

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 24, 1980

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. Robert A. Clark, Chief
Operating Reactors Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Serial No. 725A
NO/WLT/JOE:ms
Docket No. 50-338
License No. NPF-4

Gentlemen:

REQUEST FOR ADDITIONAL INFORMATION
ELECTRICAL DISTRIBUTION SYSTEM VOLTAGES
NORTH ANNA POWER STATION

Further to our letter dated August 20, 1980, Serial No. 725, we hereby provide additional information with items numbered as before:

3. The voltage levels for the 480V emergency buses for the cases given as enclosure A of our letters to you dated August 7, 1979 and August 16, 1979 are as follows:

<u>Case</u>	<u>Buses Having Lowest Voltage</u>	<u>Voltage % of 480V</u>
AP, AR	2H, 2H1	91.1
AR	2H, 2H1, 1J, 1J1	94.4
AT	2H, 2H1, 1J, 1J1	94.8
AQ, AS, AV	1H, 1H1	96.7

Voltages at 480V emergency buses not given above were found to be greater than for those given. For cases AQ, AS, and AV, the worst case voltages on the 480V emergency buses were virtually identical.

6. The worst case loading conditions that have been postulated for performing voltage profile studies did not previously include starting a large motor simultaneous with maximum loading. After initiation of the automatic load shed scheme, no large motors could be started without specific operator action. It has been our position that the starting of a large motor could be done under carefully controlled conditions.

The voltage studies which we performed as per your June 25, 1980 letter give the following results:

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- A. The start of a reactor coolant pump motor combined with the postulated loading for cases AP through AU, could possibly result in a stalled motor and the subsequent separation of an emergency bus in each unit from its normal offsite source.
- B. The start of a reactor coolant pump motor, combined with the postulated loading for cases AW and BA, could possibly result in the subsequent separation of an emergency bus (in the CDA unit) from its normal offsite source. The voltage on the remaining emergency bus in the CDA unit would be satisfactory.

The starting of any large motor, under the worst case conditions postulated, will be restricted. The question of restricting this operation via station operating procedures or by Technical Specifications is still under evaluation.

It should be pointed out that the conditions postulated will become virtually impossible, and therefore the various imposed operating restrictions will be unnecessary, as a result of the generator breaker modification to be discussed later in this letter.

7. The schedule for the referenced work will be November 1980 for the 34.5KV bus 4 modification, and December 1980 for the 34.5KV bus 3 modification. The entire job will be completed and documented by the end of January 1981.
10. We are proceeding with the analysis of terminal voltages on all class 1E loads for the worst case steady state running voltages of cases AP through AU, and for the worst case starting voltages of cases AW and BA. The results of this analysis will be forwarded to you by October 16, 1980. The reactor coolant pump motor start conditions will not be included as per our reply to item #6 above.
11. The analysis of the performance of low voltage controls and instruments is proceeding utilizing the same worst case conditions as discussed in item #10 above. The final result of this study will be completed as soon as possible and forwarded to you. However, the fact that certain information will be required from various vendors precludes any valid estimate of a completion schedule at this time.

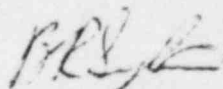
We have studied various means of upgrading the offsite power supplies such that the operator loading restrictions and load shedding will not be required.

Our analysis has shown that the installation of circuit breakers between the generator and the station service transformers will provide tremendous flexibility and capability in offsite power supplies. Attachment A to this letter is a one-line diagram of our planned future system. This arrangement will allow unit start-up with auxiliaries powered through the normal station service transformers. It will also curtail the need to transfer auxiliary loads to the reserve transformers for most unit trips. Therefore, it will be inconceivable that the loading on the reserve system could ever approach the postulated values in our previous studies.

One additional benefit of the generator breaker would be that it provides an additional offsite power supply through the main transformer and the station service transformers. By installing a generator breaker in each unit at North Anna, we will have four independent power supplies from the 500KV bus to the two units' auxiliaries. This advantage will be utilized by providing an alternate tie to each 4KV emergency bus from a normal station service bus.

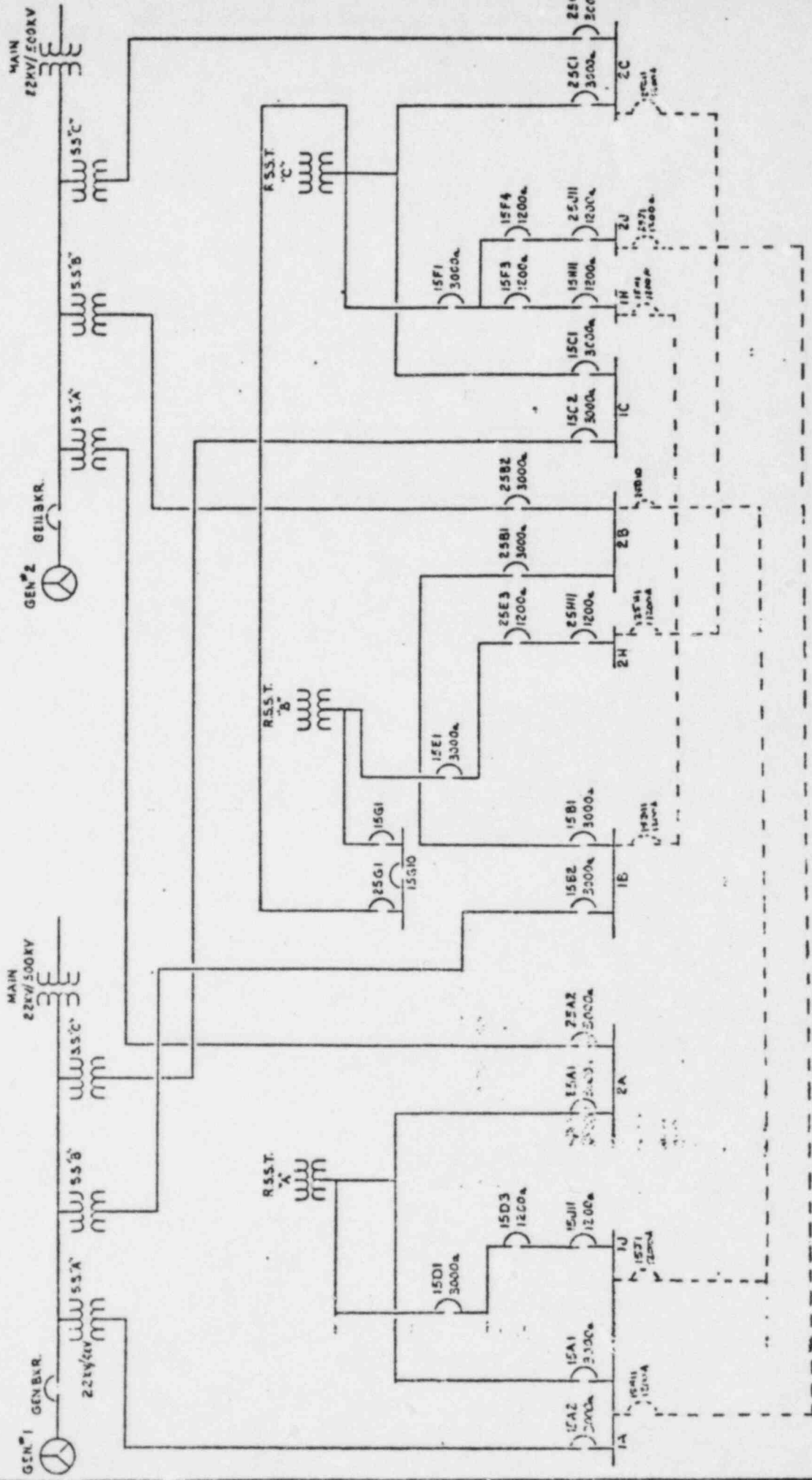
The design for the modifications discussed above for North Anna Units 1 and 2 is proceeding. Installation will occur at the earliest practical date. Further information on this modification will be forwarded to you in a later submittal.

Very truly yours,



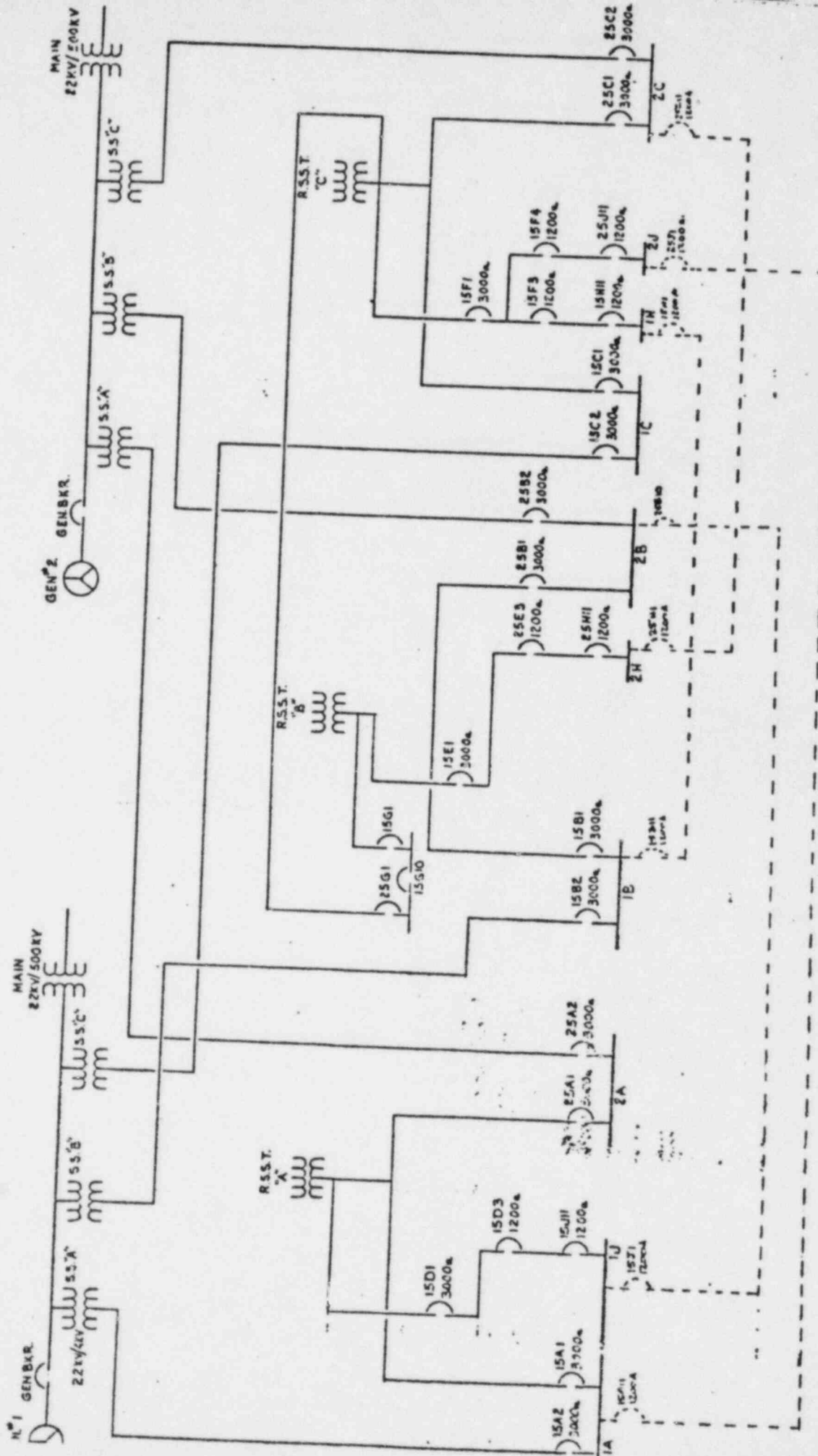
B. R. Sylvia
Manager - Nuclear
Operations and Maintenance

cc: Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement, Region II
Atlanta, Georgia 30303

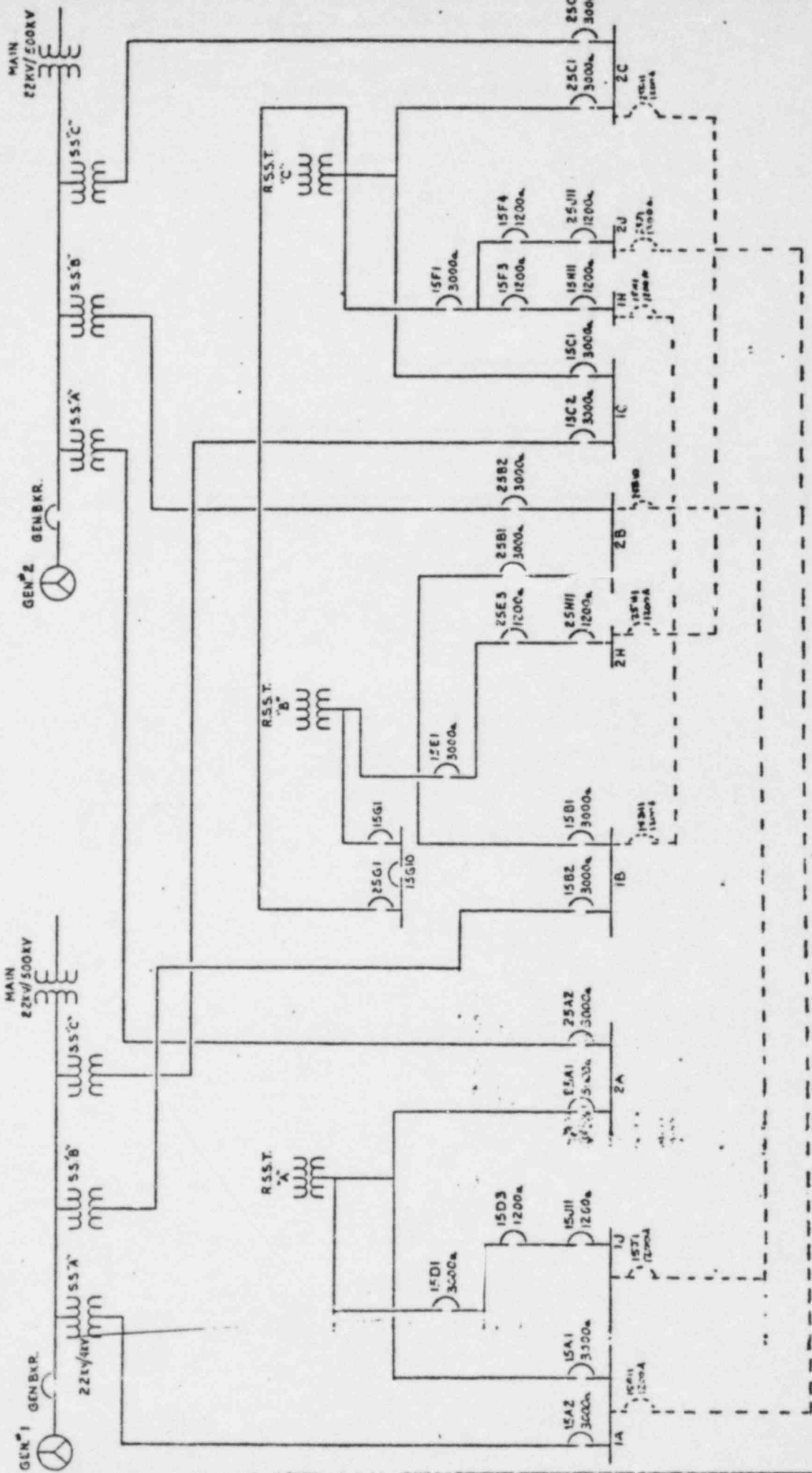


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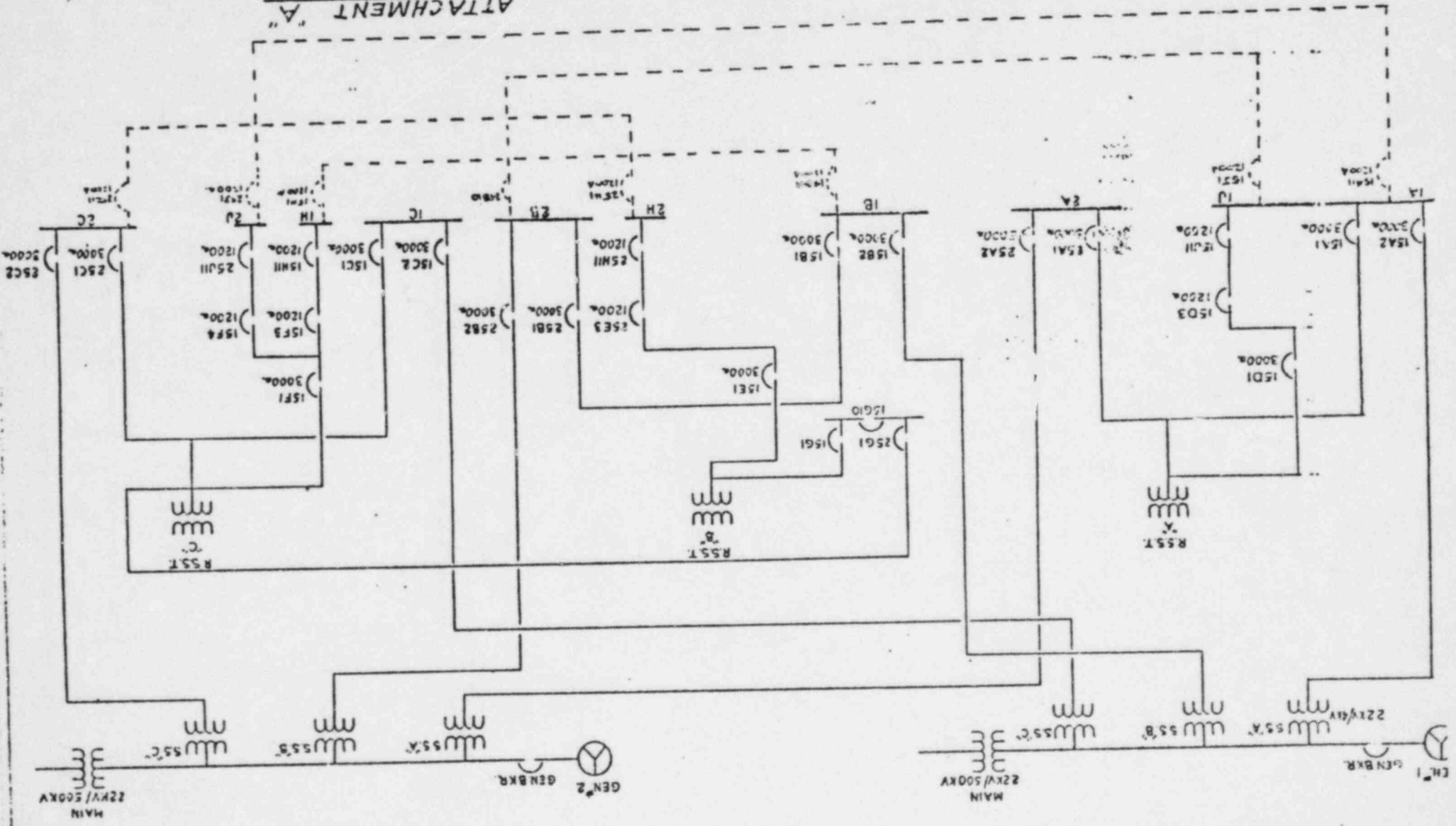


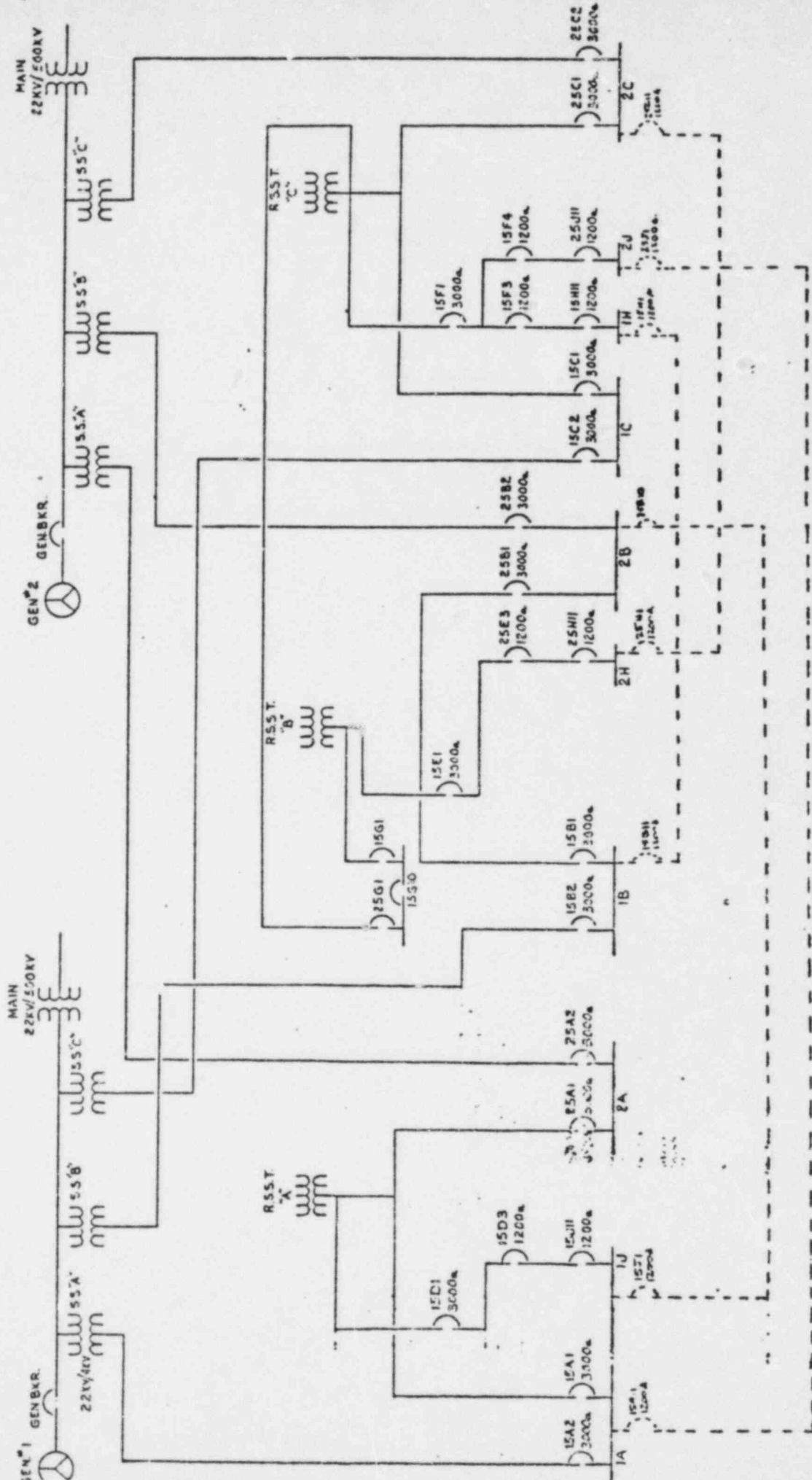
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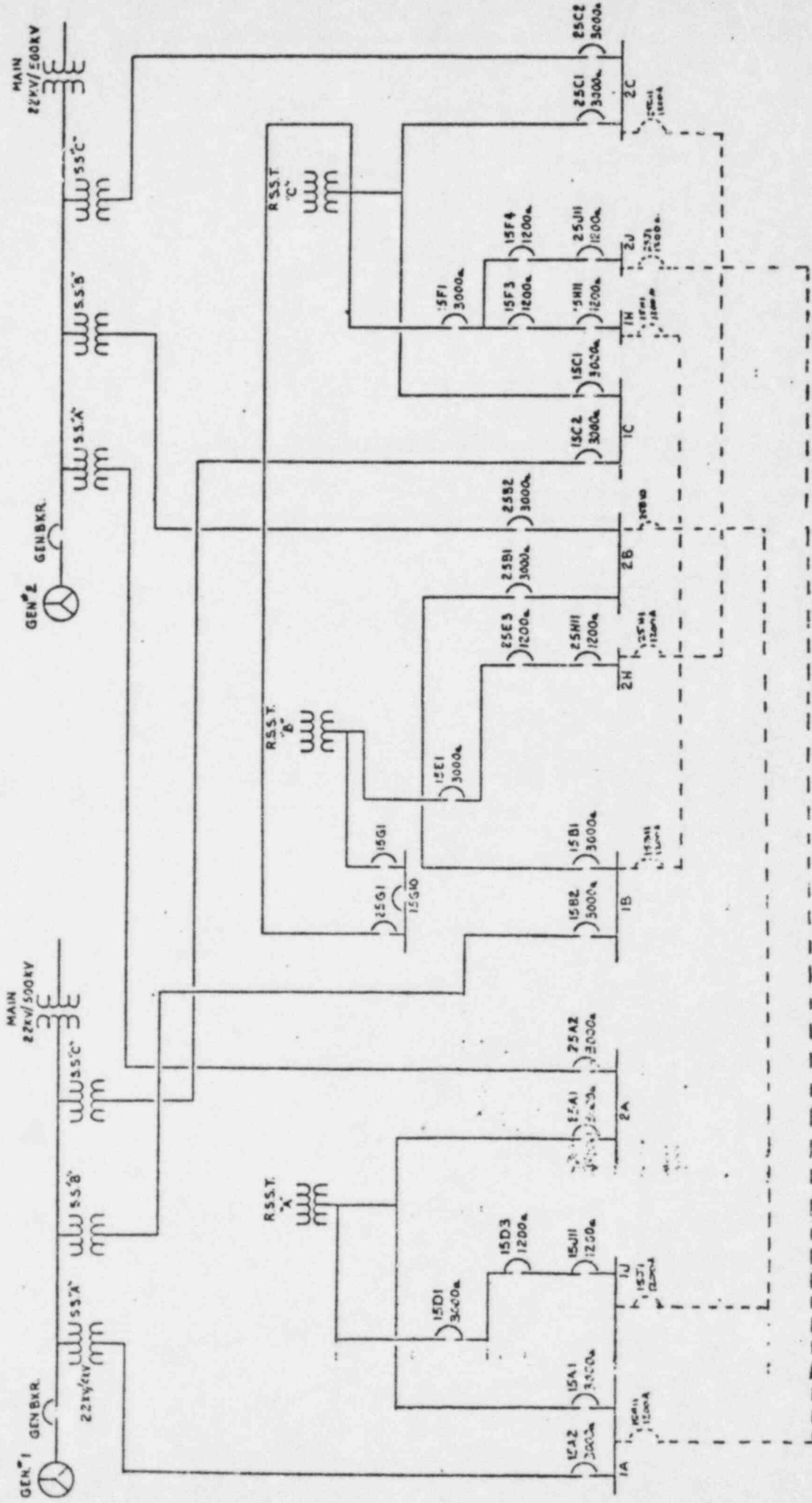
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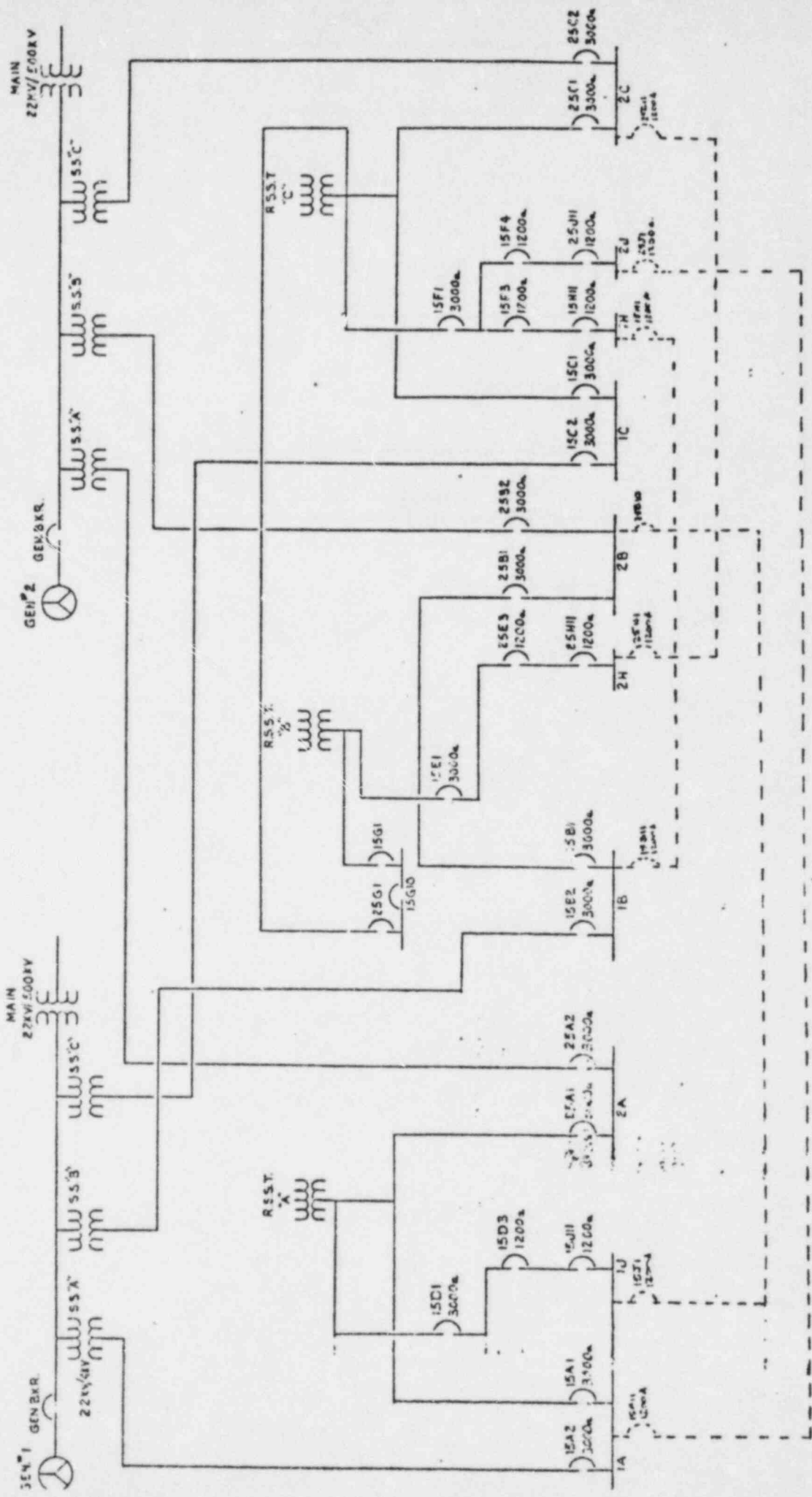




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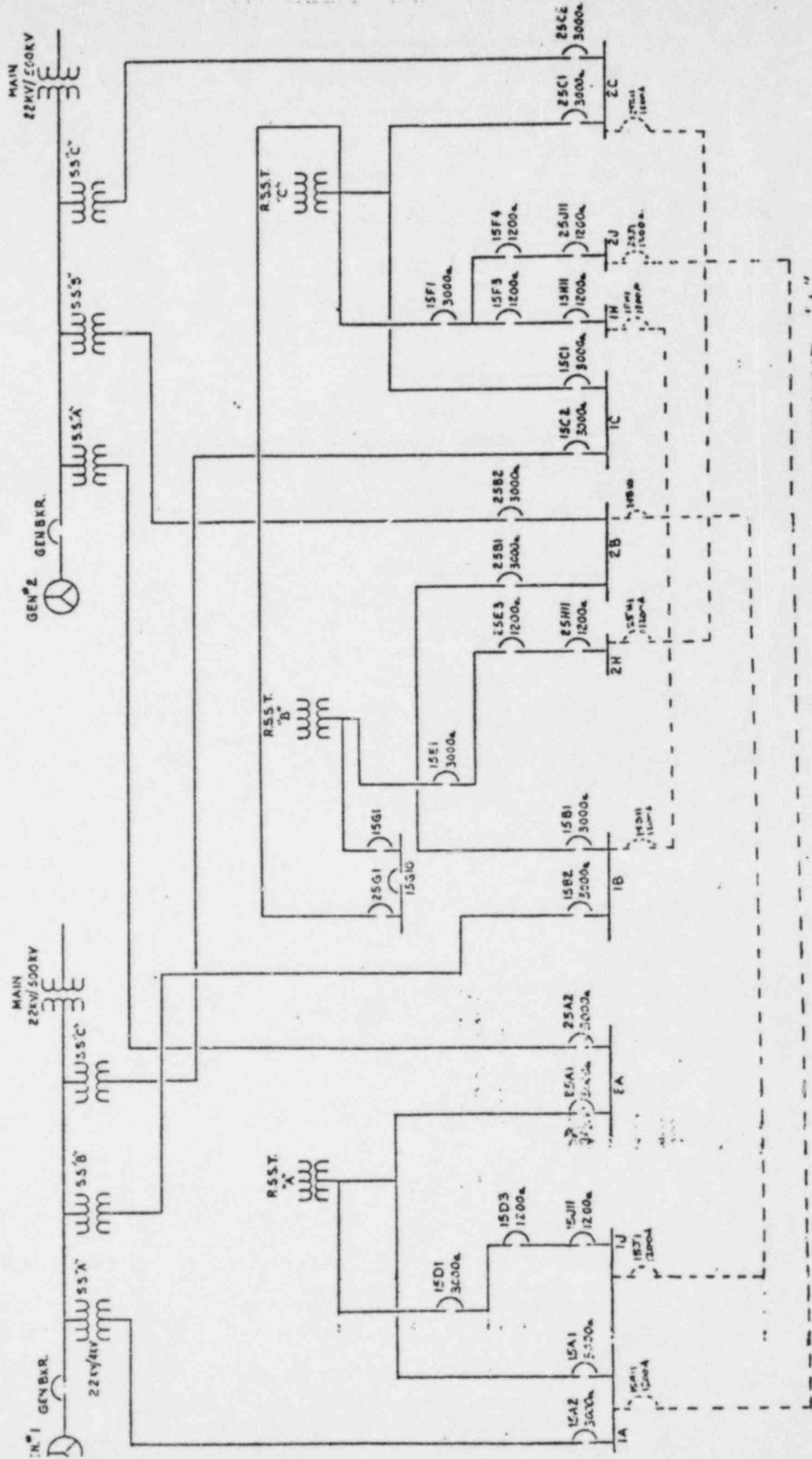


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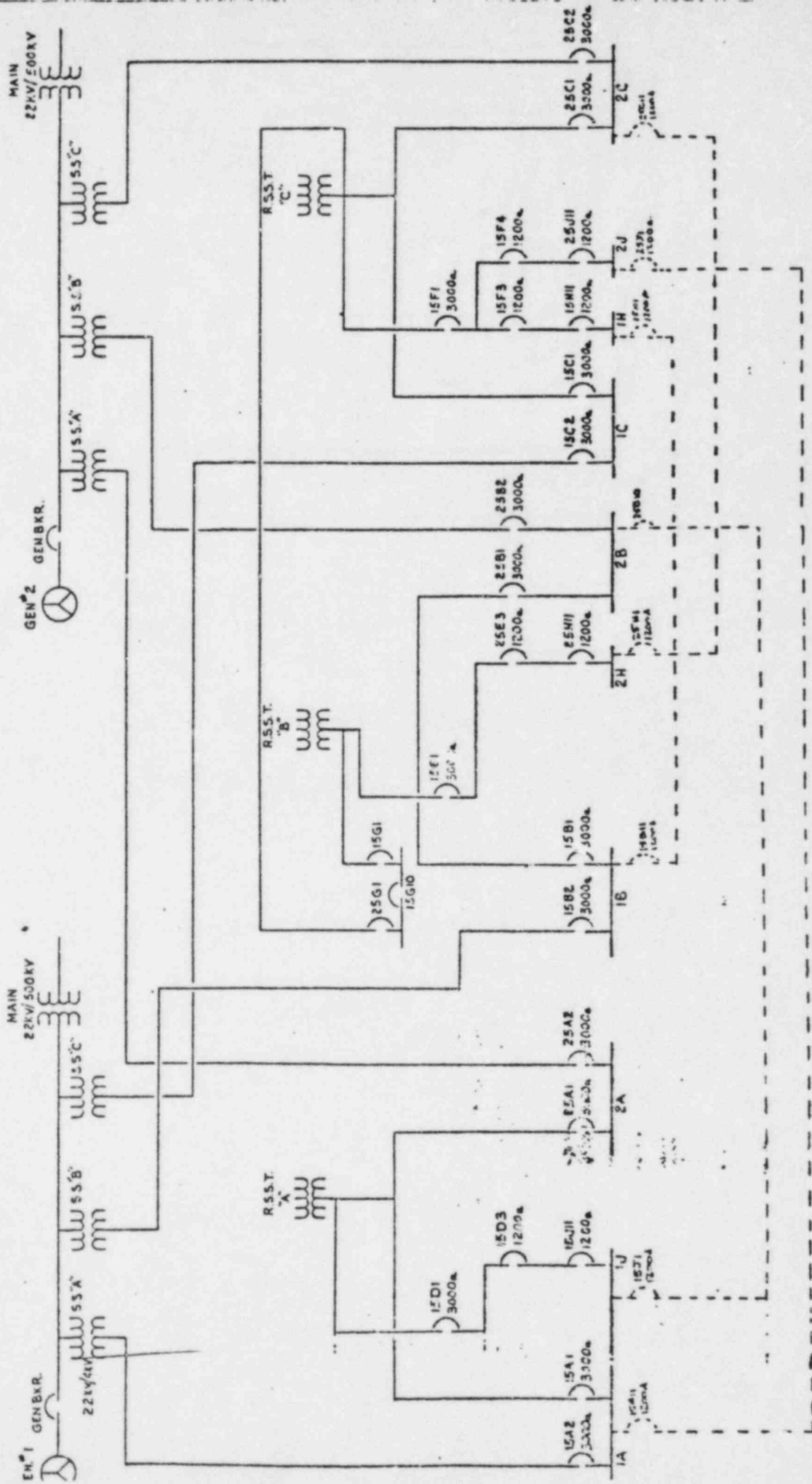
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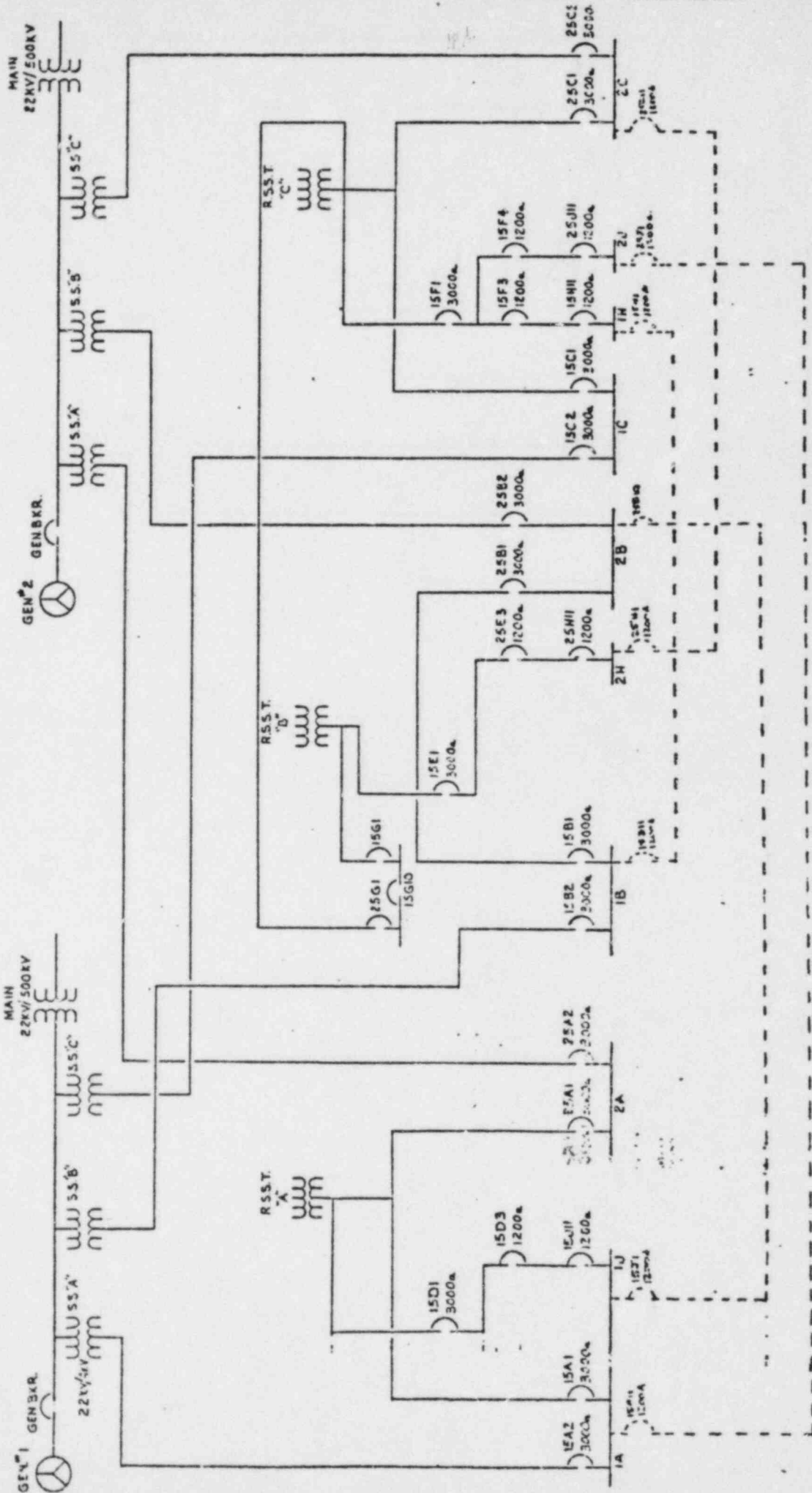
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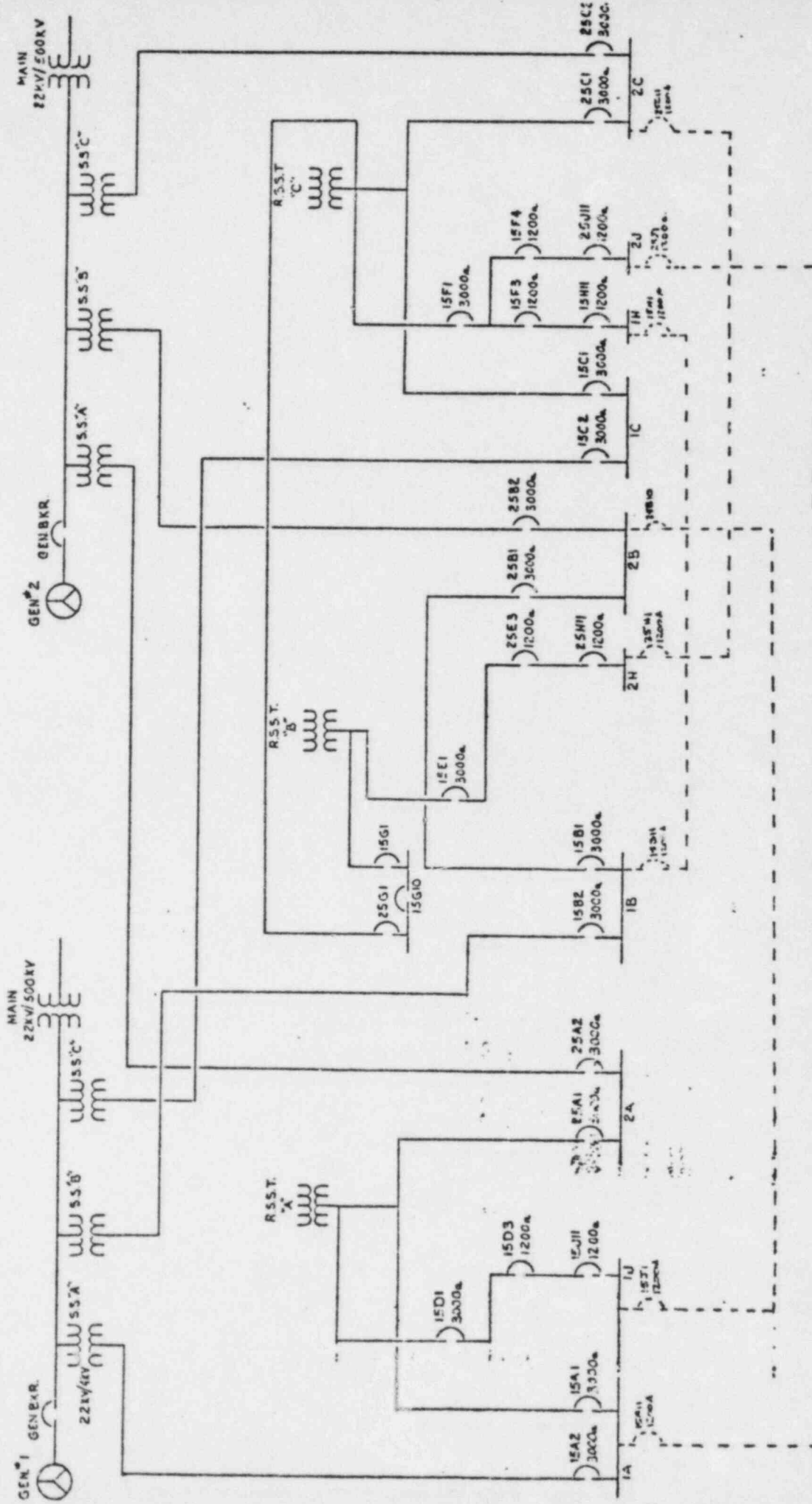


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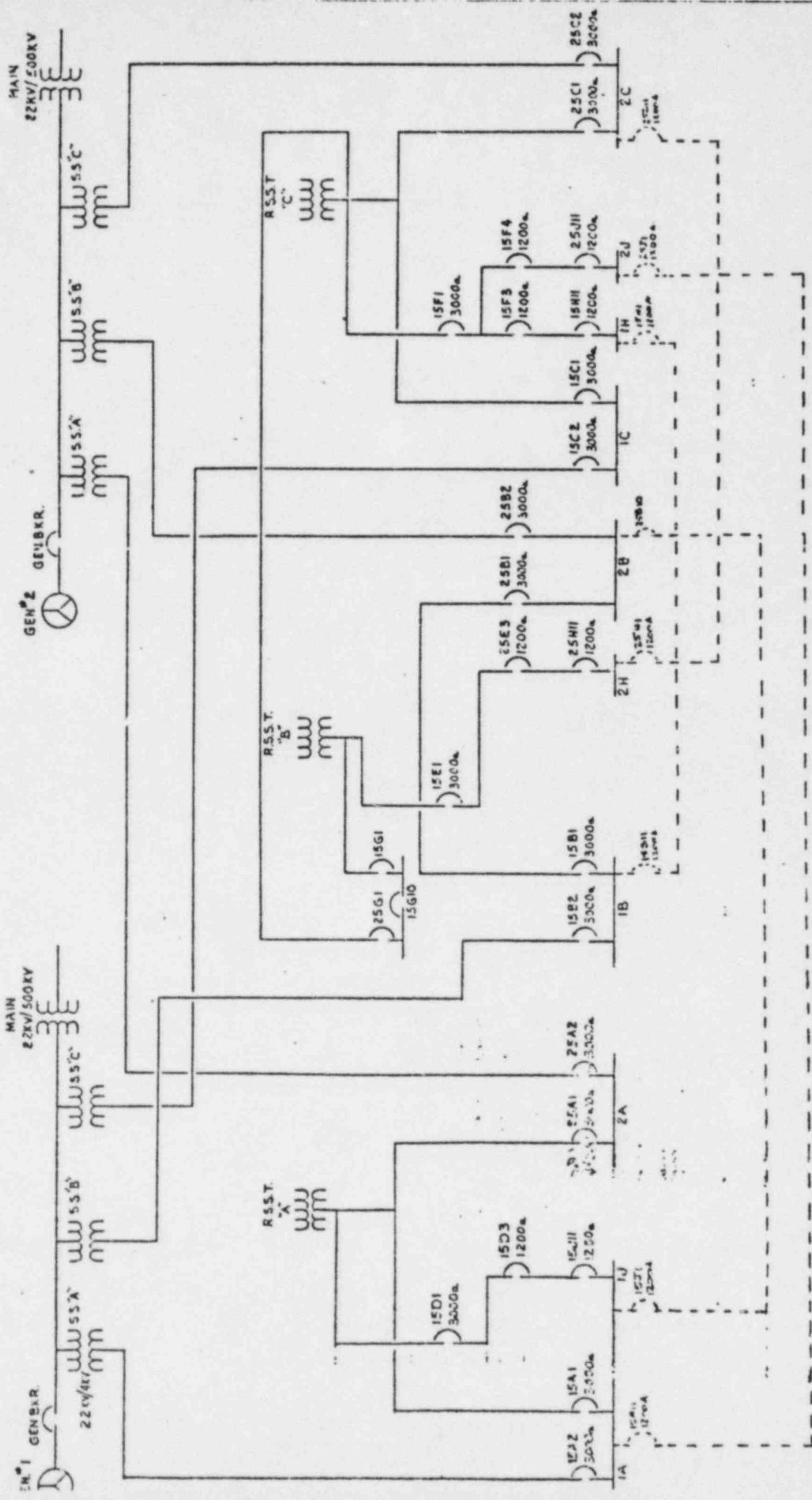


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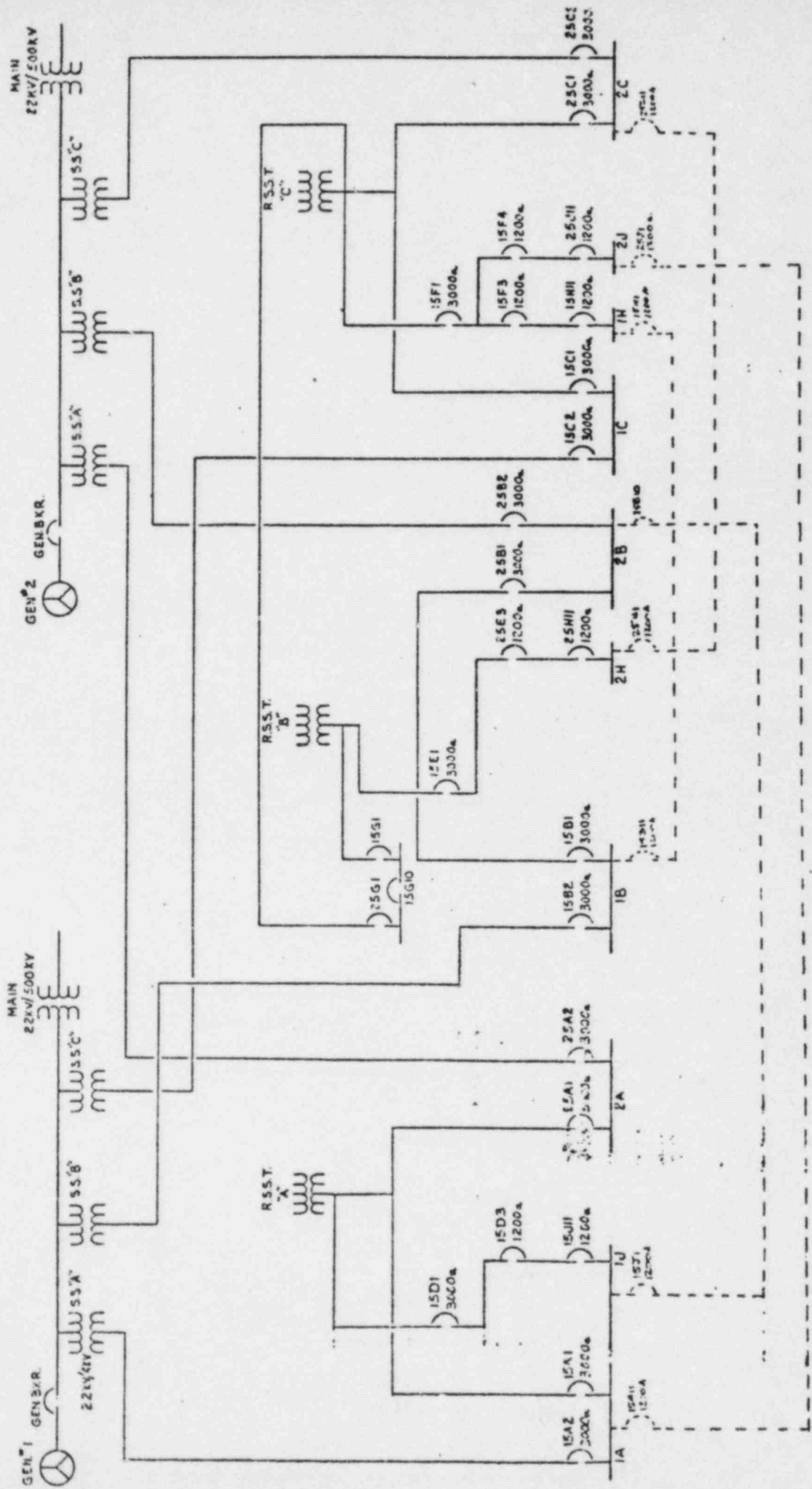


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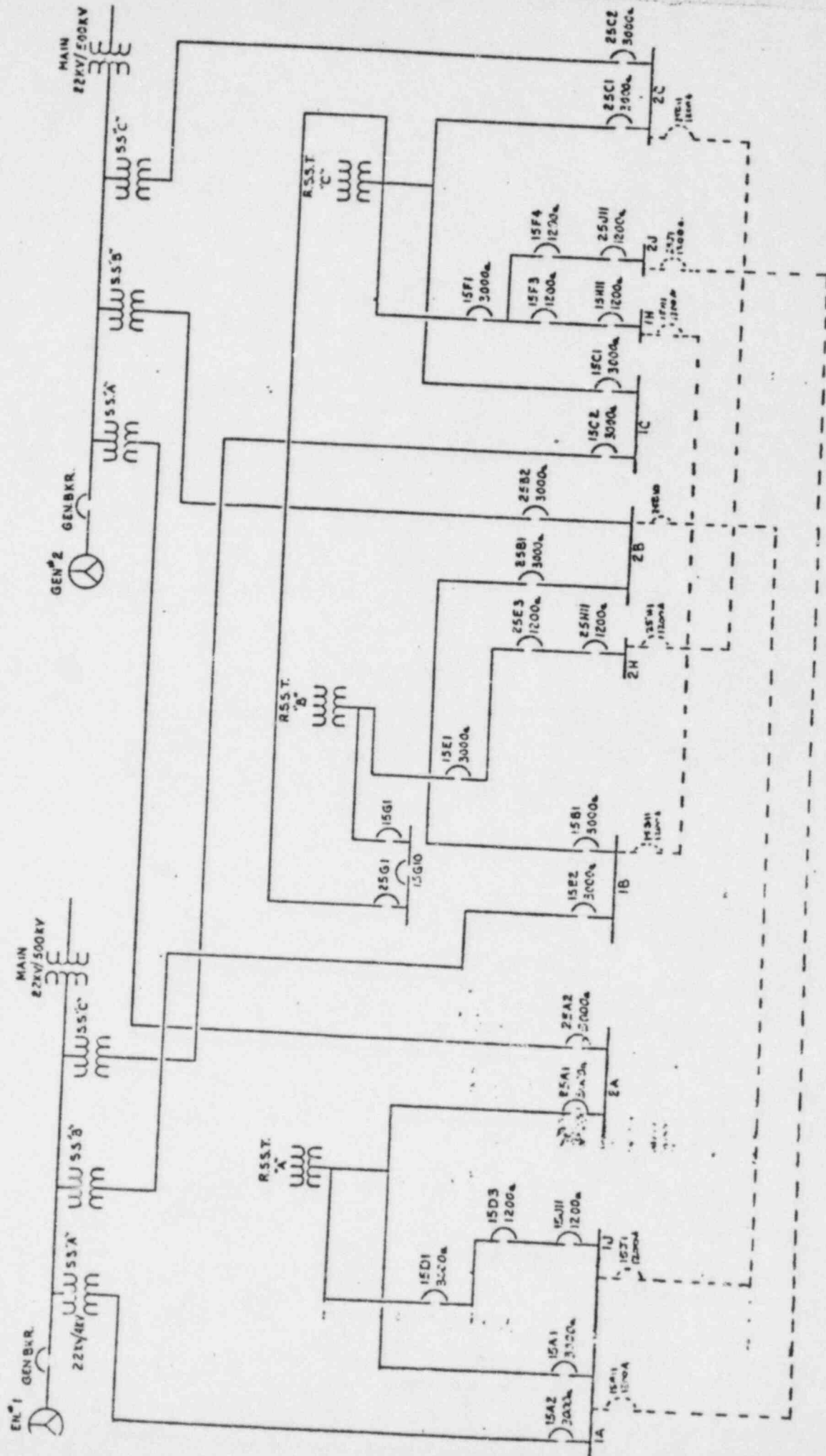


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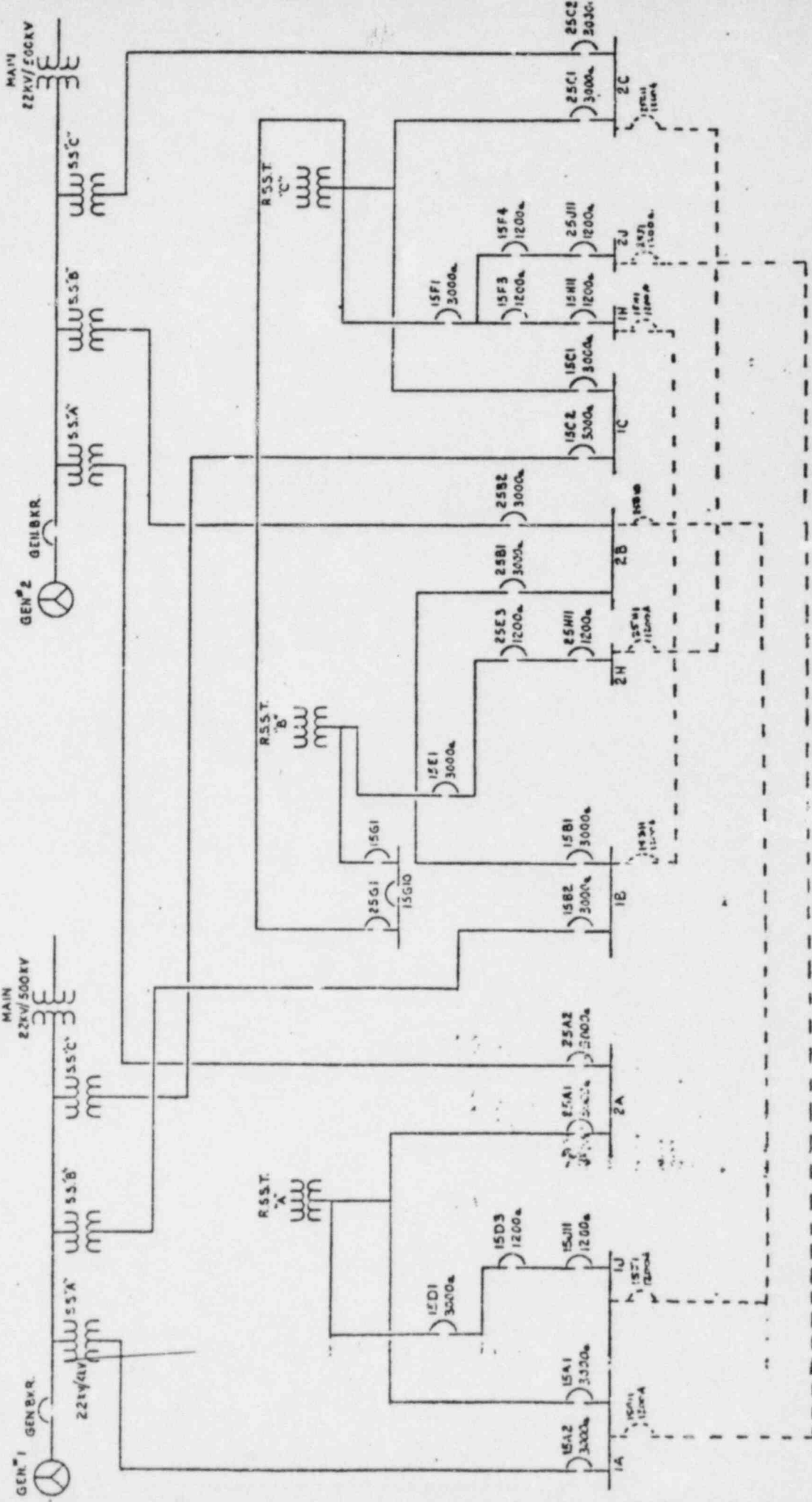


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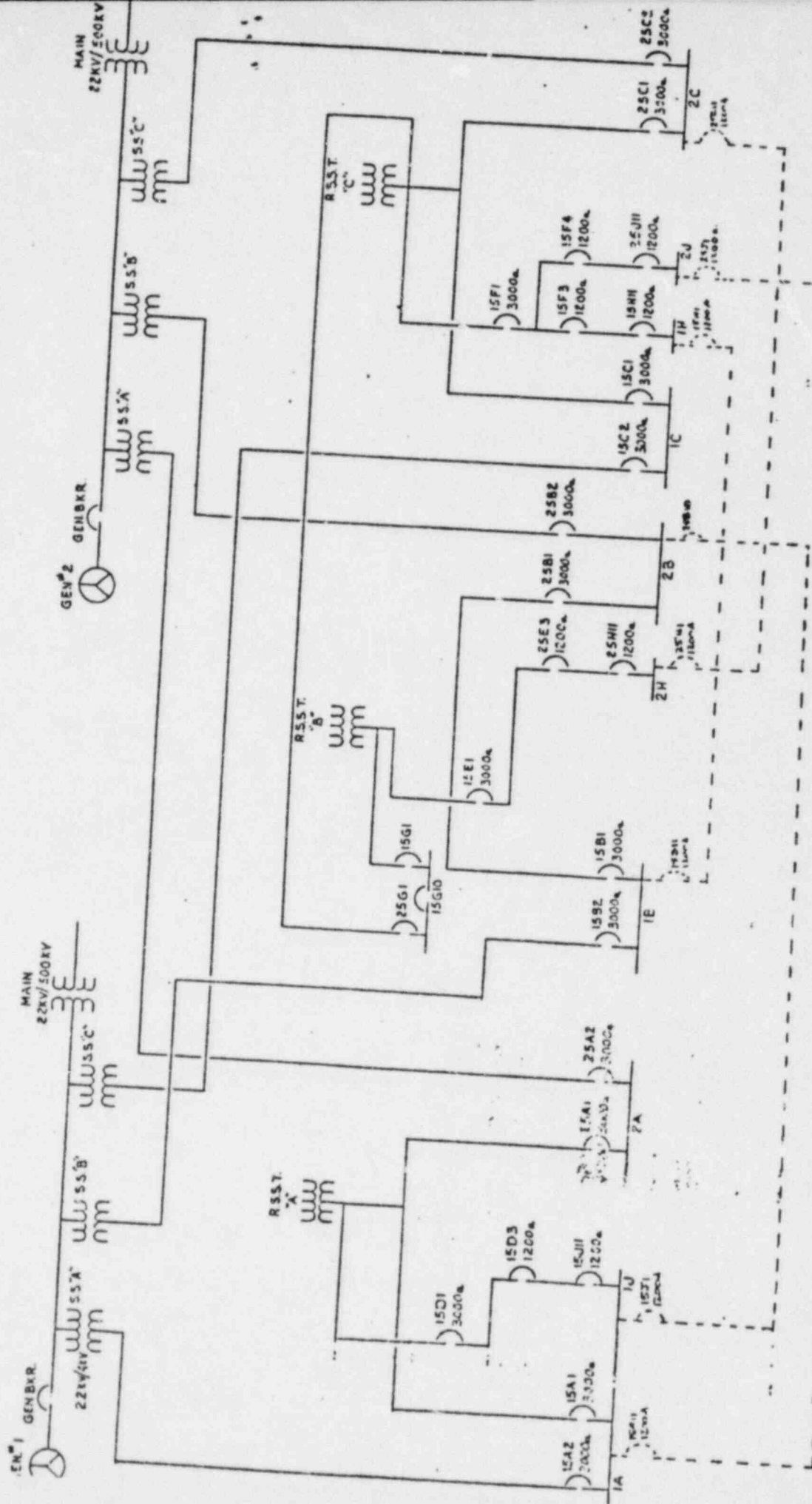
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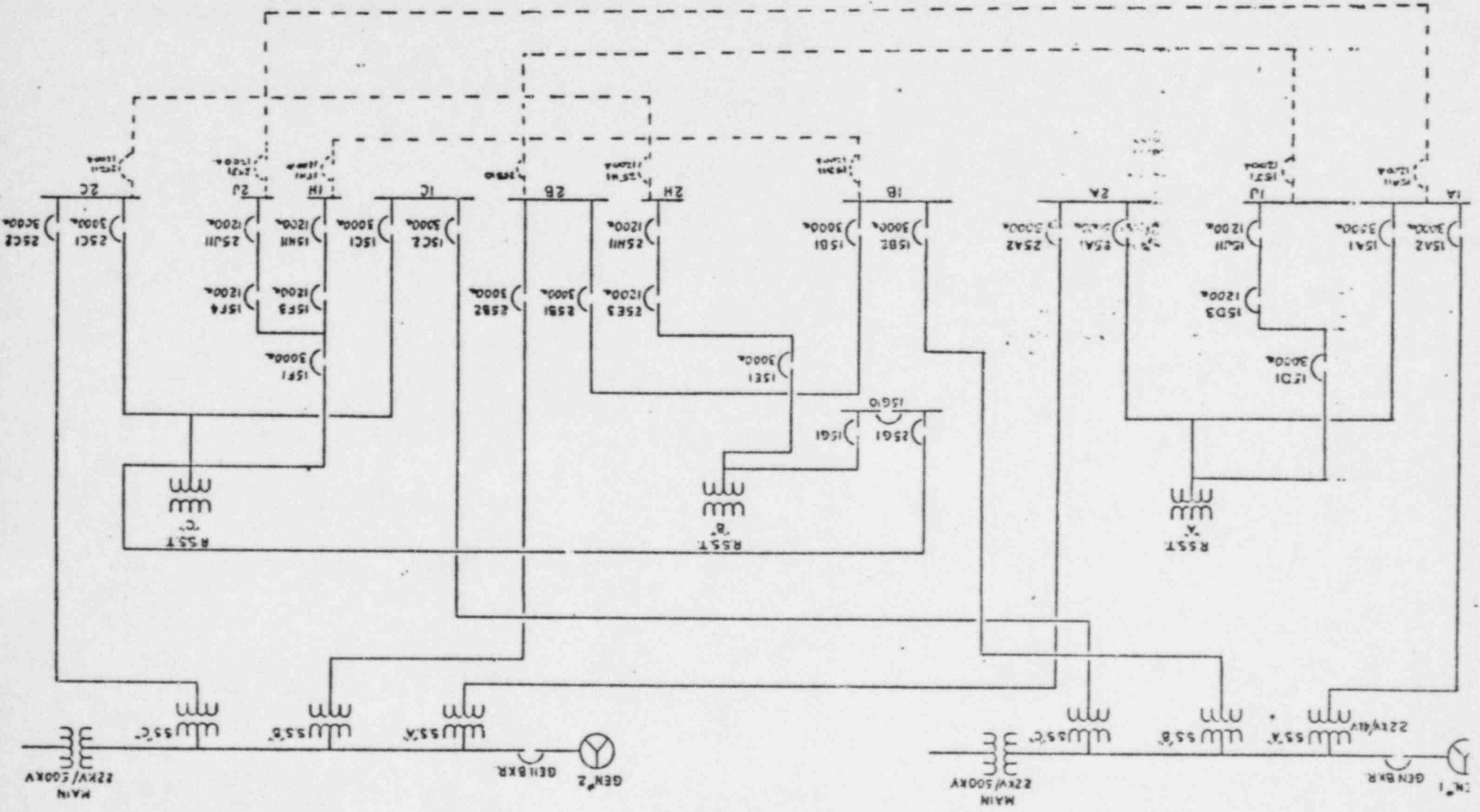


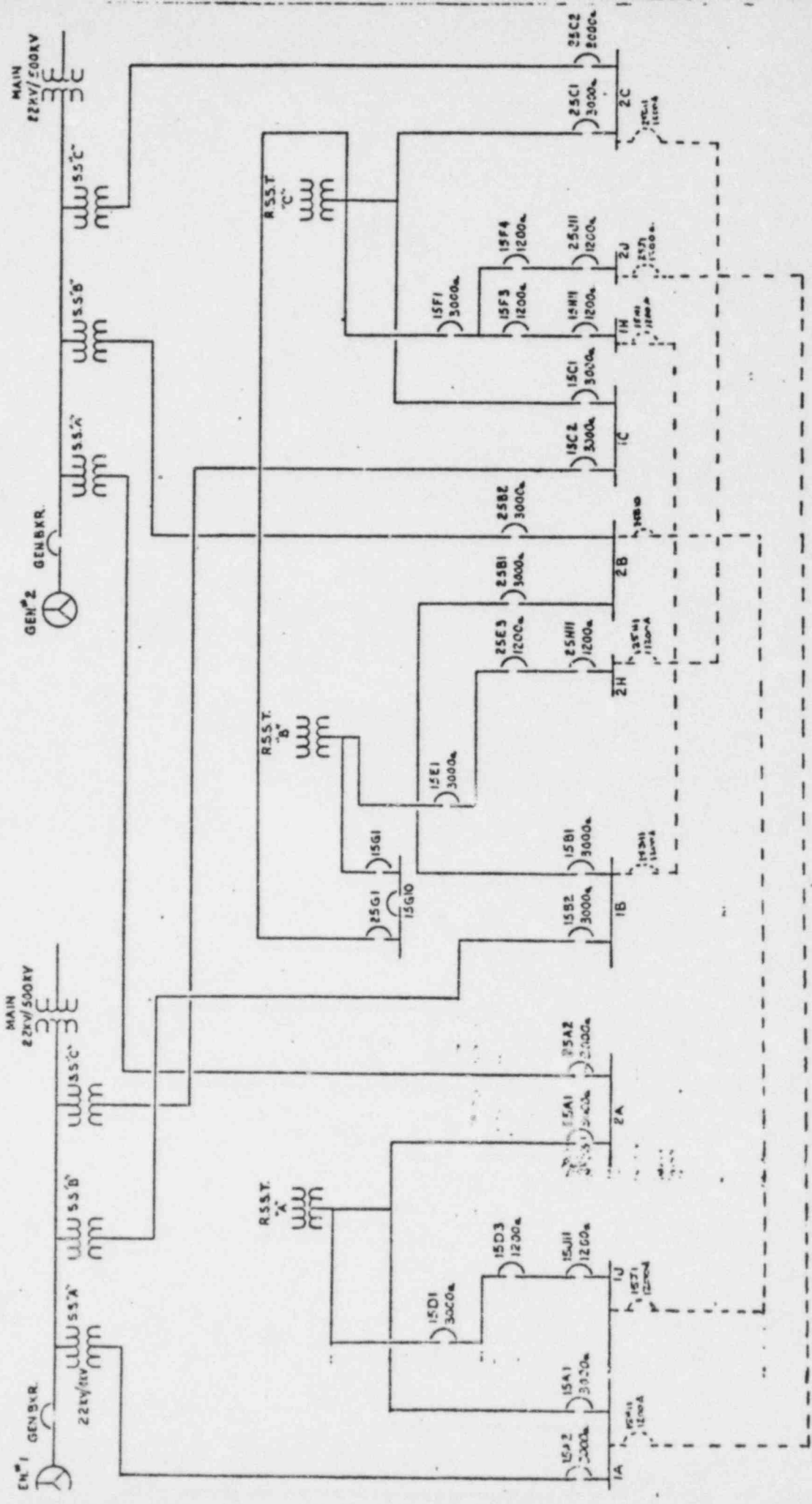
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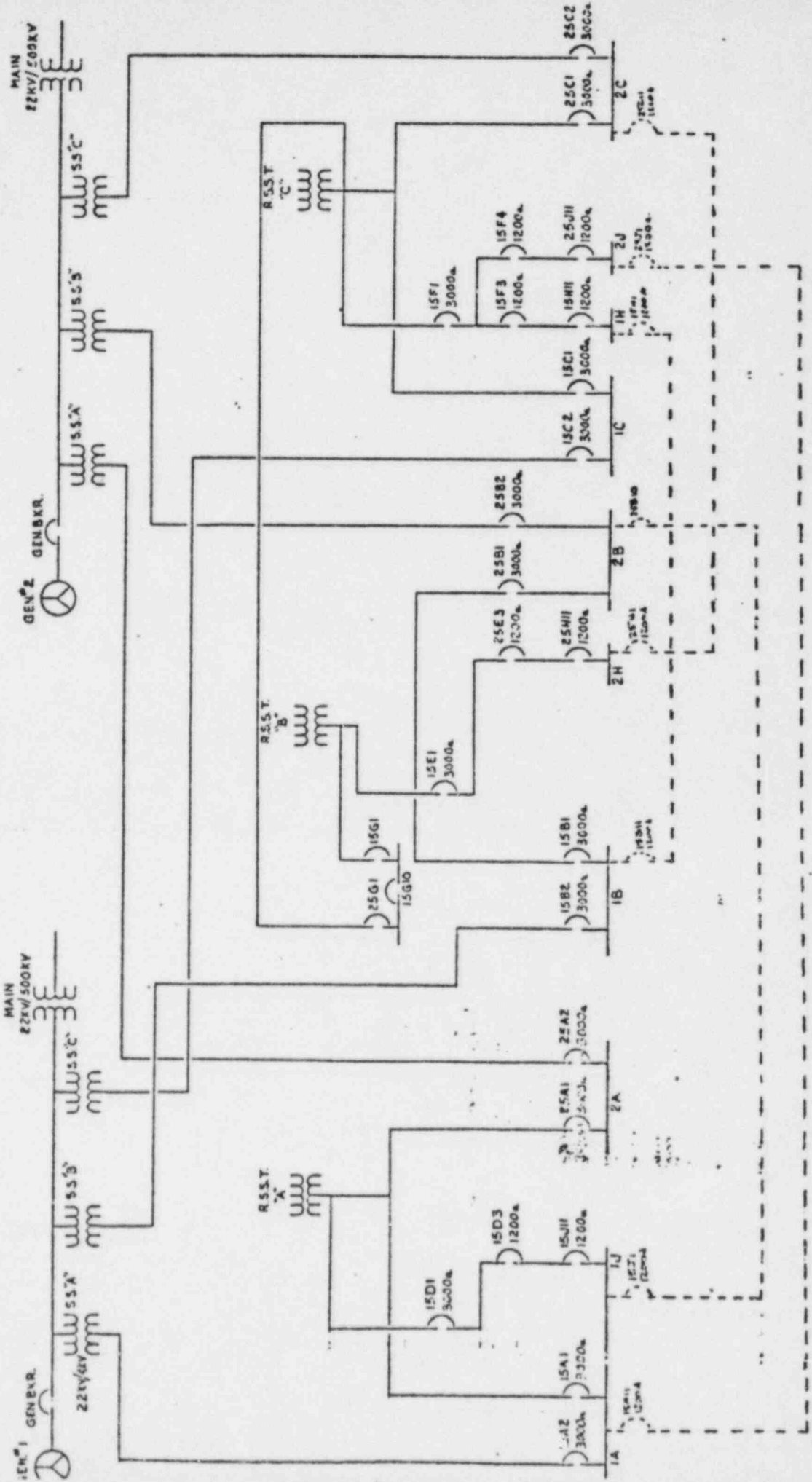
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