



Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35602

O. J. "Ike" Zeringue  
Vice President, Browns Ferry Operations

MAR 30 1992

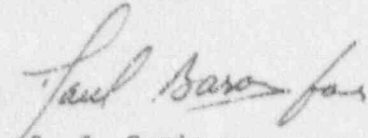
U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Dear Sir:

TVA - BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1 - DOCKET NO. 50-259 - FACILITY  
OPERATING LICENSE DPR-33 - LICENSEE EVENT REPORT LER-50-259/92001

The enclosed report provides details concerning unplanned engineered safety  
feature actuations because of a reactor protection system circuit protector  
fuse cleared resulting from a short in an indicating light socket. This  
report is submitted in accordance with 10 CFR 50.73(a)(2)(iv).

Sincerely,

  
O. J. Zeringue

Enclosure

cc: see page 2

030180

9204030199 920330  
PDP ADOCK 05000259  
S PDR

JE22

U.S. Nuclear Regulatory Commission

~~NR~~ 30 1992

cc (Enclosure):

INPO Records Center  
Suite 1500  
1100 Circle 75 Parkway  
Atlanta, Georgia 30339

Paul Krippner  
American Nuclear Insurers  
The Exchange, Suite 245  
270 Farmington Avenue  
Farmington, Connecticut 06032

ERC Resident Inspector  
Browns Ferry Nuclear Plant  
Route 12, P.O. Box 637  
Athens, Alabama 35609-2000

Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, Suite 2900  
Atlanta, Georgia 30323

Thierry M. Ross  
U.S. Nuclear Regulatory Commission  
One White Flint, North  
11555 Rockville Pike  
Rockville, Maryland 20852

PDR

NRC FORM 255  
(10-76)

DIVISION OF CONTRACTS  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

NOTIFICATION OF CONTRACT EXECUTION

CONTRACT NUMBER

NRC-33-91-183

MODIFICATION NUMBER

Four (4)

NEW

MODIFICATION

OTHER (Specify)

TO: Gerald F. Cranford, Director  
(Title)

Office of Information Resources Management

(Organization)

CONTRACT BASED ON:

AUTHORIZATION NUMBER

DATE

FROM:

Mary E. Ross  
Diana Clark  
Contract Administrator

MAR 19 1992

(Date)

CONTRACT CHANGES PER THIS ACTION

Assignment of claims

Contract Administration Branch  
Division of Contracts & Property Management, ADM

CONTRACTOR (Name & Location)

Analytical & Research Technology, Inc.  
10565 Lee Highway - Suite 300  
Fairfax, VA 22030

EXECUTION DATE

MAR 19 1992

TYPE OF CONTRACT

CPFF

PROJECT TITLE

"Advice and Assistance to Microcomputer and  
LAN Users"

9204060408 920319  
PDR CONTR  
NRC-33-91-183 PDR

PERIOD OF PERFORMANCE

4/26/91 - 4/28/93

PRINCIPAL INVESTIGATOR

Arthur Roth

NRC AUTHORIZED REPRESENTATIVE

Phyllis Smith

FUNDING

B&R NUMBER

FIN NUMBER

AMOUNT

NEW NRC FUNDS

\$ -0-

TOTAL FY FUNDING

\$ 556,066.00

TOTAL NRC OBLIGATIONS

\$ 556,066.00

GOVERNMENT PROPERTY

030128

ATTACHMENT(S)

Modification No. 4

CONTRACT DOCUMENT (

*[Handwritten signature]*

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE	PAGE OF PAGES 1   1   2
2. AMENDMENT/MODIFICATION NO. Four (4)	3. EFFECTIVE DATE MAR 19 1992	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
6. ISSUED BY U.S. Nuclear Regulatory Commission Division of Contracts Washington, D.C. 20555	CODE	7. ADMINISTERED BY (If other than Item 6)	CODE

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)  Analytical & Research Technology, Inc. 10565 Lee Highway - Suite 300 Fairfax, VA 22030		9A. AMENDMENT OF SOLICITATION NO.
CODE		9B. DATED (SEE ITEM 11)
FACILITY CODE		10A. MODIFICATION OF CONTRACT/ORDER NO. X NRC-33-91-173
		10B. DATED (SEE ITEM 11) 4/26/91

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

**13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

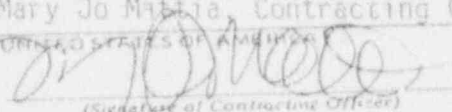
D. OTHER (Specify type of modification and authority)

F. IMPORTANT: Contractor  not,  is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

**14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)**

SEE FOLLOWING PAGE - ASSIGNMENT OF CLAIMS

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Mary Jo Mattia, Contracting Officer		
15B. CONTRACTOR/REFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY  (Signature of Contracting Officer)	16C. DATE SIGNED MAR 19 1992

Contract No. NRC-33-91-183  
Modification No. 4  
Page 2 of 2

In accordance with Billing Instruction for NRC Cost-Type Contracts, the section entitled "preparation and Itemization of the Voucher - Payee's name and address", and by virtue of the executed instrument of assignment of claims dated January 7, 1992, the contract is hereby modified as follows:

1. In accordance with the assignment of claims dated November 29, 1991, payment of monies due unto this contract will be made to:

Signet Bank/Virginia  
Government Contract Department  
P.O. Box 2329  
Merrifield, VA 22116-2329

2. This assignment of claims shall remain in effect unless or until released in accordance with FAR 32.805(e).

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Browns Ferry Nuclear Plant (BFN) DOCKET NUMBER (2) | PAGE (3) |  
050102 | 5 | 9 | 0 | 15

TITLE (4) Unplanned Engineered Safety Features Actuation Because a Reactor Protection System  
Circuit Protector Fuse Cleared Resulting from a Short in an Indicator Light Socket

EVENT DAY (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES			DOCKET NUMBER (5)
03	02	1992	001	00	03	03	1992	BFN Unit 2			0501021610
								BFN Unit 3			0501021916

OPERATING MODE (9) | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5:  
(Check one or more of the following)(11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER (Specify in
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	Abstract below and in
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	Text, NRC Form 366A)
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
James E. Wallace, Compliance Licensing Engineer	205729-7874

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD'S	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD'S

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
--	--	-------------------------------	-------	-----	------

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On March 2, 1992, with Units 1 and 3 defueled and Unit 2 at 64 percent power, an assistant unit operator (AUO) cleared a control power fuse for a circuit protector in the reactor protection system (RPS) while attempting to pull an indicating light, thereby causing the actuation of BFN's engineered safety features (ESFs). This challenge to the ESFs is reportable in accordance with 10 CFR 50.73(a)(2)(iv).

The root cause for the event is a less than adequate design requirement in the RPS circuit protector circuitry. The indicating lights do not have a separate fuse from the control circuit which has the undervoltage, overvoltage, and underfrequency relays for the circuit protectors.

The immediate corrective actions were: to place the affected RPS Bus on alternate power which uses two different circuit protectors, to reset ESFs to their normal configuration, and to place an operator aid in the field. The long-term corrective actions are to implement three design change notices previously written to ensure that the indicating lights have their own fuses and are not common with the fuse for an undervoltage, overvoltage, or underfrequency control circuit.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (5)			PAGE (3)	
		YEAR	NUMBER	REVISION		
Browns Ferry Unit 1						
	0500215992	0	1	0	0	2 of 5

TEXT (If more space is required, use additional NRC form 366A's) (17)

I. PLANT CONDITIONS

Unit 2 was at approximately 64 percent power (Power Operations). Units 1 and 3 were shutdown and defueled.

II. DESCRIPTION OF EVENT

A. Event:

On March 1, 1992 at 2300 hours, an assistant unit operator (AUO) (utility, non-licensed) began a normal equipment inspection and record readings tour through the Control Bay Building. At 0025 hours, the AUO entered battery board room #1 and noticed that an indicating light for reactor protection systems (RPS) [JC] circuit protector 1B1 was not illuminating. The AUO attempted to pull the light bulb to see if it was blown and replace it if needed. While pulling the light bulb from the socket, a blue arc was observed. This AUO activity cleared a circuit protector control power fuse in the RPS causing a loss of power to RPS bus and initiated engineered safety feature (ESF) actuations. The AUO ceased to pull the light bulb. The AUO then called the Unit 1 control room operator (utility, licensed). An assistant shift operations supervisor (ASOS) (utility, licensed) was sent to the battery board room to initiate an investigation.

The tripping of the circuit protector resulted in a group 6 and group 2 primary containment isolation system (PCIS) actuation [JM]. Due to the shutdown and defueled condition of Unit 1, the action was limited to Reactor Building and refuel zone ventilation systems [VA] isolation; A, B, and C standby gas treatment (SGTS) systems [BH] starting; A and B control room emergency ventilation (CREV) system [VI] started and, Unit 1 drywell equipment and floor drain sump outboard isolation valve [WK] closed. Required alarms and ESF actuations acted as designed.

RPS Bus B was placed on alternate power, and ESF actuations were returned to normal by 0715 hours.

As a result of the ESF actuations, this event is reportable in accordance with 10 CFR 50.73(a)(2)(iv) as an event or condition that resulted in manual or automatic actuation of any ESF.

B. Inoperable Structures, Components, or Systems that Contributed to the Event:

None

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Browns Ferry Unit 1	050023992	00	01	00	03	05	05

TEXT (If more space is required, use additional NRC Form 366A's) (17)

**C. Dates and Approximate Times of Major Occurrences:**

- March 2, 1992 at 0025 CST      AUO noticed indicating light for RPS system not illuminating, and started to pull the light bulb, thereby causing the circuit protection control power fuse to clear resulting in ESF actuations
- March 2, 1992 at 0304 CST      A four-hour notification was made to the NRC in accordance with 10 CFR 50.72(b)(2)(ii)

**D. Other Systems or Secondary Functions Affected:**

None

**E. Method of Discovery:**

This event was immediately known to the control room operator upon receiving indication of an isolation of the Reactor Building and refuel zone ventilation systems.

**F. Operator Actions:**

The AUO immediately released the indicating light bulb. The control room operator sent an ASOS to the battery board room to investigate the event. RPS Bus B was placed on alternate power which uses two different circuit protectors, and ESF isolations returned to normal.

**G. Safety System Responses:**

loss of power to the RPS bus 1B resulted in a partial group 6 and group 2 PCIS actuation. The PCIS actuation included the Reactor Building and refuel zone ventilation system isolation; A, B, and C SCTS starting; A and B CREV systems starting; and, drywell equipment and floor drain sump outboard isolation valves closed.

**III. CAUSE OF THE EVENT**

**A. Immediate Cause:**

AUO was pulling a non-illuminating indicating light bulb from the 1B1 circuit protector of the RPS, thereby causing a fuse to clear resulting in a loss of power to RPS Bus 1B. A mark was found in the light socket. This mark appears to have provided a shorting path to the metallic holder of the light bulb socket.



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)			
		YEAR	NUMBER	REVISION	NUMBER				
Browns Ferry Unit 1		1992	001	00	04	01	01	01	01

TEXT (If more space is required, use additional NRC Form 366A's) (17)

**B. Root Cause:**

The root cause of this event resulted from a less than adequate design requirement. The indicating light does not have a separate fuse from the control circuit which has the undervoltage, overvoltage, and underfrequency relays for the circuit protectors.

**IV. ANALYSIS OF THE EVENT**

**A. Safety Analysis:**

Since all equipment performed as designed during this event, the inadvertent actuation of several ESF related components did not adversely affect the health and safety of the public.

**V. CORRECTIVE ACTIONS**

**A. Immediate Corrective Actions:**

RPS Bus 1B was placed on its alternate supply; PCIS was reset; the drywell floor equipment drain sump pump outboard isolation valves were opened; Reactor Building and refueling zone ventilations were placed in service; A, B, and C SGTSS and CRKV systems were placed in standby. The associated alarms were reset.

TVA placed an operator aid on the circuit protector to identify the bulb as a bayonet type and to make personnel aware of the possibility of tripping a RPS bus if bulb is not properly removed.

**B. Corrective Actions to Prevent Recurrence:**

TVA is implementing three design change notices (DCNs) which will ensure that the indicating lights are separately fused. Implementation of these DCNs will preclude a recurrence of this type of event.

**VI. ADDITIONAL INFORMATION**

**A. Failed Components:**

None.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)
		SEQUENTIAL NUMBER	REVISION NUMBER		
Browns Ferry Unit 1		YEAR	NUMBER	NUMBER	
	0000000215191912	--	0	0	1
		--	0	0	30
					15
					10
					15

TEXT (If more space is required, use additional NRC form 366A's) (17)

**B. Previous LERs or Similar Events:**

LER 50-259/88052 event resulted from a damaged indication light socket. Although, in the March 2, 1992 event, the socket was investigated and no defects in the socket were identified, less than adequate design requirement (common fuse) was the root cause of both events. Therefore, LER 50-259/88052 is a similar previous event and one of its corrective actions was to evaluate the need to modify the existing circuitry for the addition of a separate fuse for the indication circuit.

**VII. Comments**

TVA is implementing a DCN for Unit 1 which will ensure that the indicating lights are separately fused. This corrective action will be completed by August 1, 1992.

TVA is implementing a DCN for Unit 2 which will ensure that the indicating lights are separately fused. This corrective action will be completed by August 1, 1992.

TVA is implementing a DCN for Unit 3 which will ensure that the indicating lights are separately fused. This corrective action will be completed by August 1, 1992.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].