DEPARTMENT OF THE NAVY
COMMANDER EXPLOSIVE ORDNANCE DISPOSAL GROUP ONE
BARBERS POINT, HAWAII 96862

MEMORANDUM

Subj: Test data and analysis of 7-13 December survey trip to Kahoolawe

Ref: (a) CINCPACFLT 102107Z NOV 79

Encl: (1) Search System Used During Test Searches

1. Reference (a) directed COMEODGRU ONE to prepare a plan to surface clear a specified area on Kahoolawe' of hazardous ordnance. Incident to the preparation of the clearance plan, an initial recon of the operation area was conducted during 7-13 December and clearance tests were conducted to obtain planning information. This report provides the results of this recon and outlines future activities to be conducted in the preparation of the clearance plan.

2. Clearance Tests. Two sample test areas were laid out near the center section of the OPAREA to conduct clearance tests in an area described as "good trafficability" in the Marinco Study. This area is essentially open ground with occasional grassy hummocks, ground shrubbery and kiawe' thickets. The first test area was laid out, 1000 meters by 292 meters. This area was then salted with test items prior to conducting search operations. The test items consisted of ordnance items found on the island which were inconspicuously marked to differentiate between a test item and other ordnance. In the first test area, forty test items were randomly distributed throughout the area. These items consisted of:

20	-	20MM projectiles
6	-	2.75in rocket heads
4	-	complete 20MM rounds
4	-	81MM mortar rounds
4	-	mini bombs
2	-	40MM armor piercing projectiles

It is anticipated that the smallest, hazardous explosive item which will be found on the island will be either a 20MM projectile or a live fuze component which would be of a similar size to a 20MM projectile. Consequently, the primary focus of the test search was on the 20MM projectiles. The first test area was searched by an eight man search line moving in a line abreast with a twenty-two foot interval between each man. This search line was followed by two personnel who conducted check searches, provided flags for live ordnance items found, and monitored the progress and interval of the search line. (See enclosure (1)).

ATTACHMENT (1)

The check searchers roamed behind the search line providing a back up search for four men. The truck was used to carry supplies (flags, stakes) and to carry inert ordnance items found. This system covered a sweep path approximately 176' wide. A ninth man on the end of the search line away from the string marking the search area, was used to mark the edge of the area searched. Using a can of white spray paint, he marked rocks, the ground, or bushes about every 30 yards to delineate the edge of the area searched. These marks were then used as a navigation line for the next sweep in the test area. Using this system prevented gaps from occurring in the area to be searched. The test area was searched with the following results:

Average time to make a 1000 meter sweep thru the area – 84 minutes

Total number of live ordnance items found – 43

Total number of "hazardous appearing " inert items collected (20MM, .50 caliber and other projectiles and rocket heads) – 2207

Area cleared – 70.7 acres

Clearance rate – 5.5 acres per man day

Total test items found – 38 (two 20MM projectiles were not found)

Overall search effectiveness probability (SEP) for test items – 95%

SEP for test items larger than 20MM – 100%

SEP for 20MM test items – 90%

Upon completion of the first test area, a second test area was then laid out and salted. For this test, the same search system was used except the interval was reduced to 12' between searchers for a sweep path of 96' and the test items were increased by adding twenty more 20MM projectiles. The results of the second test are outlined below:

Average time to make a 1000 meter sweep thru the area – 54 minutes

Total number of live ordnance items found – 76

Total number of "hazardous appearing" inert items collected – 2846

Area cleared – 74.1 acres

Clearance rate – 5.25 acres per man day

Total test items found - 57 (three 20MM projectiles were not located)

Overall SEP for test items in the second area - 95%

SEP for the test items larger than 20MM - 100%

SEP for 20MM test items - 92.5%

The general feeling of the searchers was that the 12' interval was preferred to the 22' interval. They felt more confident with this search interval and experienced less discomfort from constantly swiveling the head from side to side. It can be speculated that by closing the interval further the sweep speed would be increased and the SEP for 20MM would be improved. Limited time on the island precluded further testing in this area. The search interval to be used appears to be a function of the availability of manpower versus the desired level of SEP. With a closer interval, more men will be required or more time will be necessary to conduct the clearance. From this test period, it appeared that 20 men in a search line would be the maximum for a workable unit.

Upon totaling the information derived from the tests, the following data is listed:

Total acres cleared - 144.8

Average clearance rate - 5.37 acres per man day

Total explosive items destroyed - 119 (These varied from live .30 caliber ammunition up to one 500 lb bomb)

Average explosive items per acre - .82

Total number of "hazardous appearing " inert items collected - 5053 (These items were mostly inert .50 caliber and 20MM projectiles).

3. Based on this island visit, the following observations are reported:

a. The roads on the island vary from usable to totally impassable. The recon unit camped at "Ground OP" five miles from the OPAREA. Due to road conditions, it required almost one hour of a bumping, pounding ride to drive to the OPAREA. When the clearance operation is implemented, a semi-permanent camp site will have to be established near the area. A proposed site was reconnoitered in a protected area called "picnic grove". It is on the edge of the OPAREA and would be sheltered from the wind.

Subj: Initial Reconnaissance of Kahoolawe'; report of

b. In the course of testing, it was revealed that a search team could cover about 7000 meters of search sweeping (7 passes, 1000 meters each) before fatigue began to affect their search effectiveness.

c. Ordnance searching is dirty and tiring work. When the day is over, personnel are covered with dust and grit from the windblown dirt. Fresh water washing and hot meals in the morning and evening will be necessary.

d. Most of the grassy hummocks have grass that is so thick that one cannot see his shoes let alone a small piece of ordnance. Some of these hummocks have green grass growing close to the ground and the high grass is dead. If these areas are to be cleared, the high grass must be burned off. Otherwise, they are not safe to transit and will have to be marked as hazardous. During the next island visit it is proposed to test burn one of these hummocks followed by a search sweep. Later observation of this "test hummock" would reveal if the fire had destroyed the root structure or whether the grass was recovering from the fire. It is recommended such burnings be conducted during the rainy season to take advantage of the extra rainfall to aid in grass recovery. Spray on fertilizer may also be an aid.

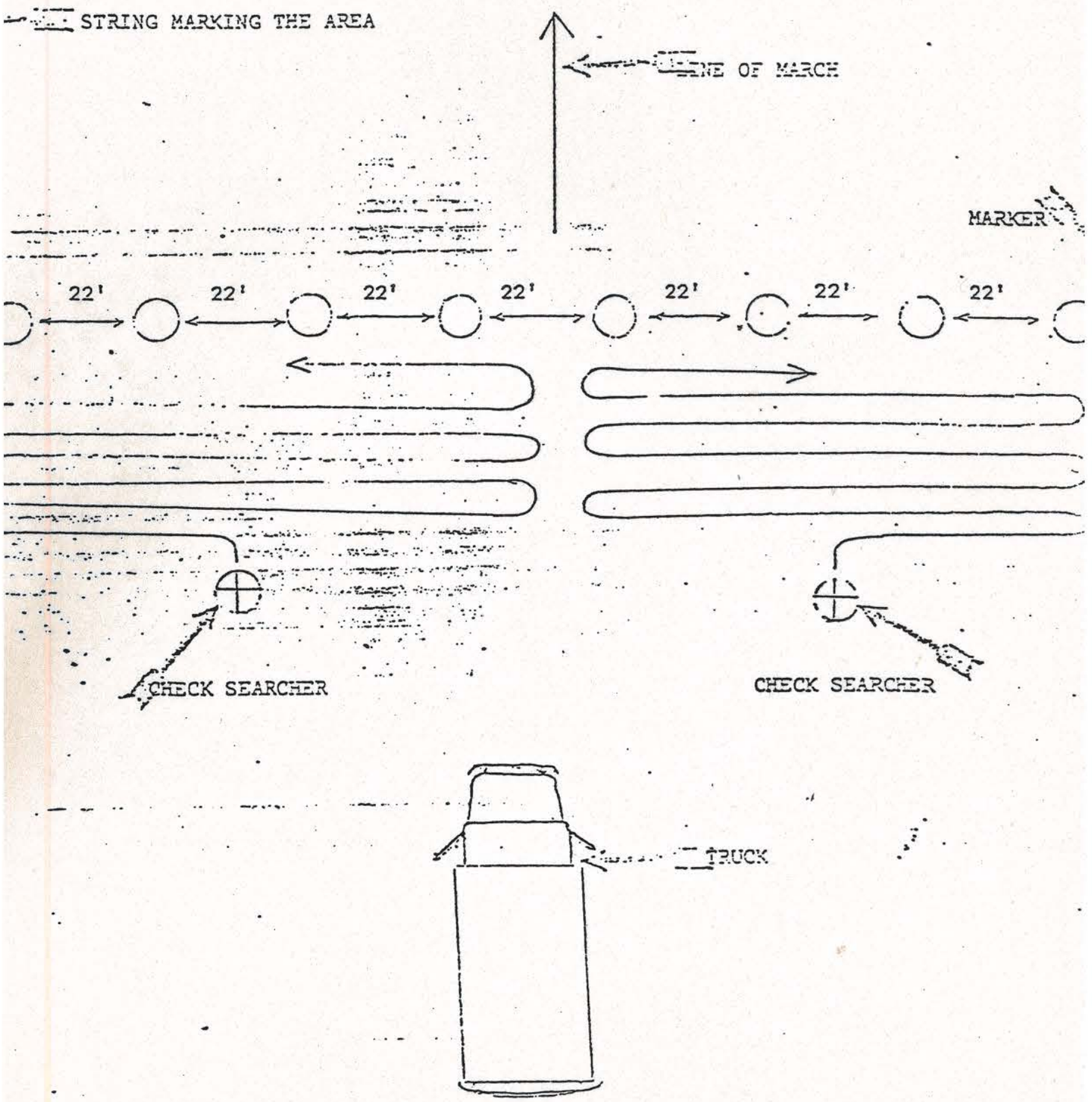
e. The above SEPs did not include the occasional heavy grass areas or kiawe' thickets. The grass areas will be tested later and the kiawe' in some cases was impenetrable. Such kiawe' thickets will have to be declared unclearable unless access will be permitted by trimming away branches.

f. During the test clearances, only explosive or "hazardous appearing" items were collected and disposed of. Ordnance related items, i.e., spent rocket motors, shrapnel and other junk were left in the area. During the clearance operation this same procedure will be applied, unless otherwise directed.

4. The next visit to the island is planned for 21 – 30 Jan 80. During this period further testing will be conducted in areas marked fair and poor in trafficability in the Marinco Study. Clearance rates and SEP will be derived for these areas based on these tests. Once these rates are known, manpower requirements can be derived.

D. J. McANULTY

SEARCH SYSTEM USED DURING TEST SEARCHES



Enclosure (1)