

Mr Bowles.

RLBC/P.111.

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE.

RUTHERFORD LABORATORY BUILDING
COMMITTEE.

Site Electrical Power Distribution Reinforcement of Sub. 13 M.V.

1. Introduction.

In RLBC/P.77 a comprehensive plan was provided of the extension to the site distribution system and eight schemes were listed to be put into practice as the demand developed. Schemes 1 to 5 were put in hand early last year and Scheme 6 was incorporated in RLBC/P.97 at the end of last year. Scheme 7 allowed a third 1000 KVA transformer in Sub 10 and Scheme 8 allowed a third 1000 KVA transformer in Sub 13. This paper calls for a modified version of this scheme 8.

2. Scheme 8 (revised).

The build up of load in the Heavy Duty Lab. (R.25) requires M.V. in excess of the 1000 amp feeder at present in use. This load is greater than previous forecasts suggested and was the subject of RLBC/P.85 in May '62. One reason for the additional load is due to the rejection of motor generator sets to feed the additional magnet loads for V.S.C. ion source as indicated in RLBC/P.101.

An extension to Sub. 13 M.V. board with a feeder and distribution switch-fuse in R.25 allows this additional load to be met and also provides the additional M.V. capacity required as the load in R.7. and R.2. develops.

The 1000 KVA transformer is ex-substation No. 12 and was to have been used for the experimental area extension. A new 1250 KVA transformer will now be used for this original duty in line with our standardisation of this size. The 1000 KVA transformer will be connected to the feeder supplying No. 1 transformer in Sub 13 via a JSS. double isolator mounted adjacent to Sub. 13. The additional transformer will be installed in a walled off part of the M.V. switchroom. This will still allow extension of the M.V. board.

Included in this revised scheme is the replacement of the present isolators in Sub 13 between the transformers and the busbars by oil break switches. This change brings this sub-station into line with the others and allows control and protection of two transformers by one oil circuit breaker in Sub. 10. This has resulted in an overall saving elsewhere but because of the isolators at present in Sub 13 the saving is small in this instance. It would not be possible to accommodate further 11 KV circuit breakers in Sub 10 without extension of that building.

3. Time scale.

The load in R.25 is expected to be in excess of capacity by July '63 and the fuseboard and cabling from Sub 13 to this board on the west side of R.25 should be ready then and temporary arrangements can be made on the MV switchboard to power it. The complete installation is required by Dec. '63 when loads from R.2 and eventually from R.7 will build up after that date.

4. Recommendation.

It is recommended that this scheme be authorised for the sum of £16,700 (including fees). A detailed breakdown is included in Appendix 1.

H. HADLEY.

April 30th, 1963.

Appendix I to RLBC/P.111.

1,250 KVA transformer 11/.415 kV.....	£1,600
Install and earth	60
Increase costs of cabling due to installation of 1,250 kVA instead of 1,000 kVA transformer at Exp. Area extension	150
Install JSS switch, Sub 13.	200
Change CT's and Ammeter scale on 11 kV O.C.B. No. 01 Substation 10	200
Extension to MV switchboard, Substation 13	4,000
Modifications to CO ₂ equipment	340
Builders work - construction of transformer chamber in MV switchroom ..	1,000
New MV English Electric switchboard in H.D. Laboratory	750
Cabling MV (Sub. 13 internal and to H.D. Lab. 260 yds. 0.4-4 core) ...	1,500
Replacement of H.H. isolators by O.C.B.'s, Sub 13	3,500
Allowances	1,200
	£14,500
Fees 15%	2,200
Total	£16,700