

Part 21 (PAR)

Event # 48798

<b>Rep Org:</b> CURTISS WRIGHT FLOW CONTROL CO.	<b>Notification Date / Time:</b> 03/01/2013 11:40 (EST)
<b>Supplier:</b> CRYDOM, INC	<b>Event Date / Time:</b> 03/01/2013 (EST)
	<b>Last Modification:</b> 03/20/2015
<b>Region:</b> 1	<b>Docket #:</b>
<b>City:</b> DANBURY	<b>Agreement State:</b> No
<b>County:</b>	<b>License #:</b>
<b>State:</b> CT	
<b>NRC Notified by:</b> MICHAEL WEINSTEIN	<b>Notifications:</b> ART BURRITT R1DO
<b>HQ Ops Officer:</b> CHARLES TEAL	RANDY MUSSER R2DO
<b>Emergency Class:</b> NON EMERGENCY	JAMNES CAMERON R3DO
<b>10 CFR Section:</b>	PART 21 GROUP EMAIL
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE	

## PART 21 - DUAL ALARM MODULES THAT MAY CONTAIN FAULTY DIODES IN SINGLE STATE RELAYS

The following is excerpted from a facsimile received from Curtis Wright:

"Crydom Inc., the sole supplier to Scientech of D4D07 Solid State Relays (SSRs) since before 2009, has informed Scientech that SSRs provided with date codes between 0908 (August 2009) and 1004 (April 2010) may have included faulty diodes which resulted in reduced reliability (early failure) of their SSRs.

"The mode of failure is that the module output may not be able to maintain voltage sufficient to activate its external load. It appears that this failure occurs randomly after some duration of operation, typically weeks or months. No common cause has been found.

"Scientech screens components for infantile failure by burning-in modules for a minimum of 48 hours prior to final test. There were no SSR failures during burn-in of potentially affected modules; therefore burn-in was not an effective screen for this issue.

"Prior to January 2013, Scientech did not track SSRs by date code. In establishing conservative boundaries for product shipped with suspect SSRs, Scientech can be certain that no suspect SSRs were shipped in Scientech products prior to August 2009 (the earliest suspect date code). It was determined in September 2012 that Scientech did not have any SSRs with a date code of 2010 or earlier in inventory or work-in-progress. Scientech can therefore determine that products shipped after September 2012 do not contain suspect SSRs."

Affected components:

DAM801, a Dual Alarm Module, manufactured by Scientech, Model DAM801 (/1 optional),

TEI9  
HRR

Part number EIP-E287PA-1

SAM801, a Single Alarm Module, manufactured by Scientech, Model SAM801 (11 optional), Part number EIP-E289PA-1

DAM502, a Dual Alarm Module, manufactured by Scientech, Model DAM502, Part number EIP-E297DD-1, -2, -3

SAM502, a Single Alarm Module, manufactured by Scientech, Model SAM502, Part number EIP-E297DD-4

DAM503, a Dual Alarm Module, manufactured by Scientech, Model DAM503, Part number EIP-E304DD-1, -2, -3

SAM503, a Single Alarm Module, manufactured by Scientech, Model SAM503, Part number EIP-E304DD-4, -20

DAM504, a Dual Alarm Module, manufactured by Scientech, Model DAM504, Part number NUS-A131PA

Affected Facilities:

- Beaver Valley
- Farley
- Ginna
- Indian Point 2/3
- Kewaunee
- North Anna
- Prairie Island
- Surry
- Turkey Point

\*\*\* UPDATE AT 1625 EDT ON 3/20/2015 FROM VINCE CHERMAK TO MARK ABRAMOVITZ \*\*\*

The following information was received via fax. Only information that has changed is being attached below.

"Thirteen plants were notified during the original notification. On March 10, 2015, one affected plant reported that when one SSR failed, its output consisted of high frequency noise at a reduced duty cycle. This noise caused overheating and failure of resistors in an RC filter connected to the alarm module output. Plants experiencing SSR failures should check downstream elements for possible consequential damage. Scientec has not received any other reports of this condition. The condition was reevaluated and the Part 21 evaluation was revised. The evaluation concluded that this newly identified condition does not impact the original defect as reported."

Notified the R1DO (Dental), R2DO (Desai), R3DO (Roach), and Part-21 Group (via e-mail).

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## Fax Cover Sheet

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To:

Fax Number: 3018165151

Subject: Update to Event Number 48798: 10 CFR Part 21 Notification, Dual Alarm Modules and Single Alarm Modules

From: "Chermak, Vincent" <vchermak@curtisswright.com>

Fax#: 855-362-1771

Date: 03/20/15 03:58:19 PM

Total Pages: 7 including this cover page

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Memo:

Take Care,

**Vince Chermak, SSBB, PMP**  
Director, Quality Operations

Scientech, Nuclear Division  
**Curtiss-Wright Corporation**  
1350 Whitewater  
Idaho Falls, ID 83402  
T: 208-497-3366 | M: 208-313-3562  
vchermak@curtisswright.com | <http://scientech.cwfc.com/>

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## FAX

**From:** Alois Vincent Chermak  
Sciencetech Director of Quality Operations

**Subject:** Update to Event Number 48798: 10 CFR Part 21  
Notification, Dual Alarm Modules and Single Alarm Modules

**Contents:** Update letter to US Nuclear Regulatory Commission  
Document Control Desk

**Number of Pages Including this Cover Sheet: 5**

Should you have any questions regarding this matter, please  
contact:

Robert Queenan

Sciencetech Director Instrumentation and Controls

Curtiss-Wright Nuclear Division

[rqueenan@curtisswright.com](mailto:rqueenan@curtisswright.com)

Tel 208-497-3458, Cell 208-403-3547



Instrumentation & Controls Division  
1350 Whitewater Drive.  
Idaho Falls, ID 83402  
(208) 497-3333

March 20, 2015

Attn: Document Control Desk  
US Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SUBJECT: Update to Event Number 48798: 10 CFR Part 21 Notification, Dual Alarm Modules and Single Alarm Modules

Dear Madam or Sir:

The purpose of this letter is to update the Nuclear Regulatory Commission about the defect in Solid State Relays (SSRs) supplied by Crydom, Inc., that was reported on March 1, 2013. The updated information is *italicized* at the bottom of page 3 of 4. No other technical information has changed.

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

AV Chermak  
Scientech Director of Quality  
Curtiss-Wright Nuclear Division  
1350 Whitewater Drive  
Idaho Falls, ID 83402

Daniel E Meils  
Scientech General Manager  
Curtiss-Wright, Nuclear Division  
29399 US Hwy 19 North, Suite 320  
Clearwater, FL 33761

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

DAM801, a Dual Alarm Module, manufactured by Scientech, Model DAM801(/1 optional), Part number EIP-E287PA-1

SAM801, a Single Alarm Module, manufactured by Scientech, Model SAM801(/1 optional), Part number EIP-E289PA-1

DAM502, a Dual Alarm Module, manufactured by Scientech, Model DAM502, Part number EIP-E297DD-1, -2, -3

SAM502, a Single Alarm Module, manufactured by Scientech, Model SAM502, Part number EIP-E297DD-4

DAM503, a Dual Alarm Module, manufactured by Scientech, Model DAM503, Part number EIP-E304DD-1, -2, -3

SAM503, a Single Alarm Module, manufactured by Scientech, Model SAM503, Part number EIP-E304DD-4, -20

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

Scientech, a business unit of Curtiss-Wright Flow Control Corporation  
1350 Whitewater Drive  
Idaho Falls, ID 83402

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(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.

This is an update to Event Number 48798, reported on 3/1/2013, to identify that a failing solid state relay (SSR) may cause damage to downstream components.

Crydom Inc., the sole supplier to Scientech of D4D07 SSRs since before 2009, informed Scientech that SSRs provided with date codes between 0908 (August 2009) and 1004 (April 2010) may have included faulty diodes which resulted in reduced reliability (early failure) of their SSRs.

The mode of failure is that the module output may not be able to maintain voltage sufficient to activate its external load. It appears that this failure occurs randomly after some duration of operation, typically weeks or months. No common cause has been found.

Scientech screens components for infantile failure by burning-in modules for a minimum of 48 hours prior to final test. There were no SSR failures during burn-in of potentially affected modules; therefore, burn-in was not an effective screen for this issue.

Prior to January 2013, Scientech did not track SSRs by date code. In establishing conservative boundaries for product shipped with suspect SSRs, Scientech can be certain that no suspect SSRs were shipped in Scientech products prior to August 2009 (the earliest suspect date code). It was determined in September 2012 that Scientech did not have any SSRs with a date code of 2010 or earlier in inventory or work-in-progress. Scientech can therefore determine that products shipped after September 2012 do not contain suspect SSRs.

## SERIAL NUMBER vs DATE CODE RISK

According to Crydom, the issue existed on their SSR production line from August 2009 thru April 2010. The corresponding date codes are 0908 thru 1004 (format: YYMM). Accordingly, SSRs received at Scientech prior 8/1/09 do not include suspect date codes; this includes SSR PO 09-561 and earlier.

SSR Received Dates	Relative Risk
Before 7/28/09	Least risk
7/29/09 - 11/9/09	None Purchased
11/10/09 - 7/1/10	Highest risk
7/2/10 - 12/27/10	None Purchased
12/28/10 - 11/9/11	Medium risk
11/10/11 - 5/7/12	None Purchased
5/8/12 - 11/27/12	Low risk

## CONFIGURATION RISK

When the SAM/DAM800 or SAM/DAM502 Configuration Codes 5 or 6 (and not 3 or 4) are used, the relay output is selected instead of the SSR output, and the module is not at risk as configured. (All current SAM/DAM801, SAM/DAM503, and SAM/DAM504 have the SSR output mode only.)



(v) The date on which the information of such defect or failure to comply was obtained. Submitted for evaluation 02/06/2013; evaluation completed 03/01/2013. Additional information added 3/20/2015.

(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.

Plant	Potentially affected Safety Related Production Units	Potentially affected Safety Related Repair/Refurb Units
Beaver Valley	1	0
Ginna	72	0
HB Robinson	105	3
Indian Point 2	30	0
Indian Point 3	9	0
Kewaunee	23	0
Prairie Island	68	0
Surry	242	0
Turkey Point	241	7
<b>Totals</b>	<b>791</b>	<b>10</b>

(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.

1. Scientech has determined that it currently has no SSRs with suspect date codes in inventory or work-in-progress and has established receipt inspection criteria to reject SSRs with suspect date codes.
2. Scientech has notified plants with potentially affected safety related units (completed 03/01/2013).
3. Scientech sent affected plants a list of potentially affected safety related modules by part number, serial number and purchase order (completed 03/01/2013).
4. Scientech is communicating with individual utilities the risk categories their modules fall into.
5. Scientech established a SharePoint site on March 13, 2013 to facilitate open communication between the utilities and Scientech. The SharePoint Site includes the following information:

Module Serial Numbers by Crydom SSR PO Risk

This file lists the Serial Numbers, and includes the Scientech Job Number, Plant, Client PO, and Part Number. It is color coded by Relative SSR Risk based on the likelihood that the module contains SSRs from the affected date codes. If more than one risk level applies, the higher risk is indicated.

(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.

Advice was provided in NUS Instruments Technical Bulletin Volume 47.

*3/20/2015 Update: Thirteen plants were notified during the original notification. On March 10<sup>th</sup>, 2015, one affected plant reported that when one SSR failed, its output consisted of high frequency noise at a reduced duty cycle. This noise caused overheating and failure of resistors in a RC filter connected to the alarm module output. Plants experiencing SSR failures should check downstream elements for possible consequential damage. Scientech has not received any other reports of this condition. The condition was reevaluated and the Part 21 evaluation was revised. The evaluation concluded that this newly identified condition does not impact the original defect as reported.*

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

Not applicable.

Should you have any questions regarding this matter, please contact:

Robert Queenan  
Scientech Director Instrumentation and Controls  
Curtiss-Wright Nuclear Division  
[rqueenan@curtisswright.com](mailto:rqueenan@curtisswright.com)  
Tel 208-497-3458, Cell 208-403-3547

Sincerely,



Daniel E Meils  
Scientech General Manager  
Curtiss-Wright Nuclear Division  
[dmeils@curtisswright.com](mailto:dmeils@curtisswright.com)  
Tel 727-669.3115, Cell 727-644-8359