RADIATION RESEARCH SUBJECTS MEETING
January 12, 1994

Prepared For:

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INTRODUCTION

This report documents the Radiation Research Subjects meeting conducted at the Telegraph Village office of Logicon RDA on 12 January 1994. Attendees are listed in Appendix A; the meeting agenda is provided at Appendix B; a set of handouts used to focus discussions is provided at Appendix C.

The objective of this meeting was to identify actions that could be taken to identify, and obtain all available information concerning, research activities which involved the exposure of humans to ionizing radiation. Initial priority is being given to research that may have involved the Defense Nuclear Agency and its predecessor organizations; attention is also being given to activities involving other DoD organizations.

Over the course of the meeting, a number of potential sources for information were identified. For convenience, all such references have been collected in appendices. Appendix D lists individuals cited during the meeting; Appendix E lists organizations; Appendix F provides citations for documents.

With the exception of remarks by the Defense Nuclear Agency's Director, Deputy Director, and General Counsel, comments are not attributed in this report.

During the course of the meeting, several in-progress were provided; this information is incorporated into the summary of the entire meeting provided on the next page.

SUMMARY

OBJECTIVE

Obtain all available information concerning involvement by the Defense Nuclear Agency (DNA) and predecessor organizations in research activities in which humans were exposed to ionizing radiation.

To the extent resources permit and efforts do not conflict with accomplishment of the primary objective, obtain comparable information concerning research activities accomplished by other DoD organizations.

Data dealing with occupational exposure and information previously gathered for the Nuclear Test Personnel Review (NTPR) program are excluded from this information gathering project, except as noted below in the discussion of parameters for data collection.

At several points during the meeting it was noted that the scope of this and related efforts has not been definitized; some individuals and organizations have proposed far broader scopes, e.g., all exposures to biological, chemical, or radiological agents/sources.

STATUS

The meeting accomplished its primary objective. There was consensus that the sources identified would make it possible to identify most of the information being sought. Key sources for relevant information are likely to include:

- o AFSWP, DASA, and DNA annual histories.
- o The study efforts identified during the 12 January meeting.
- o The scientific and medical literatures.
- o The Office of Scientific and Technical Information operated by the Department of Energy.

Dr. Saenger (University of Cincinnati) agreed to provide a copy of the University of Cincinnati research proposal developed for DASA and also to develop aggregate summaries of radiotherapy research.

It was noted that the data being sought involves disparate types of information for both intentional and unintentional activities entailing the release of materials, injection, or exposure to ionizing radiation sources (to include exposure in the course of radiotherapy).

CATEGORIES OF INFORMATION THAT WILL BE DIFFICULT TO OBTAIN

It was suggested that one category of DNA/DASA/AFSWP involvement in relevant experiments might not be recorded in records available to DNA. This involves situations (if any) in which DNA personnel assigned (seconded) to DOE national labs participated in DOE research that entailed exposure of humans to ionizing radiation. In the absence of DNA/DoD funding documentation or other project-specific identifying information, it is unlikely that a comprehensive summary of such activities could be developed. There was agreement that the most reasonable course of action would be to allow DOE to report such activities, given that they were funded by DOE and its predecessors at DOE sponsored facilities.

Prior to establishment of the Armed Forces Radiobiological Research Institute in 1961, relevant DoD laboratory research was decentralized. Facility-specific data collection efforts are likely to be required. In some cases the Military Departments may not have a good understanding of these research programs.

PARAMETERS FOR INITIAL DATA COLLECTION EFFORTS

The DNA-proposed time frame for reporting the activities of DNA and predecessor organizations is from January 1947, the establishment of AFSWP. Earlier records, e.g., from the Manhattan Project, were sent to the AEC/DOE.

"Involvement" is to be construed in deliberately broad terms, to include DNA funding, participation by DNA personnel in a research activity, and the use of data from a research activity in DNA-sponsored research.

A broad net will be used to capture information, to include data prior to the proposed January 1947 starting point, with filters being applied subsequently.

NTPR information having to do with research activities will be included in the initial data collection efforts.

MANAGEMENT ISSUES

The White House is directing an interagency effort. DoD management responsibilities, which involve multiple authorities and organizations, have only recently been defined.

Several attendees expressed strong reservations concerning the approach being employed, arguing that the management model used for NTPR in which a single person was given responsibility for the entire problem (to include authority to task the Military Departments) should be employed instead. In line with this argument, it was recommended that Director, DNA propose that he be given such authority, on the presupposition that DNA would, at some point, be tasked to solve at least the DoD portions of the problem.

It was noted that most of the data to be collected involved AEC/DOE activities and that a difficult-to-influence interagency process was already underway.

While DNA management expressed agreement with the argument that the NTPR management model was the best way in which to conduct the radiation research subjects program, no decisions were made.

There was agreement that preparations must be made to allow DNA to respond to a large number of inquiries (many of which may overlap with NTPR) that are likely to be forwarded from the national helpline that is being established.

NTPR

There was agreement that NTPR was the logical model for the radiation research subjects data collection effort. A decision was made to take action to improve public and media understanding of the NTPR program's accomplishments. There will be concurent coordination with OSD/Public Affairs.

There was agreement that research efforts to update NTPR epidemiological research were appropriate, particularly when attention is given to the standard practice within this research community of study updates at 10 year intervals.

INTRODUCTORY REMARKS

The meeting began with the observation that the goal of the session was to identify approaches that would extract as much information as possible concerning potential involvement by DNA and its predecessors in research activities which may have involved the exposure of humans to ionizing radiation.

Next, Dr. Ullrich (Deputy Director, Defense Nuclear Agency) provided an overview of the Agency's objectives in convening the session. He began by expressing appreciation for attendees participation in the session, which had been scheduled with little advance notice.

Dr. Ullrich noted that this meeting was the first step towards separating hype and sensational statements in the media from reality. To this end, the format would be unstructured. The purpose was to provide a forum in which attendees could draw on their unique expertise to contribute to our understanding of what actually happened during research activities. In this regard, a number of items of information had to be identified:

- What really happened in these research activities?

- What was the basis or rationale for the activities? In this regard, a key issue involves the distinction between experiments conducted for military purposes vs. medical experiments that may have generated information of interest to DNA or other DoD organizations.

The Deputy Director next addressed the context within which answers to these questions were being sought. "Radiation" and the concept of exposure to ionizing radiation has strong negative connotations within the public. When the Secretary of Energy first raised the topic of human exposure to radiation in Government-sponsored radiation research, the estimate was that perhaps 600-800 individuals might have been involved. Public response, as measured by calls to Government hotlines, has been amazing -- over 10,000 calls. On some days, there have been 700 calls per hour. Work has begun on preparing responses to 4,000 of these inquiries. Over half of the inquiries involve atomic veterans. Roughly one-third of the calls involve individuals who believe they had been exposed to ionizing radiation during medical experiments.

We live in a litigative age. The common cultural expectation is that everyone is entitled to believe that they are a victim (of someone or something). Before the Government responds to claims, we have to ensure that the facts are in order.

Next, Dr. Ullrich outlined some of the considerations that needed to be taken into account in the course of collecting the needed information:

- o The focus for the 12 January meeting would be involvement by DNA and its predecessors (DASA and AFSWP) in research involving the exposure of humans to ionizing radiation.

- o Such involvement could take a number of forms, ranging from direct sponsorship of the research to having a mild interest in research results.

- o The key questions are: what, where, why, how, and who?

  - What was the nature of the experiment?

  - What were the levels of exposure/dosages?

  - Was the exposure harmful? One conclusion developed in the Nuclear Test Personnel Review (NTPR) research program is most of military personnel who participated in the atmospheric nuclear test program had extremely low exposure levels, well below the thresholds at which damage might be attributed.

- o We must keep in mind the point that standards have changed over time. There was a period in which having two chest X-rays per year was considered the smart thing to do.

- o Where should we look for relevant information? Much of what we need is likely to be available in open sources, particularly health physics and other scientific and medical journals.

- o We need to understand research objectives. Was the activity conducted as:

  - Medical research?

  - Clinical treatment?

  - Military research?

  - Evil science?

- The Defense Nuclear Agency's objective is to develop a complete and honest characterization of its involvement in the research being addressed during the meeting. There are no constraints or limits. If there is bad news, if the Agency or its predecessors made mistakes, DNA management wants to hear about this. To facilitate frank and open discussions, comments (other than those by senior DNA management and the Agency's General Counsel) will not be attributed within the session's minutes.

- Was the research consistent with prevailing medical/science norms -- then or today?

- What actions were taken to achieve informed consent?

- What peer review was accomplished?

Dr. Ullrich observed that key tasks were to identify all of the research activities of interest, and to collect available information concerning the context within which these research activities were conducted. He anticipated that the unique expertise of the meeting participants would make a major contribution towards realization of these objectives.

Mr. Brittigan, General Counsel, Defense Nuclear Agency, followed with a number of observations. He began by noting that he was not addressing a "committee" in the formal, legal, sense of that term. This was a meeting attended by a group of individuals. He went on to make a number of observations:

- A primary objective is to tap into the attendees' recollections to develop the information that is needed concerning potential DNA involvement in research involving the exposure of human subjects to ionizing radiation.

- Congressional hearings have already been scheduled, to include hearings on the 14th and 20th of this month.

- DNA has already initiated reviews of technical literature and DNA contracts.

- It is important to be able to differentiate between two very different situations:
  - Experimental research in which humans were exposed to radiation in which the experimental objectives were the only goals, i.e., there was no benefit intended for the subjects.
  - Use of radiation exposure in therapy which was intended to benefit the subjects; in this situation data of interest to DNA might have been collected; however, such data collection was not the primary objective.
- It is important to cast a broad net, obtaining information on activities that clearly fit the definition being used, while also gathering data on those activities which fall outside the scope of the project (strictly defined) but which might be characterized as relevant research activities as some point in the future.
- Minutes are being taken for this meeting to ensure that DNA has a record of all of the potential sources of information identified. However, remarks will not be attributed. It is possible that these minutes might be requested (and might have to be provided) under the Freedom of Information Act.
- Related efforts are underway within other Government organizations. The priority for the 12 January meeting is to obtain information relevant to DNA involvement in research activities. To the extent time is available, attention will also be given to the identification of information relevant to the potential participation of the Military Departments and other DoD organizations in relevant research.
- Dr. Smith, ATSD(AE), has been designated at the DoD focal point for activities involving the collection and analysis of information concerning the potential exposure of humans to ionizing radiation in activities that had DoD involvement. He will need, and receive, support from DNA.
- Within DNA, RADM Wisely is serving as the Agency's focal point for coordination with other DoD and national efforts; Mrs. Pierre is working with him.

- Referencing his past experience as a counsel for the Army, Mr. Brittigan emphasized the need to have a thorough and comprehensive collection and review of relevant information sources at the outset of the effort. In the Army effort referenced (MK ULTRA experiments), the CIA discovered boxes of new information after Congress had been assured by the Army that all relevant sources had been identified. The effect on the Hill was far from positive.

Attendees made a number of observations and comments:

- Would ATSD(AE) be acting as the sole DoD agent/decision-maker in a capacity analogous to that of Director, DNA for NTPR? Would ATSD(AE) have authority to task the Military Departments?

- It was argued that one senior official needed to be in charge of all DoD efforts.

- An attendee argued that the current approach was virtually guaranteed to result in disaster, which would be handed to DNA for resolution.

- It was observed that Dr. Smith had already contacted DNA requesting assistance. As noted, RADM Wisely was the designated Agency lead, assisted by Mrs. Pierre.

- A participant argued that DNA should volunteer for the task it was likely to receive. It should do so by drafting a tasking memo from the Secretary of Defense that would provide the clear authority needed for effective accomplishment of the task.

- An attendee from DNA counseled that we should not get the horse before the cart. Most of the programs for which data is being collected are likely to be the responsibility of DOE. DNA isn't the self-evident choice as lead for collection of this information. For the activities sponsored by DoD, the argument in favor of DNA taking the lead is stronger.

Continuing, Mr. Brittigan noted that little information is likely to available from DoD sources for the period prior to the formation of AFSWP. This earlier information, e.g., from the Manhattan Project, had been sent to DOE. Hence, it is the Agency's position that the DNA review should commence with the formation of AFSWP in January 1947.

In response to a question, it was indicated that use of the proposed cut-off date would exclude the 1931 Illinois hospital experiments.

An attendee argued against the January 1947 starting point for data collection on the grounds that, if military personnel active in the Manhattan Project were involved in relevant activities, DoD would be required to report on same, irrespective of decisions made decades ago concerning the disposition of Manhattan Project records.

A DNA attendee noted that there might be merit in a counterargument to the proposition advanced previously that DNA should take the lead. It is already clear that DNA will be part of the DoD solution path. The Agency probably doesn't want to own the entire problem, since most of the research of concern was conducted by the Atomic Energy Commission (AEC). It makes sense to have a firm, agreed, definition of what the problem is before we stand up and volunteer. There is one government that has one problem -- DoD and DOE need to develop a coordinated response.

UPDATE ON DOD AND INTERAGENCY ACTIVITIES

An attendee provided an update on DoD and national initiatives to identify instances in which humans were exposed to ionizing radiation in Government-sponsored research. The following points were made:

- o The group meeting today is not a formally constituted committee that can be tasked. It is a meeting of informed individuals who can contribute to DNA and DoD efforts to locate relevant information.

- o RADM Wisely (Director for Operations) and Mrs. Pierre (Director Radiation Sciences) are the DNA focal points and liaisons to the DoD and interagency processes.

- o Some issues have been resolved; for example, the White House will define the scope of the effort and will manage the process.

- o A meeting is scheduled in the Pentagon for 1015 today at which the DoD strategy is to be defined.

- o There have been daily, in some cases more frequent, meetings at the Executive Office Building.

- o Five working groups/task forces have been constituted:

    1. Science and Ethics Panel (Gordon Soper, PDATSD(AE) is the DoD representative).

    2. Information Sources.

    3. Legal (OSD GC is the DoD point-of-contact).

    4. Congress (OSD Congressional Liaison Office is the DoD point-of-contact).

    5. Public Information & Outreach (OSD Public Affairs is the DoD point-of-contact).

- o DOE has a head start.

- o The interagency process is in motion; it will be hard to influence.

Next, the five tasks forces were addressed. Science and Ethics is to define the scope of the effort. It is having a hard time doing this. For example, the Department of Veterans Affairs wants to handle all of its own cases. DoD, on the other hand, has advanced the position that it wants to be part of a Government-wide process.

There has been some progress made in defining the scope of the effort:

- The term "experiments" is not to be used; instead, emphasis will be given to:
  - "human research"
  - "ionizing radiation"
  - "intentional exposure"
  - "intentional releases"
- The panel has not yet comes to terms with some of the key issues and parameters. For example, what is the definition of "research"? Similarly, how should we address the changes the occurred in medical and scientific standards over the period to be addressed?
- DoD's position is that the effort should focus on research involving humans in which there was exposure to ionizing radiation.
- Other participants in the interagency process have argued for a broad scope, e.g., inclusion of exposure to chemical and biological agents.

A Blue Ribbon Panel of independent experts will be constituted. It will be formed by the Science and Ethics panel. It will consist of 15 world-class medical ethicists and medical researchers.

The Information Collection task force is likely to be the busiest group over the foreseeable future. DOE has already started on data collection. DVA is also at work. DoD is still in the process of getting organized. A letter issued by the Secretary of Defense last Friday defined management oversight responsibilities within DoD.

Compensation issues have been raised from the time that the Secretary of Energy first focused the nation's attention on the issues being addressed. Concerns here involve basic questions: should there be compensation to individuals exposed to ionizing radiation (and, presuming an affirmative answer) what criteria should be used to determine compensation? Legal issues involved the chain of custody for relevant information are being given consideration. Attention is also being given to the issues associated with obtaining information held by private firms and individuals. For example, if a private contractor has data relevant to an activity conducted in 1952, how does the Government gain access to this data?

The Congressional task force is planning for hearings. Current estimates are that a minimum of 10-20 hearings will be conducted over the next few months.

A number of points were made relevant to the Public Information and Outreach group:

- Over the past 10 days, media coverage has been by and large favorable to the Government agencies involved in the interagency process.

- In-place hotlines have not been able to handle the huge volume of telephone inquiries.

- By the end of this week, a new national helpline (vice department-specific hotlines) will be operational.

The term "graybeard" is not to be employed in conjunction with the topics being addressed within the interagency process.

A range of points developed in discussions:

- NTPR is the obvious precedent and model for responding to current issues. In using this model, we need to recognize that there are some important differences in the information to be collected, e.g., in NTPR we were dealing with uniformed personnel whose records were available (unless destroyed in the Army Records Center fire) in Military Department and national archives. For the radiation research subjects we are dealing with a predominantly civilian population for which there is no central archive of medical records.

- Some of the individuals who will be making statements and bringing claims will be misinformed, disturbed, or simply dishonest. We can anticipate the need to respond to incorrect allegations, some of which may be outlandish.

- Experience involve DNA, DoD, and DOE during NTPR was recounted:
  - There was no animosity between DoD and DOE.
  - However, DOE was slower to react. The issues had to get to the level of Don Kerr (then DP) before DOE put force on target.
- There were many hearings and much litigation. However, because DNA did a credible job and did a good job of explaining to many audiences that it was doing a credible job, many constituencies were satisfied and the Government never lost a lawsuit.
- DNA was successful in holding the line during NTPR, e.g., on the issue of releasing names.
- In other instances DNA saw that it was going to lose an argument; in such cases the Agency took the initiative, e.g., its proposal to lower the threshold of radiation exposure used as a criterion for providing free medical examinations.
- Much of DNA's success in NTPR was due to one simple fact: Director, DNA was in charge.
- During NTPR the National Academy played a critical role. Congress and the informed public trust it. By having it review DNA's work (and, as required, funding such reviews) DNA demonstrated that it was doing serious, credible, research.
- The DOE hotline is about to be replaced by an interagency helpline. Operators will have a short questionnaire to use. One question will be: who do you think was responsible? DoD is one of the potential responses.
  - Lessons learned during NTPR (and over the past weeks) are relevant.
  - We should anticipate that we will be swamped with phone calls.
  - DoD must be ready to accomplish follow-up actions -- letters in response to inquiries, follow-up questionnaires, periodic updates on the reconstruction of research activities, etc.

- o We should anticipate that some bad ideas proposed during NTPR will be proposed once again, e.g., providing the media with direct access to all records that are developed, ignoring privacy concerns.

- o An attendee focused attention on some of the points made in Secretary Aspin's letter:

  - USD(A&T) is designated as the senior responsible DoD official.

  - ATSD(AE) is given responsibility for coordination and review functions. ATSD(AE) will chair a DoD working group that will develop a process and structure for data collection. NTPR is the most likely model. ATSD(AE) will also be the lead for DoD planning and analysis.

- o It was noted that the scope of the effort to be conducted has not yet been defined in final form. DNA should not plan on the presupposition that we know what the final set of filters will be.

A participant with knowledge of the interagency process deliberations outlined current guidance. The scope of the effort is: all extant information pertaining to research involving human exposure to ionizing radiation. There are no other markers on the table. Components have been tasked to retain and assemble all relevant data, records, and reports in all formats. Records are also to be recalled from record centers. The goal is to assemble 100% of the relevant extant information.

Several categories are presently excluded:

1 Occupational exposure to ionizing radiation.

2 NTPR.

It was observed that the scope might be broadened, potentially in the very near-term:

- o Action is underway on the Hill to draft legislation providing compensation to the pilots involved in Redwing; this is inconsistent with the objective of excluding NTPR cases from the current effort.

- o NTPR's population expanded over time. In addition to military personnel, it now includes "down-winders" and civilian personnel who worked on-site. The latter group is covered in the DoD portion of NTPR for the purposes of data collection and analysis. DOJ handles all compensation matters.

- o Hearings are scheduled before Senator Kennedy on 13 January and before Senator Glenn on the 20th of this month. Senator Glenn's scheduled his hearings prior to the Secretary of Energy's press conference. He is interested in human exposure issues, to include exposure to chemical and biological sources.

A number of document resources were cited:

- o The 1986 report by Representative Markey's subcommittee: American Nuclear Guinea Pigs: Three Decades of Radiation Experiments on U.S. Citizens.

- o An information packages distributed by DOE last week; it was noted that DoD will need to develop a comparable public information package.

- o Statements by Members of Congress that identify their specific concerns. For example, one such concern involves the populations that served as subjects, to include:

    - Representation of minority groups.

    - Prisoners.

    - Mentally retarded people and others who might not have been capable of providing true informed consent.

Discussion continued, with the following points being made:

- o Key questions/issues include:

    - Who performed the research?

    - How many were exposed to what levels?

    - Were the subjects fully informed?

- Were the subjects truly and fully capable of giving informed consent?

  -- Did they understand what they were signing?

  -- How could there have been informed consent for research involving plutonium in the period prior to 1948 during which references to plutonium were classified?

- Did the subjects benefit?

- If harm did occur, what is appropriate compensation?

o The interagency process has not yet come to terms with the cause/effects issue that was central to NTPR. It is simpler (but far more expensive) to avoid determining cause/effect relationships, and simply give compensation to anyone who can demonstrate exposure. If we opt to identify cause/effect relationships, more detailed (and expensive) research is needed.

It was observed that the Science and Ethics groups is predominantly comprised of non-technical members. The ethicists appear to outnumber the scientists.

An attendee suggested that those who are averse to all exposures to radiation should contact their deity regarding cosmic rays.

Dr. Ullrich provided guidance for the group:

o There has been non-stop activity for the past two weeks.

o DNA will have to run as fast as it can just to keep up with events.

o We need to focus on DNA issues and defer the broader issues until we have come to closure on the DNA-specific matters.

o At the minimum we need to have an understanding of what was done by DNA and its predecessors.

Discussion followed, with a number of points being made:

- It is essential to develop a comprehensive database; this will in large part determine its value.

- We need to understand what protocols were used at the time that research was performed.

- A question was posed: Will we need to ascertain if subjects provided written consent? The response was affirmative.

- It was noted that current Institutional Review Board practice was implemented ca. 1974/75. It has been suggested that, since this is case, and given that the system in place is first-rate, we might want to focus our efforts on the period between the onset of the Cold War and the mid-1970s. No decisions have been made. It was observed that this was not a proposal to avoid collecting more recent information; the proposal involves priorities, not coverage.

- In response to a question, it was indicated that epidemiological studies were not to be included; they did not involve research in which exposure to ionizing radiation took place.

- It was suggested that the inclusion or exclusion of NTPR from the scope of the current effort was likely to be driven by outside forces. There have been many calls on the hotlines from atomic veterans.

- A contrast was noted: the research being addressed involved a small number of subjects as opposed to the 200,000+ covered in NTPR.

Topics involving NTPR were addressed:

- An attendee argued that NTPR had developed high quality products. DoD would only benefit by increasing public awareness of these materials. It was suggested that the Agency adopt the same approach as used in the earlier phases of NTPR, engaging in outreach to reporters to ensure that the quality media (at a minimum) are aware of this accomplishment.

- It was noted that there have been over 700 recent NTPR-related phone calls.

- It was suggested that appropriate actions might include:
  - Developing an NTPR briefing to be used as part of a DoD outreach program.
  - Preparing lessons learned summaries for the interagency participants and for use within DoD.
- An attendee suggested that funding, vice lessons learned, was the critical thing needed. We know how to do NTPR; we can easily generalize this experience, given resources.
- It was noted that OSD Public Affairs was taking the lead on PAO materials; anything DNA does must be coordinated.
- A counterargument was advanced -- don't seek publicity and try to keep as much distance between DNA and this topic as possible. We would simply be creating another avenue for claims from atomic veterans.
- A participant suggested that the management approach being adopted was fundamentally flawed. It involved a coordination nightmare. Everyone was going to play. Precisely the opposite approach was adopted for NTPR. There was one responsible official -- Director, DNA. He did not have to coordinate with a host of Assistant Secretaries and other officials. He was authorized to task the Services.
- It was suggested that it would be useful to review the one volume summary history of NTPR to identify key lessons learned; excerpts as distributed during the 12 January meeting are included in Appendix C.
- An attendee argued that there was a critical difference between the current effort and NTPR. With the latter there was clear involvement on the part of DNA and predecessor organizations. For the radiation research subjects, most of the activities involved the AEC -- DNA was involved in a comparatively small fraction of the activities.

IDENTIFICATION OF POINTS-OF-CONTACT AND RESOURCES

During this portion of the meeting attendees were requested to nominate individuals, organizations, and documentation that could provide information concerning DNA (and DASA/AFSWP) involvement in research entailing exposure of humans to ionizing radiation. Some misspellings are likely in the listings below. A set of questions (Appendix C) was used to initiate discussions. Several points were made at the outset:

- o Medical ethics issues are essential. We must obtain information concerning informed consent and regarding the standards that were current at the time that research was conducted.

- o We need to cast a wide need and screen later.

- o NTPR-related research should be included in first-pass data collection efforts, notwithstanding guidance to exclude NTPR from this activity.

An attendee made a number of observations based on personal experience and on his review of documentation available within DNA's technical library:

- o The AFSWP histories provide much of the information that is needed.

  - Relevant information is provided in the volumes of the Weapons Effects Division and for the Technical Director & Inspector General.

  - Of 16 biomedical "contracts" in 1955, only one had "man" in the title (a thermal radiation study). (Italics are used because the term "contract" was employed in a general sense at this and other points during the meeting to encompass contracts with private researchers/organizations as well as a broader range of MIPRs and other instruments employed to move funds from DNA and its predecessors to other organizations.)

  - There is also a 1955 entry for an Army medical fallout study of potential interest.

  - For the period reviewed (1955-1960) the coverage of "contracts" is good.

- The 1960 volume is the first year to report a contract with Dr. Saenger for research dealing with humans. This DASA effort involved research on blood chemistry and on the psychological effects observed subsequent to radiation exposure.

- This attendee had questions concerning the availability of documentation for the period prior to 1955; a second attendee expressed similar reservations. (Subsequently during the meeting a third attendee indicated that history volumes of comparable quality were available for the period from the late 1940s through the mid-1950s.)

A participant observed that NTPR had not focused on research involving humans and that research at AFRRI had involved animals, not people.

Reference was made to a report: WT 923, which provides information concerning human response subsequent to exposure to radioactive fallout from the CASTLE BRAVO event. It was noted that there had been follow-up research by the University of California (Berkeley) dealing with the Marshallese radiation exposures. It was suggested that this was a separate issue. It was noted that the US Government had provided compensation to Marshall Islanders in both 1962/63 and in 1985.

An issue was posed: Did personnel from AFSWP assigned to DOE national labs participate in research projects that would fall within the scope of this data collection effort? In the absence of a funding relationship, there may not be an audit trail available within the DoD record system. The most reasonable course of action might be to allow these DOE/AEC-sponsored activities to be covered in DOE reporting.

It was noted that some HUMRRO (Human Resource Research Organization) experiments were covered in the NTPR database. However, dosimetry from the 1951 test was lost. It was suggested that Neil GlasS, an Army psychiatrist who was one of the managers of this organization, might be able to provide information.

It was suggested that AFSWP personnel assigned to national labs might have been participants in DOE-sponsored work dealing with total body exposure of humans; these AFSWP personnel would have supported the experiments; all of the subjects were civilians.

Reference was made to data collected at the Rochester Hospital prior to the formation of AFRRI.

A question was posed: were military personnel involved in lab research prior to January 1947? Two sources of information were suggested:

- o Central Mail & Records at Los Alamos National Laboratory.
- o The DOE Office of Scientific and Technical Information (OSTI) at Oak Ridge. This organization is the DOE counterpart to DoD's Defense Technical Information Center (DTIC). It maintains a bibliographic database for DOE-sponsored technical reports. On-line searches can be conducted through DNA and/or DTIC.

A number of points were made by multiple participants:

- o Much work of potential interest was declassified in 1973.
- o Good sources include:
  - The proceedings of the Radiation Research Society.
  - The proceedings of the Health Physics Society.
  - The (old) Nuclear Science Abstracts.
  - Nucleonics, for the few years that it was published.
- o Relevant work should be available in the AFRRI library. Notably, AFRRI tended to be the site to which files were sent when the Military Departments elected to discontinue radiation research programs.
- o Much of the literature is hard to search, absent prior knowledge, e.g., names of authors.
- o Both on-line (and, for most of the period of interest) traditional hard copy format medical indexes are available.
- o A 1955 Radium Research Report was referenced. This research by Nixon et. al involved human subjects. It was an analysis sponsored by Argonne involving a 20-year follow-up study of radium injections.
- o It was noted that the NTPR database includes ca. 500 personnel who volunteered to occupy close-to-detonation positions during events.

- An attendee suggested that the NTPR files should include individuals who swallowed dosimeters on strings to allow internal doses to be monitored.

- It was suggested that Health Physics should have one or more articles dealing with military personnel assigned to DOE labs who voluntarily participation in experiments, e.g., involving tritium exposure.

- It was observed that data might available for the pilots who overflew US and Soviet nuclear tests or participated in the collection of data from post-event clouds; for the Soviet events these were CIA personnel in U2s and/or B57s.

- An attendee suggested that some highly classified data might be available dealing with both on-site and remote collection of data during and subsequent to foreign events for a country that was referenced during discussions.

- It was suggested that Wright Langham (deceased) had personal files that should be reviewed.

- As a follow-up to the 1973 declassification decision, DOE/NAVOO and REECO developed the Communications Information Center (CIC) at Los Vegas. This organization has over one million DOE documents. It is difficult to search unless you have some information to start with (dates, names of experimenters, etc.). Another person indicated that DoD funding also was given to CIC. The second person suggested that the CIC should not be one of the first resources to be searched.

Attention turned to DoD labs:

- AFRRI was established in 1961.

- A question was posed: Was DASA the only focal point for relevant research prior to the establishment of AFRRI? The answer was negative. Relevant work may have been conducted with or without DASA funding at a number of locations, e.g., Walter Reed.

- Subsequent to the 12 January meeting, additional information was provided. Prior to the establishment of AFRRI and DASA, the AFSWP channeled projects (with our without funding) to the Office of the Surgeon General, U.S. Army.

- Animal research at Rochester and Case Western Reserve was cited.

- In 1957 radiation research was being performed at/in Walter Reed.
  - Strontium 90, post REDWING.
  - DASA was a line item in the Army budget. It was fairly easy to move funding to Walter Reed and other Army labs.
- Jim Brennan was the first Director of AFRRI. His files may contain relevant information.
- There was no focal point for DoD lab research on topics of interest in the early 1960s.
- When the Military Departments began to terminate their radiation research programs in the 1970s, the surviving programs tended to migrate to AFRRI.
- NRDL is a potential source for information concerning Navy-sponsored activities.
- The Military Departments were concerned with the whole body does that might result from fallout. Research involving cesium injections was of interest because it would assist in calibrating whole body dose data. Some of the research conducted at the University of Cincinnati is relevant here. DASA annual reports should be able to provide information. Reva (sp.?) and Lightnacher (sp.?) are authors of potentially relevant work.
- In 1949 Payne Harris was at Walter Reed, where he set up the first isotope lab outside of AEC.
- In the 1950's, the Walter Reed Army Institute of Research was the facility at which cesium 137 milk sample research was conducted. Kent Woodward was involved.
- The Navy Radiation Lab was a DASA contractor, but for research involving thermal effects that fall outside the scope of the current data collection effort.

- An attendee reported that in bibliographic research to date, no indications have been found associating NRDL with radiation research of interest. It was suggested that there may have been some relevant work at NRDL, particularly activities involving intentional release.

- In 1958 the National Naval Medical Center in Bethesda, Maryland was involved in research on bone marrow damage. There may have been some involvement by DNA predecessor organizations in this research.

- The late Jim Brennan left a collection of 5,500 reprints which may provide an important source of relevant information.

- A question was posed: did the AFRRI charter preclude research involving human subjects? The answer was negative.

- There may have been DNA involvement in tissue research conducted at Walter Reed.

- NRDL had a large program. Portions of this work were conducted in cooperation with the University of California, Berkeley. Ed Alpen is a potential source for information. There may have been some DNA money supporting this research. There may have been HE dispersion experiments.

- Several participants cautioned that the Military Departments may not have a good understanding of the programs they sponsored many years ago, particularly lines of research which were abandoned. There is nothing that guarantees that an institutional memory will persist. In this regard, an attendee noted that the Navy had recently been contacting DNA to obtain information concerning Navy programs.

Next, information was provided concerning research with DASA involvement accomplished at the University of Cincinnati.

- A number of points of contact were identified:

  - Henry Kaplan, American College of Radiology Review.

  - Dr. Henderson, Rush-Presbyterian.

  - Dr. Taylor (no organizational affiliation referenced).

- All of the research being addressed was published in the medical and scientific literature.

- The research subjects received whole and partial body therapeutic doses of radiation as treatment for advanced or metastatic cancer.

- The research team had no involvement in determining these radiotherapy treatments; the team simply collected and analyzed the data that was available as a result of these clinical treatments.

- No DoD funds were used for clinical treatment.

- Prior to 1965, patients provided verbal informed consent. By 1968 the standard was written informed consent, with a two day waiting period.

- There were 106 subjects in the studies. Some (24) had to be excluded for various reasons; the core sample size was 78 subjects.

- Research involved blood and urine samples and psychiatric evaluations.

- The University of Cincinnati was a public charity hospital. The study population was similar to the hospital patient population in terms of the distribution of IQ scores and racial composition.

- The first irradiated patient was examined in 1960.

- Dr. Saenger, the study principal investigator, did not select the subjects; this was accomplished by the clinical radiotherapists.

- This was a phase one study effort.

- These patients had cancer that had advanced to the point that then-current forms of irradiation therapy were not regarded as being feasible.

- Both GAO and Congress have reviewed this research.

- DASA had two research interests:

  - The physiological effects associated with different dose levels.

  - The psychological/performance effects associated with different levels of exposure.

- In response to a question, it was indicated that no attempt was made to mitigate or remediate the performance degradation observed.

- In response to a question, it was indicated that no attempt was made to transfer bone marrow between patients; however, some work was done in which a patient's own marrow was removed, irradiated (levels of 200-300 R), and returned to the same patient.

- It was agreed that Dr. Saenger would attempt to locate (and if found, to provide) a copy of his original research proposal.

- A report in the DNA library (1422) was referenced; this is the second University of Cincinnati report.

- Background information was provided. The study principal investigator worked at Sandia in 1953. Subsequently he worked in nuclear medicine. In the course of his medical and medical research experience, he observed some amazing survival experiences among burn patients. This prompted a research interest concerning the use of radiation as a therapeutic technique for patients who would otherwise have little chance of survival.

- During the period in which this research was conducted, radiotherapeutic practices were less sophisticated than today. It wasn't possible to target the delivery of nuclear chemistry and radiation exposure along the lines of present practice. There were fewer chemotherapy options. Whole and partial body doses were the only techniques available.

- In response to a question, it was indicated that, at the time that this research was performed, it wasn't controversial within the medical research community.

- Additional points-of-contact were identified:

  - Lushbaugh at Oak Ridge (doing related research).

  - Heubline -- did related earlier research.

- In response to a question as to whether this work would be proposed today, the response was:
  - A current-day proposal would use current-day technique.
  - Today we can direct radiation at the metastatic sites.
  - Much more can be done with bone marrow today.
  - 1985 intravenous strontium research was referenced.
- It was noted that there were no reservations regarding medical ethics; this was a mainstream project insofar as medical ethics considerations are concerned.

At this point during the meeting (immediately after lunch), the rapporteur provided a summary of the morning deliberations. Since this information is captured in the introductory summary, it is not repeated here.

Increased PAO outreach for NTPR was discussed. It was the sense of discussions that, while there were some potential risks/downsides, this should be done.

Attention shifted to the identification of specific points-of-contact for research (associated with DNA and predecessor organizations) that might have been conducted in the period 1960-1970:

- Dr. Saenger, University of Cincinnati, to follow-up on research discussed previously.
  - This will include a review of his files to provide some frequency information for whole body radiation research.
- M.D. Anderson Hospital, whole body radiation research done under USAF SAM auspices.
- Lauriston Taylor, NCRP.
- Vic Bond, Brookhaven National Laboratory.
- Harold Weyckoff, NCRP, neutron dosimetry, AFRRI Scientific Director.
- Myron Varon, NRDL medical director, also at AFRRI, may currently live in Los Angeles.

- (Skip) Darryl McIndoe, nuclear medicine, Baltimore area.
- Bobby Adcock, Brookhaven.
- Coe.
- John Auxier, Health Physics.
- John Pickering, Brooks Air Force Base, Air Force radiobiology, School of Aerospace Medicine, currently resides in Albuquerque.
- R.J. Michael Fry can provide information concerning Argonne National Laboratory and Oak Ridge.
- Ed Alpen (as a source for information concerning biophysics research and NRDL programs, 1952+).
- Hymer Friedell, for information concerning radiotherapy work accomplished at Case Western Reserve.
- William Burr, as a source for information concerning AEC activities.

Attention returned to the University of Cincinnati experiments:

- Detailed case reports were prepared for each patient.
- The University had an internal review system in-place; there was extensive correspondence between the University's Human Use Committee and the principal investigator.
- The psychiatric degradation research has been published. It has also been used to provide important inputs for the DNA Intermediate Dose Program.
- Research was terminated after 10 years because the University president did not support the program. Use of DoD (vice NIH) funding was an issue at that time. Termination took the form of not requesting additional funding from DoD.
- It was emphasized that DoD had nothing to do with the clinical course of the patients from whom data had been collected.

Referencing NTPR experience, an attendee argued that the most effective course of action to take when false statements are made (as has recently been the case for the University of Cincinnati research) is to publish a rebuttal in the same source.

Continuing, this person noted that, when a critical article had appeared in the New York Times, the DNA response was to contact the editor of the Times and invite him to send reporters to spend a day at DNA to learn whatever they wanted to learn about NTPR.

An attendee noted that there is no agreed standard for certifying medical ethicists. They are self-selected. A few are quite good; some are disturbed.

Attention shifted to potential sources of information for the period 1944-1960. It was observed that some of the points of contact cited previously for the period 1960-1970 would also be able to provide useful information for this earlier period.

- AEC sponsored biomedical research at Lovelace. Discussants believed that this research did not involve humans.

- The Air Force School of Aerospace Medicine (previously, School of Aviation Medicine -- SAM) may have conducted relevant research.

- Clayton S. White (currently residing in Albuquerque) was involved in the SAM astronaut programs. Other potential points of contact referenced at this point were C. (Ernie) Anderson and Dr. Chand.

- It was suggested that some of Senator Glenn's understanding of medical research may be based on his experience in the astronaut program; it was suggested that it might be useful to research the procedures employed by Los Alamos, Lovelace, and other organizations during the Mercury program.

- AFSWP personnel assigned to DOE labs may have worked within hospitals and medical research organizations. In these capacities, they may have participated in relevant research, e.g., research involving tritium that was conducted at LANL. Colonel (Ret.) Ernie Pinson is a point-of-contact.

- Lewis Strauss was cited as a source for information involving the AEC.

- o A number of potential points-of-contact for information regarding biomedical research activities at LLNL were mentioned:
  - Don Anderson (ran biomedical division at LLNL).
  - Jerry Johnson (former LLNL Deputy Director; currently resides in San Diego).
  - Johnny Foster (Los Angeles area resident).
  - Harold Brown (former SECDEF and LLNL Director).
  - Ed Alpen (biophysics research).
  - John Storer (knowledgeable concerning both LLNL and DOE). He is believed to reside near Oak Ridge.
  - Herb York.
- o It was suggested that research at the University of California/Berkeley Donner Labs should be reviewed. Points of contact mentioned were:
  - John Laurence (deceased).
  - Harden Jones (who may be deceased).
  - Tom Buttinger.
  - Lushbaugh.

A number of experiments were discussed:

- o In the 1940's, LANL conducted activities in which radioactive materials (up to 2,000 curies) were released in the course of monitoring experiments. Some of these experiments used explosions to distribute the material. In one detonation the radioactive dispersal pattern crossed over the populated area. This resulted in the establishment of the Weather Section at LANL.
- o The Green Run experiment was discussed. In 1949, Air Force aircraft were employed to release 28,000 curies of material over Hanford, Washington.

Attention shifted to other topics, including the Joint Committee on Atomic Energy, the ways in which funds move to DOE and from DoD to DOE, the 050 budget account, and the allocation of DOE defense program funds to weapon program versus remediation activities.

Attention returned to the primary focus of the meeting. It was noted that 20 Vetinary Corps personnel supported a 1957 one point Pu safety experiment.

Returning to a topic discussed previously, it was agreed that there was no approach would could provide high confidence, comprehensive, information for situations in which AFSWP personnel posted to DOE labs participated in DOE funded biomedical experiments. The consensus was that the reasonable course of action would be to allow DOE to report such participation in the documentation it is preparing for DOE/AEC-sponsored research activities.

It was suggested that the AEC Division of Reactor development may have sponsored work in which there was relevant DoD participation, notably the NERVA program and ANP.

It was observed that 4 (one point safety?) experiments were conducted in 1956 and that there may have been dispersion experiments conducted on the grounds of Nellis Air Force Base.

It was suggested that the Public Health Service might have useful data. Potential points of contact are:

- Admiral Terrell.
- Howard Andrews.

An attendee suggested that information be requested from the office of the Director, Naval Reactors. Myron Farrin was suggested as a point-of-contact.

Additional points-of-contact were identified:

- Armed Forces Institute of Pathology (AFIP) at Walter Reed.
- Air Force Weapons Lab -- radiation research on animals and cloud fly-through experiments.
- Brooks Air Force Base.

- Air Force Special Weapons Center.
- Air Force Special Weapons Lab.
- Naval Nuclear Weapons Evaluation Facility.
- Naval Applied Sciences Lab (thermal research).
- School of Aerospace Medicine.
- Dispersal research at Dugway.
- Research at Evans Signal Lab and the University of Louisville.
- An organization, based in Utah, that was the precursor of NEST; it was suggested that this organization might have belonged to DASA.
- AFTAC.
- Joe Goldstein.
- Reports dealing with the SL-1 accident.
- Idaho National Lab.
- UC-Davis (inhalation and external dose research).
- Rochester.
- Lovelace.
- MIT.
- Jim Smith as a point-of-contact for information concerning Florida State programs.
- North Carolina State.
- Donner Lab.

- o Baylor University.
- o Sloane-Kettering.
- o University of Wisconsin.

An attendee listed the organizations cited as recipients of AFSWP biomedical funding in the 1955 and 1956 AFSWP annual reports (readily available within Headquarters, DNA).

LESSONS LEARNED FROM NTPR

The Nuclear Test Personnel Review (NTPR) program has been cited with increasing frequency, both within Government and elsewhere, as a model for the organization and conduct of the Radiation Research Subjects project. During this portion of the meeting, attendees were requested to summarize the key lessons learned during NTPR. To advance discussion, a candidate set of lessons learned was distributed (reproduced in Appendix C). The following points were made in discussions:

- The lesson of NTPR is: manage the program or suffer. This type of effort cannot be run from the Pentagon. A single manager must be responsible. The alternative is endless coordination.

- Another lesson is: don't allow unfair or mistaken statements to be made without rebuttals. NTPR was successful because it did quality research and because this quality research was brought to bear whenever unfair or distorted statements were made.

- Recalling his graduate student experience, an attendee encouraged the group to keep in mind the reality that standards have changed over time. We do learn things. In the early 1950s it was good practice to have your feet x-rayed when buying shoes and the shielding on dental office x-ray machines was modest, at best. As appreciation of the potential consequences resulting from exposure to ionizing radiation increased, these practices were halted. In the specific cases cited, this was because of university researchers contacting the responsible industry executives.

standards

An attendee who participated in NTPR made a number of observations:

- DoD has start out on the wrong path. We can lose this up front.

- Someone has to be in charge of everything -- all facets of problem -- technical, PAO, legal, health affairs, Congressional relations, etc.

- The Military Departments can and should be responsible for developing required information concerning their personnel. However, the single manager should have the authority to task and direct their efforts.

- It is important to assemble all relevant records and develop a central archive. A single person should have oversight of records and analysis.

- There is no way that you can get anything productive done and also do the amount of coordination involved if all Assistant Secretaries get into the act.

- If false or misleading statements are made -- rebut them.

- We should not be afraid to take the lead in an area that may involve controversy. This was the argument when, years ago, nuclear accident simulation exercises were proposed. We have learned a great deal through these simulations. We now have much more confidence in our accident response capability.

- If DNA is going to be responsible, the recommended course of action is for the Director, DNA to go directly to the Secretary of Defense requesting authority. This authority cannot be effectively exercised if there are intermediaries.

Discussion continued:

- In NTPR there was a single question: what were the levels of exposure? For the current problem, the issues and questions haven't been defined. We can't be pro-active unless we know what the problem is.

- It was suggested that we know enough to define a good approximation of the final question. The issue involves radiation-related medical experiments on subjects that did not provide consent. This is what is controversial.

- It was suggested that two things should be done:

    1. DNA should go to the Secretary of Defense and be tasked as the manager for DoD activities.

    2. As the SECDEF-chartered agent, DNA should become engaged within the interagency process to ensure it focuses on a bounded set of genuine issues.

- It was noted that third party review by credible parties, e.g., the National Academy in the case of NTPR, had been critical for the program's credibility. We should plan to actively enlist such review, preferably by an organization of comparable stature (if not the National Academy itself).

- An attendee noted that one critical difference between today and the period in which Director, DNA received authorization to be the sole manager for NTPR is that the Director's position is that of a two-star (vice three-star) general officer. The scientist discussant suggested that this entailed an order of magnitude difference.

- It was suggested that, based on experience in NTPR, problems involving DOE are not likely to involve fighting between DoD and DOE; the difficulties, rather, are likely to involve situations in which DOE isn't as helpful as DoD would like. The best way for DOE to accomplish a task to meet its department-specific requirements is not necessarily the optimal approach for DoD.

- As a follow-up, it was suggested that one lesson from NTPR is that we should not have a single master database resident on a DOE computer. The state of the art 15 years ago was such that having a single remote database was the only practical option. This is no longer the case. We can and should distribute the database, retaining responsibility for DoD-related information.

- It was suggested that we should add CDC to the set of organizations that might provide useful information.

- An attendee noted that DOE had not coordinated with DoD prior to the DOE statements that had prompted the current review of both DoD and DOE activities. Furthermore, there was informal feedback suggesting that coordination within DOE had been far from perfect.

- An attendee argued that, notwithstanding some of the things being published in the press, this was predominantly a DOE problem. Since this is the case, why should we volunteer to take the lead?

- Another attendee counterargued that this was clearly a situation in which no one was in charge. As a result, the scope of the task is boundless and the coordination burden will be immense. The only practical alternatives are to get someone tasked to be in charge to manage the situation or prepare for prolonged suffering.

- A discussant suggested that in the current situation, it would be difficult to have a single authority designated. Recall that the interagency process has already started.

- It was argued that we are dealing with a set of separate and potentially separable problems. Injection of plutonium involves toxicity; different issues are associated with exposure to a cobalt source. This person went on to argue that the likely outcome would be the discovery of a few bad cases.

The merits of updating the NTPR database and analysis in line with customary practice within the epi research community of 10 year updates was discussed. It was noted that funding shortfalls and contract practice issues had interfered with the accomplished of some desirable updates and re-looks.

CONCLUDING DISCUSSIONS

At this point, Major General Hagemann, Director, Defense Nuclear Agency, joined the meeting. Results to this point were summarized; this material was presented at the outset of this report and is not repeated here.

In response to General Hagemann's request for comments, the following points were made:

- o DNA and DoD are headed for disaster. No one is in charge. Objectives have not been defined. People are talking about compensation -- for what? There are far too many players involved within DoD. DNA has two options: be tasked as the single organization responsible for making the program happen or prepare to suffer.

- o NTPR was a success because a single senior DoD authority -- Director, DNA -- was tasked with the management of a national program. Director, DNA had authority to task the Military Services. He did not have to work through or constantly brief the ASDs. There was no agony of coordination.

- o The first key issue is that someone needs to take charge of the DoD portions of the problem. This person needs to have the authority, from the Secretary of Defense, to task all key players within DoD, to include Director, Naval Nuclear Reactors.

- o You can be reactive or proactive. The second is the better choice. NTPR involved a significant investment (taken out of hide) -- $10M/year for four years and ca. $5M/year for the next 8 years.

- o More needs to be done to publicize NTPR as a success. Many of the calls being made today come from atomic veterans. It was recommended that action be taken to increase awareness of NTPR, to include:

  - Inviting reporters to DNA. Let them review the room full of documentation that has been developed by NTPR. Show them the broad distribution given to this material. Hand out copies of the one volume summary report.

  - Provide access to the National Academy appraisals of the NTPR products and process.

- With respect to compensation, an approach modeled on that recommended by DNA during NTPR was commended:
  - DNA should take the lead. It should serve as the DoD agent.
  - As the DoD agent, DNA should take the following message to the White House/interagency process -- it is irresponsible to provide compensation, absent evidence of injury.
  - On the other hand, if injury can be demonstrated, compensation should be generous.
- We have to avoid over-promising. The research that needs to be done won't be accomplished rapidly.

At the invitation of General Hagemann, each of the meeting participants provided comments. There was significant overlap in the comments, notably, agreement that there is merit in having DNA move out as the DoD lead, and in taking steps to publicize what DNA has already accomplished in the NTPR effort. Other remarks included the following:

- It is important to involve the National Academy as soon as possible. Its reviews add tremendous credibility.
- The holdings of the DNA technical library appear to be in good shape. The key documents that are needed, e.g., the annual histories, are there.
- Based on the review of holdings and this meeting, there are grounds for confidence in our ability to identify the information that is needed.
- An active approach was recommended. In this regard, it was proposed that DNA have the goal of getting material out as soon as possible. We need to inform public consideration of the issues, e.g., by presenting objective descriptions of medical norms and their evolution over the period of concern. We also have to send the basic message that our understanding of both health physics and the medical standards derived from this physics have improved over time, in large part based on the research projects that are to be reviewed.

- It was noted that the New Years press release from Secretary Aspin had had a significant impact on inquiries. We are also beginning to see more positive inquiries concerning NTPR. People have heard that it is a good project and a good model, and want to learn more about it.

- The key thing is to get someone in charge. We are headed for disaster if we have multiple offices in play and some poor soul within OSD Public Affairs is put into the position of trying to answer technical questions involving radiation exposure.

- The 5R criterion developed in NTPR may be the prominent solution for current compensation issues.

- NTPR was a frank, open, and honest study. We want to do the same here. We also want to be open, so that people can see that we are doing high quality work.

- Someone needs to take charge. NTPR was a bounded problem -- there was only so much atmospheric testing. At the moment there are no boundaries -- absent management this could evolve into a never ending study of everyone's exposure to everything.

- We need to look at some of the early AEC materials -- why were things done the way they were?

- We need to recognize that the work to be reviewed provides the basis for much of our current understanding of health physics. Our basic understanding of the ways in which humans ingest and process radioactive materials comes from these studies. Most of the military research is likely to be found in the period from late 1940's through the late 1960s. There are likely to be a few earlier efforts, e.g., the 1931 Illinois hospital radium research.

- NTPR is a superb model. We need to be sensitive to one difference. In the period covered by NTPR, medical and other standards didn't change. The standards did evolve over the considerably longer period (since the early 1930s) that we will be addressing in this new effort.

- A key point that needs to be made is that these studies were done for important, risk reduction, reasons.

- It was noted that AFRRI was and would continue to assist the Military Departments and DNA. Furthermore, AFRRI was responding to a request from Mr. Bachkosky by serving as the DDR&E advisor for these matters. AFRRI is in the process of reviewing its own holdings.

At this point General Hagemann made comments. He began by expressing appreciation for the attendees' participation in this short notice meeting. We are dealing with a rapidly changing situation. We work for the American public. Over the past weeks, our hotline has gone from 25 calls/week to 100 calls/day. We have to take action to respond to our customers' concerns and needs.

DNA is not worried about being right or wrong. We know that standards have changed over time. If DNA or its predecessor organizations did something that is wrong (by present day or then current standards), we won't hesitate to confess. If our customers need help, we are going to provide same.

Quality is paramount. This is an important national activity. DNA's reputation is on the line in a time of great importance for the Agency.

NTPR is the probable model for responding to concerns regarding radiation research subjects. RADM Wisely and Mrs. Pierre have been tasked to organize the Agency's response and to serve as the DNA interface with the interagency process.

We need to recognize that the boundaries of the problem haven't been finalized. In his 20 January hearings, Senator Glenn intends to address exposure to biological and chemical agents. In his 6 January press conference, Senator Glenn included industrial exposure as one of his concerns.

With respect to compensation issues, the best course is likely to be one that focuses compensation on those who demonstrably need help because they clearly have been harmed. If we provide compensation to everyone, irrespective of harm, we don't have enough to properly compensate the truly deserving.

In line with the NTPR precedent, DNA is requesting $10M in additional funds to support establishment of a radiation research subjects program.

General Hagemann concluded by noting that he was inclined to support proposals to increase publicity and outreach for NTPR. When serving as Chief of Staff for General Chain, he saw how effective such presentations could be. Many are prepared to listen, if we make the effort to talk to them.

APPENDIX A. ATTENDANCE AT THE 12 JANUARY 1994 MEETING

NAME	PHONE NUMBERS	ADDRESS
E.J. Ainsworth		AFRRI
Don Alderson	703/329-7134 (fax: 7198)	DASIAC, 2560 Huntington Ave, Alexandria, VA 22305
David Auton	703/325-7744	DNA*
Jackie Allison	703/325-2408	DNA*
Sandy Barker	703/325-7681	DNA*
Robert Brittigan	703/325-7681	DNA*
Fred Celec	703/325-7065	DNA*
Major General Kenneth L. Hagemann, Director, DNA	703/325-7004	DNA*
Payne S. Harris, M.D.	703/370-4466	Box 9021, Alexandria, VA
Eric Hodson	703/971-3108	Logicon RDA, 6940 South Kings Highway, Alexandria, VA 22310
Steve Hoyle	719/635-2571	Logicon RDA Colorado Springs
Deborah G. Irby	703/325-7095 (fax: 1205)	DNA/PAO*
Rob Mahoney	703/971-3103 (fax: 6370)	Logicon RDA, 6940 South Kings Highway, Alexandria, VA 22310

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ATTENDANCE AT THE 12 JANUARY 1994 MEETING, Contd.

NAME	PHONE NUMBERS	ADDRESS
Joseph T. McGahan	703/821-4509	SAIC, 1710 Goodridge Drive, McLean, VA 22102
Lou Mills	703/325-4871	DNA*
R.R. Monroe	202/828-7362	Bechtel, 1015 15th St, NW, Suite 700, Washington, DC 2005-2605
Joan Ma Pierre Director for Radiation Sciences, DNA	703/325-7302	DNA*
Capt Stephen A. Samnick	703/325-7744	DNA/RAEM*
Eugene L Saenger, M.D.		University of Cincinnati
Frank H. Shelton	719/633-2508	1327 Culebra Ave. Colorado Springs, CO 80903
L.R. Stromberg	708/949-6622 (fax: 8686)	120 Edgemont St., Mundelein, IL 60060
Bob Summers	703/325-8585	DNA*
George W. Ullrich, Deputy Director, DNA	703/325-7300	DNA*
Fred Wikner	301/365-1219 301/469-6457	6716 Loring Ct. Bethesda, MD 20817
Robert W. Young	703/325-1097	DNA*

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APPENDIX B. AGENDA FOR THE 12 JANUARY 1994 MEETING

AGENDA

Radiation Research Subjects Meeting

12 January 1994

0900	Welcome	Dr. Ullrich
0915	Terms of Reference	Mr. Brittigan
0930	Charge to Committee	Ms. Pierre
0945	DNA/DASA/AFSWP	ALL
1200	Working Lunch	ALL
1300	NTPR Management Lessons Learned	ALL
1630	Summary	Mr. Mahoney

APPENDIX C. ITEMS DISTRIBUTED DURING THE 12 JANUARY 1994 MEETING

OBJECTIVE: Review DNA's involvement in radiation research projects

GOALS.

Collect data:

- Internal--DNA, group reports, public domain reports, limited distribution reports
- External--phone inquiries, letters

Review and Summarize

Preliminary report by Jan 28

ISSUES:

Criteria for program membership

- Was it an accepted medical procedure?
- What is medically acceptable by today's standards?
- What was medically acceptable at the time?
- Exclude personnel already in the NTPR database?
- Exclude activities already accounted for in the NTPR database?
- Where does DNA's responsibility start?

No central source for internal data on:

- Experiments, Agencies involved, Studies, Subjects, Contracts, Reports

No complete external data collection system

- Inquiries and responses differ from those of the NTPR system
- Database must be adaptable to changing requirements

Time is critical

Coordination efforts with other agencies (DOE, VA, DOJ)

Legal culpability

Cause and Effect of radiological illnesses

- Use current laws on presumptive illnesses as a guide
- Perform new studies

QUESTIONS TO FOCUS THE INQUIRY INTO POSSIBLE DNA INVOLVEMENT IN RADIATION EXPERIMENTATION ON HUMANS

1. Are you aware of any testing or experimentation on humans that involved ionizing radiation or radioactive substances and that was conducted by DNA or any of its predecessor organizations? This would include any experimentation performed under a DNA contract.

2. Are you aware of any testing or experimentation on humans that involved ionizing radiation or radioactive substances that was funded, either in whole or in part, by DNA or any of its predecessor organizations?

3. Are you aware of any participation in any testing or experimentation conducted by any of the Services or another DoD agency that involved DNA or any of its predecessor organizations?

4. Are you aware of any participation in any testing or experimentation conducted by any arm of the Department of Energy or its predecessor organizations that involved DNA?

5. Are you aware of any analysis by DNA (or under a DNA contract) or any of its predecessor organizations of dat that resulted from testing or experimentation on humans that involved radioactive substances or ionizing radiation?

6. Do you have any suggestions concerning areas we can investigate that could yield information on possible testing or experimentation on humans that involved radioactive

substances or ionizing radiation? This could include files or archives.

7. Are you aware of anyone that you recommend we contact who might be able to help with this inquiry?

8. Do you have any other suggestions of actions we might take that could help us recover any potential involvement by DNA or any of its predecessor organizations in radiation testing on humans?

SOME MANAGEMENT LESSONS LEARNED FROM NTPR

1 There must be a single, identified, responsible DoD manager with appropriate authority for both DoD and interagency matters. Recommend DNA be made the agent

2 There must be a single, identified, responsible DNA manager with appropriate authority for both DNA activities and for coordination with DoD activities.

3 Data collection, analysis, and other DoD activities must be centrally managed.

4 The database management system for organization, application, and retention of all relevant information should be in place at the outset of the data collection effort.

5 As the DoD agent, DNA should be assigned responsibility for maintaining the DoD database, to include maintaining a repository of all relevant materials (inquiries, responses to inquiries, reference documents, etc.).

6 An effective public (PAO) interface needs to be developed and brought on-line at the outset of the effort, to include:

- An agreed plan for regular communications with members of Congress (and their staffs).

- Procedures for handling telephone inquiries from:

  - Members of Congress and their staffs.
  - DoD organizations.
  - DOE and other non-DoD Government activities.
  - Private organizations.
  - The public.

Procedures should be defined for situations in which the response to an inquiry must be based on technical expertise.

Procedures should be approved by appropriate authorities and published.

ALTERNATIVES.

Internal data collection

- Paper forms for data collection
- System similar or same as DOE
- Use relational database tied to Jaycor's existing telephone/LAN system
- PC or mainframe bases system
- Include bulletin board for use by public
- Help desk in addition to answering the phones

External data collection

- Experience of participants in these activities
- Establish Radiological Research Program library
- Documents and Reports from other agencies
- Search for documents based on overlapping reports from multiple individuals
- DNA internal review and data collection
  - Involvement by DNA and its predecessor organizations (to include the Manhattan Project) in any activity corresponding to the criteria specified below.
    - Involvement includes, but is not limited to, such actions as:
      - Funding all or a portion of the activity or the facility at which the activity took place.
      - Involvement of DNA or DNA-sponsored personnel in the activity.
      - Use of DNA-provided/funded instrumentation or materials in the activity.
      - Observation of the activity by DNA/DNA-sponsored personnel.
      - Utilization of products/information developed by the activity by DNA/DNA-sponsored personnel.

INITIAL DATABASE CATEGORIES -- ACTIVITY-LEVEL FILE

1) Activity/Experiment Number (to be assigned during database implementation)
2) Activity Name
3) Location (organization, mailing address)
4) Activity Date(s)
5) Names of DNA participants
6) Types of DNA involvement
7) Names/Organizations for DNA-sponsored participants
8) Types of DNA-sponsored involvement
9) Names/numbers of individuals potentially exposed to effects of ionizing radiation
10) Radiation source characterization
11) Dose reconstruction
12) Available medical information relevant to exposure
13) Citations for publications relevant to the activity
14) Union Catalog data or other location information for publications
15) Citations for records relevant to the activity
16) Locations of records relevant to the activity
17) Related activities (and nature of relationship)
18) Additional information not captured in other categories

INITIAL DATABASE CATEGORIES -- INDIVIDUAL-LEVEL FILE

1) Last Name
2) First Name
3) Middle Name
4) Social Security Number 1
5) Social Security Number 2
6) Military Number
7) Sex
8) Date of Birth
9) Street Address
10) City
11) State
12) Zip code
13) Telephone number
14) How did you hear about this hotline?
15) Activity name
16) Activity medical staff or administrator names/titles
17) Activity location
18) Activity dates
19) Radiation source
20) Were you advised of the test/experiment?
21) Do you have a radiation related illness? What?
22) Other related medical information
23) Do you know the names of other individuals in the same test?
24) Any involvement with other radiation activities?
25) Have you called the DOE hotline? Case number?
26) VA claim? Case number?
27) DOJ claim? Case number?
28) Are you currently in the NTPR database?
29) Additional information not captured elsewhere?
30) What other information would you like?
31) Date stamp generated automatically
32) Person making entry (code) entered automatically

Using his given authority, Vice Admiral Monroe delineated the respective responsibilities of DNA and the military services in a 13 February 1978 memorandum directed to the Secretary of the Army, the Secretary of the Navy, and the Secretary of the Air Force. DNA, he emphasized, would "organize and direct the overall effort," while each military service would be responsible for NTPR research pertinent to that service and for followup communications with service personnel (6).

DNA coordinated its approach with DOE and CDC in meetings held during March and April 1978. Representatives from DNA explained the NTPR program to DOE/NVOO and its contractors at a 9 March 1978 meeting. DOE hosted a meeting on 4 April 1978 that was attended by representatives of the DOD NTPR, National Archives, REECo, LANL, NAS/NRC, and each DNA contractor organization. The discussion focused on methods for identifying and obtaining records on atmospheric nuclear weapons testing (7).

An 8 June 1978 memorandum, drafted by Vice Admiral Monroe, directed the NTPR teams toward consistency in research. It asked them to collect the following information on test participants: "1) Full name (no initials), 2) Branch of service (if civilian, service/contractor/laboratory affiliation), 3) Unit or ship (at time of test), 4) Grade, rank, or rating (at time of test), 5) Service serial number(s), 6) Social security number, 7) Date of birth, 8) Shots participated in, 9) Radiation exposure data, in as much detail as possible (e.g.: total atmospheric test exposure; exposure by radiation type; exposure by shot, series, or time period; badge issue and turn-in dates; bioassay data; etc.), 10) Sources of above data elements." The memorandum also required the teams to research individual medical records, which would be a major effort involving considerable time. The rationale for this records search was as follows (8):

> First, the NTPR effort could scarcely be considered thorough, searching, or even competent if this basic source is not explored. Second, radiation exposure data is so central to the purpose of NTPR, and recorded information elsewhere is known to have such limitations, that no potential source can be overlooked. Third, since future research efforts (epidemiological, claims, etc.) will, in many cases, retrace this same ground, knovledge even of absence of information in medical records will be of considerable value. Finally, an understanding of the Services' past success or failure in recording exposures will be important in devising new systems.

in the preceding section itemized six tasks. Nine tasks eventually emerged, as listed below (11):

1. To compile a roster of the DOD personnel involved in the atmospheric nuclear tests

2. To develop a history of each atmospheric nuclear event that involved DOD personnel

3. To declassify all possible nuclear test related source documents that bore a security classification

4. To provide estimates of atmospheric test radiation doses--both as a check on film badge readings and as a substitute for them in those cases where badges were not worn or readings were not recorded or are not retrievable--and to submit the methodology for the estimates to the NAS for peer review

5. To establish personal contact with as many test participants as possible

6. To identify those individuals who received a higher radiation dose than those doses recommended under current Federal guidelines for radiation workers, to notify those individuals of their dose, and to offer veterans free medical examinations at Government hospitals

7. To sponsor, in conjunction with the Department of Energy, an independent mortality study by the National Academy of Sciences of test participants selected by the NAS

8. To carry out a detailed research program, in conjunction with the ongoing NTPR program, to recover all data pertaining to possible radiation exposure of U.S. postwar occupation troops at Hiroshima and Nagasaki, Japan

9. To provide assistance to the veteran, the Veterans Administration, and other organizations by doing research and by providing as complete data as possible on individual participation and radiation doses.

An NTPR team in each military service and a separate team at the DNA Field Command in Albuquerque, New Mexico, have worked with DNA in meeting these tasks, as is explained in chapter 2. In addition, DNA has employed several contractors to provide specialized supporting services. Figure 1 shows the basic organization of NTPR within DNA. The five NTPR teams and the contractors report to the NTPR Program Manager, who is responsible to the Director of DNA. Succeeding Vice Admiral Robert Monroe as DNA Director were Lieutenant General Harry A. Griffith, U.S. Army, August 1980 to August 1983;

APPENDIX D. INDIVIDUALS CITED AS POTENTIAL SOURCES FOR INFORMATION DURING THE 12 JANUARY 1994 MEETING

(Caveats. Some spellings are phonetic. References to periods, e.g., 1960-70, are not exclusive.)

Bobby Adcock	Brookhaven National Lab. 1960-1970.
Ed Alpen	LLNL; NRDL 1952+; biophysics information.
E.C. Anderson	LASL. Believed to reside in Colorado.
Don Anderson	Ran biomedical division at LLNL.
Howard Andrews	Public Health Service.
John Auxier	Health Physics. 1960-1970.
Vic Bond	Brookhaven National Laboratory. Marshallese. Period 1960-1970.
Harold Brown	Former SECDEF and LLNL Director.
William Burr	AEC.
Tom Buttinger	University of California Donner Labs.
Dr. Chand	School of Aerospace Medicine.
Coe	1960-1970.
Myron Farrin	Office of the Director, Naval Reactors.
Johnny Foster	Los Angeles area resident.
Hymer Friedell	Case Western Reserve University. Radiotherapy.
R.J. Michael Fry	Can provide information concerning Argonne National Laboratory and Oak Ridge. Period 1960-1970.

Neil Glass	Army psychiatrist; manager of HUMRRO.
Joe Goldstein	Army psychiatrist; manager of HUMRRO.
Ed Halpin	Potential source for information on NRDL and UC/Berkeley research.
Dr. Payne Harris	Meeting participant.
Dr. Henderson	Rush-Presbyterian point-of-contact for University of Cincinnati research.
Heubline	Did research relevant to the University of Cincinnati project.
Jerry Johnson	Former LLNL Deputy Director; currently resides in San Diego).
Harden Jones	University of California Donner Labs; may be deceased.
Henry Kaplan	American College of Radiology Review point-of-contact for University of Cincinnati research.
Langham	Personal files. (deceased)
John Laurence	University of California Donner Labs. (deceased)
Lightnacher	Mentioned at the time that whole body dose and cesium injection topics were being discussed.
Lushbaugh	Did research related to that accomplished at the University of Cincinnati; work at Oak Ridge; source for information pertaining to LASL.
(Skip) Darryl McIndoe	Nuclear medicine, Baltimore area. Period 1960-1970.
John Pickering	Brooks Air Force Base. Air Force radiobiology. Air Force SAM. Believed to reside in Albuquerque.

Col (Ret.) Ernie Pinson	AFSWP personnel involvement in tritium research at LANL and other research at DOE labs. Currently lives in Texas.
Reva	Mentioned at the time that whole body dose and cesium injection topics were being discussed.
Dr. Saenger	University of Cincinnati, to follow-up on research discussed during the 12 January meeting. This will include a review of his files to provide some frequency information for whole body radiation research. Participant at 12 January 1994 meeting.
Jim Smith	Information concerning programs at Florida State University.
John Storer	Knowledgeable concerning both LLNL and DOE. He is believed to reside near Oak Ridge.
Lauriston Taylor	NCRP. Period 1960-1970. (Probably same Taylor as referenced below.) Physics. Dosimetry. National Bureau of Standards.
Dr. Taylor	(No organizational affiliation referenced). Point-of-contact for research at University of Cincinnati.
Admiral Terrell	Public Health Service.
Myron Varon	NRDL medical director, also at AFRRI, may currently live in Los Angeles. Period 1960-1970.
Harold Wyckoff	NCRP. Neutron dosimetry. AFRRI Scientific Director. 1960-1970.
Ken Woodward	Cesium 137 levels in milk research at Walter Reed. (deceased)

Clayton S. White	Currently residing in Albuquerque; was involved in the SAM astronaut programs.
Herb York	LLNL.

APPENDIX E. ORGANIZATIONS CITED AS POTENTIAL SOURCES FOR INFORMATION DURING THE 12 JANUARY 1994 MEETING

Air Force Special Weapon Center

Air Force Special Weapons Lab

Air Force Technical Applications Center

Air Force Weapons Laboratory

Armed Forces Institute of Pathology (at Walter Reed).

Atomic Energy Commission.

Division of Reactor Development NERVA and AMP programs.

Argonne National Lab

1955 20 year follow-up radium injection study.

Air Force School of Aerospace Medicine (SAM) -- previously the Air Force School of Aviation Medicine

Armed Forces Radiobiological Research Institute (AFRRI) Technical Library

Baylor University

Brooks Air Force Base

Case Western Reserve University

Centers for Disease Control

Communications Information Center at Los Vegas.

Repository for over one million declassified/unclassified DOE records.

Defense Nuclear Agency Technical Library

Source for DNA, DASA, AFSWP annual history volumes

Director, Navy Reactors

Donner Labs, University of California, Berkeley

Dugway Arsenal

Evans Signal Laboratory, Kentucky

Florida State

Idaho National Lab

Joint Committee on Atomic Energy

Lawrence Livermore National Laboratory.

Los Alamos National Laboratory.

Central Mail & Records

Lovelace

MIT

National Bureau of Standards

National Naval Medical Center

Bethesda, MD facility; research on bone marrow damage.

Naval Nuclear Weapons Evaluation Facility

Naval Applied Sciences Laboratory

Naval Nuclear Reactors

Navy Research Lab

NCRP

NRDL

May have been conducted research involving the release of materials.

North Carolina State University

Office of Scientific and Technical Information (OSTI) at Oak Ridge.

This organization is the DOE counterpart to DoD's Defense Technical Information Center (DTIC). It maintains a bibliographic database for DOE-sponsored technical reports. On-line searches can be conducted through DNA and/or DTIC.

Phillips Laboratory -- see Air Force Weapon Laboratory

Sloane-Kettering

United States Public Health Service

University of California

- Berkeley (to include Donner Labs)
- Davis

University of Cincinnati

Research by Dr. Saenger sponsored by DASA.

University of Louisville

University of Rochester

University of Utah

University of Wisconsin

Walter Reed Army Institute of Research

First isotope lab outside of AEC.

APPENDIX F. DOCUMENTS CITED AS POTENTIAL SOURCES FOR INFORMATION DURING THE 12 JANUARY 1994 MEETING

The 1986 report by Representative Markey's subcommittee: American Nuclear Guinea Pigs: Three Decades of Radiation Experiments on U.S. Citizens.

An information packages distributed by DOE last week; in this context it was noted that DoD will need to develop a comparable public information package.

Statements by Members of Congress that identify their specific concerns.

Review the one volume summary history of NTPR to identify key lessons learned; excerpts as distributed during the 12 January meeting are included in Appendix C.

The AFSWP histories provide much of the information that is needed.

WT 923, which provides information concerning human response subsequent to exposure to radioactive fallout from the CASTLE BRAVO event.

The proceedings of the Radiation Research Society.

The proceedings of the Health Physics Society.

The (old) Nuclear Science Abstracts.

Nucleonics, for the few years that it was published.

Health Physics and related journals.

A 1955 Radium Research Report on Argonne/Nixon et. al research involving a 20 year follow-up study dealing with radium injections.

Both on-line (and, for most of the period of interest) traditional hard copy format medical indexes are available.

Congressional Record, 1972 entries.

Files of Jim Brennan (first Director of AFRRI), including collection of 5,500 reprints; Rosemary Harris (Logicon RDA) is source for information concerning access to this collection of material.

A report in the DNA library (1422) was referenced; this is the second University of Cincinnati report.

Files of the Joint Committee on Atomic Energy