Docket No. 50-528/529/530

50.55(e) Report

Arizona Public Service Company
P.O. BOX 21666 • PHOENIX, ARIZONA 85036

April 4, 1983
ANPP-23419-BSK/RQT

U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, CA 94596-5368

Attention: Mr. D. M. Sternberg, Chief
Reactor Projects Branch 1

Subject: Final Report, Revision 2 - DER 81-22
A 50.55(e) Reportable Condition Relating to Premature Time-Out Condition with AGASTAT Pneumatic Timing Relays
File: 83-019-026; D.4.33.2

Reference: A) Telephone Conversation between J. Eckhardt and J. Cook on July 15, 1981
B) ANPP-18632 dated August 11, 1981 (Interim Report)
C) ANPP-19231 dated October 21, 1981 (Final Report)
D) ANPP-20408 dated March 12, 1982 (Time Extension for Revised Report)
E) ANPP-20913 dated May 7, 1982 (Time Extension for Revised Report)
F) ANPP-21432 dated July 20, 1982 (Final Report Revision 1)

Dear Sir:

Attached is Revision 2 of the subject Deficiency Evaluation Report under 10CFR50.55(e). This revision clarifies the corrective action statement regarding method of testing for defective relays, and provides the manufacture date of relays to be returned to supplier.

Very truly yours,

E. E. Van Brunt, Jr.
APS Vice President,
Nuclear Projects
ANPP Project Director

EEVB/RQT:wp
Enclosure

cc: See Attached Page Two

1907

cc: Richard DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

T. G. Woods, Jr.
G. C. Andognini
J. A. Roedel
D. B. Fasnacht
A. C. Rogers
B. S. Kaplan
W. E. Ide
J. Vorees
J. R. Bynum
D. D. Green
P. P. Klute
A. C. Gehr
W. J. Stubblefield
W. G. Bingham
R. L. Patterson
R. W. Welcher
R. M. Grant
D. R. Hawkinson
L. E. Vorderbrueggen
G. A. Fiorelli

FINAL REPORT REVISION 2 - DER 81-22
DEFICIENCY EVALUATION 50.55(e)
ARIZONA PUBLIC SERVICE COMPANY (APS)
PVNGS UNITS 1, 2 & 3

I. Description of Deficiency

The following Class IE equipment is impacted by defects existing in AGASTAT relays manufactured by Control Products Division, Amerace Corporation:

4.16KV Switchgear	AC Panels
Load Centers	DC Load Centers
Motor Control Centers	Aux. Relay Cabinets

a. Control Products Division, Amerace Corporation notified Bechtel Power Corporation that the AGASTAT 7000 Series date coded 7740 through 7840 (1977 40th week through 1978 40th week) had diaphragm contamination on a small percentage of the total production due to use of unfiltered shop air at one of the blow-off stations which was used only for peak manufacturing periods. Compressor lubricant, a silicon contaminant, on the diaphragm coupler causes the diaphragm to leak resulting in a premature time-out condition.

Amerace Corporation by reference (g) has indicated that a contaminated coupler which has sat unused for a long period of time will exhibit the following traits when functioned on a bench test.

- The initial time delay would be lower than the set time delay.
- The next time delay would be significantly shorter than the first.
- The third time delay would be significantly shorter than the second.

b. On February 2, 1982, the Control Products Division, Amerace Corporation informed the U.S. Nuclear Regulatory Commission that approximately 20 percent of their AGASTAT E-7000 Series time-delay relays manufactured during the period between July 15, 1981 to January 12, 1982 may not operate properly.

Quality Assurance tests performed to ascertain acceptable performance over extended time periods have determined that the pneumatic timing diaphragm manufactured by one of two diaphragm suppliers exhibited a bleed-out of a fluid substance as a function of time and temperature. This substance may affect the diaphragm seal on the relays operated at high temperatures for extended periods, resulting in shorter time delays than those set on the relay dial. Although the temperature required to initiate significant bleed-out would not be encountered in the majority of these relay applications, it is within the range of nuclear safety qualification tests required by IEEE-323 and IEEE-344.

In a letter dated February 2, 1982, the Control Products Division of Amerace Corporation requested users to return all of the discussed relays for inspection and possible replacements.

c. On May 30, 1980, General Electric, Electric Utility Sales Division, informed Bechtel Power Corporation that Control Products Division of Amerace corporation requested return of selected AGASTAT 7000 Series and E-7000 Series time delay relays installed in GE motor control centers as identified by Reference (d). Amerace Corporation had identified a "staked sub-assembly which exhibits looseness after several hundred thousand operations at a rapid cycle rate," and as a precaution requesed these be returned for possible repair or replacement.

II. Analysis of Safety Implication

Conditions (a) and (b) have separately been evaluated as reportable under both 10CFR50.55(e) and 10CFR Part 21. Condition (c) is evaluated as not reportable, as documented by the Amerace Corporation testing results given in Reference (i).

This report summarizes all conditions requiring replace- ment AGASTAT relays for overall project control purposes, since there is overlap of impacted equipment. If left uncorrected, conditions (a) and (b) could possibly preclude safety related equipment from performing per design intent.

III. Corrective Action

a. As listed on the Attachment, the 7000 Series AGASTAT relays will be tested and replaced as required during normal start-up activities. All Class IE installations found defective will be replaced with qualified relays. Nonconformance reports have been initiated to document removal, testing, and replacement, as applicable.

b. As indicated by the 10CFR Part 21 notification and IE Information Notice No. 82-04, the applicable electrical panels will be inspected for existence of the E-7000 Series relay. All E-7000 Series AGASTAT relays manufactured between 7/15/81 and 1/12/82 will be returned to the manufacturer for inspection and possible replacement. Non-conformance reports will be initiated as applicable to document removal and reinstallation of these relays.

c. The relays identified by Reference (d) will be removed from the GE motor control centers and returned to GE as requested. Nonconfor-mance reports will be initiated as required to document removal and reinstallation of these relays.

REFERENCES:

(a) Bechtel Quality Assurance Bulletin 80-15, Rev. 2
(b) Bechtel Quality Assurance Bulletin 82-04, Rev. 0
(c) IE Information Notice No. 82-04, March 10, 1982
(d) GE Letter, L. R. Fickel to Bechtel (J. Torres P.O. File EM-018), May 30, 1980
(e) IOM-E-8348, W. G. Bingham to W. J. Stubblefield, October 14, 1980
(f) IOM-E-8647, W. G. Bingham to W. J. Stubblefield, February 25, 1981
(g) Amerace Corp. to Bechtel (R. L. Rogers, File S023-703-F), March 5, 1981
(h) GE Letter, E. L. Phillip to Bechtel (W. Bingham File EM-019, 021) April 30, 1982
(i) Amerace Corporation to Bechtel (M. Torikian), June 2, 1982

ATTACHMENT TO
DER 81-22

List of Nonconformance Reports Identifying Series 7000 Agastat Relays.

NONCONFORMANCE REPORT NO.	QUALITY CLASS	UNIT	LOCATION	ELEV.	QTY.
EJ-1864	Q	2	Control Bldg.	140'	1
EJ-1857	Q	1	Control Bldg.	100'	45
EJ-1856	Q	2	Control Bldg.	100'	5
EJ-1852	Q	3	Warehouse "C"	-	2
EJ-1851	Q	3	Warehouse "C"	-	6
EJ-1839	Q	1	Control Bldg.	100'	1
EA-1838	Q	1	Aux. Bldg.	-	1
EG-1836	Q	1	Diesel Gen.	-	10
ET-1865	R	3	Turbine Bldg.	100'	1
ET-1862	R	1	Turbine/Aux. Bldg.	-	16
EY-1861	R	1	Turbine/Aux. Bldg.	-	17
EA-1863	R	2	Aux. Bldg.	120'	2
ET-1860	R	1	Aux./Turb./Bldg.	-	14
ET-1859	R	2	Aux./Turb./Radwaste	-	16
ET-1858	R	2	Turbine Bldg.	100/140'	5
EY-1555	R	1	Cooling Towers	-	5
ET-1854	R	1	Turbine Bldg.	100'	4
ER-1853	R	3	Warehouse "C"	-	1
EJ-1850	R	2	Warehouse "C"	-	1
EY-1849	R	2	13.8 Switcher-Yard	-	6
EA-1842	R	1	Aux. Bldg.	120'	2
EY-1841	R	3	13.8 Switcher-Yard	-	8
EJ-1840	R	1	Control Bldg.	140'	5
EY-1837	R	1	13.8 Switcher-Yard	-	2
ET-1835	R	1	Turbine Bldg.	-	1
SE-0127	Q	1	Control Bldg.	100'	15
SE-0351	Q	1	Control Bldg.	-	25
SE-0245	R	1	Turbine Bldg.	-	1
SE-0246	R	1	Turbine Bldg.	-	1
SE-0247	R	1	Turbine Bldg.	-	1
SE-0248	R	1	Turbine Bldg.	-	1
SE-0243	Q	1	Control Bldg.	-	1
SE-0619	R	1	Turbine Bldg.	-	1
SE-0620	R	1	Turbine Bldg.	-	1

REFERENCE (a)

LOS ANGELES POWER DIVISION

QUALITY ASSURANCE

BULLETIN

BULLETIN NO. 80-15, Rev. 2

DATE November 17, 1980

PAGE 1 OF 1

1. SUBJECT

Agastat 7000 Series Pneumatic Timing Relays

2. DESCRIPTION

This Bulletin is a supplement to Bulletin 80-15, Rev. 1, issued August 6, 1980.

Procurement Supplier Quality has determined that all Agastat Model 7000 Timing Relays date coded 7740 through 7840 are suspect. These relays could malfunction due to supplier use of unfiltered shop air (oil in line) during assembly.

3. REFERENCE DOCUMENTS

Supplier Quality Information Bulletin 80-5, Rev. 1 (Attachment 1)

4. PROPOSED ACTION TO BE TAKEN

SONGS 2 & 3 and Palo Verde - Jobsite QA

1. Determine if Agastat 7000 series pneumatic timing relays are installed on equipment delivered to the jobsite. If installed, review code dates to determine if suspect units (code 7740 through 7840) were received. Initiate action for suspect relays received.
2. Provide results of investigation to Problem Investigation Committee Chairman (A.G. Coutoumanos). Scheduled response date: by December 22, 1980.

Other LAPD Projects

This Bulletin is for information and action as appropriate to project requirements.

ACTION BY: ☐ ENGINEERING ☐ PROCUREMENT ☐ CONSTRUCTION ☒ QUALITY ASSURANCE

5. CORRECTIVE ACTION/FOLLOW-UP VERIFICATION

APPROVED BY: _____ PROJECT _____ DATE _____

6. PREPARATION AND AUTHORIZATION

PREPARED BY: A. G. Coutoumanos DATE: November 17, 1980

AUTHORIZED BY: R. L. Patterson DATE: November 17, 1980

7. DISTRIBUTION: HOLDERS OF BULLETIN MANUALS

OTHER:

T. G. Greer	R. E. Weber	F. I. Henry	J. H. Boeckerman
W. A. Homer	J. Bouma	B. L. Lex	J. E. Bashore
J. Gensler	P. Dragolovich	H. F. McCluskey	D. Vinson
W. V. Coane	F. J. Duddy	S. M. Cott	H. D. Townsend

LAD-0678 1/79

REFERENCE (b)

BECHTEL
LOS ANGELES POWER DIVISION

QUALITY ASSURANCE
BULLETIN
LIMITED DISTRIBUTION

BULLETIN NO. 82-04
DATE February 9, 1982
PAGE 1 OF 2

1. SUBJECT
Agastat Series E7000 Pneumatic Timing Relays

2. DESCRIPTION
Control Products (Amerace Corporation) has determined that E7000 series relays manufactured between the 24th week of 1981 and the third week of 1982 may malfunction due to defective diaphragms. When the relays are operated at high temperature for extended periods, a diaphragm bleed-out (fluid) may occur, resulting in shorter time delays than those set on the dial. The supplier has notified NRC pursuant to 10 CFR 21.

The attached supplier letter requests Bechtel (Panel Shop direct procurement) to return suspect relays for inspection and possible replacement.

Continued...

3. REFERENCE DOCUMENTS
Control Products Letter Dated February 2, 1982 (Attachment 1)

4. PROPOSED ACTION TO BE TAKEN
Manager - Bechtel Panel Shop

1. Arrange for return of Agastat relays identified in Attachment 1 to supplier.

Project Managers - SONGS 2 & 3 and Palo Verde Projects

Regulation 10 CFR 21 requires the supplier to notify purchasers of subject relays. In turn, these purchasers should pass the notification to their customers so that the end item user is notified. Bechtel experience indicates that a breakdown in the notification chain may occur, and projects may not be notified by BPC suppliers.

1. Determine if Agastat E7000 series relays date coded 8124 through 8152 and 8201 through 8203 are applicable to equipment received after June, 1981 or replacement relays installed as a result of previous DER's.

Continued

ACTION BY: ☐ ENGINEERING ☐ PROCUREMENT ☐ CONSTRUCTION ☐ QUALITY ASSURANCE

5. CORRECTIVE ACTION/FOLLOW-UP VERIFICATION

APPROVED BY: _____ PROJECT _____ DATE _____

6. PREPARATION AND AUTHORIZATION

PREPARED BY: A.G. Coutoumanos
DATE: February 9, 1982

AUTHORIZED BY: R.L. Patterson
DATE: February 9, 1982

7. DISTRIBUTION:

K.G. Kreutziger	M. Delaplain	J.M. Amaral	F.J. Duddy	PQAE's
W.H. Wilson	M.J. Grothe	J.M. Curran	H.D. Townsend	J. Cou
K. Stwertnik	J.J. Bartko	W.V. Coane	T.G. Greer	QA Div. Mgrs.
H.F. McCluskey	C.D. Riggs	S.M. Cott	QA Managers/Project	

LAO 0675.2 6/80

LOS ANGELES POWER DIVISION

ALITY ASSURANCE
BULLETIN
LIMITED DISTRIBUTION

BULLETIN NO. 82-04
DATE February 9, 1982
PAGE 2 OF 2

2. DESCRIPTION

Note: Similar Agastat Relay problems were identified on SONGS 2 & 3 DER 70, Palo Verde DER 81-22 and LAPD QA Bulletin 80-15. Agastat relays date coded 7740 through 7840 (1977 40th week through 1978 40th week) had diaphragm contamination due to use of unfiltered shop air during supplier assembly. Additionally, SONGS 2 & 3 DER 79 identified conditions where relay dials set at 5 seconds had delay times ranging from 1.97 to 12.94 seconds.

4. PROPOSED ACTION TO BE TAKEN

Actionees

Provide results of investigation and action taken, if action is required, to Problem Investigation Committee Chairman, A.G. Coutoumanos. Scheduled response date: by March 26, 1982.

Other LAPD Projects

This Bulletin is for information and/or action as appropriate to project requirements.

SSINS No.: 6835
Accession No.:
8202040107
IN 82-04

QA Bulletin 82-04

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

March 10, 1982

IE INFORMATION NOTICE NO. 82-04: POTENTIAL DEFICIENCY OF CERTAIN AGASTAT E-7000 SERIES TIME-DELAY RELAYS

Description of Circumstances:

On February 2, 1982, the Control Product Division, Amerace Corporation informed the U.S. Nuclear Regulatory Commission that approximately 20 percent of their AGASTAT E-7000 Series time-delay relays manufactured during the period between July 15, 1981 to January 12, 1982 may not operate properly.

Quality Assurance tests performed to ascertain acceptable performance over extended time periods have determined that the pneumatic timing diaphragm manufactured by one of two diaphragm suppliers exhibited a bleed-out of a fluid substance as a function of time and temperature. This substance may affect the diaphragm seal on the relays operated at high temperatures for extended periods, resulting in shorter time delays than those set on the relay dial. Although the temperature required to initiate significant bleed-out would not be encountered in the majority of these relay applications, it is within the range of nuclear safety qualification tests required by IEEE-323 and IEEE-344.

In a letter dated February 2, 1982, the Control Products Division of Amerace Corporation requested users to return all of the discussed relays for inspection and possible replacements. Copies of the letter and a list of the users are enclosed.The Control Products Division records do not identify individual nuclear power plants because most shipments were made to nuclear steam supply system (NSSS) suppliers, vendors, panel manufacturers, architects and engineers and utilities.

This information notice is provided as an early notification of a potentially significant matter. It is expected that recipients will review the information for possible applicability to their facilities and take appropriate action as necessary. No specific action or response is required at this time. If you have any questions regarding this matter, please contact the Regional Administrator of the appropriate NRC Regional Office.

Attachments:
1. List of customers to whom applicable relays were shipped.
2. Recently issued IE Information Notices

82-131

REFERENCE (d)

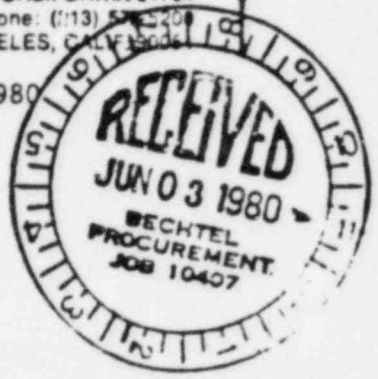
GENERAL ELECTRIC

ELECTRIC UTILITY

SALES DIVISION

GENERAL ELECTRIC COMPANY, 9350 E. FLAIR DR., EL MONTE, CALIFORNIA 91734
Phone: (213) 5[illegible]
MAILING ADDRESS: P.O.BOX 2830,TERMINAL ANNEX, LOS ANGELES, CALIFORNIA 9[illegible]

May 30, 1980



PURCHASING JOB 10407	ACTION	INFO	INCL
PROJ PROC MGR			
ASST PRM			
PROJ ENG			✓
CONSTRUCTION			✓
COST/SCH SUPV			✓
A/PP			✓
EXPEDITING			✓
SUPPLIER QUALITY			✓
FILE			✓
A. Pizutan			✓
J. Roberson			✓

H. Klopp → PVNGS
↳ PVNGS

Bechtel Power Corporation
P.O. Box 60860 Terminal Annex
Los Angeles, California 90060

Attention: Joe Torres
Bldg. 46

Re: Palo Verde
Motor Control Centers
PO 10407-13-EM-018
Defective Agastat Relays

Gentlemen:

We have been notified by the manufacturer of Agastat relays, Control Products Division of Amerace Corporation, of a "staked sub-assembly which exhibits looseness after several hundred thousand operations at a rapid cycle rate."

As a precaution, Amerace Corporation has requested the return of certain Agastat relays for analysis, possible repair or replacement at no charge. Please check the shipments on the attached list of motor control centers for relays that may have the serial numbers listed. (These shipments were made between February and March 31, 1980).

Very truly yours,

Lester L Fickel

L.R. Fickel
Sales Engineer

LRF:bjr

Attachment

4/14/80

Class	Agastat Model	Serial #	Location Check Item	Tag	GE Catalog #	Unit
NonIE	F7012AD	80043489	1W	A-W-NUN-M24--	423X311M24	AR3
NonIE	F7012AD	80050952	-	A-W-NUN-M3615	423X311M6Q	AF1
			-	A-W-NUN-M3617	423X311M7Q	HF1
			-	A-W-NUN-M3606	423X311M9Q	KF3
1E	E7022AF	80064195	4C	1-E-PHA-M3532	432X956M20	AR1
		80064196		1-E-PHA-M3533	432X956M20	AR2
		80064197		1-E-PHA-M3534	432X956M20	AR3
		80064198		1-E-PHA-M3531	432X956M20	BR3
		80064199		1-E-PHA-M3530	432X956M20	DR1
		80064200				
		80043455	4F	1-E-PHB-M3828	432X956M14	AR1
		80043456		1-E-PHB-M3825	432X956M14	BR1
		80043457		1-E-PHB-M3826	432X956M14	BR2
		80043458		1-E-PHB-M3827	432X956M14	BR3
		80043459		1-E-PHB-M3823	432X956M15	DR3
		80043460	5A	1-E-PHA-M3114	432X956M02	DR1
		80043461	5B	1-E-PHB-M3212	432X956M04	DF2
		80043462	17K	Parts Qty. 6	443X016M07	--
		80043463	17L	Parts Qty. 6	443X016M08	--
		80043464	4D	1-E-PHA-M36	432X956M11	DR2
		80043465		1-E-PHA-M36--	432X956M12	BF2
		80043466				
		80043467				
		80043468				
		80043469				
		80043470				

REFERENCE (C)

Bechtel Power Corporation

Interoffice Memorandum

To W. J. Stubblefield

Subject ANPP Job 10407
Defective Agastat Relays

File No. E.6.01

Date IOM-E-8348 MOC 127391
October 14, 1980

From W. G. Bingham

Of Engineering

At LAPD Ext. 539

Copies to W. H. Wilson
R. R. Stiens
J. Aguilar
M. Torikian
J. Robinson (F)
J. Schuh
D. Soteropoulos
G. Kopchinski
K. Kreutziger
All w/encl.

Reference: (A) GE Letter, L. R. Fickel to J. Torres, May 30, 1980
(B) Q.A. Bulletin, 80-15, June 2, 1980

Per reference (A) please check motor control centers for suspected Agastat 7012AD relays and return them to GE, Phoenix representative.

Also please check Class IE equipment listed below for possible defective Agastat relays of the serial numbers indicated on reference (A) or date coded 7745 and 7812 per reference (B), and report to us by November 3, 1980.

Class IE Equipment	P.O. Number
4.16 kV Switchgear	13-EM-009
Load Center	13-EM-017
Motor Control Centers (other than those listed in Ref. A)	13-EM-018
AC & DC Panels	13-EM-020
DC Load Centes	13-EM-021
Aux. Relay Cabinets	13-EM-022

We are currently compiling a list of other equipment where Agastat relays might be used and will submit it to you.

A. A. Stiens for
W. G. Bingham

WGB:SV:fd

Enclosure: Q.A. Bulletin 80-15, June 2, 1980 (4 pages, 1 copy)

Bechtel Power Corporation

Interoffice Memorandum REFERENCE (f)

To W. J. Stubblefield

Subject ANPP Job 10407

File No. EM-018
IOM-E-8647 MOC 139148

Date February 25, 1981

From W. G. Bingham

Of Engineering

At LAPD Ext. 539

Copies to W. H. Wilson
R. R. Stiens
J. Aguilar
G. Kopchinski
K. Kreutziger
All w/encl.

Ref: (A) IOM W. G. Bingham to W. J. Stubblefield, October 14, 1980
(B) Q.A. Bulletin 80-15, Rev. 2, November 17, 1980
(C) G.E. letter, L.R. Fickel to J. Torres, May 30,1980

Amerace Corporation has identified a premature time-out condition with Agastat Model 7012D Timers or a "Stalled sub-assembly which exhibits looseness after several hundred thousand operations at rapid cycle rate", per reference (C).

Your response to reference (A), requesting identification of equipment where possible defective relays are found and your corrective action is required by March 6, 1981.

Please note that in QA Bulletin, Rev. 2, the code of suspected units changed to 7740 through 7840.

Please add Class IE Diesel Generator Control Cabinets P.O. No. 13-MM-018 to the list of equipment in reference (A).

W. G. Bingham

WGB:VMT:kab

Enclosure: QA Bulletin 80-15, Rev. 2, Nov. 17, 1980 (3 pages, 1 copy)

CONTROL PRODUCTS DIVISION
AMERACE CORPORATION, 2330 VAUXHALL ROAD
UNION, NEW JERSEY 07083 (201) 964-4400

REFERENCE (9)

March 5, 1981

Bechtel Power Corporation
P.O. Box 60860
Terminal Annex
Los Angeles, California 90060

Att: R. L. Rogers, Project Engineer
Los Angeles Power Division

Subject: Southern California Edison Company
San Onofre Nuclear Generating Station, Units 2 & 3
Bechtel Job 10079
Premature Timeout Problem on 7000 Series Agastat
Time Delay Relays
File: S023-703-F

Re: Your Letter February 18, 1981
Log BX-6232
(1) Report on Premature Timeout Problem on 7000
Series Agastat Time Delay Relays

Gentlemen:

In Paragraph 4 of your letter you asked that we review our responsibility for providing the information required in 10CFR50 Section 21.21(b)(3)(VI).

We feel that there is no responsibility on our part to provide this information, because the product which you have purchased is our standard commercial grade time delay relay, sold through many channels of distribution. In April, 1979 Control Products Division placed on the market our E7000 series, which conforms to 10CFR50, and is manufactured under that quality program, which also includes 10CFR21 covering traceability. Those products are sold only on a direct basis, and are identified with our 7000 series having the prefix letter "E" and suffix "001" (Example E7012AD001).

In summary, the units that you have in questions were not subject to any NRC regulations at the time they were purchased.

Reference the Paragraph entitled "Background" -

We feel that the explanation and description of the problem is not correct, and that it would be advantageous for us to give you Control Product's correct background, as related to the problem. This is as follows:

In the latter part of 1978, we received a few units back from the field that exhibited premature time-out. Upon investigation it

was discovered that there was a contaminant on the diaphragm coupler (relay diaphragm does not crack) which caused the diaphragms to leak resulting in premature time-out. The contaminant was found to be silicon, which in turn was traced to an unfiltered air line used to blow-off parts. Compressor lubricant in the air line was the source of the silicon.

Fortunately this particular blow-off station was used only during peak manufacturing periods. The overall number of units passing through this station was small in relation to total units produced, although in a given batch of parts contamination could appear on a high percentage in that batch.

The following corrective action was taken:

1 - The written manufacturing instructions have been revised to call out "Filtered Air Only" for blow-off operations.

2 - An ultra-sonic cleaning operation has been added to the manufacturing procedure.

3 - A visual inspection has been added to check for the presence of contaminants.

The period during which "suspect" units were produced was 1, October 1977 to 1, October 1978. We use the word "suspect" in the sense that very few of the total units produced during this period were contaminated.

If a unit has a contaminated coupler and has sat unused for a long period of time (which would be the case for any units appearing now) it would exhibit the following traits:

. . . The initial time delay would be lower than the set time delay.

. . . The next time delay would be significantly shorter than the first.

. . . The third time delay would be significantly shorter than the second.

If a unit operates satisfactorily for several operation, it does not have a contaminated coupler.

Control Products recommends the use of our "E" series timers and relays when application calls for Class 1E certification.

Enclosed are copies of our:

E7012/E7022
E7014/E7024
EGP, ETR and
EML series

TK

NCR E1 1865 P3

These Product Documents will provide you with the performance characteristics, when tested to Control Products Qualification Program. Our Qualification Reports, E1000 and E2000, are also available.

If there are any further questions, please do not hesitate in contacting me.

Regards,

J. A. Tonini

Joseph Tonini
Sr. Product Manager
JT/ie
Enc. E7012/E7022, E7014/E7024, EGP, ETR and EML Product Documents

cc: D.P. Alexander, Dan Bucci, Mel Martin

TK

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, 9350 E. FLAIR DR., EL MONTE, CALIFORNIA 91734
Phone: (213) 572-5200
MAILING ADDRESS: P.O.BOX 2830,TERMINAL ANNEX, LOS ANGELES, CALIF. 90051

(FERENCE (h)
ELECTRIC UTILITY

SALES DIVISION

April 30, 1982

MT

TC JL
GZ ALZ
RB RB
MJ MJ
MT ——
LAST

Bechtel Power Corporation
P.O. Box 60860
Terminal Annex
Los Angeles, CA 90060

Attn: W. G. Bingham

Subj: ANPP
P.O. EM-018 & EM-021
Agastat 7000 Relays

Gentlemen:

In reference to your letters of 3-30-82, I have attached a copy of your Mr. C. L. Wetherby's letter of 3-30-82 to your Mr. J. V. Carlson of San Francisco.

As the correspondence indicates your site personnel is to contact Mr. M. Q. Martin of Amerace (414/377-0800) when agastat are found in the date code band of concern and he will advise return procedures and address for re-inspection.

Very truly yours,

E. L. Phillippi
Customer Service Specialist

cc: w/attchmts.
R. C. Roessler - GPC, Mebane, NC
W. Bridges - I&SE, Phoenix, AZ
C. L. Wetherby - GPC, Mebane, NC
D. Sigmon - GPC, Mebne, NC
R. Shaw - EUSD, Phoenix, AZ
P. Rinne - I&SE, Phoenix, AZ
L. R. Fickel - Office

165924
JOB 10407
FILE EM-018
EM-021
MAY 3 '82

3	PLM BINGHAM	
2	PE STIENS	
1	APE KLITH	
	APE NAJARIAN	
	APE ALEY	
	RE BLACK	
	COORD 1	
	COORD 2	
	PSE	
	PA	
	PE/WRY (LFO)	
	PA 1 DR	
	NRCP	
	C/S	
	CONTROLS	
W	ELECT	
	MECH	
	NUCLEAR	
	PLANT DESIGN	
	STR & SUP	
W	CLIENT	
W	PO FILE	

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, P.O. BOX 489, MEBANE, NORTH CAROLINA 27302
Phone (919) 563-5561

GENERAL
PURPOSE
CONTROL
DEPARTMENT

March 30, 1982

Mr. John V. Carlson
Bechtel Power Corporation
P. O. Box 3965
San Francisco, CA 94119

Dear Mr. Carlson:

Subject: NRC Information Notice No. 82-04, Agastat
E-7000 Series Time Delay Relays

Attached is a letter written to Mr. M. Q. Martin of Amerace on this subject. A copy of this letter was sent to your company at the site address indicated. The locations listed are suspected to be of the serial range identified by Agastat. Each unit listed should be checked to determine if the serial number listed by Amerace is present. When items are found to be in the date code band, your personnel should contact Mr. M. Q. Martin of Amerace Corporation at (414) 377-0800, who will provide shipping procedure and address for return to Amerace for inspection.

Sincerely,

C Wetherby

T. L. Wetherby
Manager - Quality Control

/kl

Attachments

QUESTIONAIRE

AGASTAT E-7000 SERIES TIME DELAY RELAYS

1. Has your firm shipped any equipment involving the suspect relays to Bechtel projects? YES If so, please provide the following information:

Bechtel P.O. No., Item/Tag No.	Ship Date	Relay Serial No.(s)	Was Customer Notified (If so provide copy)
13-10407-EM018, Item 18	9/21/81	See Attached List	YES
13-10407-E021	12/31/81	"	
13-10407-E018-234	1/29/82	"	

2. Has your firm, as a sub-tier supplier, shipped any equipment with the suspect relays to a prime supplier who may be furnishing the equipment to a Bechtel project? NO If so, please provide the following information:

Customer & Address	Customer P.O. No., Item/Tag No.	Ship Date	Relay Serial No.(s)	Was Customer Notified (If so provide copy)

3. Have all suspect relays received by you and not yet shipped to a customer been returned to Amerace Corporation YES.

Your Firm General Electric Company

Signed [signature]

Date March 30, 1982

Please return to:
Bechtel Power Corporation
P. O. Box 3965
San Francisco, CA 94119
Attn: John V. Carlson
PSQD Special Projects Mgr.

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, P.O. BOX 489, MEBANE, NORTH CAROLINA 27302
Phone (919) 563-5561

GENERAL PURPOSE CONTROL DEPARTMENT

February 12, 1982

Mr. M. Q. Martin
Manager - Quality Assurance
Amerace Corporation
Control Products Division
1000 Hickory Street
Grafton, WI 53024

Dear Mr. Martin:

SUBJECT: Recall of Model E7000 Relays

As a result of your letter of February 2, 1982, we have identified Nuclear 1E (Class Q) orders on which your subject device may have been shipped. Enclosed is a listing of these orders and contact addresses to reach our customers who may have these relays. You should coordinate directly with these sites, as General Electric will not bear any expense as a result of this recall. A courtesy copy of this letter has been mailed to each.

Only 1E (Class Q) requisitions were identified as traceability records are not maintained on non-1E equipment (Class R). Eight relays on purchase orders A683M671230, 675148, 751216, and 768T80 are Class R. It is highly likely these are also at Palo Verde. These could have been shipped on purchase order 10407-13-EM-18 item 157A (2) and purchase order F-134994 (3) - Arizona Public Service Company purchase order. Two relays were still in our shop. They were returned and have been re-received at Mebane. They are model E7022AF, Ser. 81260380, on purchase order A683M659142, and model E7012AC, Ser. 81373342, on purchase order A683M719175. The balance have been shipped to customers in equipment or as parts and should be in the equipment listed. Enclosed is a copy of your listing so noted.

Request you advise the undersigned when all relays have been returned and dispositioned.

C. L. Wetherby
Manager - Quality Control

/kl

Enclosure

cc: C. Wetter, GPC - Bloomington
B. Snell, GPC - Mebane
Florida Power & Light
Bechtel/Arizona Public Service

AGASTAT TIME-DELAY RELAY RECALL PROGRAM
FW 24 - 1981 TO FW 03 - 1982
CLASS Q CUSTOMERS
GENERAL ELECTRIC COMPANY
GENERAL PURPOSE CONTROL DEPARTMENT
MEBANE, N.C. 27302

Customer: Florida Power & Light Company
St. Lucie Plant - Unit No. 2
P. O. Box 1117
Jensen Beach, FL 33457
Attention: Project Quality Construction Supervisor

Equipment: Four (4) pre-wired relay panels with (13) E7012AD timers -
GE part number 272A5509QCP4Q

Florida Power & Light Company P.O. No.: NY422568, Item 1
GE Requisition No.: 300-92264-6
GE Shop Order No.: 475X795M01

Customer: Bechtel Power Corporation/Arizona Public Service
P. O. Box 49
Palo Verde, AZ 85343
Attention: Field Procurement, Jim Crotwell

Bechtel Purchase Order No.: 10407-13-EM-018, Item 18
GE Requisition No.: 480-55032-98
GE Shop Order No.: 473X943M06

Equipment: Design change package - (2) E7022AF, GE part number 272A5509QCP1Q
For: Unit M3726 - Unit 1 and Unit 2

Bechtel Purchase Order: 13-10407-E018-234
GE Requisition No.: 480-55032
GE Shop Order: 443X015M--

MCC No.	GE Ship Item	Unit Location	GE Part Reference	Agastat Model No.	Qty.	Bechtel Unit Ref.	Device
15A-E-PHA-M31	M02	DR1	272A5509QCP2Q	E7022AF	1	M3114	62
	M04	DR2	"	"	1	M3212	62
	M14	DR1	272A5509QCP1Q	E7022AF	1	M3825	62
	M15	DR3	"	"	1	M3823	62

Bechtel Purchase Order: 13-10407-E021
GE Requisition No.: 480-55240
GE Shop Order: 436X0552M--

MCC No.	GE Ship Item	Unit Location	GE Part Reference	Agastat Model No.	Qty.	Bechtel Unit Ref.	Device
3EPKA-M41	M43	1A1	296A2150ASP1Q	E7022PC	2	M4101	62, 62-1
"	M44	1B2	296A2150ASP1Q	E7022PC	1	M4110	62
"	M44	1C2	"	"	1	M4111	62
"	M44	1D2	"	"	1	M4112	62
"	M45	1E2	"	"	1	M4113	62
"	M45	1F2	"	"	1	M4115	62
"	M45	1G4	"	"	1	M4116	62
"	M46	1H3	"	"	1	M4117	62
3EPKB-M42	M47	2A1	296A2150ASP1Q	E7022PC	2	M4201	62, 62-1
3EPKB-M43	M50	3A1	296A2150ASP1Q	E7022PC	2	M4301	62, 62-1
"	M51	3B2	"	"	1	M4312	62
"	M51	3C2	"	"	1	M4313	62
"	M51	3D2	"	"	1	M4314	62
"	M52	3E2	"	"	1	M4315	62
"	M52	3F4	"	"	1	M4316	62
3EPKD-M44	M53	4A1	296A2150ASP1Q	E7022PC	2	M4401	62, 62-1
"	M54	4B2	"	"	1	M4415	62
"	M54	4C2	"	"	1	M4416	62
"	M54	4D2	"	"	1	M4417	62

C. L. Wetherby
2/12/82

A[illegible] CORPORATION
CONTROL PRODUCTS DIV.
[illegible] NUMBER 21a[illegible]
INQUIRY TYPE 2

NUCLEAR TRACEABILITY INQUIRY

CUSTOMER PURCHASE	CUSTOMER ORDER	PART-IDENTIFICATION	CONF CODE	SER-RANGE	COIL NUM	CUSTOMER/NAME	LOCATION
[illegible]		E[illegible]22AE REPLACED & RENUMBERED	[illegible]	[illegible]	[illegible]	GENERAL ELECT	[illegible]
A6[illegible]2142		E7022AE	001	81260331	8122	GENERAL ELECT	[illegible]
A6[illegible]2142		E7022AE	001	81260332	8120	GENERAL ELECT	[illegible]
A6[illegible]2142		E7022AE	001	81260333	8120	GENERAL ELECT	[illegible]
A6[illegible]2142		E7022AE	001	81260334	8122	GENERAL ELECT	[illegible]
A6[illegible]2142		E7022AE	001	81260[illegible]	8122	GENERAL ELECT	[illegible]
[illegible]2142		E7022AE	001	81260[illegible]	8117	GENERAL ELECT	[illegible]
[illegible]2142		E7022AE	001	81260[illegible]	8117	GENERAL ELECT	[illegible]
A6[illegible]1230	CLASS R NONIE	E7012AC	001	81[illegible]	8122	GENERAL ELECT	[illegible]
A6[illegible]1230	CLASS R NONIE	E7012AD	001	81212237	8122	GENERAL ELECT	[illegible]
A6[illegible]1230	CLASS R NONIE	E7012AD	001	81212238	8122	GENERAL ELECT	[illegible]
A6[illegible]1248	CLASS R NONIE	E7012AC	001	81212239	8122	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304098	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304099	8124	GENERAL ELECT	[illegible]
[illegible]4260		E7022PC	001	81304100	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304101	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304102	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304103	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304104	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304105	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304106	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304107	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304108	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304109	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304110	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304111	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304112	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304113	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304114	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304115	8124	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304116	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304117	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304118	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304119	8125	GENERAL ELECT	[illegible]
A6[illegible]4260		E7022PC	001	81304120	8125	GENERAL ELECT	[illegible]
A6[illegible]2175		E7012AC	001	81373341	8118	GENERAL ELECT	[illegible]
A6[illegible]2175		E7012AC REPLACED & RENUMBERED	001	81373342	8118	GENERAL ELECT	[illegible]
A6[illegible]2175		E7012AC	001	81373343	8118	GENERAL ELECT	[illegible]
[illegible]1182		E[illegible] REPLACED & RENUMBERED	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]1182		E[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
A6[illegible]1216	CLASS R NONIE	E7012AE	001	81460043	8137	GENERAL ELECT	[illegible]
A6[illegible]1180	CLASS R NONIE	E7012AE	001	81443074	8138	GENERAL ELECT	[illegible]
A6[illegible]1180	CLASS R NONIE	E7012AE	001	81443075	8140	GENERAL ELECT	[illegible]
A6[illegible]1180	CLASS R NONIE	E7012AEL	001	81443074	8142	GENERAL ELECT	[illegible]
A6[illegible]9060		E7012AE	001	81443073	8141	GENERAL ELECT	[illegible]

TROL PRODUCTS DIVISION
RACE CORPORATION 1950 HICKORY STREET
TON, WISCONSIN 53224 (414) 377-0600

QA82083

(reference (i)

June 2, 1982

Bechtel Power Corporation
11445 South Lakewood Blvd.
Downey, CA 90241

Attention: Mr. Mike Torikian

Dear Mr. Torikian:

On March 20, 1980 we notified General Electric, Mebane, North Carolina, of a possible problem with a sub-assembly in our 7000 series nuclear safety related relays. This problem was noticed during our continuing extended performance test program. In a rapid cycle test, a core stop to plate staking operation came loose after a few hundred thousand cycles. When the staking breaks loose, the relays make a lot of noise, but still functions. The worse case would be a continuously energized relay. These might draw higher than normal current and eventually overheat.

Most of the worst staking was caught before shipment, however some marginal assemblies may have gotten to the field.

Although the rapid cycle test is more severe than normal usage and the qualified life of nuclear series is 25,000 cycles, we recommended that customer purchasing "nuclear safety related" relays return them for core/plate replacement, as a precautionary measure. Of the 77 nuclear relays involved all but the 24, which G.E. says were sent to you, have been returned.

Since we did not experience the failures in the type of testing done for nuclear qualification, it was decided that NRC notification was not required. This judgement is now supported by the fact that since this potential problem was discovered in 1980, there have been no reports of field failures from this cause in either nuclear or conventional product installations.

If, however, there is any concern on your part that one of the relays you have from this lot might result in a random failure that would cause a safety hazzard, we still will be happy to replace all the core/plates if you will send them to us at Grafton, WI. Turn around time will be no longer than 2 days.

If you have any further questions on this please call me.

Sincerely,

CONTROL PRODUCTS DIVISION

M. Q. Martin
Quality Assurance Manager

MQM/vf