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ATOMIC ENERGY COMMISSION

PRESS CONFERENCE ON OPERATION GREENHOUSE

Report by the Director of Information Services

1. On April 6, 1951, the Commission approved the Public Information Policy and Procedure, Operation GREENHOUSE, as set forth in the JTF-3 Staff Study of February 26, 1951 (AEC 153/23), and on April 17 the President approved use of the plan.

2. The plan contained the following recommendation: "That as early as practicable after official reports in Washington, the top staff of JTF-3 hold a press conference in Washington, with appropriate representatives of the Department of Defense and AEC attending, to give previously cleared statements of credit and citiation."

3. Accordingly, arrangements have been made to hold a press conference at 2:00 p.m. on Wednesday, June 13, in room 3E869 at the Pentagon. The Commissioners, General Manager, and staff members concerned are asked to attend.

4. The Chairman will open the press conference. Mr. LeBaron will speak on behalf of the Department of Defense. General Quesada will give a prepared statement giving credits to individuals and agencies, governmental, industrial and academic, participating in the tests. A copy is attached as Appendix "A". General Quesada will be followed by Dr. Graves with a statement on the scientific phase of the operation. A copy is attached as Appendix "B". Questions by correspondents will follow their presentations.

5. Copies of the transcript of the press conference will be provided to the Commissioners and staff and the Joint Committee on Atomic Energy.

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APPENDIX "A"

DEPARTMENT OF DEFENSE U.S. ATOMIC ENERGY COMMISSION

Washington 25, D. C.

No. 377
Tel. ST 8000, Brs. 307, 308

FOR RELEASE AT 7:00 P.M.(EDT)
WEDNESDAY, JUNE 13, 1951

STATEMENT BY LIEUTENANT GENERAL E. R. QUESADA
COMMANDER OF JOINT TASK FORCE THREE

Information on atomic weapons tests which can be publicly released falls into two categories. The first is the non-technical information of a general nature dealing largely with the organization and administration of the test program. The second category of publicly releasable information is the technical information on the effects of the weapons.

As most of you know, there is very little which can be released in connection with the functioning of the weapons of the military and scientific results of the tests. If you have some questions later in this press conference, I should warn you now that we cannot go beyond the prepared statements in answering questions about the scientific or military aspects of the tests. We can discuss the effects in very general terms and we can talk about the supporting work of the Task Force.

Today, I can give you some information in the first category dealing with the over-all work of Joint Task Force Three. Dr. Graves will give you some information on the scientific phases of the 1951 test program at Eniwetok. Information in the second category, that is, the data needed for civil defense purposes, will be made available to the Federal Civil Defense Administration as fast as the mass of data can be collated and analyzed and then given security review. It may be months before some of this information can be put into shape useful for civil defense purposes.

The latest series of weapons tests at the AEC's Eniwetok Proving Ground was successful in every respect. The program was carried out by Joint Task Force Three and it was a truly joint operation in which the resources of the Department of Defense and the Commission were completely integrated.

The objectives of the operation, to which the resources of the Department of Defense and the Commission were completely integrated.

The objectives of the operation, to which the code word GREENHOUSE had been assigned, were to test new and improved weapon designs, to conduct experiments contributing to research on thermonuclear weapons, to expand our knowledge of the fundamentals of the atomic blasts and to study the direct effects of atomic weapons.

To meet these objectives the following experimental programs were conducted:

Weapon performance and phenomonology
Biomedical research
Blast effects on structures
Atomic cloud physics
Radiac instrument evaluation
Physical tests and measurements
Blast effects on aircraft

The weapon performance program measured the efficiency and yield of each detonation. Within the first few microseconds (one millionth of a second), the nuclear reactions were examined in detail. The phenomena associated with atomic explosions -- blast, heat and ionizing radiation -- were also studied in detail. The objectives of this complex program were to prove new atomic bomb designs, to contribute to research on thermonuclear weapons and to develop a fuller basic knowledge of the effects

of the very great energies released in a detonation. This basic knowledge is essential to a better understanding of specific effects such as were investigated by the other programs.

The biomedical program studied the effects of nuclear detonations on skin tissues, glands and circulatory systems. Mice, dogs and pigs were used in these experiments. All were bred and raised at Eniwetok in order that they might be acclimated to the environment, thus making possible essential controlled studies, some of which are complete, others are continuing. The mouse is useful since there is a wealth of laboratory background material on mice. Swine were used because their skin resembles that of man. The dog was used because its circulatory system resembles that of man. The objective of the biomedical program was primarily to provide a background for the development of treatments of atomic bomb casualties. Laboratory studies of the glands and tissues of exposed animals are continuing in the United States and thousands of exposed mice have been returned. The work is being carried on at Los Alamos, Oak Ridge, University of Rochester, Department of Agriculture, Armed Forces Institute of Pathology, Naval Medical Research Institute, University of California and California Institute of Technology.

The structures program included the testing of designs and types of construction, using various engineering principles and materials. The reactions of underground and surface shelters, industrial plants and typical dwellings were recorded. The objectives of this program were to establish a method of predicting blast damage and to gain information useful in developing designs to minimize blast damage to military and industrial facilities. Some nine hundred (900) measurements were made on twenty-seven (27) various structures. Tests of a variety of

glass and window construction were conducted for the Civil Defense Administration. Although most of the structures program was developed and conducted by the three Armed Services, the information gained will be of significant value to civil defense and will be made available to the Civil Defense Administration as soon as it is assembled and analyzed.

The cloud physics program investigated the growth and rise of the atomic cloud and plotted the associated radiation fields. The objective of this program was a better understanding of the radiation of the cloud and its meteorological structure.

The radiac evaluation program field-tested various models of badges and dosimeters. The program also included experimentation in the field of new radiation detection devices. Various types of meters and recording devices were exposed. This program will contribute to the design of simple, reliable radiation detection instruments required by many agencies and activities.

The physical tests and measurements program included the exposure of Sherman tanks, protective clothing, the study of contamination and decontamination problems, the study of fall-out patterns and particle size of fission fragments and the development of filter materials to screen radioactive particles. The broad objectives of this program were to test military equipment and to better understand the nature of the problems posed by atomic detonations.

Drone T-33s (modified F-80 "Shooting Stars"), drone B-17s (Flying Fortresses), manned B-50s (Superfortresses) and a manned B-47 (6 engine Stratojet) were exposed to varying degrees of blast and heat. These aircraft were all carefully instrumented to record stresses and pressures. Manned aircraft remained at safe distances, while drone aircraft were vectored close to zero.

Information gained from these airplanes was supplemented by exposure on the ground of instrumented aircraft components, wings, model airfoils and fuselages. The purpose of this program was to collect data useful in developing tactics of operations in the close vicinity of atomic blasts as well as to assist in establishing design criteria for new combat aircraft.

To conduct these programs, and to provide support services and security, the Task Force was organized into four (4) functional Task Groups.

Task Group 3.1, commanded by Dr. Alvin C. Graves of Los Alamos Scientific Laboratory, with Mr. Stanley W. Burriss as Chief of Staff, was assigned the mission of conducting all experimental programs. This task group, at its peak strength, numbered 2,580 personnel.

Weapon performance measurements and fundamental effects studies were under the direction of Dr. Frederick Reines, Los Alamos Scientific Laboratory. Major contributions were made by a group from the Naval Ordnance Laboratory, under Dr. Gregory K. Hartman, augmented by a group under Dr. Curtis W. Lampson from the Aberdeen Ballistics Research Laboratory; two groups from the Naval Research Laboratory, one under Dr. Wayne C. Hall, the other under Dr. Ernst Krause; a group from the University of California's Radiation Laboratory, under Dr. Herbert F. York, Jr., assisted by Dr. Hugh Bradner; a group from the National Bureau of Standards, under Dr. Lauriston Taylor and by the firm of Edgerton, Germeshausen and Grier, Inc., of Boston. Selected military officers and enlisted technicians gained valuable experience by assisting these groups.

The biomedical program was under the direction of Dr. George V. LeRoy of the Northwestern University Medical School.

The structures program was under the supervision of Mr. Sherwood B. Smith of the Armed Forces Special Weapons Project. Personnel of the three Services and of the Sandia Corporation, Albuquerque, New Mexico, instrumented the buildings and recorded the data.

The cloud physics program was under the direction of Dr. Peter H. Wychoff of the Air Forces' Cambridge Research Laboratory.

The radiac evaluation program and physical tests and measurements program were under the direction of Commander Victor Delano, U. S. Navy. Personnel from various Service laboratories joined in these programs.

The study of blast effects on aircraft was under the direction of Colonel Robert E. Jarmon, U. S. Air Force. Instrumentation was designed and installed by personnel of the Air Materiel Command.

Dr. Graves' task group also included a contractor force of the firm of Holmes and Narver, Los Angeles, which was responsible for engineering all facilities of the proving ground and the accomplishment of the major portion of essential construction.

Task Group 3.2, commanded by Brigadier General Arthur R. Walk, USA, with Colonel Samuel N. Lowry, USA, as Chief of Staff, had two distinct missions. During the build-up phase of the operation, this task group, consisting then of Corps of Engineer troups and supporting services, augmented civilian contractor forces by constructing Army and Air Force base facilities on the largest island of Eniwetok Atoll. During the operational phase, this task group numbered 1,400 personnel. Its principal tasks were to provide military security on the islands of the atoll and logistic support to Air Force units.

Task Group 3.3, commanded by Rear Admiral Richard H. Cruzen USN, with Captain Harry R. Horney, USN, as Chief of Staff, had the

mission of providing off-shore air patrols and surface defense. This task group also provided transportation for personnel and cargo within the atoll, harbor defense and floating fuel storage. This task group consisted of 2,370 Navy personnel.

Task Group 3.4, commanded by Major General Robert M. Lee, USAF, with Colonel William T. Hefley, USAF, as Chief of Staff, had as its mission the operation of experimental aircraft, which included the drones and aircraft for blast measurements mentioned earlier, as well as the B-17 filter collecting drones essential to the over-all experimental program. Task Group 3.4 also provided weather observation and reconnaissance, search and rescue, liaison taxi service within the atoll and F-80 jet interceptors for air defense. Due to the complex nature of operating aircraft on split second timing in relation to the detonation, latest developments in radar were used for exacting air control. The peak strength of this task group was 2,400 personnel.

The personnel of Joint Task Force THREE, numbering just under 9000, were drawn from the AEC, its contractors, military, industrial and educational laboratories and from the three Services.

Joint Task Force THREE was supported fully, despite the drains of the Korean War, by the Military Sea Transport Service and by the Service Force of the Pacific Fleet, who moved 250,000 measurement tons of cargo over the 4,500 miles between the west coast and Eniwetok. The Military Air Transport Service airlifted the passengers essential to our schedule and 3,500 tons of high priority cargo.

Needless to say, this has been a most interesting and enlightening experience. Even though it will take months before all the data is analyzed, we in the Task Force have arrived at certain conclusions which in our opinion are significant.

First. It has again been clearly demonstrated that the cooperation between scientific and military personnel, so essential in modern war, is effective. Success of this operation can be credited largely to the outstanding performance, enthusiasm, energy and adaptability of our civilian scientists and technicians. On the other hand, members of our military services demonstrated their adaptability to a complex scientific-military operation.

Second. The complete success of Operation GREENHOUSE proves that progress in weapons design and research has been made by Los Alamos. The detailed analysis and application of experimental data will make further progress possible.

Third. The extensive basic and applied studies of the effects of atomic weapons will be of significant assistance in planning effective civil defense and in developing military tactics, techniques and equipment.

Fourth. We have again operated in and around radioactivity. Our operations have indicated to us clearly that the mysterious ghost of lingering radiation should be dispelled. The immediate radiation, blast and heat kill and destroy. Fear of lingering residual radioactivity must not confuse or delay prompt disaster operations in the event we are attacked.

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APPENDIX "B"

DEPARTMENT OF DEFENSE U.S. ATOMIC ENERGY COMMISSION

Washington 25, D. C.

No. 378
Tel. ST 8000, Brs. 307, 308

FOR RELEASE AT 7:00 P.M. (EDT)
WEDNESDAY, JUNE 13, 1951

STATEMENT OF DR. ALVIN C. GRAVES, DIRECTOR, TEST DIVISION, LOS ALAMOS SCIENTIFIC LABORATORY AND DEPUTY COMMANDER FOR SCIENTIFIC OPERATIONS JOINT TASK FORCE THREE

General Quesada has discussed the activities of Joint Task Force Three since its formation in 1949. He has discussed the scientific programs and the importance of some of the results. I should like to give you a few additional details.

It may appear to the uninformed that tests have been held in recent months at such a frequency that important results could not ensue. We are today, however, in the normal and desirable situation in which we are improving and extending the range and usefulness of our product at such a rate that frequent tests are a necessity. Test programs are constantly under discussion and the preliminary planning on new tests starts even before one series of tests is completed.

A successful test operation is a product of the combined efforts of the Atomic Energy Commission, the Armed Forces, and many laboratories and other specialized groups. The over-all scientific know-how available to a test organization is amazingly extensive. I can assure you that the test proposals for GREENHOUSE were subjected to detailed screening processes for both scientific value and economy and that the data will be most important.

The instrumentation for a carefully planned test program may provide for hundreds of experiments designed to give many cross-checks on important results. Primary measurements such as nuclear, thermal, and visual radiations and blast pressures as functions of time and distance, and total yield, are invariably measured in several ways. Although it is not desirable to discuss these experiments in detail, it is worthwhile to give you some idea of the way in which these experiments are done.

In some cases, special instruments set close to a burst must measure events which take place within a fraction of a millionth of a second and transmit the data to a safe place where it can be recorded before the detecting instruments are vaporized. The data are transmitted in some cases directly by cable and in other cases by radio links, and are recorded by high-speed oscilloscopes, magnetic tapes, photographic plates and other means. Some measurements depend on laboratory analyses of samples flown from Eniwetok to continental laboratories, such as Los Alamos, within thirty to forty hours after each test detonation. Other measurements depend on the use of high-speed cameras operating at speeds up to a million frames per second or more.

There is a wide variety of other types of instrumentation, including photocells, photomultipliers, ion chambers, and even such complicated instruments as mass and beta-ray spectrographs. The complexity of this instrumentation is the reason why we use tower shots instead of air-drop experiments, which might appear more realistic from a military standpoint.

The data from these experiments frequently require extensive computation, and the results from various systems of instrumentation must be cross-checked or actually combined before useful and reliable data are available. Perhaps this will give you some idea

of why it takes so long to analyze data and obtain from experiments the type of information from which firm conclusions can be drawn.

Many of the results of Operation GREENHOUSE will remain highly classified; others will be declassified as further study indicates that benefits will accrue from such declassification. For example, it is certain that many experimental results will be of great value to civilian defense. I should like nothing better than to give these results at this time, but unfortunately we are still engaged in the process of analyzing data. In general, I may state that these results indicate continuing improvement in weapons design, and reflect the extensive program of development which the Los Alamos Scientific Laboratory has been carrying on with the aid of other laboratories and technical groups.

As to our programs toward the eventual development of thermonuclear weapons, you know that experiments were carried out which contributed to thermonuclear research. I cannot discuss these experiments in detail but I want to emphasize what Mr. Dean has said about the interpretations put on the authorized announcements on this subject. The official statements have been carefully considered and there is no basis for interpretations which go beyond the actual words of the Commission's releases. I may say that we have gained new information and understanding of the basic phenomena underlying thermonuclear reactions. The half-dozen or so experiments designed to give specific information on the thermonuclear reaction were so novel and complicated that we would have been happy if only half of them had worked. It is a remarkable tribute to the laboratories and other agencies that participated in the work that each one of these experiments gave useful information.

One of the GREENHOUSE tests was largely aimed at obtaining weapons effect data. It should be kept in mind, of course that when these tests were planned in 1949, the program was designed primarily for military defense purposes. There will, however, be a great deal of data useful in civil defense work. As soon as this information has been analyzed and given security review, it can be made available for public civil defense use. The people responsible for civil defense, assuming that there has been improvement in weapons design, must necessarily plan on the basis of weapons several times more powerful than the Hiroshima-Nagasaki, or nominal weapon. The GREENHOUSE program included test detonations of sufficient energy yield to permit checking or confirmation of the estimates and predictions as to the effects of these higher-power weapons.

For security reasons, we cannot release precise yield figures at this time, but we hope that the data obtained as to the effects of the detonation on dogs, swine and mice, and on structures, equipment and materials, will be made available in useful form and without too much delay to those responsible for the welfare and protection of the country.

In conclusion, I should like to express my appreciation to those military and civilian personnel whose efforts made Operation GREENHOUSE possible.

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APPENDIX "C"

DEPARTMENT OF DEFENSE U.S. ATOMIC ENERGY COMMISSION

Washington 25, D. C.

No. 376
Tel. ST 8000, Brs. 307, 308

FOR RELEASE AT 7:00 P.M. (EDT)
WEDNESDAY, JUNE 13, 1951

STATEMENT BY BRIGADIER GENERAL JAMES COONEY, RADIATION SAFETY ADVISER TO JOINT TASK FORCE THREE

Our experience in recent test programs repeatedly has demonstrated that radiation hazards will not delay rescue and recovery work after an air burst of an atom bomb. There is no reason that every casualty cannot be removed and treated immediately without serious radiation hazard to rescuers.

In the case of a high aerial burst of an atomic weapon, such as I think probably would be used, there would be no residual radiation. In a low air burst just above the ground's surface, the significant residual radiation would be confined to an area 300 to 400 yards in radius. No rescue work would be required in this area because it would be devastated. Rescuers would not be subject to injurious ionizing radiation in reaching survivors.

At Eniwetok for instance, large numbers of scientists and technicians returned to the test islands, as quickly as transportation by air and water permitted, to recover their instruments and data needed for their research. On one of the islands where new construction was required full time work started 1,000 yards from the detonation point on the day of the explosion and within the 72 hours required to build barracks, the workers occupied their quarters. There was residual radioactivity in an area immediately around the detonation point because the detonations were made from towers.

Radiation safety surveys made after the tests in the immediate area of Eniwetok Atoll and neighboring inhabited atolls failed to reveal any contamination of a serious nature. Food and drinking water outside the destroyed area continued to be fit for consumption.

The immediate radiation hazard from the air burst disappears after the first two minutes. Rescue, fire fighting and recovery work can begin immediately in any area where there is life, as in any major catastrophe caused by conventional air attacks, earthquakes or disasters on the scale of those at Texas City and Halifax.