2.4.10. Mapping Quality and Consistency

2.4.10.1. Purpose

The purpose of this test is to evaluate the mapping quality and consistency and to assess the effects these parameters have upon the utility of the radar for orientation and navigation.

2.4.10.2. General

Ideally, the radar mapping display would look like a photograph of the search volume. This ideal display could easily be correlated to the geographic features on a tactical chart and thus used for navigation updates. The display would also be perfectly consistent to the edge of the scope with no variations in the quality of the display and no blank areas. Cultural features and targets would appear just as they do visually and would be easily discernable. The purpose of this test is to find how closely the real radar mapping display comes to this goal.

2.4.10.3. Instrumentation

Data Cards and an optional voice recorder are required for this test.

2.4.10.4. Data Required

Record qualitative comments concerning the consistency of the radar display from the minimum range to the edge of the detection area as well as the fidelity of the display in presenting a map-like picture of the search volume. During mission relatable ingresses, record the utility of the display for orientation and navigation.

2.4.10.5. Procedure

Climb to the altitude used for the maximum range test and select a range scale that includes the maximum range radar returns. Select the widest antenna scan angle limits and optimize the antenna pointing angle for maximum range detection and then for a display at 1/2 of the maximum range returns. Make qualitative comments concerning the mapping quality and consistency. Repeat using all the radar mapping modes. Descend to a moderately low altitude and repeat the series. During mission relatable ingresses, assess the utility of the mapping quality and consistency for orientation and navigation to the target.

2.4.10.6. Data Analysis and Presentation

Relate the mapping quality and consistency to the utility of the radar for long range navigation, geographic orientation and for finding targets at long range. Pay particular attention to the change in mapping consistency as the antenna elevation angle is changed. If poor consistency is noted close to the test airplane while searching at long ranges, relate this to the requirement to obtain navigation updates while still searching at maximum ranges for targets.

2.4.10.7. Data Cards

A sample data card is presented as card 33.

CARD NUMBER ___ TIME ___ PRIORITY L/M/H

MAPPING QUALITY AND CONSISTENCY

[CLIMB TO _____ FEET MSL AND SET ___ KIAS. SELECT A __° SCAN ANGLE LIMIT, OPTIMIZE THE ANTENNA TILT FOR LONG RANGE DETECTION AND, SET THE RANGE SCALE TO JUST INCLUDE ALL OF THE DISPLAYED VIDEO. MAKE QUALITATIVE COMMENTS. REPEAT FOR ALL MAPPING MODES. REPEAT WITH THE ANTENNA TILTED TO OPTIMIZE DETECTION AT 1/2 THE MAXIMUM DETECTION RANGE. REPEAT AT _____ FEET AGL.]

	MODE	SCALE	FAR/MID	COMMENTS
HIGH				
LOW				

[RECORD QUALITATIVE COMMENTS CONCERNING THE EFFECTS OF THE MAPPING QUALITY AND CONSISTENCY DURING MISSION RELATABLE INGRESSES.]

EFFECTS:

Card 33: Mapping Quality and Consistency Data Card