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Nuclear Operations

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NRC-90-0179

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

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

Subject: Updated Response to NRC Bulletin 90-01

Detroit Edison reviewed NRC Bulletin 90-01 (Reference 2), and took actions as requested. Specific responses to each of the items required by the Bulletin were detailed in References 3 and 4. On October 31, 1990, Rosemount furnished two addenda to their suspect lot list. Based on a review of these addenda and program progress, the following update is being furnished:

- o four (4) additional suspect lot transmitters have been identified.
- o Two (2) suspect lot transmitters were deleted because they have been replaced.
- o EDP 10714 was completed in October, 1990 and thus an inservice date for T50N496 is now established.
- o Rosemount's failure analysis showed that of the five (5) transmitters submitted for analyses four (4) were confirmed as suffering some form of oil loss.
- o Operator training was completed in August, 1990.

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- Additional detail concerning operability acceptance criteria was provided in part 4.f.

As part of this effort a complete review of the serial number and plant identification number correlation was conducted. It was determined that suspect lot transmitter B21N111D (SN 410960) was incorrectly identified as B21N110D (SN 410952) and the serial number for transmitter G51N402 (SN 487105) was incorrectly reported as SN 288142. An Engineering Functional Analysis for B21N111D was written to justify continued operation.

The purpose of this transmittal is to reissue the entire response to Bulletin 90-01 with the update and transmitter identification corrections.

If you have any questions, please contact Mr. John Tibai at (313) 586-4289.

Sincerely,

Enclosure

cc: A. B. Davis
R. W. DeFayette
W. G. Rogers
J. F. Stang

Required Action per Bulletin 90-01:

1. **"Identify Model 1153 Series B, 1153 Series D, and Model 1154 pressure differential pressure transmitters, excluding Model 1153 Series B, 1153 Series D, and Model 1154 transmitters manufactured by Rosemount subsequent to July 11, 1989, that are currently utilized in either safety-related systems or systems installed in accordance with 10CFR50.62 (the ATWS rule)."**

Response

1. Model 1154 Rosemount transmitters are not used at Fermi. There are 108 model 1153 transmitters in service. The following list provides information concerning these transmitters. The information includes the plant identification number, model number, serial number, in service date, and the rack identification on which the instrument is mounted.

   Twenty-three (23) instruments listed were manufactured or refurbished after July 11, 1989 and are exempt from the Part 21. These are identified with an "*." The list also identifies with an "**" two (2) model 1153 transmitters that are not used in safety related applications. These twenty-five (25) transmitters are not addressed by NRC Bulletin 90-01. The eighty-three (83) remaining transmitters will be addressed. Four "G11" transmitters, used for drywell sump level indication, are included. These are not safety related but are included because they perform a leak detection function required by Technical Specifications.

PIS NUMBER	MODEL #	SERIAL #	IN SERVICE	RACK ID
B21N080A	1153DB4RC	410931	11/1/85	H21P004
B21N080B	1153DB4RC	413771	4/26/88	H21P004
B21N080C	1153DB4RC	410933	10/31/85	H21P005
B21N080D *	1153DB4RCN0037	0422143	12/15/89	H21P005
B21N081A	1153DB5RC	410837	3/15/85	H21P004
B21N081B	1153DB5RC	410838	11/10/85	H21P004
B21N081C *	1153DB5RCN0037	0422177	12/15/89	H21P005
B21N081D	1153DB5RC	410840	11/17/85	H21P005
B21N085A *	1153DB5RCN0037	0422179	12/15/89	H21P009
B21N085B *	1153DB5RCN0037	0422180	12/15/89	H21P010
B21N090A	1153GB9PA	405582	8/8/83	H21P004
B21N090B	1153GB9PA	405583	4/25/88	H21P005
B21N090C *	1153GD9RCN0037	0421811	12/15/89	H21P009
B21N090D *	1153GD9RCN0037	0421812	12/15/89	H21P010
B21N091A *	1153DB5RCN0037	0422181	12/15/89	H21P004
B21N091B	1153DB5PA	379552	11/6/88	H21P005
B21N091C *	1153DB5RCN0037	0422182	12/15/89	H21P004

PIS NUMBER	MODEL #	SERIAL #	IN SERVICE	RACK ID
B21N091D	1153DB5PA	405591	8/5/83	H21P005
B21N094A	1153GB4RC	411261	10/25/85	H21P004
B21N094B	1153GB4RC	411262	11/7/85	H21P005
B21N094C	1153GB4RC	411263	10/22/85	H21P004
B21N094D	1153GB4RC	411264	11/10/85	H21P005
B21N094E	1153GB4RC	411265	11/1/85	H21P004
B21N094F	1153GB4RC	411266	10/14/85	H21P005
B21N094G	1153GB4RC	411267	10/25/85	H21P004
B21N094H	1153GB4RC	411268	11/9/85	H21P005
B21N095A	1153DB4RC	410935	10/23/85	H21P004
B21N095B	1153DB4RC	410936	10/17/85	H21P005
B21N110A	1153GD9RC	410949	11/2/85	H21P004
B21N110B	1153GD9RC	410950	10/16/85	H21P005
B21N110C	1153GD9RC	410951	10/30/85	H21P004
B21N110D	1153GD9RC	410952	10/15/85	H21P005
B21N111A	1153GB9RC	410957	10/29/85	H21P004
B21N111B	1153GB9RC	410958	10/15/85	H21P005
B21N111C	1153GB9RC	410959	10/30/85	H21P004
B21N111D	1153GB9RC	410960	10/15/85	H21P005
B21N450	1153DB4(PA)	285949	3/9/82	H21P423B
B21N451	1153DB4(PA)	285948	3/15/82	H21P423A
B21N481	1153GB7(PA)	282209	6/24/82	H21P423A
B21N482	1153GB7(PA)	282212	6/28/82	H21P423A
B21N484	1153DB5(PA)	282223	6/28/82	H21P423A
B21N485	1153GB7(PA)	282213	3/16/82	H21P423A
B21N486	1153GB7(PA)	282211	3/9/82	H21P423B
B21N487	1153DB5(PA)	282222	3/9/82	H21P423B
B21N490	1153GB7(PA)	315536	3/9/82	H21P423B
B21N492	1153GB7(PA)	282208	3/9/82	H21P423B
B31N110A *	1153DB4RCN0037	0422153	12/15/89	H21P009
B31N110B *	1153DB4RCN0037	0422154	12/15/89	H21P010
B31N110C *	1153DB4RCN0037	0422155	12/15/89	H21P009
B31N110D *	1153DB4RCN0037	0422156	12/15/89	H21P010
B31N112A	1153DB4RC	410941	10/18/85	H21P006
B31N112B	1153DB4RC	410942	10/18/85	H21P022
B31N113A	1153DB4RC	410943	10/18/85	H21P006
B31N113B	1153DB4RC	410944	10/18/85	H21P022
B31N114A	1153DB4RC	410932	7/15/89	H21P006
B31N114B	1153DB4RC	411231	10/18/85	H21P022
B31N115A	1153DB4RC	411460	10/20/85	H21P006
B31N115B	1153DB4RC	411548	10/18/85	H21P022
E11N015A	1153DB6RC	410832	11/2/85	H21P018
E11N015B	1153DB6RC	410833	10/13/85	H21P021
E11N055A	1153GB8RC	411076	10/13/85	H21P018
E11N055B	1153GB8RC	411077	10/28/85	H21P021
E11N055C	1153GB8RC	411078	11/1/85	H21P018
E11N055D	1153GB8RC	411079	11/1/85	H21P021
E11N056A	1153GB8RC	411080	10/13/85	H21P018
E11N056B	1153GB8RC	411081	10/28/85	H21P021
E11N056C	1153GB8RC	411082	11/1/85	H21P018
E11N056D	1153GB8RC	413929	8/26/86	H21P021

PIS NUMBER	MODEL #	SERIAL #	IN SERVICE	RACK ID
E21N003A	1153DB5RC	410834	10/25/85	H21P001
E21N003B *	1153DB5RC	0500801	8/8/90	H21P019
E21N055A	1153GB8RC	411084	10/25/85	H21P001
E21N055B	1153GB8RC	411085	11/5/85	H21P019
E21N062A	1153GB8RC	411086	10/26/85	H21P001
E21N062B	1153GB8RC	411087	11/6/85	H21P019
E41N008 *	1153DB5RC	500802	12/18/90	H21P014
E41N055A	1153GB6RC	410945	10/19/85	H21P034
E41N055B	1153GB6RC	410946	10/19/85	H21P014
E41N055C	1153GB6RC	410947	10/18/85	H21P034
E41N055D	1153GB6RC	410948	10/19/85	H21P014
E41N057A	1153DB6RC	413862	8/28/86	H21P016
E41N057B	1153DB6RC	418218	11/21/88	H21P036
E41N058A	1153GB7RC	410953	10/19/85	H21P016
E41N058B	1153GB7RC	410954	10/18/85	H21P036
E41N058C	1153GB7RC	410955	10/18/85	H21P016
E41N058D	1153GB7RC	410956	10/20/85	H21P036
G11N150	1153DB4RG	414916	4/9/86	DW-576'1"
G11N152	1153DB4RG	414915	4/9/86	DW-576'1"
G11N156	1153DB4RG	414914	4/18/86	DW-576'1"
G11N158	1153DB4RG	414913	4/18/86	DW-576'1"
G51N402 **	1153DA3	487105	12/24/82	RBSB-B15
P34N007 **	1153DB3PB	406380	11/19/84	RB1-G13
T48N164A	1153DB3PA	406545	12/3/83	RB3-C10
T48N164B	1153DB3PA	406546	12/3/83	RB3-D10
T48N175A	1153DB3PA	406547	12/5/83	RB3-C10
T48N175B	1153DB3PA	406548	12/3/83	RB3-D10
T48N176A	1153AB6PA	406519	12/5/83	RB3-C10
T48N176B	1153AB6PA	406518	12/5/83	RB3-D10
T49N474A	1153GB7	397745	8/18/83	T49P400A
T49N474B	1153GB7	397746	8/18/83	T49P400B
T50N401A *	1153GB5RA	0500194	12/15/89	H21P595A
T50N401B *	1153GB5RA	0500195	12/15/89	H21P595B
T50N406A *	1153DD5RAN0037	0500196	12/15/89	H21P614A
T50N406B *	1153DD5RAN0037	0500197	12/15/89	H21P614B
T50N414A *	1153GB6RA	0500173	12/15/89	H21P596A
T50N414B *	1153GB6RA	0500174	12/15/89	H21P596B
T50N415A *	1153GD7RA	0500418	12/15/89	H21P595A
T50N415B *	1153GD7RA	0500419	12/15/89	H21P595B
T50N496 *	1153GB6RC	414763A	10/31/90	H21P596B

Required Action per Bulletin 90-01:

2. "Determine whether any transmitters identified in Item 1 are from the manufacturing lots that have been identified by Rosemount as having a high failure fraction due to loss of fill-oil. Addressees are requested not to utilize transmitters from these suspect lots in the reactor protection or engineered safety features actuation systems; therefore, addressees are requested to develop and implement a program to replace, at the earliest appropriate opportunity, transmitters from these suspect lots in use in the reactor protection or engineered safety features actuation systems."

Response

2. Rosemount has identified the "suspect lot" transmitters by serial number in a series of lists and most recently by two addenda. Additionally, Rosemount has furnished a list of suspect lot transmitter serial numbers which Rosemount's records show were sent to Detroit Edison. From these lists twenty-one (21) installed "suspect lot" Rosemount Model 1153 transmitters were identified. Two of these transmitters, as noted below, have been replaced, the remaining "suspect lot" transmitters will be replaced. The following list provides the engineering design change package (EDP) or work request (WR) which will be used to accomplish this. All replacements are scheduled to be completed prior to restart from the RFO2 (second refuel outage.) RFO2 is scheduled to begin at the end of the first quarter of 1991.

PIS NUMBER	MODEL #	SERIAL #	CHANGEOUT PACKAGE
B21N081A	1153DB5RC	410837	EDP 6740
B21N081B	1153DB5RC	410838	EDP 6740
B21N091B	1153DB5PA	379552	EDP 6740
B21N094A	1153GB4RC	411261	EDP 6740
B21N094B	1153GB4RC	411262	EDP 6740
B21N094C	1153GB4RC	411263	EDP 6740
B21N094D	1153GB4RC	411264	EDP 6740
B21N094E	1153GB4RC	411265	EDP 6740
B21N094F	1153GB4RC	411266	EDP 6740
B21N094G	1153GB4RC	411267	EDP 6740
B21N094H	1153GB4RC	411268	EDP 6740
B21N111D	1153GD9RC	410960	EDP 6740
B21N484	1153DB5(PA)	282223	WR #007D900417
B31N114B	1153DB4RC	411231	EDP 6740
E21N003A	1153DB5RC	410834	WR #001D900417
E21N003B	1153DB5RC	410835	REPLACEMENT COMPLETED
E41N008	1153DB5RC	410836	REPLACEMENT COMPLETED
G11N150	1153DB4RG	414916	WR #004D900417
G11N152	1153DB4RG	414915	WR #005D900417
G11N156	1153DB4RG	414914	WR #004D901204
G11N158	1153DB4RG	414913	WR #006D900417

"Suspect Lot" System Identification and a Brief Description of the Transmitter Function.

B21N081A,B	Nuclear Boiler System, Reactor Water Level Transmitters
B21N091B	Nuclear Boiler System, Reactor Water Level Transmitter
B21N094A-H	Nuclear Boiler System, Drywell Pressure Transmitters
B21N111D	Nuclear Boiler System, Reactor Pressure Transmitter
B21N484	Nuclear Boiler System - Main Steam Isolation Valve Leakage Control, Differential Pressure Transmitter
B31N114B	Reactor Recirculation System, Differential Pressure Transmitter
E21N003A	Core Spray System, Flow Transmitter
G11N150 & G11N152	Radwaste System, Drywell Floor Drain Sump Level Transmitters
G11N156 & G11N158	Radwaste System, Drywell Equipment Drain Sump Level Transmitters

Required Action per Bulletin 90-01:

3. **"Review plant records (for example, the three most recent calibration records) associated with the transmitters identified in Item 1 above to determine whether any of these transmitters may have already exhibited symptoms indicative of loss of fill-oil. Appropriate operability acceptance criteria should be developed and applied to transmitters identified as having exhibited symptoms indicative of loss of fill-oil from this plant record review. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria should be addressed in accordance with the applicable technical specification. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria and are not addressed in the technical specifications should be replaced at the earliest appropriate opportunity."**

Response

3. Just prior to the first refuel outage a transmitter (SN 411230) was observed to have abnormal behavior. This transmitter was replaced and sent to Rosemount for failure analysis. The transmitter has been confirmed to have suffered oil loss via the glass to metal seal failure as defined by Rosemount's 10 CFR Part 21 notification.

   During the first refueling outage (RFO1) when the required calibration surveillances were performed Detroit Edison specifically looked for sluggishness and zero shift (drift calibration error.) This was done by reviewing the "as found" readings vs. their allowable tolerances. The findings during RFO1 calibrations resulted in replacement of four (4) potential oil loss transmitters per design change package

EDP-10757. Two of the transmitters (SNs 405588 and 405590) have been confirmed to have suffered oil loss via the glass to metal seal failure as defined by Rosemount's 10 CFR Part 21 notification. The other two transmitters showed no hardware defect.

An additional transmitter (SN 410939) also showed symptoms of oil loss. This transmitter was replaced as part of a common sensing line rack improvement design change and had its "as found" calibration check done after RFO1. Although this transmitter has been confirmed to have suffered oil loss, the failure mechanism was not the glass to metal seal failure. The oil seal failure occurred at the fill tube and Rosemount has classified this as a random failure.

Detroit Edison has also reviewed the calibration history for the installed transmitters which were manufactured prior to July 1989. No new findings resulted from either plotting of zero and span shift % per Rosemount recommendations or the reviews of calibration histories for non-trendable transmitters.

Operability assessment criteria were based on conservative interpretations and application of information obtained from Rosemount technical bulletins.

Required Action per Bulletin 90-01:

4. **"Develop and implement an enhanced surveillance program to monitor transmitters identified in Item 1 for symptoms of loss of fill-oil. This enhanced surveillance program should consider the following or equally effective actions:**

   a) **Ensuring appropriate licensee personnel are aware of the symptoms that a transmitter, both during operation and during calibration activities, may exhibit if it is experiencing a loss of fill-oil and the need for prompt identification of transmitters that may exhibit these symptoms;**

   Response

   a) Instrument repairmen and responsible engineering personnel have been made aware of loss of oil symptoms. This was accomplished through on site training and the participation in the previous BWROG subcommittee activities. Cycle 5 of the licensed operator training program, which was completed in August, 1990, included discussion of this problem.

   b) Enhanced transmitter monitoring to identify sustained transmitter drift;

   Response

   b) A two part enhanced monitoring program has been developed and consists of the following:

      1) Trending of calibrations of the model 1153 transmitters.

         Sixty-eight (68) of Fermi's eighty-three (83) model 1153 transmitters subject to this bulletin are trendable per Rosemount's Bulletin 4 recommendations.

Computerized tabulations and graphs showing calibration zero and span drift percentage accumulations have been created and are being maintained by Engineering.

Degraded or degrading transmitters will be documented on deviation event reports (DERs) and will be dispositioned in accordance with the corrective action and evaluation program.

The remaining fifteen (15) model 1153 transmitters, which are listed below, are not trendable via the computerized format. The computerized format requires individual transmitter calibrations. These transmitters, other than during their initial calibration, are checked for proper calibration as part of their overall loop performance.

The Technical Group evaluated the loop calibrations for these transmitters by a comparison with previous calibration results. This allowed the determination of the status of the transmitter. No adverse conditions were found.

For future comparisons any degraded or degrading transmitter found will be documented on a DER and dispositioned accordingly.

TRANSMITTERS NOT TRENDABLE

PIS NUMBER	MODEL #	SERIAL #	IN SERVICE	RACK ID
B21N450	1153DB4(PA)	285949	3/9/82	H21P423B
B21N451	1153DB4(PA)	285948	3/15/82	H21P423A
B21N481	1153GB7(PA)	282209	6/24/82	H21P423A
B21N482	1153GB7(PA)	282212	6/28/82	H21P423A
B21N484	1153DB5(PA)	282223	6/28/82	H21P423A
B21N485	1153GB7(PA)	282213	3/16/82	H21P423A
B21N486	1153GB7(PA)	282211	3/9/82	H21P423B
B21N487	1153DB5(PA)	282222	3/9/82	H21P423B
B21N490	1153GB7(PA)	315536	3/9/82	H21P423B
B21N492	1153GB7(PA)	282208	3/9/82	H21P423B
E11N015A	1153DB6RC	410832	11/2/85	H21P018
E11N015B	1153DB6RC	410833	10/13/85	H21P021
E21N003A	1153DB5RC	410834	10/25/85	H21P001
T49N474A	1153GB7	397745	8/18/83	T49P400A
T49N474B	1153GB7	397746	8/18/83	T49P400B

2) Periodic Monitoring

A program has been established to monitor a select group of transmitters on a monthly basis starting in July 1990. Each month a reading from the selected transmitter will be taken using a digital multimeter. This data will be compared with redundant channels to detect any deviations. In addition, this data will be trended to detect any deteriorating transmitter. Degraded or degrading transmitters will be documented on deviation event reports (DERs) and will be dispositioned in accordance with the corrective action and evaluation program.

Transmitters were selected by Engineering using the following criteria:

1. Redundant channels were available.
2. The channel is not saturated off-scale during normal plant conditions.
3. The transmitters were manufactured prior to July 1989.
4. Transmitters sensing low pressure (<250 psi continuous pressure) were excluded.
5. Intermittent duty transmitters were excluded. For example, those transmitters that are normally not inservice except for monthly or quarterly surveillance tests.

c) **Review of transmitter performance following planned or unplanned plant transients or tests to identify sluggish transmitter response:**

Response

c) Fermi personnel specifically looked for sluggish response during RFO1 (fall of 1989) calibrations. Since Fermi does not have continuous on-line monitoring capabilities of all transmitters, full functional/calibration testing is required to look for sluggish response. It is not expected that special sluggish response investigations would be undertaken unless there was some evidence to suggest that a slow response occurred and the enhanced monitoring program showed some potential for oil loss.

d) **"Enhanced awareness of sluggish transmitter response to either increasing or decreasing test pressures during calibrations activities."**

Response

d) As previously stated, Fermi personnel are aware of the need to look for sluggish response and have been doing so since the start of RFO1. This was presented to the I&C personnel in the I&C continued training session for the 3rd quarter 1989. In addition, the surveillance performance form (SPF) provided with the calibration procedure includes a reminder for the technician to specifically look for sluggish output or time delayed output.

e) **"Development and implementation of a program to detect changes in process noise."**

Response

e) Detroit Edison is very interested in this detection methodology, but feels that insufficient development progress has been made and therefore does not have plans to use it as an evaluation/monitoring technique at this time.

f) **"Development and application to transmitters identified as having exhibited symptoms indicative of loss of fill-oil, of an appropriate operability acceptance criteria. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria should be addressed in accordance with the applicable technical specification.**

Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria and are not addressed in the technical specifications should be replaced at the earliest appropriate opportunity."

Response

f) The acceptance criteria for a transmitter that exhibits symptoms of oil loss is the anticipated remaining "oil loss lifetime" of that transmitter. Should a transmitter show symptoms of oil loss the "oil loss lifetime" would be determined by the procedure outlined in Rosemount Technical Bulletin No. 4 using the trend data as described in "b" above and the maximum allowable cumulative drift figures found in Table A1, Bulletin No. 4. The transmitter's remaining operability time would be considered as the difference between "oil loss lifetime" and the transmitter's time in service. Replacement of the transmitter will be scheduled with consideration of the remaining operability time, plant conditions needed for replacement, any applicable technical specification requirement and any safety system application.

Required Action per Bulletin 90-01:

5. **"Document and maintain in accordance with existing plant procedures a basis for continued plant operation covering the time period from the present until such time that the Model 1153 Series B, 1153 Series D, and Model 1154 transmitters from the manufacturing lots that have been identified by Rosemount as having a high failure fraction due to loss of fill-oil in use in the reactor protection or engineered safety features actuation systems can be replaced. In addition, while performing the actions requested above, addressees may identify transmitters exhibiting symptoms indicative of loss of fill-oil that do not conform to the established operability acceptance criteria and are not addressed in the technical specifications. As these transmitters are identified, this basis for continued plant operation should be updated to address these transmitters covering the time period from the time these transmitters are identified until such time that these transmitters can be replaced. When developing and updating this basis for continued plant operation, addressees may wish to consider transmitter diversity and redundancy, diverse trip functions (a separate trip function that may also provide a corresponding trip signal), special system and/or component tests, or (if necessary) immediate replacement of certain suspect transmitters."**

Response

5. The nineteen (19) currently installed suspect lot transmitters have been evaluated in accordance with procedure NEP-OP1-01, "Engineering Functional Analysis," and continued operation has been justified. Documentation of these evaluations is being maintained in accordance with the procedure. As previously discussed, degraded or degrading transmitters will be identified in the corrective action and evaluation process via a DER and an appropriate evaluation will be conducted.

Required Action per Bulletin 90-01:

Rosemount Model 1153 Series B, Model 1153 Series D and Model 1154 transmitters that are believed to have exhibited symptoms indicative of loss of fill-oil or have been confirmed to have a loss of fill-oil shall be identified as to: (1) the indicated manufacturer, (2) the model number, (3) the system the transmitter was utilized in, (4) the approximate amount of time at pressure, (5) corrective actions taken and,

(6) the disposition (e.g., returned to vendor for analysis.) This should include Model 1153 Series B, Model 1153 Series D and Model 1154 transmitters manufactured after July 11, 1989.

Response

Four (4) Rosemount manufactured transmitters have been confirmed by Rosemount to have suffered oil loss. Three (3) of the four (4) transmitters are confirmed to be subject to Rosemount's 10 CFR Part 21 notification, the remaining transmitter's oil loss was defined by Rosemount as being a random failure of the oil fill tube seal. Specific information requested by the bulletin is listed on the following page. In general, all four (4) transmitters were determined to be operable through evaluation of the calibration data obtained during surveillance testing

PIS NUMBER	SYSTEM	MODEL #	APPROXIMATE TIME AT 1000 PSIG	DER #	CORRECTIVE ACTION TAKEN	DISPOSITION
B31N114A (SN 411230)	REACTOR RECIRCULATION	1153DB4RC	23.5 MONTHS	89-0797	TRANSMITTER REPLACED	SEE NOTE 1
B21N091C (SN 405590)	NUCLEAR BOILER	1153DB5PA	27.5 MONTHS	89-1231	TRANSMITTER REPLACED	SEE NOTE 1
B21N091A (SN 405588)	NUCLEAR BOILER	1153DB5PA	27.5 MONTHS	89-1238	TRANSMITTER REPLACED	SEE NOTE 1
B31N110C (SN 410939)	REACTOR RECIRCULATION	1153DB4RC	27.5 MONTHS	90-0290	SEE NOTE 2	SEE NOTE 3

NOTES: 1 - RETURNED TO ROSEMOUNT FOR CONFIRMATORY TESTS AND REFURBISHMENT. THE TRANSMITTER WAS SUBSEQUENTLY CONFIRMED TO HAVE SUFFERED OIL LOSS DUE TO GLASS TO METAL SEAL FAILURE PER THEIR 10 CFR PART 21 NOTIFICATION.

2 - AFTER THIS TRANSMITTER WAS REPLACED (AS PART OF THE COMMON SENSING LINE - RACK IMPROVEMENT PROJECT, EDP-6740) OIL LOSS SYMPTOMS WERE FOUND DURING A FULL CELL RANGE TEST CONDUCTED PRIOR TO SENDING THE UNIT BACK TO ROSEMOUNT FOR REFURBISHMENT.

3 - RETURNED TO ROSEMOUNT FOR CONFIRMATORY TESTS AND REFURBISHMENT. THE TRANSMITTER WAS SUBSEQUENTLY CONFIRMED TO HAVE SUFFERED OIL LOSS. HOWEVER, THE OIL WAS LOST FROM A BROKEN OIL SEAL ON A OIL FILL TUBE, NOT A GLASS TO METAL SEAL FAILURE.

4 - TRANSMITTER B21N080D (SN 410934) WAS REPORTED IN REFERENCE 4 AS A SUSPECTED FAILURE. SUBSEQUENT TESTING BY ROSEMOUNT DETERMINED THAT THIS TRANSMITTER DID NOT SUFFER FROM AN OIL LOSS. THE TRANSMITTER WAS REFURBISHED AND RETURNED TO STOCK AS A SPARE.

PIS NUMBER	SYSTEM	MODEL #	APPROXIMATE TIME AT 1000 PSIG	DER #	CORRECTIVE ACTION TAKEN	DISPOSITION
B31N114A (SN 411230)	REACTOR RECIRCULATION	1153DB4RC	23.5 MONTHS	89-0797	TRANSMITTER REPLACED	SEE NOTE 1
B21N091C (SN 405590)	NUCLEAR BOILER	1153DB5PA	27.5 MONTHS	89-1231	TRANSMITTER REPLACED	SEE NOTE 1
B21N091A (SN 405588)	NUCLEAR BOILER	1153DB5PA	27.5 MONTHS	89-1238	TRANSMITTER REPLACED	SEE NOTE 1
B31N110C (SN 410939)	REACTOR RECIRCULATION	1153DB4RC	27.5 MONTHS	90-0290	SEE NOTE 2	SEE NOTE 3

NOTES: 1 - RETURNED TO ROSEMOUNT FOR CONFIRMATORY TESTS AND REFURBISHMENT. THE TRANSMITTER WAS SUBSEQUENTLY CONFIRMED TO HAVE SUFFERED OIL LOSS DUE TO GLASS TO METAL SEAL FAILURE PER THEIR 10 CFR PART 21 NOTIFICATION.

2 - AFTER THIS TRANSMITTER WAS REPLACED (AS PART OF THE COMMON SENSING LINE - RACK IMPROVEMENT PROJECT, EDP-6740) OIL LOSS SYMPTOMS WERE FOUND DURING A FULL CELL RANGE TEST CONDUCTED PRIOR TO SENDING THE UNIT BACK TO ROSEMOUNT FOR REFURBISHMENT.

3 - RETURNED TO ROSEMOUNT FOR CONFIRMATORY TESTS AND REFURBISHMENT. THE TRANSMITTER WAS SUBSEQUENTLY CONFIRMED TO HAVE SUFFERED OIL LOSS. HOWEVER, THE OIL WAS LOST FROM A BROKEN OIL SEAL ON A OIL FILL TUBE, NOT A GLASS TO METAL SEAL FAILURE.

4 - TRANSMITTER B21N080D (SN 410934) WAS REPORTED IN REFERENCE 4 AS A SUSPECTED FAILURE. SUBSEQUENT TESTING BY ROSEMOUNT DETERMINED THAT THIS TRANSMITTER DID NOT SUFFER FROM AN OIL LOSS. THE TRANSMITTER WAS REFURBISHED AND RETURNED TO STOCK AS A SPARE.