William S. Orser
Executive Vice President
Nuclear Generation

Detroit Edison

Fermi 2
6400 North Dixie Highway
Newport, Michigan 48166
(313) 586-5201

Nuclear Operations

March 5, 1993
NRC-93-0037

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) NRC Bulletin 90-01, "Loss of Fill Oil in Transmitters Manufactured by Rosemount", dated March 9, 1990

3) Detroit Edison Letter to NRC, "Detroit Edison Response to NRC Bulletin 90-01", NRC-90-0128, dated July 18, 1990

4) Detroit Edison Letter to NRC, "Detroit Edison Revised Response to NRC Bulletin 90-01", NRC-90-0156, dated October 12, 1990

5) Detroit Edison Letter to NRC, "Updated Response to NRC Bulletin 90-01", NRC-90-0179, dated January 18, 1991

6) NRC Bulletin 90-01, Supplement 1, "Loss of Fill Oil in Transmitters Manufactured by Rosemount", dated January 4, 1993

Subject: Detroit Edison Response to NRC Bulletin 90-01, Supplement 1

The purpose of this letter is to provide Detroit Edison's response to Bulletin 90-01, Supplement 1 (Reference 6). This bulletin supplement provided information regarding the NRC and industry activities related to Rosemount transmitters and requested actions to resolve this issue. This supplement was received on January 4, 1993 and required a response within 60 days after receipt of the supplement.

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1/1

Accordingly, pursuant to the oath and affirmation requirements of 10CFR50.54(f), Detroit Edison has reviewed Bulletin 90-01, Supplement 1 and provides the information required under the Reporting Requirement section of the bulletin. As requested, a copy is also being submitted to the Regional Administrator, U.S. NRC Region III.

Fermi 2 has 130 Model 1153 and no Model 1154 Rosemount transmitters. There are no Model 1153 Series D transmitters and 39 of these 130 Model 1153 transmitters are Series B transmitters manufactured before July 11, 1989. Only 9 of these 39 transmitters normally operate at pressure greater than 500 psi and so are subject to the concern of this supplement. These 9 transmitters will be replaced by the end of the fourth refueling outage currently scheduled to begin in March 1994. The other 30 transmitters will remain in service due to their very low operating pressures (0-100 psi) and will be checked for symptoms of oil loss during their surveillance activities.

Detroit Edison's detailed response to NRC items is provided in the Enclosure of this letter.

If you have any questions, please contact Mr. Girija S. Shukla at (313)586-4270.

Sincerely,

Enclosure

cc: T. G. Colburn
A. B. Davis
W. J. Kropp
M. P. Phillips
A. Marion (NUMARC)

I, WILLIAM S. ORSER, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

William S. Orser

WILLIAM S. ORSER
Executive Vice President

On this 5th day of March, 1993, before me personally appeared William S. Orser, being first duly sworn and says that he executed the foregoing as his free act and deed.

Rosalie A. Arsetta

Notary Public

ROSALIE A ARSETTA
NOTARY PUBLIC STATE OF MICHIGAN
MONROE COUNTY
MY COMMISSION EXP. NOV. 20 1993

DETROIT EDISON RESPONSE TO BULLETIN 90-01, SUPPLEMENT 1
("Loss of Fill-Oil in Transmitters Manufactured by Rosemount")

Detroit Edison's detailed response to NRC items listed under Reporting Requirement section of the supplement is given below:

- **NRC Item 1:**

  "A statement whether the licensee will take the actions requested above (in the Requested Actions section of the supplement)."

  Detroit Edison Response:

  Detroit Edison will comply with the requested actions stated in NRC Bulletin 90-01, Supplement 1 except as noted in response to Item 3 below.

- **NRC Item 2.a:**

  "With regard to the actions requested above that the licensee is taking:

  a. "A list of the specific actions that the licensee will complete to meet Item 1 of Requested Actions for Operating Reactors provided in this supplement, including justifications as appropriate."

  Detroit Edison Response:

  2.a Currently, Fermi 2 has 130 Model 1153 and no model 1154 transmitters installed. Below is a list of currently installed Model 1153 transmitters.

PIS_NO	MODEL	S/N	DATE	WR/EDP	LOCATION	PART_21
B21N078A	1153GB9RCN0037	421804	5/4/91	EDP 6740	H21P004	N
B21N078B	1153GB9RCN0037	421805	5/4/91	EDP 6740	H21P004	N
B21N078C	1153GB9RCN0037	421806	5/4/91	EDP 6740	H21P005	N
B21N078D	1153GB9RCN0037	421807	5/4/91	EDP 6740	H21P005	N
B21N080A	1153DB4RCN0037	422145	5/4/91	EDP 6740	H21P004	N
B21N080B	1153DB4RCN0037	422146	5/4/91	EDP 6740	H21P004	N
B21N080C	1153DB4RCN0037	422147	5/4/91	EDP 6740	H21P005	N
B21N080D	1153DB4RCN0037	422298	5/4/91	EDP 6740	H21P005	N
**B21N081A	1153DB5RCN0037	422175	5/4/91	EDP 6740	H21P004	N
**B21N081B	1153DB5RCN0037	422176	5/4/91	EDP 6740	H21P004	N
B21N081C	1153DB5RCN0037	0503587	5/4/91	EDP 6740	H21P005	N
B21N081D	1153DB5RCN0037	422178	5/4/91	EDP 6740	H21P005	N
B21N085A	1153DB5RCN0037	422179	12/15/89	EDP 10757	H21P009	N
B21N085B	1153DB5RCN0037	422180	12/15/89	EDP 10757	H21P010	N
B21N090A	1153GD9RCN0037	421809	5/4/91	EDP 6740	H21P004	N
B21N090B	1153GD9RCN0037	421810	5/4/91	EDP 6740	H21P005	N
B21N090C	1153GD9RCN0037	421811	12/15/89	EDP 10757	H21P009	N
B21N090D	1153GD9RCN0037	421812	12/15/89	EDP 10757	H21P010	N
B21N091A	1153DB5RCN0037	0501029	5/4/91	EDP 6740	H21P004	N
**B21N091B	1153DB5RCN0037	422183	5/4/91	EDP 6740	H21P005	N
B21N091C	1153DB5RCN0037	0501030	5/4/91	EDP 6740	H21P004	N
B21N091D	1153DB5RCN0037	422184	5/4/91	EDP 6740	H21P005	N
**B21N094A	1153GB4RCN0037	421887	5/4/91	EDP 6740	H21P004	N
**B21N094B	1153GB4RCN0037	422194	5/4/91	EDP 6740	H21P005	N
**B21N094C	1153GB4RCN0037	422195	5/4/91	EDP 6740	H21P004	N
**B21N094D	1153GB4RCN0037	422196	5/4/91	EDP 6740	H21P005	N
**B21N094E	1153GB4RCN0037	422197	5/4/91	EDP 6740	H21P004	N
**B21N094F	1153GB4RCN0037	422198	5/4/91	EDP 6740	H21P005	N
**B21N094G	1153GB4RCN0037	422199	5/4/91	EDP 6740	H21P004	N
**B21N094H	1153GB4RCN0037	422200	5/4/91	EDP 6740	H21P005	N
B21N095A	1153DB4RCN0037	422149	5/4/91	EDP 6740	H21P004	N
B21N095B	1153DB4RCN0037	422150	5/4/91	EDP 6740	H21P005	N
B21N095C	1153DB4RCN0037	422151	5/4/91	EDP 6740	H21P004	N
B21N095D	1153DB4RCN0037	422152	5/4/91	EDP 6740	H21P005	N
B21N110A	1153GD9RCN0037	421813	5/4/91	EDP 6740	H21P004	N
B21N110B	1153GD9RCN0037	422165	5/4/91	EDP 6740	H21P005	N
B21N110C	1153GD9RCN0037	422166	5/4/91	EDP 6740	H21P004	N
B21N110D	1153GD9RCN0037	422167	5/4/91	EDP 6740	H21P005	N
B21N111A	1153GD9RCN0037	422168	5/4/91	EDP 6740	H21P004	N
B21N111B	1153GD9RCN0037	422169	5/4/91	EDP 6740	H21P005	N
B21N111C	1153GD9RCN0037	422170	5/4/91	EDP 6740	H21P004	N
**B21N111D	1153GD9RCN0037	422171	5/4/91	EDP 6740	H21P005	N
B21N450	1153DB4(PA)	285949	3/9/82		H21P423B	Y

PIS_NO	MODEL	S/N	DATE	WR/EDP	LOCATION	PART_21
B21N451	1153DB4(PA)	285948	3/9/82		H21P423A	Y
B21N481	1153GB7(PA)	282209	6/24/82		H21P423A	Y
B21N482	1153GB7(PA)	282212	6/28/82		H21P423A	Y
**B21N484	1153DB5PA	0500074	5/16/91	007D900417	H21P423A	N
B21N485	1153GB7(PA)	282213	3/16/82		H21P423A	Y
B21N486	1153GB7(PA)	282211	3/9/82		H21P423B	Y
B21N487	1153DB5(PA)	282222	3/9/82		H21P423B	Y
B21N490	1153GB7(PA)	315536	3/9/82		H21P423B	Y
B21N492	1153GB7(PA)	282208	3/9/82		H21P423B	Y
B31N014A	1153DB5RCN0037	422185	5/4/91	EDP 6740	H21P006	N
B31N014B	1153DB5RCN0037	422186	5/4/91	EDP 6740	H21P006	N
B31N014C	1153DB5RCN0037	422187	5/4/91	EDP 6740	H21P022	N
B31N014D	1153DB5RCN0037	422188	5/4/91	EDP 6740	H21P022	N
B31N024A	1153DB5RCN0037	422189	5/4/91	EDP 6740	H21P006	N
B31N024B	1153DB5RCN0037	422190	5/4/91	EDP 6740	H21P006	N
B31N024C	1153DB5RCN0037	422191	5/4/91	EDP 6740	H21P022	N
B31N024D	1153DB5RCN0037	422192	5/4/91	EDP 6740	H21P022	N
B31N110A	1153DB4RCN0037	422153	12/15/89	EDP 10757	H21P009	N
B31N110B	1153DB4RCN0037	422154	12/15/89	EDP 10757	H21P010	N
B31N110C	1153DB4RCN0037	422155	12/15/89	EDP 10757	H21P009	N
B31N110D	1153DB4RCN0037	422156	12/15/89	EDP 10757	H21P010	N
B31N111A	1153GB7RCN0037	421888	5/4/91	EDP 6740	H21P006	N
B31N111B	1153GB7RCN0037	421889	5/4/91	EDP 6740	H21P022	N
B31N112A	1153DB4RCN0037	422157	5/4/91	EDP 6740	H21P006	N
B31N112B	1153DB4RCN0037	422158	5/4/91	EDP 6740	H21P022	N
B31N113A	1153DB4RCN0037	422159	5/4/91	EDP 6740	H21P006	N
B31N113B	1153DB4RCN0037	422160	5/4/91	EDP 6740	H21P022	N
B31N114A	1153DB4RCN0037	422161	5/4/91	EDP 6740	H21P006	N
**B31N114B	1153DB4RCN0037	422162	5/4/91	EDP 6740	H21P022	N
B31N115A	1153DB4RCN0037	422163	5/4/91	EDP 6740	H21P006	N
B31N115B	1153DB4RCN0037	422164	5/4/91	EDP 6740	H21P022	N
C36N401	1153GB9RCN0037	421808	5/4/91	EDP 6740	H21P004	N
C36N402	1153DB5RCN0037	422193	5/4/91	EDP 6740	H21P004	N
C71N050A	1153GB4RCN0037	422201	5/4/91	EDP 6740	H21P004	N
C71N050B	1153GB4RCN0037	422202	5/4/91	EDP 6740	H21P004	N
C71N050C	1153GB4RCN0037	422203	5/4/91	EDP 6740	H21P005	N
C71N050D	1153GB4RCN0037	422204	5/4/91	EDP 6740	H21P005	N
E11N015A	1153DB6RC	410832	11/2/85		H21P018	Y
E11N015B	1153DB6RC	410833	10/13/85		H21P021	Y
E11N055A	1153GB8RC	411076	10/13/85		H21P018	Y
E11N055B	1153GB8RC	411077	10/28/85		H21P021	Y
E11N055C	1153GB8RC	411078	11/1/85		H21P018	Y
E11N055D	1153GB8RC	411079	11/1/85		H21P021	Y
E11N056A	1153GB8RC	411080	10/13/85		H21P018	Y

PIS_NO	MODEL	S/N	DATE	WR/EDP	LOCATION	PART_21
E11N056B	1153GB8RC	411081	10/28/85		H21P021	Y
E11N056C	1153GB8RC	411082	11/1/85		H21P018	Y
E11N056D	1153GB8RC	413929	8/26/86		H21P021	Y
**E21N003A	1153DB5RC	410839A	3/6/91	001D900417	H21P001	N
**E21N003D	1153DB5RC	0500801	8/8/90	002D900417	H21P019	N
E21N055A	1153GB8RC	411084	10/25/85		H21P001	Y
E21N055B	1153GB8RC	411085	11/5/85		H21P019	Y
E21N062A	1153GB8RC	411086	10/26/85		H21P001	Y
E21N062B	1153GB8RC	411087	11/6/85		H21P019	Y
**E41N008	1153DB5RC	0500802	12/18/90	003D900417	H21P014	N
E41N055A	1153GB6RC	410945	10/19/85		H21P034	Y
E41N055B	1153GB6RC	410946	10/19/85		H21P014	Y
E41N055C	1153GB6RC	410947	10/18/85		H21P034	Y
E41N055D	1153GB6RC	410948	10/19/85		H21P014	Y
E41N057A	1153DB6RC	410841A	5/23/91	000Z910579	H21P016	N
E41N057B	1153DB6RC	418219A	5/24/91	000Z910176	H21P036	N
E41N058A	1153GB7RC	410953	10/19/85		H21P016	Y
E41N058B	1153GB7RC	410954	10/18/85		H21P036	Y
E41N058C	1153GB7RC	410955	10/18/85		H21P016	Y
E41N058D	1153GB7RC	410956	10/20/85		H21P036	Y
**G11N150	1153DB4RG	0503407	5/23/91	004D900417	DW-576'1"	N
**G11N152	1153DB4RG	0503461	5/22/91	005D900417	DW-576'1"	N
**G11N156	1153DB4RG	0503462	5/23/91	004D901204	DW-576'1"	N
**G11N158	1153DB4RG	0503408	5/21/91	006D900417	DW-576'1"	N
G51N402	1153DA3	288142	12/24/82		RBSB-B15	N
P34N007	1153DB3PB	406380	11/19/84		RB1-G13	N
T48N164A	1153DB3PA	406545	12/3/83		RB3-C10	Y
T48N164B	1153DB3PA	406546	12/3/83		RB3-D10	Y
T48N175A	1153DB3PA	406547	12/5/83		RB3-C10	Y
T48N175B	1153DB3PA	406548	12/3/83		RB3-D10	Y
T48N176A	1153AB6PA	406519	12/5/83		RB3-C10	Y
T48N176B	1153AB6PA	406518	12/5/83		RB3-D10	Y
T49N474A	1153GB7(PA)	397745	8/18/83		T49P400A	Y
T49N474B	1153GB7(PA)	397746	8/18/83		T49P400B	Y
T50N401A	1153GB5RA	0500194	12/15/89	EDP 9094	H21P595A	N
T50N401B	1153GB5RA	0500195	12/15/89	EDP 9094	H21P595B	N
T50N406A	1153DD5RAN0037	0500196	12/15/89	EDP 9094	H21P614A	N
T50N406B	1153DD5RAN0037	0500197	12/15/89	EDP 9094	H21P614B	N
T50N414A	1153GB6RA	0500173	12/15/89	EDP 9094	H21P596A	N
T50N414B	1153GB6RA	0500174	12/15/89	EDP 9094	H21P596B	N
T50N415A	1153GD7RA	0500418	12/15/89	EDP 9094	H21P595A	N
T50N415B	1153GD7RA	0500419	12/15/89	EDP 9094	H21P595B	N
T50N496	1153GB6RC	414763A	4/15/90	EDP 8483	H21P596B	N

** Previous Suspect Lot

There are no Model 1153 Series D transmitters and only 39 of these 130 Model 1153 transmitters are Series B transmitters manufactured prior to July 11, 1989. These 39 are listed below with their normal operating pressures.

PIS_NO	OLD_MODEL	OLD_S/N	SRVDAT	PRESSURE	LOCATION
B21N450	1153DB4(PA)	285949	3/9/82	100	H21P423B
B21N451	1153DB4(PA)	285948	3/9/82	100	H21P423A
B21N481	1153GB7(PA)	282209	6/24/82	100	H21P423A
B21N482	1153GB7(PA)	282212	6/28/82	990	H21P423A
B21N485	1153GB7(PA)	282213	3/16/82	990	H21P423A
B21N486	1153GB7(PA)	282211	3/9/82	990	H21P423B
B21N487	1153DB5(PA)	282222	3/9/82	990	H21P423B
B21N490	1153GB7(PA)	315536	3/9/82	990	H21P423B
B21N492	1153GB7(PA)	282208	3/9/82	100	H21P423B
E11N015A	1153DB6RC	410832	11/2/85	0	H21P018
E11N015B	1153DB6RC	410833	10/13/85	0	H21P021
E11N055A	1153GB8RC	411076	10/13/85	0	H21P018
E11N055B	1153GB8RC	411077	10/28/85	0	H21P021
E11N055C	1153GB8RC	411078	11/1/85	0	H21P018
E11N055D	1153GB8RC	411079	11/1/85	0	H21P021
E11N056A	1153GB8RC	411080	10/13/85	0	H21P018
E11N056B	1153GB8RC	411081	10/28/85	0	H21P021
E11N056C	1153GB8RC	411082	11/1/85	0	H21P018
E11N056D	1153GB8RC	413929	8/26/86	0	H21P021
E21N055A	1153GB8RC	411084	10/25/85	0	H21P001
E21N055B	1153GB8RC	411085	11/5/85	0	H21P019
E21N062A	1153GB8RC	411086	10/26/85	0	H21P001
E21N062B	1153GB8RC	411087	11/6/85	0	H21P019
E41N055A	1153GB6RC	410945	10/19/85	0	H21P034
E41N055B	1153GB6RC	410946	10/19/85	0	H21P014
E41N055C	1153GB6RC	410947	10/18/85	0	H21P034
E41N055D	1153GB6RC	410948	10/19/85	0	H21P014
E41N058A	1153GB7RC	410953	10/19/85	1025	H21P016
E41N058B	1153GB7RC	410954	10/18/85	1025	H21P036
E41N058C	1153GB7RC	410955	10/18/85	1025	H21P016
E41N058D	1153GB7RC	410956	10/20/85	1025	H21P036
T48N164A	1153DB3PA	406545	12/3/83	15	RB3-C10
T48N164B	1153DB3PA	406546	12/3/83	15	RB3-D10
T48N175A	1153DB3PA	406547	12/5/83	15	RB3-C10
T48N175B	1153DB3PA	406548	12/3/83	15	RB3-D10
T48N176A	1153AB6PA	406519	12/5/83	30	RB3-C10
T48N176B	1153AB6PA	406518	12/5/83	30	RB3-D10
T49N474A	1153GB7(PA)	397745	8/18/83	100	T49P400A
T49N474B	1153GB7(PA)	397746	8/18/83	100	T49P400B

Only 9 of the 39 transmitters are normally operated at pressures greater than 500 psi and so are subject to the concern of this supplement. These 9 transmitters will be replaced during the next refueling outage. The other 30 transmitters will remain in service and, consistent with the Supplement recommendations, will be dropped from the trending program due to their very low operating pressures (0-100 psi). The supplement recommendation to "maintain ability to detect failures" for the remaining 30 transmitters will be accomplished by plant personnel continuing to check for symptoms of oil loss while performing surveillances.

The transmitters to be replaced are listed below. The replacement transmitters are like-for-like manufactured after July 11, 1989.

PIS No.

B21N482
B21N485
B21N486
B21N487
B21N490
E41NO58A
E41NO58B
E41NO58C
E41NO58D

- **NRC Item 2.b:**

  "The schedule for completing licensee actions to meet Item 1 of Requested Actions provided in this supplement."

  Detroit Edison Response:

  The 9 transmitters listed above will be replaced by the end of the fourth refueling outage, currently scheduled to begin in March 1994.

- **NRC Item 2.c:**

  "When completed, a statement confirming that Items 1 and 2 of Requested Actions for Operating Reactors provided in this supplement have been completed."

  Detroit Edison Response:

  Detroit Edison will notify the NRC confirming that the subject transmitters have been replaced, after completion of their replacement.

o **NRC Item 3:**

"A statement identifying those actions requested by the NRC that the licensee is not taking and an evaluation which provides the bases for not taking the requested actions."

Detroit Edison Response:

Out of 9 transmitters to be replaced, the 8 gage transmitters in ESF actuation systems are normally operated saturated off scale high, and one differential transmitter normally reads zero. Therefore, reviews for oil loss for these transmitters can only be performed while performing calibrations. Maintenance personnel have been trained to look for symptoms of oil loss such as sluggish response and offset condition while performing calibrations. Also, a trending program is in place to trend calibration data. No symptoms of oil loss have been indicated for these transmitters. An Engineering Functional Analysis has been prepared to justify operating with these transmitters without performing monthly surveillances until their replacement during the next refueling outage. As requested, a copy of the Engineering Functional Analysis is attached.

ENGINEERING FUNCTIONAL ANALYSIS COVER SHEET

PART 1 - IDENTIFICATION

A)	System(s) PIS No. B2106	B) Component(s) PIS No. B21N487	[ ] N/A
C)	QA Level [X] 1 [ ] 1M [ ] Non-Q	D) Seismic Category [X] I [ ] II/I [ ] None	
E)	ASME [ ]Yes [X]No	F) EQ [X] Harsh [ ] Mild	[ ] None
G)	Originating Document DER 93-0021 [ ] NA	H) Safety Evaluation Number	[X] NA

PART 2 - RECOMMENDED OPERABILITY DETERMINATION

A) Equipment [X] Operable [ ] Inoperable/Outside Current Licensing/Design Basis

B) System [X] Operable [ ] Inoperable/Outside Current Licensing/Design Basis

PART 3 - RECOMMENDED PLANT ACTION

A) [X] Continue Plant operation [ ] Permanent

[X] Interim Until REPLACED VIA WR #000Z923082

B) [ ] Place Plant in Safe Condition of _____

C) [ ] Follow Technical Specifications

PART 4 - SIGNATURES

A)	Prepared by D. A. Hoscila	Date 2-3-93
B)	Checked by K. S. Amin	Date 2-12-93
C)	Approved by Responsible NE Supervisor Lee Ferguson for J. Green	Date 2/24/93
D)	Approved by General Director NE John Wilson	Date 2/25/93

Form NEP-OP1 Att 1 P1/1 020392 DTC: TDEFA File: 1804

EFA CONTINUATION SHEET

I. COMPONENT IDENTIFICATION

System:	B2100 Steam Generator System
Subsystem:	B2106 Nuclear Boiler System - MSIVLC - Division 2
PIS No.:	B21N487
Description:	Differential Pressure Transmitter

II. COMPONENT FUNCTION

The subject transmitter is used to monitor and alarm differential pressure between the reactor and the main steam piping, which is located between the outboard and third MSIVs. Its output is processed by Foxboro Spec 200 instruments located in the Relay Room Panel H11P917B. The Foxboro Spec 200 powers the transmitters and outputs discrete signals which are used for a permissives for the Main Steam Line Isolation Valve Leakage Control System (MSIVLCS). The MSIVLCS Division 2 uses air from the Division 2 Control Air System. The injection point for the Division 2 system is the main steam drain line upstream of the third MSIVs. The MSIVLCS is not intended to be used during any phase of plant operation other than following a LOCA. Within 20 minutes after a confirmed LOCA, each Division is armed manually through key operated switches located in the main control room. System activation occurs after several interlocks have been met. Once all interlocks are satisfied, the associated MSIVLCS drain valve will automatically close and remain closed for the duration of the LOCA. Closure of the drain valve prevents venting of the control air and allows it to be directed to the volume between the isolation valves. During LOCA conditions, after differential pressure has fallen to 5.5 psid, the air injection valve opens automatically. This valve provides air from the control air system to injection points on the main steam drain lines between the outboard and third MSIVs during a LOCA. This results in the pressurization of the piping volume bounded by the closed outboard and third MSIVs. Once this valve is open, it will remain open until differential pressure increases to 8 psid. At this point, the injection valve is closed and will remain closed until the differential pressure drops again to 5.5 psid. The valve is then reopened and the cycle repeated. This cyclic process takes place throughout the duration of the LOCA accident mitigation period. In addition, the subject transmitter provides a low differential pressure alarm set at 2 psid to alert the plant operator of the possible failure of an outboard MSIV, third MSIV or Drain Valve to be in its fully closed position. If this condition persists for 5 minutes, the system is isolated (shut down).

III. NUREG 0588 SAFETY CATEGORY

Differential pressure transmitter B21N487 is classified 2A in accordance with NUREG 0588, Appendix E. It is exposed to the harsh environmental conditions during a LOCA and its operation is essential because it is used for proper MSIVLCS function during a LOCA. The MSIVLCS is not used during HELB conditions nor is this transmitter exposed to a harsh environment during a HELB.

IV. COMPONENT OPERABILITY REQUIREMENTS

The subject differential pressure transmitter must function during a LOCA to provide a permissive and interlock to actuate the MSIVLCS Division 2 injection valve. This valve must operate on and off during a LOCA to maintain a differential pressure between the outboard and the third MSIV and the reactor pressure vessel. This prevents contaminated steam leakage past the outboard and the third MSIVs into the environment during a LOCA event. Therefore, the operability time requirement for the subject transmitter was determined to be 100 days.

EFA CONTINUATION SHEET

V. FAILURE EFFECTS DUE TO SENSOR OIL LOSS

Based on Rosemount's bulletins, the oil loss from the transmitter sensor does not happen catastrophically but happens over a period of time. The time frame for oil loss is proportional to the applied process pressure. When oil loss occurs, a fixed and/or erroneous transmitter output will result. An erroneous output is an output which may start to track the input as it changes, but then becomes sluggish or offset.

Primary Effects, Plant Logic

This transmitter is normally indicates zero, therefore, monthly channel checks cannot be performed. However, the potential for having an undetected oil loss in this transmitter is mitigated by the measures described below.

An oil loss could potentially occur from either side of the transmitter. If the effect of advanced oil loss causes a premature achievement of the 5.5 psid setpoint, premature air injection would not occur because the system must be armed manually and the Reactor and Main Steam Line pressure interlocks must be satisfied.

If an oil loss causes a premature achievement of the 2 psid setpoint, the system will provide an alarm and eventually isolate the system. If this occurs, there is a redundant division which will pressureize the inboard MSIVs thus allowing the system to perform its function.

If the effect of advanced oil loss causes a sluggish or no achievement of setpoint, there is a redundant division which will pressurize the inboard MSIVs thus allowing the system to perform its function.

Secondary Effects

An oil loss failure would have no effect on any other equipment. The Foxboro Spec 200 instruments are designed to operate within the resultant transmitter output range which would occur after a loss of fill oil.

VI. INTERIM COMPENSATING MEASURES

This transmitter normally indicates zero. Therefore, reviews for oil loss can only be performed while performing calibrations. Maintenance personnel have been trained to look for symptoms of oil loss (sluggish response and offset) while performing calibrations. No symptoms of oil loss have yet been indicated.

VII. CHANGEOUT

This transmitter is scheduled for replacement with a post July 11, 1989 manufactured transmitter via WR 000Z923082 no later than the end of RF04.

VII. Summary

Actions have been taken to assure the design function of this transmitter is maintained. This transmitter will reach the 60,000 psi-month maturity by the next refuel outage. Experience has shown that the longer a transmitter is in service without showing symptoms of oil loss, the likelihood of an oil loss failure lessens. Therefore, an oil loss failure of this transmitter is unlikely. If a failure should occur, the function of the system, due to redundancy, will not be lost. MSIVLCS does not affect any other safety equipment or their functions.

ENGINEERING FUNCTIONAL ANALYSIS COVER SHEET

PART 1 - IDENTIFICATION

A)	System(s) PIS No. B2106	B) Component(s) PIS No. B21N485, B21N486	[ ] N/A
C)	QA Level [X] 1 [ ] 1M [ ] Non-Q	D) Seismic Category [X] I [ ] II/I [ ] None	
E)	ASME [ ]Yes [X]No	F) EQ [X] Harsh [ ] Mild	[ ] None
G)	Originating Document DER 93-0021 [ ] NA	H) Safety Evaluation Number	[X] NA

PART 2 - RECOMMENDED OPERABILITY DETERMINATION

A) Equipment [X] Operable [ ] Inoperable/Outside Current Licensing/Design Basis

B) System [X] Operable [ ] Inoperable/Outside Current Licensing/Design Basis

PART 3 - RECOMMENDED PLANT ACTION

A) [X] Continue Plant operation [ ] Permanent

[X] Interim Until REPLACED VIA WR #000Z923082

B) [ ] Place Plant in Safe Condition of _____

C) [ ] Follow Technical Specifications

PART 4 - SIGNATURES

A)	Prepared by D. A. Hoscila	Date 2-3-93
B)	Checked by K. S. Amin	Date 2-12-93
C)	Approved by Responsible NE Supervisor Lee D Ferguson for J P Green	Date 2/24/93
D)	Approved by General Director NE John A Zwolinski	Date 2/25/93

EFA CONTINUATION SHEET

I. COMPONENT IDENTIFICATION

System:	B2100 Steam Generator System
Subsystem:	B2105 Nuclear Boiler System - MSIVLC
PIS No.:	B21N485, B21N486
Description:	Pressure Transmitters

II. COMPONENT FUNCTION

The subject pressure transmitters are used to monitor reactor pressure for the Main Steam Isolation Valve Leakage Control System (MSIVLCS). Their output is processed by Foxboro Spec 200 instruments located in Relay Room Panels H11P917A/B. The Foxboro Spec 200 instruments power the transmitters, and output discrete signals which are used for permissives to activate the MSIVLCS and to close the MSIVLCS drain valves. The MSIVLCS is not intended to be used during any phase of plant operation other than following LOCA. Within 20 minutes after a confirmed LOCA, each Division is armed manually through key operated switches located in the main control room. System activation occurs after several interlocks have been met. For Division 1, B21N485 sensing a Reactor pressure below 44 psi satisfies one of the interlocks. B21N486 provides the same function for Division 2. Once all interlocks are satisfied, the associated MSIVLCS drain valve will automatically close and remain closed for the duration of the LOCA. Closure of the drain valve prevents venting of the control air and allows it to be directed to the volume between the isolation valves.

III. NUREG 0588 SAFETY CATEGORY

The subject pressure transmitters are classified 2A in accordance with NUREG-0588, Appendix E. They are exposed to the harsh environment conditions of Zones 9 and 10 during a LOCA. Their operation is essential because they are used for MSIV Leakage Control to mitigate unwanted releases post-LOCA. The transmitters are not exposed to a harsh environment and are not required to mitigate the consequences of a HELB.

IV. COMPONENT OPERABILITY REQUIREMENTS

The subject pressure transmitters must function during a LOCA to provide permissives to actuate MSIVLCS drain valves. The MSIVLCS is required to operate throughout the LOCA period. Therefore, the operability time requirement for the subject transmitters is 100 days.

V. FAILURE EFFECTS DUE TO SENSOR OIL LOSS

Based on Rosemount's Bulletins, the oil loss from the transmitter sensor does not happen catastrophically but happens over a period of time. The time frame for oil loss is proportional to the applied process pressure. When oil loss occurs, a fixed and/or erroneous transmitter output will result. An erroneous output is an output which may start to track the input as it changes, but then becomes sluggish or offset.

EFA CONTINUATION SHEET

Primary Effects, Plant Logic

This transmitter is normally saturated off scale high, therefore, monthly channel checks cannot be performed. However, the potential for having an undetected oil loss in this transmitter is mitigated by the measures described below.

In this application, an oil loss condition would eventually result in a slow response to an increasing pressure while maintaining a normal response for a decreasing pressure. This condition would have no negative effects on system operation because the setpoint is on decreasing pressure.

If the oil loss was severe enough to cause an offset, which would result in an indicated Reactor pressure lower than actual, one of the interlocks in one Division would be prematurely satisfied. The system would still require manual arming and the Control Air Pressure and Main Steam Line Pressure permissives satisfied to initiate.

Secondary Effects

An oil loss failure would have no effect on any other equipment. The Foxboro Spec 200 instruments are designed to operate within the resultant transmitter output range which would occur after a loss of fill oil.

VI. INTERIM COMPENSATING MEASURES

These transmitters are normally saturated off scale high. Therefore, reviews for oil loss can only be performed while performing calibrations. Maintenance personnel have been trained to look for symptoms of oil loss (sluggish response and offset) while performing calibrations and no symptoms of oil loss have yet been indicated.

VII. Changeout

These transmitters are scheduled for replacement with a post July 11, 1989 manufactured transmitter via WR #000Z923082 no later than the end of RF04.

VIII. Summary

Actions have been taken to assure the design function of these transmitters is maintained. In addition, these transmitters will reach the 60,000 psi-month maturity by the next refuel outage. Experience has shown that the longer a transmitter is in service without showing symptoms of oil loss, the likelihood of an oil loss failure lessens. Therefore, an oil loss failure of these transmitters is unlikely. If a failure should occur, the function of the system, due to redundancy, will not be lost. MSIVLCS does not affect any other safety equipment or their functions.

ENGINEERING FUNCTIONAL ANALYSIS COVER SHEET

PART 1 - IDENTIFICATION

A)	System(s) PIS No. B2106	B) Component(s) PIS No. B21N482, B21N490	[ ] N/A
C)	QA Level [X] 1 [ ] 1M [ ] Non-Q	D) Seismic Category [X] I [ ] II/I [ ] None	
E)	ASME [ ]Yes [X]No	F) EQ [X] Harsh [ ] Mild	[ ] None
G)	Originating Document DER 93-0021 [ ] NA	H) Safety Evaluation Number	[X] NA

PART 2 - RECOMMENDED OPERABILITY DETERMINATION

A) Equipment [X] Operable [ ] Inoperable/Outside Current Licensing/Design Basis

B) System [X] Operable [ ] Inoperable/Outside Current Licensing/Design Basis

PART 3 - RECOMMENDED PLANT ACTION

A) [X] Continue Plant operation [ ] Permanent
[X] Interim Until REPLACED VIA WR #000Z923082

B) [ ] Place Plant in Safe Condition of _____

C) [ ] Follow Technical Specifications

PART 4 - SIGNATURES

A)	Prepared by D. A. Hoseila	Date 2-3-93
B)	Checked by K. S. Amin	Date 2-12-93
C)	Approved by Responsible NE Supervisor Lee D Ferguson for JP Moran	Date 2/24/93
D)	Approved by General Director NE John A Walker	Date 2/25/93

EFA CONTINUATION SHEET

I. COMPONENT IDENTIFICATION

System:	B2100 Steam Generator System
Subsystem:	B2106 Nuclear Boiler System - MSIVLC
PIS No.:	B21N482, B21N490
Description:	Pressure Transmitters

II. COMPONENT FUNCTION

The subject pressure transmitters are used to monitor Main Steam Line pressure for the Main Steam Isolation Valve Leakage Control System (MSIVLCS). Their output is processed by Foxboro Spec 200 instruments located in Relay Room Panels H11P917A/B. The Foxboro Spec 200 instuments power the transmitters, and output discrete signals which are used for permissives to activate the MSIVLCS and to close the MSIVLCS drain valves. The MSIVLCS is not intended to be used during any phase of plant operation other than following LOCA. Each Division is armed manually through key operated switches located in the main control room within 20 minutes after a confirmed LOCA. System activation occurs after several interlocks have been met. For Division 1, B21N482 sensing a Main Steam Line pressure below 138 psi between the inboard and outboard MSIVs satisfies one of the interlocks. For Division 2, B21N490 sensing a Main Steam Line pressure below 138 psi between the outboard and the third MSIVs satisfies one of the interlocks. Once all interlocks are satisfied, the associated MSIVLCS drain valve will automatically close and remain closed for the duration of the LOCA. Closure of the drain valve prevents venting of the control air and allows it to be directed to the volume between the isolation valves.

III. NUREG 0588 SAFETY CATEGORY

The subject pressure transmitters are classified 2A in accordance with NUREG-0588, Appendix E. They are exposed to the harsh environment conditions of Zones 9 and 10 during a LOCA. Their operation is essential because they are used for MSIV Leakage Control to mitigate unwanted releases post-LOCA. The transmitters are not exposed to a harsh environment and are not required to mitigate the consequences of a HELB.

IV. COMPONENT OPERABILITY REQUIREMENTS

The subject pressure transmitters must function during a LOCA to provide permissives to actuate MSIVLCS drain valves. The MSIVLCS is required to operate throughout the LOCA period. Therefore, the operability time requirement for the subject transmitters is 100 days.

V. FAILURE EFFECTS DUE TO SENSOR OIL LOSS

Based on Rosemount's Bulletins, the oil loss from the transmitter sensor does not happen catastrophically but happens over a period of time. The time frame for oil loss is proportional to the applied process pressure. When oil loss occurs, a fixed and/or erroneous transmitter output will result. An erroneous output is an output which may start to track the input as it changes, but then becomes sluggish or offset.

EFA CONTINUATION SHEET

Primary Effects, Plant Logic

This transmitter is normally saturated off scale high, therefore, monthly channel checks cannot be performed. However, the potential for having an undetected oil loss in this transmitter is mitigated by the measures described below.

In this application, an oil loss condition would eventually result in a slow response to an increasing pressure while maintaining a normal response for a decreasing pressure. This condition would have no negative effects on system operation because the setpoint is on decreasing pressure.

If the oil loss was severe enough to cause an offset, which would result in an indicated Main Steam Line pressure lower than actual, one of the interlocks in one Division would be prematurely satisfied. The system would still require manual arming and the Control Air Pressure and Main Steam Line Pressure permissives be satisfied to initiate MSIVLC.

Secondary Effects

An oil loss failure would have no effect on any other equipment. The Foxboro Spec 200 instruments are designed to operate within the resultant transmitter output range which would occur after a loss of fill oil.

VI. INTERIM COMPENSATING MEASURES

These transmitters are normally saturated off scale high. Therefore, reviews for oil loss can only be performed while performing calibrations. Maintenance personnel have been trained to look for symptoms of oil loss (sluggish response and offset) while performing calibrations. No symptoms of oil loss have yet been indicated.

VII. Changeout

These transmitters are scheduled for replacement with a post July 11, 1989 manufactured transmitter via WR #000Z923082 no later than the end of RF04.

VIII. Summary

Actions have been taken to assure the design function of these transmitters is maintained. In addition, these transmitters will reach the 60,000 psi-month maturity by the next refuel outage. Experience has shown that the longer a transmitter is in service without showing symptoms of oil loss, the likelihood of an oil loss failure lessens. Therefore, an oil loss failure of these transmitters is unlikely. If a failure should occur, the function of the system, due to redundancy, will not be lost. MSIVLCS does not affect any other safety equipment or their functions.

ENGINEERING FUNCTIONAL ANALYSIS COVER SHEET

PART 1 - IDENTIFICATION

A)	System(s) PIS No. E4100	B) Component(s) PIS No. E41N058A-D	[ ] N/A
C)	QA Level [X] 1 [ ] 1M [ ] Non-Q	D) Seismic Category [X] I [ ] II/I [ ] None	
E)	ASME [ ]Yes [X]No	F) EQ [X] Harsh [ ] Mild	[ ] None
G)	Originating Document DER 93-0021 [ ] NA	H) Safety Evaluation Number	[ ] NA

PART 2 - RECOMMENDED OPERABILITY DETERMINATION

A) Equipment [X] Operable [ ] Inoperable/Outside Current Licensing/Design Basis

B) System [X] Operable [ ] Inoperable/Outside Current Licensing/Design Basis

PART 3 - RECOMMENDED PLANT ACTION

A) [X] Continue Plant operation [ ] Permanent

[X] Interim Until REPLACEMENT VIA WR #000Z923080 AND WR #000Z923081

B) [ ] Place Plant in Safe Condition of _____

C) [ ] Follow Technical Specifications

PART 4 - SIGNATURES

A)	Prepared by D. A. Hoscila G.A. HOSCILA	Date 2-3-93
B)	Checked by Connie L Byrd C.L. BYRD	Date 2/4/93
C)	Approved by Responsible NE Supervisor Leigh Ferguson for R Kiser	Date 2/24/93
D)	Approved by General Director NE John A Walter	Date 2/25/93

EFA CONTINUATION SHEET

I. COMPONENT IDENTIFICATION

System:	E, Core Cooling and Containment System
Subsystem:	E4100 High Pressure Coolant Injection System (HPCI)
PIS No.:	E41N058A-D
Description:	Pressure Transmitters

II. COMPONENT FUNCTION

These devices monitor HPCI steam supply line pressure. Their output is processed by trip units located on the fourth floor of the Auxiliary Building. These trip units power the transmitter and output discrete trip signals on low steam pressure which are utilized to initiate HPCI trip/auto-isolation.

Start-up and operation of the HPCI system following a LOCA or HELB is automatically initiated upon detection of either low water level in the reactor vessel or high drywell pressure. These transmitters have no function during normal plant operation. When the HPCI turbine is in operation, the reactor is the source of driving steam. As the reactor pressure decreases, so does the steam pressure at the turbine. When the steam supply pressure decreases to 100 psi, a HPCI trip/auto-isolation signal trips the HPCI turbine and causes closure of several steam line and containment isolation valves to isolate the HPCI turbine. Once activated, the auto-isolation signals are sealed in preventing restart of the HPCI system until the failure condition is corrected and the auto-isolation logic circuits are manually reset. A HPCI trip/auto-isolation alarm is also initiated in the control room.

III. NUREG-0588 SAFETY CATEGORY

The subject transmitters are classified 2A in accordance with NUREG-0588, Appendix E. They are exposed to the harsh environmental conditions of Zones 11 and 12 during a LOCA or a HPCI, RCIC or RWCU HELB. They are essential because they provide permissives for operating HPCI (Emergency Core Cooling) following a LOCA or HELB (except HPCI HELB). They also provide a signal for HPCI isolation after HPCI operation is finished.

IV. COMPONENT OPERABILITY REQUIREMENTS

The HPCI system is required for a maximum of one (1) hour after an accident. The pressure transmitters shall be operable for one (1) hour after a LOCA or HELB as they are required to be operable during the (1) hour post accident period as a permissive to HPCI to keep the HPCI System functional.

V. FAILURE EFFECTS DUE TO SENSOR OIL LOSS

Based on Rosemount's Bulletins, the oil loss from the transmitter sensor does not happen catastrophically but happens over a period of time. The time frame for oil loss is proportional to the applied process pressure. When oil loss occurs, a fixed and/or erroneous transmitter output will result. An erroneous output is an output which may start to track the input as it changes, but then becomes sluggish or offset.

EFA CONTINUATION SHEET

Primary Effects, Plant Logic

This transmitter is normally saturated off scale high, therefore, monthly channel checks cannot be performed. However, the potential for having an undetected oil loss in this transmitter is mitigated by the measures described below.

In this application, an oil loss condition would eventually result in a slow response to an increasing pressure while maintaining a normal response for a decreasing pressure. This condition would have no negative effects on system operation.

If the oil loss was severe enough to cause an offset, which would result in an indicated steam supply line pressure lower than actual, a premature trip/auto-isolation of the HPCI system would occur. The Automatic Depressurization System (ADS) is the ECCS opposite division backup to HPCI. If the HPCI system should malfunction, the ADS has the ability to rapidly reduce the pressure in the reactor vessel to a point where the Core Spray system or the Low Pressure Injection system can provide the coolant to the reactor.

Secondary Effects

An oil loss failure would have no effect on any other equipment. The trip units are designed to operate within the resultant transmitter output range which would occur after a loss of fill oil.

VI. INTERIM COMPENSATING MEASURES

These transmitters are normally saturated off scale high. Therefore, reviews for oil loss can only be performed while performing calibrations. Maintenance personnel have been trained to look for symptoms of oil loss (sluggish response and offset) while performing calibrations and no symptoms of oil loss have yet been indicated. In addition, the calibration data for these transmitters have been trended according to Rosemount Technical Bulletin No. 4. There is no drift indicative of oil loss on any of these transmitters.

VII. Changeout

These transmitters are scheduled for replacement with a post July 11, 1989 manufactured transmitter via WR #000Z920380 and WR #000Z920381 no later than the end of RF04.

VIII. Summary

Actions have been taken to assure the design function of these transmitters is maintained. In addition, these transmitters will reach the 60,000 psi-month maturity by the next refuel outage. Experience has shown that the longer a transmitter is in service without showing symptoms of oil loss, the likelihood of an oil loss failure lessens. Therefore, an oil loss failure of these transmitters is unlikely. If an oil loss failure should occur, the HPCI system would auto-isolate prematurely, but other ECCS systems would still be available for core cooling.