

LASL MONTHLY PROGRAM REPORTS

411558

THESE will be very brief notes from monthly reports written or at least distributed by what was then D-division, and broken into the general areas of progress at this laboratory with only maybe ten to fifteen per cent of each months document devoted to testing kinds of activities. The notes I will take will be directed at forming a picture of what kept the laboratory and especially the weapons development people and weapons test people busy and what the effect on readiness was through the moratorium. The documents are ^{entitled} ~~intituted~~ LASL program status.

JANUARY 1958:

Part of J-Divisions activities entailed predicting the phenomonology of the planned UHA shot and inparticular running machine codes on the 250,000 foot shot. Note that the Feb. 58 report indicates that T and J divisions are jointly working on calculations of the phenomonology of this shot.

Here is an interesting map of Christmas Island dated in 1958 from the British, which shows the location of a number of sites, some for cameras, located on the beach around the southeastern end of the island.

Here, in a folder entitled "Johnston Island," is a pack of interesting black and white photos which show the construction of the Thor pad, some blast hardened buildings and other facilities.

RG 326 US ATOMIC ENERGY
COMMISSION

Location Doe History Division
Collection #1387 Conrad-Ogle
Folder "B" (Box 1)

BEST COPY AVAILABLE

Meeting #1324, 8 January 58:

Chairman Strauss reported that at Killian's suggestion President Eisenhower had appointed a panel of five people to study the feasibility of accurately detecting weapons tests. The suggestion was made because of conflicting views now existing on the possibility of detecting tests anywhere in the world. Panel members are: Harold Brown, Rod Spence, Carson Mark, Hans Bethe, and Starbird. The commissioners concurred in the selection of the individual members of the committee.

The general manager said that the Army intended to begin testing satellites during early 58 and had requested permission to use Enewetok as a launching site. The commission expressed their feelings that the AEC should cooperate fully and offer all possible assistance including the use of Enewetok. Strauss believed that the project had such importance that it warranted delay or interference with Hardtack if this might be necessary in order to accomodate the Army's project.

NG

PI

M & R Records Center

"635 Laboratory Program" Folders

On 8 Jan. 58, Bradbury sent a letter to Starbird expressing his feelings about where the LASL has come to and where weapons development has come, partly in light of the possibility of a moratorium on testing, and Bradbury is just generally "worrying." His thinking in this particular instance seems to be driven by current questions about how a moratorium would affect LASL and Bradbury refers to Starbird's "somewhat surprised reaction" to his recent reply to Starbird's query along these lines. Apparently due to the transition of LASL from being a pretty freely operating, independent laboratory making good progress for the money they were receiving, Bradbury generally feels that the two weapons laboratories are now making very little progress per the dollar invested and are much more prone to control from the bureaucracy, in particular the military. He feels that perhaps a moratorium would be a good thing in a certain sense right now: "If we had to sit down and think, if we had time to sit down and think, we might think of something. It is very unlikely that with the press of affairs as they are, and with the general attitude of the commission what it is, and with our own response what it is that we will have the intellectual fortitude to say 'No!' to any proposal, nor will we, with the continual workload (which we will partly bring upon ourselves) find the ^{elusive} ~~elusive~~ 'new' idea if it exists at all. . . . A moratorium followed by the possibility of further testing would at least force us to take stock of our whole situation. . . . It is my own impression that LASL has let itself get slightly too bogged down in mass production of weapon designs, and that we should try to take that aspect of our life a little easier and work a little harder in general research - which is thought to be good for the country too! It is for reasons like this that the thought of a moratorium, cast in the proper context, is not too painful."

One of the last paragraphs is particular significant to just give an insight to

PT

Bradbury's feelings at this point in time before the moratorium was a reality and in light of his feelings about the pressures from the bureaucracy and the changes in the way attitudes had to be since the advent of Livermore. "What is this letter all about? I really do not know. Primarily I guess it is to apprise you of various worries - worry that we may become a factory because we don't have time to keep from being a factory; worry that we may become a factory because the weapon business is becoming a factory-sort of business; worry that we are not fulfilling our maximum role for the country - but what is it?; worry that we may try to get too many commissions to design special bombs for the DOD; worry that we may not have enough commissions to keep our staff really busy; worry that good people are getting worried about the real utility of our frenzied design and test programs; worry that if we don't do this we will be less 'enthusiastic' than UCRL; just worry!" This document is No. DIR-1319.

LF

M&R Records Center

"635 Livermore" Folders

A message from Starbird to Bradbury on 9 Jan. 58 refers to the 1 point safety test where the announcement has been "no significant nuclear yield is expected," and the approval procedure has not been the same as for full scale nuclear test. Certain events with some of the safety shots have shown significant nuclear yield and brought questions from areas as far as Los Angeles about the effects of off-site fallout, in one case being complaints from Hollywood over the spoiling of film. Thus, there is a need to better perform these safety tests to limit the effects and also to better handle the approval procedure thru the White House.

The LASL reply on 10 Jan 58 is that the safety ~~xxxxxx~~ shots to date have taught LF
us a great deal about calculating the yield to be expected and so in the future greater
confidence can be attached to limiting the effects. Also, LASL intends to do 3 safety
shots probably in the coming fall and are requesting 3 vertical holes in Nevada to
contain the plutonium. The assurance that they give is that there will be no
appreciable off-site fallout.

There was correspondence in the first 4 months or so of 58 between DMA and the
2 labs on who should be responsible for the development and testing of which weapons.
Generally, Starbird felt that Livermore had their hands full and therefore he assigned
the Nike-Zeus warhead development to LASL. Later discussion, in April, raised questions
as to who should be responsible for weaponization effort in various weight categories,
particularly in certain types of weapons below 1600 lbs.

The first letter of interest is dated 14 Jan. 58 and is the last such PP
letter from York as Director to Fidler. The lab programs are broken down into the following major headings: Fundamental research; general weapons research; specific device research and development; specific weapons development and engineering (on which this lab is in the early phases of building up a capability); test planning and evaluation; non-military uses (Plowshare had been initiated); and other programs (Sherwood and nuclear propulsion-Pluto). Note that in the area of specific device R and D, some fair amount of thought and design is going into cleaning up the devices |

In the area of planned tests, 3 series are outlined for 58: 58A at the NTS in the spring to include 1 point test only; Hardtack at the EPG and 58B listed for NTS in the fall and including 1 point and full-scale tests. All of these 58 B tests are to be done underground and the tentative list includes 5 full-scale tests, |

It is stated that "By increasing the yields of devices tested by a factor of 20 or so each time, it is hoped to reach the megaton range in underground testing by 1959. The radio-chemical measurements available in such tests remain subject to question, but accurate yield and prompt diagnostics appear from the Rainier test to be possible. It is hoped that most or all of the UCRL tests for Operation Trumpet (planned for 59) may be carried out in this way. To insure that this can be planned with assurance, a 20-40 Kt. yield shot should be made in the fall of 1958." Note that planning at this stage for Trumpet includes some evacuated pipe x-ray measurements underground.

Note that a man named Air Force Brig. Gen. Perry B. Griffith was Chief
of Staff of the Task Force through at least a portion of 1958 and that later
Col. Thomas Jeffery took over in that role.

CV

Miscellaneous correspondence from
early 1958 thru resumption of
testing between from to, etc.
4950th (v subordinate units) AF SWC,
JTF-7, AF SWP, ARDC mainly.
Traces evolution & pressure on
aircraft & Air Force (TG 7.4)
nuclear test readiness during
the moratorium.

J

A File

UNCLASSIFIED

✓

11 ARGUS

DV

- Motivated by Christophilos report (COPD 582
dated 10 Jan 58) (SRD) T.

~~7.2 - conducted by JTF-7~~

~~AF-SWP~~
~~ARPA~~ series (to AF SWP)

- ARGUS phenomenon - trapping
of relativistic electrons in the
magnetic field

X

N. Christophilos,
C. Longmire

- Navy launch ship - Norton Sound

- LMSC carrier vehicle

- Task Force 88 commanded by

R/Ad Lloyd M. Martin

58

Feb 11

C. H.

Nov 22

Nov 11

Answer stopping, ASD, etc.

John

Let's
reference -
manuscript
← Public Announcement
of Hard'n. L.
April 8 -
April 28 Hard'n. RI

Meeting #1325, 22 January 58:

The commission Chairman is to meet with Von Braun and other scientists from the Army Signal Laboratory on the next day. Perhaps this had something to do with the high altitude events coming up this summer. 116

Starbird went over with the commissioners the testing schedule

58

for calendar year 58, in which he requested an additional test in the atmosphere. Along these lines, "Mr. Strauss reiterated his concern about the large number of weapons scheduled for testing during operation Hardtack and recalled that the President had asked that the Commission eliminate some of the shots originally scheduled. If the contingency shot is added, he said, the total number scheduled will be up to again. This, he remarked, seemed to be a reflection of the DOD's requirement for an increasing number of different nuclear weapons types. The Commissioners discussed the shots scheduled for 58 and Mr. Libby requested that the letter to the President concerning operation Hardtack state the amount of off-site fallout which will result from the series." The Commission then approved the revised Hardtack program (including tests), approved underground tests at Nevada (MILLRACE) and also approved the conduct of 1-point safety tests at the NTS during 58. This then would go into the appropriate letters for execution authority to the President. etc.

Meeting #1327, 28 January 58:

Among the discussion at this meeting, Libby discussed the question of avoiding detection of a nuclear test by placing the weapon in an earthquake fault, either underground or submerged, and then having detonation in sequence. His inquiries of certain California seismologists had indicated that detection under conditions would vary with the medium and it was felt that it would be difficult to detect such tests in the Pacific but not in Nevada.

NG

DRAFT

Meeting #1328, 31 January 58:

The President had approved informally the first 6 months of Hardtack but had some questions regarding the fall testing for the NTS.

NG

Meeting #1331, 5 February 58:

Mr. Floberg said that recent statements made by Senator Humphrey indicated he didn't clearly understand the problems with halting nuclear weapons testing and Humphrey was under the impression that it is impossible to conduct a weapons test without other countries being able to detect each shot. The discussion ended with the feeling that Captain Morse, the chairmans^y special assistant for NSC affairs, should present a short briefing on the subject to Senator Humphrey.

NG

LA

M & R Records Center

01, 231.2, and 334 Bethe" Folders

This is just to document that the so-called Bethe panel existed prior to 1958 d, as I gather from some correspondence by Bethe and the Air Force, it was a committee formed to advise ~~the Air Force~~ and Bethe himself called it the "evaluations committee on foreign tests." The members of the panel in mid-57 included Bethe, rk, Cowan, Spence, Street, Harold Brown, and Anthony Turkevich of the University Chicago.

A letter from Starbid to Bradbury on 20 February 58 refers to the "Bethe Panel the Killian committee," so apparently this panel was attached to Killian who at the time I believe was President Eisenhower's scientific advisor. This letter transmitted a table prepared by the Bethe panel which listed specific types of weapons and their expected position in their evolution after HARDTACK testing, as well as the further development which would be possible but would be cut off if no further testing were possible after HARDTACK.

Meeting #1337, 26 February 58:

As has been discussed for the month or so previous to this, discussion continued at this meeting on the question of a so called observer demonstration test during Hardtack . This apparently would be one test that would be open to international observation and for which there exists the possibility of allowing nations to get radioactive samples for either their own or U.S. analysis to determine the cleanliness of the detonation. The discussion continued with a lot of strong pros and cons at this meeting and it was not decided what the consensus recommendation should be but it was pointed out that President Eisenhower had indicated that there would be such a test and for him to retract this now would be a problem.

Also at this meeting, there was discussion of an AEC paper #226/132, which outlined 10 possible armament positions and their advantages and disadvantages.

Meeting #1338, 28 February 58:

The Commission approved conducting a UN observer program during operation Hardtack to demonstrate the US clean weapons capability and requested a detailed program be submitted for their consideration.

The Chairman reported on a letter received by the White House from Linus Pauling which requested an appointment with President Eisenhower to discuss the cessation of nuclear weapons tests. Strauss did not feel that such an appointment should be allowed and the Commissioners discussed the matter with some expressing their views that the request for an appointment could not be ignored and that perhaps it should be given to Dr. Killian to handle.

FM

ALOO Central Files

MRA-7 Project 58 & 59 NTS (FY 58)

Indicates planning for safety shots at NTS in Feb-Mar 58, called

"Project 58A-NTS", only LRL devices. The LASL portion "58 Project --NTS" was done in Dec 57 and looked at properties of two proposed designs upon one point detonation.

LRL carried out 58A in Feb & Mar with the Venus and Uranus tests, respectively.

M & R Record Center

"635 NEVADA TEST SITE, 1/1/58 - 12/31/65" Folder

BP

Here is documentation of a visit to the Nevada Test Site by French nuclear experts that was classified in Feb. of 58. The stated purpose of the trip is to brief the experts on operational and safety aspects of U.S. full scale nuclear weapons testing at the NTS. The visit was sponsored jointly by the DOD and AEC and there was the intent to limit the discussion primarily to the NTS with only a passing mention of the EPG. Among those briefing the group was Jim Reeves and Al Graves.

M & R Records Center

"471.6-High Altitude Nuclear Effects" Folders covering 1958 through 1971, one folder classified, the other unclassified.

These folders should be used in conjunction with those entitled "Upper Atmospheric Physics Group" since there are a number of cross-references and some obvious cross-fertilization in these two fields.

Reference to March 1958 correspondence on a meeting or meetings held by AFSWP, forerunner of DASA, with participation by ARPA, DDR&E, and the AEC on the matter of planning for a high altitude detonation.

Here is a lengthy report from Doyle Northrup on 4 March 58 entitled "Present and Potential Capabilities and Limitations of the long range Detection System" **LA** and is a memorandum for the Chairman, ad hoc panel on Nuclear Test Limitation. The introduction notes that the Chairman of this so-called panel is Hans Bethe and this report was presented to him on 5 February 1958 to discuss the capabilities of the system and its limitations in the detection of nuclear tests within the Soviet Union and elsewhere. It is addressed to tests anywhere from deep underground to 50,000 feet above the ground. Addressed are the general system capabilities and Operations as well as the acoustic component, the seismic component, the electromagnetic component, and the nuclear (air-borne sampling) component. The system whose capabilities are discussed in detail is known as the "Long Range Detection System."

"635-Eniwetok Proving Ground" Folder

1. A 6 March 1958 TWX from Starbird to Bradbury, Street of Livermore and Reeves asks for their opinions of a couple possible options for future test series. One would be to keep the Eniwetok Proving Ground open continuously after Hardtack with very few shots of small yield being done periodically at the NTS and with these being done underground as far as diagnostics would permit. A second alternative to be thought of would be somewhat the opposite and that would be to utilize Eniwetok only every so often like every 2 years to fire all those shots over some designated yield such as 500 kilotons or that could not for diagnostics or effects reasons be fired underground at the NTS. Under this latter plan a continuous type operation would be established at the NTS using the underground technique for the great majority of shots and authorizing an above ground shot only on an individual basis and not to exceed the present limitations. The Livermore answer to this TWX from Kenneth Street on 10 March was *heartily* ~~heartily~~ in favor of going to a continuous testing concept. Furthermore, that laboratory favored the first proposal to have the Eniwetok Proving Ground open on a continuous basis over the NTS continuous operation. Bradbury's answer for LASL on 11 March also favored the new proposals for ~~new~~ more continuous testing although it was somewhat less enthusiastic and in part he states "It would seem preferable to consider more frequent or continuous testing at Eniwetok with periodic operations at Nevada rather than the reverse arrangement." Bradbury goes on to cite some of the problems with the continuous administration of Eniwetok and in that vain asks that perhaps consideration should be given to operating Eniwetok on periodic basis but at yearly intervals and this might provide many of the benefits to be expected from a continuous operation without the headaches which such

FK

an operation might bring. ^{His} ~~as~~ final statement also reflects his feelings at that time on underground testing: "All I am saying at the moment is that it would be a good thing if we could find a practical way to test at Eniwetok more frequently than every 2 years but that I am not very interested at present in a continuous test ability at Nevada particularly if it has to be underground."

Meeting #1340, 7 March 52:

Some comments of General Starbird in addressing the upcoming budgets for weapons testing and other related projects are pertinent: "during the summer of 59, it is planned to conduct a harbor excavation experiment with a nuclear device at Point Barrow, Alaska. ---Starbird said that it was his belief that in the near future, the US would adopt a policy either of continuous weapons testing or testing all weapons underground, and slated intelligence reports of increasing numbers of Soviet weapons test series and of greater number of weapons being tested in each series."

NG
Dissem

Because of this belief, Starbird said he had requested from LASL and Livermore their comments on the advisability of maintaining the Pacific proving grounds on the basis which would permit testing throughout the year. He said he was not anticipating continuous testing on a scale such as operation Hardtack, but rather more frequent testing of a few weapons at a time. He added that he had changed his position on the need for testing a 20 to 40 kiloton weapon underground at NTS during 1958 and now believed it important that such a test be conducted during December 58 or January 59. Mr. Libby urged that the commission increase its underground testing program and said he also believed that the US may soon adopt a policy of testing all nuclear weapons underground except certain clean weapons which would be detonated above ground for weapons effects tests. General Starbird then reviewed the recommended budgets supplemental of 4.8 million dollars for the weapons laboratories, pointing out that 2.7 million for LASL would be spent largely on development of NIKE-ZEUS, and anti-ICBM missile; and the 2.1 million for Livermore would be spent on accelerating work on the Polaris and on the development of small size nuclear weapons. ---Mr. Graham inquired whether the Department of Defense was, in effect, beginning a trend toward the development of smaller and cleaner weapons. Starbird replied that the policy was to maintain large thermonuclear weapons at the present level and to develop medium size and small clean weapons." A lengthy discussion followed which indicated the problems posed by the large number of military weapons systems being proposed, on which the AEC was asked to prepare warheads, and the difficulty with meeting the DOD's needs within present budgets. Eventually, the commissioners agreed that

1 million dollars should be added to the next fiscal budget for the underground testing program but made no other changes in the weapons program budget. NG

58

An 11 March letter to Bethe from Spence admires the summary of the detection system and its possible future written by ~~the Air Force~~ but notes the weaknesses. The 27 greatest weakness seems to be any thought of the Russians testing outside of their country, perhaps in the Southern Hemisphere, and the fact that little or no attention is being given to this and Spence doesn't have any idea how it might be done. As for the system with stations set up within the country as discussed in the paper, he states the investigation of 100 events per year (for the U.S.S.R.) might be feasible, but not much more, so I would not attempt to investigate possible sub-surface violations involving bombs of less than about 10KT yield. The extension of the present system to stations inside the U.S.S.R. does not then seem to me to be very advantageous Air Force except for fringe benefits such as Dr. Scoville discusses in his annex to the memorandum. The use of inspection teams does not guarantee discovery of violations, of course, but the increased risk of detection seems great enough so that I would doubt that Russia would allow inspection teams and then attempt sub-surface shots within the U.S.S.R." PW

"110.01 Mid year review" folder

This folder begins with a letter to the Los Alamos Area Manager, Paul Wilson, on 16 Jan 58 from Bradberry. This particular letter has very little of interest. Generally these documents have very little narrative about the status of the Lab programs but plenty of pages of numbers indicating the funding and man years devoted to the various lab programs. As the title indicates, these reviews are in the middle of the fiscal year and generally update those documents for the Lab's programs at about the beginning of the fiscal year that are covered in "635 Lab. program."

PP

A supplement to the program letter dated 21 March 58 was written after Teller took over as Director and goes into possible studies, calculations, tests, and experiments, as well as specific ideas which Livermore has and cannot at the present pursue due to the limitations on manpower that they have to put on projects. After going into several pages of what can be done in each of the major program areas, Teller concludes "The above enumeration clearly indicates that there is far more useful work to be done than a laboratory of the present size of UCRL can possibly do in the immediate future. This poses the difficult and dangerous problem of choosing the ultimately most useful and desirable ideas from among the many promising and in some cases unexplored candidates. We feel that, at least at the present level, limitations of funds should not be the determining factor in our ability to pursue some of this work."

First pertinent entry is dated 21 March 1958 and mentions plans for test operations as follows: Millrace at NTS in fall of 1958, Trumpet at NTS in spring of 1959, and Willow at Eniwetok in spring of 1960.

BL

Discussion began and continued through this period on the subject of one of the high altitude shots (TEAK) planned for Hardtack during this summer. At the beginning of the discussions, two problems existed. One was that in order to acquire what was felt to be necessary technical data from the Teak event, a satellite must be launched quickly which would gather this data and would use the same launch team as planned to be used at Enewetok. Second, and perhaps more importantly, is the eye burn problem associated with this burst at an altitude of about 250,000 feet. York, Ogle, and Dunham have been mentioned as estimating the eye burn hazard radius as being about 350 miles. This would include from 2,000 to 4,000 natives depending on whether the shot was done during the day or at night. Even with the assurances of the Task Force Commander as to how he could control the population, the commission is extremely worried about this eye burn problem. Starbird recommended two things: that the satellite be launched the week of 24 March, and that the shot be fired on 16 April as planned. At the outset, it is noted that Ludeke is discussing the problem with trust territory officials, and chairman Strauss intends to discuss it with Secretary of State Dulles. Starbird maintained throughout the discussion that firing the shot at a reduced yield just would not provide the information required for defense purposes. Starbird pointed out a number of factors, such as that the available warheads for such a test

on the desired time scale are only three and that only the largest one would give the defense information required; that the rocket equipment is already in the Pacific in March of 58 and that any changes now would effect the satellite firing. Of particular note is the statement "even though he thought the Hardtack test series would be the last in the Pacific and he could appreciate the need for this vital defense information, the Chairman (Strauss) questioned the element of urgency, in as much as the commission had known nothing of this development six months ago." Starbird had extensive discussion with the Task Force during this short period of time of discussion and two messages in particular are noted on 26 March and 28 March from JTF7. Shot at another location. Further discussion addressed to alternative locations came in the 1 April Commission meeting which began with Starbird presenting the JTF7 information on the advantages and disadvantages of using Wake, Midway, Christmas, and Johnston Islands. The commission members quickly focused on the possibility of Johnston Island and "Strauss said he had visited JI and believed this would be a satisfactory location. He added that in view of the possibility of flash blindness for natives on atolls in the vicinity of Enewetok, you could not support holding the shot there. Mr. Libby remarked that he also would favor Johnston Island." ---Mr. Floberg inquired about the additional time required if the shots are to be moved to JI. General Starbird replied that necessary construction work and the removal of personnel would require an additional 5 or 6 months. He added that this might be a conservative estimate of time required. During further discussion, the Commissioner referred to Mr. Strauss' earlier suggestion

and agreed that he should discuss with the DOD the question of cancelling the shots as well as the use of JI if the shots are to be carried out.

The subject DOD concurrence on the alternative location and a final Presidential determination, the AEC would proceed with plans for the high altitude tests at Johnston Island." Also entering into the discussion was the fact that the Army had already launched the satellite which was to make certain measurements and that a time delay would lead to the possibility of it not operating when needed.

Other items at these meetings included Floberg's comments on a recently detected but unidentified seismic signal which demonstrates the difficulty of certain identification of each Soviet test and he suggested that Senator Humphrey be apprised of these reports and their relationship to establishing a fool-proof weapons test detection system "Senator Humphrey, he recalled, had been urging that U. S. agree to a suspension of nuclear weapons test based on a world wide system of test detection."

Also, in the 1 April meeting, " Mr. Strauss referred to a press conference held earlier in the day by Dulles, and said that Dulles had commented on recent White House consideration of a possible statement regarding cessation of nuclear tests in anticipation of the USSR statement on this subject."

Supreme Soviet of USSR approves decree discontinuing all nuclear weapons tests in Soviet Union and calls on US and UK to follow suit. USSR reserves right to resume tests if security is threatened.

CR

Here is a copy of the minutes from the first meeting of the JERICHO coordinating committee at Livermore on 2 and 3 April 58. Jerry Johnson led the discussion and PQ apparently was heading up the program at this time and seemed to feel that unless a definite commitment ~~was made~~ to go ahead with this program could be made within the month, Livermore would consider it had not further obligations with respect to the ~~JERICHO~~ JERICHO experiment. In addition to outlining the organization and funding channels and listing the diagnostic and effects measurements to be made and by whom, some discussion indicated that measurements were planned on the EVANS event in MILL RACE at NTS in the Fall of 58 to get some basic information necessary for design of the JERICHO experiments. Sandia at this time said they did not have the manpower to do an experiment in the Fall of 58.

Meeting #1351, 4 April 58:

The discussion on the high altitude shots continued, with the inclusion of General Loper, assistant to the Secretary of Defense for Atomic Energy. AG Clearly the JCS is not anxious to move the shots or even to delay them and rather lengthy discussion ensued at this meeting and, since it is not classified, I will make a copy of it to attach to these notes.

Also of interest is that there is a ship of people protesting the Pacific testing, the "Golden Rule," on its way to the Pacific test area to carry out their protest; also a law suit has been filed in the District Federal Court by fourteen scientists and others from the US and three other countries, seeking an order to halt US nuclear testing.

Meeting #1352, 7 April 58;

Chairman Strauss attended a meeting this same day at the Pentagon with representatives from the State Department, the DOD, and James Killian to consider the question of transferring the high altitude shots to JI. The DOD indicated that they favored carrying out the shots as scheduled at Enewetok and Dulles agreed with the AEC that, if the shots were carried out at Enewetok and any incident occurred involving the natives, such an incident would be a serious threat to any continuation of Hardtack. "After further discussion, the representatives of the AEC and Departments of State and Defense had agreed to transfer the high altitude shots to JI. He added that the Department of Defense representatives were, however, reluctant to approve the change and that although he was relieved that the decision had been made, he was still concerned about the possibility of personal injury resulting from the shots. " Further discussion had to do with recent information that seemed to indicate that the eye burn hazard was less than earlier predicted and , Starbird would be in touch with Ludeke immediately as to accelerating the efforts to transfer the facilities to JI and set up a shot date as early as possible.

TRAF

April

US rejects Soviet proposal for uninspected test ban. President Eisenhower suggests international conference of technicians to study control measures.

CR

Meeting #1353, 9 April 58:

The President approved JI as the high altitude site on 7 April 58.

A discussion of the non-military uses of nuclear devices determined a number of activities and positions that directly effected the Plowshare program. "Mr. Libby referred to the possibility of a disarmament agreement being reached which would restrict all nuclear weapons tests to underground detonations. Because of this possibility, he said, he believed that the AEC should accelerate its program of underground testing so that it would have greater experience with tests of this type if the US should agree to a test limitation. Starbird said he intended to submit to the commission the following week, recommendations concerning an expanded underground test program. " Among other things, the Commission approved broadening the Plowshare program and increasing the funding level for FY59 to 4 million dollars. A number of items were approved to address the planning and preparation for the Alaskan excavation project.

NG

BN

M&R Record Center

"635 Johnston Island" Folder

The first evidence that there is a decision to move the Teak and Orange Shots of Hardtack to Johnston Island from the Eniwetok area is in a TWX dated 9 April 1958 from Ogle at Eniwetok to Al Graves. Ogle mentions that moving to Johnston will cost some electromagnetic data on the DOD side, but essentially nothing else. Herman ^{Hoeclin}~~Hertland~~ and Ogle feel that J-10 and ~~NRL~~ can participate at Johnston in the same manner as at Eniwetok. New construction will be necessary but Starboard has indicated that they can dig this up out of AEC funds.

Note that the AL00 report on Hardtack notes that the Teak and Orange events were relocated to JI on 9 Apr. 58.

CV

In April there was a query from DMA to Bradbury ^{to}~~re~~ reply on the possibility of using clean warheads for the Teak and Orange shots versus the warheads that had been planned. This was apparently driven by a request from ^{Commissioner} Libby who is concerned about fall-out and Bradbury's reply is that since the design of the clean warheads is in such a primitive state and they are not planned to be ready until like 1960 any use of these warheads in ^a mated configuration with the Redstone missile would probably mean that they would not stand up under flight conditions and certainly would require some interfacing and testing before the actual weapons test. In short, Bradbury is pessimistic that the state of development of the clean weapon is such that it would be profitable to employ it on Tea k and Orange.

As plans and activities increase at Johnston Island for the Teak and Orange shots to be done there at the end of August, about the end of June, it was realized that there might well be a ^{thermal}~~thermal~~ radiation problem to the birds on Sand Island (J.A.)

of water spray was being set up to cope with this.

Meeting #1354, 11 April 58:

Here is an interesting item on test detection: "Mr. Strauss said it had been suggested that the National Academy of Sciences conduct a study on the ability to detect accurately any nuclear weapons tests. He said the Killian Committee report on this subject had not been conclusive. The cost, Mr. Strauss said, would be approximately \$20,000. The commissioners said they would favor such a study."

"635 Millrace" Folders

Discussion in early calendar year 58 mentions an operation entitled "Millrace" as well as certain safety tests all to be done at the NTS in the fall of 1958, on which the AEC has withheld formal authorization until later in the year. Note also that Trumpet is a series planned for the spring of 59 at the NTS.

April 58 correspondence indicates planning for logistics and equipment support at the NTS for this series beginning about the 15th of Sept. 58. The Livermore program seems to include 4 definite underground test with a maximum yield of 5 kilotons, as well as several strictly safety tests.

----- NC
"35 PLOWSHARE (GENERAL)" FOLDER

A 15 April 1958 letter from Teller to Fidler, Manager of SAN is informative as to the weapons and Plowshare plans of Livermore as of this date. Following the fall 1958 operation, Livermore proposes 4 to 6 underground tests in the yield range 10 to 40 KT during an operation called Trumpet at the NTS which might begin as early as 15 February 1959. They also propose a test series similar in scope to what was planned for the fall of 1958 for the fall of 1959 at the NTS. Concurrently with this weapons testing and "as a first step in the Plowshare Program, we are planning an earth-moving project in Alaska, for the summer of 1959. In addition, plans are underway for two industrial application for the spring and fall of 1959. The primary object of these latter tests is to access the capability of nuclear devices for certain mining, power production, and isotope production applications. " He then goes into detail of the support required on the USC&GS for these various nuclear explosion activities and suggests that the AEC requests a proposal from that organization. NC

Meeting #1357, 16 April 58:

Discussion of upcoming NTS testing by Starbird addressed the remainder of 58 and early 59 prior to operation Trumpet, planned for spring of 59. "In response to a question by Libby, Starbird said the 40 kiloton shot planned for NTS would be ready by January or February 1959 and could be ready in November 58, if it is assigned a high priority. Mr. Libby commented on the need for accelerating the underground test program and observed that future disarmament negotiations may result in the US abandoning testing in the Pacific completely with the exception of 100 kiloton device tests for weapons effects. General Starbird said he agreed that the underground test program was urgent but that AEC should not give the impression that it is expediting the underground program in anticipation of any disarmament agreement. He said it is important for government officials outside AEC to realize that an underground test program cannot accomplish the same results as testing above ground. Libby said he believed that the letter to the President concerning the underground test program did not adequately state the urgency of the present situation. He said he believed AEC's position on the importance of underground tests had never been properly presented to the President and that it should be pointed out to him that underground testing at Nevada may be the only way the US will be able to carry on weapons tests in the future." The commissions actions included approving the 20 to 40 kt. underground tests for early 59 and that the number of 1-point safety tests for the NTS in the fall of 1958 had been cut from 10 to about 7.

Discussion at this meeting was addressed to a desire by the DOD to **SECRET**
test the Nike-Hercules missile in a full scale configuration in Nevada
with a nuclear warhead. The discussion addressed mainly the problems
with attaining complete safety and the reason why the DOD wants this
safety test at the NTS rather than in the Pacific.

On the question of test detection, "Floberg said that during a discussion
the previous day with representative Holifield and Mr. Vance, Holifield
had asserted that, in his opinion, the AEC weapons lab were following
a policy of de-emphasizing the possibility of accurate long range
weapons test detection. Floberg said he believed this was absolutely
untrue but that since the charge had been made, an investigation should
be undertaken to determine whether it had any basis in fact."

The commissioners approved, on 16 April, a letter to the GAC asking
them to address the adequacy of the commissions present underground
test program and how the weapons program might be conducted if only
underground testing were permitted at their 58th meeting, to be held
5-7 May.

Meeting #1359, 21 April 58:

This was the first meeting at which the tests which later became Argus, were brought up and the discussion was led by General Loper. He discussed the proposal as it had already been presented to Killian and Quarles, among other people. Noted was that the proposal and the concept of the Argus effect came generally from Livermore and that LASL that such possible tests certainly deserved serious consideration. Mention was made that the shots needed to be done at a much higher altitude than those presently planned from Johnston Island and a tentative detonation location in the South Atlantic was suggested. The shot was now planned in some detail, including the date (about 1 September), the method of launch, the location, etc. Loper said that after a decision has been made to proceed with the shot, the State Department, AEC, and DOD could meet jointly with the President and Killian to obtain Presidential approval. "Strauss said he appreciated the importance to US defense planning of the information to be obtained from the proposed shot. However, he expressed concern over the possible overtones of this test and observed that if the shot were carried out at the proposed location, the US would not be in a position to object to weapons testing by the USSR in international waters."

Meeting #1361, 24 April 58:

Along the lines of the potential Argus tests, : Starbird reported that he NG
had received a telegram from Teller responding to questions in connection
with the special weapons test proposed for later in the year. Teller, he
said, had stated that there would be no eye damage to observers of the
shot and that there would be no perceptable effects at surface level.
Starbird said he had communicated this information to Dr. Al Graves
who is presently in the Pacific test area. " Starbird suggested that a
briefing be prepared for the next GAC meeting to obtain their views and
that plans for the shot proceed right away, and that the President and
Department of State be notified of the plans, a procedure approved by the
Commission.

Meeting #1366, 29 April 1958:

Perhaps some indication of the increased and accelerating pressures on declaring a test moratorium are indicated by a couple items here. **NG**

"Strauss said that during a conversation with Mr. Bernard Baruch, Mr. Baruch had suggested that a reply be made to Mr. Albert Schweitzer's recent statement calling for the halting of nuclear weapons tests. The reply, Baruch said, would be most effective if it were made by a distinguished public figure with a large popular following. " Libbey was requested to prepare the material for such a statement and the Commissioners all agreed that this then could be used to provide to such an individual as Baruch would locate.

"Mr. Libbey remarked that, aside from the Commissioners themselves, the AEC had received relatively little support for its position that U. S. weapons testing should not be completely halted. The fact that the question has become a political issue has restricted persons employed by AEC from speaking out freely about it, Mr. Libbey said. He suggested that it would be helpful if the support of Senate leaders such as Lyndon Johnson and William Knowland could be enlisted in presenting to the public the case for continued testing."

Meeting #1367, 30 April 1958:

A proposal by the Air Force to test both the Nike-Hercules missile and the Fighter-Interceptor/MB-1 using nuclear warheads was presented. The DOD said that it would be impossible to prepare for testing these systems at the EPG by 1 September and they were proposing conduct of the tests in the U.S. It was stated the NTS could not be used for the MB-1 tests since they involved firing warheads at drones and the NTS area was not large enough to provide adequate safety. The DOD had presented a proposal now to test these two systems at Eglin Air Force Base. The discussion addressed the possible problems with public relations and the reasons why Cape Canaveral and Eniwetok could not be used. The Commission as a whole were not very sympathetic to the DOD's desires or to agreement to opening up another U.S. test site, for various reasons.

Discussion ensued in this meeting on a revised letter to the JCAE commenting on a bill introduced into the House of Representatives by Representative Porter (HR8269) to halt the testing by the U.S. of nuclear weapons. Some discussion by the various Commissioners ensued but no agreement on a letter was reached so the General Manager said that another revision to the letter would be prepared and submitted at a later time for consideration.

⁵⁸
In April a TWX from DMA indicates that the French following their briefing in February are asking a number of questions to get additional information on the *BP* testing procedures and activities and DMA is asking that these questions and answers be funneled through DMA.

"Historical Report Of Johnston Atoll, 1796-1973" by . LCDR L.R. Bauer, U.S. Navy and H&N/LPG, presently being revised.

This report was first published in 1964 after being authored by Bauer for JTF-8 and is presently being updated. The notes will address only pertinent items and essentially only those items of interest in the pre-Dominic time frame.

Following intermittent use the Island first came into use for Nuclear Test Operations in 1958 as described by the following notes: "A decision was made in April 1958 during the Pacific Atomic Tests to relocate the missile launching facilities from Bikini to Johnston Island in order to complete the test series. A classified Memorandum of Agreement designated the Commander of JTF-7 as Commander of Johnston Island Air Force Base for the duration of this project (22 April to 19 ^{APR} April 1958). The roll-up period following the completion of this project continued for several months. *NO, ONE MONTH* *BB*

During 1958 a proposed support agreement for Navy seaplane operation at JI was under discussion, however, it was never completed because the requirements failed to materialize.

9 May

USSR Chairman Khrushchev agrees to President Eisenhower's suggestion of 8 April of study of control system although "the transfer of this problem to technical experts for study might entail a delay in the solution of this urgent matter." *CR*

NVOO Mail & Records

"Moratorium" Folder, Volume I, 23 May through December 1958.

Because of the limited time to review these notes and the fact that they are documented to a certain extent elsewhere I will try to hit only the high points to cover a broader period of time.

The initial entry is dated 23 May and is a TWX to the Labs from Starbird noting that the MLC is considering the impact of a possible test moratorium after 1 September 1958 which Starbird notes is a possibility which has neither his personal nor the AEC's official acceptance. *MS*

MAY 1958:

This is the first report to mention Millrace and says "contract for drilling and casing of the test holes at NTS has been awarded with the first hole to be cased by June 8 and the last hole by July 17. Reeco has been authorized to proceed with head tower erection, with the first tower to be completed by June 25 and the third by July 15. It is estimated, that, if necessary, LASL could move in and operate not later than August 1 with all towers and signal systems in." PT

Meeting #1370, 7 May 1958:

Project Plowshare was discussed, on which a site had been selected in Alaska for the Harbour Excavation Project. After noting that 3 million dollars had been allotted for Plowshare, Starbird remarked that the cost was now estimated at 7 million in FY59 but that some phases might be deferred until FY60. "In response to a question by Mr. Libbey, General Starbird said the Department of the Interior had not indicated that they would provide any funds for the project. Libbey suggested that consideration be given to expanding the project and inviting cooperation from private industry and universities on an unclassified basis. In view of the possible civilian uses which could be developed, he said this was an important project which could be developed on a cooperative basis." In remarking on the weapons testing budget, "Mr. Fields remarked that the 45 million dollars in the base budget for weapons tests might not be sufficient and General Starbird pointed out that underground tests require more funds than the surface tests at the NTS." NG

Meeting No. 1372, 9 May 1958:

Further indications of pressures to discontinue testing are a request from Representative Porter to present his views on the need for a test cessation to the Commission and the Commissioner's feelings that they should meet with him provided the JCAE had no objections.

Also, Commission Graham visited earlier in the afternoon with a group of Pacifists who were staging a hunger strike in the Lobby of the AEC Headquarters Building. Also, Libbey discussed with Starbird the possibility of utilizing sites in Chile and Utah for underground weapons detonations and the possibility of interesting oil companies in nuclear explosions for their purposes.

Meeting #1371, 9 May 1958:

Lengthy budget discussions for the upcoming fiscal years included Libbey's remarks that in connection with test funding in the Pacific, "Consideration should be given to the possibility that by 1960 all testing would be underground at NTS. The Commissioners briefly discussed with the General Manager and Mr. Burrows the question of whether underground shots would be more expensive than testing at Enewetok, and Mr. Burrows said he believed underground testing would be less expensive than testing at Enewetok. Mr. Libbey suggested that it might be desirable to footnote the cost estimates for testing, indicating that if all testing is carried on underground, additional funds might be required." Note that Starbird was not at this meeting.

PJ
Field Command Files

Notes from Semi-annual Histories of Field Command, DASA, 1958 thru 1962

Generally these notes are of little interest except for the pertinent sections, particularly the histories of the weapons effects and tests division and to a lesser extent if at all, the research and development and operations division.

Note that in 1958, Colonel Hutchinson of the Army was head of the Weapons Effects and Tests Division. He took over on the 10th of May 58 from Ted Parsons (Colonel Hershel E. Parsons) and serving under these men, among others, was Roger Ray (Special Assistant to the Director of the Test Division). Also in WET at this time was John Kodis who served then in JTF-8 thru Dominic.

Ray was actually the Special Assistant for ABMA (Army Ballistics Missile Agency) and was assigned in particular to cover the Orange and Teak events (UHA and VHA) scheduled for firing on Redstone missiles from Bikini in late April and early May. This history says "Three weeks prior to first readiness date, a decision was made in the office of the Chief, Armed Forces Special Weapons Project, to move the zero sites for the two events from Bikini to Johnston Island due to the possibility of chorioretinal burns from the shots to the natives of the Marshall Islands." Bikini roll-up for these shots was completed in early May and Ray reported to J.I. to watch over preparations for the new sites on 29 May 58.

Note that the VHA shot was actually the balloon test whereas the missile shot was VHA Prime. This event, Yucca, was on a balloon launched from the USS Boxer (CVS-21).

PJ

The numbers of personnel in WET in this time period are of interest for comparison purposes. The group was authorized 98, was augmented with 34 additional for Hardtack and was planned to be augmented with 210 more for Trumpet, planned for 1959. Furthermore in support of Hardtack overseas, WET assisted in support of Task Unit 7.1.3 which had about 1200 personnel made up of military, federal, and contractor. The organization charts here for WET and Task Unit 3 show that a number of the staff functions of each organization were held by the same people although the head of the WET was not the same as the head of the Task Unit, who was Colonel K. Coleman, Director of the Test Division under the Head of WET.

BU

AFSWC History Office

"Moratorium, May 1958-10 October 1961" Folder

A 19 May 1958 letter from Col. Wignall (Deputy Commander of Task Group 7.4) to Maj. Ashcraft (Rear Echelon of Task Group 7.4 at Kirtland) is on the subject of a letter on the testing moratorium, dated 8 May. Clearly at this time a possible moratorium at the completion of the Pacific Test Series was considered a very real possibility and the 4950th had been thinking of their possible role and the problems with maintaining their personnel and resources during such a moratorium. Pertinent sentences include: "In carrying out this reduction we should be extremely careful to retain in the 4950th or elsewhere in the center, personnel who are experienced in every facet of the test operations. ... I believe we could keep a reduced staff quite busy for at least 6 months should a moratorium be announced after this test; such a staff would monitor the IRAN (of B-57 aircraft) and rehabilitation programs mentioned above and would prepare detailed plans necessary for resumption of testing and an alternate plan should a permanent suspension of testing occur. It would seem to me that it would also be wise to prepare a detailed record of the procedures that were developed through the years in the testing business. What I have in mind here is to compile a file which would supplement the final report and contain all the charts, SOP's, and all other data that might be helpful to a future test commander." As for the other organizations close to the 4950th, it is noted that the 4926th will probably be kept busy in Air Force technical activities from time to time as they have been in the past for the High Altitude Sampling Support within the

Air Force

Wignall states at the end that while he doesn't expect these comments to get into the reply to AFSWC, he provides them should anyone seriously suggest that the 4950th personnel and resources be scattered to the four winds.

BU

T

(cont.)

Confid. ltrs May 58 on possibility of
test moratorium

roles of: 4950th T G at KAFB
support Task Gr. 7.4 4926th T Sq
in Pacific testing → 4951st Support Sqdn
located at EPC Indian Springs → 4935th Air Base Sqdn
4952nd Support Sqdn
located at KAFB

Boxex 407-1, 408-1, and 409-1

PR

These boxes contain so called staff papers with AEC numbers on them and there are several of them of tremendous interest to us such as paper No. 226/141 which contains "Proposals Related to Possibility of Nuclear Moratorium," and is dated 20 May 58. It is imperative some attention be given to these staff papers whether it is from their files here or the ones in Washington.

Meeting #1376 , 21 May 1958:

The Commission discussed and approved the declassification of information relating to the Pinon shot of Hardtack, which I gather is 1/6 to be the shot which will be observed by U.N. observers. The discussion noted that the observers would receive short-range cloud samples from which it could be determined that the device was a thermal nuclear weapon. Also the samples would give other information about the materials in the device, but the Commission determined that this information plus publicizing the fact that it is a stockpiled nuclear weapon was acceptable.

Further discussion of the possible missile tests at Eglin led to the following recommendations: That the Commission advised the Secretary of Defense that the AEC had no objection to the DOD conducting these tests; that the AEC cooperate but not assume any responsibility

for the tests; that the AEC review the DOD safety and operational plans. Along these lines, "General Starbird remarked that the DOD was particularly anxious to carry out the tests by September 1 in view of a possible test moratorium this year. Consideration had also been given to the Secretary of State's statement on April 7, 1958, the tests of this kind should be conducted before September 1, 1958. General Starbird said that he believed that the tests ^{were} desirable but expressed concern that the U.S. may be accelerating too many weapons tests to meet the September 1958 date. Such action he said might not prove to be in the best interests of the U.S. in view of the serious consideration being given to a test moratorium."

Along these lines of a possible test suspension the following was stated" "The Commissioners discussed with the General Manager and General Starbird the question of suspension of nuclear weapons tests in connection with its consideration during the forthcoming meeting of President Eisenhower and Prime Minister Macmillan. The Commissioners agreed that in view of the possibility of an establishment of a moratorium on weapons testing, the Commission should be informed on the advantages and disadvantages of underground weapons testing in the event that it is considered desirable to propose continuation of such tests. The Commissioners requested Starbird to arrange a meeting of the Commissioners with Messrs Bradbury, Teller and others on May 28 to discuss the question of underground shots."

PQ

Sandia CTF

Notes from Planning Documents on Testing and
Other Sandia NTS Support and Projects ~~1961-62~~

A 28 May 58 message from the President of Sandia (McRae) to Starbird discusses planning for an underground experiment to investigate x-rays to be known JERICH0 and to be conducted in the Fall of 59 by UCRL, with the cooperation AFSWP and AFSWC. Sandia plans to make certain diagnostic measurements on this test and refers to a Document entitled "Proposed X-ray Measurements For MILLRACE PRIME," as a description of their participation in JERICH0.

Meeting #1377, 28 May 1958:

Additional personnel in attendance at this meeting included Bradbury, Brown, Graves, Sewel, and Teller. The lengthy discussion in which these gentlemen participated on weapons test limitations and the possibility and effects of a moratorium are classified SECRET and a copy will be obtained to keep in our classified files. NG

The afternoon session of this 28 May meeting addressed the possible additional of shots to Hardtack. Libbey had calculated that approximately 8 megatons of fission yield would be contributed to the atmosphere by those shots already approved and the discussion of the additional fallout contribution of the new shots took place. The Commissioners were addressing whether to request the additional shots for the President's authorization and what to present as the request for Project Millrace. A couple of the points brought up were: That the President was very concerned about the number of weapons and the amount of fallout being contributed by Hardtack; That, in view of the present international climate with respect to weapons testing and a possible moratorium, the President might not question inclusion of additional shots since Hardtack might be the last test series. Apparently the total estimated fission yield with the new shots included in the Hardtack would be 8.4 megatons. The Commission approved for preparation and later revision possibly a letter to the President requesting the completion of Hardtack with two additional and one contingency shot. Also it would request that Millrace be approved and, if Millrace were not approved, then Hardtack would require one additional atmospheric and a 1-point

1

safety shot. One of the Commissioners stressed the importance of getting an underground shot in Millrace as a primary objective. Strauss noted that he had provided President Eisenhower with a copy of the GAC recommendation regarding underground shots, which did not have unanimous support from the GAC.

JUNE 1958:

PT

This report indicates that an EMP experiment will be shipped to Johnston Island for the two high altitude shots where it will operate as an un-manned station with continuous recording; or the ambient electrostatic field starting several hours before the shots and strip film recording of the scope presentations of the field starting at launch.

As of this month one 500 foot 36" hole has been drilled and cased for Millrace and Reeco has started on the foundation for the tower. One August is the completion date estimated for 3 holes with tower. Further design work for the new signal cable to area 3 has been completed. Date for completion for installation of 2 runs of 51 pair of cable from station 351 to station 3-354 is August 1, 1958. Preliminary design has been started on 2 tunnel sites in the Twin Peaks area at the north end of Yucca Flat. With contractor negotiations held to a minimum and favorable drilling conditions prevailing, two 3,000 foot horizontal tunnels, exclusive of instrumentation area, can be completed by December 1, 1958."

58

In late May and early June, there is documentation of discussion between Ogle and Graves, at the EPG and LASL respectively, on the subject of the fall series. Graves **LH** s, in a 29 May message, "We confidently expect Millrace to occur with LASL participating tests. y to extent of 1 point We agree it would be interesting to know are we are going." Ogle said in a message back to Graves several days later: "If a moratorium is being taken more seriously, may I again raise the question of 1 point safety tests on Tsetse and/or Gnat?" I suspect this message was sent before the other e had been received. A 2 June message from Graves to DMA states that LASL's plans r the fall series are for 3 safety shots, to include 1 Moccasin and either 2 Tsetse 1 Tsetse and 1 Gnat.

DRAFT

NA

LIVERMORE DIRECTOR'S FILES

"42-1 DOD GENERAL" FOLDER

Here in June of 1958 is a letter and a lengthy Memorandum from the President of Sandia Corporation on the subject of Division of Responsibility Between the AEC and the DOD in Weapons Testing and bringing up in some detail the problems with trying to separate the output measurements from the effects measurements and defining whose responsibility is whose.

Meeting #1380, 6 June 1958:

The action taken against the "golden rule" vessel which attempted to sail into the Pacific Test Area during Hardtack is noted that three crew members had been given 60-day jail sentences for attempting to sail into the area against a court order.

NG

As for a test moratorium inspection, Strauss met with Fisk, Bacher, and Lawrence, members of the U. S. team appointed by the President to negotiate a weapons test moratorium inspection system and said that they inquired about the possibility of conducting another underground weapons test at the NTS. They said that the Rainier shot had not provided sufficient information about underground test detection and suggested that a larger test be conducted so that they might collect additional data. Strauss said he made them aware that a second tunnel at the NTS might be completed by October and said that they would write the AEC requesting acceleration of preparations for this test.

Discussion of possible announcement of specifics about events in the NIG
Hardtack series included Mr. Libbey saying that Jim Fisk, a member of the President's appointed group to negotiate with the Soviets on a weapon test inspection system, had called the day before regarding announcement of such shots. Fisk had requested that the AEC make no detailed announcements at least for the next several weeks since negotiations about an inspection system would begin soon and the U. S. may be able to use the possible release of further test information as a bargaining point during the negotiations. The Commissioners concurred with the proposal that further consideration of release of any detailed information about Hardtack tests be deferred for the time being.

A discussion of the proposal to be presented to the President to include more tests in Hardtack included Libbey's remarks that he had asked not to be recorded as approving the additional shots for Hardtack since he felt that the weapons labs had previous test data which had not yet been analyzed and on which he felt greater emphasis should be placed prior to more tests. "He said one possible explanation for the disappointing results from some of the tests to date in Operation Hardtack may be because full use was not made of weapons information available from other test series." Straus said: "He believed it quite likely that Operation Hardtack may be the last test series held by the U. S. before a weapons test moratorium is agreed to by the U. S., U. K. and the Soviet Union. Therefore, he now believed that any tests which the labs consider important should be carried out without regard to

DRAFT

the total number of shots detonated during the series. Floberg said he agreed but suggested that the President be told that this is the primary reason for the AEC requesting the additional shots. Strauss added that although the Commission is disappointed that all Hardtack shots had not been completely successful, this should not be interpreted as meaning that the Commission wishes the laboratories to become more conservative in their design of new weapons."

*shot was president
actually told?*

58

LH

A 13 June message from Starbird to the labs and operations offices asks them to consider completing Millrace by Nov. 58 and advised them of the feasibility of doing this by 17 June. He tells them to assume that they can use all necessary short cuts and have no monetary limitations to meet this date. Bradbury replied on the 15th that the SL portion could be completed by Nov. A 16 June message from Hertford to Starbird follows a 14 June message from Teller and the essence is that for a little additional money for additional equipment mainly, the labs fullscale shots can be performed to meet the Nov. date. Hertford gives several specific tunnel locations on which work needs to be completed, including a new tunnel (12E05) for a pre-Trumpet shot.

The discussion in this period (mid-June) indicates plenty of high level thinking as to revising the Hardtack and Millrace tests in light of the upcoming conference and perhaps moratorium. The Sec. of State is even involved in the discussions.

4. MKA-7 Project 58 and 59 NTS

- Refers to Trumpet as 1959 series in Nevada; included would be X-ray shot (later, June 1958, called Jericho)

~~Other folders not yet reviewed.~~

FL

1958

13 June

UN Scientific Committee on the Effects of Atomic Radiation issues report. Committee concludes that "all steps designed to minimize irradiation of human populations will act to the benefit of human health. Such steps include the avoidance of unnecessary exposure resulting from medical, industrial and other procedures for peaceful uses on the one hand and the cessation of contamination of the environment by explosions of nuclear weapons on the other."

CR

Meeting #1383, 18 June 1958:

Mr. Strauss reported that the President and the Secretary of State had approved the AEC request for additional shots in Hardtack as well as approving Millrace. President Eisenhower expressed the hope that Millrace could be accelerated in order to begin before the conclusion of Hardtack, and Strauss had pointed out the additional cost and time factor but had requested Starbird to initiate necessary action to accelerate that series.

NG

58

On 18 June, Bradbury sent a message to DMA suggesting that tunnels be developed for possible LASL fullscale shots during Millrace. This was followed up immediately by direction to LASL to discuss their possible requirements with H&N and see what could be done to prepare sites. LH

Correspondence between the various information offices of the AEC at this time indicates a forthcoming public announcement on Millrace and the statement that it will be entirely underground. The statement would also say that there would be no release of radiation to the atmosphere and no off-site fallout. Albuquerque is pressuring to make the public announcement of Millrace now rather than waiting until later due to the possible later conflict with the results of international conferences or other activities which might stir public reaction.

Late in June, Bob Watt worked on the possible tunneling for LASL shots for Millrace and provided the information to Graves and Bradbury who were both at Eniwetok. Graves told Watt by message on 27 June to proceed with the construction of 2 double track tunnels on the shortest feasible time scale.

Meeting #1385, 25 June 1958:

The Commission approved the appointment of Al Luedecke as AEC General Manager upon his retirement from the Air Force following Hardtack and, in the interim, appointed Paul Foster to succeed Fields as General Manager until Luedecke assumes the duties. AG

Before the Commission at this meeting was a paper, AEC 226/143 which recommended declassification of certain effects information needed by the U.S. Delegation to the Geneva Conference of Experts to begin discussions on 1 July. After discussing in whose hands the authority to declassify should lie, it was said that such a declassification should be conditional upon a determination by the Chairman of the U.S. Delegation, Dr. James B. Fisk, that final release of such information was necessary to successfully carry out the mission of the delegation. "During discussion of the question, Mr. Marshall pointed out that information proposed for declassification relates to tests detection systems and has been requested by Chairman Fisk as possibly needed during the conference period. In addition, Chairman Fisk had stated that the U.S. delegation should also be able to discuss the physical aspects of the Argus if the Soviet Union appeared familiar with this subject." A lengthy discussion on this subject followed with some of the following brought up: The DOD's concerns about any release of information; the suggestion that in general the U.S. delegation discuss matters only to the extent that the Soviets had at first brought them up; that the Commission have a physical representative with declassification authority at Geneva or delegate the responsibility in the U.S. to a Commission person below the Commission. Further, the discussion ended up agreeing to consider the question following the next day's AEC-MLC Conference.

Meeting #1386, 26 June 1958:

Chairman Strauss announced that this was to be his last meeting as Chairman and said that the Senate would hold a public confirmation meeting on the 2nd of July for John A. McCone, nominated by the President to be a member of the Commission. AC

As to the question of declassification of information for Geneva, the commission agreed to the delegation of authority to Captain John H. Morse, the AEC's staff representative with the US Delegation at Geneva and specified those topics in which he would have declassification authority. There were a few things that the commission and the MLC agreed they did not wish to declassify and any mention of these topics would have to be brought directly to them for consideration.

A 27 June 1958 letter to Fidler from Teller addresses in more definitive terms the plans for FY59 and the following years for Plowshare. The funding level AC has been set at 3 million dollars for Livermore for these efforts in 1959. The summary states "The research and/planning groups at Livermore will continue to expand. In addition the Project Chariot is firm and the Project Gnome schedule is being developed. Preparations for both projects are proceeding now. The Project Gnome shot will be fired in late FY59 with post-shot investigation continuing on into FY60. Project Chariot will not reach the detonation stage until early FY61. No field operations other than Gnome and Chariot are currently proposed. However, proposals for additional test programs in FY 1960 are being developed." The Gnome site has already been selected in New Mexico and there are several possibilities in Alaska for Chariot which are under investigation.

July 1958:

The construction preparation for Millrace as of this time are completion of three 500 foot 36" holes with towers over 2 of the holes and signal lines to be completed by 1 Sept. All stations "will be in readiness and contractor's support available for field operations by Sept. 15."

In this report is the first mention of operation Trumpet where it says the construction effort on the LASL tunnel has been temporary halted pending results of an AEC-LASL-USGS conference on 1 August to discuss long term usage planning. Discussions have been going on with UCPL personnel to learn from their tunnel experience and the techniques that they have developed and are working on.

58

A 1 July message from Ogle at LASL to Graves at Eniwetok includes, among other things, the plans for the LASL participation in Millrace which are 3 safety shots and 2 tunnel shots.

Note that there is plenty of discussion as to what the organization at Nevada to control the Millrace series would be, with tentative agreement at this time that Reeves will be overall director with LASL and Livermore scientific advisors and some discussion that the Livermore man will be called the senior advisor.

Through the first third of July, the rumors at Eniwetok as to the possible shots to be done on Millrace and the possible cutoff dates and moratorium and other such things were plentiful. One of the conflicts of information was that LASL was proceeding with 2 tunnels for 15 kiloton shots which were planned for completion in Dec. whereas other information said that there could be no use of these tunnels before March of 59. Information from Bob Watt on 11 July indicates that plans are for the tunnels design to be reasonably firm in the first half of Aug. and for completion of the tunnels about 1 Dec.

Meeting #1387, 2 July 58:

The following high level discussions on the possible Air Force missile tests from ^{Eglin}Egland, President Eisenhower told the State Department to inform Cuba and Mexico that some relatively small-yield nuclear tests would be held at or near ^{Eglin}Egland and, if either government reacts adversely, the tests are to be reconsidered. NG

A memorandum written by Captain Morse prior to his departure for Geneva on 27 June was brought up since it raised a question on which the AEC ought to take a position, that of international participation in weapons tests. Staff recommendations on this question were requested by the commissioners.

Meeting #1388, 8 July 58:

Discussion of the Geneva conference began addressing certain items which had been requested from the US Delegation for Declassification and it was noted that Loper and the MLC opposed any additional declassification since so far the Soviets have discussed primarily theories rather than scientific facts. Morse reported to the commission that so far he had complete confidence in the way Fisk was conducting NG

the US side of the talks. L-1388

Meeting #1389, 10 July 58:

Starbird brought up a proposal to consider cancelling the UN demonstration program for the Pinon event of Hardtack. He noted that several events had taken place since the recommendation for the program on 18 March, which required a reappraisal of the program. The pros and cons of cancelling the test at this late date and the fact that approximately 3 to 4 million dollars of the 10 million dollar cost for the shot could be recovered were brought up and the commission agreed that Libby should recommend to the President the cancellation of this program. ALG

Further discussion of the position to be taken on international cooperation in nuclear testing, as discussed in AEC 226/147, led to a position which would be given to the Secretary of State for transmission to and use by the Fisk group at Geneva. "Starbird reviewed at length the background of the proposal, pointing out that the Geneva technical conference may afford the US an excellent opportunity to obtain a propaganda victory over the USSR. He added that in presenting the proposal under consideration, the Fisk group would confine its comments to international observation of nuclear tests and not concern itself with international conduct or monitoring of nuclear tests. In addition, he pointed out that nothing would be said about high altitude shots. He also commented that the proposed position had the concurrence of General Loper."

Note that in the meetings about this time, the question of cooperating with the French in exchange of information, and in particular weapons information, begins to come up more and more frequently. In this particular meeting some conversations that will be held with DeGualle by Secretary of State Dulles are mentioned.

An 11 July 58 memo from Bradbury to 7 of the key scientists at LASL notes that Starbird is projecting about 18 tests for NTS in 59 and is afraid that Livermore (Teller) will automatically divide this number by 2 and conclude that the number (9) for them is too small. While Bradbury didn't say so to Starbird, he feels that 9 is probably too large for LASL and is asking the general question "Do we keep up with the Joneses"? In questioning just what items ~~might have that~~ might be important and interesting to test, he mentions one that he would like to see wait for the next Eniwetok operation and interesting indicates by a question mark whether there will ever be a next Eniwetok operation. PG

An 11 July 1958 letter from the acting AEC Chairman, Libby, to Teller is the next item chronologically in this folder and contains for Teller's information the answer just provided to Bradbury as to the question of what the AEC's guidance to the Laboratories would be in the event of a moratorium on weapons testing and/or production. First of all, Libby notes that the Laboratories are institutions which are valuable national assets and must do important work in the event of either a test ban or a disarmament agreement. Along these lines, he feels that "a period of 18 months or two years probably could be most profitably employed" in digesting and collating the results from plumbbob and Hardtack. Also, "experimental work at sub nuclear yields probably would be involved". LQ

CONFIDENTIAL

Further, under a test ban, he feels the AEC would hope that there would be a special exception made for a non-nuclear explosions for purposes such as Plowshare. Under a full disarmament agreement, in addition to the above mentioned possibilities, a major effort would have to be put into reworking the present weapons into the best possible weapons that could be put into stockpile without additional testing. This of course assumes an agreement with the present stockpile frozen except for reworking and continued maintenance. 20

He further states more generally: "The second part of our guidance would be to advise you to make plans on a strictly confidential basis which you could hold in readiness to reorganize your work and re-slot people should a cessation actually occur. The existence of such plans we believe should be closely held by you to prevent their developing in the laboratory a feeling that you, and we, believe a moratorium on cessation is immediate." Generally, the guidance would attempt to get the labs to sort of realign their philosophy and use of people and resources to do the best job with basic research and developmental efforts, without testing, to best employ and retain the good scientific personnel.

In response to a query from Bradbury, the Commissioners what the weapons labs would do in the event of a test ban or moratorium and wrote duplicate letter to Teller and Bradbury on July 11, 1958 discussing the role of the labs if the testing situation should change. This document is filed in our classified.

58 LH
A message from Teller to Starbird on 11 July discusses the general Nevada situation and Teller is happy that discussion now seems to separate all weapons development shots from DOD, Plowshare, and safety shots. Teller emphasizes that underground shots should be separated from aboveground shots and proposes that underground tunneling be authorized as a more or less continuous activity. He also proposes that no limit on the specific number of underground shots be given for calendar year 59 but that a starting date should be given and an approximate rate of firing should be specified and the labs would then flexibly respond on a continuous basis. He discusses the public concern and psychological damage from the aboveground shots and says, "We believe, therefore, that aboveground shots may have to be limited to effects and Plowshare shots which cannot be carried out underground. If it is nevertheless decided that there will be an aboveground Trumpet series for the purpose of accomodating weapon development shots, we may consider a small number of aboveground shots in order to perform special diagnostics experiments."

Meeting #1390, 17 July 58:

This was John McCones' first meeting as AEC chairman, having been sworn in by the President on 14 July. 116

A lengthy discussion followed on the advisability of cancelling the Pinon shot including international observers. McCone had been at a meeting of the Operations Coordinating Board (OCB, including Representatives of the Department of State, CIA, and USIA, all of whom had been opposed to the AEC proposal to cancel the shot following the Presidents' announced invitation to foreign countries to send representatives. This was all tied to a shot that was to demonstrate the US's ability to develop a clean weapon. The responses from foreign nations to date were: accepting the invitation were Sweden, Brazil, Canada, Belgium, Australia, and France; declining the invitation were the Soviet Union and Czechoslovakia; no replies as yet from Japan, Mexico and Argentina. McCone had informed the OCB that he would bring up the question again with the AEC, and he noted that the OCB was disturbed to a certain degree because they felt that they hadn't gotten all of the real reasons for the desire to cancel from the AEC in the proposal. Discussion revealed that Ludeke, Commander of JTF7, had said that the task to prepare for such an observed shot would require an additional 2 to 3 weeks to carry out. Following discussion, the Commission changed their position and agreed that the shot should be held as originally planned and requested that the test be accelerated.

Meeting #1391, 17 July 58:

On the subject of development of clean weapons, Libby said that the current Hardtack tests had demonstrated that the US had achieved a "remarkable breakthrough in the development of clean nuclear weapons."

With the other commissioners in agreement, he expressed his feelings that the Commission should renew its efforts to convince the DOD to increase their requirements for clean weapons and McCone said he would arrange a meeting with the JCS for the AEC to discuss this question and have the laboratory directors present for the meeting.

Teller
Starbird responded to this ⁵⁸message on 17 July saying that he agreed in part and disagreed in part and stating the following opinion. While underground shots cause much less unfavorable comment, protest which is not necessarily based on rational fact is directed towards entirely stopping testing. Starbird says, "I do believe, therefore, it behooves us to limit our testing to the degree possible without impeding weapon development." As for tests in 59, he hopes the number aboveground can be minimized and those done on balloons, with as many tests as possible done underground. He agrees with Teller that he would like to go to a continuous testing posture but points out in particular fact that this is too expensive and that he is already looking for ways of diverting funds in FY 59 from other activities to cover testing and preparations. Finally, he states again that he requires a tentative plan of specific tests from each laboratory.

...very soon from Starbird to Teller (into Bradbury) apparently responds to Teller's push to put as much CY 59 testing underground as possible (TWX #C-3355). Starbird feels, although as many shots as possible should be put underground, if necessary a limited number should be planned above ground (as many as possible by balloons in a relatively short period of time). 18 shots is target number for CY 59. FN

58

A 22 July message from Starbird to Hertford gives the details of a meeting with Bradbury on 18 July which noted that LASL devices couldn't be ready for the tunnels til Feb. or so of 59, removing the necessity for completion of the 2 tunnels as rected by Starbird on 18 June for contingency shots in Millrace. Also, LASL will avert its 3 Nevada tower shots for 59 to either balloon or underground locations resulting in all calendar year 59 shots being done underground or on balloons. Starbird asks ALOO to discuss the revised tunnel requirements with LASL. Trumpet, which have been broken down into 6 tunnel shots and 3 balloon shots. J-6 is working on preliminary plans for designs for 6 underground locations including 15 kilotons ranging down to 20 tons, based on Longmire's yield estimates. LH

Bradbury's information is that Millrace should terminate about 15 Nov.

Some of the correspondence both at LASL (Watt and Malik) and in the Pacific (Ogle) this time period while expressing some relief over not having to race underground on Millrace, expresses disappointment at hurrying to do ^{extensive(?)} expensive testing in 1959. the lack of time to properly consider the tests and measurements ahead of time, all as the strain on J Division personnel are noted as reasons for this.

Here is a 22 July 58 message from Starbird to Hurtford on planning for upcoming Nevada testing. Discussion with Bradbury several days earlier revealed that LASL would not have a particular device ready for testing in Nevada until after the beginning of 59, about 1 February. This removes the requirement for completing two underground chambers for firing two LASL devices in MILL RACE as directed by Starbird on 18 June. Bradbury also indicated that LASL plans to convert its three 1959 tower shots to balloons or underground sites which means that all calendar year 59 shots will be underground or on balloons. Starbird asks ALOO to discuss the revised site requirements with LASL and do construction per these new requirements.

JP

Meeting #1392, 29 July 58:

One of the first items was the report that the President had decided to cancel the proposed UN observers shot in Hardtack and that the Department of State had issued a press announcement along these lines on 26 July.

AG

On the subject of discussions of clean weapons and DOD requirements for such weapons, a joint AEC-DOD briefing to be conducted by the weapons lab directors on these developments and requirements was to be scheduled for the week of 11 August.

58
On 30 July, Col. Kieffer, Commander of Task Group 7.4 sent a letter to the Commander of JTF-7 on the subject of the nuclear testing moratorium. The letter assumes that the moratorium will be declared after the normal HARDTACK rollup, that nuclear testing in the EPG will not be resumed prior to 1 May 1960, that a requirement for testing to resume in the EPG after 1 November 1959 be readied to begin on a 6 month basis, and that present organizational missions and responsibilities are applicable. Briefly the position is that in order to support the Task Force and in particular Task Group 7.5, no reduction in materiel or personnel below normal testing interim levels is visualized in order to provide this required support. There has been listed the required personnel strength (about 390 people) and the required aircraft for interim period operations. This interim period is as has been experienced between previous operations as between REDWING and HARDTACK. This stand of no reduction from that particular level is based on retaining the capability to resume testing six months after the moratorium is rescinded.

BU

'334 Scientific Advisory Board" Folder

This folder contains the correspondence to the LASL members of the Air Force SAB during a period of interest. Perhaps the only part of the SAB on which the ASL personnel served was the nuclear panel.

LD

The first pertinent letter is from Agnew to the Secretariat of Nuclear Panel of the SAB on 31 July 58 which provides comments to a draft report entitled "Improving Air Force Capabilities under a Test Moratorium." The comments have been requested by a Dr. E. Plesset. The comments are fairly brief and Agnew points out that he is not adverse to supplementing this stockpile with untested weapons during a moratorium "but would never recommend stockpiling a "improved" but untested weapon if the ~~sucessful~~ successful operation of the device was of paramount importance to our offensive or defensive strength." Of interest is his mention of the size of the warhead required versus the accuracy as to the effect on the enemy that we wish to produce. He states "although gains have been made on a yield per pound basis, they have not been easy and they are really quite trivial compared to the gains which could accrue by decreasing CEP. Remember the damage goes something like the cube root of the yield divided by the variance(Sigma squared). It takes an awful lot of increase in yield to be equivalent to a small decrease in CEP. We should never allow ourselves to sanction high yields as a substitute for improved CEP." He also highlights the area of weapons effects on which he feels we are quite ignorant as to what constitutes the mechanisms to kill a weapon and that we are just beginning to assess this area and learn what is done to typical weapon components by the explosion of a nuclear weapon in the vicinity. "This type of information is of paramount importance in designing both defensive and offensive weapons and the environment cannot be mocked up very well in the Laboratory."

Jason / Wallops - July 58 - ^{FY}
sounding rocket Capability -
Biller involved
Javelin - during moratorium -

hi alt sampling (up to
500,000' - sampling only?
- Col. Paul Wignall,
Cdr, 4950th.

More on Jason - Cape Canaveral
Ft. Mey, Puerto Rico
Wallops

hi-alt. rocket sampling
(500 miles) on Argus (electron
measurements) - Results
correlated with Explorer IV
satellite measurements