

REPORT OF INTERVIEW
WITH
HAROLD BOYD


BOYD was interviewed on July 24, 1990, at his place of business by Nuclear Regulatory Commission Investigator Gary H. Claxton. BOYD is employed as the purchasing manager for Nutherm International, Incorporated, 501 S. 11th Street, Mt. Vernon, Illinois 62864, telephone (618) 244-6000. Upon being advised of the interviewer's official identity and purpose of the interview, BOYD provided the following information.

BOYD said one of the Nutherm engineers, Bill ELLIS, received an order for 32 Potter and Brumfield (P&B) electric relays from the Tennessee Valley Authority to be used in the Watts Bar Nuclear Plant (WBNP), Spring City, Tennessee. BOYD said upon receipt of an order, he is responsible for locating a distributor of the needed item and then issuing a purchase order. BOYD said in this instance, he called the manufacturer, P&B, and learned that it would be several months before the relays could be shipped. He said P&B referred him to one of their distributors, Spectronics, Incorporated, in Mobile, Alabama.

BOYD said he telephoned Spectronics and asked to speak with someone who could help him with some relays. He said he talked with Pete TOLBERT who immediately responded that he had the needed relays in stock. BOYD recalled telling TOLBERT that Nutherm dealt exclusively with clients in the nuclear industry for which Nutherm conducted tests on parts and fabricated panel boards. He said he asked TOLBERT if traceability could be provided by Spectronics and TOLBERT assured him that was no problem. BOYD further recalled that TOLBERT said Spectronics had previously done business with nuclear plants but that TOLBERT did not identify which ones. BOYD said there could have been no doubt in TOLBERT's mind that the relays being purchased by Nutherm were to be used in nuclear applications. BOYD said he asked TOLBERT if traceability would be any problem and TOLBERT responded that there was no problem.

BOYD said the relays were received by Nutherm and dedicated for nuclear service before being shipped to WBNP. He said when Nutherm realized that Spectronics had not provided proper traceability as required in the sales contract, he contacted TOLBERT to resolve the issue. BOYD said TOLBERT then told him that he (TOLBERT) thought the documentation had been shipped with the relays. BOYD said TOLBERT later claimed that Spectronics had received several shipments of relays at the same time and he, therefore, could not precisely document where the relays came from that were shipped to Nutherm.

This Report of Interview was prepared on August 7, 1990.



Gary H. Claxton, Investigator
Office of Investigations
Field Office, Region II

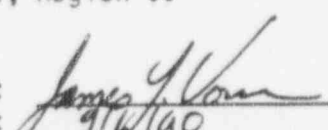
Reviewed by: 
Date: 9/6/90 

EXHIBIT 12

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2-90-014

ELECTRICAL REQUIREMENTS

Coil voltage	115V 60 Hz
Operate voltage	92V or less 60 Hz
Drop-out voltage	12V or more 60 Hz
Coil resistance	66 ohms $\pm 10\%$
Breakdown voltage	1230V RMS 60 Hz contacts to base, coil terminals to base.
	1250V RMS 60 Hz between open contacts.

RESULTS

RELAY NUMBER	OPERATE VOLTAGE	DROP-OUT VOLTAGE	COIL RESISTANCE OHMS	BREAKDOWN
*19	81.7	41.7	Accepted	Accepted
25	82.4	36.5	Accepted	Accepted
26	87	41	Accepted	Accepted
29	86	43.3	Accepted	Accepted
30	82.9	38.4	Accepted	Accepted

*This relay appeared to be a F&B original. Relay #30 buzzed at 92V through 115V.

Relays hand carried by Gary Claxton to P&B on 7/25/90.

R. Market
8/7/90

EXHIBIT 17

2-90-014

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VISUAL INSPECTION

RELAY #

	19	25	26	29	30
Incorrect nameplate.....		X	X	X	X
Incorrect color Glyptal seal.....		X	X	X	X
Rotor shaft cut off and filed down.....		X	X	X	X
Rotor slot not painted black.....		X	X	X	X
Motor nuts out of torque.....				X	X
Incorrect end play.....		X	X	X	X

NOTES:

1. Inspected to requirements of 6/21/90.
2. Relay #19 appeared to be a P&B original.

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ELECTRICAL REQUIREMENTS

Coil voltage	28V DC
Operate voltage	18V DC max.
Drop-out voltage	2.8V DC min.
Coil resistance	76 ohms $\pm 10\%$
Breakdown voltage	1300V RMS 60 Hz contacts to base, coil terminals to base.
	1250V RMS 60 Hz between open contacts.

RESULTS

RELAY NUMBER	OPERATE VOLTAGE	DROP-OUT VOLTAGE	COIL RESISTANCE OHMS	BREAKDOWN
1	20.1	4.6	Accepted	Accepted
2	21.2	4.5	Accepted	Accepted

Relays #1 & #2 were disassembled by P&B to check contact pressure requirement of 60 grams min. All contacts on relay #1 meet min. requirements while two contacts on relay #2 were below requirements by 10 to 20 grams.

Relays were hand carried by Gary Claxton to P&B on 7/19/90.

R. Market
8/7/90

2-20-014

EXHIBIT 23
PAGE 1 OF 2 PAGE(S)

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VISUAL INSPECTION

RELAY #

	1	2
Nameplate number changed.....	X	X
Coil leads painted.....	X	X
No Glyptal seal.....	X	X
Studs cut off.....	X	X
Rotor shaft cut off and filed down.....	X	X
Contact hole tapped oversize.....	X	
Top nuts out of torque.....	X	
Rotor slot not painted black.....	X	X
Motor nuts out of torque.....	X	X
Incorrect clearance between shaft and cover.....	X	X
Coil terminals have bad appearance.....	X	X
Incorrect end play.....	X	X

NOTES:

1. Inspected to requirements of 6/21/90.

EXHIBIT 23PAGE 2 OF 2 PAGE(S)

MEMORANDUM TO CASE FILE

TYPE ACTION

- ☒ RECORD OF CONVERSATION
☐ CASE REVIEW / STATUS
☐ OTHER

PARTICIPANTS

Voice + DAVE COMPTON NIS

CONFIDENTIALITY REQUESTED YES NO

FILE NO.

DATE

8/14/90

TIME

3:15P

SUMMARY

I was called by DAVE Compton who wanted to advise me that our NIS agent will be going tomorrow AM to obtain relays from SPECTRONICS and he wanted to know the name of the individual in death with. I told him it was TOLBERT. DAVE also advised me that he had contacted PASCAGOULA MS who and was informed 18 USC 1341 applies to counterfeit over 1 million in value without knowledge. He asked that either he call or Compton call early AM to obtain more details.

PAGE 1 OF 1

PREPARED BY

DATE

8/14/90

ACTION REQUIRED

REVIEWED BY

DATE

B/US

OFFICIAL USE ONLY

DO NOT DISCLOSE

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

September 5, 1990

NRC INFORMATION NOTICE NO. 90-57: SUBSTANDARD, REFURBISHED POTTER & BRUMFIELD
RELAYS MISREPRESENTED AS NEW

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice is intended to alert addressees to the discovery of rotary, non-latching type relays, originally manufactured by Potter & Brumfield (P&B) of Princeton, Indiana, that have been apparently modified and/or refurbished and that have been found to be materially and functionally substandard, such that they may not operate as required. The affected relays include, but may not be limited to, P&B types MDR-138-8, MDR-173-1, MDR-134-1, and MDR-142-1. It is expected that recipients will review this information for applicability to their facilities. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

Carolina Power and Light Company's (CP&L's) Shearon Harris Nuclear Power Plant recently received a shipment of 22 P&B MDR-type relays. Although these were purchased from Spectronics, Inc., of Mobile, Alabama, an authorized distributor of P&B relays, the shipment was received directly from their supplier, Stokley Enterprises of Norfolk, Virginia. CP&L purchased the relays as commercial-grade items to be dedicated for use in the emergency diesel generator safety bus sequencer system at Shearon Harris. CP&L expected Spectronics to supply new relays from P&B, although the purchase order did not so state. CP&L was alerted to potential quality problems when the relays were received much sooner than the normal 10 to 12 weeks from P&B. Discrepancies were identified by CP&L during receiving inspection, during subsequent examination at Shearon Harris by NRC staff and a P&B technical representative, and later during inspection and testing at the P&B factory, observed by NRC staff. The relays were improperly adjusted, lacked lubrication, and all failed one or more of the P&B tests. They contained assortments of nonstandard and/or substandard parts and obsolete parts used by P&B or its predecessor, Magnetic Devices, Inc. The parts were assembled in incorrect, non-original configurations. These conditions, indicative of refurbishment, are listed in Attachment 1 to this information notice.

Discussion:

Through a continuing series of inspections at licensee and vendor facilities, the NRC staff has learned that Spectronics, Inc., has supplied apparently

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modified and/or refurbished P&B MDR-type relays that are materially and functionally substandard directly and/or indirectly to (1) at least three nuclear plants, including Shearon Harris, Watts Bar, and Sequoyah; (2) various vendors to nuclear plants; (3) at least one dedicicator of commercial-grade components for nuclear plants, Nutherm International (Mount Vernon, Illinois); and (4) possibly one or more electrical equipment fabricators for installation in relay and switchgear panels for nuclear plants. These apparently modified and/or refurbished P&B-type relays were obtained directly or indirectly from either Stokley Enterprises or The Martin Company of Chesapeake, Virginia. Stokley Enterprises and The Martin Company may have supplied such P&B-type relays, and various other types of modified and/or refurbished electrical components from other manufacturers, to distributors of electrical equipment who deal directly or indirectly with nuclear utilities.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate NRC regional office.



Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contacts: K. R. Naidu, NRR (301) 492-0980
S. D. Alexander, NRR (301) 492-0995

Attachments:

1. Conditions Indicative of Substandard/Refurbished Relays
2. List of Recently Issued Information Notices

CONDITIONS INDICATIVE OF SUBSTANDARD/REFURBISHED RELAYS

The following conditions, observed with P&B MDR-type relays supplied by Stokley Enterprises and/or The Martin Company through Spectronics, Inc., and/or Nutherm International, may be observed on similar relays supplied through various other distributors and dealers and are indicative of substandard refurbishment:

1. Non-standard reddish-brown paint used to stake the nuts securing the motor and rotor assemblies (paint may be wet and adhering to the carton)
2. Sloppy coil lead solder joints at terminal strips with possible wicking
3. Painted relay base grommets (normally clear plastic) for coil leads
4. Terminal strips fastened with eyelets (discontinued in 1967) instead of rivets currently used by P&B
5. Grey painted rivets fastening the terminal strip to the relay housing where original P&B relays have unpainted rivets
6. Field termination screws (supplied with the relays) shipped in brown paper bags instead of heat-sealed, plastic bags
7. Cartons differing from original P&B cartons in color and labelling and relays packed with bubble wrap instead of wrapped in a plastic bag and packed in styrofoam as done by P&B
8. Apparently silk-screened nameplates, clearly different from original
9. Repainted inner bell-surface and relay base marks indicating prior use
10. Date codes and inspection and testing stamps missing or inconsistent with relay type (as determined by comparison with P&B production records), indicating interchanged relay caps
11. Cap nuts (discontinued in 1977) on rotor and motor assembly bolts, instead of currently used hex nuts, that are not torqued to P&B specifications
12. Incorrect shaft-relay cover clearance, incorrect rotor shaft end play, and lack of bearing lubricant
13. Coil lead insulation color inconsistent with that of current P&B relays
14. Orange paint (not used by P&B after 1972) on tops of rotor shafts
15. Slots on tops of rotor shafts not painted black as currently required
16. Nonuniform numbers stamped on the contact decks, indicating decks made up from various relays
17. High potential test failure on coils and between contacts and contact sections
18. Functional test failure - actuation above P&B-specified "maximum operate" [pick-up] voltage and/or drop-out below minimum drop-out voltage
19. Widely varying coil winding resistance among relays, indicating manufacture during various periods of time
20. Incorrect coil - one 125-VDC relay found with 200-VDC coil. Coil had twice the specified winding resistance and relay actuated at high, out-of-specification operate voltage.

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
90-56	Inadvertent Shipment of A Radioactive Source in A Container Thought To Be Empty	9/4/90	All U.S. Nuclear Regulatory Commission (NRC) licensees.
90-55	Recent Operating Experi- ence on Loss of Reactor Coolant Inventory while in A Shutdown Condition	8/31/90	All holders of OLs or CPs for nuclear power reactors.
83-44 Supp. 1	Potential Damage to Redundant Safety Equip- ment As A Result of Backflow Through the Equipment and Floor Drain System	8/30/90	All holders of OLs or CPs for nuclear power reactors.
90-54	Summary of Requalification Program Deficiencies	8/28/90	All holders of OLs or CPs for nuclear power reactors.
89-18 Supp. 1	Criminal Prosecution of Wrongdoing Committed by Suppliers of Nuclear Products or Services	8/24/90	All holders of OLs or CPs for nuclear power reactors.
90-53	Potential Failures of Auxiliary Steam Piping and the Possible Effects on the Operability of Vital Equip- ment	8/16/90	All holders of OLs or CPs for nuclear power reactors.
90-52	Retention of Broken Charpy Specimens	8/14/90	All holders of OLs or CPs for nuclear power reactors.
90-51	Failures of Voltage-Dropping Resistors in the Power Supply Circuitry of Elec- tronics Systems	8/8/90	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
CP = Construction Permit

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

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