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General Hill and Captain Russell have outlined the historical background leading up to the 1948 program of atomic weapon tests and the organization of the Task Force which was formed to carry out the program. Although the tests were conducted by a combined military and civilian team, Joint Task Force Seven is a military organization with a great majority of

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which existed between the military and civilian personnel resulted in the smoothest possible operation. Throughout the whole life of the Joint Task Force, there has not been a single incident which impeded any test or measurement and which arose from the rather great differences between military and civilian philosophies and methods of operation. The mixing was really very intimate; for example, most of the technical sections were staffed with both civilians and members of the Armed Forces Special Weapons Project.

A year ago, I would not have believed such a pleasant and successful working relationship could be achieved, and I believe now that it resulted in this case from the broad understanding and wisdom of General Hill. He has set a standard for all future integrated projects involving the Armed Forces and civilian groups. To have been a member of his organization has been a most pleasant experience for me personally, and I believe for all the civilians of the Task Force.

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The Task Unit responsible for carrying out technical operations making scientific measurements was part of the Task Group commanded by Captain Russell. Captain Russell also represented the Atomic Energy Commission Test Director. Only his wide and intimate knowledge of the organization, activities, and technical work of the Commission, and of military operations particularly naval and air operations - made it possible for us to do the work required. Since the beginning of this project, Captain Russell and I have worked very closely together. We have even ~~shared~~ ^{shared} the same room for the past three months. We are now nearing the end of one of those rare experiences which someone as lucky as I sometimes finds and which makes a highlight of life.

The Deputy Commanders of the Task Force, Major General H.E. K... USAF, and Rear Admiral H.S. Parsons, USN, were of great assistance throughout the operations. General K...s intimate knowledge of so many phases of operations contributed directly to the success of our more important ~~experiments~~ ^{experiments}. ~~Admiral Parsons' wide experience and understanding in the field of military applications of atomic energy were of the greatest value.~~

a series of The test program just completed at the Eggenstok Proving Ground involved ~~the~~ nuclear explosions. ~~They were static tests, carried out~~ ^{They were static tests, carried out} conditions as close to laboratory control as we could make them, and with very extensive instrumentation.

60 seriously. The problem was solved by forming a skeleton organization at Los Alamos, consisting of one expert in each phase of the technical work. In some

Scientists and technicians were drawn from the Los Alamos staff to carry out certain technical operations under these experts acting as section leaders. In other cases the University of California, which operates the Los Alamos Laboratory for the Commission, made contracts with outside agencies. In these cases the Los Alamos experts filled liaison positions.

~~1. Many of the...~~

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Among the organizations outside the Army Ordnance Department taking part in the technical program at Aberdeen were the Naval Ordnance Laboratory at Washington, D.C.; the Aberdeen Proving Ground (Army Ordnance Dept.) at Aberdeen, Maryland, and the Navy's David Taylor Model Basin at Washington, D.C. all supplying technical personnel for pressure and time measurement work. Dr. G.H. Hartman of the Naval Ordnance Laboratory is in this section, with Dr. G.H. Lanyon as his alternate. Dr. J.C. Clark represented the Bureau with this section.

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The consulting engineering firm of Edgerton, Gernsbacker and Grier, of Boston, contracted to carry out some of the very important technical operations. Dr. H.E. Grier was in charge of this work, assisted by Dr. H.E. Edgerton and Dr. D.J. O'Keefe of the same firm. This section designed and installed the complicated timing signal circuits which were necessary in order to have all of the self recording experimental equipment switch on at the right instant. The same section also made measurements of the growth of the nuclear reactions. Such measurements involved changes on a time scale of small fractions of a microsecond. It is a little hard to realize just how small even a microsecond is. Remember, a microsecond is one-millionth of a second. Light travels at a rate of 186,000 miles a second, thus, will travel a distance equivalent to going around the world seven one-half times in a second. In a microsecond, light travels about one foot. We are interested in fractions of microseconds. Dr. H.E. Grier worked with the firm of Edgerton, Gernsbacker and Grier.

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The Naval Research Laboratory supplied us with a section headed by H.H. Kruse, with Dr. C.V. Strain as second in command. Dr. E. Bernard worked with this section. This section also made measurements of the growth of the nuclear reactions using another method which involved times as short as a fraction of a microsecond. Another of the measurements required the observation of a time interval of several microseconds with a precision of one-tenth of one percent. This group also measured and light radiation from the explosions.

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C. E. Rogers headed an engineering group; H. W. Carlson looked after construction problems and H. J. Bradley served as safety engineer for technical operations. Mr. Henderson's section also handled several special engineering problems.

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170 You understand, of course, that I am strictly limited in what I can say about the details of the conduct of the tests and about the actual results. We have already discussed some of these details. I am going to tell you as much more as possible now, then when we have questions we will limit ourselves to the non-scientific aspects of the operation. If I am to be quoted, I would appreciate it if you would quote directly from these notes. There are some copies available for you.

180 The ultimate purpose of the tests was to insure efficient utilization of the national resources required for the development and application of atomic energy. Captain Russell has suggested to you that the Los Alamos Laboratory had developed new weapon designs. It is obvious that a research and development program of any nature cannot long be fruitful if the product of the program gets tested. If the nation elects to develop and manufacture atomic weapons, these weapons must be tested. Unlike other bombs, however, the cost in man, cash, man hours and natural resources is quite high for each weapon. Moreover, the physical processes going on during the explosion of an atomic bomb are complicated. For these reasons, development and improvement of atomic weapons cannot be carried on by the common methods of making small changes in design models and proof-testing after each change.

carefully in order to make information obtained from one test supplementary
that obtained from another. A well planned series of three atomic weapons tests
can yield much more than ~~three times the useful information~~ ^{information} available from
~~single detonations.~~ ^{an equal number of similar}
^{single tests.}

Test-series of new models often can be carried out under conditions
that make it possible to obtain secondary, but important objectives. Without
interference with the primary objective, much information can be gained which
is useful in the peaceful applications of atomic energy.

200 We have not had time to tabulate and analyze but a small portion of
the experimental data obtained in these tests. Yet, what we have learned
would have been enough to make the tests profitable. We are very pleased with
the results. Our tests were not successful merely because the weapons we
exploded with a lead bang. They were successful because the weapons did
explode and we obtained good experimental data which will guide us in research
and development in the future.

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One of the most gratifying results of the entire operation has been the confirmation of the large body of ideas, theories and methods which have grown out of the theoretical and experimental work done since the war at the Los Alamos Scientific Laboratory. I am sorry that I cannot give you more details about the actual tests, the results of our measurements, and our analysis of the data. I can say one thing which may be of interest. During the course of these tests we obtained the largest known non-oxide release of energy from a single package.

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