

Part 21 (PAR)

Event # 48863

<b>Rep Org:</b> INTEGRATED RESOURCES, INC.	<b>Notification Date / Time:</b> 03/28/2013 15:53 (EDT)
<b>Supplier:</b> INVENSYS (FOXBORO METER CO.)	<b>Event Date / Time:</b> 03/27/2013 15:30 (CDT)
	<b>Last Modification:</b> 04/01/2013
<b>Region:</b> 4	<b>Docket #:</b>
<b>City:</b> NEBRASKA CITY	<b>Agreement State:</b> Yes
<b>County:</b>	<b>License #:</b>
<b>State:</b> NE	
<b>NRC Notified by:</b> JOHN F. BROSEMER	<b>Notifications:</b> GREG PICK R4DO
<b>HQ Ops Officer:</b> HOWIE CROUCH	PAUL KROHN R1DO
<b>Emergency Class:</b> NON EMERGENCY	PART 21 GROUP EMAIL
<b>10 CFR Section:</b>	DEBORAH SEYMOUR R2DO
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE	JULIO LARA R3DO

#### PART 21 REPORT - FOXBORO POWER SUPPLY POTENTIAL FAILURES DUE TO DEFECTIVE TIE WRAPS AND HOLDERS

Mr. John F. Brosemer, President of Integrated Resources, Inc., reported discovery of repeated defects in Foxboro Meter Company's N-2ARPS-A6, Style D power supplies. When manufactured, the power supplies utilized Thomas and Betts TC105A aluminum wire tie holders in random numbers and placements. As the power supplies age, the tie wrap holder adhesive degrades and the tie wraps embrittle resulting in the separation of the tie wraps and loss of holder adhesion to the power supply enclosure. This causes the wraps and holders to fall to the bottom of the enclosure which could result in shorts when the aluminum comes in contact with electronic components. In one particular power supply, all tie wrap holders in use failed and separated from the enclosure.

The power supplies are used in Foxboro SPEC-200 cabinetry that are used throughout the industry. At the time of this notification, Integrated Resources has one power supply from Three Mile Island and two power supplies from Ft. Calhoun undergoing refurbishment. Integrated Resources will be following up this telephonic notification with a written report once their internal investigation is done.

Recommended corrective actions are for affected facilities to open and inspect all power supplies and remove the aluminum tie wrap holders and replace the tie wraps and holders with Teflon types.

\*\*\* UPDATE FROM BROSEMER TO SNYDER AT 1530 EDT ON 4/1/13 \*\*\*

"Suspecting this to be a common mode failure IRI [Integrated Resources, Inc.] opened and inspected two Foxboro N-2ARPS-A6 power supplies which were sent to IRI for refurbishment by Fort Calhoun Nuclear Station. Examination revealed that both of the power supplies have the same failures of the tie wrap aluminum mounting plates adhesive with the majority of the plates being held on the wire bundles by age embrittled nylon wire ties.

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"Confirmation of the common mode failure by inspection of the Fort Calhoun Nuclear Stations was on or about 1530 CDT on March 27, 2013.

"IRI is not the OEM or Original supplier for this power supply and cannot provide the number nor locations of these components. However, by searching the RAPID database IRI has found the power supplies at the following:

"Arizona Public Service - Palo Verde Nuclear Generating Station; Constellation Energy - Nine Mile Point Nuclear Power Plant; Detroit Edison - Fermi 2 Nuclear Power Plant; Dominion Nuclear - Millstone Nuclear Power Plant; Dominion Nuclear - Kewaunee Nuclear Power Plant; Eletronuclear - Angra Nuclear Power Plant; Entergy Nuclear - Arkansas Nuclear One; Entergy Nuclear - Indian Point Energy Center; Entergy Nuclear - Pilgrim Nuclear Power Plant; Entergy Nuclear - J. A. Fitzpatrick Nuclear Power Plant; Exelon Corporation - Three Mile Island Nuclear Plant; Exelon Corporation - Peach Bottom Atomic Power Station; NextEra Energy - Point Beach Nuclear Power Plant; Progress Energy Florida - Crystal River Nuclear Power Plant; Southern California Edison - San Onofre Nuclear Generating Station.

"IRI suspects several other utilities and units are affected by this report.

Corrective action taken: "IRI's preliminary suggestion is inspection and removal of failed tie wrap mounting plates which are being held on to wire bundles by aging nylon tie wraps. IRI also suggests replacement of age embrittled nylon tie wraps with Tefzel tie wraps."

Contact Information:  
John F. Brosemer, President  
Integrated Resources, Inc.  
113 South 9th Street  
Nebraska City, NE 68410

Notified R1DO (Dwyer), R2DO (Seymour), R3DO (Daley), R4DO (Kellar) and Part 21 Reactors (Email).

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April 1, 2013

Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, D.C., 20555-0001

Subject: 10 CFR Part 21 Report Notification, Foxboro, Co. N-2ARPS-A6 Power Supplies  
Common Mode Failure of Thomas and Betts Model TC105A Ty-Rap Mounting Plates Adhesive.

Dear Sir or Madam:

The purpose of this letter is to confirm Integrated Resources, Inc., (IRI) verbal report dated 28 March 2013, at 1553 EDT, to Mr. H. Crouch (U.S. NRC) of a potential common mode failure of the Ty-Rap mounting plates adhesive used in Foxboro, Co. Power Supplies Model N-2ARPS-A6.

The written report required by this paragraph shall include, but need not be limited to, the following information, to the extent known:

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

John F. Brosemer  
President  
Integrated Resources, Inc.  
113 South 9<sup>th</sup> Street  
Nebraska City, NE 68410

Dale Overbeck  
Quality Assurance Manager  
Integrated Resources, Inc.  
113 South 9<sup>th</sup> Street  
Nebraska City, NE 68410

(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.

N-2ARPS-A6, Power Supply, Nuclear Safety Related, manufactured by FOXBORO,  
METER Co., Foxboro, MA.

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

**FOXBORO METER, Co.**  
Foxboro, MA

Now referred to as:

**Invensys, Operation Management**  
10900 Equity Drive  
Houston, TX 77041  
(713) 329-1600

(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.

IRI found a one inch by ½ inch Ty-Rap aluminum mounting plate loose in the bottom of a safety related Foxboro Model N-2ARPS-A6 power supply being refurbished for Three Mile Island Nuclear Plant.

Further examination of the power supply found that the adhesive had failed on 14 of the 15 remaining aluminum mounting plates leaving the plates attached to the wire harnesses by age embrittled nylon wire ties. The only mounting plate that had not failed was not used (no tie wrap was used).

Suspecting this to be a common mode failure IRI opened and inspected two Foxboro N-2ARPS-A6 power supplies which were sent to IRI for refurbishment by Fort Calhoun Nuclear Station. Examination revealed that both of the power supplies have the same failures of the Ty-Rap aluminum mounting plates adhesive with the majority of the plates being held on the wire bundles by age embrittled nylon wire ties.

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

**Confirmation of the common mode failure by inspection of the Fort Calhoun Nuclear Stations was on or about 1530 CDT on March 27, 2013.**

(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.

IRI is not the OEM or Original supplier for this power supply and cannot provide the number nor locations of these components. However, by searching the RAPID database IRI has found the power supplies at the following:

Arizona Public Service - Palo Verde Nuclear Generating Station

Constellation Energy - Nine Mile Point Nuclear Power Plant

Detroit Edison - Fermi 2 Nuclear Power Plant

Dominion Nuclear - Millstone Nuclear Power Plant

Dominion Nuclear - Kewaunee Nuclear Power Plant

Eletronuclear - Angra Nuclear Power Plant

Entergy Nuclear - Arkansas Nuclear One

Entergy Nuclear - Indian Point Energy Center

Entergy Nuclear - Pilgrim Nuclear Power Plant

Entergy Nuclear - J. A. Fitzpatrick Nuclear Power Plant

Exelon Corporation - Three Mile Island Nuclear Plant

Exelon Corporation - Peach Bottom Atomic Power Station

Nextera Energy - Point Beach Nuclear Power Plant

Progress Energy Florida - Crystal River Nuclear Power Plant

Southern California Edison - San Onofre Nuclear Generating Station

IRI suspects several other utilities and units are affected by this report.

(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.

IRI's preliminary suggestion is inspection and removal of failed Ty-Rap mounting plates which are being held on to wire bundles by aging nylon tie-wraps. IRI also suggests replacement of age embrittled nylon tie wraps with Tefzel tie wraps.

IRI will be continuing evaluation with our clients to provide any other required continuing corrective actions concerning this report. This continuing evaluation should be complete in 60 to 90 days.

(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.

The failure being reported requires two failures, however, since it appears that the Ty-Rap aluminum mounting plates adhesive failures are nearly 100%, the only failure required to allow the mounting plate to become a loose metallic object in an operating power supply is the age related embrittlement of the nylon tie wraps (known failure mechanism).

IRI suspects but has not verified that this failure mechanism applies to most of the Foxboro, Co. Model "ARPS" power supplies both safety related and non-safety related. Some of these models include but are not limited to the following Foxboro, Co., Model numbers:

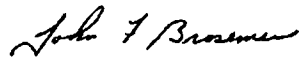
N-2ARPS-A6 All Styles  
N-2ARPS05-A6  
2ARPS-A6

(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 John F. Brosemer, President, Integrated Resources, Inc., at (402) 873-5859.

Sincerely,



John F. Brosemer  
President  
Integrated Resources, Inc.  
(402) 873-5859