

**Tab 3**

18 January 1994

## MEMORANDUM FOR THE RECORD

TO : AL/OE

SUBJECT: Search for Historical USAF Reports on Human Subjects Exposed Experimentally to Ionizing Radiations (from External Sources) Prior to the 1960's

1. On 3 January 1994, Col Vermulen (AL/OE), in response to a tasking from the USAF Surgeon General, requested that AL/OERT search local archives for reports dealing with any past USAF-sponsored experiments in which human subjects were exposed to ionizing radiation. The Surgeon General's solicitation was part of a national effort, spearheaded by Ms Hazel O'Leary, Secretary of Energy, to determine the scope of human experimentation with ionizing radiation, which may or may not have occurred with the support of a number of US agencies, including the Department of Defense, during the 1940's and 1950's.
2. Since the ionizing radiation research effort in AL/OERT now is being pursued by only one scientist (who has been a DoD employee for only 7 years), she sought the counsel of two individuals who have been involved with ionizing radiation studies at Brooks AFB since the 1960's. Mr Kenneth Hardy (AL/OEBD) could recall no human experimentation during his tenure at Brooks AFB since 1960, and Ms Yolanda Salmon (AL/OEAE), who has been at Brooks AFB since the mid-1960's, also was unaware of any such experiments.
3. Since Maj Mitchell, from AL/AOE, was examining records relating to any possible USAF experimentation on humans with internally emitting radioisotopes, AL/OERT chose to examine only the possible experiments on humans exposed to external sources of radiation, not including weapons testing. We started by examining a bibliography prepared by Col John E. Pickering (USAF, Ret.) in 1980. Col Pickering was the driving force behind the initiation of a number of critical USAF research projects including those designed to determine ionizing radiation risk estimates for personnel exposed either to the natural environments of high altitudes and space or to the high radiation environments produced by atomic weapons. As early as the 1950's, Col Pickering realized the importance, both scientifically and ethically, of animal models for the determination of such risk estimates, and most of the references in his 1980 bibliography were to studies with animal models. In cases where the nature of the study was not made clear by the title of the reference, we attempted to look at each one. With the aid of Mr Dewey Goff (AL/DOKLD) and his staff, we examined both unclassified and classified reports: some reports listed in the bibliography were no longer in the archives, but the ones that were, including the classified ones, did not pose any problems (Atch 1).
4. Mr Mitchell (AL/OE) telephoned me with a report of a telephone conversation he had with Col Pickering, who remembered many items of particular relevance to the accomplishment of the task at hand. A key piece of information was that the USAF had supported some radiation research studies at three first-class university hospitals: The

University of Chicago, The University of Rochester, and the M.D. Anderson Hospital and Tumor Institute (University of Texas, Houston). Mr Mitchell suggested that someone look through documents in the display case holding Col Pickering's memorabilia at the Hangar Nine Museum at Brooks AFB. Dr Alcott and his staff had started looking through those items already, and they were a great help when we started working at the museum. With the aid of Ms Yolanda Salmon, I went through three black binders documenting Col Pickering's work, and we noted those which might have any descriptions of human experiments with ionizing radiations. We did find some (Atch 2), but, in general, the references were to experiments with animals rather than with humans. Furthermore, as far as we could tell, the human experiments were performed with the informed consent of the subjects according to the rules and regulations at the time.

Three documents found in the display case, but not included in the binders, were examined as well. One was Recorded Testimony on the Biological and Environmental Effects of Nuclear War presented by Col Pickering before a Special Subcommittee on Radiation of the Joint Congressional Committee on Atomic Energy dated 22-26 June 1959. The second was a "workbook" in which several of the most important founders of modern radiation biology came together to discuss the radiation risks inherent in nuclear-powered aircraft. The third was a "draft" copy of a report on Project Trinity. The essence of all the documents on display was that the USAF was concerned about radiation exposures to personnel during training or nuclear war, and how much radiation could be tolerated before performance would be impaired (Atch 2).

5. Although not every document of possible interest could be examined, based on the available reference materials the reviewer is satisfied that no deception of human experimental subjects occurred in USAF-sponsored radiation experiments.

Sincerely

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2 Atch  
1 Strughold Library Summary  
2 Hangar 9 Museum Summary

Atch 1:       SUMMARY OF REPORTS/ARTICLES FOUND AT THE STRUGHOLD  
LIBRARY (based on a 1980 bibliography by Col J. E. Pickering)

Unclassified Reports   The reports examined dealt either with animal experiments or with theoretical subjects.

Classified Reports   None of the available classified reports dealt with human experimentation. Reference lists in the reports may be of interest to those concerned with studies of radiation effects on humans, but the lists could not be photocopied. Most information on ionizing radiation effects in humans has come from victims of various types of accidents (including the survivors of the Hiroshima and Nagasaki blasts) and radiotherapy patients. Unclassified titles of the reports will be made available to interested parties.

Atch 2. SUMMARY OF REPORTS ARTICLES FOUND AT THE HANGAR NINE MUSEUM

All the materials in the museum were unclassified, but some should be considered privileged information because they were draft versions of final reports.

The report we found that dealt with human experimentation was titled, "Systemic and Clinical Effects Induced in 263 Cancer Patients by Whole-body X-irradiation with Nominal Air Doses of 15 to 200 R". by L. S. Miller, G. M. Fletcher and H. B. Gerstner, Air University Report 57-92 from the School of Aviation Medicine, USAF, Randolph AFB, TX, May 1957. The authors of this report concentrated their discussion on 30 terminally ill cancer patients at the M. D. Anderson Hospital and Tumor Institute, Houston, TX, who were exposed to 200 R for 2 reasons: 1) to alleviate some of their cancer symptoms (and possibly develop new radiotherapeutic protocols for palliation of late cancer symptoms); 2) to measure performance decrements in the subjects following the 200 R dose. Experimental radiotherapy protocols are being developed to this day using patients who are *in extremis*, and it was of interest to the USAF and the radiotherapy community alike whether or not performance decrements and other debilitating symptoms occurred following a sublethal whole-body dose of 200 R. The reader should be reminded that current standard fractionated radiotherapy regimens call for 200 R per day, 5 days a week, until a given total dose has been delivered to the tumor being treated.

A later report, which, with the one summarized above, was sent to the USAF Surgeon General on 14 January 1994, was seen by this reviewer for the first time on 14 January. That report (Review 3-63, titled "Effects of Acute Radiation Exposure on Human Performance." by Robert B. Payne) was dated February 1963. It included in its discussion mention of the M. D. Anderson study described above in this attachment.

The 1959 Recorded Testimony by Col Pickering dealt primarily with use of experimental animals and data from radiation accidents as models for determining human radiation risk estimates. The "Workbook" for the Medical Advisory Group to the Aircraft Nuclear Propulsion Program (5th Meeting, 18-19 November 1956) included discussions of relevant contract studies. Only one contract study was on humans; it was performed at UCLA and Maj Mitchell should have included that in her summary. The draft report titled, "Project Trinity, 1945 Nuclear Weapon Test," prepared by C. Maag and S. Rohrer in 1981, "...describes the activities of an estimated 853 personnel, both military and civilian, in Project TRINITY, which included the detonation of the first nuclear device, conducted in New Mexico in 1945. Activities engaging military personnel included primarily scientific and diagnostic experiments to evaluate the effects of the nuclear device." This reviewer has seen only drafts of the report, not the final one; therefore, the information included as p. 2 of Atch 2 should be treated as privileged. This project was supported by the Defense Nuclear Agency rather than the USAF but the doses received by the observers were low enough that the reviewer believed they would be of interest to the readers of this report.

Addendum (for the information of local AL/OE Personnel)

The unclassified TITLES of the CLASSIFIED reports which may include REFERENCES of interest are:

Military Significance of Massive Doses of Ionizing Radiation. School of Aviation Medicine Report No. 56-34 (1955)

Operation Redwing Report WT-1326, Aug 1956, Chorioretinal Burns [animal experiments].