ETI

DEPARTMENT OF THE NAVY

UNITED STATES SHIP PIEDMONT (AD-17)
FLEET POST OFFICE
NEW YORK 09543

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3250
Ser

81 DEC 14 A8:4

From: Commanding Officer, USS PIEDMONT (AD-17)
To: Region 11 Director, Office of Inspection and Enforcement, U. S. Nuclear Regulatory Commission

Subj: Notification of Defect

Ref: (a) Nuclear Regulatory Commission Rules and Regulations, Title 10, Chapter 1, Code of Federal Regulations-Energy
(b) NAVENENVSA Port Hueneme, CA message 212040Z NOV 80 (NOTAL)

1. In accordance with Part 21, Article 21.21 of reference (a), the following report is provided:

a. USS PIEDMONT (AD-17) FPO New York, 09543

b. Component supplied - Modification of the drive cable connector for the Budd 40 Bravo Radiographic Exposure Device.

c. Supplier - Automation Industries Company, P. O. Box 245, Phoenixville, PA. 19460

d. Nature of defect - Newly modified drive cable connector separated from the drive cable during retraction of the source into the camera.

e. Date - November 6, 1981.

f. Number and location of all modified drive cables in use - Unknown.

g. Corrective action - The drive cable was returned to Automation Industries for repair.

h. Modification of the drive cable was conducted last year as directed by reference (b) to comply with NRC regulations. Recommend other drive cables modified in accordance with reference (b) be checked to determine condition of swaged end fitting.

P. M. McNICHOLAS, Jr.

Copy to:
NAVENENVSA PORT HUENEME, CA

OFFICIAL COPY

TERA
IE: HQ
File
30-5998

9 DEC 1981

Docket No. 30-5998

Automation Industries, Incorporated
Sperry Division
ATTN: Michael Santoro
Nuclear Products
P.O. Box 245
Phoenixville, Pennsylvania 19460

Gentlemen:

This refers to your telegram dated October 6, 1981 and your letter to this office dated November 5, 1981 which reported a defect which had been discovered in four of your Model 520 Iriditron radiography exposure devices.

This matter will be reviewed during the next inspection of your program. You are requested to inform this office of any additional instances of this defect which are discovered by you or one of your customers.

Your cooperation in this matter is appreciated.

Sincerely,

Original Signed By:

Thomas T. Martin, Director
Division of Engineering and
Technical Inspection

cc:
Automation Industries, Incorporated
Sperry Division
ATTN: Dr. Parker Moreland
Vice President
Shelter Rock Road
Danbury, Connecticut 06810
Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
Commonwealth of Pennsylvania

bcc:
Earl Wright, NMSS
Ralph Meyer, IE:HQ
Region I Docket Room (with concurrences)

Costello/at	Kinneman	Joyner	T. Martin
12/4/81	12/4/81	12/7/81	12/7/81

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NDS

AUTOMATION INDUSTRIES, INC.
SPERRY PRODUCTS DIVISION
P.O. Box 245
PHOENIXVILLE, PA. 19460
(215) 933-8961

November 5, 1981

Mr. Ron Haynes
Region I
U.S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
631 Park Avenue
King of Prussia, PA 19406

Ref: Automation Industries' wire dated Oct. 6, 1981. Reporting of probable defect "constricting of S-tube in four (4) of our Model 520 Iriditrons".

Dear Mr. Haynes:

Subsequent to our above referenced wire, the following lists those actions which our company has taken to determine the cause of this limited defect, or will take to preclude any future incident that could lead to a substantial safety hazard:

ACTIONS TAKEN TO DATE

(a) Contacted N.L. Industries, the original supplier of the castings. They could offer no assistance or suggestions as to what may have caused this defect. They also inferred that this was the only time that a defect of this nature was reported back to them.

(b) Contacted Nuclear Metals, our present supplier of depleted uranium castings. They suspected either a mechanical defect in the titanium tubing or an impurity within the tubing. They also stated that direct impingement or splash of molten uranium onto the S-tube during the pour could cause local erosion of the tube or completely wash-out the tube. Direct impingement could also overheat the tube resulting in sag or tube distortion. Nuclear Metals further stated that they have over the years experienced all of these various problems when casting uranium around a tube core; however, such defects are immediately apparent and segregated during normal in-house inspection.

(c) Questioned four (4) of our competitors. Have they ever experienced a progressive constricting of S-tubes in any of their products? None ever recalled a defect of this nature. Each competitor stated that occasionally they would detect an obstruction or constriction within a new casting during incoming inspection. These would be rejected and returned to the supplier for replacement. Automation Industries has also experienced this type of reject in less than 1% of our incoming castings.

(d) Made silastic castings of the S-tubes of the four (4) exposure devices reported as defective. These are serialized as 733, 740, 746 and 750. After curing, the silastic material is withdrawn and the resulting casting retains and records the exact configuration of the S-tube complete with surface defects such as constrictings, blisters, or fissures. We found that examination of these castings is more conclusive than borescope inspection. We are retaining these castings for further evaluations and for future reference.

To date, we have not determined exactly what caused our particular problem. Any of the above suggestions could probably have contributed to the defect, but nothing definite has surfaced.

We know that N.L. Industries was plagued with restraining orders and a labor strike which drastically curtailed their production commitments. We have traced the four (4) defective serial numbers to the last three (3) batches of castings shipped to us after N.L. Industries had resumed operations. We strongly believe that N.L. Industries' controls and quality suffered during these plant interruptions.

The defective S-tubes showed up in serial numbers 733, 740, 746 and 750 or over a spread of 18 units. To preclude any further incident that could lead to a possible safety hazard we are forwarding the attached NOTICE to each of our customers who purchased our Model 520 Iriditrons bearing serial numbers 723 thru 760.

Sincerely,

Michael P. Santoro
Nuclear Products.

MPS:deb

cc: Frank Costello, NRC, Region I
Earl G. Wright, NRC, Washington, D.C.

AUTOMATION DUSTRIES, INC.
SPERRY PRODUCTS DIVISION
P.O. Box 245
PHOENIXVILLE, PA. 19460
(215) 933-8961

November 5, 1981

IMPORTANT NOTICE

ATTENTION: RADIATION SAFETY OFFICER

Dear Customer:

Recently we have had four (4) of our Model 520 Iriditrons returned to us by our customers because of an obstruction in the S-tube. These obstructions were detected by the customer after the device was used in radiographic service for a period of several months. The defect presents itself as a prominence or blister which developes on the inside diameter of the S-tube. This defect is of a progressive nature and becomes mor prominent with time and could possibly prevent free travel of the Iridium source cable assembly during exposure and retraction of the source. This is not a generic defect with the Model 520 Iriditron but is limited to single group of depleted uranium castings received from our supplier. We have reported this apparent defect to the United States Nuclear Regulatory Commission who is working with us in trying to resolve the problem.

In reviewing our records, we note that your company has purchased one or more of the Model 520 Iriditrons which fall within the suspected group of serial numbers. These serial numbers range from 723 through 760.

When using any of your Model 520 Iriditrons which fall within this group of serial numbers, please look for any unusual binding, or increased resistance or drag during exposure or retraction of the source. Should you experience any of these marked changes in the operating characteristics of your equipment, please remove the equipment from active service and contact us immediately. We will review the problem with you, and if necessary will make arrangements for supplying your company with a replacement Model 520 Shielded Head Assembly.

Sincerely,

Michael P. Santoro

Michael P. Santoro,
Nuclear Products.

TELEGRAM RECEIVED FROM WESTERN UNION, MORRISTOWN, NJ, VIA TELEPHONE ON 10/6/81, 2:00 P.M.

TO: R. C. HAYNES

FROM: MICHAEL SANTORO
AUTOMATION INDUSTRIES, INC.
P.O. BOX 245
PHOENIXVILLE, PA

IN ACCORDANCE WITH REQUIREMENTS OF PART 21 OF TITLE 10 CFR, WE ARE REPORTING A PROBABLE DEFECT WITH A LIMITED BATCH OF OUR MODEL 520 IRIDITRONS. A DEFECT PRESENTS ITSELF AS A CONSTRICTION IN THE S-TUBE AFTER THE DEVICE HAS BEEN SOLD TO A CUSTOMER AND PLACED INTO RADIOGRAPHIC SERVICE FOR A PERIOD OF SEVERAL MONTHS TO A YEAR. BORESCOPE EXAMINATION OF FOUR DEVICES IN OUR POSITION, SERIAL NUMBERS 733, 740, 746, and 750 REVEAL A PROMINENCE OR BLISTER WHICH DEVELOPED ON THE INSIDE DIAMETER OF THE S-TUBES. WE STRONGLY SUSPECT THAT THIS CONSTRICTION RESULTS FROM CHEMICAL OR ELECTRIOLYTIC REACTION AT THE INTERFACE BETWEEN THE DEPLETED URANIUM SHIELD AND OUTSIDE SURFACE OF THE TITANTIUM S-TUBE. WE ALSO SUSPECT THAT THERE MAY HAVE BEEN PIN HOLE DEFECTS IN THE S-TUBES WHICH PERMITTED AIR OR MOISTURE TO PENETRATE TO THE URANIUM CASTING. THE SEQUENCE OF SERIAL NUMBERS ELUDES TO A PRODUCTION DEFECT IN THE FINAL BATCH SHIELD CASTINGS FURNISHED US BY NATIONAL LEAD INDUSTRIES. AS OF 3/24/80 WE DISCONTINUED THE SERVICE OF SHIELD CASTINGS FROM NL INDUSTRIES.

(Note: A copy of this telegram will be sent to us by mail.)

Received by Joyce
10/6/81

~~8112160460~~ 2pp.

AUTOMATION INDUSTRI INC
PO BOX 245
PHOENIXVILLE PA 19460

Western Union Mailgram

4-018007S279003 10/06/81 ICS IPMMTZZ CSP PHAB
2 2159338961 MGM TDMT PHOENIXVILLE PA 10-06 1115A EST

RON HAYNES
REGION I USNRC OFFICE OF INSPECTION AND
ENFORCEMENT 631 PARK AVE
KING OF PRUSSIA PA 19406

THIS IS A CONFIRMATION COPY OF A TELEGRAM ADDRESSED TO YOU
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REPORTING A PROBABLE DEFECT WITH A LIMITED BATCH OF OUR MODEL 520
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FURNISHED US BY NATIONAL LEAD INDUSTRIES. AS OF MARCH 24, 1980 WE DI
SCONTINUED THE PURCHASE OF SHIELD CASTINGS FROM NL INDUSTRIES
MICHAEL SANTORO AUTOMATION INDUSTRIES INC
PO BOX 245
PHOENIXVILLE PA 19460

11:17 EST

MGMCOMP