

# NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY  
WESTERN MASSACHUSETTS ELECTRIC COMPANY  
HARTFORD WATER POWER COMPANY  
NORTHEAST UTILITIES SERVICE COMPANY  
NORTHEAST NUCLEAR ENERGY COMPANY

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(203) 665-5000

February 2, 1993

Docket No. 50-423  
B14359

Re: NRC Bulletin 90-01

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3  
Revised Response to NRC Bulletin No. 90-01  
Loss of Fill-Oil in Transmitters Manufactured by Rosemount

The NRC Bulletin 90-01<sup>(1)</sup> discusses problems with Rosemount transmitters which could potentially lead to failures which would be difficult to detect during normal operation. NRC Bulletin 90-01 also requested licensees to perform certain actions, to provide confirmation of completion of those actions, and to provide information on certain models of installed Rosemount transmitters. In letters dated July 3, 1990,<sup>(2)</sup> and March 26, 1991,<sup>(3)</sup> Northeast Nuclear Energy Company provided the requested information.

Based on our surveillance program and to provide clarification to Table 1 of the initial submittals dated July 3, 1990, and March 26, 1991, it is necessary to revise our response to Item 4b of NRC Bulletin 90-01. Accordingly, the revised response to Item 4 (including Item 4b) is included in Attachment 1, and the revised Table 1 is attached to this submittal. A vertical line is added in the right-hand margin to denote the revision to the original response.

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- (1) C. E. Rossi letter to Licensees, "NRC Bulletin 90-01, Loss of Fill-oil in Transmitters Manufactured by Rosemount," dated March 9, 1990.
  - (2) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "NRC Bulletin 90-01, Loss of Fill-oil in Transmitters Manufactured by Rosemount," dated July 3, 1990.
  - (3) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "NRC Bulletin 90-01, Loss of Fill-oil in Transmitters Manufactured by Rosemount," dated March 26, 1991.

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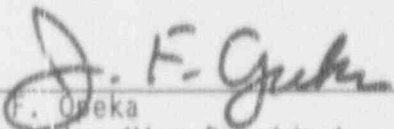
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If there are any questions, please do not hesitate to contact my staff directly.

Very truly yours,

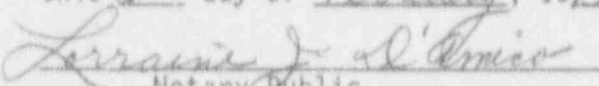
NORTHEAST NUCLEAR ENERGY COMPANY

  
J. F. Orsika  
Executive Vice President

cc: T. T. Martin, Region I Administrator  
V. L. Rooney, NRC Project Manager, Millstone Unit No. 3  
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2,  
and 3

Subscribed and sworn to before me

this 2<sup>nd</sup> day of February, 1993

  
Notary Public

Date Commission Expires: 3/31/93

Docket No. 50-423  
B14359

Attachment 1

Millstone Nuclear Power Station, Unit No. 3

Revised Response to Item 4 of Bulletin 90-01 and Table 1

February 1993

Revised Response to Item 4 of Bulletin 90-01

Item 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;
- b) Enhanced transmitter monitoring to identify sustained transmitter drift;
- c) Review of transmitter performance following planned or unplanned plant transients or tests to identify sluggish transmitter response;
- d) Enhanced awareness of sluggish transmitter response to either increasing or decreasing test pressures during calibration activities;
- e) Development and implementation of a program to detect changes in process noise; and
- f) Development and application of 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

The enhanced surveillance program for the installed Rosemount transmitters has been implemented. This program addresses the considerations of Reference (1) as follows:

- a) Instrumentation and Controls (I&C) 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. I&C Department personnel have been on distribution for all pertinent information pertaining to Rosemount technical bulletins, and this information has been included in the required reading program in the I&C Department.

Training of I&C and Operations personnel was completed by July 1990. This training includes information on the symptoms exhibited by a transmitter that is losing fill-oil and the need for prompt identification of such transmitters.

- b) The enhanced surveillance program includes periodic checks of the transmitters identified in Table 1 and the review of unmonitored transmitter calibration records for these transmitters to look for transmitter drift, as discussed in Item 3 above. The transmitters providing an input to the RPS and ESF also provide input to the Plant Computer System (PCS) and will be checked on a periodic basis using PCS data.

The frequency of monitoring for loss of fill-oil is determined by the time-pressure product of the installed transmitters. As a minimum, all Rosemount Model 1153 and 1154 transmitters will be monitored at an interval not to exceed 4000 PSI-MONTHS. With this monitoring interval, any loss of fill-oil will be detected prior to the failure of the transmitter.

Channel checks will continue to be done on a shift basis as presently required.

Transmitters that do not provide input to the PCS will be checked at the frequency determined by the 4000 PSI-MONTH criterion. The only exceptions to this are transmitters 3SIH-FT917, 3HVC\*PT73A and 3HVC\*PT73B, and 3RCS\*PT403A. 3SIH-FT917 is to monitor charging pump discharge flow during safety injection. 3HVC\*PT73A and 3HVC\*PT73B are used to monitor air receiver tank pressure for the control building ventilation system. 3RCS\*PT403A provides a signal to actuate the cold overpressure protection system and a permissive signal to the residual heat removal system suction valves to open. In addition, 3RCS\*PT403A provides an analog input to the subcooling margin monitor. These transmitters have been in service for greater than 80 PSI-MONTHS and have experienced no drift which would indicate either a defect or a loss of oil from the sensing cell. This monitoring program data and the data from transmitter calibrations will be trended to determine if any of these transmitters are exhibiting drift which may be an indication of a possible fill-oil loss.

For most of the channels, drift will be detected by trending the deviation in the output of a transmitter from a known value or the average output of redundant transmitters.

- c) Based on the information from Rosemount, monitoring for drift should give the first indication of failure long before sluggish response in a transient would be identified. Therefore, the enhanced surveillance program does not include a review following transients.

- d) The I&C technicians watch for sluggish response when calibrating Rosemount transmitters. During the calibration, the technician observes the qualitative time response performance due to a rapid change in the input. Based on the Rosemount literature, a quantitative response time test during routine calibration is not required since the degradation in response time should be noticeable to the technician. However, a quantitative time response test will be performed to verify operability of a transmitter identified by the trending program or calibration data as discussed in the response to Item 3 above or that exhibits sluggish response during the test of the qualitative response time.
- e) The primary method of detection of a potential loss of fill-oil will be the trending of the performance of the instrument channel, that is, the drift observed during the periodic checks and the calibrations. Based on the information from Rosemount, monitoring for drift should give the first indication of failure before a decrease in transmitter noise level amplitude would be identified. Therefore, the noise level amplitude or variance may be used as confirmatory information to assist in diagnosis of the loss of oil.
- f) The operability acceptance criteria are as identified in the response to Item 3 above. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that are included in the technical specifications and that do not conform to the operability acceptance criteria will 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 will be replaced at the earliest appropriate opportunity. Those transmitters that exhibit the symptoms indicative of a possible loss of fill-oil, but that satisfy the operability acceptance criteria, will be evaluated on a case-by-case basis to determine a specific course of action.



NRC Bulletin  
90-01  
Table 1  
Millstone Unit

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TRANSMITTER TAG #	FUNCTION	RANGE	SUSPECT CODE LOT	STATIC PRESSURE	TECH SPEC	SURVEILLANCE FREQUENCY	SURVEILLANCE METHOD
3CCP*FT67A	RHR OUTLET FLOW	5	No	<100*	No	Refueling	RC
3CCP*FT67B	RHR OUTLET FLOW	5	No	<100*	No	Refueling	RC
3CCP*FT178A	RCP SEAL H2O	5	No	<100	No	Refueling	RC
3CCP*FT178B	RCP SEAL H2O	5	No	<100	No	Refueling	RC
3CCP*FT178C	RCP SEAL H2O	5	No	<100	No	Refueling	RC
3CCP*FT178D	RCP SEAL H2O	5	No	<100	No	Refueling	RC
3CHS*LT102	BAT 5A LEVEL	5	Yes	<100	No	Refueling	RC
3CHS*LT104	BAT 5A LEVEL	5	Yes	<100	No	Refueling	RC
3CHS*LT105	BAT 5B LEVEL	5	No	<100	No	Refueling	RC
3CHS*LT106	BAT 5B LEVEL	5	Yes	<100	No	Refueling	RC
3CHS-FT121	CHARGING FLOW	5	No	2250	No	3 Times/60days	CM*,RC
3CHS-FT132	LETDOWN FLOW	5	Yes	400	No	3 Times/60days	CM*,RC
3CHS-FT142	RCP SEAL H2O	4	No	2250	No	3 Times/60days	CM*,RC
3CHS-FT143	RCP SEAL H2O	4	Yes	2250	No	3 Times/60days	CM*,RC
3CHS-FT144	RCP SEAL H2O	4	Yes	2250	No	3 Times/60days	CM*,RC
3CHS-FT145	RCP SEAL H2O	4	Yes	2250	No	3 Times/60days	CM*,RC
3CHS-LT112	VCT LEVEL IND	4	No	<100	No	Refueling	RC
3CHS-LT185	VCT LEVEL CTL	4	No	<100	No	Refueling	RC
3FWA*LT20A	DWST LEVEL	5	No	<100	Yes	Once Per 18 Months	RC
3FWA*LT20B	DWST LEVEL	5	No	<100	Yes	Once Per 18 Months	RC

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Table 1  
Millstone Unit  
3

TRANSMITTER TAG #	FUNCTION	RANGE CODE	SUSPECT LOT	STATIC PRESSURE	TECH SPEC	SURVEILLANCE FREQUENCY	SURVEILLANCE METHOD
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3FWA*FT33A	AUX FEED IND	5	No	<100*	Yes	Once Per 18 Months	RC
3FWA*FT33B	AUX FEED IND	5	No	<100*	Yes	Once Per 18 Months	RC
3FWA*FT33C	AUX FEED IND	5	No	<100*	Yes	Once Per 18 Months	RC
3FWA*FT33D	AUX FEED IND	5	No	<100*	Yes	Once Per 18 Months	RC
3FWA*FT51A	AUX FEED IND	5	No	<100*	Yes	Once Per 18 Months	RC
3FWA*FT51B	AUX FEED IND	5	No	<100*	Yes	Once Per 18 Months	RC
3FWA*FT51C	AUX FEED IND	5	No	<100*	Yes	Once Per 18 Months	RC
3FWA*FT51D	AUX FEED IND	5	No	<100*	Yes	Once Per 18 Months	RC
3FWS*LT551	STM GEN LVL TRIP	4	No	1000	Yes	3 Times/60days	CM
3FWS*LT552	STM GEN LVL TRIP	4	No	1000	Yes	3 Times/60days	CM
3FWS*LT553	STM GEN LVL TRIP	4	No	1000	Yes	3 Times/60days	CM
3FWS*LT554	STM GEN LVL TRIP	4	No	1000	Yes	3 Times/60days	CM
3HVC*PT73A	AIR STORAGE	9	No	3000	No	Refueling	RC
3HVC*PT73B	AIR STORAGE	9	No	3000	No	Refueling	RC
3HVK*PDT32A	CHILLED H2O	6	No	<100	No	Refueling	RC
3HVK*PDT32B	CHILLED H2O	6	No	<100	No	Refueling	RC
3HVR*PDT208	AUX BLDG FLT EXH	3	No	<100	No	Refueling	RC
3HVR*PDT208	AUX BLDG FLT EXH	3	No	<100	No	Refueling	RC
3HVR*PT104A	AUX BLDG INLT	3	No	<100	No	Refueling	RC
3HVR*PT104B	AUX BLDG INLT	3	No	<100	No	Refueling	RC



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Table 1  
Millstone Unit

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TRANSMITTER TAG #	FUNCTION	RANGE SUSPECT CODE LOT	STATIC PRESSURE	TECH SPEC	SURVEILLANCE FREQUENCY	SURVEILLANCE METHOD
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3LMS*PT24A	CTMT PRESS WR	7	No	<100	Yes	3 Times/60days	CM
3LMS*PT24B	CTMT PRESS WR	7	No	<100	Yes	3 Times/60days	CM
3LMS*PT43A	CTMT PRESS LR	5	No	<100	Yes	Once Per 18 Months	RC
3LMS*PT43B	CTMT PRESS LR	5	Yes	<100	Yes	Once Per 18 Months	RC
3LMS*PT934	CTMT PRESS (ESF)	6	No	<100	Yes	3 Times/60days	CM
3LMS*PT935	CTMT PRESS (ESF)	6	No	<100	Yes	3 Times/60days	CM
3LMS*PT936	CTMT PRESS (ESF)	6	No	<100	Yes	3 Times/60days	CM
3LMS*PT937	CTMT PRESS (ESF)	6	No	<100	Yes	3 Times/60days	CM
3MSS*PT514	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT515	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT516	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT524	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT525	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT526	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT534	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT535	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT536	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT544	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT545	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM
3MSS*PT546	SG LP TRIP (RPS)	9	No	1000	Yes	3 Times/60days	CM

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Table 1  
Millstone Unit

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TRANSMITTER TAG #	FUNCTION	RANGE CODE	SUSPECT LOT	STATIC PRESSURE	TECH SPEC	SURVEILLANCE FREQUENCY	SURVEILLANCE METHOD
3MSS*PT505	TURB 1ST STG	8	No	650	Yes	3 Times/60days	CM
3MSS*PT506	TURB 1ST STG	8	No	650	Yes	3 Times/60days	CM
3QSS*LT930	RWST LEVEL	6	No	<100	Yes	3 Times/60days	CM
3QSS*LT931	RWST LEVEL	6	No	<100	Yes	3 Times/60days	CM
3QSS*LT932	RWST LEVEL	6	No	<100	Yes	3 Times/60days	CM
3QSS*LT933	RWST LEVEL	6	No	<100	Yes	Once Per 18 Months	RC
3RCS*FT414	RCS FLOW TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*FT415	RCS FLOW TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*FT416	RCS FLOW TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*FT424	RCS FLOW TRIP	5	Yes	2250	Yes	3 Times/60days	CM
3RCS*FT425	RCS FLOW TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*FT426	RCS FLOW TRIP	5	Yes	2250	Yes	3 Times/60days	CM
3RCS*FT434	RCS FLOW TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*FT435	RCS FLOW TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*FT436	RCS FLOW TRIP	5	Yes	2250	Yes	3 Times/60days	CM
3RCS*FT444	RCS FLOW TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*FT445	RCS FLOW TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*FT446	RCS FLOW TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*LT460	PZR HI LVL TRIP	5	No	2250	Yes	3 Times/60days	CM
3RCS*LT461	PZR HI LVL TRIP	5	Yes	2250	Yes	3 Times/60days	CM

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Table 1  
Millstone Unit

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TRANSMITTER TAG #	FUNCTION	RANGE SUSPECT CODE LOT	STATIC PRESSURE	TECH SPEC	SURVEILLANCE FREQUENCY	SURVEILLANCE METHOD
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3RCS*PT403	RCS WR PRESS	9	No	2250	Yes	3 Times/60days	CM
3RCS*PT403A	RCS WR PRESS	9	Yes	2250	Yes	Once Per 18 Months	RC
3RCS*PT457	PZR PRESS	9	No	2250	Yes	3 Times/60days	CM
3RCS*PT458	PZR PRESS	9	No	2250	Yes	3 Times/60days	CM
3RCS*PT49	RCS EXT RANGE	10	No	2250	No	2 Times/60days	RC,CC**
3RCS*PT50	RCS EXT RANGE	10	No	2250	No	2 Times/60days	RC,CC**
3RHS-FT618	RHR HX OUT FLOW	6	No	<100*	No	Refueling	RC
3RHS-FT619	RHR HX OUT FLOW	6	No	<100*	No	Refueling	RC
3RSS*FT38A	CTMT RECIRC	4	No	<100*	No	Refueling	RC
3RSS*FT38B	CTMT RECIRC	4	No	<100*	No	Refueling	RC
3RSS*FT40C	CTMT RECIRC	4	No	<100*	No	Refueling	RC
3RSS*FT40D	CTMT RECIRC	4	No	<100*	No	Refueling	RC
3RSS*PT25A	CTMT RCR PMP	7	No	<100*	No	Refueling	RC
3RSS*PT25B	CTMT RCR PMP	7	No	<100*	No	Refueling	RC
3RSS*PT25C	CTMT RCR PMP	7	No	<100*	No	Refueling	RC
3RSS*PT25D	CTMT RCR PMP	7	No	<100*	No	Refueling	RC
3SIH-FT917	CHG PUMP DISCH	7	No	2250	No	Refueling	RC
3SIH-FT918	SI-A PUMP DISC	6	No	<100*	No	Refueling	RC
3SIH-FT922	SI-B PUMP DISC	6	No	<100*	No	Refueling	RC
3SIL-PT961	SI TANK - A PRES	8	No	650	Yes	Once Per 18 Months	RC,CC***

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Table 1  
Millstone Unit  
3

TRANSMITTER TAG #	FUNCTION	RANGE CODE	SUSPECT LOT	STATIC PRESSURE	TECH SPEC	SURVEILLANCE FREQUENCY	SURVEILLANCE METHOD
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3SIL-PT963	SI TANK - B PRES	8	No	650	Yes	Once Per 18 Months	RC,CC***
3SIL-PT965	SI TANK - C PRES	8	No	650	Yes	Once Per 18 Months	RC,CC***
3SIL-PT967	SI TANK - D PRES	8	No	650	Yes	Once Per 18 Months	RC,CC***
3SWP-FT59A	CTMT RECR	5	Yes	<100*	No	Refueling	RC
3SWP-FT59B	CTMT RECR	5	Yes	<100*	No	Refueling	RC
3SWP-FT59C	CTMT RECR	5	No	<100*	No	Refueling	RC
3SWP-FT59D	CTMT RECR	5	No	<100*	No	Refueling	RC

# NRC Bulletin

90-01

Table 1

Millstone Unit

2

TRANSMITTER TAG #	FUNCTION	RANGE CODE	STATUS LOT	STATIC PRESSURE	TECH SPEC	SURVEILLANCE FREQUENCY	SURVEILLANCE METHOD
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LT-110X	PZR LEVEL	5	No	2250	Yes	3 Times/60days	RC, OFIS
PT-103-1	PZR PRESSURE	9	No	2250	Yes	3 Times/60days	RC, OFIS
LT-110Y	PZR LEVEL	5	Yes	2250	Yes	3 Times/60days	RC, OFIS



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**90-91**  
**Millstone Units 2&3**  
**Notes**

(\*) For systems normally in standby and depressurized, less than 100 psi is stated. According to Rosemount, transmitters which normally operate at static pressures of less than 250 psig have a low probability of failure.

(RC) Normal refueling calibration with cumulative drift monitored and recorded. This applies only to those transmitters not monitored for drift by the computer monitoring program.

(CM\*) These six transmitters are monitored by the computer monitoring program, however no redundancy is provided and therefore drift can not be monitored. The variance of the signal will be monitored by the program at the specified frequency.

(CM) Computerized monitoring system is implemented to track both drift and drift rate. Data will be obtained and analyzed at a frequency of at least three times every 60 days with a 25% tolerance in modes 1 & 2.

(CC\*\*\*) Transmitters 3SIL-PT961, PT963, PT965,& PT967 monitor the static pressure in each of the four safety injection tanks. Should a loss of oil failure occur in any of these transmitters, it will be readily detected by the periodic channel checks comparing the outputs to redundant transmitters.

(OFIS) Millstone Unit 2 has three Rosemount transmitters installed (LT-110x, LT110y and LT-103-1) used to monitor pressurizer level and pressure respectively. These transmitters will be monitored at a minimum frequency of 3 times/60 days using Offsite Facility Information System (OFIS). Utilizing data from OFIS, a loss of oil from these transmitters will be detected prior to actual failure.

(REFUELING ) These transmitters are not required by technical specifications and surveillance frequency will be conducted during refueling.