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## Air Force Medical Service - AFMS

America's Air Force - Integrity, Service, Excellence



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May 22, 2002

### **Air Force Releases Reports on Palomares, Spain and Thule Airbase, Greenland Nuclear Weapons Accidents**

The Air Force Surgeon General's Office released two reports today containing the reevaluations of radiation exposure for personnel who participated in the clean up of a 1966 nuclear weapons accident in Palomares, Spain, and a 1968 accident near Thule Airbase, Greenland. The reevaluations, using modern modeling methods, confirmed original conclusions that the exposures were not significant.

The Palomares report found that the ability to reconstruct doses from urinalysis was confounded by poor data quality, mostly as a result of sample contamination and limited analytical sensitivity. However, environmental (air) sampling data suggests that exposures were less than 500 mrem, 1/10 the current limit for radiation workers (5 rem). The Thule report confirmed the original conclusion that the exposures to these radionuclides were also below the accepted annual limit for radiation workers.

Over the years, the Air Force had responded as completely as possible to individual inquiries concerning these radiation exposures, although the original evaluations were not updated with currently accepted methods. Recent interest in radiation exposure to veterans and government employees, as well as the availability of improved technology for assessing doses, led the Air Force to review the data from the Palomares and Thule clean ups for possible use in better estimating radiation exposures.

The Palomares accident occurred on January 17, 1966, over Palomares, Spain, between a United States Air Force (USAF) B-52 bomber and an USAF KC-135 tanker aircraft. The accident involved a mid-air collision between the two aircraft, which caused two of the four thermonuclear weapons on board to release radioactive material. This resulted in a three-month response effort to identify, characterize, remove and remediate the accident site. During the response effort, personnel were exposed to airborne dust and debris contaminated with plutonium. Approximately 1,600 individuals participated in the clean-up effort, the majority of whom were active duty Air Force personnel.

Following the completion of the clean-up in 1966, the U.S. and Spanish Governments have continued to conduct medical surveillance of the Palomares residents and environmental monitoring of the site. Concentrations of plutonium and americium have been monitored in air, soil, and food products. No radiation-related cancers have been detected in the Palomares residents.

The Thule accident occurred on January 21, 1968, when a B-52 caught fire. A "bail out" command was issued and the aircraft crashed into a sea of ice in the Wholstenholme Fjord approximately eight miles west of Thule Airbase. The crash caused the high explosives in the unarmed nuclear weapons to detonate, dispersing plutonium and tritium into the surrounding air, snow and ice. Subsequent surveys confirmed that most of the plutonium and tritium were confined in a blackened area of ice and snow in an oval pattern from the impact point. This significantly reduced the potential for plutonium

and tritium residues to become airborne and inhaled by response personnel.

The response to the Thule incident to find, safeguard, recover, and return weapon's contents to the United States, and to assess and mitigate effects on the local populace and ecosystem required over 700 active duty Air Force personnel for a period of nine months. Contaminated ice was removed in February and March 1968, and the remaining ice melted in the spring of 1968. Environmental contamination was studied by scientific expeditions in 1968, 1970 and 1974, finding no significant exposures to plutonium.

The re-evaluation process for both accidents involved efforts to identify, locate and review the records of the incident, radiation exposure assessments, and other information pertinent to the studies. Urine samples, nasal swabs, and air sampling information taken at the time of the clean-ups were evaluated for scientific soundness and possible use in updating the radiation records of the response personnel. Methods and models used in the 1960s were evaluated for their effectiveness in estimating radiation doses and risks from the intake of the radioactive materials dispersed in the accidents. Air sampling collected at the time of the incident proved the most valuable and was utilized for radiation exposure assessment.

The reports make several recommendations, to include further research in some areas, communication with the veterans involved in the clean-ups, and continued interaction with the Department of Energy. Efforts to implement these recommendations are underway.

The reports have been made available to the Department of Veterans Affairs. Use these links to access the full reports and appendices. Appendix C to the Palomares report has been omitted because of Privacy Act considerations.

AF Doctrine 2-4-2	Document	Appendices	Document	Appendix	Appendix	Appendix	Appendix E
	A		B	A	B	D	

Participants who are unable to access the web site may contact the Air Force Surgeon General's Office at (202) 767-4797 for assistance.

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U.S. AIR FORCE

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SG Newswire for May 2002

Practice improves field  
medical treatment unit

## AF Surgeon General releases reports on two nuclear weapons accidents

Brig. Gen. (Dr.) Locker  
honored for 30 years of  
contributions,  
dedication, vision

New Wilford Hall  
infusion center  
advances patient care

Suicide prevention is a  
year-round task

AF suicide prevention  
program developer  
helps Utah raise  
awareness of 'largely  
ignored' problem

Young C-9 pilots have  
big responsibilities

Pharmaceutical lab  
opens at Brooks

Edwards medics bring  
new twist to pharmacy  
care

Lakenheath's top  
volunteer lauded for  
roles in crises, grief  
counseling, clinic duties

Volunteer Medics:  
Reservist's organization  
delivers worldwide  
health care

DOD authorizes  
National Defense Medal  
for war on terrorism

Agreement on federal  
health information  
exchange announced

Archived Newsletters

**WASHINGTON** -- The Air Force Surgeon General's Office has released two reports containing the re-evaluations of radiation exposure for personnel who participated in the clean up of a 1966 nuclear weapons accident in Palomares, Spain, and a 1968 accident near Thule Air Base, Greenland. The re-evaluations, using modern modeling methods, confirmed original conclusions that the exposures were not significant.

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