

DEPARTMENT OF DEFENCE

MINUTE PAPER

REFERENCE: 30/4/42

(21)
DP
↓SUBJECT: ASYMMETRIC RESPONSE OF SHOAL BAY CDAA

DP

Through SER

When excited by a centrally located whip antenna, the CDAA at Shoal Bay exhibits, at most frequencies, an asymmetric response. This was noted during performance of Daily Operator Confidence Check procedures. The asymmetry appears to be frequency dependent, and, at some frequencies, peak to peak differences in beam output as indicated on the PVS560 display are of the order of 10 dB.

2. Test procedures suggested by Plessey for the CDAA allow for peak to peak differences in the PVS 560 display to be ± 5 mm at the test frequency. This corresponds to approximately 6.3 dB peak to peak. The test frequency to be used is derived from setting-to-work tests during which the optimum frequency for uniform response is determined. At this frequency, the CDAA at Shoal Bay exhibits a uniform, symmetric response, and hence is within specification.

3. Until further tests are made, it is impossible to state the causes of asymmetric response. Possible causes include:

- (a) effect of cable duct
- (b) variation of salt pan characteristics
- (c) interference between reference monopoles and array
- (d) interference from test source
- (e) leakage or loop conditions in r.f. cabling
- (f) radio interference on test frequencies, and
- (g) non-verticality of test monopole

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4. As the CDAA is an "outward looking" array, and the asymmetry is evident on an "inward looking" test, it is possible that this effect has no significant impact on operational capability. Until more is known of the causes of the asymmetry, however, no quantitative assessment can be made.

5. I have discussed with DNCD what action should be taken and we have agreed that DNCD should be provided with a list of tests which the station can perform in order to further quantify the effect.

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Engineering Section
28 March 1979