



GA Technologies

GA Technologies Inc.
P.O. BOX 81608
SAN DIEGO, CALIFORNIA 92138
(619) 455-3000

January 27, 1983

Mr. Richard De Young, Director
Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Notification Required by 10CFR21
GA Technologies, Inc. Radiation Monitor RM-23

Dear Mr. De Young:

This notification concerns a possible defect in equipment supplied by GA Technologies, Inc. and is provided in compliance with 10CFR21. Verbal notification was made by telephone to your Walnut Creek office on January 24, 1983. The following information is provided in the format of 10CFR21.21(b)(3):

- (i) Name and address of the person informing the Commission.

Dr. Richard A. Dean, Vice President
Power Reactors
GA Technologies, Inc.
P. O. Box 85608
San Diego, CA 92138
(619) 455-2120

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

GA Technologies Inc. RM-23 Module contains a possible defect (described in Item iv) and has been provided to the facilities listed on Attachment I and is assumed to be used by those facilities in Safety-Related Display functions.

The RM-23 is a Remote Safety Related Display Module generally located in the Plant Control Room. The RM-23 acts as a terminal to receive data from the RM-80 processor and display the data in an LED digital output. The RM-80 which performs all storage and processing of data is located in the proximity of the detector. In complete systems the RM-23 is a qualified back-up unit to the Non-Safety RM-11 unit which has a more complete CRT display system. Single Monitor installations do not generally include an RM-11.

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

GA Technologies, Inc., P. O. Box 85608, San Diego, CA 92138.

- (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.

It was determined during initial start-up of the St. Lucie Radiation Monitoring System in December that an RM-23 lock up was occurring intermittently. Lock up refers to a condition in which the LED display freezes at a point in time and is no longer updated to reflect the current data. An analogous situation would be if a digital watch would continue to operate but would not update its output without operator intervention. Initially it was thought that this condition was an anomaly related to the particular installation or application at St. Lucie. However, additional investigation showed that previously reported RM-23 anomalies may have been related to the observed condition. Since the RM-23 can be used as a safety related display, considerable effort is being given at GA to determine if a generic problem exists and to determine its nature.

Preliminary results of this ongoing study indicate the possibility that an inherent design problem exists with the RM-23.

Following is a summary of items related to this situation as currently known.

- The symptom is an intermittent lock up of the safety-related display of the RM-23 which is not annunciated.
- Since the RM-23 is not an intelligent terminal, re-start of the RM-23 (either by switching power on and off or by software control) will eliminate the problem and will not cause the loss of any safety related information.
- GA software personnel have been able to modify software in such a way as to duplicate the systems, however the source of the suspected problem has not yet been isolated.
- Suspicions are that the intermittent lock up is software related.

- Possible weak links in the RM-23 program which could allow such a problem to progress have been corrected.
 - Controlled test of a sample of RM-23s on the factory floor using corrected software has not shown any random occurrences of the above described failure at this time.
- (v) The date on which the information of such defect or failure to comply was obtained.
- January 18, 1983.
- (vi) In the case of a basic component which contains a defect or fails to comply, the number and location of all such components in use at, supplied for, or being supplied for one or more facilities or activities subject to the regulations in this part.
- See Attachment 1.
- (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.

Action being taken by GA Technologies, Electronic Systems Division under direction of W. J. Compas, Division Director:

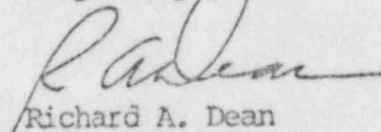
1. Notify the customers of the possibility of this condition and recommend that until the nature of the problem is verified that the customer should corroborate any RM-23 readout by other means available from the GA Radiation Monitoring Systems. Action was initiated on 1/25/83.
 2. Begin testing at GA's facility and in the field to determine extent of problem and how it will be corrected...(See Attachment 2 Test Plan.) Action has been initiated at GA and field test arrangements will be made during week ending 1/31/83.
- (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 Customers are being notified by telephone and by formal correspondence. A copy of the letter being provided is attached.

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If you wish additional information please call Mr. W. J. Compas at
(619) 457-1139.

Very truly yours,


Richard A. Dean
Vice President
Power Reactors

Attachments

cc: Mr. Robert Engelken, Regional Administrator
U.S. Nuclear Regulatory Commission
1900 North California Blvd.
Walnut Creek, CA 94596

bcc: File 3.1.5, Licensing Library (C. R. Fisher)
W. J. Compas
P. E. Bissonnette
J. P. Hogan

ATTACHMENT 1

LIST OF CA RM-23 CUSTOMERS

PLANT SITE	P/N	BASIC QTY.	SPARES	TEST DEVICES RM-23P (NOT A SAFETY RELATED APPLICATION)	STATUS
Canache Peak, Texas Utilities,	357-3000-01	12		3	At CA, will be modified (3 RM-23P at job site)
Gibbs/Hill	357-3000-03	6			
Callaway, Union Elec.,	357-3000-01	8		2	At job site
Wolf Creek, Kansas	357-3000-04	2			
Gas & Electric	357-3000-04	8		2	At job site
SNUPPS - Bechtel	357-3000-04	2		2	At job site
Waterford - Louisiana	357-3000-01	25		2	At job site
Power & Light, EMASCO	357-3000-03	0		1	At job site
Bellefonte, TVA	357-3000-01	54		4	At job site
Byron Bratwood, Commonwealth Edison	357-3000-02	18		1	At job site
Sargent/Lundy, Commonwealth Edison	357-3000-02	18		1	At job site
Marble Hill, Public Service of Indiana	357-3000-02	18		1	In Work
Sargent/Lundy	357-3000-03	22		5	In Work
Seabrook, Public Service of Hampshire United Engineers & Constructors	357-3000-03				
Limerick, Philadelphia Electric Company	357-3000-03	22			In Work (6 Directly on Prod. Structure)
Knothout, Taiwan Power Company	357-3000-03	11	1	6	At job site
Bechtel, Bechtel Carolina Power & Light EMASCO	357-3000-03	53		2	In Work

PLANT SITE	P/N	BASIC QTY. SUPPLIED	SPARES	TEST DEVICES RM-23P (NOT A SAFETY RELATED APPLICATION)	STATUS
Rancho Seco, Sacramento Municipal Utility District	357-3000-03	5		3	At Job Site
Bruce B, Ontario Hydro, APTEC	357-3000-03	1		1	At Job Site, Operatin
St. Lucie, Florida Power & Light, EBASCO	357-3000-03	24			At Job Site, Operatin
Maanshan, Taiwan Power Company, Bechtel, Norwalk	357-3000-03	18		3	At Job Site
Monticello, Northern States Power	357-3000-03	4		1	At Job Site, Operatin WRGM
Indian Pt. 3, Power Authority of the State of New York	357-3000-03	1		1	At Job Site, Operatin
Indian Pt. 2, Con Ed	357-3000-03	1		1	At Job Site
SCNCS 1, Southern California Edison	357-3000-03	1		1	At Job Site
SCNCS 2/3, Southern California Edison	357-3000-03	4		3	At Job Site
LaSalle, Common- wealth Edison	357-3000-03 357-3000-01	2 1		1	At Job Site
Calvert Cliffs, Baltimore Gas & Electric	357-3000-03	2		1	At Job Site
Connecticut Yankee, Northeast Utilities	357-3000-03	1		1	At Job Site
Durawick, Carolina Power & Light	357-3000-03	3		1	At Job Site

PLANT SITE	P/N	BASIC QTY. SUPPLIED	SPARES	TEST DEVICES FM-23P (NOT A SAFETY RELATED APPLICATION)	STATUS
Bezau, NKK Switzerland	357-3000-03	0	1	2	At Job Site
Dow Chemical Co. Midland, Michigan	357-3000-03	0		1	In Work
Zion Station, Commonwealth Edison Co., Sargent/Lundy	357-3000-02	1		-	At Job Site

RM-23 TEST PLAN

PURPOSE:

Under controlled conditions, to detect the occurrence of a field reported RM-23 condition described as "display lock-up". Once this condition occurs, to gather sufficient data to allow for the understanding of its cause(s) and a recommendation for its resolution.

SCOPE:

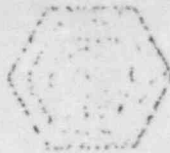
A number of RM-23s will be monitored while communicating with RM-80s for at least two weeks (unless a satisfactory resolution is reached before this time). At the end of the two weeks, a test results review will be held with cognizant representatives of the appropriate departments to evaluate the results obtained and determine a future course of action, if required.

PROCEDURE:

Testing will be conducted at both the factory and in the field. Factory testing will include samples of the two generic RM-23 designs (those with 2716 E-Proms and those with 2732 E-Proms).

The tests will be conducted by monitoring the performance of a number of RM-23s under known temperature conditions - at least one RM-23 will be monitored while interfacing with a millenium microsystem analyzer.

Analysis of the software code will be performed by Computer Engineering concurrently. Testing at GA is already in progress and arrangements for field testing will be made during week ending 1/31/83.



GA Technologies Inc.
PO BOX 87615
SAN DIEGO, CALIFORNIA 92138
(619) 455-3000

ELECTRONIC SYSTEMS DIVISION
January 25, 1983

Mr. Tom DePlonty
Florida Power and Light Company
Unit 2 Construction Warehouse
10 Mi. South of Ft. Pierce Florida on State Highway A1A
Ft. Pierce, FL 33450

Dear Mr. DePlonty:

During start-up of one of our GA Technologies Inc. (GA) Radiation Monitoring Systems at a nuclear plant, an intermittent lock-up of the RM-23 display was reported. This lock-up apparently causes the "Channel Activity" display to freeze at the most recent activity value for each channel. Initially, it was thought that this condition was an anomaly related to the specific installation. However, since the RM-23 is safety related, we conducted further studies, and the results of these studies have led us to suspect that a general design problem with the RM-23 might exist.

GA has determined that this possible defect is reportable according to the requirements of 10CFR21, and the NRC is being notified.

We are reviewing the RM-23 design and conducting additional software tests in the field and at GA to determine if a genuine design problem exists and, if it does, to determine the exact nature of the problem so it can be resolved as quickly as possible. To assist us in this effort, we are requesting that you closely monitor your RM-23 displays and notify us immediately of any suspected display lock-up. This lock-up should be suspected whenever the "Channel Activity" display of a channel remains unchanged for more than a few hours.

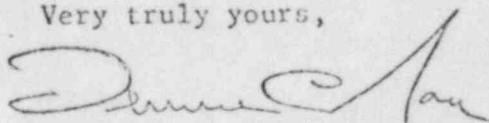
As a temporary precaution until this potential problem is resolved, you should not rely solely on the "Channel Activity" display feature of the RM-23. Instead, verification of the activity reading should be accomplished by one or more of the following methods:

1. Trend recorders connected to the RM-80 (if available). Most Wide-Range Gas Monitors have stripchart recorders connected directly to the RM-80 and would give the best independent verification of data.

2. Analog meters connected to the RM-80 (if available). The RM-80s have DAC outputs available for all channels. If these are connected and used, they will give independent verification of the data.
3. Digital display Channel Items (007) and (008). The RM-23 "Channel Activity" value can be compared with Channel Item (007) non-integrating channel (liquid, gas, or area) activity or Channel Item (008) integrating channel activity (for particulate and iodine channels).

Please direct your notifications of any suspected display lock-ups, as well as any questions you may have regarding this letter, to B. S. Asamoto, at (619) 457-1129, or to me at (619) 457-1126.

Very truly yours,



Dennis C. Nau, Manager
Program Management Department

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