Part 21 (PAR) Event # 50791

Rep Org:	THERMO GAMMA-METRICS LLC	**Notification Date / Time:**	02/06/2015 13:17 (EST)
Supplier:	THERMO GAMMA-METRICS LLC	**Event Date / Time:**	02/06/2015 (PST)
		Last Modification:	02/06/2015
Region:	4	**Docket #:**	
City:	SAN DIEGO	**Agreement State:**	Yes
County:		**License #:**	
State:	CA		

NRC Notified by:	CLARK ARTAUD	**Notifications:**	ANNE DeFRANCISCO	R1DO
HQ Ops Officer:	DANIEL MILLS		ROBERT HAAG	R2DO
Emergency Class:	NON EMERGENCY		LAURA KOZAK	R3DO
10 CFR Section:			GEOFFREY MILLER	R4DO
21.21(d)(3)(i)	DEFECTS AND NONCOMPLIANCE		PART 21/50.55 REACTORS	EMAIL

PART 21 REPORT - SHUTDOWN MARGIN MONITOR ENVIRONMENTAL QUALIFICATION NONCOMPLIANCE

The following is an excerpt of a report received from the vendor via email:

"A deviation has been identified in the SDMM supplied by Thermo Gamma-Metrics LLC. The SDMM will fail during conditions of simultaneous high temperature and high humidity less than the values reported in Qualification Test Report (QTR) 010. Testing has indicated the SDMM would not properly operate above a certain value of moisture content corresponding to a dew point of around 128°F. QTR 010 listed qualified temperature and humidity conditions corresponding to a dew point of around 136°F."

The vendor has issued a revised qualification test report which documents the revised qualified conditions for the affected SDMMs.

The following plants are potentially affected: ANO U2; Millstone U3; Prairie Island U1 & U2; Seabrook U1 & U2; South Texas U1 & U2; St. Lucie U1; Catawba U1 & U2; McGuire U1 & U2; Salem U1 & U2; Calvert Cliffs U1 & U2; Almaraz U1 & U2; Sequoyah U1 & U2; Watts Bar U1 & U2; Vogtle U1 & U2; Byron U1 & U2; Ringhals U2, U3 & U4.

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IE19
NRR

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February 6, 2015

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: 10 CFR Part 21 Notification of Shutdown Margin Monitor Noncompliance

Enclosure: (1) Report Notification Information

This letter provides information concerning an evaluation performed by Thermo Gamma-Metrics LLC, a part of Thermo Fisher Scientific, regarding potential noncompliance of our Shutdown Margin Monitors.

Based upon the evaluation, Thermo Gamma-Metrics has determined that a Reportable Condition under 10 CFR Part 21 exists for plants listed herein. The information contained in this document informs the NRC of the conclusions and recommendations derived from Thermo Gamma-Metrics' evaluation of this issue.

Sincerely,

Clark J. Artaud
Global Commercial Director
Nuclear Market

Report Notification Information

(i) Name and address of the individual or individuals informing the Commission.

Clark J. Artaud
Global Commercial Director

Robert E. Barnes
Product Line Manager

Jeffery S. Tuetken
Senior Electrical Engineer

Thermo Gamma-Metrics LLC
10010 Mesa Rim Road
San Diego, CA 92121

(ii) Identification of the facility, the activity, or the basic component supplied for such facility which fails to comply or contains a defect.

Shutdown Margin Monitors (SDMM) are installed at the following plants:

	SDMM Part Numbers	
Site Unit	Customer	Generic
ANO Unit 2	900010-101	200171-101
Millstone 3	900013-102	200978-102
Prairie Island 1	900029-101	200171-101
Prairie Island 2	900029-101	200171-101
Seabrook 1	900141-101	200171-101
Seabrook 2	900141-101	200171-101
South Texas 1	900063-101	200171-101
South Texas 2	900063-101	200171-101
St. Lucie 1	900094-101	200171-101
Catawba 1	900120-101	200171-101
Catawba 2	900120-101	200171-101
Catawba 1	900532-101	202051-103
Catawba 2	900532-101	202051-103
McGuire 1	900121-101	200171-101
McGuire 2	900121-101	200171-101
McGuire 1	900521-101	202051-102
McGuire 2	900521-101	202051-102
Salem 1	900135-101	200171-101
Salem 2	900135-101	200171-101
Calvert Cliffs 1	900158-101	200171-101

Calvert Cliffs 2	900158-101	200171-101
Almaraz 1	900280-101	200972-103
Almaraz 2	900280-101	200972-103
Sequoyah 1	900185-101	200972-102
Sequoyah 2	900185-101	200972-102
Watts Bar 1	900238-101	200972-102
Watts Bar 2	900602-101	202646-101
Vogtle 1	900414-101	201878-101
Vogtle 2	900414-101	201878-101
Byron 1	900448-101	202051-101
Byron 2	900448-101	202051-101
Ringhals 2	900265-102	200978-103
Ringhals 3	900265-101	201253-101
Ringhals 4	900265-101	201253-101

(iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.

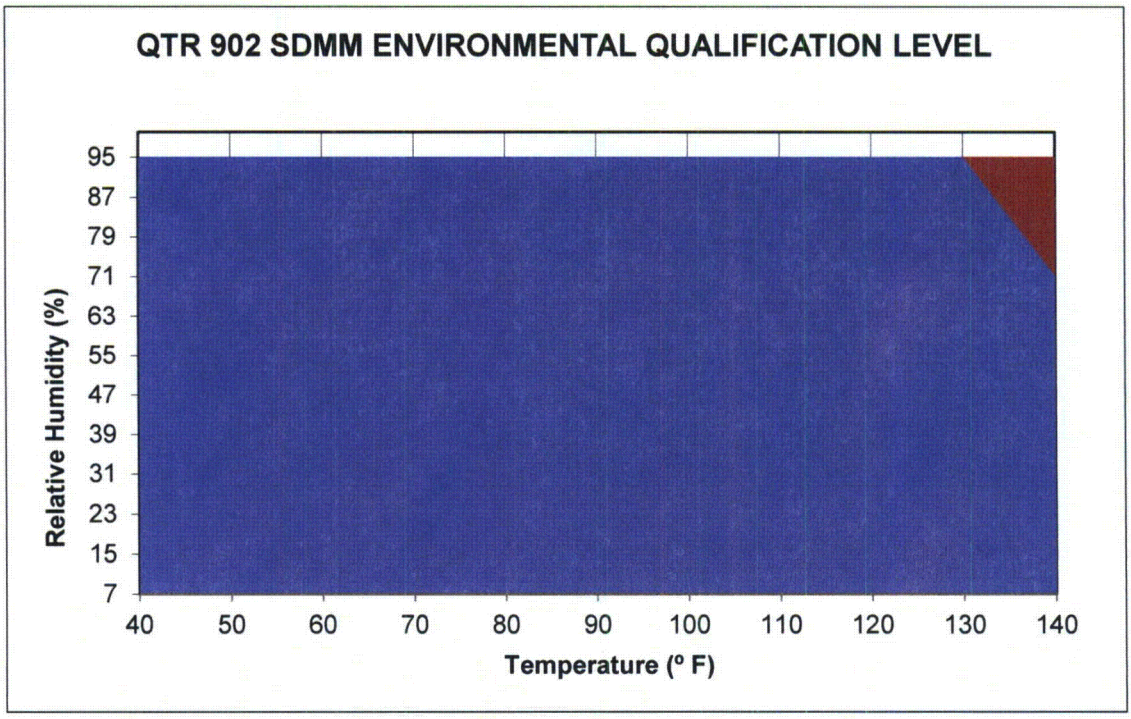
The SDMMs listed above were designed and fabricated by Thermo Gamma-Metrics.

(iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.

A deviation has been identified in the SDMM supplied by Thermo Gamma-Metrics LLC, a part of Thermo Fisher Scientific, to nuclear power plants. Affected part numbers and plants are provided above in sub-paragraph (ii). The SDMM will fail during conditions of simultaneous high temperature and high humidity less than the values reported in Qualification Test Report (QTR) 010. Testing has indicated the SDMM would not properly operate above a certain value of moisture content corresponding to a dew point of around 128°F. QTR 010 listed qualified temperature and humidity conditions corresponding to a dew point of around 136°F.

The table and corresponding chart below summarize the SDMM revised qualified conditions. Further details are provided in QTR 902.

Parameter	Qualified Conditions
Pressure (psig)	Atmospheric
Temperature (°F)	40 – 140° F
	130° F @ 95% RH
Relative Humidity (% saturation)	7 – 95%
	71% @ 140° F
Input: VAC Hz	 104 – 133 VAC 53-67 Hz



Thermo Gamma-Metrics cannot determine by itself if the deviation represents a substantial safety hazard for those power plants using the SDMM in a safety related application. The SDMM, typically installed in the Control Room, may be used to provide reactor protection for a boron dilution event or high flux at shutdown condition. The failure mode is for the SDMM to 1) display an error code in the window usually displaying neutron counts per second, ***and*** 2) generate a high neutron counts alarm. This is considered the fail safe condition as it would cause some plants to increase the reactor shutdown margin.

(v) The date on which the information of such defect or failure to comply was obtained.

Thermo Gamma-Metrics Engineers identified the qualification level deviation while performing environmental qualification on a replacement component used in the Shutdown Margin Monitor.

A Potential Reportable Condition Evaluation in accordance with 10 CFR Part 21 was initiated on December 8, 2014 based on our Corrective Action Request (CAR) 14-046.

(vi) In the case of a basic component which contains a defect or fails to comply, the number and location of these components in use at, supplied for, being supplied for, or may be supplied for, manufactured, or being manufactured for one or more facilities or activities subject to the regulations in this part.

See sub-paragraph (ii).

(vii) The corrective action, which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.

The corrective action is for Thermo Gamma-Metrics to retest and re-qualify the SDMM for the conditions it will operate properly. Qualification Test Report (QTR) 902 documents this effort and the qualified conditions as provided in the table and chart in sub-paragraph (iv). There is no effort underway to modify the design of the SDMM to meet the environmental conditions of QTR 010. QTR 902 is available now.

Thermo Gamma-Metrics is notifying plants with SDMMs (to be completed by Feb. 6).

(viii) Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.

All plants using a SDMM should review and hold QTR 902 in addition to QTR 010. The plants should verify the qualified conditions envelope the required conditions for the location where the SDMM is used. Based on the plant specifications we have reviewed, we believe that the updated (new) environmental qualifications of the SDMM will still overlap plant's mild (control room) environment maximum (abnormal) conditions.

It is not likely any plant has experienced this failure of the SDMM under these conditions. First, the environmental conditions in the locations where the SDMM is installed likely has never exceeded a dew point of 100°F. Second, it is even less likely that a boron dilution or high flux at shutdown event occurred during such extreme environmental conditions.

(ix) In the case of an early site permit, the entities to whom an early site permit was transferred.

Not applicable - this is not an early site permit concern.

Should you have any questions regarding this matter, please contact Rob Barnes, Product Line and Service Manager, Thermo Gamma-Metrics LLC, at (858) 882-1356.