

## Operation REDWING

**Note:** For information related to claims, call the Department of Veterans Affairs (VA) at 800-827-1000 or the Department of Justice (DOJ) at 800-729-7327. For all other information, call the Nuclear Test Personnel Review (NTPR) Program at 800-462-3683.

Operation REDWING was a 17-detonation atmospheric nuclear test series (see table) conducted at the Atomic Energy Commission's (AEC) Pacific Proving Ground (PPG) in the spring and summer of 1956. The PPG consisted principally of Enewetak and Bikini Atolls in the northwestern Marshall Islands in the central Pacific Ocean.

### 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 devices 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 it 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 15,400, primarily military service personnel. In addition, several thousand men from the AEC and its contractors, a few personnel from other government agencies, and some foreign observers were present.

Numerous technical demonstrations were carried out in conjunction with each of the 17 detonations. These demonstrations 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 demonstrations, 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.

### Summary of Operation REDWING Events (1956)<sup>a</sup>

Shot	Local Date (1956)	Location	Burst Type	Yield <sup>b</sup>	
				Kilotons	Megatons
LACROSSE	May 5	Enewetak	Surface	40	
CHEROKEE	May 21	Bikini	Airdrop		3.8
ZUNI	May 28	Bikini	Surface		3.5
YUMA	May 28	Enewetak	Tower	0.190	
ERIE	May 31	Enewetak	Tower	14.9	
SEMINOLE	June 6	Enewetak	Surface	13.7	
FLATHEAD	June 12	Bikini	Barge	365	
BLACKFOOT	June 12	Enewetak	Tower	8	
KICKAPOO	June 14	Enewetak	Tower	1.49	
OSAGE	June 16	Enewetak	Airdrop	1.7	
INCA	June 22	Enewetak	Tower	15.2	
DAKOTA	June 26	Bikini	Barge		1.1
MOHAWK	July 3	Enewetak	Tower	360	
APACHE	July 9	Enewetak	Barge		1.85
NAVAJO	July 11	Bikini	Barge		4.5
TEWA	July 21	Bikini	Barge		5
HURON	July 22	Enewetak	Barge	250	

<sup>a</sup> Source: United States Nuclear Tests, July 1945 through September 1992, DOE/NV-209 (Rev. 15), December 2000.

<sup>b</sup> One kiloton equals the approximate energy release of one thousand tons of TNT; one megaton equals the approximate energy release of one million tons of TNT.

### **Radiation Protection Standards**

An extensive radiological safety program was instituted with the following objectives:

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 and transient shipping.

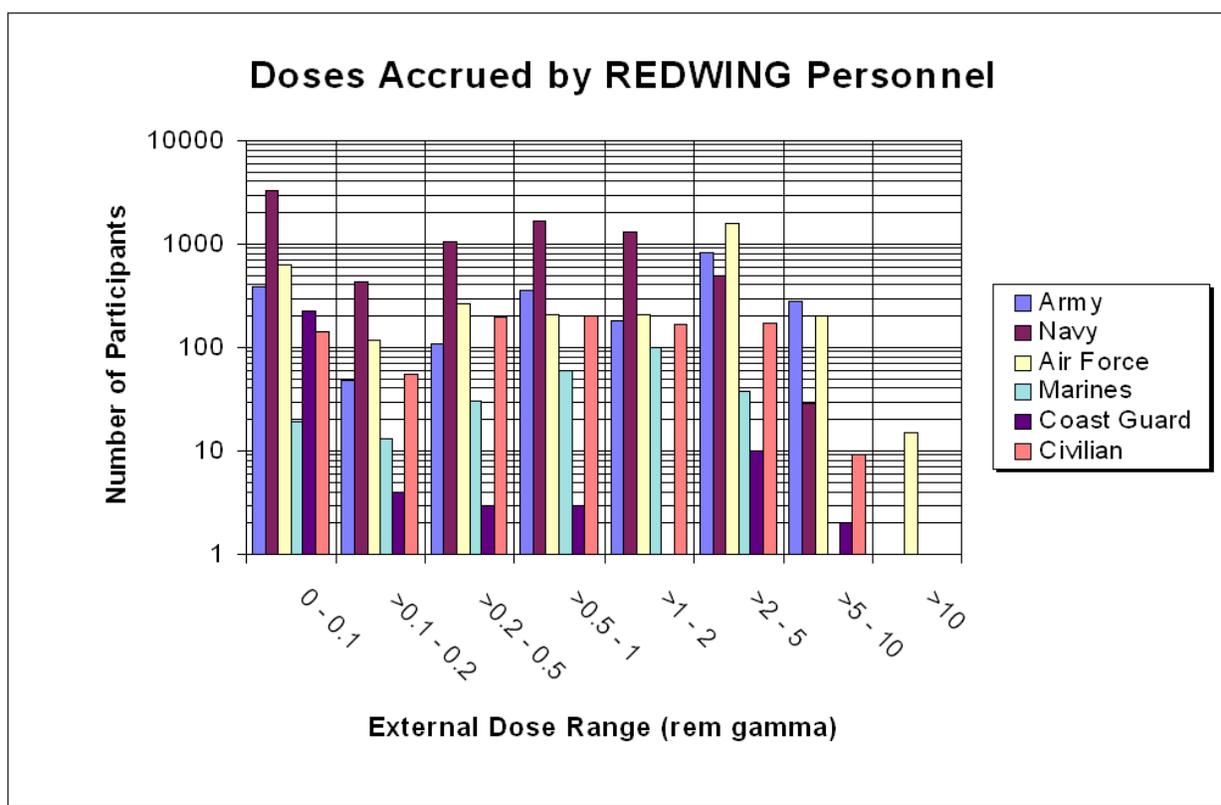
The program established an organization to provide radiological safety expertise and services to the separate components of the task force who were responsible for personnel safety within their commands. Personnel were trained in radiological safety and standards governing maximum permissible exposures were established. The exposure limit was set at 3.9 Roentgen (R) for the series. Film badges were provided for all of the participating personnel. Personnel likely to be exposed to radiation were often provided with additional badges for more complete monitoring of exposure. A special Maximum Permissible Exposure (MPE) of 20 R gamma was authorized

for the operational period for aircrews, maintenance crews, and recovery crews associated with air-sampling aircraft

An extensive weather forecasting group was established to predict wind directions and areas of potential fallout. Personnel were evacuated from danger areas prior to each detonation, and reentry to radioactive areas was restricted to personnel required to retrieve important data.

### **Radiation Doses at Operation REDWING**

The average dose to DoD participants at REDWING was approximately 1.3 rem; over 96 percent of the participants received doses less than 5 rem. The highest doses were recorded by Air Force flight officers who flew nuclear cloud-sampling missions. The recorded REDWING doses (including DoD civilians) are summarized in the following chart.



\* A rem is a radiation protection unit of measure that quantifies the risk of biological effects resulting from exposure to ionizing radiation. Ionizing radiation is any radiation (gamma, x-ray, beta, neutron or alpha) capable of displacing electrons from atoms or molecules, thereby producing ions. According to the National Council on Radiation Protection and Measurements (NCRP, Report No. 160, Table 1.1), the general U.S. population receives about 0.62 rem per year from natural background radiation sources (radon, cosmic rays and rocks) and man-made radiation sources (medical diagnostic x-rays and consumer products).

For more information, see the report “Operation REDWING 1956” (DNA 6037F), available online at [http://www.dtra.mil/rd/programs/nuclear\\_personnel/atr.cfm](http://www.dtra.mil/rd/programs/nuclear_personnel/atr.cfm).