DMA Central File

A

MRA-7 Test Planning - 60 — [redacted] 61

411724

A1 Ltr (21 Jan 60) from Loper (Ch, MLC) to McCone (Ch, AEC): Notes President's recent announcement pertaining to test moratorium and says time may be to prepare joint AEC-DOD requirements of weapons for testing and plan for underground series so approval may be obtained to initiate preps requiring funds and effort. Stresses need to plan for underground series. Stresses DoD interest in Jericho and granite detection shots ↓ Marshland AEC never really answered above until Starbird - Loper ltr in July 60 after "events had made such specific test planning less worthwhile".

A2 A draft reply from Ch, AEC in April (not sent) noted NTS preps for 7 or 8 priority shots and response times ranging from 2 to 18 mos. for other shots mentioned by Loper. (Notes recent events "make it inappropriate at this time to submit specific proposals for early testing.")

Another round of Loper discussion and Starbird response memo to McCone in Dec 60 & Jan 61 on possible benefits of nuclear testing.

A4 Note - in May 1960, efforts of ALO diverted from Succotash to Vela Uniform.

A3 No budget allowance between 1 Jun 60 and early 61 for test readiness at NTS - only for Vela Uniform. Jan 25, 1961 letter from Starbird to Reeves asks him to plan and do what can be done (in spite of budget restrictions) to work toward a "more complete test capability." General guidelines for possible NTS underground testing:

> 3 to 6 month readiness to do about 6 most important shots (abbreviated Succotash) plus longer range program
> Stresses there should be no impression that test resumption is imminent.

A4 Above was in part in reply to Reeves letter to Starbird of Nov 10, 1960 of change in NTS readiness due to shift away from Succotash (LRL plan only?) to Vela Uniform.

A5 Detailed response of weapons and NTS tunnel preps needed and readiness dates from Harold Brown (LRL) on April 10, 1961. Notes changes (negative) since similar status report on 17 August 1960.

10 April 61 letter from Gen. Holloway (MLC, AF Member) to Betts asked AEC current requirements for AF support (e.g., sampling) and correctness of assuming 6 - 12 month build-up period.

A37 14 Apr 61 TWX from Johnson (LRL) to DMA to do some preparing (cables, construction, instrumentation) at NTS to really be ready. 2 May 61 reply by Betts says NO due to current sensitivity.

A36 2 May 61 ltr from Pitzer (Ch, Gen. Adv. Com. to AEC)to Seaborg addresses "Possible Resumption of Weapons Tests"; says possibility of break-up at Geneva makes it imperative AEC be prepared to resume tests. Further, he

states underground tests should come first and a program for this "should be carried to within a few days of firing time." Also plans of weapons tests outside the atmosphere should be made immediately. Flavor is certainly that test resumption is likely and plans must be made.

See GAC mtg #74, 27-29 Apr 61

11 May 61 ltr from Betts - labs (MASP:SHS)
Chairman stresses confidential nature of test resumption discussions!
Note of large amount of discussion going on in Wash. on test ban talks and test resumption.

A6

Notes Seaborg ltr to McCloy (Pres. advisor on disarmament on 5 May) with AEC views: recommended, if President decides to resume, U. S. announce resumption of underground weapons tests, Vela Uniform detonations, and Plowshare detonations. First Plowshare shot would be Gnome in Dec 61.
Notes to Pres. readiness to do 1st Vela Uniform shot (Orchid) on 10 week notice. Ltr further presented general time schedule and shot list:

Arrow	∿ 10 weeks
Davy Crocket or Polaris	just after
Chickadee	≤ 6 mos.
Calliope	just after
Cinderella	≤ 6 mos.
Owl	∿ 1 year
Marshmallow	≤ 1 year

Asks Bradbury and Foster to evaluate tentative program and make suggestions; commence planning and preps (without revealing anything).

Strong reply from Bradbury)only 1 LASL device and that on an alternative basis) on May 18 plus LASL device test recommendations, etc.

Memo from Betts to AEC Gen. Manager Luedecke on 25 May 61 sums up test preparedness: notes tunnel systems and holes in being; impact of Vela U.; status of diagnostics capability; need for definite program for labs to plan and make realistic estimates on.
States device availability is not pacing so much as site availability, diagnostics, cable procurement and installation, and contractor technical support. Recommends "direct contact with the field," a proposed program of events. and instituting procurement action, construction and scientific installations as required. Asks concurrence.

26 May Memo from Betts to Luedecke responding specifically to Pitzer's recommendations:

(1) On achieving underground readiness posture of a few days -- this means having a detailed plan of lab and field activities, long-lead time item purchase; major construction of holes and tunnels, and a general substantial increase in spending and lab and field activities.

Betts' comment - Any disclosure of such activities might indicate U. S. not negotiating in good faith at Geneva. In-house (quiet and less extensive) preps seem to give readiness of a few weeks.

(2) On resuming "tests outside the atmosphere":
29 Aug 60 joint feasibility study (USAF & AEC) proposes Atlas Centaur as device carrier and lead times are 18 - 24 (depending on on-continent or overseas operation). DOD and especially ARPA are studying kill mechanisms and the like and AEC doesn't plan to initiate their own studies.

26 May TWX reply by Foster to Betts' 11 May letter stresses need to know if planning would be for definite window (2 - 4 months) or indefinite period (as plan is done for). Lists devices, purposes, ready dates, etc. and says very earliest could be minimum diagnostics test on 22 June.

26 May TWX from Hertford (ALO) to Betts on actions proposed to get NTS ready. Lists, concurs in, and gives cost and schedule figures on work required at NTS in FY 61 & 62 to attain capability for LRL and LASL proposed programs. Includes extensive drilling and construction. Proposes DMA set up mtg. with ALO, labs, and DASA to set up program.

Luedecke to Betts memo - 1 June 61 on proceeding with planning and procurement for a proposed program. After talking with Seaborg, okays go-ahead with these limited actions, emphasizing that care be exercised to minimize people involved and amount of activity engaged in.

A38

In reply to above, Betts sent Luedecke "Draft Commission Paper" on 9 June 61 on readiness posture.

Betts TWX to Foster on 19 June states that, for planning, DMA is not considering low altitude atmospheric shots, underground shots that might vent, and Plowshare shots. Asks for info on specific shots foreseen below 50 km.

20 June 61 letter from Reeves to Betts on activities of committee of lab and ALO personnel developing a "Weapons Test Capability Plan - NTS." Asks guidance in several areas:

(1) Should plans try to exclude Vela Uniform objectives or try to make VU & weapons testing parallel (sharing the tests)?

(2) What containment criteria should be assumed?

(3) Asks that a code name be selected.

Memo to the Commission from Betts on 23 June - Stresses that confidentiality and minimum number of people will be involved.

- Suggests further planning be done on operation already brought forth (combined LASL/LLL proposal)
- Notes cover for NTS construction provided by Vela U. and suggests continuing such digging, etc. to prepare for weapons testing and "blaming" it on Vela Uniform and need to keep contractor busy.
- Notes significant work needed to work on vertical holes for LASL preparedness but sees no good quiet way to do this!
- Notes constant chance of astute observers picking up and speculating on suggested activities.

23 June TWX from Foster to Betts stresses that atmospheric testing not be "given up" arbitrarily. Notes firm interest in and study of regime from 7 - 50 km in relation to ABM problems and low altitude EMP effects on ICBM systems as two reasons not to ignore atmospheric test regime.

A7

27 June ltr from Betts to Ramey (JCAE) refers to 21 June testimony by Betts to JCAE and Senator Jackson's inquiry as to funding for test resumption should Congress not be in session. Betts notes avenue for obtaining funds at any such time.

27 June TWXes (2) from Bradbury to Betts give LASL proposed tests and justifications for a medium-range program and comments on long-range developments.

27 June TWX from Foster to Betts on changes to short-term program and details of LRL medium and long-term programs.

There is a document entitled "principal areas of gain to the U. S. if weapons tests are resumed and proposed schedule of actions and tests" with no identifiable author but apparently it was not written in DMA since there is a stamp on the back that says it was received by DMA. The document addresses various aspects of a resumption of testing. It notes at the outset that it appears necessary for the U.S. to be able to carry out such a program of testing that a scheduled release of public announcements be made which would permit the AEC and DoD to make all the required advance preparations. Then there is a good deal of discussion of the gains which the U.S. can expect from testing: pure fusion weapons including very lightweight weapons, yield to weight ratio, weapons effects particularly as they pertain to anti-ICBM systems, and proof testing of new weapons entering stockpile. The study goes on to present the recommended sequence of events assuming a decision is made to resume testing. First of all would come an announcement that the preparation for testing has been ordered by the President. The suggestion that such a disclosure be made to the public immediately is based on the fact that "ground work was laid in the United States reply (released June 17th) to the Soviet aide-memoire." A suggested text of the announcement follows. "The Soviet may be testing. They consistently reject treaty provisions which could give reasonable assurance that they are not testing. The security of the free world requires the United States not to permit the Soviets to acquire an advantage by testing while the United States does not test. The U.S. will continue to negotiate in Geneva. There is still time for the Soviets to agree to reasonable proposals. The United States is preparing sites for underground tests involving no danger from fallout. Whether the U.S. actually tests will depend on events in the next few weeks." Further this study feels that the announcement should be made public rather than kept secret for two reasons: one, that such a public disclosure is consistent with past policy and probably the news could not be suppressed anyway, and two, that such an announcement is consistent with other steps being taken in light of the impending Berlin crisis. It stressed that what is recommended is a decision being made public that test preparations are being made but that in fact the carrying out of tests is a decision to be made at a later date. Following the public announcement that test preparations were to be made, such preparations would follow. Assuming that conditions have not materially changed, probably in August according to this study and only shortly before the first test, an announcement should be made that testing will be resumed, with the first series underground involving no danger from fallout. The study further recommends that the U. S. not ever commit itself in any of these public statements to refraining from tests in any environment but that we should retain our freedom of action should the Soviet Union test in other environments or should the tests become necessary.

A 3 July memo from Col. Anderson of DMA to Mr. Luedecke, the AEC General Manager, notes the discussions with the JCAE on the subject of parallel efforts with weapons test resumption and continuing the Vela uniform tests that have been planned for. There seems to be a strong feeling on the JCAE that the Vela uniform series be carried out as planned with the foreign observers as planned.

A 5 July memorandum for Chairman Seaborg of the AEC from one of the commissioners Robert E. Wilson is a rather strong statement of this commissioners feelings about test resumption. Among other things he says "to my mind the matter of overriding importance to the nation's safety and the AEC's responsibility is the resumption at the earliest possible moment of underground weapons testing. I am very much concerned about the continued delay in this and I firmly believe that the Soviets are making better use of this critical period than we are." He goes on to state that he doesn't see any reason why the announcement couldn't either call for only the Vela or Plowshare programs at the outset if the President and his advisors think this will make it easier to proceed with the resumption of weapons tests but he feels that Vela and Plowshare and such things are so far less important than weapons testing that he doesn't favor such an announcement or such a beginning to testing but feels that we should start off by at least saying that weapons testing will be forthcoming. He also opposes any foreign inspection procedures included for any of the programs, including Vela, feeling that they would greatly impede even those tests for which they have been planned and really serve no useful purpose.

A8

This is the 12 July TWX from Foster to Betts stating Foster's feelings that the AEC should reduce their sensitivity with regard to the public knowledge of preparations for testing at the NTS. Captain Brady, the chief of the DMA Test Branch, makes a reply for General Betts to Foster's TWX on the same day stating that it is just more of the same type pressure that LRL has kept on DMA for the past two years and that indeed certain of these things can be done but that he doesn't feel that scientific construction or installation should be agreed to at this time without first seeking top level guidance which has to this point only imposed restrictions on those things that Foster has proposed. He further proposes that ALO call in the Labs and H & N and REECO to come up with a well thoughtout construction plan to give maximum sites from a minimum of tunneling.

Apparently, such a meeting as suggested came to be based on a 21 July TWX from Reeves of ALO to Col. Anderson of DMA which refers to a meeting of representatives of LRL, LVAO and H & N to discuss a concept for digging and construction at the NTS to prepare for a great number of shots. The concept is a LRL one nicknamed Christmas Tree. The TWX sets forth the time and cost involved in the various aspects of the digging and construction at the NTS.

On 24 July Betts sent a TWX to the Labs and ALO which he felt was of great importance and should be protected from being distributed to very many people stating that there will be a meeting on the 26th of July at ALO to review for Betts the current test readiness posture. The key person doing the reviewing is a person named O'Brien, who apparently is in the DMA Test Office and he will verify device availability as previously indicated by the Labs, examine the diagnostic instrumentation readiness and availability, and discuss the detailed construction requirements which will be required for the short-ranged test program. Furthermore, the general construction requirements for tests beyond the shortranged program will be discussed and Betts requests that each lab have one or two very knowledgeable people present at this meeting.

In a 31 July TWX to Foster, Betts essentially says no to Foster's request for additional work to be initiated at the NTS and for some of the cover for readiness preparations to be lifted. Betts stresses that the sensitivity to test resumption and preparation is not reduced and if anything is increased in the Washington area. Further states that DMA has not attributed their underground construction entirely to Vela and does not intend to do so and says that until the Vela program is defined in a more detailed way, Betts does not consider it possible to assign specific sites as Foster has recommended.

A staff paper from the DMA Test Office for the AEC and the Chairman, discussing the status of readiness at the NTS, was prepared and is filed in MRA-7 "NTS (Test Planning)".

A 7 August memo from Col. Anderson of DMA to Chairman Seaborg, addresses the incremental cost per shot for the various types of weapons tests above ground, below ground and outer space. The rough estimates for each type are, below ground from about 2 to 4 million dollars per shot, including both AEC and DoD costs, above ground NTS shots about 1.5 million per shot, above ground Eniwetok shots about 3.5 million per shot, including both AEC and DoD costs, and outer space testing with a number of assumptions about the success of the Atlas Centaur rocket assumes that the first successful weapons test would cost about 100 million dollars and each successful shot thereafter would be 10 to 15 million dollars.

A9

A TWX from Foster to Betts on 8 August acknowledges the sensitivity of any preparations for testing but further requests that cable procurement for long lead needs be done immediately even if the cables have to be stored at the factory and cannot be delivered to the NTS. Along these lines Reeves of ALO on 9 August sent a request to Betts for the procurement of the LRL and LASL required cables for the NTS program.

There follows in this file two letters including all the enclosures from General Betts to the Labs, dated 11 and 17 August which I have copies of in other files.

The next entry is a 31 August TWX from Betts to Hertford and the Lab directors stating that the sensitivity of preparations for testing no longer applies and giving details of what the Labs may go ahead with as far as preparing for an immediate resumption of testing. First goal is to be a 54 proof test on or before 14 September. A memorandum from the General Manager to the Chairman Seaborg on the 4th of September is based on discussions with General Betts and the Weapons Labs, the operation offices and the contractors involved in test resumption. The paper sets forth several alternatives to the already planned short-term testing program underground at NTS and the disadvantages and advantages connected with each of the alternatives. The first alternative would be a three-shot program at the NTS in the shortest possible time. The three devices tested would be a 54, an Arrow, and a Tsetse. Among other things this emergency program to be completed between 14 September and 12 October would delay any further shots since the cable inventory would be virtually exhausted and also the diagnostics would be so minimal as to perhaps require some tests to be redone in the future.

A second alternative program would be for one high yield shot underground at the NTS on the order of about 40 kt. Such a detonation while possible within a few weeks jeopardize the remainder of the tunnel complex in which it would be fired and therefore an additional 4 to 5 weeks should be taken to assure that the device can be fired without jeopardizing the remainder of the complex. Furthermore the considerations for atmospheric testing are covered including some details on the number of balloons required, the availability of devices and which ones are candidates for early detonation by this method and the various types and areas in which atmospheric testing might be undertaken either by balloon or air drop or at the NTS or Eniwetok. The readiness and response time for atmospheric testing at the NTS is certainly short on the order of weeks but should larger yield devices be desired these could be accomplished by an air drop at sea or at Eniwetok and it is felt that about 3 months time is the minimum response that could be met for these locations. It should be noted that the stress in this study from the General Manager is that every effort be made to avoid the alternate quick response programs which would cause problems in the long run and that the short range program already planned be implemented to permit maximum use of the available facilities and secure adequate diagnostic information.

It is clear from a letter dated 5 September from Chairman Seaborg to Mr. McGeorge Bundy that the alternative approaches to resuming testing addressed and discussed by the AEC General Manager came out of Seaborg's discussions with the President and Secretary McNamara a few days previous. Clearly, McNamara was asking for a quick response to match the Russians and he had said specifically what could the AEC do to provide 3 shots on a "two-weeks, four-weeks, six-weeks schedule". Secondly, because these shots might not be noted other than by the fact that we would announce them, it was further requested that a schedule for a high enough yield shot that would clearly be felt and noted off-site and by foreign observers be detailed also. In his response to Bundy, Seaborg reiterates the disadvantages of the alternative programs for three quick shots and for the soonest possible high yield shot and even adds a couple other disadvantages. One other disadvantage that he notes is "the Soviets have tried hard to picture us to the world as having made continuous preparations for testing and to be ready to start at the very first opportunity. They surely would take advantage of any announcement by us of an almost immediate test detonation to further line." In brief, Seaborg concludes by recommending to Bundy that if a test program is to be undertaken, it be the short range program that has been set forth and discussed and prepared for since July. It is noted further that a decision must be made on this very day, September 5th, to meet a first detonation schedule of September 14th.

A 7 September TWX from Betts to the Labs asks them to answer specific questions concerning the advantages and disadvantages of testing in the atmosphere and requests the replies by 11 September so that a joint AEC/DoD position can be prepared for submission to the President in the near future.

DMA and in particular a Lt. Col. McMillan are now on about the 6th of September actively investigating the rights and facilities and supplies that AEC has at EPG.

A memo from a Major Rosen from the DMA Test Office to General Betts on 9 September 1961 addresses a DoD study entitled " Case for Nuclear Testing" and doesn't really seem to think much of the study as far as being at all comprehensive or really saying very much. Among other things the study notes the DoD's need for effects tests but doesn't make a very strong case for any justification for tests other than underground tests. Rosen goes on in his memo to list and discuss crucial problems in deciding whether testing should be done underground or in the atmosphere if there is a choice. Among other problems he discusses the time factor where atmospheric testing can probably do the same number of shots much more quickly than can underground testing, diagnostics where it is not known for certain if all the needed diagnostics can in fact be acquired by underground tests, costs where because of the time factor involved the lengthy underground series will cost a good deal more maybe a factor of several times more than atmospheric tests programs, and finally the yield limit on underground shots which would not exist for the same reasons for atmospheric or outer space shots.

A 9 September TWX from Betts to the Labs discusses the inputs from the DoD after seeing the AEC's proposed programs and lists in particular the effects test that the DoD proposes and a priority in which they would like to perform them. Further, the DoD lists in their shot list 4 devices which they feel require proof or developmental tests which the AEC hadn't included in any of their lists and Betts asked for comments on these. The entire DoD list contains 44 tests to be done in a two-year test period.

In addition to the Foster and Bradbury replies requested by Betts on the matter of atmospheric versus underground testing Hertford of ALO replies to Betts and concludes that given certain assumptions that he makes one or two atmospheric tests could be quickly staged at the NTS and accomplished without too much consideration for public opinion because of the attitude of the people in that area among other things.

In a 14 September TWX Schwartz of Sandia gives his feelings to General Betts of the atmospheric testing capabilities under various considerations. He discusses surface testing using balloons and feels that a response time for the NTS would be about 3 weeks whereas for EPG it would be about 90 days. On the subject of high altitude and outer space testing he notes the availability of Thor and Atlas boosters to lift various size payloads to the desired altitudes. He further notes the availability of small rockets and dicaps for diagnostics. As for response times it is estimated that using only ground based instrumentation or companion rockets Thors could perform high altitude testing from Johnston Island in about 6 to 8 months and using onboard instrumentation and dicaps probably would require about 12 to 18 months. Smaller payloads might be tested by launching them from the Polaris launched from the Norton Sound or a operational submarine on a shorter time scale. Area of outer space testing which would allow testing of yields one megaton or larger it is estimated that 18 to 24 months would be required to develop a site and prepare for such shots.

A10

A11

Both Foster and Bradbury by TWX's in the 10 days following the 9th of September request from Betts for information on the DoD shot list replied to Betts with their comments on the DoD's shots not included in previous

AEC proof and development requests.

On the 19th of September Seaborg transmitted to the President a paper prepared by DMA, I believe the Test Branch, entitled "Nuclear Test Program", which is in response to an NSC action memo No. 87 which requests a comparison of the effectiveness of testing nuclear explosives in various media. The study addresses the rationale behind the various types of tests of nuclear weapons that are felt to be necessary for tactical weapons, smaller weights in missile warheads, lower fission yields for cleaner warheads, and developments in the ABM effects area. The need for weapons system tests and weapons effects measurements are stressed as well as the continuing need for a Vela program to improve our methods of monitoring a test ban treaty as well as improving our intelligence capabilities. In the environmental impact of the various types of tests be they weapons development or weapons effects are detailed here. The type of testing versus the media in which it can be performed is addressed throughout this study and there are a number of recommendations at the conclusion. First of all that the planned test program proceed for the next year under the assumption that it will be conducted underground and that steps be taken to provide for an underground testing capability for the indefinite future and further that preparations be taken for possible atmospheric tests at the NTS up to a few tens of kilotons. Further that plans be made and activites be pursued by both the AEC and the DoD to bring the Eniwetok area to a 3-month readiness posture and that a completely seaborne operation not be ignored. Further that the Vela and Plowshare tests be planned to proceed underground.

RE-READ

There are a number of pieces of correspondence in here that I've seen in other files that address the activities and thoughts about planning or being ready to plan for atmospheric testing at the NTS and at Eniwetok should such authorization ever come. A TWX on 25 September from Betts to Hertford of ALO addresses certain actions that may be taken and others which may not be taken in relation to preparation for atmospheric testing. Among those which may be taken are selection of suitable balloon sites at the EPG, discussion with the military of various boosters and RV's that might be used for testing, detailed planning for fuzing and firing systems in conjunction with selected RV's, plans for diagnostic instrumentation and sampling systems, etc. The activities which are prohibited deal with procurement of additional balloons and flying of the balloons at this time. Further Betts requests a detailed proposal including a schedule and cost estimate for testing with the balloons at the NTS and EPG and for exoatmospheric testing.

Also beginning about this time September 25th is discussion of the very short response atmospheric testing program which goes on for some time as documented in other files.

An NTS Planning Board meeting was held on 27 September and the preliminary report of this meeting on the same date went to General Betts to address various questions that he had asked the laboratories and the operations offices. Among other things the group addressed whether acceleration of the present short term program was possible and determined that not only is acceleration not possible but that the present schedule is optimistic. Furthermore, acceleration which might come to pass by resumption of atmospheric testing at the NTS was studied and it was felt that about 5 LASL events could

A12

be accelerated but that the LRL events could not be accelerated since they are device limited. Also in regard to Pacific operations it was concluded that two air drops could be accomplished in two weeks and that a short term air drop program with ground based diagnostics could be ready in 2-1/2 to 3 months whereas a continuing program would require 6 to 9 months to be ready. A test of the Nike Zeus warhead with the Thor vehicle could be ready in about 6 months from Johnston Island. A decision as to whether support facility activity must await an atmospheric test resumption decision was not resolved. Attachments to the conclusions of this meeting contain a great number of details of the status of the various organizations to meet the different test schedules and test programs in the various areas be they underground or at NTS in the atmosphere. For instance the "quick and dirty" air drop program requires immediately establishing a USAF priority to obtain the air support establishing the test organization and calling on Kirtland who has two B-52 drop planes available immediately. Lengthy and detailed schedules including device types, sponsor, method of detonation, diagnostic capabilities, etc for the various types of operations are included also as attachments including the NTS underground program, the Pacific operations for the various types of programs; "quick and dirty", short term, and overseas operation; and finally for the Johnston Island program which at this time included only a Niki Zeus system test.

A13

Letter of October 2 from Gerald Johnson, Assistant to the Secretary of Defense, (Atomic Energy) to the Chairman of the AEC, addresses the feasibility of a quick response atmospheric test operation which would be completely airborne. After discussions with Hertford of ALO and General Donnelly of Field Command DASA, Johnson feels it advisable to have the Air Force and DASA and the AEC work together on planning for an air drop operation over the Pacific south of Hawaii using airborne diagnostic equipment with the feeling that this can be a means of conducting tests which are both urgently needed and can be done very quickly perhaps in a matter of weeks.

A memorandum for Chairman Seaborg from Commissioner Robert E. Wilson on 5 October is based in part on a call that Wilson received from Arthur Dean the U. S. Ambassador to the United Nations on October 4th. Dean said that he wanted the commission to know that he had good reason to believe that the Soviets would continue testing in rapid sequence until the later part of November and then would probably make a gesture in the direction of the expected United Nations resolution and agree to halt tests if we would do the same. We would then be under such great pressure from the UN to do likewise that he would urge us to try to get our most crucial tests out of the way before that time if possible. Further, Dean said that the pulse of the UN was such that there was essentially no longer any substantial propaganda value to be gotten out of confining ourselves to underground testing because the neutral nations did not appear particularly concerned with the manner of testing. He emphasized that he felt that it was quite important to do the maximum testing by December though he felt that the attitude of the neutrals was unfair. Wilson stressed that this reinforced his opinion that he had had for awhile that it should be made clear to the President that we could only get an appreciable speed up in our testing by going to atmospheric testing and that he recommended that we urge the President that atmospheric testing be started promptly in view of the fact that we are not getting any real credit for confining our tests to the underground testing.

A TWX on 7 October from Sandia to Betts addresses the question of planning for a possible operational demonstration of the Niki Zeus system with the nuclear warhead. On 22 September Sandia had been asked a number of questions about the availability and feasibility of flying an reentry body to the proper area as a target for such a test and what the problems and possibilites would be as far as instrumenting the test doing it in a feasible time scale and whatever cost would be involved. Sandia here answers that there is probably reentry vehicle available that the facilities to launch and position such a vehicle as a target are also available, that no instrumentation would specially be required on the target vehicle and that the Atlas missile could be used if the Air Force agreed to fly the reentry vehicle to the desired location. It is noted that the warhead for the Zeus is not yet developed but it is felt that perhaps a unit could be flyable and usable for such a test by spring of 1962. However, even though the schedule and various other factors make the test feasible the document concludes by saying "test operation as outlined above would provide no information useful to DoD and AEC in assessing the true vulnerability of the ICBM reentry body-warhead combination. The acquisition of meaningful vulnerability information would dictate a much more sophisticated experiment, probably involving several additional parasite bodies containing instrumentation." Further it is felt that an experiment such as this that would provide the desired data is very difficult to accomplish and the time scales would be measured in years rather than months.

In a letter to Secretary of State Rusk, with a copy to Secretary McNamara, on 7 October, Chairman Seaborg notes the possibility of upcoming resolutions being introduced to the United Nations General Assembly. He stresses and justifies his position through the letter that the President not agree or that the US not agree to any such resolution that would curtail our power to initiate atmospheric testing should it be deemed necessary in the interests of our national security. In particular he stresses that the US be careful not to enter any more uncontrolled moratoria whether they are of limited or unlimited duration and whether or not negotiations are required under any particular moratorium.

On the same day, Mr. Seaborg sent the President a letter alluding to the possibility of the UN pressure and detailing some of the problems encountered so far in the underground testing and whereas he says that the purpose of this letter is not to make a recommendation for atmospheric testing at this time, he later says "if you should determine that our test program should be accelerated and increased in scope, atmospheric testing would be a necessary supplement to our current underground program.

In a TWX from Betts to the Labs and ALO on 7 October he notes the international pressure which may bring about a moratorium in the not too distant future but reiterates the AEC committment to execute the Nougat program as authorized by the President and requests that three weapon development tests of the 50X1, the 56X1, and the 59 be prepared for air drop events with optimum diagnostics on or before 1 December. He requests the various labs study the possibilities of this, include any other high priority items which they might have and which can be readied within that time frame in the same series and come back to him as soon as possible with any comments they might have about the preparations for such a program of three air drops.

The three laboratories answer Betts request for information quite promptly and I have documented their replies in other notes. Included in these is that Sandia points out that the Air Force now desires to use the B-52 rather than the B-47 as a drop aircraft, that LRL cannot meet a 1 December date with the 56X1 but rather say that the earliest possible date for testing in an air drop is December 15. LRL mentions a couple other devices which could and they would desire be tested by air drop in this time frame. LASL replies that they feel that they could meet the 1 December date with the 50 and the 59 and they propose testing the 50X1 at two different yields. Bradbury further recommends testing another device at several different yields and recognizes that the LASL proposal would extend the operation beyond the minimum number of three which Betts had given but also points out that the additional strontium 90 contribution is trivial and that also once we have opened the door to atmospheric air drop testing it would be wise to get the most for our money.

The DoD forwarded a joint AEC/DoD nuclear testing program proposal to the President on about 9 October and it went to Mr. Gilpatrick. As a result of presidential approval of the DoD letter, Captain Craig of the DMA Test Branchproposed several actions to General Betts. Among others was that the appropriate AEC field agencies be advised that active preparations by the AEC and the DoD are now underway toward conducting atmospheric tests and that final approval may be imminent. Furthermore, it is recommended that the NTS be authorized to go full speed ahead on preparing for the balloon shots and that the planning board set up a firm schedule for these shots and that various other preparations in conjunction with the atmospheric program at the NTS and also at Johnston Island be undertaken.

A13

On 13 October a letter from General Booth, Chief of DASA, to the Assistant to the Secretary of Defense (Atomic Energy) covered the subject of overseas nuclear weapons testing and in particular for the first time that I have seen addressed Christmas Island as a possible site for such testing. The letter is followed by a lengthy report covering the operational and logistic characteristics of Christmas Island and prepared in 1959 by the Pacific Missile Range. In part General Booth states "it appears that the adaption of Christmas Island as a U.S. nuclear test site is both operationally and logistically feasible. Christmas Island affords sufficient advantages to make it attractive as a base for sampling operations, balloon shots, and off-shore detonations with onshore instrumentation." Further he notes that a PMR report prepared in July 61 indicates that NASA is also interested in Christmas as a launch site in support of the lunar program. General Booth considers the selection of Christmas Island as a nuclear test site second to his choice of Eniwetok with which he is more familiar. However, he considers it desirable that a survey of Christmas Island be conducted immediately.

A 13 October TWX from Hertford of ALO to Betts points out that while the various labs have been answering Betts requests for information on planning a three device quick response air drop operation on or before 1 December that LASL and ALO had already done some planning and coordination on the possibilities of a two device "quick and dirty" air drop of LASL's 28 and 43 as proposed by the Planning Board on September 27 and 28.

Discusses alternatives of off-Hawaii open sea or off-JI with pros + cons + details of how each would be done + diagnosed.

On 13 October Col. W. M. Shankle, the military assistant to the Assistant to the Secretary of Defense (Atomic Energy) reported on a meeting of the same date at which the use of Christmas Island was discussed among himself, personnel from DASA and Col. O'Brien of DMA. At this meeting the following actions were decided upon: a survey of Christmas Island, including participation by DoD, AEC and United Kingdom representatives would be conducted; subsequent to the survey determination of the relative merits of the different facilities would be made; and should the Christmas facilities be determined to be desirable, the DoD, AEC and Department of State would then decide on the terms for approaching the United Kingdom and the extent to which we would desire their participation in the tests and the extent to which the information which we would obtain from the tests would be made available to them. The DMA representative at this meeting was Lt. Col. O'Brien, and a copy of the memo from the meeting was sent to General Betts with a request that he proceed with the actions as indicated therein.

A 16 October TWX from ALO to Mr. Schwartz of Sandia goes into a great deal of detail on the status and problems of the bomb, missile and balloon systems which have been proposed for the various types of testing.

Col. O'Brien of the DMA Test Office in a memo to General Betts on the 13 October meeting with Col. Shankle on the subject of the possible use of Christmas Island makes the following statements "the subsequent discussion indicated the question of using Christmas Island supposedly arose because of Dr. Johnson's strong feeling that the EPG would be unavailable because of UN or political pressure against using part of the trust territory for such purposes. There was no indication, however, that there had been any exploratory action toward using the EPG but rather that due to Dr. Johnson's position the DoD was going all out to explore the use of Christmas Island.

A14

On 18 October a Mr. Mercer of the AEC, at the request of the chairman, sent a report to the President covering among other things US nuclear test accomplishments, probable effects of detonation of a 50 megaton device at various altitudes, time required for US development of a similar 50 megaton device, and a brief reference to possible military uses of a 50 megaton device. Betts apparently inquired into the possibilities of a 50 megaton shot for on October 19 a TWX from Sewell of LRL to Betts refers to a phone conversation on the subject and goes into more detail with regard to the possibilities for an early 40 to 50 megaton shot. The TWX goes into some detail on the possibilities for such a shot and a couple of alternatives are

Further it is pointed out that there will be problems with any drop aircraft if the tests were desired to be air drop for there would certainly not be sufficient time for a drop aircraft to get to a safe distance based on the range of destruction from this particular yield. It is suggested that drones be looked into as possible carriers for such a device. A handwritten note at the conclusion of this TWX notes that on the 27th of October General Luedecke who was reviewing the TWX wrote "no further action required" on the TWX.

A TWX from Bradbury to Betts on 19 October refers to a TWX from Shuster dated October 13 which refers to one particular type of testing which I believe is high altitude rocket testing and a response time of 6 to 12 months. Bradbury stresses the fact that this seems to be a highly feasible method of testing and that we should certainly include it in our plans for future tests even if only a test of a particular method.

A TWX on 18 October from Hertford of ALO to Betts refers to a meeting on the 17th with representatives from AFSWC, Field Command, LRL, EG&G, Sandia, and ALO, considering the LRL device overseas program. Also the LASL requirements for devices and ready dates for the devices are noted here and there is listed the minimal requirements stated by LRL for diagnostics on their tests which are Fireball, rad chem, HE transit time, and Bhangmeter. Some of the open questions are noted here and whereas one of the LRL devices is a very large device it is noted that Gen. Betts in an informal meeting with the commission has said there is a very small probability of a proof test of this stockpile device and therefore requests permission to drop this particular device from future planning. ALO states that they have authorized EG&G, LASL and H&N and have requested LRL to prepare for the overseas atmospheric test operation as follows: preparation for earliest possible airlift of ground based diagnostic gear to Johnston Island, and installation of airborne diagnostic gear in the aircraft. Among other things it is noted that the drop aircraft are expected to be and plans are being made for B52 aircraft. Further, ALO states that they need authorizations for further preparation in the areas of: authority to reenter JI, authority to ship diagnostic equipment to JI, earlier authorization to prepare for and conduct dry runs over selected ground zero, and some action to be taken in the area of forming and putting into operation a task force. Further, ALO notes that "there is some possibility that an air drop over the open ocean off Hilo might be required by October 31. In this case, assuming a week's notice, plans are being made as follows: device would be a LASL 28 or 43, diagnostics would be minimal, and the operation would be from Hickam and Barbers Point. Bhangmeter airborne w/radchem sample possible

A15

Betts reply to Hertford on the message just discussed on 20 October is quoted here "continue preparations for air dropsin Hawaii-Johnston Island area. Designation of task force commander by Air Force for this operation expected by October 23. Assuming support of operation requires reentry to Johnston Island, authority to move personnel and equipment as you requested will be obtained as soon as possible. In the meantime make all possible preparations for the movement without risking leak to the public."

A16

On 23 October Betts sent a TWX to ALO and Labs on the subject of further planning for the atmospheric test resumption. He lays out here a list by item and device ready date for the air drop program which runs from November 12 through December or January and includes about 6 or 7 shots. He excludes certain proposed shots from LRL in the high yield area and from LASL in the area of Tsetses and requests further justification from them if they so desire to make it. He also refers here to a program called the balloon acceleration program of Nougat and Ivanhoe shots and lists those shots by nickname which apparently are being moved up in the schedule and the dates to which they are being moved. Also he specifically lists the materials to be expended in the different shots and notes the DoD operational systems tests which are in planning and requests the labs to cooperate with the DoD on any technical problems with these shots. He requests full review of the text of this TWX and any comments or verification as appropriate to be into

him by the 27th of October.

On 24 October Betts sent a TWX to Schwartz of Sandia on the feasibility of air dropping 30 megaton and 50 megaton bombs from a B52 type aircraft and with particular weights and particular heights of bursts and requests them to comment on the possibilities and make any suggestions by October 27.

Out of order chronologically but in the file here is a copy of a TWX from Reeves dated approximately the 12th of October on the subject of the actions necessary based on the NTS Planning Board determinations on 27 and 28 September, Reeves sets forth to each organization such as Sandia, ALO, EG&G, U. S. Public Health Service, etc., what activities and planning they are to be doing at this time. One area worth mentioning is the requests made to Col. Kiley of Field Command who was asked to submit a statement on the DoD capability to support the AEC in the area of air support at the NTS, temporary support from the Air Weather Service to the U. S. Weather Bureau, and capability to support two different quick air drop programs, one for two devices to be air dropped in less than 30 days and one for three devices to be air dropped within 2-1/2 to 3 months.

A17

There is and has been frequent correspondence through this period mainly from ALO with the laboratories and DMA on the subject of fabrication of weapons, production of weapons, procurement of material for weapons, etc.

On 26 October Henderson of Sandia Corporation sent a TWX to Betts on the subject of preparations for air drops. He reports that a test drop of a unit like the one to be used in actual air drop testing was dropped from a B52 flown by AFSWC on the 24th of October and that after being dropped at 45,000 feet the unit detonated only about 3000 feet below the aircraft and although no damage was sustained this was of course an obvious malfunction which must be remedied prior to using the unit for actual testing. The message concludes "it is obvious that the suggested nuclear drop date cannot be met."

A 27 October memo for record written by Lt. Col. O'Brien of DMA's Test Branch, covers the subject of sampling aircraft and notes the history of lab requirements for samplers through 1961 that seems to have evolved to a LASL position that they would like four B57B's plus two B57D's for high altitude sampling and an estimate of the LRL position which seems to be that they would prefer two B57B's and five B57D's for shots over one megaton but if the D models are not available they would accept a force of six B57B's. According to a Lt. Col. Highley who is knowledgeable on the availability of samplers at the present time there were plans for 33 sampler aircraft to be made available for all the different jobs and that 13 of these B57's were being modified at this time. Only 3 of the B57D's are actually available for the AEC purposes and yet with the present plans which don't include shots above certain yields within certain periods of time apparently the Air Force seems to be saying that they feel that they can meet the requirements as they now see them. Mention is made of the B47 as a sampler possibility but it of course does not meet the high altitude requirements.

In response to a request from the Joint Committee on Atomic Energy the AEC General Manager sent a letter on 27 October to the Joint Committee summarizing the results of the underground test program to date which had to that point detonated 4 different events and going into detail on the current planning for future testing both underground and in the atmosphere. The letter contained a schedule for a follow-on program that is an underground test program to follow the Nougat operation which is scheduled only into February and a copy of this schedule is not contained here but is attached to a letter to the President dated 19 September 61 and filed in the Ivanhoe file. In addition to the schedules and details of the results of the underground program the following section was included in addressing the possibilities of an atmospheric program: "we have made preliminary plans and preparations should circumstances demand and the necessary approval be obtained to perform certain proof tests as well as a portion of the Nougat and follow-on tests in the atmosphere. At the NTS these would be done on balloons and might include certain devices listed here. If we are permitted to do this type of testing at the NTS, a Nougat schedule acceleration of from one to two months might be accomplished with perhaps 4 to 5 months acceleration of the later shots of the follow-on program. Tests of certain others devices which are best performed in their high yield versions could be done by air drops in the Pacific area within a few weeks if the President should decide to test in the atmosphere. Of course a somewhat more advanced and sophisticated testing program involving relatively complex diagnostics would call for an island site, requiring several months time and a considerable expenditure of funds to get underway."

Betts sent a TWX on 27 October to ALO and the labs on the subject of underground testing and requested that each of the addressees answer and comment on certain questions concerning the course of action to be taken in the area of underground testing should atmospheric testing authorization be forthcoming. The questions which he requires answers to are whether some tests can be conducted more advantageously underground, what capability for underground testing could be retained in the event we return to atmospheric testing, certain questions about the development of diagnostic techniques and instrumentation for underground testing as well as safety aspects to be studied in this area, comparison of the costs and time and instrumentation limitations in the vertical holes versus the tunnels, and what capability should exist for underground testing if atmospheric testing were stopped but exoatmospheric [illegible] or space testing were authorized. Betts requested these answers by 3 November.

On 27 October Chairman Seaborg sent the President a letter listing certain suggestions and recommendations that the AEC General Advisory Committee chaired by a Mr. Pitzer had requested be communicated to the President without delay. The committee advised the commission that they are of the firm opinion that militarilly useful technical information can best be obtained by atmospheric testing. Secondly, it would be technically feasible to conduct a useful atmospheric test before the announced termination of the current Soviet series on 31 October if a decision were made to resume such testing within the next few days. The committee believes that possible political advantages of such a test should be evaluated promptly. Third, the committee is convinced that the AEC could within a few days of a presidential directive come up with a single weapon having a yield of about 50 or may be up to 100 megatons.

The committee has no thought that the U.S. would detonate such a device but feels that the situation should be explored since it would provide the President with a psychological weapon in the current Soviet terror campaign. Chairman Seaborg states that the AEC concurs in the first two suggestions or conclusions but has reservations about the third one in that the feasibility and advisability of the [redacted] method is questioned as well as the fact that even if it were feasible the AEC seriously doubts that such an experiment could be accomplished within a few days. They feel it would be technically feasible to detonate a couple of devices in close physical proximity to achieve in that yield in the range of 50 or more megatons but this could not be done in ~~less than~~ a matter of less than a few weeks and that even if it were done such a configuration would not really represent a weapon that would be designed for these yields nor would the technique of obtaining this yield represent the manner in which the laboratories would undertake the design of a very large yield deliverable weapon. He further refers to his letter of 18 October concerned with the effects of a ~~4~~50 and 100 megaton weapon and goes into some detail there on the dimensions and weights of such weapons and the time scales on which the laboratories could possibly bring such a weapon into the stockpile. It is stressed that to do it at either yield, 50 or 100 megatons, and have a device ready in less than a year would be a high priority effort and would seriously interfere with the other work of the laboratories and the rest of the weapons testing program.

On 27 October Mr. Howell of Holmes & Narver transmitted to Captain Craig of the DMA Test Branch preliminary drafts on the capabilities of H&N to support test operations at Eniwetok and Johnston Island and he notes that the assumptions have already become somewhat outdated and the current information on the status has not had the benefit of an onsite inspection of current conditions and facilities there.

On 28 October Bradbury replied by TWX to Betts TWX of 23 October setting forth the planning for the atmospheric test resumption. No mention is made of the 28 or 43 tests which I assume means they are no longer being considered for a quick air drop program and Bradbury only addresses the 50 and the 59. Bradbury indicates that these devices will be ready at dates somewhat later than those set forth in Betts' TWX. He further discusses a number of other devices which might be feasible for airdrop testing as well as discussing the balloon testing program at NTS and notes that there are a number of devices which, if they could be so tested, would give advantages in accelerating the NTS program as well as allowing diagnostics to be done more accurately and more easily. He lists the device availability dates for these NTS balloon test devices and notes that if it turns out that political and safety pressures will not allow such a balloon test series to be done at the NTS that perhaps these could be airdropped over the Pacific. In the LRL reply to the same TWX, Foster sets forth in tabular form several options, one of which allows for underground testing only, and sets forth a schedule for the revised Nougat and revised Ivanhoe programs and the other major table covers the schedule based on authorization for a combined underground and atmospheric testing program and the dates when the various devices will be ready for this program. The date of Foster's reply is 29 Oct.

A letter dated 29 Oct. from Secretary of State, Dean Rusk, to Chairman Seaborg states rather convincingly the argument against considering the use of the trust territories in the Pacific for atmospheric testing. Among other arguments are the following: Since the Unites States is charged with the administration of the trust territory and it is supervised by the United Nations, we must defend our actions in the trusteeship council and in the security council where the general feeling is strongly against nuclear testing and a strong desire to protect the interests of dependent peoples creates an unsympathetic atmosphere for discussion of this question. Furthermore, there is an argument that by conducting tests in the trust territory we avoid exposing our own U. S. inhabitants to the dangers and there has in fact been injury to some of the people of Rongelap in the past. A18 Further, there is a very real potential problem in our relations with the people of these trust territories in future dealings with them and in their future desires to continue cordial and good relations with the U. S. Further, there are legal and political arguments and points to be made by our opponents should the trusteeship issue be raised and carried through in an exhaustive manner, as it certainly would be in this case. There is in fact a serious risk of having the issue brought before the International Court of Justice where the possibility exists that we might be immediately enjoined from such use of the territory. Rusk concludes that in view of these circumstances, he feels that we should avoid using a site in the trust territory for any such atmospheric tests but that the Department of State would be glad to explore any possible alternative sites for the AEC.

On 30 Oct. Betts sent a memo to Chairman Seaborg in light of the State Department's feelings about using the EPG and setting forth the most major steps required for moving forward on preparing for atmospheric testing and the relative chance of the various steps of being observed by and suspect in the public eye. Among other things, he mentions the appointment of a Task Force Commander and notes that an Army Major Gen., I assume Starbird, has already been nominated and also he notes the need for the establishment of a provisional Task Force and states that such was activated on Oct. 24. From the steps that he sets forth required in the preparation phase and the probability of a number of these steps being observed by the press and the public, it becomes pretty clear that such disclosure probably will become common knowledge and that public queries could be answered to the effect that we have announced that we are making preparations for the possible eventuality of atmospheric testing. Betts summarizes with three recommendations: 1) The AEC and DOD take immediate action to select an overseas test location; 2) that the AEC formally join with the DOD in Task Force activation and planning: and 3) that an early decision be requested from the President due to the lead-time required for many of the necessary implimenting actions and to reduce the inefficiency and lost effort that is potential.

Out of order chronologically is the next item dated 28 Oct. which is a TWX from Hertford, ALO, to Betts on Betts' 23 Oct. TWX on the details of the plans for possible atmospheric testing. ALO reports for itself and AFSWC and notes that AFSWC now has two B-52 aircraft ready to support the airdrop program as well as equipped ~~xxxxxxxx~~ with bhangmeter and fireball diagnostics equipment. Furthermore, AFSWC is equipping two C-130 aircraft for

timing

additional fireball and bhangmeter coverage and LRL measurements and the modifications are scheduled for completion on 31 Oct. Movement to the field for these aircraft can be accomplished within 15 days after authorization. In noting the preparations for supporting a program off Johnston Island, AFSWC reports that the island is congested by programs with higher priority and sees problems with operations taking place from there, including facilities and housing as well as fuel for sampler aircraft which would have to be staged out of there. The modifications couldn't take place, they feel, in the time scale contemplated for the off-Hilo program. In the area of NTS, ALO reports that they could reduce the response time for the balloon program by two weeks, if authority were granted to fly the practice balloons for training purposes.

On 31 Oct. the second weekly planning meeting for JTF-8 was held and here is a memo for Gen. Betts from Capt. Craig of DMA Test Branch reporting on the meeting. At the meeting were representatives from DASA, the Army, Navy, Air Force and the AEC, with a Gen. Polhamus acting as Chairman. Key personnel to man JTF-8 are beginning to arrive and about 50 are expected to be in place by mid-November but space has not yet been found for the Headquarters' staff. It is stated that DASA is proposing W-27 warheads for the effects shots but the Airforce believes that W-49's should be used since they are already compatible with the missiles. I assume this has to do with high altitude effects tests and the missiles mentioned are probably Thors, but it doesn't give any indication here. It is stated that "The ASROC test is ready to go. Some ships are presently at sea. The longer this test is held up, the greater the danger of information leaking to the public." Mention is also made of the Polaris test to be fired from the submarine Ethan Allen, which is presently on a shakedown cruise and the shot is planned for the Atlantic missile range with impact southwest of Ascension Island. Four missiles are being prepared with the proper destruct features and the dates given are that the sub can sail on 11 Nov. and fire the missile during the week of 20 Nov. and that the [redacted] Observation Island and another ship will be downrange to provide backup destruct control. As for the Air Force plans, they are divided into three phases: Phase 1, the 28[redacted] and 43 airdrops; Phase 2, is the 50, 56 and 59 airdrops; and Phase 3 is the Atlas test. Preparations are complete for the first two phases up to about 10 days prior to test and are being held there to prevent too much activity which might lead to public disclosure. Aircraft are planned to operate from Hickam Field and Barbers Point in Hawaii, with the two C-130's for diagnostics and the two B-52 drop aircraft ready to go, as well as all other aircraft for the operation having been earmarked. Once the series begins, the Air Force says that drops could be made every other day and that the obtaining and returning of air samples are the limiting factors in the conduct of the airdrops. $4.5 million has been spent for an additional twelve B-57 aircraft. As for the Atlas test, it is to be ready anytime after 15 Nov. with the launch to take place from Vandenberg AFB and the target area to be in the open sea either west of Wake Island or east of Taongi Atoll. SAC is the operational command in charge of this test. DASA is working on an eyeburn experiment to be conducted in conjunction with the Air Force Phase 1 and 2 operations and the Air Force feels that the AEC could add other development tests in with the planned Phase 1 and Phase 2 tests. As for the Army, their ABM plans are still

A19

on a time scale of about 18 to 24 months before being ready.

A 31 Oct. TWX from Batzel of LRL to Betts notes that the underground shot program for LRL at the NTS through Nougat is essentially independent of whether or not atmospheric testing is resumed.

In response to a 13 Sept. letter from Mr. Hollifield, the Chairman of the JCAE to the AEC Chairman expressing the concern of the JCAE that the preparations for and conduct of nuclear weapons testing might be conflicting with and, in fact, detracting from the other nuclear energy programs in, and particular, the Rover and Pluto programs. Dr. Seaborg responds on this day, Oct. 31, by stating that he believes that while the weapons test program particularly if it is accelerated, may have some affect on Rover, it will not be a substantial one. He discusses some of the actions that the Commission has taken and will take to minimize the effects of the testing program. He further states that the specifics that apply to the Rover program apply generally to the Pluto program also.

A 1 Nov. TWX from Reeves of ALO to Betts goes into a great deal of detail in the assessment of possible overseas sites for the conduct of the long-range test program. Those four areas that are addressed are Eniwetok, Bikini, Johnston Atoll and Christmas Island. The advantages and disadvantages of each area are listed. Summary quoted here.

"In summary, on the basis of a permanent long-range test facility, it would appear that Christmas Island from the standpoint of weather conditions, fallout problems, and international objections to testing activities, would have distinct advantages over Eniwetok. In the long run, any immediate savings that might accrue by use of existing support and scientific facilities on Eniwetok would be far outweighed by operational advantages of Christmas Island. It also appears that should Christmas Island prove unacceptable for high altitude testing, a separate facility for this activity could be established at Johnston Island, and the increased cost and disadvantage of operating two sites would still be more than off-set by the disadvantages of the combined facilities of Eniwetok-Bikini. This recommendation is based on one premise: That we are given complete operational control of Christmas Island."

On the same date, 1 Nov., Gen. Betts sent a similar memo to Chairman Seaborg on the subject of assessment of overseas test sites. He included the details of the various sites that were sent to him by ALO and made essentially the same recommendations about the use of Christmas Island and Christmas in conjunction with Johnston Island as opposed to using Eniwetok and Bikini for a long-range test program which was assumed to be a test series conducted over an indefinite period of time with devices fired when ready and using maximum diagnostics. The great desirability of having such a full-scale test program as opposed to a completely airborne and hence, minimum diagnostics operation is emphasized and an intermediate step between the two programs is discussed as a program which could "be carried out largely by airdrops in the vicinity of an island on which we could establish a higher level of instrumentation for diagnostic measurements than could be provided

in a fully airborne operation. Such a short-term test program with optimum diagnostics could be conducted in connection with ~~Eniwetok~~ either Eniwetok or Johnston Island, but would obviously be easier to support technically and logistically if conducted in connection with the EPG. The considerable acceleration of our developmental test program that could be possible by turning to this intermediate type testing program leads logically to the conclusion that the Commission should strongly support a recommendation that we be released immediately to plan for and execute such an operation. ~~despite the technical~~ Despite the technical and logistic advantages of conducting such a short-term test program at the EPG, to avoid the problem raised by the trust territory situation, we recommend the operation be based on Johnston Island."

A 2 Nov. TWX from Reeves of ALO to Betts replies to Betts' questions about the advantages of atmospheric versus underground testing, etc. contained in a 27 Oct. TWX and in addition to addressing questions about the feasibility and requirements for surveying underground test locations and preparing them, Reeves argues about the advisability of going all out on atmospheric testing in light of the public opinion. He feels that even given the go-ahead to test in the atmosphere, we should realize that there is a certain probability from the public opinion of forced termination of atmospheric testing either completely or at an unnecessarily early date and Reeves recommends that atmospheric testing be held to a minimum even at the expense of increased cost and acceptable delay in order to decrease the probability of public opinion forcing such an early termination.

Batzel of LRL in a TWX to Betts on 2 Nov. makes some remarks about the present situation with regard to diagnostic measurements. He feels that with the airborne diagnostics in the C-130 and the X unit signal telemetered from the drop case Hett and . time measurements can be made. Also bhangmeter and radiochemistry data will be available but there is considerable question about a reliable fireball yield. It is stated that a ground-based radar-tracked optical system is being prepared for shipment by Nov. 15 and that such a system would insure . time measurements and therefore it is requested that operations be planned, if possible, to provide a land base for the time and fireball photography which LRL feels is highly desirable.

On 2 Nov. Bradbury responds to Betts' TWX of 27 Oct. asking for comments on atmospheric versus underground testing and Bradbury makes a strong case for the lack of real advantages from underground testing as opposed to the attainment of a number of advantages if we could go to atmospheric testing. His TWX stands in stark contrast to that of ALO. Even though he states it would be "hard to understand why we should willingly agree to stopping air testing once started and returning underground" he urges that a stockpile of holes be accumulated.

Gen. Betts wrote a memo on 2 Nov. detailing a meeting he attended in the office of a Mr. Howard Furnas of the State Department on Oct. 23 with the Department of the Interior, Department of Defense, Department of State

and AEC in attendance. The memo goes into some detail on the various persons' arguments against the advisability of going to either Bikini or Eniwetok for the testing and states that it was the consensus of the group that we should look very carefully at the possibility of using either Johnston or Christmas, and only move to EPG if the factors discussed are out-weighed by other considerations.

On 2 Nov. Foster sent a TWX to Betts responding to Betts' 27 Oct. TWX mentioned above. Foster addresses the advantages of underground testing, the possibilities for developing improved capabilities underground for the future and addresses in a great deal of detail the advantages of the tunnel method of underground testing as opposed to vertical holes.

A 4 Nov. TWX from Betts to ALO and the Labs is included in notes from other folders and it addresses in part the decisions of the National Security Council which met on Nov. 2 on the subject of atmospheric testing.

On 8 Nov. Maj. Rosen of the DMA Test Office wrote an internal memo on the subject of properly diagnosing or best diagnosing the atmospheric tests. (continued)

Major Rosen proposes consideration of barges and surface ships to be used as aiming point and diagnostic base for the air drops and questions whether this method shouldn't be considered as it might possibly be a more desirable and better method of diagnosing the air drop tests than were the airborne diagnostics that were discussed.

Although slightly out of chronological order in the file this 27 October TWX from Henderson of Sandia to Betts addresses the questions about delivery of a 30 or 50 megaton device from a B52 aircraft. The response is that it looks like with parachute systems there is a method of air dropping such devices and obtaining safe separation distances for the aircraft and further the possibility of doing an exoatmospheric shot of one of these devices is addressed. It is felt that the Thor could be launched with such a warhead and certain advantages such as the minimization of fallout problems could be thus attained and notes that the desired launch sites would be in the Aleutians, Greenland, or Johnston Island.

On 8 November Betts sent a memo to Leudeke documenting the fact that Sandia feels that air drop of a 30 or 50 megaton weapon from a B52 aircraft at a release altitude of 35,000 feet with a height of burst of 15,000 feet is both feasible and can be safely performed.

A21

Documentation on 8 November covers the fact that DMA has been requested to outline for a Senator Aiken the reasons for the U. S. resumption of atmospheric testing as well as underground testing and also to prepare a proposed atmospheric test schedule in the event the U.S. resumes atmospheric testing.

On 10 November a TWX from Reeves of ALO to Betts documents the fact that neither one of the three laboratories can practically utilize a large amount of cable offered by the United Kingdom at a date a month or so previous to this and therefore have after a great deal of correspondence turned down the United Kingdom's offer.

A memorandum for Chairman Seaborg from Betts on 10 November documents the fact that Betts will be briefing the Joint Committee on Atomic Energy on 11 November and contains an outline of the briefing which contains the present AEC guidance for preparing atmospheric testing, the steps that the AEC is taking towards implementing the atmospheric program which include a planned meeting of the laboratories, and ALO and the support contractors on the 13th and 14th of November as well as a good deal of detail on 10 or so devices which are tentatively thought of as candidates for testing in the atmosphere plus a summary briefly covering the five tests already completed underground at NTS.

In an unclassified letter to Senator Aiken on 13 November, Gen. Betts covers some rationale behind the commission feeling the need for resuming atmospheric testing if the President so directs. In assessing the relative positions of the United States and the Soviet Union since testing was resumed on 1 September the letter states in part "The Soviet Union could have been making relatively large gains in nuclear weapons technology through their current intensive tests in the atmosphere. They have demonstrated that the number of tests that can be conducted in the atmosphere in a comparatively short period of time is much

greater than we have been able to conduct in the same period in the limited facilities presently available to us for underground testing. Thus, by limiting ourselves to underground testing our possible relative gains vs the Soviets in this field are as a consequence also limited. Atmospheric testing would relieve this limitation on the number and types of tests that can be conducted. In addition to the more rapid rate of progress through atmospheric testing, it is important to note that much needed information on effects and operational behavior of weapons systems could be gained only through atmospheric testing. Proof tests of large yield weapons and operational tests of entire weapons systems cannot be conducted underground. Atmospheric tests would permit gathering important effects information relating to anti intercontinental ballistic missiles. In this area we do not believe that conclusive information can be gained through underground tests alone. Important weapons developments necessitating large yield tests cannot be achieved in the present state of technology with underground tests."

On 15 November Gen. Betts sent a memorandum to Chairman Seaborg on the subject of the availability of sampling aircraft. In part the letter states that it is felt that there is sufficient B57 aircraft with the low altitude capability to meet those needs. However, the B57D aircraft which are the only available sampler aircraft to meet our high altitude sampling needs are in a marginal status as to the number of aircraft to meet our requirements. There are in fact 4 B57D's available to the AEC but in fact only 3 of these are useable. There are 13 other B57D's in the Air Force inventory and the following is true of these: "4 are assigned to the Air Defense Command for a high priority mission, 6 are in Europe extensively modified for a high priority mission there, and 3 are assigned to the Air Force Systems Command. The 3 assigned to Systems Command might be available, providing they have not been modified to the extent they are unsuitable for sampling purposes. A determination would have to be made, of course, of the relative priority our mission vs. that to which they are assigned in the event we require more than the 3 B57D's now on hand." It is thus clear that there is some question as of November 15 as to the readiness of the Air Force to meet the AEC's atmospheric test sampling needs.

A lengthy TWX dated 14 November from ALO to Gen. Betts with info copies to the labs is a preliminary coverage of the meeting in Albuquerque of 13 November attended by the principals from the various labs as well as Gen. Betts and others on the subject of atmospheric test resumption. The TWX contains a lengthy event list from each lab, LASL listing 15 events plus certain specific statements concerning the conduct of these events, and LRL lists about 26 different events as well as the specifics of their position relating to atmospheric testing. Various other details of the test site requirements, diagnostic requirements, etc., are contained in this TWX as well as a listing of the desired DoD program which includes 3 detonations in the Fishbowl series including Starfish at 400 kilometers, Kingfish, and Bluegill, as well as one near surface shot at the NTS which is titled Small Boy. As to a choice of test sites the sites to be considered in order of desirablity are first, Eniwetok/Bikini, second, Christmas Island, and third, Johnston Island and/or Hilo. It is noted that the concensus shows that politically Eniwetok and Bikini are essentially not feasible and that planning should be directed to Christmas Island with the alternative of Johnston and Hilo.

↑

Noted requirement for two "Boxer" type ships for diagnostics

On 15 November Chairman Seaborg sent to the AEC General Manager a copy of the "Presidential Instructions to the NSC Committee on Atmospheric Testing Policy" which gives the guidance for this committee to consider the proposed programs submitted by the Atomic Energy Commission. In part the Presidential instructions contain the following guidelines: "tests will be conducted in the atmosphere only if: (a) the test will provide information of substantial importance to the national defense. (b) The information needed can be obtained no other way, with reasonable time and effort. (c) Atmospheric fallout is minimized in all practicable ways. (d) The military need for the tests out weighs the desirability of avoiding all atmospheric fallout.

Preparations for atmospheric testing will be directed toward: (a) Test readiness in 4 months. (b) Concentration of atmospheric tests in the shortest possible time period with a target of about 3 months.

The committee will consider and recommend to the President on the need for providing the capability to conduct follow-on tests.

The study requested by the President (NSC record of action 2440-c) of the availability of sites for atmospheric tests will be directed toward obtaining, on a priority basis, a suitable island test base.

The committee will submit to the President for decision the carrying out of each atmospheric test. (a) For the present, the committee should limit its recommendations to tests which relate to important questions of weapons development and weapons effects. (b) Approval of either proof tests or systems tests can be expected only if there is convincing demonstration of unusual need in each case.

Budgetary questions arising out of test preparations will be reviewed by the committee, in consultation with the Director of the Bureau of the Budget. The President has decided that : (a) No FY 63 budget proposals for the financing of test preparations will be made public. (b) FY 62 expenditures will be financed by use of the emergency funds, with a supplemental request to be made as necessary."

A22

A memo for Chairman Seaborg from General Betts on 16 November while transmitting the list from each laboratory of the proposed devices to be tested in the atmosphere it mentions for the first time that I have seen General Starbird as commander of JTF8.

A 16 November TWX from Graves of Los Alamos to Gen. Betts asks that induced tsunami in Hawaii in the case of an accidental surface burst be added as a safety consideration in connection with off-Hilo operations.

A 16 November memo for Col. Anderson of DMA from a Col. Banks of the R&D Branch addresses [redacted]

Correspondence on 16 November notes the fact for the record that as of this date negotiations with the United Kingdom for the use of Christmas Island were already underway.

A 16 November memo from a Captain Craig of Test Office to Gen. Betts in DMA covers an attached memo for the commissioners which recommends the conduct of overseas tests in the open sea. The purpose of the memo which is not contained here seems to be to allow the labs and other organizations to do some efficient and firm planning in one direction only and it is felt that the way to force the commissioners to allow this is to recommend that a decision be made to focus only on the open sea area for testing due to the fact that no island base has yet been found. To quote from the conclusion of the cover letter "preparation time is very limited. A decision must be made very soon. Unless the commissioners are sure they can obtain Christmas they should agree to an open sea operation now."

A 17 November letter to Betts from Bill Ogle of LASL documents the specifics of the LASL diagnostic program for possible Pacific atmospheric tests as presently planned. Details of diagnostics to be performed from groundborne, airborne and/or shipborne stations for the various types of devices and type of carrier are enumerated.

On 17 November Betts sent a memorandum to Chairman Seaborg and the Commission on the subject of selection of overseas sites. He enumerates the present possibilities and states the following: "Unless final negotiations for Christmas Island can be accomplished quickly or support for Eniwetok-Bikini operations can be obtained from the highest governmental levels, I strongly but reluctantly recommend that a decision be made to conduct the tests by air drops or barge shots in the open sea. I feel that a decision at this time will provide the guidance needed to place all technical and operational preparations on a systematic basis. With the firm knowledge that the tests will be conducted at sea, all effort can be applied in this direction and it is likely that improved techniques can be worked out that will overcome the inherent disadvantages of such an operation. Continued delay in selection of a test site will greatly increase the cost in terms of funds and manpower, as well as reduce the effectiveness of final operation, since effort must be directed to support several contingencies instead of supporting a specific plan of action. In summary, I recommend that unless there is a good possibility of obtaining Christmas Island or Eniwetok-Bikini Atolls by December 1, the Commission make a decision to proceed with an open sea test operation, making use of Johnston Island and Hawaiian support facilities as feasible. If it appears that agreement for use of Christmas Island might be obtained with extended negotiations, these negotiations should be continued in order to provide a more suitable place of operations for tests in the future."

Two letters from Leudeke, the AEC General Manager to the JCAE on November 18 address previous requests from that committee for information concerning Eniwetok in particular and the resumption of atmospheric testing as the AEC is planning for it. The first letter responds specifically to four questions raised by the committee on the present status of the Eniwetok area as to its readiness and response capability for overseas atmospheric testing. The answer in part states that "preparations for a limited air drop series with limited diagnostics could be done so that the first test could be conducted in 12 weeks. Preparations for an extended test series at Eniwetok with optimum diagnostics would require up to 6 months." Further Holmes & Narver as well as EG&G and Sandia and their capabilities to respond with their organizations manned for a test series are addressed. Also the fact that

JTF8 is presently being activated by the Department of Defense to conduct the test series is noted.

A November 18 TWX from Betts to the Lab Directors notes that the President has appointed a committee chaired by Seaborg and consisting of Weisner, Bundy, a State Department representative, a DoD representative Gerald Johnson, and the committee will meet about the week of 20 November to address and evaluate a proposed US atmospheric test plan and to jointly meet with a similar committee from the United Kingdom and present the United States's position. Following the joint US/UK review the President and the Prime Minister will be presented with the joint plan for their consideration after which a decision as to the use of Christmas Island will be made. Betts requests the strongest justification for the different labs programs due to the importance of the information being forwarded to the Seaborg committee. He further notes that DMA has obtained authority to dispatch a group to inspect Christmas Island and that additional details of this inspection visit will be forthcoming. On November 20th Bradbury submitted to Gen. Betts the lengthy LASL reply. On November 21st Dr. Foster submitted the LRL reply.

A 22 November TWX from Betts to Hertford states the following concerning the Christmas Island trip: "Arrangements for inspection tour of Christmas Island facilities expected to be completed very soon. AEC designees are Bill Ogle, LASL, and Pat Ryan, H & N. Understand Ogle will represent both AEC and DoD."

A 21 November letter from the Assistant to the Secretary of Defense Johnson to Chairman Seaborg presents the DoD proposal for the first atmospheric test operations to be conducted beginning in about March and lasting for about 3 months. Johnson notes that these tests were included in the list submitted to the President on October 9th and their preparation was approved on October 11th. Further he notes that the test list submitted previously would require about two years to do and therefore the tests listed in this letter are those that it is felt could be done within the smaller window with the others being delayed to a follow-on series. The tests include(one)a 1 to 2 kiloton land surface or near surface test in Nevada to address the EMP effects. (Two) a 10 kiloton subsurface asroc test probably in the Atlantic ocean (3)At least one and not more than two of the following: (a) a 2 megaton detonation at approximately feet to investigate vulnerability of RV's and blackout effects on radio and radar. (b) a one-quarter megaton detonation at about feet to determine ICBM RV vulnerability and other effects. (c) a two megaton detonation at 1.3 million feet altitude to look at effects on communications and radars. (d) a full-scale ICBM vulverability test to verify the data from the above tests, to investigate kill mechanisms and RV vulnerability and to proof test the ABM capability against an ICBM.(4) the Polaris and Atlas tests earlier proposed are still considered to be desirable. As to the decision on an overseas site Johnson states the following: "In view of the present position of the British Government with the respect to the use of Christmas Island, in the interests of getting on with the operations I recommend that we plan on the time scale that we are working on to conduct all operations out of Johnston Island and over the open sea. In the meantime, let us continue to explore with the British the possibility of obtaining the use of Christmas Island."

On 24 November Gen. Betts sent a memorandum cover letter with 3 attachments to Chairman Seaborg in preparation for the meeting of the Seaborg committee which summarized DMA's position on the atmospheric test series proposals. The cover letter addresses the 3 general categories of tests the first of which is verification of designs and a few words on the LASL and LRL proposals are made. The second category is that of effects tests and the overlap between the AEC interests and the DoD interests in particular the two very high altitude recommendations of the DoD are noted. The third category of proposals is called advanced concepts and a good deal of detail of the LASL and LRL proposals is noted in the cover letter. The three attachments are the letter from Johnson of DoD which I just discussed above and second a DMA study entitled "Discussion of Proposed Atmospheric TestProgram" which is a lengthy look at both the LASL and LRL proposed tests in exhaustive detail as to the device and the justification as well as some comments by DMA on the overall need for atmospheric testing and the third enclosure entitled "Proposed Atmospheric Tests" which is an abbreviated listing of those tests selected by DMA as those most desirable for a test series, containing LASL shots and LRL shots and including 2 high altitude tests.

A 27 November TWX from Betts to Hertford of ALO discusses the final arrangements for the Christmas Island Tour which will include Ogle and Ryan. In addition to the dates of the tour which is to take place beginning about 5 December, the need for strict security is emphasized and a story for local consumption that Christmas Island and only then if necessary is "the purpose of the party on Christmas is connection with survey work for possible use of the island in extension of satellite tracking facilities."

Note should be made here of the 3 November letter from a Mr. James Carr, the Acting Secretary of the Interior, to Chairman Seaborg which expresses deep concern over the possibility of use of the trust territory i.e. Eniwetok and Bikini for the testing of atomic devices. It's a strong letter which lists some reasons briefly and states a strong recommendation from the Department of the Interior that they recommend against any further testing in the trust territory.

A23

A 29 November letter was sent by Dr. Seaborg as Chairman of the NSC Committee on Atmospheric Testing Policy to the President and the contents of this letter are extremely important, of course, so I will have a copy of this made for our use after getting permission since it is Secret RD. The letter begins by noting that a careful study has been made of all of the nuclear test shots proposed by the weapons labs and the DoD for inclusion in the possible shot window which may be authorized for a 3-month period beginning in the spring of '62 and it is noted that the proposals were reviewed in light of the continuing objectives of our nuclear weapons program, our position relative to the USSR and our current state of readiness as adversely affected by the test moratorium. It states that "some 49 possible test shots were reviewed, of which a minimum of are recommended for inclusion in the early program." The letter notes the 3 general categories of testing which are in order of discussion. One, effects of nuclear weapons on such things as hardened missile bases, missiles in flight, radar and communication, and on Naval vessels and their equipment. It is stated also "the area of greatest interest lies in effects at very high altitudes as they apply to AICBM defenses and to the kill capability of our own AICBM warheads. A series of 5 such tests

has been projected, varying in yields from a few hundred kilotons to about 1-1/2 megatons, and in altitudes from 20 kilometers to above 400 kilometer. However, practical considerations with respect to development of instrumentation techniques and related preparations make it unrealistic to plan for more than two of these shots in the short time available. Category two is that of advanced concepts for improving weapon effectiveness and decreasing warhead vulnerability, and these cover a wide range of possible design changes, etc. The third category noted includes tests that combine both developmental and weapons verification objectives. As to the designs that might be tested under this category the letter states "it is important that these designs be subject to experimental verification not only to give confidence as to the effectiveness of devices stockpiled as weapons but also, importantly to enable the laboratories to use the information so obtained as a basis for more advanced steps into new weapons technology. In addition to addressing the general categories and justification for the different types of tests which are desired for atmospheric conduct, the letter gives some specific justifications for the need for atmospheric testing including the problems inherent in solely underground testing, the great advances and the large data base that the Russians are building up in their accelerated atmospheric program, and specific military areas which can best be addressed only by atmospheric testing and are so very important to the nation's military defense strategy. In addition to noting the engineering problems with doing testing underground and the slowness with which such testing goes a strong point is made about the relative capability for diagnostic instrumentation with underground versus atmospheric testing. Further the question of an overseas test site is addressed and Eniwetok with its political difficulties versus the use of Christmas Island with the as yet uncertain availability are noted and it is stated that tests could be done by air drops probably staged from Hawaii with limited instrumentation on some small island such as Johnston which is at present being pursued but which is not as desirable as having a large island test base. Further it is stated that a special requirement exists in connection with the rocket lifted test shot for which Johnston Island is the most logical launch point because of the available facilities. He further addresses the question of outer space testing and states that because of the projected cost of an initial 100 million dollars over a two-year period to develop such a capability that such a capability is not being considered for the planned program. In the area of fallout and political implications of nuclear yield it is stated that a total yield of approximately 21 megaton of which about 8 megaton would be fission yield is projected for the planned series of events as compared to the approximately 120 megatons of yield already totaled during the recent Soviet tests. Part of the summary of the cover letter reads as follows: "In addition to provisions for flexibility, current planning should provide for preparation for a second test series, about a year later, looking to more dramatic advances than are possible in an early time frame. In fact, it is essential to plan for a second series in order to accomplish the very important effects tests that could not be included in the early time scale. In looking at what test devices can be made available in the April to July period, it is apparent that we are suffering to some extent from the three-year test moratorium. During that period while the United States was negotiating in good faith, the bulk of our nuclear weapon design

A24 effort was oriented towards devices that could be stockpiled with adequate assurance without tests. Thus, the climate was not conducive to bold, new concepts requiring experimental checks. The possibility of being able to test seemed very remote. In contrast, the available evidence indicates from the very outset of the moratorium, the Soviets have anticipated atmospheric testing and have oriented their efforts toward significant advances A25 requiring such testing. In summary, it is clear that a rate of progress adequate to maintain our relative military posture can be attained only through resort to atmospheric testing; indeed, much vital information on effects and many possible technical advances, would not be realized at all through underground tests alone." The letter also contains 4 lengthy enclosures which detail the types of tests by category, the types of devices with details on the diagnostics and type of device, the amount of yield as well as listing for the President the numbers and types of tests of each of the nuclear powers since the beginning of nuclear testing.

A TWX dated 30 November from Batzel of LRL to Betts details the plans for diagnostics and the capabilities for diagnostics for the various types of A26 atmospheric tests as LRL sees it. They address them by categories of low yield shots being less than 50 kiloton, high yield shots greater than 50 kiloton, open sea testing and use of aircraft for the atmospheric program diagnostics.

A 30 November memo from the General Manager's office, to Gen. Betts is a reminder that Senator Jackson of the JCAE has requested the AEC be ready when Congress reconvenes in January to present to them the alternative test programs based on the circumstances as they may exist then.

A TWX dated 30 November from Mr. Schwartz of Sandia to DMA notes the change in the title of the outer space program from the Oats program which stood for out of the atmosphere testing and was misconstrued by some to mean that there would be no effects on or in the atmosphere to the new title Wirts which stands for weapon intermediate range testing system.

A memo from Captain Craig of the DMA Test Office to Gen. Betts on 1 December covers the last atmospheric tests coordination meeting held by DASA on 28 November since all future meetings will be held under the jurisdiction of JTF8. It is noted that General Starbird and a few of his staff are at A27 ALO and may visit Vandenberg on their way back to Washington. And that on his return Starbird will recommend one of three systems being considered for high altitude delivery to Genral Booth the director of DASA. Gen. Polhamus is mentioned here and I infer that he is the deputy director of DASA. There is little new information here except that a statement that JTF8 is doing parallel planning for the overseas operation and is considering a combination air/sea operation perhaps utilizing Hawaii and Johnston Island and another alternative of using Christmas Island or other island for a base of operations. The DoD funding picture is presented as follows: they presently have 18 million dollars for atmospheric operations and expect to obtain 32 million more from the emergency fund for a total of 50 million for FY 62 and expect to have 100 million included in their FY 63 budget.

→ NO — Still undecided on 6-8 Dec.

A 5 December letter from Seaborg as Chairman of the NSC Committee on atmospheric testing policy to the President addresses some additional questions from the President following the submission of the total report of this committee. It would be very helpful to have copies of or access to the letters from the executive to the AEC and probably also to the DoD. This letter deals with several items. First of all Christmas Island where Seaborg states that technical discussions with the British on the nature of the program are scheduled in Washington on December 8th and 9th and at this time also the Secretary of State will be briefed on the status of Christmas Island. As to the specific dates for the beginning of this series it is to be set at 1 April for the time being and the earliest possible date that it is felt the very important high altitude effects test can be performed is mid-June, therefore, setting the end of the test window at around June 15th as the target date with the understanding that it may well be necessary to extend this date to about July 1st. But for purposes of planning the window is now set at 1 April through 15 June '62. In accordance with the President's request the proposed atmospheric tests have been and are being thoroughly reviewed for deletion, substitution, consolidation, etc. to reduce the number from to a lower number. While it is felt that all of these items are important, Seaborg lists several suggestions for a few items which may be substituted underground, one particular pair of tests which may be consolidated, and also several tests which might be done in lieu of each other and which would allow for a reduction in the total numbers and in summary he states that there is attempt being made to reduce the number by about 5 to 7 tests. The reduction in total yield would be very little, about 2 to 4 hundred kilotons and this would be largely fission yield. Furthermore, Seaborg notes that a study of ways to accelerate and expand the underground test program is currently underway.

Betts sent a TWX to Bradbury and Foster on the 6th of December querying them as to the possibility of
for various reasons and received a reply immediately from both laboratories to the effect that it is indeed feasible to do this. LASL, however, points out that it is not desirable to do

A 7 December TWX from Betts to Hertford of ALO addresses Reeves request for urgently needed authorization to increase manpower and activities. Betts states that he realizes the urgency and the necessity, however, DMA cannot at this time authorize any further actions which might increase manpower ceilings or dollar committments but they expect relief from this situation probably within a week.

A28

A memorandum for Gen. Betts from Col. Banks with DMA on 7 December covers a JTF8 meeting of 6 December with Gen. Starbird. Adm. Mustum, Gen. Samuel, Mr. Howell of H&N, Shuster of Sandia, LRL, Herman Herlin of LASL, Mr. Miller of ALO and others in attendance. Gen. Starbird made some specific remarks on the status of the planning for the atmospheric program and gave a rundown as follows: Program will consist of 20 to 25 diagnostic tests and because of the inability to use Eniwetok and the question on Christmas Island many

A29

of the test would be air drops in the open ocean south of Hawaii or adjacent to Johnston Island with some of the shots to be on ships. The best possible diagnostics are sought using Air Force capability and diagnostic trailers designed so that they can be used on either ship or land Starbird stated. The first shot would be planned for April 1 with the whole program concluded as soon as possible but by 15 June as planned. A skeletal organizational chart was presented by a Mr. Parsons of JTF8 showing the commander and the deputies and the line of command then through a chief of staff to four subgroups one of which would have the scientific groups, one Navy, one Air Force, and one a support group. As for financing Starbird mentioned effort was being made to try to reinstate an old AEC-DoD agreement whereby each of the parties pays the total cost for an event based on to whom the event was of primary interest. A large amount of the discussion centered around the support requested of each of the individual services, the Navy, Air Force and Army, and enclosures to this memorandum are the formal drafts of the memoranda for the Chief of Naval Operations, the Chief of Staff of the Air Force, and the Chief of Staff of the Army as they would read from JTF8 to the respective services. Certains things of note on these enclosures are that on the Navy enclosure where the ship requirements are listed included is a request for six shot ships of the Liberty class which are to be expendable since they would serve as the platform for detonation of the near surface shots. Also included in the Air Force request list for support is a request for six B57D aircraft which was crossed out and changed to 10 and a note is written in that at this time only 3 of these were available for high altitude sampling and that others would be hard to come by. An LRL list of device by device readiness date for testing is contained herein as it was reported at the meeting and a note that LASL will provide a similar list for JTF is included. There was also some discussion of the missile requirements between Gen. Starbird, Don Shuster of Sandia Corporation, Dr. Herlin of LASL and Mr. Gale. In addition to the two shots that are planned, AEC is interested in a third shot with a yield of 50 kilotons or so at a few thousand kilometers to check out the capability of space testing as well as making physics measurements and doing some measurement relative to the Vela Hotel and Vela Sierra programs. There was agreement that the high altitude schedule would be set up to accommodate three shots in case one of the shots was a failure but that the likelihood of an added shot was remote.

Whereas no decision had yet been made on selection of either the Polaris, Redstone or Thor as the high altitude carrier, Polaris seemed to be out of the running due to the inavailability within the proper time scale. Redstone looked like it might be the choice, however, it could not be used above 1000 kilometers, where Thor seemed to be the choice. Study by the JTF-8 staff had also showed that the Thor system could be ready by 1 May.

A TWX on 11 Dec from Betts to Reeves of ALO, Shuster of Sandia, Ogle of LASL and Howell of H&N notes the plans for a survey trip by these gentlemen and Gen. Starbird and JTF-8 staff members to the Hawaiian area and Johnston Island starting on the 12th of Dec.

A TWX on 11 Dec. from Betts to Foster and Bradbury notes the possible problems with the "Christmas tree" concept that LRL had been pushing for some time and that following the contamination problems arrising from such happenings as those following Antler and the situation arrising after Chena, there is considerable scepticism in DMA regarding this concept. These experiences plus other unknowns make a thorough and timely examination of the Christmas tree concept as opposed to the outer space testing concept immediately necessary. And due to the high cost involved with developing either one of these capabilities it seems clear to Betts that both of them can't be developed and therefore a choice must be made at an early time. He asks both LASL and Livermore to prepare a discussion of the advantages and disadvantages of the Christmas Tree concept and submit these on 14 Dec to the chairman so that an early decision and an early concentration of resources may be made.

An 11 Dec. Memo for record written by Col. McMillan of the DMA Test Office is on the subject of "Pacific Islands Discussion with Representatives of Department of State and Department of the Interior". The meeting was held on 11 Dec to discuss the possible use of 3 U.S. islands, Jarvis, Baker and Howland. These islands have no inhabitants and are being thought of as sights for surface bursts. The Department of State has no concerns about these areas for political reasons, however, they are concerned with the fallout problem. Also the matter of the birds on Jarvis Island was discussed but didn't seem to generate much concern. The conclusion was that there are no domestic or foreign policy problems which seem to preclude the use of the islands for the conduct of the proposed tests and that to proceed separate letters should be sent to the Departments of State and Interior stating the proposed uses of the islands outlining the safety aspects and requesting approval. Both State Department and Interior Department Representatives felt that an affirmative answer would be forthcoming.

A 12 Dec. TWX from Bradbury to Gen. Betts addresses the Christmas Tree concept and in general, states plainly LASL is prejudiced in favor of use of vertical holes as opposed to tunnels or the Christmas Tree configuration. As for outer space testing, Bradbury stresses that he feels the development of such a capability should be explored in Bluestraw, and that LASL would like to again press for the inclusion of a very high altitude shot, like 1000 kilometers. He feels the purpose of such a shot would be primarily to explore diagnostic techniques of a known system and only in a secondary way to observe the bomb debris behavior and geophysical interactions. LASL believes that such a

shot would be cheap compared to a full Christmas Tree attempt and Bradbury understands that Foster supports the idea of a space shot directed toward the similar objectives.

In a TWX to the labs and ALO on 12 Dec. Gen. Betts outlines the letters from Seaborg to the President on the NSC Committee shot list and recommendations for schedules etc. for an atmospheric test series as well as some of the President's feedback following the initial letter and asks that the labs continue planning for atmospheric testing according to this guidance. Among other things he notes that the President has not approved the atmospheric test list, nor has he approved the test period between April 1 and June 15, nor has he made a final decision on the actual resumption of testing.

In a TWX on 12 Dec. Betts asks Bradbury, Foster and Reeves to continue considering the question of

On 12 Dec. Betts sent a TWX to Bradbury in regard to a letter from the DDR&E to Seaborg on 1 Dec. That letter referred to the gray area of responsibility for certain types of test measurements between the DOD and the AEC. The problem area has to do with a particular effects test which the DOD felt was being generated by LASL for the Army and hadn't been properly handled in that DASA should have responsibility for arranging and planning for effects tests as this was felt to be. The letter from DDR&E to Seaborg discusses in a little detail the historical and legal division between responsibilities for weapons tests diagnostics that affect performance and design of the weapon as being the AEC responsibility and output measurements and measurement of effects caused by weapons output as being the DOD responsibility. Betts is asking Bradbury for assistance in preparing the Chairman's response to the DDR&E letter and is taking the approach that this particular device, which is a warhead for the Nike Zeus, must have the military characteristics and in particular the neutron output spectrum verified and that therefore this is actually a test for diagnostic measurements that affect performance and design of the weapon. Not only does Betts feel that there is misunderstanding between whether this is a development test or an effects test, or a test by some other name, but that also there was a question as to where the request for the test came and that Betts feels that it came from the DOD to the AEC and not as alledged from the Army directly to LASL.

At the request of the President, Dr. Harold Brown, who I believe was DDR&E, sent the President a rather lengthy letter on 12 Dec. addressing the justification, for the need for and the specifics of the various tests which should be included in or should not be included in an atmospheric test resumption. Although Brown was a member of Seaborg's committee which had submitted a couple weeks earlier their own position, Brown comments here on the specifics of that. I believe he makes a strong justification for the need for development tests, as well as effects tests, and he makes some rather convincing

arguments about excluding several tests not biased towards either laboratory from the overall list as well as pointing out that the overall systems tests of the antisubmarine rocket, the Polaris and the Atlas, while highly desirable if they can be done on essentially a non-interference basis, are certainly not necessary completely for our confidence in these systems.

A 14 Dec. TWX from Graves of LASL to Col. O'Brien of DMA discusses in some detail the need for land-based diagnostics and the importance of being able to pinpoint exactly the device position relative to the instrumentation if such land-based diagnostics and precise accurate positioning is possible.

A 13 Dec. TWX from Bradbury to Betts addresses

A memo written by a Navy civilian named N. M. Brown of the Bureau of Yards and Docks on 11 Dec. reports on his meeting at AEC headquarters and his briefing on the possibilities of the Pacific atmospheric operations by a Cmdr. Stephens. The memo for the files seems to be considering the fact that the AEC retains the services of Holmes & Narver for engineering and construction, etc. in the Pacific area as necessary and that therefore the Navy Bureau of Yards and Docks might not be looked on with any great seriousness if they offered their services to Gen. Betts. This memo was forwarded by a cover letter to Cmdr. Stephens of the DMA Test Office from Brown who stated that it was decided that the Bureau would not contact either Gen. Starbird or Gen. Betts at this time but that if the services of the Navy Bureau could be utilized at some future time that it would be appreciated if DMA would get in touch with them.

A 15 Dec. TWX from Foster to Betts contains the planned LRL underground test program for Dec. 61 through Aug. 62 and includes shots.

On 15 Dec. Bradbury sent a rather lengthy TWX to Gen. Betts on the subject of DOD and AEC responsibilities as brought up by the recent DDR&E TWX to Betts and the question of the so called effects test of the 50 X1Y2 device. Bradbury makes a strong argument for the misunderstanding DOD seems to have of just what it is that the AEC has been responsible for in weapons testing for years and points out that it was the responsibility of the AEC to develop weapons and make appropriate diagnostic experimental measurements towards this objective and in addition, to provide by calculation or direct measurement for the using agency the definitive information regarding the fundamental output of those bombs. This, of course, specifically includes

the spectrum measurements in such areas as x-ray and neutron outputs, which is often required by the DOD. He goes into some detail on what he feels is the proper definition of the weapons effects responsibility which the DOD does in fact have, and makes the following statements: "We believe the AEC should understand these words to mean the effects which are caused by the use of nuclear weapons on systems or things of DOD interest, for example structures, communication, etc. The effects of nuclear weapons on nuclear weapons are an AEC responsibility as is the determination of the actual eminations coming out of the detonating nuclear system. The latter should not be considered to be a "weapon effect." It is also important that the AEC ascertain whatever it can about the phenomena associated with nuclear explosions whether of immediate interest to the DOD or not." Dr. Bradbury also discusses the theoretical role of DASA as a collection and sorting agency for the various services within the DOD and feels that the AEC should have no objection to them acting as such but sort of wistfully wishes that they in fact could act as such instead of having the various contractors and services come directly to the AEC and the labs in so many cases.

A letter from Commissioner Leland Haworth to Mr. Bundy, the President's special assistant for national security affairs on 15 Dec. addresses the advantages to be gained by having Christmas Island available for the test series. The summary of the letter reads "To summarize, the availability of Christmas Island by Jan 1962 for the coming series of tests would be highly advantageous in that it would permit the conduct of a more extensive, more carefully instrumented, and operationally simpler program with greater assurances of attainment of test objectives. Even if use in this series were limited by shortage of time, availability for subsequent series could be of great importance. However, ~~two~~ rigorous restrictions imposed by the British, particularly on the content of the test series or on our freedom of control, could largely, or even completely, nullify the potential advantages." Mr. Haworth concentrates some length in his letter on the subject of the desirability of having the island base for the most accurate and proper diagnosis and output measurements of the tests themselves. He makes a very strong point as to the need for a fixed base and at most desirable a land base for diagnostic instrumentation to carefully pinpoint its position and also the desirability of having the detonation carefully located and he compares the use of Christmas Island either in conjunction with airdrops or in some cases balloon tethered shots to the diagnostics problems with having an open ocean series where the devices would be either airdropped or on ships in some cases and the instrumentation would be largely either ship-based or airborne. See Commissioner intg #1804, 4 DEC 61.

A30

A 16 Dec. TWX from Foster to Gen. Betts on the subject of the gray area between AEC and DOD responsibilities states the following: "Specifically my understanding is that the AEC has responsibility for warhead design and output, including blast, x-rays, neutrons, and gamma rays. The "gray area" is the transmission of these effects. The DOD responsibility is the response of military equipment and personnel to these effects. This position seems adequately covered in Starbird's letter to Dr. Brown, Director, LRL, on Nov. 23, 1960." Foster goes on to say that he doesn't feel there is a gray area involved in the request for LASL to make a measurement on the radiation produced by the warhead being questioned here, as well as he feels there is no question on the 1000-kilometer shot which he feels are both appropriate experiments for the AEC to perform if it so desires.

A TWX on 17 Dec. from Mr. Reeves of ALO to Gen. Betts seems to be addressing the need for information by the beginning of work on Dec. 18 by a man named Anderson of DMA and Reeves is stating there is no time to call a planning board meeting to arrive at the information requested prior to that time but he presents the information as ALO is able to come up with it in this TWX. Apparently, based on the current LRL and LASL underground test schedules, ALO was asked to come up with detailed cost and schedule figures and to discuss and perhaps address various alternative methods of saving money and improving schedules, etc. The TWX goes into a great deal of detail on the advisability of hiring extra crews at the NTS, of working extra shifts, of changing the number of hours per work week, of shutting down rigs for week-ends, etc.

A31

On 17 Dec. Bill Ogle sent a report on a summary of his visit to Christmas Island to Gen. Betts which is enclosed here and I believe we have a copy of at LASL, the number being JO-541. I will quote here the conclusion of this report. "While Christmas Island is not developed to the extent that is Eniwetok-Bikini, it could be made into an emminently satisfactory site for atmospheric tests. The main point that strikes the observer immediately is that there is so much space, all flat. Air fields, parking ramps, etc. can be as large as necessary. Buildings need not be crowded together, scientific stations can be properly placed.

There is no serious fallout hazard. The weather is good. The site seems to be ideal for balloon sites and air drops. It is more difficult for barge shots because of deep anchorage. But experience would probably teach us how to do even this properly.

While there are many problems, it appears that the most serious ones that arise in considering a quick operation have to do with the technical facilities, in particular those concerned with Alpha. For longer range planning the main problem is clearly that of docking facilities for large ships.

Therefore, from an operational and technical point of view, Christmas Island is to be highly recommended. Politically of course, the finger may point elsewhere."

An 18 Dec. memo from Col. Anderson, Deputy to Gen. Betts, to Gen. Betts discusses the results of a meeting with Gen. Starbird and includes the following items among others. DMA has issued authority to ALO authorizing Reeves to direct H&N to begin hiring personnel immediately and H&N plans to have about 1000 people ultimately involved in the JTF operations. The first DOD high altitude shot is scheduled for 7 May at Johnston Island with actual work towards this date beginning at Johnston Island on Jan 3. It is stated also that Johnston will not be used as a base for sampler aircraft. The Honolulu newspapers have written a couple of articles which are regarded as "surmise" articles, addressing the H&N hiring. The JTF generated cover story is that the hiring is for strictly DOD work at Johnston Island for construction, rehabilitation and service support for Johnston Air Force Base. As for funding for Johnston Island build-up, it is tentatively decided that DOD will pay for construction which relates to the DOD technical program, whereas the rehabilitation of the administrative facilities will be

paid for by the AEC. As for the Johnston Island management it is planned for an agreement to be negotiated such that JTF-8 will take control of J. I. from the present controlling agency which I believe is PACAF and will negotiate satisfactory agreements for use with the present users. H&N will then provide the support facilities and the AEC will be reimbursed for the costs that are attributed to non-JTF users. Operational drop aircraft and sampler aircraft are planned to be based at Barbers Point Naval Air Station with only minor additional facilities needed there. The remainder of the Air Task group will be based at Hickam and there is a need for at least $100,000 to be spent there to build and rehabilitate barracks buildings. Furthermore, the MATS freight terminal at Hickam which is presently jammed to capacity will require some additions for the JTF needs. JTF headquarters will be located on Ford Island and the Navy has agreed to the use of the buildings there which are in need of some repair. Gen. Starbird feels the AEC should pay the rehabilitation costs listed above for Ford Island and, I believe, Hickam also, based on the fact that the requirement of these facilities arises primarily from the AEC development shots.

There are a couple memos from the AEC secretary on about 18 Dec. noting the fact that a response to Dr. Harold Brown's letter on the subject of the atmospheric test series be prepared and that Gen. Betts of DMA will be preparing a reply.

On 19 Dec. Mr. Batzel of LRL sent a TWX to Gen. Betts on the subject of the desirability and feasability of pursuing the Christmas Tree concept which Betts had earlier requested comments on. Mr. Batzel goes into some of the details of the desirability of having tunnels for improved diagnostics on detonations as opposed to using just holes, and he discusses some of the engineering problems and stemming problems involved in both holes and tunnels. As to a recommendation about pursuing the Christmas Tree concept he states "In the light of our existing experience, LRL also has reservations about the feasibility and desirability of starting construction of a Christmas Tree facility at this time. As we gain more experience about the problems of stemming, radii of damage, and the effects of geology, we will be in a position to make a firm recommendation." On the question of outer space testing, Batzel states that LRL believes it is very important to develop a capability to diagnose nuclear tests in space and that an effort should be made to establish this capability. Further, LRL believes that it is urgent that the techniques for diagnosing and instrumenting such tests be checked out during the forthcoming atmospheric series.

A32

A 20 Dec. TWX from the Chief of DASA to DMA and AFSWC requests AFSWC to proceed with the design and procurement of sea borne targets for the airdrops including radar reflectors, radar responders and lighting and requests the AEC to provide necessary initial funds.

A 20 Dec. TWX from Batzel of LRL to Gen. Betts and Mr. Reeves of ALO is on the subject of schedules for underground testing at Nevada and in particular the construction and digging schedules at the NTS. Batzel notes that the present LRL schedule through 1 April has a few shots removed from it for two reasons: 1) An appreciation of the difficulties involved in providing locations for the experiments and 2) preparation for the atmospheric

series beginning in April. Batzel further discusses the fact that experiments which could have been done before April cannot now be executed because of the lack of suitable sites, particularly high yield sites. And requests that in the future decisions with respect to construction timing in the various tunnels should be coordinated with his laboratory and requests that an NTS planning board meeting be held before there is any action taken with respect to the reassignment of mining crews.

On 20 Dec. Gen. Betts sent a memorandum to the Chairman and the Commissioners of the AEC documenting the authorizations which DMA had provided within the last few days concerning the resumption of atmospheric testing. The decisions were required immediately to meet the April 1 schedule date since the holiday was fast approaching and Gen. Betts, among other things, authorized H&N to do certain hiring and initiate procurement of construction equipment, materials and supplies, authorized 3.5 million dollars of a $5 million authorization to H&N for the work to be performed prior to June 30 and presented H&N with the cover story as to the purpose of the work that they were performing in the Pacific area. The memo further states "Arrangements have been made to identify and contact past employees to determine if they are available to meet the predicted early needs."

A 22 Dec. Memo from Col. Banks of DMA to a Mr. Holland of the Fallout Studies Branch of the Div. of Biology and Medicine in the AEC covers some of the details of the planned atmospheric test operation which "may be useful to you in your planning investigations of various fallout phenomena." Among other things, Col. Banks notes that there are a total of detonations scheduled between April 1 and June 15 and that of the , about are currently planned as airdrops, 2 are high altitude shots and 2 are surface shots. He notes the range of yields of various shots and that the airdrops are to be conducted 400 miles south of Oahu with shots scheduled about uniformly throughout the test period. The 2 high altitude shots he notes are to be 1 at with a yield of and the other at 400 kilometers with a yield of and are scheduled to be performed between May 15 and June 15 from Johnston Island. The two surface shots which he notes are to be a 165 kt shot at Jarvis Island and a 2 kt shot at the NTS. Further, for the assistance of Mr. Holland, he states that Bob Goeckermann of LRL and George Cowan of LASL had been contacted relative to attending a meeting to discuss fallout phenomena.

A 27 Dec. TWX from Bradbury to Betts mentions the planned surface shot of an XW-50 X1Y2 to measure the neutron flux distribution and it is presently planned to be done as a surface shot on Jarvis Island. Bradbury requests that Betts arrange the procurement of Jarvis for that purpose and notify the lab of the Island's availability by the first of the year.

A 34

A 27 Dec. memorandum for Gen. Betts and Dr. Gerald Johnson, the DOD Assistant to the Secretary of Defense for Atomic Energy, covers the arrangements regarding the use of Christmas Island and is written by a Mr. Phillip J. Farley, a Special Assistant to the Secretary of State for Atomic Energy and Outer Space. The cover letter notes that a tentative agreement with the United

Kingdom experts has been reached at Bermuda to govern the use of the Christmas Island if it should be available in connection with the U.S. atomic weapons tests. He requests that pending further communication with the British that these two gentlemen review the draft statement of principles and advise Mr. Farley of their concurrence of their agencies or of any additional changes which appear desirable. The document is entitled "Statement of Principles - Use of Christmas Island in Connection with United States Atomic Weapons Tests" and is dated, Bermuda, 12/21/61. The statement states that Christmas Island would be used only in connection with a test program of agreed general nature and purposes which would use either airdrops or balloon shots and that the U. S. would have responsibility for control of the various aspects of the tests including their selection, scheduling and timing and the application of safety rules. The only direct position for the United Kingdom would be that the Base Commander would be a member of the safety committee. The UK government will take steps to assure the availability of such portions of the island and surrounding safety zones as are necessary. The U. S. may construct buildings and facilities as deemed necessary at their own expense with the approval of major facilities and buildings coming from the UK Base Commander. The UK would assist in providing security protection at Christmas Island. The U. S. in accordance with existing agreements for cooperation will furnish or otherwise make available to the UK detailed information concerning the tests making use of Christmas Island. Further the U. S. would be responsible for dealing directly with any claims due to loss or damage caused by such tests. Finally, all these arrangements would be made without prejudice to either Nation's claims to sovereignty over Christmas Island.

A 28 Dec. memo from Col. Banks to Gen. Betts covers briefly some of the items discussed with Bill Ogle of LASL with Gen. Starbird present on 27 Dec. 61. The question of the availability of Jarvis Island was raised and it was pointed out that although this was presently being considered by the AEC and appeared to offer no problem to the Department of State, that actual approval had not yet been received. It was confirmed that only one shot, a surface shot, was planned for Jarvis. Ogle noted that so little is known of electromagnetic effects that LASL planned to make EM measurements on the surface shot at Jarvis. The status of negotiations for Christmas Island was discussed with Ogle emphasizing that even if it could not be used for shots, it would be most helpful as a base for sampler aircraft. The limitation that no barge shots could be fired from Christmas Island was of considerable concern to Ogle, who pointed out that ships could be located as far as 10 miles from shore and that he was pretty confident that contamination would go out to sea and that other problems could be taken care of. In subsequent discussion after this meeting, Col. Anderson of DMA pointed out that barge shots would be permissible if conducted off shore so that the island contamination could be avoided. Dr. Ogle felt that it would be desirable for the U. S. Hydrographic people to measure the water currents around Christmas Island since such measurements had never been made. Ogle advised that there was a very real problem being encountered by the military in finding ships other than the CVS appropriate for airdrop support. The Joint Task Force, it was noted, has asked Ray Shelton of LRL to put together a safety committee with representatives from the Vey different laboratories and DASA and other appropriate organizations to consider such problems as blast, fallout and tsunamis and be an advisory group

A35 to the JTF. Ogle asked about the likelihood of a surface test being authorized at NTS and Mr. Gale of DMA said that this looked as firm as any noting the Dr. Brown's letter to the President had given justification for both the two high altitude shots at Johnston and the surface shot at the NTS. Gale further discussed a number of items of funding and personnel hiring authorizations.

A 29 Dec. TWX from the Commander-in-Chief of PACAF to Gen. Starbird addresses the transfer of responsibility for J. I. support from PACAF to the JTF. Among other things, the PACAF Commander requests that the arrangements for transfer and assumption of complete operational control by the JTF Task Group be earlier than Gen. Starbird had proposed in the neighborhood of 10 Jan. but not later than 15 Jan. Further, the PACAF
A33 Commander notes that there are a number of programs with priorities from various military organizations which are presently being supported by PACAF and that JTF would be assuming responsibility for support of these programs as negotiated with the various users.