

# Fact Sheet



Defense Nuclear Agency  
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## Operation REDWING

REDWING was a 17-detonation nuclear weapon test series (see table) held at the Atomic Energy Commission's (AEC) Pacific Proving Ground (PPG) in spring and summer 1956. The PPG consisted principally of Enewetak\* and Bikini atolls in the northwestern Marshall Islands in the Central Pacific Ocean.

### REDWING test events, 1956<sup>a</sup>

Assigned Name	Location	Date (local time)
LACROSSE	Enewetak; surface on Runit Island	5 May
CHEROKEE	Bikini; airdrop near Nam Island	21 May
ZUNI	Bikini; surface on Eneman Island	28 May
YUMA	Enewetak; tower on Aomon Island	28 May
ERIE	Enewetak; tower on Runit Island	31 May
SEMINOLE	Enewetak; surface on Boken Island	6 June
FLATHEAD	Bikini; barge off Iroij Island	12 June
BLACKFOOT	Enewetak; tower on Runit Island	12 June
KICKAPOO	Enewetak; tower on Aomon Island	14 June
OSAGE	Enewetak; airdrop over Runit Island	16 June
INCA	Enewetak; tower on Lujor Island	22 June
DAKOTA	Bikini; barge off Iroij Island	26 June
MOHAWK	Enewetak; tower on Eleleron Island	3 July
APACHE	Enewetak; barge off Dridrilbwij Island	9 July
NAVAJO	Bikini; barge off Iroij Island	11 July
TEWA	Bikini; barge over Nam Island reef	21 July
HURON	Enewetak; barge off Dridrilbwij Island	22 July

<sup>a</sup>Yields not announced except: LACROSSE (40 KT), CHEROKEE ("several MT"), ZUNI (3.5 MT), SEMINOLE (13.7 KT), TEWA (5 MT). One kiloton equals the approximate energy release of the explosion of one thousand tons of TNT; one megaton equals the approximate energy release of the explosion of one million tons of TNT.

\*The spelling of Marshall Island place names has changed in recent years in order to more accurately render the sounds of the Marshall Island names using English spelling.

ENCLOSURE (9)

## HISTORICAL BACKGROUND

The REDWING series was held primarily to test high-yield thermonuclear devices that could not be tested in Nevada. The development and testing of these devices, which generate their explosive power through the fusion or joining of hydrogen atoms, began in 1950 and had advanced to the stage that one of these was dropped from a B-52 bomber in REDWING. This test drop, although of some scientific interest, was probably more a demonstration to the world of the deliverability of these weapons than an experiment. The drop was witnessed by a group of U.S. newsmen, the first such group invited to view a Pacific nuclear test since 1946.

The devices were tested at the PPG by a joint military and civilian organization designated Joint Task Force 7 (JTF 7). This was a military organization in form, but was populated by military personnel, Federal civilian employees, and contractor personnel of the Department of Defense (DOD) and the AEC. The commander of this force was the appointed representative of the AEC and reported also to the Joint Chiefs of Staff (JCS) and the Commander in Chief, Pacific (CINCPAC). The peak DOD numerical strength of REDWING was approximately as follows:

Uniformed military	9,710
DOD civil service	600
DOD contractors	140
Total DOD personnel	10,450

In addition, several thousand men from the AEC and its contractors, a few from other Government agencies, and some foreign observers were present.

Numerous technical experiments were carried out in conjunction with each of the 17 detonations. These experiments measured the yield and efficiency of the devices and attempted to gauge the military effects of the explosions. DOD personnel participated in this test operation as individuals whose duty stations were at the AEC design laboratories, as units performing separate experiments, and as units performing various support roles. The REDWING operations placed most of the Navy support group at Bikini, where its ships provided living space for personnel who were evacuated from the islands before each test.

An extensive radiological safety (radsafe) program was instituted whose objectives were:

1. Maintenance of personnel radiation exposure at the lowest possible level consistent with medical knowledge of radiation effects and the importance of the test series.
2. Avoidance of inadvertent contamination of populated islands or transient shipping.

The program established an organization to provide radsafe expertise and services to the separate components of the task force who were responsible for personnel safety within their commands. Personnel were trained in radiological safety, and standards governing maximum permissible exposures (MPE) were established. The MPE was set at 3.9 R for the series. Film badges were provided for all of the participating personnel. Persons likely to be exposed to radiation were often provided with additional badges for more complete recording of exposure. An extensive weather forecasting group was established in order to predict wind directions and areas of potential fallout. Personnel were evacuated from danger areas before each detonation, and reentry to radioactive areas was restricted to the personnel required to retrieve important data.

## TEST OPERATIONS AND EXPOSURES

Tests were conducted at both Enewetak Atoll and Bikini Atoll some 190 nmi (352 km) to the east of Enewetak. The Marshall Islanders were evacuated from Bikini in 1946 and Enewetak in 1948. Enewetak served as a base of operations and the place where

smaller-yield devices were tested, and Bikini was an advance camp where the larger-yield devices were tested.

Most of the U.S. Navy and Marine Corps personnel were on ships operating around Bikini providing supply, evacuation capability, and other support to the tests there. Most of the Army and Air Force personnel were on Enewetak. All the Services had personnel assigned to laboratory organizations whose operations were conducted on both atolls as well as other locations in the Pacific area.

The operations ran smoothly except for two incidents. The airdropped demonstration test, CHEROKEE, was considerably off target; and the edge of the cloud from the last event fired at Bikini, TEWA, passed over Enewetak causing fallout there. The missed airdrop caused no exposure of personnel to ionizing radiation as the entire Bikini Atoll had been evacuated, and the miss was in the direction of the open sea. But the TEWA fallout on the Enewetak base camp did lead to the exposure of the personnel there. The incident occurred toward the end of the series when some personnel had already returned to the United States, but the remaining Enewetak personnel received about an additional 1.5 R exposure from this incident. The overall average exposure for the series was approximately 1.7 R. The highest exposures were recorded by Air Force flight officers whose aircraft penetrated the nuclear clouds on scientific missions. The recorded REDWING exposures are summarized in the following table by service affiliation. Civilians employed by the Services have been included with the uniformed personnel. Other participants included personnel from other U.S. Government agencies including the AEC, AEC contractors, and foreign military and U.S. media observers.

Summary of REDWING exposures

	No. of Persons Badged	Exposure Ranges (roentgens)							High Recorded (R)
		Not Available	0	0.001- 0.999	1.000- 2.999	3.000- 4.999	5.000- 9.999	Over 10	
Army	1,612	0	19	398	500	650	45	0	7.2
% of Total		0	1	25	31	40	3	0	
Navy	5,638	23	312	3,674	1,474	147	8	0	6.2
% of Total		<1	5	65	26	3	<1	0	
Air Force	2,780	0	220	823	1,010	638	77	12	16.4
% of Total		0	8	30	36	23	3	<1	
Marine Corps	249	17	2	116	108	6	0	0	3.6
% of Total		7	<1	47	43	2	0	0	
Other Military	379	2	23	126	143	74	11	0	7.4
% of Total		<1	6	33	38	19	3	0	
DOD Contractors	138	1	4	58	66	9	0	0	4.7
% of Total		<1	3	42	48	7	0	0	
Other Participants	3,847	78	426	1,237	844	1,038	224	0	6.8
% of Total		2	11	32	22	27	6	0	
Total	14,643	121	1,006	6,432	4,145	2,562	365	12	16.4
% of Total		<1	7	44	28	18	2	<1	

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\* From 1945 to 1962 the United States conducted several series of underwater, \*  
\* surface, and above-surface nuclear tests. The Defense Nuclear Agency (DNA) \*  
\* in 1978 was assigned as Department of Defense's (DoD) Executive Agent to \*  
\* conduct a program to identify DoD participants, determine radiation doses, \*  
\* and write histories of the series. This fact sheet summarizes information \*  
\* on OPERATION REDWING, one of those test series. Further information can be \*  
\* obtained from DNA Report #6037F. \*  
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