



DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
WASHINGTON, D.C. 20350

IN REPLY REFER TO  
8 December 1980

KWAT *Conte*

410417

MEMORANDUM FOR THE RECORD

Subj: Radioactive Fallout on Navy Bases in the Marshall Islands

1. Radioactive rain fell on Kwajalein Atoll as a result of Test YOKE, Operation SANDSTONE. The rain commenced at 1800 on 2 May 1948. The rain-out continued until 0400 on 3 May 1948. The maximum activity observed was 6 to 10 mr/hr. Among the facilities and units at Kwajalein at the time were: NAS Kwajalein, Naval Station Kwajalein, NS Kwajalein In Service Craft, NS Kwajalein Ship Security Detail, Construction Battalion 1509 DET, VPAM-2 DET, VPHL-8, VRU-3 DET, VR-8 DET and USS QUICK (DMS-37). In addition, USS DAVISON (DMS-37) entered Kwajalein Harbor at 0900 on 3 May 1948.

2. Radioactive fallout occurred on Eniwetok Atoll as a result of Test ROMEO, Operation CASTLE. At approximately 1230 on 29 March 1954 (54 hours after ROMEO) intensity levels began to rise. By that evening, readings averaged 5 mr/hr, with a 15 mr/hr maximum on windward surfaces. At that time, no permanent naval bases were located at Eniwetok (the Naval Station at Eniwetok was closed on 23 June 1947). However, a Naval Shore Detachment, a Boat Pool Detachment, a Detachment of VC-3 and possibly a MATS Unit were at Eniwetok on 29 March. In addition, LST-1146, which is currently considered a non-participant, was anchored in Eniwetok Lagoon until 1315 on 29 March. Also, Task Force ships USS NICHOLAS (DDE-449), USS CURTISS (AV-4), USS SIOUX (ATF-75), USS TAWAKONI (ATF-114), USS GEORGE EASTMAN (YAG-39), USS LST-762, and USS PC-1546 all entered or were already anchored in Eniwetok Lagoon on 29 March.

3. Radioactive intensities also rose on Kwajalein as a result of ROMEO. On 31 March 1954, radioactivity levels were recorded at 9 mr/hr maximums on the windward side of tree trunks, 1 to 3 mr/hr average on beaches, and 1 to 4 mr/hr average on the windward side of buildings. The average Kwajalein background prior to 31 March was 0.05 mr/hr. In addition, aircraft on training flights in the local area recorded concentrations of 20 mr/hr on engines. As a precautionary measure, water catch basins were examined and samples of the first run-off of the next rain were taken for analysis. Of the five samples collected, all indicated no activity except for the one taken from open storage tank number 10 which read  $4.85 \times 10^{-4}$  microcuries per milliliter. Kwajalein naval units at the time included Kwajalein Naval Station, Kwajalein MATS Unit, CHB-4 Kwajalein, and VP-29.

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. Several other Marshall Islands served as naval bases shortly after WWII. However, by 1947 these bases had been closed. They included Ebeye Island, Kwajalein Atoll (closed 15 June 1947), Roi-Namur, Kwajalein Atoll (closed 20 September 1946), and Majuro Atoll (closed 1 June 1947). Nevertheless, it has not been determined if these islands housed military detachments during the atomic tests.



Paul Boren  
NNTPR

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PRELIMINARY RESULTS NYKORO AIRBORNE MONITORING SURVEY FLIGHTS  
O/A 1 MARCH 1954 (CONDUCTED BY HEALTH AND SAFETY LABORATORY,  
NEW YORK OPERATIONS OFFICE, AEC)

LOCATION (STOLL, UNLESS OTHERWISE INDICATED)	LOCAL TIME (MARCH)	MAXIMUM GROUND INTENSITY (mr/hr)	LOCAL TIME (MARCH)	MAXIMUM GROUND INTENSITY (mr/hr)
<u>APLE</u>				
KWALJALEIN	021800	0.6*	041200	0.5*
LAE	021210	.08	040710	.04
UJAE	021224	.10	040752	.06
WOTHQ	021300	1.00	040819	1.60
BIKINI (NAMU ISLAND)			040913	96,000
MILINGINAE	021328	400.00	041011	200 to 390
RONGELAP (ISLAND)	021340	1350	(RONGELAP survey did not include RONGELAP ISLAND)	
RONGELIK	021400	1720	041110	1050
TRONGI	021525	1.4	041533	1.6
SIKIA	021628	600	041632	160
UTIRIK	021651	240	041655	48
TAKA	021656	160	041702	44
MILUK	021716	76	041810	20
JEMO	021725	18	041820	12
LIKIEP	021740	6.0	041830	10

(NOTE: There is some doubt that intensities indicated represent the maximum for the atolls listed or that the re-survey covered the same location as the 2 March survey. Readings marked with asterisk are ground observations.)

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NAMU	030720	.02		
MILINGELAPALAP	030745	.08		
NAMORIK	031123	.20		
EBON	031247	.20		
KILI	031224	.20		
JALUIT	031206	.20		
MILI	031109	.60		
ATNO	031028	.60		
MUJURO	031016	2.0		
MUR	030945	.40		
MALOELAP	030924	3.6		
ERIKUB	030902	4.0		
WOTJE	030850	20		

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INCLOSURE 9

K-56

RESTRICTED DATA

ATOMIC ENERGY ACT - 1946

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Based on the Bikini experience and the forecast 72-hour air particle trajectories, NIKOPO Flight Able was scheduled for 30 March to assess the effects of secondary fall-out on the atolls east of Bikini.

On 30 March a report was received from CTG 7.3 to the effect that no early fall-out was received by any ship except the experimental YAG's, that nearly all ships and boats received light contamination from fall-out occurring approximately 40 to 48 hours after shot time, that average readings of 25 mr/hr were reduced due to decontamination and decay, that personnel exposures were negligible compared with BRAVO (estimated average additional individual exposures due to ROMEO was approximately 50 mr), and that, although the western quarter of the lagoon was still highly contaminated, it was doubtful if lagoon contamination would become a serious problem to ships. The above information was passed on 31 March to CINCPACFLT in accordance with a post-BRAVO request by CINCPACFLT for such information.

On 31 March information was received from the TG 7.3 unit on Kwajalein to the effect that 9 mr/hr maximums were observed on the windward side of tree trunks, 1 to 3 mr/hr average on beaches and 1 to 4 mr/hr average on windward sides of buildings. The average Kwajalein background prior to 31 March was 0.05 mr/hr. The advisory further stated that aircraft on training flights in the local area were concentrating contamination reaching maximum values of 20 mr/hr on engines. (Note: Approximately the same values were observed at Eniwetok by the evening of 29 March. Values were 5 mr/hr average, with 15 mr/hr maximum on windward surfaces.)

On 1 April a special radsafe advisory was dispatched to ComNavSta Kwajalein to reassure the garrison relative to the light fall-out experienced. This advisory noted that the fall-out on Kwajalein was of a degree equivalent to that experienced on Eniwetok and considered insignificant from a health standpoint. As a precautionary measure, it was suggested that Kwajalein water catch basins be examined carefully, the first run-off of the next rain be isolated and that a pint sample be taken for analysis. The facilities of the task force were made available (and accepted) for this analysis. (Subsequent analysis indicated no activity in the five samples taken except the one from Open Storage Tank No. 10 which read  $4.85 \times 10^{-4}$  microcuries per milliliter.)

On 3 April in response to a request from Kwajalein the above advisory was re-quoted to include CINCPACFLT, and further stated that the Task Force Staff Surgeon would visit Kwajalein to establish suitable operating procedures for future shots. (No further difficulties arose for the remainder of the CASTLE series.)

On 9 April information was received that wire services were carrying Tokyo stories reporting two Japanese fishing vessels outside the Danger Area arriving at port with radioactive tuna. These stories indicated that some of the catch was destroyed, vessels reportedly radioactive, but no illness reported on the crews. No official confirmation was received, and from the press stories the contamination appeared to be slight. Considering time and distance factors, the contamination could have come from ROMEO at fishing grounds to the east northeast of OZ.

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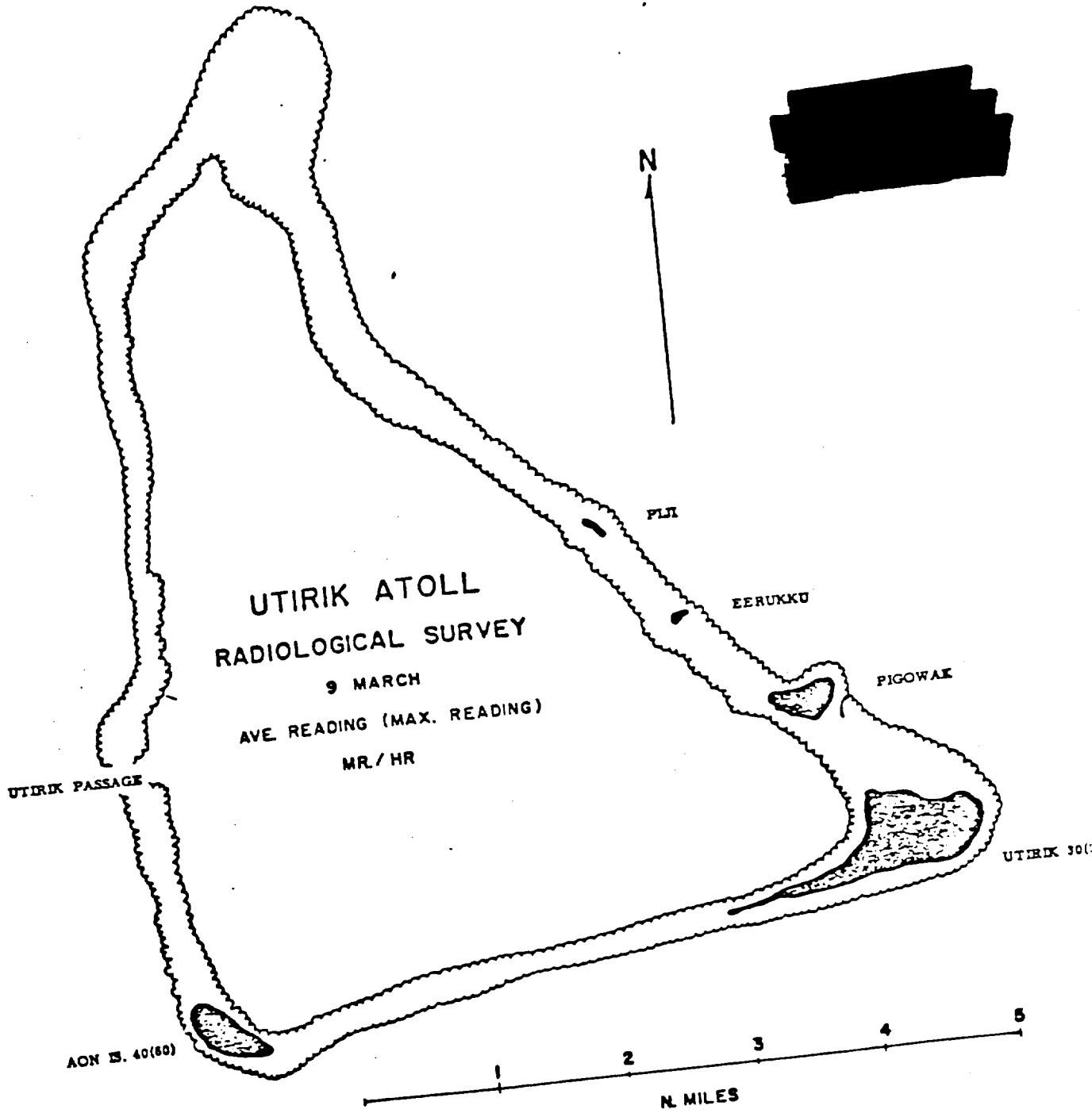


FIG. 2

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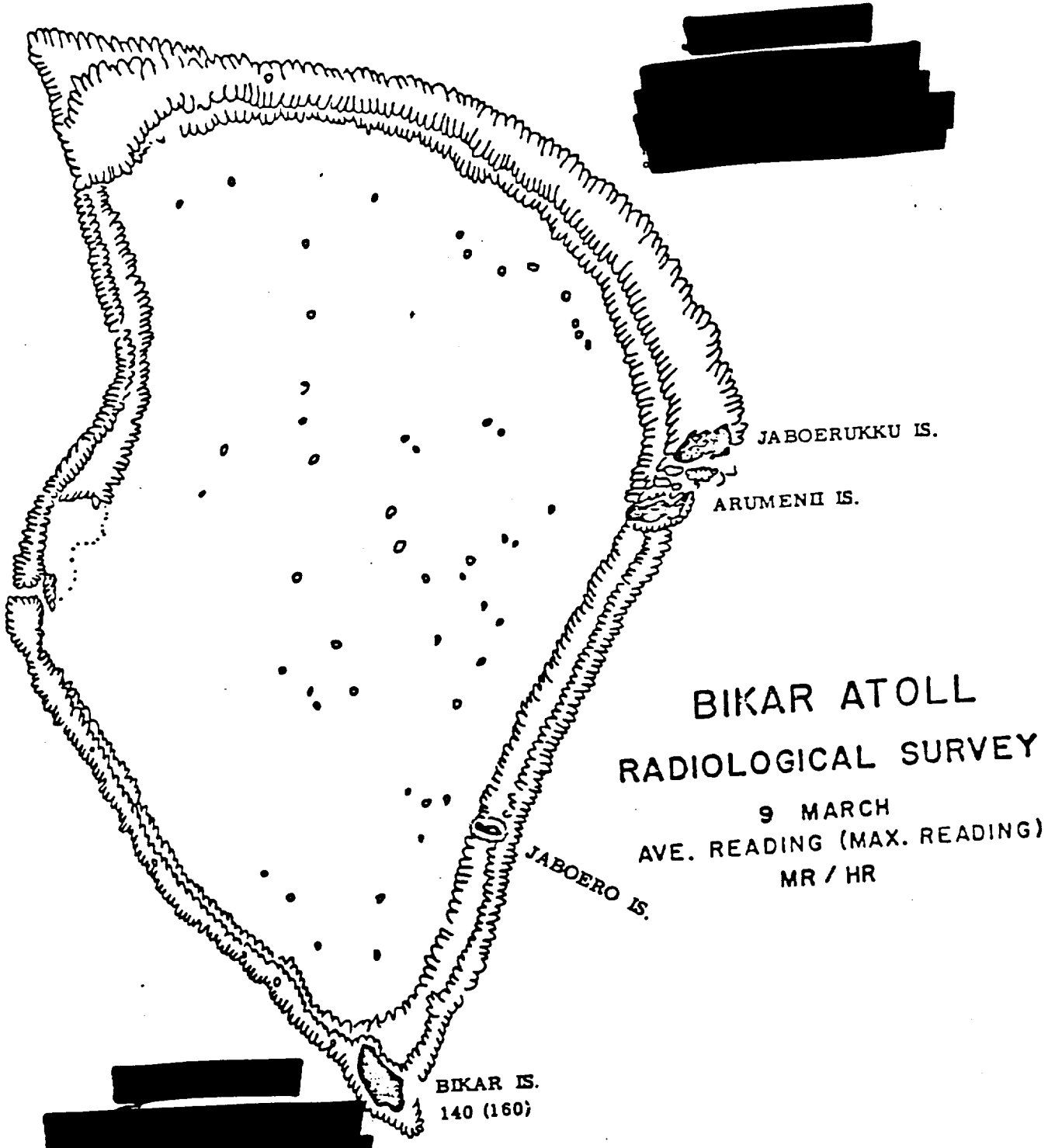


FIG. 3

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plan followed during G STAG.

c. That for future operations, the Task Group be given complete operational control of an entire twelve plane patrol squadron and that no attempt be made to combine missions.

d. That naval search aircraft be based at ENIEMAN in future operations, but that provision be made for staging, parking and limited servicing on ENIEMAN Island.

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