| gamment demonstration and an average and and and   |   | anna barbri on ana puna di stauna   |   | -  | CANONER A REPORT OF CANADRA  | WINDOW WINDOW WARD TO CAR  | and a stand of the st  | STO NORTH COLORIDAN AND COLORIDAN   |                         | MORE REAL FOR THE PARTY OF |
|--|---|---|---|--|--|--|---|---|-------------------------|----------------------------|
| NRC Form 366<br>(9-83)   |   |   |   |  |  |  | U.S. NUC  | LEAR REGULATO   | RY COMM                 | IISSION                    |
|  |   | 110   | CHICCE EVE  | NT DE  | ODT  | (1 5 5)  | 1   | APPROVED OMB 1  | 10. 3150-01             | 04                         |
|  |   | LIC   | CINSEE EVEI   | NI MEI   | ONT  | (LEM)  |   |   |                         |                            |
| anan bana managa san an  | anan amandarang dasa kasada too ta ka ahan ka   |   |   |  |  |  |   |   |                         |                            |
| FACILITY NAME (1)  |   |   |   |  |  |  | DOCKET NUMBER (   | 2)  | PAG                     | E (3)                      |
| BROWNS FER   | RY UNIT 1   |   |   |  |  |  | 0 5 0 0   | 0 2 5 9   | 1 07                    | 0 4                        |
| FAILURE TO   | PERFORM PRI   | EVENTIVE  | E MAINTENA  | NCE ON   | A RE   | ACTOR PRO  | DTECTION S  | YSTEM MOT   | OR                      |                            |
| GENERATOR  | SET CAUSES  | ENGINEER  | RED SAFETY  | FEATL  | RE AC  | TUATIONS   |   |   | -                       |                            |
| EVENT DATE (5)   |   |   | REPORT DAT  | E (7)  |  | OTHER  | FACILITIES INVOL  | VED (B)   |                         |                            |
| MONTH DAY YEAR YEA   | UMBER   | NUMBER  | MONTH DAY   | YEAR   |  | FACILITY NA  | WEB   | DUCKET NUMBER   | (5)                     |                            |
|  |   |   |   | -  | BROW   | NS FFRRY   | UNIT 2  | 0 5 0 0   | 1012                    | 1610                       |
|  |   |   |   | ala  |  |  |   |   |                         |                            |
| 0323898  | 9 0 10  | 00  | 0 4 1 8   | 89   | BROW   | INS FERRY  | UNIT 3  | 0 151010  | 1012                    | 1916                       |
| OPERATING THIS   | REPORT IS SUBMITTE  | D PURSUANT 1  | TO THE REQUIREME  | ENTS OF 10   | CFR S: /C  | Sheck one or more  | of the following! (11   | 1   |                         |                            |
| N N  | 20.402(6)   |   | 20.405(c)   |  | X  | 50.73(a)(2)(iv)  |   | 73.71(a)  |                         |                            |
| POWER<br>LEVEL OLO IO  | 20.405(#)(1)(i)   |   | 50.36(c)(1)   |  |  | 50.73(a)(2)(v)   |   | /3.71(c)  |                         |                            |
|  | 20.405(a)(1)(ii)  |   | 50.36(c)(2)   |  |  | 50.73(a)(2)(vii)   |   | below and in  | Text, NRI               | C Form                     |
|  | 20.405(c)(1)(iii)   |   | 50.73(#1(2)(1)  |  |  | 50,73(e)(2)(v)())  | M)  | JOD4(7  |                         |                            |
|  | 20.406(a)(1)(v)   |   | 50.73(=)/21(0)  |  |  | 50.73(s)(2)(v)   | <b>b</b> /  |   |                         |                            |
| for a second sec | £0.400(E)(1)(F)   | k   | ICENSEE CONTACT   | FOR THIS   | 1 E.B. (12)  | DU.73(87(27(K)   |   |   |                         |                            |
| NAME   |   |   | ILLINDEE CONTACT  | ron mis  | LEN (12)   | 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-   |   | TELEPHONE NUM   | BER                     |                            |
|  |   |   |   |  |  |  | AREA CODE   |   | roads to be a second to |                            |
| Stephen C.   | Willard, Fr   | nginger.  | Plant Res   | ocrtin   | a Sec  | tion   | 21.015  | 712191-   | 1 215                   | 13.16                      |
| ocephen of   | COMPLETE  | ONE LINE FOR  | EACH COMPONENT  | FAILURE  | DESCRIBE   | D IN THIS REPOR  | RT (13)   | 1 - 12 1  | 1 = 1 = 1               | 12 10                      |
|  |   | DEPODIARIE  |   | 1  | 1  |  | Turkuran  | L.  |                         |                            |
| CAUSE SYSTEM COMPONENT   | TURER   | TO NPROS  |   | CAUSE  | SYSTEM   | COMPONENT  | TURER   | TO NPROS  |                         |                            |
|  |   |   | dendularis, relevande un estas seguineas un   |  |  |  |   |   |                         | ************               |
|  | 111   |   |   |  | 1  | 1 1 1  | 1 1 1 1   | 1   |                         |                            |
| forman and a second   |   |   | anor taxaoannaganana a  |  | **************************************   | ferende andere ander  |   |   | ***********             | ererenteed                 |
|  | 1111  |   |   |  |  | 111  | 1111  |   |                         |                            |
| frances and a subserve derived a such as a derived a   | SUPPLEME  | NTAL REPORT   | EXPECTED (14)   | and an ensurement  | A  | kennen konne konsenderen   |   | MONTH   | DAY                     | YEAR                       |
|  |   | and the second se |   |  | and a process so such back   |  | SUBMISSI  | DN  |                         |                            |
| YES (If yes, complete EXPECT   | ED SUBMISSION DATE  |   | X NO  |  |  |  | DATEIN  |   | 1                       | 11                         |
| ABSTRACT (Limit to 1400 spaces in  | e, approximately lifteen  | single space type   | ewritten lines/ (16)  |  |  |  |   |   |                         |                            |
| On March 23<br>protection<br>protectors<br>(ESFs) were<br>ventilation<br>and a half<br>The output<br>slowly osci<br>trip is 124<br>adjustment<br>As correcti<br>damage. Th<br>found satis<br>remaining R<br>received re<br>All three un<br>defueled du   | <pre>, 1989, at<br/>system (RPS<br/>tripped. A<br/>actuated:<br/>, refueling<br/>scram.<br/>voltage of<br/>llating bet<br/>.5 ± 0.8 vo<br/>potentiomet<br/>ve action,<br/>e rest of t<br/>factory. P<br/>PS MG set v<br/>cent cleaning<br/>nits of Brow<br/>ring this end<br/>set set</pre> | 1843 how<br>) bus 11<br>s a resu<br>standby<br>zone is<br>the 1B H<br>ween 120<br>1ts). 1<br>er.<br>the pote<br>he gener<br>reventive<br>oltage a<br>ng or re-<br>wns Ferrivent.  | urs, the B<br>B was deen<br>ult, the f<br>y gas trea<br>solation,<br>RPS motor<br>D and 125<br>This oscil<br>entiometer<br>rator cont<br>ve mainten<br>adjustment<br>eplacement<br>ry were sh | rowns<br>ergize<br>ollowi<br>tment,<br>and pr<br>genera<br>volts<br>lation<br>was o<br>rol ci<br>ance a<br>poter<br>ut dow | Ferry<br>ed whe<br>ing er<br>, cont<br>rimary<br>ator (<br>(circo<br>h was<br>cleane<br>trouit<br>action<br>ntiome | y unit 1<br>en the 1B<br>ngineered<br>rol room<br>y contain<br>(MG) was<br>cuit prot<br>caused by<br>ed and in<br>ry was in<br>as will b<br>eters which<br>I units 1 | reactor<br>1 and 1B2<br>safety fe<br>emergency<br>ment isola<br>found to h<br>ector over<br>y a dirty<br>spected for<br>nspected a<br>e performe<br>ch have no<br>and 3 wer | circuit<br>eatures<br>y<br>ations,<br>be<br>rvoltage<br>voltage<br>or<br>and<br>ed on<br>ot |                         |                            |
| 89042<br>PDR<br>S  | 60449 8904<br>Addck 0500  | 418<br>00259<br>PDC   |   |  |  |  |   | IE  | 22                      |                            |

NRC Form 366 (9-83)

ä

| 19-83) LICENSEE EVENT RE  | PORT (LER) T  | EXT CON  | TIN   | JATIO  | N   |  | U.S. NUG<br>AF<br>EX                                      | PROVED                      | GULAT         | ORY CO | MMISSIO |
|---|---|--|---|--|---|--|---|-----------------------------|---------------|--------|---------|
| FACILITY NAME (1)   | DOCKET NUMB   | NY MENDERSONAL BR  | LE  | R NUMBER   | (6)   | PAGE (3)   |   |                             |               |        |         |
|   |   |  |   |  |   | SEQUENT  | ENTIAL REVISION<br>MBER NUMBER                            |                             |               |        |         |
|   | 0 15 10 1   | 010101   | - 10  | 0.10   |   | 0111   | ~   | 0.10                        |               |        | 0.17    |
| TEXT (If more space is required, use additional NRC Form 306A's) (17)   | 10 15 10  | 0 0 2  | 5 9   | 89   |   | 0 1  | 0   | 00                          | 0             |        | 014     |
| Description of Event  |   |  |   |  |   |  |   |                             |               |        |         |
| On March 23, 1989, at 1843 ho<br>protection system (RPS)(EIIS<br>completing the initiation log<br>features (ESFs):  | ours, the Bro<br>code JC) buy<br>gic for the s  | owns Fer<br>s 1B was<br>followir   | ry i<br>dei<br>ig ei                                    | unit<br>energ<br>ngine   | l r<br>ize<br>ere                           | eacto<br>d the<br>d saf                                    | r<br>reby<br>ety  |                             |               |        |         |
| Unit 1 RPS half scram, ch   | nannel B  |  |   |  |   |  |   |                             |               |        |         |
| Containment Isolations/Ad   | ctuations (E  | IIS code   | e JM  | )  |   |  |   |                             |               |        |         |
| - Unit 1  |   |  |   |  |   |  |   |                             |               |        |         |
| Group 2 (Residual Heat<br>(EIIS code BO)  | Removal) is   | olation,   | ou  | tboar  | d v   | alves  |   |                             |               |        |         |
| Group 3 (Reactor Water<br>(EIIS code CE)  | Cleanup) is   | olation  | ou  | tboar  | d v   | alves  |   |                             |               |        |         |
| Group 6 (purging and ve<br>(EIIS code VB)   | enting) isol  | ation, (   | outb  | oard   | val   | ves  |   |                             |               |        |         |
| Group 8 (Traversing Ind   | core Probe)   | isolati  | on (1   | EIIS   | cod   | e IG)  |   |                             |               |        |         |
| Reactor zone isolation  | (EIIS code '  | (AV  |   |  |   |  |   |                             |               |        |         |
| - Common  |   |  |   |  |   |  |   |                             |               |        |         |
| Standby Gas Treatment,  | trains A, B   | , and C  | (EI   | IS co  | de  | BH)  |   |                             |               |        |         |
| Control Room Emergency  | Ventilation   | , trains   | s A   | and B  | (E  | IIS c  | ode   | VI)                         |               |        |         |
| Units 1, 2, and 3 refu  | el zone isol  | ations   | (EII  | S cod  | e V   | G)   |   |                             |               |        |         |
| Unit 1 reactor zone ventilat<br>allow work in the air intake  | ion had been<br>structure.  | isolat   | ed p  | rior   | to  | this   | even  | t to                        |               |        |         |
| Operations personnel respond<br>1B1 and 1B2 tripped. Trippin<br>RPS Bus 1B. RPS motor gener<br>output voltage was observed<br>volts, as indicated by the i<br>overvoltage trip of the circ<br>was shut down, the RPS Bus 1<br>actuation logic reset, and t<br>pre-event alignment by 2100 | ing to the e<br>ng of either<br>ator (MG) se<br>to be slowly<br>nstalled vol<br>uit protecto<br>B was placed<br>he actuated<br>hours. | vent for<br>circui<br>t 1B wa<br>oscill<br>tmeter.<br>r is 12<br>on its<br>ESF equ | und<br>t pr<br>s st<br>atin<br>Th<br>4.5<br>alt<br>ipme | RPS cotect<br>ill r<br>g bet<br>e set<br>± 0.8<br>ernat<br>nt re | irc<br>or<br>unn<br>wee<br>poi<br>vo<br>e p | will<br>ing,<br>en 120<br>nt fo<br>lts.<br>power<br>rned t | rote<br>deen<br>but<br>and<br>r th<br>The<br>supp<br>o it | the<br>125<br>MG s<br>1y, t | e<br>et<br>he |        |         |
| All three units were shutdow  | n during thi  | s event  | ; un  | its 1  | an  | nd 3 w   | ere   |                             |               |        |         |

| RC Form <sup>*</sup> 366A<br>.63) | LICENSEE EVENT REPOR | INUATION          | U.S. NUCLEAR REGULATORY COMMISSI<br>APPROVED OMB NO. 3150-0104<br>EXPIRES: 8/31/88 |                |                                      |  |  |
|-----------------------------------|----------------------|-------------------|--|----------------|--------------------------------------|--|--|
| ACILITY NAME (1)                  |                      | DOCKET NUMBER (2) | LER NUM  | ER (6)         | PAGE (3)                             |  |  |
|                                   |                      |                   | VEAR SEQUE   | NTIAL REVISION | an and a second second second second |  |  |

|   |             |    |    |              |   |               |                  | and a second |           |            |        |           |                   |                             |    |                 |  |
|---|-------------|----|----|--------------|---|---------------|------------------|--|-----------|------------|--------|-----------|-------------------|-----------------------------|----|-----------------|--|
|   |             |    |    |              |   |               |                  | YEAR   |           | SEQUE      | ABER   |           | NUMBER            |                             | T  |                 |  |
|   |             |    |    |              |   |               |                  |  | T         |            |        |           |                   |                             |    |                 |  |
| BROWNS FERRY UNIT 1   | 0           | 15 | 10 | 10           | 0 | 2             | 5 9              | 8 9  |           | d          | 1 0    |           | 010               | 03                          | OF | 0 4             |  |
| TEXT // more space is required use additional NRC Form 3664(+) (17) | and company | -  | -  | and services |   | Antonio de co | waren bern weren | derer reading war  | -Arrented | kornenskon | ****** | A.coronad | house when seeing | array a surificant assessed |    | man address and |  |

### Cause of Event

The trip of the 1B1 and 1B2 circuit protectors was caused by the output voltage of the RPS MG set 1B rising above the circuit protector overvoltage relay setpoint. This MG set output overvoltage was observed on the voltmeter installed by the Operations personnel (utility, licensed) responding to the event. Based on evidence evaluated, it is concluded that the oscillating output of the MG set was caused by a dirty voltage adjustment potentiometer. Preventive maintenance (PM) practices in the past did not specifically address cleaning the voltage adjustment potentiometer.

#### Corrective Actions

The MG set was shut down, the RPS Bus 1B was placed on its alternate (transformer) supply, the actuation logic reset, and the actuated ESF equipment returned to its pre-event alignment.

The potentiometer was cleaned and checked. The rest of the generator control circuitry was inspected and found satisfactory and the MG set restarted. Stable operation of the MG set was then observed for approximately 30 hours, and was placed back in service supplying the RPS Bus 1B.

The PM program in general has undergone extensive improvements during the past two years. As discussed in BFR0-50-296/88008, the PM procedure covering the potentiometer had been recently revised to include cleaning of the potentiometer but this PM action had not been performed on the 1B MG set at the time of this latest event.

PM actions will be performed on the RPS MG set voltage adjustment potentiometers on MG sets 2A, 2B, and 1A. The potentiometer for MG set 1B was cleaned as part of the activities described in this report. The potentiometer for MG sets 3A and 3B has been recently replaced or cleaned.

#### Analysis of Event

The systems affected are designed to shut down the reactor or contain and process any radioactive releases and to fulfill their safety functions upon loss of initiation logic power. The systems responded correctly to the loss of power; therefore, plant safety was not adversely affected. The plant's safe shutdown capabilities would not have been diminished had the unit been at power.

Previous Similar Events - BFR0-50-259/86031 BFR0-50-296/88008

| 19-83) LICENSEE EVENT | REPORT (LER) TEXT CONTIN | UATIO | N  | Ų.8.                 | APPROVED<br>EXPIRES: 8/3                          | GULATOR<br>DMB NO. 1<br>1/88 | Y CON<br>3150-0 | 104 |
|-----------------------|--------------------------|-------|----|----------------------|---|------------------------------|-----------------|-----|
| FACILITY NAME (1)     | DOCKET NUMBER (2)        |       | LE | R NUMBER (6)         | nimuraa oo ka | 1                            | PAGE (          | 3)  |
|                       |                          | YEAR  |    | SEQUENTIAL<br>NUMBER | 1   | TT                           |                 |     |
| BROWNS FERRY UNIT 1   | 0 5 0 0 0 2 5 9          | 8 9   |    | 0 1 0                | - 00  | 0 4                          | OF              | 0 4 |

# Commitments

PM actions will be performed on RPS MG set voltage adjust potentiometer on MG sets 2A, 2B, and 1A. This commitment is a subset of the actions committed in BFR0-50-296/88008 with a due date of June 1, 1989.

## TENNESSEE VALLEY AUTHORITY Browns Ferry Nuclear Plant Post Office Box 2000 Decatur, Alabama 35609-2000

APR 20 1989

U.S. Nuclear Regulatory Commission 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 - REPORTABLE OCCURRENCE REPORT BFR0-50-259/89010

The enclosed report provides details concerning the failure to perform preventive maintenance on a reactor protection system motor generator set resulting in engineered safety feature actuations. This report is submitted in accordance with 10 CFR 50.73 (a)(2)(iv).

Very truly yours,

TENNESSEE VALLEY AUTHORITY

bigle Comphill

Guy G. Campbell Plant Manager

Enclosures cc (Enclosures): Regional Administration U.S. Nuclear Regulatory Commission Office of Inspection and Enforcement Region II 101 Marietta Street, Suite 2900 Atlanta, Georgia 30303

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

NRC Resident Inspector, BFN