOCKUP OF THE RPCS AS A CONSEQUENCE OF THE DRIFTING CONTROL RODS OCCURRED AS DESIGNED.

FORM 134 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
416 1990 028 0 9101140227 220688 12/10/90

ABSTRACT

POWER LEVEL - 100%. ACTUATION OF ENGINEERED SAFETY FEATURES OCCURRED ON DECEMBER 10, 1990, INCLUDING THE REACTOR PROTECTION SYSTEM (RPS) AND THE EMERGENCY CORE COOLING SYSTEM (ECCS) HIGH PRESSURE CORE SPRAY (HPCS) SYSTEM. THE SUBSEQUENT REACTOR SCRAM FROM FULL POWER WAS CAUSED INDIRECTLY BY A FAILED SOLDER JOINT IN THE INSTRUMENT AIR SYSTEM. THIS REPORT IS BEING SUBMITTED PURSUANT TO 10CFR50.73(A)(2)(IV) AND PLANT TECHNICAL SPECIFICATION 3.5.1 ACTION ITEM H. THE FAILED PIPE JOINT WAS INVESTIGATED. A LEAKING ROOT VALVE APPARENTLY CAUSED A SLIGHT PRESSURE DIFFERENTIAL ACROSS THE JOINT AND PRECLUDED OPTIMUM CAPILLARY ACTION DURING THE SOLDERING PROCESS. IT IS BELIEVED THAT VIBRATIONS IN COMBINATION WITH SYSTEM PRESSURE CAUSED THE RESULTANT SEPARATION OF THIS INADEQUATELY SOLDERED JOINT. THIS JOINT HAD BEEN SOLDERED ON NOVEMBER 9, 1990. APPLICABLE PLANT ADMINISTRATIVE PROCEDURES WILL BE REVISED TO PRECLUDE INADEQUATE WELDING AND SIMILAR FAILURES. THE ACTUATION OF THE RPS AND THE RESULTANT AUTOMATIC SCRAM OCCURRED AS DESIGNED. ACTUATION OF THE ECCS INITIATED AS DESIGNED BY INJECTING CONDENSATE FROM THE CONDENSATE STORAGE TANK INTO THE REACTOR VESSEL VIA HPCS. THE SAFETY OF THE GENERAL PUBLIC WAS NOT COMPROMISED BY THIS EVENT.

FORM 135 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
416 1990 029 0 9101240010 220827 12/18/90

ABSTRACT

POWER LEVEL - 017%. ON DECEMBER 18, 1990, DURING A CONTROLLED SHUTDOWN, A REACTOR PROTECTION SYSTEM ACTUATION OCCURRED RESULTING IN AN AUTOMATIC PLANT SHUTDOWN. THE ACTUATION OCCURRED DUE TO LOW REACTOR WATER LEVEL WHICH WAS CAUSED BY A REACTOR FEEDWATER PUMP TRIP. THE HIGH DISCHARGE PRESSURE TRIP OF THE FEEDWATER PUMP WAS A RESULT OF THE INTERACTION BETWEEN THE STARTUP LEVEL CONTROL SYSTEM AND THE MASTER FEEDWATER CONTROL SYSTEM. THE INVESTIGATION, WHICH FOLLOWED THE SCRAM, IDENTIFIED THE AIR SUPPLY VALVE FOR THE STARTUP LEVEL CONTROL VALVE NOT BEING FULLY OPEN AND THE "A" ELECTRIC AUTOMATIC

THE ROOT CAUSE OF THE EVENT. ALL SAFETY SYSTEMS PERFORMED AS DESIGNED DURING THE TRANSIENT. THE MINIMUM WATER LEVEL REACHED WAS -25 INCHES AS INDICATED ON THE WIDE RANGE LEVEL INSTRUMENTATION. THE MINIMUM LEVEL WAS APPROXIMATELY 142 INCHES ABOVE THE TOP OF ACTIVE FUEL.

FORM 136 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
423 1989 008 0 8906140205 214240 05/06/89

ABSTRACT

POWER LEVEL - 090%. ON 5/6/89 AT 0810 HOURS, WITH THE PLANT AT 90X POWER IN MODE 1, A MANUAL REACTOR TRIP WAS INITIATED DUE TO AN ANTICIPATED TURBINE TRIP. PRIOR TO THE TRIP, THE PLANT WAS EXPERIENCING FOULING OF THE TRAVELING SCREENS DUE TO LARGE AMOUNTS OF SEAWEED AT THE INTAKE. ROOT CAUSE OF THIS EVENT WAS DESIGN DEFICIENCY IN THAT THE TRAVELING SCREEN CAPACITY WAS INADEQUATE. RECENT CHANGES TO THE FISH RETURN SYSTEM TO BRING IT INTO COMPLIANCE WITH STATE REGULATIONS HAVE INCREASED THE SEAWEED LOADINGS ON ALL BAYS, ESPECIALLY "A" AND "B" BAYS. AS CORRECTIVE ACTION, A PROCEDURE CHANGE HAS BEEN IMPLEMENTED WHICH ALLOWS FOR THE ISOLATION OF THE FISH SPRAY SYSTEM WHEN SEAWEED RECIRCULATION IS A CONCERN. RECOMMENDATIONS OF AN INTERNAL TASK FORCE ADDRESSING OPERATIONAL PROBLEMS WITH THE TRAVELING SCREENS WILL BE IMPLEMENTED OVER THE NEXT TWO YEARS.

FORM 137 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
423 1989 009 1 9001040124 216352 05/11/89

ABSTRACT

POWER LEVEL - 100%. AT 1514 ON 5/11/89 WHILE OPERATING IN MODE 1, 100X REACTOR POWER, 557 DEGREES AND 2250 PSIA, A REACTOR TRIP OCCURRED DUE TO A POWER RANGE NEUTRON FLUX HIGH NEGATIVE RATE SIGNAL. UPON DEENERGIZING A ROD DROP TIME RECORDING SYSTEM CONNECTED TO THE CONTROL ROD DRIVE SYSTEM, THE CONTROL RODS UNLATCHED. THE RECORDING SYSTEM HAD BEEN CONNECTED IN PREPARATION FOR TESTS DURING THE SECOND REFUELING OUTAGE, SCHEDULED TO START 5/12/89. ROOT CAUSE OF THE REACTOR TRIP WAS PROCEDURAL INADEQUACY IN THAT THE PROCEDURE DID NOT SPECIFY THAT CONTROL RODS MUST BE UNLATCHED PRIOR TO CONNECTING THE ROD DROP TIME RECORDING SYSTEM. SPURIOUS ROD DROP SIGNALS WERE GENERATED BY THE ROD DROP TIME RECORDING SYSTEM WHILE BEING DEENERGIZED. THIS CONDITION DOES NOT OCCUR EVERY TIME THE SYSTEM IS DEENERGIZED. TO PREVENT RECURRENCE PLANT PROCEDURES WERE CHANGED TO REQUIRE RODS TO BE UNLATCHED BEFORE CONNECTING THE ROD DROP TIME RECORDING SYSTEM. SINCE THIS EVENT OCCURRED WITHIN 48 HOURS OF THE SCHEDULED START OF THE SECOND REFUELING OUTAGE, THE REFUELING OUTAGE COMMENCED IMMEDIATELY AFTER THE TRIP.

FORM 138 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
423 1990 005 0 9002270006 216966 01/18/90

ABSTRACT

POWER LEVEL - 100%. ON 1/18/90, AT 0803 HOURS, WHILE OPERATING IN MODE 1 AT 100X POWER, 2250 PSIA AND 597F, A MANUAL PLANT TRIP WAS

FEED FLOW MISMATCH ALARM ANNOUNCIATED FOR ALL FOUR STEAM GENERATORS, FOLLOWED BY STEAM GENERATOR LOW LEVEL ALARMS. THE MOTOR-DRIVEN FEEDWATER PUMP, 3FWS-P1, DID NOT AUTOMATICALLY START BECAUSE THE FEEDWATER PUMP DISCHARGE HEADER PRESSURE DID NOT DECREASE TO THE AUTOMATIC START SETPOINT. THE THIRD CONDENSATE PUMP, 3CNM-P18, WAS STARTED PRIOR TO STARTING 3FWS-P1. BY THE TIME 3FWS-P1 WAS MANUALLY STARTED, THE STEAM GENERATOR LEVELS WERE TOO LOW AND AN AUTOMATIC TRIP ON LOW LOW STEAM GENERATOR TRIP WAS IMMINENT. THE ROOT CAUSE OF THE EVENT WAS THE FAILURE OF THE TURBINE/PUMP COUPLING OF 3FWS-P28 DUE TO LOSS OF PRELOAD ON THE COUPLING BOLTS DUE TO PERSONNEL AND PROCEDURAL ERRORS. CONTRIBUTING CAUSES WERE THE PUMP AND TURBINE MISALIGNMENT, AND INADEQUATE COUPLING LUBRICATION. IN ORDER TO PREVENT A RECURRENCE OF FEEDWATER PUMP COUPLING FAILURE, CHANGES HAVE BEEN MADE TO THE COUPLING INSTALLATION PROCEDURE AND THE VIBRATION ALARM SETPOINT WILL BE LOWERED.

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FORM 139 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
423 1990 009 0 9004200305 217843 03/09/90

ABSTRACT

POWER LEVEL - 100%. ON 3/9/90, AT 1653 HOURS, WHILE OPERATING IN MODE 1 AT 100% POWER, 2250 PSIA AND 587F, AN AUTOMATIC TURBINE TRIP WITH SUBSEQUENT REACTOR TRIP OCCURRED DUE TO HIGH STATOR COOLING WATER TEMPERATURE. THE CAUSE OF THE EVENT WAS THE FAILURE OF THE MECHANICAL LINKAGE ON THE FISCHER & PORTER CONTROLLER FOR THE STATOR COOLING WATER TEMPERATURE CONTROL VALVE DUE TO WEAR AT THE LINKAGE CONNECTIONS. THE ROOT CAUSE OF THE EVENT WAS INADEQUATE DESIGN, IN THAT THE TEMPERATURE CONTROLLER IS MOUNTED DIRECTLY ON THE TEMPERATURE CONTROL VALVE. THE WEAR FOUND ON THE MECHANICAL LINKAGE OF THE CONTROLLER WAS INDUCED FROM VIBRATION OF THE TEMPERATURE CONTROL VALVE. AS SHORT TERM CORRECTIVE ACTION, THE AILED CONTROLLER WAS REPLACED WITH A SPARE OF THE SAME MODEL. THE ACTIONS TO PREVENT RECURRENCE INCLUDE REPLACING THE ORIGINAL MODEL CONTROLLER WITH A MORE RELIABLE CONTROLLER WITH MANUAL OVER-RIDE CAPABILITIES, AND RELOCATING THE NEW CONTROLLER TO AN AREA OF LOW VIBRATION.

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FORM 140 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
423 1990 011 0 9005090083 218139 03/30/90

ABSTRACT

POWER LEVEL - 080%. ON 3/30/90 AT 1328 HOURS WITH THE PLANT AT 80% POWER IN MODE 1, A MANUAL REACTOR TRIP WAS INITIATED DUE TO AN ANTICIPATED TURBINE TRIP FROM A LOSS OF CONDENSER VACUUM. PRIOR TO THE TRIP, THE INTAKE STRUCTURE SCREEN WASH SYSTEM WAS REMOVED FROM SERVICE TO INSTALL A REPAIRED ELBOW. THE INSTALLATION WAS PLANNED FOR THREE HOURS. THE INSTALLATIONS WOULD HAVE RESTORED THE SECOND 100% SCREENWASH PUMP TO SERVICE BEFORE THE SEASONAL (I.E., 4/15-5/30) HIGH SEAWEEED LOADING BEGAN. HOWEVER, THE EFFORT TO MANUALLY CLEAR THE SCREENS WAS NOT ENOUGH TO PREVENT TWO CIRCULATION WATER PUMPS FROM TRIPPING. THE ROOT CAUSE WAS THE FAILURE TO COLLECT THE DEBRIS FROM THE MANUAL SCREEN WASHING. THE DEBRIS RECIRCULATED INTO THE INTAKE STREAM ON THE TIDE CHANGE. ALSO, A MAJOR FACTOR THAT PREVENTED CLEARING THE SCREENS RAPIDLY WAS THE INABILITY OF OPERATORS TO MANUALLY RUN THE SCREENS AT ANY SPEED OTHER THAN SLOW. IN THE FUTURE, ANY TEMPORARY SYSTEMS USED IN PLACE OF THE SCREEN WASH WILL INCLUDE DEBRIS COLLECTION. OTHERWISE, MAINTENANCE REPAIRING THE SCREENWASH TO

FORM 141 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 423 1990 013 1 9008240193 219378 04/16/90

ABSTRACT

POWER LEVEL - 049%. ON APRIL 16, 1990, AT 1201 HOURS WITH THE PLANT AT 48% POWER IN MODE 1, A MANUAL REACTOR TRIP WAS INITIATED BECAUSE OF AN ANTICIPATED TURBINE TRIP DUE TO LOSS OF CONDENSER VACUUM. CIRCULATING WATER PUMP 3CWS-P18 WAS PROVIDING COOLING WATER FOR CONDENSER WATERBOXES "A" AND "B". A RAPID BUILDUP OF SEAWEED ON "B" TRAVELING SCREEN RESULTED IN AN AUTOMATIC TRIP OF 3CWS-P18 DUE TO HIGH SCREEN DIFFERENTIAL LEVEL. AS THE LOSS OF COOLING TO TWO CONDENSER BAYS WOULD HAVE RESULTED IN A LOW CONDENSER VACUUM, A REACTOR TRIP WAS INITIATED. THE REACTOR TRIP CAUSED A MAIN TURBINE AND GENERATOR TRIP IN ACCORDANCE WITH DESIGN. THE ROOT CAUSE OF THE EVENT WAS INADEQUATE ADMINISTRATIVE GUIDANCE IN THAT DEBRIS WAS ALLOWED TO COLLECT ON THE TRASH RACK. DURING TRASH RACK RAKING, SEAWEED BROKE FREE AND CLOGGED "B" TRAVELING SCREEN. HIGHER THAN NORMAL SEAWEED INFUX AND 130% FLOW DUE TO CROSS CONNECTING A & B WATERBOXES CONTRIBUTED TO THE HIGH WATER PUMP TO SUPPLY ONLY THE ASSOCIATED WATERBOX DURING SEVERE WEATHER. FOR CORRECTIVE ACTION, THE TRASH RACKS HIGH DIFFERENTIAL LEVEL ALARM POINT HAS BEEN LOWERED FROM 15 INCHES TO 6 INCHES. PERSONNEL HAVE BEEN INSTRUCTED TO CLOSELY MONITOR THE TRASH RACK WATER LEVELS AND CLEAN THE RACKS BEFORE LEVELS EXCEED 4 INCHES.

FORM 142 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 423 1990 014 0 9006200233 218564 05/10/90

ABSTRACT

POWER LEVEL - 060%. ON 5/19/90 AT 2033 HOURS WITH THE PLANT IN MODE 1 AT 60% POWER, A MANUAL REACTOR TRIP WAS INITIATED BECAUSE OF AN ANTICIPATED TURBINE TRIP DUE TO LOSS OF CONDENSER VACUUM. CIRCULATING WATER PUMP 3CWS-P18 WAS PROVIDING COOLING WATER FOR CONDENSER WATERBOXES "A" AND "B". A RAPID BUILDUP OF SEAWEED ON "B" TRAVELING SCREEN RESULTED IN AN AUTOMATIC TRIP OF 3CWS-P18. THE PLANT WAS IN THE PROCESS OF DOWNPOWERING AS A RESULT OF WEATHER EFFECTS ON CONDENSER COOLING WATER EQUIPMENT IN THE INTAKE STRUCTURE. AS THE LOSS OF COOLING TO TWO CONDENSER BAYS WOULD HAVE RESULTED IN A LOW CONDENSER VACUUM, A REACTOR TRIP WAS INITIATED. THE REACTOR TRIP CAUSED A MAIN TURBINE AND GENERATOR TRIP IN ACCORDANCE WITH DESIGN. ROOT CAUSE OF THIS EVENT WAS DESIGN DEFICIENCY IN THAT THE TRAVELING SCREEN CAPACITY WAS INADEQUATE. A CONTRIBUTING CAUSE WAS THE PEAK SEAWEED SEASON. AS CORRECTIVE ACTION, THE TRAVELING SCREEN UNITS IN A NUMBER OF BAYS WILL BE REDESIGNED AND MODIFIED PER THE RECOMMENDATIONS OF AN INTERNAL TASK FORCE. TWO OF THESE UNITS WILL BE MODIFIED IN THE NEXT YEAR. PERSONNEL HAVE BEEN INSTRUCTED TO EVALUATE INTAKE STRUCTURE CONDITIONS MORE FREQUENTLY AND PROCEDURES MODIFIED TO ALLOW POWER REDUCTIONS AT A FASTER RATE.

FORM 143 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 423 1990 019 1 9101070169 220616 06/06/90

AT 100% POWER, 580F AND 2250 PSIA, AN AUTOMATIC REACTOR TRIP FROM A NEGATIVE FLUX RATE SIGNAL OCCURRED DUE TO A DROPPED CONTROL ROD. THE CAUSE OF THIS EVENT WAS A BROKEN CONNECTION IN THE STATIONARY GRIPPER COIL POWER CABLE FOR ROD G13. THIS SINGLE DROPPED ROD RESULTED IN A NEGATIVE FLUX RATE SIGNAL ON TWO POWER RANGE DETECTORS, THEREBY RESULTING IN A REACTOR TRIP SIGNAL. THE ROOT CAUSE OF THE BROKEN CONNECTION WAS CORROSION AT THE CONDUCTOR/PIN INTERFACE. IMMEDIATE CORRECTIVE ACTION CONTROL ROOM OPERATORS PERFORMED THE ACTIONS REQUIRED BY THE APPLICABLE EMERGENCY OPERATING PROCEDURE. THE BROKEN CONNECTOR WAS REPLACED. A FUNCTIONAL TEST WAS PERFORMED BY FULLY WITHDRAWING AND THEN INSERTING THE AFFECTED ROD. LONG TERM CORRECTIVE ACTION WILL BE TO INSPECT AND REPLACE CONNECTORS AS NECESSARY DURING THE THIRD REFUELING OUTAGE.

FORM 144 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
423 1990 030 0 9102070051 220935 12/31/90

ABSTRACT

POWER LEVEL - 086%. ON 12/31/90, AT 1636 HOURS WITH THE PLANT IN MODE 1 AT 86% POWER, 580F AND 2250 PSIA, A MANUAL REACTOR TRIP WAS INITIATED DUE TO TWO SIX INCH MOISTURE SEPARATOR DRAIN LINE (DSM) PIPING BREAKS IN THE TURBINE BLDG. FOLLOWING THE TRIP A MAIN STEAM LINE ISOLATION WAS INITIATED TO MINIMIZE THE RELEASE OF STEAM INTO THE TURBINE BLDG. CAUSE OF THE EVENT WAS FAILURE OF THE 2 DSM LINES DOWNSTREAM OF THE RESPECTIVE LEVEL CONTROL VALVES. BOTH LINES APPEARED TO BURST, FAIL LONGITUDINALLY, THEN UNZIP CIRCUMFERENTIALLY AT THE MINIMUM WALL THICKNESS LOCATION. THE WALL THICKNESS AT THE RUPTURE WAS APPROX. 0.020 INCHES. THE CAUSE OF THE SEVERE WALL LOSS WAS SINGLE PHASE EROSION/CORROSION. THE COMBINATION OF TEMPERATURE, HIGH FLUID VELOCITY AND EXTREMELY LOW OXYGEN CONTENT ARE THE CAUSATIVE FACTORS. THE WALL LOSS WAS LOCALIZED. THE MINIMUM THICKNESS OCCURRED ADJACENT TO THE CONTROL VALVE(S) AND INCREASED AT 0.011 INCHES PER INCH DOWNSTREAM FROM THE VALVE(S). THE ROOT CAUSE ANALYSIS OF THE EVENT HAS NOT BEEN COMPLETED. AS IMMEDIATE CORRECTIVE ACTION CONTROL ROOM OPERATORS PERFORMED THE ACTIONS REQUIRED BY THE APPLICABLE EMERGENCY OPERATING PROCEDURES. THE RUPTURED PIPES WERE CAPPED PENDING REPAIRS DURING THE UPCOMING OUTAGE. THE DSM PUMPS AND PIPING WERE ISOLATED. POTENTIAL LONG TERM CORRECTIVE ACTIONS WILL BE EVALUATED WHEN THE ROOT CAUSE ANALYSIS IS COMPLETE.

FORM 145 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
424 1989 005 0 3903170282 213275 02/10/89

ABSTRACT

POWER LEVEL - 100%. ON 2-10-89, AT APPROX. 0050 CST, CONTROL ROOM OPERATORS RECEIVED MAIN FEEDWATER PUMP TURBINE (MFFT) "A" HIGH VIBRATION ALARMS. A CHECK OF THE VIBRATION MONITOR SYSTEM SHOWED A VIBRATION OF ONLY 1.2 MILS. (THE VIBRATION SYSTEM ALARMS AT 3 MILS AND TRIPS AT 5 MILS). AT APPROX. 0051 CST MFP "A" TRIPPED. STEAM/FEEDWATER FLOW MISMATCH ALARMS WERE RECEIVED ON ALL 4 STEAM GENERATORS (SG). TURBINE LOAD WAS MANUALLY REDUCED TO APPROXIMATELY 700 MWE AND CONTROL RODS PLACED IN AUTO TO FOLLOW LOAD. STEAM DUMP VALVE CONTROLLERS WERE MANUALLY OPERATED TO ATTEMPT TO MATCH STEAM/FEED FLOW. AT APPROXIMATELY 0053 CST, SG #4 REACHED 20% LEVEL AND THE SHIFT SUPERVISOR DIRECTED THE REACTOR TO BE MANUALLY TRIPPED. FEEDWATER ISOLATION AND START OF AUXILIARY FEEDWATER (AFW) PUMPS

VIBRATION TRIP CANNOT BE POSITIVELY IDENTIFIED. THE CAUSE OF THE TDAFW PUMP OVERSPEED TRIP, ALTHOUGH NOT POSITIVELY IDENTIFIED, MAY HAVE BEEN CAUSED BY PARTICULATE CONTAMINATION OF THE LUBE OIL, WHICH SERVES AS THE CONTROL SYSTEM HYDRAULIC FLUID. CORRECTIVE ACTIONS INCLUDE TEMPORARILY INSTALLING VIBRATION INSTRUMENTATION TO COLLECT MFP VIBRATION DATA. ADDITIONAL SURVEILLANCES WERE ALSO PERFORMED ON THE TDAFW PUMP TO ENSURE OPERABILITY.

FORM 146 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
424 1989 012 0 8900000000 216366 05/09/89

ABSTRACT

POWER LEVEL - 100%. ON 5/9/89, AT APPROX. 0905 CDT, THE UNIT BEGAN EXPERIENCING MAIN FEEDWATER PUMP (MFP) 'B' HIGH VIBRATION ALARMS (6 ALARMS IN 15 SECONDS), WHICH WOULD IMMEDIATELY CLEAR. THE TURBINE BUILDING OPERATOR (TBO) REPORTED NO UNUSUAL NOISE AT THE PUMP. THE ADVANCED TURBINE SUPERVISORY INSTRUMENTATION (ATSI) WAS CHECKED AND READINGS WERE FOUND TO BE BELOW ALARM LEVELS. AT THIS TIME IT WAS THOUGHT THAT PAINTERS, WORKING IN THE AREA, HAD MOVED CABLES CAUSING THE ALARM. ALARMS WERE AGAIN RECEIVED AT 1013 CDT AND A CHECK OF THE ATSI AND A REPORT FROM THE TBO DID NOT INDICATE ANYTHING ABNORMAL. BEARING METAL AND LUBE OIL TEMPERATURES WERE CHECKED ON THE MAIN COMPUTER, AND THE READINGS WERE ACCEPTABLE. ASSISTANCE WAS REQUESTED FROM MAINTENANCE AND ENGINEERING. ADDITIONAL ALARMS WERE RECEIVED BETWEEN 1028 AND 1040 CDT. THE INDIVIDUALS INVESTIGATING THE PROBLEM DID NOT DETECT ANY UNUSUAL VIBRATION OF THE MFP. AT 1040 CDT, MFP 'B' TRIPPED ON HIGH VIBRATION. CONTROL ROOM OPERATORS ATTEMPTED RECOVERY FROM THE PUMP TRIP, BUT WERE NOT ABLE TO PREVENT A REACTOR TRIP AT 1042 CDT DUE TO STEAM GENERATOR #4 LOW-LOW LEVEL. THE CAUSE OF THE FEEDWATER PUMP TRIP WAS A BROKEN SOLDER CONNECTION ON A TEST JACK IN THE ATSI VIBRATION CARD FOR THE LOW PRESSURE BEARING. A CONTRIBUTING CAUSE TO THE REACTOR TRIP WAS A FAILED BISTABLE IN THE CONTROL ROD DRIVE CIRCUITRY.

FORM 147 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
424 1989 016 1 8909080090 215175 07/09/89

ABSTRACT

POWER LEVEL - 100%. ON 7/8/89, AT 0327 CDT, A MANUALLY INITIATED REACTOR TRIP OCCURRED ON UNIT 1 WITH THE REACTOR AT 100% OF RATED THERMAL POWER. THE MANUAL TRIP WAS INITIATED BECAUSE THE LOOP 4 MAIN FEEDWATER ISOLATION VALVE (MFIV) FAILED CLOSED RESULTING IN A DECREASE IN THE NO. 4 STEAM GENERATOR LEVEL. THE PLANT WAS STABILIZED IN MODE 3 FOLLOWING THE REACTOR TRIP. TROUBLESHOOTING FOLLOWING THE MANUAL TRIP FAILED TO IDENTIFY THE EXACT CAUSE OF THE SPURIOUS CLOSURE. HOWEVER, 2 POTENTIAL FAILURE MECHANISMS WERE EVALUATED: SOLENOID FAILURE AND AUXILIARY RELAY FAILURE. CORRECTIVE ACTIONS FOR THE 7/8/89 EVENT INCLUDED TROUBLESHOOTING OF THE VALVE CONTROL CIRCUITRY, REPAIR OF THE ASSOCIATED HANDSWITCH FOR A PROBLEM NOTED DURING TROUBLESHOOTING BUT UNRELATED TO THE FAILURE, AND CONTINUED CONTROL LOOP MONITORING WITH A MULTI-CHANNEL RECORDER. ON 9/3/89, THE LOOP 4 MFIV SPURIOUSLY CLOSED AND THE RESULTING DECREASE IN FEEDWATER LED THE OPERATOR TO TRIP THE REACTOR AT 1445 CDT. CONTROL ROOM OPERATORS ACHIEVED STABLE PLANT CONDITIONS BY 1505 CDT. CORRECTIVE ACTION FOR THIS EVENT CONSISTED OF REPLACING A FAILED SOLENOID VALVE AND RETURNING THE VALVE TO THE VENDOR FOR FATIGUE ANALYSIS.

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 424 1989 018 0 8911070020 215754 10/02/89

ABSTRACT

POWER LEVEL - 087%. ON 10-2-89, AT APPROXIMATELY 0136 CDT, THE NO. 1 STEAM GENERATOR (SG) TRAIN "A" MAIN STEAM ISOLATION VALVE (MSIV) FAILED CLOSED. AT 0137 CDT, AN AUTOMATIC REACTOR TRIP OCCURRED DUE TO SG NO. 1 REACHING ITS LOW-LOW WATER LEVEL SETPOINT. A TURBINE TRIP, MAIN FEEDWATER ISOLATION AND AUXILIARY FEEDWATER ACTUATION OCCURRED AS DESIGNED FOLLOWING THE TRIP. THE MSIV CLOSED DUE TO A BLOWN FUSE IN THE CONTROL LOGIC POWER SUPPLY. INVESTIGATIONS REVEALED THAT GROUNDING PROBLEMS EXISTED IN THE 125VDC CONTROL POWER DISTRIBUTION PANEL AND INDICATED THAT A GROUND COULD HAVE EXISTED IN A MSIV LIMIT SWITCH WHICH SHOWED SIGNS OF INTERNAL MOISTURE RELATED DETERIORATION AND ARCING. THE COMBINATION OF THE GROUNDS IN THE CONTROL POWER DISTRIBUTION PANEL AND THE SUSPECT GROUND IN THE MSIV LIMIT SWITCH LIKELY CAUSED THE FUSE TO BLOW. THE GROUNDING PROBLEMS WERE CORRECTED AND THE MSIV LIMIT SWITCH AND FUSE REPLACED. CORRECTIVE ACTION TO PREVENT RECURRENCE INCLUDES COMPLETING A PREVIOUSLY IDENTIFIED TASK OF SEALING THE MSIV LIMIT SWITCHES DURING THE NEXT REFUELING OUTAGE TO PREVENT WATER INTRUSION.

FORM 149 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 424 1990 001 0 9003060244 217056 01/24/90

ABSTRACT

POWER LEVEL - 090%. ON 1-24-90, PARTIAL STROKE TESTING OF A MAIN STEAM ISOLATION VALVE (MSIV) WAS IN PROGRESS. DURING A PREVIOUS TEST, THE VALVE HAD FAILED TO REOPEN AUTOMATICALLY AT THE 10% CLOSED POSITION AS DESIGNED. AS A RESULT, PLANT PERSONNEL WERE PREPARED TO INSTALL A JUMPER TO REOPEN THE VALVE IF IT FAILED TO REOPEN AUTOMATICALLY. THE TEST BEGAN AND AN INDICATOR ILLUMINATED AT APPROXIMATELY 10% CLOSED; HOWEVER, UNKNOWN TO THE PERSONNEL INVOLVED, THERE WERE TWO LIMIT SWITCHES WHICH WERE NOT ADJUSTED TO ACTUATE CONCURRENTLY. CONSEQUENTLY, WHEN THE INDICATOR ILLUMINATED, THE OTHER LIMIT SWITCH HAD NOT YET ACTUATED AND IT APPEARED THAT THE VALVE WOULD NOT REOPEN AUTOMATICALLY. THE JUMPER WAS INSTALLED TO INITIATE VALVE REOPENING; HOWEVER, POSITION INDICATION WAS LOST AND THE MSIV WENT FULLY CLOSED. MSIV CLOSURE RESULTED IN A RAPID DECREASE IN WATER LEVEL IN STEAM GENERATOR (SG) #4 TO THE LOW-LOW LEVEL SETPOINT AND AN AUTOMATIC REACTOR TRIP OCCURRED AT 0133 CST. AN INVESTIGATION DETERMINED THAT WHEN THE JUMPER WAS INSTALLED, THE MSIV CONTROL FUSES FAILED, WHICH CAUSED THE VALVE TO CLOSE. CORRECTIVE ACTIONS INCLUDE: A) FUSE REPLACEMENT, B) PROCEDURE REVISION TO INCLUDE A CAUTION THAT THE INDICATOR MAY LIGHT PRIOR TO THE VALVE RECEIVING THE REOPEN SIGNAL, AND, C) LIMIT SWITCH ADJUSTMENT TO OBTAIN CONCURRENT ACTUATION.

FORM 150 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 424 1990 011 0 9005290001 218322 04/25/90

ABSTRACT

POWER LEVEL - 082%. ON 4-25-90, AT 1257 CDT, THE UNIT 1 REACTOR WAS

MINOR FLUCTUATION WAS OBSERVED AND FEEDWATER FLOW TO SG NO. 2 WAS OBSERVED TO BE DECREASING RAPIDLY. THE BALANCE OF PLANT OPERATOR ATTEMPTED TO INCREASE THE FEEDWATER FLOW BY INCREASING THE DEMAND SIGNALS TO MAIN FEEDWATER REGULATING VALVE (MFRV) NO. 2 AND BYPASS FEEDWATER REGULATING VALVE NO. 2. HOWEVER, SG NO. 2 LEVEL CONTINUED TO FALL WHICH FORCED INITIATION OF THE REACTOR TRIP. THE AUXILIARY FEEDWATER SYSTEM ACTUATED AS DESIGNED FOLLOWING THE REACTOR TRIP TO MAINTAIN SG LEVELS. BY 1310 CDT, THE UNIT WAS STABILIZED IN MODE 3. SUBSEQUENT INVESTIGATION INDICATED THAT MFRV NO. 2 HAD CLOSED AND CAUSED THE EVENT. THE MFRV APPARENTLY CLOSED WHEN WORKERS INSTALLING INSULATION ON THE MFRV INADVERTENTLY BUMPED INTO AND MISPOSITIONED THE LOCAL CONTROL LEVERS LOCATED ON THE SIDE OF THE VALVE POSITIONER. MISPOSITIONING OF THE LOCAL CONTROL LEVERS INTERRUPTED THE CONTROL AIR SUPPLY TO THE VALVE POSITIONER. SINCE THE LOCAL CONTROL LEVERS ARE NOT USED FOR NORMAL OPERATIONS, CORRECTIVE ACTION TO PREVENT RECURRENCE HAS BEEN TAKEN TO REMOVE THESE LEVERS FROM BOTH THE UNIT 1 AND UNIT 2 MFRVS.

FORM 151 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 424 1990 016 0 9003280290 219379 07/23/90

ABSTRACT

POWER LEVEL - 100%. ON 7-23-90 AT 0600 CDT, UNIT 1 WAS OPERATING IN MODE 1 AT 100% POWER WHEN A 4160/480 VOLT NON-1E TRANSFORMER (1N801) EXPERIENCED AN INTERNAL FAULT, CAUSING A TRIP OF THE ASSOCIATED FEEDER BREAKER. THIS TRANSFORMER WAS SUPPLYING POWER TO THE SPEED CONTROL CIRCUITRY FOR BOTH OF THE MAIN FEEDWATER PUMP (MFP) TURBINES. THE MFPs TRIPPED, THE STEAM GENERATOR (SG) WATER LEVELS DECREASED TO 24% NARROW RANGE LEVEL, AND THE REACTOR OPERATOR INITIATED A MANUAL REACTOR TRIP AT 0602 CDT. THE MAIN FEEDWATER SYSTEM ISOLATED AND THE MOTOR-DRIVEN AUXILIARY FEEDWATER (AFW) PUMPS STARTED, AS EXPECTED, WHEN THE REACTOR TRIP OCCURRED. THE TURBINE DRIVEN AFW PUMP STARTED WHEN TWO OF THE FOUR SG'S REACHED THEIR LOW-LOW LEVEL SETPOINT. NORMAL PLANT CONDITIONS WERE ESTABLISHED IN MODE 3 (HOT STANDBY) AT 0656 CDT. THE CAUSE OF THE EVENT WAS AN INTERNAL FAULT IN THE 1N801 TRANSFORMER. FURTHER INVESTIGATION OF THE CAUSE OF THE FAULT IS IN PROGRESS.

FORM 152 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 424 1990 023 0 9101220420 220828 12/18/90

ABSTRACT

POWER LEVEL - 100%. ON 12-18-90 AT 1936 CST, UNIT WAS OPERATING AT 100% POWER WHEN A 4160/480 VOLT NON-1E TRANSFORMER (1N810X) EXPERIENCED AN INTERNAL FAULT. THIS FAILURE RESULTED IN A LOSS OF POWER FOR THE SPEED CONTROL CIRCUITRY FOR THE 1B MAIN FEEDWATER PUMP (MFP) TURBINE AND CERTAIN SUPPORT SYSTEMS FOR EMERGENCY DIESEL GENERATOR 1B. FEEDWATER PUMP SPEED, FEEDWATER FLOW, AND STEAM GENERATOR (SG) LEVELS DECREASED. THE REACTOR OPERATOR INITIATED A MANUAL REACTOR TRIP AT 1937 CST AFTER EFFORTS TO MAINTAIN SG LEVELS WERE UNSUCCESSFUL. ALL SAFETY RELATED FUNCTIONS OCCURRED PER DESIGN FOLLOWING THE REACTOR TRIP; HOWEVER, A NON-1E 4160 VOLT BUS FAILED TO AUTOMATICALLY TRANSFER TO THE RESERVE AUXILIARY TRANSFORMERS CAUSING A TEMPORARY LOSS OF VARIOUS NON-1E HOUSE LOADS. TRANSFER OF THE 4160 VOLT BUS WAS COMPLETED MANUALLY AND NORMAL PLANT CONDITIONS WERE ESTABLISHED FOR HOT STANDBY BY 1956 CST. THE ROOT CAUSE FOR THE

THE INVOLVED TRANSFORMERS ARE GE CLASS AA/FA, THREE PHASE, DRY TYPE TRANSFORMERS. THE FAILED TRANSFORMER HAS BEEN REPLACED AND FURTHER STUDY OF POSSIBLE FACTORS WHICH MAY HAVE LED TO THE FAILURE IS IN PROGRESS.

1
FORM 153 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
425 1989 019 0 8906050216 214183 05/02/89

ABSTRACT

POWER LEVEL - 063%. ON 5-2-89, PERSONNEL WERE PERFORMING A CHECK OF TURBINE TRIP DEVICES PER PROCEDURE 14286-2, "WEEKLY TURBINE TRIP DEVICE OPERABILITY TEST". PRIOR TO PLACING THE TURBINE IN STANDBY, AN OVERSPEED TRIP DEVICE TEST MALFUNCTIONED AND, AFTER CONSULTING THE TURBINE VENDOR REPRESENTATIVE, THE OPERATOR ATTEMPTED TO RESET THE MALFUNCTION USING THE "STOP/GO NORMAL" BUTTON. WHEN THIS BUTTON WAS PUSHED AND RELEASED, AT 1102 CDT, THE TURBINE TRIPPED WHICH RESULTED IN A REACTOR TRIP. PRIOR TO THE TURBINE TRIP, A DEFECTIVE WELD IN A ONE INCH STEAM LINE WAS RELEASING STEAM INTO AN AREA UNDER THE TURBINE FRONT STANDARD WHERE THE TURBINE TRIP DEVICE CONTROLS ARE LOCATED. THE CAUSE OF THE TURBINE TRIP HAS NOT BEEN DETERMINED DESPITE EXTENSIVE TROUBLESHOOTING. HOWEVER, IT COULD BE POSTULATED THAT THE STEAM LEAK AFFECTED MECHANICAL OR ELECTRICAL COMPONENTS TO PRODUCE THE TRIP. FOLLOWING THE TRIP, THE WELD WAS REPAIRED AND THE TRIP DEVICE OPERABILITY TESTS WERE REPEATED SEVERAL TIMES BUT THE TURBINE TRIP DEVICE MALFUNCTION COULD NOT BE DUPLICATED.

1
FORM 154 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
425 1989 020 0 8906130270 214295 05/12/89

ABSTRACT

POWER LEVEL - 078%. ON 5-12-89, WHILE PERSONNEL WERE PERFORMING SURVEILLANCE OF NUCLEAR INSTRUMENT CHANNEL N44, A 2 OUT OF 4 HI FLUX RATE TRIP COINCIDENCE SIGNAL WAS RECEIVED, CAUSING AN AUTOMATIC REACTOR TRIP. POWER RANGE CHANNEL N43 EXPERIENCED A MOMENTARY LOSS OF POWER, WHICH TRIPPED THE RATE TRIP BISTABLE ON N43. THE CONTROL ROOM OPERATOR ACKNOWLEDGED THE ALARM FOR THE TRIPPED BISTABLE, BUT FAILED TO NOTICE THAT THE WRONG BISTABLE HAD TRIPPED FOR THE WORK BEING PERFORMED. A STEP OF THE SURVEILLANCE PROCEDURE, WHICH WAS BEING PERFORMED FOR N44, REQUIRES THE FUSES TO BE PULLED. THIS TRIPPED THE RATE TRIP BISTABLE FOR N44. THE N43 AND N44 BISTABLES SATISFIED THE 2 OUT OF 4 LOGIC FOR A POWER RANGE TRIP. THE REACTOR TRIP BREAKERS OPENED, TRIPPING THE REACTOR AT 1429 CDT. ALL AUTOMATIC SYSTEMS FUNCTIONED AS DESIGNED. THE CONTROL ROOM OPERATORS BROUGHT THE PLANT TO STABLE CONDITIONS IN MODE 3 (HOT STANDBY). THE CAUSES OF THIS EVENT WERE THE LOSS OF POWER TO CHANNEL N43 AND THE FAILURE OF CONTROL ROOM OPERATORS TO NOTICE THAT THE WRONG BISTABLE HAD TRIPPED. TROUBLESHOOTING CHANNEL N43 DID NOT REVEAL THE CAUSE FOR THE LOSS OF POWER. A COPY OF THIS LER WILL BE PLACED IN THE OPERATION REQUIRED READING BOOK.

1
FORM 155 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
425 1989 021 1 8908140002 215006 05/22/89

POWER LEVEL - 100%. ON 7-26-89, AT 0136 CDT, WHILE PERSONNEL WERE PERFORMING CORRECTIVE MAINTENANCE ON POWER RANGE NUCLEAR INSTRUMENTATION CHANNEL 2N43, A 2 OUT OF 4 OVERTEMPERATURE DELTA-T (OTDT) TRIP SIGNAL WAS RECEIVED AND CAUSED AN AUTOMATIC REACTOR TRIP FOR VEGP UNIT 2. THE CORRECTIVE MAINTENANCE ON 2N43 REQUIRED THE CHANNEL 111 OTDT REACTOR TRIP BISTABLE TO BE TRIPPED AS A PART OF THE REMOVAL FROM SERVICE PROCESS. A LOSS OF INPUT FROM PRESSURIZER PRESSURE CHANNEL 2P458 THEN OCCURRED AND CAUSED THE CHANNEL IV OTDT REACTOR TRIP BISTABLE TO TRIP. THIS COMPLETED THE 2 OUT OF 4 LOGIC REQUIRED FOR REACTOR TRIP ON OTDT. BY 0156 CDT, THE PLANT HAD BEEN STABILIZED IN MODE 3. THE FAILURE OF CHANNEL 2P458 WAS CAUSED BY THE FAILURE OF AN OPERATIONAL AMPLIFIER IN THE NON-ISOLATED SECTION OF AN NLP2 PROCESS CARD. THIS CHANNEL HAD SPIKED LOW ON TWO SEPARATE OCCASIONS SEVERAL DAYS EARLIER BUT TROUBLESHOOTING FAILED TO IDENTIFY THE EXACT CAUSE OF THE PROBLEM UNTIL AFTER THE REACTOR TRIP. AN ADDITIONAL SPIKING PROBLEM HAD ALSO BEEN EXPERIENCED ON CHANNEL 2N43 AND WAS STILL BEING INVESTIGATED AT THE TIME OF THE EVENT. CORRECTIVE ACTION CONSISTED OF REPLACING THE DEFECTIVE NLP2 CARD FOR CHANNEL 2P458 AND REPLACING A SUSPECT CARD FOR CHANNEL 2N43.

FORM 156 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 425 1989 024 0 8908280268 215149 07/26/89

ABSTRACT

POWER LEVEL - 100%. ON 7-26-89, AT 0136 CDT, WHILE PERSONNEL WERE PERFORMING CORRECTIVE MAINTENANCE ON POWER RANGE NUCLEAR INSTRUMENTATION CHANNEL 2N43, A 2 OUT OF 4 OVERTEMPERATURE DELTA-T (OTDT) TRIP SIGNAL WAS RECEIVED AND CAUSED AN AUTOMATIC REACTOR TRIP FOR VEGP UNIT 2. THE CORRECTIVE MAINTENANCE ON 2N43 REQUIRED THE CHANNEL 111 OTDT REACTOR TRIP BISTABLE TO BE TRIPPED AS A PART OF THE REMOVAL FROM SERVICE PROCESS. A LOSS OF INPUT FROM PRESSURIZER PRESSURE CHANNEL 2P458 THEN OCCURRED AND CAUSED THE CHANNEL IV OTDT REACTOR TRIP BISTABLE TO TRIP. THIS COMPLETED THE 2 OUT OF 4 LOGIC REQUIRED FOR REACTOR TRIP ON OTDT. BY 0156 CDT, THE PLANT HAD BEEN STABILIZED IN MODE 3. THE FAILURE OF CHANNEL 2P458 WAS CAUSED BY THE FAILURE OF AN OPERATIONAL AMPLIFIER IN THE NON-ISOLATED SECTION OF AN NLP2 PROCESS CARD. THIS CHANNEL HAD SPIKED LOW ON TWO SEPARATE OCCASIONS SEVERAL DAYS EARLIER BUT TROUBLESHOOTING FAILED TO IDENTIFY THE EXACT CAUSE OF THE PROBLEM UNTIL AFTER THE REACTOR TRIP. AN ADDITIONAL SPIKING PROBLEM HAD ALSO BEEN EXPERIENCED ON CHANNEL 2N43 AND WAS STILL BEING INVESTIGATED AT THE TIME OF THE EVENT. CORRECTIVE ACTION CONSISTED OF REPLACING THE DEFECTIVE NLP2 CARD FOR CHANNEL 2P458 AND REPLACING A SUSPECT CARD FOR CHANNEL 2N43.

FORM 157 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 425 1989 027 0 8911090270 215919 10/11/89

ABSTRACT

POWER LEVEL - 058%. ON 10/11/89, AT 2333 CDT, AN AUTOMATIC REACTOR TRIP OCCURRED WITH THE REACTOR IN STABLE OPERATION AT 58% OF RATED THERMAL POWER. ALL AUTOMATIC SAFETY FEATURES FUNCTIONED AS REQUIRED AND THE REACTOR WAS STABILIZED IN MODE 3 WITHOUT INCIDENT. NO ANNUNCIATOR OR OTHER WARNING OF A PROBLEM PRECEDED THE REACTOR TRIP.

OPERABILITY TESTING OF THE CONTROL RODS THEN INDICATED THAT A PROBLEM EXISTED WITH ROD K-2 IN CONTROL BANK B. INVESTIGATION OF THE CONTROL ROD CIRCUITRY IDENTIFIED A FAILED DIODE WHICH HAD APPARENTLY RESULTED IN A LOSS OF CURRENT TO THE STATIONARY GRIPPER COIL. THIS ALLOWED THE ROD TO DROP INTO THE CORE AND INITIATE A NEGATIVE FLUX RATE TRIP. CORRECTIVE ACTION INCLUDED REPLACING THE DIODE FOR ROD K-2.

FORM 158 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 425 1989 029 0 8912120165 216109 11/05/89

ABSTRACT

POWER LEVEL - 100%. ON 11-5-89, PLANT PERSONNEL WERE RETURNING A HEATER DRAIN TANK HIGH LEVEL DUMP VALVE, 2LV-4333, TO SERVICE FOLLOWING REPLACEMENT OF VALVE PACKING AND GASKETS. THE VALVE WAS ISOLATED FROM THE HEATER DRAIN TANK AND OPERATORS NOTICED IT INDICATED 30% OPEN. TO CHECK OPERABILITY, THE OPERATORS ISOLATED THE AIR LINE TO THE VALVE, WHEREUPON IT WENT FULL OPEN, AS EXPECTED. ATTRIBUTING THE 30% OPENING TO A VALID DEMAND SIGNAL, OPERATORS BEGAN TO OPEN THE VALVES WHICH HAD ISOLATED 2LV-4333. AT THIS POINT, THE OPERATORS NOTICED STEAM AND WATER COMING FROM THE PACKING. THE 30% OPEN VALVE CAUSED THE HEATER DRAIN TANK TO DUMP TO THE MAIN CONDENSER. THIS RESULTED IN LOW MAIN FEEDWATER PUMP SUCTION PRESSURE WHICH CAUSED THE PUMP TO TRIP. IN ADDITION, THE STANDBY CONDENSATE PUMP FAILED TO START ON LOW FEEDWATER PUMP SUCTION PRESSURE. THE REDUCED FEEDWATER FLOW RESULTED IN A RAPID DECREASE IN STEAM GENERATOR WATER LEVELS. ANTICIPATING AN AUTOMATIC REACTOR TRIP, CONTROL ROOM OPERATORS INITIATED A MANUAL REACTOR TRIP WITH STEAM GENERATOR LEVELS AT 19% (NARROW RANGE INDICATOR) AT 1223 CST. VALVE 2LV-4333 MOVED TO THE 30% OPEN POSITION DUE TO A DEFECTIVE O-RING (WHICH WAS REPLACED) IN THE VALVE ACTUATOR. THE STANDBY CONDENSATE PUMP FAILURE TO START WAS DUE TO ITS BREAKER BEING IMPROPERLY RACKED IN. THE BREAKER WAS RACKED IN PROPERLY AND THE PUMP TESTED SUCCESSFULLY.

FORM 159 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 425 1989 031 0 9001020207 216251 12/02/89

ABSTRACT

POWER LEVEL - 100%. ON 12-2-89, PLANT PERSONNEL WERE RELEASING A CLEARANCE ON HEATER DRAIN TANK (HOT) HIGH LEVEL DUMP VALVE 2LV-4334. THE HIGH LEVEL DUMP VALVE FOR MOISTURE SEPARATOR REHEATER (MSR) "D", 2LV-4525, WAS IN A 50% JACKED-OPENED POSITION DUE TO 2LV-4334 BEING ISOLATED. UPON OPENING THE VALVE WHICH ISOLATED 2LV-4334, IT BECAME EVIDENT THAT 2LV-4334 WAS NOT CLOSED. THE HOT LEVEL DECREASED AND THE NORMAL LEVEL CONTROL VALVE, 2LV-4332, CLOSED. THE ISOLATION VALVE WAS RECLOSING AND HOT LEVEL ROSE; HOWEVER, 2LV-4332 FAILED TO REOPEN RESULTING IN RISING FEEDWATER HEATER LEVELS AND, DUE TO THE CONFIGURATION OF 2LV-4525, MSR D LEVEL ROSE AS WELL. AT 0341 CST, MSR D LEVEL REACHED THE HIGH LEVEL SETPOINT GIVING A TURBINE/REACTOR TRIP. THE ROOT CAUSE FOR THE EVENT WAS COGNITIVE PERSONNEL ERROR INVOLVING REASSEMBLY OF 2LV-4334. THE VALVE WAS REASSEMBLED SUCH THAT ITS POSITION INDICATION SHOWED CLOSED WHEN IT WAS ACTUALLY FULL OPEN. FOR 2LV-4332, THE LEVEL CONTROL SENSING LINES WERE DISCOVERED TO BE CLOGGED WHICH RESULTED IN ITS MALFUNCTION. ACTIONS TO PREVENT RECURRENCE INCLUDE DISCUSSING THIS EVENT IN MAINTENANCE SHOP MEETINGS, IMPLEMENTATION OF A PERIODIC TASK TO BLOWDOWN THE LEVEL CONTROL

FORM 160 LER SCSS DATA 04-13-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
425 1990 002 0 9004260305 218045 03/20/90

ABSTRACT

POWER LEVEL - 100%. ON 3-20-90, AT 0820 CST, A UNIT 2 GENERATOR PRIMARY DIFFERENTIAL RELAY ENERGIZED CAUSING A GENERATOR TRIP, TURBINE TRIP, AND REACTOR TRIP. THE RELAY ENERGIZED UPON A PHASE TO GROUND FAULT WHICH OCCURRED WHEN A TRUCK OPERATOR BACKED INTO A SUPPORT POLE FOR A 230KV PHASE "C" "SWITCHER" FEEDER LINE FOR UNIT 1 RESERVE AUXILIARY TRANSFORMER (RAT) "A". THE 230KV LINE CAME IN CONTACT WITH THE GROUND CAUSING A FAULT WHICH ALSO TRIPPED UNIT 1 RAT "A" AND UNIT 2 RAT "B". DIESEL GENERATOR 29 STARTED AUTOMATICALLY AND RESTORED POWER TO EMERGENCY BUS 2BA03. A LOSS OF POWER TO CERTAIN NON-IE BUSES RESULTED IN A TRIP OF REACTOR COOLANT PUMPS 2 AND 4. AT 1035 CST, NORMAL OPERATING PROCEDURES WERE ENTERED AFTER THE UNIT WAS STABILIZED IN MODE 3. ALTHOUGH THE INITIATING EVENT WAS THE TRUCK BACKING INTO THE 230KV SUPPORT POLE, CAUSING A PHASE TO GROUND FAULT, THE UNIT SHOULD NOT HAVE TRIPPED ON THE GROUND FAULT CURRENT RECORDED DURING THIS EVENT. INVESTIGATION DETERMINED THE CAUSE FOR THE ACTUATION OF THE GENERATOR PRIMARY DIFFERENTIAL RELAY WAS INCORRECT TAP SETTINGS FOR VARIABLE RATIO CURRENT TRANSFORMERS LOCATED ON THE GENERATOR MAIN OUTPUT BREAKERS. A CONTRIBUTING CAUSE WAS THE FAILURE TO TEST THE RELAY TO VERIFY THAT IT WAS RECEIVING THE PROPER VOLTAGE AND CURRENT SIGNALS FROM THE CURRENT TRANSFORMERS. THE TAP SETTINGS FOR THE CURRENT TRANSFORMERS WERE CORRECTED AND THE REMAINING PROTECTIVE RELAYS WILL BE TESTED.

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FORM 161 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
425 1990 007 0 9006190115 218543 05/06/90

ABSTRACT

POWER LEVEL - 100%. ON 5-6-90, AT 2039 CDT, CONTROL ROOM OPERATORS RECEIVE TROUBLE ALARMS INDICATING CLOSURE OF MAIN STEAM ISOLATION VALVE (MSIV) 2HV-3026A AND STEAM GENERATOR (SG) #3 LOW-LOW WATER LEVEL. AN AUTOMATIC REACTOR TRIP ENSUED. THE MAIN FEEDWATER SYSTEM ISOLATED AND THE AUXILIARY FEEDWATER SYSTEM STARTED AS DESIGNED. UNIT CONDITIONS WERE STABILIZED IN MODE 3 AT 2050 CDT. THE DIRECT CAUSE OF THIS EVENT WAS THE CLOSURE OF THE MSIV, WHICH RESULTED IN THE REACTOR TRIP WHEN SG #3 REACHED ITS LOW-LOW WATER LEVEL SETPOINT. AN INVESTIGATION OF THE MSIV CONTROLS FOUND THAT THE AIR SOLENOID TO THE VALVE'S HYDRAULIC PUMP WAS NOT ENERGIZED SO THAT AIR PRESSURE WAS NOT AVAILABLE TO DRIVE THE PUMP MOTOR. FURTHER INVESTIGATION REVEALED THAT THE AX1 RELAY HAD FAILED. THE AX1 RELAY ENERGIZES BOTH THE AIR SUPPLY SOLENOID AND THE HYDRAULIC PUMP SOLENOID TO HOLD THE MSIV OPEN. WHEN THE AX1 RELAY FAILED, THE LOSS OF HYDRAULIC FLUID PRESSURE TO THE VALVE CAUSED THE MSIV TO CLOSE. THE FAILURE OF THE RELAY WAS THE ROOT CAUSE FOR THIS EVENT. THE FAILED RELAY WAS REPLACED AND THE MSIV WAS TESTED AND VERIFIED TO OPERATE SATISFACTORILY. THE FAILED RELAY HAS BEEN RETURNED TO THE VENDOR FOR ANALYSIS.

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FORM 162 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
425 1990 009 0 9009000151 219040 04/23/90

POWER LEVEL - 037%. ON 6-25-90, INDICATION WAS RECEIVED IN THE CONTROL ROOM THAT MAIN STEAM ISOLATION VALVE (MSIV) 2HV-3026A WAS CLOSING. OPERATORS WHO WERE DISPATCHED TO INVESTIGATE FOUND HYDRAULIC FLUID SPRAYING FROM THE VALVE. AFTER AN UNSUCCESSFUL ATTEMPT TO KEEP THE VALVE OPEN, A MANUAL REACTOR TRIP WAS INITIATED AT 1906 CDT DUE TO DECREASING LEVEL IN STEAM GENERATOR NO. 3. A FEEDWATER ISOLATION AND AN AUXILIARY FEEDWATER ACTUATION OCCURRED PER DESIGN. BY 1947 CDT, THE UNIT HAD BEEN STABILIZED IN MODE 3 WITHOUT INCIDENT. THE CAUSE FOR THE MSIV CLOSURE WAS THE FAILURE OF AN O-RING WHICH SEALS THE CONNECTION OF THE "NON-PUMP SIDE" MANIFOLD ASSEMBLY TO A BOSS ON THE ACTUATOR CYLINDER. FACTORS WHICH COULD HAVE CONTRIBUTED TO THE O-RING FAILURE INCLUDED A SLIGHT MISALIGNMENT OF THE CYLINDER BOSS AND MANIFOLD ASSEMBLY, A SMALL LOW SPOT AT THE EDGE OF THE ACTUATOR CYLINDER BOSS, AND EVIDENCE THAT THE O-RING MAY HAVE BEEN PINCHED ON INSTALLATION. AS A TEMPORARY MODIFICATION, A SPACER AND A SMALLER DIAMETER O-RING HAVE BEEN INSTALLED TO ENSURE THE O-RING SEATING SURFACE IS NOT TOO CLOSE TO THE OUTSIDE DIAMETER OF THE BOSS. THE PROPOSED PERMANENT MODIFICATION IS TO MACHINE THE BOSS TO PROVIDE A BETTER SEATING SURFACE.

FORM 163 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 425 1990 009 0 9008060053 219061 06/30/90

ABSTRACT

POWER LEVEL - 018%. ON 6-30-90, A PROLONGED DELAY WAS EXPERIENCED IN ROLLING THE UNIT 2 TURBINE AND SYNCHRONIZING THE GENERATOR TO THE GRID. DURING THIS DELAY, REACTOR POWER WAS ALLOWED TO INCREASE STEADILY DUE TO XENON BURNOUT. SINCE SYNCHRONIZATION APPEARED IMMINENT AND TO AVOID PRODUCTION OF LIQUID RADWASTE, THE SHIFT SUPERINTENDENT (SS) DECIDED NOT TO BORATE TO HOLD POWER WITHIN THE NORMAL RANGE FOR SYNCHRONIZATION BUT RATHER TO PROCEED WITH THE TRANSFER OF STEAM GENERATOR (SG) LEVEL CONTROL TO THE MAIN FEEDWATER REGULATING VALVES (MFRV'S). THIS ACTION DID NOT FOLLOW THE NORMAL SEQUENCE PROVIDED FOR BY THE UNIT OPERATING PROCEDURE (UOP) AND, DUE TO A FURTHER DELAY IN SYNCHRONIZATION, SG LEVEL CONTROL BECAME DIFFICULT. SUBSEQUENTLY, A FEEDWATER ISOLATION AND A TURBINE TRIP OCCURRED WHEN A SG REACHED ITS HIGH-HIGH LEVEL SETPOINT. SG LEVELS THEN FELL RAPIDLY AND FORCED INITIATION OF A MANUAL REACTOR TRIP AT 1150 CDT. ALL SYSTEMS RESPONDED APPROPRIATELY AND BY 1204 CDT THE UNIT HAD BEEN STABILIZED IN MODE 3. THE ROOT CAUSE FOR THE EVENT WAS A COGNITIVE PERSONNEL ERROR BY THE SS. THE SS WAS AWARE OF THE DIFFICULTY THAT COULD BE EXPECTED IN CONTROLLING SG LEVELS WITH THE TURBINE UNLOADED AND REACTOR POWER CONTINUING TO RISE. HOWEVER, HE ELECTED TO OPERATE IN THIS CONFIGURATION AND AUTHORIZED THE SEQUENCE DEVIATION INVOLVING THE TRANSFER TO THE MFRV'S.

FORM 164 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 440 1990 001 0 9002090006 216695 01/07/90

ABSTRACT

POWER LEVEL - 100%. ON JANUARY 7, 1990, AT 1132, A REACTOR SCRAM OCCURRED DUE TO A REACTOR WATER LEVEL OF LESS THAN LEVEL 3 (+177.7 INCHES ABOVE THE TOP OF ACTIVE FUEL). THE LOW WATER LEVEL OCCURRED AFTER AN IMPROPER TRANSFER OF 480 VOLT AC POWER SUPPLIES RESULTED IN A MOMENTARY POWER INTERRUPTION TO THE FEEDWATER CONTROL CIRCUITRY AND A

THE BUS TRANSFER WAS MADE. TO PREVENT RECURRENCE, THE OPERATOR HAS BEEN COUNSELED ON THE IMPORTANCE OF PAYING CLOSE ATTENTION TO DETAIL WHEN OPERATING PLANT EQUIPMENT. THE SYSTEM OPERATING INSTRUCTION WAS REVISED AND SUPPLEMENTAL TRAINING ON LIVE-BUS TRANSFERS WAS DEVELOPED. INVESTIGATION IS BEING PERFORMED INTO POSSIBLE DESIGN CHANGES TO INCREASE FEEDWATER CONTROL SYSTEM AVAILABILITY IN THE EVENT OF LOSS OF NON-ESSENTIAL BUSES. AS PART OF THE ESTABLISHED REQUALIFICATION TRAINING PROGRAM, ALL PLANT LICENSED OPERATORS WILL BE INSTRUCTED ON THE LESSONS LEARNED FROM THIS EVENT. SUBMITTAL OF THIS REPORT ALSO MEETS THE REQUIREMENTS FOR TECHNICAL SPECIFICATION 3.5.1 ACTION G WHICH REQUIRES A SPECIAL REPORT FOLLOWING ANY EMERGENCY CORE COOLING SYSTEM ACTUATION AND INJECTION INTO THE REACTOR COOLANT SYSTEM.

FORM 165 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 443 1989 008 0 8907310204 214903 06/22/89

ABSTRACT

POWER LEVEL - 003%. ON 6/22/89, A MANUAL REACTOR TRIP WAS INITIATED WHILE CONDUCTING A NATURAL CIRCULATION TEST. SHORTLY AFTER TRIPPING THE REACTOR COOLANT PUMPS, AS PER THE NATURAL CIRCULATION TEST PROCEDURE, ONE OF THE CONDENSER STEAM DUMP VALVES BEING USED TO CONTROL TEMPERATURE FAILED TO THE FULL OPEN POSITION. THIS OPEN VALVE CAUSED AN INCREASED STEAM DEMAND WHICH INITIATED AN UNPLANNED PLANT COOLDOWN. THIS COOLDOWN CAUSED THE PRESSURIZER LEVEL TO DECREASE BELOW THE 17% MANUAL TRIP CRITERIA SPECIFIED IN THE STARTUP TEST PROCEDURE. DUE TO THE UNIT SHIFT SUPERVISOR'S MISINTERPRETATION OF THE TEST PROCEDURE TRIP CRITERIA, THE PLANT WAS NOT MANUALLY TRIPPED AT THAT TIME. WHEN THE STEAM DUMP VALVE, MS-PV-3011, WAS CLOSED, THE PREVIOUSLY DECREASING PRESSURIZER PRESSURE AND PRESSURIZER LEVEL BEGAN INCREASING. BOTH PRESSURIZER PRESSURE AND LEVEL CONTINUED TO INCREASE UNTIL THE PRESSURIZER PRESSURE, AT 2310 PSIG, APPROACHED THE TEST PROCEDURE MANUAL TRIP CRITERION OF 2340 PSIG AND A MANUAL REACTOR TRIP WAS INITIATED AT 12:36PM. THE CAUSE OF MS-PV-3011 FAILING TO THE FULL OPEN POSITION HAS BEEN DETERMINED TO BE THE POSITIONER FEEDBACK LINKAGE WHICH BECAME DISCONNECTED DURING THE TEST. CORRECTIVE ACTION FOR THIS VALVE AND SIMILAR VALVES IS BEING SCHEDULED. THE STARTUP TEST PROGRAM WILL BE REVISED TO REQUIRE THAT A MORE COMPREHENSIVE PRE-TEST BRIEFING BE PROVIDED AND A DETERMINATION BE MADE OF WHICH TESTS REQUIRE SPECIAL CLASSROOM AND REVIEWED.

FORM 166 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 443 1990 015 1 9011050112 219937 06/20/90

ABSTRACT

POWER LEVEL - 030%. ON 6/20/90, AT 4:39 P.M., WHILE IN MODE 1 AT 30% REACTOR POWER AND INCREASING, A TURBINE-GENERATOR TRIP WITH REACTOR TRIP OCCURRED. THE TRIP WAS INITIATED BY THE ACTUATION OF A MAIN GENERATOR GROUND FAULT RELAY DESIGNED TO PROTECT THE LAST 5% OF GENERATOR WINDINGS FROM A GROUND FAULT. AN EMERGENCY FEEDWATER (EFW) ACTUATION ALSO OCCURRED DUE TO LOW-LOW STEAM GENERATOR NARROW RANGE LEVEL. STEAM GENERATOR "A" EFW ISOLATED DUE TO HIGH EFW FLOW ONE MINUTE INTO THE EVENT. THE TURBINE GENERATOR TRIPPED DUE TO THE GROUND FAULT RELAY ACTUATING. ALL THE APPLICABLE TRIPS AND INTERLOCKS ASSOCIATED WITH A TURBINE GENERATOR, REACTOR TRIP AND FEEDWATER ISOLATION FUNCTIONED AS DESIGNED. PARAMETERS ASSOCIATED WITH THE

CAUSE OF TO FULL SPEED, THUS CREATING A SITUATION WHERE BOTH EFW PUMPS WERE SUPPLYING FEEDWATER SIMULTANEOUSLY. THE ROOT CAUSE FOR THE ACTUATION OF THE GROUND FAULT RELAY HAS BEEN DETERMINED TO BE INCORRECT RELAY SETTINGS PROVIDED BY THE VENDOR. A MINOR MODIFICATION (MMOD) WILL BE ISSUED TO REVISE THE RELAY SETTINGS AND BYPASS THE TRIP FUNCTION OF THE RELAY. ADDITIONAL CORRECTIVE ACTIONS INCLUDE REVISING THE EFW ISOLATION SETPOINT AS WELL AS REVIEWING AND UPDATING EMERGENCY OPERATING PROCEDURES.

FORM 167 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 443 1990 018 0 9008090069 219073 07/05/90

ABSTRACT

POWER LEVEL - 075%. ON 7/5/90, AT 4:29 P.M., WHILE IN MODE 1 AT 75% REACTOR POWER, A REACTOR TRIP WITH TURBINE TRIP OCCURRED. THE TRIP WAS INITIATED BY A MAIN STEAM LOW ELECTROHYDRAULIC CONTROL (EHC) OIL PRESSURE SIGNAL. A MAIN FEEDWATER ISOLATION ALSO OCCURRED DUE TO THE SENSITIVITY OF THE STEAM GENERATOR LEVEL TRIP SIGNALS TO PRESSURE PULSES. THE REACTOR TRIPPED DUE TO CONTACT CLOSURE OF THE EHC OIL PRESSURE SWITCHES SATISFYING THE TWO OUT OF THREE LOGIC FOR REACTOR TRIP ON LOW EHC OIL PRESSURE. ALL APPLICABLE TRIPS AND INTERLOCKS ASSOCIATED WITH THE REACTOR TRIP AND FEEDWATER ISOLATION FUNCTIONED AS DESIGNED. ALL OPERATOR ACTIONS WERE DETERMINED TO BE APPROPRIATE. THE ROOT CAUSE HAS BEEN DETERMINED TO BE EXCESSIVE VIBRATION OF THE EHC PRESSURE SWITCHES DUE TO THEIR MOUNTING LOCATION. THIS VIBRATION CAUSED THE SWITCHES TO CLOSE EVEN THOUGH ADEQUATE EHC OIL PRESSURE EXISTED. CORRECTIVE ACTIONS INCLUDE RELOCATION OF THE PRESSURE SWITCHES TO AN AREA WITH LESS VIBRATION AS WELL AS MONITORING THE PRESSURE SWITCHES IN THEIR NEW LOCATIONS UPON THE PLANT'S RETURN TO POWER OPERATIONS. ADDITIONALLY, A DESIGN CHANGE TO ELIMINATE THE EFFECTS OF THE PRESSURE PULSES ON THE STEAM GENERATOR LEVEL TRIP SIGNALS WILL BE EVALUATED. THIS IS THE FIRST EVENT OF THIS TYPE AT SEABROOK STATION.

FORM 168 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 443 1990 022 0 9010020286 219624 08/22/90

ABSTRACT

POWER LEVEL - 100%. ON 8/22/90 AT 9:19 A.M., EDT, WHILE IN MODE 1 AT 100% REACTOR POWER, A TURBINE-GENERATOR TRIP WITH REACTOR TRIP OCCURRED. THE TRIP WAS INITIATED BY AN APPARENT LOSS OF VOLTAGE ON THE ELECTROHYDRAULIC CONTROL (EHC) 24 VOLT DC BUS DURING TROUBLESHOOTING ACTIVITIES. A MAIN FEEDWATER ISOLATION ALSO OCCURRED SUBSEQUENT TO THE REACTOR TRIP. A WORK REQUEST WAS INITIATED TO PERFORM CIRCUIT CHECKS IN THE EARLY VALVE ACTUATION (EVA) CIRCUITRY DUE TO INCONSISTENT OPERATION OF THE EVA'S TEST INTERLOCK LIGHT LOCATED ON THE MAIN CONTROL BOARD (MCB). SUBSEQUENT TO INITIAL TESTING AT THE MCB, IT WAS DECIDED TO CONTINUE THE TESTING LOCALLY AT THE EHC CABINET. TWO TEST LEADS WERE USED TO SIMULATE THE TEST SIGNAL AND TO SUPPLY 24 VOLT DC POWER TO THE EVA CIRCUIT. AFTER THE SECOND APPLICATION OF THE TEST LEADS, A VOLTAGE DROP OCCURRED ON THE 24 VOLT DC TRIP BUS RESULTING IN A TURBINE-GENERATOR TRIP WITH REACTOR TRIP. THE ROOT CAUSE FOR THE LOSS OF VOLTAGE ON THE EHC 24 VOLT DC BUS COULD NOT BE CONCLUSIVELY DETERMINED, ALTHOUGH A CONTRIBUTING FACTOR WAS THE TROUBLESHOOTING ACTIVITY ASSOCIATED WITH THE EVA CIRCUIT. PERSONNEL ERROR IN APPLYING THE TEST LEADS HAS NOT BEEN RULED OUT BUT

FORM 169 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 443 1990 025 0 9012120168 220497 11/09/90

ABSTRACT

POWER LEVEL - 100%. ON 11/9/90, AT 2:31 P.M. E.T., WHILE IN MODE 1 AT 100% POWER, A REACTOR TRIP WITH TURBINE-GENERATOR TRIP OCCURRED. THE TRIP WAS INITIATED BY A STEAM GENERATOR LOW-LOW NARROW RANGE LEVEL SIGNAL. THE INITIATING EVENT WAS CAUSED BY FATIGUE FAILURE OF A CONTROL AIR PIPE NIPPLE. THIS NIPPLE CONNECTS THE AIR BOOSTER RELAY TO THE VALVE ACTUATOR FOR FEEDWATER FLOW CONTROL VALVE, 1-FW-FCV-520. FOLLOWING THE FAILURE OF THE NIPPLE, VALVE 1-FW-FCV-520, FAILED CLOSED AS DESIGNED, DUE TO A LOSS OF CONTROL AIR. THE VALVE CLOSURE RESULTED IN A LOSS OF FEEDWATER TO THE "B" STEAM GENERATOR. A REACTOR TRIP OCCURRED AS DESIGNED, WHEN THE STEAM GENERATOR WATER LEVEL DROPPED BELOW THE LOW-LOW NARROW RANGE LEVEL SETPOINT. SUBSEQUENT TO THE REACTOR TRIP, A MAIN FEEDWATER ISOLATION OCCURRED DUE TO HIGH-HIGH STEAM GENERATOR WATER LEVEL SIGNAL SPIKES. IN ADDITION, AN EMERGENCY FEEDWATER ACTUATION OCCURRED AS DESIGNED, DUE TO THE LOSS OF FEEDWATER TO A STEAM GENERATOR. THE ROOT CAUSE OF THE EVENT HAS BEEN DETERMINED TO BE VIBRATION INDUCED FATIGUE FAILURE OF THE PIPE FITTING DUE TO A LESS THAN OPTIMAL DESIGN LOCATION. CORRECTIVE ACTIONS INCLUDE RELOCATION OF THE AIR BOOSTER RELAYS FOR ALL FOUR FEEDWATER FLOW CONTROL AND BYPASS VALVES. IN ADDITION, A WALKDOWN OF THE SECONDARY SIDE WILL BE PERFORMED DURING 100% POWER OPERATION TO IDENTIFY SIMILAR CONTROL AIR ARRANGEMENTS THAT MAY BE AFFECTED BY EXCESSIVE VIBRATION.

FORM 170 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 445 1990 002 0 9004170049 217600 03/05/90

ABSTRACT

POWER LEVEL - 000%. AT 0155 CST ON 3/5/90, WHILE CONDUCTING COLD ROD DROP TESTING, A BLOWN FUSE IN INVERTER IV1PC1 RESULTED IN A REACTOR TRIP AND A SOURCE RANGE FLUX DOUBLING (SRFD) SIGNAL. THE DISTRIBUTION PANELBOARD WAS RE-ENERGIZED ON ALTERNATE POWER. THIS RE-ENERGIZATION CAUSED A MOMENTARY SPIKE ON A WIDE RANGE REACTOR COOLANT SYSTEM (RCS) PRESSURE CHANNEL WHICH CLOSED THE RESIDUAL HEAT REMOVAL (RHR) HOT LEG SUCTION VALVE, RESULTING IN THE TEMPORARY LOSS OF SHUTDOWN COOLING. SHUTDOWN COOLING WAS RESTORED AT 0228 CST ON 3/5/90. AT APPROXIMATELY 0248 CST, AFTER VERIFYING THAT INDICATION WAS APPROPRIATE FOR PLANT CONDITIONS, THE SRFD SIGNAL WAS RESET AND AFFECTED COMPONENTS RESTORED TO THEIR ORIGINAL POSITION. THE ROOT CAUSE FOR THE FUSE FAILURE HAS NOT BEEN DETERMINED. THE POSSIBLE CAUSES IDENTIFIED INCLUDE FAILURE OF THE FERRO-RESONANT TRANSFORMER, AND LOOSE CONNECTIONS IN THE GATING CIRCUIT. CORRECTIVE ACTIONS INCLUDED THE REPLACEMENT OF THE FERRO-RESONANT TRANSFORMER AND A REWORK OF ALL LOOSE CONNECTIONS IN THE INVERTER. A DETAILED VISUAL INSPECTION OF THE THREE OTHER SIMILAR INVERTERS WILL BE PERFORMED DURING THE NEXT COLD SHUTDOWN OF SUFFICIENT DURATION. THIS INSPECTION WILL INCLUDE THE VERIFICATION OF ALL BOLTED AND SOLDERED CONNECTIONS IN THE INVERTERS.

FORM 171 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 007%. AT APPROXIMATELY 1715 CST ON 4/21/90, WHILE DUSTING THE MAIN CONTROL BOARD, THE REACTOR OPERATOR ACCIDENTALLY BUMPED SWITCH 1/1-N-338 AND RESET SOURCE RANGE CHANNEL N31 WHICH HAD BEEN PREVIOUSLY BYPASSED FOR POWER OPERATION. RE-ENERGIZING THE SOURCE RANGE HIGH VOLTAGE POWER SUPPLY WHILE OPERATING AT 7% POWER EXCEEDED THE REACTOR TRIP SETPOINT AND GENERATED A REACTOR TRIP SIGNAL. THE REACTOR TRIP COINCIDENT WITH A LOW-AVERAGE REACTOR COOLANT SYSTEM (RCS) TEMPERATURE GENERATED A FEEDWATER ISOLATION SIGNAL. DURING REACTOR TRIP RECOVERY, THE AUXILIARY BOILER FAILED TO START DUE TO A FAULTY IGNITER ASSEMBLY AND RESULTED IN A SLIGHT DECREASE IN RCS TEMPERATURE PRIOR TO THE PLANT BEING STABILIZED IN MODE 3. CORRECTIVE ACTIONS FOR THIS EVENT INCLUDED THE REMOVAL OF CLEANING BRUSHES FROM THE CONTROL ROOM AND THE SUSPENSION OF ALL CONTROL BOARD CLEANING UNTIL AN ALTERNATIVE METHOD IS IMPLEMENTED. ADDITIONALLY, A PLEXIGLASS COVER HAS BEEN PLACED OVER THE INVOLVED SWITCH UNTIL AN EVALUATION IS COMPLETED TO DETERMINE IF THE SWITCH IS OVERLY SENSITIVE AND WHY BUMPING THE SWITCH CAUSED THE SOURCE RANGE CHANNEL TO RESET.

FORM 172 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 445 1990 013 0 9006140199 218559 05/09/90

ABSTRACT

POWER LEVEL - 049%. AT APPROX. 1504 CDT ON 5/9/90, WHILE USING A PROCEDURE, WRITTEN FOR MODE 5 COLD SHUTDOWN, OR MODE 6 REFUELING, TO CALIBRATE A FEEDWATER PUMP DISCHARGE PRESSURE TRANSMITTER, JUMPERS WERE INSTALLED ACROSS THE FEEDWATER PUMP SPEED CONTROLLERS WHILE THEY WERE BEING USED TO MAINTAIN FEEDWATER PUMP SPEED DURING MODE 1 POWER OPERATION. INSTALLATION OF THE JUMPERS CAUSED A COASTDOWN OF THE FEEDWATER PUMPS, RESULTING IN A LOSS OF FEEDWATER FLOW AND REDUCTION OF STEAM GENERATOR WATER LEVELS. AN AUTOMATIC REACTOR TRIP OCCURRED WHEN THE STEAM GENERATOR WATER LEVEL LOW-LOW TRIP SETPOINT WAS REACHED. PLANT RECOVERY WAS COMPLETED WITHOUT FURTHER INCIDENT OR UNEEXPECTED FINDINGS. THE ROOT CAUSE OF THE EVENT HAS BEEN DETERMINED TO BE AN INADEQUATE REVIEW AND APPROVAL PROCESS FOR CERTAIN PROCEDURE CHANGES. AS CORRECTIVE ACTIONS FOR THIS EVENT, A PROCEDURE REVISION WILL ENSURE TECHNICAL REVIEWS AND OPERATIONAL IMPACT ASSESSMENTS ARE PERFORMED FOR MODE APPLICABILITY INTERPRETATIONS. GENERIC CORRECTIVE ACTIONS WILL INCREASE SENSITIVITY TO THE IMPACT THAT NON-SAFETY COMPONENTS CAN HAVE ON AN OPERATING PLANT. THE SINGLE POINT FAILURE ANALYSIS, WHICH IDENTIFIES THESE COMPONENTS, WILL BE UTILIZED PROGRAMMATICALLY.

FORM 173 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 445 1990 017 0 9006280113 218774 05/27/90

ABSTRACT

POWER LEVEL - 043%. ON 5/27/90, AT 0126 WHILE PERFORMING STEAM GENERATOR ATMOSPHERIC RELIEF VALVE (ARV) CAPACITY TESTING, A MAIN FEEDWATER FLOW CONTROL VALVE (FCV) FAILED CLOSED. THIS RESULTED IN REDUCED FEEDWATER FLOW AND DECREASING STEAM GENERATOR (SG) NO. 3 WATER LEVEL. THE OPERATOR CLOSED THE ARV, WHICH WAS OPEN FOR TEST PURPOSES, AND STARTED TO MANUALLY RAMP DOWN THE MAIN THROTTLE TO REDUCE

TO OCCUR. AT 0120, WHEN NO. 3 SG WATER LEVEL REACHED APPROXIMATELY 30% (AUTOMATIC REACTOR TRIP IS AT 28% SG WATER LEVEL), THE OPERATOR MANUALLY TRIPPED THE REACTOR. ALL OTHER PLANT SYSTEMS OPERATED PROPERLY. THE CAUSE OF THE EVENT WAS THE FAILURE OF A SOLENOID VALVE COIL, ASSOCIATED WITH NO. 3 SG FCV, DUE TO RAIN WATER INTRUSION (FCV'S ARE LOCATED OUTSIDE). A TEMPORARILY REMOVED COVER ALLOWED WATER TO ENTER A JUNCTION BOX THEN DRAIN VIA CONDUIT TO THE SOLENOID COIL HOUSING. CORRECTIVE ACTION INCLUDED THE REPLACEMENT OF THE FAILED SOLENOID COIL AND INSPECTION OF THE OTHER SOLENOIDS FOR WATER/MOISTURE INTRUSION. AN EVALUATION WILL DETERMINE IF ADDITIONAL CRITICAL COMPONENTS EXIST IN A SIMILAR CONFIGURATION. GUIDANCE FOR THE CONDUCT OF OUTDOOR MAINTENANCE ACTIVITIES WILL BE ADDRESSED PROGRAMMATICALLY.

FORM 174 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 445 1990 023 0 9009100049 220895 08/08/90

ABSTRACT

POWER LEVEL - 017%. ON 8/8/90, COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1 WAS IN MODE 1, POWER OPERATIONS, WITH REACTOR POWER AT 17%. A LOOSE FUSE IN THE MAIN FEEDWATER CONTROL POWER CIRCUIT CAUSED CLOSURE OF A VALVE IN THE FEEDWATER FLOW PATH TO STEAM GENERATOR NUMBER 4. WATER LEVEL IN STEAM GENERATOR NUMBER 4 DECREASED TO THE LO-LO LEVEL SETPOINT, INITIATING A REACTOR TRIP SIGNAL. CORRECTIVE ACTIONS INCLUDED INSPECTION OF SIMILAR COMPONENTS IN OTHER APPLICATIONS, MAINTENANCE ON THE MALFUNCTIONING COMPONENT, AND PERSONNEL TRAINING.

FORM 175 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 445 1990 025 0 9010010186 219626 08/25/90

ABSTRACT

POWER LEVEL - 097%. AT APPROXIMATELY 0037 ON 8/25/90, STEAM GENERATOR (SG) NUMBER 2 FEEDWATER FLOW CONTROL VALVE (FCV) FAILED FULL OPEN. A REACTOR OPERATOR ATTEMPTED TO CLOSE THE VALVE FROM THE MAIN CONTROL BOARD BY REDUCING THE DEMAND SIGNAL; HOWEVER, AT 0038, A TURBINE TRIP SIGNAL AND FEEDWATER ISOLATION SIGNAL WAS GENERATED DUE TO PROTECTION SYSTEM INTERLOCK P-14, HI-HI LEVEL IN SG NUMBER 2. THE REACTOR TRIPPED AT 0038 DUE TO THE TURBINE TRIP SINCE REACTOR POWER WAS ABOVE THE P-9 SETPOINT OF 50%. THE CAUSE OF THE FEEDWATER FCV FAILURE IS ATTRIBUTED TO THE FEEDBACK LINKAGE ARM FROM THE VALVE STEM TO THE VALVE POSITIONER SEPARATING DUE TO FLOW INDUCED OSCILLATIONS. CORRECTIVE ACTIONS INCLUDE THE INSTALLATION OF A LOCK WASHER ON THE FEEDBACK LINKAGE ARM AND A DESIGN MODIFICATION TO MODIFY THE VALVE INTERNALS TO REDUCE FLOW INDUCED OSCILLATIONS.

FORM 176 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 445 1990 027 0 9010300042 219940 09/07/90

ABSTRACT

POWER LEVEL - 100%. ON 9/7/90, AT 0033, COMANCHE PEAK STEAM ELECTRIC STATION (CPSES) UNIT 1 STEAM GENERATOR (SG) NUMBER (NO.) 2 FEEDWATER FLOW CONTROL VALVE (FCV) FAILED FULL OPEN DUE TO SHEARING OF THE POSITIONER FEEDBACK LINKAGE ARM. THE FAILED VALVE OVERFEED SG NO. 2

STABILIZED AT 0043 IN MODE 3. AT 0130, A BALANCE OF PLANT REACTOR OPERATOR (RO) DECREASED AUXILIARY FEEDWATER FLOW TO SG NO. 4 SINCE THE LEVEL WAS INCREASING FASTER THAN THE OTHER THREE. AT 0232, A RELIEF RO NOTED THAT SG NO. 4 LEVEL WAS APPROACHING THE LO-LO LEVEL SETPOINT AND INCREASED AUXILIARY FEEDWATER FLOW. THE LOW LEVEL COMBINED WITH THE INCREASED FLOW WHICH CAUSED A "SHRINK AND SWELL" EFFECT IN SG NO. 4 RESULTED IN LO-LO LEVEL SIGNAL WHICH GENERATED AN AUTOMATIC START SIGNAL FOR THE AUXILIARY FEEDWATER SYSTEM. THE CAUSE OF THE LINKAGE ARM FAILURE IS ATTRIBUTED TO FATIGUE RESULTING FROM FLOW INDUCED OSCILLATIONS. CORRECTIVE ACTIONS INCLUDE REPAIR OF SG NO. 2 FCV AND A DESIGN MODIFICATION TO MODIFY THE VALVE INTERNALS TO REDUCE FLOW INDUCED OSCILLATIONS.

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FORM 177 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 445 1990 028 0 9010220016 219779 09/08/90

ABSTRACT

POWER LEVEL - 038%. AT 1428 ON SEPTEMBER 8, 1990, COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1 WAS AUTOMATICALLY TRIPPED FROM 38 PERCENT POWER. A LIGHTNING STRIKE IS BELIEVED TO HAVE CAUSED A SURGE IN THE INPUT POWER RESULTING IN THE DE-ENERGIZATION OF POWER SUPPLIES IN THE ROD DRIVE SYSTEM, CAUSING THE RODS CONTROLLED BY ONE ROD CONTROL CABINET TO DROP INTO THE CORE. THIS RESULTED IN THE REACTOR TRIP FORM HIGH NEGATIVE FLUX RATE. NO SPECIFIC COMPONENT OR SYSTEM FAILURES WERE IDENTIFIED AS THE CAUSE OF THIS EVENT. THE INSTALLATION OF SURGE SUPPRESSORS IN THE INPUT SUPPLY TO ROD DRIVE POWER SUPPLIES WILL PROVIDE ADDITIONAL ASSURANCE THAT POWER SUPPLIES REMAIN AVAILABLE DURING LIGHTNING STRIKES.

1

FORM 178 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 445 1990 029 0 9010180286 219780 09/10/90

ABSTRACT

POWER LEVEL - 092%. ON SEPTEMBER 10, 1990, AT 0917 CDT, COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1 EXPERIENCED A REACTOR TRIP FROM MODE 1, POWER OPERATIONS. THE REACTOR TRIP WAS CAUSED BY A TURBINE TRIP WHICH RESULTED FROM A HIGH LEVEL CONDITION IN THE B MOISTURE SEPARATOR REHEATER (MSR). THE HIGH LEVEL IN THE MSR OCCURRED WHEN AN OPERATOR ATTEMPTED TO RESTORE A SEPARATOR DRAIN TANK DRAIN VALVE TO SERVICE WHILE THE DRAIN VALVE WAS STILL ISOLATED. THE EVENT WAS CAUSED BY THE FAILURE OF OPERATORS TO ADEQUATELY VERIFY COMPONENT STATUS PRIOR TO RETURNING THE COMPONENT TO SERVICE. CORRECTIVE ACTIONS TAKEN INCLUDE REVIEW OF THE LESSONS LEARNED PACKAGE BY OPERATORS AND INDIVIDUAL COUNSELING.

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FORM 179 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 445 1990 030 0 9010260117 219941 09/15/90

ABSTRACT

POWER LEVEL - 054%. ON 9/15/90, COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1 WAS IN MODE 1, POWER OPERATION, WITH REACTOR POWER AT 54%. OPERATIONS PERSONNEL WERE PREPARING TO RAISE REACTOR POWER TO SUPPORT

FEEDWATER PUMP TRIPPED. AS A RESULT OF DECREASING STEAM GENERATOR LEVELS, A MANUAL REACTOR TRIP WAS INITIATED. THE CAUSE OF THE EVENT WAS AN IMPROPERLY ROUTED HEAT DRAIN PUMP SHIELD GROUND LEAD WHICH CAUSED A FALSE GROUND OVERCURRENT SIGNAL. CORRECTIVE ACTION INCLUDED REWORK OF THE AFFECTED COMPONENT AND REVIEW OF SIMILAR COMPONENTS FOR THE SAME PROBLEM.

FORM 180 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
454 1989 002 0 8903100242 213279 01/31/89

ABSTRACT

POWER LEVEL - 099%. UNIT 1 WAS OPERATING AT 99% POWER AT 0956 ON 1/31/89, WHEN THE REACTOR TRIPPED MANUALLY. LEVEL IN STEAM GENERATOR 1C WAS INCREASING BECAUSE ITS FEEDWATER REGULATING VALVE (1FW530) HAD FAILED FULLY OPEN. THE VALVE WOULD NOT RESPOND TO AUTOMATIC OR MANUAL CONTROLS. THE REACTOR TRIP WAS PRUDENT BECAUSE STEAM GENERATOR 1C LEVEL WAS RAPIDLY APPROACHING ITS HIGH-LEVEL AUTOMATIC FEEDWATER ISOLATION SETPOINT (P-14). ALL SAFETY SYSTEMS FUNCTIONED AS DESIGNED. THE UNIT WAS STABILIZED IN HOT STANDBY AT APPROXIMATELY 1114. FEEDWATER REGULATING VALVE 1F2530 WAS FOUND TO HAVE ITS VALVE POSITIONER FEEDBACK ARM DISENGAGED FROM THE VALVE FOLLOWER. NEITHER MANUAL NOR AUTOMATIC CONTROL WAS POSSIBLE WITH THE VALVE IN THIS CONDITION. THE VALVE POSITIONER WAS RECONNECTED USING LOCKTITE AND A STAR WASHER TO PREVENT FUTURE FAILURES. SIMILAR PREVENTATIVE ACTION WAS PERFORMED ON THE REMAINING REGULATING VALVES ON BOTH UNITS.

FORM 181 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
454 1990 002 0 9004100463 217602 03/01/90

ABSTRACT

POWER LEVEL - 000%. ON 3/1/90, AT 0939, WHILE IN MODE 2, A UNIT 1 REACTOR TRIP OCCURRED WHEN THE 2 OUT OF 4 COINCIDENCE WAS SATISFIED ON OVER TEMPERATURE DELTA TEMPERATURE (OT DELTA T). THE FAILURE OF THE LOOP 1B REACTOR COOLANT RESISTANCE TEMPERATURE DETECTOR AMPLIFIER CARD CONCURRENT WITH THE PREVIOUSLY TRIPPED LOOP 1A BISTABLES, WHICH WAS NECESSARY TO ACCOMMODATE LOW POWER PHYSICS TESTING, SATISFIED THE TRIP LOGIC. THE FAILED CARD WAS REPLACED BUT THE ROOT CAUSE OF THE FAILURE IS INDETERMINATE. ALL SYSTEMS RESPONDED AS REQUIRED, AND THE UNIT WAS STABILIZED IN MODE 3. THIS EVENT IS REPORTABLE PER 10CFR 50.73(A)(2)(IV) FOR AN EVENT THAT RESULTED IN AUTOMATIC ACTUATION OF AN ENGINEERED SAFETY FEATURE INCLUDING THE REACTOR PROTECTION SYSTEM.

FORM 182 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
454 1990 006 0 9006080273 219397 05/03/90

ABSTRACT

POWER LEVEL - 079%. ON 5/03/90, AT 0300, WITH UNIT 1 OPERATING AT 79% POWER, THE OPERATING DEPARTMENT BEGAN SURVEILLANCE 1805 3.4.2.A-1, "TURBINE THROTTLE, GOVERNOR, REHEAT, AND INTERCEPT VALVE MONTHLY SURVEILLANCE." AT 0359, THE SURVEILLANCE WAS HELD TO ACCOMMODATE TROUBLESHOOTING ON THE TURBINE DIGITAL ELECTRO-HYDRAULIC COMPUTER (DEMC). DUE TO THE REPEATED FAILURE OF A 2 AMPERE FUSE ON 1 OF 4

THE FUSE ON THE LOW-2 STEAM GENERATOR WAS LOST. THE 5 AMPERE FUSE ON THE SAME CARD WAS BLOWN. AS A REPLACEMENT FUSE WAS INSERTED, A 100 MEGAWATT POWER EXCURSION OCCURRED, FOLLOWED BY A COMPLETE LOAD REJECTION. AT 0631, A REACTOR TRIP OCCURRED ON LOW-2 STEAM GENERATOR LEVEL. THE 2 AMPERE FUSE FAILED DUE TO A SHORT CIRCUIT IN THE PUSHBUTTON. THE BUTTON WAS EQUIPPED WITH A GROUNDED COPPER SCREEN. WHEN THE BUTTON WAS MOVED INSIDE THE SOCKET, THE SCREEN CAME IN CONTACT WITH THE PUSHBUTTON LIGHT'S POWER SUPPLY WHICH INDUCED A SHORT AND BLEW THE FUSE. ROOT CAUSE FOR THE 5 AMPERE FUSE FAILURE AND SUBSEQUENT REACTOR TRIP REMAIN INDETERMINATE. AS CORRECTIVE ACTION, SCREENS IN ALL THE PUSHBUTTONS WERE REMOVED. LIGHTING CIRCUIT WAS ALSO REWIRED TO BE MADE SEPARATE FROM THE RUNBACK CIRCUITRY SO A LOSS OF INDICATION WILL NOT EFFECT A RUNBACK SIGNAL.

FORM 183 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 454 1990 011 1 9103010259 221135 08/19/90

ABSTRACT

POWER LEVEL - 078%. AT 0425 ON AUGUST 19, 1990, WITH SEVERE LIGHTNING ACTIVITY NEAR BYRON STATION, A UNIT 1 REACTOR TRIP OCCURRED FROM 78% POWER. A LIGHTNING STRIKE INDUCED A VOLTAGE SURGE THAT ACTIVATED NINE OUT OF TEN OVER-VOLTAGE PROTECTION DEVICES INSTALLED ON POWER SUPPLIES IN THE ROD DRIVE (RD) (AA) POWER CABINETS. THIS ACTIVATION RELEASED TWELVE OUT OF FIFTEEN ROD CONTROL CLUSTER ASSEMBLY GROUPS INTO THE CORE AND RESULTED IN A HIGH NEGATIVE FLUX RATE REACTOR TRIP. DUE TO SEVERAL COMMONWEALTH EDISON AND INDUSTRY WIDE LIGHTNING INDUCED REACTOR TRIPS, SEVERAL MODIFICATIONS HAVE PREVIOUSLY BEEN MADE TO BOTH THE CONTAINMENT LIGHTNING PROTECTION SYSTEM AND THE ROD DRIVE OVER VOLTAGE PROTECTORS. THE ROD DRIVE SYSTEM WILL BE FURTHER MODIFIED WITH A NEW MODEL OF POWER SUPPLY THAT IS LESS LIKELY TO CAUSE REACTOR TRIP AFTER A TRANSIENT CAUSED BY LIGHTNING. THIS EVENT IS REPORTABLE PURSUANT TO 10CFR50.73 (A)(2)(IV) AS A RESULT OF THE AUTOMATIC ACTUATION OF THE REACTOR PROTECTION SYSTEM.

FORM 184 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 454 1990 014 0 9101090154 220634 12/03/90

ABSTRACT

POWER LEVEL - 098%. ON 12/3/90, AT 1240 WHILE PERFORMING SCHEDULED SLAVE RELAY SURVEILLANCE 1805 3.2.1-980 "UNIT ONE ENGINEERED SAFEGUARD FEATURES ACTUATION SYSTEM INSTRUMENTATION SLAVE RELAY SURVEILLANCE (TRAIN A FEEDWATER ISOLATION, REACTOR TRIP K637)" AN ACTUAL FEEDWATER (FW) (SJ) ISOLATION SIGNAL (FWI) WAS GENERATED CAUSING A LOSS OF FEEDWATER. A REACTOR TRIP ON LOW-2 STEAM GENERATOR LEVEL IN THE 10 STEAM GENERATOR ENSUED. ALL COMPONENTS ASSOCIATED WITH A FWI/REACTOR TRIP RESPONDED AS EXPECTED WITH THE EXCEPTION OF VALVE 1FW039A WHICH HAD DUAL POSITION INDICATION. DURING PERFORMANCE OF THE SURVEILLANCE, SWITCH S817 IS PLACED IN A "PUSH TO TEST" POSITION. AFTER PUSHING IN THE SWITCH AND VERIFYING INDICATIONS, THE SYSTEM MUST BE RESTORED BY RESETTING THREE SWITCHES IN SEQUENCE. S817 IS ONE OF THE THREE SWITCHES AND SHOULD BE THE LAST TO BE RESTORED TO ITS NORMAL POSITION. CONTRARY TO THE PROCEDURE, THE S817 SWITCH WAS RESTORED TO ITS NORMAL POSITION FIRST IMMEDIATELY AFTER THE "PUSH TO TEST" STEP WAS PERFORMED. THE FEEDWATER ISOLATION OCCURRED SEVERAL STEPS LATER WHEN THE SWITCH THAT IS NORMALLY FIRST TO BE RESET WAS RESET SECOND. THE FW ISOLATION AUXILIARY RELAYS ARE A LATCHING TYPE AND HAD NOT BEEN

FORM 185 LER SCSS DATA 04-1E-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
455 1990 001 0 9002220074 216934 01/18/90

ABSTRACT

POWER LEVEL - 099%. ON 1/18/90, UNIT 2 WAS OPERATING AT 99% POWER. AN INSTRUMENT MAINTENANCE TECHNICIAN WAS PERFORMING A FUNCTIONAL SURVEILLANCE ON STEAM PRESSURE CHANNEL 526 WHEN CHANNEL 525 SPIKED LOW. A REACTOR TRIP AND SAFETY INJECTION FOLLOWED. THE MOST PROBABLE CAUSE OF THE EVENT WAS THE FAILURE OF THE 525 PRESSURE TRANSMITTER. THE TRANSMITTER WAS REPLACED, AND THE SPIKING HAS NOT RECURRED. THIS IS THE FIRST TIME THE COINCIDENCE WAS SATISFIED DURING A PRESSURE TRANSMITTER FAILURE AND RESULTED IN A REACTOR TRIP. THIS EVENT IS REPORTABLE PER 10CFR50.73(A)(2)(IV) FOR ANY EVENT OR CONDITION THAT RESULTED IN MANUAL OR AUTOMATIC ACTUATION OF ANY ENGINEERED SAFETY FEATURE, INCLUDING THE REACTOR PROTECTION SYSTEM.

FORM 186 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
455 1990 010 0 9101220502 220832 12/20/90

ABSTRACT

POWER LEVEL - 072%. ON DECEMBER 20, 1990 AT 0400, A SEVERE STEAM LEAK WAS REPORTED IN THE UNIT 2 MAIN STEAM TUNNEL. AFTER VERIFYING THE SIZE OF THE LEAK, THE REACTOR WAS MANUALLY TRIPPED. BY ELIMINATING STEAM GENERATOR BLOWDOWN AND FEEDWATER AS CAUSES, IT WAS DETERMINED THAT THE LEAK WAS ON THE MAIN STEAM SIDE. THE MAIN STEAM ISOLATION VALVES WERE THEN CLOSED WHICH ISOLATED THE LEAK. THE MAIN STEAM DUMPS WERE OPENED TO DEPRESSURIZE THE MAIN STEAM HEADER. UPON ENTRY INTO THE MAIN STEAM TUNNEL, THE 2C MAIN STEAM SAMPLE PROBE WAS FOUND LYING ON THE FLOOR. THE WELD FOR THE PROBE HAD BEEN IMPROPERLY REPAIRED DURING THE PREVIOUS REFUELING OUTAGE CAUSING THE PROBE AND ITS ISOLATION VALVE TO BE EJECTED LEAVING A ONE INCH HOLE IN THE MAIN STEAM LINE. SINCE THIS PROBE WAS NEEDED ONLY FOR INITIAL START-UP TESTING, THE NOZZLE WAS CAPPED. THIS EVENT IS REPORTABLE PURSUANT TO 10CFR50.73(A)(2)(IV) ANY EVENT THAT RESULTS IN A MANUAL OR AUTOMATIC ACTUATION OF THE ENGINEERING SAFETY FEATURES INCLUDING REACTOR PROTECTION SYSTEM.

FORM 187 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
456 1989 004 0 8904130103 213621 03/06/89

ABSTRACT

POWER LEVEL - 097%. AT 0100 ON 3/6/89 A SURVEILLANCE WAS IN PROGRESS TO TEST TRAIN B TURBINE TRIP RELAY K640. DURING THE INITIAL PREPARATION STEPS OF THE PROCEDURE THE INTERFACE DIAPHRAGM VALVE TEST VALVE CONTROL SWITCH, CS/DVT, IS TAKEN FROM THE NORM (NORMAL) TO THE PERM (PERMISSIVE) POSITION. THE PERM SET (TEST PERMISSIVE ENABLED) LIGHT IS VERIFIED ILLUMINATED ON THE CONTROL PANEL. THIS INITIAL SETUP PROVIDES FOR TESTING WITHOUT TRIPPING THE MAIN TURBINE. AT 0154, A NUCLEAR STATION OPERATOR DEPRESSED THE RELAY TEST SWITCH. THE GOVERNOR VALVES DRIFTED TO THE CLOSED POSITION. THE CLOSURE OF THE GOVERNOR VALVES RESULTED IN A DECREASE IN STEAM FLOW AND AN INCREASE

DECREASED TO THE LOW LOW LEVEL REACTOR TRIP SETPOINT AND THE REACTOR TRIPPED, TURBINE TRIPPED, AND THE AUXILIARY FEEDWATER PUMPS AUTO STARTED. THE CAUSE OF THIS EVENT WAS A DEFECTIVE TEST SWITCH, CS/DVT. THE FAILURE OF THE SWITCH RESULTED IN THE CONTROL SYSTEM REDUCING THE GOVERNOR VALVE POSITION LIMITS TO ZERO. THE SWITCH WILL BE REPLACED. PREVIOUS EVENT CORRECTIVE ACTION WAS NOT APPLICABLE TO THIS EVENT.

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FORM 188 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
456 1989 006 0 8908220405 215050 07/18/89

ABSTRACT

POWER LEVEL - 086%. AT 2020 AND 2026 ON 7/18/89 THE STATION EXPERIENCED LIGHTNING INDUCED VOLTAGE TRANSIENTS CAUSING MULTIPLE ROD DRIVE OVERVOLTAGE PROTECTION DEVICES TO ACTUATE ON UNIT 1 AND 2, RESPECTIVELY. ON UNIT 1 TEN OUT OF TEN OVERVOLTAGE PROTECTORS ACTUATED. ON UNIT 2 SEVEN OUT OF TEN OVERVOLTAGE PROTECTORS ACTUATED. THIS REMOVED POWER TO VARIOUS ROD DRIVE CONTROL CARDS AND ALLOWED NUMEROUS CONTROL RODS TO DROP. BOTH REACTORS TRIPPED DUE TO NEGATIVE RATE TRIP ON THE POWER RANGE. IMMEDIATE CORRECTIVE ACTIONS WERE TO STABILIZE THE PLANT, RESET THE OVERVOLTAGE PROTECTORS, AND VERIFY ROD CONTROL OPERABILITY. THE EXACT LOCATION OF THE LIGHTNING STRIKES ARE UNKNOWN. THE ROOT CAUSE IS INADEQUATE PROTECTION AND ISOLATION OF THE ROD CONTROL SYSTEM FROM LIGHTNING INDUCED TRANSIENTS. THE IMMEDIATE CORRECTIVE ACTIONS WERE TO RESET THE OVERVOLTAGE PROTECTORS. NO DAMAGE OCCURRED TO THE ROD CONTROL SYSTEM. THERE HAS BEEN ONE PREVIOUS OCCURRENCE OF A LIGHTNING INDUCED VOLTAGE TRANSIENT RESULTING IN A REACTOR TRIP. CORRECTIVE ACTIONS WERE IMPLEMENTED ADDRESSING BOTH ROOT AND CONTRIBUTING CAUSES FOR THE ABOVE EVENT. THE PREVIOUS CORRECTIVE ACTIONS ARE NOT APPLICABLE TO THIS EVENT.

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FORM 189 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
456 1990 001 0 9002230074 216935 01/12/90

ABSTRACT

POWER LEVEL - 099%. A DC GROUND INVESTIGATION WAS IN PROGRESS ON 125V DC BUS 114 IN ACCORDANCE WITH PROCEDURE. AN EQUIPMENT OPERATOR (EO) AND A SHIFT FOREMAN WERE SYSTEMATICALLY ISOLATING AND RESTORING LOADS TO IDENTIFY THE GROUND. CIRCUIT NUMBER 19 WAS IDENTIFIED AS THE FEED TO THE GENERATOR RELAY NORMAL POWER. THE PROCEDURE SPECIFIED TRANSFERRING TO RESERVE POWER USING A DEAD BUS TRANSFER PROCEDURE. AT 1324 THE EO OPENED CIRCUIT NUMBER 19 PER PROCEDURE. WHEN THE CIRCUIT WAS OPENED AN AUXILIARY RELAY WAS DEENERGIZED WHICH PROVIDED INPUT TO ELECTRO-HYDRAULIC CONTROL SYSTEM (DEHC). WHEN THE RELAY DEENERGIZED THE DEHC SYSTEM SENSED THAT THE MAIN GENERATOR WAS DISCONNECTED FROM THE TRANSMISSION SYSTEM WITH TURBINE LOAD ABOVE 30%. THIS INITIATED A LOAD DROP ANTICIPATION (LDA) SEQUENCE CAUSING THE TURBINE GOVERNOR VALVES TO CLOSE. THIS CAUSED STEAM PRESSURE TO INCREASE AND STEAM FLOW TO DECREASE RESULTING IN A LOW LOW STEAM GENERATOR WATER LEVEL REACTOR TRIP FROM THE SHRINK EFFECTS ON LEVEL INDICATION. THE CAUSE OF THE EVENT WAS A PROCEDURAL DEFICIENCY. THE PROCEDURE DID NOT CAUTION THAT AN LDA WOULD OCCUR IF TURBINE POWER WAS ABOVE 30%. THE DC GROUND DISAPPEARED SHORTLY AFTER THE REACTOR TRIP AND DID NOT RETURN WHEN THE UNIT RETURNED TO POWER. THE PROCEDURE HAS BEEN TEMPORARILY REVISED. AN EVALUATION OF THE METHODOLOGY AND CONTENT OF THE PROCEDURE WILL BE CONDUCTED. NO PREVIOUS OCCURRENCES.

04-18-91
 LER SCSS DATA

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 456 1990 008 0 9007090202 218808 06/08/90

ABSTRACT

POWER LEVEL - 100%. ON 6/8/90 THERE WAS HEAVY THUNDERSTORM ACTIVITY IN THE BRAIDWOOD STATION AREA. AT 0618 A REACTOR TRIP OCCURRED ON UNIT 1 DUE TO A HIGH FLUX RATE TRIP SIGNAL FROM THE POWER RANGE NUCLEAR INSTRUMENTATION. THE REACTOR OPERATORS VERIFIED ALL AUTOMATIC ACTIONS. ALL SYSTEMS FUNCTIONED AS DESIGNED. STABLE PLANT CONDITIONS WERE IMMEDIATELY ESTABLISHED. AN EXAMINATION OF THE ROD DRIVE (RD) POWER CABINETS INDICATED THE POWER SUPPLY OVER VOLTAGE PROTECTORS (PSOVP) HAD TRIPPED IN THREE OF THE RD CABINETS. THERE WERE NO BLOWN FUSES IDENTIFIED IN ANY OF THE CABINETS. THE PSOVP'S WERE RESET AND ALL VOLTAGES WERE CHECKED. THE ROOT CAUSE OF THIS EVENT WAS A VOLTAGE TRANSIENT. IT IS BELIEVED THAT LIGHTNING STRUCK THE UNIT 1 CONTAINMENT AND CAUSED A VOLTAGE SURGE IN THE STATION GROUND SYSTEM. THIS CAUSED THE ACTIVATION OF PSOVP'S IN THE 3 RD POWER CABINETS. THIS SHUT OFF THE CURRENT TO THE STATIONARY GRIPPER COILS OF THE RODS POWERED BY THE CABINETS, AND CAUSED THEM TO DROP, RESULTING IN A NEGATIVE FLUX RATE. THE NEGATIVE FLUX RATE WAS OF SUFFICIENT MAGNITUDE TO ACTIVATE THE REACTOR TRIP SIGNAL FROM THE POWER RANGE NUCLEAR INSTRUMENTATION. NO DAMAGE OCCURRED TO THE RD SYSTEM. A REVIEW OF THE STATION LIGHTNING PROTECTION SYSTEM IS BEING CONDUCTED. THE STATION HAD MADE MODIFICATIONS TO THE RD POWER SUPPLY SYSTEM AND THE STATION GROUNDING SYSTEM AS CORRECTIVE MEASURES FROM PREVIOUS EVENTS.

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 FORM 191 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 456 1990 018 0 9011010038 219947 09/29/90

ABSTRACT

POWER LEVEL - 092%. AT 0345 ON 9/29/90 THE TRAIN B SOLID STATE PROTECTION SYSTEM (SSPS) INITIATED A CONTAINMENT VENTILATION ISOLATION SIGNAL. NO COMPONENTS REPOSITIONED AS ALL WERE IN THEIR REQUIRED STATE. AT 1735 A SPURIOUS TRAIN B SAFETY INJECTION SIGNAL (SI) OCCURRED CAUSING A REACTOR TRIP AND CONTAINMENT ISOLATION TO OCCUR AS WELL AS STARTING TRAIN B ECCS COMPONENTS. THE B TRAIN OF SSPS WAS DECLARED INOPERABLE AND A PLANT COOLDOWN WAS INITIATED. AT 0013 ON 9/30/90 A REACTOR OPERATOR WAS PERFORMING AN SSPS TEST PROCEDURE WHEN THE TRAIN B SSPS MEMORIES TEST SWITCH WAS INADVERTENTLY ROTATED FROM OFF TO POSITION 23. THIS ENABLED THE PRESSURIZER AND STEAMLINE LOW PRESSURE SI AND STEAMLINE ISOLATION CIRCUITS WHICH HAD BEEN BLOCKED. WITH BOTH PRESSURES BELOW THEIR RESPECTIVE SETPOINTS, A TRAIN B SI AND A STEAMLINE ISOLATION OCCURRED. DUE TO THE STEAMLINE ISOLATION, THE RCS TEMPERATURE INCREASED ABOUT 12 DEGREES FROM 340 TO 352 F OVER THE NEXT 14 MINUTES UNTIL COOLING WAS RE-ESTABLISHED. 350F IS THE LOWER LIMIT OF MODE 3 OPERATION. AT 1020 ON 10/3/90 A SPURIOUS TRAIN B FEEDWATER ISOLATION OCCURRED WITH THE UNIT IN COLD SHUTDOWN. THE CAUSES OF THE EVENT WERE COMPONENT FAILURE, PERSONNEL ERROR, AND COMPONENT DESIGN INTERFACE. TRAIN B SSPS WAS REPAIRED, TRAINING WILL BE PROVIDED, AND THE MEMORIES TEST SWITCH WAS RE-ORIENTED.

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 FORM 192 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 456 1990 021 0 9101020362 221097 12/01/90

POWER LEVEL - 099%. AT 1545 ON 12/1/90 THE 1B FEEDWATER PUMP (FW), ONE OF THE TWO ON LINE FW PUMPS, TRIPPED. THE NUCLEAR STATION OPERATOR (NSO) INITIATED A TURBINE RUNBACK TO 60% POWER IN ACCORDANCE WITH PROCEDURE. STEAM GENERATOR (SG) LEVELS DECREASED DUE TO BOTH THE REDUCTION IN FW FLOW FROM THE LOSS OF THE FW PUMP AND THE "SHRINK" EFFECT ON THE SG LEVEL INSTRUMENTATION FROM THE REDUCTION IN STEAM FLOW AS A RESULT OF THE TURBINE RUNBACK. AT 1647 THE LEVEL IN THE 1B SG REACHED THE LO-2 REACTOR TRIP SETPOINT AND A REACTOR TRIP, TURBINE TRIP, FEEDWATER ISOLATION, AND AUX. FW AUTOMATIC INITIATION OCCURRED AS DESIGNED. ALL COMPONENTS ASSOCIATED WITH THESE ACTUATIONS FUNCTIONED AS DESIGNED. THE CAUSE OF THE FW PUMP TRIP WAS LOW OIL PRESSURE. IT IS BELIEVED THAT THE SUCTION OF THE HIGH PRESSURE OIL PUMP BECAME PARTIALLY PLUGGED FROM A SLUDGE BURST. THE STANDBY OIL PUMP STARTED BUT THE LOW PRESSURE "DIP" THAT OCCURRED WAS OF SUFFICIENT MAGNITUDE TO REACH THE LOW OIL PRESSURE TRIP SETPOINT. THE TURBINE RUNBACK WAS INITIATED, BUT EQUILIBRIUM FW FLOW/STEAM FLOW WAS NOT ACHIEVED PRIOR TO REACHING THE REACTOR TRIP SETPOINT. A CONTRIBUTING CAUSE TO THE EVENT WAS A PROCEDURAL DEFICIENCY. THE PROCEDURE DID NOT ADDRESS CLOSING THE RECIRCULATION VALVE ON THE TRIPPED FW PUMP. THE OIL SYSTEM HAS BEEN CLEANED AND IS BEING MONITORED. THE PROCEDURE HAS BEEN REVISED. NO PREVIOUS OCCURRENCES.

FORM 193 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 456 1990 023 0 9101310179 220853 12/30/90

ABSTRACT

POWER LEVEL - 098%. ON 12/30/90, UNIT 1 WAS LOAD FOLLOWING TO ACCOMMODATE SYSTEM DEMAND FOR THE COMMONWEALTH EDISON COMPANY SYSTEM LOAD DISPATCHER. AT 0915 THE UNIT COMPLETED A POWER ASCENSION TO FULL CAPABILITY. AT 0921 A GENERATOR NEUTRAL GROUND OVERCURRENT PROTECTIVE RELAY ACTUATED AND TRIPPED THE UNIT 1 MAIN GENERATOR. A TURBINE AND REACTOR TRIP FOLLOWED AS DESIGNED. MEGGER TESTING REVEALED A GROUND ON THE "C" PHASE OF THE MAIN GENERATOR. THE CAUSE OF THE GROUND WAS AN INTERNAL GENERATOR DEFECT. UPON APPLICATION OF H₂ POTENTIAL ALTERNATING CURRENT TO THE "C" PHASE, OBSERVATION OF SMOKE AND ELECTRICAL ARCING REVEALED THAT THE FAULT WAS IN THE BOTTOM COIL IN SLOT 29 OF THE STATOR. DAMAGE TO THE COIL WAS ATTRIBUTED TO A VENT SPACER THAT CAME LOOSE. VIBRATION DURING NORMAL OPERATION ALLOWED THE SPACER TO RUB AND WEAR DOWN INSULATION PROTECTING THE COIL. THE GROUND WAS CREATED AS A RESULT OF INSULATION BREAKDOWN. THE COIL WAS REMOVED FROM THE STATOR AND SENT TO THE VENDOR. THIS COMPONENT FAILURE IS CONSIDERED TO BE AN ISOLATED EVENT. THERE HAVE BEEN PREVIOUS OCCURRENCES OF A REACTOR TRIP CAUSED BY A GENERATOR TRIP. PREVIOUS CORRECTIVE ACTIONS AND CONTRIBUTING ROOT CAUSE ARE NOT APPLICABLE TO THIS EVENT.

FORM 194 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 457 1989 002 0 8906140299 214241 05/11/89

ABSTRACT

POWER LEVEL - 067%. AT 0447 ON 5/11/89, BRAIDWOOD 345 KV BUS 11 RECEIVED A TRIP SIGNAL FROM TRANSMISSION SUB STATION (TSS) 177. THE A PHASE OF BUS TIE (BTCE) 10-11 OPENED MORE SLOWLY THAN THE "B" AND "C" PHASES. A LOCAL BREAKER BACKUP (LBB) SIGNAL WAS INITIATED. THIS SENT A TRIP SIGNAL TO UNIT 2 MAIN GENERATOR LOCKOUT RELAYS. THIS

ROD STARTED. STABLE PLANT CONDITIONS WERE IMMEDIATELY ESTABLISHED. AT 0540 THE FLOW CONTROL VALVE FROM THE 2A AF PUMP TO THE 2A SG WOULD NOT GO FULL OPEN. THE INSTRUMENT AIR TO THE VALVE WAS ISOLATED AND IT FAILED OPEN. FLOW WAS CONTROLLED BY THROTTLING THE MOTOR OPERATED ISOLATION VALVE. THE ROOT CAUSE OF THIS EVENT WAS A DEFECTIVE TRIP COIL FOR THE A PHASE OF BTCB 10-11. THE CAUSE OF THE LEVEL SPIKE ON THE 2C SG WAS A PRESSURE SPIKE FROM SUDDEN LOSS OF STEAM FLOW. THE CAUSE OF THE AF VALVE FAILURE WAS DEFECTIVE CONTROL CARD. THE CAUSE OF THE TRIP SIGNAL FROM TSS 177 WAS NOISE ON THE MICROWAVE CHANNELS. THE A PHASE TRIP COIL HAS BEEN REPAIRED. THE MICROWAVE UNIT AT TSS 177 WILL BE REPLACED. THERE WAS A PREVIOUS OCCURRENCE OF A LOSS OF A SWITCHYARD BUS DUE TO AN LBB INITIATION. PREVIOUS CORRECTIVE ACTIONS WERE NOT APPLICABLE TO THIS EVENT.

FORM 195 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
457 1989 004 0 8910160019 215593 09/07/89

ABSTRACT

POWER LEVEL - 090%. AT APPROXIMATELY 2000 HOURS, 9/7/89 A SEVERE THUNDERSTORM WAS IN THE AREA OF BRAIDWOOD STATION. A VIDEO RECORDER HAD BEEN SET UP TO MONITOR THE EFFECTS OF ATMOSPHERIC EVENTS. FROM 2029 TO 2036 SIXTY-THREE LIGHTNING FLASHES WERE RECORDED BY THE CAMERA. FOUR OF THESE LIGHTNING STRIKES HIT STATION STRUCTURES. THE UNIT 2 AUX. BLDG. VENT STACK WAS STRUCK TWICE. THE BRAIDWOOD STATION SWITCHYARD WAS STRUCK. AT 2031:44 THE UNIT 2 CONTAINMENT WAS STRUCK. AT 2032 ALL TEN ROD CONTROL SYSTEM (RD) POWER CABINET OVERVOLTAGE PROTECTION DEVICES ACTUATED. THIS CAUSED THE STATIONARY GRIPPER COILS OF THE CONTROL RODS TO DEENERGIZE AND THE RODS DROPPED INTO THE CORE. THE RAPID FLUX DECREASE WAS SENSED BY THE NUCLEAR INSTRUMENTATION WHICH GENERATED A POWER RANGE FLUXRATE HIGH REACTOR TRIP. THE REACTOR TRIP BREAKERS OPENED, THE TURBINE TRIPPED, AND FEEDWATER ISOLATION OCCURRED. THE SHRINK EFFECT ON STEAM GENERATOR LEVEL INSTRUMENTATION RESULTED IN AN AUTO START OF THE AUXILIARY FEEDWATER PUMPS ON LOW WATER LEVEL. THE CAUSE OF THIS EVENT WAS A LIGHTNING INDUCED VOLTAGE TRANSIENT. THE RD OVERVOLTAGE PROTECTION DEVICES WERE RESET. THE RD SYSTEM WAS TESTED. A TIME DELAY HAS BEEN ADDED TO THE OVERVOLTAGE PROTECTION DEVICES. RECOMMENDATIONS ON ADDITIONAL CORRECTIVE MEASURES ARE BEING EVALUATED. THERE HAVE BEEN TWO PREVIOUS OCCURRENCES. PREVIOUS CORRECTIVE ACTIONS WERE NOT APPLICABLE.

FORM 196 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
457 1990 010 0 9007100186 218811 06/09/90

ABSTRACT

POWER LEVEL - 015%. A UNIT START UP WAS IN PROGRESS. FEEDWATER (FW) FLOW WAS BEING CONTROLLED IN AUTOMATIC BY THE BYPASS FW REGULATING VALVES (BFRV). STEAMLINE HEADER PRESSURE WAS BEING CONTROLLED IN AUTOMATIC BY THE STEAM DUMPS. AT 0030 ON 6/9/90 A REACTOR OPERATOR (RO), WHO WAS MONITORING THE FW PANEL, OBSERVED THAT INDICATED LEVEL ON THE 2B STEAM GENERATOR (SG) HAD DECREASED TO 35%. THIS WAS BELOW THE SET POINT OF 50%. THE RO PLACED THE CONTROLLER IN MANUAL AND INCREASED THE OUTPUT TO RAISE SG LEVEL. 2B SG LEVEL CONTINUED TO DECREASE FROM THE 'SHRINK' EFFECT OF THE COLD FW. THE SUPERVISOR (SRO) DIRECTED THE RO WHO WAS MONITORING REACTOR CONTROL PANEL, TO WITHDRAW CONTROL RODS TO INCREASE TEMPERATURE AND "SWELL" THE LEVEL. SG LEVEL INCREASED FROM AN INITIAL VALUE OF 20% TO 24%. AT 0039 THE

LEVEL FLUCTUATION WHICH CAUSED THE LEVEL IN THE 29 SG TO DECREASE BELOW THE REACTOR TRIP SET POINT OF 17% AND A REACTOR TRIP OCCURRED. THE CAUSE OF THE EVENT WAS A MALFUNCTIONING BFRV WHICH WOULD STICK DURING OPERATION IN THE LOWER THIRD OF VALVE TRAVEL. THE VALVE PACKING WAS LOOSENEED AND VALVE TRAVEL WAS SMOOTH AND ACCEPTABLE. OPERATOR TRAINING WILL BE PROVIDED. PREVIOUS CORRECTIVE ACTIONS ARE NOT APPLICABLE.

FORM 197 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
458 1989 007 0 8903290026 213393 02/20/89

ABSTRACT

POWER LEVEL - 002%. AT 0153 ON 2/20/89 WITH THE UNIT IN OPERATIONAL CONDITION 2 WITH REACTOR POWER IN THE IRM RANGE AND DURING A REACTOR STARTUP FROM A CONTROLLED SHUTDOWN, A REACTOR SCRAM OCCURRED DUE TO AN INTERMEDIATE RANGE MONITOR (IRM) UPSCALE TRIP. THE IRM UPSCALE WAS CAUSED BY EXCESSIVE FEEDWATER WHICH DECREASED THE MODERATOR TEMPERATURE AND INDUCED POSITIVE REACTIVITY. CONTRIBUTING TO THIS EVENT WAS THE PLACING OF STEAM DRAINS IN SERVICE BY OPERATIONS. AS EACH DRAIN WAS PLACED IN SERVICE, OPERATIONS WAS ALLOWING REACTOR PRESSURE AND LEVEL TO STABILIZE. AFTER OPENING THE FOURTH DRAIN IN A SERIES OF FOUR, A FEEDWATER TRANSIENT OCCURRED CAUSING THE REACTOR SCRAM. UPON INVESTIGATION IT WAS DISCOVERED THAT DURING THIS TIME FRAME THE STARTUP FEED WATER REGULATOR VALVE WAS NOT RESPONDING PROPERLY DUE TO NUMEROUS AIR LEAKS IN THE VALVE OPERATOR. THE AIR LEAKS CAUSED THE VALVE TO HAVE A SLUGGISH RESPONSE. REACTOR STARTUP OPERATING PROCEDURE GOP-001 HAS BEEN CHANGED TO NOW REQUIRE A STEAM BYPASS VALVE TO BE OPEN APPROXIMATELY 50% PRIOR TO PLACING STEAM DRAINS IN SERVICE. THIS WILL ALLOW ADDITIONAL MARGIN TO COMPENSATE FOR THE DECREASE IN REACTOR PRESSURE IF A RAPID INCREASE IN FEEDWATER FLOW OCCURS. THERE WAS NO IMPACT ON THE SAFE OPERATIONS OF THE PLANT OR TO THE HEALTH AND SAFETY OF THE PUBLIC.

FORM 198 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
458 1989 008 0 8904070151 213430 02/25/89

ABSTRACT

POWER LEVEL - 078%. AT 0041 ON 2/25/89 WITH THE UNIT AT 78% POWER (OPERATIONAL CONDITION 1), THE REACTOR AUTOMATICALLY SCRAMMED WHILE PERFORMING A ROUTINE UPPER THRUST BEARING WEAR DETECTOR TEST IN ACCORDANCE WITH OPERATIONS SECTION PROCEDURE (OSP)-0101. THE SCRAM OCCURRED AS A RESULT OF A TURBINE TRIP CAUSED BY A DEFECTIVE BYPASS RELAY. THE RELAY FAILED TO OPEN THE "TRIP BUS" CIRCUIT AS DESIGNED TO PREVENT A TURBINE TRIP WHILE TESTING THE THRUST BEARING WEAR DETECTOR. IMMEDIATELY FOLLOWING THE TURBINE TRIP, THE REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM INJECTED DUE TO A SPURIOUS LOW REACTOR WATER LEVEL 2 SIGNAL. THE SPURIOUS SIGNAL RESULTED FROM A PRESSURE PERTURBATION, CAUSED BY THE FAST CLOSURE OF THE TURBINE CONTROL VALVES, BEING SENSED BY THE REACTOR WATER LEVEL INSTRUMENTATION. REACTOR WATER LEVEL INCREASED TO LEVEL 8 AND THE RCIC STEAM SUPPLY VALVE CLOSED PER DESIGN. AS CORRECTIVE ACTION, A TURBINE TRIP BYPASS SWITCH WILL BE INSTALLED TO BE UTILIZED DURING THE WEEKLY TURBINE TESTING TO TEMPORARILY BYPASS TURBINE TRIPS WHICH MAY BE INADVERTENTLY CAUSED BY SPURIOUS RELAY ACTUATIONS WITHIN THE MAIN TURBINE ELECTRO-HYDRAULIC CONTROL PANEL. ADDITIONAL CORRECTIVE ACTION IS BEING IMPLEMENTED DURING THE SECOND REFUELING OUTAGE TO PREVENT

FORM 199 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
458 1989 035 0 8911080205 215783 09/30/89

ABSTRACT

POWER LEVEL - 078%. AT 0340 ON 9/30/89 WITH THE UNIT AT 78% POWER (OPERATIONAL 1), THE REACTOR AUTOMATICALLY SCRAMMED DURING THE PERFORMANCE OF A ROUTINE REACTOR PROTECTION SYSTEM (RPS) - MAIN STEAM LINE ISOLATION VALVE CLOSURE MONTHLY SURVEILLANCE TEST. THE CAUSE OF THE SCRAM WAS DETERMINED TO BE A DEFECTIVE TEST SWITCH IN THE REACTOR PROTECTION SYSTEM. THE DEFECTIVE GENERAL ELECTRIC SWITCH (MODEL CR 2940) HAD INADVERTENTLY PLACED THE SYSTEM IN A CONSERVATIVE STATE ALLOWING A SCRAM TO OCCUR AFTER A HALF SCRAM SIGNAL WAS INITIATED AS REQUIRED BY THE SURVEILLANCE TEST. THE TEST SWITCH WAS REPLACED VIA A PROMPT MAINTENANCE WORK ORDER. PRIOR TO SUCCESSFULLY COMPLETING THE SURVEILLANCE TEST, THE PROCEDURE WAS REVISED TO REQUIRE VERIFICATION OF PROPER SWITCH POSITION PRIOR TO PERFORMING THE SURVEILLANCE AND UPON RESTORATION. THE RPS SYSTEM WAS RETURNED TO SERVICE. THE RPS SYSTEM ACTUATED PER DESIGN IN RESPONSE TO THE DEFECTIVE TEST SWITCH CONDITION AND THE REACTOR SCRAM PLACED THE UNIT IN A SAFE SHUTDOWN CONDITION. THERE WAS NO ADVERSE IMPACT ON THE SAFE OPERATION OF THE PLANT NOR TO THE HEALTH AND SAFETY OF THE PUBLIC AS A RESULT OF THIS EVENT.

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FORM 230 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
458 1989 042 0 9001110176 215420 12/01/89

ABSTRACT

POWER LEVEL - 097%. AT 0628 ON 12/1/89 WITH THE UNIT AT 97 PERCENT POWER (OPERATIONAL CONDITION 1), THE MAIN TURBINE GENERATOR TRIPPED, RESULTING IN A REACTOR SCRAM. THE GENERATOR TRIPPED DUE TO THE MAIN GENERATOR PROTECTION BREAKERS TRIPPING AS A RESULT OF SENSING A FAULT ON AN OFFSITE 230KV LINE. THE FAULT FAILED TO CLEAR AT THE 230KV SWITCHYARD DUE TO A FAILED RELAY AND SLOW BREAKER RESPONSE TIME FOLLOWING THE SIGNAL FROM A BACKUP RELAY. IMMEDIATELY FOLLOWING THE GENERATOR TRIP, THE STATION 4.16KV NORMAL SWITCHGEAR (1NNS-SWG1A) FAILED TO SUCCESSFULLY TRANSFER TO OFFSITE POWER. THIS CAUSED AN UNDERVOLTAGE CONDITION WHICH INITIATED AN AUTOMATIC START OF THE DIVISION III HIGH PRESSURE CORE SPRAY (HPCS) EMERGENCY DIESEL GENERATOR. INITIATION OF THE DIVISION III STANDBY SERVICE WATER PUMP 1SWP*P2C ALSO OCCURRED DUE TO A MOMENTARY LOSS OF POWER TO THE INITIATING TRIP UNITS. THE DIVISION III EMERGENCY DIESEL GENERATOR RESTORED POWER TO THE BUS PER DESIGN. THE REACTOR SCRAM PLACED THE UNIT IN THE SAFE SHUTDOWN CONDITION. SINCE ALL SAFETY SYSTEMS FUNCTIONED AS DESIGNED, THERE WAS NO IMPACT ON THE SAFE OPERATION OF THE PLANT OR TO THE HEALTH AND SAFETY OF THE PUBLIC AS A RESULT OF THIS EVENT.

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FORM 201 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
458 1990 008 0 9004230336 217836 03/15/90

ABSTRACT

POWER LEVEL - 042%. AT 2140 HOURS ON 3/15/90 WITH THE UNIT AT 42

PROTECTIVE RELAY OPERATION DUE TO A LOSS OF FIELD. THIS RESULTED IN TRIP SIGNALS BEING SENT TO MAIN GENERATOR PROTECTION BREAKERS AT THE 230 KV SWITCHYARD. GSU'S INVESTIGATION REVEALED A MALFUNCTION OF THE ZONE 1 LOSS OF FIELD RELAY (40G KLF). THIS RELAY WAS REMOVED AND RETURNED TO SERVICE. PROCEDURES HAVE BEEN UPGRADED TO INCLUDE STATE OF THE ART THREE-PHASE TESTING METHODS AND TO CLEARLY IDENTIFY THOSE CONDITIONS THAT INITIATE A GENERATOR TRIP. THE REACTOR SCRAM PLACED THE UNIT IN A SAFE SHUTDOWN CONDITION. SINCE ALL SAFETY SYSTEMS FUNCTIONED AS DESIGNED, THERE WAS NO IMPACT ON THE SAFE OPERATION OF THE PLANT OR TO THE HEALTH AND SAFETY OF THE PUBLIC AS A RESULT OF THIS EVENT.

FORM 202 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
458 1990 014 0 9005140251 218190 04/07/90

ABSTRACT

POWER LEVEL - 079%. AT 0154 ON 04/07/90 WITH THE REACTOR AT 79% POWER (OPERATIONAL CONDITION 1), A REACTOR SCRAM OCCURRED WHILE TESTING THE MAIN TURBINE COMBINED INTERMEDIATE VALVES (CIVS) (*V*). THE SCRAM OCCURRED ON LOW TURBINE ELECTROHYDRAULIC CONTROL (EHC) SYSTEM PRESSURE. THIS LOW PRESSURE APPEARS TO HAVE BEEN DUE TO MULTIPLE CIVS STROKING WHEN THE #4 CIV WAS BEING TESTED. HOWEVER, REPEATED TESTING FAILED TO BRING ABOUT A REPETITION OF THE EVENT WHICH CAUSED THE SCRAM. CORRECTIVE ACTION INCLUDED REPLACEMENT OF TWO SOLENOID VALVES, FIVE RELAYS, AND THE ELECTRICAL TRIP VALVE. A MODIFICATION HAS BEEN INSTALLED TO PROVIDE ADDITIONAL RELAY CONTACTS BETWEEN THE CIVS AND THE TEST CIRCUIT. IN ADDITION, THE VALVE TESTING PROCEDURE HAS BEEN REVISED TO REQUIRE INCREASED MONITORING OF VALVE POSITION. THIS EVENT RESULTED IN THE ACTUATION OF THE REACTOR PROTECTION SYSTEM (RPS). THEREFORE, THIS REPORT IS SUBMITTED PURSUANT TO 10CFR50.73(A)(2)(IV). THIS EVENT CAUSED NO ADVERSE IMPACT ON THE HEALTH AND SAFETY OF THE PUBLIC.

FORM 203 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
458 1990 047 0 9101180156 220715 12/12/90

ABSTRACT

POWER LEVEL - 090%. AT 0032 HOURS ON 12/12/90, WHILE PERFORMING TURBINE OVERSPEED PROTECTION WEEKLY OPERABILITY TESTING (STP-110-0101), A REACTOR SCRAM OCCURRED AS A RESULT OF A TURBINE CONTROL VALVE (TCV) FAST CLOSURE SIGNAL. AT THE TIME OF THE SCRAM, THE REACTOR WAS AT A REDUCED POWER OF 80 PERCENT TO PERFORM THE SUBJECT TESTING. THE CAUSE OF THE TURBINE CONTROL VALVE FAST CLOSURE SIGNAL WAS DUE TO A LOW ELECTRO-HYDRAULIC TRIP SYSTEM (ETS) PRESSURE TRANSIENT THAT OCCURRED DURING SCHEDULED SURVEILLANCE TESTING OF THE COMBINED INTERCEPT VALVES (CIVS). CORRECTIVE ACTIONS INCLUDED THE INSTALLATION OF ORIFICES ON ALL ETS SUPPLY PORTS TO THE TCVS, TURBINE STOP VALVES (TSVS), AND CIVS. IN ADDITION, A TRANSMITTER WAS INSTALLED ON THE TURBINE FRONT STANDARD TO VERIFY ETS PRESSURE. ALL SYSTEMS RESPONDED TO THE REACTOR SCRAM PER DESIGN. THE RPS RESPONDED CORRECTLY TO THE TCV FAST CLOSURE IN ANTICIPATION OF THE LOSS OF THE TURBINE GENERATOR. REACTOR WATER LEVEL AT NO TIME REACHED A LEVEL REQUIRING THE USE OF ALTERNATE SOURCES OF WATER INJECTION TO MAKE UP FOR LOST INVENTORY. THEREFORE, THE REACTOR WAS NOT PLACED IN A CONDITION WHICH THREATENED THE HEALTH AND SAFETY OF THE PUBLIC.

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
461 1989 022 0 8907050489 214580 05/26/89

ABSTRACT

POWER LEVEL - 019%. THIS REPORT DOCUMENTS THE INSERTION OF A MANUAL SCRAM SIGNAL ON MAY 26, 1989 AND AGAIN ON JUNE 1, 1989. ON MAY 26, 1989, REACTOR WATER LEVEL BEGAN DROPPING. THE MOTOR DRIVEN REACTOR FEEDWATER PUMP (MDRFP) REGULATING VALVE IFW004 DID NOT OPEN IN RESPONSE TO THE DECREASING LEVEL. WHEN INDICATED REACTOR WATER LEVEL DROPPED TO APPROXIMATELY TEN INCHES, A MANUAL SCRAM SIGNAL WAS INSERTED. THE FAILURE OF VALVE IFW004 WAS DETERMINED TO BE CAUSED BY A FAULTY SERVO-AMPLIFIER BOARD. THE BOARD WAS REPLACED. THE PLANT ENTERED MODE 2 (STARTUP) IN MAY 27, 1989. ON JUNE 1, 1989, POWER WAS BEING REDUCED IN ORDER TO SHUT THE REACTOR DOWN TO REPAIR THE SEAL ON REACTOR RECIRCULATION PUMP B. AFTER SWITCHING FEEDWATER CONTROL FROM THE TURBINE DRIVEN REACTOR FEEDWATER PUMP TO THE MDRFP, VALVE IFW004 FAILED TO SHUT IN RESPONSE TO ITS CONTROL SIGNAL. REACTOR WATER LEVEL BEGAN IN RAISING. WHEN INDICATED REACTOR WATER LEVEL REACHED FORTY-FIVE INCHES, A MANUAL SCRAM SIGNAL WAS INSERTED. THE CAUSE OF THESE EVENTS WAS THE FAILURE OF VALVE IFW004 TO RESPOND TO ITS CONTROL SIGNAL. TROUBLESHOOTING IDENTIFIED TWO PROBABLE CAUSES: VIBRATIONS CAUSED LOOSE ELECTRICAL CONNECTIONS ON THE SERVO-AMPLIFIER BOARD; SILICON-CONTROLLED RECTIFIERS ON THE BOARD HAD FAILED. THE BOARD HAS BEEN REPLACED AND RELOCATED.

FORM 205 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
461 1989 023 0 8907310365 214906 06/28/89

ABSTRACT

POWER LEVEL - 100%. ON JUNE 28, 1989, WITH THE PLANT IN MODE 1 (POWER OPERATION), THE "C" PHASE MAIN POWER TRANSFORMER (MPT) SUDDEN PRESSURE SENSOR RELAY MALFUNCTIONED CAUSING A TRIP OF THE MAIN GENERATOR. THE TRIP OF THE MAIN GENERATOR RESULTED IN A TURBINE TRIP AND AN AUTOMATIC REACTOR SCRAM BECAUSE OF THE TURBINE CONTROL VALVE FAST CLOSURE SIGNAL. THE CAUSE OF THIS EVENT IS ATTRIBUTED TO A SPURIOUS SIGNAL FROM THE MALFUNCTIONING SUDDEN PRESSURE SENSOR RELAY. THE SUDDEN PRESSURE SENSOR RELAY MALFUNCTIONED BECAUSE OF INTERNAL CORROSION RESULTING FROM WATER INTRUSION INTO THE RELAY. THE SUDDEN PRESSURE SENSOR RELAY WAS REPLACED WITH A SENSOR RELAY WHICH HAS AN AIR VENT TO PREVENT MOISTURE BUILDUP INSIDE THE RELAY. THE SUDDEN PRESSURE SENSOR RELAYS WERE REPLACED IN THE OTHER TWO MAIN POWER TRANSFORMERS AND ALSO IN THE RESERVE AUXILIARY TRANSFORMER AND THE EMERGENCY RESERVE AUXILIARY TRANSFORMER.

FORM 206 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
461 1989 029 0 8908150263 215007 07/14/89

ABSTRACT

POWER LEVEL - 039%. ON JULY 14, 1989, WITH THE PLANT AT THIRTY-NINE PERCENT REACTOR POWER, A MANUAL REACTOR SCRAM WAS INITIATED IN ANTICIPATION OF AN AUTOMATIC SCRAM THAT WAS IMMINENT BECAUSE MAIN CONDENSER VACUUM WAS DECREASING. (A LOSS OF MAIN CONDENSER VACUUM CAUSES A TURBINE TRIP AND RESULTS IN AN AUTOMATIC REACTOR SCRAM.) THE REACTOR HAD BEEN OPERATING AT 100 PERCENT REACTOR POWER WHEN

MANUALLY CLOSED IN ANTICIPATION OF THE AUTOMATIC ISOLATION THAT WOULD OCCUR BECAUSE OF LOW CONDENSER VACUUM. THE CAUSE OF THIS EVENT IS ATTRIBUTED TO A MECHANICAL FAILURE OF THE RUBBER EXPANSION JOINT LOCATED BETWEEN THE "A" LOW PRESSURE TURBINE AND THE MAIN CONDENSER. THE EXPANSION JOINT FAILED BECAUSE OF AGE, OVERTORQUING OF THE ATTACHMENT NUTS OF THE EXPANSION JOINT CLAMP ASSEMBLY, AND STEAM EXPOSURE THAT RESULTED FROM A DETACHED PROTECTIVE COVER. CORRECTIVE ACTION FOR THIS EVENT INCLUDED REPLACING THE RUBBER EXPANSION JOINTS BETWEEN BOTH THE "A" AND "B" LOW PRESSURE TURBINES AND THE MAIN CONDENSER, TORQUING THE ATTACHMENT NUTS OF THE CLAMP ASSEMBLY TO VENDOR RECOMMENDED VALUES, AND REINFORCING THE WELDS OF THE PROTECTIVE COVER.

FORM 207 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 461 1989 032 0 8909060289 215152 07/31/89

ABSTRACT

POWER LEVEL - 025%. ON JULY 31, 1989, WITH THE PLANT AT APPROXIMATELY 25 PERCENT POWER, OPERATORS INITIATED A MANUAL SCRAM OF THE REACTOR. PRIOR TO THE SCRAMS THE PLANT HAD BEEN OPERATING AT 100 PERCENT POWER WHEN DIFFICULTIES WERE EXPERIENCED WITH THE MOISTURE SEPARATOR REHEATER (MSR) AND THE HIGH PRESSURE FEEDWATER HEATER SYSTEMS AND THEIR VENT AND DRAIN SYSTEM. IN RESPONSE TO THESE DIFFICULTIES, OPERATORS BEGAN REDUCING POWER TO REMOVE THE MSRS FROM SERVICE. AT THIS POINT OPERATORS NOTED AN INCREASE IN WATER LEVEL IN THE REHEATER DRAIN TANK, AN INCREASE IN OFF-GAS SYSTEM FLOW, AND A DECREASE IN THE MAIN CONDENSER VACUUM. IN RESPONSE OPERATORS CONTINUED TO DECREASE REACTOR POWER. AT APPROXIMATELY TWENTY-FIVE PERCENT REACTOR POWER, WHILE REMOVING ONE OF THE TURBINE DRIVEN REACTOR FEEDWATER PUMPS FROM SERVICE, AN OPERATOR FAILED TO MATCH THE MANUAL FEEDWATER CONTROL TO THE AUTOMATIC FEEDWATER CONTROL PRIOR TO TRANSFERRING THE PUMP TO MANUAL. THIS CAUSED REACTOR WATER LEVEL TO INCREASE AND APPROACH THE HIGH WATER LEVEL SCRAM SETPOINT THEREFORE, OPERATORS INITIATED A MANUAL SCRAM. THE CAUSE OF THIS EVENT IS ATTRIBUTED TO OPERATOR ERROR DURING THE TRANSFER OF FEEDWATER PUMP CONTROL. BECAUSE THE OPERATOR RECOGNIZED HIS ERROR AND IDENTIFIED IT TO HIS SUPERVISION, NO CORRECTIVE ACTION IS REQUIRED.

FORM 208 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 461 1990 012 0 9006270079 218744 05/17/90

ABSTRACT

POWER LEVEL - 043%. ON MAY 17, 1990, WITH THE PLANT IN POWER OPERATION AT 43 PERCENT REACTOR POWER, AND BOTH REACTOR RECIRCULATION (RR) PUMPS IN FAST SPEED, REACTOR FEEDWATER SYSTEM (FW) FLOW CHANNEL "B" FAILED AND CAUSED INSTRUMENTATION TO INCORRECTLY SENSE TOTAL FW FLOW AS LOW. AS A RESULT OF THIS, THE LOGIC INITIATED AN AUTOMATIC TRANSFER OF THE "A" AND "B" RR PUMPS TO SLOW SPEED. IN RESPONSE TO THE RR PUMP TRANSFERS, THE CONTROL ROOM OPERATOR INITIATED A MANUAL REACTOR SCRAM IN ACCORDANCE WITH THE OFF-NORMAL PROCEDURE. ADDITIONALLY, GROUPS 2, 3 AND 20 CONTAINMENT ISOLATION VALVES ACTUATED AS A REACTOR VESSEL WATER LOW-LEVEL TRIP OCCURRED. TROUBLESHOOTING DETERMINED THAT A POWER CONVERTER FOR THE FW CONTROL SYSTEM FAILED DUE TO NORMAL END OF LIFE AND CAUSED THE "B" FW FLOW CHANNEL TO FAIL. THE CAUSE OF THIS EVENT IS ATTRIBUTED TO THE NORMAL END-OF-LIFE

CONVERTER OF THE SAME MODEL; INITIATING A PREVENTIVE MAINTENANCE (PM) TASK TO PERIODICALLY REPLACE THE POWER CONVERTER AND ANOTHER CONVERTER OF THE SAME MODEL; AND DETERMINING IF OTHER FW CONTROL SYSTEM POWER SUPPLIES/CONVERTERS MAY NEED PM TASKS FOR PERIODIC REPLACEMENT.

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FORM 209 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
461 1990 013 0 9008140018 219287 07/09/90

ABSTRACT

POWER LEVEL - 091%. ON JULY 9, 1990, WITH THE PLANT IN POWER OPERATION AT 91 PERCENT REACTOR POWER, MAIN GENERATOR OVERVOLTAGE/HERTZ PROTECTION RELAY 59/81-1 ACTUATED. AFTER A DESIGNED 45-SECOND TIME DELAY, THE MAIN TURBINE GENERATOR TRIPPED VIA TURBINE CONTROL VALVE FAST CLOSURE WHICH CAUSED AN AUTOMATIC REACTOR SCRAM. ADDITIONALLY, GROUPS 2, 3, AND 20 CONTAINMENT ISOLATION VALVES ACTUATED AS A REACTOR VESSEL WATER LOW-LEVEL TRIP OCCURRED. INVESTIGATION DETERMINED THAT RELAY 59/81-1 HAD ACTUATED PRIOR TO EXCEEDING ITS DESIGN SETPOINT BECAUSE IT WAS OUT OF CALIBRATION. THE CAUSE OF THE RELAY BEING OUT OF CALIBRATION CANNOT BE DETERMINED. PROBABLE CAUSES ARE PERSONNEL ERROR IN READING THE TEST INSTRUMENT DURING CALIBRATION AND/OR TEST INSTRUMENT ERROR DURING CALIBRATION CAUSED BY A FLUCTUATING VOLTAGE SOURCE. CORRECTIVE ACTIONS INCLUDE: RECALIBRATING TWO RELAYS AND VERIFYING SETPOINTS OF A SAMPLE OF OTHER RELAYS CALIBRATED DURING THE SAME PERIOD; ISSUING DETAILED PROCEDURES FOR CALIBRATING PROTECTIVE VOLTAGE RELAYS; INVESTIGATING QUALIFYING A CLINTON POWER STATION TECHNICIAN TO PERFORM RELAY TESTING; RECENTLY PURCHASING NEW DIGITAL TEST EQUIPMENT; AND BRIEFING EACH OPERATIONS CREW ON GENERATOR LIMITATIONS AND ABNORMAL VOLTAGES.

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FORM 210 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
482 1989 002 0 8902280362 213119 01/23/89

ABSTRACT

POWER LEVEL - 100%. ON JANUARY 23, 1989, AT 1322 CST, A REACTOR TRIP OCCURRED AS A RESULT OF A HIGH BEARING VIBRATION MAIN TURBINE TRIP. A FEEDWATER ISOLATION SIGNAL, AN AUXILIARY FEEDWATER ACTUATION SIGNAL, AND A STEAM GENERATOR BLOWDOWN AND SAMPLE ISOLATION SIGNAL OCCURRED AS DESIGNED FOLLOWING THE REACTOR TRIP. THE REQUIRED SAFETY RELATED EQUIPMENT PERFORMED AS DESIGNED. PRIOR TO THE EVENT, THE UNIT WAS IN MODE 1, POWER OPERATION, AT 100 PERCENT POWER. THE CAUSE OF THE TRIP WAS DETERMINED TO BE A SPURIOUS SIGNAL IN THE VIBRATION MONITORING CIRCUITRY WHICH INCORRECTLY INDICATED HIGH VIBRATION ON THE MAIN TURBINE NUMBER 7 BEARING. TO PREVENT ADDITIONAL UNNECESSARY CHALLENGES OF REACTOR PROTECTION SYSTEMS, THE TURBINE HIGH VIBRATION TRIP CIRCUITRY HAS BEEN MODIFIED FROM A TRIP FUNCTION TO AN ALARM FUNCTION. FURTHER EVALUATION OF THE TURBINE VIBRATION TRIP CIRCUITRY IS BEING CONDUCTED TO DETERMINE IF INSTALLATION OF MULTI-COINCIDENCE LOGIC IS FEASIBLE FOR THE TRIP CIRCUITRY. THERE WAS NO DAMAGE TO PLANT EQUIPMENT OR RELEASE OF RADIOACTIVITY AS A RESULT OF THIS EVENT. AT NO TIME DID CONDITIONS DEVELOP THAT MAY HAVE POSED A THREAT TO THE HEALTH OR SAFETY OF THE PUBLIC.

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FORM 211 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 100%. ON 2/2/89, AT APPROXIMATELY 1321 CST, A REACTOR TRIP OCCURRED FROM 100% POWER AS A RESULT OF STEAM GENERATOR (S/G) 'C' REACHING THE LO-LO LEVEL TRIP SETPOINT FOLLOWING CLOSURE OF S/G 'C' MAIN STEAM ISOLATION VALVE (MSIV 'C'). IN ADDITION, A FEEDWATER ISOLATION SIGNAL, AN AUX. FEEDWATER ACTUATION SIGNAL, AND A STEAM GENERATOR BLOWDOWN AND SAMPLE ISOLATION SIGNAL ACTUATIONS OCCURRED AS DESIGNED. THE CAUSE OF THE REACTOR TRIP HAS BEEN DETERMINED TO BE A LOOSE SCREW ON A TERMINAL STRIP IN THE SOLID STATE PROTECTION SYSTEM (SSPS). DURING UNRELATED MAINTENANCE, THIS LOOSE TERMINATION WAS BUMPED RESULTING IN A FAST CLOSE SIGNAL TO MSIV 'C'. EFFORTS TO IDENTIFY THE ROOT CAUSE OF THE LOOSE TERMINAL CONNECTIONS HAVE BEEN UNSUCCESSFUL. OTHER TERMINATIONS IN THE SSPS AND OTHER CONTROL ROOM PROCESS CABINETS WERE CHECKED AND TIGHTENED AS NECESSARY. IN ORDER TO PREVENT RECURRENCE OF THIS EVENT, A CHECK OF SCREWS IN THESE APPLICATIONS WILL BE ADDED TO THE INSTRUMENTATION AND CONTROLS PREVENTATIVE MAINTENANCE PROGRAM.

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FORM 212 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 482 1990 001 0 9003140392 217397 02/06/90

ABSTRACT

POWER LEVEL - 100%. ON 2/6/90, AT APPROX. 0906 CST, A REACTOR TRIP OCCURRED FROM 100% POWER AS A RESULT OF A LOOP LOW FLOW CONDITION FOLLOWING A TRIP OF REACTOR COOLANT PUMP (RCP) "A". IN ADDITION, A FEEDWATER ISOLATION SIGNAL, AN AUXILIARY FEEDWATER ACTUATION SIGNAL, AND A STEAM GENERATOR BLOWDOWN AND SAMPLE ISOLATION SIGNAL ACTUATIONS OCCURRED AS DESIGNED. ALL REQUIRED SAFETY RELATED EQUIPMENT PERFORMED AS DESIGNED. THE TRIP OF RCP "A" WAS CAUSED BY AN INDICATED HIGH DIFFERENTIAL CURRENT ON THE "A" PHASE. THE DIFFERENTIAL CURRENT RELAY WAS TESTED AND NO ABNORMALITIES WERE DETECTED. EXTENSIVE TROUBLESHOOTING EFFORTS WERE UNSUCCESSFUL IN IDENTIFYING THE ROOT CAUSE FOR THE RELAY ACTUATION. FOLLOWING INSTALLATION OF TEMPORARY RECORDERS TO MONITOR INPUTS TO THE RELAY, RCP "A" WAS RESTARTED AT APPROX. 1630 CST. NO SIGNIFICANT ABNORMALITIES ASSOCIATED WITH PUMP OPERATION WERE DETECTED AND THE NEXT DAY, ON 2/7/90, THE UNIT WAS RESTARTED, ENTERING MODE 2, STARTUP, AT 1631 CST.

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FORM 213 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 482 1990 011 0 9006190024 218551 05/14/90

ABSTRACT

POWER LEVEL - 008%. A 5/14/90, AT 2136 COT, DURING PERFORMANCE OF THE MAIN TURBINE OVERSPEED TRIP TEST, A FEEDWATER ISOLATION SIGNAL (FWIS) AND MAIN TURBINE TRIP SIGNAL OCCURRED WHEN STEAM GENERATOR 'B' REACHED THE HIGH-HIGH LEVEL SETPOINT. SHORTLY THEREAFTER, A REACTOR TRIP AND AUXILIARY FEEDWATER ACTUATION SIGNAL (AFAS), AND STEAM GENERATOR BLOWDOWN AND SAMPLE ISOLATION SIGNAL (SGBSIS) OCCURRED WHEN STEAM GENERATOR 'C' REACHED THE LOW-LOW LEVEL SETPOINT. ALL ENGINEERED SAFETY FEATURES AND REACTOR PROTECTION SYSTEM EQUIPMENT RESPONDED PROPERLY TO THE ACTUATION SIGNALS. EARLIER IN THE DAY ON 5/14/90, FEEDWATER PREHEATING USING MAIN STEAM HAD BEEN REMOVED FROM SERVICE. WHEN THE MAIN TURBINE WAS TAKEN OFFLINE IN ACCORDANCE WITH THE OVERSPEED TRIP TEST, FEEDWATER HEATING USING EXTRACTION STEAM WAS LOST. AS A RESULT OF THE COLDER FEEDWATER BEING SUPPLIED TO THE STEAM

***** ATTEMPTS TO PREVENT THE HIGH-HIGH AND LOW-LOW LEVEL CONDITIONS. THE PROCEDURE FOR PERFORMING THE OVERSPEED TRIP TEST HAS BEEN REVISED TO REQUIRE FEEDWATER HEATING TO BE INSERVICE PRIOR TO CONDUCTING THE TEST. THE REVISED TEST WAS COMPLETED SUCCESSFULLY ON 5/16/90 AT 0002 CDT.

FORM 214 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
482 1990 012 0 9006260355 218775 05/17/90

ABSTRACT

POWER LEVEL - 001%. ON 5/17/90, AT 2305 CDT, WITH THE UNIT AT 0.5% POWER, A REACTOR TRIP SIGNAL, MAIN TURBINE (TA-TR9) TRIP SIGNAL, AUXILIARY FEEDWATER ACTUATION SIGNAL (AFAS), FEEDWATER ISOLATION SIGNAL (FWIS) AND STEAM GENERATOR BLOWDOWN AND SAMPLE ISOLATION SIGNAL (SGBSIS) OCCURRED AS A RESULT OF A LOW-LOW WATER LEVEL IN STEAM GENERATOR 'C'. PRIOR TO THIS EVENT, THE UNIT HAD BEEN TAKEN OFF LINE AND THE STEAM GENERATOR ATMOSPHERIC RELIEF VALVES (ARV'S) WERE BEING USED TO MAINTAIN REACTOR COOLANT SYSTEM TEMPERATURE. AT APPROXIMATELY 2300 CDT, IT WAS DISCOVERED THAT THE 'C' ARV WAS STUCK OPEN. EFFORTS TO CLOSE THE ARV FROM THE CONTROL ROOM WERE UNSUCCESSFUL, AND OPERATORS WERE DISPATCHED TO MANUALLY ISOLATE THE VALVE. THIS VALVE WAS ISOLATED AT 2310 CDT, AND PLANT CONDITIONS WERE STABILIZED. DURING SUBSEQUENT TROUBLESHOOTING, A CURRENT-TO-PNEUMATIC CONVERTER IN THE ARV POSITIONER CIRCUITRY WAS REPLACED. THE ARV WAS VERIFIED TO BE OPERATING PROPERLY AND WAS RESTORED TO SERVICE AT 0716 CDT ON 5/18/90. IT IS BELIEVED THAT THE FAILURE OCCURRED AS A RESULT OF A PRESSURE REGULATING BALL IN THE AIR BLEED OFF LINE OF THE CONVERTER BEING RESTRICTED FROM FREE MOVEMENT. THIS CONDITION CAUSED THE ARV TO REMAIN IN THE OPEN POSITION.

FORM 215 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
482 1990 013 0 9006220084 218550 05/19/90

ABSTRACT

POWER LEVEL - 097%. ON 5/19/90, AT 2353 CDT, A MAIN TURBINE (TA-TR8) TRIP OCCURRED AS A RESULT OF HIGH-HIGH MOISTURE SEPARATOR REHEATER LEVEL. BECAUSE THE UNIT WAS OPERATING AT GREATER THAN 50% POWER, THE MAIN TURBINE TRIP CAUSED A REACTOR TRIP. AS EXPECTED, AN AUXILIARY FEEDWATER ACTUATION SIGNAL, A FEEDWATER ISOLATION SIGNAL AND A STEAM GENERATOR BLOWDOWN AND SAMPLE ISOLATION SIGNAL ALSO OCCURRED. ALL REACTOR PROTECTION SYSTEM AND ENGINEERED SAFETY FEATURES EQUIPMENT FUNCTIONED PROPERLY. FOLLOWING THIS EVENT, EXTENSIVE TROUBLESHOOTING ACTIVITIES WERE CONDUCTED. A LEVEL SWITCH ON MOISTURE SEPARATOR DRAIN TANK (MSDT) 'A' WAS FOUND TO INITIALLY BE STUCK THUS PREVENTING A MAIN CONTROL ROOM ALARM ON HIGH LEVEL. THE SWITCH WAS REPLACED. THE REMAINDER OF THE LEVEL CONTROL CIRCUITRY FOR MSDT 'A' WAS FOUND TO BE OPERATING PROPERLY. NO ABNORMALITIES WERE IDENTIFIED IN THE DUMP VALVE TO THE CONDENSER, THE NORMAL LEVEL CONTROL VALVE, OR ITS UPSTREAM CHECK VALVE. NO SIGNIFICANT ABNORMALITIES COULD BE IDENTIFIED DURING THE TROUBLESHOOTING. THE UNIT WAS RESTARTED ON 5/20/90, AND LEVELS WERE CLOSELY MONITORED. NO FURTHER DIFFICULTIES WERE ENCOUNTERED IN THE LEVEL CONTROL SYSTEM.

FORM 216 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 097%. ON 5/29/89 AT 1051 CDT, A REACTOR TRIP OCCURRED ON A POWER RANGE NEUTRON FLUX RATE TRIP SIGNAL. THE PLANT WAS IN MODE 1 - POWER OPERATIONS. AT 97 PERCENT REACTOR POWER, THE REACTOR COOLANT SYSTEM (RCS) TEMPERATURE WAS 587F (AVERAGE). RCS PRESSURE WAS 2235 PSIG. THE POWER FLUX RATE TRIP SIGNAL WAS RECEIVED DURING THE PERFORMANCE OF A SURVEILLANCE PROCEDURE FOR INCORE/EXCORE CALIBRATION. A CHANGE IN METER LOCATION OF THE MEASURING & TEST EQUIPMENT (M&TE) INSTALLED FOR THE SURVEILLANCE WAS REQUESTED BY A UTILITY REACTOR ENGINEER. THE TECHNICIAN REMOVED THE LEADS FROM THE M&TE THAT WAS CONNECTED TO POWER RANGE CHANNELS N41 AND N42. WHEN RECONNECTING, THE TECHNICIAN DROPPED THE N42 LEADS CAUSING A GROUND. A GROUND IN ONE OF THE N41 LEADS ALSO OCCURRED, WHICH LEAD TO THE TRIP SIGNAL AND SUBSEQUENT UNIT TRIP/TURBINE TRIP. THIS EVENT WAS CAUSED BY THE LACK OF DETAIL PROVIDED IN PLANT PROCEDURES WHICH RESULTED IN PERSONNEL BEING UNAWARE OF POTENTIAL CONSEQUENCES. NEITHER THE TECHNICIAN NOR THE REACTOR ENGINEER REALIZED THE RISK ASSOCIATED WITH THE CONFIGURATION DUE TO THE MULTIPLE CHANNEL ARRANGEMENT AND NON-ISOLATED TEST POINTS. PROCEDURE ESP-22-00006 INCORE/EXCORE CALIBRATION HAS BEEN REVISED TO INCORPORATE SPECIFIC PRECAUTIONS CONCERNING PLACEMENT, CONNECTION AND REMOVAL OF THE M&TE. THE EVENT WILL BE DISCUSSED WITH THE TECHNICIANS AND ENGINEERS INVOLVED.

FORM 217 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 483 1989 008 0 8907280187 214908 06/23/89

ABSTRACT

POWER LEVEL - 100%. AT 0840 CDT ON 6/23/89, CONTROL ROD BANK "B" FAILED TO MOVE AND WAS DECLARED INOPERABLE IN MODE 1 - POWER OPERATION AT 100% REACTOR POWER. AT 1102, A PLANT SHUTDOWN WAS COMMENCED PER TECHNICAL SPECIFICATION (T/S) 3.1.3.1 ACTION B. AT 1418 AT APPROXIMATELY 3% REACTOR POWER, THE MAIN TURBINE WAS TRIPPED. A PROTECTIVE RELAY FOR GENERATOR OUTPUT BREAKER ERRONEOUSLY SENSED A FLASHOVER AND CLEARED THE 345 KV SWITCHYARD BUS "B". THIS RESULTED IN A COMPLETE LOSS OF POWER TO THE 4.16 KV SAFEGUARDS BUS NB01. THIS RESULTED IN AN ENGINEERED SAFETY FEATURE ACTUATION OF THE TURBINE DRIVEN AUXILIARY FEEDWATER PUMP. AT 1419, THE REACTOR WAS MANUALLY TRIPPED AT 2% REACTOR POWER. THE PLANT WAS STABILIZED IN MODE 3 - HOT STANDBY. THE LOSS OF NB01 HAD CAUSED RADIATION MONITORS, GK-RE-05 AND GK-RE-27, TO BECOME INOPERABLE. T/S 3.3.3.1 ACTIONS 27 AND 30 WERE NOT COMPLETED WITHIN THE 1 HOUR TIME LIMIT. THE PLANT WAS RESTARTED AT 0210 ON 6/24/89 AND REACHED 100% REACTOR POWER AT ABOUT 1500 ON 6/25/89. TWO CIRCUIT BOARDS IN THE ROD CONTROL LOGIC CABINET WERE REPLACED. THE CAUSE OF THE LOSS OF NB01 WAS THE FAILURE OF A FLASHOVER RELAY DUE TO A LOOSE SET SCREW. THE RELAY WAS REPAIRED. THE CAUSE OF THE LATE COMPLETION OF T/S 3.3.3.1 ACTIONS 27 AND 30 WAS ATTRIBUTABLE TO COGNITIVE PERSONNEL ERRORS. THESE WERE IDENTIFIED BUT WERE NOT COMPLETED WITHIN THE TIME REMAINING.

FORM 218 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 483 1990 008 0 9006010187 218374 05/01/90

ABSTRACT

POWER LEVEL - 100%. ON 5/1/90 AT 1331 CDT, A REACTOR TRIP, AND

THE PLANT WAS IN MODE 1 - POWER OPERATIONS, 100 PERCENT REACTOR POWER, AT NORMAL OPERATING PRESSURE AND TEMPERATURE. THE SCW LOW FLOW TURBINE TRIP SIGNAL AND SUBSEQUENT REACTOR TRIP SIGNAL WERE RECEIVED DURING THE CALIBRATION OF THE SCW INLET CONDUCTIVITY METER. DURING RESTORATION OF POWER TO THE CONDUCTIVITY METER, A CONDUCTIVE FOREIGN PARTICLE CREATED A DEAD SHORT ACROSS THE POWER SUPPLY LEADS OF THE METER ASSEMBLY. THE SUBSEQUENT TRANSIENT CAUSED THE FAILURE OF A 10 AMP FUSE RESULTING IN A LOSS OF MAIN GENERATOR SCW INSTRUMENTATION POWER. THE LOSS OF INSTRUMENTATION POWER INITIATED A TURBINE RUNBACK AT 1328. WITH THE "LOSS OF SCW FLOW" SIGNAL STILL PRESENT, THE MAIN GENERATOR PROTECTION CIRCUITRY INITIATED A TURBINE TRIP AT 1331. SEVERAL GENERATOR PROTECTION SCW RUNBACK MODIFICATIONS ARE BEING IMPLEMENTED TO ALLEVIATE FALSE ACTIVATIONS AND ENHANCE THE RELIABILITY OF THE SYSTEM.

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FORM 219 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
483 1990 007 0 9007160378 218823 06/11/90

ABSTRACT

POWER LEVEL - 100%. ON 6/11/90, AT 1016 CDT, A REACTOR PROTECTION SYSTEM (RPS) REACTOR TRIP, A FEEDWATER ISOLATION (FWIS), AND AN AUXILIARY FEEDWATER ACTUATION OCCURRED FOLLOWING SIMULTANEOUS CLOSURE OF ALL FOUR MAIN STEAM ISOLATION VALVES (MSIVS). THE PLANT WAS IN MODE 1 - POWER OPERATIONS AT 100 PERCENT REACTOR POWER. THE MSIVS CLOSED DUE TO A FAILED INPUT BUFFER CARD IN THE MSIV MANUAL FAST CLOSE CIRCUITRY IN THE MAIN STEAM AND FEEDWATER ISOLATION SYSTEM CONTROL CABINET. THE FAILED INPUT BUFFER CARD WAS REPLACED. ON 6/12/90, AT 0501 CDT, WHILE SUBCRITICAL DURING REACTOR STARTUP, FOUR BANK 'B' ROD CONTROL CLUSTER ASSEMBLIES DROPPED. OPTIONS WERE EVALUATED AND AT 0545, THE REACTOR TRIP BREAKERS WERE OPENED, MANUALLY TRIPPING THE REACTOR. A FWIS WAS RECEIVED AS ANTICIPATED. THE PLANT WAS IN MODE 2 - STARTUP (SUBCRITICAL). A FAULTY ROD CONTROL SLAVE CYCLER COUNTER CARD FOR THE 18D CONTROL ROD POWER CABINET WAS IDENTIFIED AND REPLACED. DURING STARTUP OF THE PLANT ON 6/12/90, OPERATIONS SURVEILLANCE PROCEDURE, "MAIN TURBINE TRIP TESTS" (OSP-AC-00004), WAS NOT PERFORMED. THIS EVENT WAS DISCOVERED ON 6/18/90. THE PLANT WAS IN MODE 2 - STARTUP AT 15 PERCENT REACTOR POWER. THIS EVENT WAS CAUSED BY THE SHIFT TECHNICAL ADVISOR MISTAKENLY READING THE SURVEILLANCE SCHEDULE BOOK. OSP-AC-00004 WAS PERFORMED SATISFACTORILY ON 6/18/90.

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FORM 220 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
483 1990 016 0 9012270013 220506 11/24/90

ABSTRACT

POWER LEVEL - 048%. ON 11/24/90 AT 0051 CST, WITH POWER BEING REDUCED AT 20% PER HOUR, A TURBINE TRIP OCCURRED ON A HIGH MOISTURE SEPARATOR REHEATER (MSR) HIGH LEVEL SIGNAL. A REACTOR TRIP OCCURRED WITHIN TEN SECONDS DUE TO LOW STEAM GENERATOR LEVELS WHICH HAD RESULTED DUE TO THE TURBINE TRIP. ENGINEERED SAFETY FEATURES FEEDWATER ISOLATION AND AUXILIARY FEEDWATER ACTUATION WERE GENERATED PER DESIGN. THE LICENSED OPERATORS IMMEDIATELY STABILIZED THE PLANT IN ACCORDANCE WITH PLANT PROCEDURES. THE PLANT WAS AT 48% REACTOR POWER AT THE TIME OF THE TRIP, WITH REACTOR COOLANT SYSTEM TEMPERATURE AT 571F AND PRESSURE AT 2235 PSIG. ONE MSR LEVEL DEVICE WAS INADVERTENTLY INSTALLED UPSIDE DOWN, CAUSING ONE HIGH LEVEL SIGNAL TO LOCK IN. THE SPURIOUS

LOGIC FOR THE MSR LEVEL TRIP SIGNAL. DUE TO NARROW TRIP AND RESET TOLERANCE, THE MSR LEVEL DEVICES WERE VERY SENSITIVE TO VIBRATION. AN ACTUAL HIGH MSR LEVEL HAD NOT OCCURRED. THE INCORRECTLY INSTALLED MSR LEVEL SWITCH WAS INVERTED AND ALL 12 SWITCHES WERE ADJUSTED TO MAKE THEM LESS SUSCEPTIBLE TO VIBRATION-INDUCED SPURIOUS ACTUATIONS. OTHER SIMILAR LEVEL SWITCHES IN THE PLANT ARE BEING EVALUATED FOR POTENTIAL SET-UP PROBLEMS DUE TO TIGHT CALIBRATION TOLERANCES.

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FORM 221 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
483 1990 017 0 9101280180 220729 12/30/90

ABSTRACT

POWER LEVEL - 100%. ON 12/30/90, AT 1152 CST, A REACTOR TRIP OCCURRED DUE TO THE FAILURE OF A CONTROLLER/DRIVER CARD FOR THE 'B' FEEDWATER REGULATING VALVE (FRV). THE FRV FAILED CLOSED AND COULD NOT BE RE-OPENED BY THE LICENSED OPERATORS FROM THE MAIN CONTROL BOARD IN EITHER THE AUTOMATIC OR MANUAL MODE. THE SUBSEQUENT 'B' STEAM GENERATOR LOW WATER LEVEL ACTUATED THE REACTOR TRIP SIGNAL. AS A RESULT OF THE RPS ACTUATION, A FEEDWATER ISOLATION (FWIS) AND AN AUXILIARY FEEDWATER ACTUATION (AFAS) WERE GENERATED BY DESIGN. THE PLANT WAS IN MODE 1 - POWER OPERATIONS AT 100 PERCENT REACTOR POWER. THE REACTOR COOLANT SYSTEM TEMPERATURE WAS 588 DEGREES F AND THE PRESSURE WAS 2235 PSIG. THE LICENSED OPERATORS RECOVERED FROM THE TRIP AND ENGINEERED SAFETY FEATURE (ESF) ACTUATIONS VIA PLANT PROCEDURES. THE FRV CONTROLLER/DRIVER CARD WAS REPLACED AT 1330 ON 12/30/90. THE MANUFACTURER OF THE CARD IS WESTINGHOUSE (COMPONENT #2837A16G03). THE PLANT WAS RETURNED TO MODE 1 - POWER OPERATIONS AT 0134 ON 12/31/90. A CAPACITOR IN THE POWER SUPPLY SECTION OF THE CARD WAS THE CAUSE OF THE CARD FAILURE. THE FAILURE OF THE CAPACITOR IS INDETERMINATE. CORRECTIVE ACTIONS INCLUDE: THE FAILURE HISTORY AND OTHER APPLICATIONS OF THE USE OF THIS CAPACITOR WILL BE EVALUATED; AND AN EVALUATION WILL BE PERFORMED TO DETERMINE THE FEASIBILITY OF ADDING A REDUNDANT CONTROLLER/DRIVER CARD TO THE CIRCUIT FOR THE FRV'S.

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FORM 222 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
498 1989 001 0 8902070184 212969 01/03/89

ABSTRACT

POWER LEVEL - 100%. AT 1317 HOURS ON JANUARY 3, 1989 WITH UNIT 1 IN MODE 1 AT 100% POWER, A REACTOR TRIP OCCURRED ON OVER TEMPERATURE/DELTA TEMPERATURE AS A RESULT OF A FAILURE IN THE MAIN TURBINE GENERATOR ELECTRO-HYDRAULIC CONTROL (EHC) SYSTEM WHICH CLOSED THE TURBINE GOVERNOR VALVES. THE MOST PROBABLE CAUSE OF THIS EVENT WAS DETERMINED TO BE A POORLY CRIMPED LUG ON AN INTERCONNECTING WIRE WHICH SUPPLIED POWER TO SEVERAL FRAMES OF PRINTED CIRCUIT CARDS IN THE EHC CABINET. THIS RESULTED IN A HIGH RESISTANCE CONNECTION WHICH DROPPED THE POWER SUPPLY VOLTAGE TO SEVERAL CARDS WHICH CONTAIN DIGITAL AND ANALOG CIRCUITS RESPONSIBLE FOR CONTROL OF TURBINE VALVES, TURBINE PROTECTION AND OPERATOR INTERFACE. CORRECTIVE ACTIONS INCLUDE REPLACEMENT OF THE DEFECTIVE WIRE AND CHECK OF OTHER SIMILAR WIRES FOR EXCESSIVE VOLTAGE DROP.

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FORM 223 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 100%. ON JANUARY 20, 1989, UNIT 1 WAS IN MODE 1 AT 100% POWER. AT 1017 HOURS, ALARMS WERE RECEIVED IN THE CONTROL ROOM FOR TURBINE GENERATOR HIGH VIBRATION, AND BEARING 8 AND 9 HIGH TEMPERATURE. A FIRE WAS SUBSEQUENTLY REPORTED AT BEARING 9. THE DELUGE SYSTEM WAS ACTUATED, THE TURBINE WAS MANUALLY TRIPPED AND THE REACTOR AUTOMATICALLY TRIPPED AT 1123 HOURS. THE FIRE WAS EXTINGUISHED IN 14 MINUTES. THE CAUSE OF THE EVENT WAS LOSS OF COOLING OF THE GENERATOR HYDROGEN. THE RESULTING INCREASE IN HYDROGEN TEMPERATURE AND PRESSURE CAUSED LEAKAGE FROM THE BEARING SEALS. THE LOSS OF COOLING OF THE HYDROGEN IS BELIEVED TO HAVE BEEN CAUSED BY A LOOSE TEMPERATURE SENSOR CONNECTION TO THE HYDROGEN GAS TEMPERATURE CONTROLLER. THE EFFECTS OF THE LOSS OF COOLING WERE NOT IMMEDIATELY DETECTED DUE TO THE FAILURE OF TWO INPUTS TO THE HYDROGEN SYSTEM COMMON TROUBLE ALARM IN THE CONTROL ROOM. CORRECTIVE ACTIONS INCLUDE INSPECTION OF THE GENERATOR, REPAIR OF THE BEARING SEALS, REPAIR OF THE HYDROGEN CONTROLLER, MODIFICATION OF THE CONTROLLER DESIGN AND REPAIR OF THE INPUTS TO THE CONTROL ROOM ANNUNCIATOR.

FORM 224 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 498 1989 015 1 9004200670 217791 07/04/89

ABSTRACT

POWER LEVEL - 100%. ON 7/4/89, UNIT 1 WAS IN MODE 1 AT 100% POWER. AT 1915 HOURS, THE MAIN GENERATOR OUTPUT CIRCUIT BREAKER OPENED. THE MAIN TURBINE GOVERNOR VALVES CLOSED TO LIMIT TURBINE OVERSPEED AND A REACTOR TRIP SYSTEMS RESPONDED AS DESIGNED AND NO UNEXPECTED POST-TRIP TRANSIENTS OCCURRED. THE CAUSE OF THIS EVENT WAS THE FAILURE OF A 125 VDC RATED AUXILIARY RELAY WHICH WAS ERRONEOUSLY USED IN THE 250 VDC GENERATOR CIRCUIT BREAKER TRIP CIRCUIT. IT HAS BEEN DETERMINED THAT THE INCORRECT RELAY WAS SUPPLIED TO HL&P BY THE VENDOR. AN ERROR WAS MADE IN TRANSPOSING THE HL&P PURCHASE ORDER REQUIREMENTS TO THE VENDOR'S PURCHASE ORDER WITH THE RELAY SUB-SUPPLIER. SINCE THE VENDOR TAGGED THE RELAYS CORRECTLY, THE ERROR WAS NOT DETECTED DURING RECEIVING VERIFICATION. THE FAILED RELAY AND ONE OTHER 125 VDC RELAY HAVE BEEN REPLACED WITH THE CORRECT MODEL. 250 VDC CONTROL CIRCUITS IN UNIT 2 HAVE BEEN INSPECTED FOR SIMILAR RELAYS WHICH ARE NOT OF THE CORRECT RATING. NO OTHERS WERE FOUND.

FORM 225 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 498 1990 005 0 9005080001 218100 03/29/90

ABSTRACT

POWER LEVEL - 100%. ON MARCH 29, 1990, UNIT 1 WAS IN MODE 1 AT 100 PERCENT POWER. AT APPROXIMATELY 1443 HOURS, FEEDWATER BOOSTER PUMP (FBP) 11 TRIPPED UPON ACTUATION OF A GROUND FAULT RELAY. THE STANDBY PUMP, FBP 13, AUTOMATICALLY STARTED, BUT DID NOT DELIVER SUFFICIENT FLOW TO PREVENT STEAM GENERATOR FEEDWATER PUMP 12 FROM TRIPPING ON LOW SUCTION PRESSURE. ATTEMPTS TO MAINTAIN STEAM GENERATOR LEVEL WERE UNSUCCESSFUL AND THE REACTOR TRIPPED ON LOW STEAM GENERATOR LEVEL. THE PLANT WAS BROUGHT TO A STABLE SHUTDOWN IN MODE 3. THE CAUSE OF THE FBP 11 TRIP HAS NOT YET BEEN IDENTIFIED; HOWEVER, IT IS BELIEVED THAT A WEAKNESS OF THE FBP 11 WINDINGS OR FEEDER CABLES AGGRAVATED BY MOISTURE INTRUSION AND DIRT DUE TO CLOGGED AIR INLET FILTERS RESULTED IN THE GROUND FAULT. CORRECTIVE ACTION IS BEING TAKEN TO DISASSEMBLE,

THE USER ADVISED TO PERIODICALLY INSPECT AND CLEAN THE COOLING AIR FILTERS. BACKUP FBP 13 DID NOT PROVIDE ADEQUATE FLOW BECAUSE THE RECIRCULATION VALVE HAD BEEN MANUALLY SET IN THE OPEN POSITION UNTIL THE VALVE CONTROLLER COULD BE REPAIRED. REPAIR TO THE FBP 13 RECIRCULATION VALVE CONTROLLER WILL BE COMPLETED DURING THE CURRENT REFUELING OUTAGE.

FORM 226 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 498 1990 006 0 9009060070 219444 07/30/90

ABSTRACT

POWER LEVEL - 100%. ON 7/30/90, UNIT 1 WAS IN MODE 1 AT 100% POWER. AT APPROXIMATELY 1946, FEEDWATER ISOLATION VALVE 1A FULLY CLOSED DURING A PARTIAL STROKE SURVEILLANCE TEST. THE RESULTANT LOSS OF FEEDWATER FLOW CAUSED A DECREASE IN STEAM GENERATOR LEVEL AND THE REACTOR WAS MANUALLY TRIPPED. THE UNIT WAS STABILIZED WITH THE EXCEPTION OF LEVEL IN STEAM GENERATOR 1A WHICH DID NOT RECOVER DUE TO A MISPOSITIONED RECIRCULATION TEST VALVE IN THE TRAIN A AUXILIARY FEEDWATER SYSTEM (AFW). THE RECIRCULATION TEST VALVE WAS RETURNED TO THE REQUIRED POSITION AND STEAM GENERATOR 1A LEVEL WAS RECOVERED. THE FEEDWATER ISOLATION VALVE CLOSURE WAS CAUSED BY A TECHNICIAN INADVERTENTLY CONTACTING THE WRONG TERMINAL WITH A TEST JUMPER. THE CAUSE OF THE MISPOSITIONED RECIRCULATION TEST VALVE COULD NOT BE CONCLUSIVELY ESTABLISHED; HOWEVER, IT IS LIKELY THAT THE VALVE WAS NOT CORRECTLY REPOSITIONED DURING A SURVEILLANCE TEST PRIOR TO THE EVENT, AND THIS ERROR WAS NOT DISCOVERED DUE TO A LACK OF ADEQUATE INDEPENDENT VERIFICATION. CORRECTIVE ACTIONS INCLUDE: ISSUANCE OF TRAINING BULLETINS CONCERNING USE OF JUMPERS; EVALUATION OF ALTERNATIVE DESIGNS TO OBTAIN THE NEED TO PERFORM THE PARTIAL STROKE TEST WITH JUMPERS; AND, ISSUANCE OF A MEMORANDUM TO OPERATIONS PERSONNEL TO REENFORCE THE REQUIREMENTS PERTAINING TO INDEPENDENT VERIFICATION.

FORM 227 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 498 1990 014 0 9007240018 218885 06/26/90

ABSTRACT

POWER LEVEL - 015%. ON JUNE 20, 1990 AT 0410 HOURS WITH UNIT 1 IN MODE 1 AT 15% POWER WHILE PERFORMING SYNCHRONIZATION OF THE MAIN GENERATOR TO THE GRID, A REACTOR TRIP - TURBINE TRIP OCCURRED DUE TO UNDERVOLTAGE TO THE REACTOR COOLANT PUMPS. DURING THE EVENT ELECTRICAL POWER WAS LOST TO THE DIGITAL ROD POSITION INDICATION (DRPI) SYSTEM, NECESSITATING A MANUAL EMERGENCY BORATION SINCE IT COULD NOT BE VERIFIED THAT ALL RODS WERE ON BOTTOM. THE REACTOR TRIP WAS INITIATED BY A GENERATOR BREAKER LOCKOUT WHICH WAS CAUSED BY THE SPURIOUS ACTUATION OF A GENERATOR BREAKER POLE FAILURE RELAY. THIS GENERATOR BREAKER LOCKOUT LED TO THE LOSS OF POWER TO THE UNIT AUXILIARY TRANSFORMER WITH RESULTING LOSS OF POWER TO THE REACTOR COOLANT PUMPS AND SUBSEQUENT REACTOR TRIP. CORRECTIVE ACTIONS INCLUDE: CALIBRATING THE RELAY AND INCLUDING IT IN THE PREVENTATIVE MAINTENANCE PROGRAM. IN ADDITION, CORRECTIVE ACTIONS ARE BEING CONSIDERED TO MINIMIZE THE POSSIBILITY OF LOSS OF POWER EVENTS DURING GENERATOR SYNCHRONIZATION.

FORM 228 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 076%. AT 0554 HOURS ON JUNE 28, 1990 WITH UNIT 1 IN MODE 1 AT 76 PERCENT POWER A REACTOR TRIP OCCURRED DUE TO A TURBINE TRIP WHICH WAS CAUSED BY LOW ELECTROHYDRAULIC CONTROL (EHC) SYSTEM FLUID PRESSURE. THE PLANT WAS BROUGHT TO A STABLE CONDITION IN MODE 3. THE CAUSE OF THIS EVENT WAS FAILURE OF AN EHC SUPPLY LINE TO A MAIN TURBINE GENERATOR THROTTLE VALVE. THE LINE FAILED DUE TO EXCESSIVE VIBRATION INDUCED BY OSCILLATION IN A MAIN TURBINE GENERATOR GOVERNOR VALVE. THE OSCILLATIONS WERE CAUSED BY A LOOSE CONNECTION IN THE CONTROL CIRCUIT. INVESTIGATION REVEALED THAT THE EHC SYSTEM PIPING CONTAINED A NUMBER OF LESS THAN ADEQUATE SUPPORTS AND THAT PORTIONS OF THE PIPING HAD LESS THAN THE SPECIFIED WALL THICKNESS. CORRECTIVE ACTIONS INCLUDE REPAIRING THE LOOSE CONNECTION AND REPLACING THE LESS THAN ADEQUATE PIPING AND SUPPORTS.

FORM 229 LER SCSS DATA 04-18-91

DOCKET	YEAR	LER NUMBER	REVISION	DCS NUMBER	NSIC	EVENT DATE
498	1990	016	0	9008070019	219066	07/02/90

ABSTRACT

POWER LEVEL - 000%. ON JULY 2, 1990, UNIT 1 WAS IN MODE 1 AT ABOUT 100 PERCENT POWER. AT 1803 HOURS A REACTOR TRIP WAS INITIATED WHEN 2 OUT OF 4 COINCIDENCE WAS SATISFIED ON OVER TEMPERATURE/DELTA TEMPERATURE (OT DELTA T). UNIT 1 WAS IN POWER ASCENSION AND LOOP 4 DELTA TEMPERATURE AND T AVERAGE BISTABLES WERE IN A TRIP CONDITION TO SUPPORT THE SURVEILLANCE IN PROGRESS. DUE TO A DECREASE IN REACTOR COOLANT SYSTEM (RCS) PRESSURE, LOOP 3 OT DELTA T TRIPPED WHEN THE SETPOINT REACHED THE ACTUAL DELTA T. TWO OF THE FOUR CHANNELS IN A TRIPPED CONDITION SATISFIED THE TRIP LOGIC AND INITIATED THE REACTOR TRIP. A FEEDWATER ISOLATION OCCURRED ON LOW AVERAGE REACTOR COOLANT SYSTEM TEMPERATURE AND AN AUXILIARY FEEDWATER SYSTEM ACTUATION OCCURRED ON LOW STEAM GENERATOR LEVEL AS EXPECTED. THE MAIN STEAM ISOLATION VALVES WERE MANUALLY CLOSED TO LIMIT THE COOLDOWN AND THE PLANT WAS STABILIZED IN MODE 3. NO UNEXPECTED POST TRIP TRANSIENTS WERE OBSERVED. CORRECTIVE ACTIONS TO PREVENT THIS INCIDENT INCLUDE LOGGING OT DELTA T AND ACTUAL DELTA T EVERY SHIFT AND REQUIRING THAT POWER NOT BE INCREASED WHEN ABOVE 90 PERCENT UNLESS ALL CHANNELS OF OT DELTA T ARE OPERABLE DURING POWER ASCENSION.

FORM 230 LER SCSS DATA 04-18-91

DOCKET	YEAR	LER NUMBER	REVISION	DCS NUMBER	NSIC	EVENT DATE
498	1990	020	0	9008240175	219381	07/16/90

ABSTRACT

POWER LEVEL - 100%. AT 0236, ON JULY 16, 1990 WITH UNIT 1 AT 100% POWER, A REACTOR TRIP OCCURRED DURING PERFORMANCE OF A SOLID STATE PROTECTION SYSTEM (SSPS) SURVEILLANCE TEST. THE TRIP WAS CAUSED BY A MALFUNCTION IN A TEST SWITCH WHICH RESULTED IN ONE TRAIN OF SSPS REMAINING IN THE URGENT ALARM CONDITION, COUPLED WITH COMPLETION OF A SUBSEQUENT PROCEDURAL STEP THAT PLACED THE OTHER SSPS TRAIN IN THE URGENT ALARM CONDITION. THE SSPS IS DESIGNED SUCH THAT IF BOTH LOGIC TRAINS ARE PLACED IN THE URGENT ALARM CONDITION, A REACTOR TRIP OCCURS. THE TEST SWITCH WILL BE REPLACED PRIOR TO STARTUP FROM THE NEXT REFUELING OUTAGE. IN ADDITION, TEST PROCEDURES HAVE BEEN REVISED TO ENSURE THAT URGENT ALARM CONDITIONS ARE SATISFACTORILY CLEARED

FORM 231 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
498 1990 023 0 9011070028 219955 09/29/90

ABSTRACT

POWER LEVEL - 100%. ON SEPTEMBER 29, 1990, UNIT 1 WAS IN MODE 1 AT 100% POWER. AT 0232 HOURS, FEEDWATER ISOLATION VALVE 1A FULLY CLOSED DURING AN "ALTERNATE" PARTIAL STROKE SURVEILLANCE TEST. THE RESULTANT LOSS OF FEEDWATER FLOW CAUSED A DECREASE IN STEAM GENERATOR LEVEL AND THE REACTOR WAS MANUALLY TRIPPED. DURING RECOVERY, A STEAM GENERATOR POWER OPERATED RELIEF VALVE (PORV) WAS MANUALLY OPENED TO APPROXIMATELY 30% WHILE INDICATING APPROXIMATELY 5% OPEN. AT 0345 HOURS, AN AUXILIARY FEEDWATER (AFW) ACTUATION OCCURRED ON LOW-LOW STEAM GENERATOR (SG) LEVEL. THE SG PORV WAS CLOSED AND THE PLANT WAS STABILIZED. THE FEEDWATER ISOLATION VALVE CLOSURE WAS CAUSED BY A TECHNICIAN INADVERTENTLY CONTACTING THE WRONG TERMINAL WITH A TEST JUMPER. THE CAUSE OF THE AFW ACTUATION DURING RECOVERY WAS FAILURE OF A REACTOR OPERATOR TO CONFIRM THE POSITION OF THE SG PORV BY MONITORING SG LEVEL AND PRESSURE INDICATIONS WHEN THE VALVE POSITION INDICATOR DISPLAYED SOME UNCERTAINTY. CORRECTIVE ACTIONS INCLUDE: ADDITION OF SPECIAL CONNECTORS ON THE TERMINALS IDENTIFIED IN THE "ALTERNATE" PARTIAL STROKE TEST PROCEDURE; THE USE OF SPECIAL INSULATED JUMPERS DURING PERFORMANCE OF THE STROKE TEST; PERFORMANCE OF THE PARTIAL STROKE TEST ON A MONTHLY BASIS VICE WEEKLY.

FORM 232 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
498 1990 025 0 9012280111 220614 11/24/90

ABSTRACT

POWER LEVEL - 100%. ON NOVEMBER 24, 1990, UNIT 1 WAS IN MODE 1 AT 100% POWER. AT 1443 HOURS, THE GENERATOR RUNNING GROUND FAULT RELAY ACTUATED DUE TO A STATOR COIL END TURN FAILURE WHICH INITIATED AN AUTOMATIC REACTOR TRIP. ALL SYSTEMS RESPONDED AS EXPECTED WITH NO ENGINEERED SAFETY FEATURES ACTUATIONS. INITIAL INTERNAL INSPECTION OF THE GENERATOR REVEALED DAMAGE TO THE END TURN OF STATOR COIL #20 AT THE TURBINE END. THE GROUND FAULT RELAY ACTUATION WAS DUE TO ELECTRICAL ARCING FROM THE FAILED STATOR COIL END TURN TO THE STATOR COOLING WATER SYSTEM MANIFOLD. FURTHER TESTING AND INSPECTIONS ARE PLANNED TO IDENTIFY THE CAUSE OF THE FAILURE AND APPROPRIATE CORRECTIVE ACTIONS. A SUPPLEMENTAL REPORT WILL BE SUBMITTED FOLLOWING RETURN OF THE GENERATOR TO OPERATION AND COMPLETION OF ASSOCIATED TESTING.

FORM 233 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
499 1989 009 0 8905110063 213847 04/05/89

ABSTRACT

POWER LEVEL - 011%. ON 4/05/89, UNIT 2 WAS IN MODE 1 AT 11% POWER PERFORMING INITIAL SYNCHRONIZATION TO THE GRID. AT 0729 HOURS, APPROXIMATELY FOUR SECONDS AFTER CLOSURE OF THE GENERATOR BREAKER, A REACTOR TRIP AND LOSS OF OFFSITE POWER ON THE AUX. BUSES AND THE 4.16KV TRAIN A ENGINEERED SAFETY FEATURES BUS OCCURRED. ONCE THE

THIS EVENT WAS IMPROPER INSTALLATION OF A WIRING CHANGE TO THE GENERATOR PROTECTIVE RELAYING BY STARTUP TECHNICIANS PRIOR TO SYSTEM TURNOVER TO PLANT OPERATIONS. THE CAUSE OF THE INADVERTENT RCP 20 RESTART WAS A BROKEN LUG IN THE TRIP CIRCUIT DUE TO ITS ASSOCIATED WIRE CATCHING ON THE BREAKER ENCLOSURE WHEN THE BREAKER WAS RACKED IN LAST. CORRECTIVE ACTIONS INCLUDE CORRECTION OF THE GENERATOR PROTECTIVE RELAY WIRING, TESTING OF OTHER PROTECTIVE CIRCUITRY, REPLACEMENT OF THE RCP 20 BREAKER LUG AND CHECKING THE OTHER UNIT 2 RCP BREAKERS.

FORM 234 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
499 1989 013 0 8905300038 214015 04/15/89

ABSTRACT

POWER LEVEL - 024%. ON APRIL 15, 1989, UNIT 2 WAS IN MODE 1 AT 24 PERCENT POWER. AT 0517 HOURS A REACTOR TRIP OCCURRED WHEN THE TRAIN 5 REACTOR TRIP BREAKER OPENED UNEXPECTEDLY. A REACTOR TRIP SYSTEM ACTUATION SUBSEQUENTLY OCCURRED ON "POWER RANGE NEGATIVE RATE". THE REACTOR WAS BROUGHT TO AN ORDERLY SHUTDOWN AND NO UNEXPECTED POST-TRIP TRANSIENTS OCCURRED. THE CAUSE OF THIS EVENT IS UNKNOWN. THE REACTOR TRIP BREAKERS AND ASSOCIATED CIRCUITRY WERE TESTED. ADDITIONAL DIAGNOSTIC ACTIVITIES WERE ATTEMPTED, HOWEVER NO PROBLEMS WERE FOUND.

FORM 235 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
499 1989 016 0 8907100202 214584 06/02/89

ABSTRACT

POWER LEVEL - 076%. ON JUNE 2, 1989, UNIT 2 WAS IN MODE 1 AT 76 PERCENT POWER. AT 0354 HOURS, DURING THE PERFORMANCE OF THE MAIN TURBINE STEAM INLET VALVE OPERABILITY TEST, A REACTOR TRIP AND TURBINE TRIP OCCURRED ON COMPLETION OF TWO OUT OF FOUR LOGIC FOR CLOSED TURBINE INLET THROTTLE VALVES. THE PLANT WAS BROUGHT TO AN ORDERLY SHUTDOWN WITH NO UNEXPECTED TRANSIENTS. THE EVENT OCCURRED AFTER A LIMIT SWITCH ON TURBINE INLET VALVE TV-1 STUCK. WHEN THE VALVE WAS CLOSED AND REOPENED DURING THE PERFORMANCE OF THE TEST, THE LIMIT SWITCH STUCK IN THE VALVE-CLOSED POSITION WHICH PREVENTED CLEARING OF THE TRIP BISTABLE. THIS CONDITION WAS NOT RECOGNIZED AS A RESULT OF A DEFICIENT TEST PROCEDURE. WHEN A SECOND VALVE WAS TESTED AND STROKED CLOSED, THE MINIMUM TRIP LOGIC WAS SATISFIED AND THE REACTOR TRIP OCCURRED. THE DEFECTIVE LIMIT SWITCH HAS BEEN REPLACED. CORRECTIVE ACTIONS INCLUDE A REVISION TO THE TURBINE INLET VALVE TEST PROCEDURES AND REVIEW OF OTHER SURVEILLANCE PROCEDURES FOR SIMILAR WEAKNESSES. ADDITIONALLY, THE TURBINE INLET THROTTLE VALVE LIMIT SWITCHES, THE ONLY SIMILAR SWITCHES FROM THIS MANUFACTURER WHICH PERFORM A SAFETY-RELATED ACTUATION, WILL BE REPLACED.

FORM 236 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
499 1989 017 0 8908210249 215037 07/13/89

ABSTRACT

THE PROTECTIVE RELAYS TRIPPED THE TURBINE AND ACTUATED THE SWITCHYARD AND GENERATOR BREAKERS TO CLEAR THE FAULT. THE REACTOR TRIPPED ON THE TURBINE TRIP. THE PLANT WAS BROUGHT TO AN ORDERLY COOLDOWN WITH NO UNEXPECTED PRIMARY SYSTEM POST TRIP TRANSIENTS. THE INVESTIGATION OF THE TRANSFORMER FAILURE IS ONGOING. THE MOST PROBABLE CAUSE WAS FAILURE OF THE HIGH SIDE, PHASE A BUSHING. THE TRANSFORMER WILL BE RETURNED TO THE MANUFACTURER FOR REPAIR AND THE BUSHING AND TRANSFORMER WILL BE ANALYZED FURTHER TO DETERMINE THE CAUSE OF THIS EVENT.

1
FORM 237 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
499 1989 019 0 8910030081 216367 08/23/89

ABSTRACT

POWER LEVEL - 100%. ON 8/23/89, UNIT 2 WAS IN MODE 1 AT 100% POWER. AT 0119 HOURS, FEEDWATER ISOLATION VALVE C CLOSED FULLY DURING A PARTIAL STROKE SURVEILLANCE TEST. THE RESULTANT LOSS OF FEEDWATER FLOW AND DECREASE IN STEAM GENERATOR LEVEL CAUSED A REACTOR TRIP. THE UNIT WAS STABILIZED IN MODE 3 WITH NO UNEXPECTED POST TRIP TRANSIENTS. THE CAUSE OF THIS EVENT WAS A FAILURE IN THE FEEDWATER ISOLATION VALVE CONTROL CIRCUIT WHICH ALLOWED IT TO STROKE FULLY CLOSED. THE SPECIFIC COMPONENT WHICH FAILED IS UNKNOWN AT THIS TIME. THE FAILURE DID NOT AFFECT THE ABILITY OF THE VALVE TO PERFORM ITS SAFETY FUNCTION. FURTHER TROUBLESHOOTING OF THE VALVE CONTROL CIRCUITS WILL BE PERFORMED DURING THE NEXT SCHEDULED MAINTENANCE OUTAGE. THE FEEDWATER VALVE CONTROL CIRCUITS ARE BEING REVIEWED TO DETERMINE IF MODIFICATIONS CAN BE PERFORMED TO REDUCE THE POTENTIAL FOR FULL CLOSURE OF THE VALVES DURING TESTING.

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FORM 238 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
499 1989 020 0 8910040297 215393 08/29/89

ABSTRACT

POWER LEVEL - 100%. ON 8/29/89, UNIT 2 WAS IN MODE 1 AT 100% POWER. AT 1400 HOURS ALL THREE OPERATING TURBINE DRIVEN FEEDWATER PUMPS TRIPPED. THE LICENSED CONTROL ROOM OPERATOR IMMEDIATELY TRIPPED THE REACTOR IN ANTICIPATION OF LOW STEAM GENERATOR LEVEL. AN AUXILIARY FEEDWATER ACTUATION SUBSEQUENTLY OCCURRED ON LOW STEAM GENERATOR LEVEL. THE UNIT WAS STABILIZED IN MODE 3 WITH NO UNEXPECTED POST-TRIP TRANSIENTS. THE CAUSE OF THIS EVENT WAS A MOMENTARY INTERRUPTION OF CONTROL POWER TO THE FEEDWATER PUMP OVERSPEED PROTECTION CIRCUITS DUE TO THE FAILURE OF AN INVERTER. A CONTRIBUTING CAUSE WAS THE DESIGN OF THE FEEDWATER PUMP OVERSPEED PROTECTION CIRCUITS WHICH COULD NOT TOLERATE THE MOMENTARY LOSS OF CONTROL POWER WITHOUT TRIPPING THE PUMPS. THE INVERTER HAS BEEN REPAIRED AND RETURNED TO SERVICE. THE DESIGN OF THE FEEDWATER PUMP OVERSPEED PROTECTION HAS BEEN MODIFIED TO AN "ENERGIZE TO TRIP" SCHEME ON UNIT 2 AND WILL BE MODIFIED ON UNIT 1 PRIOR TO STARTUP FROM THE FIRST REFUELING OUTAGE.

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FORM 239 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
499 1989 021 0 8910160050 215583 09/05/89

AT APPROXIMATELY 1607 HOURS, CONTROL ROOM OPERATORS OBSERVED SPEED OSCILLATIONS ON THE TURBINE DRIVEN STEAM GENERATOR FEEDWATER PUMP (SGFP) 21. THE OPERATORS ATTEMPTED TO REGAIN SPEED CONTROL; HOWEVER, THE PUMP DID NOT RESPOND AND SUBSEQUENTLY TRIPPED ON OVERSPEED. THE RESULTANT LOSS OF STEAM GENERATOR LEVEL CAUSED A REACTOR TRIP AND AUXILIARY FEEDWATER SYSTEM ACTUATION. NO SAFETY INJECTION ACTUATION OCCURRED. THE PLANT WAS STABILIZED IN MODE 3. THE CAUSE OF THIS EVENT WAS A DEFECTIVE SGFP 21 SPEED CONTROLLER CARD EDGE CONNECTOR WHICH WAS DISTURBED BY A MAINTENANCE TECHNICIAN DURING TROUBLESHOOTING OF A CARD ASSOCIATED WITH SGFP 22 IN THE SAME CARD FRAME. THE DEFECTIVE CONNECTOR WAS REPAIRED, THE CARD FRAME ALIGNMENT CHECKED, THE REMAINING PRINTED CIRCUIT CARDS AND EDGE CONNECTORS WERE INSPECTED AND THE CONTACT SURFACES WERE CLEANED. THE PRINTED CIRCUIT CARDS IN THE SPEED CONTROLLER CIRCUITS ON UNIT 1 WERE ALSO INSPECTED AND CLEANED.

FORM 240 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 499 1989 022 0 8910270113 215716 09/19/89

ABSTRACT

POWER LEVEL - 100%. ON SEPTEMBER 19, 1989, UNIT 2 WAS IN MODE 1 AT 100 PERCENT POWER. AT 1237 HOURS DURING THE CROSS CALIBRATION OF THE INCORE AND EXCORE NUCLEAR INSTRUMENTATION, AN OVERTEMPERATURE DELTA TEMPERATURE (OTDT) TURBINE RUNBACK OCCURRED RESULTING IN AN OTDT REACTOR TRIP. THE TURBINE TRIPPED ON THE REACTOR TRIP AND AN AUXILIARY FEEDWATER ACTUATION OCCURRED ON LOW STEAM GENERATOR LEVEL. THE MAIN STEAM ISOLATION VALVES WERE CLOSED TO PREVENT EXCESSIVE REACTOR COOLANT SYSTEM COOLDOWN. THE ENGINEERED SAFETY FEATURES FUNCTIONED AS DESIGNED. THE CAUSE OF THIS EVENT WAS THAT THE TURBINE RUNBACK SETPOINT DESIGN DID NOT PROVIDE SUFFICIENT OPERATING MARGIN TO ALLOW FOR SMALL DEVIATIONS IN RCS AVERAGE TEMPERATURE. THE OTDT RUNBACK FEATURE HAS BEEN DISABLED AND ANALYSIS IS BEING PERFORMED TO DETERMINE IF IT CAN BE RESTORED WITHOUT CAUSING UNWANTED PLANT TRANSIENTS.

FORM 241 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 499 1989 023 0 8911010105 215717 09/22/89

ABSTRACT

POWER LEVEL - 094%. ON 9/22/89, UNIT 2 WAS IN MODE 1 AT 94% POWER. AT 0201 HOURS A TURBINE TRIP OCCURRED ON LOSS OF POWER TO THE FOUR MAIN TURBINE AUTO STOP SOLENOIDS. THE REACTOR TRIPPED ON THE TURBINE TRIP. A MAIN FEEDWATER ISOLATION AND AUXILIARY FEEDWATER ACTUATION OCCURRED ON LOW AVERAGE REACTOR COOLANT SYSTEM TEMPERATURE AS EXPECTED. THE UNIT WAS STABILIZED IN MODE 3 WITH NO UNEXPECTED POST-TRIP TRANSIENTS. THE CAUSE OF THIS EVENT WAS FAILURE OF A NON-SAFETY-RELATED INVERTER WHICH INTERRUPTED POWER TO THE MAIN TURBINE AUTO STOP SOLENOIDS. A CONTRIBUTING CAUSE WAS THAT THE DESIGN DID NOT PROVIDE FOR THE SINGLE FAILURE OF A POWER FEED. THE INVERTER HAS BEEN REPAIRED AND RETURNED TO SERVICE. THE POWER FEED DESIGN HAS BEEN CHANGED TO ADD AN ADDITIONAL POWER SOURCE.

FORM 242 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 100%. ON OCTOBER 13, 1989, UNIT 2 WAS IN MODE 1 AT 100% POWER. AT 1745 HOURS, A REACTOR TRIP OCCURRED DUE TO THE DETECTION OF HIGH NEUTRON FLUX NEGATIVE RATE ON 2 OF 4 POWER RANGE NEUTRON MONITORING CHANNELS. THE PLANT WAS BROUGHT TO A STABLE CONDITION IN MODE 3 WITH NO UNEXPECTED POST-TRIP TRANSIENTS. THE CAUSE OF THE EVENT IS BELIEVED TO BE AN INTERMITTENT HIGH RESISTANCE CONNECTION ON A STATIONARY GRIPPER DIODE IN THE ROD CONTROL SYSTEM WHICH CAUSED ROD F-8 IN CONTROL BANK A TO DROP. THE DIODE HAS BEEN REPLACED. THE REMAINING STATIONARY GRIPPER DIODES ON BOTH UNITS WILL BE INSPECTED DURING THE NEXT SCHEDULED MAINTENANCE OUTAGE ON EACH UNIT.

FORM 243 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 499 1990 002 0 9003140403 217388 02/02/90

ABSTRACT

POWER LEVEL - 100%. ON FEBRUARY 2, 1990, UNIT 2 WAS IN MODE 1 AT 100 PERCENT POWER. AT 0259 HOURS THE TRAIN "S" REACTOR TRIP BREAKER SPURIOUSLY OPENED. THIS INITIATED A TURBINE TRIP AND SUBSEQUENT REACTOR TRIP. FEEDWATER ISOLATION OCCURRED ON LOW AVERAGE REACTOR COOLANT SYSTEM TEMPERATURE AND AN AUXILIARY FEEDWATER SYSTEM ACTUATION OCCURRED ON LOW STEAM GENERATOR LEVEL AS EXPECTED. THE PLANT WAS STABILIZED IN MODE 3. NO UNEXPECTED POST TRIP TRANSIENTS OCCURRED. EXTENSIVE TROUBLESHOOTING OF THE SOLID STATE PROTECTION SYSTEM AND THE REACTOR TRIP BREAKER WAS PERFORMED; HOWEVER, THE CAUSE OF THE SPURIOUS BREAKER OPENING IS UNKNOWN. AS A CONSERVATIVE MEASURE, THE FIFTEEN UNIVERSAL LOGIC CARDS ASSOCIATED WITH THE REACTOR TRIP FUNCTION IN TRAIN "S" OF THE SOLID STATE PROTECTION SYSTEM HAVE BEEN REPLACED. INSTRUMENTATION HAS BEEN INSTALLED ON THE REACTOR TRIP BREAKER IN AN ATTEMPT TO ISOLATE THE SOURCE OF THE SPURIOUS TRIP SIGNAL SHOULD IT RECUR.

FORM 244 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 499 1990 004 0 9005020166 218052 03/26/90

ABSTRACT

POWER LEVEL - 100%. ON MARCH 26, 1990, UNIT 2 WAS IN MODE 1 AT 100 PERCENT POWER. AT 0721 HOURS, A STEAM FLOW/FEED FLOW MISMATCH ALARM WAS RECEIVED ON STEAM GENERATOR 2 C. FEEDWATER FLOW TO STEAM GENERATOR 2 C HAD DECREASED TO 50 PERCENT OF FULL POWER FLOW. ATTEMPTS TO MANUALLY CONTROL THE STEAM GENERATOR 2 C FEEDWATER REGULATING VALVE TO RESTORE FEEDWATER FLOW WERE UNSUCCESSFUL. THE REACTOR SUBSEQUENTLY TRIPPED ON LOW STEAM GENERATOR LEVEL. THE PLANT WAS BROUGHT TO A STABLE CONDITION IN MODE 3 WITH NO UNEXPECTED POST TRIP TRANSIENTS. THE CAUSE OF THIS EVENT WAS SEPARATION OF THE FEEDWATER REGULATING VALVE STEM FROM THE PLUG WHICH ALLOWED THE PLUG TO LODGE IN THE FEEDWATER FLOW STREAM RESTRICTING FLOW TO APPROXIMATELY 50 PERCENT. THE UNIT 2 FEEDWATER REGULATING VALVE STEMS HAVE BEEN WELDED TO THE PLUGS TO PREVENT SEPARATION. THE UNIT 1 FEEDWATER REGULATING VALVE STEMS WILL BE WELDED DURING THE CURRENT REFUELING OUTAGE.

FORM 245 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE

ABSTRACT

POWER LEVEL - 100%. ON APRIL 14, 1990, UNIT 2 WAS IN MODE 1 AT 100 PERCENT POWER. AT 1704 HOURS, A SIMULTANEOUS REACTOR AND TURBINE TRIP OCCURRED ON LOW TURBINE ELECTROHYDRAULIC CONTROL (EHC) FLUID PRESSURE. THE PLANT WAS BROUGHT TO A STABLE SHUTDOWN IN MODE 3 WITH NO UNEXPECTED POST-TRIP TRANSIENTS. THE CAUSE OF THIS EVENT WAS FAILURE OF THE EHC SUPPLY LINE TO A MAIN TURBINE GOVERNOR VALVE. THE LINE FAILED DUE TO FATIGUE STRESS OF A WELD CAUSED BY GOVERNOR VALVE-INDUCED VIBRATION. THE VALVE VIBRATION WAS CAUSED BY VALVE PLUG ROTATION. INTERIM CORRECTIVE ACTION HAS BEEN TAKEN TO REPAIR THE EHC SUPPLY PIPING AND ADD ADDITIONAL SUPPORTS. THE VALVE USED TO THROTTLE FLOW DURING FULL POWER OPERATION WILL BE MODIFIED TO ADD ANTI SWIRL BAFFLES AND ANTI ROTATION PINS ON THE PLUG TO STEM CONNECTION DURING THE FIRST REFUELING OUTAGE.

FORM 246 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 499 1990 013 0 9010260121 219948 09/17/90

ABSTRACT

POWER LEVEL - 100%. ON 9/17/90, UNIT 2 WAS IN 100% POWER. AT 0330 HOURS, A REACTOR TRIP OCCURRED DURING PERFORMANCE OF THE TRAIN S REACTOR TRIP BREAKER TRIP ACTUATING DEVICE OPERATIONAL TEST. A MAIN FEEDWATER ISOLATION OCCURRED ON LOW REACTOR COOLANT SYSTEM AVERAGE TEMPERATURE AND THE AUXILIARY FEEDWATER SYSTEM ACTUATED ON LOW STEAM GENERATOR LEVEL. CONTROL ROOM PERSONNEL RESPONDED IN ACCORDANCE WITH PROCEDURES AND STABILIZED THE PLANT. ALL SYSTEMS RESPONDED AS EXPECTED. THE CAUSE OF THE EVENT WAS FAILURE OF A NON-LICENSED OPERATOR TO SELF VERIFY THAT HE WAS IN POSITION TO OPEN THE CORRECT REACTOR TRIP BREAKER PANEL PRIOR TO MANIPULATION OF THE AUTO SHUNT TRIP TEST PUSHBUTTON. THE NON-LICENSED OPERATOR WAS COUNSELED AND RECEIVED DISCIPLINARY ACTION. IN ADDITION A TRAINING MODULE EMPHASIZING THE IMPORTANCE OF ATTENTION TO DETAIL AND SELF-VERIFICATION WAS DEVELOPED AND PRESENTED TO EMPLOYEES ENGAGED IN OPERATIONS AND MAINTENANCE OF THE PLANT.

FORM 247 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 528 1989 004 0 8904180201 213609 03/05/89

ABSTRACT

POWER LEVEL - 100%. ON MARCH 5, 1989, PALO VERDE UNIT 1 WAS OPERATING AT APPROXIMATELY 100 PERCENT POWER WHEN, AT APPROXIMATELY 1001 MST A REACTOR TRIP OCCURRED ON DEPARTURE FROM NUCLEATE BOILING RATIO (DNBR) DUE TO A CONTROL ELEMENT ASSEMBLY CALCULATOR (CEAC) FAILURE. DURING THE ENSUING TURBINE/GENERATOR TRIP, POWER WAS LOST TO ONE OF THE TWO 13.8 KV NON-CLASS ELECTRICAL BUSES WHEN THE BUS'S NORMAL FEEDER BREAKER DID NOT TRIP AS REQUIRED. A SMALL FIRE WAS OBSERVED AND SUBSEQUENTLY EXTINGUISHED ON THE FEEDER BREAKER TRIP COIL. THE CAUSE OF THE TRIP WAS A FAILURE OF THE CEAC #2 PROCESSOR BOARD. THE PROCESSOR BOARD WAS REPLACED.

FORM 248 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 528 1990 006 0 9009250128 219528 08/14/90

POWER LEVEL - 100%. ON 8/14/90 PALO VERDE UNIT 1 WAS OPERATING IN MODE 1 AT 100% POWER. AT APPROXIMATELY 2159 MST IT WAS DISCOVERED THAT THE 'B' PHASE OF THE MAIN TRANSFORMER HAD LOST FORCED COOLING. A RAPID POWER REDUCTION WAS INITIATED IN ORDER TO UNLOAD THE TRANSFORMER WITHIN 30 MINUTES AS REQUIRED BY THE ALARM RESPONSE PROCEDURE FOR A LOSS OF TRANSFORMER COOLING AND TO MINIMIZE THE TRANSIENT ON THE PLANT. THE MAIN TURBINE WAS MANUALLY TRIPPED AT APPROXIMATELY 2223 WITH THE REACTOR AT APPROXIMATELY 65% POWER. APPROXIMATELY 30 SECONDS AFTER THE MAIN TURBINE TRIP, THE REACTOR TRIPPED ON HIGH PRESSURIZER PRESSURE. ALL SYSTEMS FUNCTIONED AS DESIGNED AND THE PLANT WAS STABILIZED IN MODE 3 (HOT STANDBY). THE LOSS OF COOLING TO THE MAIN TRANSFORMER WAS CAUSED BY THE FAILURE OF A CONTROL POWER TRANSFORMER. THE REACTOR TRIP HAS BEEN DETERMINED TO BE THE EXPECTED RESULT OF A LOAD REJECT WITH THE REACTOR AT 65% POWER WITH STEAM BYPASS CONTROL CONFIGURED FOR NORMAL (100% POWER) OPERATION. THE CONTROL POWER TRANSFORMER WAS REPLACED. THE ALARM RESPONSE PROCEDURE FOR THE MAIN TRANSFORMER WILL BE REVISED TO ENHANCE DIRECTIONS FOR THE "NO VOLTAGE ALARM". ENHANCEMENTS TO THE STEAM BYPASS CONTROL SYSTEM ARE CURRENTLY UNDER EVALUATION.

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FORM 249 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
529 1989 003 1 8912190264 216205 02/16/89

ABSTRACT

POWER LEVEL - 100%. AT APPROXIMATELY 0345 MST ON FEBRUARY 16, 1989, PALO VERDE UNIT 2 WAS IN MODE 1 (POWER OPERATION) AT APPROXIMATELY 100 PERCENT POWER WHEN A FEEDWATER CONTROL SYSTEM (FWCS) MALFUNCTION RESULTED IN A REACTOR TRIP DUE TO LOW LEVEL IN STEAM GENERATOR (SG) NUMBER 1. IMMEDIATELY PRIOR TO THE TRIP THE CONTROL ROOM STAFF OBSERVED BOTH SG LEVELS DECREASING. BOTH MASTER CONTROLLER OUTPUTS WERE CYCLING FULL SCALE. SG NUMBER 1 ECONOMIZER VALVE WAS FULLY SHUT AND SG NUMBER 2 ECONOMIZER VALVE WAS 10 PERCENT OPEN. A CONTROL ROOM OPERATOR PLACED SG NUMBER 1 ECONOMIZER VALVE IN MANUAL AND INSERTED APPROXIMATELY 17 PERCENT OPEN DEMAND WHEN THE REACTOR TRIPPED. IMMEDIATELY FOLLOWING THE TRIP AN AUXILIARY FEEDWATER ACTUATION SIGNAL WAS INITIATED. AT APPROXIMATELY 0345 MST A SAFETY INJECTION ACTUATION SIGNAL (SIAS)/CONTAINMENT ISOLATION ACTUATION SIGNAL (CIAS) WAS GENERATED DUE TO THE OVERCOOLING OF THE REACTOR COOLANT SYSTEM. SG NUMBER 1 LEVEL CONTINUED TO INCREASE AND AT APPROXIMATELY 0347 MST A MAIN STEAM ISOLATION SIGNAL WAS RECEIVED AND TERMINATED THE COOLDOWN. THE CAUSE OF THE EVENT WAS A SMALL AMOUNT OF DEBRIS IN THE RESTRICTOR ON THE VERTICAL RELAY WITHIN THE ECONOMIZER VALVE PNEUMATIC POSITIONER. IMMEDIATE CORRECTIVE ACTION TAKEN WAS TO REPLACE THE PNEUMATIC RELAYS IN BOTH FWCS'S. THIS SUBMITTAL ALSO PROVIDES SPECIAL REPORT 2-SR-89-003 IN ACCORDANCE WITH TECHNICAL SPECIFICATION 3.5.2 ACTION B.

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FORM 250 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
529 1989 009 1 8912130271 216113 07/12/89

ABSTRACT

POWER LEVEL - 100%. ON JULY 12, 1989 AT APPROXIMATELY 2212 MST PALO VERDE UNIT 2 WAS OPERATING AT APPROXIMATELY 100 PERCENT POWER WHEN 2 OF THE 4 REACTOR COOLANT PUMPS WERE LOAD SHED FROM THEIR POWER SUPPLY (BUS 2E-NAN-SQ2), RESULTING IN A REACTOR TRIP ON CALCULATED LOW PRESS

ACTUATION SIGNAL (CIAS) ENGINEERED SAFETY FEATURES OCCURRED ON LOW REACTOR COOLANT SYSTEM (RCS) PRESSURE. FOLLOWING THE EVENT, AT APPROXIMATELY 1529 MST ON JULY 13, 1989, A PORTION OF THE MAIN FEEDWATER SYSTEM (MFWS) WAS OVERPRESSURIZED. THE CAUSE OF THE LOAD SHED WAS A FAILED FUSE IN THE BUS POTENTIAL TRANSFORMER. THE CAUSE OF THE SIAS/CIAS WAS RCS DEPRESSURIZATION DUE TO IMPROPER STEAM BYPASS CONTROL SYSTEM (SBCS) RESPONSE AND LEAKING PRESSURIZER SPRAY VALVES. THE CAUSE OF THE MFWS OVERPRESSURIZATION WAS A FAILED CHECK VALVE. IMMEDIATE CORRECTIVE ACTION TAKEN WAS TO REPLACE THE FUSE. THIS SUBMITTAL ALSO PROVIDES A SPECIAL REPORT IN ACCORDANCE WITH TECHNICAL SPECIFICATION 3.5.2 ACTION B.

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FORM 251 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 529 1989 010 0 8912050090 216110 10/31/89

ABSTRACT

POWER LEVEL - 067%. AT APPROXIMATELY 1646 MST ON OCTOBER 31, 1989, PALO VERDE UNIT 2 WAS IN MODE 1 (POWER OPERATION), OPERATING AT APPROXIMATELY 67% POWER WHEN A REACTOR TRIP OCCURRED WHICH RESULTED FROM A LOW DEPARTURE FROM NUCLEATE BOILING RATIO (DNBR) TRIP SIGNAL. THE DNBR TRIP SIGNAL WAS CAUSED BY AN ERRONEOUS POWER LEVEL INPUT FROM THE MIDDLE EXCORE DETECTOR TO THE CHANNEL "B" CORE PROTECTION CALCULATOR. THE TRIP WAS UNCOMPLICATED AND SECONDARY PLANT RESPONSES OCCURRED AND NONE WERE REQUIRED. AT APPROXIMATELY 1656 MST ON OCTOBER 31, 1989, THE PLANT WAS STABILIZED IN MODE 3 (HOT STANDBY) AT NORMAL TEMPERATURE AND PRESSURE. THE CAUSE OF THE ERRONEOUS MIDDLE EXCORE DETECTOR INPUT POWER LEVEL SIGNAL TO THE CHANNEL "B" CORE PROTECTION CALCULATOR IS SUSPECTED TO BE AN INTERMITTENT MALFUNCTION OF THE CHANNEL "B" EXCORE LINEAR CALIBRATE SWITCH. AS INTERIM CORRECTIVE ACTION, A TEMPORARY MODIFICATION HAS BEEN INSTALLED TO BYPASS THE NORMAL OPERATING FUNCTIONS OF THE LINEAR CALIBRATE SWITCH. AS CORRECTIVE ACTION TO PREVENT RECURRENCE, ENGINEERING IS DEVELOPING A PERMANENT SOLUTION. THERE HAVE BEEN NO PREVIOUS SIMILAR OCCURRENCES REPORTED PURSUANT TO 10CFR50.73.

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FORM 252 LER SCSS DATA 04-18-91

 DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
 529 1990 001 0 9004040165 217577 02/23/90

ABSTRACT

POWER LEVEL - 024%. AT APPROXIMATELY 2301 MST ON FEBRUARY 23, 1990, PALO VERDE UNIT 2 WAS IN MODE 1 (POWER OPERATION) AT APPROXIMATELY 24 PERCENT POWER DURING A PLANNED SHUTDOWN FOR A REFUELING OUTAGE WHEN THE REACTOR WAS MANUALLY TRIPPED BY A REACTOR OPERATOR BECAUSE THE AXIAL SHAPE INDEX WAS APPROACHING ITS TRIP SETPOINT ON THE CORE PROTECTION CALCULATOR. THE REACTOR TRIP WAS DIAGNOSED AS AN UNCOMPLICATED REACTOR TRIP. NO OTHER SAFETY SYSTEM RESPONSES OCCURRED AND NONE WERE REQUIRED. AT APPROXIMATELY 2311 MST ON FEBRUARY 23, 1990, THE PLANT WAS STABILIZED IN MODE 3 (HOT STANDBY) AT NORMAL TEMPERATURE AND PRESSURE. THE CAUSE OF THE MANUAL REACTOR TRIP WAS THAT THE AXIAL SHAPE INDEX WAS APPROACHING ITS TRIP SETPOINT DURING AN END OF CORE LIFE SHUTDOWN. THE CORRECTIVE ACTION WAS TO TRIP THE REACTOR AND ENSURE THE AXIAL SHAPE INDEX REMAINED WITHIN LIMITS. A PREVIOUS SIMILAR EVENT WAS REPORTED IN LER 528/87-018-01.

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FORM 253 LER SCSS DATA 04-18-91

ABSTRACT

POWER LEVEL - 098%. ON MARCH 3, 1989 AT APPROXIMATELY 0102 MST PALO VERDE UNIT 3 WAS OPERATING AT APPROXIMATELY 98 PERCENT POWER WHEN AN ELECTRICAL GRID DISTURBANCE RESULTED IN THE MAIN GENERATOR OUTPUT BREAKERS OPENING. THIS RESULTED IN A REACTOR POWER CUTBACK (RPCB) AND STEAM BYPASS CONTROL SYSTEM (SBCS) ACTUATION. AN SBCS MALFUNCTION RESULTED IN A STEAM GENERATOR (S/G) NUMBER 2 LOW PRESSURE REACTOR TRIP, TURBINE TRIP, MAIN STEAM ISOLATION SIGNAL, AND CONTAINMENT ISOLATION ACTUATION SIGNAL AT APPROXIMATELY 0103 MST. APPROXIMATELY SIX SECONDS LATER, A SAFETY INJECTION ACTUATION SIGNAL OCCURRED AS A RESULT OF LOW PRESSURIZER PRESSURE. CONTROL ROOM PERSONNEL ATTEMPTED TO REMOVE DECAY HEAT AND CONTROL S/G PRESSURE UTILIZING THE ATMOSPHERIC DUMP VALVES (ADV'S). CONTROL ROOM PERSONNEL COULD NOT REMOTELY OPERATE THE ADV'S FROM THE CONTROL ROOM OR REMOTE SHUTDOWN PANEL. HEAT REMOVAL WAS SUBSEQUENTLY ESTABLISHED BY MANUALLY OPENING THE ADV'S. IN THE INTERIM, ONE MAIN STEAM SAFETY VALVE CYCLED TO REMOVE DECAY HEAT AND CONTROL S/G PRESSURE. THE CAUSE OF THE REACTOR TRIP WAS A MALFUNCTION IN THE SBCS. AN INDEPENDENT INVESTIGATION HAS BEEN CONDUCTED TO DETERMINE THE CAUSES OF THE PROBLEMS OCCURRING DURING THE EVENT. BASED UPON THE INVESTIGATION, APPROPRIATE CORRECTIVE MEASURES HAVE BEEN DEVELOPED. THIS SUBMITTAL ALSO PROVIDES A SPECIAL REPORT IN ACCORDANCE WITH TECH SPEC 3.5.2 ACTION B.

FORM 254 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
530 1990 004 0 9005100254 218103 04/14/90

ABSTRACT

POWER LEVEL - 081%. ON APRIL 14, 1990, AT APPROXIMATELY 0358 MST, PALO VERDE UNIT 3 WAS IN MODE 1 (POWER OPERATION) AT APPROXIMATELY 31 PERCENT POWER WHEN A REACTOR TRIP OCCURRED WHICH RESULTED FROM A DROPPED SHUTDOWN GROUP CONTROL ELEMENT ASSEMBLY (CEA). NO OTHER SAFETY SYSTEM RESPONSES OCCURRED AND NONE WERE REQUIRED. THE EVENT WAS DIAGNOSED AS AN UNCOMPLICATED REACTOR TRIP. AT APPROXIMATELY 0413 MST ON APRIL 14, 1990, THE PLANT WAS STABILIZED IN MODE 3 (HOT STANDBY) AT NORMAL TEMPERATURE AND PRESSURE. THE CAUSE OF THE CEA DROPPING INTO THE CORE WAS AN OPTICAL ISOLATOR CARD MALFUNCTION. THE MALFUNCTION WAS DETERMINED TO BE A RANDOM FAILURE OF A MICROCHIP ON THE CARD. AS CORRECTIVE ACTION, THE OPTICAL ISOLATOR CARD WAS REPLACED AND SUCCESSFULLY RETESTED. A SIMILAR EVENT WAS REPORTED IN UNIT 1 LER 528/85-088.

FORM 255 LER SCSS DATA 04-18-91

DOCKET YEAR LER NUMBER REVISION DCS NUMBER NSIC EVENT DATE
530 1990 007 0 9011270126 220217 10/20/90

ABSTRACT

POWER LEVEL - 100%. ON 10/20/90, AT APPROX. 1230 MST, PALO VERDE UNIT 3 WAS IN MODE 1 (POWER OPERATION) AT APPROX. 100% POWER WHEN A REACTOR TRIP OCCURRED. A FALSE STEAM HEADER PRESSURE SIGNAL CAUSED THE IN-SERVICE (I.E. 7 OF 8 VALVES) STEAM BYPASS CONTROL VALVES (SBCVS) TO OPEN CAUSING AN EXCESS STEAM DEMAND AND THE REACTOR TRIP. THE RESULTING REACTOR POWER TRANSIENT WAS TERMINATED BY THE CORE PROTECTION CALCULATOR (CPC). NO OTHER SAFETY SYSTEM RESPONSES OCCURRED AND NONE WERE REQUIRED. THE EVENT WAS DIAGNOSED AS AN UNCOMPLICATED

PRESSURE. SUBSEQUENTLY, ON 10/22/90, APS ENGINEERING DETERMINED THAT UNIT 3 WAS IN AN UNANALYZED CONDITION THAT WAS OUTSIDE ITS DESIGN BASIS. THE UPDATED FINAL SAFETY ANALYSIS REPORT CHAPTER 15 "ACCIDENT ANALYSIS" ASSUMED THAT ONLY ONE SBCV WOULD OPEN DUE TO A FAILURE OF THE CONTROL SYSTEM. THE FALSE PRESSURE SIGNAL WHICH CAUSED THE SBCVS TO OPEN WAS DETERMINED TO BE A RESULT OF A POWER DISTRIBUTION MODULE FAILURE IN A BALANCE OF PLANT ANALOG INSTRUMENT CABINET. THE ROOT CAUSE OF THE POWER DISTRIBUTION MODULE FAILURE WAS DETERMINED TO BE A FAULTY DIODE. THE MODULE HAS BEEN REPLACED. THE FAILURE OF THE DIODE WAS A RANDOM, LOW FREQUENCY COMPONENT FAILURE. SIMILAR EVENTS: UNIT 1, 86-006 AND 86-053, AND UNIT 3 89-001. ACTUATION OF AN ENGINEERED SAFETY FEATURE.

THIS SESSION HAS USED 5.26 SECONDS OF CPU TIME AND
HAS BEEN ACTIVE FOR 309.74 SECONDS

THE ESTIMATED COST OF THE RUN IS \$ 2.04