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RG 326 US ATOMIC ENERGY COMMISSION J-DIVISION LOS ALAMOS SCIENTIFIC LABORATORY UNIVERSITY OF CALIFORNIA P. O. BOX 1663 LOS ALAMOS, NEW MEXICO

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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  
SMBOL : J-15202

SPECIAL RE-REVIEW  
FINAL DETERMINATION  
SRD, DATE: 1-13-51

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	P	2420' air (H.E. only)
	7 May '53	P	2420' air drop
	21 May '53	P	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, LASL, 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-sites 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.

Original Signed by

J. C. CLARK

J. C. Clark  
Deputy Test Director

FOR THE TEST DIRECTOR:  
Enc: 1 Org. Chart  
1 Participation Chart (J-15203)

JCC:lh

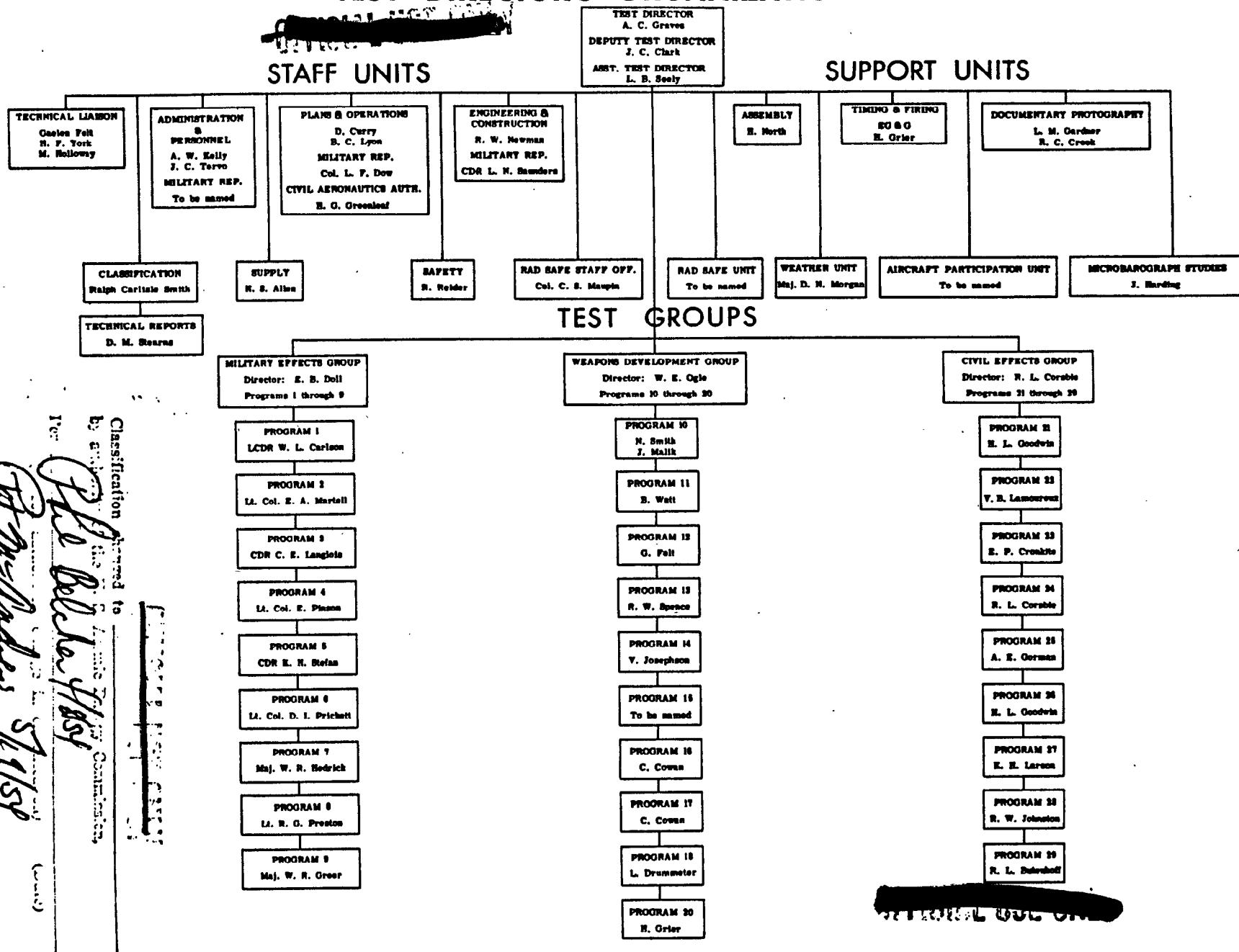
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**CONTINENTAL TEST  
TEST DIRECTOR'S ORGANIZATION CHART**



Enclosure "A"

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**SECURITY INFORMATION**  
SCHEDULE OF PARTICIPATION IN UPSHOT/KNOTHOL  
AS OF 16 DECEMBER 1962

1-15201

MILITARY EFFECTS PROGRAMS AND PROJECTS

PROJECT  
NUMBER

TITLE

PROJECT  
ORGANIZATION

1.	2.	3.	BLAST AND SHOCK MEASUREMENTS			NUCLEAR MEASUREMENTS AND EFFECTS			STRUCTURES, MATERIAL AND EQUIPMENT			
			1.1a	1.1b	1.1c	1.1d	1.2	1.3	1.4a	1.4b	2.1	
			Basic Air Blast Measurements	USN (NOL)			Studies of Airborne Particulate Material	USA (Ornl)			Test on Loading of Building and Equipment Shapes	USAF (WADC)
			Basic Air Blast Measurements	AFSMP (Sh.I.)			Measurement of Gamma Spectrum of Fission Products	USA (SCEL)			Test of Horizontal Cylindrical Shapes	USAF (WADC)
			Basic Air Blast Measurements	AFSMP (Sandia Corp)			Residual Gamma Depth Dose Measurements in Unit	USN (MNRI)			Tests of Truss Systems Connect to Open Frame	USAF (WADC)
			Basic Air Blast Supporting Measurements	AFSMP (Sandia Corp)			Density Material				Structures	USAF (WADC)
			Air Blast Measurements	USN (NOL)			Tests of Wall and Roof Panels				Tests of Wall or Roof Material	USAF (TC); USAF (WADC)
			Free Air Blast Pressure Measurements	USAF (GRC)								
			Earth Measurements	AFSMP (Sandia Corp)								
			Earth Components	AFSMP (Sandia Corp)								
			Earth Components	X								

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

MILITARY EFFECTS PROGRAMS AND PROJECTS

<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)
3.8	Effects of Air Blast on Buried Structures	USA (OCE)
3.9	Design and Location of Field Fortifications	USA (OCE)
3.11	Protective Measures for Existing Construction;	USN (BuDocks)
	Light Steel Frame Structures	
3.12	Protective Measures for Existing Construction; External Protective Measures	USN (BuDocks)
	Precast Cable Shelter	
3.13	Precast Warehouse	USN (BuDocks)
3.14	Armco Steel Magazine	USN (BuDocks)
3.15	Tests of Glazing and Window Construction	USN (BuDocks)
3.16	Minefield Clearance	USN (BuDocks)
3.18	Effects of Atomic Explosion on Trees in Forest Stands	USA (OCE)
3.19	Vulnerability of Typical Tactical Communications Systems to Atomic Attack	USA (US Dept. of Agric.)
3.20	Statistical Determination of Damage Criteria for Critical Items of Military Equipment and Supplies	USA (SC)
3.21	Effects on Engineer Bridging Equipment	USA (BRL)
3.22	Effects of an Air Burst Atomic Explosion on LVT's	USA (OCE)
3.24	Effects on POL Installation - Drum and Can Storage	USA (NRDL)
3.26.1	Effects on POL Installations - Systems and Hazards from Spillage	USA (QMC), USAF (WADC)
3.26.2	Effects on POL Installations - Bulk Storage	USA (QAC), USN (Nav Corp)
3.26.3	Effects of Atomic Weapons on Field Medical Installations	USA (OCE), USAF (WADC)
3.27	Structures Instrumentations	USA (Med FSS)
3.28.1	Structures Instrumentations	USA (BEL)
3.28.2	Structures Instrumentations	USN (ROL)
3.28.3	Structures Instrumentations	AFSMP (SRU)
3.29	Tests of Four FCDA Curtains-Wall and Partition Structures	FCDA

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**SCHEDULE OF PARTICIPATION IN UPHOLD THOMAS  
AS OF 16 DECEMBER 1952**

**REF ID: A6512**

**MILITARY EFFECTS PROGRAMS AND PROJECTS**

<u>PROGRAM NUMBER</u>	<u>PROJECT NUMBER</u>	<u>TITLE</u>	<u>PROJECT ORGANIZATION</u>
		BIO-MEDICAL	
4.1		Evaluation of the Hazard of Flying Through the Atomic Cloud	USAF (APGBC) (AEODC)
4.2		Air Blast Injuries	USA (NMRI)
4.5		Flash Blindness	USAF (SAM)
		DRONE PROGRAM	
5	5.1	Naval Aircraft Structures	USN (BuAer)
	5.2	Blast, Thermal and Gust Effects on Aircraft in Flight	USAF (MADC)
		TESTS OF SERVICE EQUIPMENT AND OPERATIONS	
	6.2	Tests of Radar Techniques for Accomplishing Indirect Bomb Damage Assessment (IBDA)	USAF (MADC)
	6.3	Field Tests of IBDA	USAF (SAC)
	6.4	Evaluation of the Chemical Dosimeter	USA (CmIC)
	6.7	Electromagnetic Radiation over the Radio Spectrum	USA (SCEL)
	6.8	Evaluation of Radiac Instrumentation, Equipment, and operational Techniques	USA (SCEL), USA (Techpo) (BuAer)
	6.9	Evaluation of Airborne Radice Equipment	USA (BuAer)
	6.10	Rapid Aerial Radiological Survey	USA (SCEL)
	6.11	Operational Training for Tactical Air Command Crews	USAF (ARDC TAC)
	6.12	Determination of Height of Burst and Ground Zero	USA (SCEL)

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AS OF 14 DECEMBER 1952

MILITARY EFFECTS PROGRAMS AND PROJECTS

PROJECT NUMBER	PROJECT TITLE	PROJECT ORGANIZATION
7	NUC RANGS DIRECTION	USAF (MRC)
7.1	Electromagnetic Effects from Nuclear Explosions	USAF (MRC)
7.2	Detection of Afterglow at Distances	USA (Calif.)
7.3	Detection of Afterglow Frequency Sound from Atomic Explosion	USA (Calif.)
7.4	Sediment Measurements	USN (NRL)
7.5	Calibration Analysis of Atom Debris	AFSMP (Dept. of Agric.)

NUC RANGS DIRECTION  
DETERMINATION  
OF  
EFFECTS  
OF  
NUCLEAR  
EXPLOSIONS

PROJECT  
ORGANIZATION

TITLE

PROJECT  
NUMBER

- 7.1 Electromagnetic Effects from Nuclear Explosions
- 7.2 Detection of Afterglow at Distances
- 7.3 Detection of Afterglow Frequency Sound from Atomic Explosion
- 7.4 Sediment Measurements
- 7.5 Calibration Analysis of Atom Debris

INTERNAL MEASUREMENTS AND EFFECTS

ITEM	NAME	ORGANIZATION
8.1 Aircraft Structures Test	USAF (MRC)	USAF (MRC)
8.2 Measurements of Total Thermal Radiation by Means of Radiation Pressure Phenomena	USA (Calif.)	USA (Calif.)
8.3 Attenuation of Thermal Radiation on Defree and Extent of Burns Under Service Uniforms	USA (Calif.)	USA (Calif.)
8.4 Thermal Effects on Clothing Materials, Panel Test	USA (Calif.)	USA (Calif.)
8.5 Effects of Thermal Radiation on Materials	USA (Calif.)	USA (Calif.)
8.6 Measurements of Thermal Characteristics of Thermal Radiation	USN (NRL)	USN (NRL)
8.7 Initiation and Persistence of Primary Fires (Structures and Interiors of Structures)	AFSMP (Dept. of Agric.)	AFSMP (Dept. of Agric.)
8.8 Initiation and Persistence of Primary Fires (Ignitable Litter)	NPSTP (Dept. of Agric.)	NPSTP (Dept. of Agric.)
8.9 Measurement of Velocity of Sound Precursor Shock Study	USN (NRL)	USN (NRL)
8.10 TECHNICAL PHOTOGRAPHY	AFSMP	AFSMP
8.11a		
8.11b		
8.12a		
8.12b		
9.1		

Technical Photography for the Support of Operation Upshot/Knothole

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## SCHEDULE OF PARTICIPATION IN URGENT WEAPONS DEVELOPMENT PROGRAMS AND PROJECTS

AS OF 16 DECEMBER 1955

## WEAPONS DEVELOPMENT PROGRAMS AND PROJECTS

PROGRAM NUMBER	PROJECT NUMBER	TITLE	PROJECT ORGANIZATION
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## GAMMA RAY MEASUREMENTS

- 10.1 Alpha
- 10.2 Transit Time
- 10.3 Transit Time - Tower Shots
- 10.4 Average Transit Time
- 10.5 In Transit Time
- 10.6 Total Dose
- 10.7 New Techniques

- E. C. and G. LASL J-13
- E. C. and G. LASL J-13
- Sandia Corp.
- LASL W-5
- J-13
- J-13

## SIMULTANEOUS INVESTIGATIONS

## TECHNICAL PHOTOGRAPHY

- E. C. and G. Photography
- Burst Position
- Ball-of-fire
- Cloud Phenomena
- Illumination as Function of Time (GR-S16a)
- Photometers
- Holographic Photography
- LASL Photography
- Hot Spot
- Cage Motion Photography
- Fringing Camera
- Radiative Growth
- Shutter Photography

- LASL J-16

- E. C. and G.

- LASL J-15

- LASL

- UCRL

## RADIONUCLIDES

- Radiochemistry - LASL
- Radiochemistry - Physics

- LASL J-16
- UCRL

- COPEDUE

- 13.1
- 13.2

- 13



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AS OF 16 OCTOBER 1992

ORGANIZATION  
PROBLEMS AND PRACTICAL  
SUGGESTIONS

15 DECEMBER 1952

15 DECEMBER 1952

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DOCUMENTATION

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**SCHEDULE OF PARTICIPATION IN UPSHOT/KNOTHOL**  
**AS OF 16 DECEMBER 1952**

**CIVIL EFFECTS PROGRAM AND PROJECTS**

PROGRAM NUMBER	PROJECT NUMBER	TITLE	PROJECT ORGANIZATION	COMMITTEE
	23.7	Drosophila Chromosome Breaks	AEC-CI	
	23.8	Drosophila LD and First Generation Lethals	AEC-LS	
	23.9	Dosage/Mutation Curve and Color Mutations in Wasp Hormone/Male Males	AEC-P	
	23.10	Effects of Neutrons on Chromosome Breaks In Tradescantia	AEC-ORNL	
	23.11	Chromosome Breaks and Mutations in <u>Natura</u> Reverse Mutations in Neurospora	AEC-S	
	23.12	Dominant Lethal and Sterility In Mice	AEC-ORNL	
	23.13	LD and First Generation Lethals on Mice of Two Stocks Exposed to Same Dose	AEC-ORNL	
	23.14	Effects of Overpressures, Displacement and Missiles on Animals	AEC-LS	
	23.15	Chromosome Breaks in Maize Seed	AEC-IC	
	23.16	Biosafety for Biological Experiments to be Conducted in Conjunction with AEC Shelter Testing (Tentative)	AEC-ORNL	
	23.17		AEC(MDL, MRL)	
	24.	AEC SHELTER STRUCTURES		
	24.1	AEC Shelter Evaluation	AEC-EN	
	24.2	Physical Measurements of Gamma and Neutron Radiation in Shelters, Including Instrumentation Evaluation	AEC-EN	
	24.3	Physical Measurements of Static and Dynamic Over-pressures and Thermal Radiation in Shelters	AEC-VITRO	
	25	AEC SERVICES		
	25.1	Effects of Static and Dynamic Pressures on Water Ratio, Pipes and Piping (Tentative)	AEC-RE	Participation not yet firm.

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CIVIL DEFENSE MODELS AND PROJECTS

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

Participation indefinite at date of end report.

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