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36 526 US ATOMIC ENERGY COMMISSION

J-DIVISION
LOS ALAMOS SCIENTIFIC LABORATORY
UNIVERSITY OF CALIFORNIA
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18 December 1952

124358

MEMO TO: Carroll L. Tyler, Test Manager

FROM : Test Director, J-Division, LASL

SUBJECT: OPERATION PLAN, CONTINENTAL ATOMIC TESTS, SPRING 1953

SYMBOL : J-15202

SPECIAL RE-REVIEW
FINAL DETERMINATION
SRD, DATE: 1-13-81

~~TELETYPE VERSION ONLY~~

1. Introduction

Atomic tests currently planned for the Spring of 1953, to be conducted at the Nevada Proving Grounds, are divided into two operations.

- a. The first group of tests, code name UPSHOT, is of primary interest to the Atomic Energy Commission and will consist of six detonations proposed by the Los Alamos Scientific Laboratory, and two detonations proposed by the Radiation Laboratory, Livermore. These tests are concerned primarily with weapon development but will include weapon effects and civil effects tests, and hence have a secondary interest to the Department of Defense and to the Federal Civil Defense Agency. Although no formal request has been received by the Test Director, plans have been discussed for participation by the Department of Defense in several or all of these tests with an operation designated as Desert Rock V.
- b. The second group of tests, code name KNOTHOLE, has been requested by the Department of Defense, and will consist of two detonations, the first being an air burst of a [redacted] weapon accompanied by a comprehensive program of experimentation of primary interest to the Department of Defense, and the second being a "proof-firing" (air burst) of the [redacted] weapon, also accompanied by considerable experimentation of primary interest to the Department of Defense. Although no formal requests have been received by the Test Director, it is understood the Department of the Army will conduct tactical maneuvers during the [redacted] tests in addition to the Desert Rock V program. The Los Alamos Scientific Laboratory will make the alpha and yield measurements for Operation KNOTHOLE.

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Operation Plan, Continental Atomic Tests, Spring 1953 -- 18 December 1952

c. It is the purpose of this document to list the proposed program of operation for these tests, to enumerate the Test Director's organization required to conduct them, to state requirements for military and other agency support, and to list the experimental program participation in the various tests.

2. Program for Operation UPSHOT/KNOTHOLE

Although the weapons to be detonated in Operation KNOTHOLE are considered firm, the number and design of the devices to be tested in Operation UPSHOT have not been firmly specified. Current planning provides for the following firing schedule:

<u>Description</u>	<u>Date</u>	<u>Area</u>	<u>Air/Tower</u>
	17 March '53	3	300' tower
	24 March '53	4	300' tower
	31 March '53	7-5a	300' tower
	6 April '53	7-2	Air Drop
	11 April '53	2	300' tower
	18 April '53	4a	50' tower
	25 April '53	1	300' tower
	2 May '53	3a	300' tower
	4 May '53	F	2420' air (H.E. only)
	7 May '53	F	2420' air drop
	21 May '53	F	500' air burst

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In addition to the nuclear detonations, it is considered advisable to conduct a complete dress rehearsal prior to the Effects test. The magnitude of (a) the air support and participation operation, (b) radio frequencies, (c) the smoke test problems, (d) the funds invested in structures and instrumentation, and (e) the inexperienced personnel who will participate, all justify the decision for a complete dress rehearsal.

3. Test Director's Organization

Enclosure "A" shows the Test Director's organization considered necessary to accomplish the tests.

4. Military and Other Agency Support

Support from the following agencies is considered necessary for these operations. Formal requests for the services enumerated are covered in separate documents.

a. Air Weather Service (USAF)

- 1) Local atmospheric conditions at shot times. These include temperature, humidity, pressure, density, velocity, and direction from ground surface to 50,000'.
- 2) General U.S. weather information, including daily weather maps.
- 3) Detailed forecasting from approximately two weeks before to the completion of the tests.

b. Aircraft Support (SWC)

- 1) Bomb delivery and disaster aircraft.
- 2) Manned cloud-sampling aircraft.
- 3) Manned cloud-tracking aircraft for airway clearance and off-site radiological safety from the Nevada Proving Grounds to a 500 mile radius.
- 4) General purpose helicopters and liaison-type aircraft primarily for use by the rad-safe unit.

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Operation Plan, Continental Atomic Tests, Spring 1953 -- 18 December 1952

- 5) Logistic support aircraft for cargo transportation between Kirtland Air Force Base and the Nevada Proving Grounds.
- 6) Courier aircraft for carrying radioactive samples from the Nevada Proving Grounds to Berkeley, IASL, and certain eastern laboratories.

c. Military Automotive Equipment

In addition to the military vehicles being supplied by the Directorate, Weapons Effects Tests, AFSWP, for the military effects programs and other military units in the Test Director's organization, there will be requested approximately thirty military vehicles of the jeep and four-wheel drive class. This latter group is for use by the Civil Effects and Weapon Development technical test groups.

d. Military Personnel

Other military personnel will be requested to assist in various duties involved in both the support units and technical projects under the Test Director. These personnel requirements are not as yet firm and detailed lists will be submitted through the Office of Test Operations, SPOO, when the exact requirements are known.

e. Rad-Safe Unit

The Rad-Safe Operations Unit shown as one of the support units in Enclosure "A" will consist mostly of military personnel under Lt. Col. T. D. Collison. Col. C. S. Maupin, a medical officer, has been designated the Rad-Safe Staff Officer. The off-site rad-safe operations involving air-sampling operations will probably be manned with approximately 30 USPHS personnel, 15 for the first five shots and 15 for the second five shots of the series.

f. Civil Aeronautics Administration

As in past operations at the Nevada Proving Grounds, the 6th Region CAA (Los Angeles) has been notified of the proposed Spring 1953 tests, and this office has stated they will assign Mr. Harold Greenleaf of the Salt Lake Office to be their representative at the Control Point during the tests. This is the arrangement which has been very satisfactory in previous operations.

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g. New York Operations Office

Informal arrangements have been made with the New York Operations Office to participate in the long-range fall-out measurements. It is expected formal agreements for this work will be handled by the Division of Military Application. In this connection, it is also expected the Division of Military Application will notify the photographic industries regarding the test schedule.

5. Project Participation

Enclosure "B" outlines the experimental programs and projects involved in Operation UPSHOT/KNOTHOLE by the Military Effects, Weapons Development, and Civil Effects Groups. No formal proposals for Desert Rock participation have been received by the Test Director as of this date.

FOR THE TEST DIRECTOR:

Original Signed by
J. C. CLARK

J. C. Clark
Deputy Test Director

Enc: 1 Org. Chart
1 Participation Chart (J-15203)

JCC:lh

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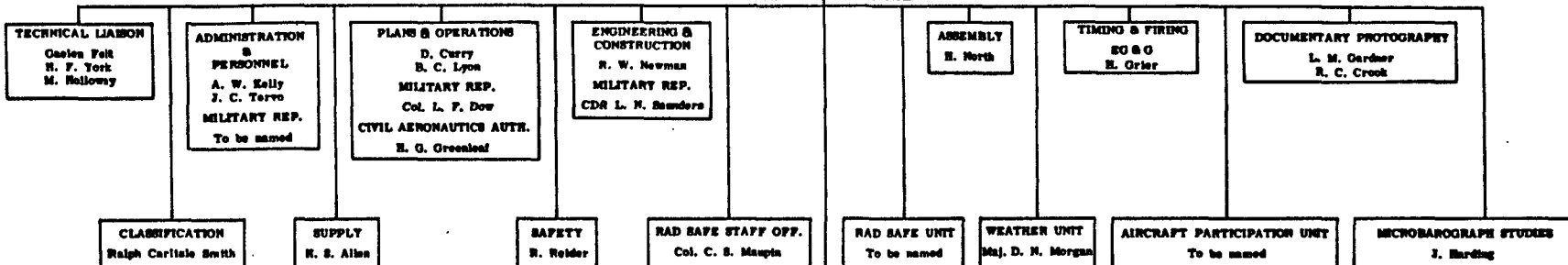
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CONTINENTAL TEST TEST DIRECTOR'S ORGANIZATION CHART

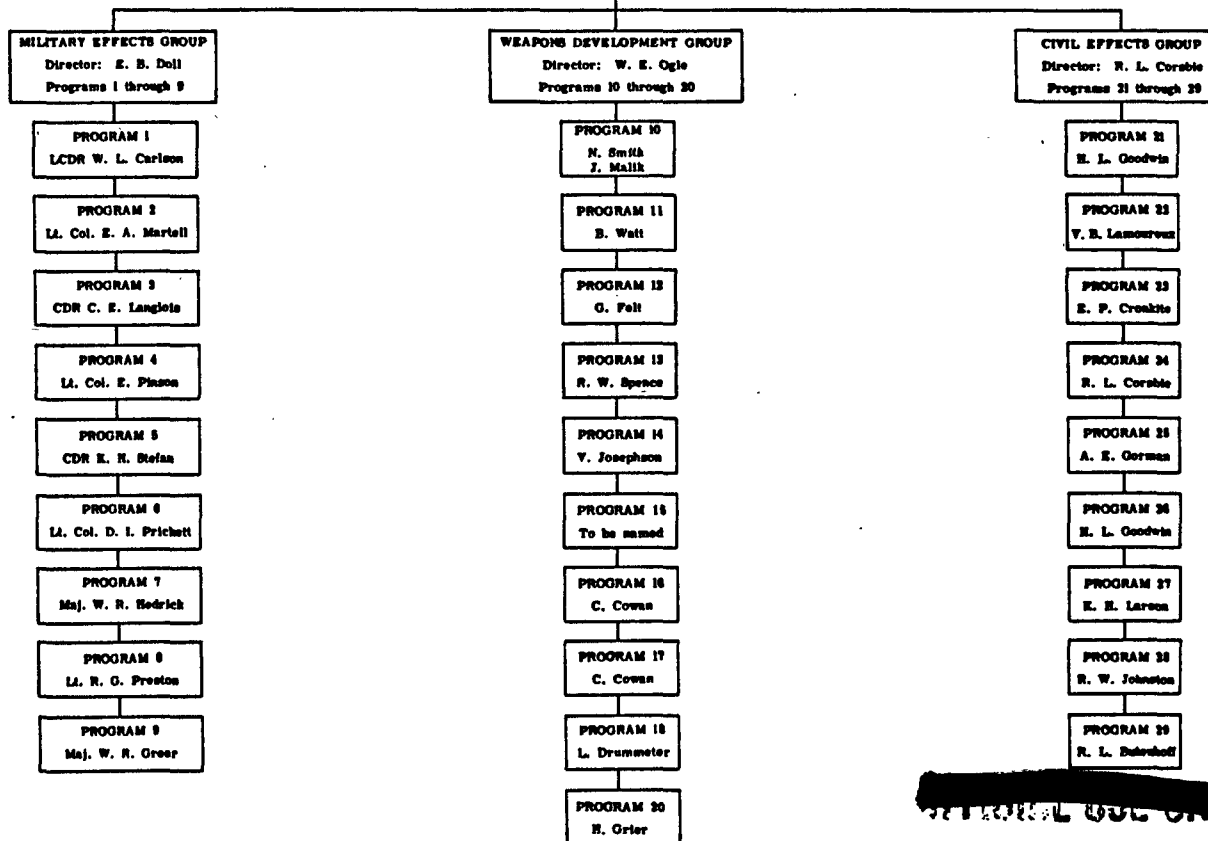
STAFF UNITS

TEST DIRECTOR
A. C. Graves
DEPUTY TEST DIRECTOR
J. C. Clark
ASST. TEST DIRECTOR
L. B. Seely

SUPPORT UNITS



TEST GROUPS



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Enclosure "A"

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SCHEDULE OF PARTICIPATION IN UPSHOT/KNOTHOLE
AS OF 16 DECEMBER 1952

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MILITARY EFFECTS PROGRAMS AND PROJECTS

<u>PROGRAM NUMBER</u>	<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT ORGANIZATION</u>					
3.7		Effectiveness of Blast Baffles at Shelter Entrances, Air Intakes and/or Outlets	USA (OCE)					X
3.8		Effects of Air Blast on Buried Structures	USA (OCE)					X
3.9		Design and Location of Field Fortifications	USA (OCE)					X
3.11		Protective Measures for Existing Construction; Light Steel Frame Structures	USN (BuDocks)					X
3.12		Protective Measures for Existing Construction; External Protective Measures	USN (BuDocks)					X
3.13		Precast Gable Shelter	USN (BuDocks)					X
3.14		Precast Warehouse	USN (BuDocks)					X
3.15		Armo Steel Magazine	USN (BuDocks)					X
3.16		Tests of Glazing and Window Construction	USN (BuDocks)					X
3.18		Minefield Clearance	USA (OCE)					X
3.19		Effects of Atomic Explosion on Trees in Forest Stands	USA (US Dept. of Agri)					X
3.20		Vulnerability of Typical Tactical Communications Systems to Atomic Attack	USA (SC)					X
3.21		Statistical Determination of Damage Criteria for Critical Items of Military Equipment and Supplies	USA (BRL)					X
3.22		Effects on Engineer Bridging Equipment	USA (OCE)					X
3.24		Effects of an Air Burst Atomic Explosion on LVT's	USA (NRDL)					X
3.26.1		Effects on POL Installation - Drum and Can Storage	USA (QMC), USAF (WADC)					X
3.26.2		Effects on POL Installations - Systems and Hazards from Spillage	USA (QMC), USN (Mar Corp)					X
3.26.3		Effects on POL Installations - Bulk Storage	USA (OCE), USAF (WADC)					X
3.27		Effects of Atomic Weapons on Field Medical Installations	USA (Med FSS)					X
3.28.1		Structures Instrumentations	USA (BRL)					X
3.28.2		Structures Instrumentations	USN (NOL)					X
3.28.3		Structures Instrumentations	AFSNP (SRI)					X
3.29		Tests of Four FCDA Curtain-Wall and Partition Structures	FCDA					X

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AS OF 16 DECEMBER 1952

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MILITARY EFFECTS PROGRAMS AND PROJECTS

PROGRAM NUMBER	PROJECT NUMBER	TITLE	PROJECT ORGANIZATION										
BIO-MEDICAL													
	4.1	Evaluation of the Hazard of Flying Through the Atomic Cloud	USAF (AFRC)(ARDC)	X									X
	4.2	Air Blast Injuries	USN (NRTC)		X								X
	4.5	Flash Blindness	USAF (SAM)		X								X
DRONE PROGRAM													
	5.1	Naval Aircraft Structures	USN (BuAer)										
	5.2	Blast, Thermal and Post Effects on Aircraft in Flight	USAF (WADC)	X									X
TESTS OF SERVICE EQUIPMENT AND OPERATIONS													
	6.2	Tests of Radar Techniques for Accomplishing Indirect Bomb Damage Assessment (IBDA)	USAF (WADC)	X									X
	6.3	Field Tests of IBDA	USAF (SAC)		X								X
	6.4	Evaluation of the Chemical Dosimeter	USA (CALC)		X								X
	6.7	Electromagnetic Radiation over the Radio Spectrum	USA (SCEL)		X								X
	6.8	Evaluation of Radiac Instrumentation, Equipment, and Operational Techniques	USAF (SCEL), USA (BuStu.p)		X								X
	6.9	Evaluation of Airborne Radiac Equipment	USN (BuAer)		X								X
	6.10	Rapid Aerial Radiological Survey	USA (SCEL)		X								X
	6.11	Operational Training for Tactical Air Command Crews	USAF (ARDC TAC)		X								X
	6.12	Determination of Height of Burst and Ground Zero	USA (SCEL)		X								X

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AS OF 14 DECEMBER 1958

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MILITARY EFFECTS PROGRAMS AND PROJECTS

PROGRAM NUMBER	PROJECT NUMBER	TITLE	PROJECT ORGANIZATION
7	7.1	THOMAS RANGE DETECTION	
	7.2	Electrons, metals, shrapnel from nuclear explosion	
	7.3	Detection of fireball light at distances	
	7.4	Detection of Airborne Low Frequency Sound from Atomic Explosion	
	7.5	Seismic Measurements Calibration analysis of A-bomb Debris	
8	8.1	THermal MEASUREMENTS AND EFFECTS	
	8.2	Aircraft Structures Test	USAF (MADC)
	8.4	Measurements of Total Thermal Radiation by Means of Radiation Pressure Phenomena	USAF (CNC)
	8.5	Attenuation of Thermal Radiation	USA (Calz)
	8.6	Degree and Extent of Burns Under Service Uniforms	USA (CNC)
	8.9	Thermal Effects on Clothing Materials, Panel Tests	USA (CNC)
	8.10	Effects of Thermal Radiation on Materials	USN (NML)
	8.11a	Measurements of Basic Characteristics of Thermal Radiation	USN (NEDL)
	8.11b	Initiation and Persistence of Primary Fires (Structures and Interiors of Structures)	AFSHP (Dept of Agri. FPL)
	8.12a	Initiation and Persistence of Primary Fires (Ignitable Litter)	AFSHP (Dept of Agri. FPL)
9	9.1	Measurement of Velocity of Sound Precursor Shock Study	USN (MFL) USN (DTRB)
	9.1	TECHNICAL PHOTOGRAPHY	
		Technical Photography for the Support of Operation Upshot/Knothole	AFSHP

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SCHEDULE OF PARTICIPATION IN U.S. PROJECTS
AS OF 16 DECEMBER 1952

WEAPONS DEVELOPMENT PROGRAMS AND PROJECTS

PROGRAM NUMBER	PROJECT NUMBER	TITLE	PROJECT ORGANIZATION
10	10.1	GAMMA RAY MEASUREMENTS	E. G. and G. LASL J-13
	10.2	Alpha	E. G. and G. LASL J-13
	10.3	Transit Time	E. G. and G. LASL J-13
	10.4a	Transit Time - Tower Shots	Sandia Corp.
	10.4b	Alpha Transit Time	LASL W-5
	10.4c	XR Transit Time	J-13
11	10.5	Total Dose	J-13
	10.6	New Techniques	J-13
12	12.1	SIMULTANEITY INVESTIGATIONS	LASL J-16
	12.1a	TECHNICAL PHOTOGRAPHY	E. G. and G.
	12.1b	E. G. and G. Photography	E. G. and G.
	12.1c	Burst Position	E. G. and G.
	12.1d	Ball-of-fire	E. G. and G.
	12.1e	Cloud Phenomena	E. G. and G.
	12.1f	Illumination as Function of Time (GR-SLITS)	E. G. and G.
	12.1g	Photometers	E. G. and G.
	12.1h	Monochromatic Photography	LASL J-15
	12.1i	LASL Photography	LASL J-15
	12.1j	Hot Spot	LASL J-15
	12.1k	Case Motion Photography	UCRL
13	12.2a	Timing Camera	UCRL
	12.2b	Radiative Growth	UCRL
	12.2c	Whitey Photography	UCRL
13.2	13.1	RADIOCHEMISTRY	E. G. and G.
	13.2	Radiochemistry - LASL	LASL J-18

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SCHEDULE OF PARTICIPATION IN UNITED STATES
AS OF 16 DECEMBER 1974

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WEAPONS DEVELOPMENT PROGRAMS AND PROJECTS

PROGRAM NUMBER PROJECT NUMBER

TITLE PROJECT ORGANIZATION

EXTERNAL INITIATOR MEASUREMENTS

ELECTRICAL INVESTIGATIONS

- 15.1 Transient Studies
- 15.2 Electromagnetic Pickups
- 15.3 Early Electromagnetic Signals
- 15.4

UCRL
LASL J-12

Sandia-Berkeley
UCRL
LASL J-12

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NEUTRON MEASUREMENTS

- 17.1 Integral Neutron (Threshold Detectors)
- 17.2 Neutron Spectra (Nuclear Emulsion Plates)
- 17.3 Vortex
- 17.4 Thonex (Midtney)
- 17.5 Integral Neutron (Threshold Detectors - Midtney)

UCRL
LASL J-12

UCRL
LASL J-12

18

THERMAL RADIATION MEASUREMENTS

- 18.1 Total Thermal Radiation and Air Attenuation
- 18.2 Power as a Function of Time (Photocells)
- 18.3 Spectrum Measurements
- 18.4 Investigation of Light Absorption Character-
istics of Regions Surrounding Pinball
Detector Shift Investigations of Case Notches
Surface Roughness Investigations (Revens
and CR-Clats)
- 18.5
- 18.6

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SCHEDULE OF PARTICIPATION IN OPSHOW/NOTES
AS OF 16 DECEMBER 1952

CIVIL EFFECTS PROJECTS AND PROJECTS

PROGRAM PROJECT
NUMBER NUMBER

PROJECT
ORGANIZATION

TITLE

PROGRAM NUMBER	PROJECT NUMBER	TITLE	PROJECT ORGANIZATION																	
		<u>CIVIL EFFECTS STUDIES</u>																		
		Low Dose Irradiation	FCDA																	
		Typical Hazards (tentative)	FCDA																	
		High-Dose Irradiation	FCDA																	
		<u>FCDA HADRY TRAINING</u>																		
	22.1	Evaluation of Relief Survey Methods	FCDA																	
	22.2	Evaluation of Relief Instruments	FCDA																	
	22.3	Evaluation of Radiological Hazards in Civil Incidents	FCDA																	
	22.4	Biological Radiation Studies	FCDA - FDA																	
		<u>BIO-250 EXPERIMENTS</u>																		
	23.1	Determination of Biological Effectiveness of Ionizing Radiation Within Shelter	AEC (NMRI, NRDL)																	
	23.2	Bacteriological Studies on Dogs Exposed to Primarily Neutron Irradiation	AEC (NMRI, NRDL)																	
	23.3	Long-term Studies on Animals Exposed Primarily to Neutron Irradiation	AEC (NMRI, NRDL)																	
	23.4	Effects of Neutron Irradiation on Longevity and Production of Sex-linked and Autosomal Lethal Mutations in <u>Drosophilidae</u>	AEC-A																	
	23.5	Effects of Neutrons on Spores of <u>Fusaria</u> and <u>Rusts</u>	AEC-N																	
	23.6	Genetic Mutations in <u>Drosophila</u>	AEC-ORNL																	

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SCHEDULE OF PARTICIPATION IN UPSHOT/KNOXON
AS OF 16 DECEMBER 1952

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CIVIL EFFECTS PROGRAM'S AND PROJECTS

PROGRAM NUMBER	PROJECT NUMBER	TITLE	PROJECT ORGANIZATION						
	23.7	Drosophila Chromosome Breaks	AEC-OT						
	23.8	Drosophila LD and First Generation Lethals	AEC-IS						
	23.9	Dosage/Mutation Curve and Color Mutations in Wasp <i>Mormonilla</i> Males	AEC-P						
	23.10	Effects of Neutrons on Chromosome Breaks in <i>Tradescantia</i>	AEC-ORNL						
	23.11	Chromosome Breaks and Mutations in <i>Datura</i>	AEC-S						
	23.12	Reverse Mutations in <i>Neurospora</i>	AEC-ORNL						
	23.13	Dominant Lethals and Sterility in Mice	AEC-ORNL						
	23.14	LD and First Generation Lethals on Mice of Two Stocks Exposed to Sens Dose	AEC-IS						
	23.15	Effects of Overpressures, Displacement and Missiles on Animals	AEC-IG						
	23.16	Chromosome Breaks in Maize Seed	AEC-ORNL						
	23.17	Dosimetry for Biological Experiments to be Conducted in Conjunction with EC Shelter Testing (Tentative)	AEC (MDDL, MURL)						
24		AEC SHELTER STRUCTURES							
	24.1	AEC Shelter Evaluation	AEC-EM						
	24.2	Physical Measurements of Gamma and Neutron Radiation in Shelters, Including Instrumentation Evaluation	AEC-EM						
	24.3	Physical Measurements of Static and Dynamic Overpressures and Thermal Radiation in Shelters	AEC-VITRO						
25		AEC SERVICES							
	25.1	Effects of Static and Dynamic Pressures on Water Pipes, Pipes and Fittings (Tentative)	AEC-RE						Participation not yet firm.

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SCHEDULE OF PARTICIPATION IN UNSHOT/KNOTHOLE
AS OF 16 DECEMBER 1952

CIVIL EFFECTS PROGRAM AND PROJECTS

PROGRAM NUMBER PROJECT NUMBER

PROJECT ORGANIZATION

TITLE

PROGRAM NUMBER	PROJECT NUMBER	TITLE	PROJECT ORGANIZATION							
26	26.1 26.2	CIVILIAN VEHICLE TESTS Bio-Med Evaluation of Vehicles as Shelters Physical and Mechanical Evaluation of Vehicles Exposed to Atomic Attack	AEC-FCDA AEC-FCDA	X						
27	27.1 27.2	FALL-OUT STUDIES IN NEAR AREAS Physical Evaluation of Fall-out Materials Biological Effects on Native Animals of Inhalation and Ingestion of Fall-out Materials and Evaluation of Soil Contamination	AEC (UCLA, AEP) AEC (UCLA, AEP)	X	X	X	X	X	X	X
28	28.1	RADIATION TELEMETRY SYSTEM Radiation Monitoring System Using a Radio Telemetry Link for Transmission of Data	AEC-BH	X	X	X	X	X	X	X
29	29.1 29.2 29.3 29.4	DOSIMETRY AND RADIATION MEASUREMENTS (Tentative) Comparison and Evaluation of Dosimetry Methods Applicable to Gamma Radiation Study and Measure Fast Neutrons in Field Tests by Means of the Permanent Electrical Resistance Changes Produced by Them in Semi-Conductors Coordination and Evaluation of Dosimetry Within Civil Effects Programs Measurement of Effective Energy and Spectral Distribution of Residual Radiation	AEC-UCLA AEC-UCLA AEC-BH AEC-R	X	X	X	X	X	X	X

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Participation indefinite at date of this report.

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