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DELETED VERSION ONLY

HISTORY - TASK GROUP 132.1

1 May 1952

to

30 June 1952

by

Albert S. Knauf

ALBERT S. KNAUF
Maj., USAF

C.1.2

J- 13328

[redacted]

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Statement A
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OUTLINE OF HISTORY - TASK GROUP 132.1

1 May 1952 to 30 June 1952

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HISTORY - TASK GROUP 132.1

1 May 1952 to 30 June 1952

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I. ORGANIZATION

A. Firming of Task Group Organization

No major changes in the general organization of Task Group 132.1 occurred during the period 1 May 1952 to 30 June 1952. It is considered that the over-all organizational pattern of this task group is firm except for the probable addition of an advisory panel on the Task Group Commander's Staff. It is interesting to note that since activation and original planning for the scientific task group organization structure there have been no major changes. In fact there have been no personnel changes in the various staff positions and task unit commanders since the organization chart was printed on 29 February 1952. There have of course been some changes in the various scientific projects to be conducted. Some of these changes have been based on experience gained during the Tumbler-Snapper Operation; other planned projects have proven to be infeasible within financial,logistic, and time limits.

The administration and "direction" of the various elements of this task group are considered to be adequate. Proper channels for technical, operational, administrative, security, and logistic assistance have been set up and are being followed. Due to the widely diversified nature of the participating agencies composing this task group, i.e. governmental, industrial, educational, and military, and due to the widely separated geographical locations of these elements much of the routine administrative and logistic support is handled by each agency. However, various problems arising in any of these fields are coordinated

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with the proper staff section or task unit commander. Instructions and planning information concerning the overseas or operational phases of this task group are coordinated with participating agencies.

Several military personnel reported for duty with this headquarters during this report period. CDR Edward S. Eunson, USN, and LCDR James B. Johnson, Jr., USN, have been assigned to the J-3 Staff Section. LCDR Johnson is the task group Communications Officer. Lt. Col. John W. Lipp, USA, has been assigned as J-4, Military Executive. Major Chester D. Steele, USA, also assigned to the J-4 Staff Section, was appointed as TG 132.1 Liaison Officer at Oakland, California. Captain F. J. Munoz, USA, who was previously the Liaison Officer at Oakland was brought to Los Alamos. Captain John J. Onderko, USA, and LTJG Paul R. Powell, USN, have arrived at Los Alamos but are awaiting "Q"-clearance before they can be fully utilized by this task group.

B. Administrative Planning for the Overseas Phase

1. Phasing Overseas

Although no firm phasing plan for units of this task group can be made at the present time, it is presently planned that movement overseas will be in three general phases. The forward echelon of this task group consisting of representatives of J-1, J-2, J-3, J-4, and TU 10 plan to arrive at the Forward Area by early August. The second group consisting of various key personnel of TG 132.1 Headquarters will arrive in the Forward Area by 15 September. The third general group consisting of staff, task unit, and project personnel will in general, move to the Forward Area during August and September with some waiting until October. The early phasing is planned so that

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scientific personnel, some of whom are already in the Forward Area, may be provided adequate services and support for their projects.

2. Instructions and Information for Personnel of TG 132.1 Traveling to Eniwetok Atoll

Revised instructions have been issued for distribution to personnel of TG 132.1 who are traveling to the Forward Area. (A copy of these instructions is attached as Appendix A to this installment.) Information is given concerning identification cards, immunizations, contraband articles, personal and hold baggage, mailing addresses, emergencies, living expenses, check cashing facilities, recommended clothing and equipment, laundry service, recreational facilities, storage facilities at Honolulu, and military records and allied papers. A final check list and set of instructions will accompany the orders issued for travel.

3. Travel Outside Continental Limits of the United States by Military Reserve Personnel and Registrants under the Selective Service System

Written permission to travel outside the continental limits of the United States must be obtained prior to departure by all military reserve personnel not on active duty and all persons registered under the Universal Military Training and Service Act. The procedure for obtaining such permission from the various branches of service and selective service boards has been disseminated to personnel concerned in TG 132.1. For security reasons personnel of TG 132.1 were informed to give only the following information when requesting permits for trips to the Forward Area:

[redacted]

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a. Countries to be visited - Marshall Islands.
b. Duration of visit - six (6) months from date of application.
c. Individuals or organization represented - name of employer.
d. Nature of business - development of Pacific Proving Grounds.

4. Personnel Administration at Eniwetok

A trip to the Forward Area was made during the period 12-26 May 1952 by Lt. Col. H. L. Freshwater, Military Executive, J-1; Captain R. J. Pitzer, Headquarters Commandant; and LTJG R. F. Wilson, Assistant Headquarters Commandant. The purpose of this visit was to plan for the efficient handling of personnel administration in the Forward Area. Details of the procedure for receiving personnel, the details of planning office space and housing, and other phases of administration were discussed with Holmes and Narver and AEC representatives.

The Headquarters Commandant will establish an office in the Forward Area in mid-July. Arriving personnel of TG 132.1 are presently being processed by the AEC Resident Manager. When the Headquarters Commandant arrives, he will assume the duty of personnel processing.

Housing facilities at the Atoll were inspected. Work was in progress to repair all plumbing and electrical fixtures in the barracks on Parry and in general to get them ready for occupancy by arriving personnel. A complete inspection was made of the two upper island camps on Teiteiripucchi and Runit as to present and proposed housing. It was felt that both sites will be adequate to handle the anticipated population.

An inspection of the TG 132.1 Headquarters building revealed that the building was in good condition but required some additional partitioning for planned offices. A check was made of the office furniture and

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it was found in fair condition.

5. Housing Planning at Kwajalein and Aboard Ship

In addition to planning for adequate housing on Eniwetok Atoll some estimates have been made concerning requirements at Kwajalein and aboard ship. Space will of course be very critical on Kwajalein and aboard ship. As of the end of June, the best estimate of housing requirements for TG 132.1 on Kwajalein was for approximately 140 project personnel.

Mr. Armand W. Kelly inspected the facilities for housing TG 132.1 personnel aboard the USS Curtiss and USS Estes on 13 June 1952. At this time approximately 12 officer grade personnel of TG 132.1 were planning on being aboard the Curtiss during the outbound trip. There is no problem of obtaining more space if required. While the Curtiss is anchored in the lagoon during the period from arrival to about M-4, TG 132.1 may occupy up to 105 spaces in cabins on the Curtiss. It is estimated that during this phase TG 132.1 will probably have 30 persons on board. During the evacuation the same 105 spaces will be available but approximately 17 spaces will be used by VIPs. TG 132.1 will require approximately 83 spaces which could be increased to 88 if necessary during evacuation.

The billeting space on the USS Estes available to the Joint Task Force and TG 132.1 included 91 permanent bunks in officers quarters. This number could possibly be increased by 150 by using temporary upper bunks and an additional 60 if folding cots were to be used in staterooms. Allocation of space between JTF 132 and TG 132.1 has not been determined.

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6. Recreational Planning

In addition to the normal recreational facilities available on Parry Island it is planned that the islands of Japtan and Aaraanbiru will be designated as recreational areas for joint use by all elements of Eniwetok Atoll. Japtan has numerous palm trees and adequate swimming facilities. Soft ball facilities are available and several buildings may be utilized for personnel shelter while eating, etc. On Aaraanbiru palm trees and other vegetation provide adequate shade and good swimming and excellent shell hunting is to be found. The location of these two islands also will provide areas located roughly at the northern and southern halves of the Atoll to which crew members from vessels anchored in the lagoon may have fairly ready access.

II. PROCUREMENT

A. Funds

Allotments totalling $1,950,000 have been issued to CTG 132.1 for Programs 3, 4, 5, 6, and 8. These were Department of Defense Research and Development funds approved for Ivy for FY 1952 for the joint AEC - DOD programs with the amount referred to above to be transferred to the AEC. All other TG 132.1 R&D funds have been allocated to the various projects. A general breakdown of funds available, cumulative obligations, and cumulative expenditures as of 30 June 1952 for TG 132.1 is given below:(1)

(1) TG 132.1 Fiscal Report as of 30 June 1952.

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CLASSIFICATION	FUNDS AVAILABLE	CUMULATIVE OBLIGATIONS	CUMULATIVE EXPENDITURES
Maintenance and Operations			
Travel	$33,200.00	$33,047.58	$16,114.31
Transportation of things	1,300.00	1,210.00	-----
Communications	500.00	-----	-----
TOTALS (M&O)	35,000.00	34,257.58	16,114.31
Research and Development Funds			
Program 3	185,000.00		
AEC		150,000.00	150,000.00
Project 3.7		35,000.00	-----
Program 4	50,000.00		
AEC		50,000.00	50,000.00
Program 5	550,000.00		
AEC		150,000.00	150,000.00
Project 5.4a		245,000.00	25,000.00
Project 5.4b		155,000.00	-----
Program 6	2,140,000.00		
AEC		1,413,500.00	1,413,500.00
Project 6.4b		100,000.00	100,000.00
Project 6.7a		216,500.00	216,500.00
Project 6.7c		-----	-----
Project 6.10		160,000.00	-----
Project 6.11		250,000.00	-----
Program 7	529,900.00		
Project 7.1		115,000.00	-----
Project 7.2		140,000.00	-----
Project 7.3		80,000.00	-----
Project 7.4		50,000.00	-----
Project 7.5		64,000.00	-----
Project 7.6		80,000.00	-----
Program 8	450,000.00		
AEC		200,000.00	200,000.00
Project 8.5		250,000.00	-----
Program 9	385,000.00		
Project 9.2		175,000.00	-----
Project 9.3		170,000.00	-----
Project 9.4		40,000.00	-----
Program 11	212,500.00		
Project 11.1		55,905.00	55,905.00
Project 11.2		27,595.00	27,595.00
Project 11.3		32,000.00	32,000.00
Project 11.4		97,000.00	97,000.00
TOTALS (R&D)	$4,502,400.00	$4,502,400.00	$2,517,500.00

[redacted]

[redacted]

Secretary of Defense Contingency Fund

Ivy Badges	1,500.00	1,486.50	1,486.50
Documentary Photography (TU 9)	147,100.00	145,691.57	598.43
Film Badges (TU 7)	2,500.00	1,040.00	1,040.00
H & N Support of DOD projects	40,000.00	40,000.00	40,000.00
TOTALS (Contingency Fund)	191,000.00	188,218.07	43,124.93

Task Group 132.1 submitted to Joint Task Force its estimated requirements of extra military of operational funds for the fiscal year 1953. Over-all estimates of these expenses are given below:

Classification	Amount
Travel	$199,508.86
Transportation of things	6,000.00
Communications	600.00
Rad-Safe	1,450.00
TOTAL	$207,558.86

During this period the fund requirements of the various programs were surveyed to determine whether additional Research and Development funds would be required to complete Ivy Programs during the fiscal year 1953. This survey revealed that the following additional funds would be required during fiscal year 1953:

Project 6.4b	$ 9,500.00
Project 6.7a	32,000.00
Project 6.7c	16,000.00
Project 7.2	35,000.00
Project 7.3	30,000.00
Project 7.5	35,100.00
Project 11.4	4,000.00
Task Unit 7	1,000.00
TOTAL	$162,600.00

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B. Procurement of Personnel

As of the end of June approximately 90 per cent of the personnel required by this task group had been procured. Of the 134 military personnel requested on a permanent basis for Operation Ivy, all but 7 have reported for duty. However of the number reporting for duty, 24 still require a "Q"-clearance.

A request was made to the Commander, JTF 132 for a policy for handling draft deferment requests for civilian personnel of this task group. During Operation Greenhouse the Joint Task Force had established contact with a representative of General Hershey's Staff in the Selective Service System for the purpose of expediting requests for draft deferment of key civilian personnel. As a result of this contact, services of irreplaceable personnel were preserved for the duration of the operation. As a result of this request a conference was held between representatives of JTF-132 and the National Selective Service Headquarters. It was agreed that the general policies and procedures in effect during Operation Greenhouse would remain in effect. It has been pointed out to members of this task group who are presently classified I-A that an immediate attempt should be made by the employer to obtain an occupational deferment.

C. Progress in Procurement of Scientific and Technical Equipment

The procurement of scientific and technical equipment for Ivy is progressing fairly satisfactorily. All of the major items of equipment have been on order for some time and most of them have been delivered. One of the last major items to be received was the first expansion engine from the Worthington Pump Company. Constant check

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and follow up was instigated by the J-4 Staff on this item. The engine was flown to Eniwetok in order to meet planned schedules of the cryogenics plant in the Forward Area. Its arrival at Eniwetok completed the shipment of the equipment needed for the cryogenics plants.

There is of course, still a constant flow of requests from Los Alamos and other continental laboratories and from the Forward Area for many small items of equipment and supplies. These are being handled as expeditiously as possible with the most urgent consigned to the Forward Area by air.

Special arrangements were made during June to air transport 45,000 lb of "mud" for the Project 11.3 drilling operation.

III. LOGISTICS

A. Status of the Logistics Program

In general the over-all logistics program of TG 132.1 is progressing satisfactorily. Clearances have been obtained for all officers assigned to this activity and their services are now being fully utilized. Captain F. J. Munoz was brought to Los Alamos and Major Chester D. Steele was assigned to the TG 132.1 Liaison Officer position at Oakland in an effort to more efficiently use officers assigned to the J-4 Staff Section. Both are working out very well in their new positions. Major Paul W. Stuart will leave the latter part of July to be a representative of the logistics group in the Forward Area.

The stockroom on Parry Island will be open for general use by the end of July. This stockroom has been operating on a limited basis since early June.

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The sailing of USNS Sgt. Pendleton was delayed approximately 10 days due to a breakdown requiring major repairs. This delay required that certain critical supplies be diverted to air shipment by MATS.

Lt. Col. John W. Lipp visited several of the agencies of this task group to discuss property accountability, marking and shipment of property through port to the overseas test site and return, and any anticipated logistic problems of these units. Lists of consignee combinations assigned to various task units and projects of TG 132.1 were distributed to participating agencies.

B. Planning for Movement Overseas

Air and water transportation requirements for both personnel and equipment are forecast each month and forwarded to the Joint Task Force for consolidation with other task group requirements. These forecasts of requirements cover a period of 3 to 6 months in advance and are altered each month to present as accurate a picture as possible of known shipments.

An estimate of personnel movement to the Forward Area and outlying islands for the period July through October for TG 132.1 military, civilian, and Holmes and Narver personnel is given below:

July		
	Military	34
	Civilian	39
	Holmes & Narver	133
August		
	Military	63
	Civilian	107
	Holmes & Narver	98
September		
	Military	144
	Civilian	262
	Holmes & Narver	75

[redacted]

[redacted]

October

Military	135
Civilian	103
Holmes & Narver	26

A Special Air Mission flight has been arranged to transport approximately 35 key personnel of TG 132.1 Headquarters to the Forward Area on 8 September 1952.

Special arrangements have been made for shipment by surface vessel of some of the larger items of equipment. Two liberty ships, the USNS Sgt. Jack Pendleton and the USNS Pvt. Joseph Merrill, have been tentatively appointed by MSTS to sail from Oakland on 2 August and 21 August respectively, for the transportation of the large Cambridge Corporation dewars. Mr. Warner of Cambridge Corporation plans to brief the ship's personnel on handling procedures for the dewars when the ships are at Oakland. The dewars have been reduced in height by a few inches and this should facilitate shipping problems.

As mentioned in a previous installment the USS Curtiss will transport all components of the Mike device with necessary spare parts and the King X-Ray device [redacted] and spare parts for work with the King Shot device. Loading feasibility tests of the basic components have been made.

IV. SECURITY

A. Status of the Security Program

The J-2 Section bf TG 132.1 has a Forward Area security representative presently stationed on Parry Island. Prior to 1 September 1952 an office will be activated in Building 222 on Parry Island by three additional men for the purpose of assembling, recording, and

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issuing all Ivy identification badges and related forms. All special badge office equipment was shipped on 10 June 1952. On or about 1 September the Assistant Chief of Staff, J-2 will establish his office on Parry Island adjoining the badge office.

Pre-shot activities will consist in maintaining required security clearance status for all Forward Area Ivy personnel, furnishing identification badges, and monitoring accomplishment of current security directives. Post-shot activities will include provisions for safe return of samples, duties relative to roll-up operations such as termination of clearances, termination statements where appropriate, and return of badges.

One security representative will be stationed on the USS Curtiss throughout the operation. In addition, it is planned to station two men on the USS Estes, one on the USS Rendova, and three on the transport during evacuation.

As of the end of June there were approximately 1750 "Q"-clearances in effect for TG 132.1 and approximately 300 in process. The arrival of uncleared military personnel for duty at Los Alamos has been a serious handicap to this task group and presents a morale problem for the men concerned while awaiting clearance. They cannot be admitted to the Tech Area at Los Alamos and hence their services are limited. Training for their prospective duties is difficult. Every effort is being made by the Joint Task Force to cut clearance time down to a minimum and each case is followed up to assure that there will be no undue delays. It is planned that after 1 August 1952 no new "Q"-clearances will be requested.

[redacted]

B. Planning for the On-Site Phase

The date for the implementation of the over-all badge system has been changed to 1 September 1952 rather than 1 August 1952 as originally planned. Ivy badges will be issued to certain personnel aboard the USS Curtiss prior to this date.

The Ivy Forward Area Identification Plan has been forwarded to Joint Task Force 132 and approved. This plan provides for indication by color code the type clearance the wearer has and the area to which he has access. Access to operational areas at Eniwetok Atoll, Kwajalein Atoll, or afloat, which are designated as "Operational" or "Exclusion" will be limited to wearers of Ivy security identification badges consisting of a colored insert laminated in plastic and equipped with a spring clip. Secondary identification such as access lists and exchange badges will be required for access to Exclusion areas. Badges will normally be procured, assembled, and issued by CTG 132.1 upon delegation of such operational responsibility by CJTF-132.

Badges will normally be issued to all "Q" and "TS" cleared persons who have need for access to classified areas ashore and afloat, and to NAC cleared personnel stationed on Kwajalein. Badges will not be issued to NAC cleared personnel stationed on Eniwetok Island. Badges will not be issued to personnel stationed afloat unless their duties require access to operational areas, ashore or afloat. Appropriate badges, "Temporary" and "VIP", may also be issued to other personnel as required by exigencies of the situation.

C. Holmes and Narver Personnel Security Processing

Statistics maintained by Holmes and Narver Security Division for a four week period indicate that an average of 100.63 days is

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required to process a clearance from the date the clearance request is submitted to AEC until the date the "Q"-clearance is granted. ~~It is granted.~~ It is expected that this time will be reduced since there is a decrease in the backlog of individuals to be cleared.

The status as of 15 June of Holmes and Narver personnel clearance is as follows:

Number of "P"-approved personnel on overseas payroll	212
Number of "Q"-cleared personnel on overseas payroll	1,074
Number of "P"-approved personnel in the home office	66
Number of "Q"-cleared personnel in the home office	235

V. TRAINING

A. Tumbler-Snapper Training

Operation Tumbler-Snapper which was completed during this report period provided excellent training for many of the personnel concerned with Operation Ivy. Many of the ideas and methods and much of the equipment were tested under field conditions. The results are now being evaluated and several revisions of the Ivy program may be attributed to lessons learned at Nevada. These revisions will be discussed in some detail in the Test Programs portion of this installment (Sec. VII).

The F-84G aircraft participation in cloud sampling missions during Operation Snapper gave first-hand experience for those who will fly cloud penetrations during Operation Ivy. Studies of the dependence of airplane contamination on surface treatment and studies of major sources of background radiation after cloud penetration were made. The results of these studies will be applied to decreasing the background radiation on the F-84G's on Ivy. The new-type fuel-carrying

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wing tank filters showed an improvement in sampling performance over the old type. In several shots these new filter tanks allowed samples to be obtained when conditions were such that no samples would have been obtained with the old units. Prior to 1 October details of the Ivy sampling operation will be worked out and practiced in dry runs with the airplanes. The use of a B-36 as an observer airplane for sampling control has been discussed with TG 132.4 and agreement reached as to the general principles involved in its use.

It was found as a result of Tumbler-Snapper experiments that certain methods and techniques planned for Ivy would need major revision. Program 2 experiments may be cited as examples. Projects 2.2, 2.3, and 2.4 have been greatly changed from the techniques originally planned. [redacted]

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Familiarization with equipment used on Tumbler-Snapper and detection of methods of improvement were a valuable part of the training program for Operation Ivy. Some of the equipment operated satisfactorily and will be used on Ivy without change. Other equipment will require further laboratory testing and radical modification prior to its use in Ivy.

B. Transport Dewar and Cryogenic Operational Tests

Cambridge Corporation has participated in several filling and test convoy runs with the transport dewars. Tests have been conducted both at Boulder and at Los Alamos on six of the dewars to be used in Operation Ivy. Careful studies of boil-off rates, hazards of operation, techniques for convoying, and operating characteristics of the refrigeration system have been made. Several minor problems were discovered and minor modifications accomplished. Cambridge Corporation took part in the cryogenics tests at Los Alamos and the dewar's capability to transport liquid hydrogen over long distances was demonstrated.

Tests on the [redacted] dewar and reflux system were conducted in June. These tests included trial hydrogen fillings of the reflux system. The piping system is being revised as a result of the experience gained in the filling operations. Another hydrogen filling is scheduled for July. At this time the piping layout will duplicate the proposed Eniwetok layout as closely as possible.

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VI. CONSTRUCTION

A. Eniwetok Construction

1. Status as of 15 June 1952(2)

The construction of H. L. Johnston's Building 344 is approximately 55 per cent complete. The Butler Building is complete except for doors. The nitrogen plant has been completed and is now undergoing initial tests. The target date for the break-in runs for the new hydrogen liquefier is mid-July. Construction of the Cambridge

(2) Holmes and Narver Monthly Narrative Report - 15 June 1952.

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Corporation dewar storage sheds (Bldg. 340, A through H) is 37 per cent complete. Units A, C, and E have been erected and Unit A is ready for sheathing. Cambridge Corporation's maintenance building (Bldg. 341) is 45 per cent complete. The 20-ton crane is in place.

The CMR Shop (Bldg. 342) is essentially complete and the shop within the Administrative Compound (Bldg. 194) is approximately 93 per cent complete. Machines and tools have been installed.

The dismantling of the two 75-ft steel towers on Teiteiri-pucchi is 75 per cent complete. The upper island temporary camp facilities are essentially completed. The turning basin and jetty channel are complete.

The Elugelab to Bogon causeway including the coaxial cover is 75 per cent complete. The removal of buildings and equipment from Japtan for storage on Parry is 91 per cent complete.

An estimate of the per cent of completion for various buildings on Parry Island as of 15 June 1952 follows:

Building No.	Completion (%)
194 - Machine Shop in Admin. Compl.	93
222 - Security Bldg	98
329 } Remodeling CMR Bldgs	(Modification completed)
330 }	96
339 - New Power House	82
340 - Dewar Sheds A thru H	37
341 - Dewar Maint Bldg	45
342 - Mach. Shop - CMR area	97
344	55
345 Two Open cylinder	100 Storage Racks
347 - Salt Water Pump	90 Houses
349 - ~~Water~~ Elevated	75 Salt water Tower

The Holmes and Narver estimate of the over-all construction completed as of 15 June was 74 per cent as compared with a scheduled

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71 per-cent. Construction for the scientific programs has progressed slowly due to lack of information on the requirements and changes in the programs. It is now hoped that with the approval of drawings for several scientific stations the pace of work in the northern islands will be increased concurrent with the gradual completion of the CMR Area at Parry.

2. Cut-off for Submission of Construction Requirements

As of 1 July 1952 the Manager, Santa Fe Operations Office stated that it appeared that requests could no longer be accepted from the various scientific users for new construction which is not already in process of design, procurement, or construction. The following reasons for the above decision were given: (1) Because of "Q"-clearance requirements, Holmes and Narver construction force at the site cannot be augmented and therefore must complete the work in process with the force presently on hand. (2) The remaining time for construction is too short to allow for stateside procurement and subsequent construction, particularly in view of the fact that the construction of the work in hand will overrun the 1 October completion date, probably to within a very few days of Mike Day. (3) The present overload of scientific structures points up that serious deficiencies in the support labor pool for the users may be expected if additional work is requested. (4) It appears that the overrun of the construction completion date will impose an additional personnel evacuation load on an already overcrowded situation.

However it was stated that construction of relatively minor scope which is determined to be an urgent and highly important project could be accomplished provided some other project of less importance

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was dropped. Any new item would have to be capable of being constructed from stockpile materials already at the site.

B. Status of Other Construction and Fabrication

During this period the fabrication of the Mike device was rapidly nearing completion. [redacted] Assembly trials were begun during the latter part of June and although ACF was somewhat behind schedule, this did not seem to be too serious a delay.

As of the end of June six Cambridge Corporation dewars had been completed and tested. It does not appear that Cambridge Corporation will have difficulty in providing the eight dewars planned for use on Operation Ivy.

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VII. THE TEST PROGRAMS (3)

The status of the Ivy experimental projects as of the end of June including revisions to the experiments brought about by knowledge gained during the Tumbler-Snapper Operation is given below:

PROGRAM 1 RADIOCHEMISTRY

The final specifications of the internal radiochemical detectors to be used by Project 1.2 have been fixed. In general, these detectors are the same as those mentioned in previous installments but vary in dimensions and location. [redacted]

Dr. Harold Plank of Project 1.3 is making arrangements for comparatively simple back-ups on the air sampling for Mike Shot. He plans to arrange containers which will allow for the collection of radioactive water after the shot if there is difficulty with the airplane sampling. This water sampling would not be by remote control. He also plans to arrange for two blower-type air samplers, one to be on Bogallua, the other to be on Engebi. The details of these collectors are not yet available.

(3) Letter from W. E. Ogle to A. C. Graves, "Recent Changes in the Ivy Program", J-12732 dated 10 July 1952 and Unit Status Reports - May and June 1952.

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The radiation integrating instruments designed and built by P-1 of LASL (Watts) for the T-33A jet fighter proved to be very satisfactory during Tumbler-Snapper. With these instruments it was possible to control radiation exposures to a ± 10 per cent correspondence with film badge results. The integrating instruments designed for the F-84G for use on Ivy demonstrated a number of minor faults which made them subject to frequent failure. These difficulties are being investigated by P-1 and will be corrected by the time the instruments are used on Ivy.

The new-type fuel-carrying wing tank filters showed an improvement in sampling performance over the old type. In several shots these new filter tanks allowed samples to be obtained when conditions were such that no samples would have been obtained with the old units. Both T-33A and F-84G units were satisfactory as filter equipment. The new-type transport equipment for the filter panels worked well and provided adequate shielding. This equipment can be used without change on Ivy.

Studies on the use of protective clothing for crew members exposed to radioactivity are being actively pursued. Calculations are being reviewed on the basis of recent guesses as to relative amounts of high-yield radioactive species which will be present in the cloud.

PROGRAM 2 PROGRESS OF THE NUCLEAR REACTION

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The experiment geometry for King Shot has been slightly modified. A platform detector station (Sta.4) 2,000 ft from ground zero will house three detectors. Station 6A will be used as a detector station with two detectors mounted on top of it. The recording station will be Station 6B, which is about 100 ft from 6A and 3,700 ft from Station 4. The ground distance between ground zero and recording station is 5,741 ft. A coverage [redacted] is possible with the present geometry and

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detectors. The region between break and peak has overlapping coverage. Three photocell and two photomultiplier detectors will be used with four 5X, three TW, and three 1056 indicators.

For Project 2.5 a dual transit-time transmitter will be installed on a tail-plate on King prior to its departure from the ZI. Dual transit-time receivers will be installed in each of two B-50's prior to their leaving the ZI. Upon arrival of the King unit and the B-50's at Kwajalein, the transmitters and receivers will be checked, using the C-124 and the island's (and/or Curtiss') facilities.

PROGRAM 3 SCIENTIFIC PHOTOGRAPHY

Pilot experiments at Tumbler-Snapper have led to minor changes in the hot-spot experiment for Operation Ivy. The collimating pipes out from the bomb will be 35 ft long instead of 20 ft and will be filled with helium. The changes are made in order to reduce the probability of interference from light attenuation in the air and from Teller light. An additional observation will be made at the top end of the deuterium section in order to obtain three points on the shock position vs time curve at that level.

It has been decided that the fabrication of the collimating tubes will be accomplished at Los Alamos. This will have the advantage of close control in anticipation of minor revisions that may be deemed necessary. Since the specifications for these tubes have been revised, they will not be available for the work at Buffalo, N. Y. The collimating-tube scaffold has been completed by the Patent Scaffolding Co., Inc., Long Island, N. Y., inspected, crated for overseas shipment, and

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transported to Buffalo for assembly studies. Even though the tubes will not be available, the scaffold will be used to obtain a true picture of space requirement.

Design of the hot-spot and case-motion camera shelter (Sta. 300) on Bogallua has been completed, approved, and construction started.

PROGRAM 4 NEUTRON MEASUREMENTS

The neutron measurement studies conducted during Operation Tumbler-Snapper proved very satisfactory. It is planned to proceed with the new electronics system designed for these tests. Some additional laboratory development will be necessary because of the non-limearity experienced in the extremely high flux regions. The detectors provided good data upon analysis at the Los Alamos Scientific Laboratory. The detectors planned for Ivy were field-tested at the Tumbler-Snapper Operation.

Considerable design work and testing were carried out on a device intended to permit recovery of neutron samples by means of a helicopter. The design utilized the blast for removal of a copper plate which permitted a spring-loaded pick-up hoop, attached to the samples, to move into view for recovery by the helicopter crew. Preliminary models were tested at Nevada for blast and thermal effects in regions of extreme conditions. As a result of these tests it was found that the blast effects are too severe, especially close to zero where the helicopter scheme would prove advantageous. It would be difficult to develop the necessary structures so that they would remain properly oriented and still maintain reasonable over-all costs for the program. It is now

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planned that a cable recovery system using boats from the lagoon side of the island will be used.

Planning for the construction of the detector sample string now includes a main line cable, 1 in. thick, beginning at 200 yd from ground zero, then 1/2-in. cable will be spliced on the 1-in. cable at the 2,500-yd station. Starting at 200 yd, at every 50 yd will be placed a 2-in. pipe extending at least 5 ft above ground level or high-tide mark, as applicable. At each station a 1-in. pig-tail cable made of plowshare steel will be woven into the main cable and extend with some slack up to the top of the corresponding pipe. There will be a loop made in the end of the pig tail and this loop will be suspended from the top of the pipe with a light steel hook. The pig tail will be woven into the main cable pointing away from zero.

Project 4.3 has been dropped from the program because of the addition of Project 2.6.

PROGRAM 5 GAMMA-RAY MEASUREMENTS

Plans are now being made to turn over Project 5.3 to Livermore, a group at the Radiation Laboratory of the University of California at Berkeley. It has been proposed that this group finish designing and building the equipment necessary, for these measurements and carry out the measurements in the field.

Project 5.4a has had the number of land sampling stations reduced from 8 to 5, and Project 5.4b has had the number of land stations requiring Holmes and Narver construction reduced from 33 to 12. However, Holmes and Narver is being requested to provide labor to

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assist in temporary-type construction to house as many of the additional stations as is determined to be possible after the project personnel arrive at the site. These reductions in stations were made necessary because the present Holmes and Narver workload precludes their construction in time to meet the M-7 deadline.

During June a decision was made to drop the plan of using free-floating life floats in the immediate sea areas surrounding the atoll. A limited number of Dan buoys may be substituted for the floats. Discussion concerning the availability of logistic support for the Dan buoys phase of the projects still has not been resolved.

PROGRAM 6 BLAST MEASUREMENTS

During Operation Tumbler-Snapper many of the projects in this program checked their equipment and the feasibility of the methods planned for Operation Ivy. Sandia Corporation checked most of their gauges and work is continuing on gauge development.

Preliminary data on the gun experiment (Project 6.2) were good. Project personnel have visited Dahlgren several times for test firing and photographing of bursts of smoke shells. Mr. Daniel Seacord has been delegated as Project Officer 6.2 by Mr. Francis Porzel.

Project 6.4a has been transferred to Mr. H. E. Grier of EG&G. This project will observe water-wave motion in the lagoon near the islands as a function of time. The motion will be recorded photographically by EG&G. Four 16-mm motion-picture cameras with wide-angle lenses and a running time of about 15 minutes will be used. They will

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be located on Engebi, Rojoa, Runit, and Parry. The water in the field of view will be marked with floats and beach poles will be erected at the shore line.

During this period it was determined that Sandia would not perform the microbarographic measurements (Project 6.6). This project necessitated a considerable amount of instrumentation exterior to the U. S. Protectorate territory. A subsequent conference between Drs. Graves and Ogle led to the decision that all instrumentation would be accomplished within the limits of the above-mentioned protectorate to preclude the possibility of political complications. As the evaluation of the information received from the limited microbarograph instrumentation thus implied would be inconclusive, the project was cancelled.

Measurement of underwater pressures across the lagoon (Project 6.7a) by the Bureau of Ships has been dropped completely. Measurements of under-water pressures in deep water has been dropped by the Bureau of Ships. However, it is understood that the Naval Research Laboratory is interested in making the deep water measurements if arrangements can be made in time. The office of Naval Research is investigating the latter possibility. (Will be going through with it)

Negative

Project 6.8 has been dropped on the basis of the experience gained during the Tumbler-Snapper operation.

Work has started on the design of a final model of the beta densitometer to be used in Project 6.9. This design will resemble the type that proved successful during the recent bomb tests at Nevada. Certain radical changes are required in this new model; these changes

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evolve from a dimensional difference in a new set of strontium sources, that have been ordered from Oak Ridge, as well as practical field experience with the device during the tests.

The ship on which the telemetering station for Project 6.11 is to be located has been requested for availability on the West Coast for inspection purposes in mid-July. This inspection is required by the project contractor (Pacific Division, Bendix Aviation Corporation) to locate the four antennas required. Some modification on the vessel will probably be required to accomodate these antennas. The decision to drop the MOTS stations due to operational difficulties arising in regard to the predicted location of the Task Force at shot time has removed a major portion of the Holmes and Narver construction required for this project.

Project 6.12 has been dropped since no feasible method of accomplishment could be determined in the limited time available.

A new project, Project 6.13 - "Measurement of Free-Air Pressures by Rocket Photography", proposed by AFSWP is being considered. The measurement of free-air pressures by means of photographing smoke trails produced by rockets is considered to be both desirable and feasible by the scientific task group. It is understood that if approved, the Naval Ordnance Laboratory will undertake this experiment at an estimated cost of $30,000. It will be necessary for NOL to supply all of the personnel necessary to conduct this experiment with the exception of two or three Holmes and Narver personnel who

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could be made available at the Pacific Proving Ground. Edgerton, Germeshausen and Grier, Inc., are prepared to take the associated photographs. A detailed proposal from NOL on this measurement is being awaited.

PROGRAM 7 LONG-RANGE DETECTION

Experiments conducted during Operation Tumbler-Snapper verified again the existence of the electromagnetic disturbances associated with a nuclear detonation. It was also shown that these signals are such that they are capable of reception at considerable distances. Further measurements at Operation Ivy are necessary to determine the characteristics of the signal and signal-receiving equipment which may be used in long-range detection of foreign nuclear explosions.

In planning for Operation Ivy, Program 7 will establish a small detachment in the Eniwetok area to provide necessary liaison with Task Force agencies and to collect and transmit data to AFOAT-1 Headquarters in Washington. In addition, the detachment will maintain a current presentation of certain elements of the normal Atomic Energy Detection System operations which are of interest to JTF 132 and will prepare such routine and special reports of this data as are required.

Since the principal on-site efforts are in connection with the processing of samples collected by the aircraft operations of TG 132.4, the principal headquarters of Program 7 will be located at Kwajalein. This group will have a four-fold mission; (1) processing

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of samples procured for AFOAT-1 by TG 132.4 units, (2) operation of the small field laboratory for preliminary counting of filter papers, (3) operational and technical control of Project 7.6 activities at Wake and Tarawa, and (4) coordination with TG 132.4 and Projects 1.3 and 5.4b on matters pertaining to sample collection.

Certain surface measurement requirements for Project 7.5 have been approved by TG 132.1 and forwarded to JTF 132 with the request that these requirements be established with TG 132.3. These measurements include the height and initial movement, after stabilization, of the visible debris and/or associated ice crystal cloud and are to be taken from two separated surface (ship) locations within a 50-mile radius of ground zero. These measurements would be made by the ship's aerology section personnel using regular meteorological theodolites and weather radar equipment.

The original plan for distant optical observations (Project 7.6) during Ivy operations envisioned two island stations, Wake and Kusaie, and two aircraft stations north of Eniwetok at about 600 miles and 1,200 miles distant. This plan has been changed by eliminating the aircraft stations, and changing the southern location from Kusaie to Tarawa. These changes were proposed because (a) experimentation during the Tumbler-Snapper operations indicated that the present equipment when operated in an aircraft during daylight presented noise fluctuations of an order that would obviate the reception of a signal at distances, (b) best information to date is that there will be no night-time shots, (c) more complete weather information indicates that

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Tarawa would be a better choice than Kusaie, and (c) technical considerations have resulted in the elimination of all other sites at this range. This proposal has been approved by JTF 132.

PROGRAM 8 THERMAL RADIATION MEASUREMENTS

Much of the prototype equipment planned for use in this program by the Naval Research Laboratory was tested at Tumbler-Snapper. High-speed photocell circuits were built at NRL and operated successfully at Snapper. The bolometer chopper equipments used at Greenhouse were modified to give a smaller time constant and operated successfully at Nevada. The rebuilt high-speed spectrographs used at Greenhouse performed satisfactorily with a resolving time of 2 μsec. It is considered that equipment to be used in this program performed very well at Nevada and few modifications will be required for Operation Ivy.

An additional station has been added to Project 8.1. That station will be on the coral head for King Shot and is required in order to increase the probability of obtaining the vital data as to total thermal radiation from that shot. The problem of cloud cover is a serious one, and the likelihood of having a wisp of cloud between the top of the fireball and the detector is real. Since the value of thermal data on this shot is very high, and another device may not be fired under these conditions for a long time, the extra insurance given by such a station is certainly worthwhile.

At Mike Shot it is proposed to operate on Elugelab and at a location as close to zero as feasible. Two 250-w, 110-w spotlights

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and one 500-w spotlight will be directed toward the optics stations on Engebi, Biijiri, and Parry. These spotlights will be used for the alignment of optical equipment.

In connection with the King Shot it is desirable to measure the atmospheric transmission from the height of the air burst to the ground and the following procedure is planned: a 12-in.-diameter Navy signalling searchlight modulated at 60 cycles will be mounted at Aniyaanii and hand directed toward a helicopter flying either over the north end of Parry or Biijiri. Mounted in the helicopter will be a hand-directed tuned photoelectric receiver of sensitivity such that for the distance worked, full scale on the recorder attached to the receiver will correspond to 100 per cent transmission for the air path between the source and the receiver. The helicopter will fly at the same altitude as that planned for the burst and will be used for this type of measurement each day in the period from minus 20 days before the King Shot until the day of the shot.

The importance of the total thermal measurements at King Shot has justified an expansion of the thermocouple program, and it is now planned to operate four thermocouples at Biijiri, four at Aniyaanii, and four at Parry. At Biijiri and Aniyaanii, two separate power systems will be used: the local power to be supplied by Holmes & Narver, and a battery-powered motor generator started on the -2 min timing signal. Each of these two types of power supply will drive the records for two thermocouples, one recorder being a General Electric photoelectric galvanometer and the other a Leeds and Northrop recording potentiometer.

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PROGRAM 9 ELECTROMAGNETIC PHENOMENA

Equipment and techniques to be used in this program for Operation Ivy have been tested during Tumbler-Snapper. As practicable, the results obtained are being used in instrumentation refinement.

Mr. Gordon C. Arnold, Jr. has been assigned as Project Officer of Project 9.4.

PROGRAM 10 TIMING AND FIRING

Edgerton, Germeshausen and Grier personnel plan to supervise the installation of electronic equipment aboard the USS ESTES while the ship is at Mare Island Shipyard during the early part of July. Television gear and accessories were to be shipped to Mare Island on 1 July.

The Release Tone Project (Project 10.2) has been added to this program. This project will be sponsored by the AEC and performed by Sandia Corporation under the direction of Mr. C. B. McCampbell. This release tone will be used to furnish the starting signal to the EG&G sequence timer on King Shot.

PROGRAM 11 SEISMIC AND GEOLOGICAL SURVEY

Project 11.1 Soundings of the Ocean Side of Eniwetok Reef

The hydrographic survey to determine the configuration of the ocean side of the reef is now underway. The team has been at the Atoll for several weeks but the work has been delayed to some extent by the failure of some shipments to arrive. This includes recording cameras, fathometer paper, and spare parts for the 42-ft sounding boat. Requests for replacements have been made, and it is expected that the survey will be accomplished in the next few weeks.

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Mr. William Foster of the Hydrographic Office, assisted by Messrs. Grimm and Griffiths of that office, is in charge of the survey. The USS Cocopa (ATF, commanded by Lt. Peterson, USN) is on hand for conducting the survey. The Cocopa will act as mother ship to the 42-ft boat, which will work close in to the ocean side of the reef to make the soundings.

While waiting for the arrival of the missing supplies the team has been engaged in dressing up island targets set by Holmes and Narver survey crews for positioning the ship. Some additional targets have been set. Vertical profiles of the reef will be taken at 500-yd intervals for a distance of 5 miles either way from Elugelab, and at intervals of one mile around the remainder of the reef.

Project 11.2 Scaled Ground Shock Tests

The field work for this project was completed in March and April 1952. Five high-explosive shots (Composition C_2 and Tetrytol) equivalent to TNT tonnages of 1, 5, 10, 15, and 20 tons were fired at water level near the future shot point on Elugelab. Seismic recordings of the ground shock were made at San Ildefonso, Engebi, Runit, Rigili, and Eniwetok.

A preliminary report on analysis of the seismic records has been received from the U. S. Coast and Geodetic Survey. The recorded ground motions were irregular, resembling earthquake motions, two successive wave cycles seldom being alike.

An analysis of the records from one station which showed similar wave patterns for four of the five shots was made to determine relative

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amounts of energy reaching the station. The validity of the results is open to question because of the large spread in the values. Average values for four of the shots are as follows:

Size of Shot (tons)	Relative Energy
5	1
10	5.19
15	10.24
20	18.46

A conclusion can be drawn from these figures that the energy reaching a station is roughly proportional to the square of the ratios of shot size.

Further analysis of the records will be made.

Project 11.3 Deep Drilling to Base Rocks

The first drill hole (Station 1130) on Elugelab Island, was completed in 31 days at a depth of 4,630 ft. Hard basement rock was encountered at 4,610 ft. A core barrel was then run in to obtain a sample of the basement rock. However, at 4,630 ft the core barrel stuck and could not be broken loose. The drill pipe was finally shot off at a depth of 3,438 ft and the hole was abandoned. Seismic logging of the hole to the depth of the broken drill pipe is now being accomplished.

The very small percentage of hard rock layers in the coral is notable. A rough field classification of the percentage of different layers drilled in a portion of the hole is given below:

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	Character of Layers	Hard	Firm	Soft	Cavity
Depth	0-1000'	1%	0%	99%	0%
	1000-2000'	8	17	67	8
	2000-3000'	18	38	41	3
	3000-4000'	0	4	96	0
	Average	7	15	75	3

A complete log of the drill hole will be available at the completion of the project.

Arrangements have now been completed to drill a second hole (Station 1131) on Parry Island. Experience with drilling the first hole will reduce difficulties on the second and it is expected that samples of the basement rock will be obtained. Furthermore it is expected that gaps in the drill record for the first hole can be partially filled from the second. As of 30 June this second hole was approximately 2,000 ft deep. The two drill holes will provide good control for interpreting the results of the seismic refraction survey (Project 11.4) to be run by the Scripps Institution this fall.

The possible third drilling location (Station 1132) on the coral head west of Runit has been abandoned because of the high cost of the drilling program and the unavailability of additional funds. The Seabee team of two officers and 12 men have left Eniwetok to return to their duty stations. The Navy pontoons of which the drilling platform was to have been constructed will be returned to Guam.

Project 11.4 Seismic Refraction Survey

Russell Raitt will be in charge of the refraction survey to be conducted by the Scripps Institution. The survey will be made with two fleet tugs (ATA), one serving as the firing vessel, the other as the receiving station for the refracted seismic waves. Scientific personnel for the project will be drawn largely from the Scripps

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staff, although one Naval officer has been requested. (Note: Not all of the scientific staff will be directly concerned with the Eniwetok survey, since this work is only a portion of a major oceanographic expedition on which the ships will be engaged this Fall.)

Two seismic traverses will be run across the lagoon in a southeast-northwest and a northeast-southwest direction, each traverse extending seaward about 20 miles in each direction. The receiver ship will remain stationary while the firing ship will proceed along the traverse lines firing charges in the water at intervals of about 1 mile. Firing across the lagoon will be continuous in to about the 20-fathom line lagoonward of the islands.

The charges will vary from 1 lb to about 100 lb of TNT, these to be fired at a depth of about 100 ft. This will necessitate avoiding the areas where power signal and timing cables lie on the bottom of the lagoon.

In running the traverses, precautions will have to be taken to avoid shallow unmarked coral heads in the lagoon. This will probably require the assistance of a Holmes and Narver boat operator well acquainted with the lagoon, and perhaps a helicopter as forward lookout. The ships draw 13 ft of water.

According to present information, one of the ships may not be available until about the time of the Mike Shot, so the survey may not be possible until after that shot, the time perhaps extending beyond the King Shot. (The survey will require about 8-10 days working time.) In this case radioactive monitoring will be required aboard the two vessels.

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A problem as yet unsolved is the determination of the location of the ships during the survey. A list is being made of markers of all types which are expected to survive the shots. These, however, will not cover all of the area, especially the traverses out to sea. Inquiry will be made of the possibility of determining location by radar , perhaps with the air search radar on Eniwetok if its range is sufficient for a surface vessel.

VIII. OPERATIONAL PLANNING

A. General

Upon completion of Operation Tumbler-Snapper in Nevada full attention has been focused on the forthcoming overseas tests, Operations Ivy and Castle. An operational concept for Ivy has been formulated by the scientific task group and disseminated for further operational planning by other participating agencies. Some planning for Operation Castle, tentatively scheduled for September-October 1953, has been accomplished. This has been of a limited nature due to the immediacy of Operation Ivy.

B. Operational Concept - Ivy (4)

No changes have occurred in the basic planning as to number of shots, dates, type of shots,, and expected yields. Two shots will be conducted at Eniwetok Atoll in the Fall

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(4) Concept of TG 132.1 Forward Area Operations, J - 11689, dated 19 May 1952 (since revised).

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of 1952 with the first shot planned for 1 November 1952. The first device, Mike Shot, is a test of a thermonuclear nature; the second shot known as King Shot [redacted] Mike Shot will be detonated from a platform on Elugelab Island of the Eniwetok Atoll, while King Shot will be an air burst dropped from an aircraft over the northern end of Runit Island.

During the pre-shot phase from 1 September to 15 October 1952 it is expected that the bulk of the construction will be completed. Construction personnel will be phased out as soon as possible in order to reduce crowded conditions during the shot phase. During this period the task units of TG 132.1 will be displaced to the Forward Area. Other necessary activities are the shipment and arrival in the Forward Area of the Mike components and the basic assembly of Mike completed [redacted] The cryogenic transport and plant facilities should be completely in place and fully operative. The positioning and

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initial calibration of instrumentation should be completed with maximum concentration on completion of critical diagnostic experimentation. The greatest number of personnel possible, consistent with completion of the mission, will be returned to the ZI. The rehearsal day for Mike Shot (MX-day) will be announced on or about 1 October 1952.

The Mike Shot phase may be considered as from 15 October to 5 November 1952. The final placement of instrumentation and its calibration will be accomplished. The MX date determination for cryogenics, electronics, and Firing Party are contingent upon the decision to be made on or about 1 October. The final test preparation, the operation of critical base facilities, and instrumentation do not permit a full-scale evacuation rehearsal. However an evacuation exercise will be conducted simulating actual evacuation procedure with task unit and project group representatives. Appropriate signs and placards will be prepared to use aboard each ship, small craft, and the beach; assembly areas will be designated, guides will be briefed, and small craft will be assigned. Again remaining personnel will be screened to return to the ZI all those not essential to the accomplishment of the final Mike phase. Certain personnel whose presence in the Forward Area will not be required if device operations proceed smoothly, but who may be required if unpredicted difficulties arise, will be evacuated to Hawaii on an "on call status".

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Critical equipment will be evacuated between M - 4 and M - 1. Preparations of facilities and equipment to be left ashore including the evacuation of certain equipment from the northern islands to Parry or Eniwetok will be made. Evacuation of major scientific equipment including dewars, telemetering trailers, and photo trailers will occur. The personnel will be evacuated to previously announced ships. It is expected that evacuation of all except the Firing Party will be complete by sundown of M - 1 day.

It is expected that the TG 132.1 Firing Party Commander will assume complete operational control including control of ground security detachments of northern islands with the Command Post established on the shot island by 1200 of M - 2 day. The Parry Island Control Station check out is planned for 0900 on M - 1 day. At 1330 the Mike device assembly is expected to be complete and cryogenic monitoring will continue on the shot island. At 1630 the cryogenics plant will be secured. At 1700 a destroyer is planned for location off Elugelab for evacuation and emergencies of the Firing Party. Between 2200 and 2400 television and electronic check outs will be conducted with the USS Estes on final station. From 0000 to 0330 the Firing Party will complete the final Mike check list. From 0330 to 0430 the Firing Party will evacuate the shot island and proceed to Parry via destroyer. From 0430 to 0530 craft from the destroyer will proceed from Parry to the freight pier at Eniwetok to evacuate the Loran detachment while the Firing

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Party completes the Parry Island check out. From 0530 to 0630 a DD boat will pick up the Firing Party and rendezvous with the Estes by 0800. The Firing Party will then transfer to the Estes.

The basic firing mechanism for detonating the Mike device is a clock-activated system located on Elugelab. Depending on the results of extensive tests to be made prior to 1 October, the timing and firing sequence may be started by remote r-f control. The purpose of the tests is to insure that the remote system will be as safe as is humanly possible to make it. As an alternate to the remote starting, a straight clock-timed start is contemplated, i.e., with no r-f start control. A safety switch in series with the arming and firing cable may be located on Parry Island in order to provide an additional safety feature for the Firing Party. Two television channels between Elugelab and the USS Estes will present pictures of the cryogenics monitoring systems and the timing, power on, arming and firing circuits. Within these two channels sufficient cross channel information will be presented to provide a back-up should one channel go out or become unintelligible. In addition, a separate radio channel is provided such that the firing system can be stopped at any moment up to zero time. There are also several "go-no go" interlock systems built into the firing circuit, any

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one of which can stop the firing operation and some of which are temporary or delay-type systems, such as the Transmissometer which will stop the operation for rain but which will permit it to proceed after passage of the rain. Other "go-no go" systems will be "lockouts". The operation of these interlocks indicate more serious trouble and the operation must be delayed. A delay greater than 24 hours automatically means a 4-day delay because of the cryogenics problem.

The success of several experiments is dependent upon the early recovery of records or samples. It is expected that every effort within the Rad-Safe limitations will be made to make these specific recoveries within the first 6 hours after shot time. Priorities will be established by the Scientific Deputy, JTF 132 in coordination with the Commander, TG 132.1 based on the value of the respective scientific information involved. After this early recovery no additional recovery will be permitted until M/1 day, dependent upon Rad-Safe conditions. The early recovery operations will be helicopter only, with all recovery operations based from the Rendova. No recovery will be permitted during the hours of darkness.

Those samples recovered from Eniwetok Atoll requiring rush delivery to laboratories in the ZI will be flown in aircraft from the flight deck of the Rendova to Kwajalein and there transferred to "sample return" aircraft staged from Kwajalein to the ZI via Hickam.

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The jet aircraft radiochemistry samples collected at about H/2 hours and landed at Kwajalein at about H/4 hours will be packed for shipment and returned aboard sample return aircraft departing Kwajalein at about H/6 hours. It is not expected that the early samples recovered from Eniwetok Atoll will be returned to Kwajalein in time to be shipped with the radiochemistry samples.

It is hoped that Parry Island will be reactivated to a limited degree after Mike Shot and the task group will move ashore for messing and billeting. It is reasonable to assume that with favorable weather conditions debarkation from ships to Parry and Eniwetok Islands can be accomplished by Mike plus seven days. Only those personnel needed for continued recovery operations, for King Shot instrumentation, and for the necessary construction maintenance, and housekeeping functions of Holmes and Narver will be returned ashore for living if such a condition exists. It is expected that all other personnel will be returned to the ZI.

The King Shot instrumentation will be ready for final installation and calibration prior to Mike Shot. The length of time after Mike Shot for final installation and calibration will be dependent upon the damage to wiring, the initial preparation of instrument stations , and upon the Rad-Safe conditions which affect general re-entry for this work.

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The King X-ray Shot is a rehearsal for King Shot and will be an airdropped high-explosive bomb [redacted] KX will be a full-scale rehearsal, as far as practicable, for all instrumentation. This rehearsal will require personnel evacuation of all islands north of Parry. There will be no evacuation to ships for this rehearsal.

Personnel not essential to the accomplishment of the final King Shot phase will be returned to the ZI. Equipment to be left ashore and island facilities will be prepared for the expected blast and thermal effects. Due to the special electronic system for providing timing signals for operation of certain diagnostic measurement equipment, it is necessary that a limited number of personnel remain ashore on Eniwetok Island. All other personnel will be evacuated from the Atoll.

In general recovery operations will be similar to recovery operations for Mike Shot but probably can be effected within shorter intervals of time. Sample return will be similar to that outlined for Mike Shot. Re-entry for final data collection, roll-up, and continued island maintenance by supporting forces of the AEC and the Services will be effected as soon as possible after King Shot.

C. Evacuation Conference(5)

On 10 June 1952 a conference was held at Los Alamos for

(5) Report of Evacuation Plans Conference, J - 12372 dated 24 June 1952.

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the purpose of discussing Ivy evacuation planning in so far as such plans are dependent on effects predictions of blast, thermal, water waves, and radiological conditions. Among those present at the conference were Maj. Gen. Clarkson and a number of representatives of JTF-132, CDR Baird of TG 132.3, Dr. Roger Revelle from Scripps Institution of Oceanography, Mr. D. L. Narver, Sr., and other representatives of Holmes and Narver, Mr. Paul Spain of the AEC, Eniwetok Field Office, Mr. Roger Warner of Cambridge Corporation, Col. James W. Thomson and other representatives of TG 132.4, Dr. EverettCox of Sandia Corporation, as well as a number of representatives of the Los Alamos Scientific Laboratory and TG 132.1. As a result of this conference important policy decisions regarding evacuation planning were reached.

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It was concluded that structural damage on Parry and Eniwetok Islands should be very minor. Such precautionary measures as are reasonably easy to take - labor-wise, time-

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wise , and economy-wise should be taken.

Regarding thermal precautionary measures it was concluded that none would be required on Parry and Eniwetok. It was felt that the thermal effects would not damage motor vehicle tires nor have any effect on vapors coming out of gasoline storage tanks.

Predicted water waves for various islands follow: Engebi, 100 ft; Rojoa, 50 ft; Runit, 30 ft; Japtan , 17 ft; Parry, 17 ft; and Eniwetok, 16 ft. Breakers will be twice size but not dangerous at Eniwetok, Parry, or Japtan. The amount of yield above 5 megatons has no effect since the size of the wave is limited by the depth of the lagoon. After three or four waves the size falls off rapidly. It was not expected that Eniwetok, Parry, or Japtan will be covered by wash. A recommended precaution was that small boats be hauled up on a 9-ft-high beach. A more practical solution presented was that of anchoring the craft in deep water not less than 50 ft.

The maximum expected fall out on Eniwetok and Parry with the worst probable wind condition is delayed airborne contamination that could raise the level of the island to 4r/hr after 10 hours. The Rad-Safe limits of exposure is 0.3r/week on a life-time basis. The total allowable one-time dosage for Ivy is 3r measured gamma only with special provision for pilots of sampling aircraft

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of 20r measured gamma only. A one-time dosage of 25r is currently used in civil defense concepts of operations but is not applicable as a general guide in Ivy unless as an accident. However, no one is expected to be exposed to radiation rates approaching 4r/hr. If such levels as these should be experienced on the islands of Eniwetok and Parry, a level of 4r/hr after 10 hours does not actually decay very rapidly according to calculations for such delayed fall out. However, from actual field experience, it has been found that weathering (i.e., wind, rain showers, etc.) of such fall out on the ground reduces the levels by more than 50 per cent in one day or according to tables: 10 hours, 4r; 20 hours, 2r; 40 hours, 1r; and 80 hours, 0.5r.

Little will be gained by covering large regular objects since when the re-entry can be attempted for persons, levels of radiation on the equipment will in general be low. However, where equipment open to airborne contamination is complex, such as radio consoles, power control banks, or motor generators, fall out contamination can be materially reduced from collecting in such inaccessible spots by some covering. Hoods, when closed, on vehicle engines should suffice to reduce oily, greasy surfaces from collecting and holding contamination after all other surrounding areas have weathered down to insignificant levels.

In general, the group recommended that common sense rules should govern in trying to reduce man hours to be spent in decon-

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taminating inaccessible spots where personnel must later work, and this should be balanced against cost of manpower and material in preventing contamination. Salvage canvas, where available, was recommended to cover equipment which has inaccessible spots which are likely to collect airborne fall-out and which will be difficult to decontaminate.

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D. Operational Requirements - Aircraft and Ships

Most of the operational requirements for aircraft and naval vessels for Operation Ivy scientific programs have been determined and requested from the Joint Task Force. The various modifications required for aircraft participating in the scientific experiments have been coordinated with TG 132.4. Certain ship modifications have been requested and are presently being carried out at the Mare Island Naval Shipyard. It is considered that except for last-minute revisions the operational requirements for both aircraft and ships are firm and no difficulty is expected. Most of the modifications are presently being performed and are expected to be completed prior to movement to the Forward Area.

E. Radiological Safety

Studies of the scientific and military programs of Operation Ivy indicate a large demand for helicopter recovery and radiological safety survey during periods when high contamination is expected. It has been recommended that additional helicopter pilots be made available because of the fact that helicopter pilots may receive radiation dosage approaching the maximum permissible levels.

F. Technical Photography

A new requirement for photographic documentation of gross damage effects on Department of Defense structures and other items has been approved by the Joint Task Force. The purpose of this photography is to determine the gross effects on the existing Army structures on the island of Engebi and on other items of interest to the Department of Defense. Two representatives of the Office,

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Chief of Engineers will require still photographs of the existing Army structures prior to the shot and after the shots. The results of these photographs will be compared with the Ivy Pressure vs Time and the Ground Motion projects to determine the gross effects of the blast wave that emanates from the shots. "Before" photographs will be taken by Task Unit 8 during the summer under the supervision of the OCE representatives. After completion of the "before" photography the OCE personnel will leave the Forward Area until recalled, when Rad-Safe conditions permit, to supervise the taking of the "after" photographs by Task Unit 8. This documentation will not involve any construction or instrumentation. It will involve approximately 300 still photographs, the support of two individuals for approximately two months in the Eniwetok area, and the support of a final report. It is estimated that 10,000 dollars of extra funds will be needed for the cost of film, travel, and reports.

3. Planning for TG 132.1 Activities on Islands Other Than Eniwetok Atoll (6)

A meeting was held at Los Alamos on 14 May 1952 to discuss requirements of the scientific task group on islands other than Eniwetok. Representatives of JTF 132, TG 132.4, Scripps Institution of Oceanography, Santa Fe Operations Office, Sandia Corporation, and

(6) Letter from CTG 132.1 to CJTF 132, "Requirements on Islands Other Than Eniwetok", J - 11634 dated 17 May 1952

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TG 132.1 were in attendance. In addition to establishing requirements it was the aim of the group to decide on the mechanics for arranging this support. Specific islands discussed included Kwajalein, Bikini, Ponape, Majuro, Kusaie, Guam, Johnston, Midway, Wake, and Truk.

A fairly complete listing of requirements was agreed upon. These requirements included determination by project of housing, office space, construction, transportation, communications, power, fuel, photography, boat, vehicle, and Rad-Safe needs. It was agreed that the Commander, TG 132.4 would be responsible for providing as much support as possible on Kwajalein and the Weather Islands of Bikini, Kusaie, Ponape, and Majuro. On the Weather Islands this would include tentage, cots, bedding, and messing facilities. It was further agreed that the Commander, JTF 132 would contact CINCPAC, DAA, ComPacDiv/AIS, and the Governor of the Trust Territory regarding possible support required on Midway, Johnston, Guam, Wake, and Truk. The Task Force agreed to arrange with the Coast and Geodetic Survey to have tide gauges in the mid-Pacific in good operating condition and operating at the time of the tests. TG 132.1 material for the Weather Islands other than Bikini would be shipped from Pearl Harboron the Weather Island LST if the material could be made ready in time. It was also agreed that TG 132.1 would provide vehicles on Kwajalein to meet requirements other than occasional use of the motor pool.

Space requirements of TG 132.1 on Kwajalein have been

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coordinated with TG 132.4. At present these include six prefabs for office and laboratory space and a 12 x 12 ft tent with roll-up sides to be used for equipment storage. A parking area has been requested next to the laboratory for vehicles. Every effort is being made to keep requirements on Kwajalein to a minimum due to the crowded condition expected.

IX. OPERATION CASTLE PLANNING(7)

Some preliminary planning has been done in regard to Operation Castle, tentatively scheduled for September-October 1953. Information available at the present time has been disseminated for staff guidance.

Certain basic information available at this time may be summarized. The Department of the Army will continue as executive agent and General Clarkson will continue as Joint Task Force Commander for Operation Castle. The Commander, JTF 132, is preparing a report for the Joint Chiefs of Staff outlining the Castle military participation program. The report will recommend approval of the following principles: (1) That certain critical personnel and equipment be returned to their respective Services during the Ivy-Castle transition period. This would include drop and instrumentation aircraft, security vessels and aircraft, and other components in similar categories. (2) That appropriate troop elements and equipment be retained in the Forward Area. This would include those components necessary for

(7) General Concept - Operation Castle, J - 12350 dated 23 June 1952.

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atoll transportation base support, maintenance and communications services and security. (3) That JTF 132 task force and task group staffs be retained to plan Castle, with normal rotation of personnel as required. (4) That the Services, in programming for Castle consider the reassignment to JTF 132 of those ships and aircraft modified and instrumented for Ivy at substantial expense.

Operation Castle may involve testing as many as three fission experimental weapons of the order of 50 kilotons [redacted]

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One of the fission-type weapons may be air dropped. If possible, simultaneous preparations will be made for each shot in order to permit optimum use of favorable weather conditions. Present preference is to test the thermonuclear device last.

Even if post-Ivy radiation levels should permit early construction on the northern islands of Eniwetok, and significant damage to base facilities does not occur, testing one thermonuclear and several fission weapons during one operation at Eniwetok presents complications in construction and time. Therefore present planning contemplates the possible use of Bikini for the Castle thermonuclear shot and Eniwetok for the fission shots. Bikini presents limiting factors for weather selection because of Rad-Safety considerations but has advantages in that it is near Eniwetok and uninhabited.

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The Castle experimental programs will be at least as extensive as and probably greater in scope than Ivy's. A structural effects program will not be conducted on Bikini, but may be conducted on Eniwetok providing the desired structures can be erected in the limited time interval between Ivy and Castle.

The Eniwetok-Bikini plan presents greater surface and air transport requirements as well as broader security problems, than Greenhouse and Ivy. A forward temporary camp to accommodate approximately 500 men and a C-47 air strip are contemplated on Bikini with Eniwetok the main base of operations including air support. Support required on Kwajalein will be considerably less than that for Ivy. Other support requirements are: (1) Round-trip air and surface transportation to be initiated as construction requirements dictate, on a schedule to be determined. (2) C-47, seaplane, liaison plane, and helicopter capabilities at Bikini in a magnitude commensurate with Bikini base development. (3) A stevedoring company at Bikini capable of handling cargo ships from Eniwetok and ZI. (4) An AGC type ship and the USS Curtiss will be required for firing control purposes, nuclear component storage, and transportation during the operational period at Bikini. (5) An LST, LSD, several LSU's, and a boat pool including DUKW's, will be required at Bikini immediately following Ivy. Tugs and barges will be required if piers are constructed.

A preliminary reconnaissance of Bikini is presently being

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conducted by personnel of Holmes and Narver in order that cost and support estimates may be made and to provide recommendations concerning a construction program which, if approved, will probably start in October 1952.

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HEADQUARTERS
TASK GROUP 132.1
JOINT TASK FORCE 132
LOS ALAMOS SCIENTIFIC LABORATORY
J Division, P.O.Box 1663
Los Alamos, New Mexico

IN REPLY
REFER TO:

Revised
June 23, 1952

Appendix A

INSTRUCTIONS AND INFORMATION FOR PERSONNEL
OF TG 132.1 TRAVELING TO ENIWETOK ATOLL

1. IDENTIFICATION CARDS

Each individual is required to possess a duly authorized Identification Card prior to departure from his duty station or place of employment for Eniwetok Atoll. Civilian and Department of Army personnel are required to possess a DD Form 2A, Department of Air Force personnel a DD Form 2AF, and Department of Navy personnel a DD Form 2N. The number of the form is located on the front left margin of the Identification Card. For civilian personnel a statement of citizenship will be shown on the front lower right hand corner of the card in the block marked "Service Number". In the event military personnel do not have one of the above mentioned Identification Cards in their possession, they will immediately contact the organization to which they are assigned. Civilian personnel may obtain Identification Cards from the Adjutant General, Task Group 132.1, P. O. Box 1663, Los Alamos, New Mexico. If several civilian Identification Cards are needed within one project, the project officer will consolidate the requirements and submit them to the Adjutant General.

Area access badges for use on the Atoll will be issued after arrival.

2. IMMUNIZATIONS

Each individual is required to have in his possession an immunization record indicating that the following immunizations have been accomplished prior to his departure from the U. S.: Typhoid and Smallpox within the last twelve (12) months; Tetanus - completion of initial series or re-immunization within four (4) years. Military personnel under 35 years of age must have evidence of a negative Schick test or if a positive Schick test, Diptheria immunizations within the last five (5) years. Requirements for further immunizations have been waived for this operation.

3. CONTRABAND

Individuals ordered to Eniwetok Atoll are not authorized to have in their possession west of Hawaii any of the following items: personal cameras, film, or other photographic equipment, private firearms or other weapons,

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3. CONTRABAND (cont.)

binoculars, signaling devices (signaling guns or lights, flares, etc.) radio transmitters, fireworks, intoxicants, and narcotics. Cameras and binoculars may be stored in Honolulu in accordance with paragraph 13 below.

4. PERSONAL BAGGAGE

Each individual is authorized sixty-five (65) pounds of personal baggage for travel overseas via military and/or commercial aircraft. Personal baggage in excess of this limitation may not be taken aboard military and/or commercial aircraft. Should an individual be required to carry official equipment, it must be requested by his supervisor and so authorized in his orders. However, individuals will not be granted an additional baggage authorization to carry additional personal baggage.

5. UNACCOMPANIED HOLD BAGGAGE

Each individual is authorized to ship at government expense a certain amount of unaccompanied hold baggage. Each officer and officer grade civilian is authorized three hundred fifty (350) pounds of such baggage and each enlisted man and enlisted grade civilian is authorized two hundred (200) pounds of such baggage. This baggage will in most instances be shipped via water transportation. Hold baggage should be shipped approximately 6 weeks before it is required in the forward area.

It is recommended that hold baggage be kept at an absolute minimum because of operational requirements. Rugged hand luggage of the military canvas type is recommended.

A bulletin of this headquarters, dated January 9, 1952, entitled "Transportation" contains the following instructions for marking of personal baggage for shipment to the forward area:

1. Footlockers and trunks will be stenciled on at least three (3) surfaces as follows:

   (a) To: Port Transportation Officer (b) SFPE
   (c) San Francisco, California
   (d) FOGS - 132.1
   (e) Name: 1st, Middle initial, Last
   (f) Grade (in case of military)
   (g) Service Number (in case of military)
   (h) Weight and cube
   (i) Green "X"

2. Duffel bags, flying bags, bedding rolls, etc., will be stenciled as prescribed above, except each container will be marked only on one side. Hand baggage will be tagged.

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5. UNACCOMPANIED HOLD BAGGAGE (cont.)

Baggage properly addressed, should be turned over to the shipping department of your organization for shipment to the forward area.

6. MAILING ADDRESS

The following is the correct mailing address for various locations in the forward area. Each organization of TG 132.1 will receive notification of code and box number.

For Eniwetok Island:

Your Name
c/o CTG 132.1 (code)*
APO 187, c/o Postmaster
San Francisco, California

For Kwajalein:

Your Name
c/o CTG 132.1 (code)*
FPO 824, c/o Postmaster
San Francisco, California

For Eniwetok Atoll other than Eniwetok Island:

Your Name
c/o CTG 132.1 (code)*
APO 187 (HOW) P.O. Box _____
c/o Postmaster
San Francisco, California

* Codes: Show one of the following: Hq; Staff Section Number, NRL-K, LASL, EG&G; ACC, CRC, etc.

7. EMERGENCIES

Each individual should advise his dependents that in the event of an emergency they may contact the local chapter of the American Red Cross. If the emergency involves the need of immediate funds and the individual is a member of the armed forces, families may request assistance from the appropriate service emergency relief society nearest them. The following agencies are available and are normally located on or near a service installation:

A. Army Emergency Relief Society
B. Navy Relief Society
C. Air Force Aid Society
D. American Red Cross

Emergency messages to personnel in the forward area will be transmitted by the rear echelon of Task Group 132.1 at Los Alamos, New Mexico. This emergency service will be in charge of Mr. S. R. Whitaker, TG 132.1, P. O. Box 1663, Los Alamos, New Mexico, phone Los Alamos 2-5285.

8. LIVING EXPENSES IN FORWARD AREA

The charge for subsistence provided by Holmes and Narver at Eniwetok Atoll will be $1.50 per day. Officers and civilians being quartered and messed aboard Navy or MSTS ships will be required to pay a mess bill in the amount stipulated by the mess regulations of the particular ship on which they are billeted. Enlisted men messing aboard ship will pay the established rate.

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9. CHECK CASHING FACILITIES

Personal checks will not be cashed in the forward area. Travelers checks may be cashed at the Post Exchange, and postal money orders may be cashed at the post office located on Eniwetok Island. Travelers checks, certified checks, and cashier's checks of not over $50.00 each may be cashed by the camp operations contractor and used in payment of quarters and subsistence.

10. CLOTHING AND EQUIPMENT

The uniform for military personnel will be prescribed by JTF-132, and full information will be issued at a later date. The following suggestions are offered for both military and civilian personnel in planning their clothing and equipment requirements:

	Recommended Amounts
Uniform (for military personnel)	6 to 8
Light weight cotton trousers & shirts (for civilians) (Shorts and short sleeved shirts or T shirts are most comfortable after danger of sunburn is passed)	6 to 8
High top work shoes	1 to 2 pair
Low shoes	1 pair
Swimming trunks (Swimming fins, goggles or face mask, and breathing tube or "schnorkel" are also useful)	1
Gym shoes	1 pair
Shower or beach sandals	1 pair
Light raincoat	1
Hat, sun helmet, or cap with visor	1
Bath towels	4 to 6
Sunglasses	2 pair
Extra pair corrective glasses	1

11. LAUNDRY SERVICE AT ENIWETOK

Laundry service will be provided for TG 132.1 personnel on Parry Island. Only a limited number of pieces can be finished for each person, and the balance will be returned without ironing or pressing. No dry cleaning service is available. There may be no laundry service provided for persons temporarily quartered on Navy Ships, particularly transports.

Sheets and pillow cases are furnished and laundered by the camp operations contractor.

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12. RECREATIONAL FACILITIES

The following recreation facilities are expected to be available at Eniwetok Atoll:

Moving pictures nightly, no charge for admission.
Field library on Parry Island and aboard ship.
Clubs and a recreation center on Parry Island for all personnel.
Athletic facilities together with coordinated sports program will be provided.
Swimming in designated areas.
Organized fishing and shell hunting trips.

13. PERSONAL CAMERAS AND BINOCULARS

If individuals desire to take their personal cameras and/or binoculars as far as Hawaii, the Holmes and Narver office, Hickam AFB, will arrange for commercial storage of these items at a small cost. As noted in paragraph 3 above, cameras and binoculars may not be taken west of Hawaii. Personnel traveling to Eniwetok via military ship should not plan on a stop over in Honolulu to handle these matters. Layover and shore leave (if any) at Honolulu is at the discretion of the Ship's Captain.

14. LAUNDRY AND DRY CLEANING STORAGE FACILITIES AT HONOLULU

In the event individuals traveling by air desire to leave laundry and dry cleaning for processing and storage at Hickam AFB until they return, they may make appropriate arrangements through the Holmes and Narver office at Hickam AFB. This service will not be available to personnel traveling to Eniwetok via military ships unless the layover time is such that individuals are able to visit the Holmes and Narver office located at Hickam AFB.

15. MILITARY RECORDS AND ALLIED PAPERS

Military personnel records (except pay records and flight records) of all officers and enlisted personnel of this group will be retained by the appropriate unit in the ZI. Flight records will accompany rated personnel. Pay records may be carried to the overseas area by the individual concerned, and delivered to the Finance Officer, Task Group 132.2, unless such individual desires to make appropriate financial arrangements to be paid by the ZI disbursing officer during his TDY overseas.

16. GOVERNMENT DRIVERS LICENSE

If you are going to drive vehicles in the forward area you are reminded to obtain a Government drivers' license prior to departure for Eniwetok.

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17. HONOLULU HOTEL RESERVATIONS

Mr. Hand of Holmes and Narver is prepared to obtain hotel accomodations for our personnel in Honolulu. The hotels which Holmes and Narver recommends are:

A. Edgewater, price about $6.50 per night for single occupancy
B. Niamalu, price about $7.50 per night for single occupancy
C. Young, price about $5.00 per night for single occupancy

Rates are slightly lower for a double room for 2 people.

Requests for reservations should be sent direct to Mr. A. W. Hand, Holmes and Narver, Inc., 1109 Bethel Street, Honolulu 13, T. H. Special care must be taken to advise Mr. Hand in the event plans are changed after reservations are made.

NOTE: A FINAL CHECK LIST AND SET OF INSTRUCTIONS WILL ACCOMPANY YOUR ORDERS.

BY ORDER OF THE COMMANDER:

DUNCAN CURRY, JR.
C/S, TG 132.1

OFFICIAL:

Armand W. Kelly

ARMAND W. KELLY
Asst. C/S, J-1

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