

OPERATION REDWING

Report of the Manager Albuquerque Operations



Pacific Proving Ground

Spring 1956

NOTICE

This is an extract of Operation REDWING,
Report of the Manager Albuquerque Operations, which
remains classified SECRET/RESTRICTED DATA
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Extract version prepared for:

Director
DEFENSE NUCLEAR AGENCY
Washington, DC 20305

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Operation REDWING		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Operation REDWING was a series of full-scale tests of nuclear devices and experimental weapons evolved in the Los Alamos Scientific Laboratory (LASL) and the University of California Radiation Laboratory (UCRL). In addition to extensive diagnostic experimental programs conducted by these laboratories, a program of weapons effects experiments sponsored by the Department of Defense (DOD) and a series of Sandia Corporation (SC) experiments were integrated. This report documents the operational aspects of REDWING.		

FOREWORD

This report has had classified material removed in order to make the information available on an unclassified, open publication basis, to any interested parties. This effort to declassify this report has been accomplished specifically to support the Department of Defense Nuclear Test Personnel Review (NTPR) Program. The objective is to facilitate studies of the low levels of radiation received by some individuals during the atmospheric nuclear test program by making as much information as possible available to all interested parties.

The material which has been deleted is all currently classified as Restricted Data or Formerly Restricted Data under the provision of the Atomic Energy Act of 1954, (as amended) or is National Security Information.

This report has been reproduced directly from available copies of the original material. The locations from which material has been deleted is generally obvious by the spacings and "holes" in the text. Thus the context of the material deleted is identified to assist the reader in the determination of whether the deleted information is germane to his study.

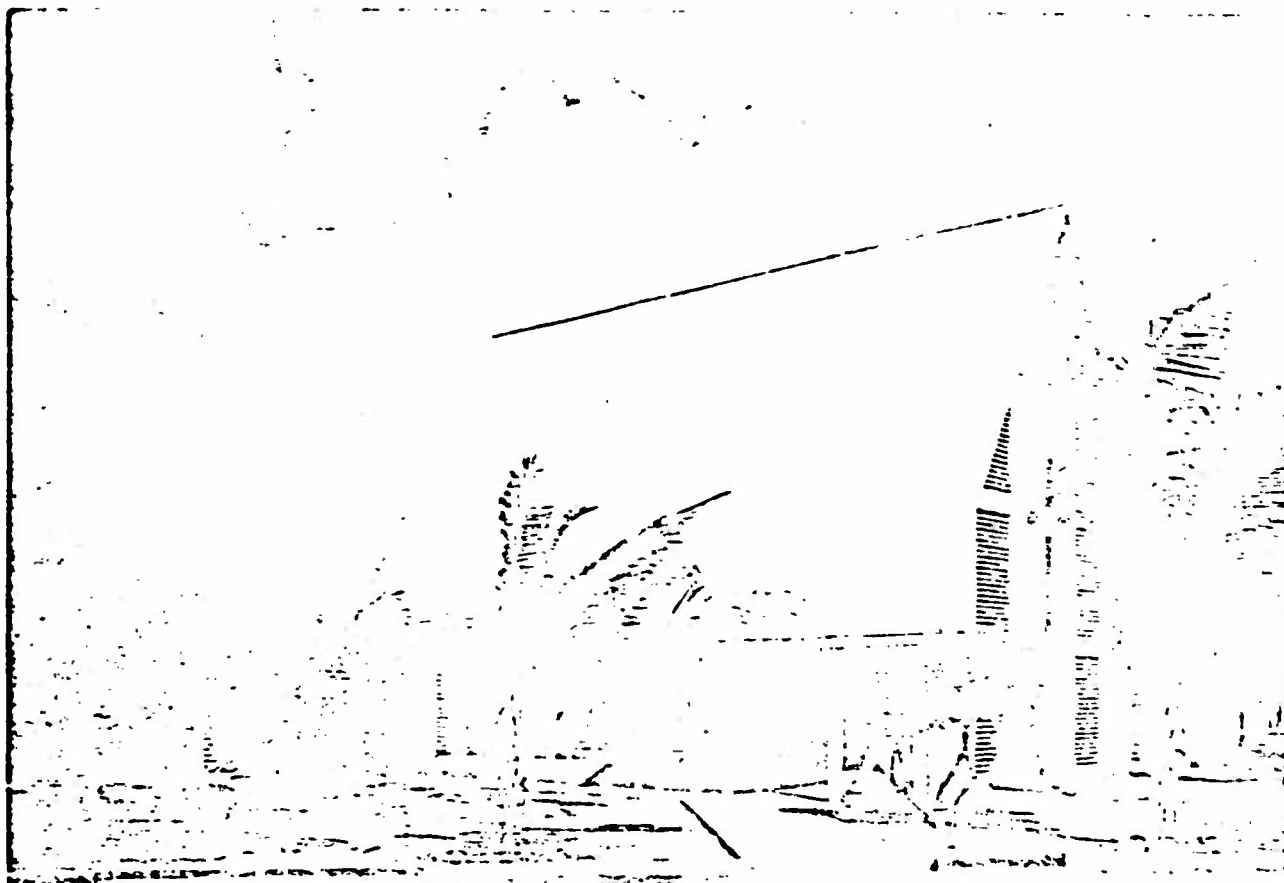
It is the belief of the individuals who have participated in preparing this report by deleting the classified material and of the Defense Nuclear Agency that the report accurately portrays the contents of the original and that the deleted material is of little or no significance to studies into the amounts or types of radiation received by any individuals during the atmospheric nuclear test program.

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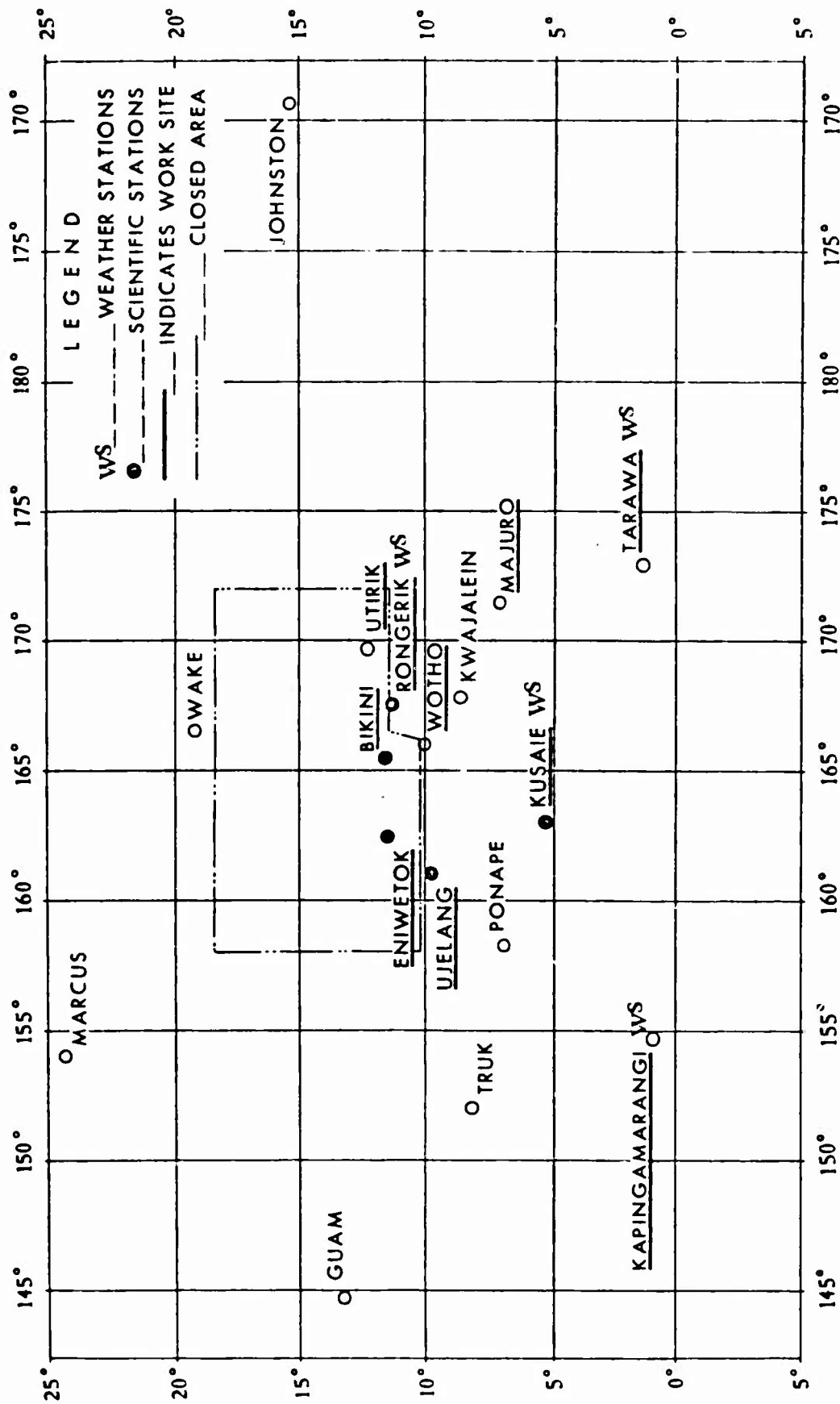
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Frontispiece - Exhibit I-1.1 Sphere of Operations - TG 7.5

INTRODUCTION

This report records pertinent information on Operation REDWING activities and costs which will be useful to AEC in evaluating various aspects of the Operation and in planning for future Operations. The only technical information included is that required to clarify the complexity, magnitude, and results of the Operation. More detailed technical information may be obtained from Weapons Test Reports prepared by the participating organizations and other details from the Final Report of CTG 7.1 to CJTF SEVEN, and the Holmes & Narver Completion Report, Operation REDWING.

This report is presented in five principal parts. Part I contains general information on the operation site, scope, schedule, organization and command relationships, and the activities of TG 7.5. Part II describes the scientific aims and accomplishments. Part III covers the managerial or administrative aspects of the operation. Part IV is the cost record and includes both AEC and reimbursable costs. Part V lists the conclusions and recommendations of the Manager, Albuquerque Operations. Exhibits will be found at appropriate places in the context. Appendices will be found at the end of the report.

PART I GENERAL ACCOUNT

CHAPTER 1. SUMMARY STATEMENT

1.1 OPERATION SITE

The Atomic Energy Commission's Pacific Proving Ground (PPG) comprises Eniwetok and Bikini Atolls in the Marshall Islands (see Exhibit I-1.1).

On 20 April 1956, prior to the first REDWING shot, AEC established a danger area around the PPG to avoid possible damage to transient aircraft and shipping. The danger area encompassed the PPG and ocean areas bounded by $18^{\circ} 30' \text{ N } 158^{\circ} 00' \text{ E}$ - $18^{\circ} 30' \text{ N } 172^{\circ} 00' \text{ E}$ - $11^{\circ} 30' \text{ N } 172^{\circ} 00' \text{ E}$ - $11^{\circ} 30' \text{ N } 166^{\circ} 16' \text{ E}$ - $10^{\circ} 15' \text{ N } 166^{\circ} 16' \text{ E}$ - $10^{\circ} 15' \text{ N } 158^{\circ} 00' \text{ E}$ extending north to $18^{\circ} 30' \text{ N } 158^{\circ} 00' \text{ E}$ (see Exhibit I-1.1). It was dissolved by an AEC announcement on 11 August 1956. Events of REDWING proved this area was realistic and adequate. //

To collect more complete weather and fallout data the sphere of operations was further extended by CJTF SEVEN to include several islands outside the danger area.

The following information on the climatology of the PPG was recorded by the JTF SEVEN Weather Central:

Temperature:

Mean Max: 86 - May through August
Hottest observed: 91 - September
Coldest observed: 71 - July

Humidity:

R. H. 50 to 90% May-June-July Range
(50% early afternoon, 90% early morning)

Precipitation:

Normal Annual - 48 in. (Based on 5 years JTF experience)
(Previously 70-80 in. was based on Ujelang records)
Monthly Average - 4 in. May-June
Measurable - 12 days in May-June
Trend - Increasing as summer wears on

Surface Winds:

Velocity - 11 to 21 knots

Direction - NE to E

Seasonal Trend - lighter, more variable as the summer wears on;
generally an Easterly Trade Wind Flow

Typhoons:

Infrequent - form south and west of PPG. History: Two every 10
years - pass close enough to cause severe weather.

Clouds:

Total Sky Cover - Average about 7/10th of summer. Clear less than
1% of the time.

1.2 OPERATION SCOPE AND SCHEDULE

Operation REDWING was a series of full-scale tests of nuclear devices and experimental weapons evolved in the Los Alamos Scientific Laboratory (LASL) and the University of California Radiation Laboratory (UCRL). In addition to extensive diagnostic experimental programs conducted by these laboratories, a program of weapons effects experiments sponsored by the Department of Defense (DOD) and a series of Sandia Corporation (SC) experiments were integrated. The number and sequence of shots as they actually occurred are shown in Exhibit I-1.2, page 8.

1.3 ORGANIZATION AND COMMAND RELATIONSHIPS

During the planning, build-up, and roll-up phases of Operation REDWING the operation, maintenance, and development of the PPG were the responsibilities of the Manager, ALO, who delegated these responsibilities to the Director, Test Division, ALO. (For the organization of Test Division and Test Division for Pacific Operations see Exhibit I-1.3.1, pages 9 and 10.) During these phases the authority of CJTF SEVEN, insofar as AEC functions were concerned, was limited to operational planning and coordination.

Under an agreement between the Atomic Energy Commission and the Department of Defense a permanent Joint Task Force SEVEN (JTF SEVEN) was established prior to Operation CASTLE to conduct the operational phase of full-scale nuclear weapons tests outside the United States. This

agreement provided for the withdrawal from the Manager, Albuquerque Operations (ALO), and the assignment to CJTF SEVEN full authority to act for the Commission in all matters which concerned the successful execution of the Task Force operation plan. The organization and command relationship of JTF SEVEN was as depicted in Exhibit I-1.3, page 9. Personnel in the Test Division, Eniwetok Branch Office and personnel of the support contractor, Holmes & Narver, Inc., participated in REDWING as Task Group 7.5 (TG 7.5). Operational control of TG 7.5 and AEC base facilities was assumed by CJTF SEVEN on 26 March 1956, and was released 10 August 1956. The organization of TG 7.5 was as shown in Exhibit I-1.4 on page 15.

CJTF SEVEN acts for the Commission as its senior representative during the operational period. A proposal is made in Part V, Section I-1.3.1 for revision to the existing basic command structure to reduce the number of Task Force elements and the population figures.

CJTF SEVEN controls visitors and official observer groups. A proposal is made in Part V, Section 1.3.2 which would better implement this function.

1.4 GENERAL ACTIVITIES OF TASK GROUP 7.5

A summary of the primary activities of TG 7.5 for REDWING was as follows:

- a. Continued to execute the mission assigned to Test Division, ALO, by the Manager, ALO, for the maintenance, operation, and continued development of the AEC Pacific Proving Ground in accordance with current and long range AEC policies.
- b. Provided the necessary base facilities and logistic support at Eniwetok and Bikini Atolls to Headquarters JTF SEVEN, TG 7.1, TG 7.2, TG 7.3, and TG 7.4 in accordance with existing agreements.
- c. Provided the necessary structures and facilities to meet the scientific, diagnostic, and military effects requirements.

During the operational period the major effort of TG 7.5 was directed toward the completion of construction of the numerous scientific stations and their many inter-related facilities. For more details on AEC REDWING activities see Part III, "Managerial Account," of this report.

SITE	SQ. FT.	ACRES
FRED	14,019,200 ✓	321.84
JANET	12,657,600	290.58
ELMER	9,574,200 ✓	219.79
SALLY	4,323,600	99.26
YVONNE	4,071,600	93.47
DAVID	3,430,400	78.75
IRENE	2,421,900	55.60
PEARL	2,358,000	54.13
TILDA	2,263,500	51.96
URSULA	1,762,200	40.45
GENE	1,762,200	40.45
OLIVE	1,758,600	40.37
*GLENN	1,758,600 (EST.)	40.37
*HENRY	1,758,600	40.37
VERA	1,645,200	37.77
BELLE	1,328,400	30.50
*IRWIN	1,328,400 (EST.)	30.50
RUBY	1,250,100	28.70
BRUCE	1,108,000	25.44
*KEITH	1,108,000 (EST.)	25.44
ALICE	974,700	22.38
DAISY	924,300	21.22
*JAMES	885,712 (EST.)	20.34
LUCY	844,725	19.39
KATE	692,475	15.90
WILMA	689,400	15.83
LEROY	590,475	13.56
MARY	505,625	11.61
NANCY	480,600	11.03
EDNA	429,300	9.86
HELEN	383,400	8.80
CLARA	298,800	6.86
VAN	285,825	6.56
REX	231,775	5.32
PERCY	209,400	4.81
URIAH	167,150	3.84
CLYDE	134,100	3.08
ALVIN	95,025	2.18
TOM	80,000	1.84
SAM	39,350	0.90
40 Sites	2.89 Sq. Miles	1,851.05 Acres

*Estimates by comparison on aerial photos

SITE	SQ. FT.	ACRES
HOW (SE)	12,684,932	291.21
HOW (NW)	11,106,666	254.97
NAN	12,972,603	297.81
UNCLE	9,444,444	216.81
CHARLIE	6,450,704	148.09
TARE	2,486,486	57.08
FOX	2,097,222	48.15
SUGAR	2,081,081	47.78
PETER	2,013,889	46.23
OBOE	2,000,000	45.91
ABLE	1,767,123	40.57
VICTOR	1,561,644	35.85
DOG	1,513,514	34.75
GEORGE	1,444,444	33.16
WILLIAM	1,287,671	29.56
KING }	1,067,485	24.51
LOVE }		
ROGER	702,703	16.13
EASY	619,718	14.23
ZEBRA	581,081	13.34
ALFA	310,811	7.14
JIG	310,811	7.14
BRAVO	270,270	6.20
MIKE	270,270	6.20
YOKE	180,556	4.14
ITEM	155,406	3.57
25 Sites	2.70 Sq. Miles	1,730.53 Acres

Exhibit I-1.2 Schedule of Events

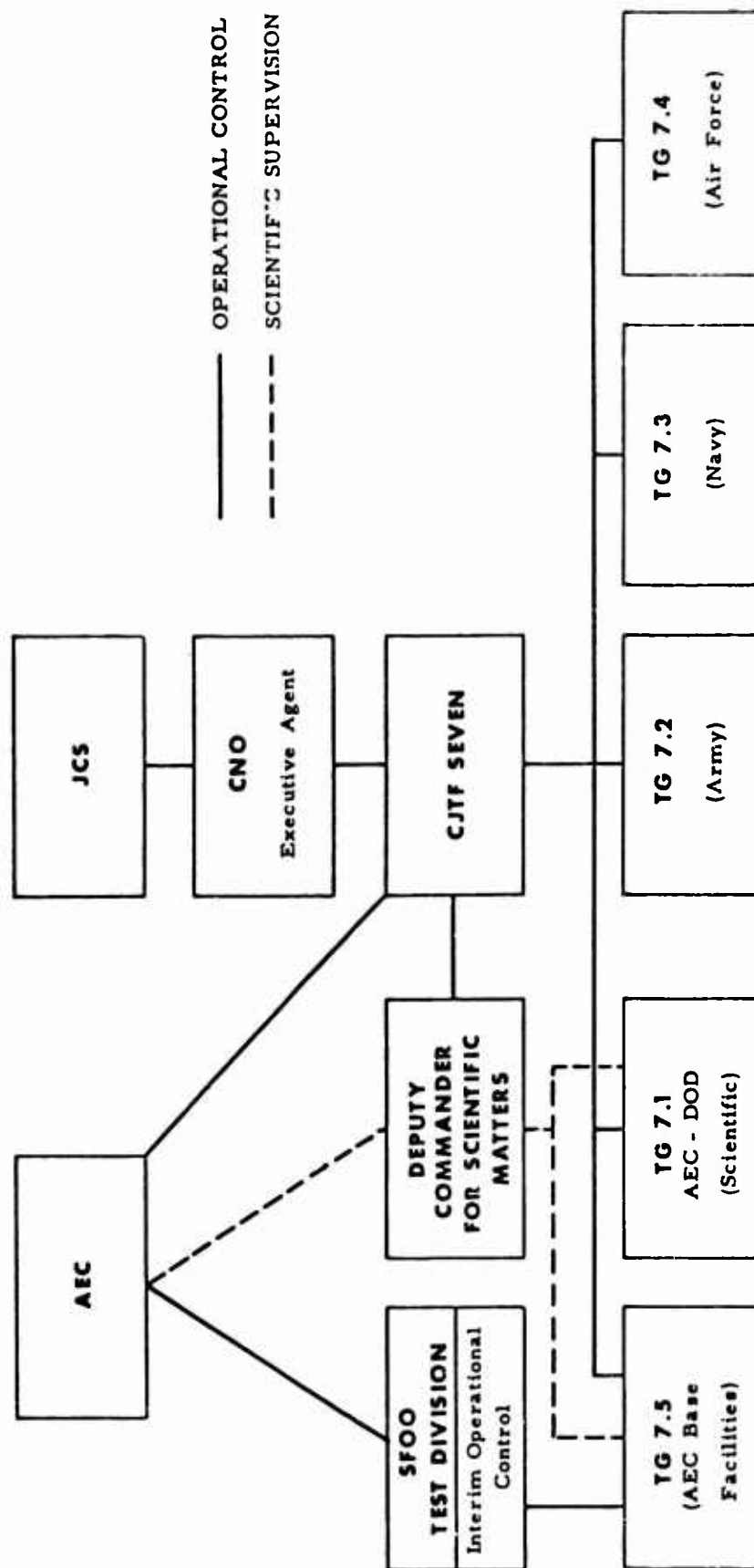


Exhibit I-1.3 Organization for Operation REDWING

**U. S. ATOMIC ENERGY COMMISSION
ORGANIZATION CHART
SANTA FE OPERATIONS OFFICE**

OFFICE OF THE ASSISTANT MANAGER FOR
ENGINEERING, CONSTRUCTION AND TEST OPERATIONS

TEST DIVISION

OFFICE OF THE DIRECTOR

Directs the planning and execution of field operations aspects of AEC full-scale testing programs, both continental and off-continental, including the use of sites and facilities by other agencies. Coordinates and arranges for necessary AEC and contractor support for such field operations. Administers related contracts and coordinates control of related expense. Responsible for providing SFO offices and contractors, and other agencies both private and public, with pertinent facts and judgments which will facilitate the performance of their respective functions and the carrying out of SFO test program assignments. During operational period, the Director serves as Manager, Joint Test Organization for continental tests, and as Commander, Joint Task Group 7.5 for off-continental tests.

ET-1 Director - James E. Reeves
ET-2 Secretary-Steno - Q-16
ET-3 Deputy Director for Eniwetok Operations - Paul N. Dain
ET-4 Secretary-Steno - Q-15
ET-5 Contract Representative - F. N. Huber
ET-6 Deputy Director for Nevada Operations - Seth A. Woodruff, Jr.
ET-7 Secretary-Steno - Q-13
ET-8 Secretary-Steno - Q-15
ET-9 Secretary-Steno - Q-15

TEST OPERATIONS
See Page 5

PERSONNEL TOTAL 44
STATUTORY 39
OS
CPE
WAGE BOARD
MILITARY
VACANCIES 5
PROPOSED POSITIONS

ADMINISTRATIVE BRANCH

Plans, organizes, coordinates and assumes responsibility for the performance of required administrative functions by the office in the execution of test programs. Participates, as assigned, in the negotiation and administration of support contracts, R & D contracts and memoranda of understanding with other Government agencies designed to fabricate special equipment, obtain data, develop criteria, analyze and report results of full-scale tests. Coordinates the compilation of data and the preparation of budgets prepared by the Division and contractors under its cognizance for test costs. Coordinates administrative-type and service functions.

ETA 7 Chief - Virgil A. Luckert GS-13
ETA 8 Administrative Assistant GS-12
ETA 9 Clerk, General GS-5
ETA 10 Clerk-Steno GS-4
ETA 11 Clerk, General GS-3

TECHNICAL OPERATIONS

Plans, coordinates and administers the operations, personnel, physical and information security programs for the SFO Test Division, Pacific Proving Ground and Nevada Test Site, including all related contractor, sub-contractor and consultant facilities.

ETT 12 Security Officer - William R. Adair GS-14
ETT 13 (V) Security Assistant GS-13
Reviews and analyzes radio logical safety and other physical science operations and data from prior tests at continental and off-continental sites; develops full-out prediction programs for full scale test operations; coordinates and establishes technical operational policies, criteria, plans and procedures during operational and interim periods.

ETT 14 (V) Physical Science Advisor GS-14
Plans and coordinates communications facilities and services at Nevada Test Site and Pacific Proving Ground; provides staff communications services by the performance of administrative and engineering duties in the fields of telephone, radio, cryptographic and teletypewriter services. Provides staff advice and assistance to Test Director on matters pertaining to communications planning and exercises general supervision over communications staff and contractor forces engaged in furnishing communications services.

ETT 15 Communications Engineer, James A. Sugden GS-12

PLANNING BRANCH

Develops long-range and immediate plans for use of Nevada Test Site and Pacific Proving Ground for execution of full-scale weapons tests and for related activities. Plans, develops and coordinates requirements for the execution of all test programs, including logistic support. Verifies scope of test participation and performs necessary liaison to establish and incorporate requirements in operations. Coordinates and arranges for supporting military groups within the limits of SFO responsibilities. Develops and promulgates AEC directives, operations plans and orders, issued in connection with test activities. On-site participation in a staff capacity as a member of the test organization during operational periods.

ETP 16 Chief - William M. Allaire OS-14
ETP 17 Engineer General GS-13
ETP 18 Engineer General GS-13
ETP 19 (V) Engineer General (Notational PPG-NTS)
ETP 20 Secretary-Steno GS-5

Holmes & Narver Contract Representative
Station - Los Angeles, California

OFFICE TEST DIVISION
APPROVED: *[Signature]* DATE: Oct. 31, 1955

Exhibit I-1.3.1 Test Division Organization

U. S. Atomic Energy Commission
ORGANIZATION CHART
SANTA FE OPERATIONS OFFICE

OFFICE OF THE ASSISTANT MANAGER FOR
ENGINEERING, CONSTRUCTION AND TEST OPERATIONS

TEST DIVISION

OFFICE OF THE DIRECTOR

PERSONNEL TOTAL 23
STAFFWORK 21
BS
CPS
WAGE BOARD
MILITARY
VACANCIES 2
PROPOSED POSITIONS

TEST OPERATIONS

LAS VEGAS BRANCH OFFICE

Duty Station - Las Vegas

EVE 21 Site Manager - Joe B. Sanders
EVE 22 Secretary-Steno
EVE 23 Administrative Officer
EVE 24 Camp Operations Officer
EVE 25 Property and Supply Officer
EVE 26 Secretary-Steno
EVE 27 Clerk-General
EVE 28 Planning Engineer
EVE 29 Construction Engineer
EVE 30 Secretary-Steno
EVE 31 Clerk (General)

The above staff will be supplemented by from 6 to 9 additional personnel temporarily assigned from the Rotational Group as test programs necessitate.

ENVIETOK BRANCH OFFICE

Duty Station - Eniwetok
ETE 32 Site Manager - Thomas A. Hardison
ETE 33 Construction Engineer
ETE 34 Administrative Officer

The above staff will be supplemented by from 6 to 9 additional personnel temporarily assigned from the Rotational Group as test programs necessitate.

ROTATIONAL GROUP

Resident in Las Vegas

EVR 36 Construction & Maintenance Engr.
EVR 37(v) Construction & Maintenance Engr.
EVR 38 Rad-Safety Officer
EVR 39 Rad-Safety Officer
EVR 40(v) Rad-Safety Officer
EVR 41 Communications Engineer
EVR 42 Communications Engineer
EVR 43 Security Assistant
EVR 44 Security Assistant

CS-12
CS-12
CS-11
CS-11
CS-11
CS-11
CS-11
CS-11

Approved by
[Signature]

OFFICE OF THE ASSISTANT MANAGER FOR
ENGINEERING, CONSTRUCTION AND TEST OPERATIONS
DATE Oct. 31, 1955

U. S. Atomic Energy Commission ORGANIZATION CHART ADD. NUCLEAR OPERATIONS SECTION

U. S. ATOMIC ENERGY COMMISSION
ADD. NUCLEAR OPERATIONS SECTION
ORGANIZATION CHART
ADD. NUCLEAR OPERATIONS SECTION

PERSONNEL TOTAL 60
STATISTICAL 53
WAGE BOARD
MILITARY
VACANCIES
PROPOSED POSITIONS

TEST DIVISION (80%)

Directs the planning and execution of field operations aspects of AEC full-scale testing programs, both continental and off-continent, including the use of sites and facilities by other agencies. Coordinates and arranges for necessary AEC and contractor support, including communications, radiological safety, and security, for such field operations. Assigns personnel to AEC offices and contractors, and other agencies, both private and public, with pertinent facts and judgments which will facilitate the performance of their respective functions and the carrying out of AEC test program assignments. During operational periods, the Director serves as Commander, Joint Test Organization for continental tests, and as Commander, Joint Test Group 7.5 for off-continent tests. Administers related contracts and coordinates control of related expense.

Director - James E. Reeves
 Secretary - G-16
 Asst. Secy. - G-4
 Security Officer - G-14
 Security Assistant - G-14
 Clerk (General) - G-13
 Communications Engineer - G-5
 G-15

ADMINISTRATIVE BRANCH

Responsible for the negotiation, development of scope, and direct administration of all assigned contracts. Plans, organizes, coordinates and is responsible for all administrative functions of the Division.

ET-7 Chief - Virgil V. Lucetti
 ET-8 Administrative Assistant
 ET-9 Clerk (General)
 ET-10 Clerk (General)
 ET-11 Clerk (General)
 G-13
 G-12
 G-5
 G-4
 G-4

PLANNING BRANCH

Develops long-range plan for use of Nevada Test Site and Pacific Proving Ground for execution of full-scale weapons tests and for related activities. Plans, develops and coordinates requirements for the execution of all test programs, including logistic support. Verifies scope of test participation and performs necessary liaison to establish and incorporate requirements in operations. Coordinates and arranges for supporting military groups within the limits of AEC responsibilities. Develops and promotes AEC directives, operational plans and orders, issued in connection with test activities. On-site participation in a staff capacity as a member of the test organization during operational periods.

ET-16 Chief - Carl Lindquist
 ET-17 Engineer, General
 ET-18 Engineer, General
 ET-19 Engineer, General
 ET-20 Secretary-Staff
 G-14
 G-13
 G-13
 G-12
 G-5

FINANCIAL MANAGEMENT BRANCH

Maintains liaison between AEC and test participants, including other Federal agencies, for the purpose of administering funds required by AEC for use of Test Division contractors on approved test programs. Appraises the effectiveness with which assigned contractors meet program goals within authorized cost ceilings and in compliance with approved financial plans. Administers preparation and review of Test Division contractor budgeting, including conversion of AEC budget data into operating financial plans and the resulting accumulation and reporting of cost data.

ET-21 Chief - Macentile Nobles
 ET-22 (V) Secretary-Staff
 G-14
 G-5

ASSISTANT DIRECTOR FOR PACIFIC OPERATIONS

Plans field operations necessary to support and execute test programs carried out at the Pacific Proving Ground. Directs field activity essential for maintaining the site and its permanent facilities; for engineering, design, construction; for installation of camp and test area facilities; and instrumentation required for the planned test program; and for operation of the Pacific Proving Ground. Administers related contracts and endorses working relations with agencies and contractors for the development of effective working relations with agencies and contractors utilizing test facilities at the Pacific Proving Ground. During overseas operational periods, serves as Commander or Deputy Commander, Joint Test Organization for continental tests. Acts as Director, Test Division, during off-continent operational periods.

ET-3 Assistant Director
 ET-4 Secretary-Staff
 ET-5 Contract Representative
 ET-35A Clerk (General)
 G-15
 G-4
 G-14
 G-4

ASSISTANT DIRECTOR FOR NEVADA OPERATIONS

Plans field operations necessary to support and execute test programs carried out at the Nevada Test Site. Directs field activity essential for maintaining the site and its permanent facilities; for engineering, design, construction; for installation of camp and test area facilities; and instrumentation required for the planned test program; and for operation of the Nevada Test Site. Administers related contracts with agencies and contractors utilizing test facilities at the Nevada Test Site. During continental operational periods, serves as Support Director, Joint Test Organization for continental tests. Acts as Director, Test Division, during off-continent operational periods.

ET-5 Assistant Director
 ET-6 Secretary-Staff
 ET-35 Contract Representative
 ET-35A Clerk (General)
 G-15
 G-4
 G-14
 G-4

• Dual capacity

ENGINEER BRANCH
See Page 6

LAS VEGAS BRANCH
See Page 9

DIRECTOR DIVISION
DATE: AUG. 17, 1954

U. S. Atomic Energy Commission

ORGANIZATION CHART AS OF JANUARY 1, 1956

TEST DIVISION

ASSISTANT DIRECTOR FOR NEVADA OPERATIONS

LAS VEGAS BRANCH (8700)

As Contracting Officer Representative, is responsible to the Assistant Director for Nevada Operations for administering the performance of CTR architectural planning and construction and maintenance contracts, and a long-term security services contract. As Chief, Las Vegas Branch, supervises the operation of the Branch and coordinates local administration of the communications, radiological safety, and security programs. In the absence of and with authority as delegated by the Assistant Director for Nevada Operations, coordinates the activities of all contractors and test agencies in the operation of the Nevada Test Site.

ETV-21 Chief - Mr. E. Smith
ETV-22 Secretary-Steno

GS-14
GS-6

OPERATIONS SECTION

Administers the performance of architect engineering and construction and maintenance CTR contracts, including field level construction planning; review and approval of contractor plans, specifications, cost estimates, work orders, procurement action, and long term contract administration; inspection, evaluation, and coordination of contractor engineering and construction effort; and contractor operation and maintenance of test facilities.

ETV-21 Chief - Mr. L. Smith
ETV-22 Engineer, General
ETV-23 Engineer, General
ETV-24 Engineer, General
ETV-25 Secretary-Steno
ETV-26 (V) Secretary-Steno
ETV-27 Engineer, General
ETV-28 (V) Engineer, General
ETV-29 Clerk (General)

Attached to Operations Section for local coordination of radiological safety programs practices with other Branch activities. Receives technical direction from Test Division Technical Section and monitors continuing on-site radiological safety program operated by contractor, subject to radiological safety reports, and provides assistance in radiological matters to CTR, contractor, and test agency personnel.

ETV-29 Radiological Assistant
ETV-30 Radiological Assistant

Attached to Operations Section for local coordination of installation and modification of communications facilities. Receives technical direction from Test Division Communications Engineer. Monitors contractor installation and operation of communications facilities, affecting liaison with local communications utility and interested government agencies.

ETV-31 Communications Engineer

CAMP MAINTENANCE SECTION

Responsible for inspection, analysis, and approval of contractor operation and maintenance of camp facilities, including support facilities, including motor vehicles, construction equipment, buildings, roads, utilities, warehouses, fire department, blighting facilities, and mess halls. Supervises conduct of test site safety program.

ETV-24 Chief - G. Coffey
ETV-25 (V) Camp Services Assistant
ETV-26 Clerk (General)

GS-13
GS-10
GS-5

ADMINISTRATIVE SECTION

Responsible for analysis and endorsement of contractor budget and financial procedures and reports, compliance with audit requirements, personnel administration, IVF budget and cost control, issuance of operating procedures, industrial relations, public information releases, records and reports management, and use of teletype and cryptographic facilities.

ETV-23 Chief - E. Sullivan
ETV-24 Administrative Assistant
ETV-25 Secretary-Steno
ETV-26 Clerk (General)
ETV-27 Clerk (General)
ETV-28 Receptionist
ETV-29 Clerk (General)

Attached to Administrative Section for local coordination of security program practices with other Branch activities. Receives technical direction from the Test Division Security Officer. Inspects physical security services as ordered by Security Officer. Administers ETV visitor control and personnel security procedures, submit security status reports and provides security guidance to CTR and contractor personnel.

ETV-33 Security Assistant
ETV-34 Clerk (General)

GS-11
GS-6

TELETYPE UNIT
OFFICE
MAIL ROOM
RECORDS SECTION
JAN 1, 1956

U. S. Atomic Energy Commission

ORGANIZATION CHART AT THE JOINT ORGANIZATION

TEST DIVISION

ADMINISTRATIVE SECTION
FOR PACIFIC OPERATIONS

TEST DIVISION

(600)

As Contracting Officer representative, is responsible to the Assistant Director for Pacific Operations, for administering the performance of a CTF AFM contract. As Chief, Test Division, supervises operation of the Branch and coordinates local administration of the communications, radiological safety, and security programs. In the absence of and with authority as delegated by the Assistant Director for Pacific Operations, coordinates the activities of the Test Division and Test agencies in the operation of the Pacific Proving Ground.

ETI-32 Chief - Thomas A. Hardison

2-34

OPERATIONS SECTION

Administers the performance of an architect-engineering and construction and maintenance CTF contract, including field level construction planning, review and approval of contractor plans, specifications, cost estimates, work orders, and procurement action; inspection and evaluation of contractor engineering and construction efforts; and contractor operation and maintenance of test facilities.

ETI-32 Chief - Thomas A. Hardison

ETI-33 Construction Engineer

ETI-34 Engineer, General

ETI-35 Chief (General)

Attached to Operations Section for local coordination of radiological safety program practices with other branch activities. Receives technical direction from Test Division Physical Sciences Section. Monitors radiological program operated by contractor, submits radiological safety reports and provides assistance in radiological matters to ET, contractor and test agency personnel.

ETI-36 Radiological Assistant

ETI-37 Attached to Operations Section for local coordination of installation and modification of P-G communications facilities. Receives technical direction from Test Division Communications Section. Monitors contractor installation and operation of communications facilities.

ETI-38 Communications Engineer

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ENGINEERING SECTION

Responsible for inspection, analysis, and approval of contractor operation and maintenance of specialized base support facilities, including motor vehicles, construction equipment, buildings, roads, utilities, warehouses, fire department, billeting facilities, and mess halls. Supervises conduct of test site safety program.

ETI-32 Chief - Thomas A. Hardison

ETI-33 Chief (General)

ETI-34

ETI-35

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ADMINISTRATIVE SECTION

Responsible at the field level for analysis and application of contractor budget and financial control and reports, compliance with budget regulations, technical administration, budget and cost control, issuance of operating procedures, instructions, relations, public information releases, records and records management, and use of security and cryptologic facilities.

ETI-32 Chief - Edward Butts

ETI-33 Chief (General)

ETI-34

ETI-35

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Qual capacity

R - Retention

OFFICE

APPROVED

DATE

Exhibit I-1.3.2 Test Division Post-REDWING Organization

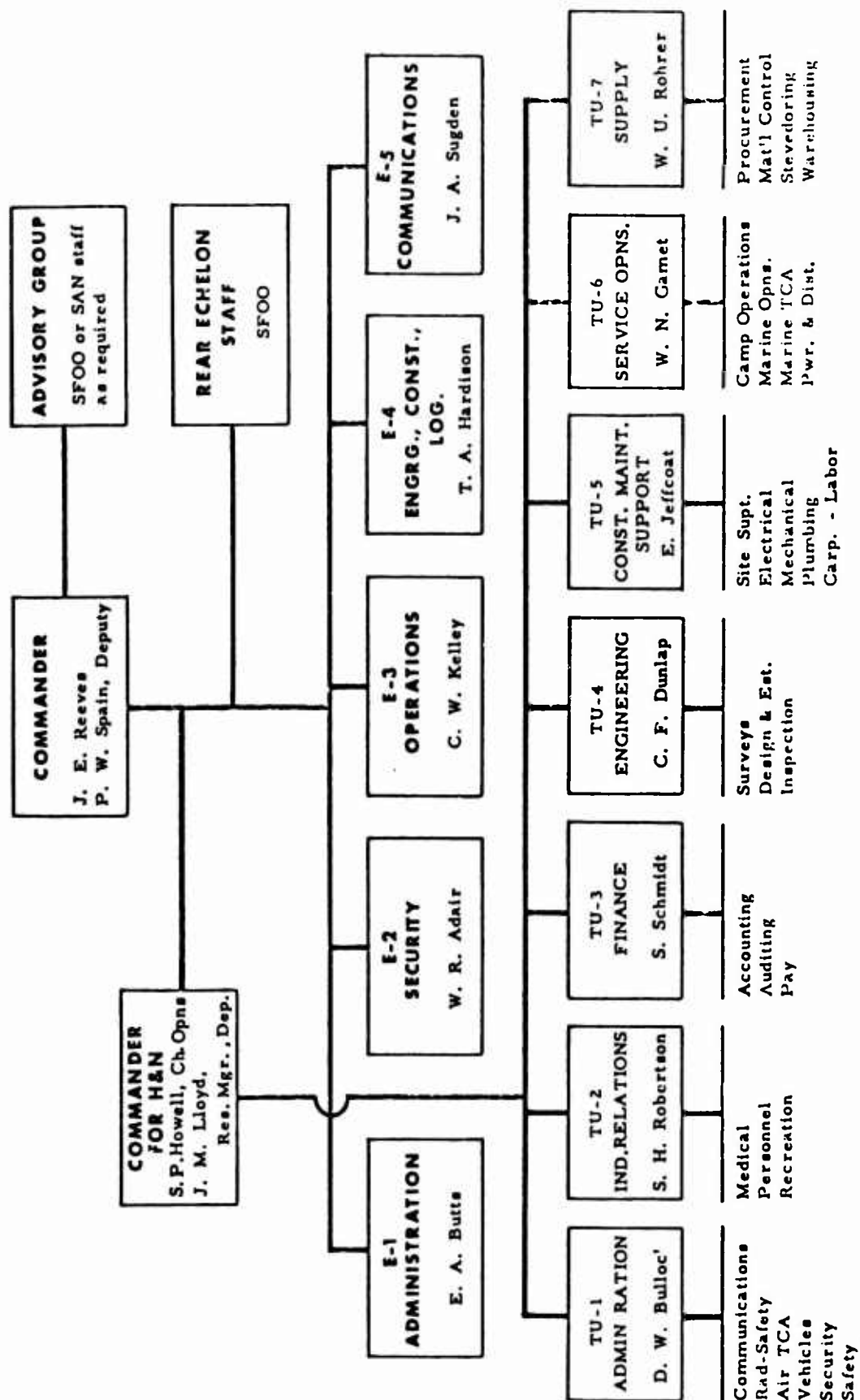


Exhibit I-1.4 Organization Chart - Task Group 7.5

1.5 PARTICIPATING AGENCIES

Agencies allocated scientific stations were as follows:

- | | |
|------------|--|
| 1. AFOAT-1 | Air Force Office of Atomic Energy |
| 2. AFCRC | Air Force Cambridge Research Center |
| 3. AFSAM | Air Force School of Aviation Medicine |
| 4. AFSWC | Air Force Special Weapons Center |
| 5. AFSWP | Armed Forces Special Weapons Project |
| 6. BRL | Ballistics Research Laboratory |
| 7. BUAER | Navy Bureau of Aeronautics |
| 8. BUSHIPS | Navy Bureau of Ships |
| 9. CFRES | California Forest and Range Experimental Station |
| 10. CRL | Chemical and Radiological Laboratory |
| 11. EG&G | Edgerton, Germeshausen & Grier, Inc. |
| 12. ERDL | Engineering Research and Development Laboratory |
| 13. ESL | Evans Signal Laboratory |
| 14. LASL | Los Alamos Scientific Laboratory |
| 15. NRDL | Naval Radiological Defense Laboratory |
| 16. NRL | Naval Research Laboratory |
| 17. NRLS | Naval Research Laboratory-Stewart |
| 18. NOL | Naval Ordnance Laboratory |
| 19. NYOO | New York Operations Office, AEC |
| 20. ONR | Office of Naval Research |
| 21. SC | Sandia Corporation |
| 22. SIO | Scripps Institution of Oceanography |
| 23. UCRL | University of California Radiation Laboratory |
| 24. WADC | Wright Air Development Center |

In addition, there were several agencies that participated in or contributed to the various programs, and which were given support services; these are listed below:

- | | |
|------------|--|
| 25. ACC | Army Chemical Center |
| 26. ACF | American Car & Foundry |
| 27. AFL | Applied Fisheries Laboratory, University of Washington |
| 28. ARDC | Air Research and Development Command |
| 29. DBM | Division of Biology and Medicine, AEC |
| 30. DOD | Department of Defense |
| 31. LML | Lookout Mountain Laboratory |
| 32. U or R | University of Rochester |
| 33. SAC | Strategic Air Command |
| 34. USCGS | U. S. Coast and Geodetic Survey |

1.6 SIGNIFICANT EVENTS

1.6.1 WEATHER ISLANDS

At the request of CJTF SEVEN a reconnaissance survey was made in June 1954 to establish the location and construction requirements of weather stations outside the PPG. The survey party recommended (1) rehabilitation of camps on Kusaie and Rongerik and (2) the construction of new camps at Kapingamarangi and Tarawa. These recommendations were approved by CJTF SEVEN and a construction schedule was adopted. Construction of prefabricated buildings was initiated by the AEC Contractor at site Elmer in early September of 1955. One LSD and one LST were assigned to support this construction. Airlift was accomplished by PBM and C-47 aircraft. (See Exhibit I-1.1 for weather station locations.)

The first construction mission was begun with the departure from Eniwetok of USS (LSD) EPPING FOREST for Kapingamarangi on 16 September 1956. Construction was completed on the schedule approved by TG 7.4 (Air Weather Service) in good season for operational requirements. Roll-up was accomplished between 23 July 1956, and 15 August 1956.

The over-all weather forecasting for shot events was successful in such a high degree as to thoroughly justify the establishment of these stations.

1.6.2 SCIENTIFIC STATIONS OUTSIDE PPG

The area of operations was further increased by the addition of eight scientific stations outside the PPG. Additional construction, operation, and maintenance supports from TG 7.5 were required for one scientific station at Kusaie, two at Wotho, three at Rongerik, one at Ujelang, and one at Uterik Atolls. In addition to the scientific stations small base camps, power and distillation plants were constructed. By obtaining additional LST, LSD, and air support, the stations were activated in time for adequate user occupancy. Roll-up was accomplished simultaneously with that of the weather stations and was completed by 15 August 1956.

1.6.3 RETURN OF RONGELAP NATIVES

Prior to REDWING some hope had been held that the Rongelap natives, displaced by the Bravo event of CASTLE, (Photo, page 19), could be returned to Rongelap from Egit Island, Majuro Atoll. However, the radiological and operational situation deferred the return until after REDWING. Subsequently, planning the return was aggressively prosecuted. At a conference

held in Kwajalein 1 October 1956, final requirements were resolved. Funding for this repatriation has not yet been determined. It is expected that the repatriation might be accomplished during December 1956 or January of 1957.

1.6.4 AIRCRAFT SUPPORT AND INCIDENTS

All TG 7.5 requirements for air support were met satisfactorily by the CTG 7.4 or the CO, Naval Air Station, Kwajalein. Although only one life was lost due to an aircraft accident, several aircraft incidents occurred which are of interest to AEC.

On 15 December 1956, a PBM, on a support mission, struck a submerged coral head while taxiing to a take-off position in Lele Harbor, Kusaie Island, and sank. To prevent further accidents of this nature, LST's were used to support Kusaie more than had been planned previously.

Approximately 550 tons of critical construction materials were transported by MATS from Travis Air Force Base to the PPG. Of this total 318 tons were shipped during the three critical construction months of February, March, and April of 1956. Only one load had to be jettisoned due to an aircraft emergency.

On 26 March 1956, a Marine H-19 helicopter made a forced landing on the Bikini reef approximately two miles southeast of George. The landing, in five feet of water, was caused by engine failure. All passengers and the crew were rescued by other helicopters which made hoist pick-ups of the involved personnel. Only the good judgement and skill of the pilots prevented loss of life.

Because of this and several other H-19 incidents of less import, all Marine H-19's at Bikini were grounded. To provide the necessary support at Bikini, TG 7.4 transferred five H-19-B's from Eniwetok to Bikini. This transfer reduced the Eniwetok airlift capability and increased the requirements for L-20 support. Investigation disclosed that the Marine H-19A's were old and did not have either the load-carrying capability or reliability of H-19-B. It was also determined that L-20 aircraft are safer and cheaper to operate than helicopters. Consideration is being given to providing additional L-20 airstrips at the principal shot islands.

On 18 May 1956, just prior to a scheduled air drop of Cherokee, a B57B was lost at sea. The shot had been cancelled because of weather just prior to the accident. An extensive search was made by surface

vessels and the mass of available aircraft. The pilot was rescued but no trace was found of the observer. Since the weather conditions did not permit firing, this accident did not prolong the operation.

1.6.5 DROWNINGS

The operation was marred by three accidental drownings. Two TG 7.1 personnel drowned at site Elmer and one airman drowned at site Fred. Autopsies were performed and reports were submitted to the appropriate authorities.

1.6.6 TEWA EVENT

Due to a change in the prevailing winds shortly after Tewa was detonated, Eniwetok Atoll received fallout from this event. More details on this matter are presented in Part III of this report. As a result of this unpredicted situation, consideration is being given to providing better protection against fallout at the PPG. Wash-down systems for buildings, improvement of decontamination facilities, and improvements to buildings which would make them better Rad-Safe shelters are being investigated by the support Contractor and Test Division, ALOO.



Rongelap Natives Off-Loading from LST at Majuro Atoll, May 1954.

PART II SCIENTIFIC ACCOUNT

CHAPTER 1. GENERAL OBJECTIVES AND TECHNICAL CONCLUSIONS

1.1 GENERAL OBJECTIVES

The test series was designed to achieve four objectives vital to the continued progress in research and development of atomic weapons and in the improvement of atomic defense. These were:

- a. To proof-test certain weapons in stockpile or to be stockpiled in the near future.
- b. To continue developmental research on promising weapons.
- c. To continue long range weapon research of new techniques, ideas, and designs.
- d. To conduct a weapons effects program required by the Department of Defense.

To achieve these objectives the test series included several facets of particular interest.

A multiplicity of projects were in-
corporated in all shots to obtain data for developmental research on promising weapons, long range weapon research, and for Department of Defense weapons effects program.

1.1.1 LOS ALAMOS SCIENTIFIC LABORATORY OBJECTIVES

Ten devices designed by Los Alamos Scientific Laboratory (LASL) were fired in Operation REDWING. Some of these were proof tests of devices suitable as weapons for the national stockpile, whereas others were experimental devices of a more forward-looking nature which could be weaponized if their performance proved sufficiently attractive. On each of these shots diagnostic experiments were made to evaluate their performance, they worked properly, or to determine the difficulty,

if they did not. In addition, many experiments were undertaken to obtain more precise understanding of the factors and physical properties which underlie nuclear weapon design or the effects they produce.

1.1.2 UNIVERSITY OF CALIFORNIA RADIATION LABORATORY OBJECTIVES.

The Livermore Laboratory planned to test and obtain diagnostic measurements on seven devices during Operation REDWING.

1.1.3 MILITARY EFFECTS PROGRAM OBJECTIVES

The effects programs for REDWING were the most extensive yet undertaken for an overseas operation. Forty-seven projects were conducted under eight programs. Some 900 project personnel and about 50 AFSWP personnel were directly involved in field operations. While the objectives of the programs were numerous, the three major objectives were:

- a. To define the special weapons delivery capabilities of late model Air Force and Navy aircraft.
- b. To document the radioactive fallout from high yield devices, to include the initial and final distribution of activity, the time history of accumulation locally and at sea, and the physical and chemical nature of the radioactive material.
- c. To document the basic blast, thermal, and nuclear radiation effects from a high yield air burst.

1.1.4 SANDIA CORPORATION OBJECTIVES

The objectives of the Sandia Corporation were:

- a. To procure data leading to a better knowledge of weapon vulnerability in relation to both blast and close-in thermal damage from the fireball.
- b. Obtain wind and temperature data in the ionosphere to be used in inter-continental ballistic missile development and long range detection considerations.
- c. To provide administrative and supervisory support to LASL, UCRL, and DOD programs.

1.2 TECHNICAL CONCLUSIONS

The 17 weapons and devices tested performed essentially as predicted. Broad scientific achievements were:

- a.

- b. Further progress was made toward fulfilling the requirements for atomic warheads.
- c.
- d.
- e.
- f. Progress was made toward development of new Class "A" and Class "B" weapons.
- g.
- h. The two-shot, two-atoll concept was completely within the capability of the Task Force.

1.2.1 LOS ALAMOS SCIENTIFIC LABORATORY RESULTS

a. LACROSSE

The device was fired on site Yvonne, Eniwetok Atoll, 5 May 1956, and gave the predicted yield of about 39 KT. The performance of Lacrosse was so satisfactory that the back-up shot Pawnee, which was scheduled on a contingent basis, was dropped from the schedule.

b. CHEROKEE

was air-dropped on 21 May 1956, near site Charlie, Bikini Atoll, and gave a yield of 19,000 ft. target miss solely to a human error by the bombardier. The test proved conclusively that the B-52 aircraft is entirely suitable for the free-fall delivery of Class "C" weapons.

c. ERIE

The was successfully fired on a 300-ft. tower on site Yvonne, Eniwetok Atoll, 31 May 1956, and gave a yield

d. SEMINOLE

The shot was fired successfully on site Irene, Eniwetok Atoll, on 6 June 1956, and it demonstrated that the design was satisfactory.

e. FLATHEAD

The was fired successfully on a barge off site Dog, Bikini Atoll, on 12 June 1956. It gave a yield and proved the correctness of various design parameters.

f. DAKOTA

The was fired successfully on a barge off site Dog, Bikini Atoll, 26 June 1956. It gave a yield and provided additional required design information.

g. OSAGE

The was fired successfully as an airdrop over the center of site Yvonne, Eniwetok Atoll, on 16 June 1956. The burst was within a 180-ft. horizontal position of ground zero and gave

h. BLACKFOOT

was detonated successfully on a 200-ft. tower on site Yvonne, Eniwetok Atoll, on 12 June 1956. It gave a yield and supplied essential design information.

i. NAVAJO

The shot was detonated successfully on a barge off site Dog, Bikini Atoll, on 11 July 1956. Although the yield

j. HURON

was detonated successfully on a barge off site Gene, Eniwetok Atoll (in the Mike crater), 22 July 1956. It functioned properly and gave a yield

1.2.2 UNIVERSITY OF CALIFORNIA RADIATION LABORATORY RESULTS

a. ZUNI

was detonated at Bikini Atoll 28 May 1956, and gave the predicted yield of about 3.5 MT. It was a highly successful investigation

b. YUMA

device was detonated on a 200-ft. tower at Eniwetok Atoll 28 May 1956. It gave, and provided experimental information

c. KICKAPOO

A device was detonated on a 300-ft. tower at Eniwetok Atoll 14 June 1956. It gave a yield of and provided design information required

d. INCA

The device was detonated on a 300-ft. tower at Eniwetok Atoll 22 June 1956. It gave a yield of and provided scientific data on a device designed to serve several purposes.

e. MOHAWK

The device was detonated on a 300-ft. tower at Eniwetok Atoll 3 July 1956. It was a satisfactory test
The yield of

Tentative Shot Name	Model	Yield	Site
Hopi			Eniwetok (Yvonne) 100-ft. tower
Shawnee			Eniwetok (Yvonne) 100-ft. tower
Yuma			Eniwetok (Sally) 200-ft. tower
Blackfoot			Eniwetok (Yvonne) 200-ft. tower
Osage			Eniwetok (Yvonne) 200-ft. tower
Kickapoo			Eniwetok (Sally) 200-ft. tower
Pueblo			Eniwetok (Helen) Ground
Mohawk			Eniwetok (Ruby) 300-ft. tower
Zuni			Bikini (Tare) Ground if small yield; Bikini (Dog) Barge if large yield.
Flathead			Bikini (Dog) Barge
Navajo			Bikini (Dog) Barge
Apache			Bikini (Dog) Barge
Cherokee			Bikini (Lagoon) Air drop

Basic principles outlined in the concept were as quoted herewith:

"a. CJTF SEVEN and his staff will normally be based on Parry (Elmer). CTG 7.2 (Army) and CTG 7.4 (Air Force) will be based on Eniwetok (Fred). While CTG 7.3 (Navy) and CTG 7.5 (AEC Base Facilities) will be based on Parry (Elmer).

"b. CTG 7.1 and major elements of the task units and staff sections will normally be located on Parry (Elmer) although each staff section will have a working group in the Bikini Atoll area.

"c. For operations afloat at Bikini Atoll during shot time the JTF SEVEN Commander and Staff will operate from the command ship (USS ESTES). CTG 7.1 and staff plus representatives of specified scientific programs and projects, and of TG 7.5, will operate from the TG 7.1 ship (USS CURTISS).

"d. A capability of firing a shot at either atoll will be maintained. The first shot for each atoll is scheduled to be ready 15 April 1956. Priority for firing will be given to Bikini Atoll shots.

"e. It is anticipated that all operations at Bikini Atoll will be conducted from afloat after the first megaton shot at that atoll.

"f. At Eniwetok Atoll the main camp will be located on Parry (Elmer) with temporary work camps located on Rojoa (Ursula), Runit (Yvonne), and Teiteiripucchi (Gene). At Bikini Atoll temporary camps will be located on Enyu (Nan), Eninman (Tare), and Romurikku (Fox).

"g. All camp site facilities will be severely taxed. Shipboard accommodations will also be limited. In view of the above conditions it is necessary that:

- (1) Only those personnel necessary to get the job done should be in the PPG. (See V-I-1.3, Conclusions and Recommendations.)
- (2) Personnel should leave the PPG as soon as their work is completed.

"h. Principal laboratory, machine shop, photographic warehouse, and stockroom facilities will be located on Parry (Elmer) with limited field facilities located at Bikini Atoll.

"i. The port of entry for aircraft and for most of the surface shipping will be on Eniwetok Atoll."

In addition to the shot schedule and basic principles quoted above, the concept contained 17 other sections giving information on test matters such as operation and administrative plans to be issued, construction requests and procedures, weather, evacuation, security, communications, transportation, timing and firing, and classification. Further, eleven annexes were included giving detailed information on subjects such as beaching conditions in the Marshall Islands.

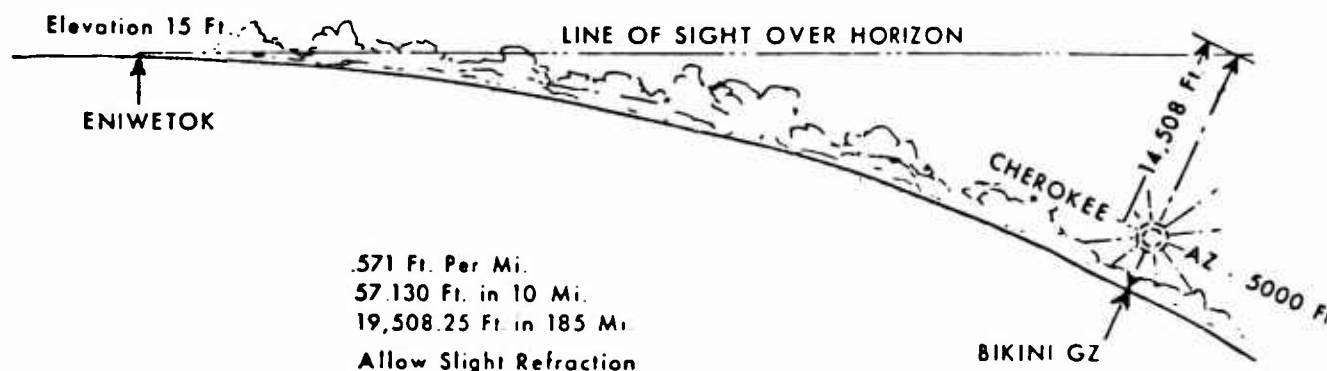
2.2 FINAL CONCEPT

On 21 June 1955 the shot schedule was revised and ready dates specified by Revision No. 1 to CTG 7.1 General Concept No. 1-55. A joint REDWING Concept Conference for key Task Force personnel was held at Albuquerque, July 19 through 21, 1955. A "two-shot" concept meeting was held at Los Alamos 26 October 1955.

The concept of Operation REDWING was finalized in Annex A of CJTF SEVEN Op Plan 1-56, 20 January 1956. Annex A included the revised shot schedule as of 16 January 1956, and listed significant planning factors.

CHAPTER 3. DEVICES

Former reports of the Manager, ALO, on PPG operations have, at DMA request, included complete descriptions of the test devices. In the interest of economy and safeguarding classified defense information, DMA has ruled in a memorandum dated 3 October 1956, that the inclusion of these of these descriptions in the Manager's Report is no longer required. Complete descriptions and entailed performance information on the test devices may be obtained by reference to the Final Redwing Report of CTG 7.1 to CJTF SEVEN.



PART III MANAGERIAL ACCOUNT

CHAPTER I. ADMINISTRATION AND PERSONNEL

Organization of Test Division (ALOO) for the REDWING period is depicted on Exhibit I-1.3.1 and as phased to Task Force elements, on Exhibits I-1.3, I-1.4, and III-1 (following page).

On the basis of experience and trends, a reorganization of the ALOO Test Division has been effected since REDWING and is depicted on Exhibit I-1.3.2, pages 12, 13, 14. Under similar influences the organization of Holmes & Narver, Inc. has been revised from time to time out of the experience gained from both the Home Office at Los Angeles and their Jobsite Office at the PPG. The Holmes & Narver Jobsite organization as of 1 January 1956 is shown in Exhibit III-1.A.

1.1 PERSONNEL PHASING

Manpower build-up was phased with construction and support requirements. Phasing provided for a peak of 1970 Holmes & Narver personnel in February 1956. As requirements expanded, this estimate was revised and as shown on Exhibit III-1.1 the peak of 15 April 1956 was 2770 when the reduction of construction personnel began. Exhibit III-1.1 also indicates the TG 7.5 population for REDWING.

With the successful completion of the REDWING test series on 22 July 1956, the general exodus of personnel from the PPG began. Headquarters JTF and Task Group Headquarters were reduced sharply. TG 7.5 began its transition to the interim status concurrently with the roll-up and, as was anticipated, CJTF SEVEN declared the operational period closed on 10 August 1956. Phasing of personnel proceeded accordingly and on 30 August 1956, TG 7.5 personnel was reduced to approximately 1500.

A decision on the proposed reduction of the military garrison at Eniwetok Island will have some effect on the interim Holmes & Narver working force. At this writing final decisions have not been reached. (See Part III, 3.4 hereof).

1.2 MORALE FACTORS

The trend of overseas test operations, beginning with CASTLE was expanded for REDWING to two atolls and dual capability. Also a larger series, longer operational period; a wider sphere of operation, and greater complexity, has introduced more aggravated problems of morale for Task Force personnel.

		1956											
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
OPERATIONAL PERIOD													
CTG 7.5	J. E. Reeves												
Actg CTG 7.5	P. W. Spain												
	T. A. Hardison												
	F. W. Hohner												
	E. Wynkoop												
Actg CTG 7.5 (for Bikini)	E. Wynkoop												
	G. H. Cook												
	R. C. Emens												
DCTG 7.5	P. W. Spain												
	T. A. Hardison												
Actg DCTG 7.5	F. W. Hohner												
Advisory Gp	E. Wynkoop												
	G. H. Cook												
	M. F. Smith												
	R. H. Goeke												
A/CS - E-1 E-2 E-3	E. A. Butts												
	W. R. Adair												
	C. W. Kelley												
E-4 E-5 Actg - E-5	J. Kaiserman												
	R. V. Carl												
	T. A. Hardison												
	J. A. Sugden												
	G. W. Barrow												
	P. O. Buchholz												

NOTE: The A/CS - E-1 and the A/CS - E-4 rotated to Honolulu. Their duties were absorbed by other Staff members during periods of absence. The A/CS - E-4 carried a dual responsibility as Actg D C TG 7.5 - part-time. The A/CS - E-1 position was filled by H&N personnel.

Exhibit III-1. Operational Period Participation - Command and Staff - Task Group 7.5 - Forward Area (as of 7-14-56)

Improvement to personal emergency communication facilities, frequency of mail deliveries, recreational facilities and programs has been made in cognizance of the problem. Good food has been provided but occasional overcrowding of mess hall facilities and overburdening of mess hall personnel has caused periodic undesirable conditions. Housing in many camps was also overcrowded and for longer periods than in the past. Planning, within budgetary limitations, has sought to alleviate these conditions to the greatest degree possible.

Despite the situation that existed from an ambitious program of the scope of REDWING, personnel morale within the Task Force remained at a high level, and accomplishment of significant results was obtained.

CHAPTER 2. SECURITY, CLASSIFICATION AND PUBLIC INFORMATION

Under the Joint Task Force form of command for REDWING, these functions were separated as described in Section 2.1, 2.2 and 2.3 hereof.

2.1 SECURITY

A. Planning and Pre-Operational Phase (Prior to 15 March 1956)

(1) Establishment of Personnel Clearance Requirements:

Based upon Test Division, ALOO, recommendations to the Commander, Joint Task Force SEVEN, all land areas of Eniwetok and Bikini Atolls, except exclusion and controlled areas (i. e., Eniwetok Island and the recreational areas on site David and site Charlie), were designated limited access areas. Activation of security areas was accomplished concurrently with the effective date for completion of security clearance requirements. The requirement that all members of Task Group 7.5 would be "Q" or "L" cleared by 1 April 1956, was established. The date of this action was later extended to 7 April 1956, with the concurrence of CJTF SEVEN.

(2) Proposed Physical Security:

Security Areas

Control of access of personnel, ships, and aircraft to the general Eniwetok-Bikini area is administered by CINCPAC

HOLMES & HARVER, INC.
ENGINEERS
CONSTRUCTORS

PROJECT 942

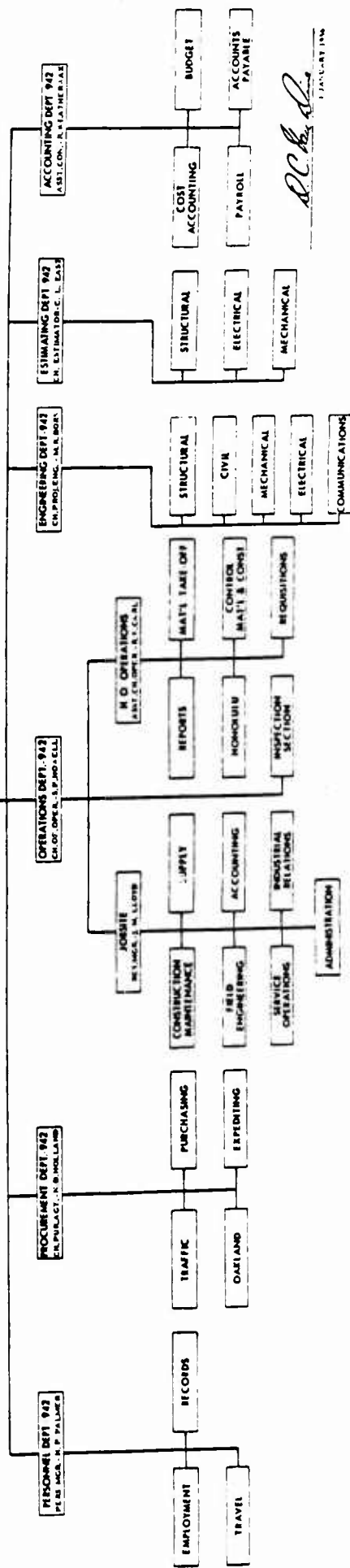
PACIFIC PROVING GROUND

CONSTRUCTION DIVISION
MANAGER - B. C. VAN BUREN

PACIFIC PROVING GROUND
PROJECT MGR. - C. L. COMPTON

ASST. CONTR. ADM.
P. L. LINDSAY

BASE STAFF
PROJECT 942
B. C. VAN BUREN, CHIEF OF DIVISION
C. L. COMPTON, PROJECT MGR.
J. E. GILLESPIE, ACCOUNTING
J. A. HARRIS, ESTIMATING
J. A. HARRIS, ESTIMATING
J. A. HARRIS, ESTIMATING
J. A. HARRIS, ESTIMATING
J. A. HARRIS, ESTIMATING



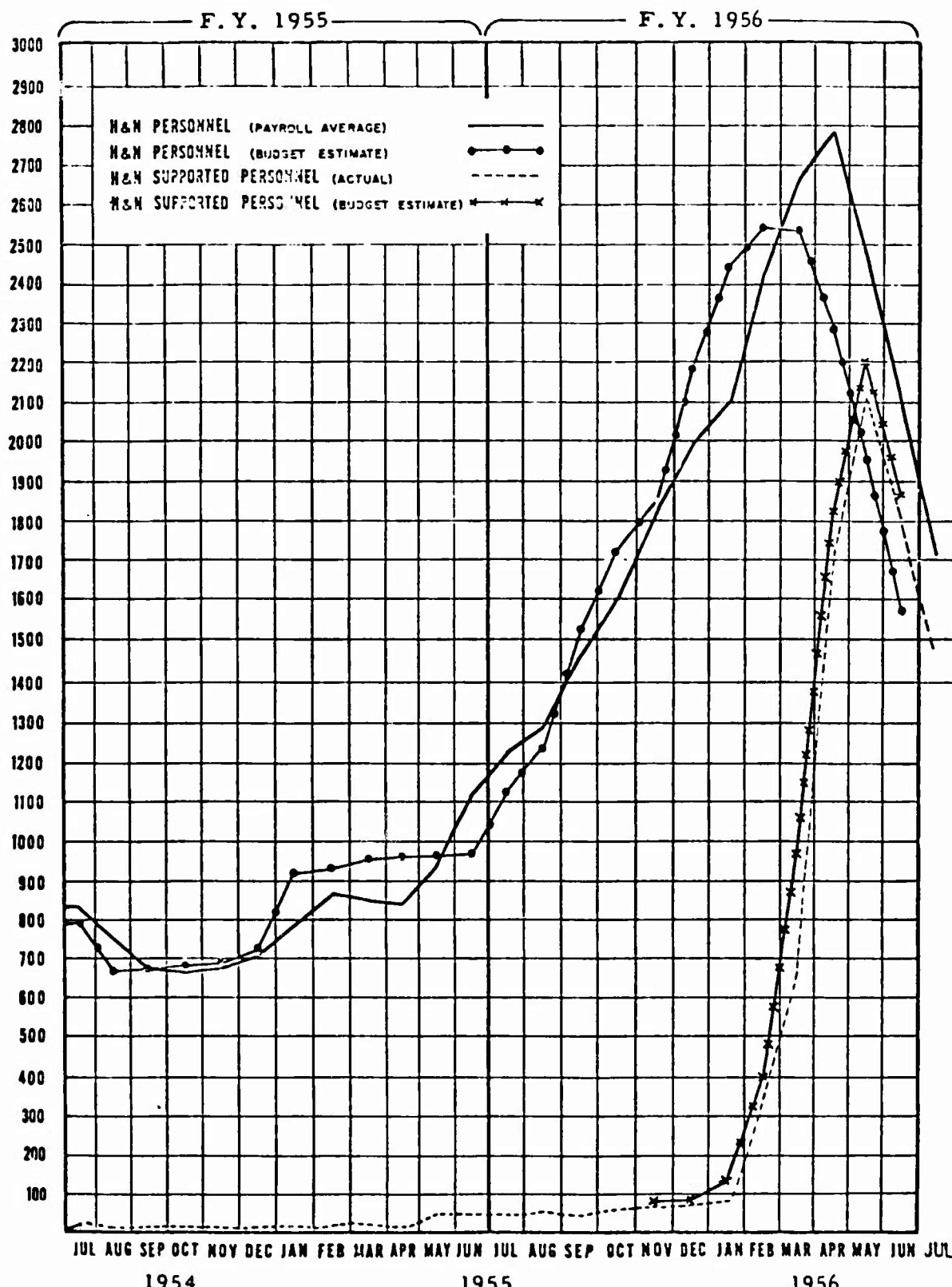


Exhibit III-1.1 Jobsite Personnel Chart

Page 34 - BLANK

through enforcement of the requirements for entrance to that area, as contained in CINCPAC Directive, Serial 020, dated 1 April 1952.

The proposed Limited and Exclusion Areas were based upon the available shot schedule information, and requirements for use of plant facilities at PPG by Task Group 7.1 and 7.5: were established as of 26 September 1955, and were subsequently approved by CJTF SEVEN. That proposal recommended the establishment of both Eniwetok and Bikini Atolls as general "controlled" areas with "limited" and "exclusion" areas therein. Suggested was a total of five limited areas at Eniwetok, four limited areas at Bikini Atoll, sixteen exclusion areas at Eniwetok Atoll, and six exclusion areas at Bikini Atoll. These figures were later modified as the shot schedule was amended. CJTF SEVEN was also alerted to the probable need of the establishment of exclusion areas afloat and certainly aboard the USS Curtiss.

Guard Requirements.

The Task Groups 7.1 and 7.5 requirements for military guards for REDWING were indicated to the CJTF SEVEN on 28 April 1955. That requirement for military police was established at 164 to 172 (as procedures for guarding storage vaults, etc., could not be firmly determined at that time). This figure did not include MP administrative and supervisory personnel. By December 1955, the requirement for military police had been established by CJTF SEVEN as 260 enlisted men and officers. The 50th MP Battalion from the Presidio, San Francisco, California, provided their Company "C" at the required strength. Apart from a small detachment utilized in February 1956 to guard a shipment of classified cargo from the CONUS to the PPG, the MP company proceeded to the PPG by surface transportation, arriving on 19 March 1956. Approximately 60% of the Military Police were in possession of Top Secret clearances, with the balance having Secret clearances. All of the men were certified for access to Restricted Data information at the Sigma 4 level.

Also on 28 April 1955, the CJTF SEVEN was requested to provide an adequate number of Marine guards for the protection of security areas of Task Groups 7.1 and 7.5 afloat,

including shot barges. A detachment of 60 Marine guards was provided by CJTF SEVEN, of which approximately 50% were cleared for Top Secret, and the remainder for Secret, with all certified for access to Restricted Data at the Sigma 4 level. These guards were assigned to CTG 7.3 and based on the USS Curtiss, the TG 7.1 Command ship.

Identification Badge System

The security badge system as proposed for REDWING was forwarded to the CJTF SEVEN on 19 December 1955. Procurement of badge inserts, temporary permits, badge layouts, and allied supplies* was handled by Test Division through ALOO procurement channels.

JTF SEVEN prepared SOPs 205-6 and 205-7, dated 31 January 1956, and 23 March 1956, which implemented the security badge identification system at PPG for REDWING.

(3) S&SN and Other Classified Materials Shipments:

The requirements for the movement of S&SN and other classified materials and documents and documents from the CONUS to PPG and return were established through a series of conferences and correspondence between representatives of Task Groups 7.1 and 7.5 and of CJTF SEVEN. The general policy was established that all such items involving Restricted Data or Defense Information classified higher than Confidential would be provided with security protection in the form of courier (armed only where Top Secret information or AEC-defined Category 1 material were involved) or armed guard, or by registered mail (when Top Secret information or AEC-defined Category 1 material were not involved).

The actual implementation of the AEC-JTF SEVEN policy for movement of classified materials and documents was set forth in JTF SEVEN Movement Directive 1-56 and supplements thereto.

* The actual operation of the PPG Pass and Badge Office was accomplished as a contractual responsibility of Holmes & Narver, Inc., and certain basic identification materials were routinely provided through the normal functioning of the Pass and Badge office.

(4) Appointment of Security Representative to CJTF SEVEN:

By letter dated 3 September, 1953, from Mr. J. A. Waters, Director, Division of Security, AEC, Washington, to Major General P. W. Clarkson (then the Commander, JTF SEVEN), Mr. W. R. Adair was appointed as Division of Security Representative on the staff of the CJTF SEVEN. This arrangement has been continued through the pre-operational, operational, and post-operational phases of Operations CASTLE, WIGWAM, and REDWING.

(5) Responsibilities to CTG 7.1:

By mutual agreement between the Commanders, TGs 7.1 and 7.5, the AC/S, E-2, TG 7.5, was made responsible for the physical security of the TG 7.1 areas at the PPG, as well as providing other security staff and operational assistance for TG 7.1 personnel at the PPG. Also certain security services are rendered in connection with TG 7.1 activities within the CONUS.

(6) Procurement of Additional Staff:

It was necessary to augment the staff of the AC/S, E-2, TG 7.5, by the addition of four AEC Security Assistants. These personnel were provided by the Division of Security, Washington; the Security Division, San Francisco Operations Office; and the Office of Security, ALOO.

(7) Security Education:

In accordance with the provisions of JTF SEVEN SOP 205-1, the contents of JTF SEVEN SOP 205-2 were incorporated into a Security Indoctrination Letter for Task Groups 7.1 and 7.5, dated 1 February 1956. It was necessary in this letter to enlarge considerably the scope of the basic JTF SEVEN security education provision by the addition of pertinent AEC security rules and regulations for the guidance of participating AEC and AEC contractor personnel. This letter was then distributed to all personnel of those two Task Groups, including Holmes & Narver, prior to individuals' departure from the CONUS to the PPG (except where already at PPG at time of issuance of the letter). In all cases either the written examination portion of the letter

was completed, or a certificate of compliance was executed. This was dependent upon whether or not the individual had previously participated in past overseas tests, or who, through long association with classified projects, was presumed to be adequately informed on security regulations.

In addition, another letter was prepared by this office for issuance to all Task Groups 7.1 and 7.5 personnel arriving at PPG, entitled "Task Groups 7.1 and 7.5 Security Briefing Upon Arrival at Pacific Proving Ground," dated 28 February 1956. This document was designed to explain such matters as the REDWING security badge system and Sigma categories designator meanings, etc., to personnel of those two Task Groups upon their initial arrival at PPG.

B. Operational Phase (Subsequent to 15 March 1956)

(1) S&SN and Other Classified Material Shipments;

Such materials were shipped to the PPG by surface and air lift with proper security protection. To reach the points of embarkation within the CONUS, those materials of direct AEC interest were transported under AEC jurisdiction by air and truck to Naval Supply Center, Oakland, California; to Port Chicago, California (for USS Curtiss); and to Travis Air Force Base. In February 1956 (prior to the operational phase), it was necessary for ALOO to ship to the PPG certain classified materials in connection with TG 7.1 (Project 30.2) aboard the USNS Pvt. Joe E. Mann. This was accomplished by the AEC arranging with the CJTF SEVEN to designate the Commanding Officer of the USNS Mann as his personnel representative to assume responsibility for the custody of the material. To assist the Captain of the Mann in protecting the classified items from the CONUS to the PPG, a detachment of MPs from the 505th MP Battalion was utilized.

All of the LASL test materials, including devices, that were ready for shipment by 26 March 1956, were transported to PPG via the USS Curtiss, which, with destroyer escort, arrived PPG on 10 April 1956. There were no UCRL test devices transported to the PPG by surface means. Aboard the Curtiss a representative of the AC/S, E-2, TG 7.5, assisted the Commanding Officer of the ship in safeguarding the test materials by coordinating the establishment and operation of several exclusion areas aboard

ship, which areas were physically guarded by Marine sentries. The REDWING identification badge system was utilized in conjunction with access lists established at each exclusion area to control access to those areas.

In addition, there was a total of ten (10)³ Special Air Mission flights for LASL test devices and components and a total of seven (7) such flights for UCRL test materials from Travis Air Force Base to the PPG. On all such flights the materials were in the custody of armed officer couriers provided by CJTF SEVEN, and the transporting aircraft were accompanied by escort aircraft.

A quantity of unexpended test device components were returned to the CONUS at various times during the latter stages of the REDWING operational phase, usually on aircraft returning test sample materials to the several participating laboratories.

The remaining unexpended test devices and components were returned via the USS Curtiss, which departed PPG 24 July 1956, and arrived at San Diego, California, on 8 August 1956. This material was then returned to the respective laboratories under AEC courier protection.

During the operational phase accountability for and custody of all S&SN materials at PPG was the delegated responsibility of the AC/S, E-2, TG 7.5, for the AEC and JTF SEVEN. During movements of S&SN materials between atolls at the PPG, custodial responsibility was transferred from TG 7.5 to the Navy or Air Task Group, as applicable.

(2) Disposition of E-2, TG 7.5, Staff:

The addition of four Security Assistant positions to the E-2 staff utilized the services of a total of seven individuals who were at PPG for varying periods of time. A security assistant was placed on each shot barge to maintain accountability of the S&SN materials involved and to act in liaison capacity between the scientific and services personnel and the military guards to assist in access control to the barge and to the test device.

(3) Holmes & Narver Clearance Requirements:

During the period 1 July 1954, to 30 June 1956, Holmes & Narver, Inc., requested 1,228 class "Q" security clearances, of which 865 were ultimately granted. During this same period Holmes & Narver requested that 1,382 class "Q" security clearances be reinstated, of which 1,335 were granted; 2,660 class "L" security clearances were requested, with 2,197 being granted. There were 853 requests for "P" approvals, with 657 granted; 1,692 requests for GSRs (Good Security Risks) were processed, with 1,386 being granted.

At the peak of Holmes & Narver's activities during the Operation the average security clearance processing time was: 94.39 days for class "Q" clearance; 24.31 days for class "Q" clearance reinstatement action; 52.47 days for class "L" clearance; 43.52 days for a "P" approval; and 7.77 days to obtain a GSR approval.

On 2 February 1956, the AEC granted Holmes & Narver, Inc. authorization to process their personnel for "QL" type security clearances, thus eliminating the necessity for dual submissions which had previously prevailed.

On 21 November 1955, the "P" approval program for Holmes & Narver jobsite applicants was discontinued. Employees who were located at the jobsite on the basis of a "P" approval were permitted to remain until the cut-off date (7 April 1956). On 12 December 1955, the "P" approval program for Holmes & Narver home office and Honolulu Branch employees was discontinued. On 15 March 1956, Holmes & Narver, Inc., was advised that a "P" approval would no longer afford an individual access to classified information, and henceforth, access to classified information would be on the basis of a formal AEC class "Q" or "L" security clearance. The "P" approval never did permit access to Restricted Data.

The GSR program was instituted to provide Holmes & Narver with a rapid means of assigning personnel to the forward area during the crash construction stage of the buildup for Operation RED-WING. The GSR program enabled compliance with CINCPAC Directive 020, but did not permit or authorize access to classified information. Holmes & Narver obtained its first GSR approval from the AEC's Los Angeles Security Branch on 12 April 1955.

(4) Activation of the REDWING Security Badge System:

The initial issuance of the REDWING security badges was made at PPG to Holmes & Narver and TG 7.1 personnel starting on 15 March 1956. The regular PPG badge system, which was in effect at PPG during the interim period between Operations CASTLE and REDWING, was continued in co-effect with the REDWING badge system until 9 April 1956, at which time the REDWING system only was valid.

During Operation REDWING the following types and quantities of each security identification badge and permit were issued to participants:

Type	Quantity	Remarks
Badge		
Permanent	12,820	Total for HQ, JTF, and all Task Groups, including replacements for lost and broken badges.
Exchange (permanent)	<u>1,595</u>	Total for all exclusion areas.
Total Permanent Badges	14,415	
Temporary	1,605	Total for HQ, JTF, and all Groups, including those used while lost or broken badges were being replaced or repaired.
Total Badges	<u><u>16,020</u></u>	
Permits		
Temporary	8,257	Total for both access and departure.
Exclusion Area	<u>6,299</u>	Total for all exclusion area.
Total Permits	<u><u>14,556</u></u>	

Whenever possible, persons with damaged badges had them replaced in a matter of minutes to reduce time off the job. In those cases where damaged badges were forwarded from island sites other than site Elmer at Eniwetok Atoll, and site Nan, Bikini Atoll (where a Pass and Badge Office to supplement the main office on site Elmer was established on or about 5 March 1956, and operated through 24 July 1956), an effort was made to repair or replace damaged or lost badges within a 24-hour period.

A total of 234 REDWING permanent badges were lost. (There were no lost temporary badges except one temporary exclusion area badge.) Of that quantity a total of 117 were recovered, leaving a total of 117 lost and not recovered. That constitutes a lost percentage of 0.9% of the total permanent badges issued.

A security identification system indoctrination was conducted by the E-2, TG 7.5, office to advise REDWING participants of the badge system details. This included briefing the Commanding Officer and staff of the MP detachment prior to their departure from the CONUS. The MP detachment was given a training course in the REDWING badge system by its officers while enroute to the PPG.

(5) Guard Force Operations:

Considerable difficulty was encountered with the Military Police insofar as their grasp of the badge system and collateral forms was concerned. This was partly attributable to the fact that the MP detachment was comprised of only approximately 40% personnel having MP training, whereas the majority were recruits and other soldiers who were added to the company without MP training to bring the company to required strength. To worsen the condition, none of the men who had MP training had experience in industrial plant protection work, which is most essential to the PPG physical security program.

Through strenuous efforts on the part of the officers and non-commissioned officer personnel of the MP company, considerable improvement was made throughout the conduct of Operation REDWING, and at the end of the operation the MPs were functioning in an acceptable manner. As the operation proceeded, efforts were made to reduce the number of MPs proportional to the fluctuating guarding requirements, so that by the date of the last shot (22 July 1956) the total strength of the MP detachment had been reduced to 150 enlisted men and officers.

On 22 July 1956, the MP travel control points at both atolls were discontinued. The only areas remaining under guard control were the two assembly areas and the administration compound on Parry Island.

On 23 July 1956, the MP detachment (except 20 enlisted men and one officer) departed by surface transportation for the CONUS. By 25 July the only area under guard control was the Administration Compound. Upon removal of Headquarters, JTF SEVEN, and TG 7.1 classified documents from that area, as of 31 July 1956, the MP guard control for REDWING was discontinued.

(6) Activation of Limited and Exclusion Areas:

Due to the accumulation of classified information, it was necessary on 1 April 1956, to activate the Administration Compound on site Elmer as a limited access area (admittance to which was limited to wearers of properly coded REDWING badges). The activation of the general REDWING badge system and MP travel control points at piers, airstrips, etc., occurred on 9 April 1956. The various exclusion areas were activated and guard-mounted thereon at varying periods of time through the Operation, as required by the presence of test device materials. Where the numbers of personnel made exchange badge systems necessary, such systems were utilized to minimize access to exclusion areas on a strict "need-to-know" basis. For access to shot towers and shot barges "comparison card" lists were used in portable Kardex folders.

Assignment of Military Police to guard the various areas at PPG during REDWING was the responsibility of the Provost Marshal, TG 7.2. The actual supervision of the Military Police was the responsibility of the Commander, Company "C", 505th MP Battalion. Direct lateral liaison with both officers was authorized for the AC/S, E-2, by the CJTF SEVEN.

The movement of any S&SN materials from an exclusion area, whether the movement was inter- or intra-atoll, was accompanied by an AEC security representative of the E-2 office, TG 7.5. Armed guards were provided by the Provost Marshal, TG 7.2, and the Commanding Officer, USS Curtiss (U. S. Marines), as applicable.

(7) Intra-Atoll and Inter-Atoll Classified Mail Movement:

Inter-atoll classified mail for TGs 7.1 and 7.5 was hand-carried twice daily between the mail rooms at the various camps at each atoll by a "Q" cleared Holmes & Narver messenger. The mail was prepared and listed on a receipt which was placed inside each pouch for the various sites. The transfer of the locked pouches from the sending to receiving mail room was covered by signature receipt.

Intra-atoll classified mail for TGs 7.1 and 7.5 was handled in the same manner, utilizing a "Q" cleared Holmes & Narver messenger.

If there had been an occasion for the transportation of Top Secret documents inter-atoll or intra-atoll, such a transfer would have been accomplished by utilizing available AEC couriers; however, this situation did not materialize among the activities of TG 7.1 and/or TG 7.5.

(8) Security Education:

In addition to the previously described security indoctrination given to all TGs 7.1 and 7.5 personnel prior to departure from the CONUS and upon arrival at the PPG, each departing TG 7.1 and TG 7.5 participant was required to sign a departure security statement. In addition, all Holmes & Narver personnel departing PPG were given a departure security lecture.

The office of the E-2, TG 7.5, determined that the various AEC contractor organizations at PPG for REDWING were operating in accordance with the provisions of GM-SEC-5.

(9) Security Survey:

With the concurrence of CJTF SEVEN, Messrs. William T. Kelley and Jesse W. Callahan, Inspectors from the ALOO (AEC) Inspection and Survey Division, Office of Security, conducted a security survey of the Operation REDWING phases of security interest to AEC, ALOO, and Washington Headquarters, during the period from 23 May through 11 June 1956. In general, the Inspectors seemed satisfied with the AEC portion of the security program at PPG.

(10) Infractions of Security Rules and Regulations:

TG 7.5 personnel were responsible for the following types of security infractions:

<u>Type of Infraction</u>	<u>Eniwetok Atoll</u>	<u>Bikini Atoll</u>	<u>Total</u>
Unsecured Repositories	7	4	11
Documents left unattended	4	0	4
Documents left in desk	1	0	1
Classified waste left unsecured	1	0	1
Improper mail transmittal	1	0	1
Improper teletype transmittal*	4	0	4
TOTALS	18	4	22

Of the above totals, nearly all of the infractions involved Holmes & Narver, Inc., personnel, except the one infraction for improper mail transmittal and two of the unsecured repositories infractions, making a total of three infractions chargeable to AEC personnel.

The security infractions of TG 7.1 were:

<u>Type of Infraction</u>	<u>Totals</u>
Unsecured Repositories	21
Documents left unattended	7
Documents left in desks	6
Classified waste left unsecured	2
TOTAL	36

* The improper teletype transmittal infractions indicated above consisted of the transmission of Restricted Data traffic over a teletype circuit connecting the TG 7.5 Teletype Room on site Elmer with the TG 7.2 Communications Center on site Fred, which circuit was changed only for the transmittal of classified Defense Information, Non-Restricted Data, through Secret.

The breakdown of the above total of infractions by general group within TG 7.1 was:

- DOD (Military and Civilian) - 22
- AEC Contractor - 14
- LASL - 8
- UCRL - 4
- EG&G - 1
- Sandia Corporation - 1

There were very few repeat offenders involved in either the TG 7.5 or TG 7.1 infractions as cited herein.

In connection with each infraction, the offender was required to explain the circumstances surrounding the occurrence, and supervisors were requested to continue to emphasize and re-emphasize the importance of safeguarding classified information.

(11) Official Mail Subject to U. S. Customs Inspections:

There occurred during the operational period of REDWING numerous instances where official packages (mostly involving unprocessed photographic film being sent to the CONUS for developing) mailed from the PPG to various processing points in the U. S. were intercepted and held for inspection by officials of the U. S. Customs Service. This situation occurred most frequently in the case of TG 7.1 (EG&G) film mailed from the forward area to the EG&G representative at Cinema Research Corporation, Hollywood, California. Packages containing this film were intercepted by Customs Officials in Los Angeles, California, and were held subject to inspection and filing of Customs Declaration. After examination of the packages in the presence of EG&G officials and the signing of a formal Customs Declaration by an official of the ALOO Los Angeles Security Branch, the packages were released to the addressee. As far as is known, no Restricted Data was compromised as a result of these interceptions and resultant inspections, nor was any unprocessed photographic film ruined as a result thereof.

Difficulties with the U. S. Customs Service were also experienced at El Paso, Texas, in regard to packages intended for LASL and Sandia Corporation and at Boston, Massachusetts, in regard to packages intended for EG&G.

2.2 CLASSIFICATION

Some months in advance of the operation, the ALO Office of Classification, together with representatives of Los Alamos, UCRL, and SAN, prepared and submitted to Washington a proposed classification guide for the then forthcoming Pacific Operation. This guide was coordinated in Washington with the DOD and subsequently approved for use on 16 December 1955.

Following the approval of the complete guide referred to above, a request was received from Headquarters, JTF SEVEN, for the issuance of an unclassified version of the guide. An unclassified extract of the Pacific guide was prepared by this office and approved for use by the Washington Division of Classification on 6 March 1956. This unclassified guide was subsequently widely distributed among elements of JTF SEVEN.

This guide served as a basis for the operation of the classification program throughout Operation REDWING.

Dr. Ralph Carlisle Smith, of Los Alamos, was initially designated by the Commission to serve as Test Classification Officer for Operation REDWING. He had requested the Director, Office of Classification, ALO, to serve in the capacity of his deputy. Subsequent to this initial appointment and some months in advance of the test operation, Dr. Smith withdrew. The Director, Office of Classification, ALO, was appointed by the General Manager to serve as Test Classification Officer in his stead. During the course of the Operation, Mr. W. H. Lawrence, of the Office of Classification, ALO, was appointed Acting Test Classification Officer during a period of temporary absence of the Classification Officer from the forward area.

Task Group 7.1 appointed Dr. John Harding as the TG 7.1 Classification Officer, and he maintained residence at the Proving Ground almost continually during the Operation. Beginning with Dr. Harding's temporary absence from the forward area and continuing to the end of the Operation, Dr. Ralph Carlisle Smith was present at Eniwetok in this capacity.

The great bulk of classification problems developed during the Operation arose, as expected, within Task Group 7.1. These problems were resolved by the TG 7.1 Classification Officer, with the results that there were relatively few problems referred to the JTF-SEVEN Test Classification Officer. During the latter part of the Operation, the

Test Classification Officer arranged to share the office of the TG 7. 1 Classification Officer, thus affording the former an opportunity for more intimate contact with classification problems arising within TG 7. 1.

A group of news media representatives were present in the forward area for several weeks as a result of the Commission's approval of an open shot. The Division of Classification, Washington, appointed Mr. Murry Nash as Classification Representative in the Joint Office of Test Information. The latter group, including Mr. Nash, was present in the forward area throughout the visit of the press representatives. All matters affecting access by the news media representatives to areas with-in and information concerning the Proving Ground were reviewed jointly by the Test Classification Officer and Mr. Nash, and coordination between these two offices was quite satisfactory.

In view of the plans to admit the news media representatives to the Proving Ground, this office recommended, and the Washington office approved, the declassification of the code name for the Operation in advance of the beginning of the test series. This is the first instance for a Pacific Operation where such action has been taken in advance of the test operation.

A significant procedure change in administering the classification program was introduced during Operation REDWING. This involved the placing of classification responsibility directly upon the various Task Groups and Units comprising the Joint Task Force. This was done because of the conviction that decentralization of classification authority to personnel directly involved in the development of classified information coupled with the education of such personnel in the approved classification policies would result in over-all improvement to the classification program. This policy worked well and should be continued.

Recommendations:

The Laboratories desired during Operation REDWING, and presumably will desire for future Pacific operations, to designate a Classification Officer for TG 7. 1. This is felt to be entirely proper, but it does have the effect of greatly reducing the action required by the JTF-SEVEN officer. The latter position has thereby become a part-time job; and, if it continues to be the desire of the Washington office to designate an AEC employee to this position, it is recommended that consideration be given to assigning this responsibility to a qualified person within TG 7. 5.

In order to avoid duplication of personnel and overlapping of responsibilities, it is recommended that the JTF-SEVEN Classification Officer be the classification representative for the Joint Office Test Information and that any other personnel assisting JOTI in this capacity be responsible directly to the JTF-SEVEN Classification Officer.

At the direction of DMA, quickie films were prepared for each of the tests in the series. Under the provisions of a procedure issued by DMA, each of these quickie films was required, regardless of information contained, to be classified Top Secret, Restricted Data. This requirement was protested by the Test Classification Officer and during a portion of the operation, these films were permitted to be reviewed and classified on the basis of content. The original policy was later re-established and was in affect throughout the greater part of the operation. During and subsequent to the operation, these quickie films were reviewed by the Test Classification Officer, the TG 7.1 Classification Officer, and Dr. Alvin C. Graves. It was the unanimous opinion of these persons that a minority of these quickie films contained information warranting the classification of Top Secret. In view of the use made of these films, to brief highly placed officials within the Government, it is felt that their automatic classification as Top Secret is giving these officials a seriously distorted picture of the areas of information within the weapons program which are being protected at this high level. It is strongly urged that these films be treated on the same basis as all other test related information and be classified by the JTF-SEVEN Classification Officer in consultation with interested laboratories, strictly on the basis of information contained.

Decentralization of classifying authority and education of Task Group and Task Unit Commanders in regard to classification policies should continue. Classification can be most accurately assigned by personnel with knowledge of classification in their field of work and intimately aware of the significance of their own data. Consultation with the Test Classification Officer should be encouraged.

2.3 PUBLIC INFORMATION

The authorized program for REDWING was contained in two documents: (1) "Information Plan for REDWING", dated 23 March, and approved by the AEC in April; and (2) "Plan for a Special Observer Program", approved by the AEC mid-April, 1956.

The Joint Office of Test Information (JOTI) was established at the Washington level to control, review, and issue all public statements on

REDWING Operations. Its AEC Project Director reported direct to the AEC General Manager. There was a DOD Deputy Project Director, with staff drawn from both AEC and DOD.

The only forward area personnel was an AEC Information Advisor to CJTF SEVEN. Mr. Richard G. Elliott (Director, Office of Information, ALO) initiated this service at PPG. He was succeeded by: Mr. Edwin Stokely, Assistant to the Manager, Oak Ridge Operations, and subsequently by Mr. Milton R. Cydell, Director, Information Division, Hanford Operations Office.

JOTI transferred to the forward area for the Special Observer Program during the period late April to 21 May, residing aboard the USS Mount McKinley. The AEC Information Advisor to CJTF SEVEN was renamed "JOTI Liaison with CJTF SEVEN" for the period.

The only information function of CTG 7.5 and Task Group 7.5 was to cooperate in furnishing and recommending information for proposed releases and visitor briefings, a briefing by CTG 7.5 and to provide guides and physical facilities for Island tours. TG 7.5 supported the Information Advisor and JOTI by providing working and billeting space and secretarial, telephone, and filing services.

The initial AEC Information Advisor to CJTF SEVEN reported in detail on the active, early stages of the REDWING Information activity, including the Special Observer Program, in a "Requested Summary of Redwing Information Activity", dated 10 July 1956, and addressed to CJTF SEVEN. This summary included an analysis of problems encountered and four pages of comments applicable to future series. None of these were exclusively within the responsibility of TG 7.5 although many had some relationship to TG 7.5. (See Exhibit III-2.3, following page.)

EXHIBIT III-2.3

Rear Admiral B. Hall Hanlon,
Commander, JTF-7, Eniwetok

Richard G. Elliott, Initial AEC Information Advisor
Office of Information, ALO

REQUESTED SUMMARY OF REDWING INFORMATION ACTIVITY

SYMBOL: OI:RGF

1. I was recently requested by JTF, in my capacity as initial AEC Information Advisor and JOTI Liaison Officer, to report on my period of duty. The request specifically asked inclusion of aspects of the public information plan peculiar to Redwing as compared with previous operations, a summary of participation by newsmen, and particularly my comments and recommendations as to future series in the Pacific. The attached material is in answer to your request.
2. The summary of activity is not necessarily accurate, nor is it complete in that it does not cover data after my departure 23 May. I do not have detailed records of the observer schedule, for instance, although I believe the schedule given to be reasonably accurate.
3. The attached material is intended, in large part, to supply JTF with the details which were not summarized, as they should have been, before departure from PPG. It is in no sense presented as a final report. It is assumed that JTF personnel can draw on it for a much briefer, final document for the public information section of your report.
4. I have not attempted to reach formal conclusions and recommendations. These are represented by my comments, which are believed sufficient to provide a basis for JTF recommendations.
5. To be comprehensive, a report of the Special Observer Project as a whole should be prepared by JOTI and not by its liaison officer ashore. It is suggested that you consider asking the Director, JOTI (Mr. Shelby Thompson, AEC, Washington) for such a report.
6. The Joint Office of Test Information has requested that it receive from me a copy of this report and you will note that a copy is being forwarded for their information.

Enclosure:

Conf DI Summary of REDWING
Public Information Activity

cc: Shelby Thompson, Dir, JOTI, DIS, Washington (w/encl)
Blind cc: Ernest Wynkoop, APO 435 SF, TG 7.5

A SUMMARY OF REDWING PUBLIC INFORMATION ACTIVITY

A. SCOPE AND PURPOSE

1. This report summarizes the organization and conduct of the Joint Task Force Seven phase of the joint Atomic Energy Commission-Department of Defense public information activity during the Redwing series.

The activity covered was divided into two areas: (a) the continuing activity throughout the series, with related activities of an internal information and general public relations nature; and , (b) the Special Observers Project at the first of the series. These areas are reflected in the organization of the Report.

It is stressed that the Report does not attempt to record the total information activity associated with Redwing, being limited strictly to the JTF-7 phase.

B. THE CONTINUING REDWING PROGRAM

2. Joint AEC-DOD Information Plan

- a. The Plan, dated 23 March, was approved by the AEC, concurred in by the DOD, and presumably coordinated with other Executive Agencies. Its authorization date presumably was in April.
- b. It differed essentially from plans for prior overseas series by projecting a fairly comprehensive program of national-level issuances and actions before and during REDWING, instead of after conclusion of a series. It noted that specific, new information activities planned for use as deemed necessary were: (a) Reporting fallout in the Pacific and on the continent; (b) official reporting during the pre-test and operational periods with particular regard to public safety; and (c) post-shot announcements of detonations with generalized description of yield, whether air or ground, and atoll of detonation.
- c. Responsibility for review, Government Agency coordination, determination of need or desirability of issuance, and issuance were retained by the AEC and DOD.
- d. Organizationally, operating responsibility was assigned to a Joint Office of Test Information, reporting directly to the AEC General Manager, with an AEC Project Director and a DOD Deputy Project Officer, and with staff drawn from both AEC and DOD.

3. Provisions Affecting JTF-7 Activity

a. Authority delegated to CJTF-7 in the public information field included:

- (1) Issuance simultaneously in Honolulu of Washington approved and released statements (with provision that statements would be made known in advance to CJTF-7 when practicable).
- (2) Recommendation to AEC and DOD of announcements deemed necessary to serve the public interest and operating requirements of JTF-7 in emergency situations such as dangerous fallout on a populated area, evacuation of personnel or natives, or unusual and severe accidents to JTF-7 personnel.
- (3) Recommendation to the Service concerned of any proposed statement to be made on casualties to military personnel, for pre-approval by AEC and DOD, and issuance by the Service.
- (4) Permissive authority to disseminate to all individuals in JTF-7 publicly-issued, official statements to supplement certain topics otherwise permitted for discussion in statements, letters, interviews or conversation.

b. Responsibilities assigned to CJTF-7 included:

- (1) Inclusion in operational reports of sufficient data and descriptive material as might be necessary for compilation in Washington of public announcements concerning Operation REDWING.
- (2) Implementation within JTF-7 of public information policies consistent with the Plan and within the limitations of Par. 3, Annex B, CJTF-7, Op Plan 1-56 which included: (a) JTF-7 would release no public information; and (b) JTF personnel would release no information in regard to JTF or its activities for publication, referring all queries to AEC or DOD.
- (3) Supporting any additional or special information activities which might be authorized by the AEC and DOD, and for recommending such other information activity as would assist him in carrying out his duties.

c. No provision was made in the Plan for review or issuance at any level of information materials of a local installation or hometown nature in the pre-operational or the operational periods. Provision was made for post-series review by AEC and DOD of such proposed material.

- d. Organizationally, the Plan provided for assignment of an AEC and of a DOD Information Adviser to the staff of CJTF-7. Their initially assigned function was to assist CJTF-7 in evaluating situations with public impact and in providing information data desired by JOTI.

4. JTF-7 Information Organization and Procedures

- a. In accord with past practice and in view of the limitations put on JTF-7 information activity, there was no organizational provision within JTF-7 for a public or internal information service. During the operational period matters requiring professional assistance were referred to the Information Advisers.
- b. The DOD Information Adviser was a retired DOD Information Officer serving in a civilian capacity, who remained on duty until early June (except that during the Special Observer Project he was assigned not to Headquarters, JTF-7 but aboard the USS Mount McKinley). The AEC rotated personnel drawn from its Operations Offices as Information Advisers, each serving for approximately one month.
- c. The Advisers reported normally to the Chief of Staff, assisting the Commander and his Deputies as requested, coordinating their activity in detail with Headquarters and Task Group staffs, and particularly with the Security Officer.
- d. There was no planning requirement established for public information, and no support was specifically allocated. Reproduction, filing and photographic services of other units were utilized as available.

5. Actions Taken

Much of the public information activity during REDWING was confined to the Special Observers Project, summarized in a subsequent section. Actions listed here are in the main separate from that project, although some were related to it in time or otherwise.

- a. In no instance was a Washington issuance released simultaneously in Honolulu by JTF-7. None ((or correct number)) was received by JTF sufficiently in advance, nor were they of a nature to require such issuance.
- b. ((Summation of recommendations made by JTF-7 for emergency situation announcements per par. 3. a. (2). There was none during my service other than Special Project.))

- c. ((Action taken, if any, on military casualties other than during Special Project.))
- d. AEC was advised of death of a Sandia Corporation employee by drowning. The Plan contained no specific instruction in this category of incident. JTF-7 was subsequently informed that Sandia Corporation released the story in Albuquerque in conformance with usual practice.
- e. No official public statement was disseminated to all JTF-7 personnel to guide them in letters home, discussions, etc. Security instructions to all personnel defined matters which could be discussed generally. Copies of all official public statements were not received by JTF-7. Following the Lacrosse and Cherokee shots, observed and reported by uncleared news media, essential facts officially released were summarized and disseminated to all personnel, permitting their discussion of the same facts.
- f. Routine and special operational reports transmitted the requested categories of information. When events indicated the desirability of such action, the reports were coordinated with JTF-7's information advisers.
- g. Other than incidental to the Special Project, JTF-7 released no public information. In no known instance was prohibited information released by individuals on duty in the forward area.
- h. Support was given to JOTI as requested, including: Special Observer Project, a statement denying published accounts of eye injuries on Cherokee, the Cinerama project in connection with Cherokee and ((please supplement)).
- i. Early in the series, Navy, Air Force, and Laboratory requirements developed for release of "hometown" stories. The Navy desired to make hometown release of photographs and stories based on recreation, on individuals by name, and on participation of a unit in the scientific program. The Air Force desired to release photographs and stories on promotions and other personnel matters. Sandia Corporation desired to print in its house publication a selection from 50 photographs taken on a mercy flight to Ujelang Atoll. JTF-7 recommended that it be authorized to establish internal procedures for review and release or that a procedure be established for review and issuance by AEC-DOD. ((Please conclude on basis of subsequent facts. JOTI initially refused on basis that such material was deliberately excluded from the information Plan, but offered to consider a

JTF-7 recommendation for amendment of the Plan. Mr. Morris subsequently worked out with Mr. Thompson a plan to recommend a procedure to permit JTF-7 handling. I am not aware of action finally taken.))

- j. JTF-7 recommended release of facts concerning a "mercy flight" to Ujelang early in May during which a native child suffering from a serious illness was treated by JTF physicians. JOTI determined against issuance because of objections by the State Department representative. A report of subsequent assistance given Ponape natives with regard to poisoned fish was considered, but rejected by JTF in view of the action above.
- k. A source file containing material on all overseas tests was compiled for permanent retention in JTF-7.
- l. Assistance was given, particularly during the Special Project, to JTF-7 Historical Officers and, through Security, to communications monitors.
- m. Following Lacrosse and Cherokee, participants requested permission to report their personal observations of those shots on an unclassified basis to hometown newspapers. Such requests were refused.
- n. There was initially no provision made for informing JTF-7 of U. S. or worldwide comment concerning the tests. With the need very apparent during the Special Observer Project, arrangements were made to obtain copies of Honolulu newspapers, and individuals arranged with home offices and with families to provide an unofficial clipping service. Analysis of worldwide use were furnished by the State Department after 11 May. ((This was true during Special Project; unknown if it continued.)) AEC and DOD representatives reported that their news digest services were on too restricted a basis to supply such materials.
- o. As is usually true with regard to the public information function, advisers participated in other JTF-7 activities. These included: Briefing, protocol, and handling of Official Observers; operations with regard to other visitors, usually encompassed in functions of a Visitors' Bureau; preparation of special reports and correspondence; and participation in internal problems such as rank or organizational limitations on use of specific beaches.

C. THE SPECIAL OBSERVER PROJECT

6. Plan for Special Observer Program

- a. The project was initiated by the AEC, in answer to news media request and civil defense interest. Following extensive inter-Agency coordination, it was authorized by the AEC on 17 April. Stated purpose was to permit U. S. news media to report accurately and promote public understanding of the need for weapons tests and of the fact of safety precautions; and give selected civil defense representatives an opportunity to observe a thermonuclear detonation.
- b. Newsmen had observed the 1946 Bikini tests from aboard ship and aircraft, with few controls on observation or coverage, with extensive briefing permitted, and with censorship of copy. No observation of subsequent Pacific tests by uncleared observers had been permitted, although three news media-civil defense observer projects had been held in Nevada in 1952, 1953 and 1955.
- c. The program authorized admission of a limited number of news media and civil defense observers, observation of the scheduled first shot (Cherokee) from aboard ship and aircraft, atoll aerial tours and ground visits, extensive briefing with pre-review of all copy, full protection of all classified information, no censorship of news media copy, declassification of certain areas of information, and established the details of forward area project handling to the extent that events and problems were anticipated.
- d. A Joint AEC-DOD information organization was established, including information, security, classification, and liaison officers and including a State Department representative. In the forward area JOTI was under the operational direction of CJTF-7.
- e. Responsibility assigned to CJTF-7 was clarified in a letter, dated ((____)), by Director, AEC Division of Military Application, noting that CJTF-7 was fully responsible for the protection of classified information and that the JOTI organization was being made available to him to support the project in the forward area.

7. Pre-Forward Area Activity

- a. The special observer group as formed included: 15 representatives of U. S. news media, one United States Information Agency representative, 21 from civil defense, and the JOTI organization of 23

which included one from State Department and the AEC Information Adviser to CJTF-7 to serve in JTF headquarters as liaison officer.

- b. It is understood that various media briefings were held in Washington. One formal briefing, largely of a security and procedural nature, was held in Honolulu.
- c. The program projected arrival of observers at Kwajalein about 27 April, two days for ship travel, two days for briefings and tours, and shot observation 2 May. (All dates herein are Pacific Proving Ground time.) On 19 April, Cherokee was postponed one week, as was the forward area observer project.

8. Schedule of Forward Area Project Activity

- a. The JTF-7 command staff and also the AEC Information Adviser (JOTI Liaison Officer) arrived at PPG 19 April. Beginning 23 April, JOTI information, classification and security officers (all AEC personnel) arrived to assist in preparation of a project and security plan; and arrangements including preparation, review, and duplication of handout and briefing materials. This contingent brought forward a copy of the final draft of the project program. On 3 May, JOTI members, other than the JTF Liaison Officer, joined the observers at Kwajalein.

- b. The following project schedule was completed:

3 May. Arrive Kwajalein; Depart 0100 by three aircraft to observe Lacrosse shot from Eniwetok pier; USS Mt. McKinley departed Bikini area for communications dry run. Scheduled airport interview with ACTHCPAC, Trust Islands, was postponed. Upon Lacrosse postponement, aircraft turned back to Kwajalein at 0130.

4 May. Observers were transferred by air to Bikini, and to McKinley. Final communications check made. Radiological effects briefing aboard en route to Eniwetok.

5 May. Lacrosse shot was observed from McKinley, stationed south of Eniwetok. Briefing aboard McKinley included AEC Commissioner Vance, on general aspects of testing, and JTF-7 on test operations stressing radiation, weather, public safety, and scientific aspects. A 6-page list of probable questions

and approved answers had been prepared at PPG, but news media questions were few. JOTI requested postponement of ground and air facilities tour, Eniwetok. Observers were shown living, administrative, and support areas on Parry preceding a reception at CJTF-7's quarters.

6 May. Observers in three aircraft viewed Eniwetok Atoll counter-clockwise from Eniwetok to Runit Islands; viewed Bikini Atoll in same direction from Namu to Enyu Islands; viewed Control Point on Enyu; transferred by boat to Romirikku-Yurochi and viewed various instrumentation stations and structures. A detailed description of technical facilities was handed out. Dr. Ogle presented tour technical briefings, and Mr. Sam Howell briefed on Holmes & Narver matters. Dr. Gaelen Felt was interviewed at Control Point.

7 May. Flight to Majuro to visit ex-Rongelap natives arranged, then cancelled per State Department representatives' request.

8 May. Weather and fallout briefing aboard McKinley. Observers viewed air strip, Eniwetok, visited Air Control, and interviewed B-52 crew under controlled conditions.

9 May. Scheduled interview of Pacific High Commissioner aboard McKinley was cancelled.

10 May. McKinley departed for Bikini. Cherokee was postponed after evening weather evaluation.

11 May. Heavy seas prevented scheduled trip to Japtan.

12 May. CJTF-7 was interviewed aboard McKinley. Observers visited Runit Island, site of Lacrosse shot, being briefed by members of TG 7.1. The NBC-TV representative (Bryson Rash) interviewed CJTF-7 on WXLE-TV.

13 May. Recreational day at Japtan. CBS-TV representative (Bob McCormick) interviewed DepAir on WXLE-TV.

14 May. Rash, Considine, Myler, Fay, and Lansner interviewed DepAir on WXLE-TV.

15 May. USS Mt. McKinley proceeded to Bikini, primarily to permit civil defense to observe rad-safety recording and decontamination measures aboard USS Badoeng Strait. News media personnel appeared on Bikini TV.

16 May. Commander, TG 7.1, was interviewed aboard McKinley. Recreation, Navy area on Enyu.

17 May. Cherokee was postponed about 0400. Observer photographers visited Enyu to take simulated photography of D-minus-one evacuation and buttoning-up. Weather officer (Cdr. Palmer) presented weather briefing aboard McKinley.

18 May. Cherokee was postponed at 0500. McKinley was diverted from trip to Eniwetok at 1355 to join search for missing aerial observer.

19 May. McKinley participated in search.

20 May. McKinley recalled from search at 1515, proceeding to Bikini.

21 May. Cherokee was detonated. Statement on Japanese fishing boat and other data were furnished to JOTI. McKinley departed for Kwajalein.

22 May. Observers departed Kwajalein at 1000 by MATS for Honolulu. Statement was radioed on cancellation of search for aerial observer.

9. Procedures

- a. Observers were aboard the USS Mt. McKinley throughout, going ashore for indoctrination events or for recreation generally as a group. Responsibility for group control rested with JOTI, although JTF-7 Security and Classification personnel were used additionally on all major tours.
- b. The general pattern of activity was that JTF-7 provided briefing personnel, information materials, and arranged and conducted all events off the McKinley. JTF-7's texts for formal briefing and descriptions for tours were approved in advance by JOTI representatives of AEC and DOD classification, security and information

and were issued to observers by JOTI. Oral statements otherwise during tours, question and answer periods, and the like were within the framework of pre-approved materials. Aside from briefings and tours, JOTI aboard the McKinley requested JOTI-Liaison-with-JTF-7 to supply desired data, which was reviewed, evaluated, and issued by JOTI.

- c. JOTI certified observers to JTF-7, which issued special badges upon identification of the individual. JTF-7 issued film badges and maintained records.

10. Material Released

- a.. Director, JOTI, reported on 8 June to news media observers that JOTI had issued, presumably including Washington and Honolulu releases:

95 information pieces (including operational and weather, daily schedules, etc.);

52 background and briefing pieces, totaling 254 pages;

and the following statistics on reporting by news media from aboard the McKinley:

172,400 words transmitted via 6 teletype circuits;

56 still pictures radio-photographed over a facsimile circuit;

3,500 feet of 16 m.m. film made by the TV pool crew;

900 feet of 35 m.m. film made by official cameramen for theatrical newsreels and for TV;

180 minutes of broadcasting over radio industry's special voice circuit.

An extensive but unestimated amount of wordage in press copy and on radio tapes, plus many additional still pictures, sent to Honolulu on aircraft.

- b. JTF-7 has only a partial record of material given to news media. Data requiring internal JTF-7 coordination and the Commander's

approval were generally written and are available in JTF-7 files. Other data transmitted to the McKinley by voice-telephone or radio were not written. JOTI did not make available to JTF-7 copies of material issued to correspondents, other than formal briefing texts and background pieces.

- c. Few requirements were put on JTF-7 for photographic material. Lookout Mountain motion picture footage of detonations, support and buildup activities, weather and fallout procedures including rocket firings, etc., were flown to Hollywood for processing and classification review, and for issuance by JOTI-Washington if it so desired. Lookout Mountain assigned a crew to the Mt. McKinley, and one or more of its Cherokee detonation pictures was released aboard the McKinley to news media. Military personnel assigned to JTF-7 to photograph Cherokee for Cinerama worked from the USS Estes. Photographic reproductions of all visual aides used in the 6 May briefing were processed by the Los Alamos Scientific Laboratory's photographic unit of TG 7.1. JTF-7 supplied JOTI for news photographers unclassified instructions on light intensity, angle of exposure, and filters.
- d. The only material services or proposed to JOTI for issuance and known to have been withheld were minor feature articles, one on two father-and-son teams of JTF and one on the handling of an accident in which a seaman's eye was injured, which involved all major civilian and military elements of JTF-7.

11. Problem Areas and Key Incidents.

- a. The authorized program was limited to observation of the Cherokee shot. The question of observation of any other detonation resulting from Cherokee postponements was discussed, however, during planning. When it developed that Lacrosse would be fired while the observers were in the forward area, Washington approval was obtained for observation and shot-time photography and for an official announcement including categorization of yield as in the low kiloton range.
- b. Contrary to past open shot practice, there was no declassification of approximate Cherokee yield, height of burst, or height of drop aircraft. These restrictions automatically limited official discussion of Cherokee-related operations and results to a much narrower area than had been true for similar projects in the past.

- c. Reference by an official briefer to the movement of the Control Point during an earth shake after the 1 March 1954 shot was interpreted by two reporters as revealing a deadly, new "earthquake effect" of megaton bombs. The Washington Post used this as a basis for two editorials critical of the AEC for assertedly withholding information. The FCDA Administrator made a statement putting the effect into proper perspective. Upon Washington request, relayed through JOTI, clarifications quoting the Deputy for Scientific Matters, in one paragraph and one page forms, were given to JOTI for issuance if desired.
- d.. Non-mingling of Task Force personnel and uncleared observers, except under controlled conditions, was programmed. The policy was extended to cover mingling with official, cleared visitors. The policy was applied effectively on the basis of the original schedule but continuing postponements created requirements for observer recreational activities ashore on both Atolls which necessarily resulted in joint use of facilities such as clubs and beaches. There was no known compromise of classified or policy-sensitive information as a result, with the single exception of an unverified report that an official visitor gave one or more news correspondents a fairly accurate approximation of Lacrosse's yield.
- e. Aerial observation of Cherokee was programmed and a specially-equipped C-97 aircraft was made available to the Task Force by Strategic Air Command for this purpose. The project presented serious problems of security control and of billeting uncleared correspondents for a possibly extended period on Eniwetok Island, and both JOTI and JTF-7 believed the project was undesirable. It was finally determined that the correspondents who elected aerial observation, and their aircraft, would be based at Kwajalein. On 5 May, JOTI advised that news media had been surveyed and did not desire such observation, so the project was cancelled.
- f. Briefing of correspondents concerning the group of Rongelap-Rongerik natives exposed to heavy fallout from the 1 March 1954 shot was approved in the observer project program. A visit by correspondents to this group, now living at Majuro, was proposed for the first suitable postponement period. JTF-7 arranged with the Trust Territories for such a trip on 7 May, but it was cancelled upon the request of the State Department's representative who additionally recommended that there be no action linking brown-skinned people to the Pacific tests. As a result, there was no coverage of a subsequent mercy flight by JTF-7 personnel to Ujelang, nor of an investigation into

fish-poisoning at Ponape, plans were cancelled for feature reports on the activities of JTF-7 personnel at radiation and weather stations throughout the Trust Territories, and a proposed meeting of the Acting High Commissioner with news correspondents was cancelled.

- g. Attendance of selected news writers and commentators at a weather evaluation meeting was considered in some detail. JOTI recommended against the project because of a belief that it was not desirable to have public reporting of the details of test command's decisive consideration of whether to fire a test. On the other side, news correspondents reportedly felt that only by such reporting could the importance given public safety by test management be fully dramatized. This question was not finally resolved. In retrospect, it is believed that the controls and procedures affecting public safety were adequately reported, and that the several postponements effectively dramatized the caution of test command.
- h. An observer visit to Eniwetok airport to view all aircraft, take pictures of exteriors, and interview crews was included in the basic tour schedule. Headquarters Air Force concurrence extended to an interview of the B-52 drop crew, but this was excluded upon recommendation of DepAir who was concerned about interference with the crew's schedule and about the sensitivity of information which might be discussed. JOTI reported that news writers strongly urged a drop crew interview and offered to accept any controls including censorship of their copy. The interview was held in conjunction with the airport visit, required deletion of only one or two replies, and there was no requirement for copy censorship. During the airport visit photographs were made of the interior of an open B-52 bomb bay which included special equipment. It was finally determined, in agreement with the news photographers, that JTF-7 would send exposed film to DOD for review. ((We are not aware of final disposition of this film.))
- i. Use of the McKinley's teletype circuits was prohibited from shot time minus ten until plus two minutes to avoid interference with operations. Use of voice circuit during this period was permitted.
- j. Announcement of the B-57 accident and the air-sea search for the two Air Force officers was withheld for approximately 12 hours. DepAir recommended against early announcement of the accident without identification of personnel, on the basis that it would cause great concern for the families of all JTF flying personnel; and against identification of personnel involved until next-of-kin had been notified

(AF rules permit withholding of accident announcements in overseas areas for 48 hours). Meanwhile the McKinley had joined the search and JOTI was authorized to advise the press on to-be-withheld basis. Full details were authorized for JOTI release promptly after notification of next-of-kin was confirmed.

- k. Announcement that a Japanese fishing vessel had been found near the far edge of the control area was withheld from late evening 20 May until after the detonation. JOTI strongly recommended release, while its State Department representative recommended against release in the belief the incident would be used in Japan as a vehicle for anti-American protest. CJTF directed that it be announced in the belief that advantages from such action outweighed possible disadvantages.

- 1. A sentence referring to accuracy of the Cherokee air drop was deleted from the Commander's post-shot statement relayed from the Estes to the McKinley about 1130, 21 May because at the time of its coordination there was no data available as to accuracy. The deletion was remarked on to JOTI with the explanation that accuracy would not be known until photographs could be viewed the next day and JOTI was asked to relay any requests by news media on this subject. None were relayed. When the degree of error was estimated following review of photographs on 22 May, essential data were reported by CJTF-7 to Washington.

D. COMMENTS

- 12. The following will help clarify subsequent suggestions as to JTF responsibility and activity.

The major impact of Pacific tests is outside the operating area, being in the national and international fields. Major requirements for public justification, reporting, and interpretation exist or develop within the United States and internationally, centering in Washington. The effective channels for public reporting also are centered in Washington. It may be accepted that Washington will not only retain control of Pacific test public reporting but it will also, and necessarily, perform the major portion of day-to-day activity.

These facts were reflected directly in the Redwing Information Plan, which almost exclusively dealt with public reporting of Washington-level matters, and established the role of JTF as that of providing support through the forwarding to Washington of data requested.

Activity of approximately the same general scope will probably be found desirable for another Pacific series, and the role of JTF will quite probably again be that of supplying essential data to a Washington Organization for issuance.

In thumbnail, our later comments related to this phase of information activity, propose no relaxation of Washington-level control over these matters but proposes simply: (1) that foreseeable needs be more definitely programmed and pre-directed; and, (2) that consideration be given to issuing some of such items in the name of the Joint Task Force to help play down the attention they may attract.

Certain areas of information requirement of greater direct JTF interest were not provided for specifically in the Redwing Plan, two having been left out possibly by intent. In these areas, we do propose greater field authority under Washington guidance.

13. Speaking solely from the public information viewpoint (and this is reflected in the Redwing Plan), it is considered desirable to issue prompt, post-shot confirmations of high yield detonations. It is our opinion that the routine issuance of these brief statements should be by JTF instead of a Washington-level Agency or Department. We also feel that they could quite properly be issued by JTF's Honolulu office to Honolulu representatives of national news services, which would reduce Honolulu media's interest in ferreting out non-official data and which over a period of time would probably decrease attention given like announcements if issued in Washington.
14. If the JTF remains a continuing organization and one with a Washington headquarters, consideration could well be given to assigning JTF responsibility for preparing, coordinating, and issuing pre-programmed and pre-authorized reports in the pre-operational period. This refers to those reports which deal with forthcoming operations, such as organizations, operating criteria, movements of supplies, etc.
15. Every effort should be made to insure earlier issuance of the approved information plan for any overseas series. To be fully effective, the policies and procedures directed in such plans should be augmented by directives reaching the home installations -- as well as traveling units or individuals -- of all participating organizations. From the JTF viewpoint, the plans establish the requirements on which it must base its plan for field supporting services and resources.

16. Every effort should likewise be made to obtain initial announcement of a series some months in advance of the operational period. Without going into the matter of providing early advice to affected industries, publics, and Nations, it is known that early announcement greatly reduces the security load on JTF and participating organizations, and otherwise facilitates operations in the buildup period.
17. The following pertains to direct authority considered desirable for JTF:
 - a. JTF is authorized to act with regard to various phases of operations, including public safety, in its area, which includes the high seas and numerous Trust Territory and foreign islands where installations are maintained. Under the Redwing Plan JTF is not permitted to make any form of public information issuance connected with these contacts, although in some instances its authority for emergency action must necessarily include authority for talking with people. It is our opinion that authority for information action should accompany the authority for operational action, and that the requirements can be sufficiently evaluated in advance to permit inclusion of any essential controls in the charter of CJTF.
 - b. The value of "hometown" stories and photographs about organizational units and individuals has long been accepted in military, AEC and military contractor, and commercial activities. It is our opinion that CJTF should be authorized to approve and to control such programs of participating organizations.
 - c. Somewhat related to the item above is the question of public information at home installations or en route to or from the Pacific Proving Ground. We feel that planning should provide for such public information, in keeping with stated policy as to content and treatment. It is our opinion that JTF should issue the directives to establish and control such activity, both in the pre-operational phase and also in the period following the organizational unit's departure from PPG.
 - d. Additionally, it is felt that detailed advance consideration could establish other limited areas in which the JTF could act in keeping with directives as to scope and content, without detailed Washington-level review and inter-agency coordination being required for each separate action. This category is more difficult to define, but it would include announcement of casualties or authorizing home installation announcement, certain categories of feature material, etc.

18. While it is accepted that planning the total test-related reporting activity is well outside JTF responsibility, it is also noted that the JTF is the only organizational unit solely concerned with the next Pacific series. The JTF might well take the initiative in getting inter-Agency planning under way, thus possibly stimulating earlier organization of a joint planning group. In any case, the JTF as the field operating organization should participate more fully in planning and in programming so that it in turn may be fully aware of what is contemplated and may organize to do the job to be assigned to it.
19. Accepting that some measure of authority and responsibility will always be assigned to JTF, in anticipation of adoption of some of the other suggestions made here, and reflecting the fact that information-type personnel can assist a field command in various functions not directly categorized as public information, it is suggested that the JTF make staff provision for a public information officer. If assigned functions in interim periods, before the buildup period, could not support such an assignment, it is suggested that he be on duty some months prior to a series so that he can participate in planning and other preparatory work, and take part in other pre-series activity. This would insure his familiarity with the organization and with the requirements prior to an operational period. It is not believed the present system of assigning advisors from AEC and DOD is "good organization" nor that it fully meets the need. The JTF information officer could be either military or AEC, although it is probable that a majority of considerations would dictate choice of a military officer. We feel that the information officer should report to the Commander, although routinely this can be done through the Chief of Staff.
20. I am not aware of the full program which may exist for education and indoctrination of individuals, either civilian or military. The aura of super-secrecy which has surrounded overseas operations since 1948, and some of my observations, make it seem probable that there is little indoctrination in the necessity and value of tests, controls and public safety, operations, or effects. There now exists a rather large total volume of approved material which has been publicly released. This, together with the official description of a forthcoming series normal to an initial announcement, would be sufficient to provide descriptive background material, both graphic and written, for indoctrination prior to departure overseas and during the stay there. Such use would not only advance participant morale and public understanding materially, but it might also help prevent participant reports of flash blindness at 180 miles or that brightness made bones visible through flesh.

21. The following comments pertain to the Special Observer Project and any future observation by uncleared news correspondents or other groups.

- a. There are very few aspects of an overseas test operation which are not classified in some degree. Declassification of a few key items does not provide sufficient authority or guidance for the decisions which then must be made in the field. This can be met through a longer planning period which will permit full evaluation by all Agencies and Departments and the field organization, resulting in pre-approved programming. Two illustrations may be mentioned. Security rules of JTF-7, established in coordination with DOD and AEC, required classification for transmission between JOTI field units of information which was then to be released to news media. JTF-7 likewise had no instructions nor guidance with regard to press briefing or press observation of various weapons effects programs although related structures, which were of considerable press interest, were in the middle of areas to be visited on press tours. Some of these decisions can be made in the field in accord with the project's objective, but many can be anticipated in planning. In any case, the JTF should have available in its Headquarters not only an expert in AEC classification but also an expert in military classification who is authorized to recommend field determinations in his specialty.
- b. Policy matters should also be anticipated in detail to the extent possible, so that Washington-level guidance may be given in advance. Illustrations which occurred during the 1956 project, include the question of visiting natives on Majuro or discussing the Trust Islands, prompt announcement of the B-57 accident, the Japanese shipping vessel, and the target miss. Our interpretation of the authorized program is that it was sufficiently comprehensive to include such items, but this obviously was not the interpretation of the State Department representative and the guidance in one or more instances was not sufficiently specific for JTF representatives of the various Services to consider it as over-riding usual Service policy or procedures.
- c. With the experience gained by JOTI and by JTF personnel during the 1956 project, many of the handling problems of that project could be anticipated in planning another. These arose at almost every stage, but include those in the areas of local transportation, communications, provision of technical briefers to accompany the observers, and better balanced distribution of specialist staff between observers and Headquarters.

CHAPTER 3. PLANS AND OPERATIONS

Planning by AEC (TG 7.5) continued throughout the interim and operational periods, both on-site and off-site. This was accomplished by the ALOO Test Division, assistance from other ALOO offices and divisions, and support from DMA and LBM. (San Francisco Operations Office, AEC, with responsibility for administration of the University of California Radiation Laboratory contract, contributed certain coordinated effort.)

Test Division, ALOO, administered the interim AEC program at the PPG, through its Eniwetok Branch; coordinated planning for future operations through its Planning Branch; developed policy and programs through the Director (CTG 7.5) and Deputy Director (DCTG 7.5); and developed security, communications, and radiological safety through its Technical Services Branch. ALOO staff assistance was also utilized as required. This organization phased into the TG 7.5 Command Staff for the operational period.

Base facilities were provided for all elements of the Task Force by the AEC (TG 7.5) through established procedures. Military elements submitted requirements to CJTF SEVEN for confirmation to AEC (TG 7.5). Drawings and estimates were authorized to Holmes & Narver, Inc. by AEC, subsequently referred to CJTF SEVEN for approval and funding when not included in Budget Proposals.

Earliest possible submittal of requirements was required for inclusion in the work authorized to Holmes & Narver. When the funding was by or through CJTF SEVEN, the CJTF SEVEN construction fund advanced to ALOO was charged.

Communication facilities were closely coordinated by all elements of the Task Force to avoid technical interference and unnecessary duplication. Sensitive firing and timing facilities require no exceptions in the attention to this coordination.

Scientific engineering, construction and supports were effected directly by established procedures of TG 7.1 and TG 7.5. DOD interests in the scientific projects were subject to action by AEC; DOD; CJTF SEVEN through the Scientific Advisor, and CTG 7.1.

Supports of TG 7.5 to TG 7.1 (including DOD program interests) were provided in the Forward Area according to established procedures. Requests for supports, such as engineering, labor, and materials for con-

struction and operation and maintenance as well as recovery and roll-up were submitted by TG 7.1 to the AC/S, E-4, of TG 7.5, in accordance with established work order procedures.

The major activity of AEC (TG 7.5) for the PPG during the interim period was the planning for base facilities and scientific structures and facilities. Therefore Engineering and Construction, with its attendant scheduling and logistical demands, prevailed as an important part of the mission, even into and through the operational period. Support to the scientific and other users other than support by other Task Groups, in modifications to requirements, and supply of labor and skills became (during the later interim and operational periods) an added load of work within this function. Well proved procedures exist for effecting these requirements and are to be found in the pertinent work order system. All such requirements were submitted by the users through AEC (TG 7.5 Staff) to Holmes & Narver, Inc. for accomplishment.

Maintenance of Base Facilities was performed in accordance with the basic agreement between the AEC and the DOD by the AEC contractor, Holmes & Narver, Inc. Necessary maintenance of scientific facilities was also operated by Holmes & Narver on authorization of the AEC. Maintenance of AEC-owned equipment was a continuing requirement of AEC performed by Holmes & Narver.

Maintenance of Military-owned equipment was performed by Holmes & Narver on authorization of AEC under the ATCOM Equipment Maintenance Fund provided for by CJTF SEVEN. Special maintenance was performed by Holmes & Narver on authorization by AEC on military equipment such as surface craft, AVR, LST, etc. when within the capabilities of Holmes & Narver and funded by allotment and appropriations designated by the appropriate approving authority.

Work order procedures exist for the accomplishment of such services and referral of such requirements are made through the appropriate Task Group Commands and/or CJTF SEVEN to the AEC-Chief, Eniwetok Branch, for interim period or AC/SE-4 for operational period for coordination and approval. Blanket work orders in some cases provide for such requirements.

Roll-up and recovery requirements are provided for in a similar manner.

Camp management and operation were provided by Holmes & Narver under the AECM contract at PPG sites, except for Eniwetok (Fred) and Japtan (David) Islands which were operated by CTG 7.2. Services included messing, billeting, transportation (vehicular and marine), laundering, and recreation.

Dispatching for the joint AEC (TG 7.5) and TG 7.1 Motor Pool, the AEC (TG 7.5) Boat Pool, and Linson Aircraft was performed by Holmes & Narver.

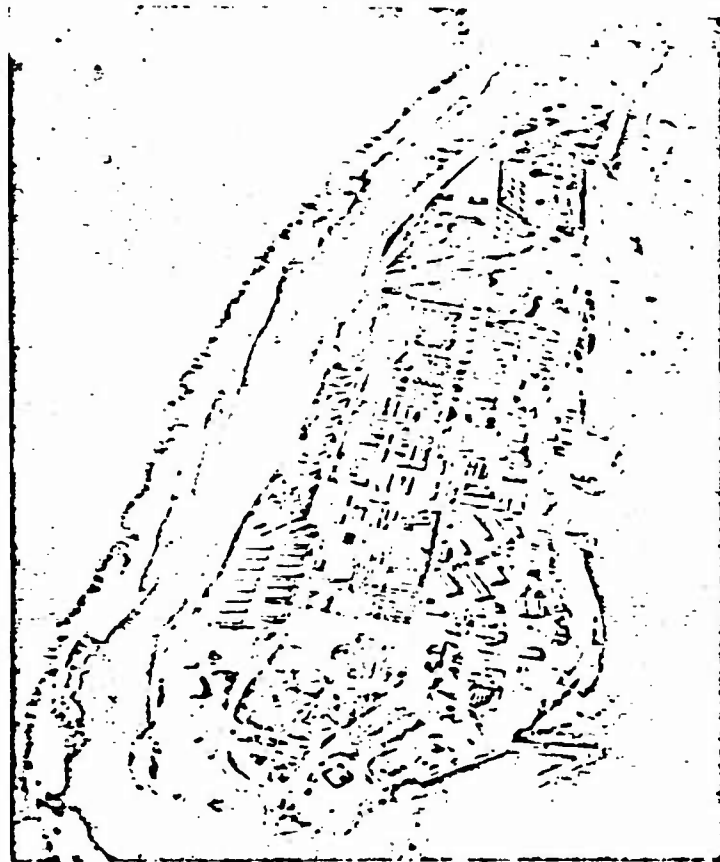
Utilities were operated by Holmes & Narver at all sites with the exception of communications operations of the Military located at Eniwetok Island (Fred), Japtan Island (David), Parry Island (Elmer), and Enyu Island (Nan), or elsewhere within the PPG as was established by the Military and excepting the POL facilities at site Fred.

Warehousing and yard storage were provided for other Task Groups on sites other than Eniwetok Island (Fred) by Holmes & Narver on approval of AEC (TG 7.5) when necessary in the best interests of the operation.

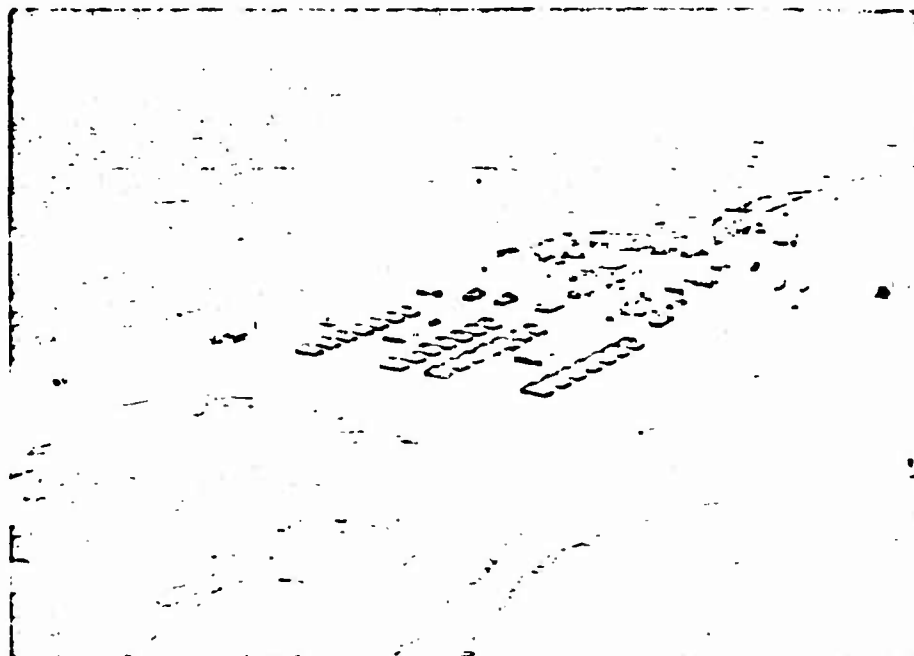
Stevedoring was provided by AEC (TG 7.5) and operated by Holmes & Narver at Eniwetok and Bikini Atolls, except Eniwetok Island (Fred) and Japtan (David) which were also operated by TG 7.2 through a supplement to the basic AEC-DOD agreement. The current study of possible reduction in the Military Garrison at Fred will, if approved in principle, require further detailed action in planning and execution, together with incidental revision to the basic AEC-DOD agreement.

The AEC (TG 7.5) Boat Pool was operated at Eniwetok Atoll and at Bikini Atoll (except during inactive periods at Bikini). During the operational period joint dispatching was effected between TG 7.3 Boat Pool Officer and TG 7.5 (H&N) Marine Superintendent. This assured maximum use of the combined boat pools during the maximum demand periods. (See Appendix III-4.5.M.)

CTG 7.5 effected emergency post-shot (and other) evacuation readiness for TG 7.5 personnel from Eniwetok and Bikini Atolls in accordance with CJTF SEVEN directives. Interim plans existed in joint bulletins and jobsite procedures which included assistance to and coordination with the ATCOM-Eniwetok (CTG 7.2). (See Appendix III-3.9.H.)



Aerial View of Site Elmer



The Gene Campsite as of 25 April 1956



Aerial View of the North End of Fred



Warehouse Area - Site Elmer



Storage Yard on Site Elmer



The Elmer Deep Water Pier

AEC (TG 7.5) maintained a Radiological Safety Unit throughout the interim period which effected Rad-Safe controls, including decontamination, for the protection of all personnel except those on Eniwetok Island. During the operational period this Unit functioned as an unit integrated with TU-7 of TG 7.1, with immediate responsibilities for TG 7.5 radiological safety.

Task Group 7.5 augmented shipboard housekeeping personnel of CTG 7.3 to support TG 7.1 and TG 7.5 elements afloat and maintained afloat TG 7.5 Headquarters Offices and Comcenters for the operation of the TG 7.5 mission, coordination with other elements afloat, and support to TG 7.1 in recovery and roll-up. In addition, TG 7.5 provided a Rad-Safe Barge facility to be tied to the TAP where major afloat Rad-Safe functions were to be performed by TG 7.5 personnel. Re-entry to NAN precluded extensive utilization of this facility.

The following factors were significant in planning Operation Redwing:

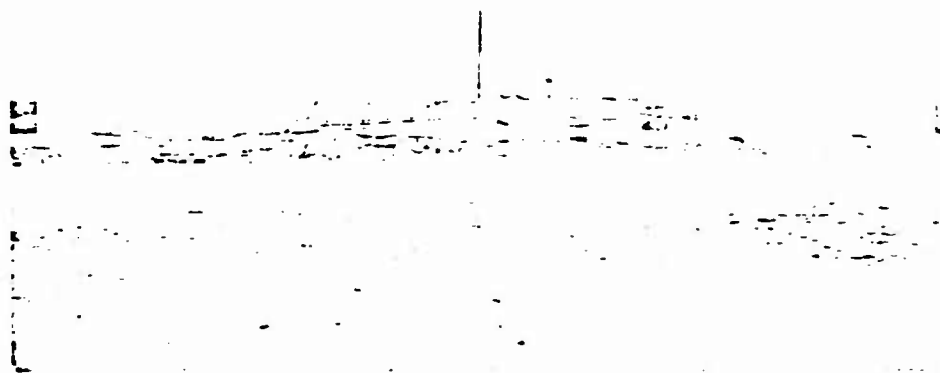
- a. Scope of operation -- required the use of both Eniwetok and Bikini Atolls as detonation sites.
- b. Eniwetok Atoll was the primary base of operation regardless of the scope of activities at Bikini Atoll.
- c. The principal port of entry for aircraft and ships was at Eniwetok Atoll.
- d. The task force was prepared to conduct all operations at Bikini from afloat after the first shot at that atoll. (Exhibits III-3.8.1 and III-3.8.2. depict the evacuations and extent of actual afloat operations.)
- e. The capability of firing a shot at Eniwetok Atoll and a shot at Bikini Atoll the same day was maintained as practicable.
- f. Firing of Bikini shots (except air drops) was accomplished from the Timing and Firing Station on Enyu Island.
- g. Firing of the Eniwetok shots (except air drops) was accomplished from the Timing and Firing Station on Parry Island.
- h. Local timing signals were available at both Bikini and Eniwetok Atolls by wire and radio.

- i. **Base Camps and Services:** At Eniwetok Atoll the base camps were located on sites Fred and Elmer with temporary work camps located on Rojoa (Ursula), Runit (Yvonne), and Teiteiripucchi (Gene). In addition, a TG 7.2 camp and communications facilities were maintained on Japtan Island. At Bikini Atoll temporary camps were located on Enyu, Eninman (Tare), and Romurikku (Fox). (See Exhibits III-3 and III-3.a for the location of these islands.)
- j. One of the most critical operational factors during Redwing was population congestion at principal locations. (See Exhibit III-1.1, page 35 for population figures).
- k. Major construction was completed at the PPG by April 1, 1956.
- l. An emergency capability for post-shot evacuation of personnel from both atolls was maintained.
- m. Trailers, vehicles, and specified equipment were evacuated to islands out of the destruction area of each shot.
- n. Locations of Command Headquarters-CJTF SEVEN, Task Group Commanders, and key staff personnel were as follows:

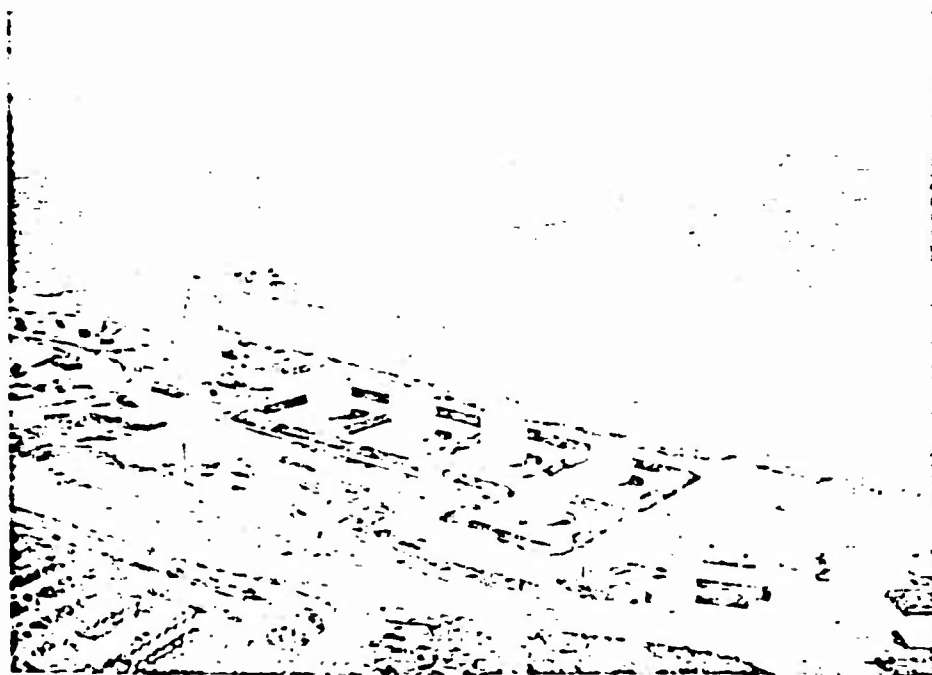
	<u>During Bikini Shots</u>	<u>At Other Times</u>
CJTF SEVEN	AGC	Parry Island
CTG 7.1	AV	Parry Island
CTG 7.2	Eniwetok Island	Eniwetok Island
CTG 7.3	AGC	AGC
CTG 7.4	AGC	Eniwetok Island
CTG 7.5	TAP	Parry Island

Control Factors. The Task Force entered the build-up, or preparatory, phase of Operation Redwing on July 1, 1955. The operational phase of Operation Redwing commenced on March 26, 1956, when the first important shipment of source and fissionable material departed from the West Coast aboard the USS Curtiss. Approximately one-half of the weapons and experimental devices were flown without incident from the ZI to the PPG.

Commander, TG 7.4 exercised operational control over all Task Force aircraft operating in the PPG area and was responsible for the safe positioning of test and other aircraft.



The Fred POL Farm



The Elmer POL Farm



Fred Airfield as of 7 March 1956



Fox Campsite as of 7 September 1955

Planning Tasks. The TG 7.5 On-Site Operation Plan provided for additions and revisions which were issued as appendices. An over-all policy based on precedent of past operations was effected whereby all pertinent AEC, Holmes & Narver, and joint bulletins and procedures not specifically rescinded or superseded by CJTF remained effective as appropriate and applicable.

Policy of the Director, Test Division, ALOO, AEC (CTG 7.5). It was the policy of the Director, Test Division, ALOO, and in his operational capacity as CTG 7.5, to evoke within the AEC and TG 7.5 an objective spirit in keeping with the goals of the over-all AEC program in general and with those of Operation Redwing as directed by AEC authority during the interim, and by CJTF SEVEN during the test operational period. Only through consistent efforts of all personnel of AEC and TG 7.5 associated with these goals, by aggressive and cooperative individual efforts welded into an effective team, could the accomplishment satisfy the exacting requirements and complex problems of Redwing. An excellent tone of cooperation prevailed throughout the operation.

3.1 GENERAL PLANS AND SCHEDULES

Redwing planning proceeded throughout the Castle-Redwing interim period with close coordination between ALOO, JTF SEVEN, the laboratories, the Task Groups, and other participating elements. Attainment of program goals was evidenced by the successful completion of the test series on July 22, 1956, prior to the estimate of August 15, 1956. Routines now exist for taking on equivalent operation to Redwing in stride. However, much can be done by way of improvement. A study of supports to other elements is being made within the ALOO Test Division, looking toward such improvement for future Pacific operations.

3.2 LONG RANGE PLANS AND SCHEDULES

A revised long range plan for improvements to the PPG was introduced under date of June 1, 1956, in contemplation of Hardtack requirements and necessary replacements to plant and equipment. The scope of this plan is undergoing budgetary consideration and revision. Construction indicated for Site Fred alone is of considerable proportion. Planning conferences were conducted during Redwing at the PPG where all elements concerned were together and while problems were intimately known.

This technique was eminently more successful in advance planning than any heretofore effected.

3.3 INTERIM PLANS

Judging by the recommendations contained in the various Task Groups' final reports to CJTF SEVEN and the corollaries of the CJTF SEVEN final report to the JCS, interim organization has been accorded more importance for planning and coordination purposes.

Task Groups 7.1 and 7.5 have maintained organization during the interim in the past and will continue as before.

Task Group 7.2 is seeking relief as set out at the conference in Washington on August 14 and 15, and a reduction in the Military Garrison has been proposed. The AEC contractor, Holmes & Narver, may operate certain support services previously performed by the Army Task Group, with certain savings in manpower and base facilities to result. CJTF SEVEN is taking steps toward funding for FY '58 and FY '59 to enable this change.

Task Group 7.4 has been supplanted by the AFSWC organization of the 4950th Test Group (Nuclear) comprised of the 4951st Support Group (Test) (formerly 4930th); 4935th Air Base Squadron (Indian Springs, Nevada); 4952nd Support Group (Test), Kirtland Air Force Base; and the 4926th Test Squadron (Sampling), Kirtland Air Force Base. This organization will provide air support and participation at both overseas (PPG) and continental (NTS) proving grounds. A greater continuity of command and staff will result.

Return of Rongelap Natives

The Marshallese group evacuated from Rongelap and Rongerik, incident to Bravo of Operation Castle, and temporarily relocated at Ejit Island, Majuro Atoll, M.I., are to be returned to Rongelap and Rongerik with completion of certain determinations. These consist of:

a. Radiological Situation.

It is believed that, with planned rehabilitation and support, this may be found acceptable by a conference group now meeting (October 1, 1956) at Kwajalein.

b. Rehabilitation of Housing, etc.

Plans and estimates have been completed to implement the return of the natives. Final determinations are to be made by the group in conference at Kwajalein. Construction will probably be performed by the AEC contractor, Holmes & Narver.

c. Other Supports.

Logistical support has been planned by the Navy. Funding is as yet undetermined.

3.4 REDUCTION IN MILITARY GARRISON - ENIWETOK

The current status of this proposal is:

The conference at Washington, D.C. on August 14 and 15, 1956, was followed by recommendations that:

- a. The AEC Contractor perform certain services previously performed by the Army.
- b. CJTF SEVEN endeavor to obtain funds through budgeting for FY '58 and FY '59 of the Chief, AFSWP.
- c. Transition to be attempted on July 1, 1957 with standards of performance to be comparable with existing standards of Holmes & Narver, Inc. at other PPG sites.

3.5 PLANNING OF TEMPORARY FACILITIES

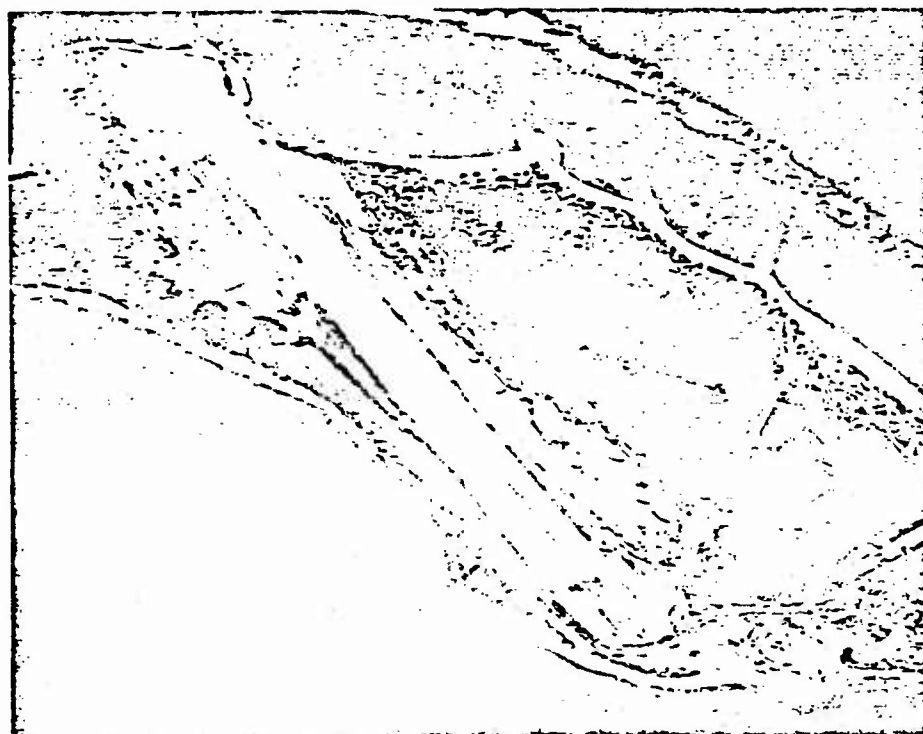
The principal temporary facilities consisted of the establishment of:

- a. An advance base of operations at site Nan.
- b. Shot camps on sites Ursula, Yvonne, Gene, Tare, and Fox.
- c. The off-atoll weather stations.

The planning for the establishment of the advance base of operations began early in 1954 with a request from Test Division, ALOO, to Holmes & Narver to institute an engineering survey. This was to de-



Aerial View of Site Nan as of 10 December 1955



Nan Airstrip as of 17 March 1956

termine the feasibility of establishing a camp on Nan to serve the same functions for Redwing as the camp on site Tare was then serving for Castle. The survey made included proposed camp layouts and standard building designs for a 250-man camp and plans for expansion to a 500-man and then 1000-man capacity. Construction of a 250-man camp was authorized September 24, 1954 with the provision that the housing tents, latrines, and utilities extension were to be erected on an "as needed" basis.

At site Nan it was contemplated to:

- a. Stockpile materials and equipment at the construction site.
- b. Prefabricate building assemblies at Elmer.
- c. Reactivate communication equipment in Castle Station 70 for the early establishment of inter-atoll communications.
- d. Decontaminate the camp site to reduce existing radioactive hazards.
- e. Rehabilitate the Peter-Oboe airstrip for limited service.
- f. Establish a beachhead camp from which the construction program could expand.
- g. Construct an airstrip suitable for landing C-47 type planes.

Arrangements were made with the U. S. Navy to utilize an LSD on the initial landings and for the continued use of an LST thereafter. The LSD type of vessel was selected for the initial landings. Equipment such as cranes could be transported without the need for dismantling, and also because the transfer of LCU and LCM craft could be more easily effected.

The continued use of the LST was essential for the establishment of an Eniwetok-Bikini shuttle service, since construction at Bikini was predicated on the fact that the main base for supply and repairs would remain on site Elmer. This arrangement reduced the need for duplicating warehousing and repair facilities at Bikini.

The plans for shot island camps included an evaluation of each site to determine the most suitable location for a camp. Preferably one adjacent to an accessible part of the beach in order that adjacent landing facilities could be provided with a minimum cost, a minimum amount

of channel excavation and a minimum of shore transport. The camp was also to be in a location least likely to interfere with scientific requirements.

Each camp was laid out to be self-contained. Power, fresh and salt water systems, sewage disposal, recreation, medical, and communication facilities were provided. At each camp there was provided an area for landing helicopters and/or L-20 type aircraft and facilities for handling materials and personnel from small marine craft. As Elmer and Nan, the main bases of operations for their respective atolls, were provided with a considerable amount of warehouse space, only limited warehouse space for receiving facilities was provided at the shot island camps.

Planning problems encountered with the weather stations were those primarily connected with logistics. This was because of the distances of the sites from the main base of operations and the difficulty of landing materials and equipment at construction sites.

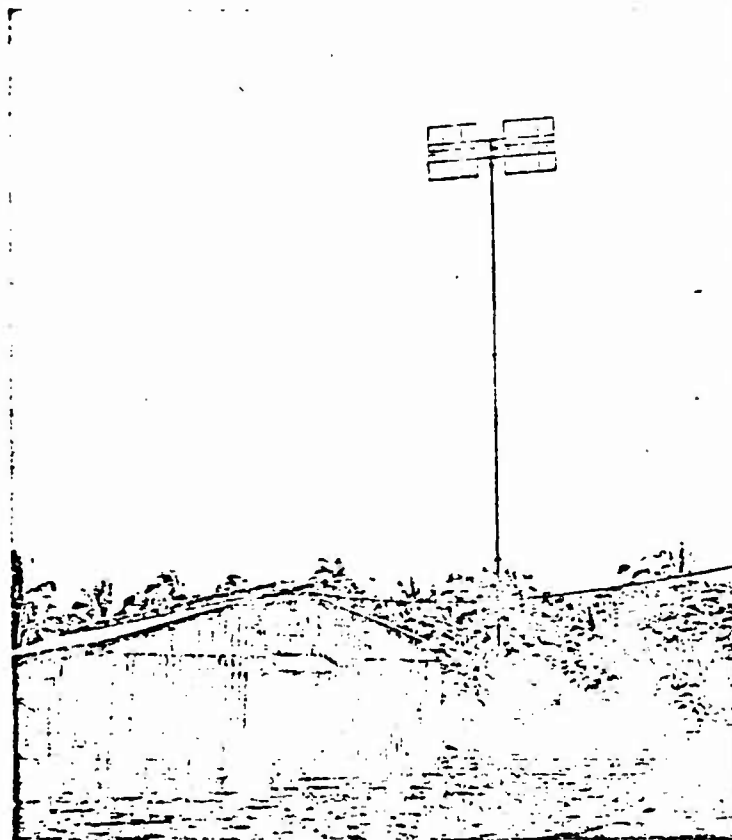
3.6 PLANNING OF BASE FACILITIES

Plans for improvement of Fred airport were approved in July 1954. Other plant and equipment projects proposed for FY 1955 were approved in September 1954. The principal items planned for construction were the deep water pier at Elmer to facilitate stevedoring operation and fueling service, eleven barracks for Fred, and a second submarine power cable between Elmer and Fred.

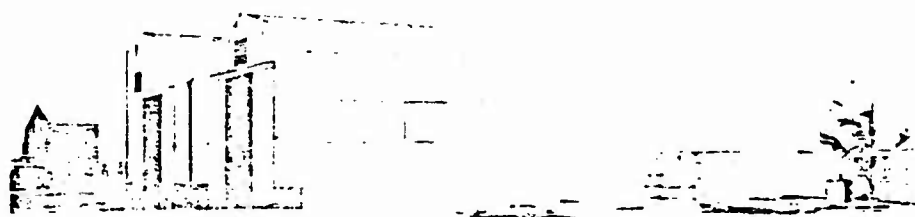
Additional plant and equipment projects approved for construction during FY 1956 included 17 buildings on Fred and 16 buildings on Elmer with a total building area of 143,494 for barracks, shops, administration offices, warehouses, and other uses.

The Fred POL farm was authorized to be expanded by the addition of two 5,000-barrel and two 10,000-barrel fuel storage tanks, additional fire protection and other appurtenances.

A joint AEC-Armed Forces Radio Receiving Station with a camp to support approximately 20 operating personnel was authorized for site David.



Joint Receiver Station on Site David



Typical New Warehouse - Site Fred

A television broadcast station for Fred, two magazines for storage of explosives on site Rex, and other numerous miscellaneous items were approved throughout the permanent base in order to support Redwing adequately.

Plans for all the structures and facilities added to the permanent base during FY's 55 and 56 were performed by Holmes & Narver, Inc. The engineering concerned with design was performed at the home office of Holmes & Narver at Los Angeles. Drawings and specifications were submitted to Test Division, ALOO, for final approval. Field engineering at Eniwetok Atoll was performed under the direction of the Holmes & Narver Resident Manager, Parry Island.

3.7 PLANNING OF SCIENTIFIC FACILITIES

Soon after the authorization of the construction of the temporary camp at Nan, various studies and appraisals were undertaken to determine the engineering and construction problems that would be involved in an operation with a scientific structures program similar to that of Operation Castle with firm requirements for causeway construction by April 1, 1955 and for scientific stations by July 1, 1955.

Included in these studies were the best means for reducing radioactive levels at probable construction sites, the condition of existing scientific stations, submarine cables and causeways, the availability of shot barges, and high speed personnel boats.

On March 4, 1955 the Contractor was authorized to proceed with the plans for scientific stations in accordance with details furnished by UCRL, LASL, and DOD. Construction would involve the outfitting of zero barges, construction of shot towers, recording, photograph and other stations to service an operation involving five tower, two ground, and two barge shots.

In April 1955 the number of shots was increased by the addition of two air drops and in July 1955 the scope was further increased to twelve shots.

In August the program called for facilities to service an operation of sixteen shots and equipping two additional barges as spares. As finally executed the program consisted of 7 barge, 6 tower, and 3 ground shots plus 2 air drops. To meet this program as finally evolved,

the test facilities required far exceeded those contemplated.

Planning for Redwing test structures involved the design and construction of more than 650 scientific stations of which approximately 75 were major stations from the design and construction viewpoint.

Included in the major stations were four 300-foot and three 200-foot steel towers with integral elevators; seven 500-ton steel barges outfitted at Elmer; two air drop targets; a ground zero station consisting of two steel tanks, one 50 feet in diameter and approximately 37 feet high, the other 15 feet in diameter located within the other, watertight, and connected by a watertight steel tunnel; two structural steel buildings high enough to accommodate a 5-ton bridge crane with a hook height of 21 feet; several reinforced concrete and precisely located recording stations and a number of other heavy concrete structures; two long pipe arrays, one with 28 pipes, all with close tolerances in horizontal and vertical alignments, and with tight vacuum specifications requiring an extensive vacuum pumping station; six steel frame buildings with special siding; eleven steel TV towers ranging in height from 88 to 265 feet; and three 75-foot photo towers.

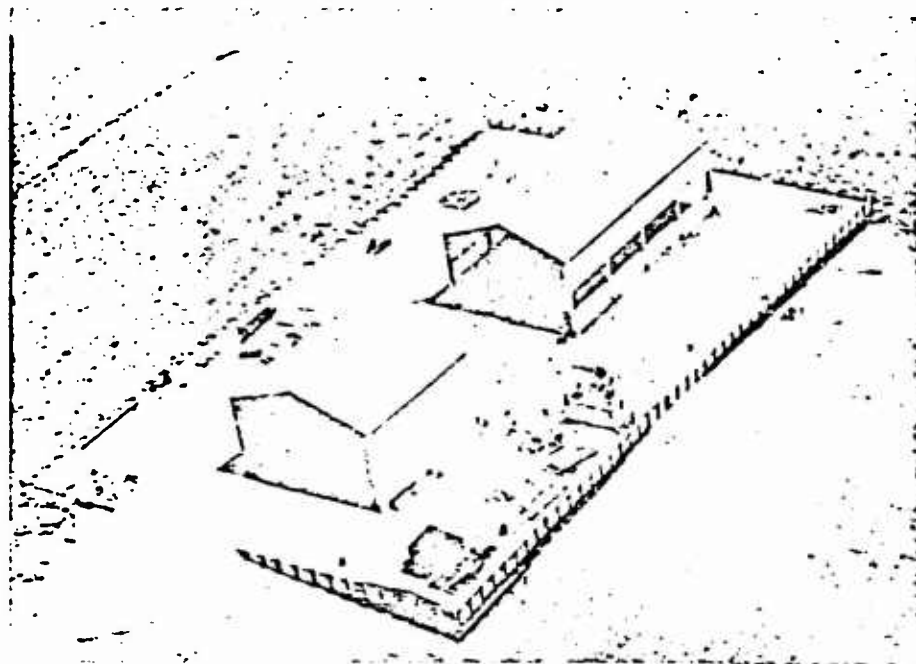
Considerable engineering was involved in the design and construction of test structures for several reasons. The large majority of stations had close location tolerances and had to be oriented with respect to other stations with unobstructed lines of sight between their working points.

Of particular significance was the extent of the work required to provide for the loading of many structures due to the heavy walls and earth covers required and the minimum allowable tolerances in settlement and movement. Engineering for these stations was further complicated by the inclusion of protection against radiation, blast, and inundation.

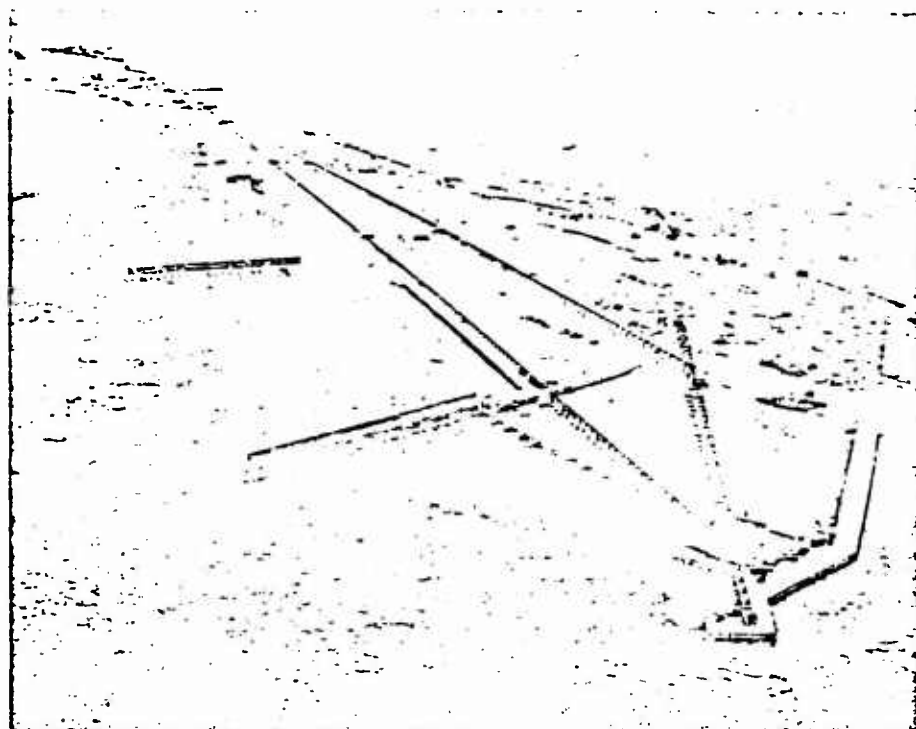
3.8 EVACUATION AND RE-ENTRY

There were five principal publications issued by CTG 7.5 concerning the evacuation of personnel and facilities in preparation for all Redwing events. These publications were as follows:

- a. Preliminary Evacuation Planning - Camps and Events, dated April 2, 1956.



Man Made Island Showing Scientific Stations



Aerial View of Yvonne Showing Scientific Stations

- b. Schedule of Camp Operations - Redwing Events, dated April 4, 1956.
- c. Establishment of TG 7.5 Embarkation Points and Assembly Areas, dated April 14, 1956.
- d. TG 7.5 Personnel Muster and Evacuation Plan - Eniwetok Atoll, dated April 14, 1956.
- e. TG 7.5 Personnel Muster and Evacuation Plan - Bikini Atoll, dated April 15, 1956.

In addition to these publications, CTG 7.5 issued various bulletins appointing specific individuals to perform specific jobs such as Site Muster Officers and Personnel Evacuation Officers.

The pre-shot evacuation of each off-island camp site was planned and effected on a predicted population figure versus a facility requirement basis. E-3, TG 7.5 coordinated this planning with the Site Evacuation Officers to enable utilization of camp facilities to the fullest extent, and still maintain the capability of a complete camp evacuation by noon of a given minus-one date.

All emergency evacuation planning was coordinated with Headquarters JTF SEVEN by AC/S E-3, TG 7.5. The capability for post-shot evacuation was maintained throughout the operation.

Yvonne, Ursula, and Gene shot camps were evacuated in accordance with prescribed directives. Due to the radiological levels subsequent to the Lacrosse event only the Yvonne Camp was re-established. The facilities and operating equipment of the Gene and Ursula camps were evacuated to Elmer as radiation levels permitted. (Exhibits III-3.8 and III-3.8.a of this report outline the evacuation of off-island camp facilities and personnel at both Bikini and Eniwetok atolls.)

3.9 NATURAL DISASTER AND HOSTILE ALERT PLANS

Plans prescribing procedures in the event of a natural disaster or hostile action at the PPG are layed on in Holmes and Narver Jobsite Procedure GA-3, dated May 6, 1956 (See III-3.9.H). Therefore, the only action required of CTG 7.5 was to augment and order execution of the existing instructions. This requirement was accomplished by two

TG 7.5 bulletins -- Emergency and Alert Signals, Operation Redwing, dated April 18, 1956, and TG 7.5 Safety Instructions - Operation Redwing. These publications emphasized signal alert instructions and described explicit procedures to be followed by personnel.

As no natural disasters or hostile alerts were experienced during Operation Redwing, the plan was not executed.

3.10 PLANS FOR OPERATION ROLL-UP

The following tasks were assigned to Holmes and Narver by CTG 7.5:

- a. Take measures to minimize the effects of blast, thermal energy, inundation, and radioactive contamination for all facilities, equipment, and supplies under Holmes & Narver custody.
- b. Roll up camps and other facilities in phase with personnel reduction. Return to site Elmer all equipment, construction materials, or other supplies in excess of needs.

The measures required to accomplish these tasks varied in accordance with the yield, amount of fall-out, blast predictions, and the extent of possible wave action, as estimated by TG 7.1. With respect to camp and other service facilities two conditions of test readiness were applicable. Where damaging pressures were probable, camp facilities were completely rolled up, but where damaging pressures were considered remote the camps were left intact. In the latter case limited precautions were taken against fall-out or inundation as deemed advisable for that particular event.

The roll-up of a camp was generally scheduled to commence on D-5 and to be completed by noon of D-1 day and consisted of removing all equipment, materials, and supplies worth saving to site Elmer. This roll-up was accomplished according to published camp service schedules and in phase with personnel reductions at each site with provisions for meal service continually through an early lunch on D-1 day. Only those buildings in temporary camps that could be bodily moved and tent canvas in good condition were salvaged.

The roll-up of the Yvonne camp was effected prior to the Lacrosse event, the Fox camp prior to Cherokee, and that of Tare prior to Zuni

in accordance with schedules. The camp sites of Gene and Ursula were left in a condition for rapid reoccupancy after the Lacrosse event. As a result of the radioactive contamination of these camp sites at the time of this event, they were rolled up shortly thereafter.

It has been the practice in previous operations to remove all Contractor equipment in scientific stations to site Elmer for storage during the interim period. For the roll-up of this equipment following Redwing, all such equipment, except electric motors and portable generators, was preserved in place. All electric motors were moved to site Elmer where they were to be overhauled and tagged with station and equipment number, and then placed in dehumidified storage. During the interim period following REDWING, periodic inspections of installed equipment were to be made and maintenance measures were taken as indicated.

The Communication Engineer, Test Division, ALOO has made detailed arrangements for the removal, rehabilitation, and storage of communications equipment not required for the interim period. These plans include the return of cryptographic and radio equipment (which was loaned to AEC for the operational period of REDWING) to the U. S. Army.

3.11 PLANS FOR INTERIM OPERATION OF PPG

The AEC Pacific Proving Ground will be operated during the interim period by the Director, Test Division, ALOO and the AEC support Contractor, Holmes and Narver, Inc., Los Angeles, California. Test Division, ALOO, will maintain a small branch office at site Elmer to perform the normal direct and contract activities during completion of the REDWING roll-up and buildup phases for HARDTACK.

The first order of business will be the big job of completing the roll-up for REDWING. This is the job of shutting down all facilities including Bikini Atoll not required for the interim; transportation of equipment and supplies back to the Base Camp at site Elmer, and in some cases to the ZI; decontamination, rehabilitation and storage of equipment; and the reduction of all support personnel no longer required.

Air support during the interim period will be provided through the Air Force Special Weapons Center, Albuquerque, and the 4950th Test Group (Nuclear).

Interim inter-island marine operations will be provided by the AEC Boat Pool operated by Holmes and Narver. Water cargo lift from the ZI and LST surface shuttle, when required, will be provided to AEC and Holmes & Narver by the U. S. Navy through JTF SEVEN.

Communication facilities will be maintained and operated by Holmes & Narver. Detailed plans for the improvement of communication facilities have been prepared by the Communications Section, Test Division, ALOO. These include a new dial telephone system and communications building at site Elmer. .

Radiological safety during the interim period will be with supervision by the Test Division, ALOO, and operated by the AEC Contractor. A specialist in radiological safety has been assigned from the U. S. Public Health Service on a loan basis as staff advisor to the Director, Test Division, ALOO.

Similarly, security during the interim period will be controlled by the Security Section, Test Division, ALOO. The pass and badge, courier, and security guard systems employed to safeguard information during Redwing will be continued on a reduced basis. In the event the military garrison at Eniwetok is reduced or withdrawn, it is planned to perform the security guard function by using civilian guards employed by the support contractor.

The next phase will be the build-up for HARDTACK: first, in the Base facilities, then into the first of the scientific requirements to be firmed, and finally into the crash phase to complete all unfinished test structures. In accordance with AEC policy to accomplish its programs largely through contracts with a minimum of direct AEC personnel, the functions of engineering, design, construction, operation, and maintenance will be accomplished through the support contractor, Holmes & Narver.

The functions of planning and coordination for the future development of the PPG and for TG 7.5 participation in Hardtack will be performed by Test Division, ALOO. Preliminary plans for the development of the PPG during FY's 1957 and 1958 have been prepared. Details of these plans are contained in the Long Range Plan for the Development of the Pacific Proving Ground, Holmes & Narver, June 1956, and ALOO budgets for FY's 1957 and 1958. Current planning envisions a construction effort of \$8,000,000 approximately for FY 1958.

One outstanding point in the current future plans is that, although the broad assumption has been made that the Hardtack scientific program will be of approximately the same magnitude as Redwing, the projected population peaks at more than 500 above the peak population for REDWING. This increase is the direct result of the following factors:

- a. Essential overhaul and additions to Base facilities required during FY 1958 is considerably above normal.
- b. In order to complete this construction more Holmes & Narver personnel will be present at the PPG during HARDTACK than were present during REDWING.

Unless the military garrison at Eniwetok is reduced as proposed by recent studies on this subject, or some special budget arrangements can be made to provide funds for FY 1958 Base Facilities construction by May of 1957, additional housing will be required outside of site Fred during Hardtack.

CHAPTER 4. LOGISTICS, ENGINEERING, AND CONSTRUCTION

"Logistics" has been credited as being a major percentage of the Test Program problem. Aside from the long distance over water involving airlift and surface lifts in volume, the inter-atoll and inter-island airlift and marine operations are extremely important in the logistical picture. Air support to AEC is provided during the interim through the Air Force Special Weapons Center with Headquarters at Albuquerque, and the 4930th Test Support, Group (now 4951st Test Gp(Test)), headquarters at Eniwetok Island.

Interim inter-island marine operations are provided for by the AEC Boat Pool operated by Holmes & Narver, Inc. Inter-atoll LST surface shuttle is provided to AEC and Holmes & Narver by the U. S. Navy through the Joint Task Force, as is the cargo lift from the States by water using Navy and MSTS vessels, and by the Air Force using MATS.

"Engineering and Construction" is the major activity of the AEC (TG 7.5) for the PPG. During the interim period planning and construction of base facilities and scientific facilities are carried forward apace with program assumptions and budget limitations.

4.1 CONSTRUCTION OF TEMPORARY FACILITIES

The first group of construction personnel (29 Holmes & Narver employees and two AEC representatives) departed Elmer on 9 October, 1954 aboard the USS Belle Grove (LSD). At site Nan this group was supported by an LCU outfitted as a houseboat while the LSD made three round trips for the movement of materials and equipment. The LSD was relieved by LSD 618 which arrived at Eniwetok 30 October, 1954. During the month of November the operations preliminary to the establishment of a beachhead camp continued as previously planned. The beachhead camp was ready by 5 December, 1954 and 34 additional Holmes & Narver employees were landed.

This force was gradually augmented and by the end of the year 150 men were employed at Bikini Atoll. Work progressed satisfactorily during January and February and was ahead of schedule by the middle of March. The airstrip was 78% complete and C-47 planes were landing on regular scheduled flights. The inter-atoll and radiophone communications systems had been activated and the work in connection with housing, messing, shop, warehouse, and POL facilities was well under way prior to the build-up phase.

Construction at the shot island camps and weather stations was comparatively simple, following the same general procedure as for construction of the base camp at Nan, and was completed in early November 1955, well in advance of the scientific test construction.

The AEC, in response to requests from the High Commissioner of the U. S. Trust Territories for aid to the ex-Bikini people, authorized on 7 March 1955 the construction of small camps and a radio station for the islands of Jaluit, Majuro, and Kili. Because of inclement weather and resulting unfavorable conditions for landing construction materials for the Kili project, it was deleted from the program.

For the support of the REDWING Operation, weather stations were authorized in September 1955 for construction on Kapingamarangi, Kusaie, Rongerik, and Tarawa. This construction was scheduled in two phases: the structures and facilities were to be provided in the first phase and the equipment was to be installed in the second phase. Construction of the first phase of these projects was nearing completion in December 1955 when requirements for off-atoll scientific projects became firm. These projects required minor construction on the atolls of Kusaie, Rongerik, Uterik, Ujelang, and Wotho. The problems encountered with



this off-atoll construction were those primarily connected with logistics because of the distances of the sites from the main base of operations and the difficulty of landing materials and equipment at construction sites.

Reconnaissance of each site determined the craft most suitable for each mission. Thus it was established that the Kapingamarangi and Wotho projects could be best served by an LSD carrying LCU's, one outfitted as a houseboat, and that all other sites could be served by an LST. However, extreme caution had to be exercised by the masters of the LST's in beaching because of existing conditions.

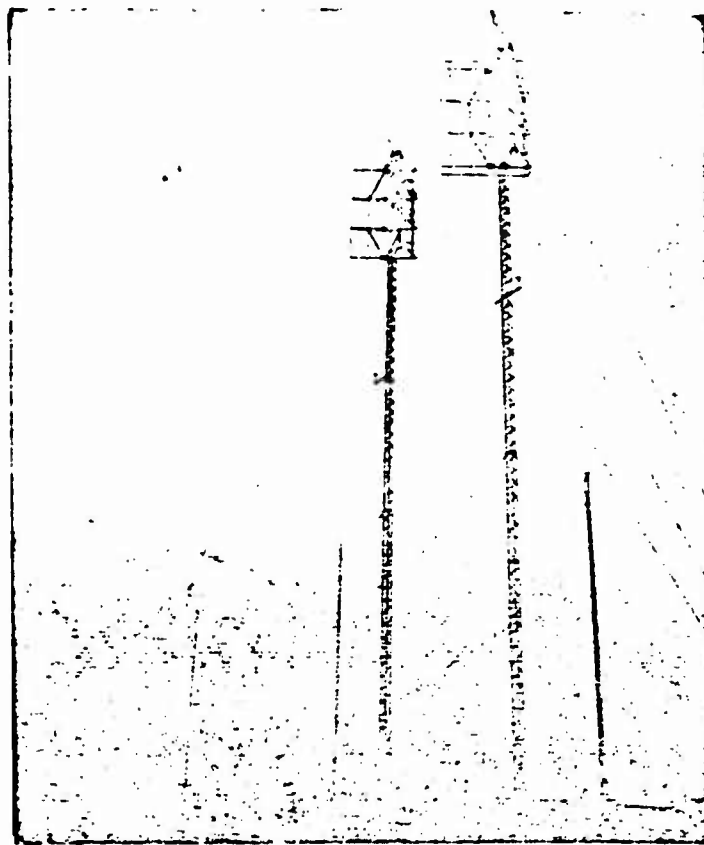
The schedules for the supporting vessels were first established for completion of weather stations.

With the firming of the scientific project requirements, rearrangements of the schedules were effected so that work remaining on weather stations could be undertaken at the same time as the work for the scientific projects. Initially certain difficulties were experienced with the rigidity of the schedules established. These difficulties were satisfactorily resolved by coordinating the departure of each mission with the arrival of project operating personnel and project furnished equipment at the Proving Ground.

Mail and emergency needs for each mission were provided for by a schedule of sea and land planes; the land planes being used only for Tarawa and Majuro missions at which sites suitable landing fields were available. Completion of the certain stations was required well in advance of the first test and work had to be accomplished during the period in which construction of the major stations at the Proving Ground was in full swing and therefore when a minimum of men and equipment could be spared.

4.2 CONSTRUCTION OF BASE FACILITIES

The airport improvement program at Fred was started soon after it was authorized in July 1954 and was completed in March 1955. By this time progress on the Elmer deep water pier and the barracks at Fred were ahead of schedule. The Elmer and Tilda airstrips had been rehabilitated and considerable miscellaneous items of construction had been undertaken. Warehouses and added fuel tanks were completed on Fred.



Antennas - Interatoll Communications



Lele Harbor - 17 November 1955

In addition to this construction completed prior to the build-up phase for REDWING, considerable expansion and improvement prior to the buildup facilities were effected concurrently with the establishment of scientific stations. These projects included 17 buildings at Fred, 16 buildings at Elmer, a joint radio receiving station, magazine for storage of explosives on Rex, and a television broadcasting station at Elmer.

The multitude of problems connected with the procurement of both men and materials required transporting them to the PPG, housing, messing, storage, fabrication, construction, and inspection which were performed effectively by Holmes & Narver.

4.3 CONSTRUCTION OF SCIENTIFIC FACILITIES

Construction was required on practically all islands of Eniwetok and Bikini Atolls, on their reefs and in their lagoons, and also spread to four (six with weather stations) other atolls where eight small scientific projects were located. It was an extremely difficult task for a multitude of reasons. The most difficult problem was obtaining final design and working drawings -- final design was not completed until February 1956.

Consequently, it was impossible to follow normal construction procedure and meet the target dates for test structures. Contractor representatives were stationed at LASL and UCRL early in the operation to obtain advance information on the test structures required and on the changes desired by the users.

A system of advance material estimates was instituted in order to initiate procurement of selected materials and equipment at an early date. Based on their experience in three previous operations (IVY, GREENHOUSE, and CASTLE) AEC authorized, and Holmes & Narver purchased and shipped to the jobsite construction items of normal usage as a stockpile or warehouse stock.

This was accomplished before the completion of working drawings and in many cases before drawings had been started. As drawings were released the material take-off and bills of material provided for the allocation of available materials to specific construction.

A tight construction schedule developed that placed an extremely high production requirement for a number of stations that were required for the first test to go off as scheduled. Shift work and overtime were required. During the early months of 1956 sufficient men and equipment were not available to outfit crews adequately for all scheduled jobs even though emergency increases were effected.

Effort was therefore concentrated on stations vital to the first test in accordance with priorities established by J-6 of TG 7.1. The timing of the final stages of construction was adjusted to permit the orderly completion of the contractor's tasks performed by the users in the instrumentation of various stations. Considerable overlapping of these activities resulted, but through cooperation and coordinated effort between the personnel involved, the stations needed for each shot were provided in operational readiness by their target dates.

Exploration was made early in the program to determine suitable sources of coral aggregate, yardage estimates were made, and schedules were established for quarry and crusher operations. The quarry operations were governed by the normal difficulties encountered in subaqueous excavations and frequent shutdowns occurred because of high tides and wave action. Stockpiling of aggregate proved to be both logical and economical.

The quantities of concrete required at each site determined the main batch plant location at Elmer, Fred, Yvonne, Ursula, and Gene in Eniwetok Atoll and at Nan, Tare, Fox, and Charlie in Bikini Atoll. Wherever possible concrete was delivered to construction sites in transit-mix trucks, sometimes transported in LCM's. Small concrete requirements for anchor blocks and small instrument mounts were pre-cast at Elmer or Nan or were poured from small portable mixers. From 1 July, 1954, through May 1, 1956, when the pouring for scientific structures was practically at an end, 210,000 sacks of cement and 2,757 tons of reinforcing steel were used for REDWING.

Tower erection was simplified by using 25-foot modules and pouring the tower and guy anchor footings prior to the arrival of steel components. Towers were erected immediately upon receipt of the required steel from the ZI. Several guy anchor blocks had to be placed in reefs and it was necessary to provide these blocks with pile foundations and to pour the concrete in accordance with tidal conditions. Completion of the construction of the towers for three stations was held in abeyance until the firing

of the first shot because of the probability of damage. Although widespread radiological contamination of the area resulted from the first event and rigid rad-safe controls were placed in effect, these towers were completed on schedule.

The problems resulting from the tight construction schedule are well illustrated by those problems that arose in the procurement and installation of the pipe arrays. In the very beginning procurement difficulties were encountered in obtaining pipe on acceptable delivery dates. After considerable canvassing of steel mills, pipe was found with acceptable delivery dates but a decision had to be made to accept certain sizes which were not in rigid accordance with the specifications but which were considered usable.

Materials for the support and alignment system were late in arriving and substitution of available materials and fabrication at the jobsite made it possible to maintain progress on this phase without too serious loss of time. Many of the components of this system had to be rushed by air and there was one case of jettisoning of urgently needed items by a plane in distress. An exceptionally high degree of cleanliness and rust-free interior of the pipe were required. Special measures taken before overseas shipment to insure this cleanliness and rust-free interior had to be accomplished during the period of record rainfall in California. This processing proved inadequate and had to be repeated at the PPG. To accomplish this task it was necessary to airlift 12 tons of grit to the jobsite. Improvisations and repairs had to be effected at the PPG to the project furnished vacuum pumps to make them operable. Last minute revisions in the locations of a few pipe were required. By concentrating the available competent craftsmen using overtime and shift work end, with the acquisition of additional welding equipment from military agencies at Kwajalein and Eniwetok the pipe arrays were readied as scheduled and were integrated into the test program without adjustment.

The island of Yvonne, approximately 8,700 feet long with an average width of 550 feet, was the site of 191 scientific stations. The complex situation of so many stations in such a small area was further complicated by the receipt at a late date of many changes in locations and requirements of these stations. Construction of many of the stations had to be undertaken simultaneously as they were required by project participation for the first test.

Continuous checking on all factors affecting construction was essential to avoid any possible delay. The availability of drawings, materials, manpower in the required categories, special equipment, and the movement of materials to and within the site had to be closely watched in order to assure orderly construction and the progress required. Final completion of the construction and instrumentation by the users had to be undertaken at the same time for several stations. The schedule of construction on Yvonne was met in spite of the many complications.

Three man-made islands, two new causeways, and reconstruction of five existing causeways were also difficult construction requirements. The design of these projects called for the construction of bulkheads of three-inch timber supported on 60-pound rails driven on five-foot centers; the back fill was of available beach sand and reef coral. Tidal conditions had to be closely watched and frequent shutdowns were necessary.

The equipment had to be frequently serviced, and at the end of each working day all oil cases had to be drained, flushed, and refilled with new oil. Men tired quickly and even with the most thorough preventive maintenance measures the salt water action seriously impaired the life of the equipment.

Weather was a most important element. In December 1955 the Proving Ground was subject to especially high seas which periodically occur in this area. These seas caused some damage to the construction of the man-made islands and causeways at a time when the construction schedule was extremely tight. To repair the temporary setback additional emergency personnel had to be assigned to these projects.

Although the solution of the problems encountered in the construction of the complexity of scientific structure required for REDWING appeared to be impossible when the first drawings were released in late October and early November, 1955, the task was accomplished by the Contractor on schedule. No scheduled test was delayed because of incomplete construction of scientific structures. This was accomplished through the efforts of the craftsmen of Holmes & Narver, and the sacrifices of TG 7.1 project personnel in shortening beneficial occupancy time for instrumenting as well as foregoing many project requirements.

4.4 OPERATION ROLL-UP

Progressive roll-up was effected prior to and following each shot to the greatest extent practicable. Consequently, with the detonation of the last shot on 22 July, 1956, it was possible to roll up Bikini and close Nan Camp on August 15. The sites outside the PPG (Weather Islands and off-atoll sites) were rolled up between 24 July and 14 August. The LST's No. 306 and No. 618 were released to the Navy immediately after completion of their roll-up missions. (Some roll-up by Project 5.9 was delayed because of tower contamination levels at Yvonne and is continuing at this writing. The large task of decontamination and rehabilitation of equipment and vehicles will continue at site Elmer for several months.)

4.5 MANAGEMENT, OPERATION, AND MAINTENANCE OF SUPPORT FACILITIES

Under the Architect-Engineer-Construction-Management Contract with Holmes & Narver, Inc., the AEC has provided for year around services and supports other than Engineering and Construction. These services prevail in accordance with interim and operational period requirements. Transition from interim to operational, and return to interim periods, from independent organizational to Task Group-Task Force status is accomplished within the scope of the contract. Contract administration remains at all times vested in the AEC Contracting Officer and his designated representatives. Consequently, management, operation, and maintenance features of the contract were effectively applied during the REDWING operational period through having the Contractor perform the following tasks:

- a. All camp services except at sites Fred, David, and the Weather Station Islands. This included subsistence, quarters, laundry, mail, PX store, barber shops, refreshment bars, medical and dental, insect and rodent control, recreation.
- b. Utilities operation including salt and fresh water services, electric power, sewage disposal, telephones and certain radiophone and radio teletype services.
- c. Warehousing and property accounting for all materials and equipment shipped for TG 7.5 and some for TG 7.1 use.
- d. Stevedoring and cargo except on shore at sites Fred and David.

- e. Photography for TG 7. 5 and AEC requirements.
- f. Radiological and industrial safety of own personnel.
- g. Inter-island water transportation.
- h. Land transportation.
- i. Maintenance of all fixed facilities.
- j. Roll-up of the PPG after the operation, including preservation of all equipment and facilities.

The location of camps operated, design capacity, peak population, and the dates of activation and deactivation are shown on page 107. .

4. 5.1 HOUSING AND MESSING

Quarters, facilities, and services were operated by Holmes & Narver, Inc. to house, sustain, and support all personnel of JTF SEVEN except those who lived on sites David and Fred, the weather station islands, and in Naval vessels. To accomplish this, temporary camps were provided at sites Yvonne, Ursula, Gene, Fox, Tare, and Nan and the permanent camp on site Elmer was expanded. Each of these camps contained the necessary facilities for housing, messing, PX store, barber shop, refreshment bars, and mail. A completely outfitted laundry was located on site Elmer and home-type washing machines for local spindry service were provided at all temporary camps.

Limited camp facilities were operated by the contractor to support off-atoll scientific project personnel on Ujelang, Wotho, and Uterik. LCU's outfitted as houseboats were used to provide limited camp services for beachhead landings before camps were established and also to support scientific groups in various areas after the shot island camps were dismantled. For a short period a scientific barge was temporarily diverted to camp use and moored off site Ursula after that camp had been rolled up.

Because of the overlapping of the peak construction activity with the extremely high instrumentation activity several camps had to accom-

mmodate more men than the number for which they were designed. It was necessary to utilize spaces originally intended for recreation and office spaces as temporary housing, to billet ten or more men in the 8-man tents, and to provide temporary quarters in the new machine shop building and the day room at site Elmer. This overloading presented many operating problems and resulted in living conditions which were less than the normal jobsite standards.

These problems were overcome without any serious threat to the health and safety of the personnel. An element of importance in camp operations was the supply of the large amounts of the consumable supplies required. The REDWING Operation was a severe test of the effectiveness of the system. No serious shortages or overages occurred despite changes in camp populations and the inadequacy of storage facilities to provide for populations as large as those of REDWING. The total Holmes & Narver personnel and the personnel supported by Holmes & Narver are shown in Exhibit III-1.1, page 35. The peak populations at each camp are listed below:

Camp Site	Date Activated	Date of Peak Pop.	Peak Population	Designed Capacity	Date Evacuated
Elmer	Base Camp	*May 5, '56	*2751		
Yvonne	May 17, '55	Mar 20, '56	393	300	May 30, '56
Ursula	May 3, '55	Apr 24, '56	288	350	Apr 29, '56
Gene	Aug 23, '55	Apr 6, '56	189	125	Apr 29, '56
Nan	Dec 11, '54	May 24, '56	891	1000	
Fox	June 8, '55	Apr 20, '56	285	200	May 9, '56
Tare	July 19, '55	Apr 21, '56	227	200	May 26, '56
Wotho	Feb 15, '56	May '56	12		
Ujelang	Apr 3, '56	May '56	15		
Uterik	Apr 12, '56	May '56	10		

*During evacuation of Ursula, Yvonne, and Gene. Additional tents approved by AEC in the field were provided on an "as needed" basis.

4.5.2 TRANSPORTATION

Logistical coordination was maintained by AEC with CJTF SEVEN and Task Groups to assure the accomplishment of AEC (TG 7.5) responsibility. Established procedures of CJTF SEVEN and AEC (TG 7.5) provided for the mechanics of accomplishment for both interim and operational periods.

In the conduct of stevedoring operations at the PPG, CTG 7.5 was guided by the "Agreement between the AEC and the Commander, JTF SEVEN, on Stevedoring Operations at the Proving Ground," dated June 1, 1955. In general, this agreement placed the responsibility for all stevedoring operations, except those on shore at Eniwetok and Japtan Island on Holmes & Narver.

The authority of Port Commander is vested in (the ATCOM) CTG 7.2; he is responsible for the port operation, including the preparation, inspection, performance and/or enforcement of the security regulations, custom declaration, landing certificates, and items of a similar nature pertaining to the crew or cargo as applicable.

Inter- and Intra-Atoll Shipping: In order to standardize operating procedures to prevent duplication of shipment and to account for all material shipped from one island to another, irrespective of means of transportation, TG 7.5 and TG 7.1 were guided by Holmes & Narver Jobsite Procedure D-14, "Inter- and Intra-Atoll Shipping," dated 3 February 1955. There was a representative of TU 7.5.7 at each camp who was responsible for receipt and shipment, including allocation of space aboard boats or aircraft. This representative provided the documentary forms necessary for such shipments. Each Task Group Commander provided TU 7.5.7 with the names of those persons authorized to make requests for shipments, and only requests by the persons so designated were honored.

Vehicle Control and Dispatching: TG 7.5 and TG 7.1 operated a combined motor pool on Elmer, Nan, and other islands as was required. CTG 7.1 and CTG 7.5 each assigned a representative to administer each Task Group's interest in assignment, dispatching, and control of the respective Task Group's interest. These pools included all vehicles assigned to Task Groups 7.1 and 7.5. Vehicles were assigned to designated key personnel only when approved by the Task Group Commander or his duly authorized representative. Bus services were provided on Elmer, Nan, and other islands as needed; routes and schedules to meet the needs of each site were published by bulletin. The TG 7.5 Motor Pool comprised a total of 416 vehicles, trucks, trailers, and loaders. (See Appendix III-4.5.N)

Inter-Island Air Transportation: CTG 7.5 designated an Air Transportation Control Agent (TCA) at Enyu and Parry who consolidated the requirements of TG 7.1 and TG 7.5 and submitted the over-all Task Groups' requirements to the Dispatch and Control Officer of the appropriate service (TG 7.4 or TG 7.3). There was an assistant to each atoll TCA at all other-than-base camps to control the air movement of TG 7.1 and TG 7.5 personnel from those camps.

Inter-Atoll Air Transportation: The Supervisor, TU 7.5.1 was designated as TCA for transportation between atolls of TG 7.5 and TG 7.1 personnel. All requests for such transportation were submitted to the office of TU 7.5.1 at least one day prior, and earlier when possible, to the plane's scheduled departure time. This advance notice was waived only if emergency requirements existed.

TG 7.5 Boat Pool: The TG 7.5 Boat Pool and various functional marine items amounted to 103 craft.

Appendices III-4.5-J, K, L, and M depict the transportation of personnel and cargo by each type of transportation.

Exhibits III-3.6.1 and III-3.6.2 depict the piers, beaching conditions, airstrips, and helicopter pads as they existed at the various islands in Eniwetok and Bikini Atolls during Operation REDWING.

4.5.3 SUPPLY

The magnitude of supply for an operation like REDWING is somewhat depicted by the exhibits and appendices referenced to Chapter 4, Section 4.5.2, "Transportation". Again, the successful and timely completion of the Redwing series is a tangible proof of solution to this problem along with others.

A large volume of equipment and materials had to be procured and shipped in a limited time. The normal procurement and shipping time on materials and particularly of fabricated equipment or assemblies from the States was three to four months. These lead times had to be drastically shortened as the success in meeting the desired completion dates depended considerably on the movement of material at an accelerated rate. This had to be accomplished in a stringent material and equipment market during a period in which demands from both industry and the consumer were the greatest in the history of the nation.

Aggravating market conditions were prolonged strikes in key manufacturing plants and abnormal weather conditions affecting both manufacturing facilities and transcontinental shipping.

In view of these conditions, it was necessary to plan for and take unusual actions in all phases of the supply process. Bills of Material were prepared from design criteria or preliminary drawings where

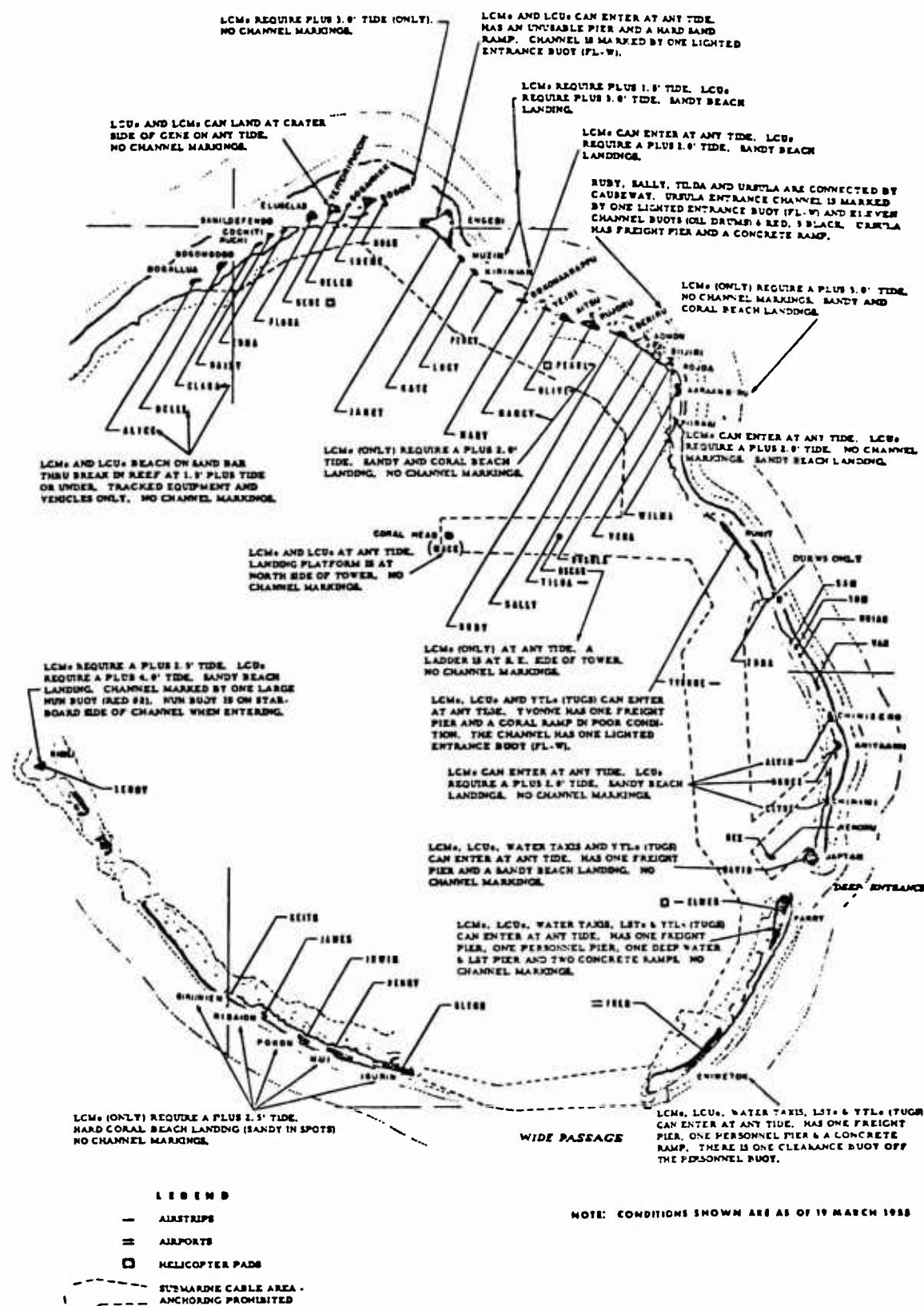


Exhibit III-3.6.1 Eniwetok Atoll Piers, Beaching Conditions, Airstrips and Helicopter Pads

1



Exhibit III-3.6.2 Bikini Atoll Piers, Beaching Conditions, Airstrips and Helicopter Pads

EXHIBIT III-3.8.1 EVACUATION AND RE-ENTRY BIKINI

EVAC. NO.	EVENT	TOTAL PERSONNEL EVACUATED	EVACUATION						REENTRY				REMARKS
			START DATE	COMPLETION DATE	REPORT DATE	HOUR	HOUR	HOUR	START DATE	COMPLETION DATE	HOUR	HOUR	
1	CHEROKEE	560	1000	5/10	*2000	5/10	NO REPORT	1000	5/11	1200	5/11	* Event postponed 2000 hours 5/10. only essential per- sonnel for operation of site Nan returned to shore. 166 remain- ed aboard Athlete.	
2	CHEROKEE	529	1100	5/16	2005	5/16	2010	5/16	1000	5/17	1130	5/17	Event postponed. Essential personnel for refueling etc. sent ashore. Bal- ance remained afloat
3	CHEROKEE	528	1400	5/17	2130	5/17	2137	5/17	1030	5/18	1400	5/18	Event postponed. Essential personnel for operation of site Nan sent ashore. 140 left aboard.
4	CHEROKEE	505	1100	5/20	1950	5/20	1957	5/20	1100	5/21	1245	5/21	27 (site Tare) per- sonnel remain afloat (Athlete)
5	ZUNI	494	1100	5/27	2000	5/27	2008	5/27	1100	5/28	1400	5/28	53 (site Tare) per- sonnel remained aboard Athlete ap- prox. 24 hours pending phase-out scheduling, etc. to site EE.

EXHIBIT III-3.8.1 EVACUATION AND RE-ENTRY BIKINI (Continued)

EVAC. NO.	EVENT	TOTAL PERSONNEL EVACUATED	E V A C U A T I O N				R E E N T R Y				REMARKS		
			START HOUR	START DATE	COMPLETION HOUR	COMPLETION DATE	START HOUR	START DATE	COMPLETION HOUR	COMPLETION DATE			
6	FLATHEAD	418	1600	6/11	2305	6/11	2310	6/11	1000	6/12	1140	6/12	
7	DAKOTA	399	1700	6/17	2000	6/17	2024	6/17	0900	6/18	1030	6/18	Event postponed.
8	DAKOTA	393	1800	6/18	*2000	6/18	NO REPORT	NO REPORT	2000 ***0730	6/18 **2045	6/19 0830	6/19	* Event postponed 2000 hours. ** Balance of personnel returned ashore. *** Balance of personnel returned ashore morning of 6/19
9	DAKOTA	388	1800	6/21	2025	6/21	2032	6/21	0900	6/22	1045	6/22	Event postponed
10	DAKOTA	386	1700	6/25	0010	6/26	0016	6/26	1000	6/26	1130	5/26	
11	HURON	371	1700	7/1	2050	7/1	2056	7/1	0900	7/2	1030	7/2	Event postponed. Subsequently cancelled this site and transferred to site EE.
12	NAVAJO	**354	1800	7/8	*2100	7/8	NO REPORT	NO REPORT	2100	7/8	2200	7/8	* Event postponed 2100 hours. Only partial evacuation scheduled prior to 2100 hours. Those evacuated were returned ashore by 2200 hours same night.

EXHIBIT III-3.8.1 EVACUATION AND RE-ENTRY (Continued)

EVAC. NO.	EVENT	TOTAL TG 7.5 PERSONNEL EVACUATED	E V A C U A T I O N						R E E N T R Y			REMARKS	
			START HOUR	START DATE	COMPLETION HOUR	COMPLETION DATE	DTG REPORT HOUR	DTG REPORT DATE	START HOUR	START DATE	COMPLETION HOUR		COMPLETION DATE
13	NAVAJO	352	2000	7/10	0225	7/11	0231	7/11	*1000	7/11	1430	7/11	* Essential personnel for clean-up and re- pair only. Balance started reentry 1230 hours.
14	TEWA	332	1910	7/20	0025	7/21	0033	7/21	0900	7/21	1015	7/21	

* Essential personnel
for clean-up and re-
pair only. Balance
started reentry 1230
hours.

EXHIBIT III-3.3.2 EVACUATION AND RE-ENTRY SHOT CAMPS

EVENT	SITE	EVACUATION				REENTRY			
		PERSONNEL		FACILITIES		PERSONNEL		FACILITIES	
		STARTING DATE	COMPLETION DATE	STARTING DATE	COMPLETION DATE	REENTRY DATE	REENTRY DATE	REACTIVATION DATES	REMARKS
LA CROSSE	YVONNE	4/27/56	4/30/56	4/25/56	4/30/56	4/30/56	4/30/56	4/30/56	Last minute notification that event was postponed necessitated reactivation of camp on same day evacuation was completed
	YVONNE	5/4/56	5/4/56	5/3/56	5/4/56	5/7/56	5/8/56	5/8/56	Due to Radioactive fall-out the Gene. and Ursula camps were not reactivated on permanent basis. Roll up of facilities at these sights was effected during the period from 16 May thru 23 May.
	URSULA	5/4/56	5/4/56			5/8/56			
	GENE	5/4/56	5/4/56			5/ /56			
CHEROKEE	FOX	5/7/56	5/10/56	5/5/56	5/10/56				Camp not habitable after event.
	TARE	5/10/56	5/10/56			5/21/56	5/22/56	5/22/56	
	NAN	5/10/56	5/20/56			5/21/56	5/21/56	5/21/56	Final of 4 each evacuation for Cherokee took place 5/20/56.

EXHIBIT III-3.8.2 EVACUATION AND RE-ENTRY SHOT CAMPS (Continued)

EVENT	SITE	EVACUATION				REENTRY			
		PERSONNEL		FACILITIES		PERSONNEL		FACILITIES	
		STARTING DATE	COMPLETION DATE	STARTING DATE	COMPLETION DATE	REENTRY DATE	REENTRY DATE	REACTIVATION DATE	REMARKS
ZUNI	TARE	5/25/56	5/27/56	5/24/56	5/27/56	NONE	NONE	NONE	Camp not habitable after event
YUMA	NAN	5/27/56	5/27/56			5/28/56		5/28/56	
	URSULA	5/27/56	5/27/56			5/27/56			
	YVONNE								personnel on Yvonne did not evacuate
ERIE	GENE	5/27/56	5/27/56			5/28/56			
	YVONNE	5/27/56	5/29/56	5/27/56	5/29/56	6/1/56			Camp not habitable after event
	GENE	5/29/56	5/29/56			5/31/56			
	URSULA	5/29/56	5/29/56			5/31/56			
SEMINOLE	GENE	6/6/56	6/6/56			5/31/56			Mid-day shot. Last personnel evacuated early morning.
	URSULA	6/6/56	6/6/56			6/6/56			
FLATHEAD	YVONNE	6/5/56	6/5/56			6/6/56			
	NAN	6/11/56	6/11/56			6/12/56		6/12/56	

EXHIBIT III-3.8.2 EVACUATION AND RE-ENTRY SHOT CAMPS (Continued)

EVENT	SITE	EVACUATION				REENTRY				REMARKS
		PERSONNEL		FACILITIES		PERSONNEL		FACILITIES		
		STARTING DATE	COMPLETION DATE	STARTING DATE	COMPLETION DATE	REENTRY DATE	REENTRY DATE	REACTIVATION DATE	REACTIVATION DATE	
BLACKFOOT	YVONNE	6/11/56	6/11/56							
	URSULA	6/11/56	6/11/56					6/12/56		
KICKAPOO	URSULA	6/13/56	6/13/56					6/13/56		
OSAGE	YVONNE	6/15/56	6/15/56							
INCA	URSULA	6/21/56	6/21/56					6/22/56		
DAKOTA	NAN	6/17/56	6/25/56					6/26/56		Final of 4 each evacuations for this event took place 6/25/56
HURON	NAN	7/1/56	7/1/56					7/2/56		Event postponed. Subsequently cancelled at Bikini and transferred to Eniwetok
MOHAWK	URSULA	7/2/56	7/2/56							
APACHE	GENE	7/8/56	7/8/56							This event was a barge shot and involved only the evacuation of 7.5 supported personnel.
NAVAJO	NAN	7/8/56	7/11/56					7/11/56		Final of 2 each evacuation for this event took place 7/11/56

EXHIBIT III-3.8.2 EVACUATION AND RE-ENTRY SHOT CAMPS (Continued)

EVENT	SITE	EVACUATION				REENTRY				REMARKS
		PERSONNEL		FACILITIES		PERSONNEL		FACILITIES		
		STARTING DATE	COMPLETION DATE	STARTING DATE	COMPLETION DATE	REENTRY DATE	REENTRY DATE	REACTIVATION DATES		
TEWA	NAN	7/20/56	7/21/56					7/21/56		This event was a barge shot and involved only the evacuation of TC 7.5 supported personnel.
HURON	GENE	7/21/56	7/21/56							

practicable. Vendors were canvassed in advance of requisitioning to determine where materials were available. Premium prices were paid for quick delivery in certain critical cases. Splitting of orders was resorted to where this speeded delivery. Vendors who could be depended on to keep promises of delivery had to be located and persuaded to bid.

This generally led to high grade firms who in these times of expanded industrial activity already had heavy backlogs of orders. To break into these backlogs to obtain precedence in delivery, the firms had to be convinced of the importance of the order. Many fabricators willingly set aside their normal production schedules and made men and materials available for the desired work when informed that the work was of high priority for the Atomic Energy Commission.

The priority section of the Supply Office of ALOO assisted considerably through Defense Order Priorities. Through these procedures combined with close surveillance by inspecting personnel of the fabrication of critical items and by expediting the movements of these items at all points it was possible to substantially decrease the normal time required for supply.

During the period from July 1, 1954 to May 30, 1956 there were 13,786 requisitions processed containing 66,439 line items and 14,735 purchase orders let with a total value of \$18,614,218.47. Within the Holmes & Narver procurement organization, provision was made for purchasing of these items in accordance with governmental policies, for proper documentation, expediting, and traffic control.

It was recognized that many intricate problems would arise in the supply of such quantities of materials by virtue of the logistics involved. Procurement personnel were therefore stationed at the on-continent freight terminals (Naval Supply Center and Travis Air Base) to work in close relationship with the representatives of the shipping agencies and with the Transportation Liaison Officer of JTF SEVEN. These representatives kept the Holmes & Narver Home Office informed as to developments in Transportation. The Home Office determined priorities, expedited movement of cargo to the terminals, determined cargo to be shipped by air as necessary, and kept the ALOO informed as to transportation developments.

A few figures are given below which represent an average operational period month. (Detailed information will be found in the "Completion Report - Operation REDWING - Contract AT 2(29-2)20, prepared by Holmes & Narver, Inc.)

Cargo Handling: (Average month, operational period)

Offload	6,351 L/T	16,484 M/T	22,835 Total
		569,725 lbs.	
Food (Dry Stores)		494,494 lbs.	1,064,219 Total

4.5.4. WAREHOUSING AND YARD STORAGE

Warehousing and yard storage were maintained as follows:

Storage and Warehousing (All sites)

Food: Reefer and Chill	99,585 cu. ft.
Gen. Warehouse	1,183,929 cu. ft.
Bin Storage	88,938 cu. ft.

Petroleum Oils & Lubricants (Site Elmer, average month)

(POL) Issued Mar. & April (Diesel)	779,048 gals.
(MOGAS)	201,703 gals.

With limited covered storage space and with the crash period movement of supplies, materials, and equipment, yard storage became expanded at all sites and particularly at Elmer, Fred, and Nan Islands. Weather protection was afforded where necessary by utilizing old canvas. "Real Estate" limitations were severe.

4.5.5 STEVEDORING

The "Agreement between the AEC and the Commander, JTF SEVEN, on Stevedoring Operations at the PPG," dated June 1, 1955, governs the conduct of this function. In general, this agreement placed the responsibility for all stevedoring operations, except those on shore at Eniwetok (Fred) and Japtan (David) Islands, on the AEC contractor, Holmes & Narver. Modification of the basic AEC-DOD agreement and a change in operation were effected with the completion of the Deep Water Pier at Site Elmer. This facility greatly aided cargo handling for REDWING. During the average operational period month, 18 major cargo vessels discharged cargo at this pier.

4.5.6 POST EXCHANGE

A post exchange was operated by Holmes & Narver at Parry Island with smaller facilities at the temporary camps. Only essential stock was carried as a more complete stock was obtainable at the Army Post Exchange at Eniwetok Island.

4.5.7 LAUNDRY

Personnel movement under the dual shot flexible scheduling of Redwing introduced added burdens on the laundry services. "Special" orders were processed daily in greater volume than appeared possible with the limited equipment and plant. This was possible only for work type clothing. The main laundry at Elmer did rough dry and finish. Temporary camps were equipped only for rough dry. TG 7.1 personnel billeted on Fred had their laundry processed at Elmer.

4.5.8 EQUIPMENT

Operation REDWING required a mass of equipment to be scattered at many locations and in some cases many miles from the base camp at Elmer. The equipment operated by the AEC contractor is listed below:

<u>Major Equipment and Facilities</u>	<u>No.</u>	<u>Sub Total</u>
<u>Vehicles:</u>		
Jeeps and Pickups	135	
Medium Trucks	48	
Heavy Trucks/Sem's	141	
Misc.-Fire/Loaders, etc.	92	416
<u>Heavy Const. Equipment:</u>		
Dozers	31	
Cranes	26	
Compressors	49	
Transit Mixers	12	
Paving Machine	1	
Ditching Machines	3	
Pile Drivers	5	
Rock Crushers	3	
Drill Rigs	10	
Misc. - Other	8	148

Marine:

DUKWS (Amphib. Trucks)	41 (Moving in operations period)
LCMS ("M" Boats)	29 (about -36 thousand PAX and)
LCU'S ("Tee" Boats)	14 (212 thousand MT each month.)
TUGS	2 (Assisting Major Ships/Tows)
AFDL (Floating Dry Dock)	1 (Inspection and Repair)
Water Taxis	3 (Fast Passenger Movement (60)
Barges	8 (Lightering Cargo)
Sea Mules	2
Gilhoist (Lift "M" Boats)	1
Deep Water Diving Gear	- (POL line & other underwater)
Special Cable Laying "M"	2 (Lays/lifts sub. cables)

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4.5.9 SHOPS

The principal shops are located at Elmer with smaller shop facilities for Bikini at Nan. With the large amount of equipment to be maintained (as listed in Section 4.5.8) it is readily seen that all existing shop facilities were heavily taxed to capacity.

CHAPTER 5. COMMUNICATIONS

Task Group 7.5 provided REDWING test participants with communications systems in accordance with Annex E, TG 7.5 Operation Plan 1-56. This chapter is intended to outline briefly the TG 7.5 communications mission, performance within the missions, and to make recommendations concerning improvements to the TG 7.5 communications system prior to another overseas test series.

The lack of adequate communications between Eniwetok and Bikini Atolls and, after evacuation, between ships in the Bikini area and Eniwetok during Operation CASTLE indicated that many improvements were required before the next operation. At the conclusion of CASTLE the Test Division negotiated with JTF SEVEN to turn over the responsibility for providing inter-atoll communications to TG 7.5 since TG 7.5 and TG 7.1 were the principal users of this type of communications. Also, AEC has a continuing requirement during interim and build-up phases for reliable telephone and teletype communication between atolls.

The "communications" mission was to provide the following communications systems and services:

1. Telephone service all islands except Eniwetok Island.
2. Submarine telephone and signal cable system.
3. Inter-atoll communications system.
4. Comcenter facilities to support TG 7.1 and TG 7. 5.
5. Cryptographic devices; teletype and telephone.
6. Ship-shore radiotelephone services.
7. Mobile radio systems.
8. Eniwetok Atoll television station WXLE-TV.
9. Eniwetok Atoll and Bikini Atoll motion picture service except at Fred and David.

5.1 TELEPHONE SYSTEM

TG 7. 5 was charged with the responsibility of providing telephone service at all locations other than site Fred. Manual telephone exchanges were provided and operated by TG 7. 5 on sites Gene, Ursula, Yvonne, Elmer, Nan, Fox, and Tare. With the exception of the telephone exchange on site Elmer, all provided satisfactory service. The site Elmer exchange, equipped for 280 main numbers (three positions local and one position toll), was not adequate to meet the traffic load. Traffic engineering studies taken and evaluated during the operation indicated that this facility was 50% under-designed to handle the traffic load.

Recommendations: It is strongly recommended that the existing manual exchange on site Elmer be replaced with a 600-line dial exchange with three dial attendants' cabinets. Further expansion of the present manual exchange is not possible, and its replacement with a six-position manual exchange is not recommended since operating costs would be twice that of a dial exchange.

5.2 SUBMARINE TELEPHONE AND SIGNAL CABLE SYSTEM

The system was considered adequate to meet communications and signal requirements with the exception of that portion of the system between sites Fred and Elmer. The cable plant between these two islands consisted of four 16-pair cables installed prior to Operation GREENHOUSE and one 51-pair cable installed prior to REDWING. One of the 16-pair cables developed shorted and opened pairs. When an attempt was made to repair the cable, it was found that over the years it had become imbedded in the coral reef and could not be properly repaired. Communications channels of lower priority were transferred to this cable, and had it been lost, the operation would not have been seriously hampered. There were several other cable breaks during the operation. These, to a large extent, were caused by Navy vessels dropping or dragging their anchors in or through cable runs. This was partially corrected by marking cable runs in anchorage areas with red buoys. Also, TG 7.3 issued Hydrographic Office anchorage charts showing the cable runs within anchorage areas.

Recommendations: The defective cable between Elmer and Fred should be replaced with a new 51-pair cable. It is also recommended that in the future larger cables be installed in lieu of the 16-pair cables. The big cost in cable plant is the labor required to lay and splice cable, whereas the cost of additional pairs in a cable is relatively small. The current study of the proposed causeway between Fred and Elmer should include future location of telephone and signal cable on the causeway to reduce maintenance and replacement costs.

All cable runs within an anchorage area should be plainly marked with red buoys. Anchorage charts should be plainly marked, and all ships' captains should be instructed prior to reaching PPG of the existence of cables in the various anchorages.

5.3 INTER-ATOLL COMMUNICATIONS SYSTEM

5.3.1 HIGH FREQUENCY SYSTEM

At the close of Operation CASTLE TG 7.1 transferred to high frequency transmitters and receivers to TG 7.5 to provide interim period communications between Eniwetok and Bikini Atolls. This system adequately provided telephone and teletype service during the interim period but could not handle the demands of a full scale

test operation even though the system was multiplexed to double its capacity. During operation periods the demand for long-range communications circuits caused the high frequency spectrum to become extremely overcrowded and resulted in radio interference.

Recommendations: It is recommended that this equipment be modified to raise the output of the transmitters from 300 watts to one kilowatt and that the antennas be redesigned to allow more directive signals. During this past operation intermodulation interference was experienced between transmitter and receiver facilities installed in the same building. It is recommended that separate transmitter buildings be constructed on Elmer and Nan to overcome this situation.

Also, existing space was extremely overcrowded, resulting in excessive heat generation and high maintenance of electronic equipment due to excessive heat. It is recommended that a commercial type multiplex unit be procured to replace the present equipment. The Signal Corps multiplex unit was designed for transmitters having broader band width and lacks the capability of better filtering to reduce cross-channel interference.

5.3.2 VHF TROPOSPHERIC SCATTER SYSTEM

During Operation CASTLE it became evident that there was a need to vacate the high frequency spectrum wherever possible to overcome radio interference problems inherent in it, and experienced in all past overseas test operations. It was determined that beyond the line of sight communications utilizing the VHF frequency spectrum to communicate between Eniwetok and Bikini Atolls, a distance of approximately 200 miles, were theoretically possible.

On 10 December, 1954, a test circuit utilizing high gain corner reflector antennas and 250 watt narrow band transmitters was activated between these two atolls. Signal strength levels were recorded and evaluated over a period of one year. The results of these tests indicated that, with additional power, a multichannel VHF system could be expected to provide the required communication services during test operations. The contractor drew up specifications for 3 1/2 kilowatt amplifiers and high gain antennas, and bids were awarded. JTF SEVEN arranged for the loan of AN/TRC-24 multichannel radio equipment to be used in the ultimate system. This equipment performed satisfactorily and demonstrated that very little maintenance was required to keep it operational. The only serious difficulty in connection with the activation of this system was the delay in the delivery of the antennas.

In January 1956 it was decided that frequencies previously allocated this system might cause serious interference to the TG 7.1 telemetering systems and to the TG 7.4 aircraft control frequencies. At that time one of the two frequencies was changed, which necessitated the re-design and modification of two of the four antennas then being manufactured. This necessary action considerably delayed the delivery of the antennas and resulted in a three-week delay in activating the system.

The system was activated on 28 April, 1956, providing telephone and teletype channels, thus relieving the backlog in telephone calls between atolls. Prior to activating this system, delays as long as three hours were experienced in completing calls between Eniwetok and Bikini. After the activation of this system, delays were practically non-existent.

The radioteletype portion of the system was hampered almost daily between the hours of 12:00 and 3:00 P.M. due to the rapid short duration fades experienced at that time of day. These fades have little or no effect on telephone conversations but do cause some adverse affect on teletype, causing garbling. Some garbling was evident during other periods of the day, but other than slowing down the delivery of teletype traffic due to re-runs required to obtain legible copy, better than anticipated service was obtained.

This system was designed with a repeater facility at site Nan and was capable of terminating channels at Nan communications facilities. Also by patching through the repeater system, channels were extended to the USS Curtiss which served as TG 7.1 afloat headquarters.

During the planning phase prior to the operation, communications engineers were considerably concerned as to what affect a thermonuclear detonation might have on the propagated signal of the tropospheric scatter system. During previous operations a complete absence of propagating medium had been experienced on circuits utilizing frequencies in the HF spectrum. This condition often lasted as long as one hour after shots and hampered the delivery of high-precedence, post-shot traffic. Also, there was a possibility that blast damage to the site Nan antennas and/or power system would render the repeater on Nan inoperative until radiation levels permitted repairs to the system.

In order to back up this facility a duplicate repeater was installed in an aircraft to replace the Nan repeater in the event of a failure. However, no difficulties were encountered and, after the Zuni shot, the aircraft repeater was discontinued.

Recommendations: Studies are being initiated to determine whether or not diversity will improve the radioteletype and voice cyphony portion of the system. The AN/TRC-24 radio equipment and the telephone and telegraph carrier equipment should be retained in dehumidified storage at PPG since this equipment will be needed for future operations.

5.4 COMCENTERS

TG 7.5 activated and operated four comcenters within the PPG during REDWING. The main relay center was established at site Elmer as a focal point for all TG 7.1 and TG 7.5 message traffic. Also this comcenter relayed high-precedence traffic for AFOAT-1. This comcenter, in addition to being equipped with circuits to other elements within PPG, operated a direct circuit to Los Alamos, New Mexico. This circuit handled most of the TG 7.1 and TG 7.5 traffic destined to addressees in the ZI. TG 7.5 operated and maintained comcenters at site Nan, aboard the USS Curtiss, and aboard the USNS Ainsworth. No major difficulties were experienced.

Recommendations: The site Elmer comcenter was extremely overcrowded. It is recommended that, before another operation, space for this facility be at least doubled and that provisions be made for adequate storage of cryptographic tape systems if this type system is again used.

CRYPTOGRAPHIC DEVICES:

The SIGTOT Samson cryptographic system with synchronous mixer was employed on all except two TG 7.5 radioteletype circuits. This equipment, previously used during Operation CASTLE, was much improved for Operation REDWING. The equipment was obtained on loan from the Armed Forces by JTF SEVEN. Maintenance of this equipment was performed by military specialists attached to TG 7.5.

Two-voice cyphony systems were obtained for this Operation by JTF SEVEN. The equipment was maintained by military specialists attached

to TG 7.5. The AFSAY 806, a three-kilocycle band width system, was installed to encipher voice conversations between site Elmer and site Nan and between site Elmer and the USS Curtiss. A channel of the VHF system was used for this communications link.

This equipment is seriously hampered by the band width and, as a result, the voice quality is adversely affected by distortion introduced by the process of voice encryption. Also the fades inherent in the VHF channel introduced further complications. This system was not widely used since it was difficult for the average user to understand voice conversations. As a result the AFSAY D-808 equipment was substituted about half way through the program and the AFSAY 806 was released.

The AFSAY D-808 equipment was designed for use on air-to-ground circuits and as a result is very compact. Four stations were installed at the beginning of the operation and all were netted together on one frequency, thus obtaining the widest possible utilization of the equipment available. The stations were located at Station 70, site Nan, aboard the USS Estes, USS Curtiss, and the USNS Ainsworth.

This system afforded users a secure voice communications system and was widely used just prior to, during, and after shots. About midway through the operation it was decided to relocate one of the units from the USS Curtiss to site Elmer in an attempt to improve inter-atoll voice cyphony service. Also, it was decided to relocate units from the USNS Ainsworth to USS Estes to provide necessary back-up. This equipment employs a band width of forty kilocycles, and thus distortion of voice by the process of encryption is minimized. Also by utilizing a broader band the fades which adversely affected the AFSAY 806 had little or no effect on the AFSAY D-808.

Recommendations: : The SIGTOT Samson with synchronous mixer employs tapes to perform encryption of messages. Since this is a continuous operation, a high volume of tape is required, and since the tapes are classified Secret, it is required that they be destroyed by shredding and burning. This creates an additional workload, and it is recommended that consideration be given to employing a rotor-type cryptographic system with synchronous mixer for the next operation.

Due to its poor speech quality it is recommended that the AFSAY 806 not be used in the next operation unless it can be modified to broaden the band width and thus improve speech quality.

The AFSAY D-808 cyphony equipment performed most satisfactorily, and it is recommended for future operations. However, if it is planned that this equipment be used on inter-atoll channels, some provision must be made to add additional remote control units, thus affording a system that can be utilized by several officials without leaving their offices. It might be possible to incorporate this feature of the AFSAY 806 into the AFSAY D-808 equipment.

5.5 SHIP-SHORE AND SHIP-SHIP RADIOTELEPHONE AND RADIO-TELETYPE SERVICES

These systems were equipped with AN/TRC-1 radio units and AN/TCC-3 telephone carrier and AN/TCC-4 telegraph carrier equipment. One complete installation was established on site Elmer. It was intended that this equipment would be used to provide radiotelephone service between ships entering the area and the Elmer switchboard until such time as the ships were able to connect to submarine buoy cables. This equipment was also installed to provide backup service in the event that a submarine buoy cable was damaged.

At site Nan three of these equipments were installed to provide ship-shore communications channels. TG 7.5 was responsible for the operation and maintenance of one of these units aboard the USNS Ainsworth. TG 7.3 was responsible for the operation and maintenance of this type equipment on all ships. The AN/TRC-1 radio units did not perform satisfactorily. The major factor leading to this conclusion were the difficulties encountered in radio frequency interference.

This equipment seems particularly susceptible to interference, and frequencies were changed several times in an attempt to overcome the problem but with little or no success. Also the equipment causes interference to other circuits operating close to the AN/TRC-1 and limitations in range proved detrimental to efficient communications during evacuations.

Recommendations: : It is recommended that all AN/TRC-1 radio equipment be replaced before another operation by the AN/TRC-24 or equivalent radio equipment which is by far more stable frequency-wise and has demonstrated that considerably less maintenance is required to keep the equipment functioning properly.

5.6 MOBILE RADIO SYSTEMS

TG 7.5 installed and maintained a Motorola radio system consisting of approximately 20 units to support TG 7.5 Construction and Operations activities. TG 7.5 installed and maintained approximately 30 AN/VRC-18 radio units for TG 7.5 boat pool and air dispatching. Also approximately 70 of these units were installed on four networks for TG 7.1 project ashore and afloat. TG 7.5 maintained a pool of 20 AN/PRC-10 portable radio units which were loaned to various projects to augment the AN/VRC-18 radio nets.

Recommendations: : It is recommended that approximately 20 additional AN/PRC-10 radio units and approximately 15 additional AN/VRC-7 radio units be obtained for the next operation since the number available for Redwing did not fulfill scientific and DUKW requirements.

5.7 ENIWETOK TELEVISION STATION WXLE-TV

This station, obtained by JTF SEVEN from the Armed Forces Television Service, was assigned to TG 7.5 for installation, operation, and maintenance. This workload was added late in the build-up phase and required maximum effort by all concerned to get the station on the air within the time allotted. The station was placed in operation on May 1, 1956 on a schedule of 5:00 P.M. to 11:00 P.M. Monday through Saturday and 1:00 P.M. to 11:00 P.M. on Sundays. The equipment was installed in a space 10 ft. x 16 ft. The station is extremely overcrowded, and the maintenance of equipment is higher than usual due to high heat generated in the crowded space. The signal strength on Elmer is adequate. However; the signal is too weak on Fred to bring in video without elaborate antennas at the receivers and even then some users complain of snowy pictures.

The station is operated on channel 9 (186 to 192 mc) and is centered between the frequencies assigned to the VHF inter-atoll communications system. The television station causes considerable interference to all channels in the inter-atoll VHF system, and as a result the station could not be operated during heavy traffic load periods, such as on D-1, and had to be closed down temporarily.

Recommendation: : It is strongly recommended that the television station be moved out of Station 81 and that suitable space be provided elsewhere on site Elmer. If the station could be moved to the southern part of site Elmer, it is believed that signal strengths would be sufficiently increased to assure good viewing on site Fred. Otherwise a new antenna should be procured with sufficient directivity to raise the output gain from the present .8 db to approximately 6 db. It is further recommended that the channel be changed from 9 to 4, thus alleviating the interference problem.

5.8 ENIWETOK AND BIKINI MOTION PICTURE SERVICES

TG 7.5 operated and maintained all land-based motion picture theaters except those on site Fred and Japtan. A theater was established at each camp. With the exception of the theater on site Elmer this facility was considered adequate. On site Elmer the theater was too small to accommodate the large increased population of Operation Redwing. The screen was moved back and additional seating was provided. However, this did not altogether solve the problem of overcrowding and increased acoustic problems to the extent that the sound was considered substandard.

Recommendation: : It is recommended that before another operation a second motion picture theater be constructed on site Elmer and that it be operated during operation periods only.

5.9 AMATEUR RADIO STATION

During Operation REDWING JTF SEVEN obtained a license from the Trust Territories to establish two amateur radio stations at Eniwetok Atoll. One station was established on Fred and the other on Elmer. At the conclusion of the operation the site Elmer station was transferred to TG 7.5. The amateur radio station KX6BQ provides an off-duty-hours recreational facility for all licensed "hams" on Elmer.

A station custodian appointed by Holmes & Narver is responsible for compliance with all FCC regulations and pertinent PPG bulletins. The Holmes & Narver Security Officer is responsible for maintaining a continuing security education program in connection with the operation of the station, registering all licensed hams and monitoring station transmissions for possible communications security infractions.

CHAPTER 6 HEALTH AND SAFETY

Health and safety has been maintained at a high level at the PPG. It cannot be minimized when considering the remoteness of the site and the importance of the mission. Essentially, controls exist to assure that all personnel going to the PPG are in good general health and physically capable of fulfilling their assigned duties. The camps are maintained in an unusually sanitary condition. Attention is given to sanitation, safety, fire prevention, and radiological safety by all elements of the Task Force.

6.1 MEDICAL SERVICES AND FACILITIES

A. Scope of Service:

The medical and dental care at the proving ground is predicated on two considerations: (1) adequate care for emergencies, including accidents, and (2) preventive measures through medical or dental treatment and sanitation to keep personnel in good health and on a productive basis. Based on these considerations, medical and dental care is limited to those cases classified as emergency and those in which pain or illness is involved; the neglect of which would constitute a hazard to the health, well being, or job performance of an employee.

Surgery is performed as necessary only in those cases which fulfill these requirements and surgical operations performed are those generally considered minor operations. Should major operations be necessary before evacuation to Honolulu can be effected, they are generally performed at the Hospital facility on site Fred, operated by the U. S. Army Medical Corps. No elective surgery, that is, of the patient's choosing or for his convenience is performed. No radiation therapy of any type is administered. Laboratories are operated at sites Nan and Elmer for general diagnostic investigations of all types of ailments. Should a diagnosis indicate the possibility of the need for surgery or prolonged hospitalization, it is company policy to return the employee to his point of hire.

Only emergency dental work for pain, cavity filling or repair of dentures is performed. Other cases are accepted for treatment as the dentist may deem necessary for the well-being of the employee. When necessary, casts for dentures are made which are

sent to a laboratory in Honolulu for processing; the cost of the laboratory work in Honolulu is born by the patient.

B. Personnel:

At the time of REDWING build-up, three doctors, two dentists, one laboratory and X-Ray technician, one med technician and librarian, 16 first aid men and clerical help comprise the staff of the medical facilities. The qualifications of the doctors are those of a general practitioner and not those of a specialist in surgery, X-Ray evaluation, or other fields. The names and qualifications of the doctors and dentists are as follows:

<u>NAME</u>	<u>CLASS</u>	<u>YR. OF GRAD.</u>	<u>SCHOOL</u>	<u>LICENSED</u>
Albert, Thomas J.	Ch. Med. Off.	1951	U. of Iowa	Territory of Hawaii Trust Ter- ritory
Interned St. Francis - Honolulu, T. H. Resident at St. Francis continuously until accepting position with Holmes & Narver in August of 1953.				
Allbaugh, Robert D.	Doctor	1952	Washington University	Trust Ter- ritory Iowa
Resident Physician, Minneapolis General Hospital from June 1952 until accepting position with Holmes & Narver in February of 1955.				
Horr, Edward A.	Doctor	1946	Johns Hopkins University	Pa.-Calif. Trust Territory
U. S. Navy from graduation until accepting position with Holmes & Narver in July of 1955.				
Blake, Lewis F.	Dentist	1924	Marquette U.	Minnesota Wisconsin
1924-1932 - Assisted in private practice. 1932-1948 - Own practice - Tracy, Minnesota. 1948-1951 - Retired (managed wholesale Rose business). 6/51-12/51 - Private practice. 1952-5/23 - Retired. 5/23- - Accepted position with Holmes & Narver.				

<u>NAME</u>	<u>CLASS</u>	<u>YR. OF GRAD.</u>	<u>SCHOOL</u>	<u>LICENSED</u>
Hallen, Lester M. Dentist		1927	Marquette U.	Minnesota

1927-1951 - Private practice until acceptance of position with Holmes & Narver in July of 1951.

The job descriptions of all classifications of the Medical-Dental Service are as follows:

CHIEF MEDICAL OFFICER

The Chief Medical Officer is responsible for the professional organization and administration and performance of all medical facilities and services at the jobsite.

Supervises all medical and dental personnel, directing them in their duties, assessing their work performance, and recommending them for merit increases, rehire, changes of classification or disciplinary action, as deemed necessary.

Inspects and/or initiates all requisitions for supplies and personnel. Consults with proper personnel as to maintenance of medical facilities or related problems.

Controls the organization of all medical facilities and functions, recommending type of facility or function to be installed, initiating procedures and other directives for the facility operation and correlates all stations for over-all function.

Provides medical service, as necessary, by diagnosing, prescribing medicines for and treating diseases and disorders of the human body, and performing surgery and operations.

Normally this job requires a Doctor of Medicine degree with a license to practice in a definite community, a valid narcotics registration, and two years' experience as a general practitioner in charge. Jobsite experience as a Doctor may be substituted for two years as a general practitioner in charge.

DOCTOR

The Doctor is responsible for the maintenance and administration of adequate medical facilities and services.

Provides medical care, maintaining daily sick calls at the Medical Clinic, and treats personally, or closely supervises all medical treatments to employees and other personnel at the jobsite.

Maintains hospital facilities, supervising the administration of such facility in terms of personnel, supplies, and overall operating conditions.

Directs work and assignments of medical personnel and passes upon the technical qualifications of personnel engaged in medical department activities.

Maintains the jobsite sanitation and health program in accordance with recognized procedures, inspecting all necessary facilities, making recommendations to eliminate unsanitary conditions, spot checking for conformance and submitting reports on such to proper personnel.

Maintains adequately staffed and equipped first aid stations on off-island sites, assigning personnel and inspecting facility for proper operation.

Maintains records for data to be used in compilation of narcotics, reports, daily sick reports, treatment cards and charts, accident reports, activities reports and similar reports for the administration control of the medical facility.

Determine those employees who, due to injury, illness or physical unfitness, should be returned to their point of hire and justifies, in writing, all such cases to interested parties.

Directs preparation of all necessary forms incidental to U. S. Labor Department and insurance requirements.

May be required to assume functions of Head of Medical Department in absence of the Chief Medical Officer.

This job requires a graduate of an accredited medical school with a degree of Doctor of Medicine, with a recognized territorial or state practice license, and one year's experienced treating cases of traumatic injury in a receiving hospital or emergency ward. Completion of one year's internship may be substituted for the above experience requirements.

DENTIST

The Dentist is responsible for the furnishing of emergency dental care as need arises, together with such other dental work as may be deemed necessary for the well-being of company employees.

Maintains dental clinic in conjunction with the operation of jobsite medical facilities, making recommendations as required for proper operation of the dental clinic.

Initiates requests for proper and sufficient supplies of dental equipment to adequately fill the needs of jobsite dental care.

Maintains regular clinic hours to conform to regular company daily work schedule but is available on a 24-hour basis.

Prepares daily treatment reports and otherwise keeps accurate dental clinical records.

May provide dental care of an emergency nature to other than company personnel, as required.

This job requires a graduate of an accredited dental school with the degree of Doctor of Dentistry, plus several years' experience in general dental surgery with emphasis on exodenty.

MEDICAL TECHNICIAN & LIBRARIAN

The Medical Technician and Librarian is responsible for the direct supervision of First Aid Men, and for assisting the Chief Medical Officer in the routine operation and administration of jobsite medical facilities.

Supervises First Aid Men by assigning work shifts, duties, and observes for performance of duties.

Acts as nurse assistant to the Doctor, assisting in the operating room and ward, and is in administrative charge of the medical facilities in the Doctor's absence.

Processes immunization of employees by keeping suspense file of immunization shots due and notifying employees of clinical appointment.

Prepares monthly medical facility historical report from various records and data on hand, such as accident reports, daily sick reports, etc., collating and grouping information for inclusion in the jobsite historical report.

Processes letters of termination for cases involving physical disability due to injury or disease, gathering pertinent data from various sources and presenting to the Doctor for preparation of letter, routing and filing necessary copies.

This job normally requires a high school graduate with a R. N. degree (or equivalent) plus two years' experience in the nursing field.

LABORATORY & X-RAY TECHNICIAN

The Laboratory and X-Ray Technician is responsible for the proper exposure and development of x-ray photographs and the conducting of hospital laboratory tests.

Conducts laboratory tests such as blood counts, urinalyses, preparation of serum for blood tests, blood typing and cross-matching for transfusions and other tests.

Takes x-ray pictures, in accordance with recognized procedures; develops exposed film to bring out maximum contrast; mixes chemicals as needed for various developing fluids; keeps x-ray records.

Maintains all apparatus and laboratory equipment in top grade working order, initiating the re-ordering of laboratory supplies as needed; cleans x-ray apparatus and maintains an adequate stock of film and chemicals by initiating purchase orders sufficiently in advance of time of possible need.

Acts as First Aid Men in treatment room and ward when not actually engaged in x-ray or laboratory duties.

This job normally requires a high school graduate (or equivalent) with additional technical schooling in laboratory and medical x-ray methods and techniques, and three years' experience in laboratory and x-ray work with a background as First Aid Man or Nurse.

FIRST AID MAN

The First Aid Man is responsible for the administration of first aid treatment, under professional direction, of injured or ill employees.

Serves during sick call hours and/or maintains standby hours for emergency treatments, during which time he administers first aid and subsequent treatment to ill or injured patients, under professional direction; sterilizes, disinfects, anoints, and bandages minor cuts and burns; administers prescribed doses of standard drugs and medicines.

Attends to needs of ward patients, administering medicine and treatments as prescribed; changes beds and cleans equipment.

Performs such typical duties as: assisting in the setting and dressing of broken bones; assisting in emergency operations; applying artificial respiration, and related duties.

Maintains patient record cards by recording information desired by the attending doctor and transferring information from cards to clinic registers.

May be required:

Assume complete charge of an off-island first aid station by ordering supplies, keeping records and carrying out first aid duties until the arrival of a doctor.

Normally this job requires a high school graduate (or equivalent) with three years' experience as a First Aid Man in an industrial plant or construction camp.

C. Facilities

The medical service is furnished through the operation of infirmaries at sites Elmer and Nan and first aid stations at each shot island camp. At the jobsite the term "hospital" is widely used, but the term "infirmery" connotes more accurately the facilities available at Nan and Elmer. Army type ambulances are provided

at both Elmer and Nan.

The infirmary at site Elmer is located in a standard Pacific Iron and Steel aluminum building, 24 feet wide, 98 feet long, with double aluminum roof and a recently added annex, 24 feet wide, 30 feet long. Adjoining the infirmary, a similar building houses the dental office, doctor's quarters, consulting room and library. The infirmary is complete with electric wiring, fixtures, hot and cold fresh water, and salt water plumbing, telephone and nurse call system.

This infirmary is partitioned to provide for doctors' consultation office, infirmary office, X-Ray Room and dark room, waiting room, kitchen, treatment room, laboratory, utility room, EGK and private room, isolated bed space, a 10-bed ward, surgery and dispensary. The major items of equipment in the infirmary at site Elmer are as follows:

- 5 Sterilizers
- 3 Instrument Cabinets
 - Treatment Cabinets
 - Biological Refrigerator
 - Timer, Hand, for X-Ray
 - ENT Treatment Table
 - Explosion Proof Lamp
 - Alcohol Dispenser
 - X-Ray Film Cabinet
 - Wheel Chair
 - Nurses Secretarial Desk
 - Fracture Bed Complete
- 2 Operating Tables
 - Electric Incubator
 - Chairs
 - Suction and Pressure Unit
 - Chair, Posture Swivel
- 12 Station Electric Annunciator System (to be replaced)
 - Photrometer
- 11 Storage Cabinets
 - Autoclave Sterilizer Compact Unit
 - Treatment and Supply Tables
 - Suction Pump, Sklar Unit
 - Nurses Desk with Chart Rack

- Overbed Tables
- Hospital Adjustable Beds
- X-Ray Machine 100 milliamperes, complete with generating unit, timer, transformer, foot switch and tilting table.
- Dryer Electric, Hot - Cold (for casts)
- Microscope
- Diathermy
- X-Ray Developing Tank
- 4 Instrument Sterilizers
- Otoscope - Ophthalmoscope
- X-Ray Cabinet
- Resuscitator portable
- 2 Otoscope - Ophthalmoscope - Combination Centrifuge, safety hand.
- Pneophore, Demand, Oxygen Administration

The major items of equipment in the dental facility at site Elmer are as follows:

- Chair, Pump, Dental
- Oxifier
- X-Ray Machine
- Sterilizers
- Trident Unit
- Lathe, Dental
- Centrifuge Casting Machine
- Cabinets
- Office Furniture

The infirmary at Nan is located in a wood frame, plywood siding building, 24 feet wide, 74 feet long, with an aluminum roof. This building is partitioned to provide a doctor's office, waiting room, examination and minor surgery room, X-Ray room, dispensary, storage room and an 8-bed ward. The major items of equipment in this medical facility are:

- 1 Diathermy Machine
- Stretcher Wheel
- Autoclaves Sterilizer
- Mayo Instrument Rack
- Hospital Beds
- Overbed Tables
- Instrument Stand
- Nurses Desk
- 2 Resuscitators portable
- Operating Table

Microscope

Machine Centrifuge Casting

Pneophose, Demand, Oxygen Administration

Sterilizers

X-Ray Unit, 100 milliampere, complete with generating unit, timer, transformer, foot switch and tilting table.

1 Biological Refrigerator

The major equipment in the dental office at Nan consists of the dental chair and all necessary appurtenances, sterilizers, cabinets, etc.

D. Operating Procedure:

Doctors and dentists are stationed only at the infirmaries on sites Nan and Elmer. Doctors make semi-weekly inspections of all first aid stations, and the doctors and dentists are available for call at all sites at any hour.

At the infirmaries and first aid stations, sick calls are held daily between the hours of 0700 and 0830 Monday through Saturday and 1800 - 2000 daily for treatment of routine complaints and old injuries. Appointments for consultation outside of sick call hours are made as warranted for more thorough examinations, laboratory analysis and diagnosis. Injuries and other emergencies are taken care of as they occur irrespective of the hour. For those instances when the doctor is away from the infirmary, a one-minute continuous blast of the siren has been the established signal to call the doctor to the dispensary.

Permanent records are maintained of medical service furnished personnel. An entry is made on an individual treatment card at each visit to the infirmary of first aid station which forms the medical record of the individual while at the PPG. All pertinent information on these cards is transcribed to a clinic register which forms a chronological record of the medical facility.

Close cooperation with the Army medical personnel on site Fred is maintained. The Army medical personnel and facilities have always been made available for consultation and for the performance of surgery or laboratory work for which Holmes & Narver-operated facilities were not adequately staffed or equipped. During operational periods, an Army Medical Officer is stationed at site Elmer for Armed Service patients and the maintenance of Service health records.

Personnel are evacuated for medical reasons on the recommendation of the Chief Medical Officer. Each case is evaluated, and the Chief Medical Officer determines whether the patient will be accompanied by a doctor, aid man, guard or will be unescorted.

Immediately on the decision to evacuate a patient with an illness considered serious, the Honolulu Office Manager is informed of the name of the evacuee, accompanying personnel, flight number of plane, estimated time of arrival, whether ambulatory or not, need for hospitalization and/or doctor's service in Honolulu.

Serious cases are also reported to the Home Office for notification to the next of kin. Holmes & Narver retains under contract Dr. Richard Durant (M.D.) of Honolulu. He is informed of arrival of employees who may require medical care while in or passing through Honolulu.

Generally, it is the practice to send patients to the Queens Hospital in Honolulu should hospitalization be required at that point. Should a patient be a veteran, arrangements are made at the Tripler General Hospital, if the patient so requests.

E. Procedure in Event of Death:

General

Upon the death of an employee, action is taken to meet the requirements of the employee's estate and to close the Company's records pertaining to the employee. In order to avoid confusion in the handling of such matters and to be as helpful as possible to the next of kin, all contacts with the family and their attorneys or insurance representatives is made by, or with the knowledge, of the Industrial Relations Department.

It is the responsibility of the Chief of Industrial Relations to coordinate all such matters as the employee's final pay check and check for accrued leave, insurance benefits, savings bonds, and return of personal papers and effects. If any member of the firm has reason to visit the family on other than a personal basis, the visit, is coordinated with the Chief of Industrial Relations.

The responsibility of handling all problems surrounding the death of an off-continent employee remains with the Chief of Industrial Relations.

Purpose

To establish a system for handling the remains and property of a Holmes & Narver employee who dies outside the continental limits of the United States, in accordance with the foregoing, the following procedure was established:

Notification

Should an employee die at the PPG, the jobsite Industrial Relations Supervisor will immediately notify the Honolulu Office Manager and the Home Office Chief of Industrial Relations.

In case an employee dies in Honolulu, the Honolulu Office Manager will immediately notify the Home Office Chief of Industrial Relations and the jobsite Industrial Relations Supervisor.

Upon receipt of an employee's notice of death, the Chief of Industrial Relations or his delegated representative will immediately advise the next of kin.

The Industrial Relations Department will notify the American International Underwriters and the U. S. Atomic Energy Commission of an off-continent employee's death.

Record

Upon notification of the death of an employee, the Industrial Relations Department will set up a file containing all correspondence in connection with the deceased employee. This includes all supplemental information relating to any illness and the treatment received for said illness by the employee prior to his death.

On completion of all steps referred to above, the file is incorporated into the employee's personnel folder.

The Industrial Relations Department will obtain a copy of the death certificate so additional copies may be prepared and forwarded to the next of kin.

Autopsy

Should an autopsy be desired as a result of an employee's death, it is necessary to obtain written consent of the next of kin (original and five copies). The jobsite Industrial Relations Supervisor and/or the Honolulu Office Manager will be immediately advised via teletype following receipt of such consent. Actual copies are forwarded to each office by mail.

If the next of kin refuses to consent to an autopsy, this information is relayed immediately by teletype to the jobsite Industrial Relations Supervisor and/or the Honolulu Office Manager.

Mortuary Services and Transportation of Remains

The Honolulu Office will arrange for initial mortuary services in Honolulu with the costs being charged to Holmes & Narver, Inc.

The Industrial Relations Department will obtain the name and address of the on-continent mortuary from the next of kin so this information can be teletyped to the Honolulu Office.

If the mortuary is in the Los Angeles area, the scheduled arrival time and place of the remains will be immediately furnished to the undertaker by telephone upon receipt of this information from the Honolulu Office.

In case the mortuary is outside the Los Angeles area, the carrier transporting the deceased employee from Honolulu to the United States will be directed to deliver his remains to a definite carrier for further transportation to a mortuary selected by the next of kin.

Holmes & Narver, Inc. will pay the transportation cost of the remains to the employee's "point of hire", or to a point of equal distance. Transportation charges beyond this point are the responsibility of the next of kin.

When authorized by the Controller, a floral piece may be ordered for delivery to the mortuary, together with a card extending the sympathies of the Company.

Personal Property

The jobsite Industrial Relations Supervisor and/or Honolulu Office Manager will furnish a complete list of the personal property belonging to the deceased and forward the articles to the Home Office Industrial Relations Department.

Personal property of a deceased person left in the custody of an agency or department of the U. S. Federal Government, a contractor engaged in U. S. Government work or a U. S. Military Reservation in the Territory of Hawaii, may be forwarded to Holmes & Narver, Inc., without the necessity of accounting to civilian Territory authorities.

If the deceased has left personal property in the custody of a civilian, a civilian organization, or anywhere in the Territory of Hawaii, other than areas considered to be U. S. Government Reservation, the Clerk of the First Circuit Court, Territory of Hawaii assumes custody of such property in accordance with the laws of the Territory. The property is held pending probate action.

Next of kin may gain possession of property in the custody of the Clerk of the Circuit Court, Territory of Hawaii by appointing a resident of the Territory of Hawaii as "Petitioner". The Honolulu Office Manager or his delegated representative may be so appointed. The Petitioner prepares an "Information Sheet" with the assistance of the next of kin, and submits it to the Clerk of the Court. (Information Sheet form is furnished by the Court.)

Petitioner published notice in a Honolulu newspaper of pending proceedings, at a cost of \$5.25 to the next of kin. After waiting a period of 60 days from the date of notice publications, thereby giving creditors time to file claims, the proceedings are set for hearing on the Docket of the Probate Court.

The Probate Court, after allowing or disallowing claims filed against the property, will release the remaining property to the Petitioner, and order him to deliver same to next of kin.

Payments

The Chief of Industrial Relations will determine whether or not the next of kin is to receive any benefits payable under Appendix B, Part III, Section 10-c (1) of Contract AT(29-1)-20.

The Accounting Department will furnish the Industrial Relations Department a statement of the total money (Payroll, Bonus, Savings Bonds, and Travel Expense per diem, if any) due the deceased by Holmes & Narver, Inc.

The next of kin will obtain a Tax Waiver from the State in which the deceased employee resided. Where possible, the Industrial Relations Department will assist the next of kin in obtaining this waiver.

Upon receipt of the Tax Waiver, the Industrial Relations Department will prepare the "Affidavit Pursuant to Section 630 of Probate Code" for notarized signature of next of kin (original and three copies). Original copy of the Tax Waiver and Affidavit is processed through to Accounting for release of funds. Copies of the Affidavit are filed in the Industrial Relations Department.

If the next of kin is unable to qualify for the Inheritance Tax Waiver in his State, all money due the deceased from Holmes & Narver, Inc., must be held pending probate action.

6.2 SANITATION

All domestic water is produced from sea water at the PPG by distillation processes. The cure and treatment in producing, storing, and distributing water is a prime sanitation function. Sewage disposal is similarly important to health, and sewage systems at the PPG compare favorably with those of the average city on the continent.

Insect and rodent control is practiced aggressively at the PPG camp sites.

Food and food handling standards are well protected, and mess halls, food storage, and garbage disposal are continuously inspected to assure better than acceptable conditions. The men of the Task Force follow better habits of orderliness than those found in the average

city, and trash is an almost unknown problem.

6.3 SAFETY AND FIRE PROTECTION

The health, safety, and fire protection policies, standards, and procedures, as prescribed or set forth in Part 050 "Health and Safety", of the USAEC Manual, are made to apply and govern in all activities at the PPG under jurisdiction of the AEC. Additional safety rules and regulations are promulgated by AEC and the Contractor in the form of joint bulletins and jobsite safety bulletins.

The record of personal casualties is low, and property damage is insignificant, which best attests to the effectiveness of this effort.

6.4 RADIOLOGICAL SAFETY

The Commander, TG 7.5, assumed direct administrative responsibility for personnel of TG 7.5, consistent with basic responsibilities of AEC and its contractor, Holmes & Narver, Inc. Under directives of CJTF SEVEN, CTG 7.1 assumed radiological safety responsibility of TG 7.5. CTG 7.5 assured that the command responsibilities and mission of TG 7.5 were fulfilled through the following measures:

- a. Provided for the transition of the AEC (TG 7.5) Rad-Safety Unit from interim to operational status on an integrated basis with TU-7, TG 7.1, as directed by CJTF SEVEN. Radiological safety personnel were provided from the TG 7.5 unit for integration and training with the Radiological-Safety organization of TG 7.1 for rad-safe activities during the operational phase. The total number and qualifications of such personnel were predetermined and approved jointly by CTG 7.5 and CTG 7.1 or their Rad-Safety representatives.
- b. Assured that necessary radiation detection instruments and special clothing requirements of TG 7.5 were included in the allowances of CTG 7.1 for necessary issue to TG 7.5 personnel during the operational phase and for subsequent loan or sale to CTG 7.5 for post-operational use at the PPG.

- c. Issuance of film badges was in accordance with instructions of CTG 7.1, CTU-7.
- d. Developed a schedule of radiological safety services required from TG 7.1, and assisted TG 7.1 in decontamination of facilities and equipment as necessary. All laundry of contaminated clothing was provided by TG 7.5.
- e. Provided facilities as required for TG 7.1 Rad-Safe Center, decontamination areas and equipment, including the rad-safe barge, but excepting such facilities as the rad-safe trailers or as were provided by TG 7.1 and TG 7.3 on certain ships.
- f. Provided services and rad-safety advice during the construction phase to TG 7.5 operations, TG 7.5 Command and staff, and as necessary to TG 7.5 contractor supervisor personnel.
- g. Maintained records of exposure covering all TG 7.5 personnel during operational phase and will continue to maintain records during interim phase and complied with AEC reporting procedures.
- h. TG 7.5 personnel of Holmes & Narver, Inc., assigned to the TG 7.5 Rad-Safe Unit complied with Holmes & Narver jobsite procedures implementing the CJTF, TG 7.1, and TG 7.5 operation plans. Revision to Holmes & Narver jobsite procedures were made from time to time as necessary to accomplish such implementation and transition from interim to operational and back to the succeeding interim phase.
- i. Assumed residual AEC and Task Force radiological safety functions at the PPG upon completion of the operational phase - 15 days after the Huron event. Accomplished an orderly transfer of equipment and supplies from TG 7.1.

Significant effects on the TG 7.5 mission and personnel were found subsequent to the Lacrosse and Tewa events. The report of CTG 7.1 will cover the radiological safety situation existing throughout the test series, and TG 7.5 will report in detail only on the interim program as it progresses.

6.4.1 PLUTONIUM CONTAMINATION INCIDENT

On June 19, the Army Chemical Center (Project 2.51) received a plutonium neutron detector foil from the Sandia Corporation for counting. The sample was an aluminum alloy foil sandwiched between two nickel sheets, crimped at the edges, then copper plated. Three days later when running other alpha samples in the counting trailer, it was found that the alpha background was tremendously high. Investigation revealed that the foil had opened allowing the plutonium to leak, contaminating equipment, personnel, and the trailer. The Rad-Safety Officer, TU-7, TG 7.1, was advised at 2130, 23 June and immediately investigated. Immediate measures taken were:

- a. All personnel involved were monitored. Those found to be contaminated were processed through the rad-safety decontamination station, and 24-hour urine samples were taken.
- b. Living quarters were monitored and all bedding, clothing, or equipment found to be contaminated were confiscated.
- c. Tent floors were decontaminated.
- d. The messhall and latrine facilities were monitored and found to be clean.
- e. Three trailers found to be contaminated were sealed and were subsequently moved to the decontamination pad. Much of the equipment could not be decontaminated and was disposed of at sea.

A corrective measure that must be provided in advance is that project personnel must report to the Rad-Safety Officer the presence of radioactive material at PPG.

While this alpha contamination was handled expeditiously and without further mishap, it could have been avoided. The TU-7 had on its staff, persons experienced in health physics; hence expert advice was available as to the proper precaution and methods for handling this material.

6.4.2 [KICKAPOO] DETONATION INCIDENT

Recovery parties returning to the Rad-Safety Center from the [Kickapoo] shot were found to be contaminated with alpha emitting material. First indication was that the contamination resulted from the plutonium neutron detectors placed on the tower by Sandia Corporation. One detector later ruptured in Project 2.5.1's counting trailer. However, investigation revealed that the contamination came from infissioned plutonium from the device. Monitoring surveys were conducted and air samples taken to ascertain the extent of the contamination. For the most part, plutonium was "plated out" on the remaining portions of the tower, with little contamination of the ground.

The portion of Sally Island to the north of the road was closed to all personnel except when special permission of the Rad-Safety Officer was obtained. A mobile decontamination unit was stationed on the exit to the area, and all recovery personnel were monitored. Those showing any contamination showered and changed into clean clothing.

6.4.3 TEWA FALLOUT INCIDENT

Following the Tewa detonation at Bikini Atoll on 21 July 1956, the wind structure was such that the radioactive fallout commenced at Eniwetok Atoll at 1500 hours the same day. It continued until 0800 hours 22 July.

The gamma background began to increase rapidly about 1800 hours 21 July, 1956, and by 2130 hours reached a level that remained nearly constant during the fallout period. The maximum dose rate of 130 mr/hr was reached between 0600 hours and 0800 hours 22 July. Frequent heavy rain squalls throughout the fallout period probably increased the fallout rate by a large factor.

It also tended to wash the radioactive particles from the roofs of buildings where personnel were billeted or worked but at the same time, concentrated the contamination in the areas under the eaves of buildings.

At a conference on the evening of 21 July at Joint Task Force Headquarters, it was decided:

- a. Not to attempt evacuation until the gamma levels exceeded 250 mr/hr and probably not before 500 mr/hr.
- b. To secure the messhall prior to the midnight feeding.

JTF SEVEN later authorized raising the exposure from 3.9r to 7r for the Redwing operation. Under this waiver, it was not necessary to evacuate Holmes & Narver personnel with high exposures to Nan Island, Bikini Atoll, or send them to the ZI. Prior to receiving this waiver it had been planned to evacuate about 50 persons per day to Bikini and have others, who were necessary for recovery and roll-up, live aboard LCU's anchored in the Eniwetok lagoon.

After the fallout, a survey was made of site Elmer, and work orders for decontamination of hot spots were initiated. However, little was accomplished until all recovery for the Huron detonation the morning of 22 July and some of the roll-up was finished due to lack of equipment and personnel. Living quarters and the movie theater area were decontaminated. Due to planned deactivation within one week, the tent area was not decontaminated.

Grading adjacent to barracks and offices reduced exposure rates by an average factor of three. At the theater, removal of the seats, removal of the top layer of dirt with subsequent backfilling with clean dirt reduced the gamma levels by a factor of about 10.

Certain conclusions were reached which should aid in planning for future operations.

- a. Decontamination should proceed all but the most urgent recovery and roll-up. The schedule for firing Huron on 22 July influenced a delayed action.
- b. Adequate drainage of run-off areas under eaves would preclude the necessity for a large amount of decontamination.
- c. More complete provisions for the study of background air contamination, fallout, rain out, and particle size would aid in evaluation of the exposure problem.
- d. Simple precautions at the time of fallout, would have helped to reduce exposure, such as advising all personnel to remain indoors, take showers, and change clothes if they had been outside.

PART IV - REDWING COSTS

CHAPTER 1 - NARRATIVE COMMENTS AND COST REPORT - AEC FULL SCALE WEAPONS TEST ACTIVITY

1.1 GENERAL

Based on data furnished the Manager, ALO, by the participating organizations, a report has been compiled covering costs to AEC of participation in Operation REDWING. This report is presented herewith as Exhibit IV-1 with supporting Exhibits IV-1.1, IV-1.1a, IV-1.2 and IV-1.3.

Exhibit IV-1 reflects the AEC 3000 Program Full Scale Test Activity and related Reimbursable Work costs by organization detailed by the following major cost categories:

- 3810 - Test Planning and Evaluation
- 3831 - Expendable Test Construction
- 3832 - Test Site Operations

Exhibits supporting Exhibit IV-1 reflect further breakdowns of cost as follows:

Exhibit IV-1.1: Test Planning and Evaluation detailed by scientific program.

Exhibit IV-1.1a: Expenditures and Commitments - A. E. C. M.

Exhibit IV-1.2: Expendable Test Construction detailed by major items or types.

Exhibit IV-1.3: Test Site Operations detailed by subfunction.

Also included are two charts which present graphically the relation of certain cost factors to population factors. The data used in preparation of these charts also were furnished by participating organizations.

Exhibit IV-2 shows the relation of costs of support services performed for test organizations and the number of scientific personnel at the site, reflecting the increase in support requirements with the increase in scientific personnel as the test period is approached, and the corresponding decrease in support requirements and scientific personnel subsequent to the test period.

Exhibit IV-3 shows the trend of costs for maintenance and operation in relation to the total population trend as the test period is approached and passed.

The total cost reflected on Exhibit IV-1 includes actual cost reported at 31 August, 1956, and the estimated cost to complete AEC programs.

1.2 DEFINITIONS

Definitions of the major cost categories are as follows:

Test Planning and Evaluation includes costs incurred by scientific organization in preparation for or participation in full scale weapons tests, such as the development of techniques for making diagnostic and yield measurements and the design and procurement of instrumentation for these purposes; assembly of test devices in the test area; and the provision of scientific direction, administrative and logistical assistance in connection with test programs.

Expendable Test Construction includes all costs of towers, scientific stations and other structures constructed in test areas subject to damage or destruction during test operations, and those scientific structures in non-test areas that are constructed for a particular test operation.

Test Site Operations includes all costs incurred in the maintenance and operation of the overseas test site such as maintenance, operation of facilities, and support services provided to participating test organizations on a special work order basis.

CHAPTER 2. COST VS. FINANCIAL PLAN

2.1 FACTORS AFFECTING COSTS

Final total cost of AEC participation compared with the cumulative total of fiscal year financial plans covering contractor activities in construction of expendable test facilities, and scientific program support, was approximately 5% in excess of estimated cost.

Comparison of the cost of an operational period that, in part, covers three fiscal years with a cumulative total of financial plans

applicable to each fiscal year individually does not necessarily reflect a true variance. The true variance is obscured by two facts: (1) Financial plans are designed to apply to specific fiscal years; (2) Financial plans at the fiscal year end will have been adjusted for actual cost at the time of each midyear review.

Factors contributing to the overrun of actual cost over the cumulative financial plan estimates are explained as follows:

- a. Total expendable test facility construction costs incurred of \$21,481,423 exceed the total of financial plans applicable to three years by \$100,000.

The overrun in expendable test facility construction cost is not significant enough to warrant comment.

- b. Total Test Site Operations Costs incurred of \$21,364,803 exceeded the Financial Plan by \$1,758,000. This overrun was due primarily to maintenance and operational costs of Marine transportation, Electrical & Water Systems, Messing and Housing, and Special Order Work.

An overrun of \$523,000 in Marine transportation was occasioned by a greater demand in this category than was originally anticipated. Increased personnel at PPG, additional requirements for Off-Atoll construction, and the extended period for the test operations requiring additional refuel runs and evacuation of personnel contributed to this overrun.

Maintenance and Operational costs of Electrical & Water Systems over-ran the Financial Plan by \$372,500. This overrun can also be attributed to the extended period of test operations where delays in time schedules necessitated additional service to power and water supply. Greater than anticipated length of stay by personnel at PPG, work requests by Scientific personnel, and an increase in numbered stations beyond that originally anticipated, also had a prime bearing on this overrun.

Messing and Housing had an overrun of \$452,200 due to Scientific and Support personnel being needed at the site for a longer time than anticipated. The extended period of the test operation and contamination precluded a reduction of Holmes & Narver personnel as originally scheduled and thereby contributed to this overrun.

Special Order Work over-ran the Financial Plan by \$127,400 due to more work requests by Scientific personnel than originally anticipated.

2.2 BREAKDOWN OF FINAL COSTS - REDWING

Breakdown of the final costs of Operation REDWING on a percentage basis shows distribution of the AEC Full Scale Test Dollar to be as follows:

	Gross Cost Including Re- imbursable Work	Per- cent	Net Cost After Reim- bursable Work & Revenue Cr's	Per- cent
Test Planning & Evaluation	\$12,619,737	22.7	\$12,162,497	24.7
Expendable Test Facilities	21,521,423	38.7	18,742,050	38.1
Test Site Operations (14 month period)	<u>21,399,803</u>	<u>38.6</u>	<u>18,301,875</u>	<u>37.2</u>
Total	<u>\$55,540,963</u>	<u>100.0</u>	<u>\$49,206,422</u>	<u>100.0</u>

2.3 BREAKDOWN OF FINAL COSTS - CASTLE FOR COMPARISON

For purposes of comparison of final costs for Operation CASTLE adjusted to the same basis as the cost breakdown for Operation REDWING in paragraph 3.1, above, is as follows:

	Gross Cost Including Re- imbursable Work	Per- cent	Net Cost After Reim- bursable Work & Revenue Cr's	Per- cent
Test Planning & Evaluation	\$ 8,283,299	18.4	\$ 8,072,669	18.6
Expendable Test Facilities	17,816,272	39.5	16,671,555	38.3
Test Site Operations (18 month period)	<u>18,959,209</u>	<u>42.1</u>	<u>18,742,026</u>	<u>43.1</u>
Total	<u>\$45,058,780</u>	<u>100.0</u>	<u>\$43,486,250</u>	<u>100.0</u>

OPERATION REDWING
COST REPORT
AEC FULL SCALE TEST ACTIVITY
SUMMARY BY COST-BUDGET CATEGORY

Cost-Budget Category		University of California (UCL)					Edgerton, Gormeshausen & Grier, Inc.		Naval Research Laboratory		Holmes Narver, Inc.	
		Total										
1810 TEST PLANNING & EVALUATION (Schedule IV-1.1)												
Gross Costs												
Less: Reimbursable Work - DOD												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated AEC Cost to Complete												
Net Costs Incurred and Estimated												
1811 EXPENDABLE TEST CONSTRUCTION (Schedule IV-1.2)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1812 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1813 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1814 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1815 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1816 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1817 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1818 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1819 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1820 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1821 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1822 TEST SITE OPERATIONS (Schedule IV-1.3)												
Gross Costs												
Less: Reimbursable Work for Other Government Agencies												
Net Costs Incurred by AEC to August 31, 1954												
Add: Estimated Cost to Complete AEC Construction												
Net Costs Incurred and Estimated												
1823 TEST SITE OPERATIONS (Schedule IV-1.3)												

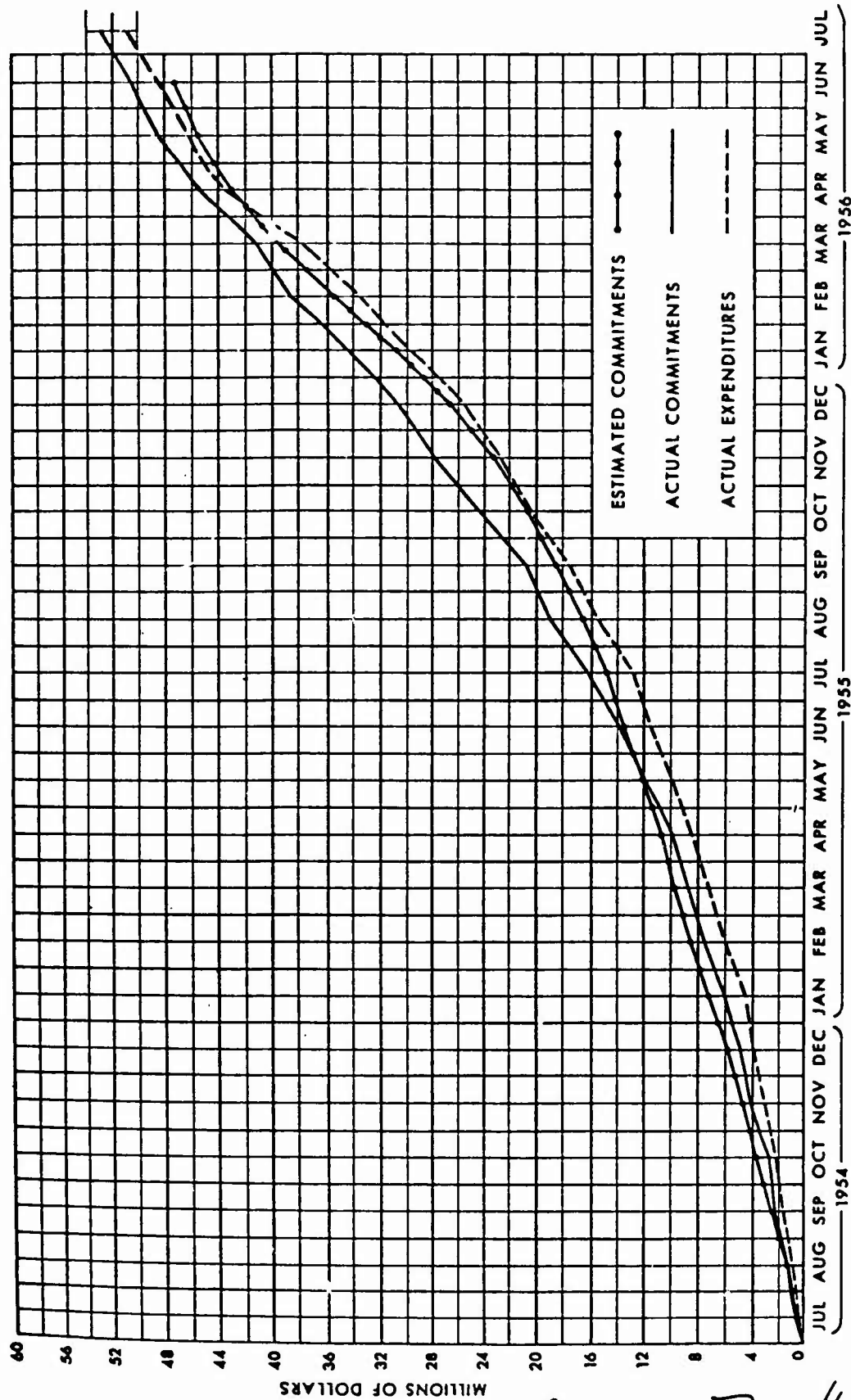
OPERATION REDWING
COST REPORT
AEC FULL SCALE TEST ACTIVITY

3810 - TEST PLANNING AND EVALUATION

Pro-gram No.	Scientific Program Title	Total	University of California (LASL)	University of California (UCRL)	Sandia Corporation	Edgerton, Germeshausen & Grier, Inc.	Naval Research Laboratory
1	Blast and Shock Measurements	\$ 73,020	\$	\$	\$ 73,020	\$	\$
2	Nuclear Radiation and Effects	36,510			36,510		
9	General Support	457,241				457,241	
10	Thermal Radiation and Hydrodynamics	168,806	168,806				
11	Radiochemistry	1,411,128	1,411,128				
12	External Neutron Measurement & High Energy Gamma Measurements	195,499	195,499				
13	Fission Reaction Measurements	1,316,884	277,371			1,039,513	
15	Photo-Physics	790,085	422,414				
16	Physics & Electronics & Reaction History	407,619	407,619				
18	Thermal Radiation	72,456	72,456				
21	Radiochemistry	836,445		836,445			
22	History of the Reaction	939,470		845,156		94,314	
23	Scientific Photography	656,433		398,813		257,620	
30	Vulnerability	1,004,556			1,004,556		
	Common to LASL Programs	1,861,818	212,575		633,362		1,015,881
	Common to UCRL Programs	1,082,205		1,050,133	32,072		
	Common to AEC Programs	731,562			19,732	711,830	
	Total Test Planning and Evaluation	\$12,041,737	\$3,167,868	\$3,130,547	\$1,799,252	\$2,928,189	\$1,015,881
	Less: Reimbursable Work - DOD	457,240				457,240	
	Net Costs Incurred by AEC to August 31, 1956	\$11,584,497	\$3,167,868	\$3,130,547	\$1,799,252	\$2,470,949	\$1,015,881
	Add: Estimated Cost to Complete AEC Programs	578,000		50,000	378,000	150,000	
	Net Cost to AEC - Incurred and Estimated	\$12,162,497	\$3,167,868	\$3,180,547	\$2,177,252	\$2,620,949	\$1,015,881
Prior Year Cost Included in Net Costs Above							
	F/Y 1955	\$ 445,489	\$ 275,412	\$	\$ 6,973	\$ 55,591	\$ 107,513
	F/Y 1956	10,154,900	2,658,518	2,710,939	1,691,354	2,205,699	898,370
	Total	\$ 10,600,389	\$2,933,930	\$2,710,939	\$1,698,327	\$2,261,290	\$ 995,903

Exhibit IV-1.1

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Exhibit IV-1.1a Expenditures and Commitments - A-E-C-M

OPERATION REDWING
COST REPORT
AEC FULL SCALE TEST ACTIVITY

Exhibit IV-1.2
Page 1 of 2

3831 - EXPENDABLE TEST CONSTRUCTION

<u>Description</u>	<u>Total</u>
<u>Scientific Facilities</u>	
Scientific Stations	\$ 9,813,339
Causeways, Bulkheads & Offshore Islands	287,976
Inter-Atoll Communication System	207,813
Blast Protection	8,211
Signal Cable Systems	491,786
Telephone Cable Systems	467,278
Man-Made Islands	137,101
Electrical Distribution Systems	1,866,603
Miscellaneous	646,894
Total Scientific Facilities	<u>\$13,927,001</u>
<u>Temporary Camps and Auxiliary Facilities</u>	
Nan	\$ 1,368,148
Fox	280,794
Gene	618,272
Tare	412,124
Ursula	110,051
Yvonne	277,819
Floating Camps	92,691
Users Test Program Construction	167,167
Recovery of Materials and Equipment	194,692
Jaluit Atoll	72,094
Miscellaneous - DOD	844,744
Miscellaneous - AEC	503,239
Total Temporary Camps and Auxiliary Facilities	<u>\$ 4,941,835</u>
<u>Other Expendable Test Facilities</u>	<u>\$ 1,418,343</u>
<u>Construction Equipment Procurement (Schedule IV-1.21)</u>	<u>\$ 1,194,244</u>

Total Expendable Test Facilities Construction	\$21,481,423
Less: Reimbursable Construction	2,779,373
Add: Estimated Cost to Complete AEC Construction	<u>40,000</u>

*Net Cost to AEC Incurred and Estimated	<u>\$18,742,050</u>
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*Prior Year Cost Included in Above

F/Y 1955	\$ 2,358,100
F/Y 1956	<u>16,054,003</u>

Total Prior Year Cost	<u>\$18,412,103</u>
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Schedule IV-1. 21

Construction Equipment Procurement

Heavy Mobile Equipment	\$ 588,165
Motor Vehicles in Excess of 1 Ton	512,835
Miscellaneous Equipment	<u>93,244</u>

Total Costs to AEC Incurred to August 31, 1956	<u>\$1,194,244</u>
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Prior Year Cost Included in Above

F/Y 1955	\$ 238,644
F/Y 1956	<u>947,700</u>

Total Prior Year Cost	<u>\$1,186,344</u>
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OPERATION REDWING
COST REPORT
AEC FULL SCALE TEST ACTIVITY

Exhibit IV-1.3
Page 1 of 3

3832 - TEST SITE OPERATIONS
July 1, 1955 to August 31, 1956

Schedule IV-1.31

Total

Base Camp Facilities

Maintenance of Base Camp Facilities

Electrical System	\$ 563,294
Water System and Distillation Plants	577,093
Communications Facilities	339,623
Other Utility Maintenance Costs	22,774
General Transportation Vehicles	140,811
Messing and Housing Facilities	552,715
Miscellaneous Buildings and Structures	447,870
Miscellaneous Equipment and Facilities	544,711
Total Maintenance Costs	<u>\$3,188,891</u>
Less: Reimbursable Work for Other Government Agencies	<u>\$ 59,247</u>

Net Total AEC Maintenance Costs
to August 31, 1956

\$3,129,644

Operation of Base Camp Facilities

Electrical Systems	\$ 568,980
Water System and Distillation Plants	492,995
Communications Facilities	233,907
General Transportation Vehicles	180,609
Messing and Housing Facilities	3,571,110
Store, Bar, and Snack Bar	1,086,967
Laundry	295,597
Hospital and First Aid	312,253
Recreation	138,958
Miscellaneous	<u>264,821</u>

Net Total AEC Costs - Operation of Base Camp
Facilities to August 31, 1956

\$7,146,197

Total Base Camp Costs Incurred
to August 31, 1956

\$10,335,088

Less: Reimbursable Work for Other
Government Agencies

59,247

Net Total AEC Costs to August 31, 1956

\$10,275,841

Schedule IV-1.32Oper. & Maint. of Temporary & Scientific FacilitiesTemporary Camps

Camp Nan (Main Camp - Bikini)

\$2,416,207

All Others

3,784,974

Scientific Facilities

126,409

Total Costs Incurred to August 31, 1956

\$6,327,590

Less: Reimbursable Work for Other
Government Agencies

326

Net Total AEC Costs to August 31, 1956

\$6,327,264Schedule IV-1.33Inter-Island Marine Transportation

Maintenance of Marine Transportation

Equipment and Facilities

\$1,773,013

Operation Of Marine Transportation

Equipment and Facilities

2,382,105

Total Costs Incurred to August 31, 1956

\$4,155,118Less: Reimbursable Work for Other
Government Agencies2,835Net Total Costs to AEC Incurred to
August 31, 1956\$4,152,283Schedule IV-1.34Special Order Work for Test Organizations

Incidental Support Construction

\$ 547,007

Less: Reimbursable Work for Other
Government Agencies

129,643

Add: Estimated Cost to Complete AEC Work

35,000

Net Total Costs to AEC Incurred & Estimated

\$ 452,364

Schedule IV-1.35Cash Revenue From Operation of Test Site Facilities

Subsistence and Quarters	\$ 1,551,887
Store	648,446
Bar	655,422
Snack Bar	<u>50,122</u>
Total Cash Revenue	<u>\$ 2,905,877</u>

SUMMARY - TEST SITE OPERATIONS COSTS

Total Costs Incurred	\$21,364,803
Less: Reimbursable Work for Other Government Agencies	192,051
Cash Revenue	<u>2,905,877</u>
Net Total Costs to AEC Incurred to August 31, 1956	\$18,266,875
Add: Estimated Cost to Complete AEC Special Order Work	<u>35,000</u>
*Net Total Costs to AEC Incurred and Estimated	<u>\$18,301,875</u>

*Prior Year Costs Included in Above

F/Y 1955 (Special Order Work Only)	\$ 890
F/Y 1956	<u>15,889,764</u>
Total Prior Year Cost	<u>\$15,890,654</u>

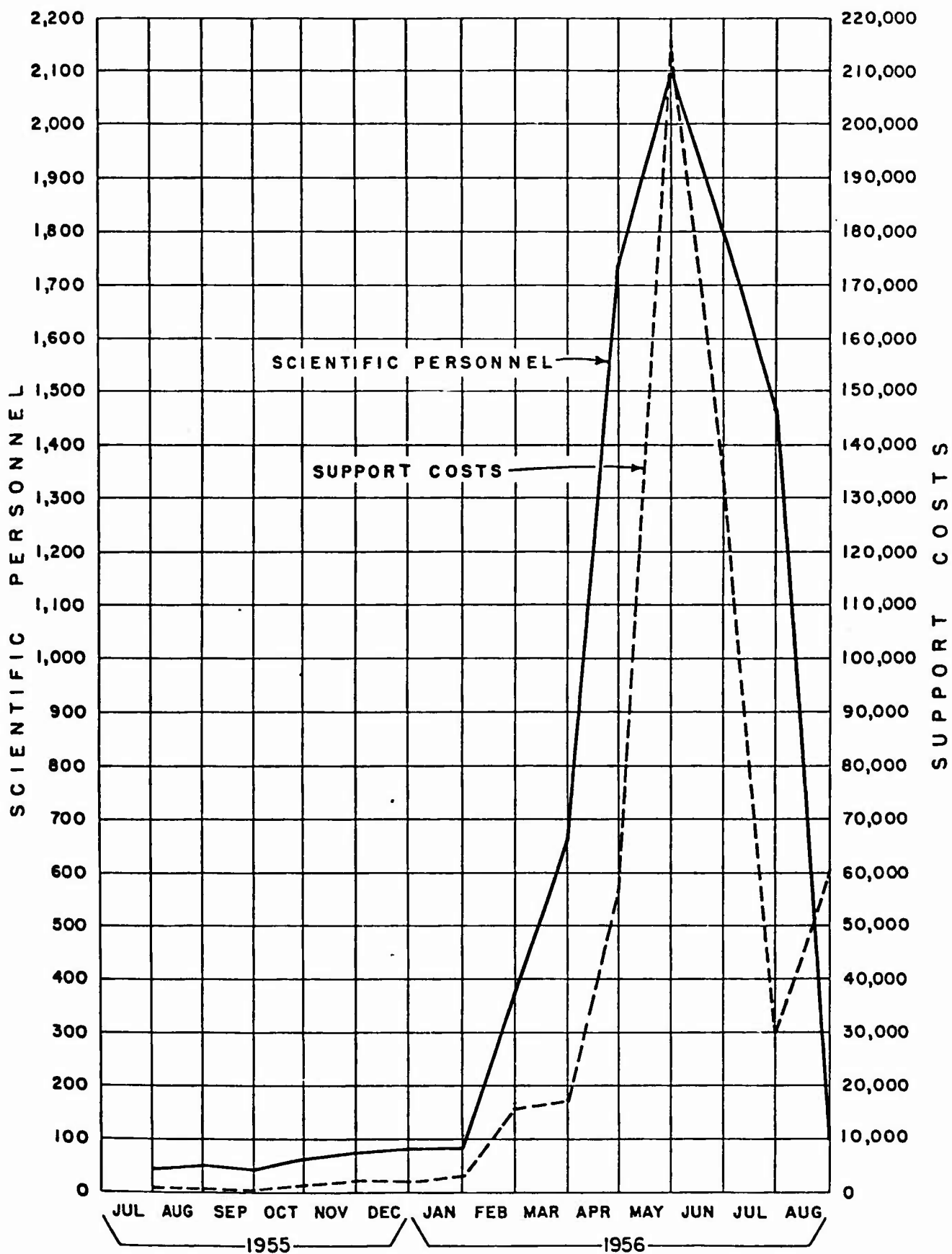


Exhibit IV-2 Relation of Support Costs to Number of Scientific Personnel at PPG

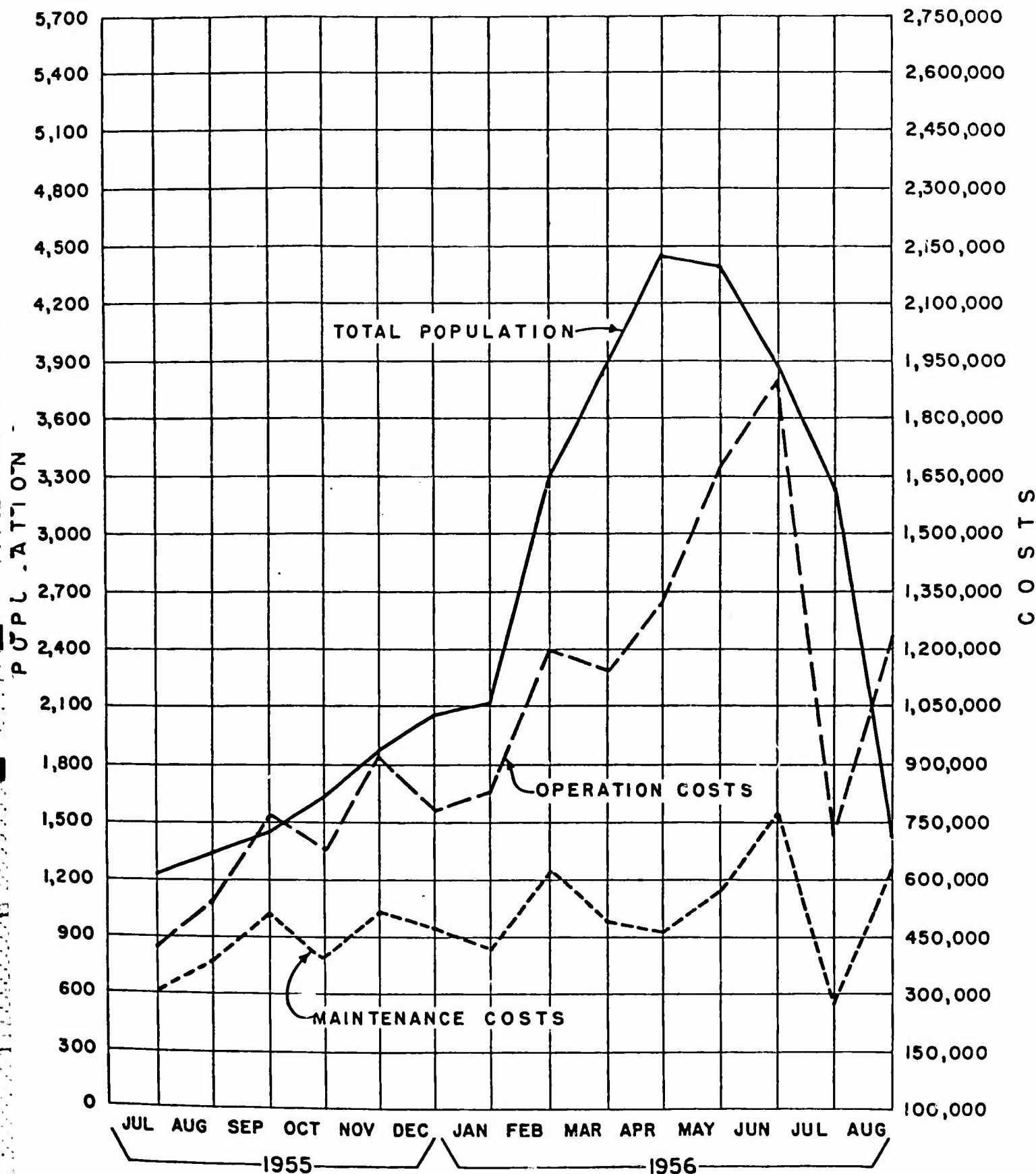


Exhibit IV-3 Relation of Maintenance and Operation Costs to Total Population - PPG

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PART V CONCLUSIONS AND RECOMMENDATIONS

Tentative "Conclusions and Recommendations" were made in the "Operation Redwing Report of the Commander, Task Group 7.5" to Commander, JTF SEVEN which are contained in quotes at appropriate places herein. The due date designated by CJTF SEVEN did not permit final conclusions and recommendations, therefore it was stipulated that they were "preliminary" and subject to later action if deemed appropriate.

Report Reference

I-1.1 OPERATION SITE

Conclusion

The PPG, including Eniwetok and Bikini Atolls, has been utilized adequately to the requirement for overseas test programs for Operations Castle and Redwing in a large order of magnitude and within a reasonable test cycle period.

Recommendation

Planning for HARDTACK should contemplate re-use of the established operation site.

I-1.2 OPERATION SCOPE AND SCHEDULES

Conclusion

The REDWING scope, as presented with the Operation Concept in June of 1955, seemed attainable only over a longer period than as was indicated to begin with 1 May and end by 15 August, 1956. However, the last detonation was accomplished on 22 July, 1956; therefore, it is concluded that the scope and schedules were realistic and an equivalent accomplishment could be made for HARDTACK. Some indications exist that the more favorable weather within the operational period occurred within the latter months. Inadequate time elements existed from date of firm criteria to date of beneficial occupancy by scientific users.

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Recommendations

The concept of Operation HARDTACK and scientific criteria should be established at the earliest possible date. Continuing liaison and appropriate conferences should be effected to allow the lead time requirements for planning, procurement, and construction. Consideration should be given to scheduling the operational period to begin in June rather than earlier as in CASTLE (1 March) and REDWING (1 May), with the objective of shortening an otherwise longer operational period.

I-1.3 ORGANIZATION AND COMMAND RELATIONSHIPS

"Reference: Section 2. ORGANIZATION AND COMMAND

"Conclusion

- "1. Organization of Task Group 7.5 was effected on 1 March 1956 with the issuance of the Task Group 7.5 Operation Plan which was later confirmed, on 7 April 1956, as an Operation Order. Phasing of the interim Test Organization and supplementary staff assistance provided continuing Command and Staff coverage through AEC assignments to the PPG. It is considered that the Task Group structure, augmented by the Holmes & Narver, Inc. Organization proved effective to the Task Force requirement.

"Recommendations

- "1. Although early assignments by CJTF SEVEN and Task Group Commanders of responsible officer personnel to the Forward Area was an improvement over Castle experience, it is recommended that a study be made to assure Forward Area liaison adequate to requirements.
- "2. It is further suggested that, at an appropriate time in the planning cycle, a qualified AEC representative be attached to Headquarters CJTF SEVEN - Washington to assist in AEC liaison matters."

1.3.1 TASK FORCE ORGANIZATIONAL STRUCTURE

Conclusion

JTF-SEVEN, since becoming a continuing Task Force, has effectively coordinated interim planning. Likewise, CJTF-SEVEN, acting as Senior AEC and JCS representative for operational periods, has done an excellent job.

Apparent now for serious study is a condition partly exemplified by studies of a reduction in military garrison - Eniwetok, also, in CINCPAC's efforts toward deactivation of ATCOM-Eniwetok. The JCS, Department of the Army, CJTF-SEVEN, and AEC have incorporated in studies of relief of military personnel for transfer to military-type duties elsewhere.

Cost of personnel facilities and support at the base camps at PPG is relatively high per capita. Therefore, any possible reduction in numbers of personnel temporarily assigned to either base camp during operational and/or interim periods indicates substantial potential saving to the Government. The overall per capita saving that would accrue from a reduced occupancy is ascertainable, but would require time in which to conduct a comprehensive cost study.

Under present Task Force organization, key military personnel are assigned to duties which can be performed by civilian personnel of the AEC and the AEC contractor. As the PPG basically is an executive assignment to the AEC as a large-scale overseas testing ground and as DOD effects tests are incidental to weapons device testing and diagnostics conducted by the AEC laboratories, a foundation exists for consideration of the recommendation submitted below.

Recommendation

That, an objective feasibility study be made for adoption of a "Test Manager" form of organization in lieu of the Joint Task Force Headquarters Command and Staff. —————> *gratuitous?*

This alternate should include assignments by the JCS of military deputies and liaison officers to the Test Manager's staff. Such deputies should be authorized to an extent sufficient to execute their coordinating duties. Military support to test operations would result, and military interests would be assured.

That, a joint board be established for conduct of the feasibility study, to consist of representatives from the JCS, DMA, ALO, CJTF SEVEN, FC/AFSWP, and the scientific laboratories.

I-1.3.2 OBSERVER GROUPS - VISITORS' BUREAU - PPG

Conclusion

During Redwing, CJTF SEVEN controlled all visitors. It was therefore assumed that JTF would provide coordination of billeting space and services required. In addition, tours of duty of special attaches to Advance, HQ JTF SEVEN were effected by CJTF SEVEN, which included AEC personnel from various sources. Examples were: the JOTI group; the Information Advisors; the Classification officers; DBM advisors, etc. The same assumption was made as to responsibility for billeting and working space and personal services. In some cases of travel orders being issued by the AG 7.5, this was used by JTF to fix responsibility with TG 7.5 although such orders were issued as an accommodation to the JTF and to absorb travel costs by the AEC.

As a result of the foregoing procedures problems developed at the Forward Area and TG 7.5 in cooperation with the JTF provided billeting and work space at some difficulty and loss in efficiency within the TG 7.5 offices.

Servicing of normal AEC visitors has been no burden in past operations wherein TG 7.5 had advance knowledge and visitor control. Holmes & Narver, through existing offices, is capable of handling visitors' services.

Recommendations

- a. That, as an added support service, Holmes & Narver establish a "Visitors Service Bureau" to handle services to official visitors, relieving Command and Staff within the Task Force of routine services.
- b. That, only where appropriate, Task Force Command and Staff coordinate VIP protocol through advance information to the "Visitors Bureau."

- c. That the usual courtesies be observed by all Task Force Command and Staff to satisfy protocol.
- d. That recommendation for visitation be vested in parent organizations on an allocation basis and be authorized by the CJTF SEVEN.

I-1.4 GENERAL ACTIVITIES OF TASK GROUP 7.5

"Reference: Section I Mission - TG 7.5

Conclusion

- "1. The mission of Task Group 7.5 was accomplished through execution of the operation order 1-56 and other detailed procedures, schedules, and directives. Experience of the three previous operations contributed to the planning for and accomplishments of this Task Group. Cooperation of CJTF SEVEN and the Task Groups was accorded where required. Another operation should derive further benefits of experience and association leading to improvement in coordination between the AEC, TG 7.5, and all elements of TF SEVEN.

"Recommendations

- "1. Continuation of liaison should be maintained, and CJTF SEVEN is requested to authorize continuing direct liaison with other Task Groups for purposes of planning and coordination as was practiced during the Castle-Redwing interim period.
- "2. Test Division-ALOO, and, in appropriate cases Holmes & Narver, Inc., should be represented in the early planning conferences between JTF and the AEC laboratories and Field Command, AFSWP for the best integrated understandings and results."

Conclusion

The AEC (Base Facilities, Task Group 7.5) through its ALOO Test Division and TG 7.5 Staff and, as implemented by Contract AT(29-2)-20 with Holmes & Narver, Inc., completed its interim and operational period mission of Operation Redwing successfully. However, certain duplications in the CJTF SEVEN and TG 7.1, TG 7.2, and TG 7.4 organization responsibilities are noted to exist. (Reference

Part V-I-1.3). The AEC contractor, Holmes & Narver, Inc., must of necessity gear its organizational structure to perform services of a support type. With little expansion to administrative and supervisory personnel, added responsibility could be assumed for performance of like kinds of services to some presently performed by other elements at an over-all reduction in total population and with corollary gains to the other elements of the Task Force.

Recommendation

That the capabilities of Holmes & Narver, Inc. be carefully considered for absorbing additional activities as in Recommendations of Part V-I-1.3 in the interest of:

- a. Reduction of population.
- b. Dollar Savings.
- c. Benefits to the DOD.
- d. Benefits to the test program.

III-1 ADMINISTRATIVE AND PERSONNEL

Conclusions and Recommendations

Those given under V-I-1.3 apply.

III-1.1 PERSONNEL PHASING

"Reference Section II. Personnel Phasing

"Conclusions

Phasing was appropriate to the problem, however, with better advance liaison and planning made possible by earlier receipt of criteria for engineering, construction, and support, the TG 7.5 over-all population could be reduced in proportion to the assumptions for another operation as compared with Redwing. It is believed that similar proportional reductions could be made in over-all task force numbers. The costs per capita are high at the PPG for construction of work and billet space, and support to personnel.

Recommendations

CJTF SEVEN and all Task Group commanders should give diligent study to reducing to a minimum of personnel. Duplication of services should be eliminated to a degree consistent with program objectives. TG 7.5 is currently preparing a study of this problem."

Conclusion

It is believed that many personnel of the Task Force are scheduled to be in the Forward Area too early and for too long; thus, adding to the population peaks and to costs at the PPG.

Overtime, during the crash period of Redwing, was administered with care but went to high figures. Analysis made during the incidence of high overtime revealed no individual cases that could be construed as excessive. Flexibility and dual capability in the shot schedule, and weather delays, acted as influences in this area.

Recommendation

That careful scheduling and subsequent rescheduling of tours of duty be effected toward reduction of population, added confusion, and costs.

That further study be made of overtime as an expedient in lieu of additional personnel. Improvement to advance planning, procurement, and earlier construction scheduling should be possible in larger degree. ALOO is carrying forward a "Supports Study" toward this end.

III-1.2 MORALE FACTORS

Conclusion

Morale has been cited many times by the Commanders of the Task Groups and CJTF SEVEN as being of great importance to the success of the test program in the forward area. Good food, and housing seem most important. Health conditions, working conditions, and recreation are definite morale factors. Cognizance of the morale factors was emphasized because of the long test period for REDWING.

Recommendation

Every reasonable effort should be made to: continue the good messing situation; improve housing through more barracks and less tents; continue the high health standards with improvement to fallout period shelter and decontamination facilities; and exploit every practicable recreation activity.

III-2 SECURITY, CLASSIFICATION, AND PUBLIC INFORMATION

2.1. B (1) S&SN and OTHER CLASSIFIED MATERIAL SHIPMENTS

Conclusion

The requirements for shipping classified test materials to the PPG prior to the designation of the Commander, JTF SEVEN, as the Commission's representative for the conduct of the operational phase of Redwing necessitated eliciting the cooperation of the CJTF SEVEN to arrange through Navy channels for the assignment of custodial responsibility from the CJTF SEVEN to the Master of the USNS MANN. If the CJTF SEVEN had not had an extremely cooperative attitude, he might well have declined to assume such responsibility prior to his Commission appointment, in which case the Manager, ALOO, would have retained the responsibility for the safe arrival of that material at the PPG.

Recommendation

It must be assumed that such a requirement will exist in future overseas test operations, and it would be much more desirable if arrangements were made at the Commission level for the CJTF SEVEN to be authorized and requested to assume the responsibility to arrange for the transportation of such materials under DOD security protection from the CONUS to the PPG.

III-2.1.B (5) GUARD FORCE OPERATIONS

Conclusion

A security program calculated to safeguard classified information associated with nuclear weapons development depends to a degree upon the efficiency of the guard force utilized to operate the physical security system, and particularly so at the PPG. During Operation REDWING, as previously indicated herein, the lack of training of the Army personnel as Military Police, and the lack of training and experience of both officers and enlisted men in what is comparable to industrial plant guarding resulted in a lack of understanding and grasp of the fundamentals of such guarding. This extended to a lack of appreciation of the need for constant alertness and vigilance at travel control points and as to the mechanics of badge checking and the use of the several forms collateral to the basic security badge. From an inauspicious beginning (resultant in part from the short period of time after their arrival at PPG until the activation of the REDWING guarding responsibilities) the Military Police improved throughout the operation until, for the most part, their performance was quite creditable. This improvement resulted mainly from a determined and unswerving effort on the part of the MP officers and enlisted men to improve the quality of their performance.

Recommendation

For any future operation at the PPG the Military Police requirements will be established at as early a date as is practicable. A serious effort will be made to assure that the military guards provided will be experienced in the type of guarding involved in these operations or will receive suitable and adequate training prior to their arrival at PPG.

Deputy Army — ✓ please note
Donner
*Early contact w/ P.M. Service, to designate & train MP unit
now solve above problem*

III-2.1.B(10) INFRACTIONS OF SECURITY RULES & REGULATIONS

Conclusion

There occurred during Redwing several security infractions involving the transmittal of Restricted Data teletype traffic over a cable circuit approved for the transmission of classified Defense Information but not for Restricted Data.

Recommendation

That every effort be made to establish approval for the transmission of Restricted Data traffic over the TG 7.5 teletype circuit involved between sites Elmer and Fred.

III-2.1.B(II) OFFICIAL MAIL SUBJECT TO U. S. CUSTOMS INSPECTION

Conclusion

The U. S. Customs Department practices as mentioned introduced delay factors and danger of compromising security.

Recommendation

That this situation be resolved with U. S. Customs officials at the Washington level in order to establish workable procedures that will eliminate the problem for any future overseas tests at the PPG. It is further recommended, as one likely solution to the problem, that consideration be given to assigning a U. S. Customs Service employee to the PPG during operational periods.

III-2.2 CLASSIFICATION

Conclusions and Recommendations

These are contained within the text of III-2.2.

III-2.3 PUBLIC INFORMATION

Conclusion

The Joint Office of Test Information (JOTI) program for the Uncleared (News Media) Observer Group functioned better than might have been expected. From the contacts of this Group with the Staff of TG 7.5 it must be noted that cooperation was a mutual effort and surprisingly few questions were asked that, for security reasons, could not be acceptably answered.

Recommendation

That a similar program be included in Hardtack planning.

III-3.1 GENERAL PLANS AND SCHEDULES

"Reference: Section 3 Planning

"Conclusions

"Many difficult problems of planning and coordination followed the first revelation of the Operation Redwing concept. The Project Officers' Conference at Los Alamos in July of 1955 presented a fantastic scope and time elements irreconcilable with basic lead times comprised of the following:

- a. Firming of criteria.
- b. Preliminary engineering and design.
- c. Review and approval of preliminary drawings.
- d. Determination of funding sources.
- e. Authority for procurement and construction.
- f. Transport to the PPG.
- g. Actual dates construction could be started within the sphere of operations.
- h. Users' period of beneficial occupancy.
- i. Completion to scheduled or revised schedules of ready dates.

"In addition many revisions were necessary to satisfy program goals -- and many improvisations and substitutions were implemented. Scientific projects were, because of the short end time of beneficial occupancy, compelled to limit the number of desired dry runs in checking out installed equipment and instrumentation. However, revised ready dates permitted meeting the shot schedules as determined on weather and fallout forecasts.

"Recommendations

- "1. Liaison, and conferences as mentioned in Section 1 and 2 - Recommendations hereof, should result in some improvement to advance planning tasks.

- "2. Later study should be made of detailed problems and recommendations which will be contained in the Completion Report for Operation Redwing."

IV-1.1. CONCLUSION

Comparison of REDWING with CASTLE costs bears out the economy of a larger test series on a flexible schedule - dual capacity basis. CASTLE was comprised of five events at a cost of \$45,058,780. Redwing, with 17 shots, costing \$55,540,963 had 240% increase in events and about 12.3% increase in cost.

Recommendations

That future full scale overseas test series contemplate similar scope when economy will result and the individual events are as well justified. In general, it is thought most practicable to have a combination of several smaller events with the major events to allow flexibility and scheduling consistent with weather limitations.

III-3.2 LONG-RANGE PLANS AND BUDGETING

Conclusion

The Long-Range Report issued under date of 1 June, 1956, established a requirement for approximately \$14,500,000. of additional Plant Acquisitions and Construction during Fiscal Year 1958. Subsequent to an ALOO submission of proposed construction project of this magnitude, DMA reduced the project to an approximate \$8,000,000. scope. Principal deletions to the ALOO submission includes:

- | | |
|-------------------------------|--------------|
| a. Causeway | \$3,024,500. |
| b. New Hanger | 830,000. |
| c. Emergency Fallout Shelters | 1,000,000. |

Recommendation

That item "c", Emergency Fallout Shelters, be reconsidered for reinstatement in the amount of \$1,000,000. for sites Fred and Elmer pending conclusion of a study and estimates now in process. The TEWA incident was a high potential of how such shelters could possibly have prevented a costly and delaying total evacuation of the two base camps.

That the past system of developing revision to the Long-Range Report be continued with emphasis on inclusion of realistic essential and thoroughly justified requirements.

III-3.3 INTERIM PLANS

Conclusion

Interim plans have benefited by past experience. The scope of base facilities construction is large but probably will be considerably diminished in the budget approvals. Reduction in the Military Garrison is a major change in prospect for July of 1957.

Recommendation

On completion of the currently active "Supports Study" of ALOO, it is anticipated that an "Advance Planning Conference" will be held at ALOO. It is recommended that all elements having concern with advance planning develop tentative material for consideration at such a conference. The time of conference will be announced, together with a proposed agenda at the earliest possible date.

III-3.4 REDUCTION OF MILITARY GARRISON

Conclusion

This proposal of the Department of Army appears to be reasonably assured of being effected in July of 1957, subject to funding by CJTF SEVEN through assistance of the Chief, AFSWP. Relief to the Army and added activities of the AEC contractor are involved.

Recommendation

That a committee be formed at the operating levels of JTF SEVEN and ALOO to explore the unresolved details necessary to planning in advance for an orderly transition in the event of approval.

III-3.5 PLANNING OF TEMPORARY FACILITIES

III-3.6 PLANNING OF BASE FACILITIES

III-3.7 PLANNING OF SCIENTIFIC FACILITIES

Conclusion

Planning resulted in accomplishment of program goals. However, closer advance liaison would have improved coordination and expedited the necessary action.

Recommendation

That all elements of the Task Force endeavor to confer frequently and broadly with other elements concerned to effect better advance planning.

That CJTF SEVEN include AEC (TG 7.5) in consultations with the AEC Laboratories and Field Command, AFSWP, to assure information and coordination.

III-3.8 EVACUATION AND RE-ENTRY

"Reference

"Section 9. Evacuation and Re-entry

"Conclusion

This function was, from first to last, a well planned and executed part of operations. The problem was extensive, the results excellently participated in by all elements concerned. Here again was a demonstration of the value of past experience. A potential evacuation of the entire Eniwetok Atoll existed from 1800 hours on July 21 through a period of several hours but, fortunately, fallout at Eniwetok continued to drop from its peak sufficiently and therefore did not require execution of emergency evacuation plans.

"Recommendation

"Similar planning should be incorporated in the next operation".

III-3.9 NATURAL DISASTER AND HOSTILE ALERT PLANS
III-3.10 PLANS FOR OPERATION ROLL-UP
III-3.11 PLANS FOR INTERIM OPERATION OF PPG

"References

- "Section 15. Natural Disaster and Hostile Alert Plans
- "Section 16. Plans for Operation Roll-Up
- "Section 17. Plans for Interim Operation PPG

"Conclusion

"Planning was effective to the extent used, and as of this date.

"Recommendations

"Subject to further study".

Conclusion

The planning and necessary execution of plans for the above functions were well conceived and effected.

Recommendation

That close liaison be maintained throughout the interim period to make further improvement to planning and coordination for these functions.

That close liaison be continued in the forward area to assure similar success with future execution of these plans.

III-4 LOGISTICS, ENGINEERING AND CONSTRUCTION
thru
4.5.9

"References

- "Section 4. Engineering and Construction of Temporary Facilities.
- "Section 5. Engineering and Construction of Base Facilities.
- "Section 6. Engineering and Construction of Test Facilities.
- "Section 7. Management, Operations and Maintenance of Support Facilities.

"Section 8. Transportation.

"Conclusions and Recommendations of Section 3 hereof apply".

Conclusions and Recommendations

Covered by items referenced to Chapter 3, Plans and Operations.

III-5 COMMUNICATIONS

thru

5.9 Conclusions and Recommendations

Contained in the body of Chapter 5.

III-6 HEALTH AND SAFETY

thru

6.3 Conclusion

The referenced functions were adequate to the requirements.

Recommendation

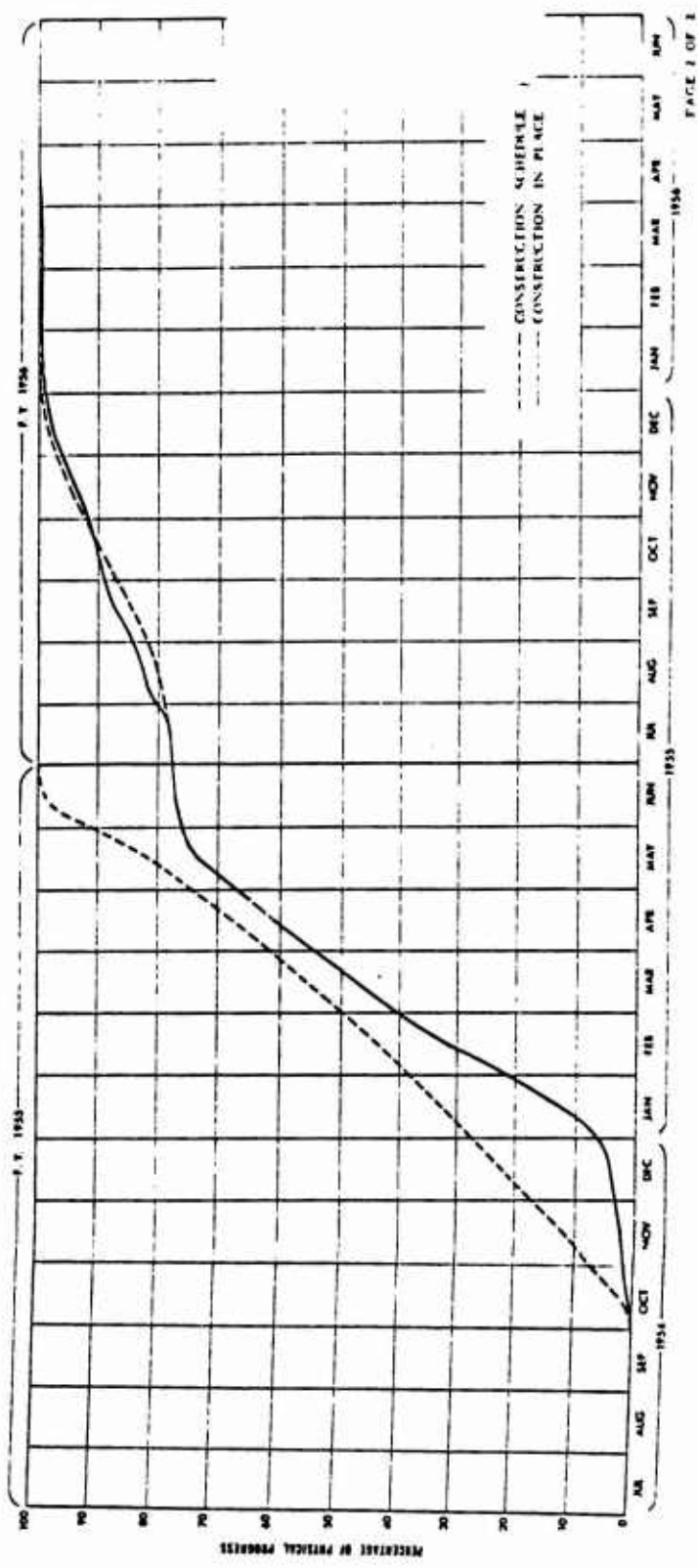
That planning include the same or, if possible, improved facilities and services in these functions.

III-6.4 RADIOLOGICAL SAFETY

Conclusions and Recommendations

Contained within the text of III-6.4.

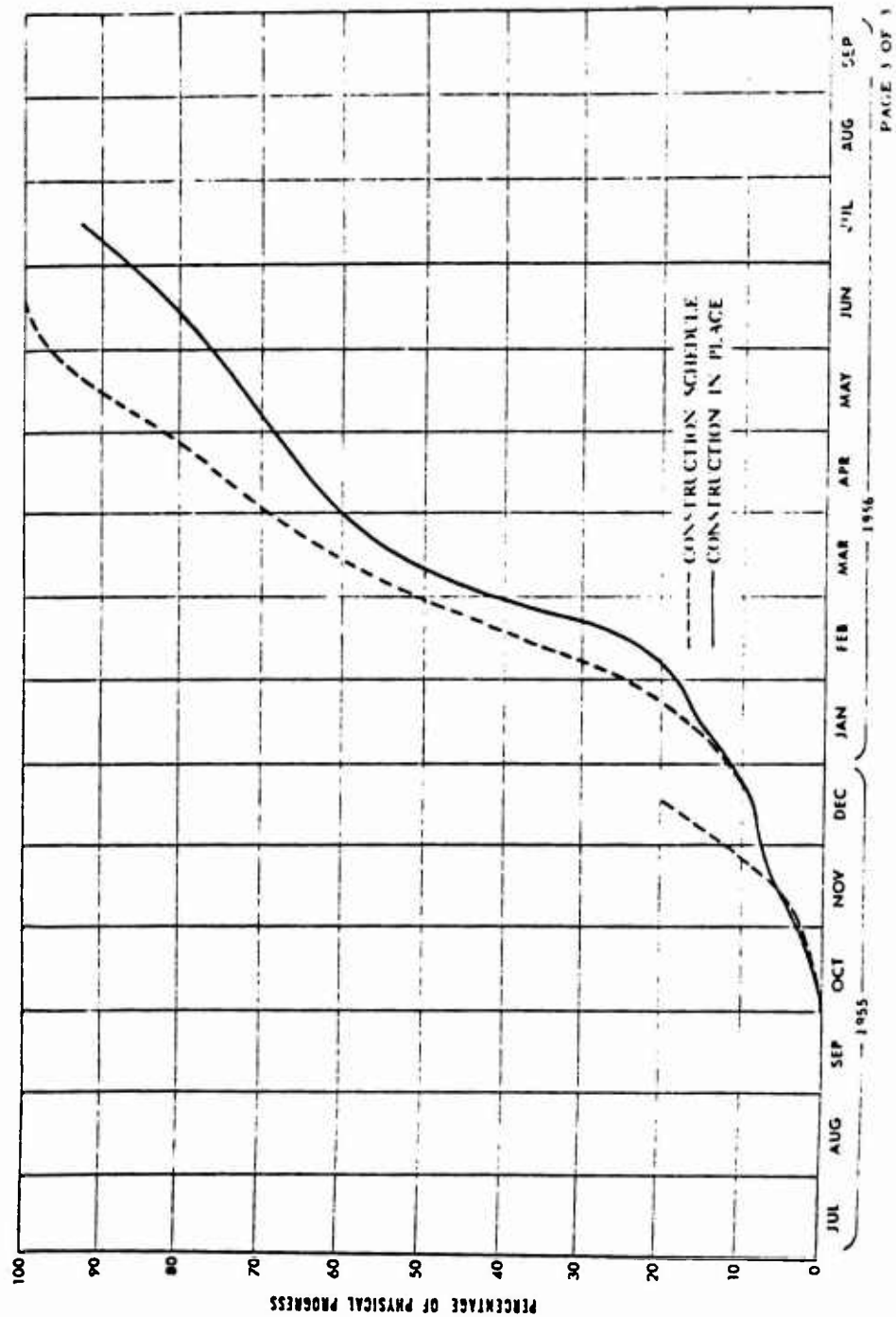
CONSTRUCTION ITEM												REMARKS											
SECOND SUBMARINE CABLE - ELMER/FRED																							
FIRE PROTECTION - ELMER																							
BARRACKS - FRED																							
MILITARY POLICE HQTRS. - FRED																							
DEEP WATER PIER - ELMER																							
GUEST HOUSE - FRED																							
CAMP & COMMUNICATIONS FACILITIES - DAVID																							
MACHINE SHOP - ELMER																							
MISC. CONSTRUCTION - FRED/ELMER																							
SUMMARY OF PROJECT \$024																							



Appendix III-4-A Construction Progress, P&E, FY 1955, Project 5026

CONSTRUCTION ITEM	1955												1956		
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
CHAPEL - ELMER	75.00														
	CONSTRUCTION SCHEDULE														
	ESTIMATED PERCENT														
GUARD OFFICE & QUARTERS - ELMER	75.00														
	CONSTRUCTION IN PLACE														
	PERCENT COMPLETED														
LABORATORY ADDITION BUILDING 223 - ELMER															
ADDITION TO ADMINISTRATION BUILDING - ELMER															
MARINE REPAIR BLDG. 420 - ELMER															
RECEIVING & CLASSIFICATION BUILDING - ELMER															
HOSPITAL ADDITION - ELMER															
BARRACKS (2) - ELMER															
LATRINES (5) - ELMER															
DISTILLATION PLANT ADDITION - ELMER															
UTILITY CONNECTIONS FOR BARRACKS & LATRINES - ELMER															
CRASH FIRE STATION - FRED															
FOR SUMMARY SEE FOLLOWING CHART															

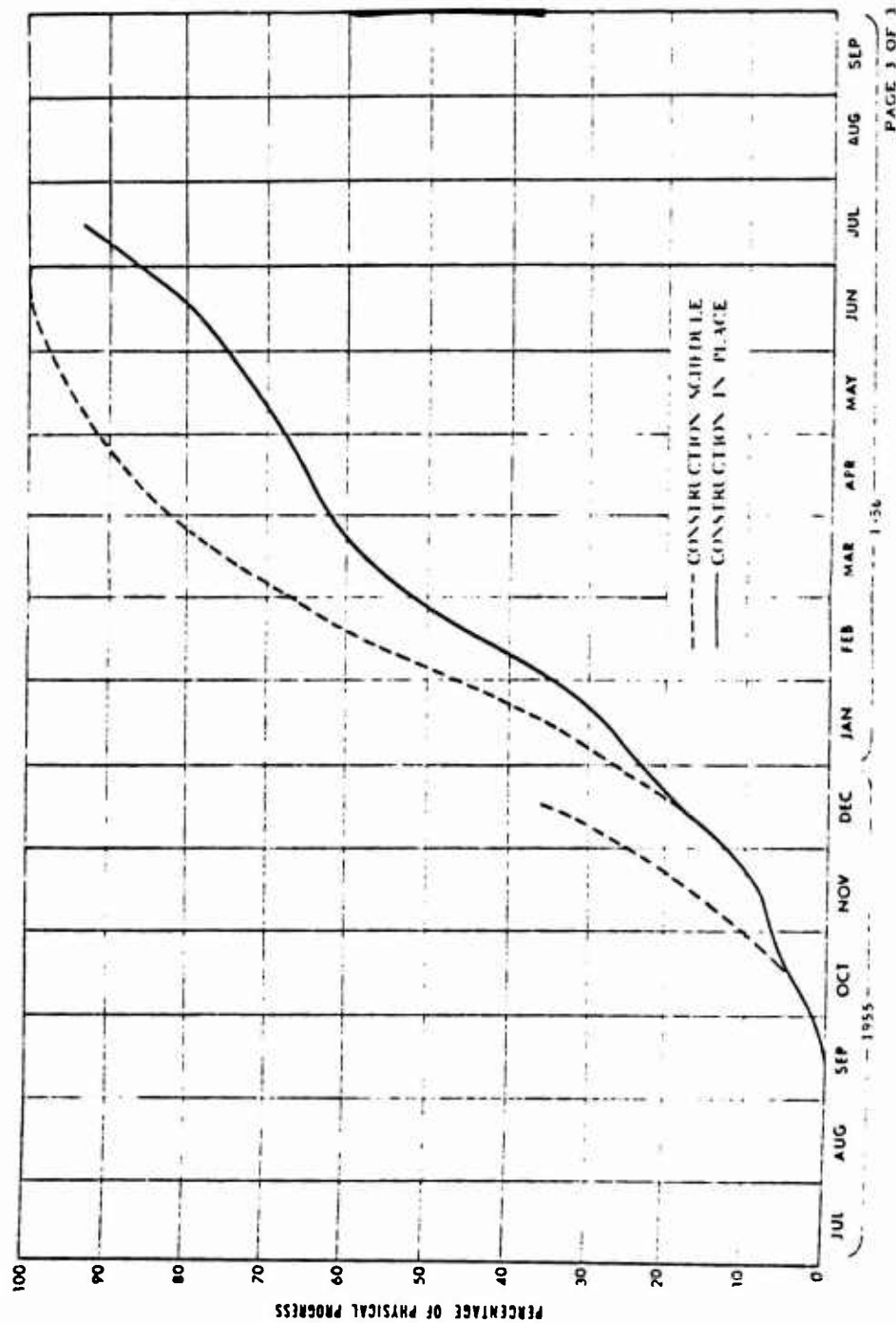
PAGE 101



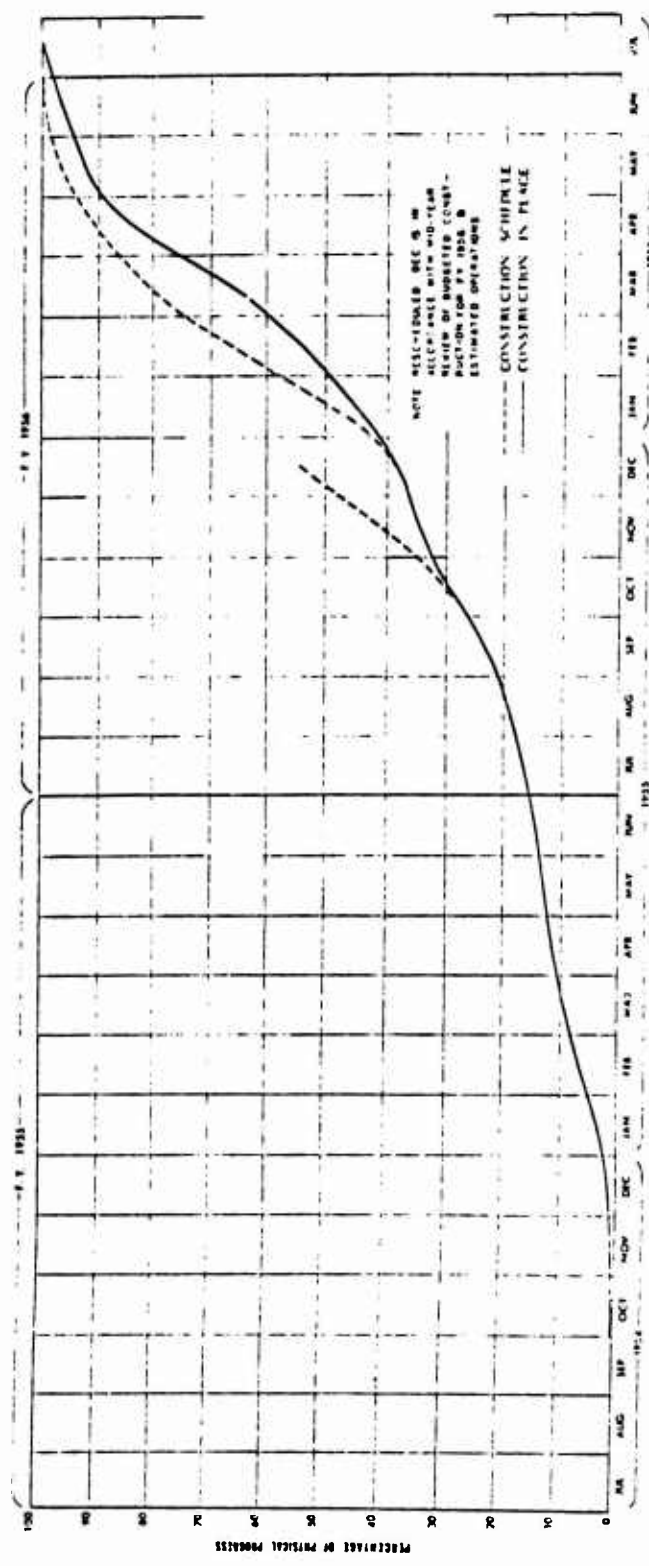
Appendix III-4-B Construction Progress, PLE, FY 1956, Project 6001

CONSTRUCTION ITEM	1955												1956			
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
CABINET SHOP & CONSTRUCTION MAINT. OFFICE - BLDG. 427 - ELMER											75.00	75.00	100.00			
PAIN'T SHOP - BLDG. 424 - ELMER											0.00	0.00	0.00	25.00		
PAIN'T STORAGE - BLDG. 425 - ELMER											0.00	0.00	0.00	40.00		
POL FACILITIES IMPROVEMENT - ELMER											0.00	0.00	0.00	20.00		
OPERATIONS & ADMINISTRATION BLDG. 679 - FRED											0.00	0.00	0.00	40.00		
CHAPEL - BLDG. 678 - FRED											0.00	0.00	0.00	20.00		
CONSOLIDATED FIELD MAINTENANCE SHOP - BLDG. 682 - FRED											0.00	0.00	0.00	40.00		
CONSOLIDATED FIELD MAINTENANCE SHOPS - BLDGS. 683 & 684 - FRED											0.00	0.00	0.00	40.00		
ELECTRONICS & COMMUNICATIONS BLDG. 681 - FRED											0.00	0.00	0.00	40.00		
ORDNANCE WAREHOUSE BLDG. 642 - FRED											0.00	0.00	0.00	40.00		
QM EXPENDABLE WAREHOUSE BLDG. 643 - FRED											0.00	0.00	0.00	40.00		
QM SALES WAREHOUSE BLDG. 644 - FRED											0.00	0.00	0.00	40.00		
CONSTRUCTION SCHEDULE																
ESTIMATED PERCENT																
FOR SUMMARY SEE FOLLOWING CHART																

PAGE 1 OF 3



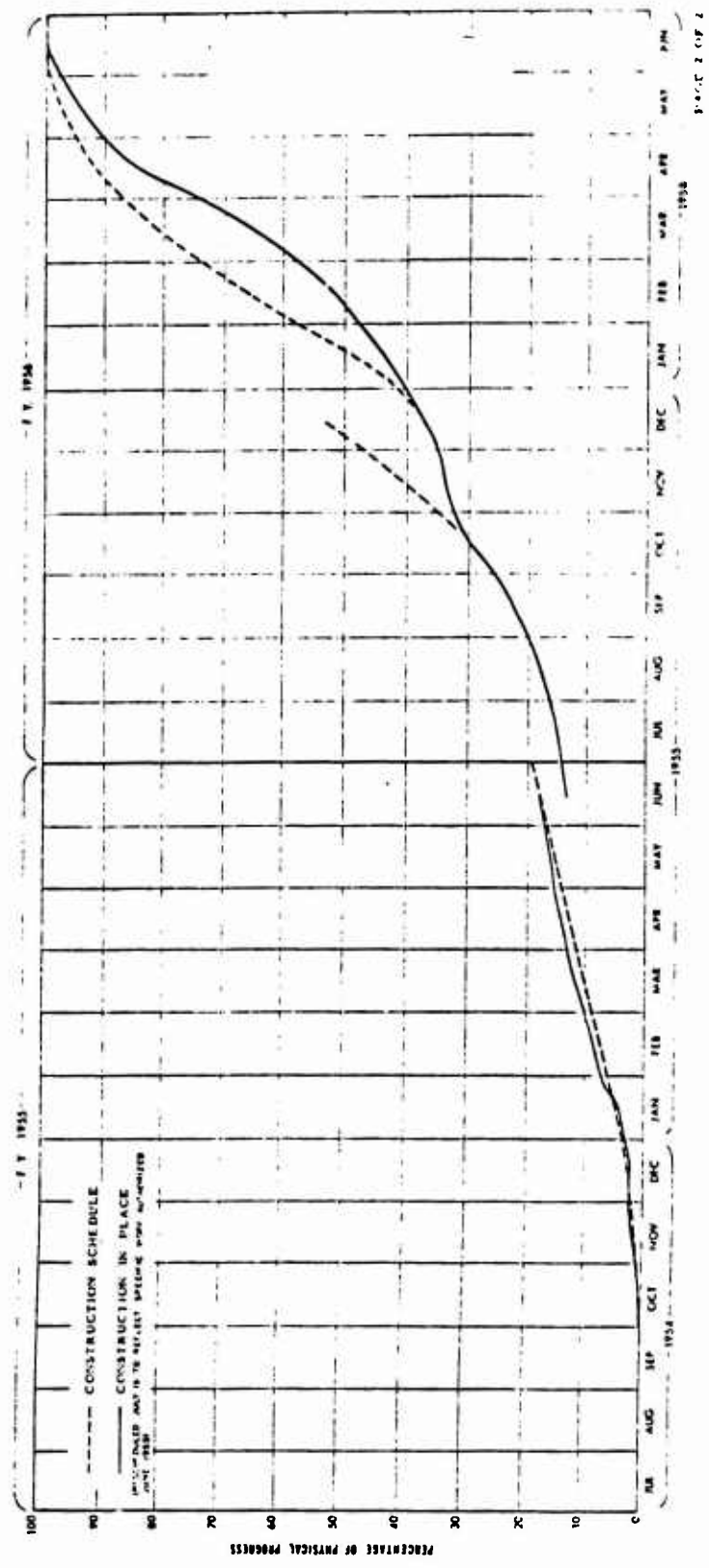
Appendix III-4-C Construction Progress, P&E, FY 1956, Project 6011



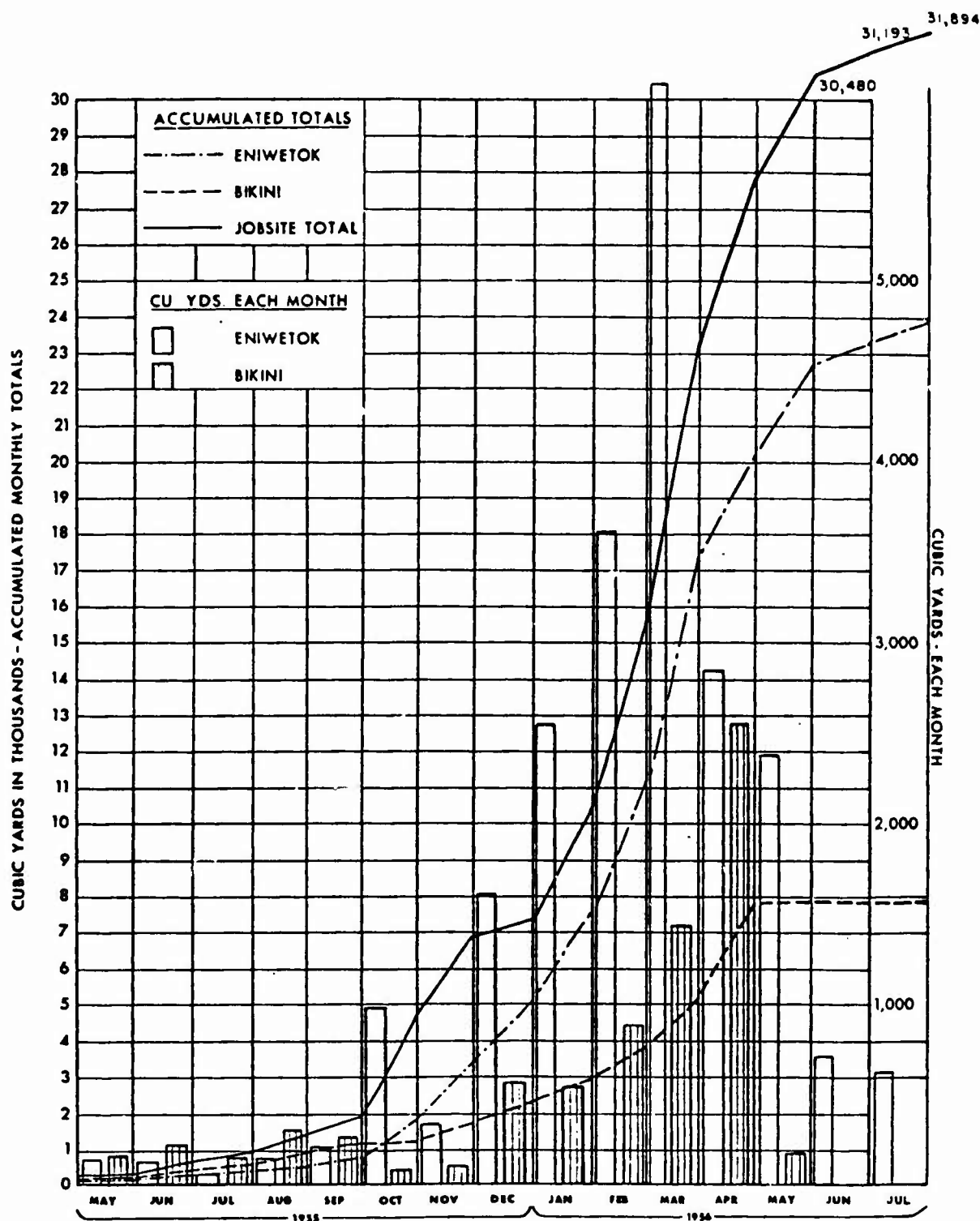
Appendix III-4-D Construction Program, P&E, FY 1956, All Projects

CONSTRUCTION ITEM	1955												1956												
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP										
SCIENTIFIC STATIONS - AEC			87	8,000	24,000	18,333	33,500	37,277	78,888	97,250	58,750	100,000													
SCIENTIFIC STATIONS - DOD			87	2,100	8,000	18,333	33,500	37,277	78,888	97,250	58,750	100,000													
CAUSEWAYS																									
INTERATOLL COMMUNICATIONS																									
SUBMARINE CABLE																									
ELECTRICAL POWER, COAX CABLE, TELEPHONE & SIGNAL																									
USERS TEST FACILITIES																									
MISCELLANEOUS TEST CONSTRUCTION OTHER THAN SCIENTIFIC STATIONS																									
MISCELLANEOUS EXPENDABLE CONSTRUCTION INCLUDING REIMBURSABLE																									
TEMPORARY CAMPS																									

Appendix III-4.3-E Scope of Construction, Test Structures



Appendix III-4.3-E Scope of Construction, Test Structures



Appendix III-4.3-G Concrete Poured - Both Atolls

APPENDIX III - 3.9H

HOLMES & NARVER, INC., Engineers - Constructors	Number: GA-3 Issue: 1 Page 1 of 10
JOB SITE PROCEDURE	Effective: 7 May 1956
Subject: JOB 942	Approved:
PRECAUTIONS IN CASE OF EMERGENCY	J. M. Lloyd, Resident Manager

INDEX TO PARAGRAPHS

- | | |
|--------------------|---------------|
| 1.0 PURPOSE | 4.0 POLICY |
| 2.0 SCOPE | 5.0 PROCEDURE |
| 3.0 RESPONSIBILITY | |

1.0 PURPOSE

To establish definite procedures for the guidance of all Administrative and Supervisory personnel in the event of an emergency.

2.0 SCOPE

This procedure is applicable to all Divisions, Departments and individuals as their respective functions may be delineated herein.

3.0 RESPONSIBILITY

3.1 Responsibility for determination, and direction of action required in emergencies will be assumed by the following individuals in the order in which they appear:

- A. Resident Manager
- B. General Superintendent - Construction
- C. General Supervisor - Service Operations
- D. Resident Engineer

3.2 The Area Superintendent - FRED will act under the direction of the General Superintendent - Construction, as provided in Paragraph 5.2.B. (3). He will also be responsible to the Atoll Commander for the performance of such duties as may be directed, as provided in Procedure GA-14, Paragraph 3.3.

4.0 POLICY

4.1 Emergencies, actual or imminent, are normally occasioned either by enemy action or natural causes such as typhoons or tidal waves. Emer-

APPENDIX III - 3.9H (Continued)

HOLMES & NARVER, INC., Engineers - Constructors JOBSITE PROCEDURE	Number: GA-3 Issue: 1 Page 2 of 10 Effective: 7 May 1956
Subject: JOB 942 PRECAUTIONS IN CASE OF EMERGENCY	Approved: J. M. Lloyd, Resident Manager

4.0 POLICY (Continued)

gencies will be declared ONLY by the Commander, Task Group 7.2, except during operational periods, when special directives may be issued.

- 4.2 An emergency will be announced by a series of 15-second siren blasts on the fire siren lasting for three minutes. Immediately upon such a signal, all men, except those assigned to emergency duty elsewhere, will assemble at the shop where their craft Superintendent is located (plumbers at plumbing shop, mess personnel in the mess hall, powerhouse personnel in the powerhouse, volunteer firemen at the firehouse, etc.) and wait for instructions. Division Heads will report immediately to the Resident Manager's office for instructions. In the absence of a Division Head, the next senior employee will act for him.
- 4.3 The action to be taken will depend upon the nature of the emergency, the instructions received from CTG 7.2, or other constituted authority, and the considerations enumerated below.
- 4.4 The end of an emergency will be announced by an "ALL CLEAR" Signal which will be a two minute "off and on" warbling signal of the fire siren.

5.0 PROCEDURE

5.1 Action in Case of Enemy Attack:

A. Each Department Head will:

- (1) Designate fire squads to man all available firefighting equipment in his area and to stand by to extinguish fires.
- (2) When ordered, carry out his part of the provisions of Joint Bulletin PPG #15, Amendment #1, "Destruction of Classified Documents", dated 13 October 1954, a copy of which has been distributed to all responsible individuals.
- (3) Man all radio and telephone communication facilities in his area.
- (4) Be prepared to disperse his personnel for their individual protection against enemy attack.

B. The General Supervisor - Service Operations will:

Man all available marine craft for use on call from CTG 7.2, or

APPENDIX III - 3.9H (Continued)

HOLMES & NARVER, INC., Engineers - Constructors	Number: GA-3 Issue: 1 Page 3 of 10
JOB SITE PROCEDURE	Effective: 7 May 1956
Subject: JOB 942	Approved:
PRECAUTIONS IN CASE OF EMERGENCY	J. M. Lloyd, Resident Manager

5.0 PROCEDURE (Continued)

other constituted authority.

- C. IN THE EVENT OF ATTACK WITHOUT WARNING, EACH PERSON SHALL PROTECT HIMSELF AS THE SITUATION DICTATES. GENERALLY, THE BEST PROTECTION WILL BE TO LIE FLAT ON THE GROUND IN THE DEEPEST HOLE AVAILABLE.

5.2 Action in Case of a Typhoon:

- A. When Condition II is declared (Condition II indicates that winds of 50 knots or more are anticipated within 24 hours):

(1) The Resident Manager will:

- (a) Order all field parties recalled.
- (b) Order all Construction personnel to prearranged areas.
- (c) Order stoppage of all construction requiring continuity, such as monolithic pours of concrete, and hold same in abeyance pending further instructions.
- (d) Order all medical facilities alerted.
- (e) Order all appropriate marine craft readied for emergency operations.
- (f) Order all power and distillation units not needed for minimum requirements to be secured and given all practicable protection.

- B.. When Condition I is declared (Condition I indicates that winds of 50 knots or more are anticipated within 12 hours or less):

(1) The Resident Manager will:

- (a) Order the emergency signal sounded.
- (b) Transmit appropriate warning to the Superintendents in charge at off-island camps.
- (c) Establish his command post in Building #208 for damage control operations, and arrange for a continuous watch to be stood at this station by designated Heads of Divisions. Courier service will be provided by the Office Manager.

(2) At off-island camps, the Superintendent in charge will:

APPENDIX III - 3.9H (Continued)

HOLMES & NARVER, INC., Engineers-Constructors	Number: GA-3 Issue: 1 Page 4 of 10
JOBSITE PROCEDURE	Effective: 7 May 1956
Subject: JOB 942 PRECAUTIONS IN CASE OF EMERGENCY	Approved: J. M. Lloyd, Resident Manager

5.0 PROCEDURE (Continued)

- (a) Secure power house and distillation plant.
 - (b) Secure "reefers" and leave stand-by generator running.
 - (c) Fill water tanks, and guy towers.
 - (d) Secure and guy all semi-permanent buildings.
 - (e) Assemble all equipment and vehicles with lightest vehicles stored in the center. Remove canvas tops and fold jeep windshields ahead to hood rest.
 - (f) Strike tents and store with tent furnishings in latrines and mess hall.
 - (g) Ensure that all cash and postage stamps in the hands of facilities are turned over to an Accounting Division representative for safekeeping.
 - (h) Move all personnel and classified documents into the most secure locations available.
- (3) The General Superintendent - Construction (on ELMER and, where applicable, on FRED) will:
- (a) Man and operate emergency radio set installed in the telephone room in the Administration Building for radio communications with TG 7.2 elements at FRED, or other superior headquarters.
 - (b) Activate a secondary frequency on the Marine Department set in H & N Marine Operations.
 - (c) Activate four (4) PRC-10 handie talkies on the above secondary frequency and deliver to:
 - (1) Resident Manager
 - (2) AEC Resident Engineer
 - (3) General Superintendent - Construction
 - (4) Supervisor - Industrial Relations.
 - (d) Monitor power and communication lines.
 - (e) Set up and prepare to operate standby generator to provide emergency power for hospital.
 - (f) Set up and prepare to operate three (3) 75 KW generators to provide emergency power for the galley "reefer" banks.
 - (g) Provide standby generators for radio and telephone communications.
 - (h) Provide emergency crews for:

APPENDIX III - 3.9H (Continued)

HOLMES & NARVER, INC., Engineers - Constructors	Number: GA-3 Issue: 1 Page 5 of 10
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Subject: JOB 942	Approved:
PRECAUTIONS IN CASE OF EMERGENCY	J. M. Lloyd, Resident Manager

5.0 PROCEDURE (Continued)

- (1) Electric service cut out
 - (2) Water service cut out
 - (3) Airfield clearance
 - (4) General salvage
-
- (i) Guy water towers.
 - (j) Secure all buildings; close doors and windows.
 - (k) Strike tents and store, together with furnishings, in any available space.
 - (l) Store vehicles and equipment in heavy equipment motor pool with light vehicles in center. Remove canvas tops and fold jeep windshields ahead to hood rest.
 - (m) Check lashings on quonsets.
 - (n) Pick up loose objects in barracks areas which could be dangerous to life if borne by high winds.
 - (o) Instruct all men not assigned to other duties to proceed to their assigned barracks building and report to the designated Barracks Leader for further instructions.
- (4) The General Supervisor - Service Operations will:
- (a) Haul out of the water and secure on the beach any craft, LCM size and smaller, which still remain in the water.
 - (b) Make final preparations for maximum security mooring of all other marine craft.
 - (c) When mooring operations are completed, withdraw all marine personnel ashore.
 - (d) Stand by to secure the distillation plants on order.
 - (e) Stand by to secure main power plant on order.
 - (f) Provide barracks accommodations for men moved out of tents.
 - (g) Distribute emergency rations to occupied barracks and to the Command Post in Building #208. Be prepared to replenish.
 - (h) Distribute emergency supply of potable water to occupied barracks and to the Command Post in Building #208. Be prepared to replenish.
 - (i) Issue two (2) flashlights to each of the following stations:

APPENDIX III - 3.9H (Continued)

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5.0 PROCEDURE (Continued)

- (1) Each occupied barracks building. (For use of the Barracks Leader)
- (2) The Command Post in Building #208. (For use of the Resident Manager)
- (j) Provide two (2) cots and associated bedding at the Command Post Building #208. (For use of personnel standing watch there)
- (k) Turn in to the Cashier in the Administration Building for safe-keeping, all cash and postage stamps in the hands of facilities.
- (1) Instruct all men not assigned to other duties to proceed to their assigned Barracks Building and report to the designated Barracks Leader for further instructions.
- (5) The Supervisor - Industrial Relations will:
 - (a) Be responsible for preparing and keeping up to date, a list of Barracks Leaders, with first and second alternates, plus instructions for their guidance in the control of personnel, sent to their barracks for safety during a typhoon emergency.
 - (b) Be responsible for preparing and keeping up to date, a list of Area Leaders, with first and second alternates, for the eight (8) different areas of the ELMER camp as defined hereunder and delineated on Appendix 1. He will also be responsible for preparing instructions for their guidance.
 - (1) Area #1 - All south of axis of air strip. Observation Post (OP) - Building #339 (Power House)
 - (2) Area #2 - All west of Sandstone Ave., and south of line drawn from Building #512 to cargo pier extending to axis of Air strip - Observation Post (OP) - Building #406 (Marine Dispatcher's Office)
 - (3) Area #3 - All north of line bounded by east west line through Tower #2 and west to Crossroads Ave.,

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5.0 PROCEDURE (Continued)

south to Brookhaven Road, west to Sandstone Ave., south to line connecting Building #412 and cargo pier - Observation Post (OP) - Building #410 (Power & Distillation)

- (4) Area #4 - All area enclosed by following lines - intersection Crossroads Ave. - Brookhaven Road; intersection Brookhaven Road - Sandstone Ave.; intersection Sandstone Ave. - Sandia Road; intersection Sandia Road - Crossroads Ave; back to intersection Crossroads Ave. - Brookhaven Road - Observation Post (OP) Building #201 (Mess Hall).
- (5) Area #5 - All area enclosed by following lines; intersection Crossroads Avenue - Sandia Road; intersection Sandstone Ave. - Sandia Road; intersection Sandstone Ave. extended to axis of air strip; axis air strip and beach line; beach line and Oakridge Road extended; then to Crossroads Ave. - Oakridge Road intersection and back to Crossroads-Sandia intersection - Observation Post (OP) Building #208 (Administration Building)
- (6) Area #6 - All area enclosed by following lines; intersection Sandia Road extended and beach line; intersection Crossroads Ave. - Sandia Road; intersection Oakridge Road - Crossroads Ave. and Oakridge extended and beach line - Observation Post (OP) - Building #222 (Badge Office)
- (7) Area #7 - All area enclosed by following lines; intersection of beach line with line drawn from intersection Crossroads Ave. - Cooper Road bisecting space between Barracks #109 and #115; intersection Crossroads Ave. - Cooper Road; intersection Sandia Road - Crossroads Ave. and Sandia extended to beach line. - Observation Post (OP) Building #117 (Hospital)
- (8) Area #8 - All area enclosed by following lines; intersection east-west line through tower #2 and beach line; intersection east-west line through tower #2 and Crossroads; intersection Cooper Road - Crossroads Ave. and intersection of beach line with line drawn from intersection Cooper Road - Crossroads Ave.

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5.0 PROCEDURE (Continued)

bisecting space between Barracks #109 and #115 -
Observation Post (OP) Barracks #102.

- (c) Arrange for distribution to men in barracks, of periodic information bulletins on the progress of the typhoon; and arrange also for periodic mustering and reporting of these men.
 - (d) Ensure readiness of Hospital facilities.
 - (e) Instruct all men not assigned to other duties to proceed to their assigned barracks building and report to the designated Barracks Leader for further instructions.
- (6) The General Supervisor - Supply will:
- (a) Take necessary measures to protect supplies and records.
 - (b) Instruct all men not assigned to other duties to proceed to their assigned barracks building and report to the designated Barracks Leader for further instructions.
- (7) The Resident Controller will:
- (a) Store ledgers, property cards, current time sheets and any other vital records in concrete vault.
 - (b) Store all money, including stamp and petty cash funds, in vault.
 - (c) Ensure that Cashier stands by for storage of classified documents and other important material which it may be necessary for other Divisions to place in vault.
 - (d) Make men available to other Divisions as needed.
 - (e) Instruct all men not assigned to other duties to proceed to their barracks building and report to the designated Barracks Leader for further instructions.
- (8) The Resident Engineer will:
- (a) Place tracings and theodolites in concrete vault.
 - (b) Make men available to other Divisions as needed.
 - (c) Instruct all men not assigned to other duties to proceed to the designated Barracks Leader for further instructions.

APPENDIX III - 3.9H (Continued)

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5.0 PROCEDURE (Continued)

(9) The General Supervisor - Administration will:

- (a) Ensure that classified documents are protected by removal by designated personnel to the concrete vault in the Cashier's cage in the Administration Building or, if so ordered destroyed.
- (b) Provide fire protection.
- (c) Provide security and fire patrol.
- (d) Provide for distribution of "safety hats" to working parties of all Divisions.
- (e) Provide for continuous operation of telephone and teletype facilities until directed by proper authority to discontinue.

5.3 Action in Case of a Tidal Wave:

A. Advance warning in case of a tidal wave may not be provided or, of short interval. Provided sufficient time is available before the arrival of a predicted tidal wave of major dimensions, action as indicated below will be taken:

(1) The Resident Manager will:

- (a) Order the emergency signal sounded.
- (b) If practicable, transmit appropriate warning to the Superintendent in charge at off-island camps.
- (c) Order shut-down of utilities.
- (d) Order actual embarkation of personnel from site ELMER.

(2) At off-island camps, the Superintendent in Charge will:

- (a) Take all practicable steps to safeguard his personnel, including their embarkation into such marine craft as are available to him.
- (b) Take similar action with respect to the classified material in his charge, particularly "Restricted Data", but not if such action will endanger the safety of his personnel.

(3) Each Department Head will:

APPENDIX III - 3.9H (Continued)

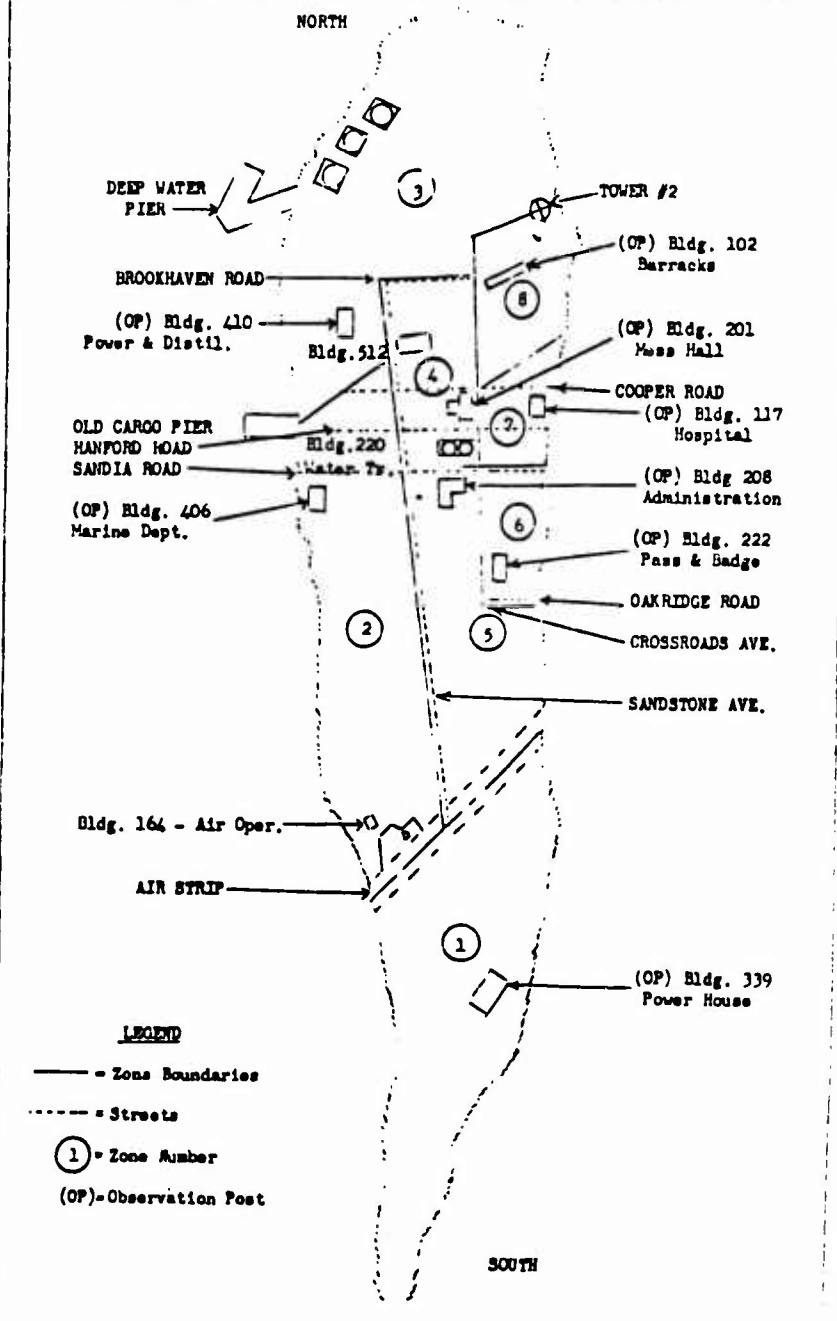
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5.0 PROCEDURE (Continued)

- (a) Direct the movement of his personnel to the designated embarkation point.
 - (b) If time permits, transport to the designated embarkation point all practicable classified material and equipment, particularly "Restricted Data", which normally falls within his custody.
- (4) The General Supervisor Service Operations will:
- (a) Immediately man all appropriate marine craft and stand by for emergency embarkation into those craft of all personnel from site ELMER.
 - (b) As practicable, maintain continuous radio communications with all manned marine craft.
 - (c) Be prepared, as practicable, to assist in the emergency embarkation into marine craft of personnel from site FRED.
 - (d) Be prepared to receive into the manned marine craft all classified material and equipment, particularly "Restricted Data", of all Task groups. However, such material shall not be loaded if such action will endanger the safety of the personnel.
 - (e) When ordered by the Resident Manager, shut down the power and Distillation plants.
 - (f) When ordered by the Resident Manager, embark all personnel from Site ELMER and move the loaded marine craft off the beach into a safe area of the lagoon.
- (5) The General Superintendent - Construction will:
- (a) If time permits, activate a secondary frequency on the Marine Dispatcher's set in H & N Marine Operations.
 - (b) If time permits, activate four (4) PRC-10 handi-talkies on the above secondary frequency and deliver to:
 - (1) Resident Manager
 - (2) AEC Resident Engineer
 - (3) General Superintendent - Construction
 - (4) Supervisor - Industrial Relations

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JOBSITE PROCEDURE

Effective: 23 July 1956

Subject: JOB 942

Approved:

ROLL-UP AND RECOVERY OF MATERIALS

John R. Kaiserman, Resident Manager

INDEX TO PARAGRAPHS

1.0 PURPOSE	7.0 REMOVAL OF MATERIAL
2.0 SCOPE	8.0 MOVEMENT OF MATERIAL
3.0 DEFINITIONS	9.0 RECEIPT OF MATERIAL
4.0 RESPONSIBILITY	10.0 CLEANING AND REPAIRING
5.0 AUTHORIZATION AND ACCOUNTING	11.0 STORAGE OF MATERIAL
6.0 MATERIAL RETURNABLE	

1.0 PURPOSE

- 1.1 To establish procedure to govern the activities involved in the "Roll-Up and Recovery", from off-island Sites, of such materials as may be specifically designated by Management.
- 1.2 To delineate lines of authority and responsibility.
- 1.3 To define the "terms" and scope of activities involved in the operation of salvage and recovery.

2.0 SCOPE

- 2.1 This procedure is applicable primarily to the Supply Division, and to all other Divisions for supporting functions.

3.0 DEFINITIONS

- 3.1 The functional and objective terms used herein are defined as:

- A. "Roll-up and Recovery": The actions involved in the dismantling of facilities, removal, movement, and disposal or storage of materials after an operation.
- B. "Materials": Any item of supplies, equipment, property, structures, or components of facilities used in construction, maintenance, or operations, when not specifically designated otherwise.

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ROLL-UP AND RECOVERY OF MATERIAL

John R. Kaiserman, Resident Manager

3.0 DEFINITIONS (Continued)

- C. "Economically Salvaged": When the cost of removal and movement of an item is less than the monetary value.
- D. "Economically Repaired": When the cost of rehabilitation of an item, exclusive of other costs, is less than the monetary value thereof.
- E. "Economically Recoverable": When the cost of removal, movement, or rehabilitation of an item, or any combination thereof, is less than the monetary value.
- F. "Movable Equipment": Those items of equipment designated as mobile or stationary, and miscellaneous, which are not installed as an operating component of a structure or facility.
- G. "Installed Equipment": Items of equipment which are installed as operating components of a structure or facility.
- H. "USER'S Equipment": Such items of equipment as may belong to participating agencies other than H&N, or AEC, and for which H&N has not assumed property accountability.

4.0 RESPONSIBILITY

- 4.1 The recovery of "material" is the "overall" responsibility of the Supply Division.
- 4.2 Collateral responsibility resides in the Divisions listed herein, for performance of such of the following functions as Management may determine are required for completion of the program as outlined in published "Roll-up schedules".
 - A. Construction-Maintenance:
 - (1) Utilities Department - Removal of valves, water closets, tanks, urinals, meters, water system pumps, sinks, boilers, and other allied plumbing materials and equipment. Aid, when called upon, in removal of messing equipment. Repair of all pumps, lockers, and other plumbing and sheet metal work after return of material.
 - (2) Electrical Department - Removal of transformers, generators, motors, and control panels; signal, radio, telephone, projection and amplifier equipment; refrigerators, dehumidification units,

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John R. Kaiserman, Resident Manager

4.0 RESPONSIBILITY (Continued)

portable generators, water coolers, and other electrical materials and equipment. Inspection and repair of all electrical items after return to base facility.

- (3) Mechanical Department - Removal of all mechanical repair equipment and tools; lubrication equipment and tools; parts in repair shop stocks; machine tools, welding equipment and other items used by the Mechanical Department. Repair of mechanical and engine components of all equipment submitted for same after return to base facility. Removal of all heavy equipment and vehicles from non-camp sites; aid to all other departments requesting same within normal rigging duties; heavy lifts to trailers and boats.
- (4) Building-Maintenance Department - Dismantling of stations, buildings and towers; cleaning up of areas and removal of movie screens, benches, fencing, etc.

B. Service Operations Division:

- (1) Camp Department - Removal of beds, messing equipment and materials, bar equipment and stocks, PX stocks, lockers, camp chairs and tables, mattresses and pillows. Cleaning and inspection of all camp and messing equipment after return to base facility, routing of materials and equipment not immediately required for use, to the Supply Division for storage, or to appropriate shop for repair and/or painting. Boxing of dishes and pots and pans prior to return to Supply Division. Sorting of mattresses prior to return to Supply Division.
- (2) Marine Department - Removal of all marine equipment; providing transportation, as required for shipment of all "roll-up" items overhaul and mothball of inactive marine equipment; clean-up of all DUKWS before return to the lending agency, including flushing with fresh water.
- (3) Power and Distillation - Removal of all power and distillation equipment and tools; securing of all remaining installations and equipment, including provision for reduction of humidity, rust prevention, and mothballing and cocooning of all power and distillation equipment placed in storage.

C. Engineering Division: Removal of all survey and engineering equipment, data, and drawings.

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John R. Kaiserman, Resident Manager

4.0 RESPONSIBILITY (Continued)

- D. Industrial Relations Division: Removal of all hospital and safety equipment and personnel records.
- E. Accounting Division: Removal of all monies, accounting records, timekeeping equipment and records, cash registers, safes, and office machines.
- F. Supply Division: Is responsible for the following:
 - (1) Removal of all warehouse stocks.
 - (2) Pick-up and loading of all roll-up materials.
 - (3) Scheduling of transportation.
 - (4) Coordination with, and advance notification to, Marine Department regarding requirements.
 - (5) Off-Loading of ships and carriers.
 - (6) Coordination of, and requests for men and equipment from Heavy Equipment Section, when required.
 - (7) Control of, and responsibility for, movement of all materials and equipment during shipment.
 - (8) Distribution of materials and equipment after return to base facility.
 - (9) Preservation of warehouse stocks.
 - (10) Strapping and dunnage of beds after return from Camp Department.
 - (11) Provision of storage space where required, and available.
 - (12) Accounting for returned materials in accordance with established accounting procedures.
 - (13) Routing of equipment and material for repair when necessary.
- G. All Divisions - Shall be responsible for security and return, or proper disposal, of classified documents in their possession on "roll-up" sites. All are responsible for co-ordination and implementation of the "roll-up" of "User's" equipment and material as required.

APPENDIX III-3.10-I (Continued)

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ROLL-UP AND RECOVERY OF MATERIAL

John R. Kaiserman, Resident Manager

5.0 AUTHORIZATION AND ACCOUNTING

5.1 All work involved in "Roll-up and Recovery" is authorized under specific work Authorizations issued to cover the complete handling, removal, shipment, and storage of each type of material. All related labor and materials used in effecting such "roll-up" and "recovery" (but not repairs) is charged to the appropriate "Roll-up" Work Authorization.

5.2 ALL COSTS OF REPAIRING or REHABILITATING equipment or materials recovered in the "Roll-up" program are chargeable to the appropriate "Maintenance Work Authorization", as provided in Procedure F-2.

6.0 MATERIAL RETURNABLE

6.1 All material of a standard stock nature, which is "economically salvable" is returned to stores at the nearest warehousing activity. Material which is of special design, and for which no use is anticipated at any future date, is not returned, nor is material which is damaged beyond "economical repair".

6.2 "Movable equipment" is returned unless surveyed. "Installed equipment" is subject to the same economy determinations as materials.

7.0 REMOVAL OF MATERIALS

7.1 The removal of materials and equipment is the responsibility of the installing and maintaining Division, or of the "using" Division, if the equipment or materials are specifically assigned for use by that Division. Each Department Head in each area is responsible to his Division Head for removal of that portion of materials and equipment which are the responsibility of his Division.

7.2 The Area Superintendent is responsible for all local coordination of removals of material.

7.3 Published "Roll-up and Recovery" Schedules are adhered to in order to best utilize available manpower, and shipping space, and to co-ordinate all activities within the overall operation schedule.

8.0 MOVEMENT OF MATERIALS

8.1 When materials have been removed, and are ready for return to a permanent base facility, the Department removing, or responsible for the

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8.0 MOVEMENT OF MATERIALS (Continued)

material notifies the Supply Division Shipping and Receiving Activity. All arrangements for loading and transporting, including arrangements with the Marine Department and Riggers, is made by the Supply Division in accordance with existing procedures.

8.2 Removal of material from sites where no warehousing activity exists is the responsibility of the Construction-Maintenance Division.

9.0 RECEIPT OF MATERIALS

9.1 When material arrives at the permanent base facility, the Supply Division Shipping and Receiving Activity unloads and routes material in accordance with the following schedule:

- A. All warehouse stock to the appropriate warehouse.
- B. All furniture, desks, office equipment, and other property items are first, routed to the Property Warehouse. All typewriters and office machines are re-routed to the Typewriter Repair Shop for conditioning and storage. All desks and tables, when requiring repairs are sent first, to the Carpenter Shop, thence to the Paint Shop, and then returned to the Property Warehouse for storage. All file cabinets, if requiring repainting, are routed to the Paint Shop, and then returned to the Property Warehouse for storage.
- C. All generators are sent to an area specified by the Electrical Department. Prime movers requiring repairs are routed to:
 - (1) Mechanical Department, if under 100 KW capacity.
 - (2) Power Department, if over 100 KW capacity, or lesser capacity if the unit is normally operated by the Power Department.
- D. All household refrigerators are routed to the Property Warehouse, then to the Refrigeration Department for reconditioning if required. All walk-in reefers are sent to an area designated by the Electrical Department.
- E. All heavy equipment to the Mechanical Shop, or to Deadline Area, if work load is too heavy for immediate action.
- F. Aluminum lockers to the Sheet Metal Shop and then rerouted to the Electrical Shop for inspection. After inspection and repair, the

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9.0 RECEIPT OF MATERIALS (Continued)

Supply Division stores all lockers.

- G. All vehicles to the Motor Pool where they will be rerouted to the Mechanical, and Paint Shops if in need of repair and/or painting.
- H. Electric fans to the Property Warehouse where they will be rerouted to the Electrical Department for repair if required, and returned to Property Warehouse.
- I. Transformers to Property Warehouse where they will be rerouted to the Electrical Generator Shop, if repairs are necessary, and then returned to the Property Warehouse.
- J. Pumps to Property Warehouse where they will be rerouted to Plumbing or Distillation Department, if repairs are required, and then returned to the Property Warehouse.
- K. Messing equipment to an area specified by the Camp Department.
- L. Camp Supplies to the Camp Department Warehouse.
- M. Mattresses and beds to an area specified by the Camp Department.
- N. "USER'S" material to the AEC Warehouse.
- O. Shacks and miscellaneous buildings to Salvage Area, North end of Parry Island.
- P. Marine equipment to areas specified by the Marine Department.
- Q. Navy cubes to the Material Yard.
- R. Prefab buildings and towers to Material Yard, unless specified for "matchmarking" on North end of Parry Island.
- S. Tentage and canvas to the Material Yard.
- T. Radio and signal equipment to the Radio Shop.
- U. Fire equipment and vehicles to the Fire Station, with vehicles to be rerouted to Mechanical Department for inspection and repair, if required.
- V. PX items to the PX, or PX Warehouse.

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9.0 RECEIPT OF MATERIALS (Continued)

W. Medical supplies to the Hospital

X. Hospital equipment to the Property Warehouse.

Y. Survey equipment to the Engineering Division.

9.2 All Items are subject to prior delivery to Rad-Safe Areas in case of actual, or suspected contamination.

9.3 Surveys of equipment not economically repairable are initiated by the "USING" Activity, and processed by the Supply Division in accordance with the provisions of Procedure D-3.

10.0 CLEANING AND REPAIRING

10.1 Messing equipment is cleaned by the Camp Department. Items not repairable or usable are disposed of; a survey being required for property items. "Request For Survey", Form 1 D-16, should be prepared and routed to the Supply Division in accordance with the provisions of Procedure D-3.

A. Non-Property items are accepted for storage by the Supply Division if boxed. These items are not credited, dollarwise, to camp expenditures unless of a supplies nature.

B. Property items are accepted for storage, after cleaning, at the Property Warehouse. Inspection and repair of same is made by the Electrical, Plumbing, or Mechanical Departments, as applicable.

C. Beds are routed by Camp Department through the Paint Shop for sand-blasting and painting if required. Subsequent dunnage, strapping and storing is the responsibility of the Supply Division.

D. Mattresses are inspected by the Camp Department, and unsanitary and badly torn mattresses are disposed of by dumping. Storage space is provided by the Supply Division.

10.2 All Heavy equipment, vehicles and mechanical items are repaired by the Mechanical Department, painted by the Paint Shop, and lubricated by the Lube Shop as necessary. Water is drained from the radiators of all mothballed equipment, and batteries removed, if of the type utilizing such units.

10.3 All pumps are inspected and repaired by the Plumbing Department, unless

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ROLL-UP AND RECOVERY OF MATERIAL

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10.0 CLEANING AND REPAIRING (Continued)

specifically maintained by the Distillation Department.

10.4 All electrical items are inspected and repaired by the Electrical Department as required.

10.5 All items requiring sheet metal work are repaired by the Utilities Department.

10.6 All Items requiring wood work, and/or finishing are repaired by the Building-Maintenance Department.

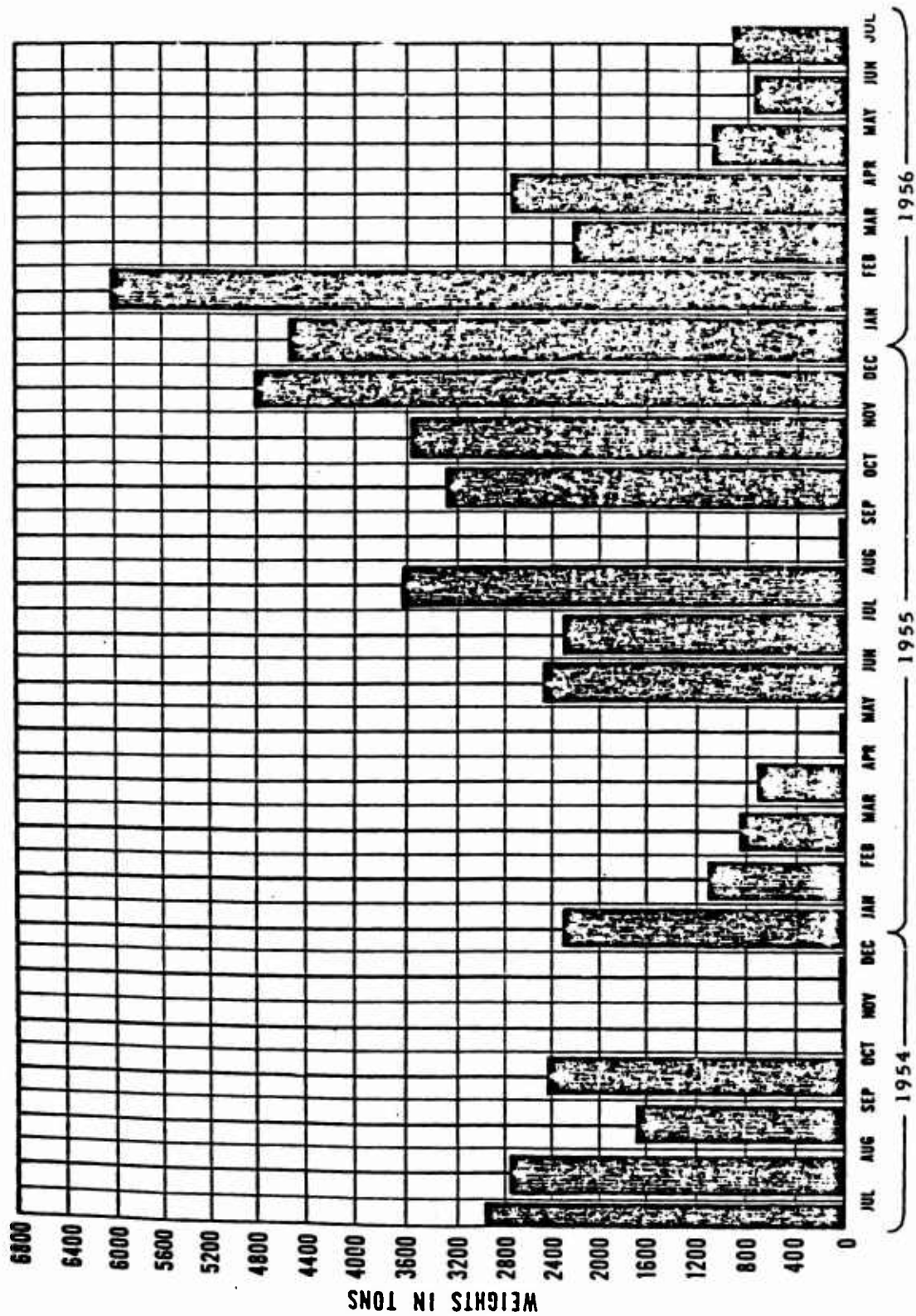
11.0 STORAGE OF MATERIALS

11.1 All Final storage is provided by the Supply Division, and when accepted for storage, is properly recorded in accordance with existing procedure with the following exceptions:

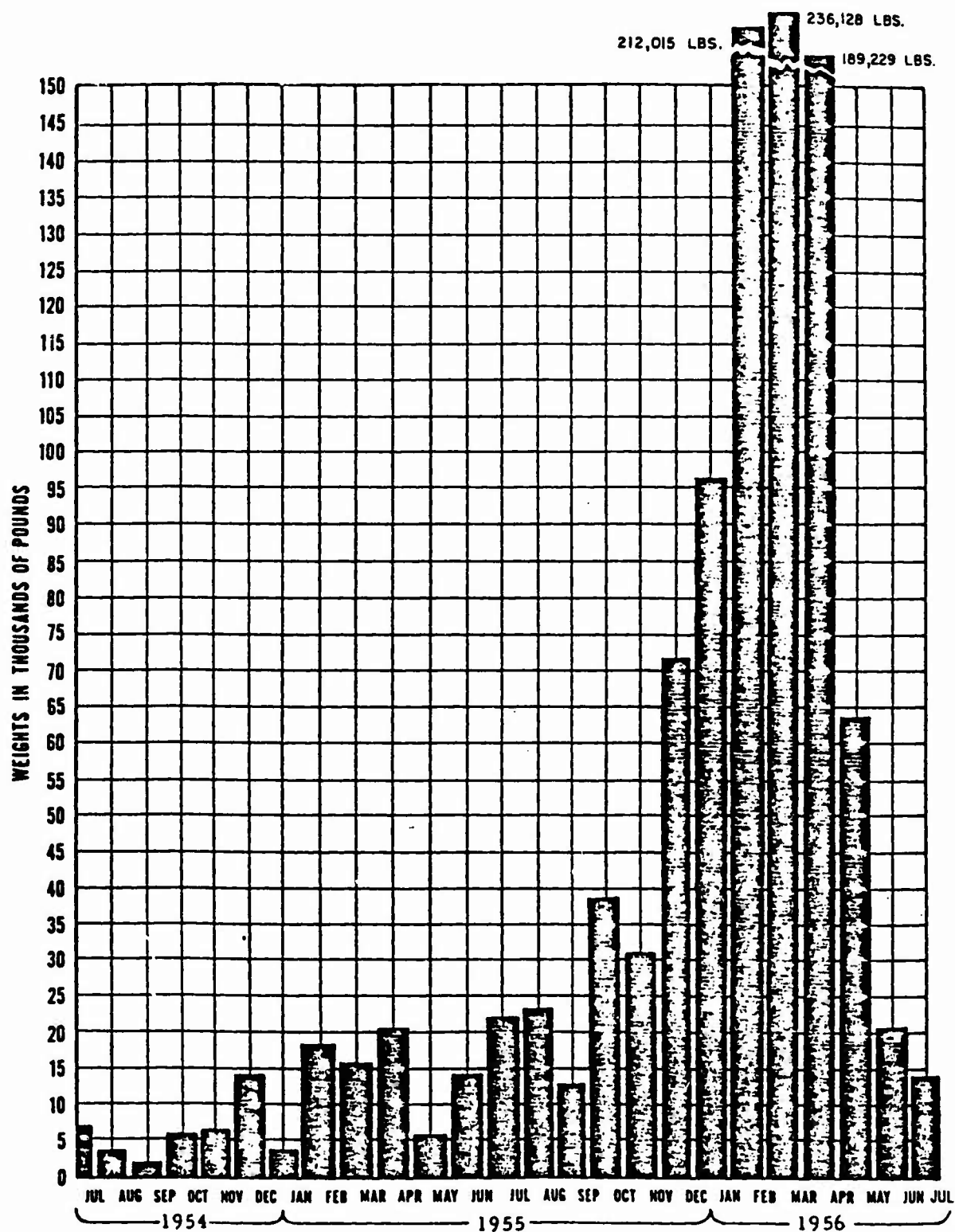
- A. Items on M/R loan from the Department of Defence, or other Government agencies, and no longer required, are returned to the lending agencies. No such material is ever disposed of, even if unserviceable, but is turned in to the Property Warehouse, for return on a "fair wear and tear" basis.
- B. Vehicles and heavy equipment may be placed in service, if required or mothballed by the Mechanical Department, and placed in deadline storage.

JRK/HGM/egs

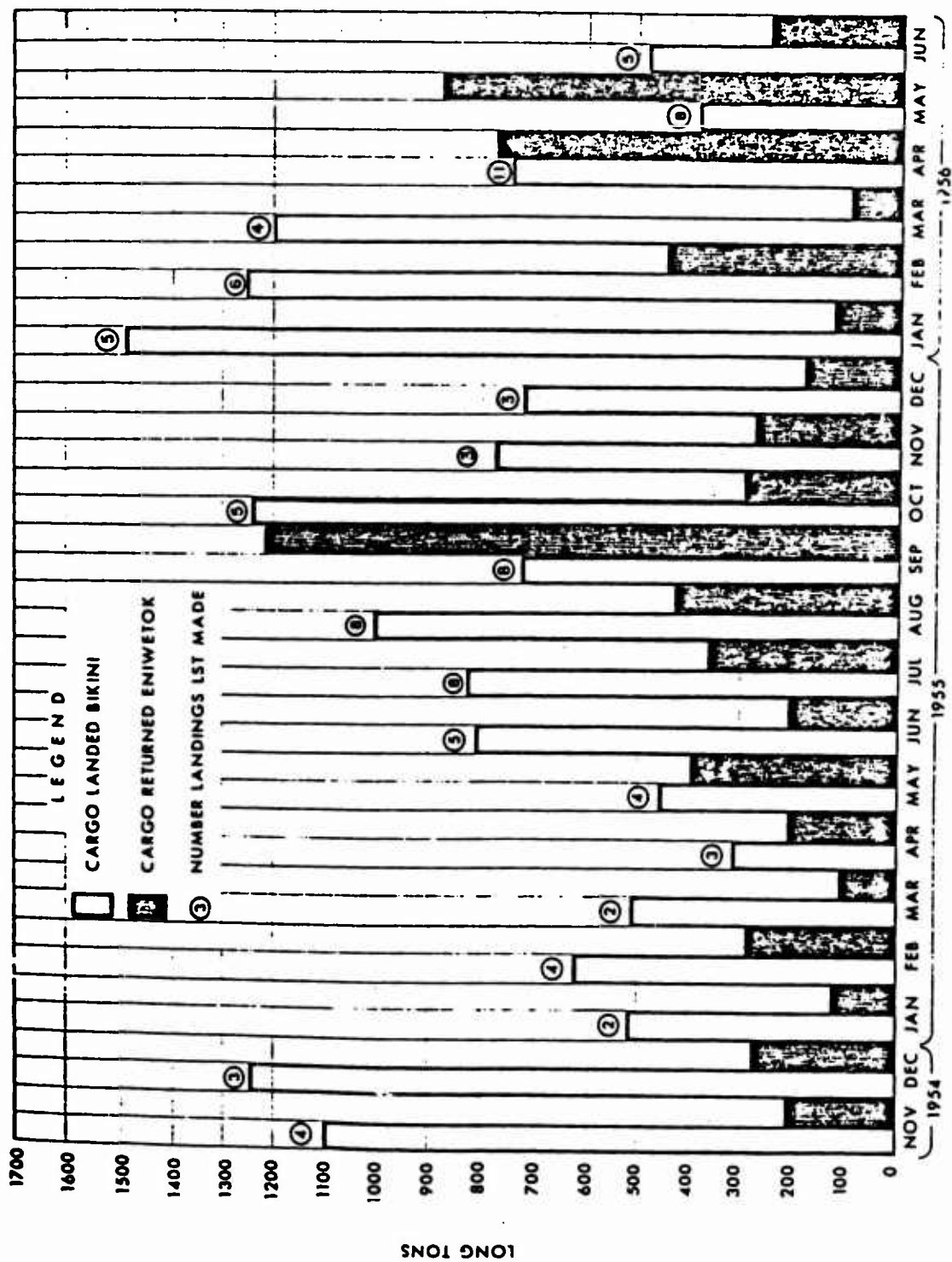
DISTRIBUTION "B"



Appendix III-4.5-J Water Shipment Chart



Appendix III-4. 5-K Airlift Shipment Chart



Appendix III-4. 5-L LST Cargo - Eniwetok and Bikini

Appendix III-4. 5-M

Summary of Passenger and Cargo Lift

TG 7. 5 Boat Pool

Month	ENIWETOK		BIKINI	
	Tonnage	Passengers	Tonnage	Passengers
July 1954	87,500	8,900		
August	149,000	7,900		
September	89,000	8,100		
October	44,000	7,600		
November	61,000	8,200		
December	42,000	6,100	5,200	800
January 1955	29,000	5,700	7,000	690
February	24,000	5,600	4,000	750
March	21,000	5,200	6,000	720
April	41,000	8,800	6,500	850
May	42,000	9,200	6,000	900
June	39,000	8,700	11,000	1,500
July	39,000	9,100	15,500	2,100
August	62,000	12,300	16,000	2,500
September	112,000	9,800	16,000	2,100
October	119,000	13,100	13,000	2,200
November	114,000	14,300	16,000	4,300
December	107,000	14,500	26,000	7,700
January 1956	104,000	15,200	34,000	7,800
February	106,000	15,900	33,000	7,000
March	131,000	21,900	51,000	7,900
April	158,000	27,200	49,000	9,000
May	148,000	30,200		

APPENDIX III-4. 5 N

Summary of Light Vehicles

H&N Control

Site	Jeep	Pickup	Power Wagon	WC-PC	HM Trucks	Scooters	Bus-Ambulance	Totals
Elmer	45	7	20	20	23	5	4	124
Fred	7	1	5	3	8	2	0	26
Gene	3	0	1	1	3	0	0	8
Ursula	4	0	2	2	3	0	0	11
Yvonne	4	0	1	1	6	0	0	12
Fox	2	0	3	4	2	0	0	11
Nan	14	0	4	5	5	1	2	31
Tare	<u>3</u>	<u>0</u>	<u>0</u>	<u>5</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>10</u>
TOTAL	82	8	36	41	52	8	6	233