



LOUIS ALLIS
Beloit Power Systems

565 Lawton Avenue, Beloit, WI 53511 608/365-4491 TLX 260029

50-395

April 15, 1983

United States Nuclear Regulatory Commission
101 Marietta Street
Suite 3100
Atlanta, GA 30303

Attention: Mr. Murphy

South Carolina Electric & Gas
P. O. Box 764
Columbia, SC 29218

Attention: Mr. D. R. Moore
Manager of Quality Assurance

Subject: Potential Defect in a Westinghouse SA-1
Generator Differential Relay, Shipped
to South Carolina Electric & Gas
Virgil B. Summerstation

Gentlemen:

Please be advised that Westinghouse has advised us of a potential defect in relays known as SA-1 relay. This potential defect can cause the relay to trip in a condition when it should not trip. If this occurs, it will trip the generator circuit breaker, causing loss of the standby generator output, which is safety related.

Westinghouse advises that the problem is an SCR manufactured by ST Semicon and were first purchased January 10, 1980. They also advise to check the unit to see if the units contain an SCR manufactured by ST Semicon. If it does, then notify your closest Westinghouse Sales Office per the attached Westinghouse letter dated 4/11/83.

Our history shows that one (1) relay is involved. It is at the Virgil B. Summer Generating Station, South Carolina Electric & Gas.

South Carolina Electric & Gas Purchase Order #Q311-777 to Colt Ind. FMED
Colt Service Order Number 11-726170
Colt P.O. to Louis Allis Beloit Power Systems Number B441272-0
Beloit Power Systems Sales Order Number 586197
BPS Ship Date 6/24/82 Colt Ship Date 7/29/82
BPS Part Number 01703321-1E

All other relays shown on the Westinghouse letter of 4/11/83 are located at Louis Allis Beloit Power Systems and Westinghouse is being notified that all the relays here contain the ST Semicon SCR's.

83 APR 25 AID: 1
USNRC REGION
ATLANTA, GEORGIA

4/25/83
Summer Gen Sta
in spare parts/shold
not installed - put
held on relay zone

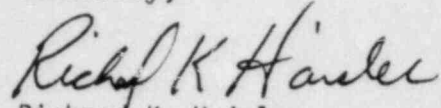
B304280240 B30415
PDR ADOCK 05000395
S PDR

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Please advise me when final disposition of this relay has been obtained. If I can be of further assistance, please call or me.

Sincerely,



Richard K. Haisler
Manager of Quality Assurance
Louis Allis Beloit Power Systems

RKH/bkw

Attachment

cc: Ken Rehard - Colt (w/attachment)
Dick Keyser - Colt (" ")
Harlan Leusink - BPS (" ")
Shef Massey - BPS (" ")
Walt Liermann, Sr. - BPS (" ")



Westinghouse
Electric Corporation

2121 Fifteenth Street
Box 1715
Rockford Illinois 61110
815-398 3591
April 11, 1983

Beloit Power Systems
555 Lawton Avenue
Beloit, Wi 53511

Attn: Mr. Roger Churchill

Subj: Class 1E SA-1 Relays
Uninitiated Trip Output Potential

Dear Roger:

We have had reports from the field that commercial relays have provided trip outputs when there have been no system conditions warranting an output. The trip output has been attributed to the random "firing" (turning on - becoming conductive with no gate input) of a silicon controlled rectifier in the trip output circuit. There have been no reports of this happening in SA-1 relays, commercial or Class 1E, but the SA-1 utilizes the same SCR in a similar trip circuit.

Q.A. and Engineering have been investigating these reports. Eighteen devices returned from the field and over 150 devices from inhouse inventory have been tested. The following comments and conclusions are based on what we have learned to date.

1. Certain SCR's can provide a random trip output.
2. The phenomena appears to be isolated to the devices purchased from a single manufacturer, ST Semicon. We first started to purchase these devices on January 10, 1980.
3. The tendency to provide a random trip is dependent upon the history of ambient temperature, voltage and time. The higher any of these parameters, the more likely an ST Semicon SCR will provide a random trip.
4. ST Semicon has recommended "burning-in" as the technique for "weeding out" devices that may exhibit this tendency. "Burning-in" consists of placing an SCR in an 80 degree C ambient for 48 hours with 500VDC applied, anode to cathode. Devices which go through this process without becoming conductive are believed to be good devices.

4/11/83

5. Our investigation is continuing and we have not, at this time, decided on a corrective action.

Please review the SA-1 relays below. Any relays containing SCR's that were manufactured by Westinghouse (identified by a (W) logo and 2N1850 printed on the barrel) or SYNTRON (identified by a FMC logo and 184A614) are not believed to be subject to this phenomena. SCR's manufactured by ST Semicon (identified by a logo and CR127) are suspect. Aside from the "burn-in" of item 4 above, we do not have any method of determining which particular ST Semicon SCR's will exhibit this tendency.

<u>Serial No.</u>	<u>(W) G.O. Number & Item</u>	<u>Customer Order Number</u>
5256A	RK43470-N1-9	01507
5257A	RK43470-N1-9	01507
5258A	RK43470-N1-9	01507
5259A	RK43470-N1-9	10507
5486	RK43330-N1-25	01401
5487	RK43330-N1-25	01401
7437	RK44202-N1-3	32476
7438	RK44202-N1-3	32476
7439	RK44202-N1-3	32476
7440	RK44202-N1-3	32476
7441	RK44202-N1-3	32476
7442	RK44202-N1-3	32476
7443	RK44202-N1-3	32476
7444	RK44202-N1-3	32476
7455	RK44202-N1-3	33858

Since we have not completed our investigation and do not have a final solution at this time, we would like to postpone making any revisions to SA-1 relays in the field. The purpose for sending this letter is to alert you to the situation and propose interim actions if you have SA-1 relays applied where the potential for a random trip, as evidenced by the presence of an ST Semicon SCR in the relay, should be removed.

Our proposed interim action is to replace the existing SCR with a "Burned-in" SCR. This may be accomplished by returning the relay to us as an RMR. We will replace the SCR with a "burned-in" device, recalibrate, re-inspect and test in Q.A. and provide new replacement. Engineering has indicated that the SCR may be replaced without affecting the calibration of the relay. If field replacement is decided upon, we recommend that the "Adjustments and Maintenance" and Electrical Checkpoints" sections of I.L. 41-348-11 "Type SA-1 Generator Differential Relay for Class 1E applications" be followed. If field replacement is accomplished, we request that a memo so stating be sent to me so our Class 1E records for each serialized relay can be kept up-to-date.

4/11/83

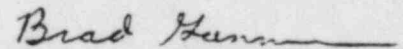
Since we have not decided upon a final corrective action, the above may turn out to be an interim action to reduce the probability of a random trip output being produced by a SA-1 relay. It may be necessary at a later date to recall relays modified as proposed above, to further modify them in line with our final corrective action. This would only be necessary if we believe that "burn-in" is not as effective as our final corrective action.

We do not have application information or knowledge necessary to perform an evaluation to determine if the potential for random trips from Class 1E SA-1 relays with ST Semicon SCR's as described above, could create a substantial safety hazard in your application of these relays.

If you have the required application information or knowledge, you should determine if this potential is creating a substantial safety hazard in the Class 1E application of these relays. If you determine that a safety hazard exists you should take appropriate reporting action as required by NRC Regulation 10CFR Part 21, "Reporting of Defects and Non-Compliance". One of the purposes of this letter is to initiate a chain of reporting that will continue until the person(s) who is able to make this determination is informed of the potential for random trip output.

If relays are to be returned or "burned-in" SCR's are to be supplied; arrangements should be made.

Sincerely,



Brad Gannon
Asst. Sales Engineer

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