# DNA 1251-1-EX

# COMPILATION OF LOCAL FALLOUT DATA FROM TEST DETONATIONS 1945-1962 EXTRACTED FROM DASA 1251

Volume I -Continental U.S. Tests

General Electric Company-TEMPO DASIAC 816 State Street Santa Barbara, California 93102

1 May 1979

Extract

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# PREFACE

This report has been prepared to serve as an unclassified source of information and data concerning the atmospheric nuclear test program conducted by the United States prior to 1963. The information contained herein was reproduced directly from the classified versions of the DASA 1251 series of reports. The classified material which was deleted to prepare this report was in accordance with the requirements of the Atomic Energy Act of 1954 and would not contribute to an understanding of the radiation interactions with personnel. All fallout plots and radiation contours are presented exactly as they appeared in the classified version of DASA 1251.

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Safety Experiments

#### INTRODUCTION

The objective of this report is to provide a ready reference of fallout patterns and related test data for those engaged in the analysis of fallout effects.

This compilation was extracted from DASA 1251 "Local Follout from Nuclear Test Detonations" (D) Vol. 2 "Compilation of Fallout Patterns and Related Test Data" (D) Parts 1 through 3. DASA 1251 Vol. 2 was the work of Manfred Morgenthau. Harvy Meieran, Richard Showers, Jeffrey Morse, Norman Dombeck, and Araoldo Garcia of the U.S. Army Nuclear Defense Laboratory under Defense Atomic Support Agency (now Defense Nuclear Agency) sponsorship.

Although local (early) fallout is emphasized, the data presented will be useful to those studying world-wide (delayed) fallout as well. In this report local fallout is defined as all fallout which consists principally of the larger particles that are deposited within 24 hours after the deconation. World-wide or delayed fallout is defined as fallout which consists of very small particles which descend very slowly over large areas of the earth's surface.

Data resulting from each U.S. detonation are presented chronologically. For each detonation, the basic information useful for an interpretation of the fallout data is tabulated first. This is followed by both on-site and off-site fallout patterns where available. A graph of the growth-rate of the cloud and stem is presented pext. Wind speed and direction are then tabulated as a function of altitude, and hodographs are drawn from these data.

#### EXPLANATION COMMENTS ON DATA PRESENTED

## Fallout Patterns

One or more fallout patterns are given for each event, except for those shots for which no significant residual radiation was observed downwind of GZ or for which no patterns were found in the literature. In the remarks included on the basic data sheet for each shot, the individual fallout patterns are discussed briefly; some comments are made for those shots for which no patterns were available. The doserate contours for the fallout patterns have been drawn to show the gamma dose rate in roomtgens per hours, three feet above the ground, in terms of the one hour after burst reference time. The  $t^{-1/2}$  approximation was used when no actual decay data was available to adjust radiation measurements to the one hour reference time. It is important to recognize the H+1 hour is used as a reference time, and that only the contours from low yield weapons are complete at one hour after burst. For high yield weapons, fallout over some parts of the vast areas shown does not commence until many hours after the burst. The time of arrival of fallout is indicated on some of the fallout patterns by "dot-dash" lines. The time lines are intended to give only a rough average arrival time in hours as estimated from the wind reports and the available monitoring information.

#### induced Activity Patterns

The contamination resulting from low air bursts is due primarily to the activity induced by neutrons which are captured by certain elements in the soil, notably sodium, manganese and atomicum. The resulting radiation field is circular and covers a limited area about ground zero. Weather conditions have very little influence on the lucation or shape of the induced radiation pattern. However, increasing the moisture content in soils can increase the induced activity levels. The rate of decay of the induced radiation field is different from the decay of fission products and depends on the composition of the soil over which the weapon was detonated. For Nevada soil, the sodium and manganese composition generally varies by a factor of 1.4 to 2 and the aluminum composition varies by a factor of 3 to 7 within and between test areas. For most induced activity patterns in this report, a general neutron-induced decay curve for Nevada soil was used to extrapolate the observed dose rates back to H+1 hour. For a few induced activity patterns. Na<sup>24</sup> decay is used to extrapolate the observed dose rates to H+1 hour. This decay rate is not strictly applicable but it closely approximates the observed decay.

#### Wind Bata

The tables of wind data give surface and upper air winds for heights up to at least the top of the nuclear cloud. These data are presented for times as close to shot time as possible and for several times after shot. Directions are in degrees from which the wind is blowing, and are measured clockwise from north. Velocities are in statute miles per hour. The height of the tropopause at shot time is given when available. Although the meteorological data were taken in close proximity to ground zero, they do not necessarily represent the wind field downwind from ground zero in space and time.

The hodographs are drawn for a constant balloon rise rate of 5,000 ft/hr and are presented for illustrative purposes only. The fall rates of particles vary considerably with altitude; therefore, errors will result from the use of a constant fall-rate hodograph for fallout prediction. In general, particles in higher altitudes levels fall faster and the percentage change in the falling rate is greater for larger particles. The numbers on the hodographs represent altitudes in thousands of feet. The associated points represent the locations on the surface where particles having a constant fall-rate of 5,000 ft/hr could land if they originated over G2 at the ultitudes shown. The letter S on the hodographs stands for "Surface" and the number next to it in parenthesis (for the Nevada shots) is the site elevation of ground zero in feet above MSL.

### OPERATION TRINITY

DATE: 16 Jan (16 Jan 17)	Sponsor: IAU.
TTMJ: 0529 1229	<u>S176</u> : 57 mille Northwest of Alamonords, New Mexice Doordinates: 33 <sup>2</sup> 40' 31" N 106" 20' 29" V
<u>TOTAL YININ</u> : 19 kt	Site elevation: 1,624 Ct
	HEIGHT OF PURCE: I. C. P.
<u>FIREPALL IATA:</u> Time to lot minimum: XM	TYPE OF MURST ACO ( ACCOUNT) Tower Furst
Time to Professionant 574 Padius at 2nd maximum: 574	CLOUD TOP HELCHER PRICE IN MAR. CLOUD BORTOM HELCHER DRIVEN IN MER.
	GRATER DATA: Lise tred 1.1. oft Data: Print - Print 1.1.

# <u>R1244/R00</u>1

Extensive surveys were water four order afford the dott which is a solution burvey seture. The measurements were adjusted to BML the by start the transformation the decay.

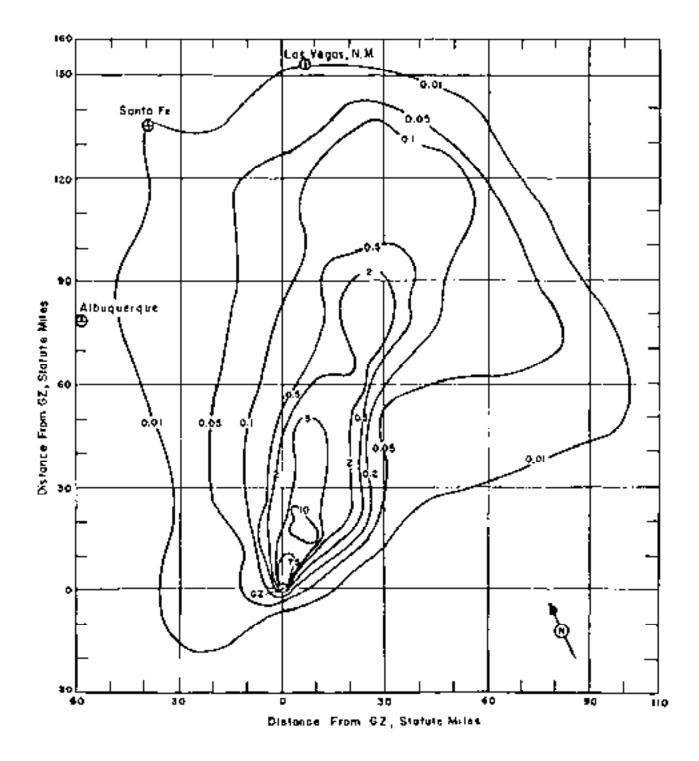


Figure 1. Operation TRINITY off-site dose rate contours in r/hr at H+1 hour.

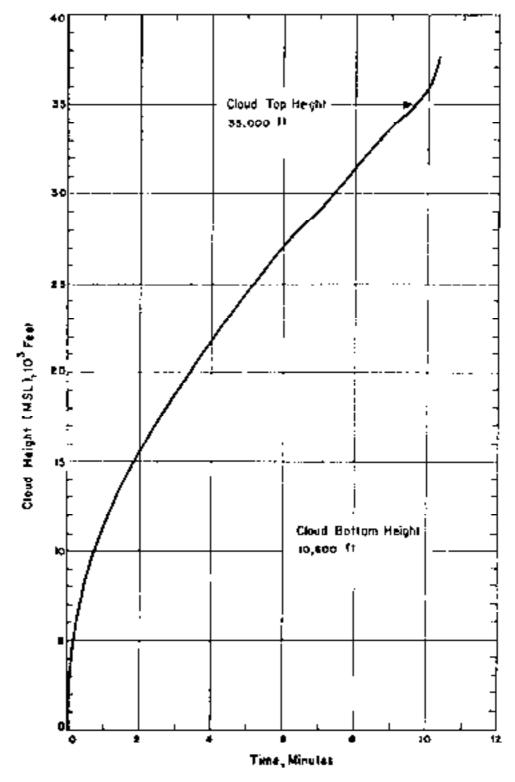


Figure 2. Cloud Dimensions: Operation TRINITY.

Altitude	ե-իթ	u <b>r</b>		urs	E+4 to	0975		aurs	E+10, 0	nours
(MSL)	JE r	Speed	12r	Speed	Dir	Spend	ply-	Speed	p.r	Spord
feet	degrees	⊒եյլ	degrees	ang⊳h	degrees	uph	degrees	mph	degrees	Ept:
5,100	110	C4								
5,300	15C	07	330	с <b>4</b>	160	03	240	01	140	09
6,000	200	06	260	03	150	03	120	C2	100	CÅ
6,700	230	07	230	oĥ	140	cš	140	05	100	03
7,300	250	-08	250	04	160	03	130	αŹ	140	0Š
7,900	250	10	270	à3	150	<u>65</u>	130	07	150	07
8,500	240	08	250	04	150	05	130	э <u>ё</u>	270	07
9,100	230	07	230	04	170	cś	130	08	10V	07
9,700	220	08	230	07	190	cŹ	160	10	100	<b>o</b> 6
10,300	220	12	230	10	210	зò	150	10	170	05
10,900	220	11	230	13	200	11	150	60	180	¢4
11,500	200	80	220	12	160	11	250	05	070	02
12,100	190	07	170	10	170	11	190	03	310	35
12,700	170	09	160	11	180	12	240	03	310	eć.
13,300	270	12	260	12	190	11	240	્રોંડ	320	04
13,900	160	12	170	14	210	12	250	66	310	05
14,500	150	13	180	16	200	13	270	08	290	06
15,100	24c	ĩĩ	180	15	180	ĩš	280	10	280	05
15,700	130	16	19C	13	170	16	280	60	290	06
16,300	120	16	190	12	370	16	270	05	280	07
16,900	140	12	190	07	190	11	250	04	590	05
17,500	160	10	160	07	210	03	240	05	270	сś
17,600	150	13								
18,100			170	05	320	02	260	05	<b>2</b> 70	C3
16,600	150	12					<b>-</b>			
18,700			210	-04	280	02	260	06	270	01
19,300			220	03	270	03	250	<b>o</b> 6	130	03
19,600	180	Ç4					•			
19,900					270	02	250	-06	180	Q5
20,600	250	C4								
21,600	240	c8								
21,700			<b>-</b>				220	21	210	60
22,600	220	11								
22,900							190	17	210	16
23,600	220	15								
24,600	220	15								
29,600	230	16								
34,600	230	21				•-				
39,600	240	19								<b>-</b>
44,600	290	18					÷=			
48,600	260	11								

TABLE 1 ALAMOCORDO, NEW MEXICO WIND DATA FOR OPENATION TRINITY

Note: At H-hour the surface air pressure was 12.39 psi and the temperature 21.8°  $\sigma_{\rm c}$ 

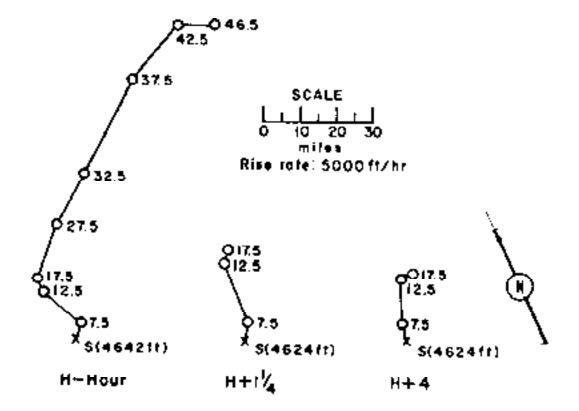
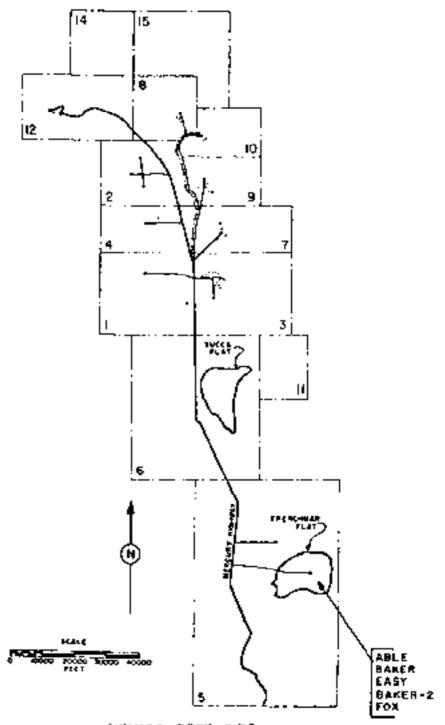


Figure 3. Hodographs for Operation TRINITY



NEVADA TEST SITE

Figure 4 . Operation RANCER, Shot Locations.

OPERATION RANGER -	Able	
$\frac{\text{PST}}{\text{MTE}} = \frac{\frac{\text{PST}}{27}}{27} \frac{\text{G}}{\text{Jan}} \frac{1951}{27} \frac{27}{27} \frac{\text{Jan}}{27}$	<u>ин</u> .c. 1991	Spensor: LACL
<u>TIM</u> : 0545 1345		$\frac{STTE}{36^{\circ}} = \frac{31\%}{16^{\circ}} \leq \frac{7}{5} \frac{1}{5} \frac$
202A), YJEGO: 1 kt		Site elevations (3,540 Pt
<u></u>		<u>nejost og sustt</u> e 1,000 m
TT 1'''T 1 1		TYPE OF RURD AND DIACHNETT: Air Nordt
FIREBALL DATA: Time to ist minimum: Time to and maximum: Badius at 2nd maximum:	gun Barr MM KM	<u>01000 701 3567355</u> - 17, 8 5 38 200 <u>02000 107708</u> ( <u>1980</u> ) - 5, swellet (s

#### REMARKS:

No local follow: An induced-activity petters was even protect from readings taken from SH12 hours and to SH12 hours along an with a west and south of GR. No decay interation was up 3. All top on wes below 20 mm/br were measured with Genger-Mouller type-D6666 integ instruments. The values above 20 mm/or were measured with bight and low-range June ionization-type meters.

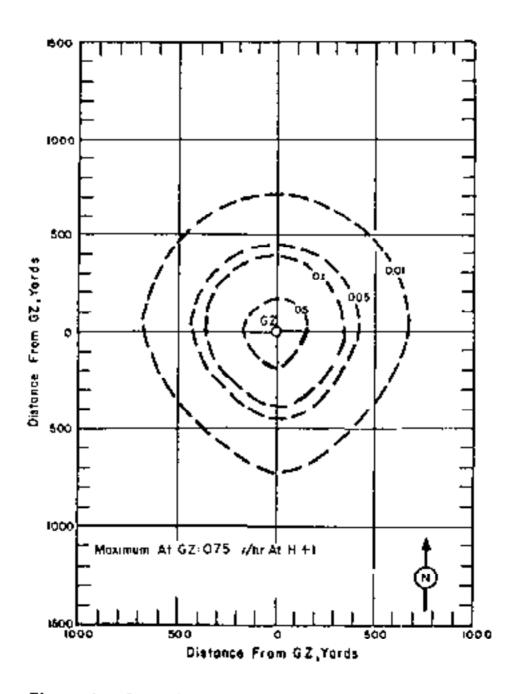


Figure 5. Operation RANGER - Able. On-site dose rate contours in r/hr at H\*1 hour.

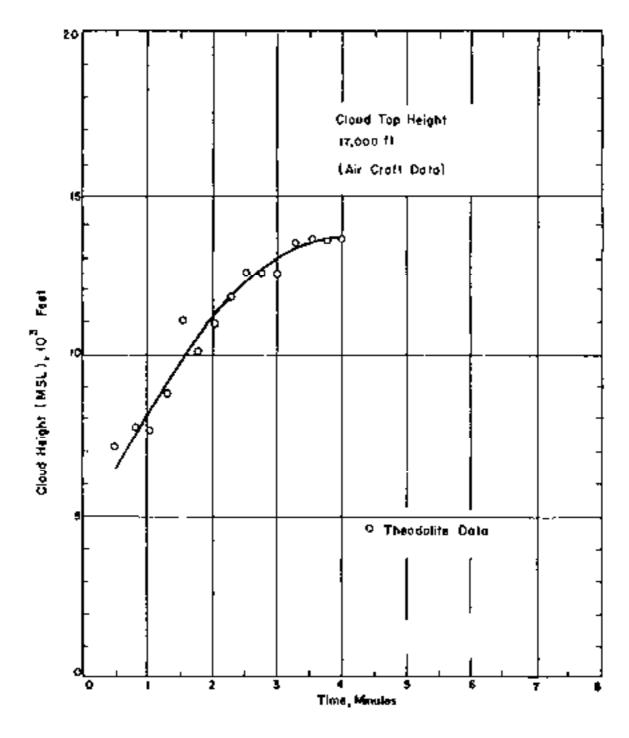


Figure 6. Cloud Dimensions: Operation RANGER - Able

Altitude	71-1-1	hours	i i-heor		H-hour H-1, hour	
_ (MSL)	Lir	Speed	üLr 🛛	Jaceg_	Dir	- Spreed -
feet	gefilees	Eb?	degrees	mph)	degrees	≃գրհ
Surface	130	03	130	02	Calm	Calm
4,000	140	03	140	Q2	Calm	Calm
5,000	230	07	230	06	230	05
6,000	210	22	190	23	180	97
γ <b>,</b> 000	\$10	2)	220	ъë	220	14
8,000	240	14	270	23	290	13
9,000	260	17	280	17	300	17
10,000	260	20	280	21	300	21
12,000	250	20	250	24	300	23
14,000			270	21	270	21
16,000	260	20	250	16	250	15
<b>18,0</b> 00			510	35	270	35
<u>20,000</u>			210	35	270	35

· . \_

TARGE 2 NEWADA WIND DATA FOR OPERATION RANGER - ARLE

NOTES:

 Wind data was obtained from the Ranger control point located on the slope of a mountain approximately 10 miles (in a southwesterly direction) from Frenchman Lake.

- 2. Tropopause height was 33,000 ft MSL.
- H-hour values were determined by interpolation between the H-1<sup>2</sup> and H+1<sup>2</sup> hour values.
- The surface air pressure was 13.10 psi, the temperature -2.0°C and the relative humidity 73%.

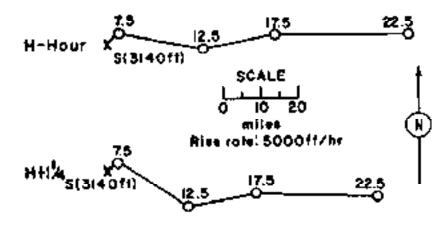


Figure 7. Hodographs for Operation Ranger - Able.

OPRIMITION PANGER -Baker-1 Sponsor: IASE PST GMT 28 Jag 1951 28 Jag 1951 DOUG: TIME: 05:2 1352 SITE NIM - Promitizing Photo 36° 48° M 1129 277 8 Sile elevation: 3,000 ft TODA, MIELD: 8 kt HEIGHT OF PURCET: 1,080 FU TYPE OF BURGT AND PLACEMENT: Atr burst FIRGALL DATA: Time to ist minimum: 6.8 made ЪM Time to Sad maximum. Radius at Rad maximum:  $\mathbf{NM}$ CLOUD TOP RELIGERS - 39,000 f\* MSG CLOUD BOTTLY SHE ONT: SUA AVAILABLE CRATER LATA: N. Structure

#### REMARKS:

No local failout. An idealized induced-settivity patters in constructed from readings taken from H\*12 hours and to H\*12 hours along one eximute west of G2. No decay correction was press with the values below 20 mr/hr were measured with Geiger-Mueller type 2610A survey instruments. The values above 20 mr/hr were measured with high- and low-mage June ionization-type meters.

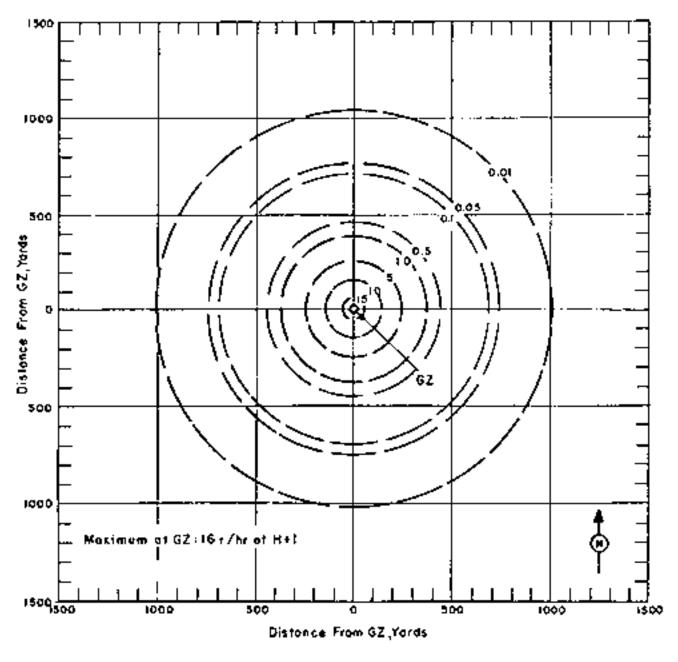


Figure 8. Operation RANGER - Rokor. On-site dose rule contours in r/br at X+1 hour.

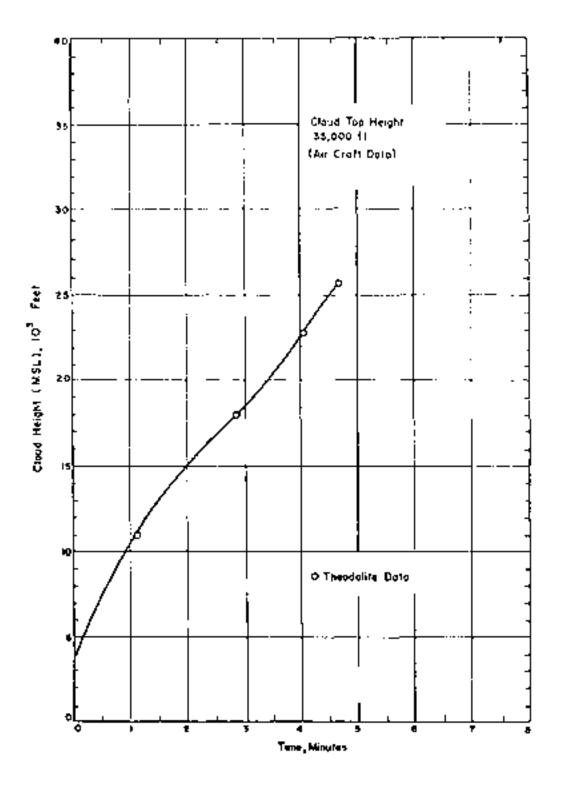


Figure 9. Cloud Dimensions: Operation RANGER - Baker 1.

TWALE 3 NEWADA WIND DATA FOR OPTEMPION RANGER

E4K528 - 1

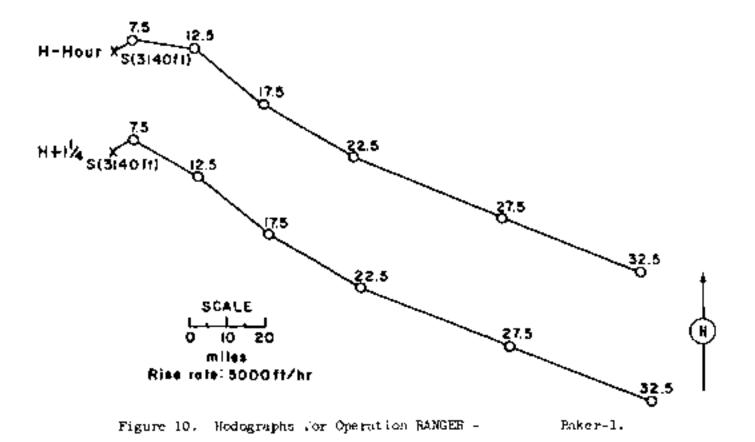
\_ \_ \_ \_ \_ \_ \_ \_

Altitude		H-La bours		r	E 1 hours	
(MDD.)	Dir	ap v d	Bir	Speed	Day	Sec.ed.
1000	defferen	न्म ii	degreep	ml:1:	degrees.	m;+*.
Surface	800	¢3	290	67	58c	09
4,000	500	05	190	C7	190	09
5,000	250	23	24C	12	240	12
6,000	230	18	240	15	250	14
7,000	250	25	250	10	250	07
8,000	260	22	270	C9	270	06
10,000	260	13	280	15	300	15
12,000	850	12	270	38	290	21
05,000		• -	(310)	(23)	(310)	(23)
16,000		• -	310	$\mathbb{Z}^{l_1}$	310	24
19,000		<b>.</b> -	310	32	310	32
20,000			300	26	300	26
25,000			290	41	20	<b>ն</b> լ
30,000	•-•	•	290	38	290	38

NOT723:

. . . .

- 1. Numbers in parenthesis are estimated values.
- Wind data was obtained from the Winger control print located on the uleps of a monitalis approximately 30 miles (in a continuentarily direction) from Frenchman Lake.
- 3. Trophysics Belght 4as 32,000 ft Mile
- H-hour values were determined by interpolation between the H-12 and H+12 hour values.
- The surface air pressure was 13.04 poi, the temperature -2.8°C, and the relative humidity 87%.



OPERATION RANGER -

Fasy

	POT	CMT
DATE:	1 Feb 1951	і Усъ 1951
TINE:	0547	<u>)</u> 3ŀ7

TOTAL YIMLD: 1 KC

Sponsor: LASL
<u>SITE:</u> NCS - Frenchman Fist 369 481 N 1159 571 W
Site elevation: 3,140 ft
HEIGHT OF RUNST: 1,080 Ct

TYPE OF BURST AND PLACEMENT: Air burst

FIREBALL MATA: Time to ist minimum: 5.0 move Time to 2nd maximum: 5M Radius at 2nd maximum: 5M

CLOUD NOTICE HELDER: 12,500 CL MSL CLOUD NOTICE HELDER: Not available

----

CRATER DATA: No crater

#### REMARKON

No local failout. Induced activity pattern was constructed from reddings taken from H+1 hour and to H+1) hours along four astroited month, east, south, and west. No decay correction was used. All the values below 20 mm/bm were measured with Geiger-Mueiler type 2610A survey instructed. The values above 20 mm/bm were measured with high- and low-range Juno ionization-type meters.

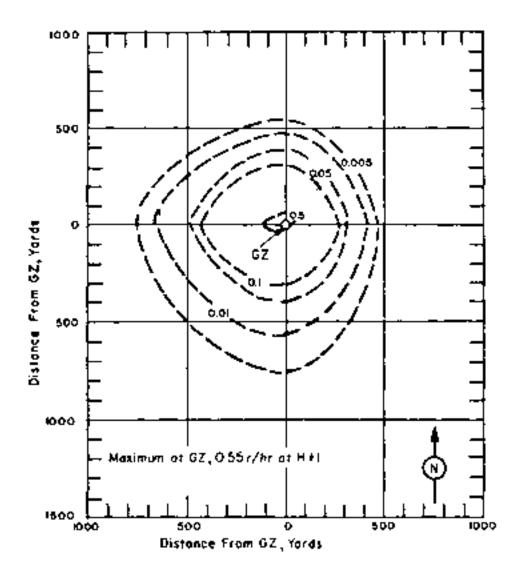


Figure 11. Operation RANGER - Fasy. Conside dose rate contours in r/hr at 8+1 hour.

Altitude	- 1 <u>1</u> 2	101277	X-hor	X-borm		99.2 hours	
(MSD)	D:r	Cir-ed	Dir	Speed	Dir	- lig end	
feet	degreed	m <sub>k</sub> /ii	degrees	ιη <i>λ</i> ι	degrees	រពរ្វាត់:	
Sarfuce	020	03	010	68	Callin	Ca leg	
4,000	020	05	C10	30	Colm	Calle	
5,000	020	27	030	21	Qi-0	- 66	
6,000	100	09	060	10	C10	10	
7,000	050	16	36C	18	350	21	
8,000	360	23	3/10	29	330	32	
9,000	3:0	3i	340	26	340	2	
10,000	31.0	- 26	340	30	340	32	
12,000	330	26	31=0	ŭg	340	32 62	

FACY

TABLE 4 NEVALA WIND DATA FOR CPRIMIDION NOTCHER -

NOTES:

- 1. H-hody values were determined by interpolation; between the H-12 and H-12 hour values.
- 2. Wind data was obtained from the Banger control plint located on the clope of a mountain approximately 10 miles (in a southwesterly direction) from Frenchman Lake.
- Troposadov holicht vas 35,000 rt MML.
   The curface air pressure was 13.33 psi, the temperature -11.9°C and the relative humidity 80%.

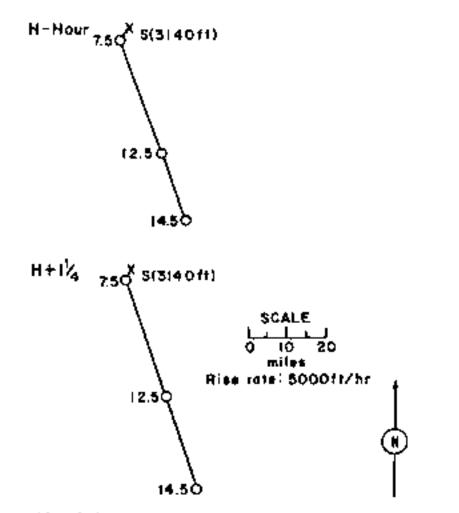


Figure 12. Hodographs for Operation RANGER - Eosy.

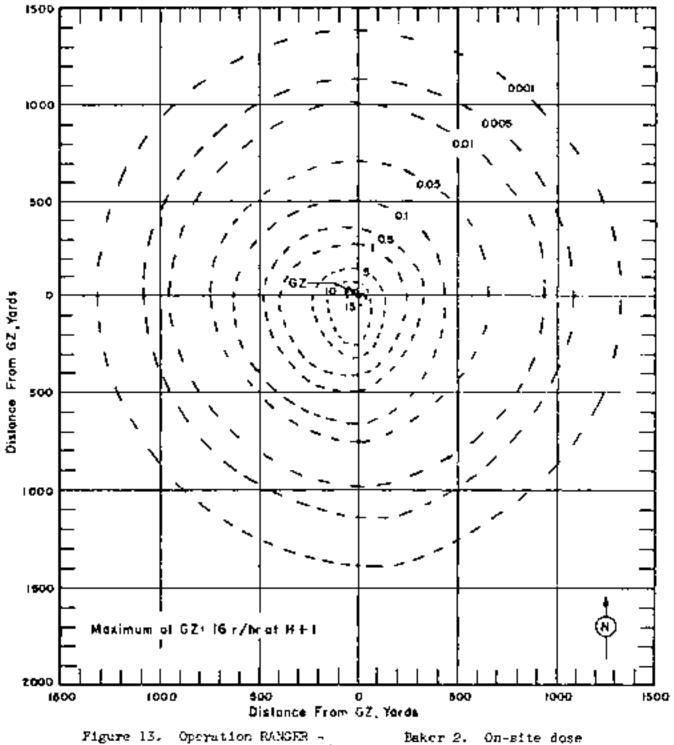
.

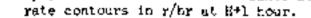
OPERATION NAMOUR -	Baker 2	
$\frac{PST}{PST} = \frac{GM}{2}$	1551	Sponsor: IAGL
HATE: 2 Feb 1951 2 Feb TIME: 0549 1349		SITE: NTO - Frenchman Flat. 36° 48° N
		$115^{\circ}$ 57' W Site elevation: 3,140 ft
TOTAL YINGD: 8 kt		HEIGHT OF BURGT: 1,100 St
		TYPE OF BURST AND PLACEDOFT: Air burst
FIREBALL DATA:	9	
Time to lot minimum: Time to 2nd maximum:	8.9 tu 9.2 mse หย	e
Radius at 2nd maximum:	204	CLOUD TOP INSIGHT: 25,000 Pt MSL CLOUD BC YCM NED SHI: Not available

CRAPER DATA: No erster

# REMARKS:

No local fallout. Induced-activity pattern was constructed from 3 surveys made from H41 and to H428 hours along stakes placed (CC yd apart on four azimeths, north, east, south, and wast. Dreay corrections were made from measurements along the west azimuth. All the values below 20 mm/hm were measured with Geiger-Mueller type 2610A survey instruments. The values above 20 mm/hm were measured with high- and low-range June ionization-type peters.





Attlude	- 15-33- h	oore	B-hour		ក្រដ់ ដែលក	
(@3L)	Dir	Speed	Dir	Speed	Dir	Spred
feet	degrees	ភាព	degrees	աշտե	degrees	mgyr:
Surface	Calm	Calm	Çalm	Calm	Calm	Cra I m
4,000	Co) H.	Сыlт	Calm	Co 171	Collin	Galm
5,000	180	02	190	02	190	62
6,0.0	240	0)	230	C12	220	07
7,000	190	10	210	15	550	17
8,000	190	- 22	510	26	230	30
9,000	250	26	250	26	260	2G
10,000	260	24	260	25	27G	28
:2,000	285	29	290	33	290	36
14,000	290	22	290	35	290	<b>-</b> 3
15,000			(290)	(45)	(290)	(45)
16,000			290	147 C	290	67
18,000			28c	63	2Ŝu	k3
20,000			290	51	290	52

TABLE 5 NEVADA WIND DATA FOR OPENSITION RANGER 🛏 👘

BAKER-2

NOTES:

- 1. Numbers in parentheses are estimated values.
- P. Wind data was obtained from the Ronger control point located on the slope of a mountain approximately 12 miles (in a southwesterly direction) from Freechman Lake.
- H-hour values were determined by interpolating between the H-l<sup>2</sup> and H+l<sup>2</sup> hour values.
- 4. Tropopouse height was 38,000 ft MSL.
- The surface air pressure was 12.81 psi, the temperature -9.2°C and the relative humidity 79%.

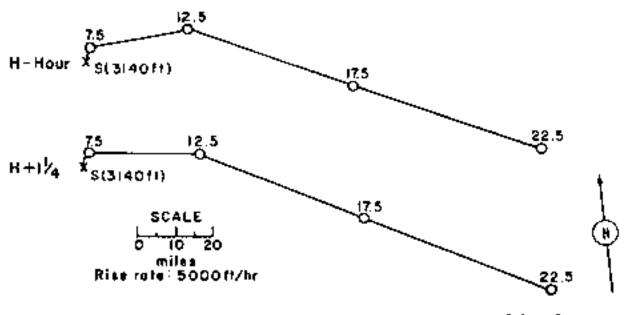


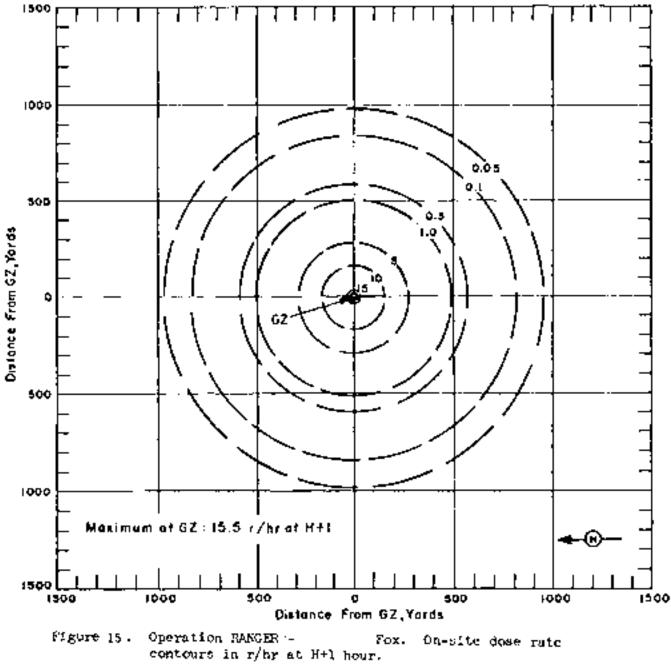
Figure 14. Hodographs for Operation RANGER - Baker-2.

OPERATION NAMOER - Fox		
$\frac{PST}{6} = \frac{GMS}{6} = \frac{GMS}{6}$	Sponser: IASL	
DATE: 6 FUD 1951 6 FUD 1951 TIME: C547 1347	<u>SITE:</u> NTS - Frenchman Flat 30° 48° K 115° 57' W	
	Site elevation: 3,140 ft	
TOTAL YISLD: 22 kc	HEIGHT OF BURST: 1,435 St	
	TYPE OF BURGT AND PLACEMENT: Air burst	
FIRSTALL DATA:		
Time to lot minimum: 7.6 to 15.4 c	A200	
Time to 2nd maximum: NM		
Rodian at 2nd maximum: NM	CLOUD TOP HEIGHT: 43,000 ft MBS. CLOUD BORTON HEIGHT: 27,000 ft MEL	

CRATER DATA: No Costor

#### REMARKS:

No local fallout. Induced-activity pattern was constructed from readings taken from  $\|v_{n}^{2}\|$  hours and to  $\|v_{n}^{2}\|$  hours along azimuth. No decay correction was used. All the values below 20 mr/hr were measured with Geiger-Mueller type-261GA survey instruments. The values above 20 mr/hr were measured with high- and low-range Juno ionization-type meters.



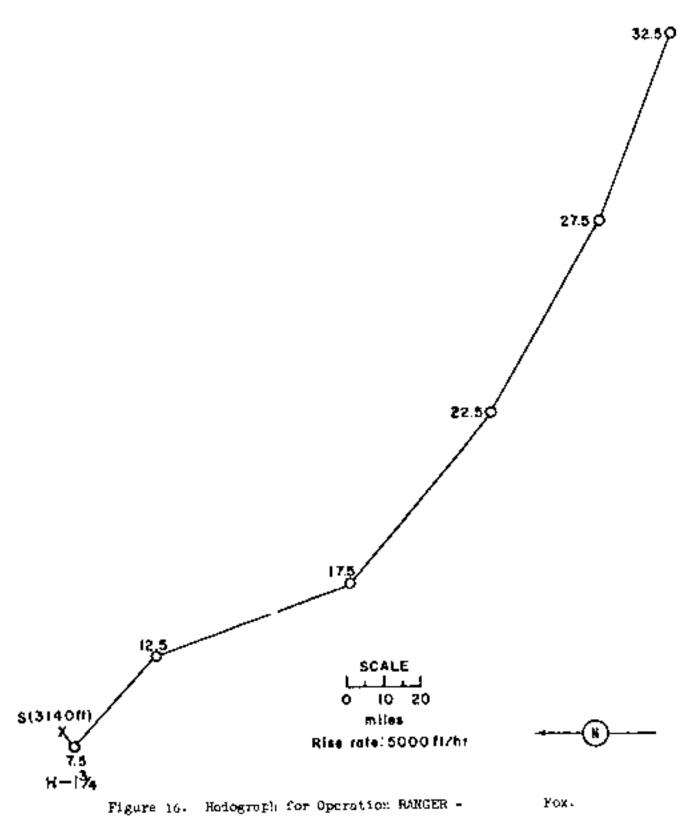
Altistate	II-C- hours		
(24:57)	Dir	Speed	
fret	degrees	mpi)	
Surface	150	02	
4,000	15-0	02	
(), COD	350	05	
6,000	359	10	
7,000	310	09	
8,000	270	12	
9,000	290	51	
15,600	310	31	
12,000	330	51	
14,000	340	1°ð	
15,000	(340)	(53)	
:5,000	330	56	
18,000	330	45	
20,000	310	56	
25,000	300	58	
30,000	žeo		

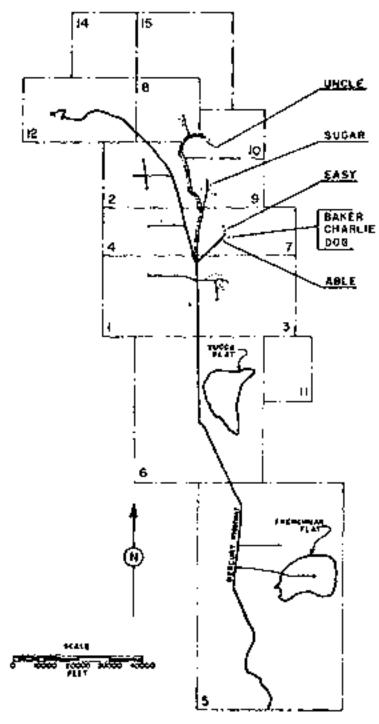
FOX

# TABLE 6 SEVARA WIND DATA FOR OPERATION BACKNE.

NOTES:

- 1. Numbers in parentheses are estimated values.
- Wind data was obtained from the Ringer control point licented on the slope of a mountain approximately 10 miles (in a southwesterly direction) from Prenchman Lake.
- 3. Tropopause height was 40,000 ft MSL.
- The surface air pressure was 13.18 psi, the temperature -2.0°C and the relative humidity 85≸.





NEVADA TEST SITE

Figure 17. Operation BUSTER-JANGLE, Shot Locations.

OPERATION BUSTER - JANGLE -

Abie

	PST	GMT
<u>MTE:</u>	20 0et 1997	20 000 1951
TIME:	0600	1400

TOTAL YUELD: <0.1 kc

FIREBALL DATA:

Time to ist	minimum;	202
- Clay to Pad	tan ximum:	NM
Rodius at 2	tes et example	10 A

CRATEN DATA: No croter

Sponsor: LASL

<u>SITE</u>: MTC - Areb 7 - Station 5 37° C5' 52″ K 116° C1' 26″ W Site elevation: 4,169-17 ft

MELONT OF BRAUCH ICC ft

TYPE OF BURNT AND PLACEMENT: Tower burnt over Nevade 1011

CLOUD TOT SEAST: 8,000 Ft MSI. CLOUD POTION SEAST: 6,000 Ft MSI.

#### REMARKS:

Gamma contamination was losignificant. The olyha represidention shown is based upon readings taken in D day and D41 and to reported in counts per minute with 50% geometry. Missiles were continend over a 500-yard radius. Readings on some pieces were greater than 20,000 epunts per minute.

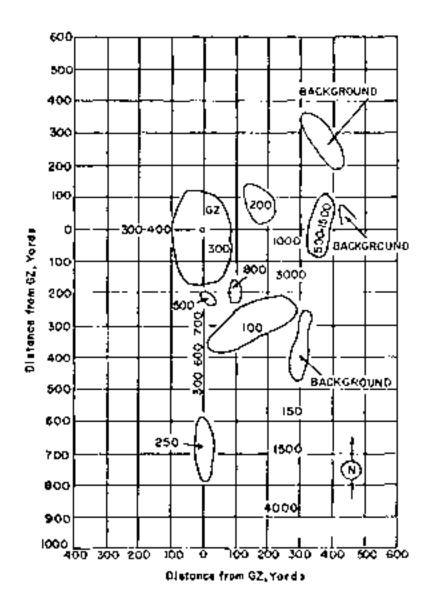


Figure 18. Operation BUSTER-JANGLE - Able. Alpha contamination designated in counts per minute with 50% geometry.

Altitude	E-hou	nr –	9+1 h:	<u>си</u> г	H+Y ho	urs
<u>(MSL)</u>	Dir	Speed	Dir	Speed	9ir	Speed
feet	degrees	mph	degrees	eph	(log)was	mph.
Surface	320	<b>0</b> 6	320	09	270	97/
5,000	320	10	320	20	320	07
6,000	310	17	310	17	320	05
7,000	310	20	310	20	330	03
8,000	310	20	310	20	330	0Ğ
9,000	310	21	310	21	320	0'i
10,000	300	20	300	20	300	07
$15,0\infty$	320	29	320	29	320	88
14,000	320	39	320	39	320	33
15,000			320	Ē1	310	36
16,000	320	54	320	54	310	ĹЗ
18,000	320	55	320	55	310	39
20,000	320	47	320	47	320	57
23,000			320	55		
25,000	320	61			320	87

NOTE:

Wind data was obtained by the Mercury Weather Station located at the C. P. At N-hour the pressure at ground zero was 874 mb, the temperature  $5.8^{\circ}$ C and the relative humidity 22 percent.

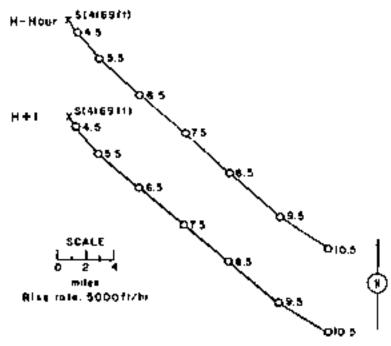


Figure 19. Hodographs for Operation BUSTER-JANGLE -

Able.

ABL 3

OPERATION BUSTER-JADOLE - Baker	
$\frac{PST}{DATE: 26 \text{ GeV} (36)} = \frac{\text{GCT}}{28 \text{ Ord} (195)}$	Sponsor: LASL
<u>DATE:</u> 26 C. 1991 28 Cet 1951 <u>TIME:</u> 0720 1520	<u>STTE</u> : NTS - Area 7 - Station 3 37° 05′ 06″ N 116° 01′ 12″ V
TOTAL YIELD: 3.5 Kt	Site elevation: 4,193 ft
10000 19000, 515 KL	ECICRT OF ROMET: 1,118 ft
FTRENIA, DATA:	TLOUD TOP HEIGHT: 31,700 ft MSL CLOUD BOTTOM HEIGHT: 33,000 ft MSL
Time to lot minimum: 5.5 to 6.0 msee Time to 2nd maximum: NM Radius at 2nd maximum: NM	<u>CEATER DATA</u> : No croter
	TIPE OF BUIET AND PLACEMENT: Air burst over Nevaca soll

#### REMARKS:

The contours reculting from this shot were due primarily to neutroninduced activity. Readings were obtained by conitors during area surveys or recovery operations and were taken i fit above ground with THE or SU-10 ionization-chamber survey metars. The pattern was obtained from readings taken at HALL hours and corrested to EAL hour, using the decay curve for neutron-induced activity in X-wada soil

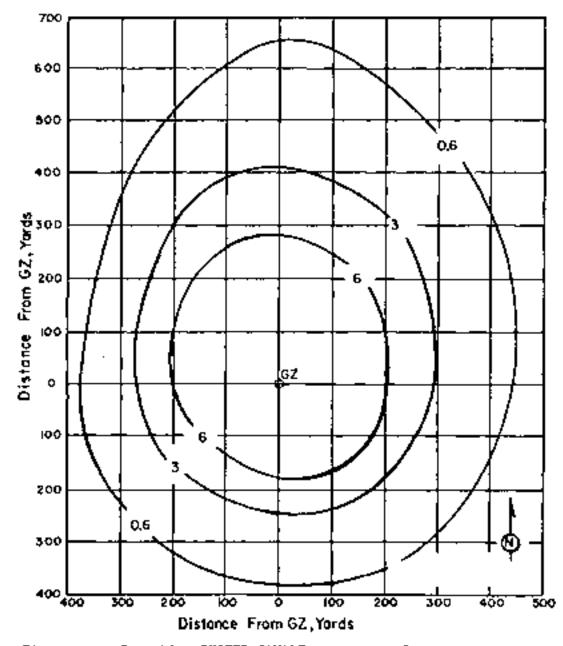


Figure 20. Operation BUSTER-JANGLE - Baker. On-site dose rate contours in r/hr at H\*1 hour.

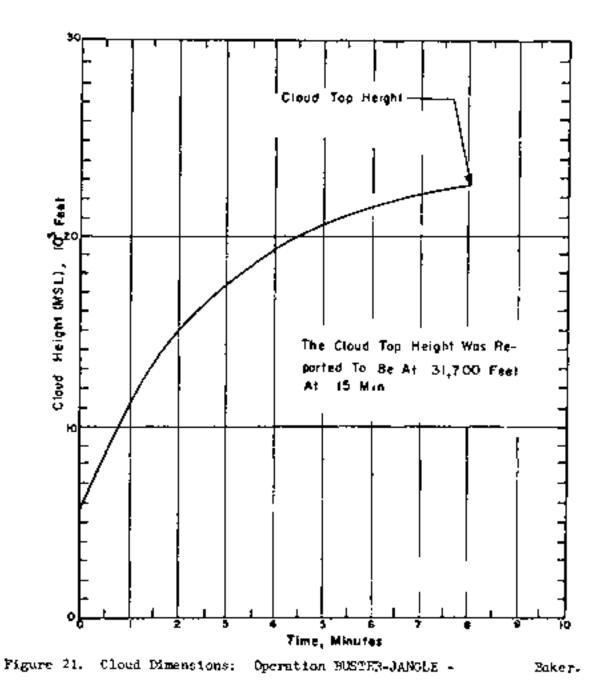


TABLE	8	NEVADA	MIND	DATA	POR	CPSRATION.	BOSTER-JANGUE
	-				2.025	01 110111 011	

Altitude	H-n	H-hour		×-F0	
(M20.)	Dir	Spring	Dir	Speed	
feet	degrees	mpi:	degrees	mpia	
Surface	320	10	340	ργ	
5,000	<b>-</b>		020	14	
6,000	030	23	0.C	15	
7,000			040	83	
8,000	050	29	040	25	
9,000			Q4C	25	
10,000	oyo	)7	030	20	
12,000	100	liu	050	0%	
14,000	050	177	080	13	
15,000	(050)	(20)	(080)	(13)	
16,000	050	21	<b>¢</b> 70	14	
18,000	050	25	<b>06</b> 0	16	
20,000	050	26	050	26	
23,000	050	32		• -	
25,000	050	<u>4</u> 4	050	24	
30,000	060	50	050	22	
35,000	060	63			

BAXER

NOTES:

- 1. Numbers in parentheces are estimated values.
- 2. Wind data was obtained by the Mercury Woother Station at the C. F.
- Tropapause height was 39,000 ft MSD.
   At M-hour the pressure at ground zero was 677 mb, the temperature 11.0°C and the relative humidity 28 percent.

36

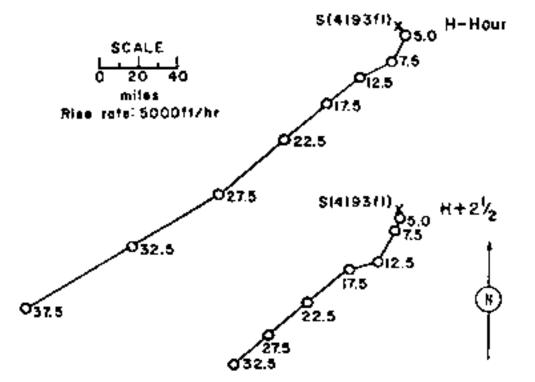


Figure 22. Modographs for Operation BUSTER-JANGLE - Eaker

OPERATION ELETER-JANOLE - Charplie	
<u>MATE:</u> <u>30 Oct 1971</u> <u>30 Oct 1771</u> <u>11ME</u> : 5705 1500	Sponsor: LASL <u>STTE</u> : MIG - Areas 7 - Station 3
<u>TOTAL YIROOM</u> 14 kt	37° 05' 06" N 116° 01' 13" W Site elevation: 0,193 ft <u>MELOME OF BUX(72</u> : 1,132 ft
<u>FIRENALS FATA:</u> Time to lat minimum: 12.5 to 13.0 eser Time to Pol seguines: 130 ro 735 mane Fullion at Pol maximum: 2M	TYPE OF EUROT AND FLACEMENT: Air burst over Nevada set:
<u>CRATER (ATA</u> ) - Ruberater	CLOUD TOP HEDONT: 41,000 F* MSL CLOUD LOTTOM HELOND: 27,000 F* MSL

## REMANDLE

The contours resulted from this shot were due primarily to delironinduced activity. Readings were obtained by monitors during area surveys or recovery operations and were takes 3 ft above ground with TIB or SU-IC ionization-chamber carvey meters. The pattern was obtained from readings taken at H49 hours and corrected to N+1 hour using the decay curve for neutron-induced activity in Nevada soil,

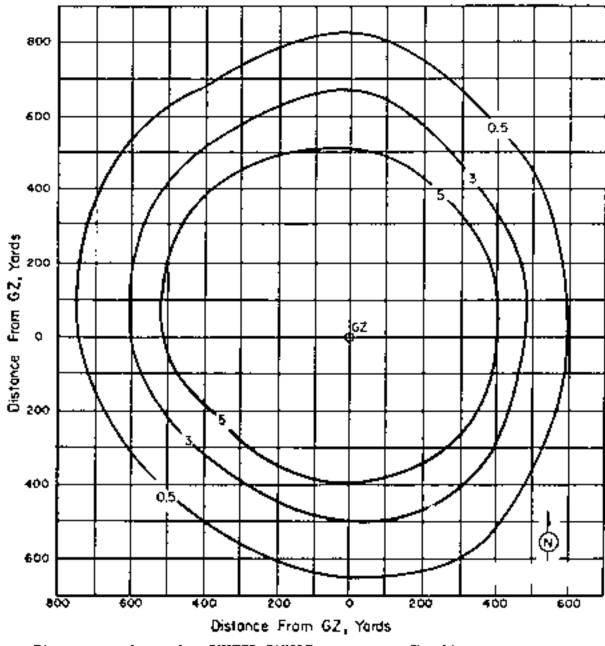
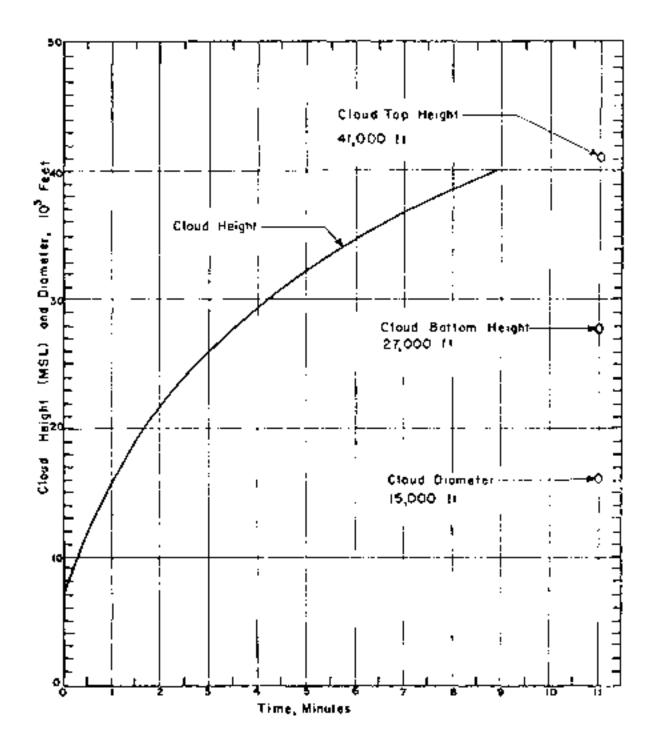
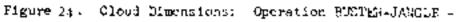


Figure 23. Operation BUSTER-JANGLE - Charlie. On-site dose rate contours in r/hr at H+1 hour.





Charlie.

Allitude			liti koar		<u>814 (s. 1</u> 6	10270	H40 hours	
(M:0-)	Dir	sipee i	D'r	Spinod	Dir	Speed	J:1 L	Si egi
feet	degrees	יי זני:	degrees	mph	degn-e	εF.P	degrees	wT:j1
Surface	360	сő	360	o6	310	05	090	<b>0</b> 6
5,000			340	07	Calm	Calm	C <sup>1</sup> C	- 03
6,000	250	35	290	05	նընե	Cale	0.70	- 05
7,000			290	-06	Collet	Calm	359	$0^{\circ}$
8,000	290	22	290	12	260	65	3020	¢8
9,000			270	13	270	0P	280	- 08
10,000	530	- 60	230	CĎ	r50	05	290	- 05
12,000	130	07	130	$G_{1}^{*}$	(8o	06	690	- 03
)¥,000 -	080	-09	-060 	09	JCC	-05	070	- 05
15,000	(c8c)	(15)	070	C7/	090	69	Q4G	- 10
16,000	080	12	C80	12	070	13	050	15
18,000	C)C	20	090	20	050	20	360	- 13
20,000	074	25	070	24	050	16	090	10
ຂອງໂດຍຍ	060	29						
25,000	050	32	050	32	060	25	040	- 13
30,000	050	35			0%C	3à	030	- 28
35,000	c Se	29			C60	31	030	- 20
40,000	£30	kĊ					920	12
45,000				• •			220	- 65
50,000							290	17

TABLE 9 NEVALA WIND INCA FOR OPERATION BUSTER-JANCEE - CHARLIE

10753:

- 1. Numbers in pureatheses are obtimated values.
- 2. Wind date was obtained by the Mercury Weather Station located at the C. P.
- Tropopause height was 38,000 ft MSL.
   At B-hour the pressure at ground zero was 8"2 mb, the temperature. 5.3°C and the relative humidity 14 percent.

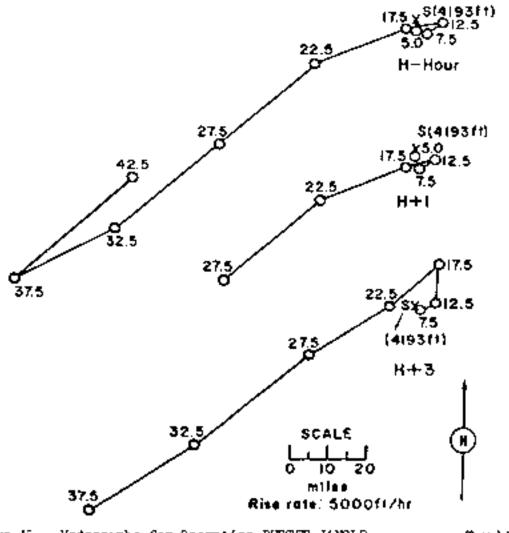


Figure 25 Holographs for Operation BUSTER-JANGLE - Charlie.

OPERATION EXCLUSION-JANGLE -

Dog

<u>INTE: 1 Nov 1991 1 Nov 1981</u> TIME: 0730 1980	Sponsor: LASL
TOTAL YIST.: 21 kt	$\begin{array}{rcl} \underline{S1TE}: & NPO & Area & 7 & - \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ & & & \\ & & & & \\ & & & \\$
	Site elevation: 0,193 ft <u>HEIGHT OF SURVE</u> : 1,417 ft
<u>FIREBALL DATA:</u> Time to 1st minimum: 15.5 mage Time to Sad maximum: 160 to 175 ms Redius at Sod maximum: 120	
CRATER LATA: No order	CLOUD TOP SET GET: 46,000 P. MEL CLOUD BOTTIN SELUCIO SU ,000 P. MEL

## RIMADICS:

The contours resulting from this show were due primarily to new stainduced activity. Readings were obtained by monitors during area surveys or recovery operations and were taken 3 ft above ground with THB or SU-10 ionization-charber survey meters. The patiene was obtained from readings taken at H+253 hours and corrected to H+1 hour using the decay curve for neutron-induced activity in Nevade soil

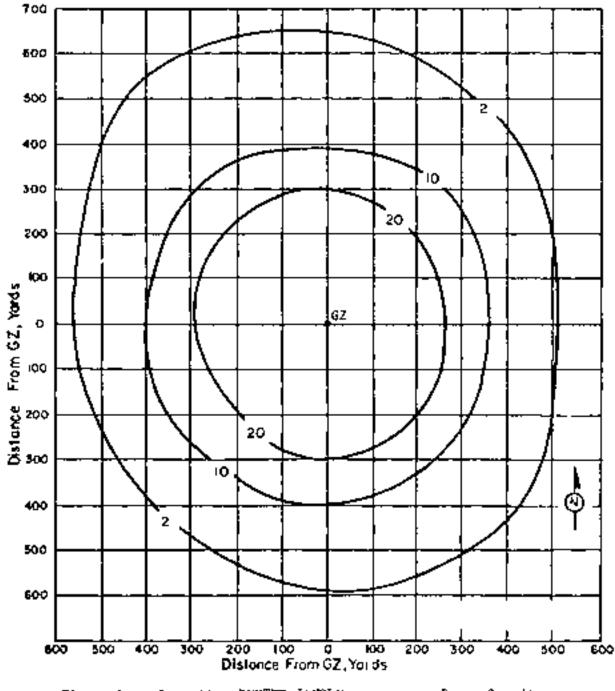


Figure 26. Operation BUGTER-JANGLE - Dog. On-site dose rate contours in r/hr at X+1 hour.

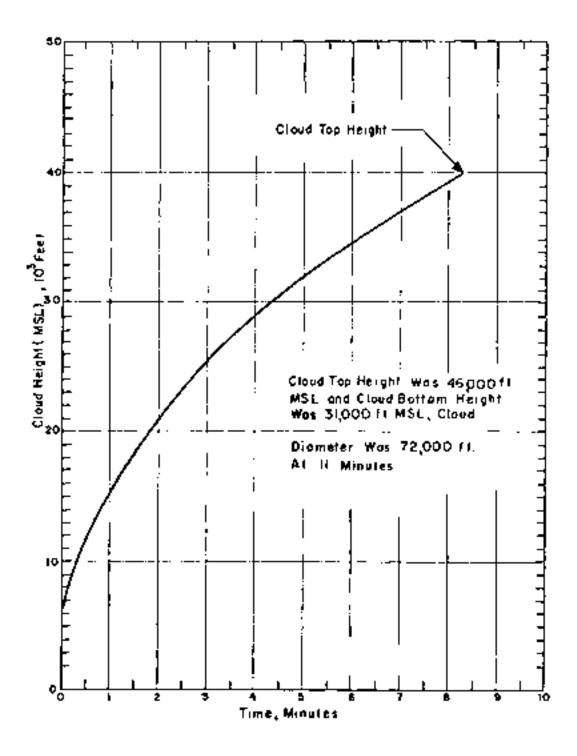


Figure 17. Cloud Dimensions: Operation EUSTER-JANGLE -

Dog.

Altitude	II-to	9. E.	11-1	heurs	1921	he da a	11 12	hourd
(MSL)	Dí s-	Stred	lin	Speed	<u>ia r</u>	<u>Opend</u>	Die	Sugar
feet	despress		degrades	E-1-11	1.1020.00		Sec. 25-160	70(2)
Surface	340	02	040	02	350	17	360	05
5,000			360	07	360	17	020	
6,000	320	24	330	10	390	15	030	10
7,000			31.0	17	330	)0	010	15
8,000	320	35	350	21.	339	13	35.0	17
9,000			350	20	310	28	320	12
10,000	380	37	390	31	240	24	320	i6
:z,000	320	<u>58</u>	390	33	340		344	32
14,000	374	Ä.;	330	ξo	Ř40	-5,2	340	47
15,000	$(\bar{3},\bar{2}\bar{2})$	$\langle \psi \rangle$	(370)	(45)	(240)	(544)	240	÷
16,000	320	<b>4</b> 8	320	1.5	24-2	1.9	330	$\mathcal{O}_{i}$
15,000	320	60	320	53	30	63	- 34	- C3
20,000	320	63	3.20	-	230	- 76	3,0	- 6ő
25,000	320	5 <u>8</u>		• -		• -	•	
25,000	320	53	330	52		•.		
36,000	320	73						
33,000	Sac	26						
46,220	370	20						

DOG

TABLE IC - NEVADA WIND DATA FOR OPERATION RESIDER-JACKIE-

NOTES:

- 1. Numbers in parentheses are estimated values.
- Wind data was physical by the Mereopy Workser Station located st. the C. P.
- 3. Tropopeuse height was 38,000 ft MSL.
- At R-hour the pressure at ground were was SY6 all, the temper ture 15.9°C and the relative humidity 45 p reset.

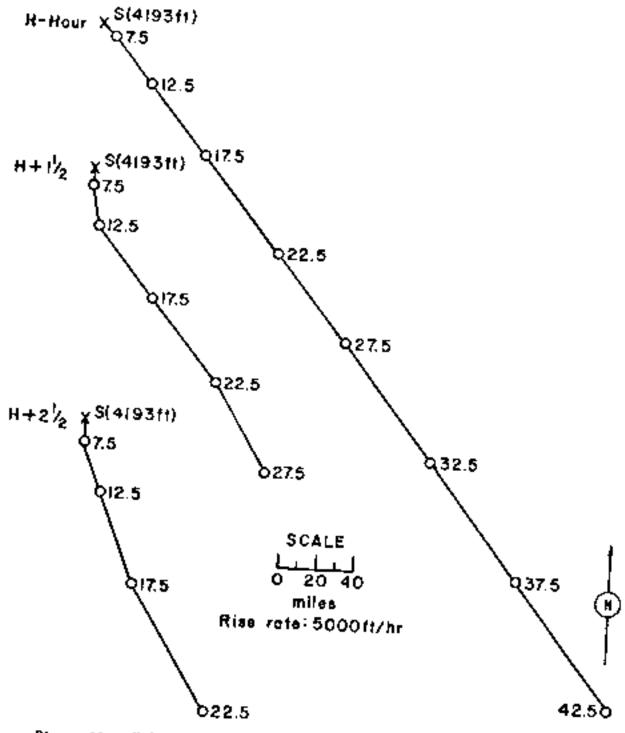


Figure 28. Holographs for Operation RUSTER-JANGLE -

Dog.

OPERATION:	BUDTER-JANGLE -
------------	-----------------

Easy

PST 30	C.T.	Spansor: MSL
DATE: 5 NOV 1977 5 NOV TIME: 0830 1630	1935	$\frac{S1TC}{37^{0}} = \frac{8155}{51^{0}} = \frac{4765}{51^{0}} = \frac{7}{51} = \frac{512}{51} = \frac{512}{510} = \frac{11}{500} = $
TOTAL YIELD; 31.0 KC		Site elevation: 3,225 ft HEIGHT CY HINET: 1,316 ft
		TYPE OF DUEST AND PLACEMENT: Air burnt over Severe soll
	15 to 20 move	
Time to Fnd maximum:	190 to 210 msec	CLOUD FOR HEIGHT: SC.IC. C. MELS

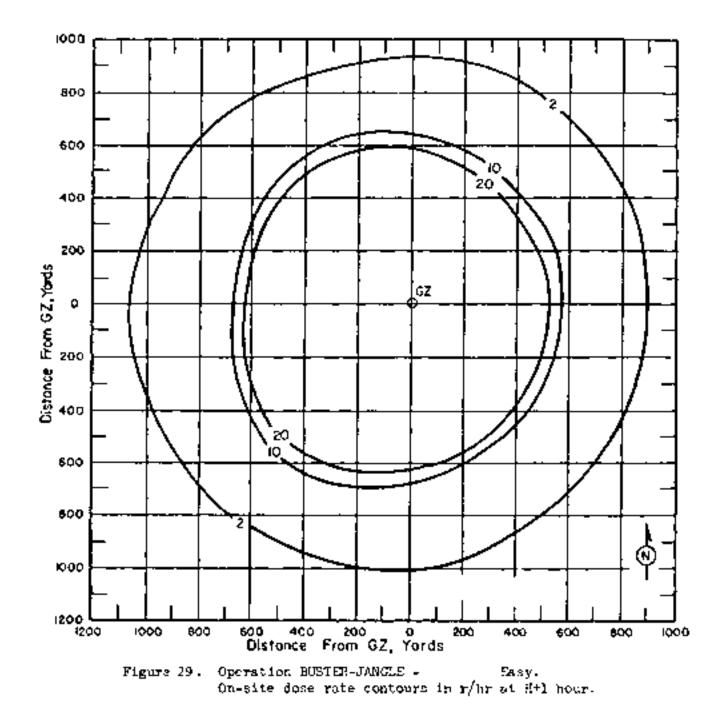
NING NO ING HERIOTOTA	Ty to zu mave
Time to Prd maximum:	190 to 210 msec
Radius at 2nd maximum:	11.4 11.4

00,000	TOF ES	1 <u>G:FE</u> : ' .	Cy10. ft.	MED
CLOUD	BOTTOM	SOCIONTS	- 35,000	rt MGL

CRATER DATA: No emitter

## REMARKO:

The conjours resulting from this shot were due privarily to neutron-induced activity. Readings were obtained by monitors dening area surveys or recovery operations and were taken 3 ft above ground with TiB or SU-10 instruction chamber curvey meters. The pattern was obtained from readings taken at H+2% hours and corrected to H+3 hear. using the decay curve for neutron-induced activity in Nevada poil



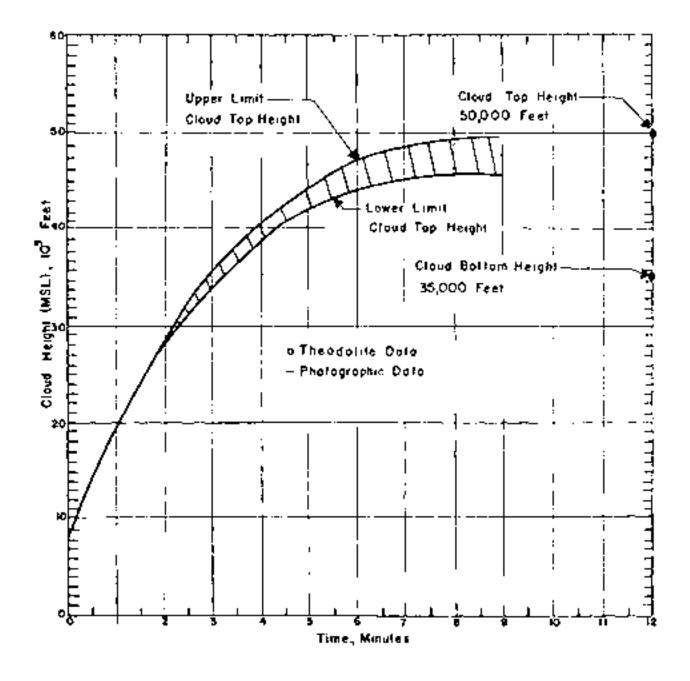


Figure 30. Cloud Dimensions: Operation BUSTER-JANGLE - Easy.

Altitole	5 <b>-</b> 50	υr	114 junior		
$\langle MSL \rangle$	Dir	Speed	[/ir	Speed	
feet	degrees	Յբի	degrees	mph	
Surface	02/0	15	020	<b>)</b> C	
5,000	<b>-</b>		C20	16	
6,000	010	29	030	-18	
7,000			360	18	
8,000	020	18	020	16	
9,000			CI-C	18	
10,000	050	21	07C	22	
12,000	ção	25	c/c	25	
16,000	010	38			
15,000	(360)	(37)	360	36	
16,000	340	37	3/10	35	
18,000	3%0	26	340	28	
20,000	320	22	310	26	
25,000	360	38	360	58	
28,000	350	32			
30,000	250	31			
55,000	350	40			
-5,000	340	52			
45,000	330	63			

TABLE 12 NEVADA WIND DATA FOR OPERATION EXCTER-JANGLE - SACY

NOTEST

1. Eucobero in prestnesses are estimated values.

- 2. Wind data was obtained by the Mercury Weather Station located at the C. P.
- Tropoyause height was 35,600 ft MSL.
   At S-hour the pressure at provid zero was 875 mb, the temperature 11.3°C and the relative humidity 17%.

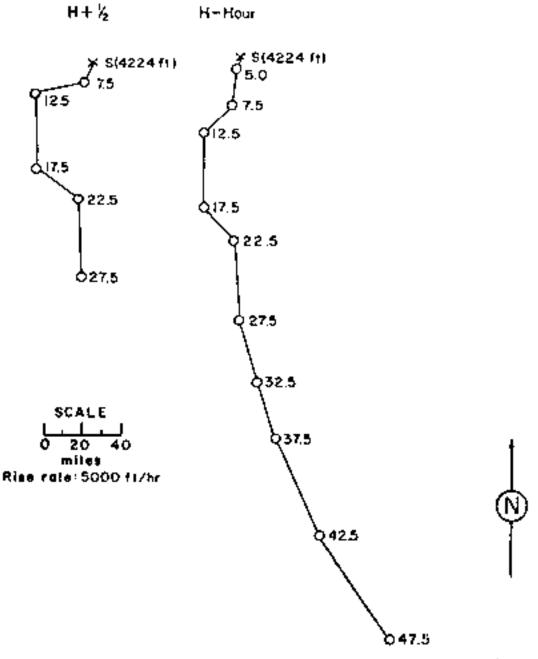


Figure 31. Hodographs for Operation BUSTER-JANGLE - Easy.

OPERATION DUSTER-JANGLE -

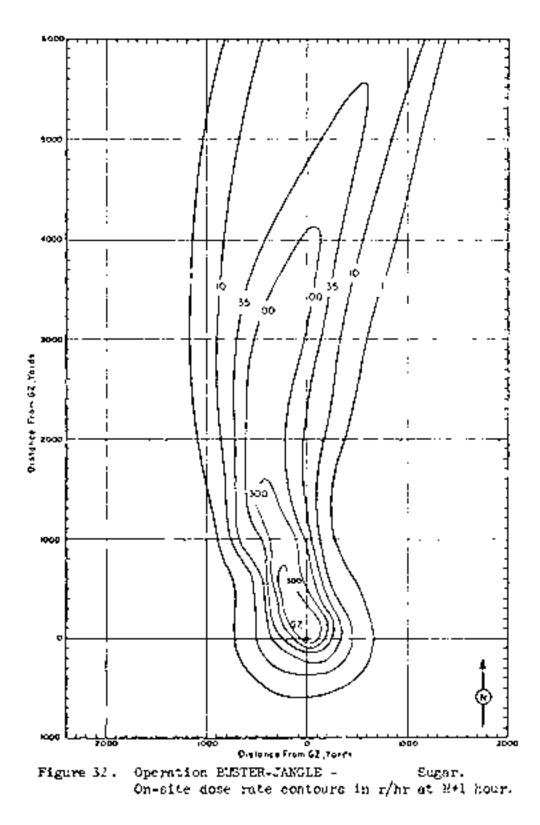
Sugar

DATE: TIME:	19 Nov 1951 0900	<u>GMT</u> 19 Nov 1951 1700	Sponsor: DOD
			<u>SITE</u> : MT3 - Area 9 37° Ογ' 54″ N 1:6° Ο2' 19″ W
TOTAL	YI <u>9555</u> : 1.2	kt	Site elevation: 4,219 ft
			HEFORE OF BLACKTE 215 FE
Time	<u>IL PATA:</u> to 1st minim to 2nd mexim	um: 6 - 7 misce um: NM	<u>TYPE OF BURGE ALL PLACHEEXT:</u> Surface bards from platforms on Nevada coil
	us st 2nd max		CLOUP CON 201 2011 - 15,600 31 MOL CLOUP FORTOM RES <u>C</u> EPT (1,000 35 MOL

<u>CRATER DATA:</u> Dimentor: 90 ft maximum dose pute: 7500 p/LP at E+1 Depth: 21 ft at crater lip hour Volume: 50,000 ft<sup>3</sup>

#### REMARKS:

The contomination resulting from this shot was well documented to several thousand yords. The on-site pattern was drawn from the data and maps of three scientific projects and can be considered reliable. Direct measurements of radiation fields at one hour after burst were obtained with constant-recording scintillation counters. Additional readings were taken with AN/PDR-TIB survey meters over the period 2- to 70 hours after burst. These readings were corrected to the reference time of one hour by the use of the t<sup>-1-2</sup> decay approximation. The off-site pattern is less reliable because only a limited number of readings were available.



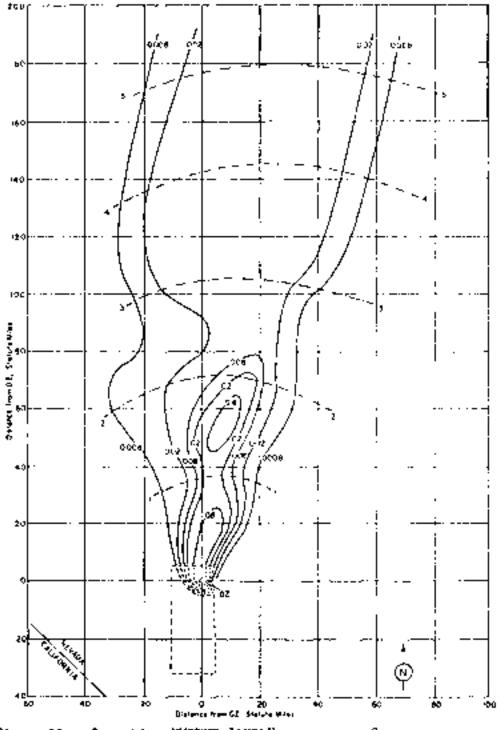


Figure 33. Operation BUSTER-JANGLE - Sugar. Off-site dose rate contours in r/hr at H+1 hour.

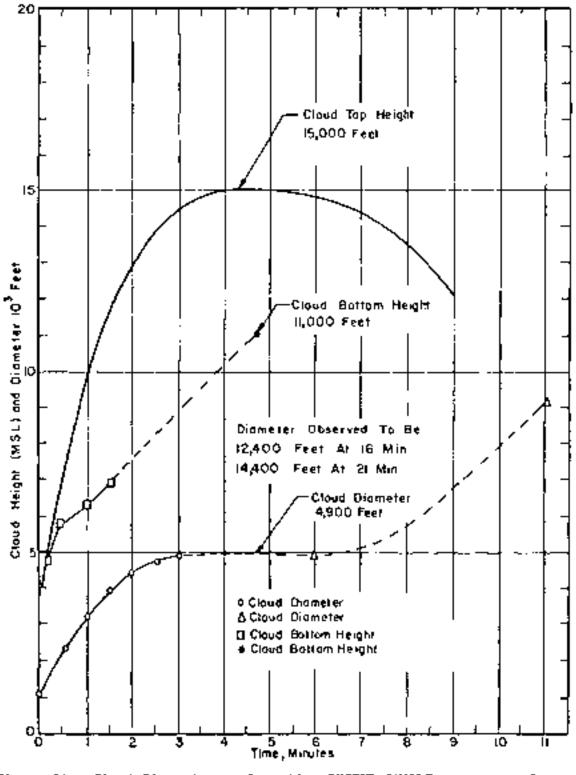


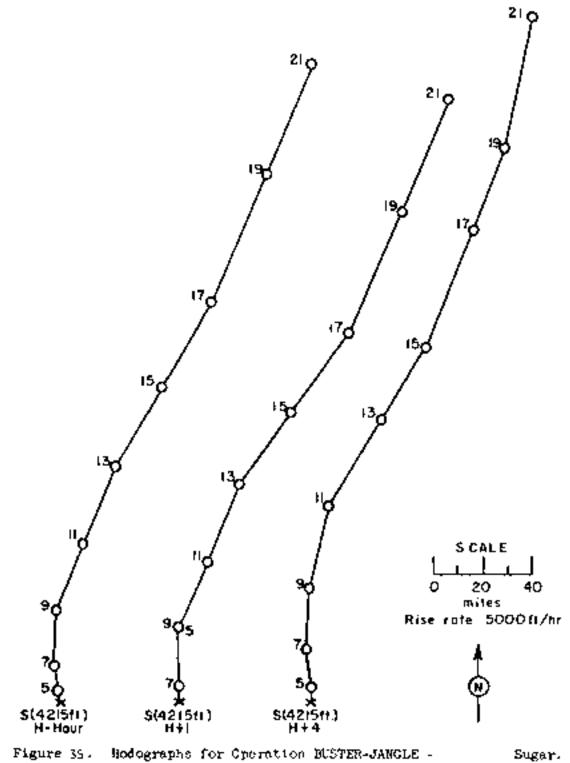
Figure 34. Cloud Dimensions: Operation BUSTER-JANGLE - Sugar.

Altitude	B-hour		211 hour		HWG hours	
(MSL)	Dir	Sceed	Di	Speed	Dir	Speed
feet.	degrees	որչ,	degrees	որի	degrees	apli
Serface	190	02	Calm	Colim	180	09
5,000			Calm	նանոր	170	12
6,000	170	15	170	15	170	18
7,000		<u> </u>	180	23	180	26
8,000	180	30	180	30	180	31
9,000			200	32	180	35
30,000	500	37	200	37	190	42
12,000	200	42	200	42	530	51
14,000	210	46	210	46	210	44
15,000			210	47	210	45
16,000	510	51	210	52	200	- 66
18,000	200	72	500	72	200	- 55
20,000	200	- 62	200	62	2.90	69
25,000	210	72				
30,000	210	8c				
35,000	210	90				

TABLE 12 NEVADA WIND DATA FOR OFERATION BUCTHR-JANGLE - SUGAR

NOTES:

- 1. Wind data was obtained by the Mercury Weather Station located at the C. P.
- 2. At 2-hour the pressure of ground zero was 871.5 mb, the temperature  $1^{\circ}C$  and the relative humidity 47%.





.

Sugar.

OPERATION BUDTER-JANGLE -	Une Le
<u>POT 6MT</u> <u>DATE: 29 Nov 1951 29 Nov 1951</u> <u>TAME:</u> 1200 2000	Sponsor: DOD - LASL <u>SITE: NTS - Area 10</u>
TOTAL YINT D: 1.2 At	$37^{6}$ 10' 11" N 116 <sup>5</sup> 62' 33" N Site elevation: $4,235$ 55
FIREBALL DATA:	HEIGHT OF SURAD: -17 YC Underground
Time to 1st mintmume NM Time to 2nd maximume NM Redius at 2nd maximume NM	TYPE OF ERCT AND HACOMERT: Underground Lupst - Filled shaft in Nevada soll
	<u>CLOUD INF RELOW</u> : 11.400 ft MOL <u>CLOUD BOTYCH CHIGHT</u> : Xet evailable
CRATER DATA: Dismeters: 260 ft Mu	xinun door rate: → 2000 r/hr ny H+1 nour

# Valume: 980,000 re<sup>3</sup>

Depth:

#### REMARKS:

The contamination resulting from this shot was well documented to several thousand yards. The on-site pattern was drawn from the data and maps of three scientific projects and can be considered reliable. Direct measurements of radiation fields at one hour after burst were obtained with constant-recording scintillation counters. Additional readings were taken with AN/PDR-TIE survey meters over the period 24 to 70 hours after burst. These readings were corrected to the reference time of one hour by the use of the  $t^{1+2}$  decay approximation. The off-site pattern is less reliable because only a limited number of readings were available.

53 ft at erater lip

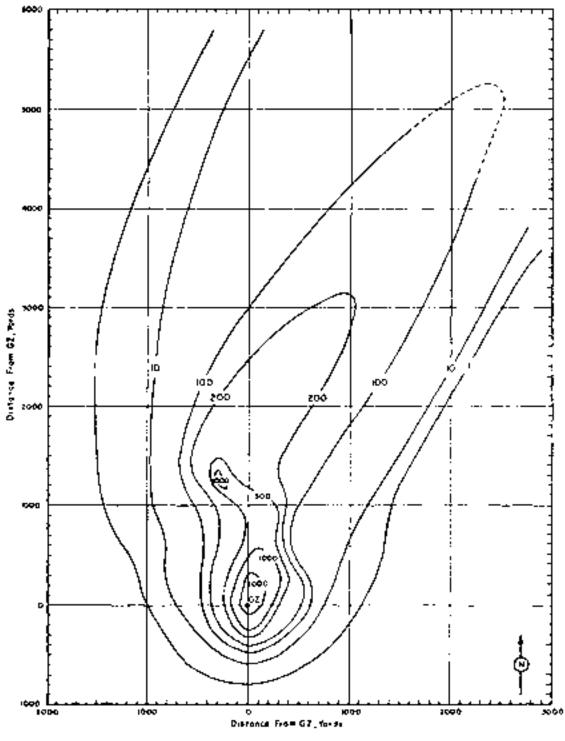
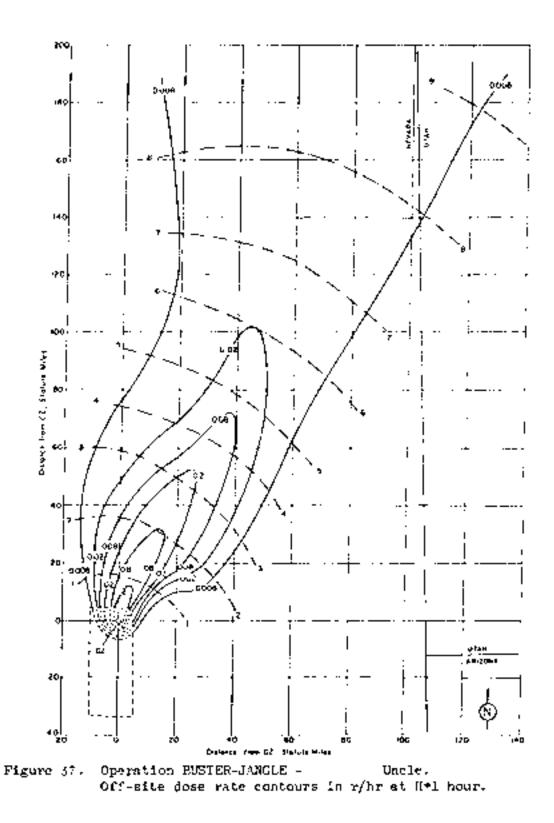
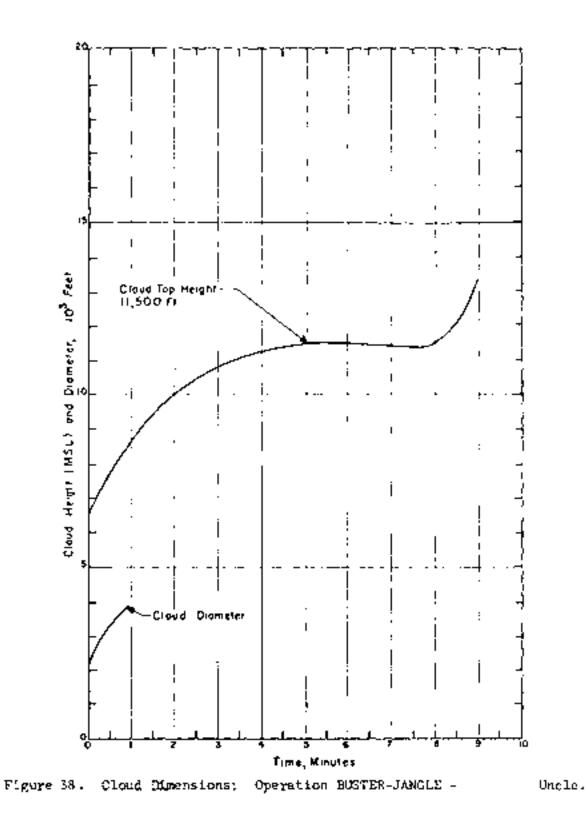


Figure 35. Operation RUSTEP-JANGLE - Uncle. On-site dose rate contours in r/hr at H\*l hour.





Altitude	H-hour		II+1 hour	
(MSL)	Βir	Speed	Dir	Speed
feet	degrees	aph	degrees	mph -
Surface	180	02	040	03
5,000			050	03
6,000	190	05	290	05
7,000			180	- 09
8,000	210	27	510	17
9,000	•	-7	220	24
10,000	<b>2</b> 30	24	220	25
12,000	240	<b>8</b> 8	250	55
14,000	250	29	250	21
15,000			260	26
16,000	250	34	250	30
18,000	250	ցե	250	36
20,000	250	<u>3</u> 4	250	41
25,000	250	4ī	250	41
30,000	250	43	250	43

NOTES:

- Wind data was obtained by the Mercury Weather Station located at the C. P.
- At M-hour the pressure at CZ was B72 mb, the temperature 14.5°C and the relative humidity 35%.

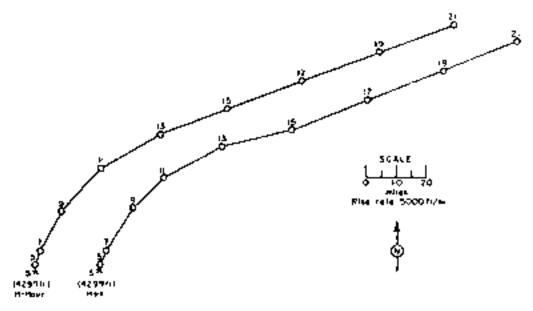
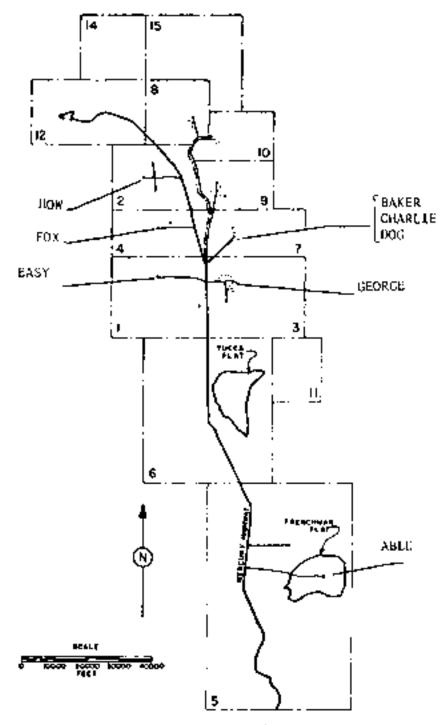


Figure 39. Hodographs for Operation BUSTER-JANGLE - Uncle.

UNCLE



NEVADA TEST SITE

Figure 40. Operation TWMELER-SWAFPER, Shot Locations.

OPERATION TUNN	AR-CRETTAR	-	ABLE
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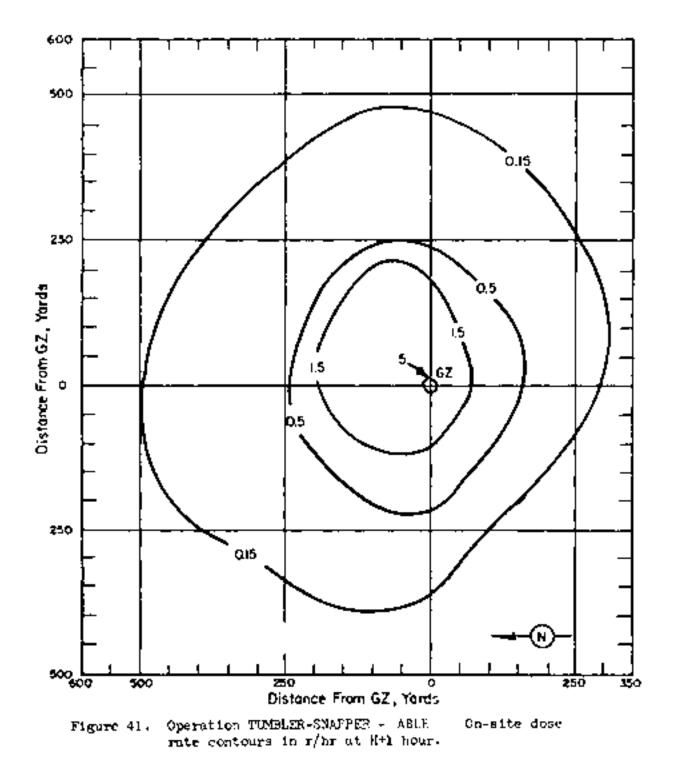
DATE: TATE 1952 CMT	Sponsor: 30D - JASL
<u>TIME:</u> 6000 1700	<u>SITE</u> : NTS - Frenchman Flat 36° 47' 54" X 115° 56' 08" V
	Site elevation: 3,077 ft
<u>2034), Yuyuu</u> 1 ku	HEIGHT OF BURGT: 793 IS
	TYPE OF BUREN AND PLACEMENT: Air burst over Newads soil
FIREBALL (MTA) Time to let minimum; 2.85 to 3.5 mase Time to Sed maximum; 90 to 125 mase	
Padius at 2nd maximum: NM	CLOUB TOP HELCHT: 16,200 C: MGL CLOUD BOFICH (SHIGHT: Not available

CRATES DATA: No crater

REMARKS:

The contours resulting from this shot were due primarily to peutroninduced activity. Readings were taken by radiological safety survey teams working with test recovery parties on B day, D+1 day and D+2 day. These readings were extrapolated to R+1 hour, using the generalized decay curve for neutron-induced activity in Nevada soil

67



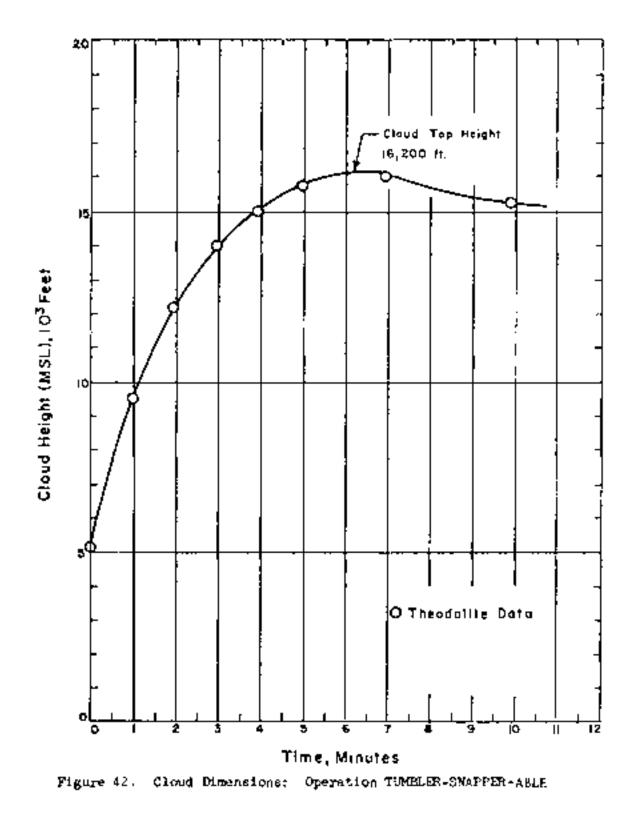


TABLE 14	NEVADA	$\rm MDMD$	DATA	FOR	OPERATION	TIMBLER-SNAPPER -ABLC	

Altitude	Մ-իօս	יד ידי
(MSL)	Dir	Speed
fcel	degrees	արչ։
Surface	050	07
5,000	090	06
6,000	150	<b>o</b> 6
7,000	140	08
8,000	170	-09
9,000	200	09
10,000	210	12
12,000	25C	17
14,000	250	16
15,000	250	20
16,000	260	23
18,000	260	39
20,000	260	ι, p
25,000	260	L9
30,000	270	21 <sub>4</sub>

NOTES:

- 1. Find data was obtained by the Mercury Veather Station located at the C. P.
- Tropopause height was 42,000 ft MSL.
   At E-hour the pressure at ground zero was 91<sup>L</sup> mb, the temperature 58<sup>0</sup> F and the relative humidity 25%.

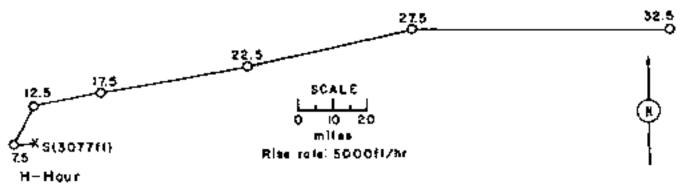


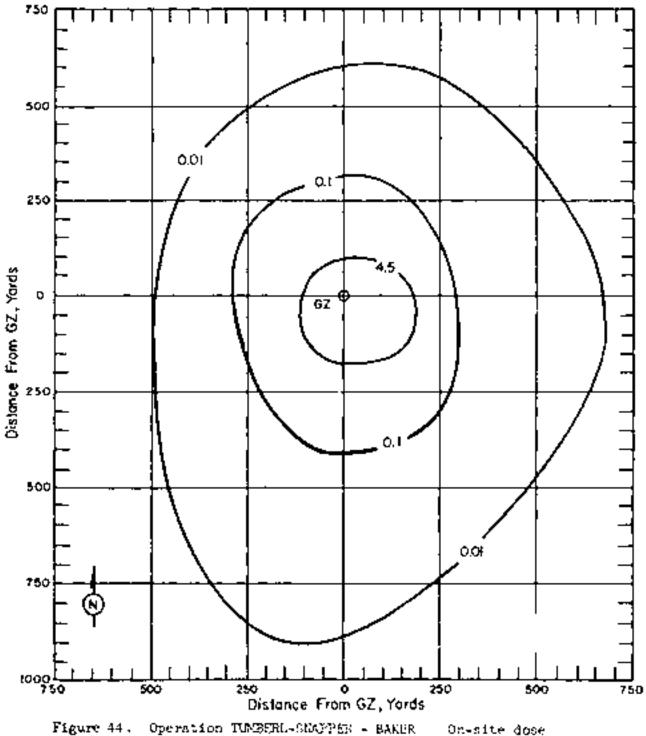
Figure 43. Hodogroph for Operation TUMELER-SNAPPER- ABLE

OPERATION TUMPLER CHAPTER - BAKER

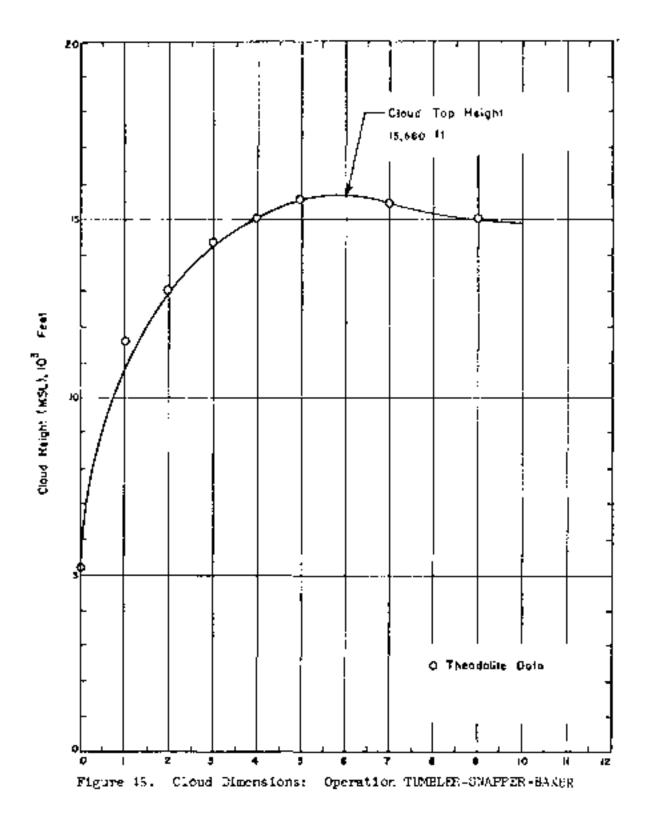
DATE: 15 Apr 1952 15 Ap	<b>'EM</b>	Spondor: DOD - LASL	
<u>TIME:</u> 0930 1730	-F - 1978	<u>SITS:</u> NCS - Area 7 - 3?° 05' 03" 116° 01' 10"	х У
TOTAL <u>YIELD</u> : 1 kt		Site elevation: 4, <u>HEIGHT OF ELECT</u> : 1,)	
		TYPE OF RECT AND PLA	
CRAIPE DATA: No cruter		Air burst over Nevs	03 5011
<u>FIREBALL DATA:</u> Time to 1st minimum: Time to 2nd maximum:	3 to 5 msec 90 to 105 msec	CLOUD TOP SETCHT:	25,700 ft MGL
Radius at 2nd maximum:	10M	CLOUD SOTION SETTIET:	10,000 ft MSL

# REMARKS:

The contours resulting from this shot were due primarily to neutroninduced activity. Readings were taken by radiological safety survey teams on P day, D+1 day, D+2 days, and D+3 days along eight radial lines of numbered wooden stakes placed 100 yards apart. The readings were extrapolated to H+1 hear using the decay curve for mentron-induced activity in Nevada soil



Operation TUNBERL-SNAUPER - BAKER rate contours in r/hr at H#1 hour.



R-Doa	r	Altitude	H=5000	3 <b>*</b>
D1r	Spend	(M.C.)	()ir	Speed
degrees	7032);;	freeL	degrees	r≑t::'
050	07	16,000	310	21
04C	07	18,000	01Ę	21
Q4C	07		300	29
050	10		270	35
Q40	14	30,000	260	40
030	14	35,000	260	25
360	10	40,000	230	32
340	09	45,000		រ៍សំ
320	10			4 G
310	16		270	- 26
	01 r degrees 050 040 050 040 050 040 030 360 340 320	degrees         πph           05C         07           04C         07           04C         07           04C         07           05O         10           04C         14           030         14           36O         10           34-0         09           32O         10	Dir         Speed         (MS.)           degrees         mph         foot           050         07         16,000           040         07         18,000           040         07         20,000           050         10         25,000           040         14         30,000           030         14         35,000           360         10         40,000           340         09         45,000           320         10         50,000	Dir         Space         (M.2.)         Dir           degrees         πph         foot         degrees           050         07         16,000         310           040         07         16,000         310           040         07         16,000         310           040         07         20,000         300           040         07         20,000         300           050         10         25,000         270           040         14         30,000         260           030         14         35,000         260           360         10         40,000         270           340         09         45,000         270           320         10         50,000         270

TABLE 15 NEVALA WIND DATA FOR OPERATION TERRET-SNAPPICE BANER

## NOTES :

- 1. Wind data was obtained by the Mercury Veather Station located at the C. P.
- 2. Propopause height was 38,000 Ft MSL.
- At M-hour the pressure at ground zero wit 878 mb, the temperature 52.8°F and the relative humidity 30%.

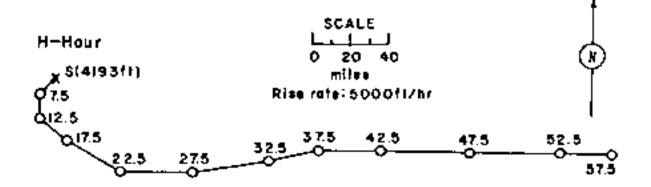


Figure 46 . Hodograph for Operation - TUMICER-SNAPPER- BAKER

OPERATION TUMBLER-SHAPPER - CHARLIE

PET GMT	Sponsor: 000 - LASE
<u>DATE: 22 Apr 1952</u> TIME: 0937 1730	<u>SITE</u> : NTS - Area 7 - Target 3 37° 05° 04″ X 116° 01′ 23″ W
	Site elevation: 4,193 Fr
TOTAL YISLD: 31 kt	HEIGHT OF BUNKE: 3,467 Pt
	TYPE OF ELECT AND FLACEMENT: Aly burst over Nevada soil
FIRSHALL DATA:	-
Time to l.t minimum: 15 to 18.5 m	
<ul> <li>Time to 2nd parameters 150 to 190 mas</li> </ul>	20
Forglands with Open investigation MM	CLOUD TOP SELENT: 42,000 ft MSL
	CLOUD MATTON MELCHI: 31,000 fr MEL

CRATER DATA: No grater

## REMARKS:

The contours resulting from this shot were due primarily to neutroninduced activity. Readings were taken on D day and 541 day by the radiological safety survey thans along eight radial lines of numbered wooden stakes placed 100 yards apart. These readings were extrapolated to E+1 hour, using the decay curve for neutron-induced activity in Nevada soil

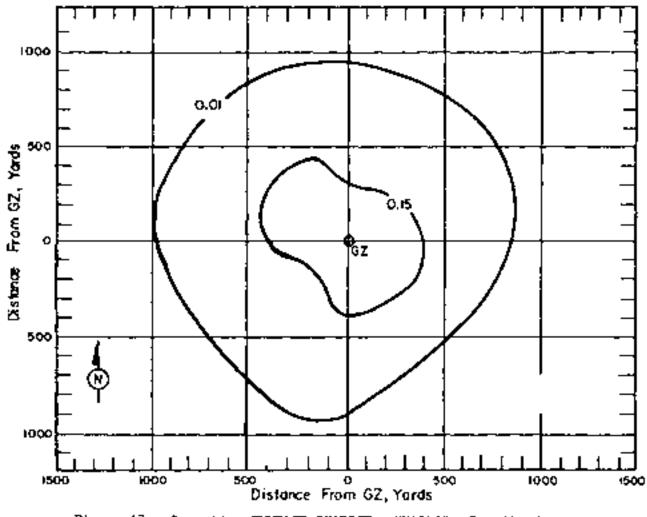


Figure 47. Operation TUMBLER-SNAPPER - CHARLIE On-site dose rate contours in r/hr at E+1 hour.

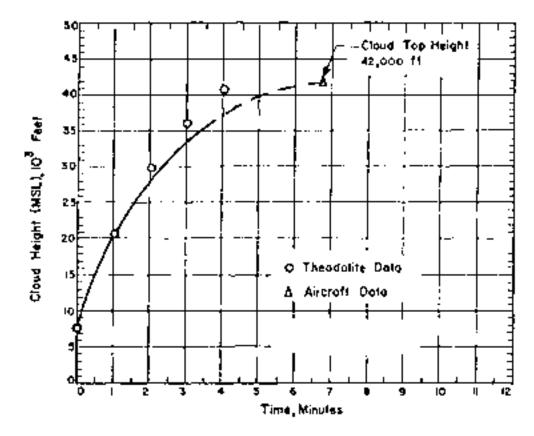


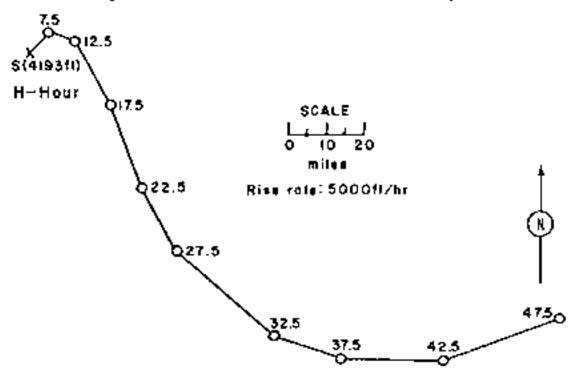
Figure 48. Cloud Dimensions: Operation TURE(SE-SUAPPER-CHARLE).

Altitude	H-hour		Altitude	E-bour	
( <b>K</b> SL)	Dir	Speed	(2425.)	Dix	Correl
feet	degrees	កណ្ដា	teet	degrees	រាក្នុះវិទ
Surface	230	<b>0</b> 7	15,00G	330	15
5,000	250	09	16,coc	330	16
6,000	250	C9	18,000	330	19
7,000	210	68	20,000	37.0	$\Gamma($
8,000	210	C6	25,000	330	18
9,000	240	03	30,000	310	33
10,000	290	- 66	35,000	290	17
12,000	350	09	40,000	270	25
14,000	360	12	45,000	2%0	32

TABLE 16 NEVADA WIND DATA FOR OPERATION TURRLER-SUAPPER-CHARLED

NOTES:

- Wied data was obtained by the Morcury Vesther Station located at the C. P.
- 2. Tropopause bright was 58,000 ft MSL.
- At N-hour the pressure at ground zero who <sup>0.9</sup>k mt, the temperature 56.1°F and the relative bundlity 30%.



## Pigure 49. Hodograph for Operation TUN28.ER-SNAPPER-GHARLIE

OPRIMITION TORRESPONDED IN 1 pag

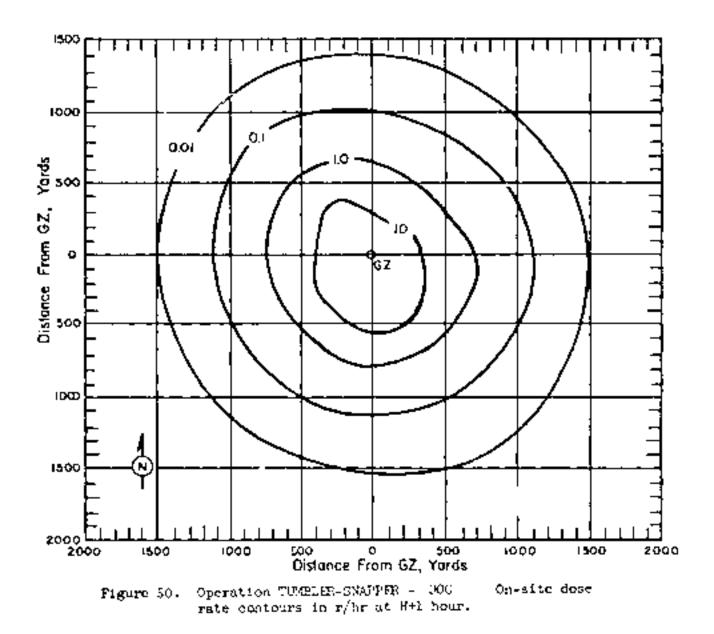
POT DATE: 1 May 1940	5MC	Sponsor: LASL
101%L Y1%da 19 kt	1630 1630	<u>Site</u> : NTS - Area 7 - Target 3 37° 05' 03" M 116° 01' 13" W Site elevation: 4,193 ft MELGHT OF DESET: 1,040 ft
PIREMON DATA;		THE OF BURGT AND FIACEMENT: Air burst over Nevada soil

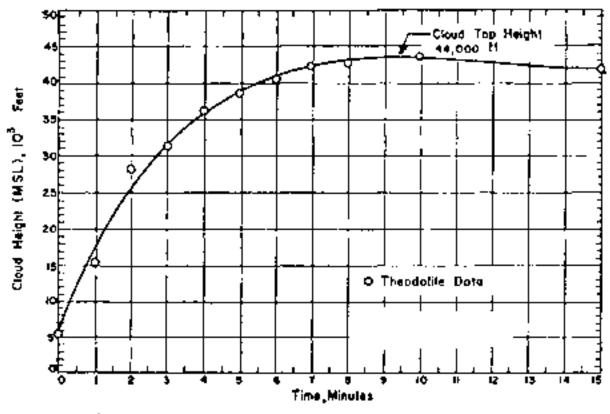
Time to lot minimum: 12.5 to 15 msee <u>GLOUD TOP HELGET</u>: MA,000 St MDL Time to Red maximum: 130 to 160 msee <u>GLOUD BOTTOM HELGET</u>: 28,000 St MDL Radius at Set maximum: NM

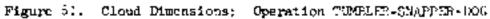
\_CRATER\_DATA: No croter

# REMARKS:

The contours resulting from this shot were due primarily to seutroninduced activity. Readings were taken by radiological curvey teams along eight radial lines of numbered wooden stakes placed 100 yards apart. These readings were taken between H\*36 minutes and N+66 minutes. No decay corrections were made.







Altitude			Altitudo	Helician	
(MS1.)	17. 7	Speed	(MOL)	$\overline{\text{Di}\tau}$	Sper-d
feet	degrees	mp2)	feet	CHR34444	றைக
Surface	020	03	14,000	250	14
5,000	240	05	15,000	260	18
6,000	210	07	16,00C	280	22
7,000	200	10	18,000	270	30
8,000	190	13	20,000	260	36 24
9,000	180	14	25,000	260	2 A A
10,000	190	15	30,000	250	ելե
12,000	190	լկ	35,000	260	1,17

TABLE 17 NEVADA WIND DATA FOR OPERATION TUMPLER-CHAPTER-1006

NOTES:

- Wind data was obtained by the Mercury Wonther Station located at the C. F.
- 2. Tropopause height was 38,000 (t MSL.
- At H-hour the pressure at ground zero was 877 mb, the temperature 62.8°F and the relative humidity 47%.

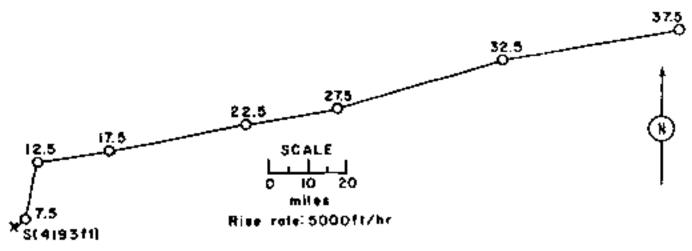




Figure 52. Hodograph for Operation TAMS\_FR-SNAFFER-DOG

OPERATION TUMELER - CNADDER - EASY

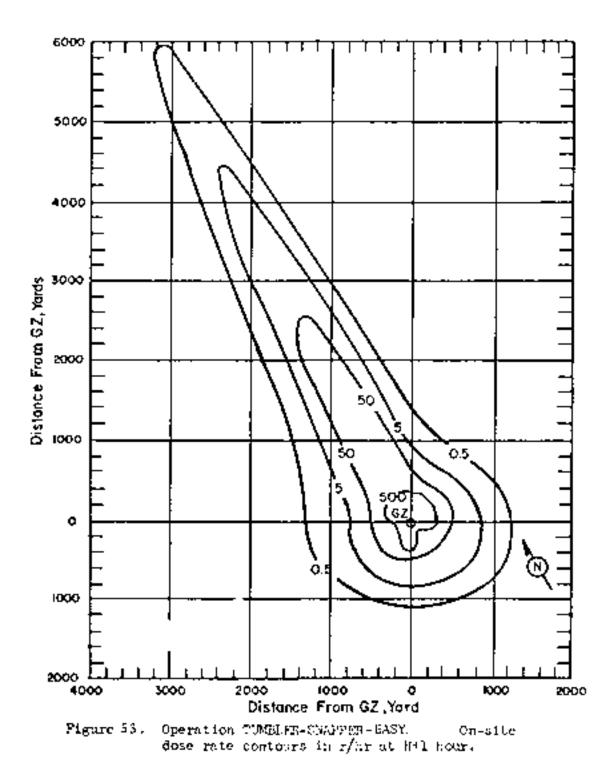
<u>FST GMT</u> <u>TWT6:</u> 7 May 1952 <u>71M2:</u> 0 <sup>1,</sup> 15 1215	Sponsor: LASL
	<u>SITE:</u> NIS - Area T-1 37° 03' 11" N 116° 66' 20" W
<u>TOINJ. YINLE: 12 kt</u>	Site elevation: 0,329.25 ft <u>HEIGNT CO SUNDT</u> : 300 ft
	TYPE OF EUROT AND PLACEMMENT: Tower burst over Sevada soil.
FIREBALL DATA: Time to 1st minimum: 9.3 to 12.5 mset Three to 2pd maximum: 95	¢

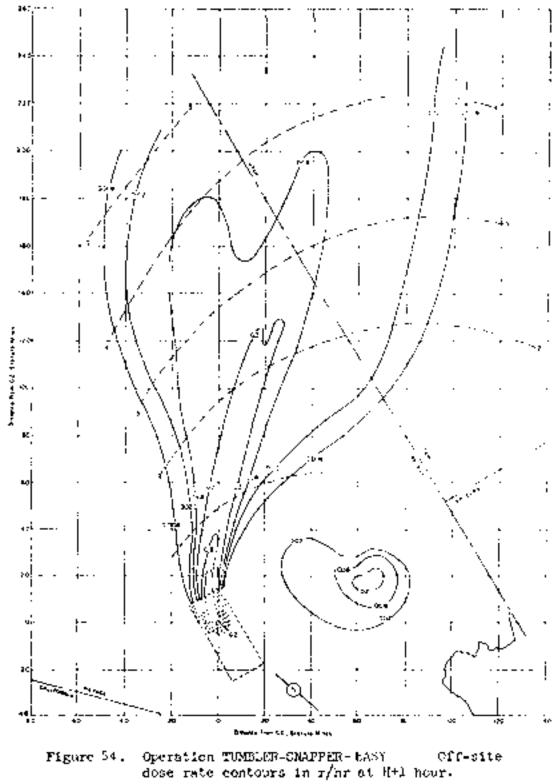
Time to 2nd maximum: 95		
Radius at 2nd maximum: NM	CLOUD TOP HER SHIT:	34,000 ft MSL
	CLOUD ROTTON SELECT	Not available

CRATER DATA: No crater

#### REMARKS:

The on-site followt pattern was obtained from readings of radiological survey teams on D41 day along eight radial lines of numbered stakes 300 feet apart. The stakes within approximately 1200 to 1500 feet of ground zero were destroyed or blown down so that they did not provide adequite reference points. The survey readings were extrapolated to H+1 hour by using the  $t^{-1+2}$  decay approximation. The off-site readings were obtained by ground mobile monitors of the Radiological Safety organization on D-doy. These readings were extrapolated to H+1 hour by using the  $t^{-1+2}$  decay approximation.



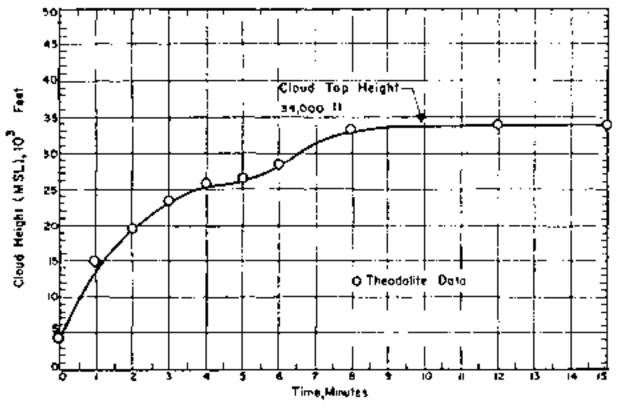


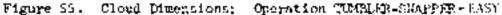
Altitude	ll-hCar	r	Altitude	R-hour	ut
(MSL)	$D_{r}$	Speed	(四明)	Dir	Speed
feet	degrees	ale p	feet	degrees	եյ։հ
Surface	Calm	Calm	12,000	190	52
4,000	Calm	Calm	14,000	190	62
5,000	Ci () 🛤	Calm	15,000	190	- 56
6,000	180	23	16,000	210	55
7,000	180	<u>3</u> ō	19,000	210	67
8,000	180	37	20,000	220	77
9,000	<b>19</b> 0	ĹО	25,000	220	<b>9</b> 0
10,000	180	41	30,000	220	107

TARLE 15 NEWADA WIND SATA FOR OPERATION TIMELER-SNAPPER- BASY

NOC'ES:

- Vind data was obtained by the Mercury Weather Station located at the C. P.
- 2. Troporause height was 41,000 ft MSL.
- At H-hour the pressure at ground zero was 502 m<sup>2</sup>, the temperature 60.517 and the relative humidity 40%.





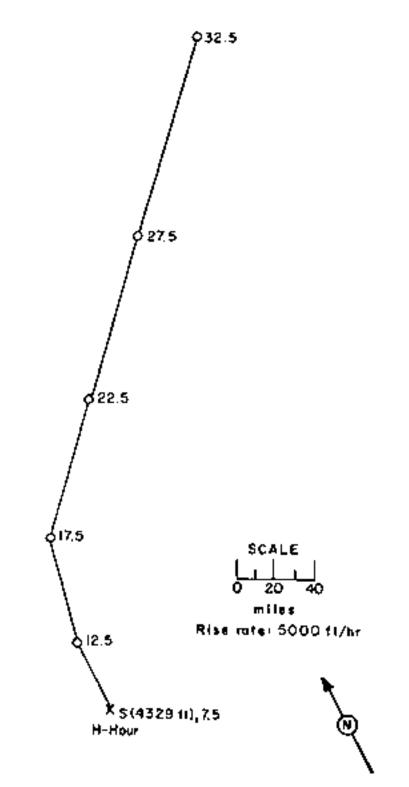


Figure 56 . Hodograph for Operation TUMBLER-SNAPPER-EASY

## OPERATION CONDUCTS - POX

FIGT GMP	Sponsor: LASL
IATE: 25 May 1902 25 May 1902 <u>71Maa</u> 6460 - 1200	$\frac{\text{SITE}}{37^{\circ}} = \frac{\text{N}_{1}\text{cs}}{44^{\circ}} \frac{h}{8}$ $\frac{37^{\circ}}{106^{\circ}} \frac{\text{cs}}{26^{\circ}} \frac{54^{\circ}}{76^{\circ}} \frac{\text{K}}{8}$
20TAL YISLD: 11 KS	Site clevation: 4,309 ft
	HEIGHT OF PURDTE - 30% DU
FIREBUL, BATA:	TYPE OF BURNT AND FLACEMENT: Tower burnt over Merold and
Time to 1st minimum: 10 to 13 move Time to 2nd maximum: 110 msec Radius at 2nd maximum: 124	CLOUD FOR HEIGHT: 43,000 PL MAL CLOUD ROTTON HEIGHT: NOU available

CRATER PATA: No erater

## REMARKS:

The on-site fellout pattern was obtained from readings of radioluties: survey teams from D-day through D+3 days along eight redial lines of numbered stakes, 300 feet upart. Although part of the contamination from this chut overlapped that resulting from the previous tower shot, the old contamination had a negligible influence on the dose rates. The survey readings were extrapolated to N+1 hour by using the  $t^{-1+\frac{2}{3}}$  decay approximation. The off-site readings were obtained by ground mobile monitors of the Radiological Safety organization from D-day through D+2 days.

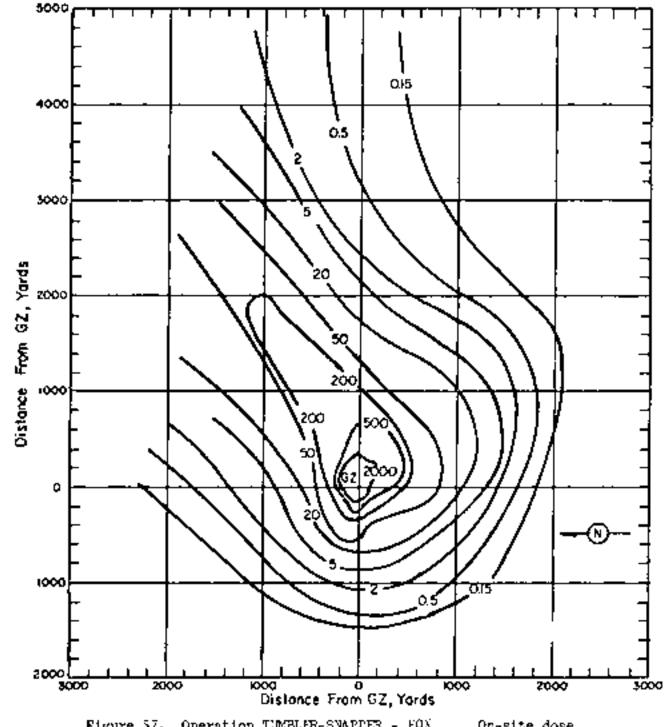


Figure 57. Operation TUMELIR-SWAPPER - FOX On-site dose rate contours in r/hr at 8+1 hour.

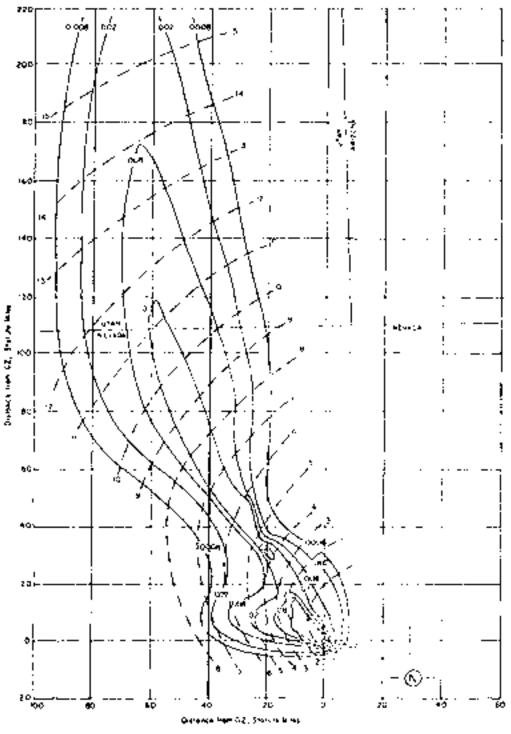
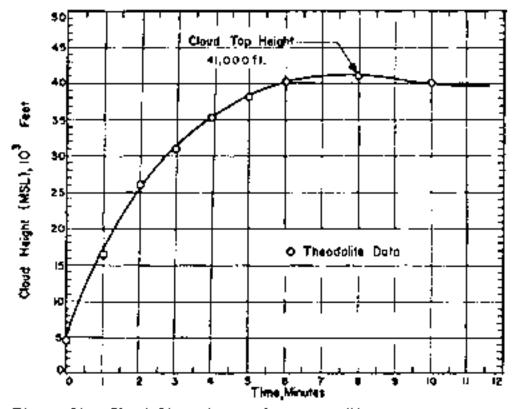


Figure 58. Operation TUMPLER-SNAPPER - FDX Off-site cose rule contours in r/hr at H+1 hour.



Pigure 59. Cloud Dimensions: Operation TUMELER-SNAPPER.FOX

Altitude	H=hour		A)titude	H-hour	
(MSL)	<u> Pir</u>	Speed	(SSL)	Dir	Speed
fect	degrees	mph	feet	dog)nes	±aբ:h
Surface	Calm	Calm	12,000	200	07
5,000	220	C2	15,000	150	05
6,000	210	09	16,000	150	07
7,000	220	13	18,000	140	10
B,000	820	13	20,000	280	09
9,000	220	23	25,000	240	25
10,000	220	12	30,000	230	23
12,000	210	10	35,000	240	40

TABLE 19 NEVADA WIND DATA FOR OPERATION TUMBLER-SNAPTOR-FOX

NOTES;

- Wind data was obtained by the Mercury Weather Station located at the C. P.
- 2. Tropopause height was 37,000 ft MSL.
- At N-hour the pressure at ground zero was 860 mb, the temperature 57.1°F and the relative humidity 41%.

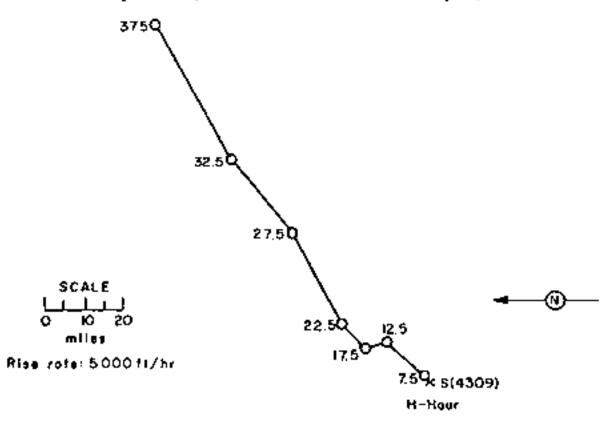


Figure 60. Hodograph for Operation TUMELER-SNAPPER-FOX

OPERATION TIMELER-SNAPPED-GEORGE

$\frac{POT}{DATE} = \frac{OMP}{DT}$	Sponsor: LASL
DATE: 1 Jun 1957 1 Jun 1952 TIME: 0355 1155	<u>SITE:</u> NTS - Area 3 37 <sup>°</sup> 02' 53" W 116° 01' 36" W
TOTAL YIELS: 15 kt	Site elevation: 4,027.56 ft <u>HETCHT OF MONST</u> : 300 ft
FIREBALL NATA: Time to lot minimum: 8.5 to 14.5 msec Time to 2nd maximum: 120 msec Radios at 2nd maximum; NN	TYPE OF BURST AND PLACEMENT: Tower Larst over Nevada Soci
CRATER DATA: No erater	CLOUD TOP REFORM: 37,000 ft MSU CLOUD BOTTOM TETOT: Not available

#### BIWARD:

The on-site fallous pattern was obtained from readings of radiological survey teams from D-day through D+2 days along eight radial lines of numbered stakes 300 feet apart. These readings were extrapolated to H+1 hour by using the  $t^{-1+2}$  decay approximation. The off-site falloust pattern was drawn from the readings taken by ground mobile monitors of the Radiological Safety organization on D-Day. The  $t^{-1+2}$  decay approximation was used to extrapolate the dose-rate readings to S+1 hour.

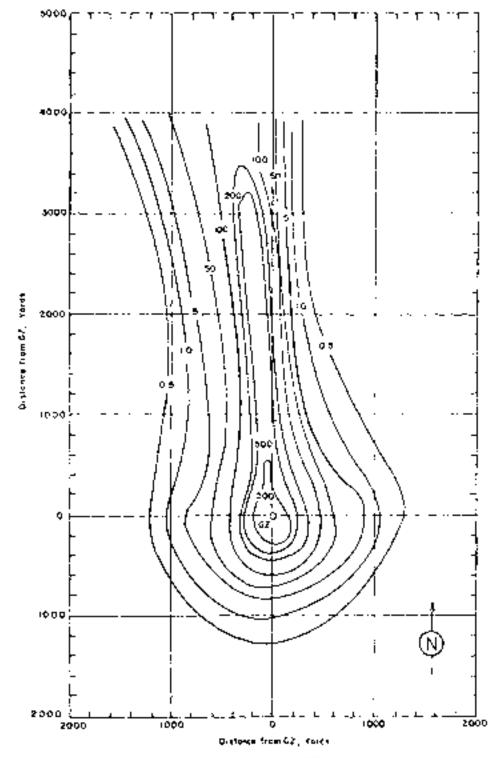


Figure 01. Operation TUMBLER-SNAPPER-GEORG: On-site dose rate contours in r/br at H+1 hour.

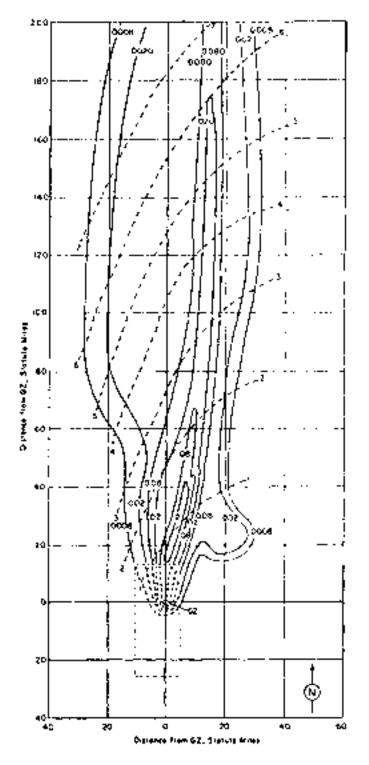


Figure 62. Operation TUMELER-SNAPPER-GEORGE Off-site dose rate contours in r/hr at H+1 hour.

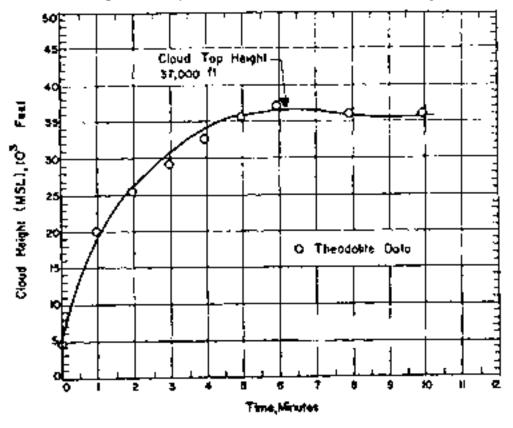
Altitude	H-hour		Altitude	Н-реог	
(MOL)	Dir	Speed	(MCC.)	Cir	Spinio
feet	degrees	यम्।	feet	degrees	mJej:
Surface	Calm	Calm	14,000	180	30
5,000	Calm	Calm	15,000	170	30
6,000	170	20	16,000	170	33
7,000	170	21	18,000	190	35
8,000	170	20	20,000	3/2	51
9,000	160	20	25,000	200	48
10,000	160	17	30,000	190	41
12,000	180	20	- ,	-	

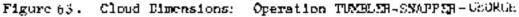
TABLE 20 NEVADA WIND DATA FOR OFERATION TUMBLER-CHAPTER-GEORGE

NOTE:

\_ \_ \_

- Wind data was obtained by the Mercury Weather Station located at the C. P.
- 2. Tropopause height was 37,000 ft MSL.
- At H-hour the pressure at ground zero was 872 mb, the temperature 52.6°F and the relative humidity 48%.





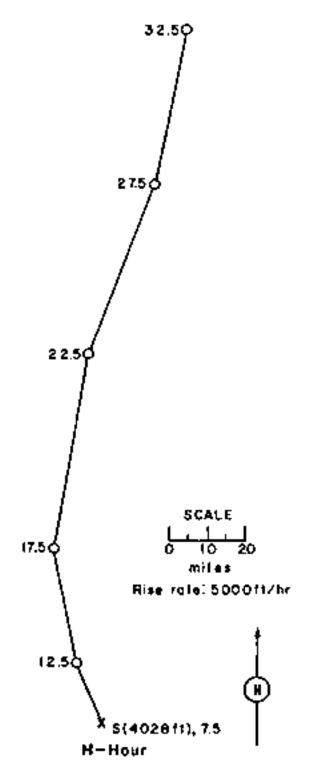


Figure 64. Hodograph for Operation TUNBLER-SMAPPER-GEORGE

OPENATION TUME FR-SEAFFLE - NOV

$\frac{FST}{DATE} = \frac{FST}{5 J_{con} (1952)} = \frac{GMT}{5 J_{con} (1952)}$	Sponsor: LACL
TIME: 0355 1155	<u>STTU:</u> NTS - Атод 2 37 <sup>0</sup> 08° 19″ м
TOTAL YIELD: 11 kt	116° 07° Ch" W Site elevetion: 1,492 ft
FIREBALL DATA: The to let minimum: 9 to 11 mpec	HEIGHT OF BURET: 300 ft
Time to 2nd maximum; NM Radius at 2nd maximum; NM	TINK OF BURCH AND PLACHMENT: Tower burch over Nevada sorr
CRACHE MEA: So crater	CLOUD CON BELGET: «1,800 rt M.H. CLOUD HOFTCM MCLOHT: Not available

### REMARKS:

The on-site fallost pattern was obtained from readings of rudiological survey teams from D-day through D+4 days along radial lines of numbered stakes 300 feet apart. These readings were extrapolated to H+1 hour by using the t-1-2 decay approximation. The close-in fallout was deposited in the mountains, and, therefore, the on-site isointensity lines were not closed. The off-site Fallout pattern was drawn from the readings. taken on D-day by ground mobile monitors of the Radiological Safety organization, using the  $t^{-1-2}$  decay approximation to extrapolate to H+1 hour.

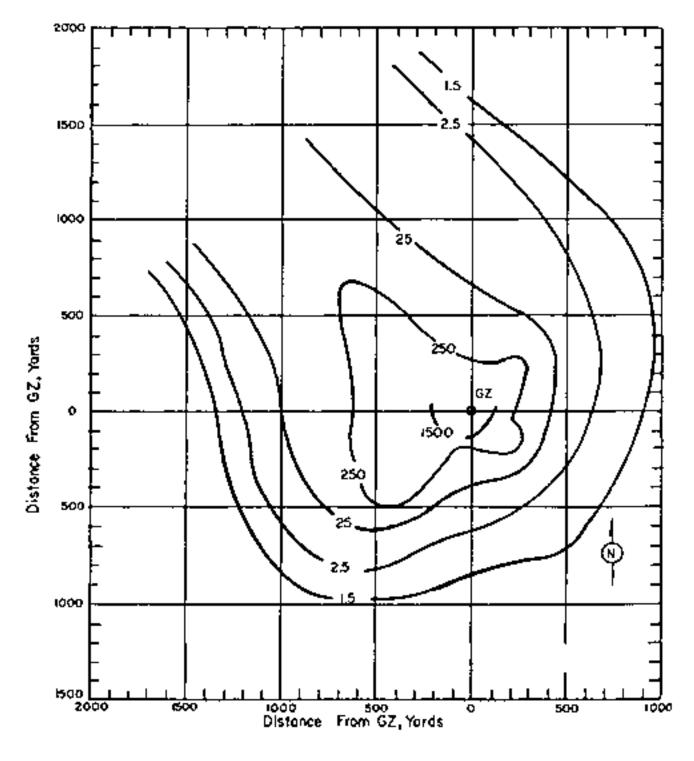
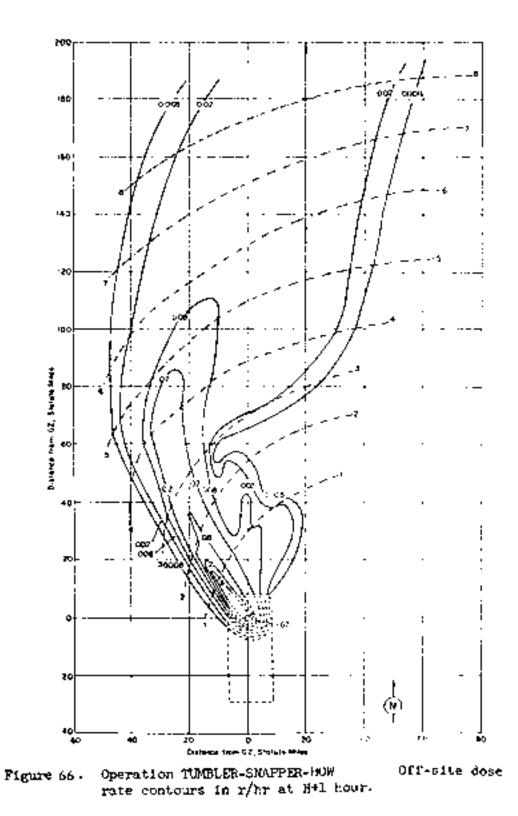


Figure 65. Operation TUMBLER-SNAFPER-HOW On-site dose rate contours in r/hr at H+l-hour.



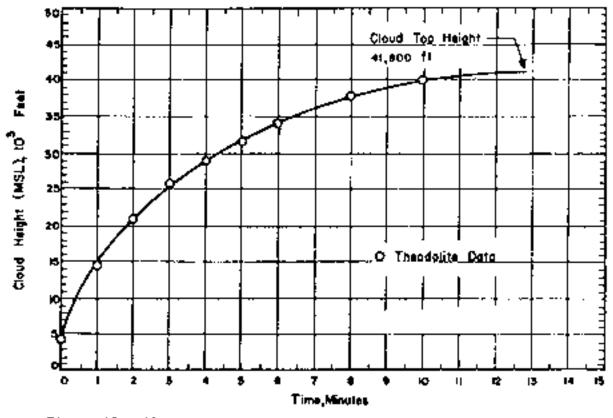


Figure 67. Cloud Dimensions: Operation TUMBLER-SNAPPER-HOW

ll hour	r	Altitude (MSG.)	ff-irour	
лг	(loed		Dir	Spee
degrees	mat.	feet	dogrees	ធរ្មាំ។
Calm	Calc	14,000	120	29
Calm	Colm	15,000	120	28
210	ə6	16,000	120	25
170	07	18,000	150	55
150	07	20,000	150	17
14C	13	25,000	160	25
140	15	30,000	150	29
130	20			
	Mr degrees Calm Calm 210 170 150 140 140	Mr         Imple           degrees         mph           Calm         Calm           Calm         Calm           Calm         Calm           210         06           170         07           150         07           140         13           140         15	Itr         Opened         (Month)           degrees         mph         feet           Calm         Calm         14,000           Calm         Calm         15,000           210         06         16,000           170         07         18,000           150         07         20,000           14c         13         25,000           140         15         30,000	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

TABLE 21 NEVADA WIND DATA FOR OPERATION TEMPLER-CONFFER-DOW

NOTES:

- Wind data was obtained by the Moreury Weather Station located at the C. P.
- 2. Tropopause height was 10,000 ft MSL.
- At H-hour the procesure at ground zero was 863 mb, the temperature 64.0°F and the relative humidity 46%.

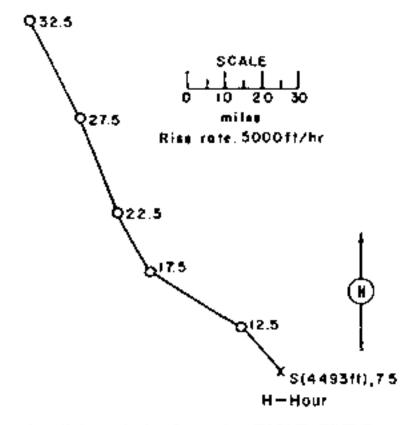
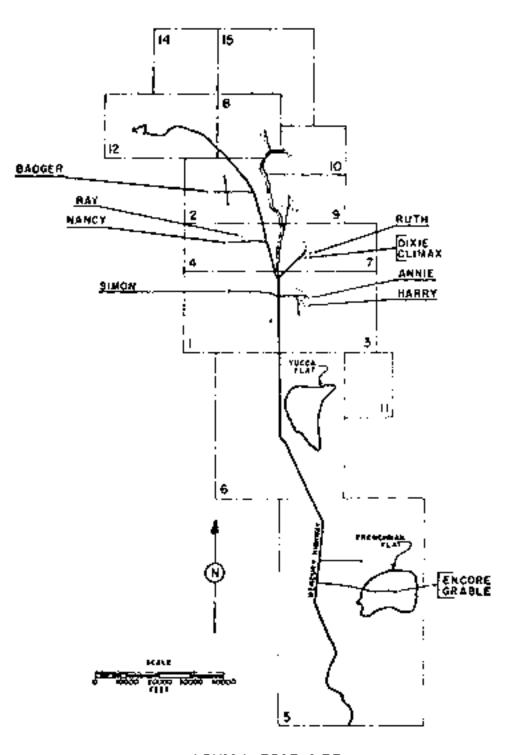


Figure 68. Hodgeraph for Operation TUNSLER-SNAPPER-HOW



NEVADA TEST SITE Figure 65. Operation UTSHOT-KNOTHOLE, Shot Locations.

OPERATION	UPCINT-KNOTHOLE -	
-----------	-------------------	--

Annie

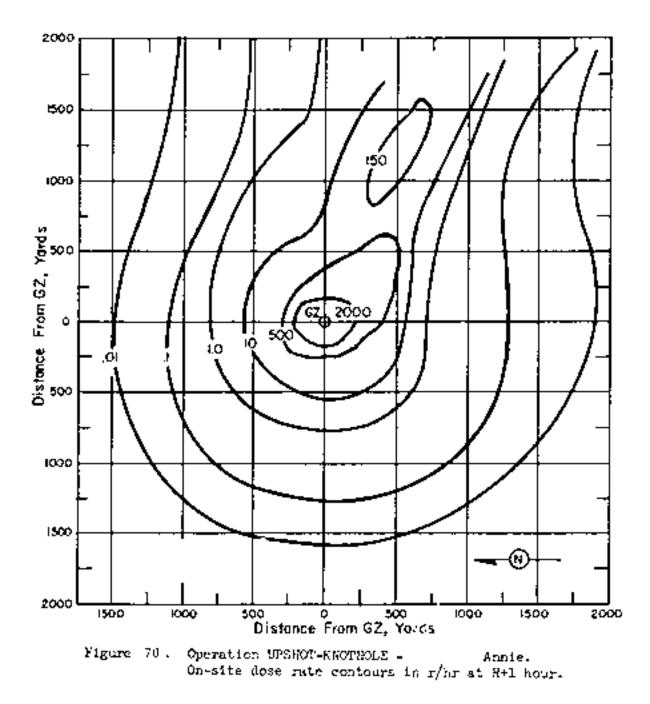
DATE: 1" Mor 1953 17 Mar 1953	Sponsor: LASL
TIME: 0520 1320	<u>SITE</u> : NTS - Area 3 37° 02' 52" N 116° 01' 16" W Site elevation: 4,026 m
TOTAL YIMLE: 16 kt	HEIGHT OF BURGT: 300 ft
	TYPE OF BURST AND PLACAMENT: Tower burst over Nevada soil
FIREBALL DATA: Time to 1st minimum: 14.3 to 14.5 msec Time to 2nd maximum: 122 msec	
Radius to 2nd maximum: NM	CLOUD TOP HEIGHT: 41,000 Pt CLOUD BOTTOM MAIGHT: 28,000 Pt

CRATER DATA: No crater

41,000 Ft MSL 28,000 ft Mai

#### REMARKS:

The on-site fallout pattern is based upon readings obtained by radiological group! survey teams from D-day to D+3 days. The locations of the points at which readings were taken were approximated. The offsite fallout pattern was drawn from readings on D-day through D-3 day by ground mobile monitors of the Radiological Safety organization. The  $t^{-1-2}$  decay approximation was used to extrapolate both the on-site and off-site dose rates to H+1 hour.



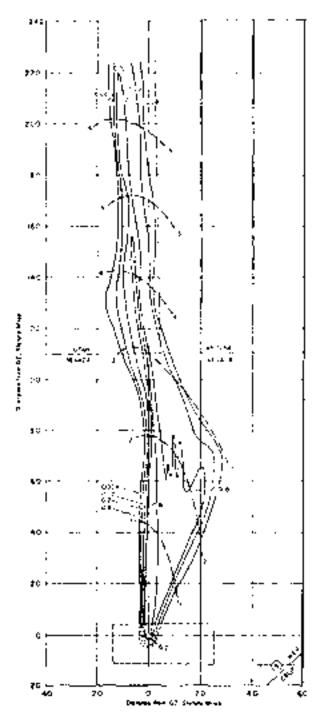
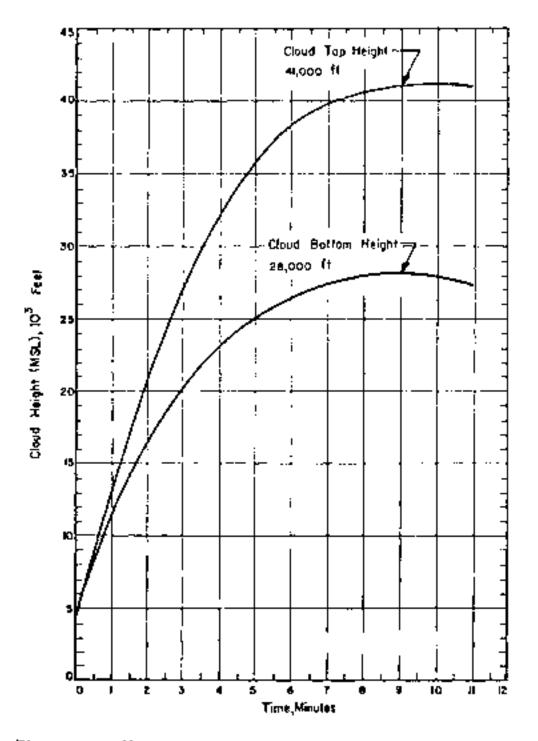
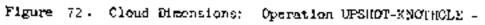


Figure 71. Operation USNEOP-XNOTHOLE - Annie Off-site dose rate contours in r/br at H+1 hour.







Altituán	N-hos	2-	Altitude	lf-nor	r
(Man.)	Jir	Spend	(1450.)	Dir	Specied
feet	degrees	лI-I-	feet.	degraves	يېلى
Surface	Variable	Light	27,000	270 0	57
Borst Reight	250	C2	28,000	270	60
5,000	250	65	29,000	270	69
6,000	250	69	30,000	240	75
7,000	<i>7</i> ?0	10	31,000	270	76
8,000	280	67	32,000	540	74
9,000	270	r8	33,000	216	69
10,000	270	29	3/,000	260	64
ni,coo	276	29	35,000	260	61
12,000	270	29	36,000	260	69
33,000	200	26	37,000	260	75
34,00C	210	\$44	38,000	264	ć5
19,000	P750	27	39,000	26:0	92
:6,000	250	39	46,000	76C	102
17,000	280	4.6	ar,cup	S 194	90
18,000	27.5	45	ian) cop	26.0	ð4
19,000	2770	• 5	43,000	200	80
30,000	2010	62	Si,o.c	2164	26
21,000	200	- 52	is,uco	247.	12
22,000	0.10	1.1	46,000	200	10
23,000	270	6.9	in jecc	210	é)
74,000	27.5	40	-8,000	1.0	63
25,000	870	1.1.1	⊾9,000	2.0	66
26,00C	270	54	56,000	240	66
• •				_ •	

TABLE 22 NEWAGA WIND DATA FOR OPERATION DECHOT-KNOTHOLS -

AMITE

# NOT REE

- 1. Tropopause height was 37,000 ft MCL at M-hour.
- Surface wind data were obtained at the Control Peint. Upper air data were obtained from the rewindonde section located on Yucew Lake.
- 3. At H-hour the pressure at ground zero was 8% sb, the temperature 2.7%C, the dew point -8.5%C and the relative humidity 43%.

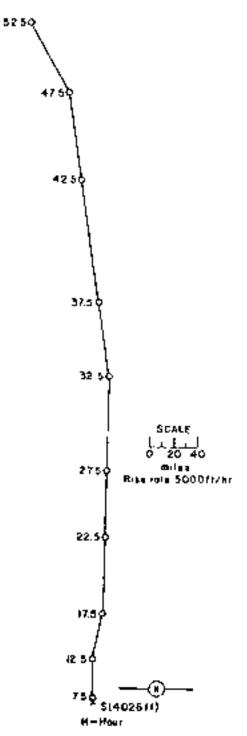


Figure 73. Hodograph for Operation UPSHOT-XNOTHOLK - Activ.

OPERATION UNSHOT-KNOTHOLE -

Maney.

	PST	GMT		
$M(T_{i})$	24 Mar 1995	25 Kas 1975		
T1M0	0516	1310		

TOTAL VISION 24 KC

Spondor: LACL

<u>SITE:</u> NTO - Agen 6 37° 05° 60" N 116° 06' 60" W Site elevation: 4,70% ft

### HERGER OF BURGESS SOC IN

TYPE OF MOUT AND BELORM DIT: Towar Bare's even Diserts and t

CROWN TOP REPORTED AN PROVIDE AND CROWN ROUGH REPORTED AND REPORT AND

FIREBALL MARK Time to be: minimum: 17.5 to 18.5 msee Time to End maximum: 166 msee Radius at See maximum: NM

CRATEF DATA: No crater

#### REMARXS:

The on-site fallout patters is based open readings obtained by radiological ground survey teams on D-day. The off-site fallout pattern was drawn from D-day ground surveys made by the Radiological Sofety organization. The  $t^{1/2}$  decay approximation was used to extrapolate the dose rates to R+1 hour for both the on-site and off-site patterns.

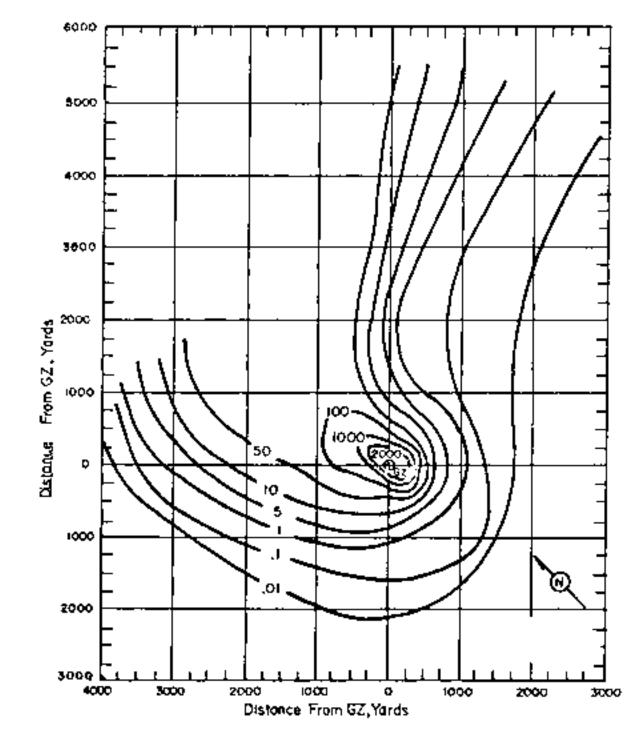
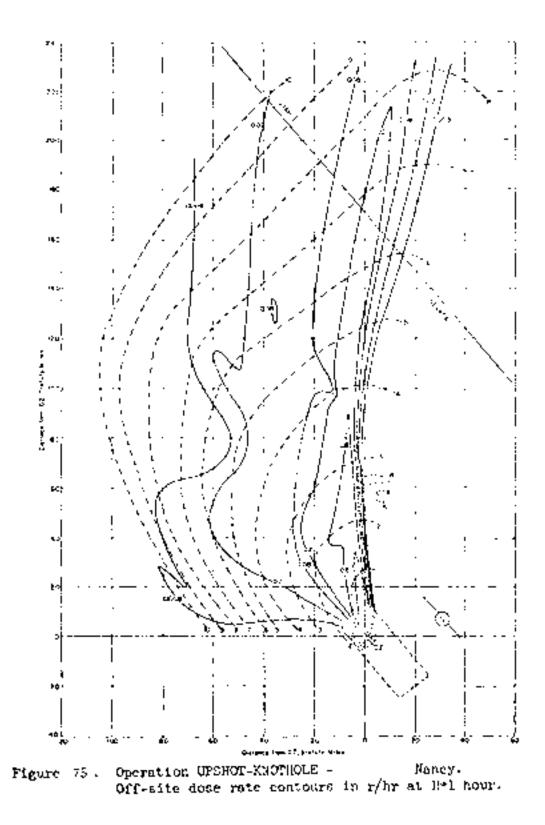
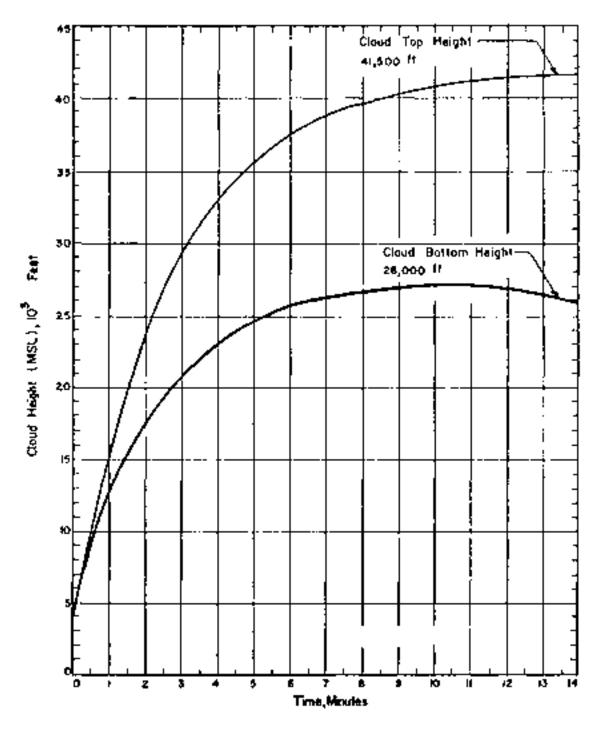
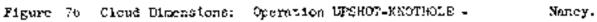


Figure 74. Operation UPSHOC-KNOTHOLE - Nancy. On-site dose rate contours in r/hr at H+1 hour.







	lent Site Wert Spring, Lev								~ <b>,</b> '-
Alt	2-i. ·		ii+2 b	-0, <u>2</u> .	Alt.	?(+),c	32	192 s	×
_(Mat.)	Ti yi	Course	11.05	Decent.	$(\underline{Me})$		i a rigel	<u>``</u> -5	
feet.	(September)	m; e.	contress.	anguin.	free t.	240. Louiss		dennes	
Surface	330	02	Colta	Callin	27,000	220	29		
Rutes									
Height	Calm	Calm			28,000	210	- 32	220	- 57
5,000	Calm	Calm			29,000	230	29		
6,000	210	15	Culm	Calm	30,000	220	36	220	- 57
- Y,000	150	յլ	185	- 09	31,000	230			
8,000	350	15	160	27	35,000	230	39 34		
9,000	150	<u>1</u> ,			33,000	220	33		
10,000	150	14	050	26	34,000	220	36		
11,000	160	15	160	31	35,000	210	31	200	- 50
12,000	176	20	150	29	36,000	210	32	•	
13,000	SCC	22			37,000	220	31		
_14,α⊘	<b>2</b> 00	21	<b>S</b> 00	32	33,000	220	35		
15,000	220	14	200	- 32	39,000	220	37		
16,000	213	18	200	30	40,000	220	37	83.0	- 30
17,000	210	14			41,000	220	39		
$18,\infty$	190	13	800	26	42,000	220	43		
19,000	180	17	<b>-</b>		43,000	555	4.6		
20,000	210	23	200	32	44,000	650	36		
21,000	220	23			45, CGG	2210	42	875	- 50
22,000	220	23	190	35	46,000	255.5	40		
23,000	230	87			ay,ecc.	22	1.11	20	1.2
26,000	210	29	200	24	-18,0.:C	530	32		
25,000	210	29	200	¥1	49,000	230	31		
26,000	210	29			50,000	230	29		

TABLE 25 MIND DATA FOR OFFICIAL DESIGN CHERTICAL - MANNEY

NOTES:

- Tropopulse height was 39,300 ft MSL at H-hour.
   H-hour surface wind data was obtained from the Control Point. R-hour upper air data was obtained from the rawissonde section located on Yucco. Lake. H+2 hour wind data was obtained from the pical observation at Warm Springs.
- 3. At H-hour the pressure at ground zero was  $870 \pm h$ , the temperature  $9.9^{\circ}$ C, the dew point -3.6°C and the relative humidity 39%.

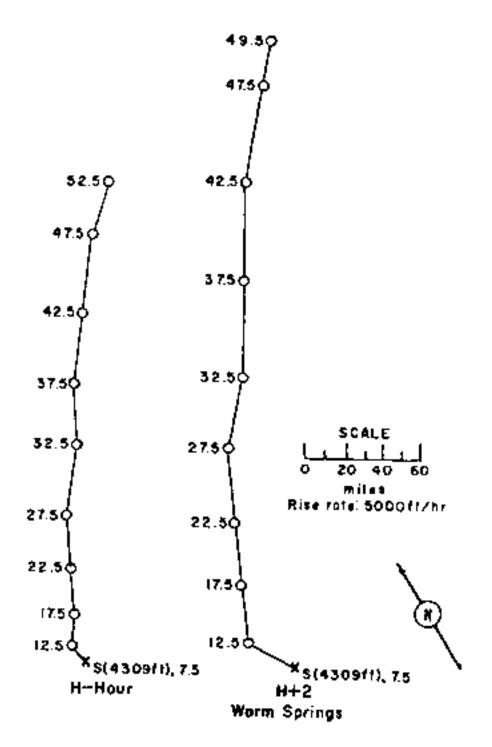


Figure 77. Hodographs for Operation UPS#OT-XNOTHOLE -

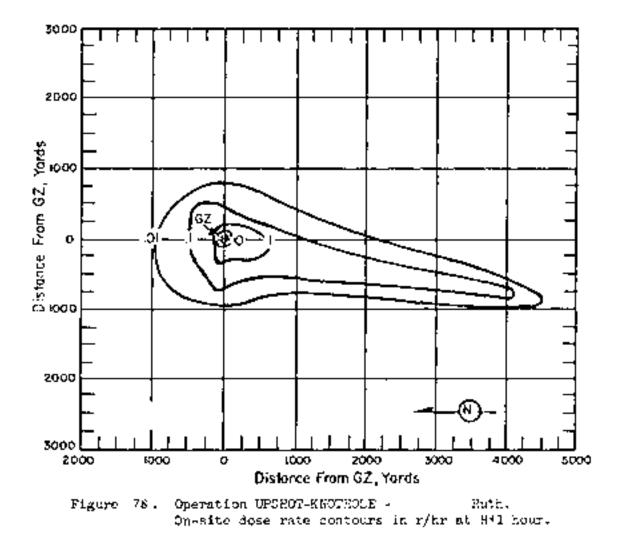
Nuncy.

OPERATION (State) - Actor (State) - Actor

$\frac{1007}{21Mc} = \frac{1007}{3.1007} + \frac{10007}{3.1007} + \frac{1007}{3.1007} + \frac{1007}{3.1$	Sponsor; UCHL
	$\frac{\text{SITE}}{37^2} = \frac{\text{MTG} + \text{Area} \ ? = 5a}{37^2} = \frac{58^2}{58^2} = \frac{3}{8}$ $116^2 = 61^2 = 26^2 = 8$
$\underline{TOT} M\underline{S}(\underline{YT}(\underline{J}, \overline{D}) = 0), 2    k t$	Site elevation: 3,000 to
FTREBULL INCL.	HEIGHT OF BURGT: BURGED F
Time to lot minimum: [].C move Time to Cad mathematic []. to 18 move Redius at 2nd maximum: NM	Trees horst over Words still
CRATHS DATA: No equiter	<u>groud top height</u> e logión et men <u>Choud Bortom Height</u> e elginas de mar

# ROMANCE:

The on-ofte falle to pattern was obtained asing Sti-Boor readings of padiological survey teams. At decay correction was more many. The off-site fallost puttern was drawn from 0-day readings of movile ground-survey teams of the Radiological Rifety enganization. The  $t^{-2-2}$  decay approximation was used to extrapolate the off-site dose rates to 341 bour.



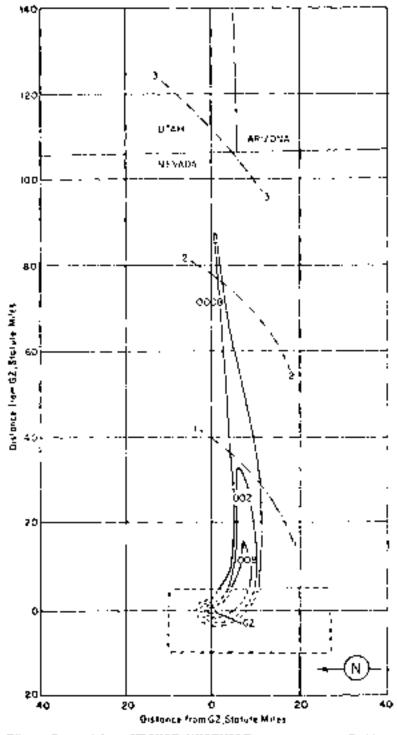


Figure 79. Operation UPSHOT-KNOTHOLE - Ruth. Off-site dose rate contours in r/hr at H\*1 hour.

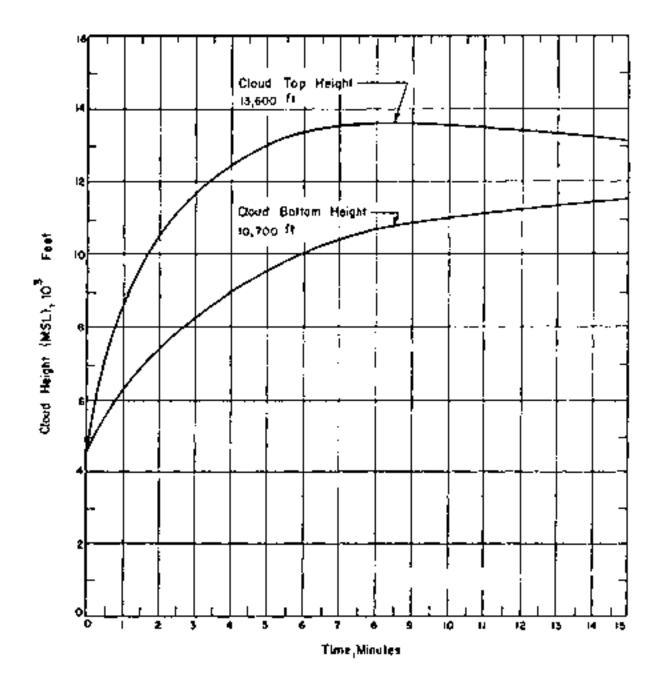


Figure 80. Cloud Dimensions: Operation UPSHOT-XNOTHOLE - Ruth.

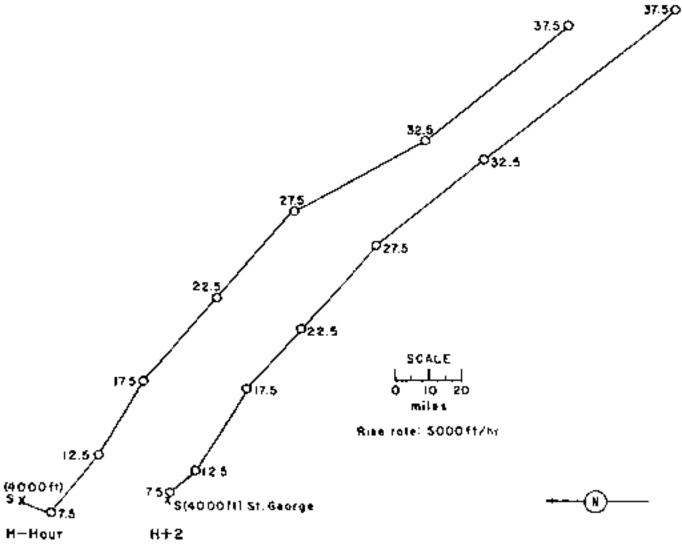
	Test S		it George,	1.47.17		Cect 5	ite S	t Guarde,	
Altitude	H-h-p		3142 Bo		Altitude	ll-bo	ar	H+2 1.0	
_(Mp:.)	Mr.	Speed	Di s	Queres	(323.)	Dir	Staved.	Sir	
feet	degrees	πri:	destances	որել	feet	degrees	nibi:	degrees	
Surface	360	05	Calm	Calm	27,000	330	39		
Surst Beight	020	c8			28,000	330	39	210	30
5,000	020	10	280	05	29,00C	330	41		
6,000	010	24	280	10	30,000	330	44	320	4)
n,ouc	360	24	280	32	31,000	330	կ կ		
8,000	350	15	310	12	32,000	330	39		<b>.</b>
9,000	330	14			33,000	320	48	•	
10,000	310	21	320	10	35,000	320	51		
1),000	300	28			35,000	380	55	320	73
12,000	310	30	300	17	36,000	320	59	320	75
13,000	320	30			37,000	310	53		
14,000	320	23	290	26	38,000	300	43	<b></b> -	
15,000	300	25	300	28	39,000	300	47		
16,000	330	28	Ξου	28	40,000	270	<b>≦</b> 7		
17,000	330	30			41,000	290	9 <u>9</u>		
18,000	320	35	300	35	42,000	290	47		
19,000	320	32			43,000	290	47		
20,000	310	33	310	24	44,000	290	47		
21,000	310	36			45,000	290	46		
22,000	380	36	310	31	46,000	290	46		
23,000	320	41			47,000	290	40		
24,000	320	45	310	31	48,0C0	280	39		
25,000	310	35	310	33	49,000	280	39	<b>-</b>	
26,000	330	<b>4</b> 1	310	46	50,000	280	39	<b>-</b>	

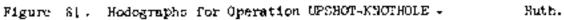
RUTH

TABLE 24 WIND DATA FOR OPSPACION UNSHOW-RUCTHOLE-

NOTES:

- 1. Tropopause height was 35,500 ft MSL at H-hour.
- H-hour surface wind data was obtained at the Control Foint. H-hour upper air data was obtained from the rawinsonde section located on Yucca Luke. H+2 hours wind data was obtained from the pibal observation at St. George.
- 3. At M-hour the pressure at ground zero was 373 mb, the temperature  $4.4^{\circ}$ , the dew point 5.3°C and the relative humidity 48%.





#### OPERATION UPSHOT-KNOTHOLE -

Dixee

	PST	GMT		
DATE:	<u>C Ap<del>r</del> 1993</u>	6 Apr 1953		
TIME:	0730	1530		

SITE: MTS - Ares 7 - 3 37° 05' 05" N 116° 01' 05" W

Sponsor: IASL

TOTAL YIELD: 11 kt.

### TYPE OF BURYT AND PLACHMENT: Air burst over Nevada Soil

FIREBALL DATA:

Time to lst minimum: 10.5 to 11.2 msee Time to 2nd maximum: 114 to 127 msee Radius at 2nd maximum: NM

# HAGHT OF MANY: 6,092 CC

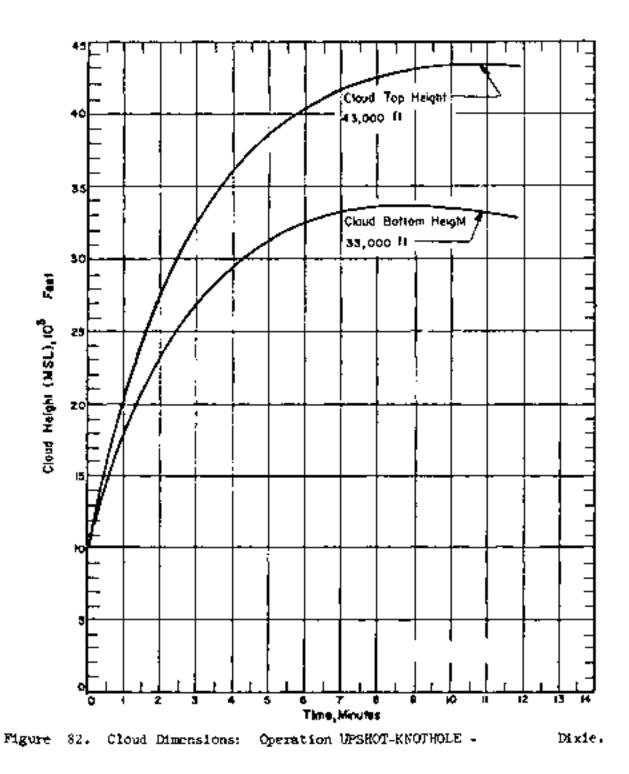
Site elevation: 4,025 ft

CLOUD TOP HELGHT: 45,000 Pt MBL. CLOUD DOTTON HELGHT: 33,000 Pt MBL.

CRATER DATA: No crater

#### REMARKS:

The highest reading at ground zero was 1.5 mm/hr at 3\*1 hour.

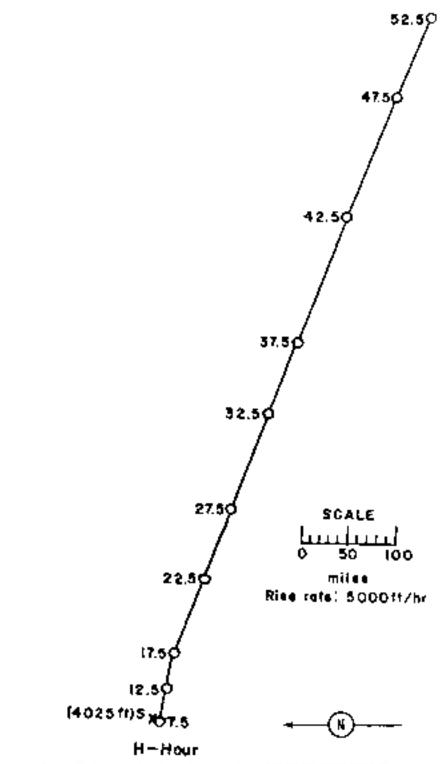


· Λ11	H-hour		Alt	li-hos	
(851.)	Dir	Speed	(MC).	Dir	Speed.
fret	dragees	in in the second	fect	quittues	74::.
Surface	015	C6	27,000	290	69
5,000	030	62	28,000	2590	95
6,000	300	¢3	29,002	290	108
7,000	310	12	30,CCC	290	106
a,000	310	35	31,000	290	1::
9,000	280	24	32,000	290	122
10,000	: 80	32	33,000	290	92
urst Height	280	33	34,000	290	85
11,000	280	36	35,000	590	97
12,000	280	38	36,000	290	74
13,000	280	52	37,000	290	84
34,000	280	55	38,000	230	)ե5
15,000	280	36	39,000	290	135
16,000	250	Ž9	40,000	290	140
17,000	280	ĩź	41,000	290	12.0
18,000	290	73	42,000	S90	6ز1
19,000	290	5 <u>3</u>	43,:XX	290	331
20,000	290	63	46,000	290	141
21,000	290	90	45,000	290	137
22,000	290	98	46,000	290	:19
23,000	290	84	47,000	290	202
24,000	290	84	45,000	290	- 93
25,000	290	78	49,000	290	90 90
26,000	290	65	50,000	290	90

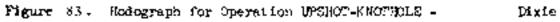
WARLE 25 NEVALA WIND DATA FOR OPHEADING CICKOT-ENOTIONE - DIXIE

MOTES:

- Tropopause bright was 38,500 ft MSL at H-hour.
   Surface wind data was obtained at the Control Point. Upper air data was obtained from the rawinconde section. located on Yarda Lake.
- 3. At H-hour the pressure at ground zero was 861 mb, the temperature 15.5°C, the dew point -4.1°C and the relative homiotry 25%.



•



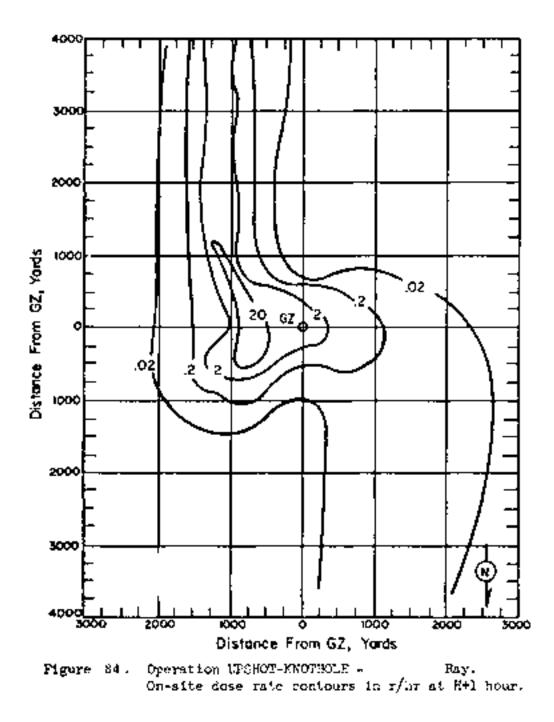
### OPERATION OPENOT-KNOTHOLE -

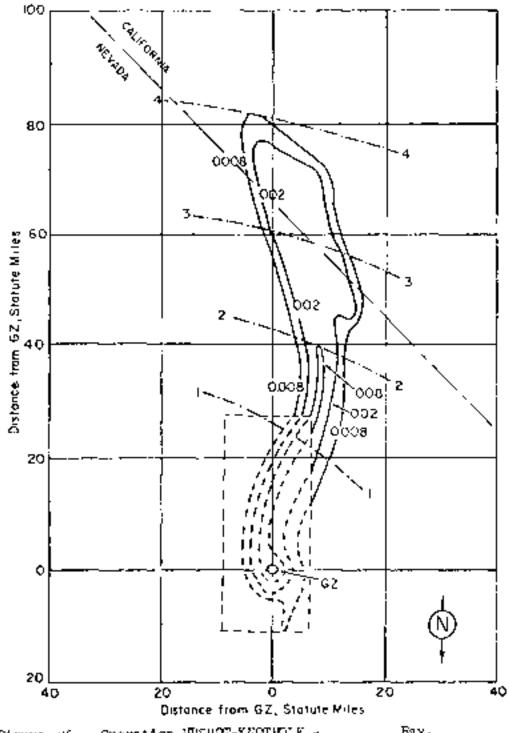
May

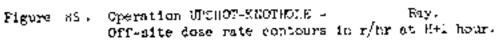
	PST	CMT	
DATE: TIME:	11 Apr 1953		Sponsor: JCNJ.
TDL:	0449	1945	
			SITE: MTS - Area he
			37° 05′ 56″ N 116° 05′ 33″ N
-			Site elevation: 4,025 ft
10150	Y) EUD: (F. 2 Kg		Site elevation: 4,025 ft
			HELGET OF BURGT: 100 ft
PTRESS	LL DATA:		
		um: 18.2 asee	TYPE OF BURST AND PLACEMENT:
Time	to 2nd maxim	ал; 162 жжес	Tower burst over Nevada soil
Radi	us at 2nd max	imum: NM	
			<u>GLOUD_TOP</u> HETCHI: 12,800 CL MSL
			CLOUD BOLTON UPIGHT: 7,700 ft MSL
			<u>CRATER DATA</u> : No erater

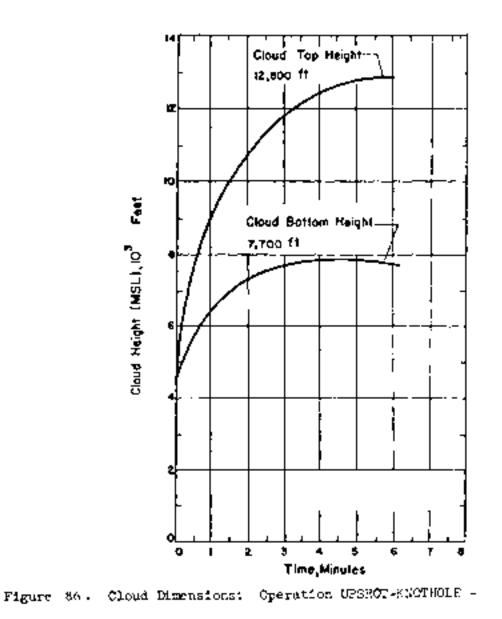
## RFMARKS:

The on-site fallout pattern is based upon readings taken at  $\mathbb{R}^{+}\mathbb{I}_{4}^{0}$  hours by radiological survey teams. The off-site fallout pattern was drawn from D-day readings of mobile ground-survey teams of the Radiological Safety organization. The t<sup>11.8</sup> decay approximation was used to extrapolate the dose rates to N+1 hour. This shot is nometimes designated as UPSHOT-KNOTHOLE-6.









Pay.

	Test	Site	boatty,			Test S		Beativ,	Sev.
Alt	h-he	sur -	H+2 10	លរាន	Alt	Н-ро	(GY		ors
(M5L)	Dir	Speed	Dit	Speed	( <u>M</u> \$31.)	D)r	Speed	Dir	
feet	degrees	шріі	degrees	nich	feet	degraes	ារដ្ឋា	degrees	÷.; :
Surface	¢45	06	010	15	27,000	290	155		-
Burst Height	030	08			29,000	290	173		-
5,000	010	17	360	16	29,000	290	207		-
6,000	360	51	360	22	30,000	560	515		-
7,000	360	26	360	25	31,000	250	198		
8,000	360	36	360	23	38,000	280	235		-
9,000	360	41	350	2ī	33,000	290	132		
10,000	360	36	340	20	34,000	290	138		
11,000	360	26			35,000	280	154		-
12,000	360	26	330	18	36,000	270	166	<b>-</b>	-
13,000	350	30			37,000	270	175		-
14,000	350	26	330	24	38,000	270	161		-
15,000	310	32	320	<b>S</b> ð	39,000	260	193		
16,000	300	38	330	35	40,ccc	260	199		-
17,000	300	56			⊾1, <b>0</b> 00	250	155		-
18,000	300	56	310	46	42,000	250	133		
19,000	300	53			43,000	270	121		-
20,000	300	51	300	63	ь <u>й, ооо</u>	270	115		-
21,000	300	72			⊾s, <b>9</b> 00	260	132		-
22,000	300	95	300	92	46,0CC	290	175		-
23,000	300	109			47,000	230	195		-
24,0XC	300	122			48,000	280	212		
25,000	300	129	530	115	£9,000	28C	224		
26,000	230	139	290	112	50,000	280	234	<b>u</b>	

36AY

# TABLE 26 WIND TATA FOR OPERATION UNSHOT-KNOTHOLS-

NOTEST

- 1. Tropopause height was 38,330 ft MSL at H-hour.
- H-hour surface wind data was obtained at the Control Point. H-hour upper air data was obtained from the rawinsonde section located on Yucca Luke. H+2 hour wind data was obtained from the pibel observation at Beatty.
- At B-hour the pressure at ground zero was 669 mb, the temperature -0.3°C, the dew point -11.3°C, and the relative humidity 43%.

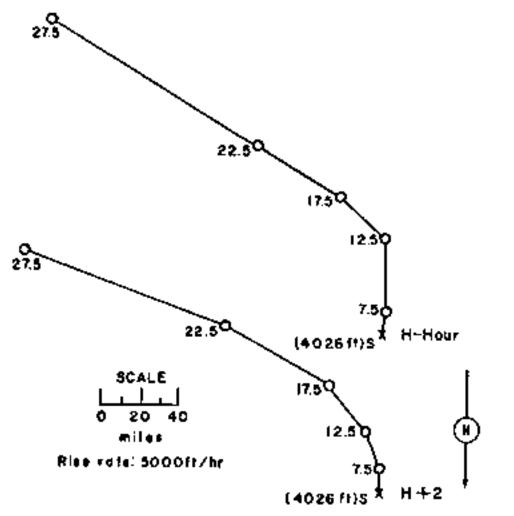


Figure 87. Hodographs for Operation UPSHOE-KNOTHOLE - Ray.

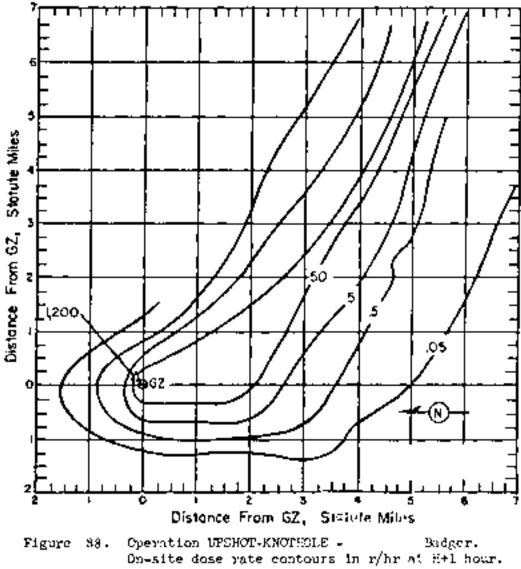
OPERATION DESIGNCT - KNOLDERS -

hadger.

<u>1977)</u> 1977): 1977 1977): 1977 1977): 1977 1977): 1977	Sponsor: LAGL
<u>112234</u> 0479 - 1295	SUTE: MEC - Arman
	116" CTT CV" V
303W1 (Y1 512) 23 KE	Site clevations (5,54) for
	HELOHI OF MARCE: 301 C
	TARK OF HERE'S AND THE DELET
E10032011 172303	Cover Energy Lyne Kny (10 mar)
Yiew to the elast and the in 10.00 made	
Tire to 2nd maximum (C)	CLOUD TOL RECERCE OF LED COMMENT
Brud Share and Jonai Harak Providen (ID)	<u>aran sana sana kana kana kana</u>
ORATIVE TALE OF Intervention	

### R-MARKS:

The un-site failout patters is bared upon readings rade on D-day and D+1 day by callelogical curvey teams. Because of leavy contentation, the highway to the suit across read to the shet area could not be used, and, therefore, it was difficult to propolal the exact Scentize of the readings. The off-site failout patters was drawn from D-day readings of mobile ground curvey teams of the Padiological Catego organization. The t<sup>-1 of</sup> decay approximation was used to extrapolate the dose rates to H+1 hour. This should a compliance designated as DFGS(CD-KNOTHOLO-).



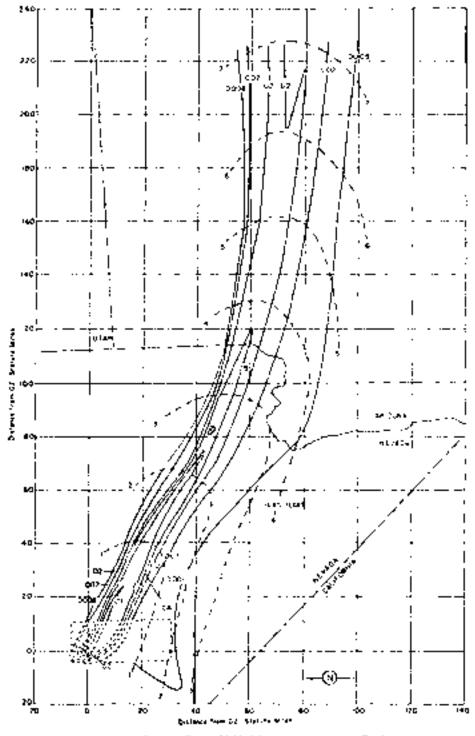
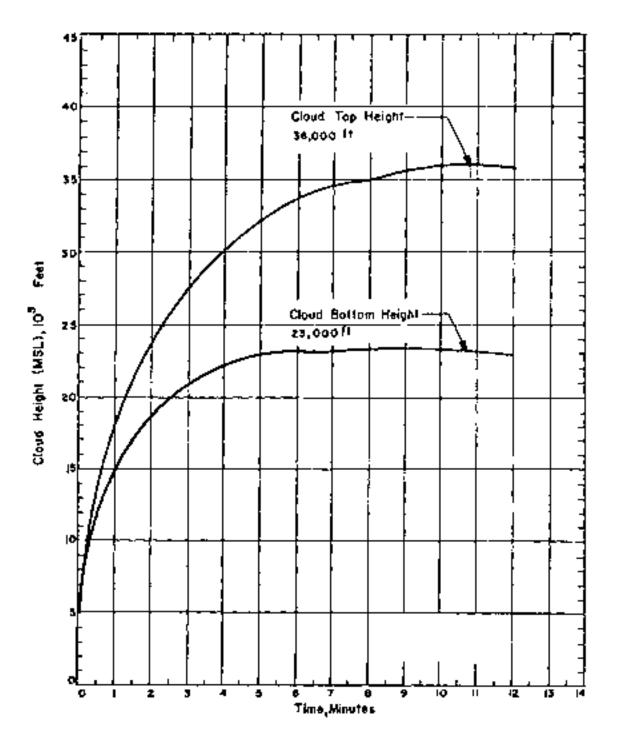


Figure 89. Operation MCHDT-KHOTEDLE - Rudger. Off-site dose rite contours in r/er at H+1 hour.





Badger.

Altitude	11-1: cuer		Altitudy	9-):-4 <u>7</u>	
(M::L)	01 r	1 tores	(SCL)	Dir	Sperat
feet	depteros		Sect	degreen.	rapit
Surface	360	10	27,000	300	46
Barot Molght	N/C	1.0	28,000	300	49
÷,000	016	23	29,000	320	46
$\epsilon,\infty$	S10	25	30,000	310	53
7,000	360	22	31,000	300	67
8,000	290	$\sim i$	32,000	300	69
9,000	27/0	10	33,000	300	65
10,000	240	20	54,000	300	57
11,000	2(0	26	35,000	300	62
12,000	260	30	36,000	200	56
13,000	300	33	37,000	220	եց
19,000	310	39	38,000	200	5-
15,000	320	35	39,000	300	69
16,000	310	35	40,000	200	78
17,000	310	36	4 <b>),</b> 0et	300	
18,000	300	38	42,000	300	- 78
19,000	(960) (960)	40 -	63,000	990	եր
20,000	390	40 H	44 JOCX1	25-2	53
2.,000	290	4)	45,000	260	60
· · · ·				,	<i>.</i>

INTELS 27 HERVARY VERTE DATA FOR CHERVARY CONTRACTOR AND PRODUCE.

)M16851

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29. 29.

20 .....

NOTES	:
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22,000

23,000

24,000

25,000

26,000

290

290

290

290

300

1. Tropopsuce height was 39,320 ft MpH at S-hour.

i.g —

57 -

E, 17

69

Ŀ9.

- 2. Surface wind data was obtained at the Control Found. Upper nir data was obtained from the ravincente section located on Yucca Lake.
- 3. At H-hour the pressure at ground zero was 862 mb, the temperature 7.7°C, the dev point -3.9°C, and the relative humidity 40 \$.

46, CC

47,000

48,000

49,000

50,000

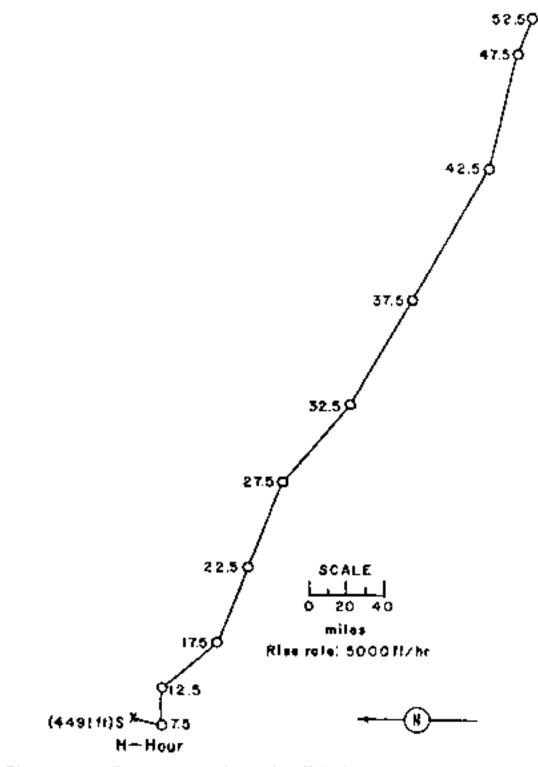
280

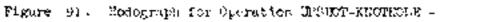
-80

250

290

290





Badger.

Gragorit Og, Michel T-Actor 801 V. -

	1:::	<u></u> (357)	
1512:	1. Apr 1.1.1	Apr 1995	
$\overline{10}\overline{2}\overline{6}$ :	54 A.275	10.25	

Spanner (1801

<u>81000 NUV - Ares 1</u> 31<sup>00</sup> CS1 (10<sup>10</sup> N 310<sup>00</sup> CG1 (10<sup>10</sup> N 8100 et a velletation (100 gr. 10

## - <u>HELGIED DV ENDUITE</u> - 1060 CC

### YAR MADE A 745

TC 111. Y. A.P. 43 Kt

 They Thuế thế end of the 16.8 the CSUCH Horse Stream to Cost Horse the DC - TYPE Horse Heighter of the demonstration 570

CHACKER (MATA) - No denitor

<u>anous no e come l'autorité des services</u> <u>anous habilité (com</u>e la la service)

True of the track line of the True borns over New Colling

#### REMARKS

The an-site fallest patters is based open pending, obtained at  $349^{+}_{1}$  hours by radiolesies) survey threat. The off-site fallest pattern was drawn true 0-key readings of robile endend-survey teams of the Badiological Cafety organization. The chapped in the unticipated fallest pattern exceeding of mobile products for each and equipment. The chapped difficulties is purplicing the exact leading of the target approximation was used to extrapolate the door rate to H41 hour for both the on-site and off-site patterns.

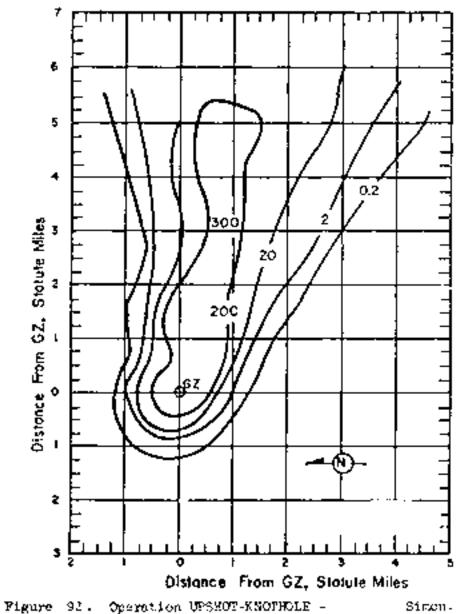


Figure 92. Operation UPSHOT-KNOFHOLE - Simon-On-site dose rate contours in r/br at M42 hour.

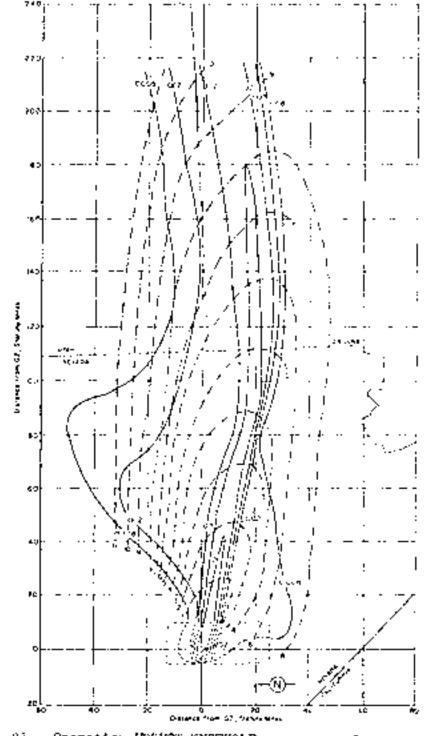


Figure 93. Operation UPSHOT-KNOTHOLE - Simon OFF-site doce rate contours in r/hr at H+1 Hour.

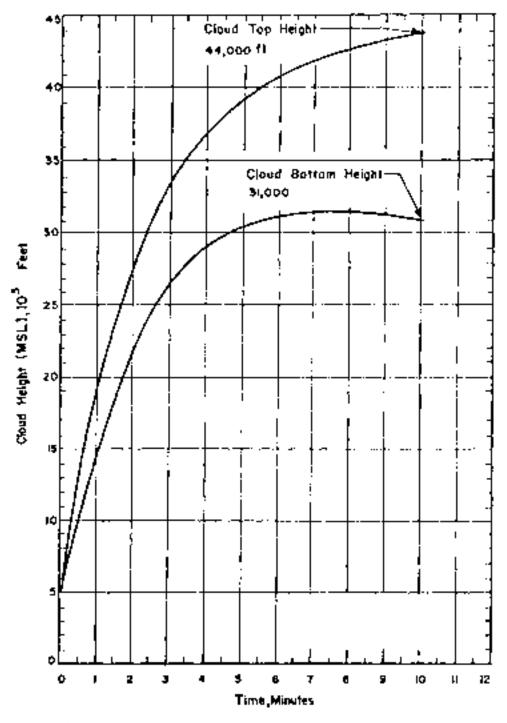


Figure 94. Cloud Dimensions: Operation UPSHOT-KNOTHOLE -

Simon.

Altitude	li-t.c.		Alt. Cuther	<u>l!-aca</u>	
$\langle N_{\rm eff} \rangle$	Pre	Open 1	<u>(x_</u> )	<u>Dir</u>	<u>''</u>
frect	degrees.	mph	feet.	difference	Tif' ti
Surface	3.4	c6	<b>2</b> 8,000	280	36 32 42
Marst linight	:) <b>⊷</b> ⊊,	C8	29 Sec.	270	- 32
5,000	010	09	30,000	98.0	
6,000	030	09	31,000	28G	
7,000	0.62	05	32,000	260	- 65
8,000	070	03	33,000	280	48
9,000	160	05	34,000	28G	- 56
າຍ໌,ຈາຍ	200	10	35,660	280	- A 1
11,000	270	13	36,000	270	- 0°2
19,000	2:11:1	1	37,000	270	47
13,000	275	17	38,000	270	49
14,000	270	13	39,000	270	48
20,000	890	10	40,000	5222	39
16,000	280	09	.1,000	270	57
17,000	270	10	48,000	270	55
)0,cxx	210	30	-3,000	270	48
19,000	280	14	44,600	220	30
25,000	280	30	4%,CCC	77°C	3% 28
21,000	280	35	46,000	210	28
82,000	.:80	26	472, COX	220	25
23,662	260	29	48,000	27/0	- 25
26,000	280	25	⊾9,000	27/6	12
25,000	280	24	5Č,000	m/c	28
26,000	280	26	ŠI., 000		
27,000	280	33			

TABLE 28 VIND DATA FOR OPENATION UPCNOT-ENCODELS - SINCE

NOTE:

). Tropopause height was 39,350 Ft MSL at H-hour.

- 2. R-hour surface wind data was obtained at the Control Paint-K-hour opper air data was obtained from the rewindende section located on Yuera Lake-
- 3. At S-hour the pressure at ground zero was E7C mb, the temperature  $11.7^{\circ}$ C, the dew point  $-7.3^{0}$ C and the relative munidity 26%.

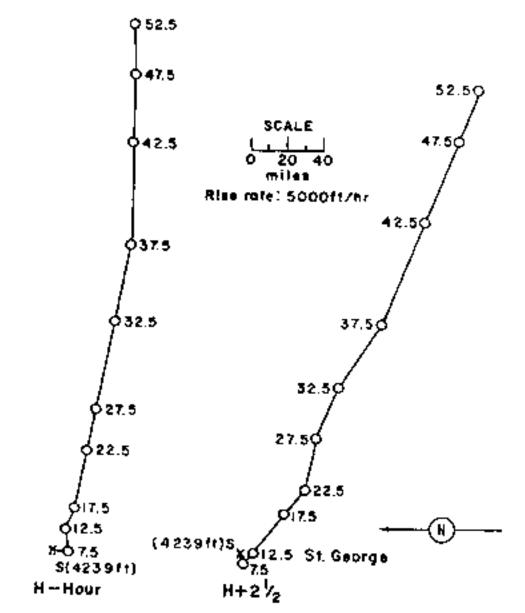


Figure 95. Nodographs for Operation UESHOT-PNOTROLE - Simon.

CPREASE GROUPSER - Shoon	
$\frac{1}{10000} = \frac{1}{8} \frac{1}{1000} \frac{1}{10000} = \frac{1}{8} \frac{1}{100000} \frac{1}{10000000000000000000000000000000000$	$\mathcal{E}_{\mu}(\sigma_{\mu\nu},\rho_{\mu}) = [0.1] \cdot 1 A(0)$
TING: CONU 2.30	$\frac{$1750}{360} = 850 - 8500 \text{ More stars and } 360 + 800 \text{ M} \\ 119^{2} \pm 50^{2} - 45^{2} - 8$
2010 <u>(). 2017</u> 0: 20 ke	Site elevation: 3,091 ft <u>Herder og Båter</u> : 0,024 ft
<u>FIPPERAL DATA:</u> Time to got distinguish 16.8 to 17.8 move Time to Posi despinant (10.5 to 170 move)	<u>CLC</u> UR (74 APIANI) - 40,000 m XM <u>CLCUR RECY (CLCUI)</u> - (CLCU M XM
Rodius et Cod angederung (1292)	<u>ORACIE DACA:</u> Storman

TYPE OF FIRST AND FLACEMENT: Air burst over Nevers 11

## REMARKS:

This shot is sometimes includes of an IRRET-KNELHCLE - will be prewas no local fillult. The independentially pattern was constructed from readings taken at  $H_{\rm e}^2$  being and extrapolated to Helmony, many the properties of the 2 doce rate decay curve for Neuron apil

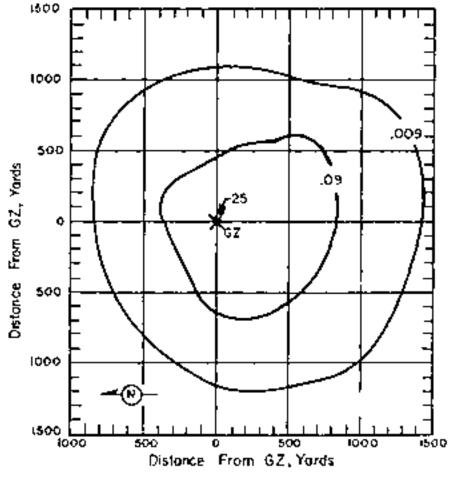
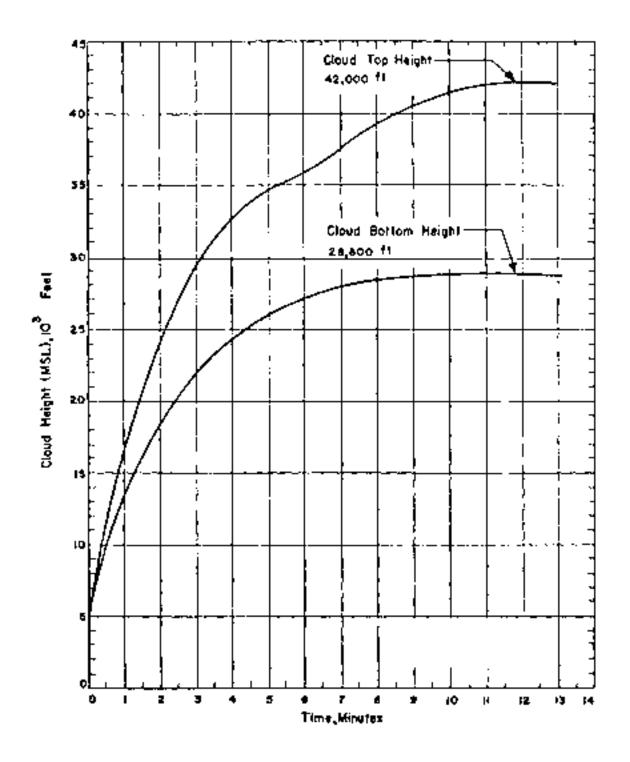


Figure 96. Operation GPSROT-VROTHOLE - Knewre. On-site dose rate contours in r/hr at H+1 hour.



# Figure 97. Cloud Dimensions:

Operation UPSHOT-KNOTHOLE -

Zicore.

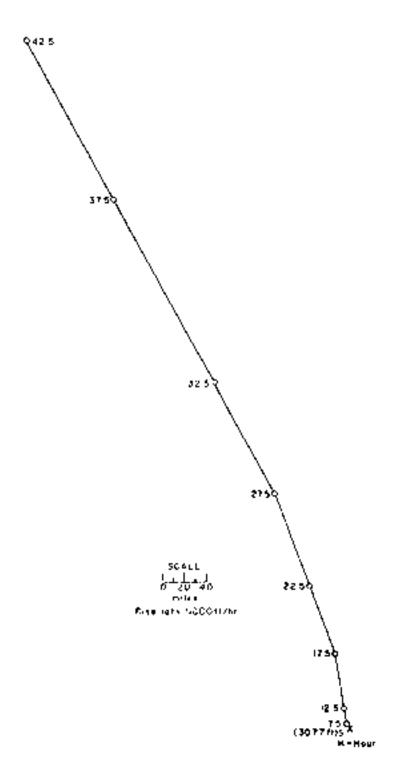
A. Clubby	ff-hou	12	Altilai	2-939	n
(NS)L)	Dir	Speed	(MGL)	D6 r	Speed
feet	acgrees	mph	feet	dergroup	េទួយ
Surfaces	190	c6	23,000	250	71
Barat Height	9%0	06	21.,000	290	78
5,000	230	07	25,000	250	
6,000	5.1.C	- 20	26,000	250	- 90
7,000	310	12	27,000	250	-95
8, œo	320	12	28,000	22,33	115
9,000	300	12	29,000	11 A.	125
10,000	260	ìà	30,000	1540	: :8
11,000	250	23	31,000	Page	115
12,000	250	30	32,000	240	1 2
13,000	260	35	33,000	240	128
14,000	260	40	34,600	240	:46
15,000	260	50	35,000	8-0	190
16,000	25C	55	36,000	1242	107
17,000	250	61	3%,000	240	- 16)
18,000	250	66	38,000	240	162
19,000	250	Ge.	39,000	2461	17.5
20,000	250	65	40,000	14.	$iQ_{i}$
21,000	290	58	41,000	2.442	:73
22,000	250	59	*		

\_ \_

TABLE 29 NEWADA WIND DATA FOR OPERATION MIGHET-KNOTHOLN + STOONER

NOTES

- 1. Tropopause height was 39,000 ft MSL at H-hour.
- Surface wind data was obtained at the Control Point. Upper air data was obtained from the rawincende acclion located on Yacca Lake.
- At B-hour the pressure at ground zero was (AC mt, the temperature 16.7°), the dew point - 7.6°C and the relative humidity 19%.



# Figure 98. Redograph for Operation UPSHOT-XMOTROLE -

Encore.

OPERATION ATOMOTICA - Herring	,
<u>1920 - 091</u> DATE: 1914 (j. 1965 - 1935) Millio - 0405 - 1935	0)-oor: 1860
2005 0405 NX 5	$\frac{S0TS}{37^2} = \frac{S12}{27^2} = \frac{A_{22}A_{12}}{27^2} = \frac{A_{22}A_{12}}{27} = \frac{B_{12}}{116^2} = \frac{B_{12}}{21} = \frac{B_{12}}{31} = \frac{B_{12}}{31$
	116° 61° 31° W Site Clevation: 4,006 71
<u>T0TA3, Y1HLD:</u> 32 kt	NETCHELON FURTHER ALOUND
FIREMAL FALA: Time to let minimum - 10.9 to 19.0 make Time to Pad resiment - 151 make	TYPE OF POULT AND A LACESTED Tower Cornel over Devide Soil
Radúus at 2nd maximum: SM	<u>CLOUD TOP (STARI)</u> - 47,900 ST MAL CLOUD BETTY BERTYCK - STU,900 ST MAR
	CRATER 1402 - De construe

# REMARKS:

The on-with follow pattern was obtained from readings of 04 open. No decay confliction was necessary. The off-site in test pattern was drawn from 9-may readings of table ground-runvey teams in the basisledist Safety englatization. This shot is comptiment designated as Spot t-Enoties. -Shot 8.

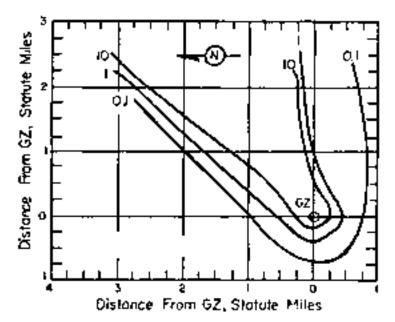
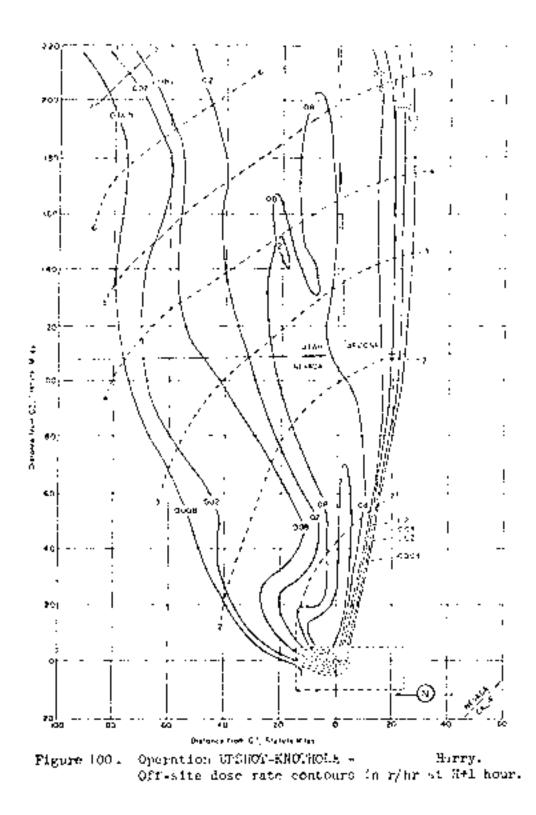
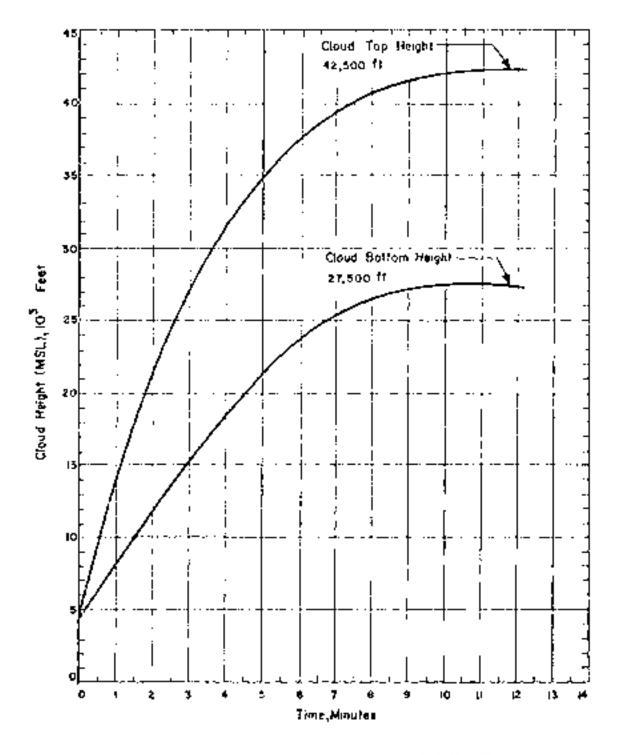


Figure 99. Operation UPSEOT-KNOINOLE - Harry. Co-site dose rate contours in T/hr at H+1 hour.









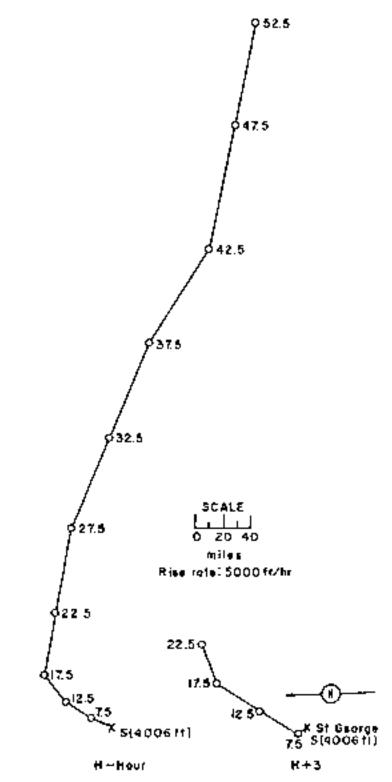
ALCOULD.	B-z day		Altridee	11-7 7	
$(\mu_{13})$	Dir	Sec. 4	(9431.)	D. g	
fact	degrees	mjói	feet	dirett erne	ı! <u>ت</u>
Surface	020	06	27.0%	$\mathcal{L}^{(1)}$	53
Norot Hought	(32)	DG	28,000	2890	
5,000	5,630	15	29,020	2000	577
6,640	200	24	30,000	22.40	67
7,000	200	29	357696	296	87
8,000	200	30	32, 683	246	77
9,000	210	26	35,666	290	75
10,000	210	21	34,000	2.50	2.5
11,0.0	210	17	36,000	200	72
12,000	200	17	36,000	2900	7.,
13,000	210	27	37,000	290	27
14,000	220	20	35,000	11.JC	244
15,000	530	24	39,000		
16,050	260	35	Noje.u	3.50	
17,000	270	40	i.1,000	3.70	- 65-
18,000	270	43	42,000	3.20	51
19,000	2/0	h3	43,000	290	19 A.
20,000	280	<b>Δ</b> Ϊ,	հմ,զութ	.285	87
21,000	280	46	45,000	-84	20
22,000	280	55	46,000	1.5.1	$\sim 10^{-10}$
23,000	2(-)	57	h7, 0.00	_ a.,	57
24,000	280	<u>63</u>	66,000	260	·);;
25,000	280	67	69,000	284	ų.,
26,000	220	57	50,680	28.5	72

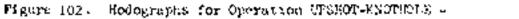
6639AY

TAPUS 30 MUDIDATA FOR CERMITION UNCOPPOSITION -

NOTEST

- Tropopulse beight was 40,900 ft MSL at R-hours
- Hohour confluer wind data was obtained at the Control Point. Hohour upper als data was obtained than the sewimicable cretics located on Yerem Take. Meg hour wind data was obtained then pibal observation at ht. George.
- At H-hour the produce at ground zone was 8% mb, the temperature 14.3°C, the devicent -0.6°C, and the relative housidity 3%.





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Borry.

OPERATION UPSHOT-KNOTHOLE -

Grable

<u>DATE:</u> 25 May 1973 25 May 1973 TIME: 0730 1530

TOTAL YIELD: 15 kt

<u>SITE:</u> NTO - Frencheran Flat 36° 57' 35" 5 115° 55' 53" W Site elevation: 3,077 5%

Sponsor: IASL

REIGHT OF BURSTE 524 CL

over Nevada soil

TYPE OF BURGT AND PLACEMENT: Airburst of guntype weapon

FIREBAL, DVTA: Time to 1st minimum: 13.3 to 14.9 msec Time to 2nd maximum: 122 to 138 msec Badius at 2nd maximum: 557.6

> CLOUD TOP HEIGHT: 35,000 ft MOL CLOUD BOTTOM HEIGHT: 23,000 ft MSL

CRATER DATA: No crater

#### REMARKS:

The on-site fallout pattern is due primarily to neutron induced activity and was obtained by the Radiological Safety organization from ground-survey measurements between [1+] hour and [1+1] hours. No decay corrections were necessary. The off-site fallout pattern was drawn from D-day readings of mobile ground-survey teams of the Radiological Safety organization.

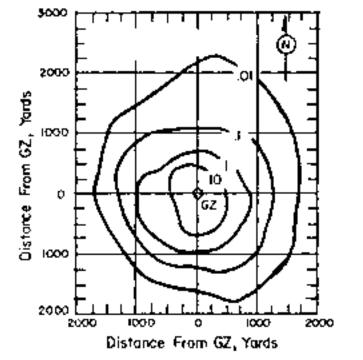


Figure 103. Operation UPSHOT-REOCECCE - Orable. On-site dose rate contours in r/hr at d+1 hour.

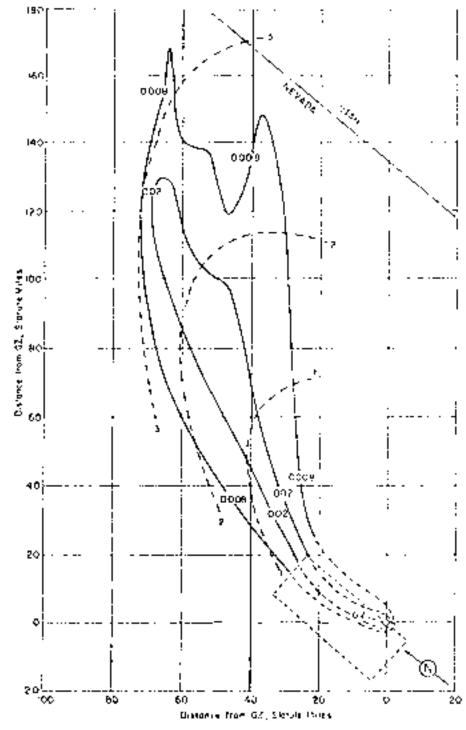
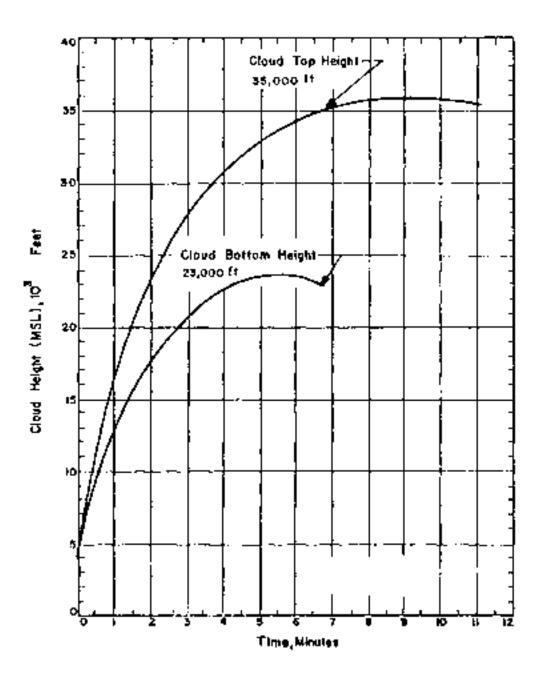
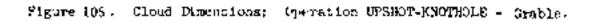


Figure 104. Operation UPSROD-KNOTSCHE - Groble. Off-site dose rate contours in r/br at H+1 boar.





Altitade	B-it.Ster		Altitude	H-5;042	
(M2512)	Dir	Special	(1331)	D5 r	Speed
feet	degrees	յաբե	feet	degrees	
Surface	360	05	27,600	2%0	102
Borst Beight	220	08	28,000	220	102
4,000	220	12	89,000	220	92
5,000	220	16	30,000	2230	98
6,000	190	24	31,000	2/20	12h
7,000	180	35	32,000	220	126
8,000	190	24	33,000	220	125
9,000	190	24	3%,000	220	120
10,000	500	35	35,000	220	338
11,000	200	30	36,000	220	340
32,000	200	36	37,000	220	100
33,000	200	37	38,000	550	103
14,000	200	38	39,000	2220	
15,000	200	40	40,000	220	75
16,000	200	55	41,000	220	85
17,000	210	63	42,000	P20	92
38,000	530	85	43,000	220	72
19,000	210	85	λ4,000	220	6:
20,000	220	85	45,000	220	$S_{2}$
21,000	220	86	46,000	290	64
22,000	220	87	47,000	220	63
23,000	220	94	48,000	820	77
24,000	220	101	49,000	220	60
25,000	220	75	50,000	220	38
26,000	220	63			-

TABLE 31 - DEVADA W1ND DATA FOR OPERATION CONCERNMENTED -

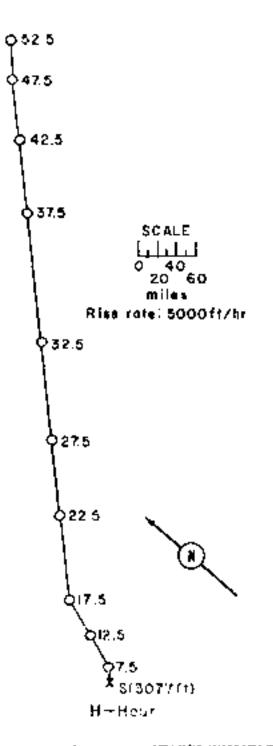
GRADE.F

NOTES:

1. Proposition bright was 35,800 ft MSL at History.

 Serface and lower level wind data was obtained at the Control Found. Upper all data was obtained from the mawinsonde section located on Yacca Lanc.

At R-hour the pressure at ground zero was 901 mb, the temperature 14.8°C, the dew point -3.8°C and the relative bunidity 38%.



Physics 106. Rodograph for Operation UTDE07-ENOTIDLE - Grable

OP-2013.00 (19 - 500-2002) (1037)	5 ( ) X
$\frac{-\frac{2622}{10000}}{\frac{10000}{10000}} = \frac{-\frac{6000}{100000}}{\frac{10000}{10000000000}}$	$(b_{2}, b_{2}, b_{3}, b_{3}) = 1.3, \mathbb{C}$
The state of the	$\frac{(22)^{10}}{(22)^{10}} = \frac{310}{(22)^{10}} = \frac{320}{(22)^{10}} $
	REAGED (P. DOLTE) - 1,78% PC
<ul> <li>PTPDEARC 19925;</li> <li>T39 - Comparison (comparison) 2740 (com79772) residents of the state of the 200 (com79772) residents.</li> </ul>	
Danila and Poir considered any State fit.	
	$\frac{\operatorname{CLORE}(\mathbf{x}_{1})}{\operatorname{CLORE}(\mathbf{x}_{2})} = \frac{\operatorname{CLORE}(\mathbf{x}_{2})}{\operatorname{LORE}(\mathbf{x}_{2})} = \frac{\operatorname{CLORE}(\mathbf{x}_{2})}{\operatorname{LORE}(\mathbf{x}_{2})} = \frac{\operatorname{CLORE}(\mathbf{x}_{2})}{\operatorname{CLORE}(\mathbf{x}_{2})} = \frac{\operatorname{CLORE}(\mathbf{x}_{2})}{$

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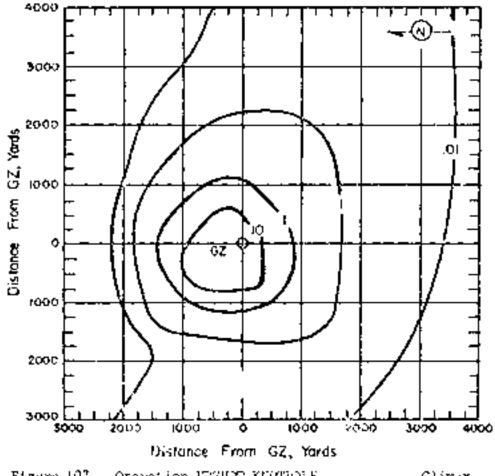


Figure 107. Operation USSUCE-KE(USE) = Climix. Operate down rate contours in p/mr at 841 hour.

Altitude	ä-ls	4.1.	AUGMENT	il-ho	nd gt
(MBD)	Dir	Speed	(NCO.)	Dist	Speed
feet	degrees	105.05	fores.	definere	्यम् ।
Curface	$Oh_{2}$	03	27,000	310	28
Barst Height	010	09	25,000	310	- 32
5,000	616	12	29,000	310	-28
6,000	360	$\alpha_1^*$	30,000	310	3.2
7,000	010	09	31,000	310	224
8,000	020	07	32,000	310	30
9,000	020	12	33,000	300	28
10,000	340	23	34,000	286	$2_{2}$
11,000	220	05	35,0.0	270	201
na, aco	200	03	36,000	260	18
13,020	190	07	37 . OCX.	250	- 22
3/1,000	170	09	38,000	260	24
15,000	170	C7	39,000	280	29
16,000	510	05	40,000	250	$\mathbb{C}^{(1)}$
τημαίο	P50	12	42,000	250	26
18,000	2(0	37	42,000	240	32
19,000	270	18	43,000	260	28
20,000	280	15	44, GCX:	270	8(
21,000	280	:8	45,COO	- 280	ji,
22,000	310	ຂາ	46,000	270	14
23,000	320	20	477,000	270	23
24,000	310	23	48,000	270	25
25,000	310	22	49,000	270	23
26,000	310	28	50,000	270	13

COMPANY, SALES

TABLE 32 WIND LATA FOR DESERVION DECEMPTION DECEMPTIONS

NOTED:

- 1. Tropopause beight was 39,060 ft MSD at H-hear.
- R-hour conface and lower level wind data was obtained at the Control Point. Wehrur apper air data was obtained from the rewincome section located on Yucca Lake.
- 3. At N-hour the pressure at ground zero was 367 mb, the temperature 13.3°C, the dew point -3.9° and the relative pomidity 30%.

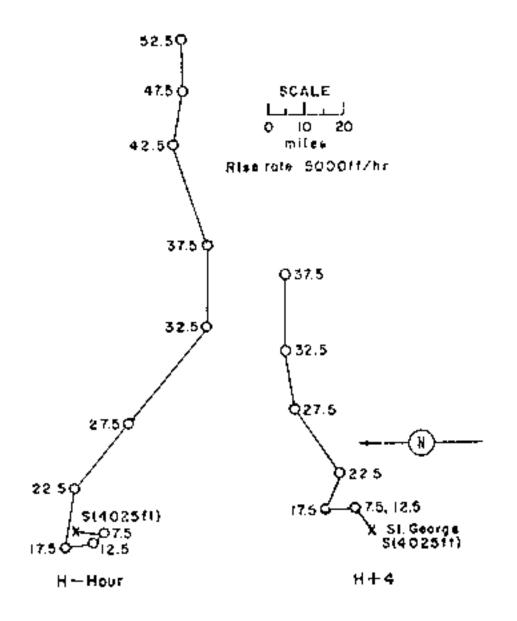


Figure 108. Motographic for Operation Property Suppression-REOFIDLE - Climate

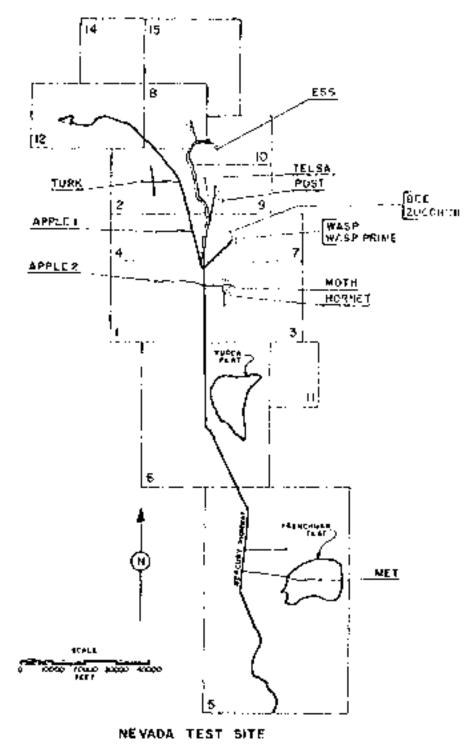


Figure 109. Operation 750107, Shot Lorations.

OPENATION TIMEST - Marg

	FBT	GMT .
DATE:	18 10 10 1995	18 Feb 1955
$T(M_{i})$	1200	2000

TOTAL YIELD: | kt

## TYPE OF ECHER AND PLACEMENT: Air Burst over Nevado soil

FIRSHAL DATA:

Time to lot minimum: 3.3 to 4 more Time to 2nd miximum: 44 to 48 more Hadius at 2nd miximum: 196.8 ft Sponsore - LASL

 $\frac{\text{SUPE:}}{37^9} = \frac{MrG}{37^9} + \frac{\Lambda row}{10^9} = \frac{7 \cdot 7 \cdot 4}{3} + \frac{37^9}{10^9} + \frac{10^9}{10^9} = \frac{3}{10^9} + \frac{10^9}{10^9} = \frac{3}{10^9} + \frac{10^9}{10^9} = \frac{3}{10^9} + \frac{3}{10^9} +$ 

HEIGHT OF SCHOT: 762 PL

<u>CLOUD 1772 HELORY</u>: 23,500 CU MEL <u>CLOUD 177200 (180.781</u>): 24,500 CU MEL

CHATTON 1477. No crather

# REMARKS:

The contours resulting from this shot were day primarily to neutroninduced activity. The on-site pattern was obtained from Red-Safe readings at Elthour. No decay corrections were microsary. No off-cite pattern is presented because of the low activity levels encountered.

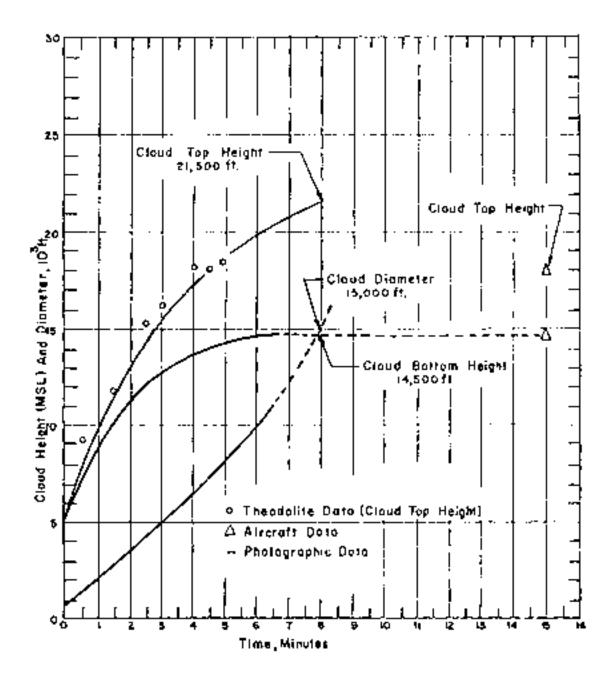
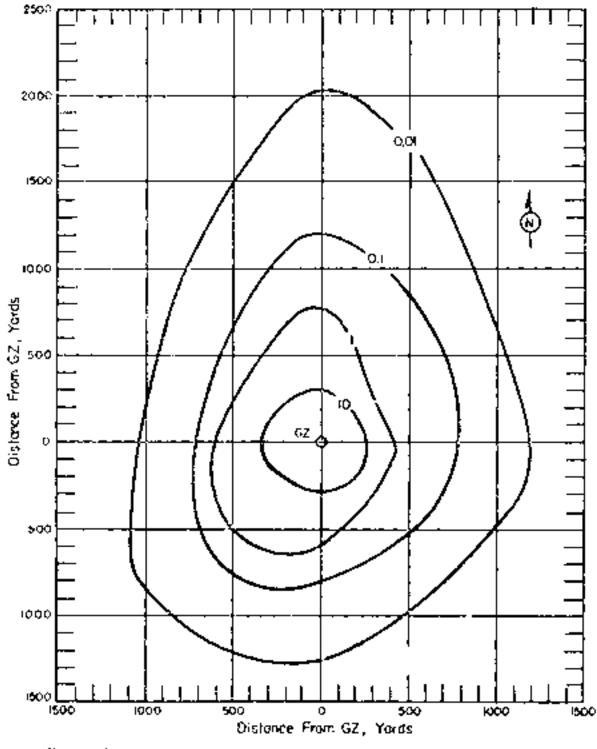


Figure 110. Operation TEAPOT - Mapp. On-site dose rate contours in r/Mr at N+1 hour.



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Samilaco	[8]%)	. *		
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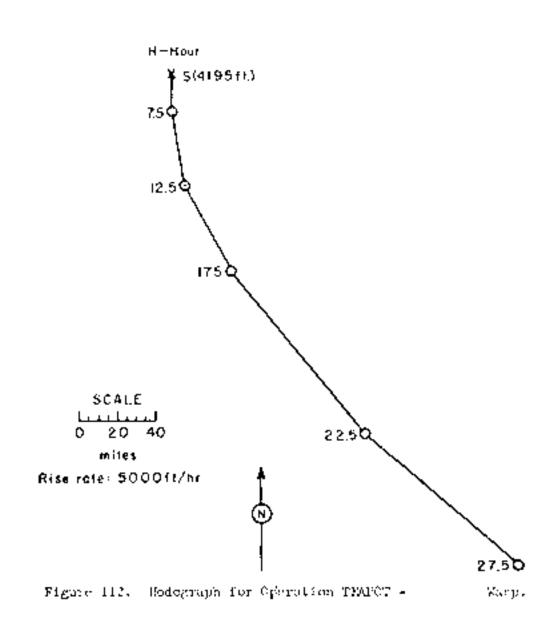
TABLE 33 DEVICE WINE LARK YOR CONSUMPTION TO STATE

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(2) At any definition to approximate we specify the group enblocked.

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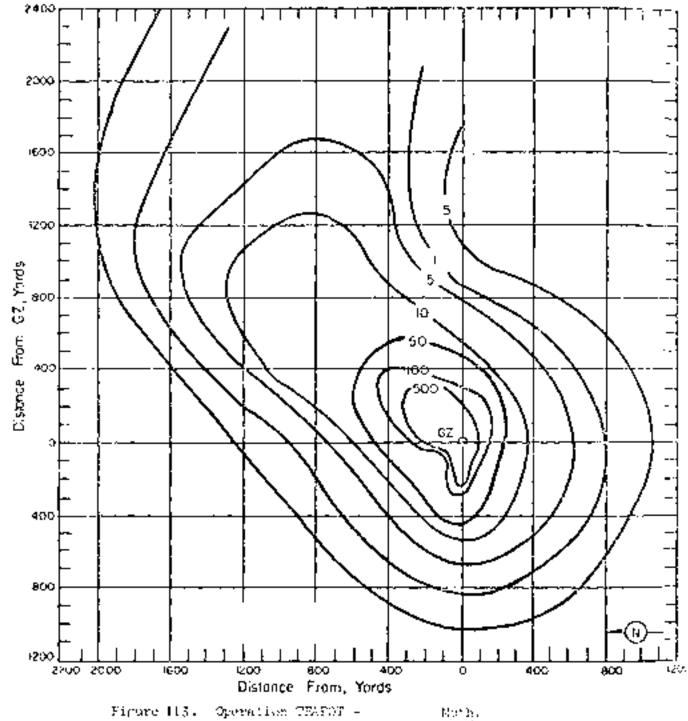
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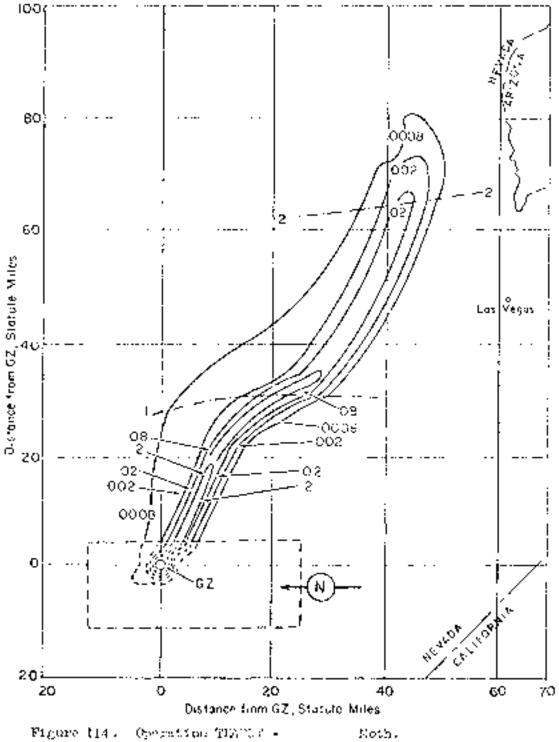
CRASSING PACKS - No. Construction

# REPAY (REF)

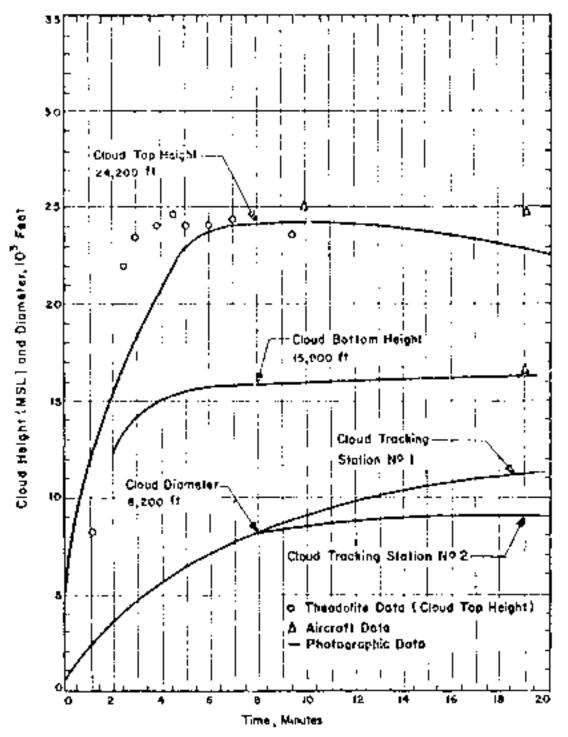
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On-site done rate contours in r/he at 2+) hour.



Off-site dope into contours in r/hr at H+1 hour.



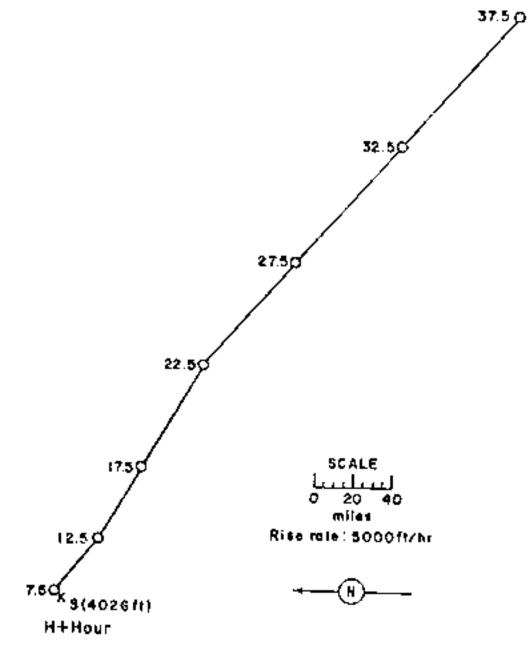
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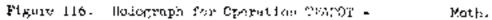
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<u>y 1996 y</u> 1996 - 7 Kt	$\underline{\mathrm{H}}(\mathbf{r},\mathbf{r}) = \sum_{i=1}^{n} \mathbf{h}_{i}^{(i)} + \mathbf{h}_{i}^{(i)} + \mathbf{h}_{i}^{(i)} + \mathbf{h}_{i}^{(i)} \mathbf{h}_{i}^{(i)}$
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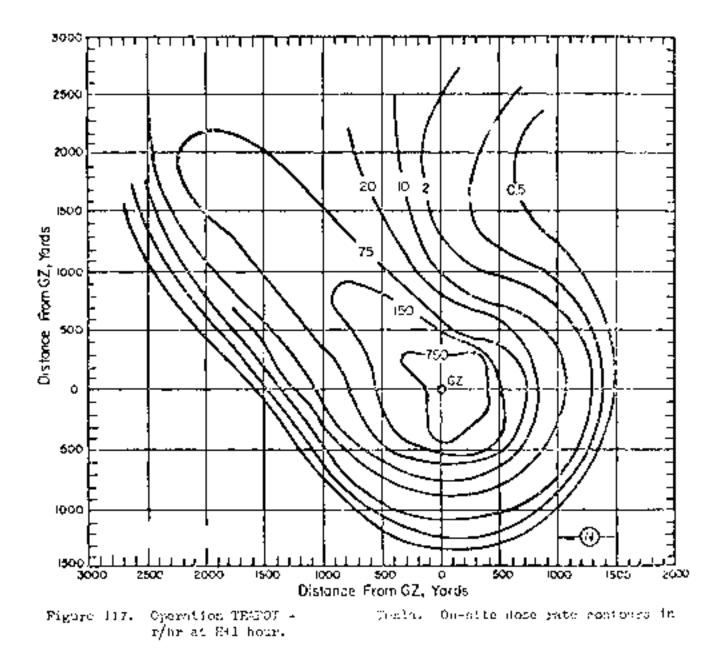
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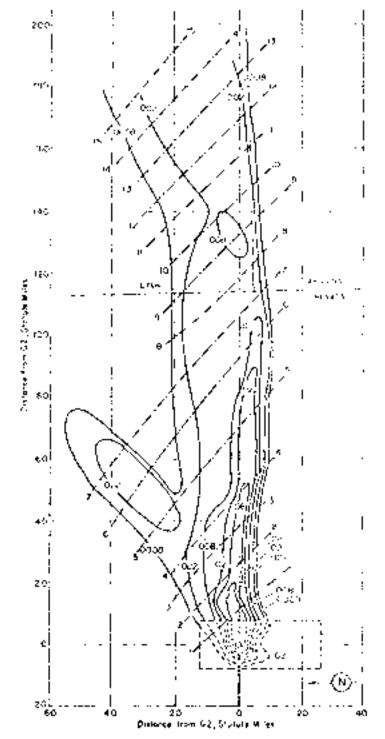
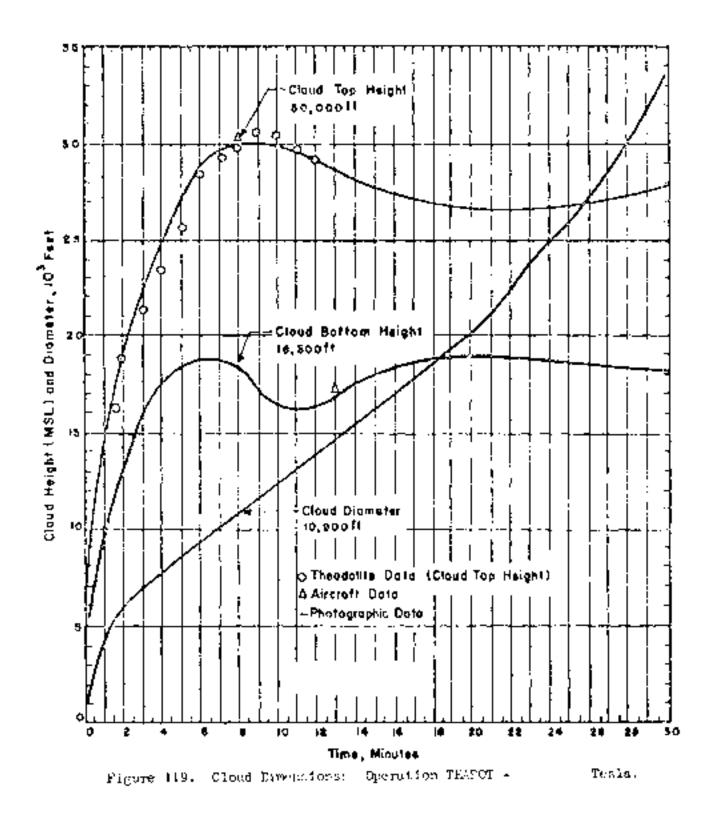


Figure (18. Operation TENFOT - Testo, Cff-site does rate contours in r/hr at R+1 hour.



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$7.91$ $\sim$	Child.	Children	$\mathcal{D}_{2,q}(x, 0)$	21.5	15.2
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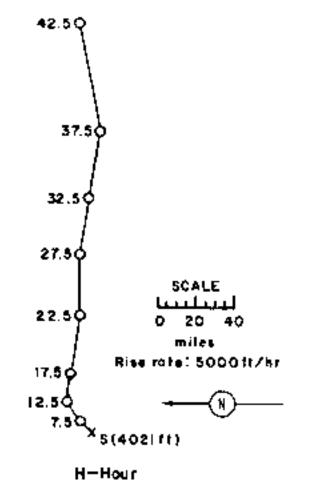
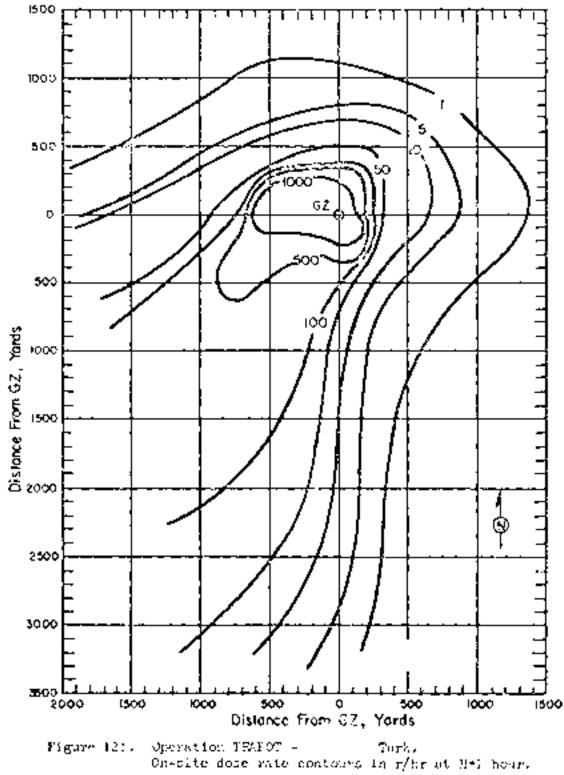


Figure 120. Holograph for Operation TEAPOT - Testa.

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$\frac{1}{2} \frac{\partial Q_{1}}{\partial (1 + 1)} = \frac{\partial M_{1}}{\partial (1 + 1)} \frac{\partial M_{2}}{\partial (1 + 1)} = \frac{\partial M_{1}}{\partial (1 + 1)} \frac{\partial M_{2}}{\partial (1 + 1)}$	[4] Shir (201) [11,23]
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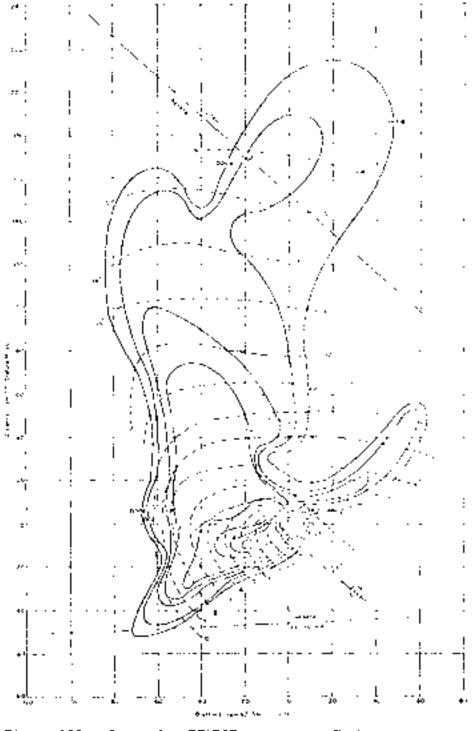
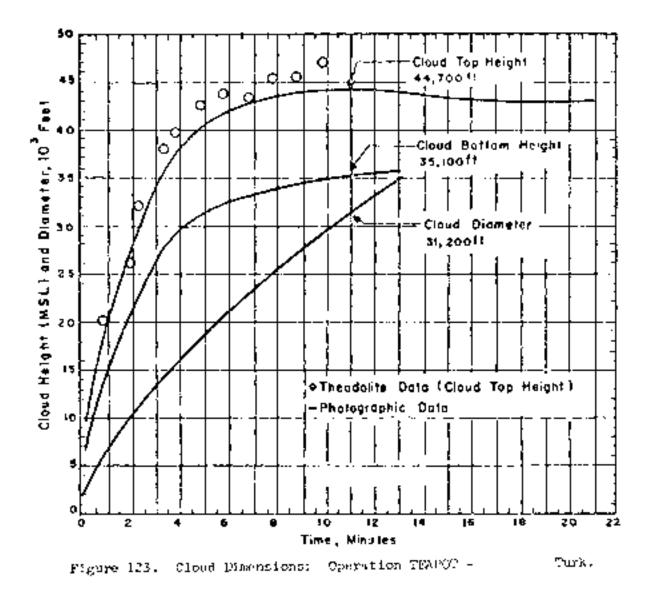


Figure 122. Operation TEAPOZ - Durk. Otr-site dose rate contours in r/Lr at B+1 hour.



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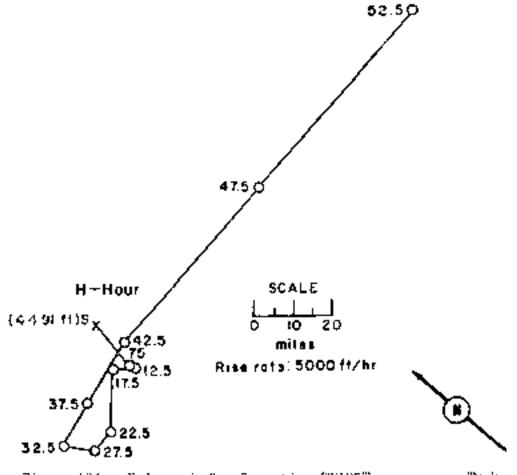
haire r H-linger Altitate Altitade 6y ded (MSL)  $(N_{ij}(L))$ D.e. ili<u>r</u> <u>Specied</u> aph. geCaller? freet dengeretena. Dec U ingen 12  $p\gamma_{1}0.0$  $110^{\circ}$ 10 Surface 310 1.00 010 20 26,000 5,000 •0 - 14. 6,000 030 24 29,000  $0^{\circ}$ 100 7,000 23 30,000 v8030 8,000 31,000 150 66 050 47 130  $28^{\circ}$  $G_{2}^{i}$ 9,000 32,000 030  $\Sigma'$ 10,000 350 02 33,06 $C_{1}^{\alpha}$ 11,020 310 23 34,000 260 20 240 12,01X) 05 35,0°C 33 130 270  $2^{2}$ 13,600 150 - 06 36,000 - 85 280 12 15,000130 37,000  $\mathbf{P}_{x,y} \mathbf{C}(\mathbf{X})$ 38,650 2000 16007 222 270 16,000 -C(X) = -- 66 -39,000 2940,630 oγ - 16 C 17,000 070 -1à L1,001 18,000 O/0- 09 ... - -- 15 42,:00 Cr. 14. 19,000 050 -Course 050 1C43,000 20,000 ... - -C! C 270 21,000 12 hing Case お子 (22,000) O(O)30 ومعروبا 270  $\mathbf{v}_{\mathbf{k}}$ 070 09 الجحجر كوا 56 23,600 270 080 09 11,000 26,000140 57 12,000 07  $C^{(1)}$ 25,000 090 -270 -୍ୟ 26,000 100 49,000 270 63 50,000 $270^{\circ}$ 61

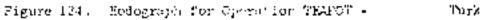
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NOTES:

1. Tropopause height use h0,000 ft MSR al Sobsare

2. At shot height the temperature was  $5.5^{2}$ C and the pressure  $895~{\rm mb}$ 





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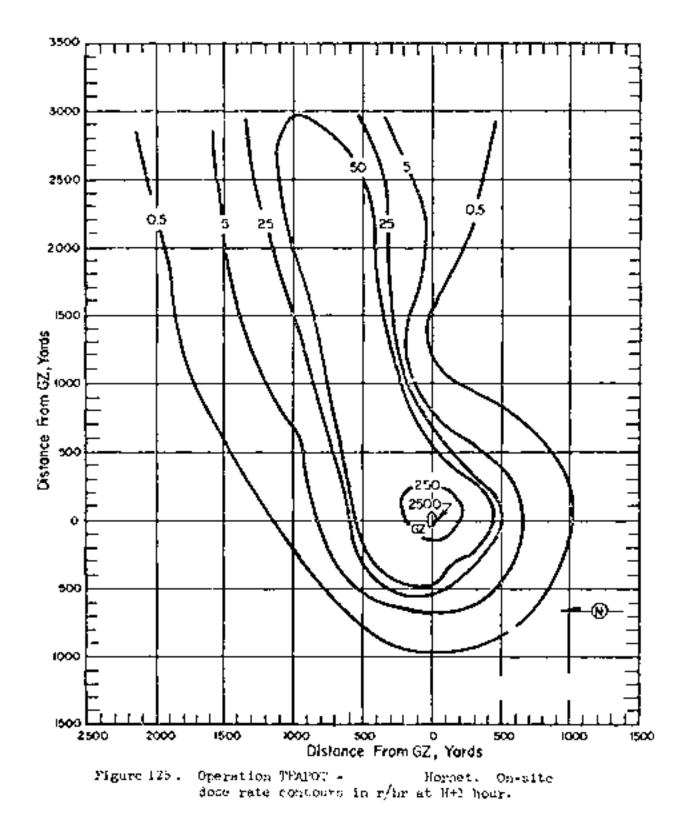
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The off-site following putters was drawn from grown below y readen to taken by the off-site following reaching equalization. The triangle decay approximation was used to extrapolate the decay rule reachings to H-1 being for both co-site and off-site patterns.



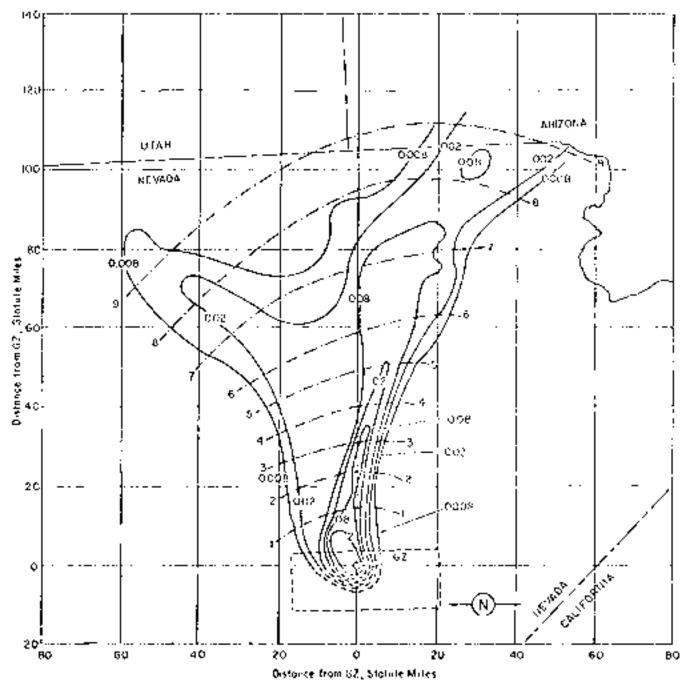
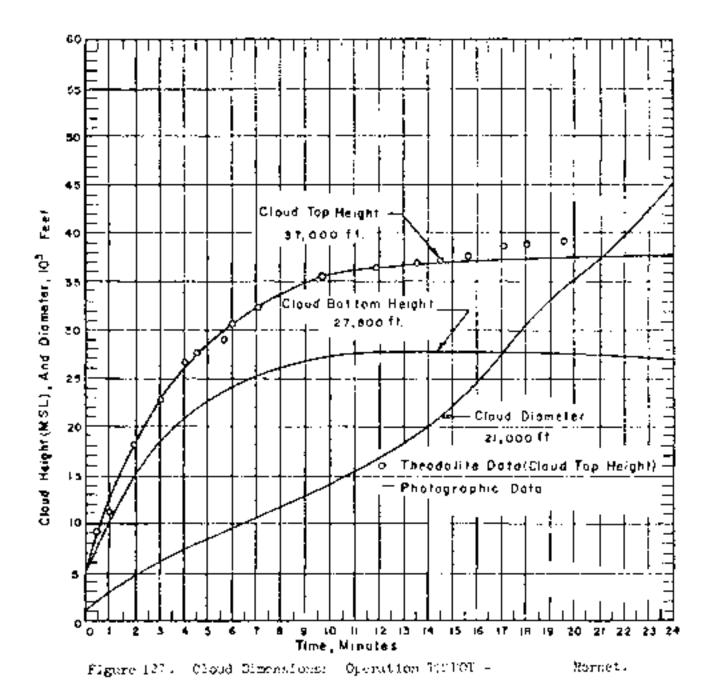


Figure 126. Operation INCPOT - Bornet. Off-site dose note contours in r/hr at H+1 hour.



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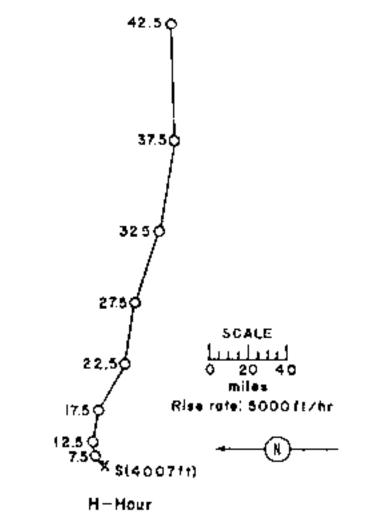
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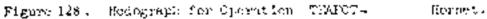
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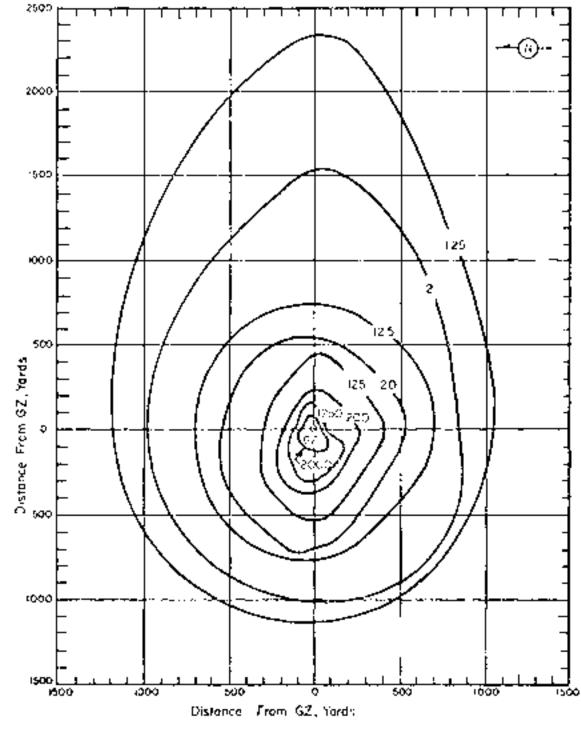
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74.)**e** 

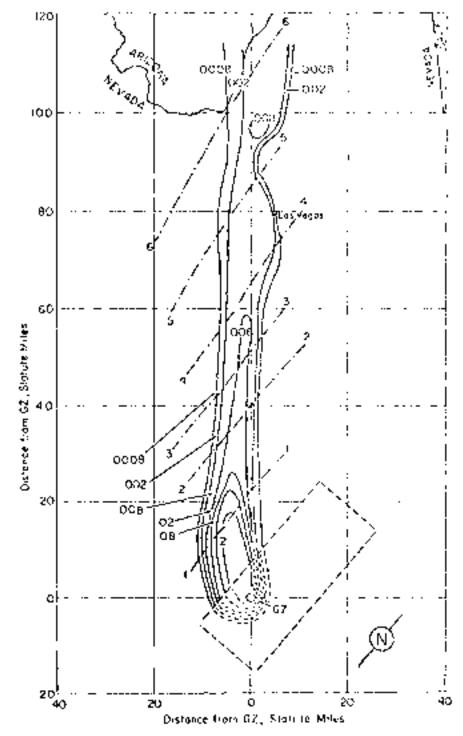
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<u>DVTC: UP_N_R_09_0</u> (C_Mar_1955) <u>TTMC</u> : 0505 1305	$\frac{\text{SITE}}{3} = \frac{6.27}{3} = \frac{5}{10} \frac{1}{2} \frac{1}{2} \frac{1}{2}$
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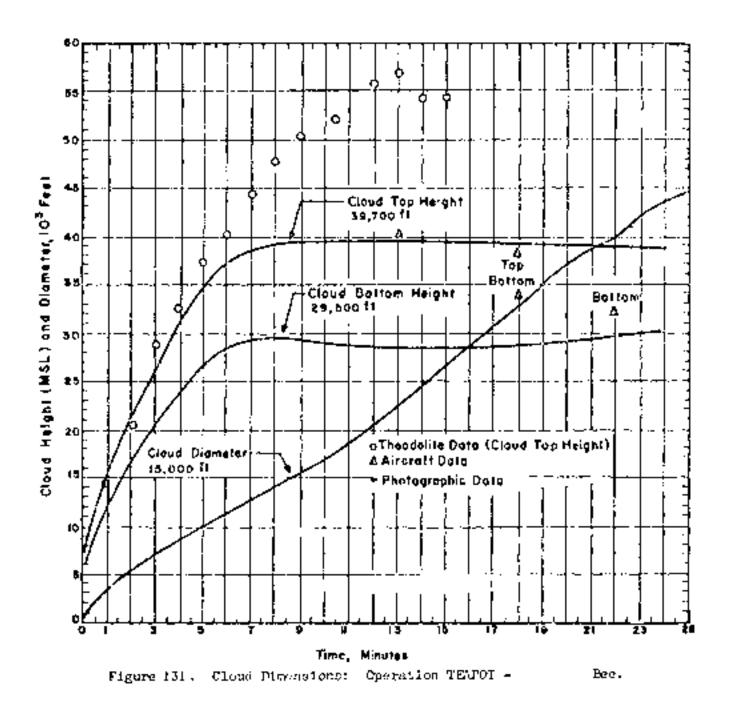
#### REMARK: 1:

The on-site puttern was constructed from data resulting from the different proceed conveys performed by the Reducteriest Cattly expansions from  $0^+/$  been to  $0^+/$  days. AN/ON-35 heatries of were used. Green stake lines (upproximately result) along exclining reads around proved zero aided the survey fract in localing (their position. The off-site fullest pattern was drawn from recent-convey readings taken by the off-site Hadiological Cately organization. The off-site fullest pattern was drawn from recent-convey readings taken by the off-site Hadiological Cafely organization. The the off-site Hadiological Cafely organization.



Pigure 129. Operation TEAPOT - Pee. Operatio description of the  $\gamma/2r$  at 1941 hour.



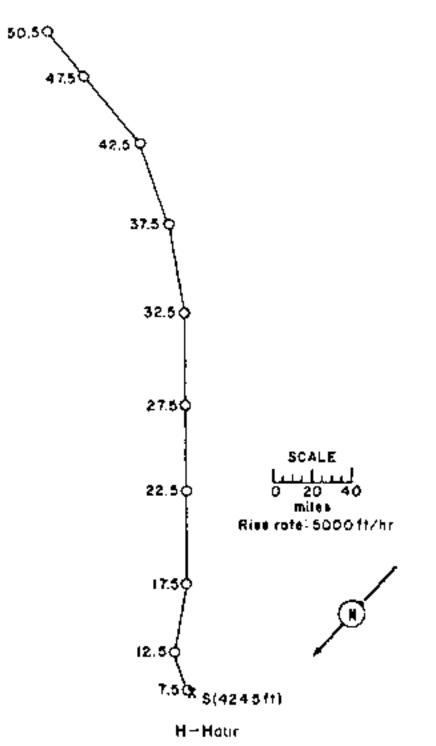


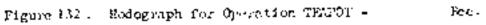
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8,000	260	09	31,0XX)	~10	48
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15,000	330	33	31,000	300	49
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NOTRE

- Tropopadov bright was 26,500 ft MOL at 9-hour.
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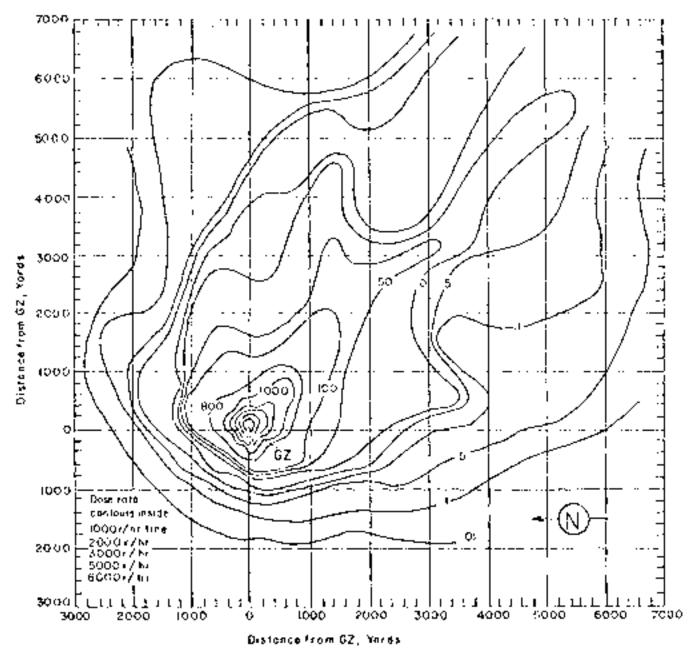


Figure 133 - Operation TWJOT - Ecs. Close-in Gene rate concours in s/hr at M+1 hour.

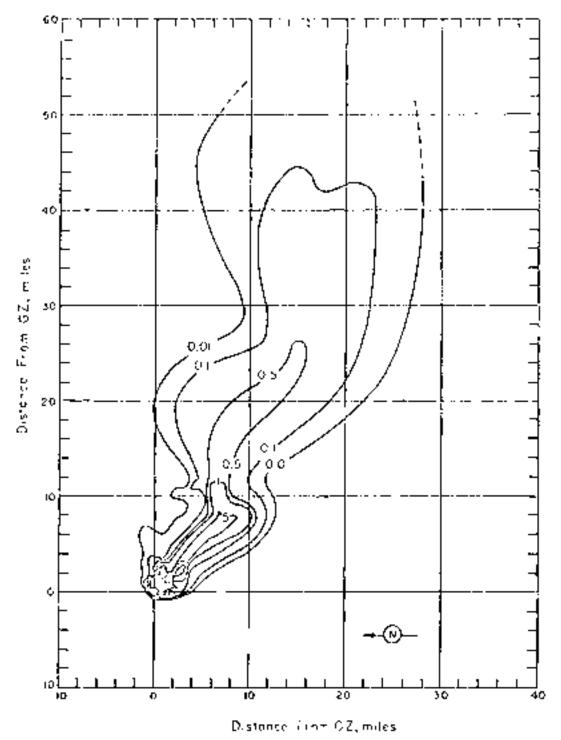
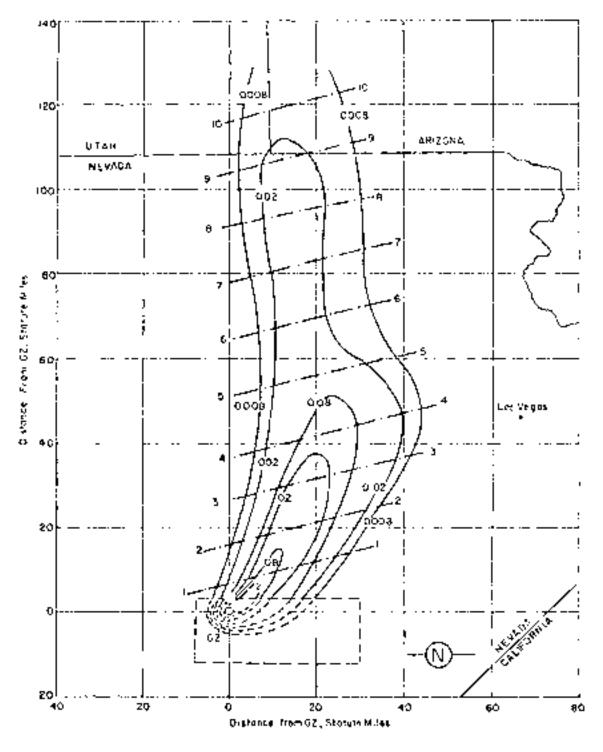
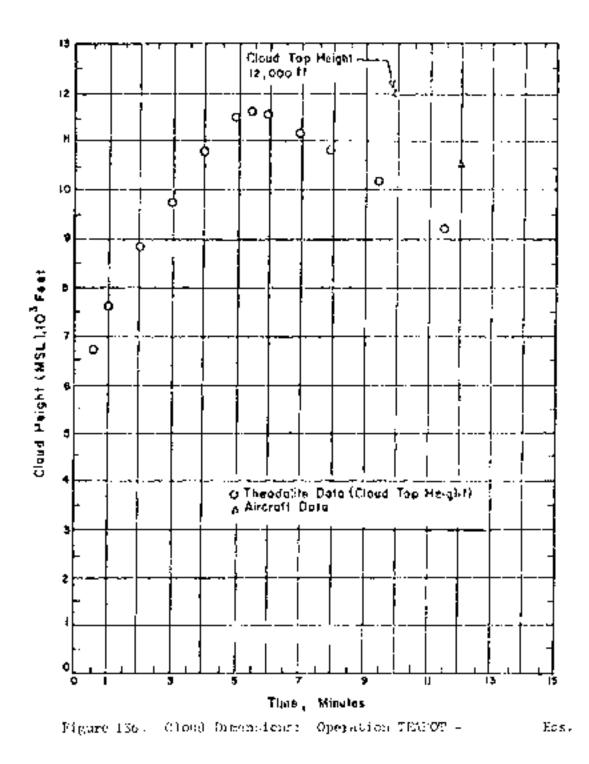


Figure 134 . Operation FigUre - - - Enc. On-site dose rule contours in r/hr at Hv1 hour.





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NOTES:

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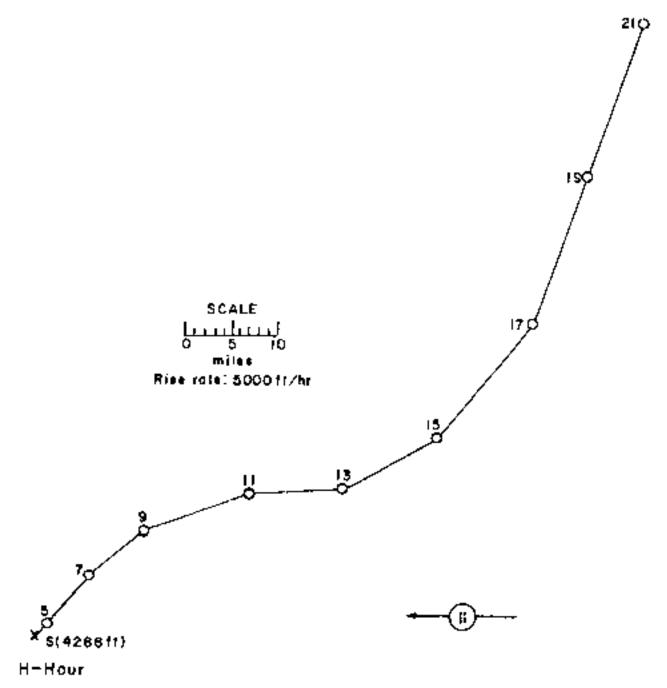
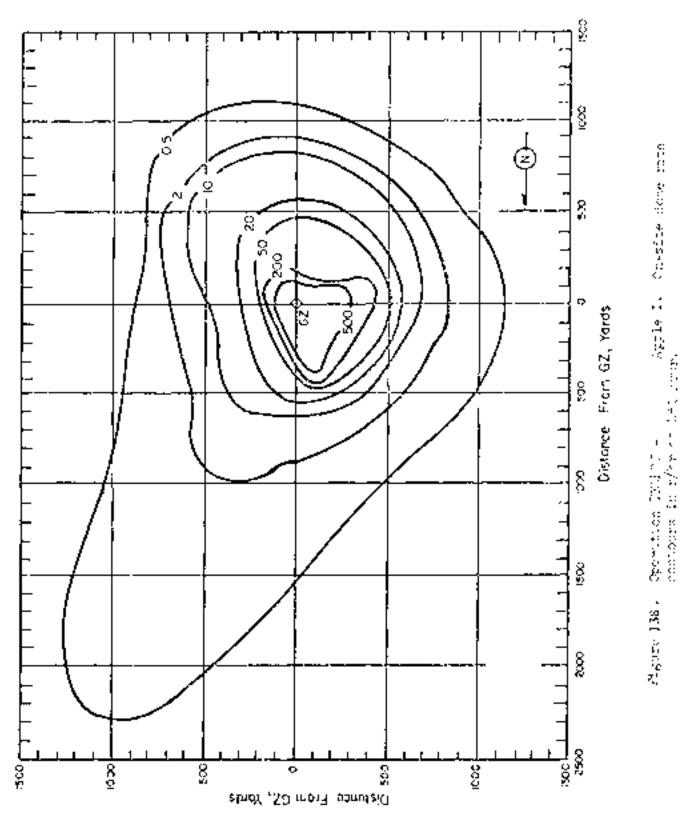


Figure 137. Hodegraph for Operation TEADOR - Ers.

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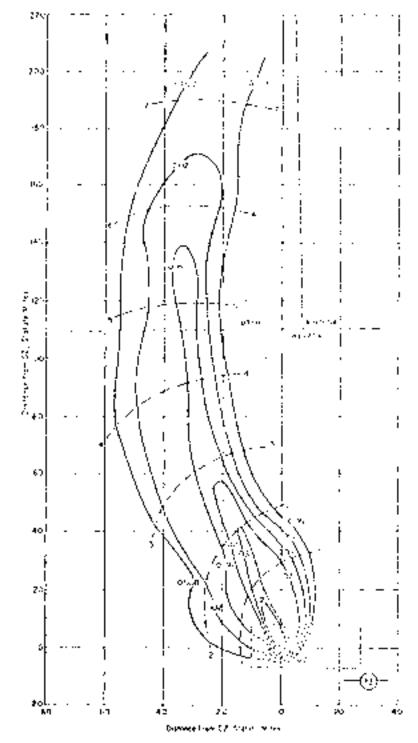


Figure 139. Operation TEAPOT - Apple 1. Off-site doce rate contours in p/br at [[+] hour.

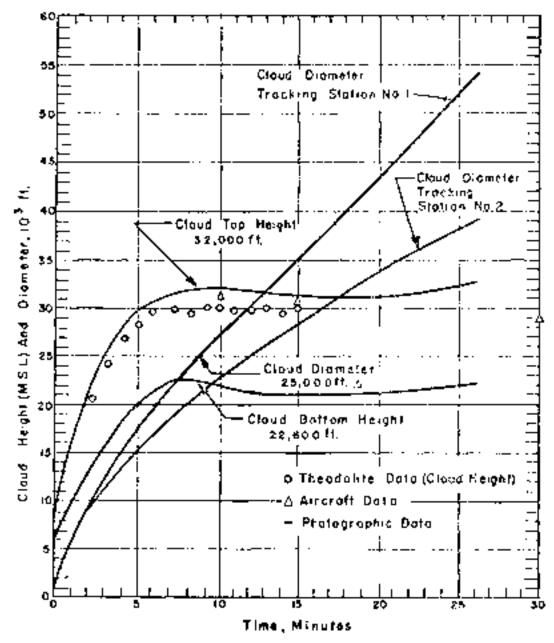


Figure 140. Cloud Dimensions: Operation 207707 - Apple 1. (Tracking Station No. 1 Decated 18 miles SM of C. P. and Tracking Station No. 2 50 miles SM of C. P.)

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7,000	190	61			30,000	200	53	250	- 73
8,000	2980	23			31,022	270	- 6 <u>3</u>		
9,000	290	25			32,000	270	55		
10,000	£00	22	230	29	33,000 -	220	54		
11,000	200	17			34,000	270	55		
12,000	240	27			Brijeno Brijeno	270	- 92	250	- 62
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18,000	260	31			Asjece -	210	58		
19,000 -	270	36			42,630	270	57	•	
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26,000	260	47			49,000	200	- 56		
-					50,000	260	G.	<b>-</b>	

NOTICE:

Tropopause beight was 50,000 ft MOL.
 At shot height the temperature was 0.3°C and the pressure 092 mb.

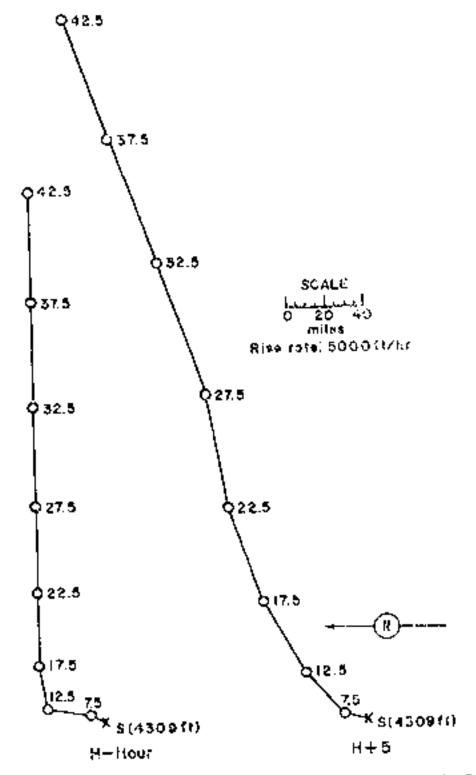


Figure 141. Holege.phs for Operation 7650°CT - Apple 1.

OF SUVERIOUS STATION -

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GATAN BUNG - Maleratery

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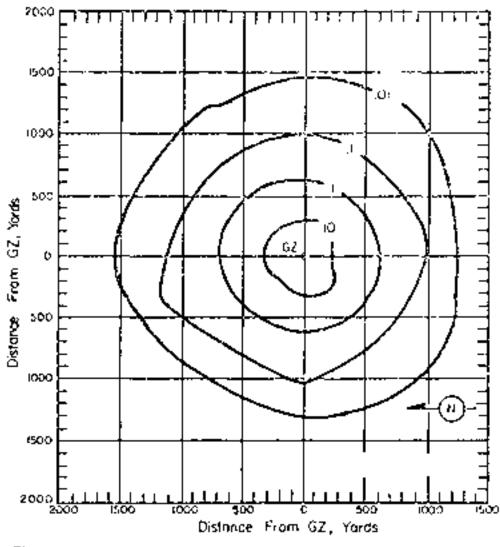


Figure 142. Constion TEAPOr - Mosp brise. Consite door rate contours in r/for at 0+1 hour.

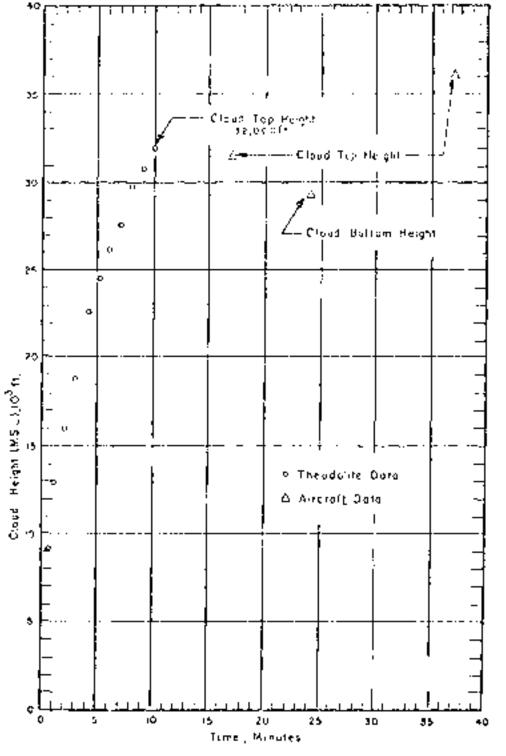


Figure 143. Cloud Limensions: Operation TPAPOT -

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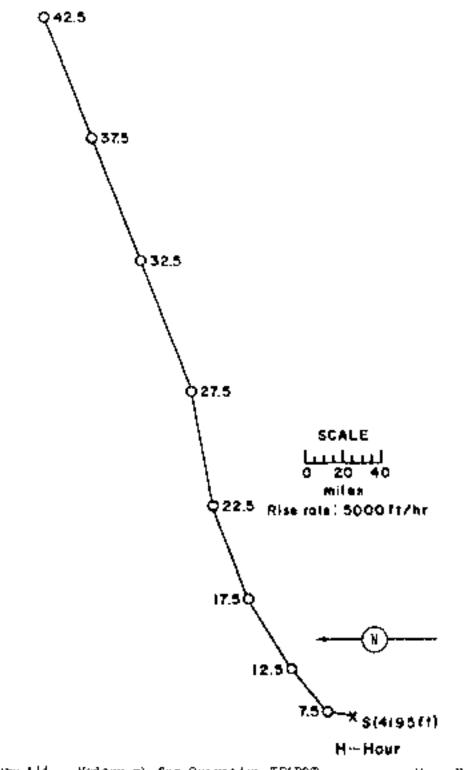


Figure 144 . Hodograph for Operation TEAPOT - Verp Prime.

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OP32072-05-2-243-01 -

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- IIA

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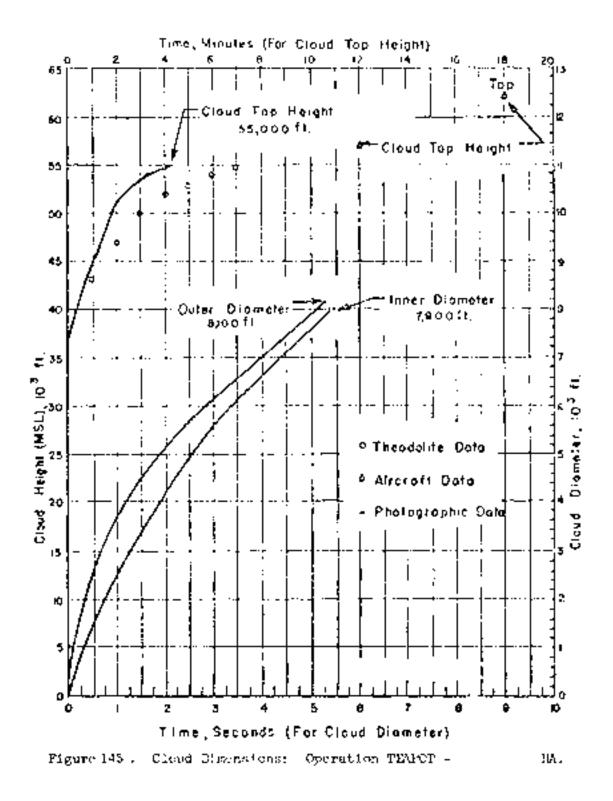
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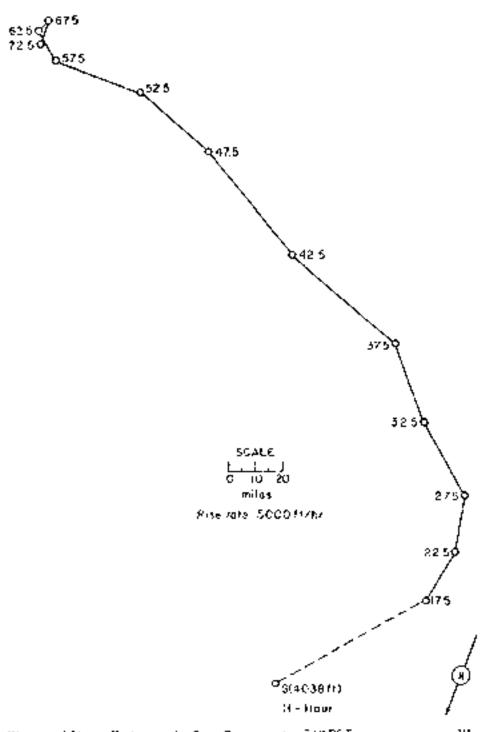
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#### 1956/43/35

The results estimination was due pointsily to neutron-induced nativity. The pointers was drawn from flow different ground for any made by the Radiation opportunities between RAT here and DOP days. The general decay curve for Kowada soil to strapeller the data to BAT here. The off-site follows pattern was arase from provides to BAT here, taken by the off-site follows pattern. Saturates from provides there, taken by the off-site follows here a degreed for the legical formation. When  $1^{-1+2}$  decay expression the was used to extrapolate the data-nate readings to RAT here.

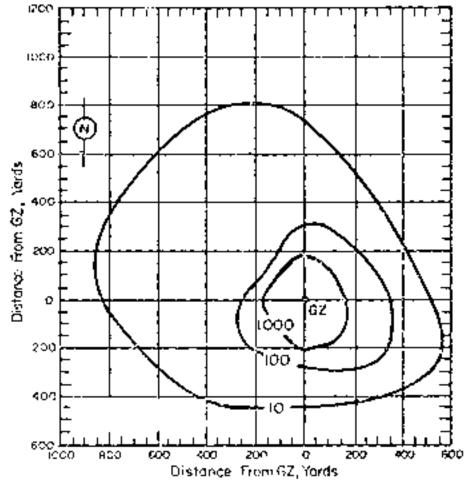
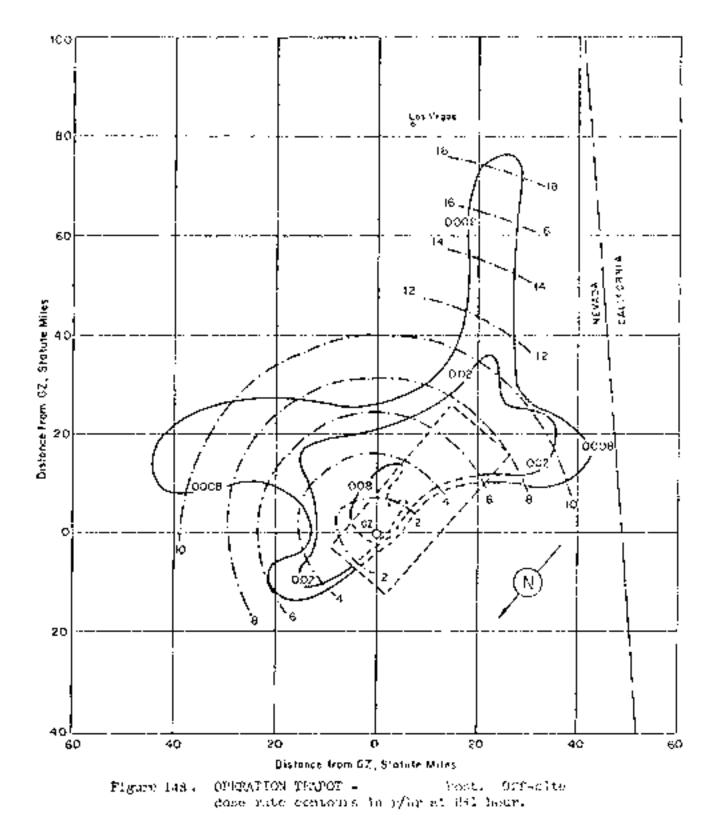


Figure 147 . Open (ion TA/POI - - - - Pours - Cossite dece mate contrary in offer at 101 hours



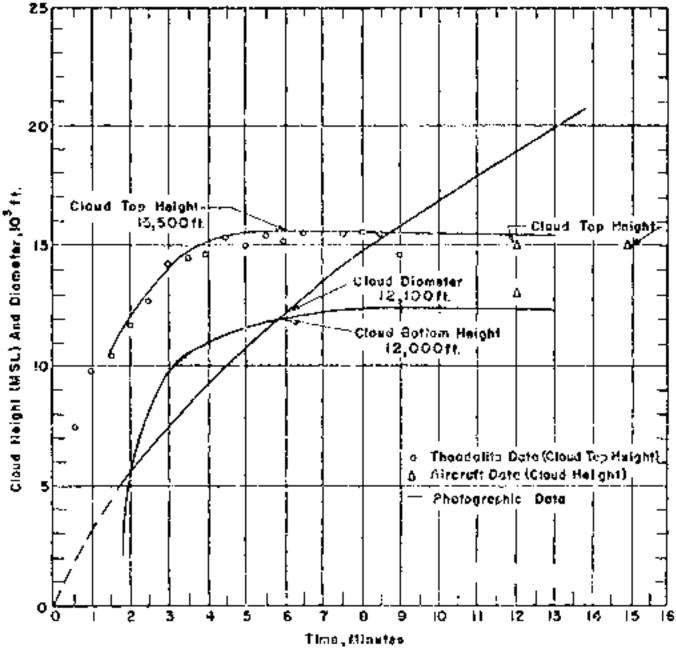


Figure 149. Cloud Dimensional Operation CWECT - Post.

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6,000	$C \sim 1 m$	Calm	18,000	330	14
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9,030	Çalba	Calm	25,000	350	29
10,000	CaBm	Colm	30,000	350	31
11,000	Calb	Callo	35,0X0	600	ĥ. 2
12,000	Calm	Co ) au	45,00	360	$h_{C}$
13,000	Calm	Calla,	45,000	320	\$94
			50,000	250	29

NOTE: At burst height the temperature was  $4.5^{\circ}C$  and the pressure  $85^{\circ}$  mb.

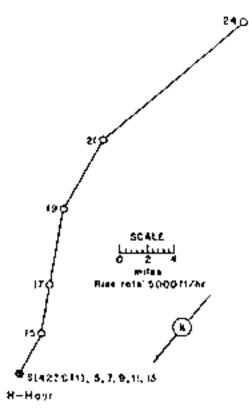


Figure 150. Hodograph for Operation TERFOR - Post.

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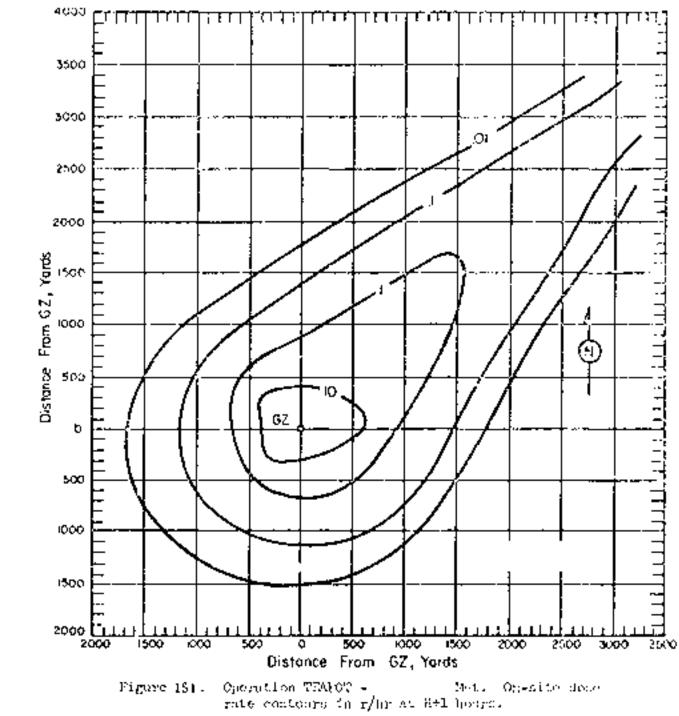
#### OPERATION TEAPOT -

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Time to 2nd maximum: NM Redius at 2nd maximum: NM	TYPE OF SHEET AND PLACEMENT: Tower burst over Nevada soll
CRACER DATA: No ensign	CLOUD TOP HELGET: 40,300 ft MSL CLOUD BUTTOM HELGET: 31,800 ft MSL

### ROMAHKO:

The on-site fullout patters was constructed from service performed by Fud-Dafe organization between  $Br_2^2$  hour and  $ErB_2^2$  hours. AN/PER-39 instrument: were used. Sight stake lines (approximately radial) along existing roads around ground zero aided the survey froms in locating their position. No decay corrections were node. The off-site fullout pattern was down from ground-survey readings taken by the off-site radiological safety organization. The triat access approximation was used to extripolate the done-rate readings to BM hour.



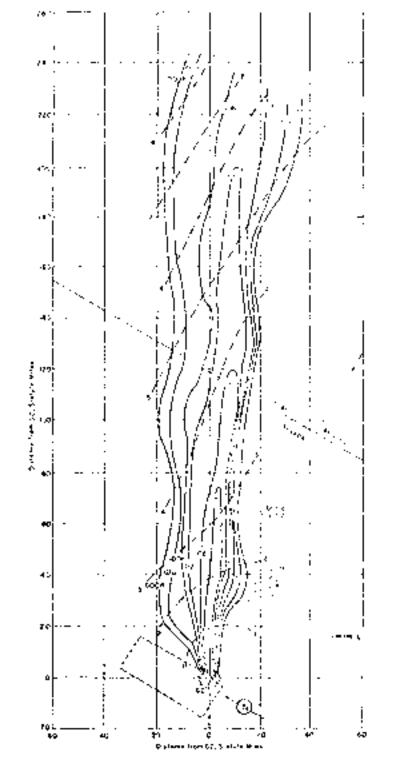
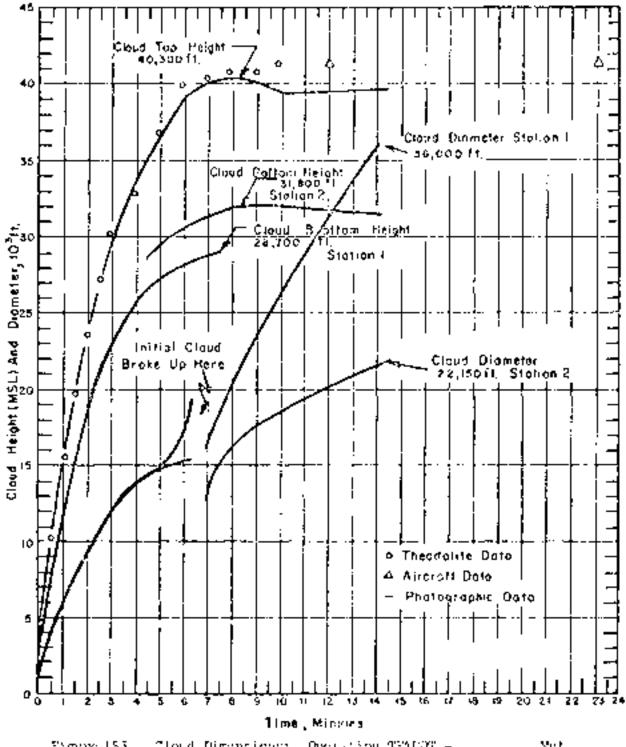
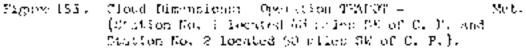


Figure 152. Operation TWDW. - - - - - Mot. Off-site dose rate contours in r/Lr at H+1 hour.





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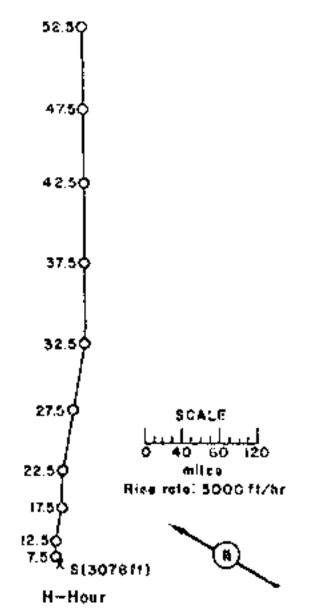
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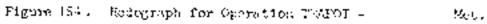
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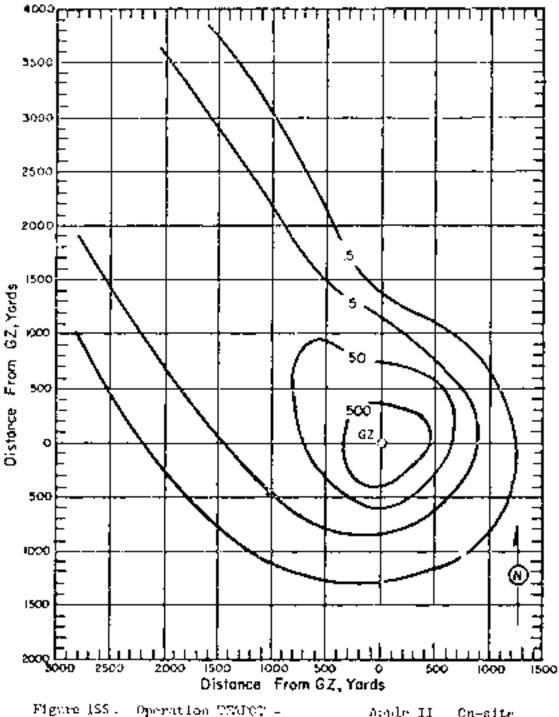
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'igure 155. Operation CENDOR = Apple II Cn-site dose rate contours is r/hr at 2\*1 hour.

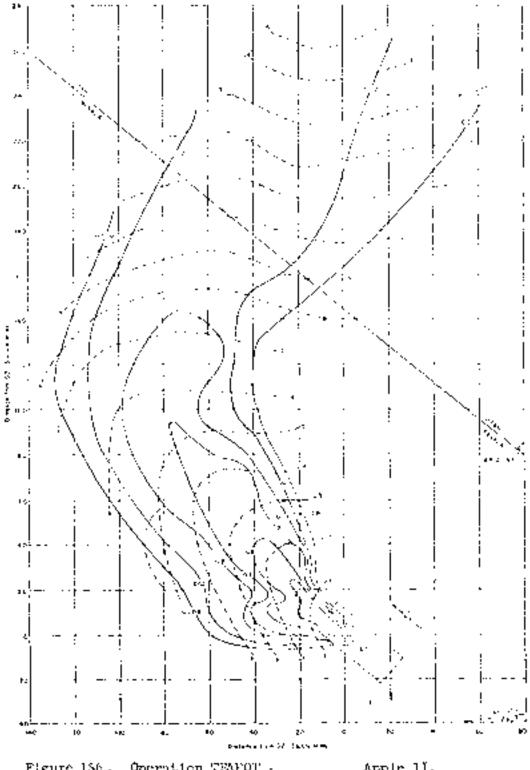


Figure 186 . Operation TEAFOT - Apple 11. Off-rile dose rate contours in r/tr at 941 hour.

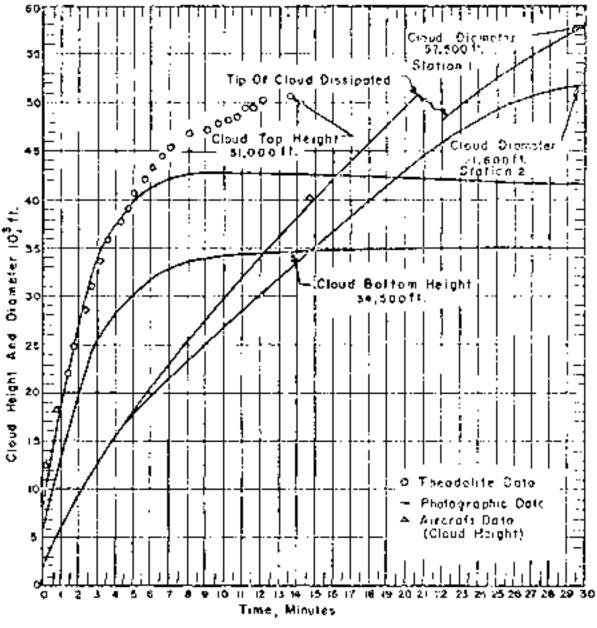


Figure 157. Cloud Dimensioner: Operation TEASTOR - Apple II. (Tracking Station No. 1 located 45 miles CO of C. P. and Tracking Station No. 2 [50 miles CO of C. F.).

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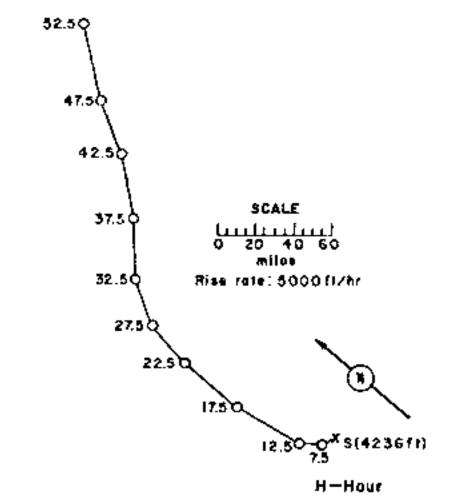
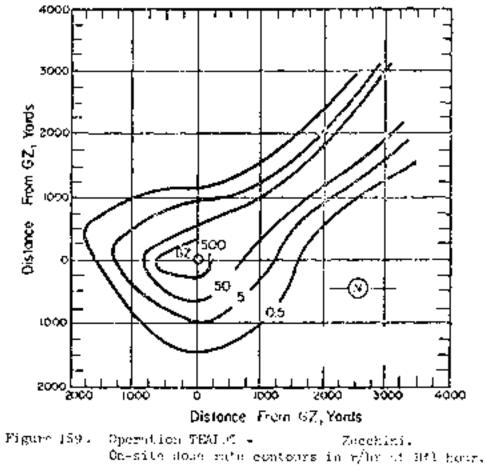


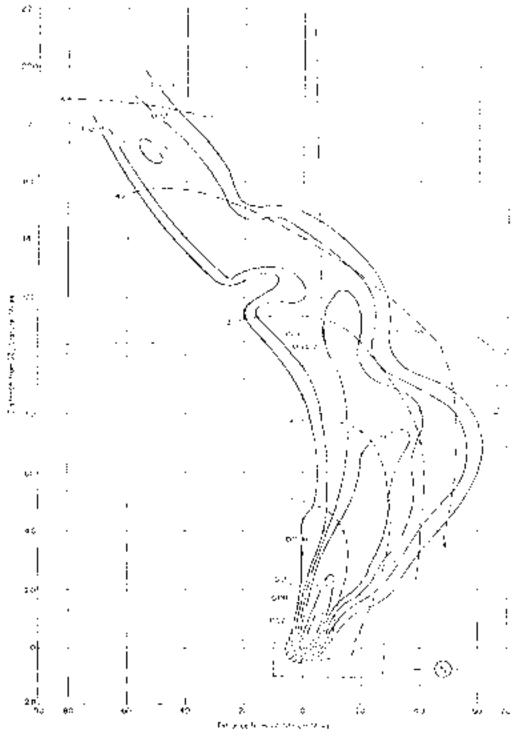
Figure 158 - Rodograph for Operation TWAPOF - Apple 11.

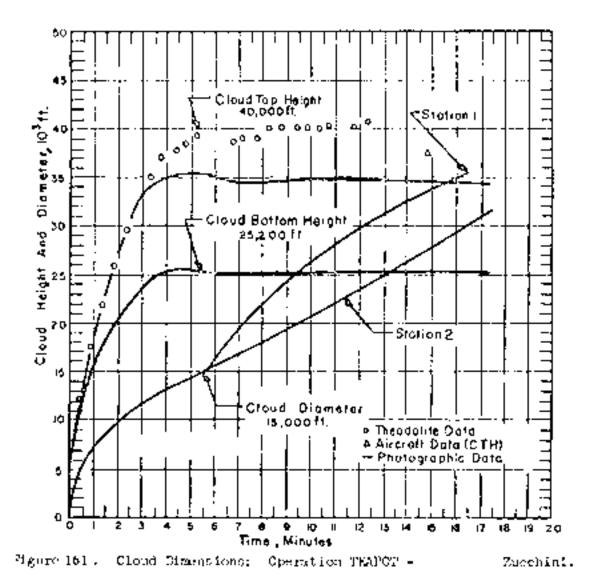
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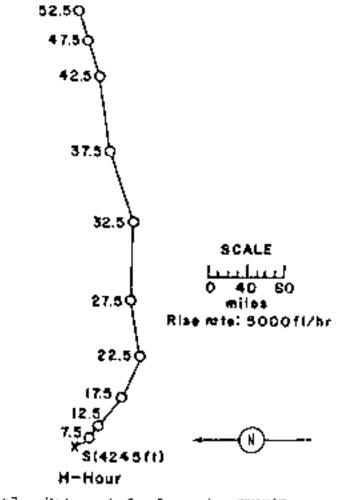


Figure 162. Hodograph for Operation TEAFOT - Zarohini,

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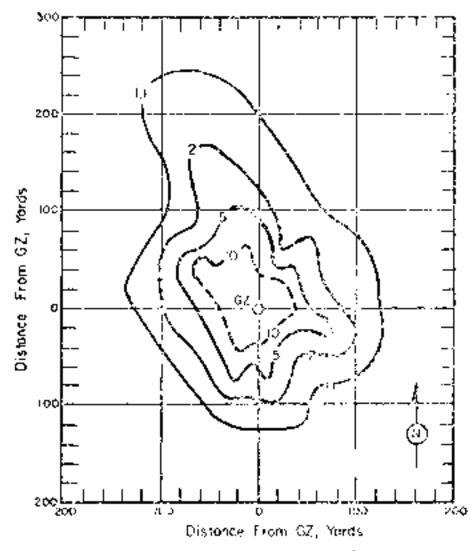
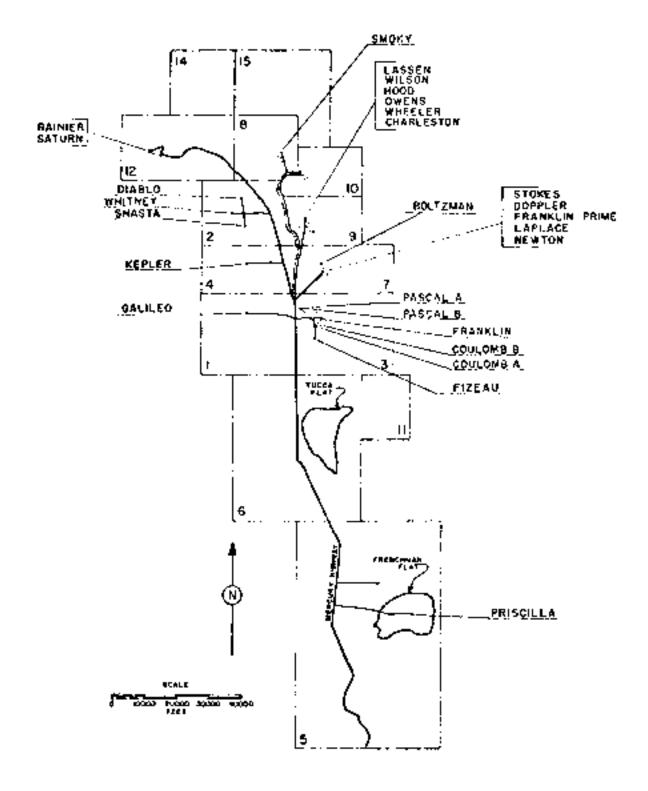


Figure 103: [10] Platence = Safety Experiment Not 3 ( http://www.sons contropy.com/from/listics.com



NEVADA TEST SITE Figure 104. Operation PLUMBBOR, Shot Locations.

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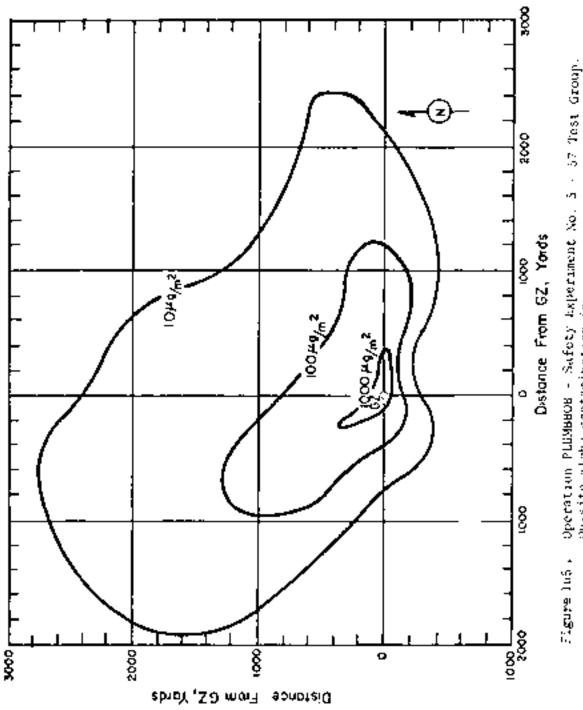
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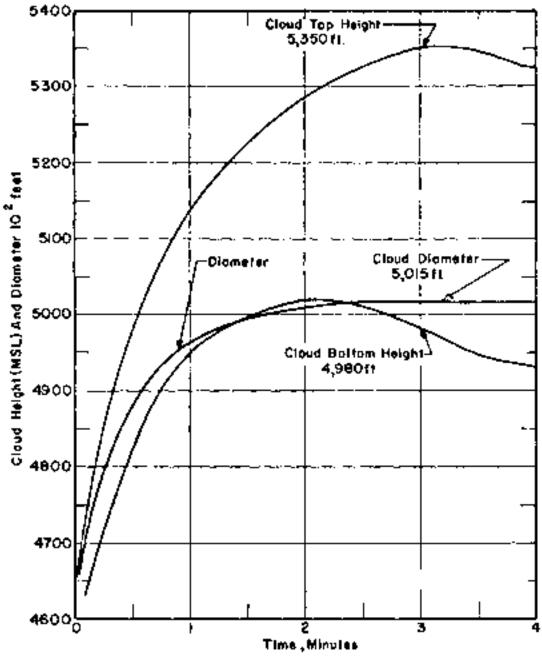


Figure 166. Close Electronic Operation FLUMEBOB Safety Experiment No. 5 - 57 Test Group

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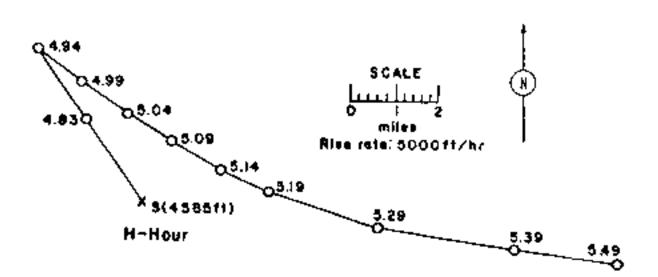


Figure 107. Hostograph for Operation FLUMSHOW Survey Experiment No. 5 - 37 Test Group-

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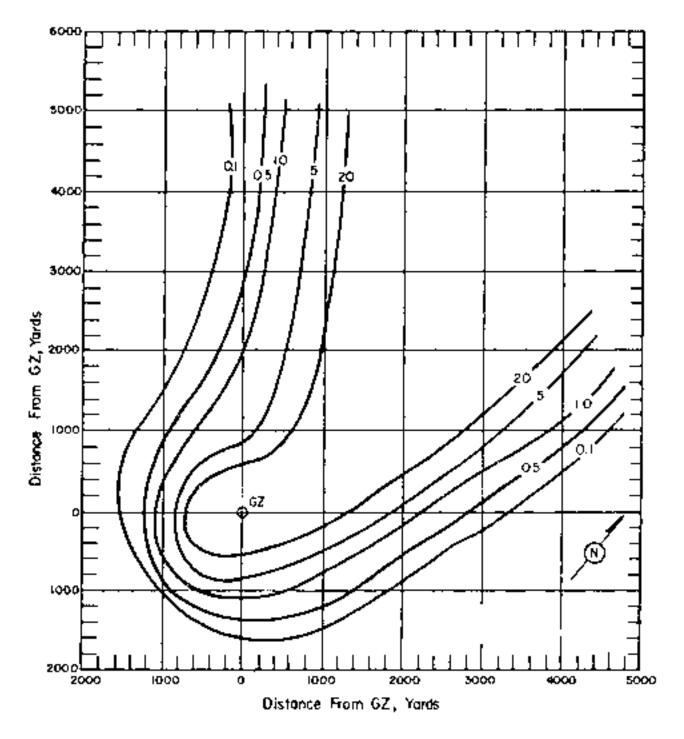


Figure 163. Operation PLEEROB - Boltymann. On-site dote rate contours is r/hr at [1+1 hour.

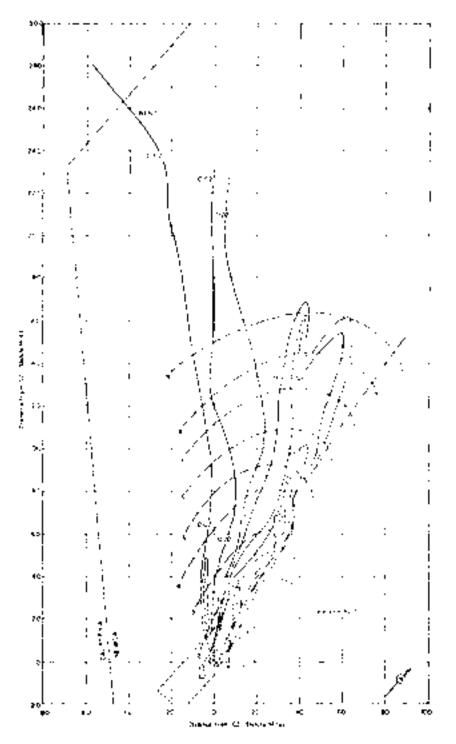


Figure 108. Operation Film@ROB = - - - Roltzmann. Off-site dose rate contours in r/br at H+1 hour.

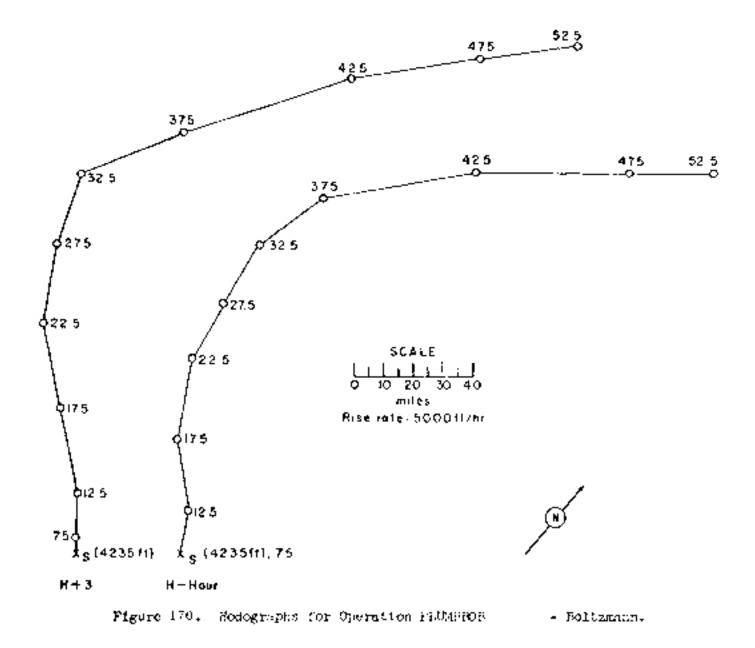
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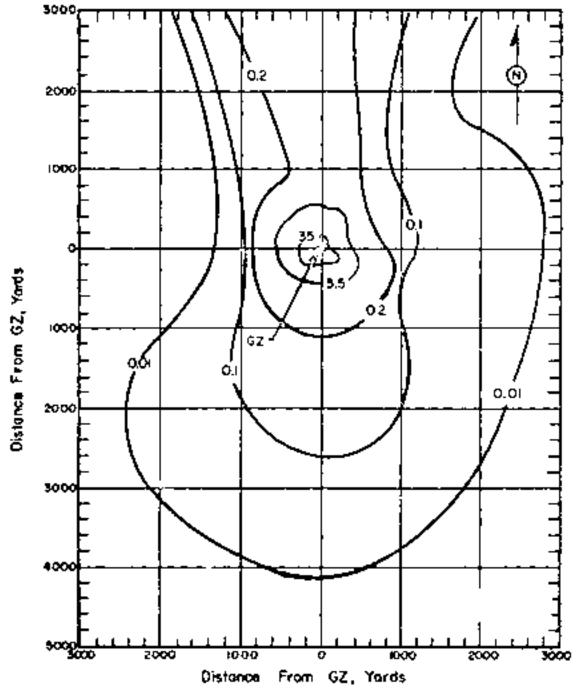


Figure 171. Operation FLUMINOR - Franklin On-site dose rate contours in r/br at E+1 hour.

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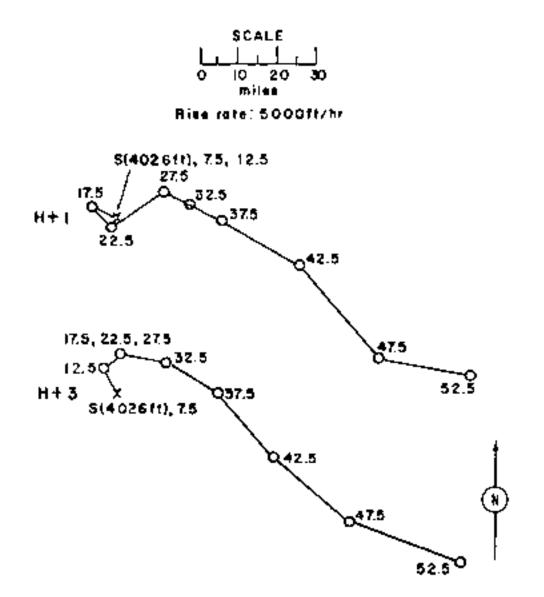


Figure 172. Rodographs for Operation PLEARED- Prenklin.

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OPEN/SICS FEARENCE - Larren

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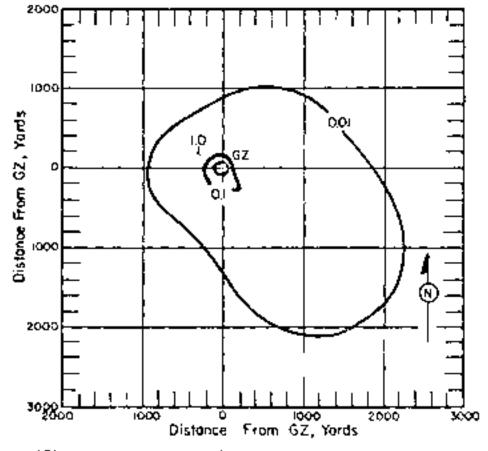
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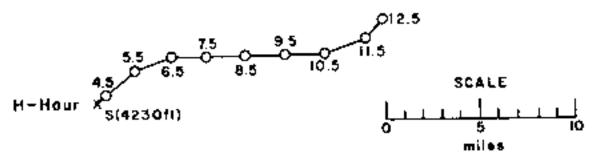
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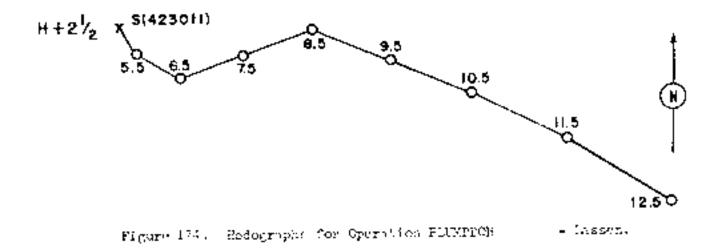
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Numbers in parentheses are estimated values.
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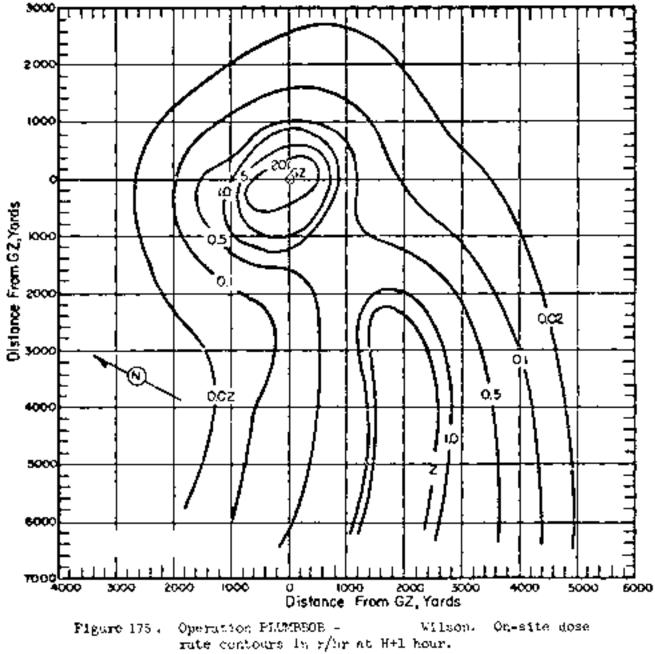
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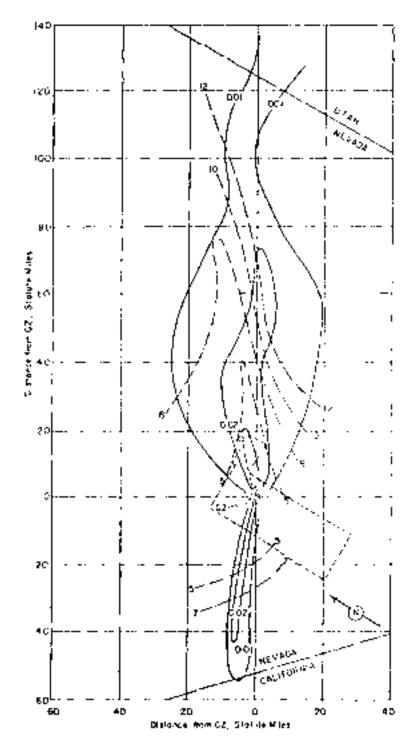
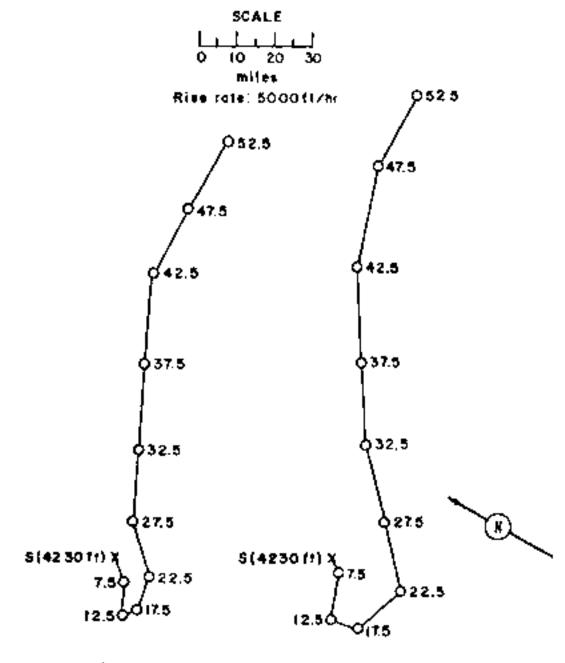


Figure 176. Operation FLEAPHOR - Wilson. Off-site dose rate costoors in r/hr at 0+1 hour.

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# REMARKS

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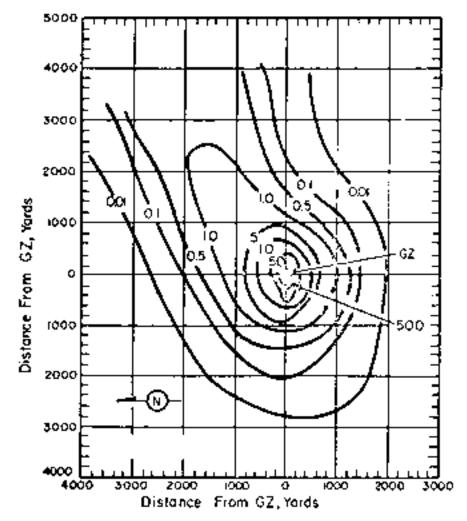


Figure 178. Operation PLIMEBOP - Priscilla. On-site dose rate contours in r/hr at H+1 hour.

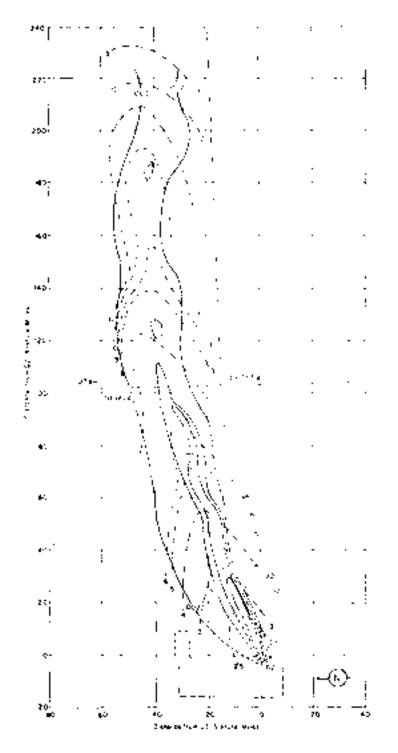


Figure 179. Operation PLUMEBOB - Priscilla. Off-site dose rate contours in r/br at N+1 hour.

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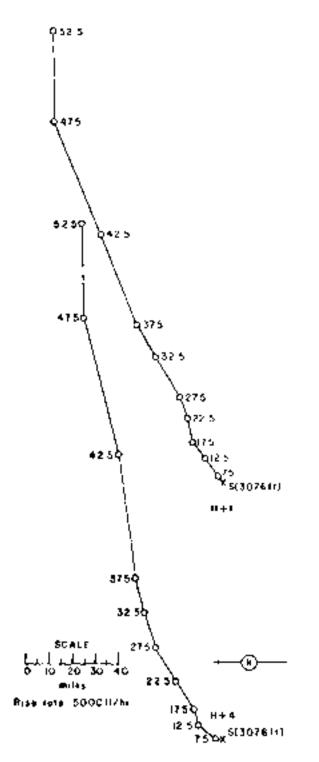


Figure 180. Hodographs for Operation PLUMSBOR - Pr

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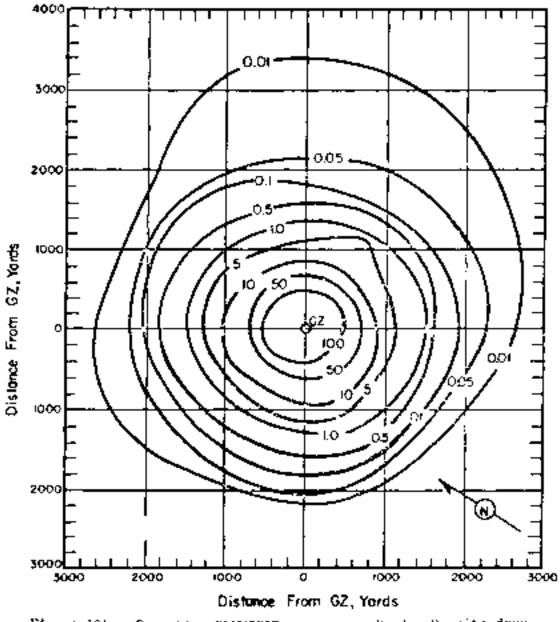
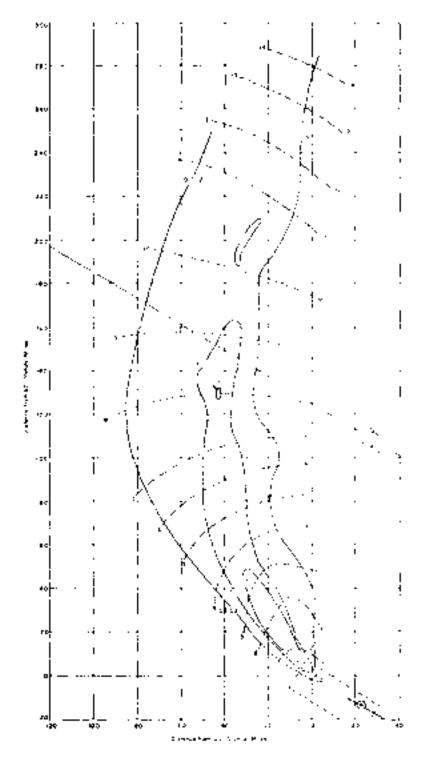


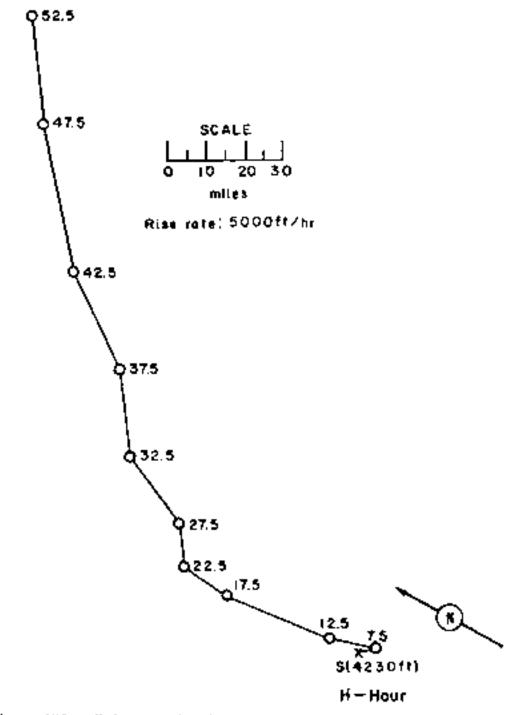
Figure 18). Operation PLEMERCE - Babl. De-site dose rate contours in r/br at 841 cour-

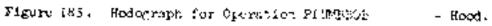


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  - At H-hour, the surface air pressure was 530 mb, the temperature 21.0°C, the dew point -3.3°C and the relative sumidaty 195.





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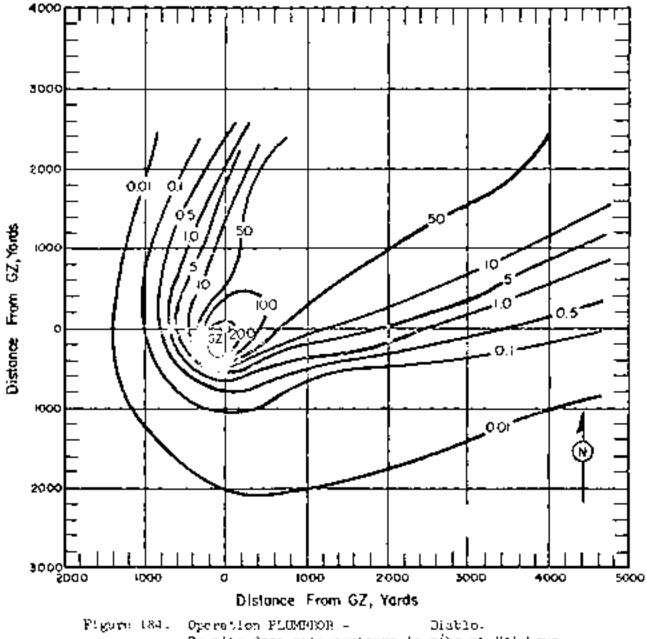
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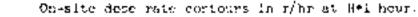
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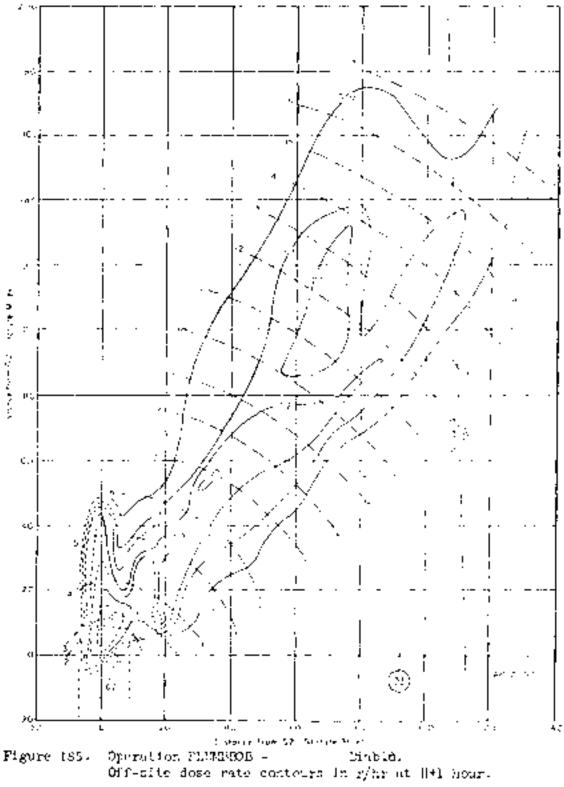
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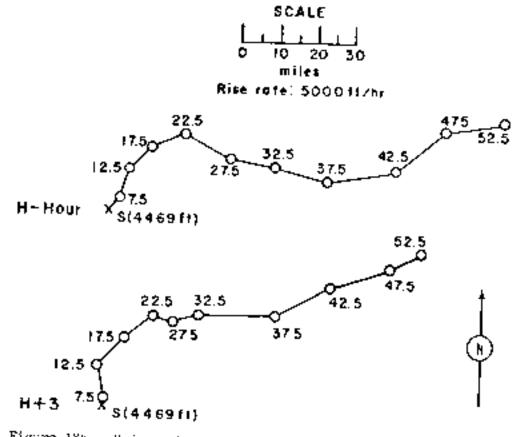
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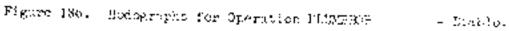
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- 1. Numbers in purentheses are estimated values.
- 2. Tropopadie del 111 war ogguld at MCL at Heijinge
- 3. Wind data was detained from the Yappen weather stations
- 4. At H-bear the curture air precise was Add not, the termy sature 23.170, the dew point -0.670 and the relative humidity 20%.





## OPERATION PLANNER John John

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- P. Propagate in continues 57,500 pt M.M. at B-Erley
- Wind Luta wide bialter from the Yacon wentler station.
   At N-hour, the surface air pressure was Boff sty to respective D2.1°C, the low point 1.3°C and the relative standard style.

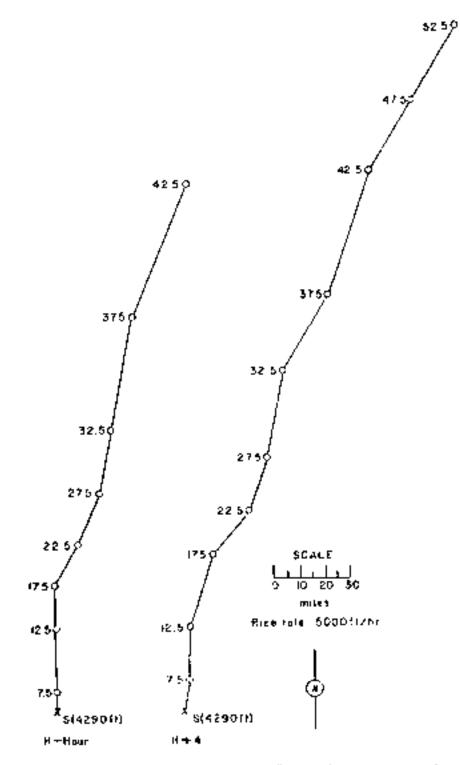


Figure 187. Hodographs for Operation FLUMBBOE

- Sohn.

OPERATE OF 121/1416.05 -

Kepler

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The off-site fallow was analyzed by the USWE Special Project, Section. The  $t^{-1-2}$  decay approximation was usen to extripulate the low-mater readings to 0+1 hear. The Schledt pattern is not reliable. There were placed prove is the several monitor runc.

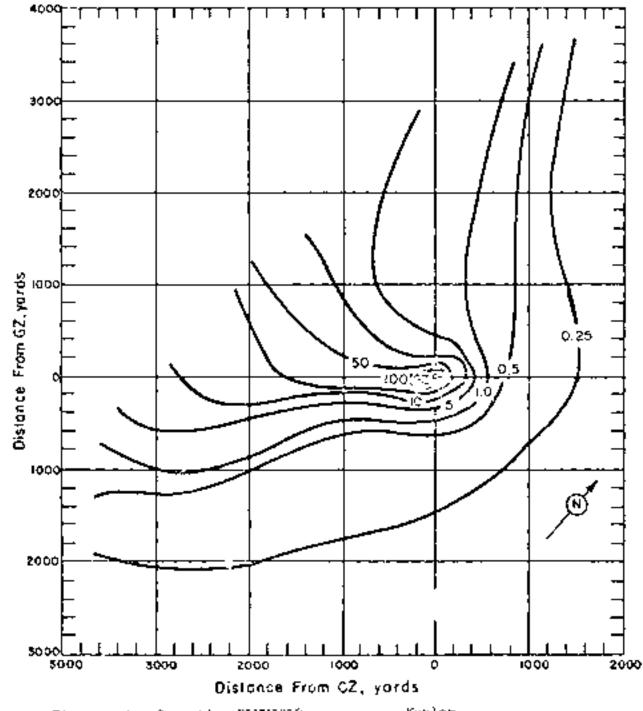


Figure 188. Operation PLUESNES - Kepler. On-site done rule contours is r/hr at 8\*1 hour.

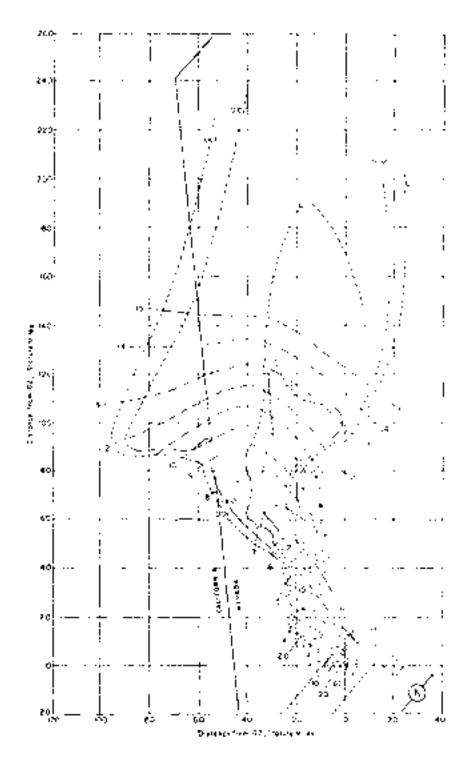


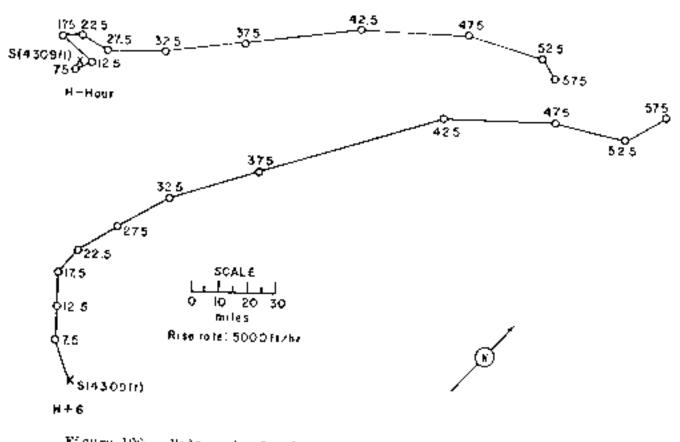
Figure 189. Operation PLUMBBOB - Kepler. Off-site dose rite contours in r/or at 2+1 hour.

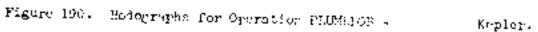
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TABLE 35 NUMBER MED DATE FOR COLLECTION FORMER-P- ECOLOR

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- 1. Numbers in perentlemes are not instead.
- P. Propagasse Argunat was graphed in MSL at Hender.
- Wind data was retained from the Yiers weither station.
   At N-hour the confuce air pressure was 865 mb, the temperature fill?C, the dew point -5.0°C and the relative deviding 2/3.





## OPERATION FLATERON -

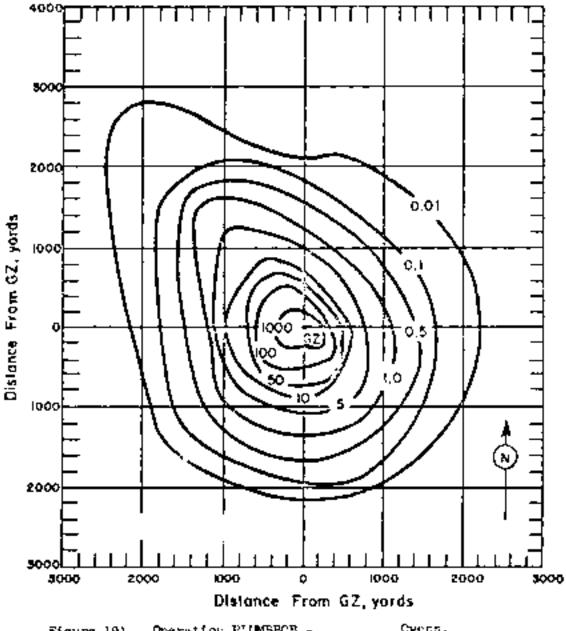
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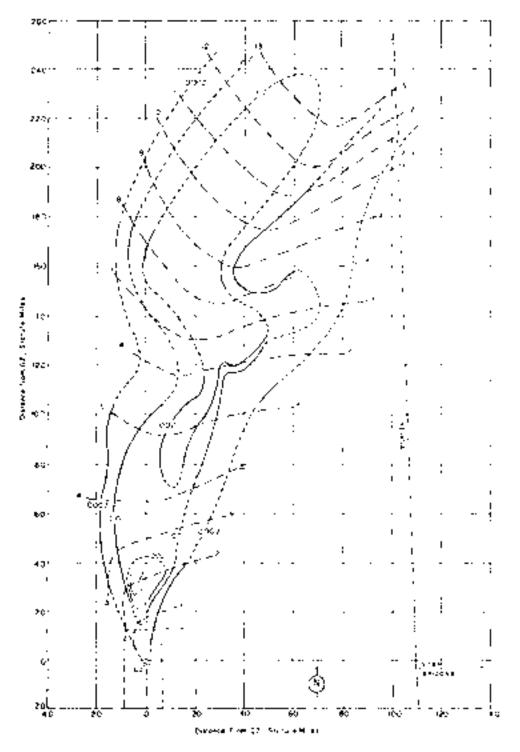
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#### SERVICE REPORTS

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Pigure 192. Operation PLU/PDOV - Owens. Off-site doew rule conferrs to r/hr at H+1 hour.

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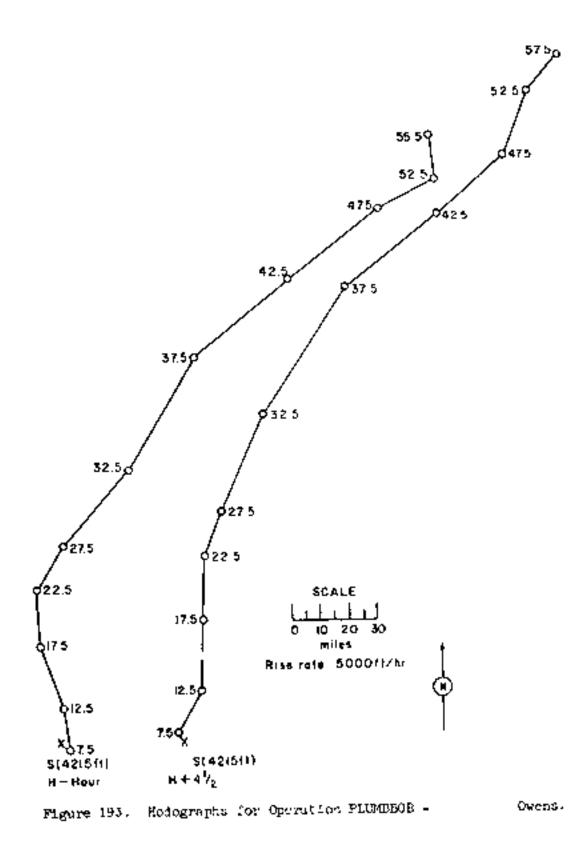
TABLE 56 NEWADA WIRD WITA FOR OPERATION PLIMEROP- OWFILE

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# NO17XS:

1. Numbers in parentheses are estimated values. 2. Tropopasse neight was 50,300 ft MSD at Henser.

- Wind data was obtained from the Yuern weather station.
   At B-hour the surface air prospers wis 570 mb, the temperature 2010°C, the dew point -3.6PC and the relative husidity 20%.

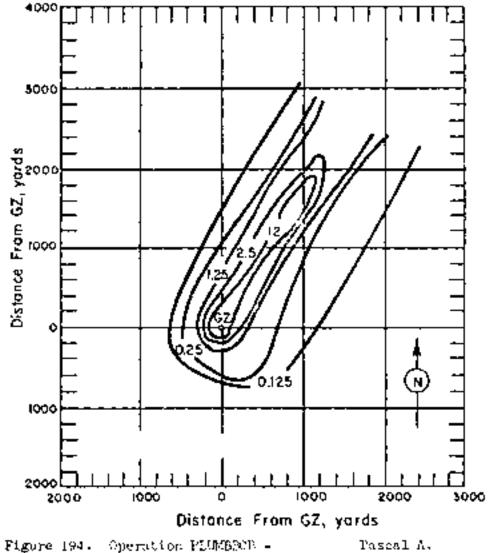


OPMEATON F1/200700 - Pascal A Safety Experiment

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# REMAILK .....

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On-site dose rate contours in r/nr at H+1 hour.

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#### CENTRALION PLANDORS -

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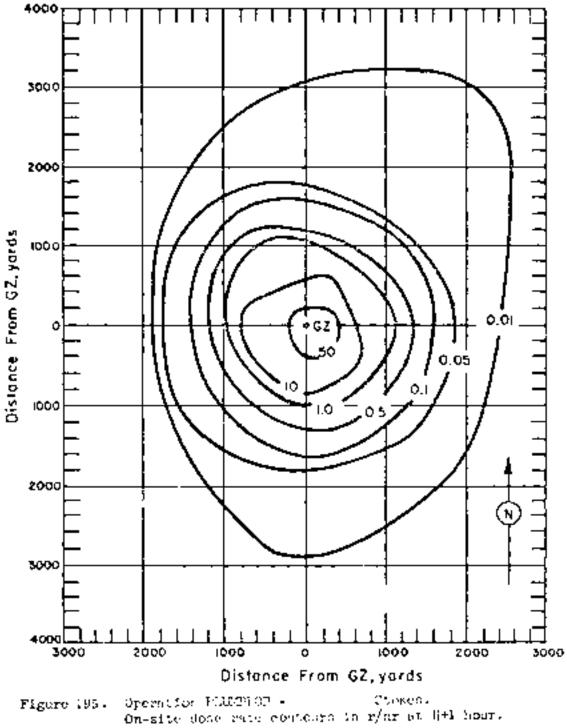
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On-Site contamination (\*, ) as primarily to induced activity. The primary was ditained from enclosed areas readings of the Redictories, Sefery Division of Regards liestrics) and Engineering Col, Levy arises AM/SDP (\*) and AS/REC-7 darway for summarial. The readings were taken at Hej hear, He Hears, No. day, but days, Dok days and DMC days state redict lies to determine reduction execution toward. The desc-rate redicts were extraplicity to BML near ty the companies induced activity decay curve for Newsda 1011

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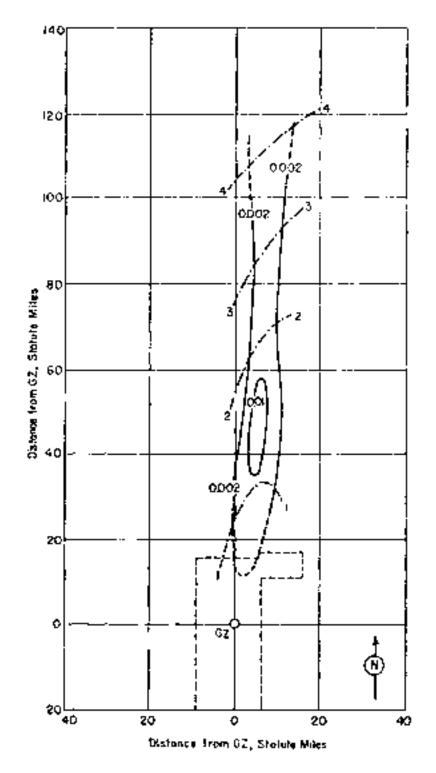


Figure 196. Operation PLUMBDOB - Stokes Off-site dose rate contours in r/hr at H+1 hour.

SOCKED

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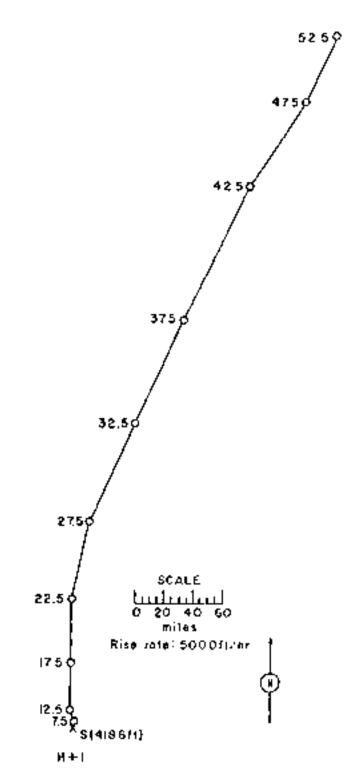


Figure 197. Hodographs for Operation PLOSENCE -

Stokes.

OPERATION PLUDINGS - Saturn Safety Experiment

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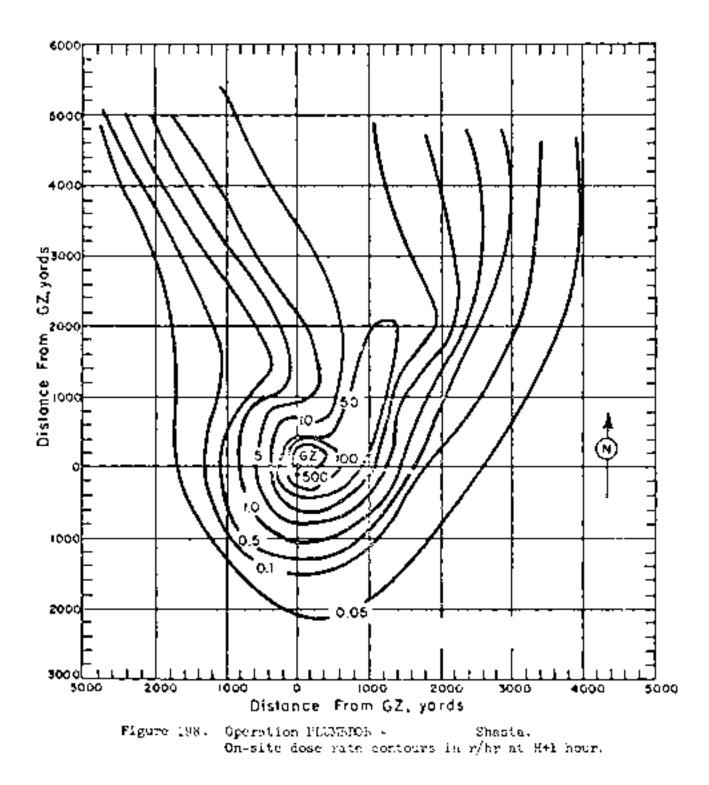
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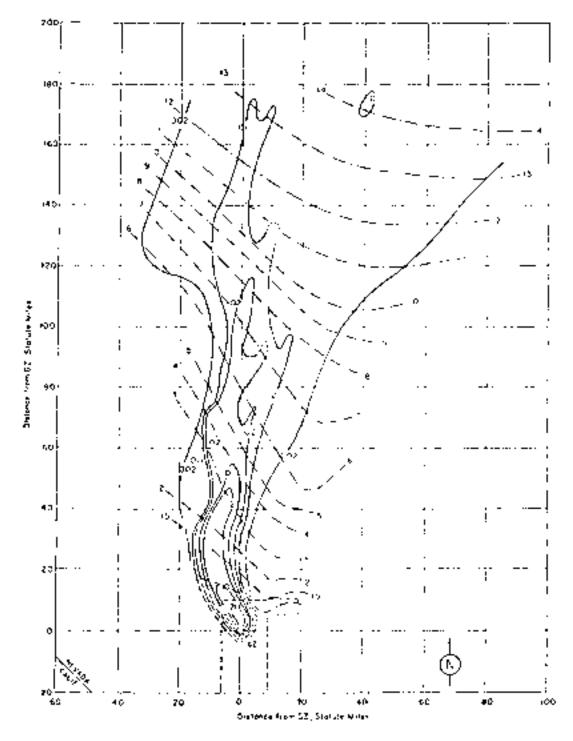


Figure 199. Operation PLNEBOR - Consta. Off-site doce rate contours in r/in at 2\*) hour-

TABLE 38 NEW PARKED (ATA SYS OF SEADLON FRANKS S- CENCEA

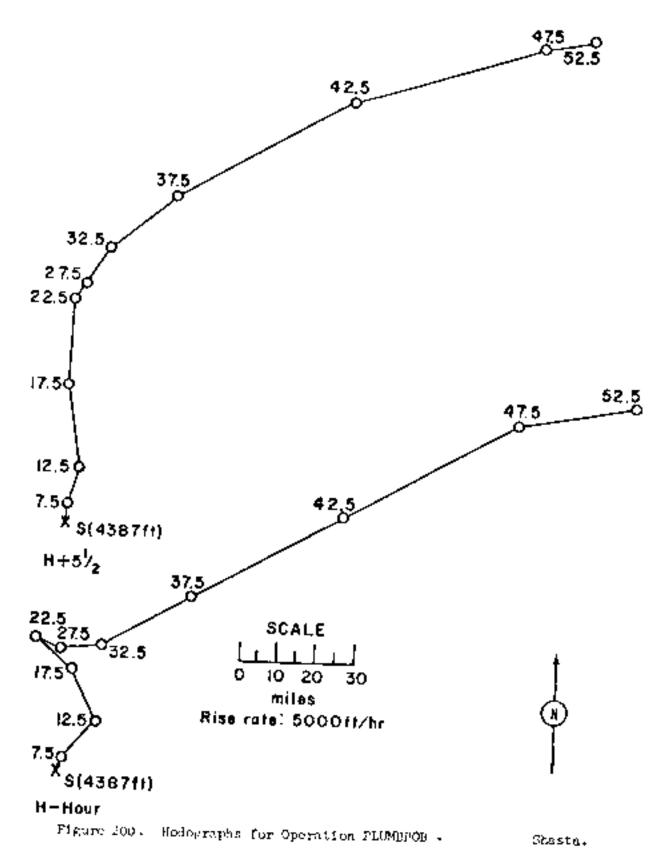
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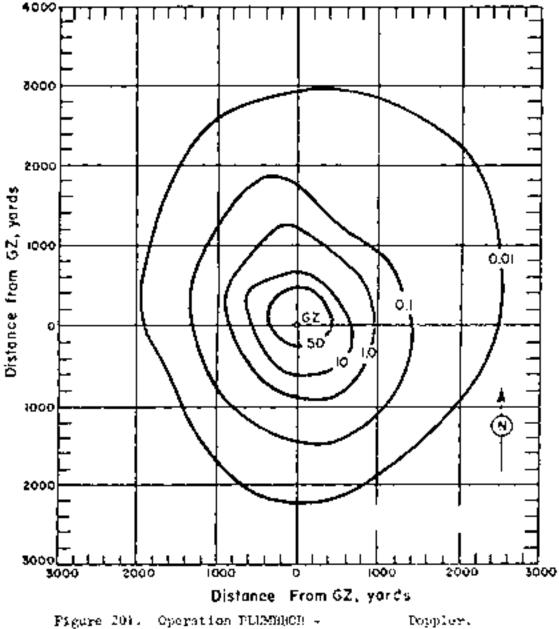
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# REMARKET

The contamination who file primarily is influent activity. The chalife pattern was obtained from ground survey readings of the Endicingical Cafety Division of Republic Electrical and Engineering Co., Lett, doing AD/FDE by and AN/FOR b3 survey in tradamts. The readings were taken at HTM book, EME hours, DMI day and DM3 days along eight radial reads to determine radiation exclusion meson. The tele-rate restings were extrapolated to BML hour by the general induced activity-decay curve for Nevada coli

The off-site fullest was analyzed by the USVE Canchal Projects Section. The t<sup>-1/2</sup> decay approximation was used to extrapolate the dope-rate relations to M+1 hour. "Some of the reliesativity is believed to be from Chot Cantha The pattern interpolated between the burnt site and the Nevada Reste 35(approximately 20 miler deviated) can only be a result approximation in the absence of measurements, but its crientation, at least, is consistent with the wind analysis"



On-site dose rate contours in s/hr at S+1 hour.

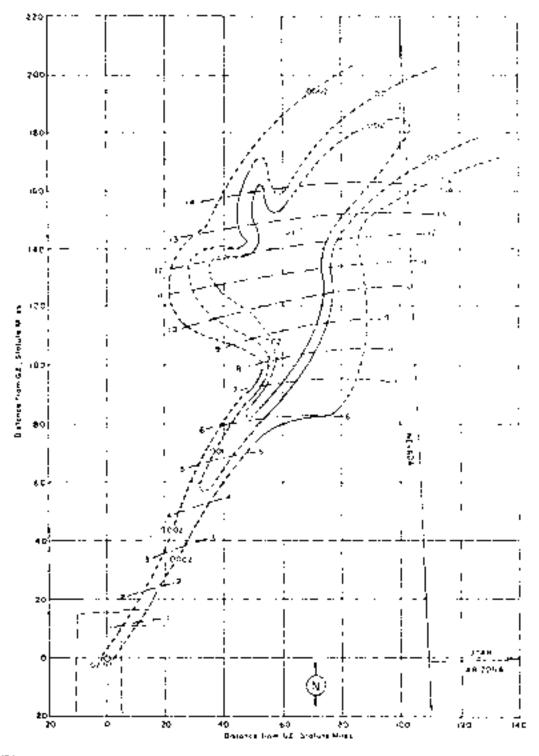


Figure 202. Operation PLUNEROE - Doppler. Off-site doce rate contours in r/br at H+1 hour.

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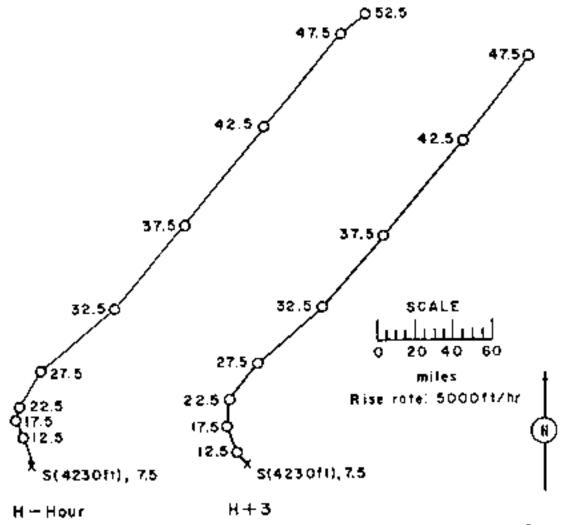


Figure 203. Hostographics for Operation FLMADFOB - Reppler.

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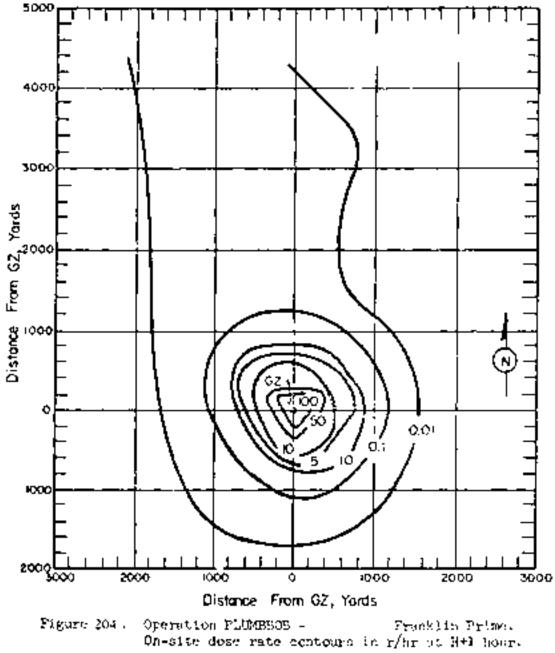
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#### RELAREST

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28,000	230	1.4					-		

TABLE 66 NEVADA WIND LAPA FOR COMMATION DESREDOR - MONOXALD DEGNO.

- - 2. Tropopage balance was 37,500 ft MSE at S-hour.

  - Wind data was obtained from the Yucen weather station.
     At Rt<sub>a</sub> hours the conference pressure was B68 mb, the temperature 11.0°C, the dew point -3.7°C and the relative humidity 35%.

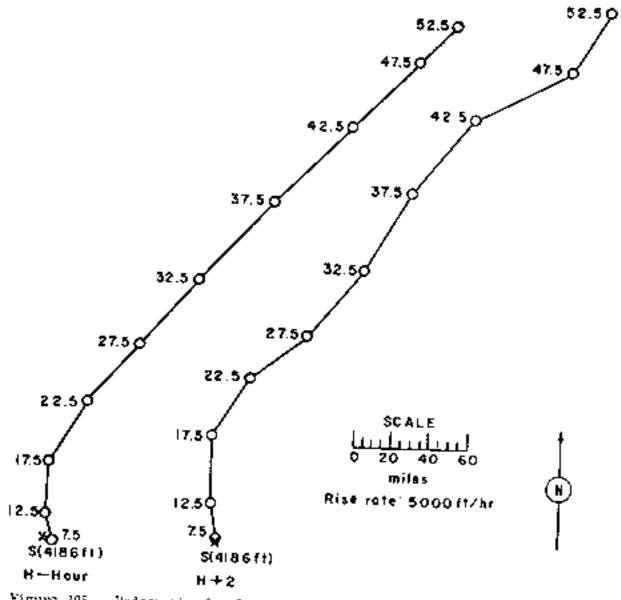


Figure 205. Nodegraphs for Operation PLAMERON - Franklin Prime.

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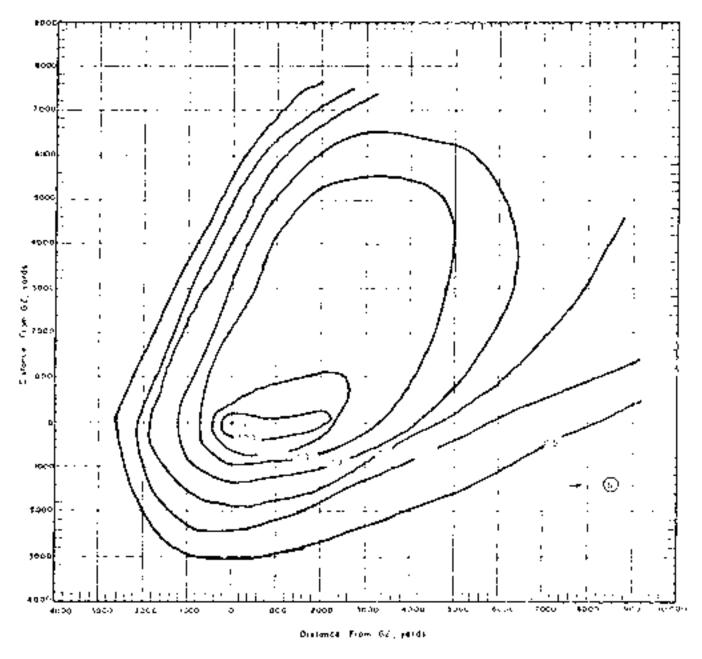
# Sponsor: UCEL <u>SETUR</u>: 21.1 - Agree - 20 37<sup>2</sup> 11.1 - 20 11.6 - 2 - 2<sup>2</sup> - 9 Setur - French - 2,3, - 1<sup>2</sup> <u>EBI GET AS FIRST</u>: 1 - 1<sup>2</sup> <u>Appendix - 1 - 1<sup>2</sup></u>

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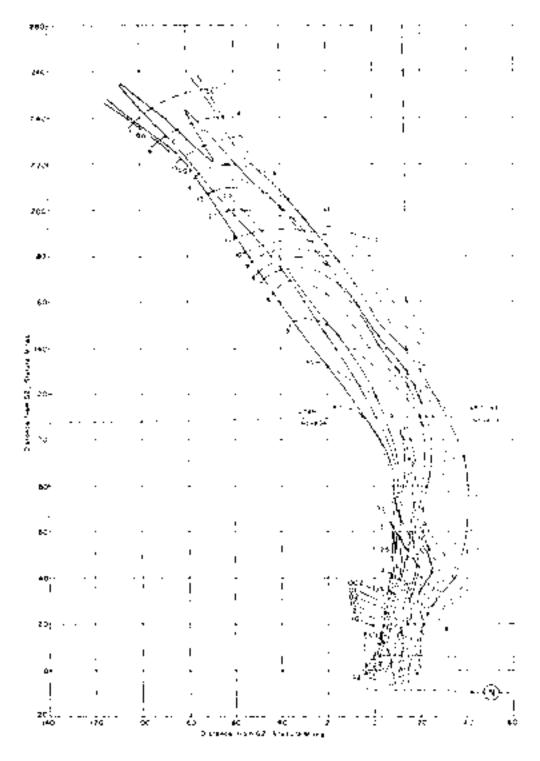


Figure 207. Operation PLUMBIOB - Choky Off-site dose rate contours in  $r/h_{\rm cr}$  at H+1 hour.

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  - Tropopose bright was 35,000 ft Mill at N-Lond.
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     At E-hour the tim pressure was 816 mL, the temperature JSC, the dew point -3.6°C and the relative homosity 315.

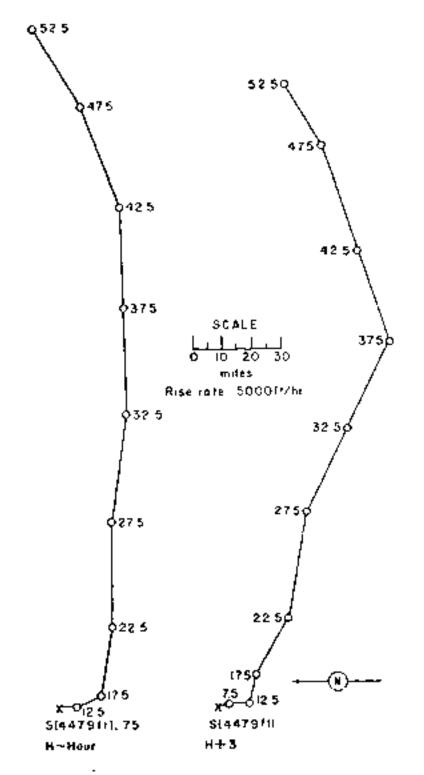


Figure 208. Hodogrups: for Operation P(1995)ON - SHOKY.

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The off-rite fallout was applyzed by Prigram PT of UCLAS Astoal decay data was used to piot the S+12-holm dose-safe contractor. The  $t^{-2+2}$  decay opproximation and used by NLC is extropolate the REP-bulk dose-rate readings to 541 hour. The pattern is baled on ground and acrial survey data. "The west edge and the close-in portion of this pattern was estimated use to the lack of data"

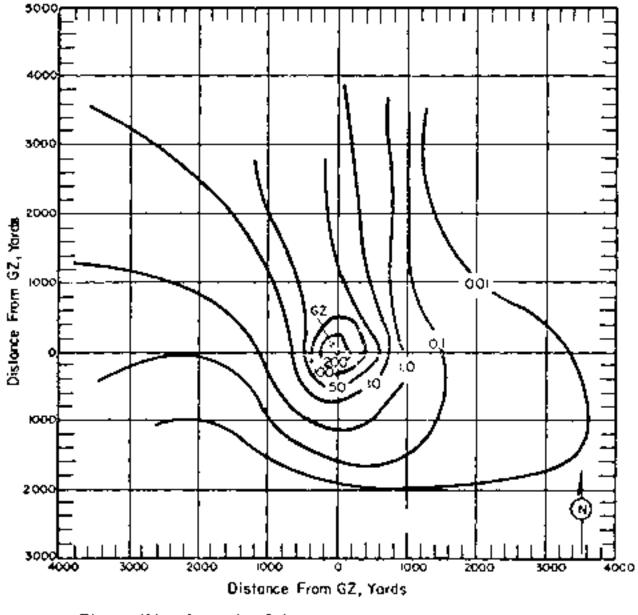


Figure 200. Operation PLEMENOB - Galileo. On-site dose rule contours in p/hr at H+1 hour.

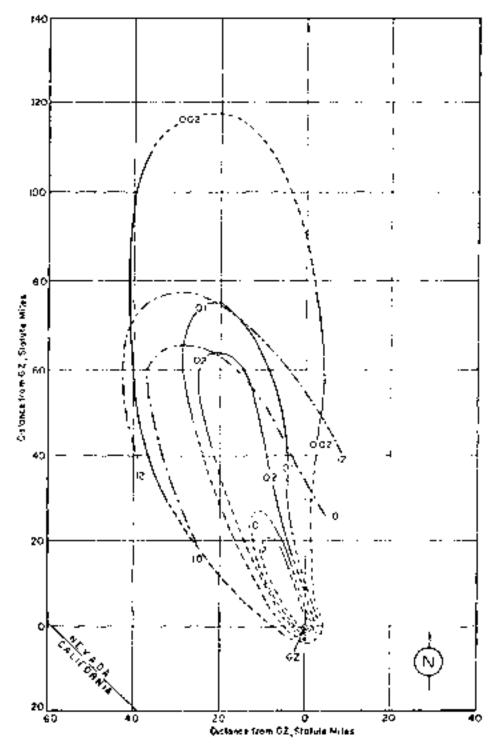


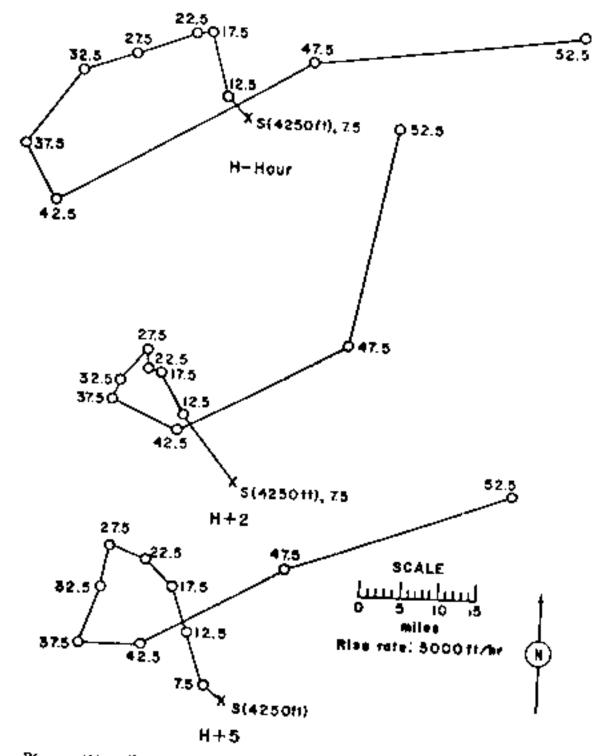
Figure 210. Operation PLUMPPOB . Caliboo. Off-site dose rate contours in r/hr at H\*1 hour.

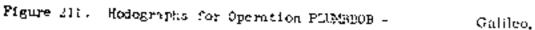
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38,000	360	26				
39,000	340	12				
40,000	330	07	290	02	270	CO.
45,000	240	38	240	25	260	21
50,000	260	36	190	23	250	32

## TABLE 62 DEVAIL VIED INTO POP OPERATION DISCOVED 4 GALLET

## NOTICE

Rubbers in permitheses are estimated values.
 P. Tropopuse height was 39,300 % MML at H-nour.
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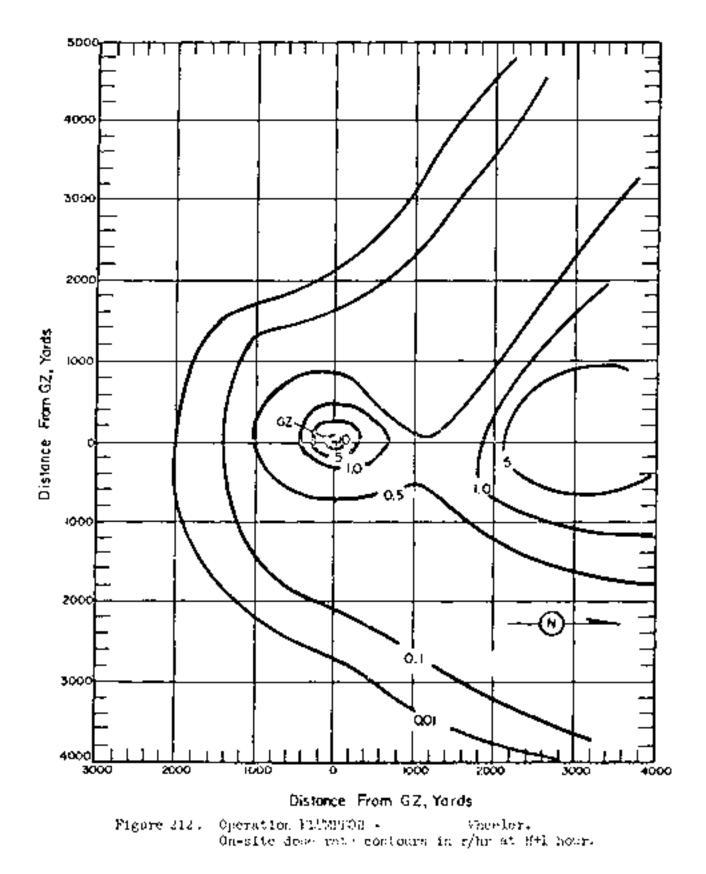
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The follows detected by the off-cite curvey could not be definitely attributed to Waveler, but may well have been from previous anota-



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8,000	11	6.5	4 <sup>14</sup> 31		، بەن	· · · .	··		
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TABLE 63 NEWARA WIND INTA FOR CLEICHTER ELLMECO --

2023

1. Numbers is parable and was estimated was seen

2. Tropyphics heided was as det of 121 of H-rease.

3. Wind data was obtained from the enced weather constant

 At H-hour the cluster of pressures and 20 for the temper ture 1.40<sup>10</sup>, the dew point -3.0<sup>10</sup>C and their lative sectory 2.40.

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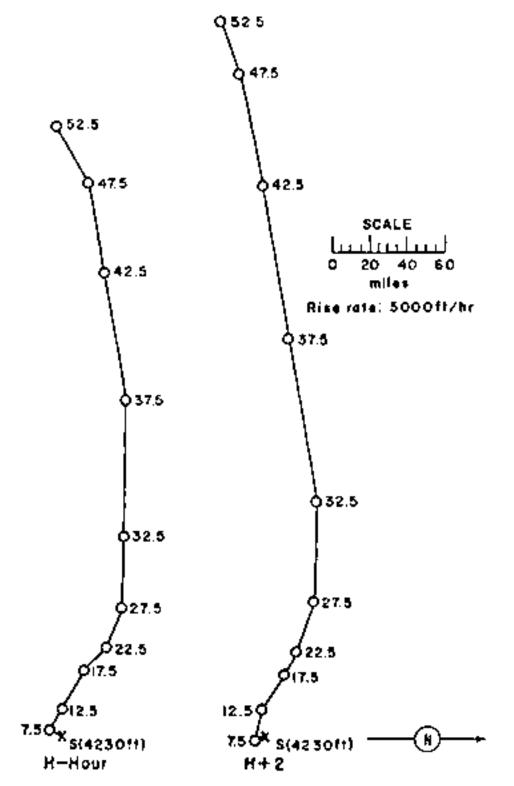


Figure 213. Hodegraphs for Operation FLUMSSOD - Wheeler.

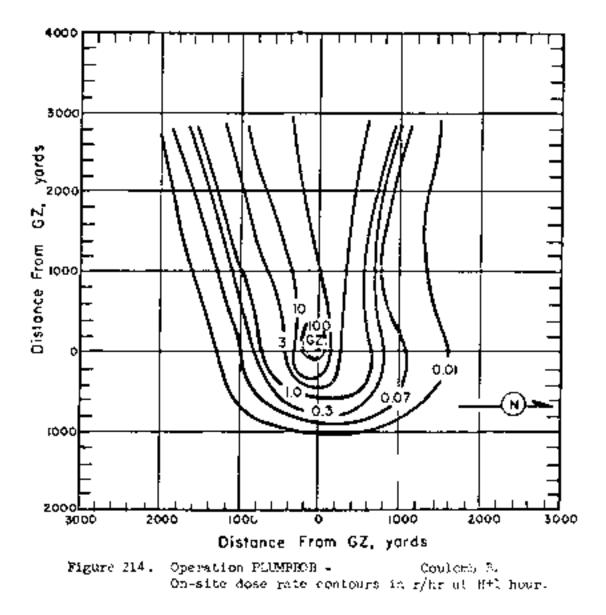
OPECADOS INCRESS - Coulomb B Safety Experiment

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## R577A730.1:

The constraints of the department will be back to form services through results of the Rest formation of the department of Experiment and the rest formation of Experiment and the rest formation of Experimental Conjunction of Conjun

The off-site field we conside ity tak WWE Speciel in particle to a The  $t^{12}$  decay approximation was near to extraplicate the dust-mate readings to 300 MHz both to logit whose a convergent of the fallest was probably dependent of the SV and to measure off-site points for which monitoring data were available.



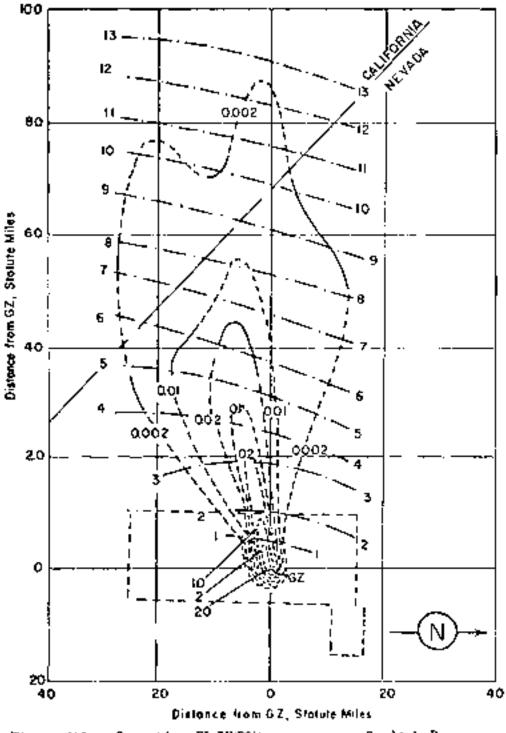


Figure 215. Operation FLOMBRON - Coulcmb P. Off-site dose rate contours in r/hr at H+1 hour.

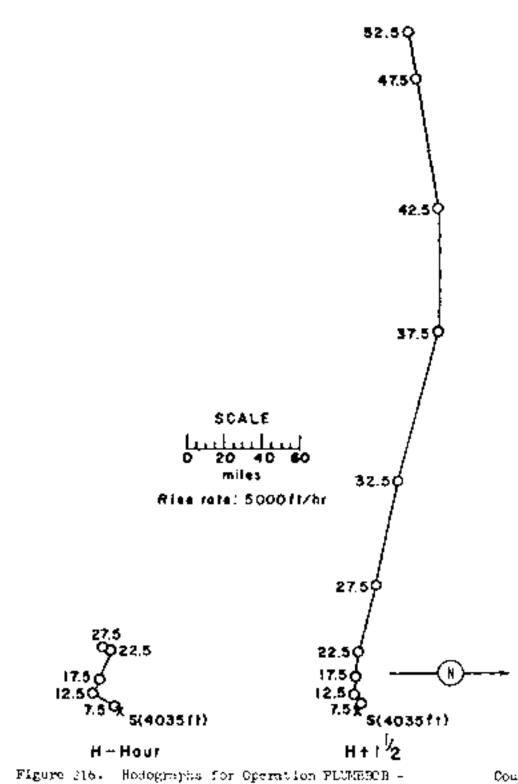
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12.001	250	09	25.4	5.7
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TAMES 64 NEWARK MINE LATE TOS CREEKTY ON FLIMBEDE-

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Coulomb-B.

OPERATION PLANEDOR -

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CRAINE DATA: No emiliar

Sponsor: LAGE

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HEIGHT OF HIRCH

- TYPE GR Shirt and Environment Air burget from Sould to the Nevals soul
- CLOUD INSTRUCTING CONTRACT MADE

## REACTION

The contentation will be primarily to induce a stirate of the factor pattern was detained from a route forcey readings of the End of stars. Safety Division of Reynolds Electrical and Engineering Company, Inc., using AN/DIR 30 and AN/FOR 43 survey instruments. The readings were taken at 840 ndar, 846 notes, D+r day, D+2 days and D+3 bays along eight radial reads to determine radiation exclusion orbits. The data rate readings were extrapolated to 841 near by the serveral (when dactivity-decay curve for Nevida coil.

No off-rite fallout was observed. The off-site menutors eftained only a few readings slightly above background.

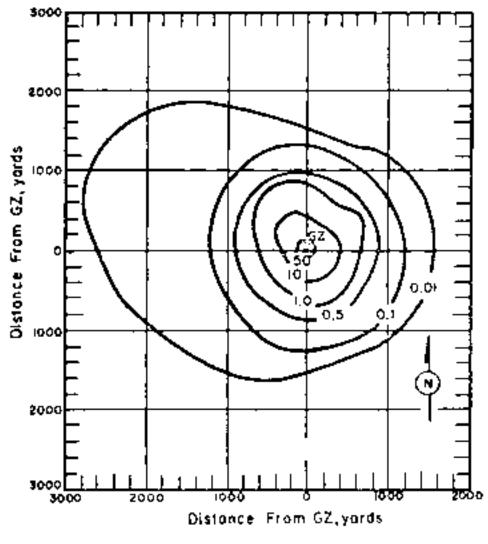


Figure 217. Operation P110%B0B - LaFlace. On-site dose rate contours in r/hr at B+1 hour.

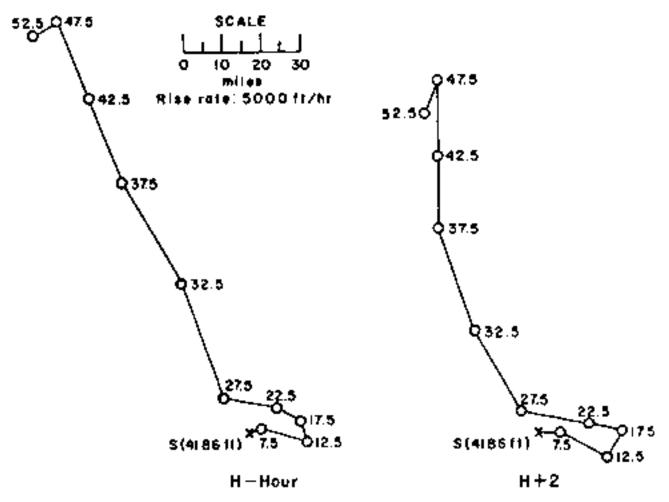
SOLID - REVEN VID BALL MER OF ON MINTER OF - LATEACE

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14 . At.		L.	2.2	15	76,000	•	- ·		
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24,000	130	(i.							
26,000	. ,0	51							

RETENCE

- Restore in purchases are estimated vitable.
   2. Propagate neight was 54,300 st MSB, at H-bars.
   3. Wind data was obtained from the Yappa washer station.
- 4. At E-four the contact our pressure was 874 mL, the temp retaine 19.093, the dew point 1.220 and the relative numidary 30%.

100-11



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Figure 218. Hodographs for Operation FLUMEBOB - LePlace.

OPERATION PLUMBEDE -

**Fizesu** 

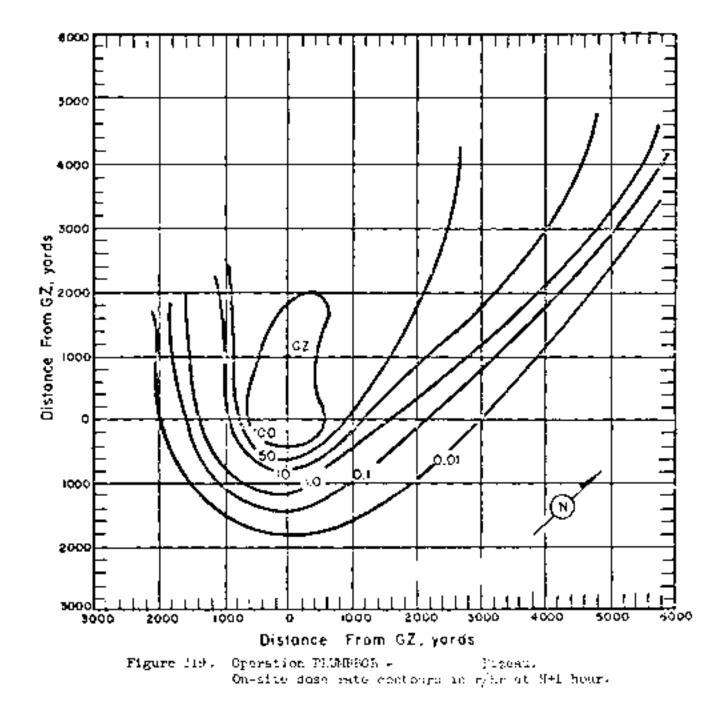
\_\_\_\_.

$\frac{\text{PDT}}{\text{DATE}} = \frac{\text{PDT}}{16 \text{ Set} (-100\%)} = \frac{\text{SMT}}{16 \text{ Cept} - 190\%}$ $\frac{\text{DATE}}{\text{TIME}} = 0.946$ $= 1646$	Spontor: [Ali].
<u>TIME</u> : 0945 1645	SITE: NTO - Area (b
<u>TOTAL X189.5</u> : U. kt	37° 621 61" 5 116° 611 65" W Site elevations (5,0%) 6t
TIREALS DATA: Time to lot concernence IN	HELOWIN OF HURDLE SALE OF
Time to Snot rescincto (128 Radium at Snot miximums) (134	TYPE OF FUELT AND ENAPPEDENT: Tower threat is an Newsman sold
CHATER DATA: No states	CLOUD TREATED STEPS AND AN AND AND AND AND AND AND AND AND

#### FEMARKS:

The on-site pottern was obtained from ground curvey readings of the Radiological Cafety Division of Regulde Electrical and Englishering Co., Inc., using AD/STR 20 and AD/PDS approxy instructure from readings were taken at Eti hour, Eté hours, D\*1 kay and D\*2 days sloug eight radial roads to determine radiotion exclusion areas. The incerate readings were extrapolated to Et1 hour by the t<sup>-1+2</sup> decay approximations.

The off-site fullout was analyzed by Frogram [7] of COLA. A dual decay data were used to plot the HHR-hear domensite contours. The tr<sup>1,2</sup> decay approximition was used by MEL to extropolate the HHR-hear domensite coefficient to HHR hear domensite coefficient to HHR hear. "On-fite Kid-Soluty applied data relative to the intensities in Yueca Flat from this shell. Further away, the west adre is estimated since no information was available in this region"



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## 350



Figure 220. Cimpation PLN20005 - Pigena. Off-site dose rate contours in r/hr at H+1 hour.

TABLE DD BRWARN ADDD DATA FOR CERACICU FILDREDORY FILERARY

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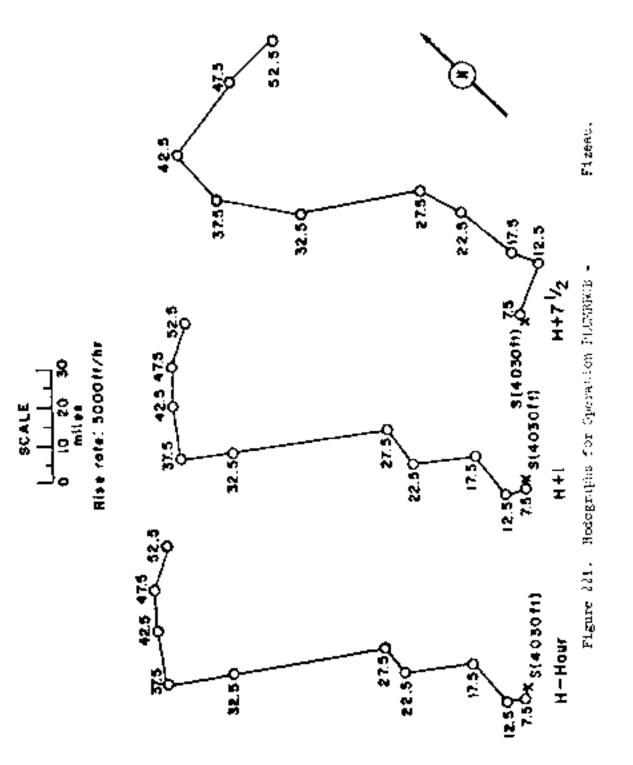
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(MSt.)		· i		1000			
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Surface	Chim	5435.	Calm	0.54	180	25	
4,599(20)	Ch 16	CAGE					
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6,000	070	ðí.	010	<u>0</u> ,	2.44	19	
7,000	C*C	65	676	- 3	210	25	
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9,000	Č.	0.	0 <b>3</b> 0	-07	240	20	
10,000	110	Č4	11c	ė,	21.0	14	
11,000	14:-	Č7					
12,000	180	58	180	37	192	57	
13,000	230	Č.	100		1.42		
14,000	1/0	ž	1%	14	150	16	
15,000	-0-2 180	13	(185)	cis) –	())	- (°)	
16,000	150	13	180	13	240	- 59	
10,000	170	13		-			
17,000		0)			) <i>f</i> ¢		
18,000	152	34	250	C1)	196	95	
19,000	220		·				
20,000	1242	12	120	-	170	16	
21,000	100	18 16					
22,000	110		120				
23,000	12.	2		12	1544 -	25	
24,000	1247	20					
25,000	50	22	360	)2	160	42	
26,000	1940	37					
27,000	110	20		••			
28,000	110	22		• -	•••		
29,000	120	26					
30,000	120	39	120	39	:20	- 32	
31,000	:10	29					
32,000	110	26	•-•	• -			
33,000	127	26					
34,00C	120	52					
35,000	220	27	220	27	140	21	
36,axe	120	25 19		•-			
37,000	140						
38,000	:60	54					
39,000	190	14					
40,000	210	16	210	լկ	180	17	
45,000	220	10	220	10	240	25	
50,000	240	12	240	2	270		

NOTHER

1. Numbers in pureothers are estimated values.

2. Tropophuse tenght was #3,000 in HOL at H-house

 Wind data was ablaited from the Yudra wester station.
 At Hohmor the surface of pressure was bid mb, the temperature. 25.1°C, the dew point -1.5°C, and the relative maniatry 17C.



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353

#### OPERALICS IN MUSICE -

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## PERCENCE DV 112

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 These the contract maximum domain 121
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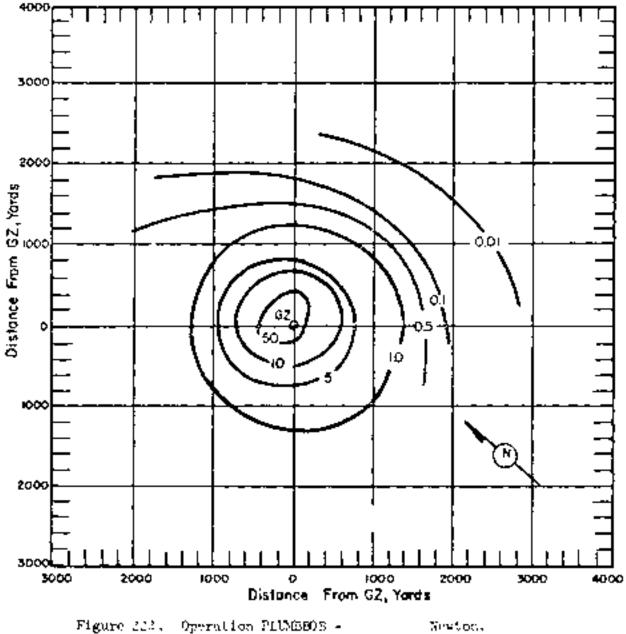
<u>PYPE 05 PERCENTE TOUR DEPENDENCE</u> ANN ALE DEPENDENCE DE LA SUM Nevelatione 1

CEACHE LAUNT BUILDER BER

#### 103W-1900-

The contamination was due primarily to include activity. The second pathwar was activity formation to be gravitational to be graved and Marcos equal 0.1. Form, and AM/2000 By and AM/2000 By entropy and property. The rest active wave takes at 10 hours. The beaution of the rest active form the rest of the rest active takes and 10 hours. The beaution of the rest active takes and 10 hours. The beaution of the rest of the rest

The off-site fallest was analyzed by Ferrews 37 of USLA. Actual decay data were shall to plot the Him-Lear decerate fact that. The  $t^{-1/2}$ decay approximation was used by NDE to extrajolate the Him-mup down rate reactory. To BH means files very little reliable data was available, this path on a constantly an attract.



On-site dose rate contours in r/hr at [[\*1 hour-

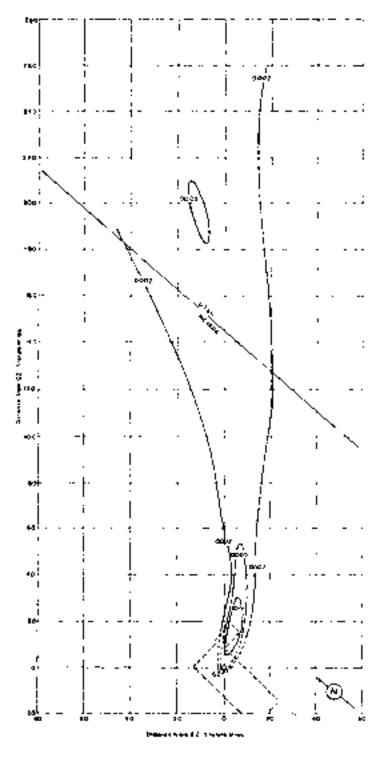


Figure 225. Operation PLUMDEOB - Newton. Off-site dose rate contours in r/br at H+1 hour.

TABLE	67	NEWS DA	935D	DATA	FCR	0523397109	E: UMPEOD-
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(RCL) Fort Surface	7.1 <del>7</del>	·····			2.477777	
		Speed	717	1	The second	10411 1944
Pro	or Steep	mper-	1978) A. A.	4.1	in the	
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5,000	20C	C5	200	- 05	1PG	C5
5,68C(RS)	200 E	လိ				~~
6,000	190	69	190	:0	65(	07
7,000	190	17	190	17	180	18
Bjecco	190	20	190	20	180	22
9,000	200	18	200	17	190	2%
ງຣ໌,ແລ	200	20	200	2a	110	22
11,020	200	18		-		
12,000	200	18	210	22	2.0	22
:3,000	210	21			4	•-
th,coc	220	22	220	22	240	>2
15,000	240	22	(230)	(22)	(240)	(23)
16,000	240	22	240	22	(240) 27.0	
17,020	250	25			£".0	3)
28,000	550	25	250	50	16	25
19,000	250	25 28			· · · ·	
20,000	250	32	250	38		•••
21,000	250	33			240	80
22,000	27,0	32		•-		
23,000	210	45	25%			
26,000	250	47	2.1.7	<del>5</del> 5	P%C	37
25,0.0	250	68	250			
26,3%	245	51	2 )(/	i,e	250	- 50
	200	30 30		•-		
27,000 28.000	200	36				
28,000	260	- 500 74	••-			
29,022	2(0	14 U2		<u>.</u> .		
30,000			260	32	260	- 95
31,000	260	33				••
32,000	270	76				
33,000	250	76 77				
34 ,(\$3)	250	-	•			
35,000	250	12	250	7>	260	83
36,000	824	68				
37,000	250	62	•••			
39,000	253	64	• • -	••		
39,000	250	67				
40,000	250	58	25C	58	250	71
45,000	250	69	250	69	250	éÅ
50,000	250	38	250	35	250	38

NCT 755:

Numbers in parentheses are estimated values.
 Troppy use height was \$2,500 ft M2D at K-Mour.
 Wind data was obtained from the filter weather station.
 At K-hour, the serimed wir pretines was 862 cb, the temperature 13,2%, the des point -5,0%2, sin the relative humidity 2%.

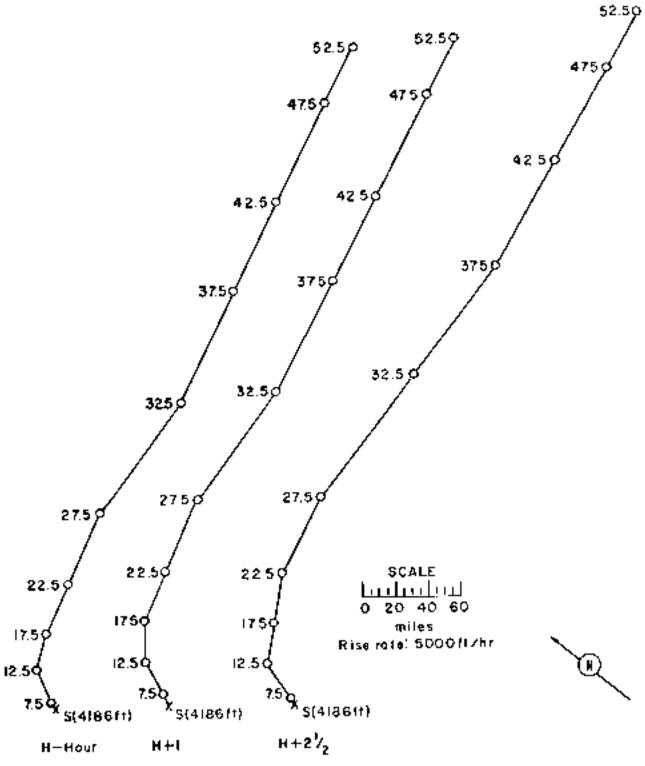


Figure 314. Hodographs for Operation PLUMMPCE -

Newton.

# Operation (Contractor)

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	P10	GMT
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- Time for the weather of \$34 Red for an de contra sono 124
- CIMPER (1974) The classic of the contracted 2123 - Store - Charles

Spreamers - TVHU 81981 - 110 - Assa III 1108 - 110 - 120 - 1 1108 - 120 - 120 - 12 5100 - 1200 - 1200 - 1200

- $\frac{\operatorname{HMF}(p)}{\mathcal{L}^{2}} = \frac{1}{4\pi^{2}} \left[ \frac{1}{2} \left[ \frac$ - Merican Ciptus en Name Constantino Ciptus en Name Constantino Ciptus

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OPERATION PLAMERCE -

Waithey

	PDT	GMF
<u>DATE:</u>	<u>73 -24 - 17 7</u>	23 //r - 1997
<u>TINE</u> :	1972	1230

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#### FIRSHEL DATE:

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CRACES: DATA: Dis structure

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#### INTERCOM BUSICES CONTRACTOR

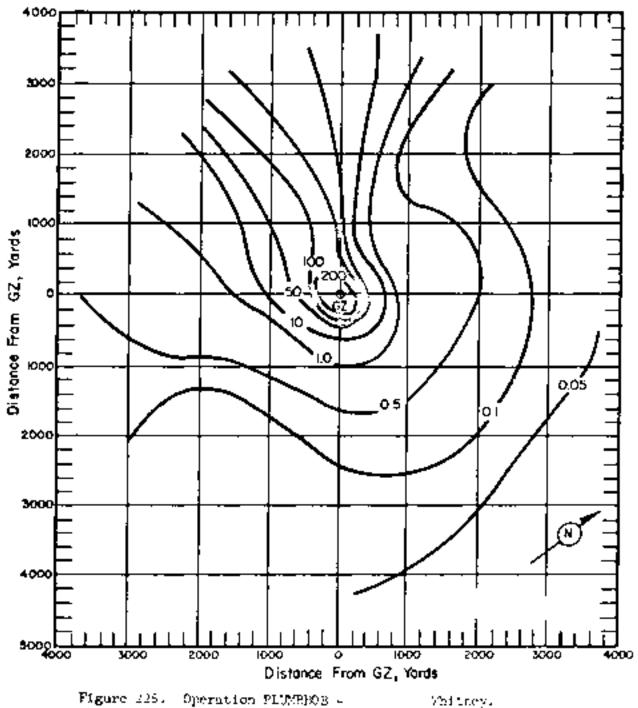
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CLOUD TOR PROPERTY OF ANY OF MEL

#### REMARCO:

The on-site fullow pattern was chained from traditions control correspondings of the Radiol grad this by hivid a of Deprings Statical and Regionericg Co., Inc., point ANGINE () and ANGINE by corresponding matrix. The reduce were taken at SNC borrs, 346 bound SH, days followays and 720 days again wight radial model to estable radiations which is avain the thir<sup>2</sup> decay upproximation with need to extrapolate the dissonate readings to 30 hours.

The off-site follows was analyzed by Perream FT of OCLA. Actual decay data were need to plot the 0+12-biag mice-rate contines. The 1-1-2decay approximation was need by NDL to extrapolate the BALP-conv doorrate readings to Bal hour. "This pattern was back is on strong and acrual data, but the northern-most pertion of the pattern was ident on a risk data only. There was no information relative fulther closein levels and this portion was estimated"



On-site dose rate contours in r/hr at H+1 hour.

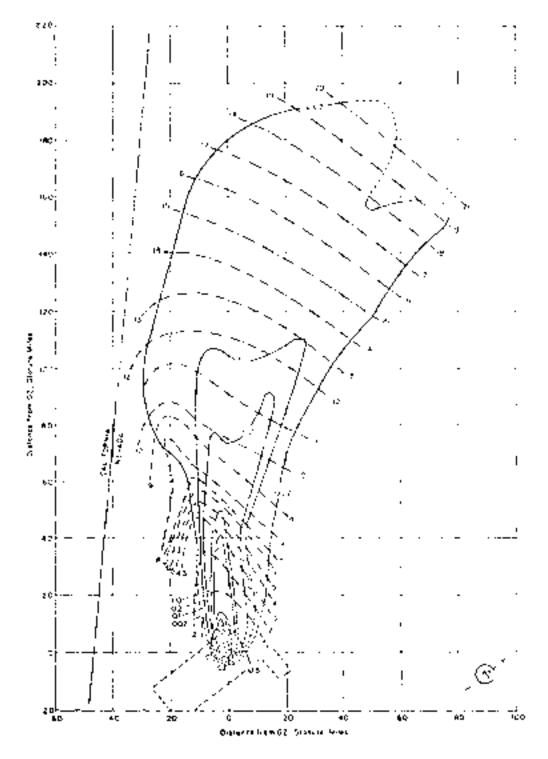


Figure 220. Operation PLIMP:OP - Valuewy. Off-site down rate contours is r/hr at 2+1 hour.

TABLE 58 NEWAD, WIND INTA FOR OPERATION PROPERLOR-

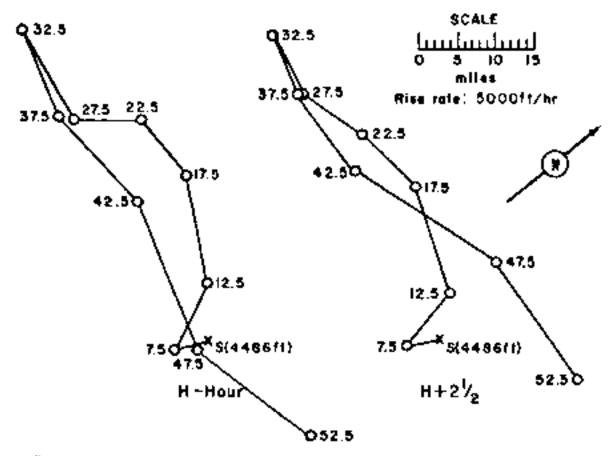
WEITHER

(MSG)         Der         Opened         Opened         (MSG)         Der           foot         degrees         mph         opened         mph         foot         degrees           Subface         Colm         360         05         30,000         100           4,967(36)         Calm         Calm           31,000         0%	13 7432 13 09 66	004 01407/00 1,00	00 01 01 01 00
Surface Colta Cata 360 05 30,000 100	13 09 66	1.00	69
	09 66		
4 960 (1991) Colles Calles -++	- 60		
9,660 kg 69 630 68 32,000 646	···. *		
6,000 070 12 000 <b>09 33,</b> 000 3%0	26		
γίραςς τως τος 690 - 09 βλίραςς βώδ	10		
5)(60 170 17 840 14 35)000 790 9,000 140 17 150 13 36,000 790	3.2	260	-08
9,000 (40 L2 150 13 36,000 2%)	10		
10,000 100 00 170 08 37,000 250	(2)		
11,000 1990 12 38,000 950	69		
12,000 170 (0 160 <b>12</b> 39,000 280	13		
13,000 120 16 k6,000 270	10	270	13
14,000 120 16 120 14 41,000 200	18		
(15) 000 100 10 (110) (15) 42,600 280	30		
16,000 110 12 (100) (13) 43,000 CHC	16		
17,000 100 09 44,000 gdo	- 14		
18,600 090 02 090 <b>09</b> 45,600 290	21	250	20
19,000 090 92 46,000 980	22	•	
20,000 090 09 080 09 47,000 270	18		<b>.</b> _
21,000 000 12 48,000 240	21		
22,000 050 12 19,000 260	21		
23,000 070 32 070 32 50,000 200	18	270	20
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85,000 DAG 08 070 <b>09 5</b> 8,000 870	16		
26,000 050 05 53,000 270	15		
27,000 0/0 0Å	_		
28,000 090 12			
29,000 090 13			

NOTE: 3. Numbers is parastheses are estimated values.

2. Tropopause beight was 53,100 ft MSD at Sebour.

 Wind data was obtained from the Yueen weather station.
 At M-hour the surface air pressure was 867 mb, the temperature. 16.1°C, the dew point -3.6°C and the relative humidity 25%.



OPERATION FLUMMOR -

Charleston

<b>MATE:</b> 200 Let 1917 20 dep 1997	Syonsor: OCRL
<u>TIME</u> : 0.450 1300	$\frac{\text{SITE}_{1}}{37^{\circ}}  \frac{1000}{\text{C8}^{\circ}} = \frac{1}{37} \frac{1000}{100} \frac{1000}{100$
TOTAL Y1312: 12 kt	126° 02' 20' w Site elevation: 0,215 ft
PIRSUL, LATA: Then to lot environment MM	MBTOINT OF BUILDED CLARKE ST
Simple to Cod musicane INV Redice of Sportsteiners INV	<u>TYPE OF REACT AND ELADERANJE</u> Air boret from callent over Nevada coil
CLOUD CON HERIORIN - PRACOC ON MOLA CLOUD ROCHON DEFINIT: CONNELS ON MOLA	<u>CRATES DATA:</u> S. Stater

## RIMALC:

The contactpation was due primarily to induced activity. The on-only pattern was obtained from -, and curvey readings of the Endicipytal Safety Division of Reynolds Electrical and Engineering Cox, Energy using AN/102 30 and AN/203 aj survey instruments. The readings were taken at H+1 hour, H+0 hours, D+1 day, D+2 days and D+3 days allow taken at H+1 hour, H+0 hours, D+1 day, D+2 days and D+3 days allow taken at H+1 hour estrapolated to H+1 hour by the general ladiendementation activity-decay curve for Mevada soil

The monitors did not detect any off-site fallout which can be attributed to this shot.

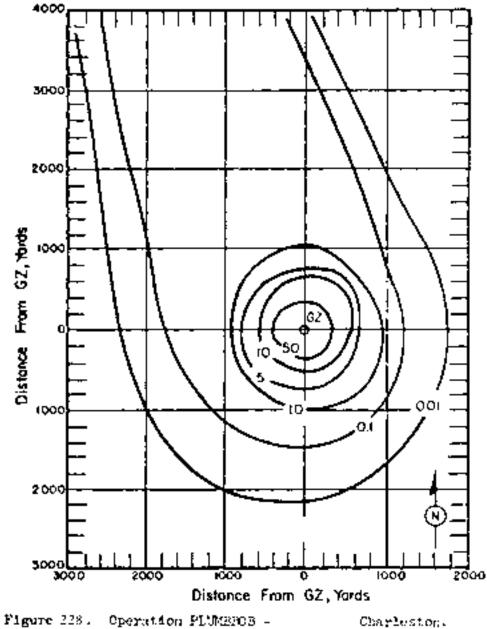


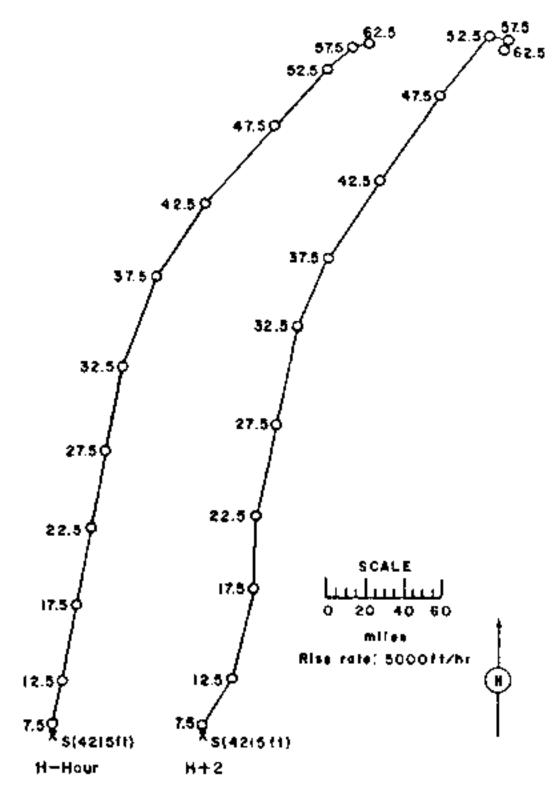
Figure 228. Operation PLUMEROB - Charleston. On-site dose rate contours in r/hr at H41 nour.

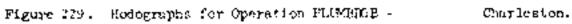
TASLE (A) NEWRON STAD INCA FOR OF SEATION FOR STATES	TASUE 69 SECON F	STND BACA FO	39. C2.5EV/TEC5.2.1 PMC 804	-
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GOASC STOL N

Alterade		uente di	5.5	:7"	· · · · ·	
(M211.)	:r	1.21111	117	· <u>·</u> ·· :	1.2	
(cet	740.044	<b>5</b> 544	ally from a	al r	9 ( Pr. 9 )	<u>.1</u> .
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$\mathcal{G}_{\mathcal{A}}^{(\alpha)}$	380	- 05	160	35	180	C - 2
5,72.(BK)					166	
6,ove	150	ić	180	10	1/20	.13
7,0.0	186	20	180	35	28.	15
8,000	160	22	190	8.	1.2	20
9,000	180	24	190	225	1.90	÷
10,700 21,000	1,80	23	210	23	21	225
21,000			• · •		254	20
22.00.	197	23	190	71	2.43	
13,000			•••		194	- i <u>:</u> -
14,660	2.90	62	170	51	1.00	13
15,000	(120)	(28)	(190)	(ari)	191	2
16,000	1//0	35	190	- 53	2,42	2.2
10,000					166	· .
18,000	260 -	կկ	180	41	15:	1- 3
19,000					100	÷.
20,000	1743	32	180	37	28.1	20
22,000					120	7
22,000					16%	
23,014	1.00	41	190	43	1.4.1	5.3
24,000						
25,000	190	40	3.90	1.tz	ι	
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27,000				•-	172	÷ 1
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30,:KX:	120	44	190	N2	122	51
31,000					197	46
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35,688	252	<b>ፋ</b> ማ	500	3R	\$10	·
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45,000	550	52	210	52	220	52
se, aca	220	40	210	щC	2.10	u.)
60,000	260	07	020	C3		

NOTET:
1. Such as a parentsessed are estimated values.
2. Tropy not traght was 94,830 ft XNL is Second.
3. Find date was obtained from the Yourn weather station.





OPERATION ILLMEBCE -

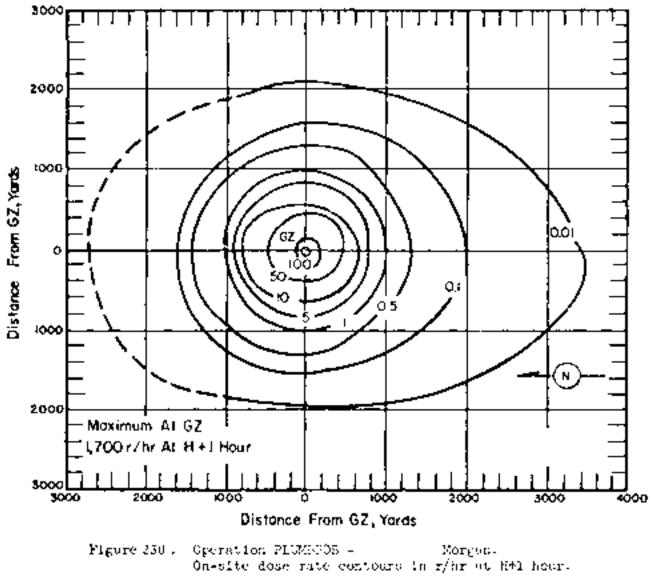
Norgan

PCT CAT	Sponsort CCRL
$\frac{1000}{1000} = \frac{1000}{7000} \frac{1000}{1000} = \frac{1000}{1000} \frac{1000}{1000} = $	$\frac{85710}{10} = \frac{3700}{10} = \frac{6}{10} \frac{10}{10} = \frac{6}{10} \frac{10}{10} = \frac{10}{10} \frac{10}{10} \frac{10}{10} \frac{10}{10} = \frac{10}{10} \frac{10}{10} \frac{10}{10} \frac{10}{10} = \frac{10}{10} \frac$
<u>DODAL YTRU</u> : 8 kt	372 681 657 6 1169 621 277 W Site elevations (4,216 ct
	HELSET OF ELECT: ( US in
<u>FIRESALL OATA:</u> Time to let minimume (M Time to Pad maximume (M Radius at Pad maximume (M)	TYPE OF MENT AND ELANDRED Air burat from Fall on over Nevala and
CRATER AVIA: No crater	CLOUD TOP HELGADY - ALLOCCE SA MAL CLOUD ROTTLE HELGADY - ALLOCDE SA MAL

REAGENCE

The contacterian was due primarily to induced activity. The openie pattern was obtained from ground survey readings of the believenies. Safety Division of Boye his Electrical and Sylow-Fier Schwary, Lee, using AN/198 Py and AD/108 A3 survey meters. The bondings were taken at BPS hear, Brb hears, BPD days DPD days and DPS days along which radial reads to determine radiation exclusion areas. The dose-rate readings were extrapolated to H+1 hour by the peneral induced-Activitydecay curve for Nevada soil

The off-site fallout was analyzed by the UCWB Special Projects Section. The trive Secay approximation was used to extrapolate the dese-rate readings to SHI hour. "The Morgan debris apparently fell over or near residual detric from Eacky, but the undertainties in the decay law and in the effects of weathering make it impossible to determine the Morgan pattern with any certainty"



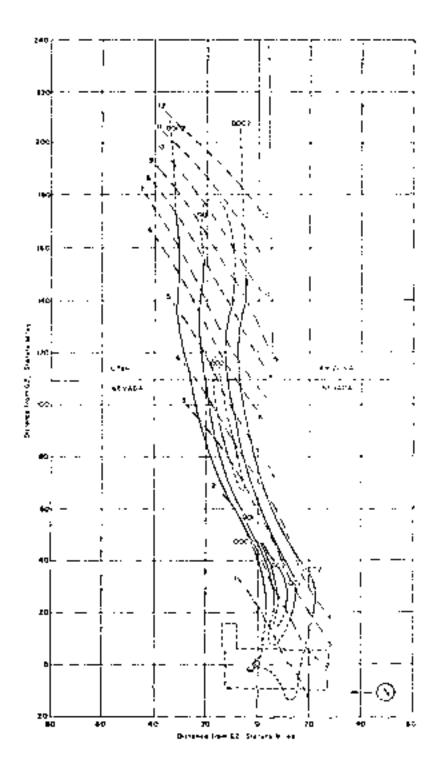


Figure 251. Operation PLUMEBOB - Morgan. Off-site dose rate contours in r/hr at H+2 hour.

NORGAN

Ait. S.	<u> </u>	12	942 N.	. 1.:	Alterate	ii-17	9. ji	106 J	- 2°
(N3L)	<u>I</u>	<u>deca</u>	ldr –	110.23	( (SS 3. )	20 <del>2</del>	· · · · · [	1. m	
Free S.	learner 2	:::T::	degrees.		feet	September 200	::. <u>1</u> ·:)		
Surface	Ch Cr	Calle	Chiim	C : 274	30,070	280	$L^{(r)}$	285	42
4,715(D	0 E.C.	. <del>С</del>			31,000	280	- 52		
5,000	24Q.	12	35,0	12	32,020	urdo –	- 51		
6,000	C10		360	20	33,000	202	50		- •
7,000	0.00	69	ວ່າວ	17	34,CCC	280	23		
8,000	010	05	030	08	25,000	(***Q	55	270	- 32
9,000	320	09	020	06	76,000	270	5%		
10,002	300	14.	280	07	37,000	260	5P		
11,000	3.0	14.			58,acu	760	51		
12,000	-90	32	270	12	39,000	250	52 S		
13,000	260	C9			40,000	290	- 55	290	- 59
14,0.0	280	13	270	11.	41,000	250	60		• -
15,000	280	18	(270)	(16)	42,000	260	59		
16,220	27.0	21	25c	15	43,000	260	- 55		• -
17,000	270	22-			44,000	260	- 58	- • -	
18,000 -	28c	23	290	26	45,000	240	- 55	234	
19,000	280	36			46,000	240	56		
20,000	270	30	270	30	47,000	2:-0	53		
21,600	270	36 1. 1			-		-		
22,000	270	i. :							
23,000	260	<b>H</b> 3	270	41					
21.,000	262	- 46							
25,000	2/0	43	270	41					
2Ġ,œc	210	4î							
27,000	270	i.y							
28,000	276	41							
29,000	280	45		÷-					

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NOT iffer

1. Numbers to parentheses are estimated values.

2. Tropopagos heimit was 57,400 ft Mill at Behour.

3. Wind data was obtained from the Yuesa weather station.

 At N-hour the curface ofr pressure Was 560 mb, the temperature 7.3°C, the dow point -0.9°C and the relative humidity 36%.

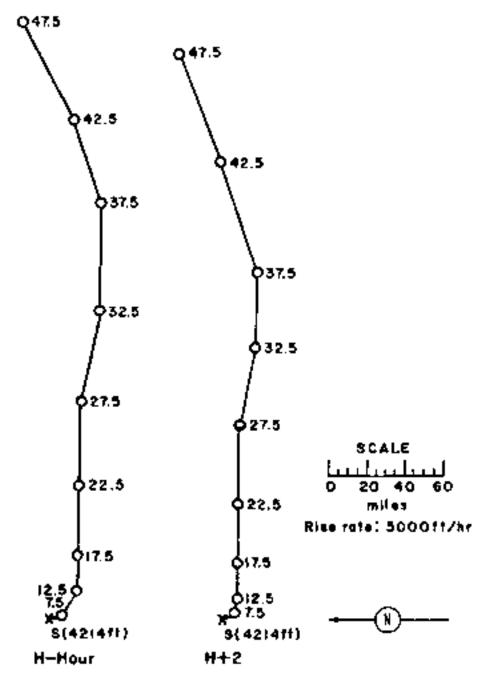
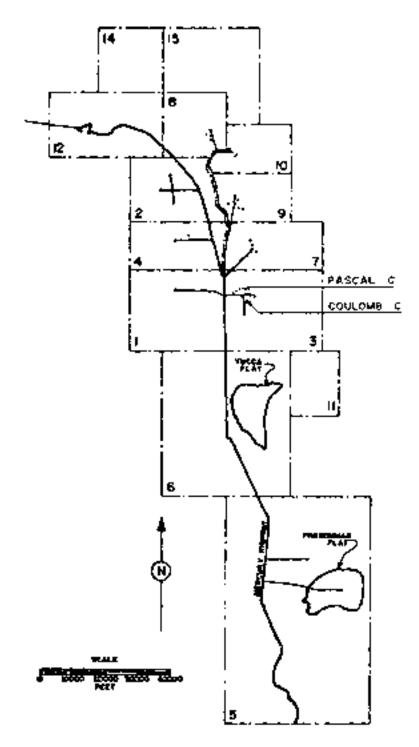


Figure 232. Hodographs for Operation FLUMBBOE -

Korgan.



NEVADA TEST SITE

Figure 233. Project 58 Shot Locations.

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58 PROJECT - Pascal C Safety Experiment

DOT:N	rsr Combus"	(2011) 	Sponse et - 1ASL
TEE	6 Dec 1977 6 Dec 1997 1977 - 2015	2015	BITH: UNIT - Normal e BitH: Control of S Diff: Control of X Site classifier i congress
			RECORD ON FRANCES
	303 (80.380) 50.108 (90.30	nines et mu <u>F</u> e - BM	TYPE OF STUDE VELOCIALISE Descriptions of the second discontrangent of the second well. Device located at the bottom of a constant the with a located of the other second alove it may an other space of to a locate second second the log-

REMARKED - 1 Wht on-olde contaction was produced.

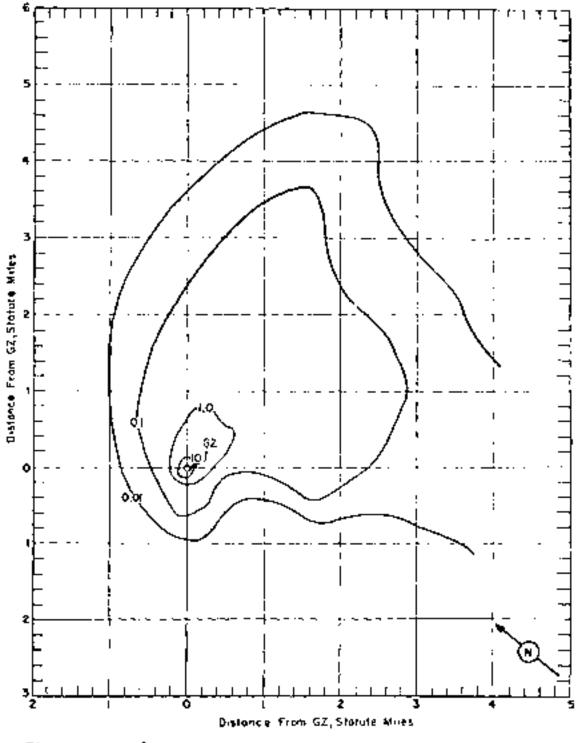
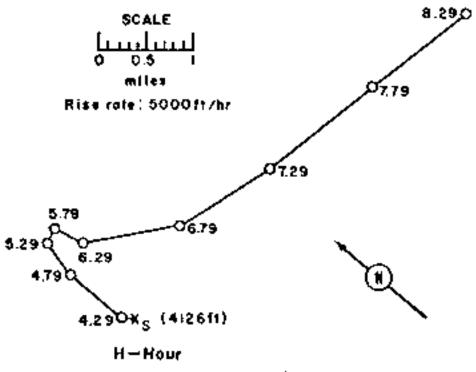
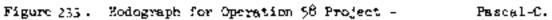


Figure 234. 58 Project - Pascal C. Cn-site dose mate contours in r/br at H+l hour.

Altitude	N-hour		
<u>(MSL)</u>	Ddr	Speed	
feet	degrees	шри	
Surface			
4,290	150	03	
4,790	180	07	
5,290	190	C4	
5,790	24C	02	
6,290	340	C4	
6,790	310	80	
7,290	290	11	
7,790	300	24	
8,290	300	!3	

TABLE 71 NEVALA WIND DATA FOR OPERATION 58 PROJECT - FASCAL-C





58 FROJECT - Coulomb t Strety Experiment

$\begin{array}{ccc} \underline{POT} & \underline{CMT} \\ \underline{DATR} & \overline{V} & \overline{V} & \overline{V} & \overline{V} & \overline{V} & \overline{V} \\ \overline{T1Nc} & \overline{V} & \overline{V} & \overline{V} & \overline{V} & \overline{V} \\ \end{array}$	Sponalari LASI
TIME: U.C. 2000	$\frac{SPTR_{1}}{37^{2}} = \frac{NTC}{2\pi^{2}} + \frac{Arma}{2\pi^{2}} \frac{1}{2\pi^{2}} = \frac{1}{2\pi^{2}} \frac{1}{2\pi^{2}$
TOTAL TILLO: 0.5 Kt	116° 21' 2"" ¥
PIRESTER IN AS	Site elevations (app50) (1
Theory Constant Strategy (194) Theory (1971) Strategy (1971) 1974	HELGHT CF FUECLE - Clertains
Preliminal lengthered of 200	TYPE OF FURNT AND DARK STORE
<u>CLOUD IN UNIVER</u> CHARGE IN MOL CLOUD POLICE FROM STREET	sol)
	CRATER DATA: IM

# <u>Repaire</u>s:

The fallout puttern was from monourements take by a defentitive project and is well defined and reliative.

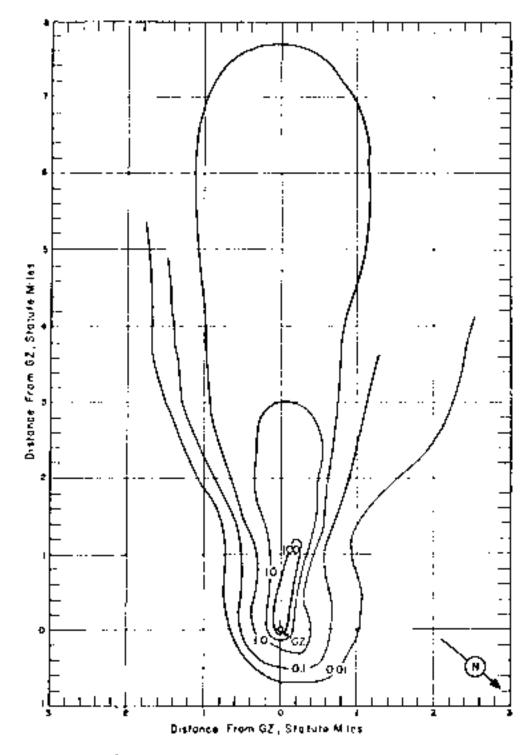


Figure 236 - 58 Project - Coulomb-C. On-site dose rate contours in r/Ar at M+1 hour.

$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Altitude	il-hou	r
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	(MSL)	Dir	L'perio
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$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	5,000	030	11
7,000       020       07         8,000       090       07         9,000       050       04         10,000       040       06         11,000       120       03         12,000       120       03         12,000       150       13         14,000       150       13         14,000       140       23         15,000       140       23         16,000       140       18         16,000       160       13         19,000       140       07         20,000       160       03         SCALE         milen	6,000	020	13
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	7,000	020	
9,000       050       04         10,000       040       06         11,000       120       03         12,000       140       05         13,000       150       13         14,000       140       23         15,000       140       23         15,000       140       18         16,000       150       16         17,000       170       14         18,000       160       13         19,000       140       07         20,000       160       03         SCALE         milen		090	67
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	9,000	050	04
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	10,000	040	C6
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		120	03
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	12,000	140	05
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$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	34,000		23
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$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	16,000	150	16
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	17,000		14
19,000 140 07 20,000 180 03 SCALE LIEII 0 5 10 miles	18,000		13
<u>20,000 180 03</u> SCALE <u>LIEIII</u> O 5 10 miles	19.000		0,9
SCALE LIEII O 5 10 miles			
	9.50 08.5 7.50	(6.5	17.5 0-0-0-20 18.5

TABLE 72 NEWATA WIND DATA FOR OPERATION 98 I POUSET = COULDER-C

Figure 237. Hodograph for Operation 58 Project -

**):** {4169 ft}

6.5Q

5.5Q

5

**H**-Hour

Coulomb-C.

58 PHOJECT - Venus Safety Experiment

	FST	0247	
DATE:	22 866 1993	25 Feb 1998	
TIME:	1700	0100	

Sponsor: UCRL		
<u>SITE:</u> MTC - Ayen 114 37° 11' 38″ N 116° 11' 43″ W		
TYPE OF FREE ADD LACESSON Subcorface corol (Conver)		

CLOUD	TOP	12177	36725	174
CLOUD	3000	X. X.	<u>191</u> 240	: 124

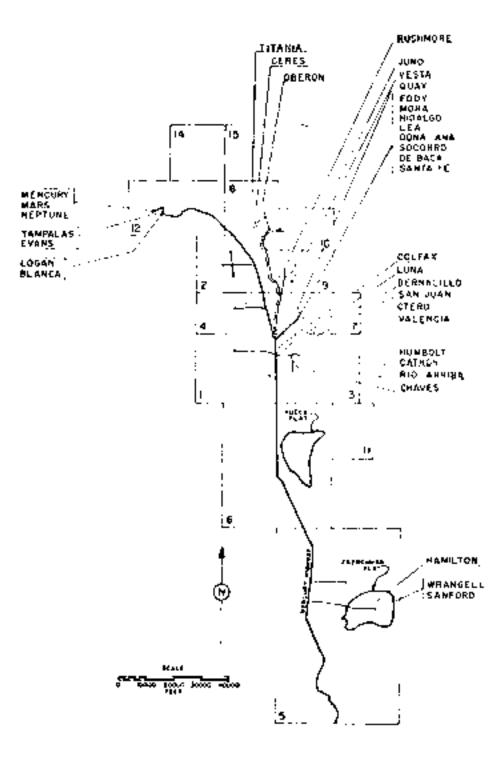
HETCHT OF EIGHT - - - PL

58 FROCENT - Gramos Safety Experiment

 PST To Nar Divisio	<u>GHT</u>	Spender: 2052
	2302 2302	$rac{21779}{216}$ (700 + Area 106) $3^{16}$ (11 - 50 <sup>4</sup> - 30 $106^{2}$ (11 - 49) <sup>4</sup> - 30
		TYDER CRIEDERS THE LEASES THE Decomposed of the Constant
		<u>CLOUIS (01 - 500 050 - 520</u> CLOUIS (01 - 500 050 - 520)
		<u>100000000 - Martin</u> e - Liver

362

.



# NEVADA TEST SITE

Figure 238. Operation HARDSACK 11, Shot Locations.

GERENTICH SUBSICIANT 21 - Utora Safety Experiment

	FBT	5%7	Sponsor: IACL
<u>171288</u>	tgab tgab	10 Sep 1307 2000	SITE: NTO Acte (g 3 <sup>50</sup> act ed <sup>®</sup> N
<u>F1950(C</u>	<u>: Y: 0.0</u> : 38 t	ons	llic° (1) (j)" w Site viewatitati ⇒,C35 it
	<u>) MIA</u> : to lot wisin to Phy maxim		<u>Matoka av janada</u> –480 r-
	in at this way	•	TYPE OF MEAN AND CLADWRYD: Subsurfany burst - 1901 wel.
<u>CLOUE T</u> <u>CLOUE S</u>	<u>10 - 2007 10</u> 0 2014 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100	4,600 Pt 2007 2010	CHATHE DATA: Dit available

### REMARKS:

The co-rice fallest documentation was performed by the Tailolaural Safety Division of the Reputlic Electrical and Performents Convery for purples of part and lateral and Performance Convery for Traverial CU-10 interference at Set store Set ( a set, Set Lay, LeS days and lay spin the performance protocol of the performance of the distribution of the approximation is the above of the approximation. The  $t^{1/2}$  is approximation was reached by way used to extra protocol of the protocol of the spin protocol of the distribution.

The off-site fallest documentation was possible to New Mark AN-9 and AN/DDP  $_{\rm CP}$  instruments by the V. C. Falle deal 5 Cervice for purposes of public refers. The particulation to the pattern indicated by solid lines in fairly reliable. The  $t^{-1/2}$  decay approximation was used to extrapolate the doce-rate relation to  $N^+$ , hown.

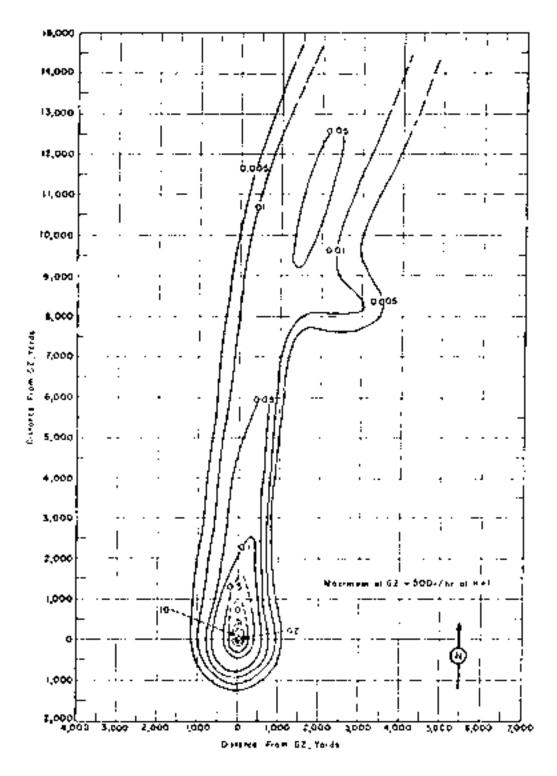
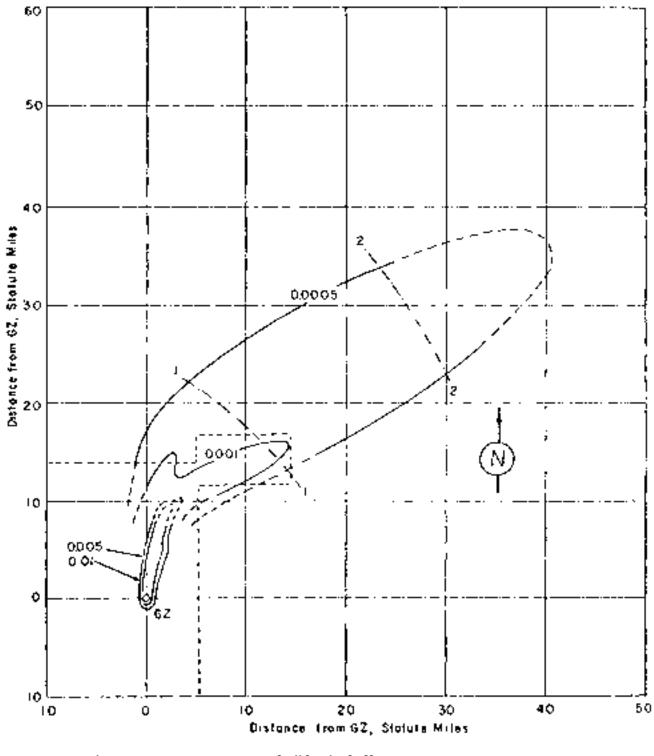
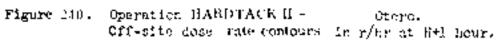


Figure 239. Operation HARDTACK II - Otero. On-site doce rate contours in r/hr at 2+1 hour.





A) vitody	81-2.00-z		
$(\kappa_{\rm eff})$	<i>D</i> ir	1.2.5	
feet	dentre eta	:. <b>;</b>	
Surface	180	27	
5,000	180		
éjece –	150	32 30	
71000	1%0	59	
8,000	190	30	
9,000	200	25	
16,000	820	30	
n,000	2:0	<u>5</u>	
18,000	220	÷./,	

TABLE 73 NEWARA MIND MATA FOR OF SMATLON MARCHARM 11 - OTADO

\$97%: Wirl data was obtained from the hors weather station.

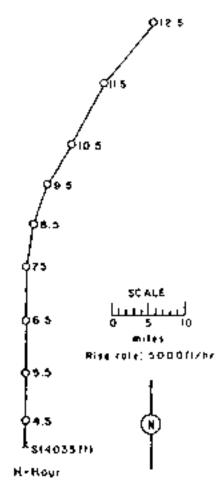


Figure 24). Rodograph for Operation Hali(MACK II - Otoro.

OPERATION (SECONDER 11 - Benallillo Safety Experiment

MTR: TO STORE OVER STORE	Sponst.r. LASL
<u>1185;</u> 1232 - 1930 - 1044 1995	<u>97395</u> MTG - Area So 37 <sup>0</sup> 02' 18" N 116° 01' 199" W
101AL YILLD: Is tens	Site Hievation: Hydro ft
FIREBALL DATA:	HEIGHT OF PUPGIS -496 Ct
Time to bet minimume 10M Time to And maximume 10M Radius at 2nd maximume 10M	TYPE OF REACT AND DEADSMITT; Substration classes - every well.
CRATER DATE: Up available	<u>CLOUD DOU NELOM</u> E - LUSCO EN BUT <u>CLOUD DE LEMESTORE</u> - M. LUSC KSD

#### REMARKS:

The openite fullerit documentation was performed by the Radiological Safety Division of the Reynolds Electrical and Engineering Company for purposes of performed ratery. Featings were taken with AN ECP  $j_i^{(1)}$  or Tracerial CU-DO costringents at  $2n_i^{(1)}$  hour,  $8n_i^{(1)}$  hours, 10,  $4n_i^{(2)}$ , 10,  $2n_i^{(2)}$ , 10

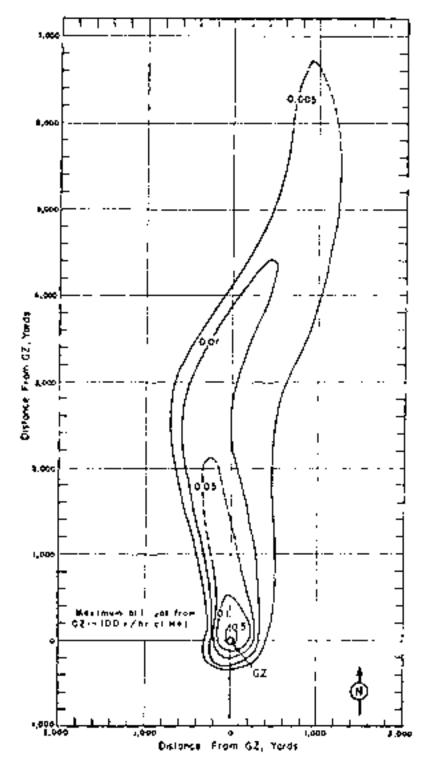
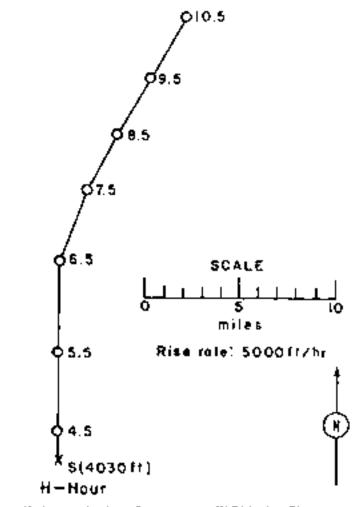


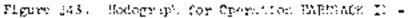
Figure 242. Operation MARDTACK II - Bernalillo. On-site dose rate contours in r/hr at 241 hour.

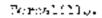
Alti		
(MGU)	71.5	
feel	20120003	·.]:
Surface	180	15
5,000	182	23
5,000 6,000	185	29 24
7,000	800	20
8,000	210	17
9,000	810	1
20,000	£10	16

TABLE 11 NEWARA VIND DATA FOR OFWERDING SPRETAGE FIRE CORRECTING

NOTE: Wind data who bitained throw the Margan westber stations







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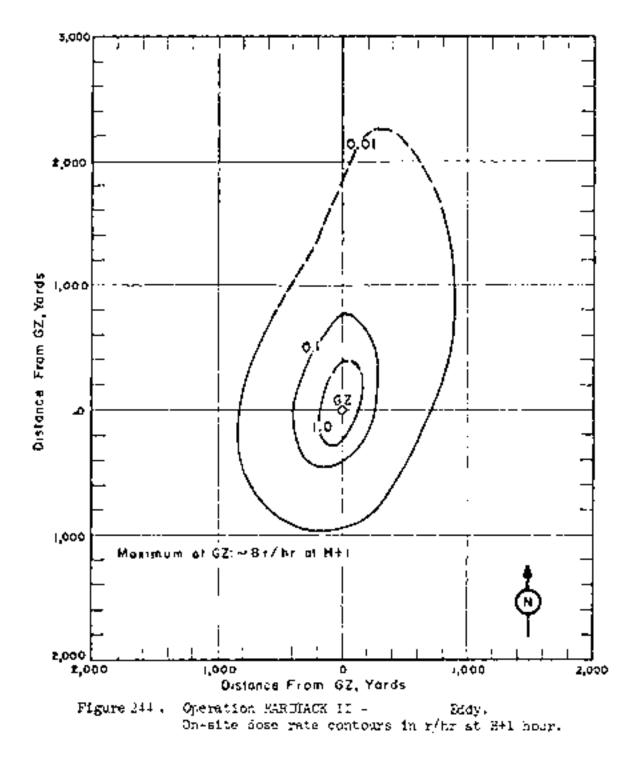
1.4.39

 $\frac{1}{1} \underbrace{\frac{1}{1} \underbrace{\frac{1}$ 

REAGAINE

The consists fall of incommutation was performed by the falled scale Safety form the off-the Republic Electrical and their vertex Corpus of a purples of Spectro of the Republic wave theory with  $K_{i}^{(1)}(0) = 0$  is Tracertae W-1. If there is at Republic Republic the state of 10 key MC large, and DQ maps along close resided evaluation. The order of the variants was used to extrapolate the incommute random of the Republic close by rate is not structly applied of all poly of the back by approximation the observes decay.

The off-site (albest connectation was partners i with Berkean MN-) and AN/110-37 introducts by the U. C. Public Statts, therefore for paryone of public satety. Andlers were taken at about 10 mile intervals encore in populated glasse or when the state rate varies considerably with situate. "The far northerly performed the partners may be in error. The albest activity shows better unit was expected in this symetric form attempt was well to be partners was encoded polated. The norther the pattern was well to consider you are using fairly seliable." The taken was well be expected and expected attribute the pattern was well be expected on and expected fairly seliable."



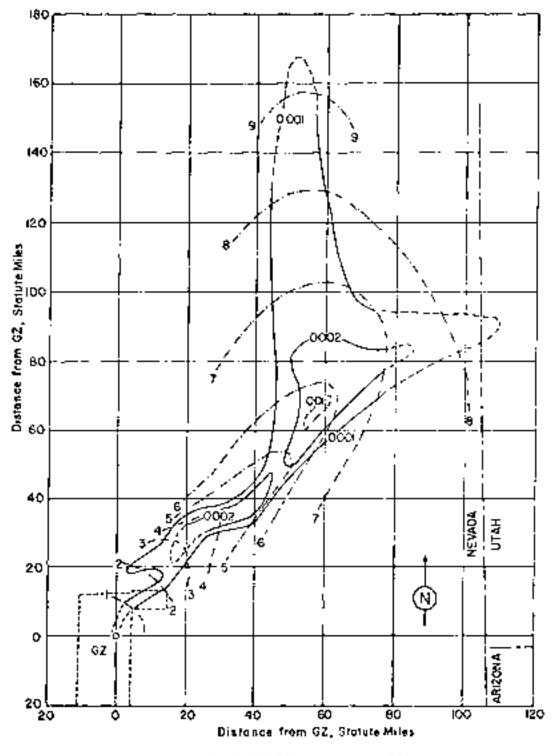


Figure 245. Operation MARDIACK II - Eddy. Off-site dose rate contours in r/hr at X+1 hour.

TABLE 75 MENADA WICH DATA FOR CLIMATION BARDINCH 11:	
--	--

Altitude	li-t.e.vr			
(MUT)		Teet		
feet	acgroups.	milio _		
Surface	Caln	Calm		
5,000	24G	08		
6,000	230	33		
7,000	2)0	13		
8,000	210	14		
9,000	<b>51</b> 0	14		
15,000	190	13		
11,000	280	10		
ງສຸໂລແດ	)C	06		

KOQA:

NOTEC

- Vind gats was obtained from the Yoots weather station.
   Tropogness beingt was 45,000 to Mil.
- 3. The surface signature was living psi, the temperature 14.200. the des point with 0, and the pulstice considity 211.

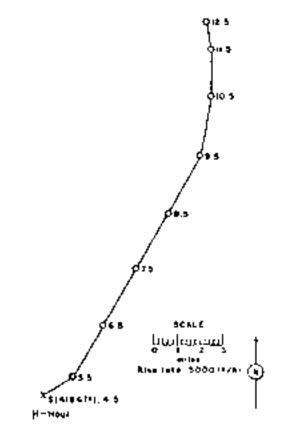


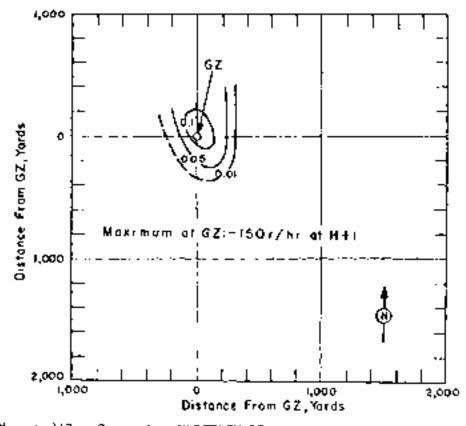
Figure 346 - Hodograph for Operation MARICACK II -£ddy - CIMINTSON DARCENCE II - Luna Safety Experiment

$\frac{PDT}{(K_1)_{12}} = \frac{GMT}{Z_1 + Q_2 + Q_3} = \frac{GMT}{Z_1 + Q_3} = \frac{GMT}{Z_1 + Q_3}$	Sponsor) 14:51.
1965 - 21 296 - 1966 - 1966 - 1966	$\frac{G1725}{317}$ ; MD3 - Arota 37. $317^{10}$ C2 $^{10}$ M
TOTAL YILLD: 1.5 tons	110° ust olf W Bite vorskinds (NyG21-15
<u>P(1003412, 1947A</u> ) Tree to bot minimum 124 Time to free two reads 124 Pathta at Coll way brond 135	HRIGHT GV STROTAGE CLART TOP Solouria - Court - Statist below corfster to we
<u>CRATER DATA</u> : Not available	<u>CLOUD DAS LE CONSE</u> NCE 220 <u>CLOUD ACTIVITATIONE 220</u>

### 1.12/12/05

The en-site fall at Recommentation was performed by the Factorial balance of the Physical Electrical and Schemeric of English for property of the Problem Schemerican Company of a purphone of performance and by Problem Westerlahe We

There were no readings above backpround reported off-wither



Pigare 247. Operation MARDIACK II - Luna. On-site dose rate contours is r/br at 840 hour.

Altitude	il-hour		
(MSL)	Dir	Creei	
feet	acgrees	mj)ri	
Surface	160	05	
5,000	170	09	
6,000	180	10	
7,000	180	13	
8,000	190	16	
9,000	190	21	

TABLE 76 NEVALA MIND DATA FOR OPERATION HARDFACK 11 - LUNA

MOIS: Wind data was obtained from the Yunca weather station.

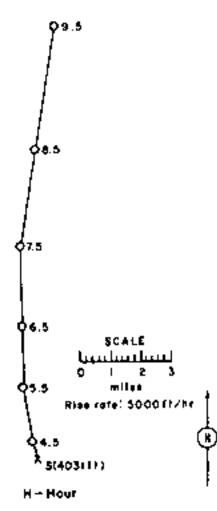


Figure 248. Hodograph for Operation MARDIACK II -

Lung.

OPRIATION MARCH II - Moreury Safety Experiment

	FDT	G <u>M7</u>
1859:	(3) 에 타이어	77103 (1935)
1186:	1990	2200

DRIVE OF POLICE 183 ft

<u>PYFE</u> <u>Option (15)</u> And ALL (2011) (1) Solution to the second state of the second New part of 1

CLOUD TOP ANT ATTA DAY CLOUD FOR CALL TO ATTA

## REMOREC:

Since there we estably us redeep joint, a conduct the simorphy we there the little way watering a spectrum to the in the main tunnel. OPMANTICE MARCHACE II - Valencia Safety Experiment

142.0 <u>1979</u> 

TOTAL VIELD: C CONS.

PIROWAL STIC: Time to the state of the Time to Colimance of 1 120 Red Sharph a set traverse and a like

RNA 265 - Gridden - Billing and Shalter

Sponsort 1403. HEIGHT OTHER LICE - LANS IN 

Ξ., Teverily in the

### REMARKS:

The execute the control of method op when greathers and put by the source of Rathery 1 with a left to depict be Diratefrazione. Entre letter altri altri entre p Pergrage served granted in redenyal. Weather revenues a server wild device in Dwares but WF- end there a to write 20 [ Books , Set an orall on the press D40 Baye such a construction of press press of Dark to research the war to research wave a soluble path solution and the state decay approximation will be all extends the file of electric endotes to RHL Const

No manifest and interactions of constituents, while the service ways of the by the off-contraction to a

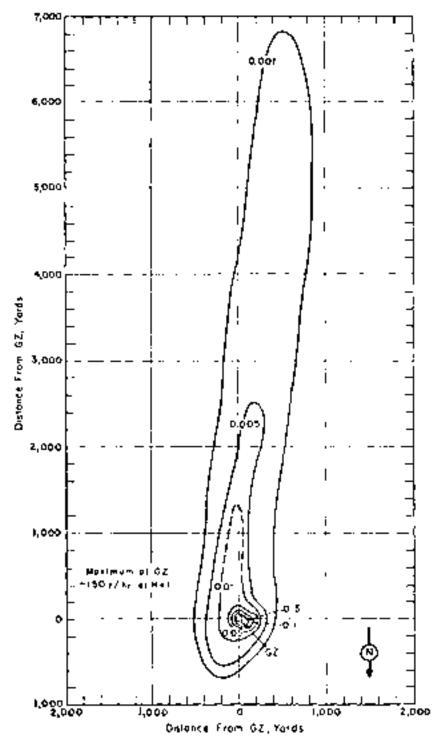


Figure 149. Operation MARETACK IJ - Valencia. On-site dose rates in r/hr at H+1 hour.

TABLE 77 NEWADA WIND DATA FOR OPERATION MARCH	ACK II	Ι-
---	--------	----

Altitude	rí-Louy		
(MS3.)	517	(Speed)	
feet	degrees	mänte	
Surface	20	17	
5,000	10	20	
6,000	20	21	
7,000 8,000	30	21	
8,000	30	50	

NOTE : Wind data was obtained from the Yucca weather station.

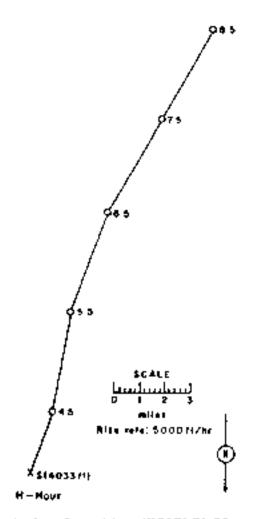


Figure 250. Hodograph for Operation HARDTACK II - Valencia.

WALENCIA

OPSEATECE CARRANCE . I - Mars Safety Experiment

$\frac{1}{1007} \frac{1}{100} 1$	Cipanicant DCRD
TRUE DE DA LACE DE LA COLOR TRUE LA LA COLOR	$rac{G175}{C} = rac{G177}{C} = rac{1}{C} + rac{1}{C}$
TOTAL VIELD: 13 tons	Site clever land th, 12 million
<u>VERSION CONTRACTOR</u> TSTANDA CONTRACTOR Vine Antonio Contractor CON	<u>395 (17 67 900-07</u> ) (17 20
Radias at the transform (20	$\frac{222990028}{22400000000000000000000000000000000000$
CLOUD THE DIAL OF STREET	Weinge das 1990 1

### REPARK: 1

The Da-site fall at a solution was plan which we based outle Safety Dividing of the Boya in the table of the second develop Capity Dark by definition of the important is the acceleration of the end of the importance for particles of the income content to a section of we interve with AN Difference or Wrank size (Difference content to the problem of the intervent of the intervent ("The only right was to the section of the rest of the intervent of the intervent was the Arma 1.1 are the optimized of the rest of the intervent of the intervent of the intervent of the section of the rest of the intervent of the intervent of the intervent of the rest of the rest of the intervent of the intervent of the intervent of the rest of the rest of the intervent of the intervent of the intervent of the rest of the rest of the rest of the intervent of the intervent of the intervent of the rest of the rest of the rest of the intervent of the intervent of the rest of the rest of the rest of the rest of the rest.") The intervent of the rest of the rest of the rest of the rest of the intervent of the rest.") The intervent of the rest of the rest.") The intervent of the rest of the rest.") The intervent of the rest o

extrapolation of the state of antice of the second

No particularly be seen and the second of the ST-city of

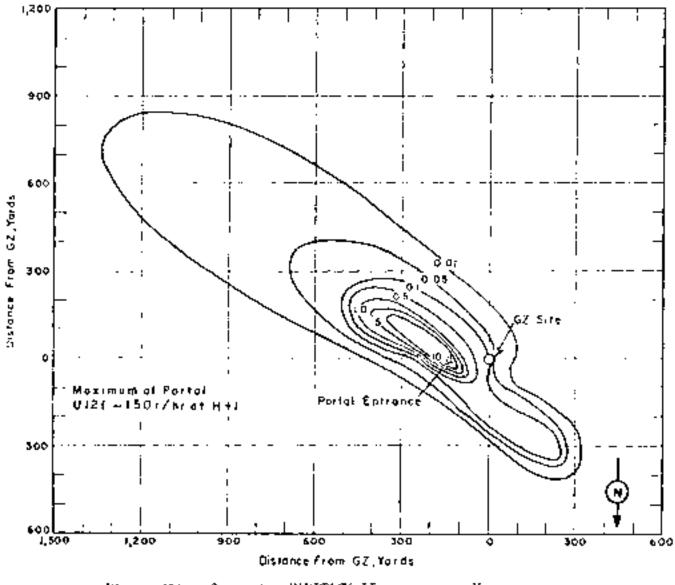


Figure 251. Operation BARMACK II - Mars-Co-site dose rate contours in r/hr at 9+1 hour.

		SURVACE AC	12.1	
71346	9 foot term Stope Terms		iv0 f. t.⇒e Xeostain I.	
	(89ev. 6.7)	e (: x.c.)	$= (0.5 y_{1} + 0.16)$	M11.)
• · · · · ·	19.5	(general)	11:1	
	degrees	_F:)	averation of the	n.j :.
H-hoar	040	2	50	<u>.</u>
Htl hote	390	8	25	51
http://honges	330	6	35	e 1
B+3 hours	320		45	2.5

TABLE 78 NEWLIN, WIND INTO FOR GREENING DAPUTCRE II - MAKE

OPERATION FARDTACH II -

Mora

	TST .	GC
INTE:	29 8 -p. 1958	2002-p 1995
TONE:	6665	1409

TOTAL YIELS C.O.kt.

FIRENAGE ONCE:

Time to lot strikepost (2% Time to 2pd accident (2% Radius Al 2pd accident (3%

CLOUD FOR ADALGED: 1814-00 PA MEL CLOUD FOTTAM CELEVED: FORCEO PE MEL <u>SPVE</u>: MTS - Area TV 37° C(1 12° 5 116° Sti 27° W Site elevations 4,184 (1

Sponsor: LASL

HERDER DR BERGER STATE

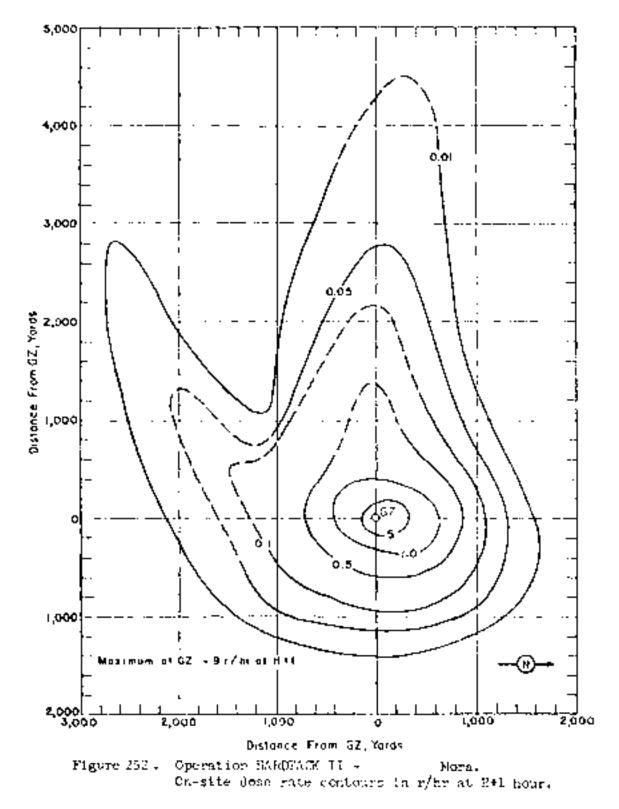
TYPE OF BUILD AND FLACEMENT: Air bard' for themilted days Nevadu cuil

CRATER DACA: Contrators

### REMARKS:

The on-site failest documentation was performed by the Endechedrent Safety Division of the Reynolds Electrical and Eucleonrian Company for purposes of personnel safety. Readings were taken with AN/FOR-49 or Tracerlab 50-10 instruments at Meg hour, 015 hours, DMI day, DM2 days and DM3 days along eight radial roads. At shot time a dost cloud was formed and was observed to move toward the west over the Mercury Highway producing some activity. Since this event was fairly well decumented, there is considerable confidence in the pattern presented. The sodius-DW decay rate was used to extrapolate the doce-rate readings to [0] hour. This decay tate is not strictly epplicable although it closely approximates the observed decay.

Only small areas of low level of radioactivity relative to background radiation were detected off site.



TAFLE 79	- PEVASA	VI ND	DATA -	FOH	OPERATION	H-RELACK.	
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Altitud	il-hear		
(NSE)	Dir	Sec. 1	
feet	degrees	sites .	
Surface	Cn 220	Calle	
5,000	320	02	
6,000	340	05	
7,000	360	09	
8,000	020	1l-	
9,000	030	15	
10,000	020	15	
11,000	010	15	
12,000	350	28	
13,000	350	20	
15,000	360	P3	
19,000	Č20	$p\bar{h}$	
16,000	010	28	
$17,\infty$	010	1	
18,000	020		
19,000	320	35	
20,000	020	56	

MORA

507903

- 1. Wind fulls was obtained from the Yours sestion station.
- Tropopolas being the AS,000 in 111.
   The surface of pressure and 12.00 provides temperature 11.8°C, the device of 5.5°C, and the relative branding 70%.

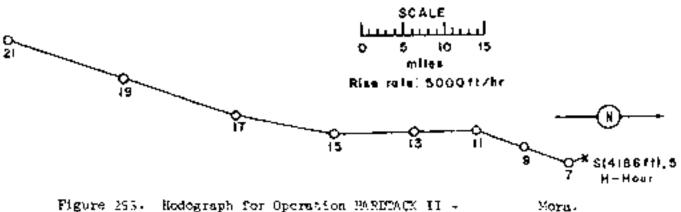


Figure 255. Hodograph for Operation PARDACK II -

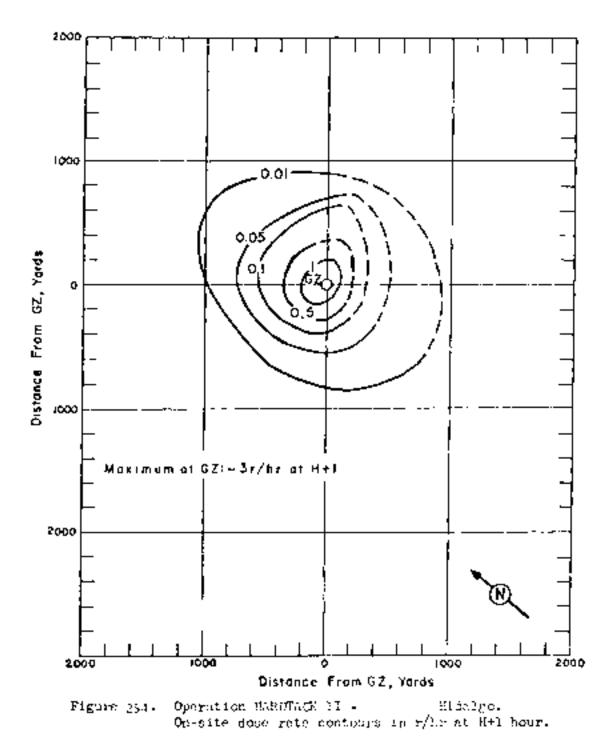
OPERATION SARDTACK II - Hidalgo Sufety Experiment.

PST CMT	Sponsor: 1.00L
MORE 5 Det 1997 , Det 1998 TOXES COLD 1410	$\underline{SITE}:  ME3 = Area ME $
r <u>01AL Y1810</u> : 77 tons	37° 65' 12" N 116° 61' 25" W Site elevition: 4,186 ft
F) <u>NGGALL DATA:</u> Time to lat minimum: NM Time to lat desimant: NM	HELCHT OF EURIST: STY IN
Radius at 2nd meximum: 184	TYPE OF MOST AND ILACCOUNT: Air bersh from a lloop sone
CRATHE DARAS So crater	Neverin coll
	CLOUD TOP (ECTART) - 10,000 (C. MCC CLOUD HOLTCH HERGER) - 0,000 (C. MCC

### REMARKS:

The on-site follout documentation was performed by the Redjological Safety Division of the Reynolds Electrical and Environmental Company For purposes of personnel cafety. Readings were taken with AM/FTR->) or Traceriab GU-16 instruments at N+3 hours, N+6 hours, D+1 hay, D+2 days and D+3 days along wight radial reads. The bodium-24 decay rate was used to extrapolate the doce-rate readings to S+1 hour. This decay rate is not strictly applicable although it closely approximates the observed decay.

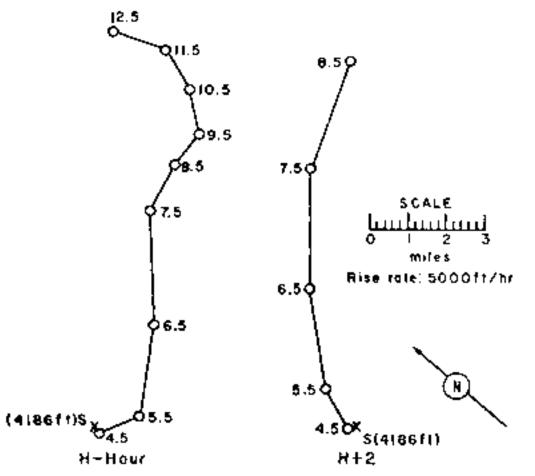
The initial of **f-site** survey did not reveal any activity above background. Approximately 24 hours after shot time, readings in the Hiko-Alamo-Calicate area indicated activity 2 to 4 times background levels.

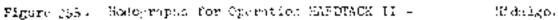


A11.05.05	1 No. 2	1-	(-) <sub>2</sub> -	a . <del>.</del> .
(M.C.)	70 <del>2</del>	11.4.15	1.17	· · · · ·
- Seet	ingen vis	ութե	drivine e	∼ <sub>e</sub> i.
Surface	545	01	110	62
5,000	300	Cΰ	2,00	0é
6,000	247	12	220	23
7,000	230	25	230	16
5,000	230	0 °	250	10
9,000	210	C/2		
10,0.0	220	o∛ .		
11,000	870	0-0		
12,0.		· _ ·		

TABLE SO DEVALA VIAD LALA DOR DESAUTOR DEPARTMENTS DE LO DA LE

P107 07 115-					• .			· •			:
10. A 1	62	1.1.1	N . 2	- CA 1912		r troa	1.1.1.1	2.427.2	247 a 1 1 4 2	- C. Y	100.4





OPSEATION MARDINGS II - Colfax Safety Experiment

$\frac{FS7}{D(T2)} = \frac{FS7}{5(C^{1}(T^{1}))^{\frac{1}{2}}} = \frac{CMT}{5(C^{1}(T^{1}))^{\frac{1}{2}}}$	Sponsor: 1A55
<u>TIKO</u> : CF15 1615	<u>5378</u> : MIG - Arm 37 <sup>0</sup> - MIG - Arm
TOTAL VIELD: 3.5 tons	116° Get by Star closed bac
FLREWEL (P. CA)	
Time to tel minimum: 201	<u>2010/011/011/25111-11</u> -
Time to ful mariners (30)	
Badices et Gen richtmussi (198	TYPE CP 20240 100 Debouettern einer
CLOCE FOR AN ANTAL STREET, AND AN AN AN AN	Revuer of all
	ADVIDE COMP. ALC.

4 N. 1975. 294 - PA

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CRATER (A CA

# REVANCE:

The or-site fallost discussion was positive a spiral build of all Shife by Dividian of the Reynolds Riegist a lagit by the plan Company. for purposes of personal out the Readings were to a site AREPE- to or Treewrine GUV... instruments at Brychenry Hermson. Tell seven a DHP days... The third benay approximation, we have a strong on the day term a condition to BHL bount. There we have the condition to be the bound of the second condition of the second condition. information from which to draw a complete performa-

No off-sile fallent.

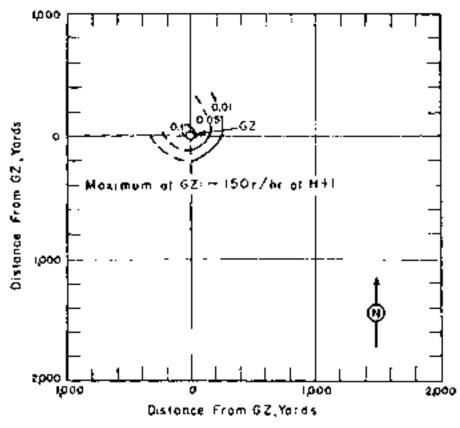
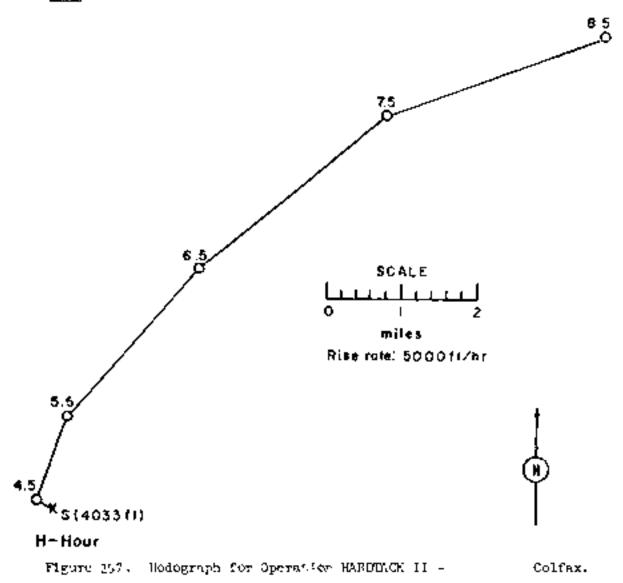


Figure 256. Operation WARDTACK J! - Colfax. On-site dose rate contours in m/br at S+1 hour.

Altitude	8-200	<u>بر</u> ۲
<u>(MS1.)</u>	710	Spece:
fect	degrees	៣រូបា
Surface	210	62
5,000	200	OG
6,000	220	13
7,000	230	16
8,000	270	

MOTE: Vind data was obtained free the function vestoer station.



413

OPERATOR CLADESCH II

Territers

	PST	GME
DATE:	5 0.41 1 44	l Chi tyva
TIME:	14 81	Svec

1052L ML040 - 72 Cons.

# E REPUBLICATION

- Time to lot scale of 224 Time to 2nd realization (22 Radius at Chi maximum) (22
- CRATER TATLE Network (55.54)

Sponsor: UCRL

- <u>SIN</u>: Sin Area 1, 1770 37<sup>0</sup> (11 - 1771 - 9 1109 (12 - 1371 - 9 Site el estructor - 6, 17 - 13
- <u>HETGERT OF 119927</u>: Vegetoend September NOT Die Diage 30 meter van neurope sonftwee September 1991 Die Diage 30 meter van 1991 Die
- <u>BB1067</u> <u>OF 1672-07 ABD 145 CD9072</u> Subscription (Construction - Construction Network) and C
- <u>CLOUD TIT AUT (657)</u> 204 CLOUD FOUTUET (1977) - 204

# RIMARES:

The un-off schildst inconstabler was performed by the Britshep el-Safety Division of the Republic Cleateries and Angle only Company for perpass of presenced cafety. Realines we can swith AN PEN-of or Tracepter SH-1 contestants at Britsher. We extend out and a decay was accounted the feature at Britsher. We extend out and a decay was accounted the feature off of the state of a support part of the Leonel contil. A regumentation off of the tester of a support part of the definis toward the state off. The pattern present will solve up as certain.

No activity above back, mound was detected off-site.

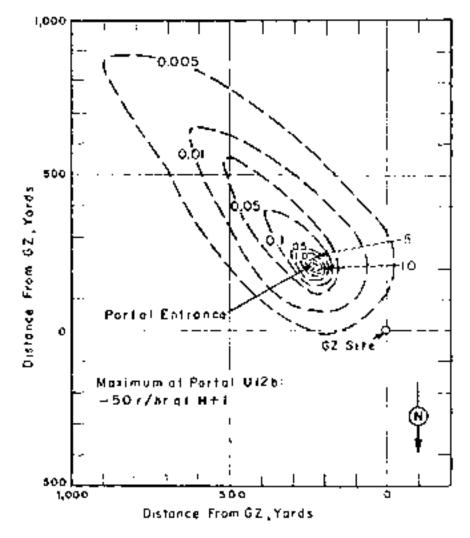


Figure 258. Operation SANDEACK 11 - Duralpaid. On-site does rate convolre in ryne at 8+1 power

		SURV	CREWENC	
	9 foot M	leca	100 foot	- Necon
TIME	Slope To	a cr	M Jontain	Tower
	(Elev. ( ft.MSL)		(Slev. 7 MSL)	,565 rt
	DEpr 2		Li p	Silvert
	énginana.	eð er	de Crano	l.u
H-hour	360	9	270	17
H+) hour	360	9	280	216
H+2 hours	361	i i	270	38

TABLE 82 NEVADA WIND DATA FOR OPERATION EXEDITACK II- DAMAIDATO

OPERATION EARDTACK 11 -

Quay

	PST	GMT
<u>DATE:</u>	10 Cat 1955	10 OFE 1993
TIME:	6630	1430

TOTAL YESD: 79 tons

FINEBALL DATA:

Time to 100 minimum; NM Time to 200 miximum; NM Redius at 2nd maximum; NM

CRATSE DATA: No eroter

Sponson: LASL <u>SITE:</u> NIB - Aren 7c  $37^{0}$  C5' 41" N  $116^{0}$  C1' 25" W Site elevetion: 4,2-9 ft

HEIGHT OF MARCEL 100 CU

TYPE CY RUNDT AND PLACEMENT: Tover Suger System Nevada Usia

CLOUD FOR HEIGHT - 11,140 (\* 1951) CLOUD BOTTON GERGER - 7,200 (\* 1951)

#### REMARKS:

The on-site fallout documentation was performed by the Rediclopical Safety Division of the Reynolds Electrical and Applacering Company for purposes of presence cafety. Readings were taken with AM/2DR-55 or Traccrist SU-10 instruments at M+1 hour, W+6 nound, D+1 day and D+2 days along wight radial roads. The  $t^{1+2}$  decay approximation was used to extrapolite the doce-rate readings to M+1 hour. The failest was well documented and the pattern is ethnicered fairly reliable.

The off-site fallout documentation was partorned with Beckern MX-3 and AN/PER-39 instruments by the U.S. Public Scalth Service for purposes of public asfety. Readings were taken at about 10-sile intervals except in populated places or when the about 10-sile considerably with distance. The  $t^{-1/2}$  decay approximation was used to extrapolate the dose-rate readings to H+1 hour. Since this event was well documented, the pattern is considered to be reliable.

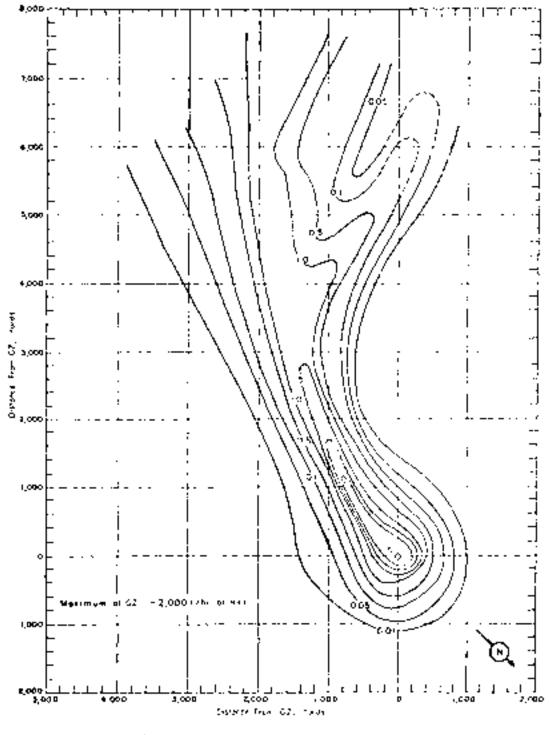
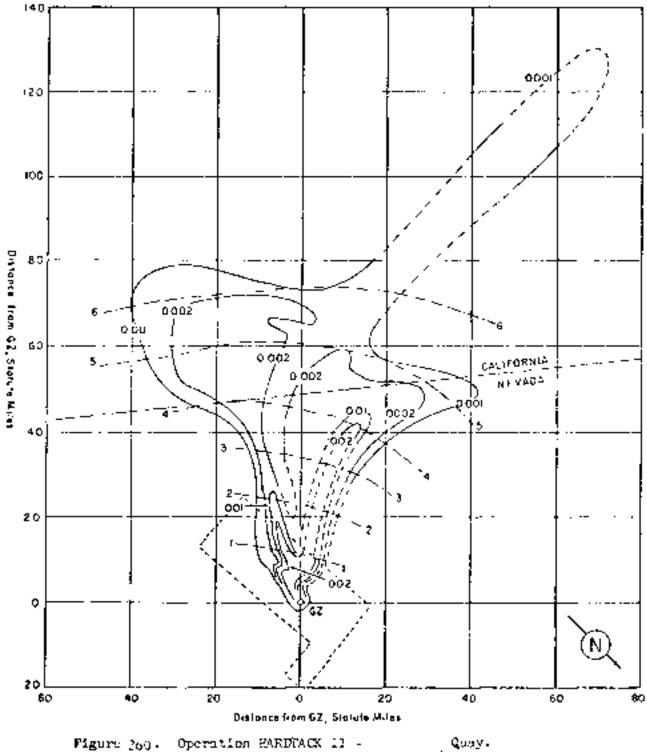


Figure 359. Operation MARTTACN II =  $$Q_{\rm MP}$. On-site does rate contours in <math display="inline">r/{\rm hr}$  at 0+1 hour.



Operation PARDFACK 11 - Quay. Off-site dose rate contours in r/hr at H+1 hour.

TABLE 8	IS NEVADA	NINE DAY	FOR	OP INTER	PARIMACK	11-
---------	-----------	----------	-----	----------	----------	-----

Altitude	hi-hor:	r
(ESL)	Nr.	Cp. ed.
feet	degrees	ຫຼັນລ
Surface	300	08
5,000	Č20	18
6,000	030	22
7,000	040	22
8,000	070	14
9,000	C9C	09
10,000	060	15
11,000	020	13
12,000	CSC	C*

NOTES:

- 1. Wind data was obtained from the faces worther station.
- The surface air pressure was 12.70 pct, the temperature 11.370, the dew point 2.7°C, and the relative humidity 20%.

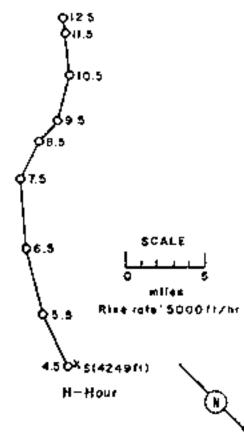


Figure 201. Hodograph for Operation HARDTACK II -

Quey.

Q(0,Y)

OPERATION SARDCACK II -

.....

Lea

	FST	CFT
DATE:	13 Oct 1958	13 Oct 1(4,5
TIME:	0520	1320

### TOTAL YIELD:

### FIRSBALL DATA:

Time to lot simisant NM Time to 2nd resitum: NM Radius at and maximum: NM

CNATER DOLL: No prater.

Sponsor: IACL <u>SITE:</u> NTO - Area Th 37<sup>9</sup> 05<sup>1</sup> 12<sup>10</sup> 5 116<sup>9</sup> 01<sup>1</sup> 05<sup>10</sup> W Site elevation: A,186 ft

HEIGHT OF REPORT: 1,7 No. 25

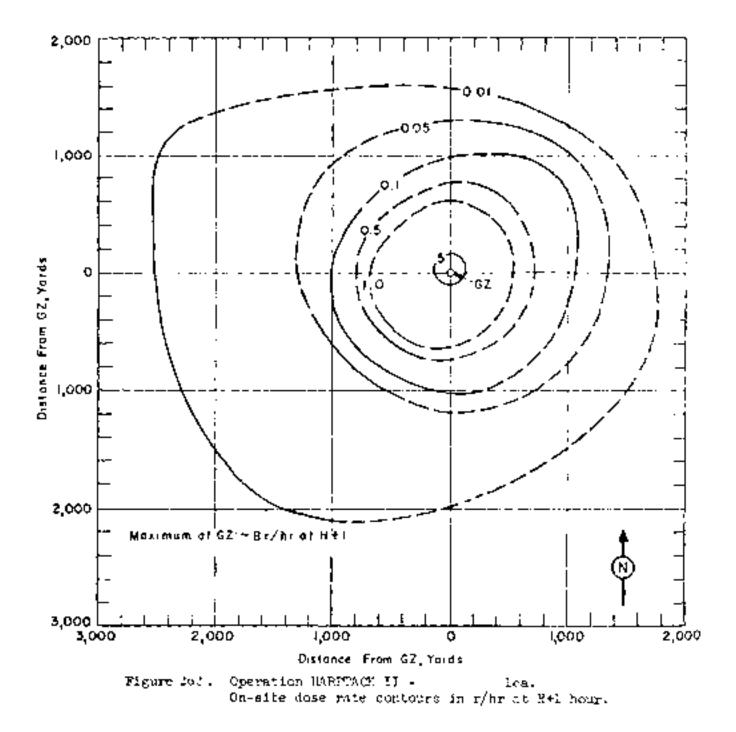
TYPE OF BURGE LED ILLOSS WE Airburge drugt sail on over Nevels soil

CLOUP THE SECOND CLASS CONTRACTOR SECOND

## PEMARKS:

The on-site fallout documentation was performed by the Rediclotical Safety Division of the Reyntlds Electrical and Engineering Company for purposes of personnel safety. Readings were taken with AN/FOR-30 or Tracerlab SD-10 instruments at H $\tau_1^2$  hour, H $\tau_2^2$  hours, D $\tau_1^2$  days along wight radial reads. The sodium-24 decay rate was used to extrapolate the disc-rate readings to H $\tau_1^2$  hour. This decay rate is not strictly upplicable although it closely approximates the observed decay.

The off-site fallout documentation was performed with Beckman MX-5 and AN/PDR-39 instruments by the U.S. Public Health Service for purposes of public safety. Bondings were taken at about 10-mile intervals except in populated pinces or when the doce rate varied considerably with distance. The t  $^{1+2}$  decay approximation was used to extrapolate the doce-rate readings to 341 hour. The pattern is not reliable.



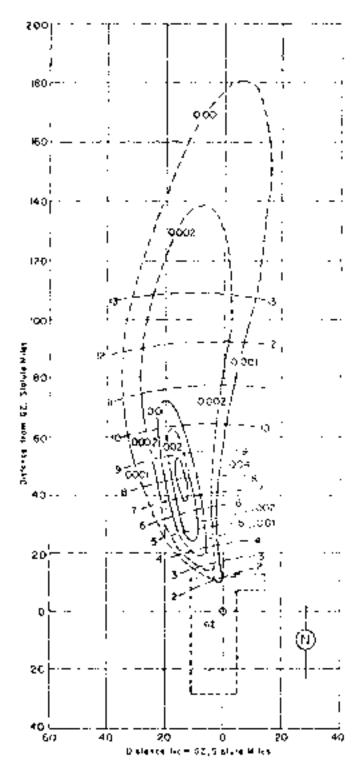


Figure 263. Operation HARDMACK II = Lea. Dif-site door rate contours is r/hr at H+1 bour.

TABLE 84 NEVADA WIND TATA FOR OPERATION HANDLACK II-

Altitude -	K-hour		
(MSL)	Dir	Spred	
feet	degrées	with µ	
Surface	200	61	
5,000	330	03	
6,000	170	¢3	
γ,000	160	- C9	
8,000	190	10	
9,000	200	୍ର	
10,000	190	10	
11,000	170	- 02	
12,000	150	07	
13,000	130	05	
14,000	210	03	
15,000	066	- 03	
16,000	020		
17,000	360	12	
18,000	360	14	
19,0CC	350	14.	
20,000	360	16	

- NOTES: 1. Wind data was obtained from the Yours weather station. 2. The curface air processre was 12.73 poil, the temperature 13.4°C, the dem point 4.3°C, and the relative homisity and

LEA

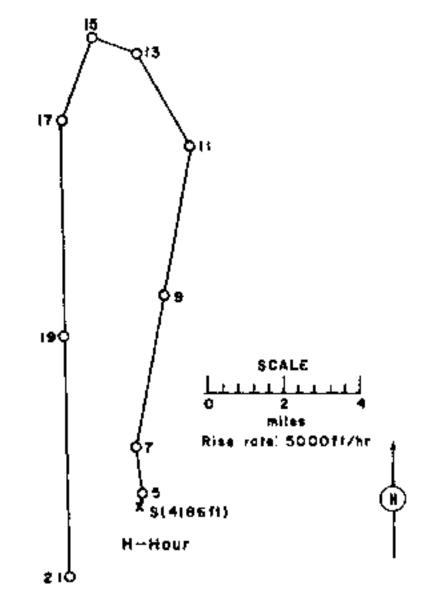


Figure 264. Hodograph for Operation MARDIACK II - Lea-

OPERATION SARDDACK IS - Septime Safety Experiment

		un	Sponsore UCEL
DATE: TIME:	94, 5, 5, 1, 7, 5, 1, 4, 6,4 1,457 (2006)		$\frac{51725}{377} = \frac{3700}{377} = \frac{377}{10} $
IGFAL Y	TEAD: 148 tons		116° (1° 57° % Sibereley times (1° − 2)
FIREWILL SAME			
Time	tillet Handbruck 13		MAIDER CHARTERSTER
Time	to Ché rexinera - XV		below and the spectrum was not
Madi.	os gl 2og − ximus	124	distance of the control of
0(0/033)	8 <u>117</u> 9		TYPE OF STATE AND STATES
Maar	Rometors 2 + pt		Sideste stant second - december
Kaxir	num Deptics 🕴 🖓 👘		Newson cost of the description of
$Q_{TT}$ to	er located on a pri-	al spe	
			CLOVE THE LEVELOPMENT OF A DECK
			CLOUP FOLIA CONTRACTOR

# REMARKS

The on-site failest deconstation was performed by the Subiological Safety Division of the Reypolds Electrical and Englacement Curpley for purposes of personnel engaty. Readings were taken with AN, FLR-is or Traceriab SU-). Instrumental file  $1^{1+2}$  decay approximation was used to extrapolate the doce-rate readings to Brithern. The National explosion verted tarough the mean alope at an elevation of whole  $\xi_{\rm s}800$  feet. The pattern is considered fairly reliables.

No activity above background levels was reported off site-

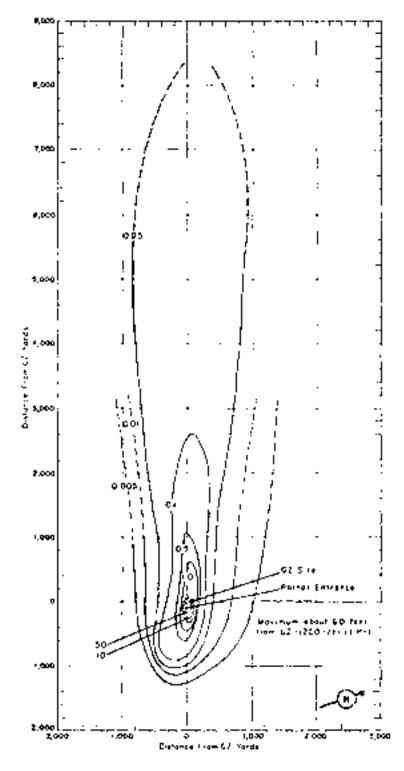


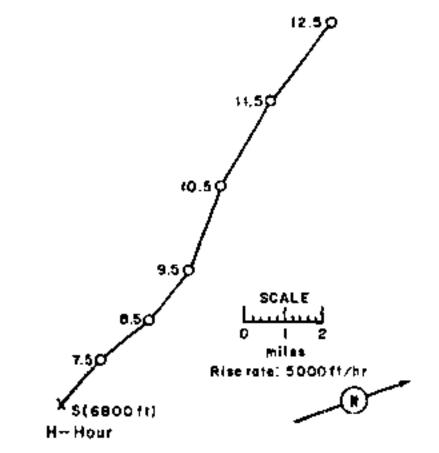
Figure 365. Operation MARDIACK II - Neptune. Op-site dose rate contours in r/hr et H+1 hour.

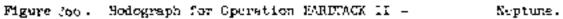
Altitude	H-nour		
(MSL)	1217	Consect.	
feet	dogreeu	ունել	
Surface	260	C2	
5,000	030	ავ	
6,000	210	Ø?	
7,000	250	- 99	
8,000	160	c8	
9,000	250	-08	
10,000	130	12	
11,000	14C	13	
12,000	250	13	

DEPTT: DIP

TABLE 85 NEVATA MIND DATA FOR OPERATION HARDTACK II -

NOTE: Vind data was obtained from the Yucca weather station.





OPERATION MARDIACK II - Humilton

	PST	Q(T
DATE:		15 Oct 1998
TIME.	6866	1,600

TOTAL YIELD: 1,2 tons

TREPALL DATE:

Time to lot minimum: 135 The to 2nd maximum: 124 Radius at 2nd maximum: NX

CHATER MOA: No ernter

SITE: NTS - Area 21 36° 48' 38" -34 115° 55' 56" W Site elevation: 3,184 14

Spandar: UCRL - 100

HEIGHT OF BURGT: 50 Pt

TYPE OF BORST AND PLACEMENT: Tower burst over Nevada soil

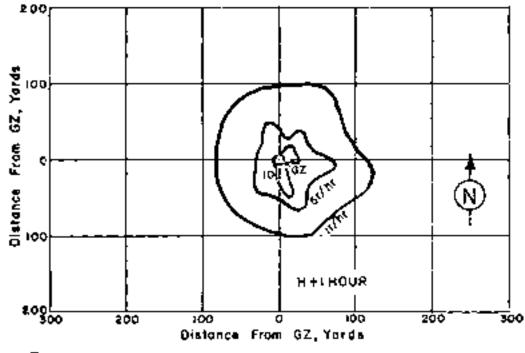
CLOUD TOP REAGAT: S,000 FE MEL CLOUD BORION HELISHT: SUCCE IT MSL

#### REMARKS:

The close-in fallent decumentation was performed by the First Radiological Safety Support Unit. Measurements were acts with AN/PER-39 instruments along 12 equally spaced voice: lines with GZ at the center. Servey points were determined by clased placed at 100 yd intervais on each line out to 800 yd. The experimental field gamma-decay corver were addinged to construct the NC-hour docerate contours. The field gamma doce-rate decay survey indicated the presence of eignificant fission-product contomination. The gauna dose-rate at Hel hour from the newtron - induced activity was estimated to be from 20% to 30% of the total done rule. The pattern presented in reliable. The devaward extent of the .Gi r/hr contour shown in figure 445 is uncertain but the rest of the pattern is considered to by reliable.

The off-site fallout documentation was performed with Beckman MX-5 and AN/PDR-39 instruments by the S. S. Fublic South Service for purposes of public safety. "The pattern was relatively well documented and is consistent with the wind analysis" (Reference 138). Whe think decay approximation was used to extrapointe the dose-rate readings to R\*1 hour.

The alpha contamination pattern was optnined from survey readings taken with Eberline 35 instruments.



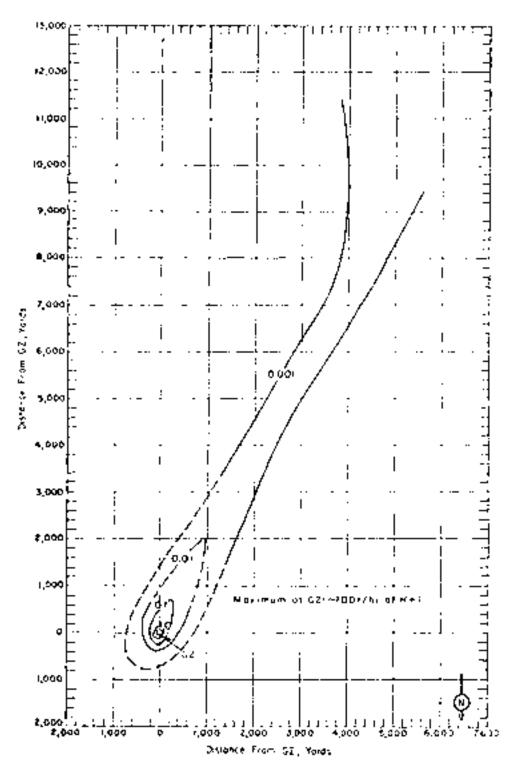


Figure 268 - Operation HARDTACK (I - Homilton, Gn-mite door rate compours to r/br at U-1 bour.

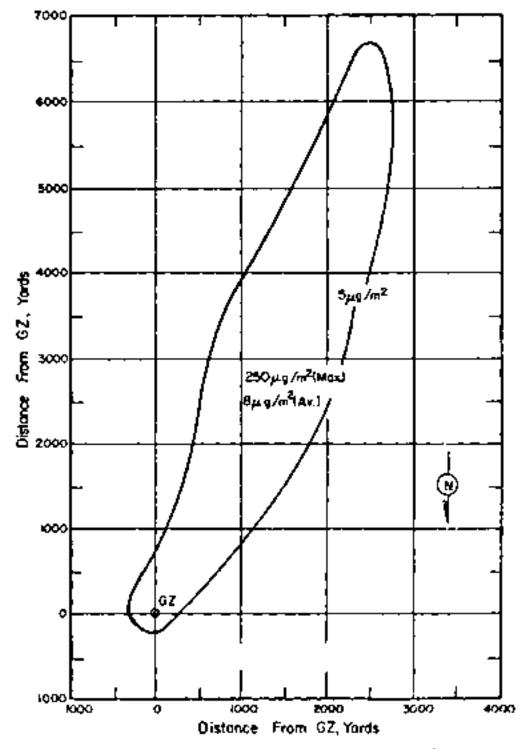


Figure 209. Operation MARDIACK II - EamElton. Alpha contamination in micrograms per equare moves.

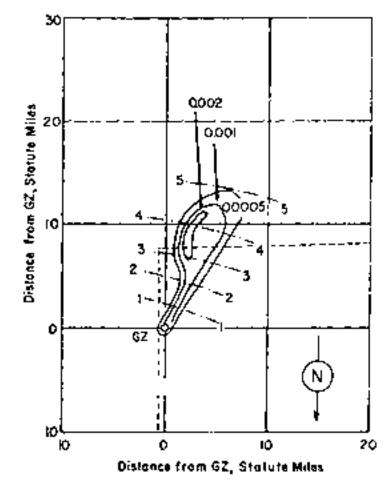
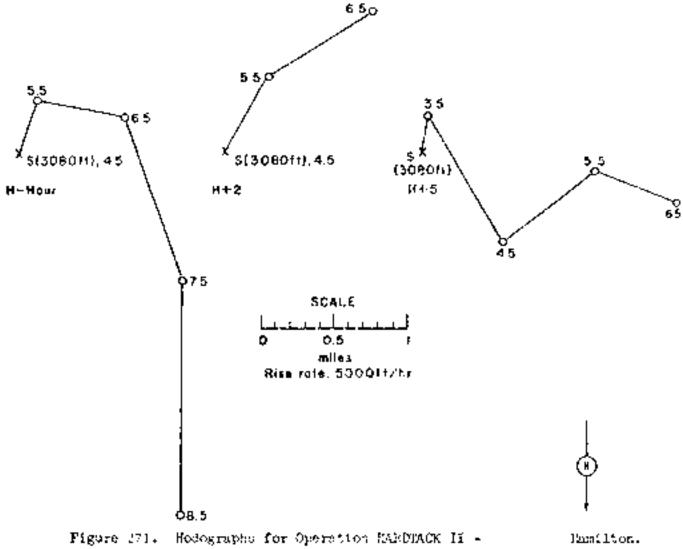


Figure 270. Operation HANDFACK II - Hamilton. Off-site dose rate contours in r/hr at 0+1 hour.

Baziliotta

Altitote	!!- <b>!</b> .<:		84° (	11 M 11	1	· · · : [1:
(NOL)	Dir	$1 \sim 1$	- i i i			1.4 1
foret	degrame		de priec	· : : ·	Jersened	: . <u>.</u> :.
Surface	Calm	Calm	Cole	Calm	212	03
4,000	360	C2	360	02	160	05
5,000	620	CS	030	03	0,0	Ch -
6,000	100	03	060	C4	140	C ?
7,000	160	03 06				
8,000	180	cR				<b>.</b>

<u>NOTE:</u> Vied data was chis and then the Yours weather wind log and rep not be represented the of the wide of the ended of the Flat.



# operation encoded if -

bogun

	PGT	C
<u>5\TC:</u>	15 OCC 1997	10 0 M 19 8
TCNE:	2200	1660

TOTAL YEARS - LOCKE

Sponder: COL

Mevela coll

<u>SITE:</u> NTO - them line if 377 111 and T 1169 101 and T Site elementions d.14, 55

<u>ныпонуток зачаки</u> нады ил. Колостийского марти 930 го

TTPE OF 19740 - 107 (1177 (N.W.) Boberterner - Conto - Chatser 16

PERSONAL SACO:

Time to let concerns (M) Time to Chi mavin no (M) Raitus et Pri maximus (M)

CRATER DATA: State average and a

### REMARKS:

The Logic burnt was supported y went field on the price as sufficient for from this explosion was released into the same

OPERATION MARINACK II -

Dona Ana

	PS7	GNT
DATE:	16 Cot 1/5E	16 Cet 1753
$\overline{TIME}$ :	6620	1420

TOTAL YIM, D: 37 tons

- FIREBALL CATA:
  - The to lot minimum: 100 The to Pud carinest 100 Reduce at 2nd carryon 100

CRATER LAIA: No crater

Sponsor: LASE

2011 STL: 520 - 520 37<sup>0</sup> (2) 10<sup>0</sup> S 116<sup>0</sup> 01<sup>1</sup> 90<sup>4</sup> W Stup clovetions 1,50 ft

HEIGEN OF REACT: AND CU

TYPE OF LEWIT AND FLACEMENTS

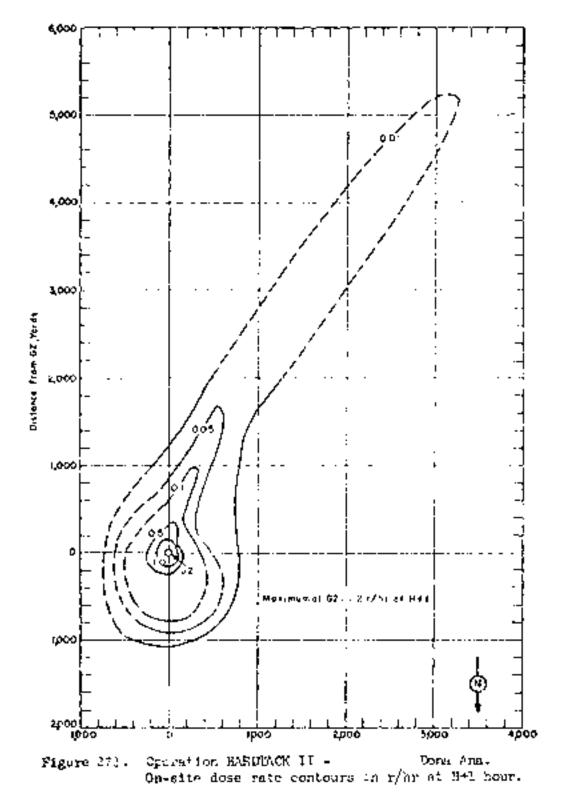
Air paret from welling of a Nevnin cori

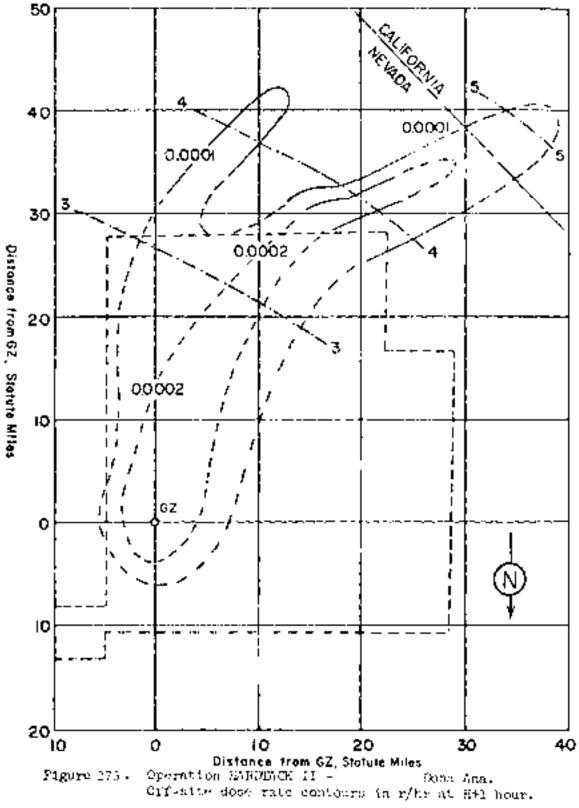
CLOUD TO! PERCENT: 11.400 PERCENT: CLOUD PERCENT: 11.400 PERCENT:

#### REMARKS:

The on-site fallout documentation was performed by the Radiological Safety Divis on of the Reynolds Electrical and Engineering Company for purposes of personnel safety. Readings were taken at U-1 down, 8+8 mours and D+1 down along eight radial reads. The pattern is not reliable since the down and extent of most of the isodown (incois not known and the new to the cost of ground zero was not monitored. The sodium-24 decay rate was used to extrapolate the dose-rate rendings to H/1 hour. This docay rate is not strictly applicable although it approximates the observed decay.

The off-site followt documentation was performed with Brekman MX-5 and AN/FDR-32 instruments by the U.S. Fublic Bealth Service for purposes of public antery. The pattern as drawn is not considered to be very reliable because of the uncertainties in desiing with activity only two or three times the background value. The t <sup>4+8</sup> decay approximation was used to extrapolate the dose-rate resulngs to M+1 hour.





Altitude	id-hori	7
(Mass.)	PS r	lig to et a
feet	deg mees	74.L
Surface	360	$C_{2}$
5,000	G2C	09
6,000	030	2.0
7,000	040	ĠŦ.
8,000	080	05
9,000	240	(c)
19,000	140	37
11,050	140	09
12,000	14-0	

NOTES:

- 1. Vind data was differed from the Years wester stations
- 2. Tropopulate welligt was 40,000 ft MAL.
- The states als pressore was 10.1% pair the temperature 13.7°C, the dev point -0.1°C, and the relative classify pair.

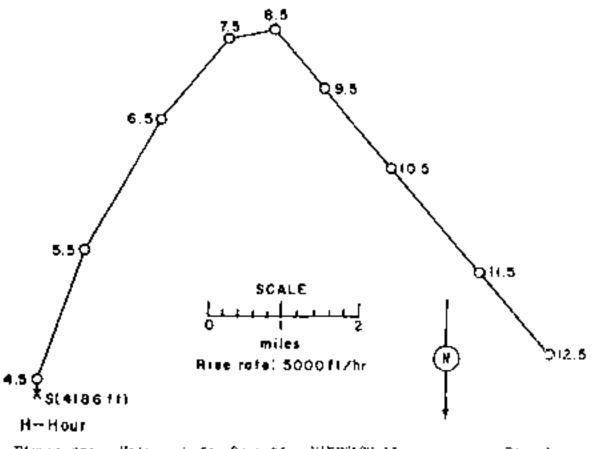


Figure 274. Hodograph for Operation NAPDFACK 11 - Dona Ana.

**OPERATION MARDIACK II - Vesta** Safety Experiment

DATE: 17 Oct 1950 (1950	Sponsor: UCRL
DATE: 17 Oct 1958 17 Oct 1958 <u>TIME</u> : 1500 - 2300	$\frac{\text{SITE}}{37^{\circ}} = \frac{\text{Area}}{21^{\circ}} \frac{36}{5}$
TOTAL THEED: 24 tons	116° 32' 35" W Site elevation: 4,206 f.
<u>FINERAL FATA:</u> Time to int minimum: NM Time to and maximum: 101	MOOST OF MARST: 20 TO SU
Redius at 2nd maximum: 12M	TYPE OF BERGT AND PLACED HID: Surface Corput in warmen
CRATER DATA: Not available	building with 20 mm of gravel over the building
	CLOUD TOP HERBERT: 10,000 (* MUL) CLOUD ROTTEN (* 17.55) to.

### REMARKS:

The on-site fullect documentation was performed to the Sadisberical Safety Division of the Reynolds Electrical and Environment Company for perposed of percentral and the second of the AN 795-- or Tracerlab SU-10 instruments at H\*1; spaces, D+1 cay and D\*2 ages. The pattern was well documented and obvic be reliable. The 14.8 decay approximation was used to extrapolate the documente of another to H+1 hour.

The off-site fallout documentation was performed with Seckman MX-5 and AN/PDR-30 instruments by the D. S. Batlie Bealth Service for purposes of public ratety. The follout pattern is considered rather uncertain, since there were few uncertain productives. The third decay approximation was used to extrapolate the dozerate readings to BMI hour.

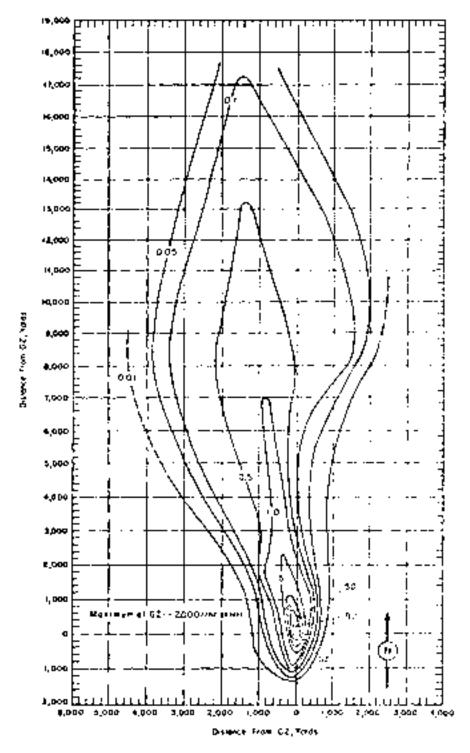


Figure 275. Operation MARUTACX II - Vesta. On-site dose rate contours in r/hr at H\*1 hour.

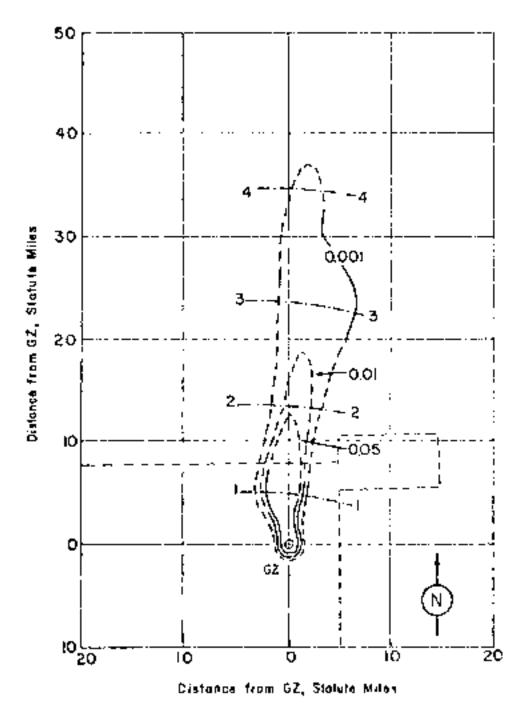


Figure 1999. Operation MARCACY II - Wester Off-site done gate contears in myor at h+1 hour.

$TA(B(\mathcal{X}))$	55	NEVADA	VIND	DATA	FOR	OFFERENCE	RAEDTACK	(I <del>.</del> -

Aitstude	II-Sour	
(MSG)	Ulr	Speed
feet	degrues	alt 11
	160	01
Surface		07
5,000	180	12
6,000	290	11
7,000	190	14
8,000	200	12
9,000	210	10
10,000	210	38
11,000	200	09
<u>12,00</u> 0	180	<u> </u>

NOTE: Wind data was obtained from the Yucca wowther station.

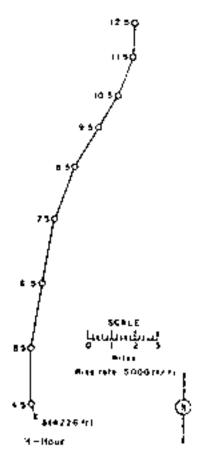


Figure 277. Modograph for Operation MARDACK II -

Vests

753236

OPERATION WARDTACK II -

Rio Arriba

	PST	CMT
DATE:	18 Oct 1958	18 Oct 1958
TD4E:	0625	1425

TOTAL YINLD: 90 cons

FIREBALL DATA:

Time to lot minimum: NM Time to 2nd muximum: SM Radius at 2nd muximum: NM

CRATER DATA: Not available

SITE: MTS - Ayea 3s 37° C2' 28" M 116° 01' 33" W Site elevation: 4,010 rt

Sponsor: LASE

HEIGHT OF BURST: 12.5 Ct.

TYPE OF BURST AND FLACEMENT: Tower burst over Nevada cost

CLOUD TOF HELGER: 12,500 CC MOL CLOUD DOTTON RECORD: 11,001 CC MOL

### REMARXS:

The on-site failout documentation was performed by the britistation Safety Division of the Reynolds Electrical and Enviorence Chopany for purposes of personnel dafety. Readings were taken with AS/ADB-My or Traceriab SD-MC instruments at B-1 hear. N=6 hears, D-1 day, D-2 mays and D+3 days along citti radial reads. The fullost was well encounted and the pattern presented is considered to be rollable. The t<sup>-1-0</sup> decay approximation was word to extrapolate the doce-sate readings it H+1 hour.

The off-site fallout documentation was performed with Beckman MX-5 and AN/PDR-30 instruments by the U.S. Public Health Dervice for purposes of public safety. Readings were taken at about 10-4000 intervals except in populated places ar when the doce-rate variad considerably with distance. The downwind extent of the 1000 and 00000 r/hy isodose rate lines to uncertain. The rest of the fallern was well documented and is reliable. The  $t^{11/2}$  decay approximation was used to extrapolate the dose-rate readings to 4+1 hour.

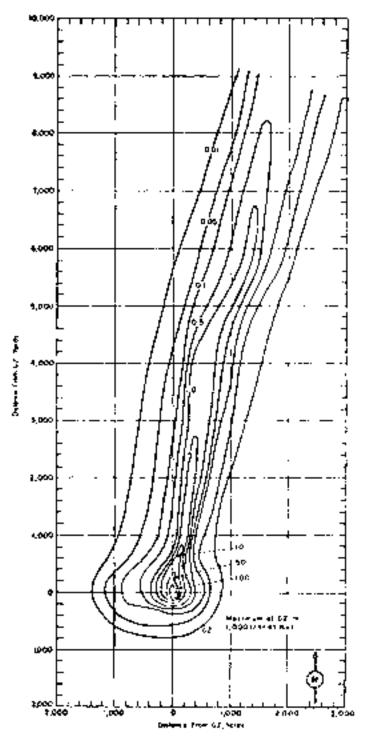
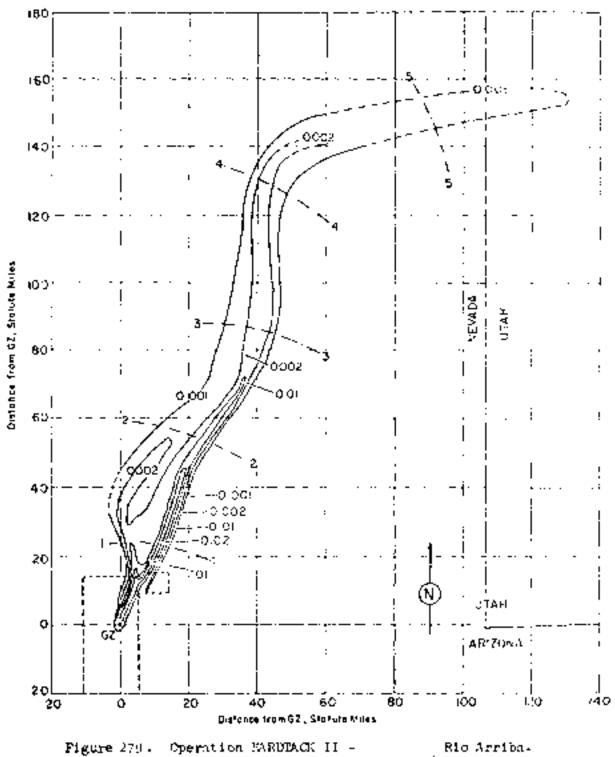


Figure 278. Operation HANDDACK 11 - Rio Arriba. On-site dose rate contours in r/hr at H+1 hour.



Operation MARDIACK II - Rio Arriba-Off-site dose rule contours in r/hr at H\*1 hour.

Altitude	H-hour		
(MSL)	D1 T	Spring	
feet	degrees	n; t:	
Surface	170	C2	
5,000	180	C9	
6,000	200	24	
7,000	200	35	
8,000	200	37	
9,000	2(4)	- 33	
10,000	210	35	
11,000	570	38	
12,000	210	40	
13,000	510	40	
14,000	210	- 38	
15,000	200	- 36	

NOTES:

- 1. Vind data was obtained from the Yucca weather station.
- The surface sim procesure and LP.75 psi, the temperature 9.3°C, the des point -10.3°C, and the relative huminity 2.4.



o Arriba.

OPERATION MAROTACK II - Sam Juan Safety Experiment

DATE:	PST 20 Oct 1958	<u>CMT</u> 20 Oct 1968	Sponsor: IACL
	C630	1430	<u>SITE</u> : N2S - Arve 3p 37 <sup>0</sup> 03' 0" N 116 <sup>0</sup> 01' 50" W
			Site elevation: 4,033 (t
			HEIGHT OF BUDGT: -234 FU
			<u>TYPE OF BURGE AND FLACEMENT:</u> Subsurface Lurst - Well in Nevada soll
			CLOUD TOP SERVICE SER CLOUD SOTION (100080): 184

# REMARXS:

"There was essentially no nuclear yield from the Sam Juan explosion, and no visible venting occurred. There was, however, some alpha contamination detected in the immediate visibility of the well in which this device was detonated" OPERATION WARDTACK II -

FIREBALD DATA:

Scorro

	PST	CMT .
<u>DATS</u> : TIMS:	22 061 1955 6530	22 Oct 1950 1330
<u>totai.</u>	<u>YIELD:</u> 6 kt	

Time to lot minimum: 34

Time to 2nd maximum (74 Region at 2nd maximum - NM Sponsor: IASL

<u>SITE</u>: NTS - Arva 75 37<sup>9</sup> 05<sup>4</sup> 12" N 116<sup>0</sup> 01' 25" W Site elevation: 4,105 ft

HOLDER OF SURGER 1, YOU'RE

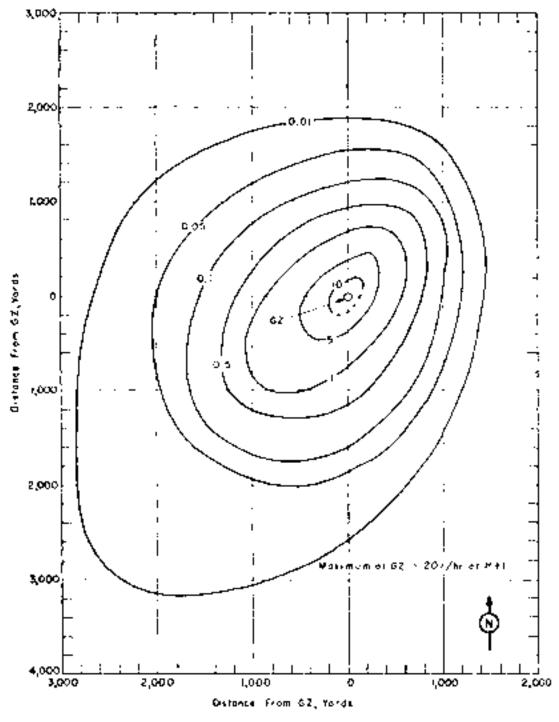
TYPE OF EVENT AND ILACIMENT: Algo burst from (all you over Neventa coli)

CLOUD TOP HELICHTY (CONJUNCT MOL CLOUD ROTTOM SCIENT: CONJUNCT ON MOL

### REMARKS:

The contomination was due primarily to induced activity. The possite measurements were performed by the Redictorial Sefery Division of the Reynolds Electrical and Engineering Company for purposes of personnel safety. Readings were taken with AN/PDR-29 or Transmiss Simil instruments at 9\*1 hour and D\*3 days. The sodium-D4 downy rate was used to extrapolate the down-rate peadings to H\*1 hour. The pettern was relatively well documented and is considered to be fairly reliable. The decay rate used is not strictly applieable although it closely approximites the abserved decay.

Scentro was the first of three nuclear detonations to occur on the tame day. The trujectory analysis for these three events indicated that all the clouds should have been transported in the same general direction; therefore, no off-site pattern is presented for this shot.



AINIGHT	E-1.1		<u></u>		<u> </u>	
(MS1.)	Di 🛫	Speed	127	a <u>s</u> erve f	10 E	di ned
feet	degreen	- <b>F</b> (1	degraes		ar 120-01.	st.pei
Surface	390	C3	090	02	$(h_0)$	05
5,000	116	- 66	060	00	176	-08 
6,001	100	07				
7,00	130	C9				
8,420	210	10				
9,000	160	10				
10,010	189	35	210	1	2.5	19
11,000	190	13			·	
12,000	230	ιē	230	12	221	26
13,000	230 240	19 18				
بالتبار الر	pi, 1	27	••-		•	
15,00	: No. 27	0.7			<b>.</b>	
1670-0	. 1:17	1.99				
17, 3	2007	6.9				
18,500	1.14	4.9 16		• •		
29,000	224	15	·			
$\infty$ , see	225	<u>1</u> Š				
21,000	<u></u>	22				
pe, or	2011	16				
22,000	22	29				
:4,000	210	23				
25,000	220	25		•-		
26,000	220	25			<b>.</b>	
2600	.220	25				

TABLE OF MEWARA WINE DATA FOR OFERATION BARDWACK II - COCORROL

NOTES:

1. Wind data who obtained from the Yueea weather station.

2. The suprace air produces was (Deed pair the temperature of "C, the dev point  $-1^{1}$  . TO, and the relative humidity  $1/k_{\rm c}$ 

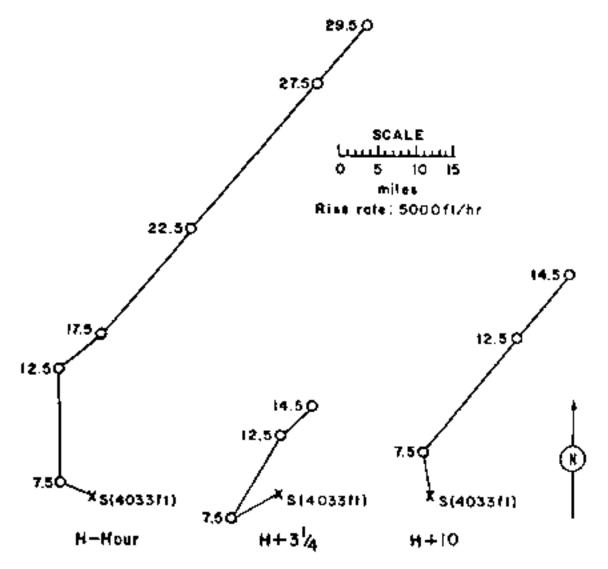


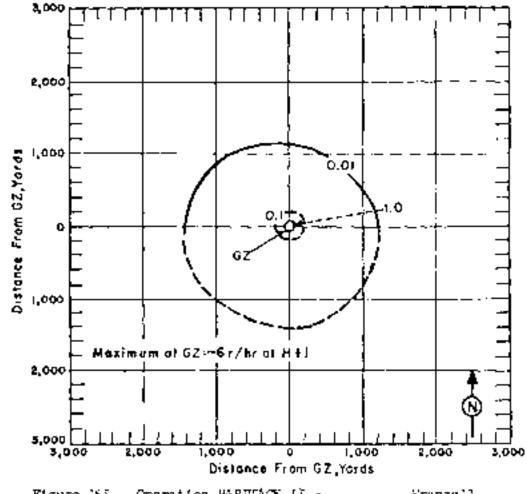
Figure 282. Rodographs for Operation MRDDACK II - Socorro.

OPERATION MARDIACK II -	Wrangell
PST CMT <u>DATE: 22 Det 1958 UP Cet 1958</u> <u>TIME</u> : 0850 1650	Sponsor: SCH0.
TOTAL YILLD: 115 tons	<u>SRTE:</u> NIS - Area Fa 36° 47' 53" N 215° 59° 44" W Site elevation: 3,8%/ ft
	HEIGHT OF EVERIT: 1,500 of
<u>FIREBALL (M.74</u> ) Time to lot minimum: NM Time to foid maximum: NM Radius at Poi maximum: NM	TYPE OF 19700 ADD (1970) MET Air Sarst Crus Callson Syre Nevada Spil
CRATER INCA: No crater	CLOUD TOP HE GREE A SPECIFIC SEL CLOUD TOPICS CLUBER (SPECIFIC SEL

## REMARKS:

The contuminations was due primarily to induce instituty. The on-site measurements were performed by the Radioligical Catety Division of Reynolds Ricctrical and Registering Company for perpisses of personnel safety. Readings were taken with AN/FDR-g) or lyandonau 20-10 instruments. The sodius-24 decay rate was doed to extrapolate the doce-rate readings to H+1 hour. This decay rate is not strictly applientle although it closely approximates the observed decay. Decause of the lack of data in some areas around ground zero there is not a high degree of confidence in the analysis of the on-site pattern.

The off-site fallout documentation was performed with Beckman NX-5 and AN/PDR-30 instruments by the U.S. Public Mealth Service for purposes of public sufety. Three nuclear detorations becaused on the same day. Since the trajectories for these three events were in the same general direction, there was some difficulty in detormining from which shots the observed fallout originated; therefore, no offsite pattern is presented for this shot.



Altitude	<i>‼</i> ∞ho:	ч <del>г</del>	₩+3 b:	0076
<u>(MCC)</u>	P1 7	Steed	<u>i ! :</u>	(peed_
feet	degrees	mph	degrees	2.245
Surface	<b>ee</b> e	02	140	<b>O</b> ()
5,000	060	- 09	170	68
6,000	110	14	190	10
γ,000	140	34	210	17
8,000	170	13	250	15
9,000	190	13	230	177
10,000	210	13	220	19
11,000	550	<b>1</b> 4	220	23
12,000	230	12	220	20

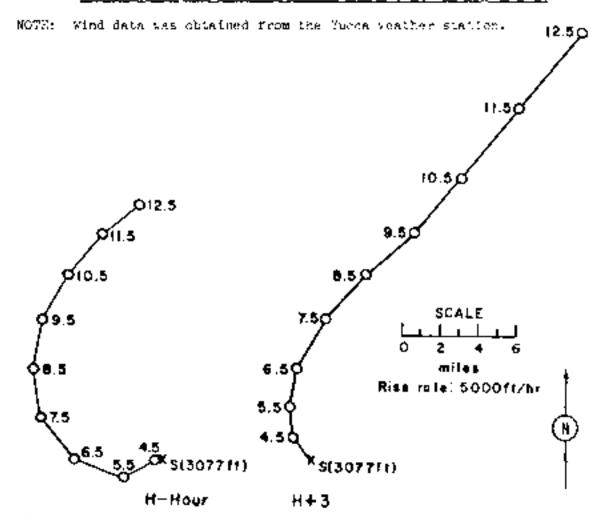


Figure 284. Hodographs for Operation PARDTACK II - Vrangell.

OPERATION FARMACK II - Oberon Sufety Experiment

P5T DATS: 22 Cet 1993 22	<u>(2417</u> S)	ponsort UCRL
<u>TIME:</u> 1250 201	30 <u>SITE</u> :	: MIS - Aros 6a $37^{\circ}$ 10' 42" M 116° 04' 03" W te elevation: 4,446 ft
	HEIGI	HI OF BURGT: 25 fr
		OF 19822 AND PLACEDORY: Wer Lunst over Novada soil
	CLOU	D TOR NEIGHT: - Very 1 om D BOTTERS (117981): - MM

# REMADORS:

No fallout - some alpha contamination.

OPERATION MANDIACK 11 -

Rushmore

	PST	CPCT .
DATE:	201 045 1996	22 0et 1258
TIME:	1540	2340

TOTAL Y1(0,0) 188 tons

FIREBULL DURA:

Time to lot minimum: 2 mage Time to 2nd maximum: 21 mage Radius at 2nd maximum: 324

CRATES SALA: No crater

Sponsor: UCRL

<u>SITE:</u> MIS - Area 9a 372 081 05" M 110" 021 27" W Site elevation: 4,244 55

MAIGET OF BARATE SCO FL

TYPE OF SIRUP AND PLACEMENT: Air horat ("nom lallout, prog Nevels auti

### ES ADECE

The contation is is due privarily to induced activity. The on-site measurements were performed by the Reficienced Catery Division of Reynolds Electrical and Nationaries Company for purposes of percented safety. Realists were taken with AG/DR or Tricerial SC-10 instruments at 54, hear, bill day and 050 mays. The solicitable (easy rate was now) to extrapolate the dome-rate modility to 341 hear. This decay rate is not strictly applicable although it closely approximates the stserved decay. Because of the lack of data in some areas around ground the of the is not a high degree of confidence in the pattern.

Three nuclear detonations becarred on the same day. Since the trajectories for these three events were in the same general direction, there was some difficulty in determining from which shots the observed fallout originated; therefore no off-site pattern is presented for this shot.

CLOUD FOR USIGHT: C, CC C, MCL CLOUD TO CLOUD CLOUT: CON available

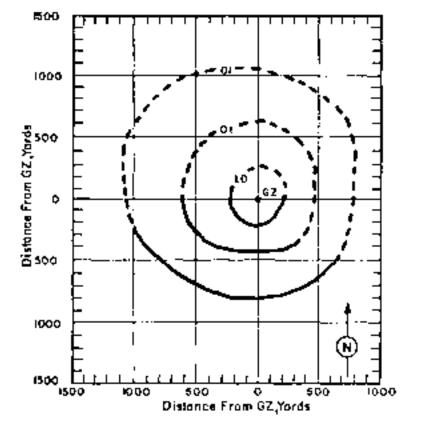


Figure 285. Operation WARDTACK II - Rushmore. On-site doug rate contours in r/hr at E+1 hour.

Altitude	Shinour		
( <u>M</u> 324)	DIr	Speed	
fect	degrees	ಸ್ಥಾಗ	
Surface	140	05	
5,000	170	08	
6,000	190	10	
7,000	570	14	
8,00C	550	16	
9,000	230	17	
10,000	220	19	
11,000	220	23	
12,000	220	23 23	

NOTES:

- Wind data was obtained from the Yuces weather station.
   Tropapause height was \$2,000 ft MSL.
- The surface sin pressure was 12.66 ps!, the temperature 17.6°C, and the relative humidity 12%.

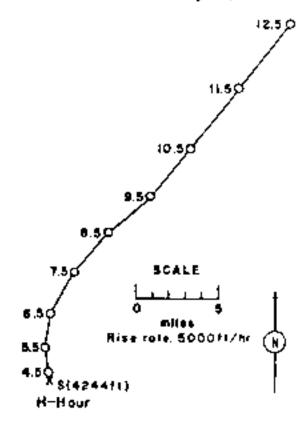


Figure 286 . Hodograph for Operation HARDTACK II -

Rushmore.

RUSHNORE

OPERATION MARDIACE 11 - Catron Safety Experiment

PST 2277 DATE: 24 Cold 1998 24 Cold 1998 TIME: 0700 1900

TOTAL YIELD: 31 tons

FIREBALL DATA:

Time to lot min.mome ISA Time to Red maximum: ISA Radius at Sed maximum: ISA Sponsor: LASL

<u>SITE:</u> NTC - Arma 3% 37° 02' 35″ N 116° 02' 37″ W

HERCHT OF BUILT: "2-5 St

TYPE OF HEART AGE STATE Tower Borus over Developer 1

CLOUD TOF HYDRATE (%,50% St MEL) CLOUD BOTTIN HERBITE (%,50% St MEL)

### REMARKS:

The on-site failedt isomentation was performed by the Badrouwical Safety Division of the Reynolds Sheethical and device ring Company for purposes of personnel safety. Peaking were taken with AN/HDS-39 or Tracerbie 50-10 instruments at Stj moor, Stj mourd, Dtl day and Dt2 days. The thirf device approximation was used to extrapolate the dose-rate readings to Sti hour. "The provide failed from Satron Was well documented and the pattern presented is a table red to be reliable. A special preside survey was very helpful in distinguishing between the Catron Failedt and the June failedt.

The off-site failest documentation was performed with Beckman MX-5 and AN/FDH-39 instruments by the U.S. Public Health Service for purposes of public safety. The  $t^{-2+3}$  decay approximation was used to extrapolate the dose-sate readings to H+1 sure. There is a great deal of excentainty in the off-site failent pattern because of the lack of data.

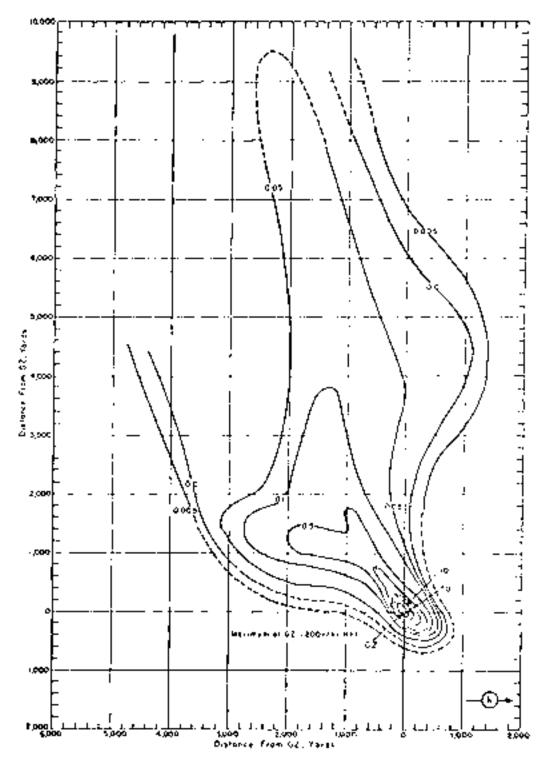


Figure 287. Operation EARDTACK II - Cniron. On-site dose rate contours in r/hr at H+l hour.

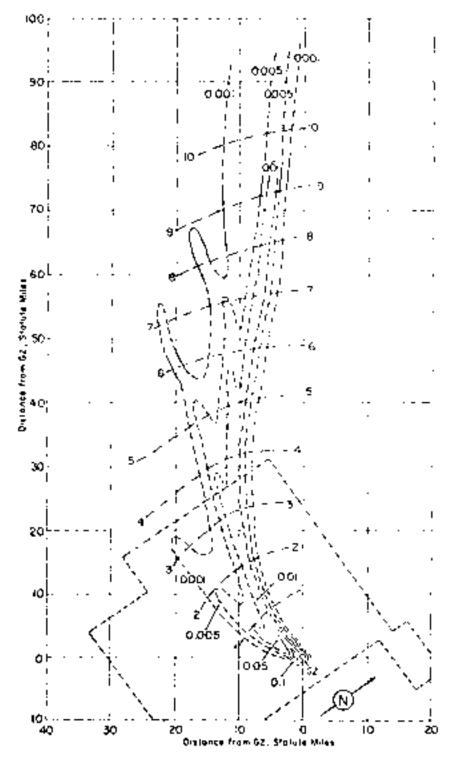


Figure 288. Operation HARDTACK fl - Catron. Off-site dose rate contours in T/hr at H+1 hour.

Altitude		ur 🗌		no:: 74
(MSL)	Dir	Speed		C: red
feet	ostices	nst.	acquees	ոլ).
Surface	C3C	02	360	05
5,000	640	09	030	07
6,000	C50	09	070	c5
7,000	670	69	100	10
8,000	110	12	110	14
9,000	120	16	120	15
10,000	120		123	17

NOTE: Wind data was obtained from the Surea weather station.

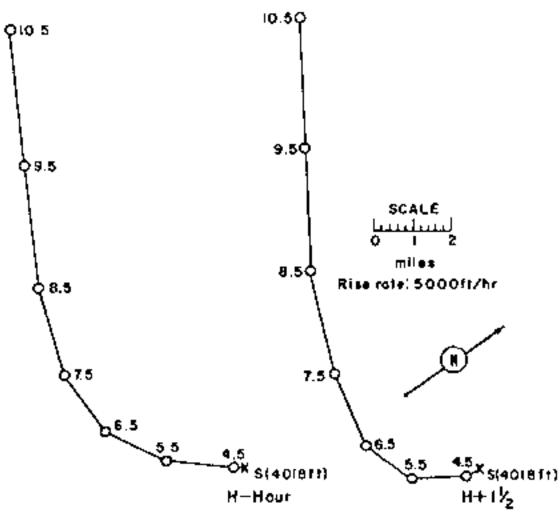


Figure 289. Sodographs for Operation MARDTACK II - Catron.

463

OPERATION MARDIACH II - Jono Safety Experiment

<u>DATX:</u> 24 Oct 1955 - 24 Oct 1955	Sponsor: UCI0.
<u>DATE:</u> 24 Oct 1955 14 Oct 1950 <u>TIME</u> : 3801 1601	$\frac{SITE}{3T^2 - Area} \frac{92}{25^2} = 3$
TOTAL YIELD: 1.7 cons	116° C2' 16' W Site elevation: 4,210 St
<u>FIRENALL PATA:</u> Time to but minimum: NM Time to 2nd maximum: 725	HEIGHT OF SUPER: Surface
Radius at 2nd caximum: 304	TYPE OF SUPSI AND PLACEMENT: Surface horst in Weaver Filling
CRATER DATA: Not available	with 20 of of grave, over the building
	<u>oloud for himohe</u> s (yinds of hom. <mark>Oloud Bouton Belghi</mark> s (not

## RHWARKS:

The on-site fallout documentation was performed by the Radiological Safety Division of the Roynolic Miestrical and Phylovering Company for purprise of personnel safety. Readings were taken with AN/PER-ty or Competite their instruments at STM hours, Del day and DtM days. For this deciy approximation was used to extrapolate the doce-rate readings to StM hour. The sasite fallout was well documented and the pittern presented is considered to be reliable.

"No significant off-site radioactivity was reported that could be attributed to the Juno event".

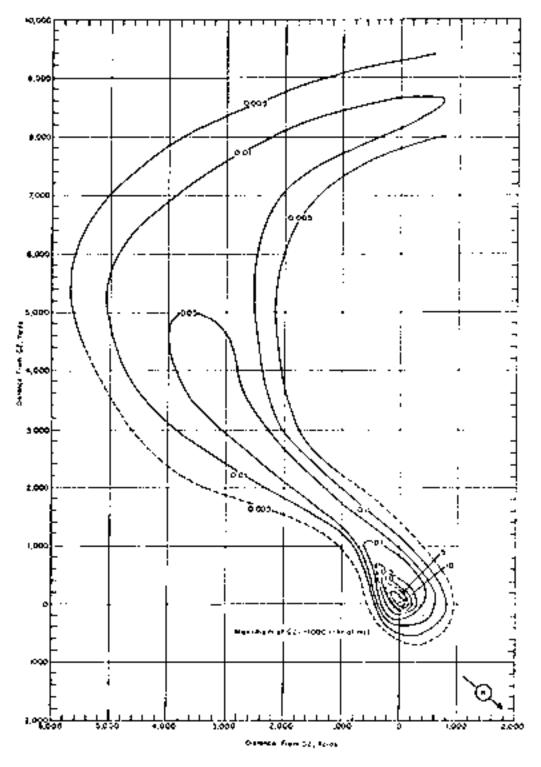
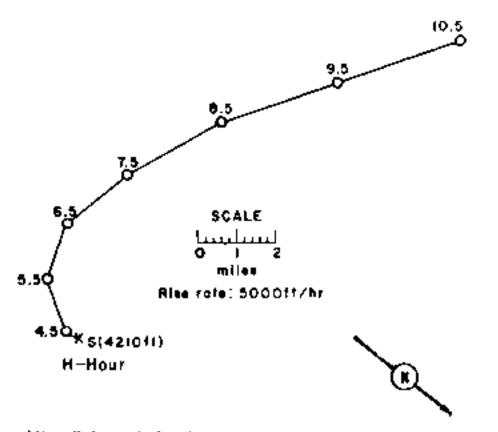
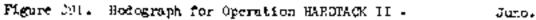


Figure 290. Operation HARDIACK II - Juno. On-site dose rate contours in r/hr at H+1 hour.

Altitude	li•, nour		
<u>(MML)</u>	_ Mr _	Spear	
feet	deg <b>r</b> aes	πpi	
Surface	360	65	
5,000	<u>030</u>	C7	
6,000	070	(8)	
7,000	100	10	
8,000	110	14	
9,000	120	56	
10,000	120	211	

NOTE: Wind data was obtained from the faces verticer station.





OPERATION BARDLACK II - Ceres Safety Experiment

	<b>1</b> 1011	(241
$\frac{\mathbf{D} \setminus \mathbf{T} \otimes \mathbf{r}}{\mathbf{T} \mathbf{D} \otimes \mathbf{s}}$	75 001 1995 2000	-26 Cent 1998 -0400

fOFAL MIELD: 0.7 tons

FIRMUL NOW

Time to 150 minimum: AM Time to Syd magement (AM Radius at Sud maximum: (A)

- Sponoer: SCiiL

HEIGHT OF FIGURE CO. CL

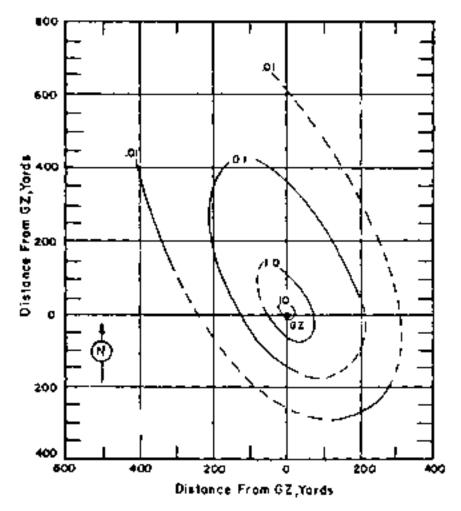
The of press and reactions Town best over Seals out

CLOCE (WAR RELATED AND A STAR WELL

### SEWINC:

The challe faile a dominantation was performed by the Pari formal Safety Division of the Second is Electrical and Enclosering Company for purposed of performance and ty. Readings were taken with AN (109-)2 or Tracelab (U-1) instruments at S+) have and S-10 second. The this decay Approximation will near to extrapolate the former formation to S+1 Second Decay and relief to the error reaction of the instruments for which the observed radiation (10) and the wing field in that, reserve the workwere rations (10), the preserve what at the Yarea lake Weather Station were produced potential to the

Off-site measurements delected no indicactivity above tackground.



Pigure 292. Operation HARDMACK II - Ceres. Op-site dose rate contours in r/br at R+1 hour.

Altitude	H-h	H-hour		4+1 hour	
(MSL)	Dir	Speed	D(r)	Speed	
fcet	degreðs	20ph	degrees	տրի	
Surface	330	2	310	6	
5,000	220	5		-	
6,000	200	6		-	
7,000	160	7		-	
8,000	140	7		-	

CITCE

NOTE: 1	ind	data.	185	obtained	from the	Yucca	weather	station.
---------	-----	-------	-----	----------	----------	-------	---------	----------

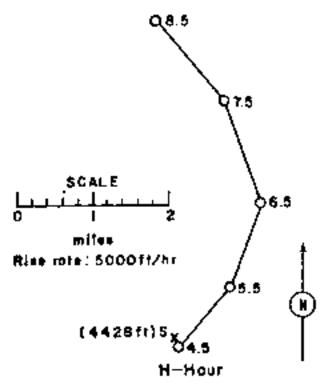


Figure 293. Rodograph for Operation MARDIACK II - Ceres.

CPERATION SAEDIACK II - Sanford

	PST	GMT		
DATE:	26 04 1 1997	20,000,1978		
TIME:		16.80		

TOTAL YEARDS 40.9 KE

- FIRENALL PALA:
  - Time to lit molecule IN Time to Colomoscient IN Relige at the molecule IN

CRATER DELAL NUMBER

Sponsort - CCIG.

 $\frac{\text{SITE}_{1}}{36^{2}} = \frac{\text{NTC}_{1} + \text{Are} + \text{Fe}}{36^{2}} = \frac{110^{2}}{5} = \frac{100^{2}}{5} = \frac{100^{2}}$ 

Marine Calence (1975) and

- TREF OF FORM / CONTROL ADD SALES TO SEE THE SECOND
- <u>ctour che brache en en en yan</u> <u>Clobe l'Alle e jober</u>e en en en yan

#### AFALCER PE

The contatinution was doe preserved to induced activity. The en-cite measurements were performed to the Well Latin Laboraty Division of the Report (Newtrical the Universal Conjunction purposes of presented betays. Remarks were taken with ADD Phene or Treasanth 20-1: training to at Rt 1 and Free Former Decay and Dt2 days. The configuration of Rt 1 and Free Former Decay the dose-rate rendings to Ht2 nound. This down rule is a strictly applicable of the lack of bata in most of the areas trained decay. "Because of the lack of bata in most of the areas trained ground zero, there is not a very tight decay of subfidence in the analysis of the on-site pattern".

Very little radioantivity above background was detected off-site.

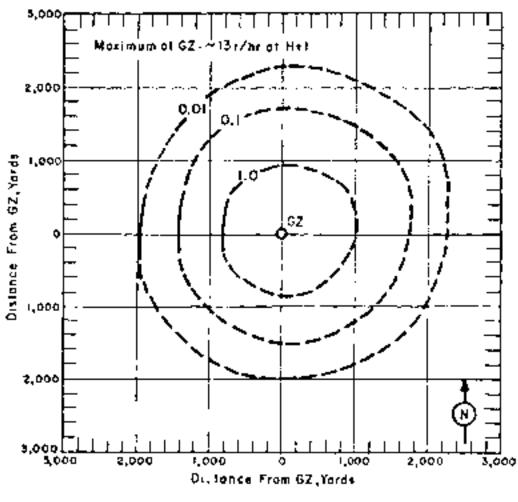
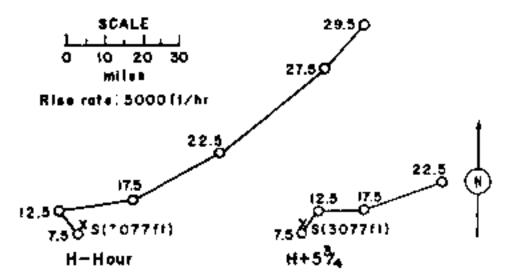


Figure 294. Operation MRDIACK Ii - Sanford On-site dose rate contours in r/hr at H+1 hour.

Altitude	ä+hos	r	20.2	1.2.122
(MSL)	Dir	Speed.	Dir	- Speed
feet	defineer		degrees	li:j::
Surface	240	01	Calm	Calm
5,000	010	03	010	62
6,000	110	02		
7,000	190	02		
8,000	186	80		
9,000	150	09		
10,000	120	80	210	- 27
11,000	120	10		
12,000	1980	07		
13,000	290	12		
14,000	270	21		
15,000	290	21	270	12
16,000	250	24		
17,000	240	23		
18,000	250	29		•-
ນຊ໌, ແລະ	220	32		
20,000	230	26	24C	22
21,000	230	39		
22,000	230	39 66		
23,000	230	49		
24, CC	220	4		
25,000	020	35		
26,000	210	35 33		
27,000	210	36		

TABLE 96 NEWADA WIND DATA FOR OPERATION PAREAUCE II - CANFORD

NOTE: Wind data was obtained from the Yucca weather station.



Pigure 195. Bodographs for Operation HARDACK 11 - Sanford.

#### OFFEATION EVENCES IN -

D-14-94

<u>1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 -</u> 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 - 1907 -

TOTAL YOR DE LES AL

# FIRENESS DONE

Transfort, John Schernen und 1924
 Transfort, Charles Schutzber 1924
 Read Druck auf Charles Hydrochystol 1924

CRATER DUTY: No contem

Special 1400

lalan ne sharto da ku at

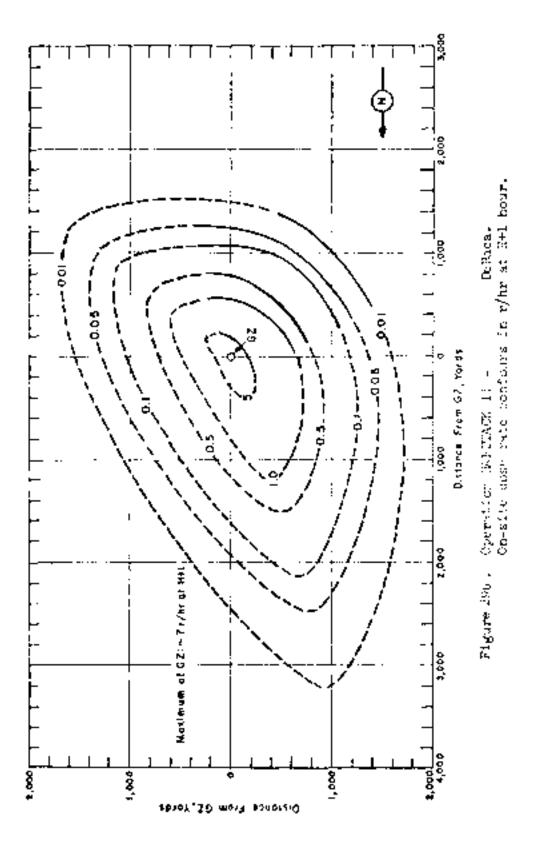
THE OF ENDED AND ALL PROPERTY Air Car Nevals

<u>CLOUD 111 BELICIE</u> - LEVELS - END CLOUD 111 BELICIE CLOUD - AND - CLOUD - CLU

#### REMARKS:

The contamination was be primarily to induced activity. The Galaxie assumed to a superproduced by the Week Larley for the Division of the Feyn of the fractional and hegiterrane ("spary for purpless of produced tafety. Festilets were taken with AN-198-19 of Transmits (W-1) instruments at H+j hear, Hes hourst D+1 kay and D+2 days. These classify each was used to extrapolate the inse-rate reaches to H+1 moor. This decay rate is not staidly applicable withough it theory approximate the theory of the sy. Responded the latter ("state to most organized activity") applicable withough it theory approximates the theory of the pattern is applicable.

Very little redicantivity above background was detected off-offer



Altitude	H-hou	ar	Altitude	H-hou	r
(MSL)	DI P	Speed	(MUL)	Dir	Speed
feet	cegrees	Militia	Teet	d0gree\$	ສູນໃນ
Surface	Calm	Calm	12,000	260	14
5,000	010	02	13,000	270	14
6,000	030	02	14,000	280	13
7,000	020	10	15,000	270	12
<b>8,0</b> 00	070	02	16,000	260	13
9,000	130	03	17,000	200	17
10,000	210	07	18,000	230	21
11,000	290	12	19,000	240	22
			20,000	570	22

<u>NOTES:</u>

1. Wind data was obtained from the Yueca weather station.

 The surface air pressure was 12.75 ysi, the temperature 8.3°C, the dev point 5.1°C, and the relative humidity 80%.

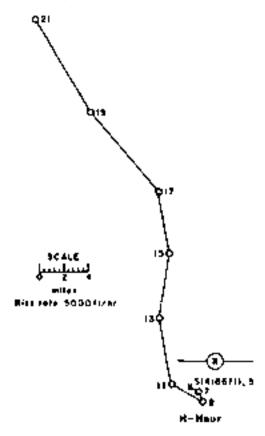


Figure 297. Hodograph for Operation HABBEACK II -

De Baca.

#### OPERATION MARCHACK II -

Chaves

	PST	220
DATE:	27 Oct 1958	27 065 1958
TANC:	0630	1430

#### TOTAL YIELD: 0.6 tons

#### FIREFUL DATA:

Tipe	20	155	mining and second	124
Time	50	$2$ p $_{\rm e}$	πa χ ¦anuga	201
Ragin	ir e	at. Se	of maximum	et W.

Sponsor: IASL

 $\frac{SITE:}{37^{\circ}} \frac{N10}{27} - Area \frac{3}{20} \frac{3}{37^{\circ}} \frac{C2^{\circ}}{27} + 41^{\circ} \frac{3}{27} \frac{$ 

NEUGHT OF BURSTS - 52-5 CL

TYPE OF EDUCTIANE LEACEMENT: Tower large over levels con-

CLOUD TO: EPHOET: A .SOL IN MOL. CLOUD ROPICK BET SUT: IN

### REMARKS:

The on-bits Callers decomponential on was performed by the Radial grad Safety Division of the Reynilos Electrical and Engineering Capany for purposes of performed safety. Readines were taken with ADG DR-) a or Tracertal DG-10 for numeric at R45 hours, Not hours, and D41 doys The t<sup>-112</sup> decay approximation was used to R41 hours. "The transmit extent of the activity is only a rough approximation to be such as well limited number of measurements. The rest of the parts is was relatively well decarected and should be fairly reliable."

No pattern is percented of the off-site fallout been set of the limited area that was constored and the relatively lew restroye obtained.

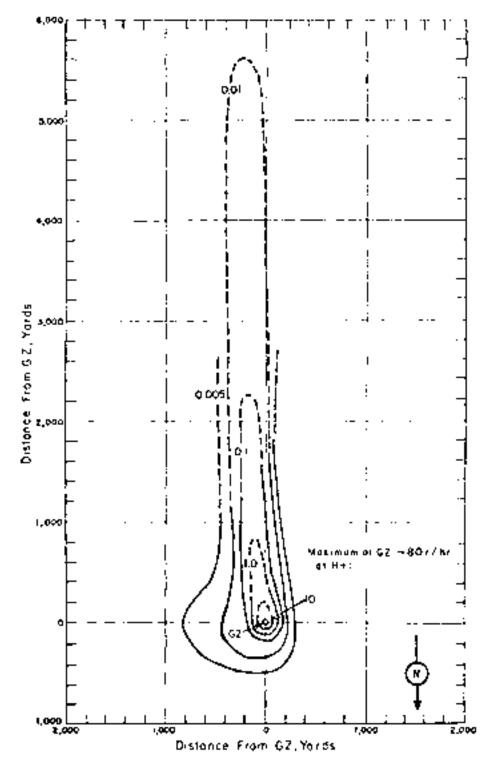
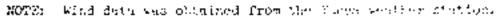
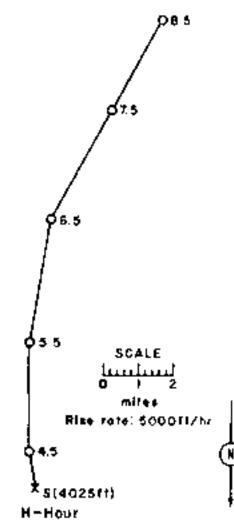
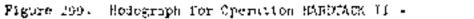


Figure 295. Operation MARDIACK II - Chaves. On-site dose rate contours in r/hr at M+1 hour.

Altitude		: <u>-</u>
<u>(MSL)</u>	Date:	1.1.1.1
feet	degrees	F:
Surface	350	07
5,000	360	Ić
5,000 6,000	010	28
7,000	030	18
8,000	030	15









OPERATION DARDENCE IS -

Evens

	PST	$C^{T}$	
$\frac{\text{DATE}}{\text{TOME}}$	28 025 1958 1600	20 Det 1996 2400	

70241. YIELD: 55 tons

- FIREBALL (MTA:
  - Time to lot relainant 120 Time in Case thighting (20 Reduce at Casi textinum) (20)

CRATER DATA: Not available

STTE: MTG - Arma 1.05.05

Sponsor: UCRL

37° 111 51" x D16° 12' 17" ¥ Site elevation: 6,650 ft

<u>HELGHT OF HELGE</u> CLARK HELGEN 348 ft. Vertical depth 850 ft.

TYPE OF EQUIC AND 1(ACPMENT: Subscribers burnt = locest is, Nevedo (\$11)

## REMARKS:

A small amount of omite was seen to west from the partal. This vented material produced very low lowels of radiation at a few inclated points.

	SURFACE VINCO				
	9 foot >	lesa	100 foot Mesa		
TIME	Slope Tower ( <u>El</u> ev. 6,725 SL MSL)		Mountain Tower (Slev: $7_2 AQ$ fo MSL)		
	Dir	Speed	Dir	Speed	
	degrees	mpin	degreed	F.F.::	
H-hour	290	8	360	Missing	
S+) hour	280	8	360	Missing	
N*2 hours	z00	ö	360	Missing	

TABLE 99 NEVADA WIND DATA FOR OFERAPION LARDZACK II - EVANC

NOTE: Wind data was obtained from the Yuccu weather station.

## OPERATION WARDDACK II -

Marboidt.

	PST	CXT
$\frac{0.075}{71005}$	29 Oct 1918 0545	59 021 1938 2445

- TCIAL YIELD: 7.8 tons.
- FIREBUL DATA:
- Time to lot minimum: 234 Time to 204 maximum: 234 Radius at 204 maximum: 234

CRATER\_DATA: Not available.

Sponsor: UCHL - DCD <u>SLTN:</u> MTC - Area 3v 37<sup>5</sup> O2' 52" N 116<sup>0</sup> O1' 29" W Site clovation: 0,009 ft <u>MENGED OF 05507</u>: 55 ft

- TYPE OF PERCEASE FLACEMENT: Tower Bond' over Devada 3211
- CLOUD TOP INTOTIC ( 1,200 CL MOL) CLOUD FOR TOT REPORTS ( 1,200 CL MOL)

### REMARKS;

The on-site failest documentation was encourely limited by changes in the GZ location and the operational firing schedule. Evaluate for the very close-in pattern were taken by the Corners' Corps Mattlester Cafety Support Unit at points along the partit, east, which, and west radial lines at times between all not fall biscus. Experimental oncerate decay curve, were used to extrapolate the reading its EtChours Readings for the entries fallent pattern were taken at Bit hours. Sto Acard, Ster hours and D+2 days. The  $t^{-1/2}$  being approximation was used to extrapolate the doce-rate readings to SH beam. The un-site fallest from Burbolit was well composed and the pattern is gon idented polialis."

The off-site fallout documentation was performed with Beckman MX-5 and AN/FDR-30 instruments by the U. 2. Fablic Health Dervice for purphess of public safety. The third docay approximation was used to extrapolate the dose-rate readings to Hillhour. "Although there is acts uncertainty in the downwind extent of some of the isolines, there is fair confidence in the width of the pattern and is the orientation of the failout, which is consistent with the wind analysis".

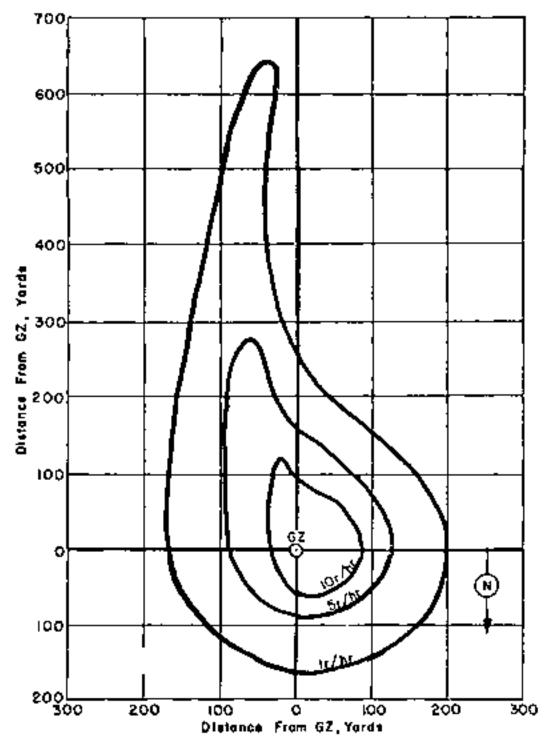
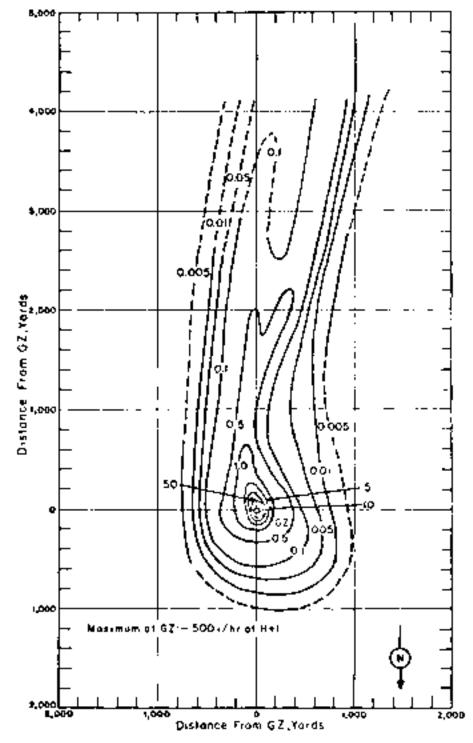


Figure 300. Operation HARDIACK II - Mumboldt. Very close-in dose rate contours in r/hr at H+1 hour.



Pigure 301. Operation EARDTACK II - Numboldt. On-site dose rule contours in r/hr at N+1 hour.

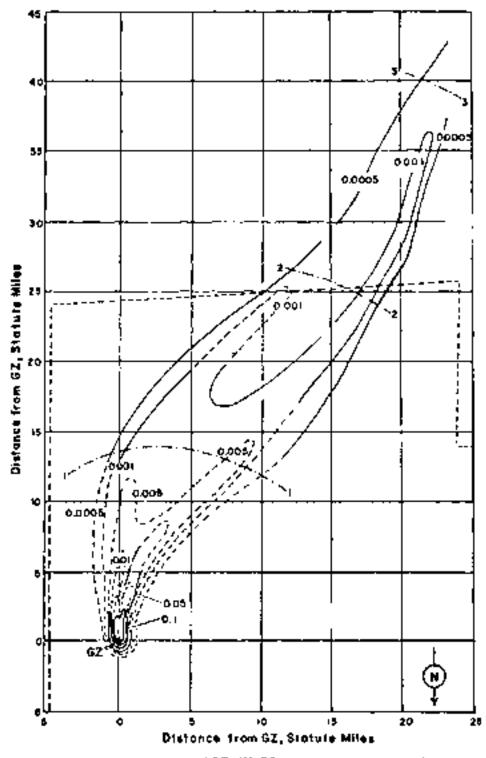


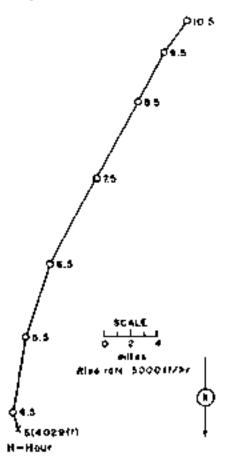
Figure 302. Operation HARDIACK\_II - Humboldt. Off-site dose rate contours in r/hr at 3+1 hour.

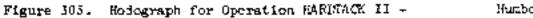
Altitude	N-hoor			
(MOL)	Dir	Leeq		
feet	degrees	-dau		
Surface	340	ØŢ		
5,000	010	29		
5,000 6,000	020	30		
7,000	030	37		
8,000	030	33		
9,000	<u> 33</u> 3	22		
10,000	040	15		

TABLE 100 NEVADA WIND DATA FOR OPERATION MARDIACK II - HUMBOL (0)

NOSESSE

- Vind duls was obtained from the Yucca weather station.
   The surface air pressure was 12.84 psi, the temperature 7.400, the dew point -3.200, and the relative humidity 405.





Humboldt

OPERATION BARDINCK 31 -

Santa Pe

107 107 107 1078	Sponsor: LASL
<u>илин</u> 29 оно 1956 36 оно 1956 <u>11м5</u> : 1966 - 0300	<u>STTE:</u> MTS - Apro 116 スT <sup>O</sup> 051 121" N 116 <sup>0</sup> 011 25" W
TOTAL YINTO: 1.5 kt	116° 61′ 25″ W Site elevation: 0,186 rt
E SERVIT DALLA	MELGRE OF BURGED 1,500 FC
Time to let minimum: SM Time to Ond maximum: SM Redius at 2nd maximum: SM	TYPE OF ECREPTANCE PLACEMENTS: Air burst from talloon over Nevada soil
<u>CRATER INTA:</u> No eralor	CLOUD TOP REPORT 15,000 CUMER. CLOUD BOTTOM RETORT: 15,000 CUMER.

## REMARKO:

The contumination was due privarily to induced activity. The on-site measurements were performed by the Radiological Safety Division of the Reynolds Electrical and Engineering Company for purposes of personnel safety. Neadings were taken with AN/PER-39 or Tracerine SU-10 instruments at N+1 brur, N+16 hours, D+2 days and D+3 days. The codit N+2 decay rate was used to extrupolate the dose-rate readings to N+1 brur. This decay rate is not strictly applicable although it closely approximates the observed decay.

The off-site fallout was very light and no pattern is presented.

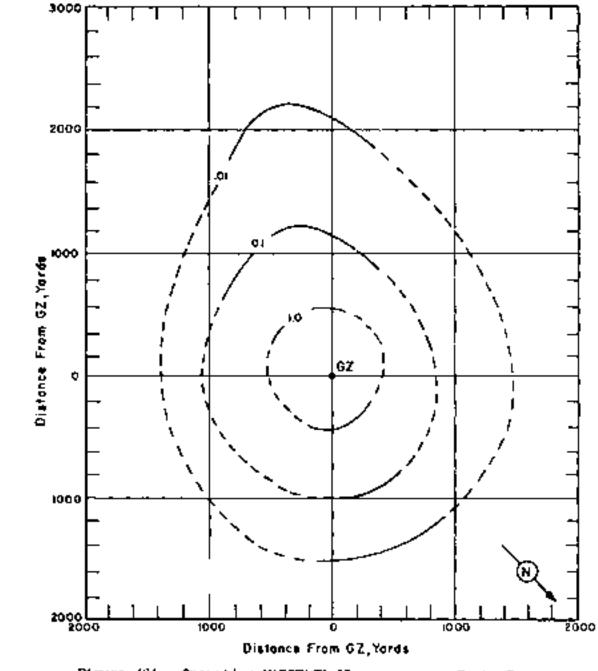


Figure 304. Operation HARDIACK II - 5 Santa Fe. On-site dose rate contours in s/hr at H+2 sour.

Altitude	H-bet	.r	Altitude	H-hou	<u>، د</u>
(MSL)	Dir	57.00d	(MCS.)	Dd y	dPood .
feet	degrees	mph	:cel	degraes	erph
Surface	350	ډلن	13,000	030	36
5,000	018	13	14,000	C4O	10 J
6,000	040	17	15,000	C4C	43
7,000	040	50	26,000	C40	43
8,000	04C	22	17,000	<u>03</u> 0	44
9,000	040	25	18,000	030	պե
10,000	030	25 28	19,000	c28	46
11,000	020	28	20,000	020	51
12,000	030	31			

NOTES:

1. Wind data was obtained from the Yuces weather station.

Tropopause height was 39,000 ft MSL. 2.

The surface air pressure was 12.75 psi, the temperature 12.1°C, the dev point  $-7.4^{\circ}$ C, and the relative humidity 25%. 3.



Figure 305. Hodograph for Operation HARDIACK II -



# OPERNYION (SARDTACK II - Garymede - Safety Experiment

DATE:	7 <b>757</b> 30 0.1 1/08	<u>(341)</u>	Sponsor: UCPL
TIME	0,00	1105	$\frac{\text{SITE}}{3?^2} = \frac{\text{STO} - \text{Arris}(0, \pi)}{3?^2} = \frac{3?^2}{2} = \frac{3?^2}{2} = \frac{3?^2}{2} = \frac{3}{2} = \frac$
			MUCHTON OF MUSIC: Cortage
			TMR OF BUILD AND INCOMPT
			Depthere buyers on a weather Belling water of the d gravel over the buildeder
			CLOUP COMERCIONAL TRA CLOUP COMERCIONAL TRA

## <u>REMARKS</u>:

.

These was no content yield for this event. These we can algor contamination in the other interval high of the spin of the

OPERATION SARDTACK II -

Blanca

1977 - 1978 - 19	Sponsor: UCHL
1900 1900 1900	<u>5176</u> : MTS - Arva 120.05 37 <sup>0</sup> 11' 09" M
TOTAL YTELD: 19 kt	116° 12' 07" W Site elevation: 7,120 ft
FIREMALL DATA: Time to lot elaimune NM Time to for miximum 124 Redias at Sod miximum 124	<u>RELGER OF PERCE</u> : -835 st Signt Distance. Vertical depth 987 ft.
<u>CRAIFN DATA</u> : Not available	TYPE OF BUPUT AND PLACEMENT: Subsurface arout - Indjel is Nevula adds
	CLOUD FOR RECORDS - VIVOL CL CLOUD BORING BORING - VIVOL CL

## REVANCO:

The on-site fallout decomposation was performed by the Radiological Safety Division of the Feynolds Electrical and Engineering Company for purposes of periodical categy. Readings were taken with AN/FPR-39 or Tracersan 33-10 instruments at 8+7 Sec.v. 8+6 Secret, 5+1 day and 142 days. Due to inadequate suppling and the approxity of good reference points there is considerable uncertainty in the ince-rate lines. A resurvey was made 7 months later with reference stakes available at hulf-mile intervale, so that the location of the failout detected is much more certain than in the initial survey. However, because of the probable reduction in indiction by weathering and the errors probably attendant is assuming the trive decay approximation to be valid for such a long period, the 2+1 doub rates were estimated from the initial survey. Chore is an order of mightade discrepancy in the estimation of the H+1 hour dose rates from the early to late survey; therefore there is very fittle confidence in the accuracy. of the pattern.

Off-site air sampling showed a significant increase in alpha activity. The beta measurements indicate that some light fallout did occur off site.

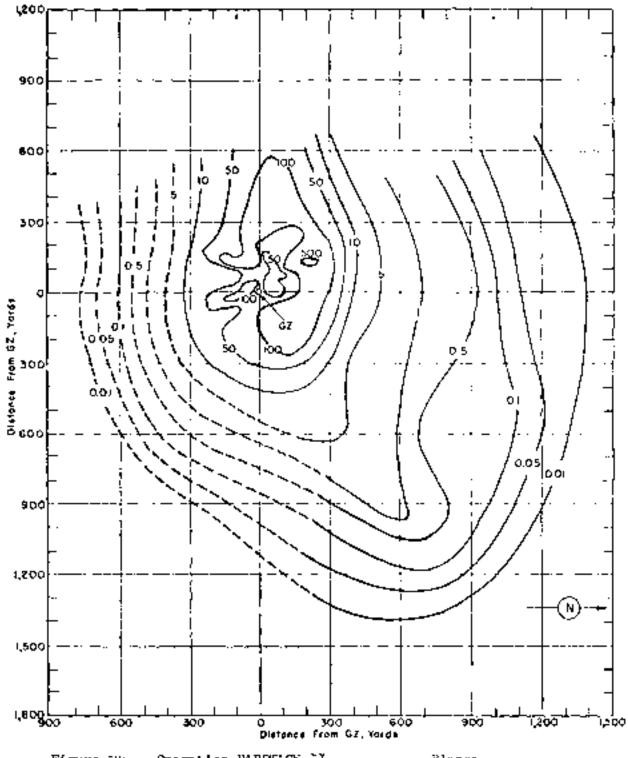
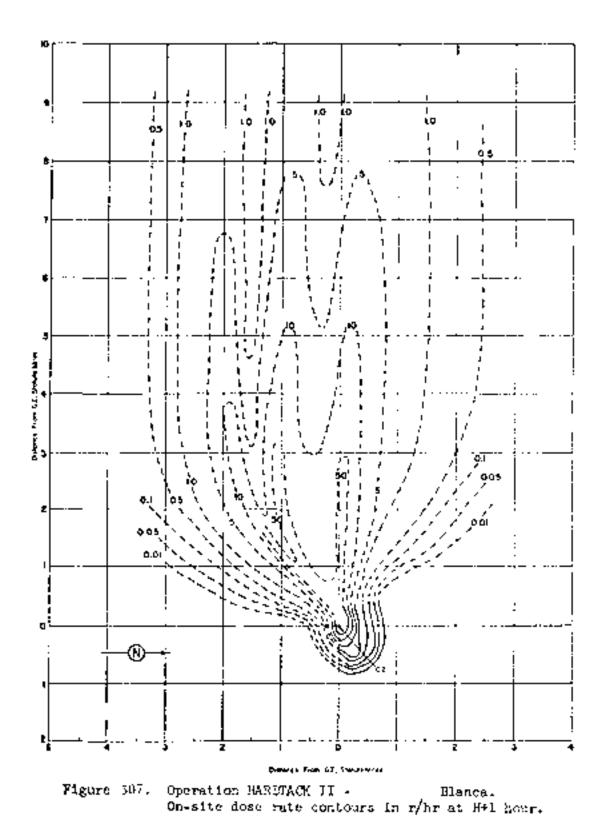
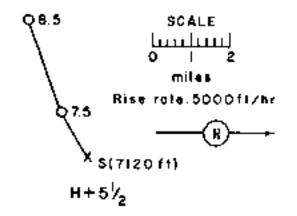


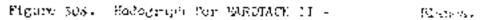
Figure 306. Operation HARDFACK II - Blanca. Close-in dose rate contours in  $r/{\rm hr}$  at B+1 hour.



Altitude	fitte hours			
(MSL)	Cir	Greed -		
fect	degrees	ոբի		
Surface	8c	09		
5,000	60	15		
6,000	60	15		
∿,000	60	14		
8,000		$-\frac{12}{3}$		

NOTE: Wind duth was oblained from the Yucca wosther station.





494

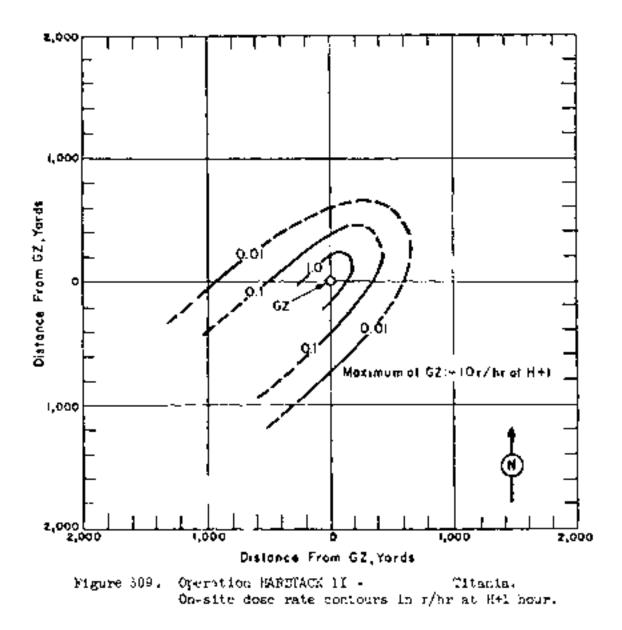
OPERATION SUBJECT II - Titania Safety Experiment

DATE: BALL 1996	Sponson: CCTC.
<u>TIME</u> : 1034 - 2034	$\frac{SITE}{TT} = MTS - Area \frac{\partial g}{\partial x}$
TOTAL VIELD: 0.2 tous	37° 10' 38" 5 116° 04' 05" W Sile elevation: 4,40% 51
<u>FIREWORK TAR</u> : Time to jut minimum: 124	HEIGHT OF BURGER OF CU
Vime to End saxisum: 184 Radius at Cul maximum: 184	TYPE OF FURCE AND BLACKED UT: Tower clarate were because in the
	CLOUD TON REPORTS AND AN MOU. CLOUD FOUR REPORTS AND AND

## RPMACKES:

The on-site fallout decomposation was performed by the judic) closed Safety Novicies of the Reynolds Electrical and Engineering Unipary for purpless of performed safety. Readings were taken with All Electric or Transplan CU-10 instruments at  $E^{+}_{2}$  been. The the  $E^{+}_{2}$  should approximation was used to extrapolate the readings to EVI hear. The pattern presented is not reliable.

No off-site contationtion was detected.



ī	ITANTA	
---	--------	--

Altitude	II-hour		<u> </u>	H+, hour		มาร
(MSL)	DIT	Speed	Pir	Speed	Dir	Speed
feeU	degrees	mph	dugrees	արե	degrees	n.ph
Surface	80	09	80	12	90	11
5,000	60	15				
6,000	60	15				
7,000	50	14				
8,000	70	13				<b>.</b> -

NOTHER

 H-hour data taken from Yoeea Lake Weather Station (Elevation 3,924 St MSL).

 E+3 hour and H+1; hours data from 20-foot tower at Station 355 (Surface Elevation about 4,325 ft MSL).

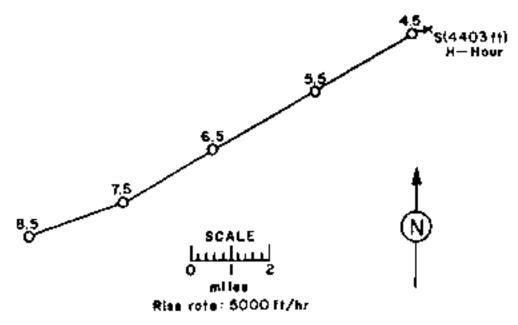


Figure 310. Rodograph for Operation MARDDACK II - Titania.

$(\delta_{11}) = \delta_{11} (100, \delta_{12}, \delta_{11}) = \delta_{11} (100, \delta_{12}) = \delta_{11} (100, \delta_{12}) + \delta_{11} (100, \delta_{12}) = \delta_{11} (100, \delta_{12}) + \delta$	
$\frac{1000}{1000} = \frac{1000}{1000} = \frac{1000}{1000} = \frac{1000}{10000} = \frac{10000}{10000}$	$\underline{SP0(230)}_{1} = 4.32$
	$rac{83711}{377} = 0.08 + 0.12 \pm 0.04$ $-377 \pm 0.7 \pm 0.164$ $0.77 \pm 0.166$ $\pm 1667 \pm 1022$ $\pm 27.02$ $\times 8^{-10}$
opena vela vela ku	<u>8171 (2000 (0</u> 3) 7428 (1000)
<u>GSALAN (GT</u> A) - So Crater	POP. 2 (27 00. 04) - 1309 - 13
	TYPE CE SCHST AND FLACTER DE Tomach, in Service Lood to fr

## STERRIG CALLSCALL

[Tonne] = Noble (of) Superior (elements latite and bodded tub) willtereated.

# V. STICE:

Vention, a prior at the turned portal at PH2 seconds for an edge to function. A concerning structure plusion was objectively from R to 10 minutes to block up the deconsticution.

The even the new gate at the toneth period, costable at the bin was 10 D/max. The estimated rotal release, new alread to bit rights, was 5x10 been and continuous the following ident-yes:  $1^{1/2}$ ,  $1^{3/2}$ ,  $1^{3/2}$ ,  $1^{3/2}$ ,  $1^{3/2}$ ,  $1^{3/2}$ ,  $1^{3/2}$ ,  $1^{3/2}$ ,  $1^{3/2}$ ,  $1^{3/2}$ .

## <u>REUM (SS</u>)

Some radius fivity was detected in of)-site areas. No radiation was detected at the worksite or any effort locatter, from releases of gave or radiantivity during post-shar drilling as could re-entry eparations. OPERATORS SOUGAT - Surey

	251	GMT
DA <u>TE</u> :	16 Sep 1961	16 Sep 1961
TING:	1145	1945

SPONSORY LAST.

 $S(17)_{12} = 508_{12} + 103.6_{12}$ 37 02 54.437 7 8 116" 01" 29,59,05" %

p<u>EPTR\_001\_10</u>081;= 00.2 ft

TYPE OF CLUB CLASS PLACEMENTS. Underground, in alightly coapolidated alloving

# VERTING

This event released small visible quantities of radioactive steam and/or passes.

# REMARK.S.:

Radiation and depected on-site from redicactivity released by this detonation, but no radiation levels above background were detected of: the NTS in populated areas. No radiation was detected at the worksite or any other Poestion, from releases of gaseous radioartivity during post-shot. drilling.

OPERATION NORMAL -

Chigna

	PS%	CMT
0AYEE = T EYE =	10 Oct 1961 1000	10 Uet 1961 1800

SPONSON: LRL

- $\frac{\text{STTD}}{37^{\circ}} = \frac{91\%}{11^{\circ}} \frac{39.4418^{\circ}}{39.4418^{\circ}} \frac{\text{S}}{\text{S}} \\ = \frac{116^{\circ}}{12^{\circ}} \frac{25.2736^{\circ}}{25.2736^{\circ}} \frac{\text{S}}{\text{S}}$
- SITE ELEVATION: 7472 ft MSL

hideni of coast; 838 ft

TYPE OF BURST AND PLACEMENT: Tonnel, in slightly component toff

#### VENTING:

Venting occurred at the tunnel portal at N+2 seconds and continued for approximately 20 minutes.

The estimated dose rate at the tunnel portal, normalized to 841 hour, was 35 K/Ar. The estimated total release, normalized to 841 minute, was 2x10<sup>6</sup> curies. The identities of the release products are not available.

#### REMARKS :

No radiation levels above background were detected off the NTS in populated areas from radioactivity released by this detonation. No radiation was detected at the worksite or at any other location, from releases of gaseous radioactivity during post-shot drilling or tonnel re-entry operations. OPERATOR NOCCAT - Mink

	PST		<u> </u>
DATE:	29 Det 1		Oct 1961
TIMC:	10 30	18	30

SPONSOR: LASE

SITE: NTS - OBac 37° 02' 34,8402" N 1161 01' 51,9455" V

SITE REEVICED 1: 4025 Ft MSL

DEPTH OF SUBSET 610 11 DEPTH OF SUPPACEMENT ROLES 640 CE TYPE OF LERST AND PLACESENT: Undergroote, in allovica

#### VESTING:

Some gas scopage was evidenced at 19925 minutes.

#### REMARKS :

Radiation was detected on-site from radioactivity released by this detonation. Produced measurable contamination of off-site milk supplies caused levels of contamination in milk in Miko, Nevada, to jump to 720 pc/s, 4 days after the shot-Some radiation was detected in the areas surrounding 52 from gaseous radioactivity released during pust-shot drilling. No radiation was detected off the NTS from post-shot operations.

geo Atroc March - Fisher - Fisher

 $\frac{\mathbf{D}_{\mathbf{A}}(\mathbf{r}_{1})}{\left[\frac{\mathbf{D}_{\mathbf{A}}(\mathbf{r}_{1})}{1+1}\right]^{2}} = \frac{\mathbf{T}_{\mathbf{A}}(\mathbf{r}_{1})}{\left[\frac{\mathbf{D}_{\mathbf{A}}(\mathbf{r}_{1})}{1+1}\right]^{2}} = \frac{\mathbf{D}_{\mathbf{A}}(\mathbf{r}_{1})}{\left[\frac{\mathbf{D}_{\mathbf{A}}(\mathbf{r}_{1})}{1+1}\right]^{2}} = \frac{\mathbf{D}_{\mathbf{A}}(\mathbf{r}_{1})}{\left[\frac{\mathbf{D}_{\mathbf{A}}(\mathbf{r}_{1})}{1+1}\right]^{2}}$ 

2011/19/2011 13:5 Kt

<u>Product March</u> Minist Contraction to a Distriction of the Long Contraction of the Contraction of the Contraction Contraction of the Contractio <u>(2007) P</u>ro 1760. <u>Alter</u>o IV, 2000 - 2000 - 370 - 2000 Antornal (2000) - 100 - 2010 - 2007 Antornal - 100 - 2010 - 2007 Antornal

 $\frac{\operatorname{TYD}(\mathcal{L}_{1})}{\operatorname{TYD}(\mathcal{L}_{1})} = \frac{\operatorname{TY}(\mathcal{L}_{1})}{\operatorname{TY}(\mathcal{L}_{1})} + \frac{\operatorname{TY}(\mathcal{L}_{1})}{\operatorname{TY}(\mathcal{L$ 

# <u>VEL-21103</u>1

Stations of a bound graft visit operative or of the structure sectors.

# <u>Marketer</u>e

Reflection on detected co-oil three reflectivity releases  $p_{\rm c}$  is detection. Normalistic well as a construction with the transformation of the trans

Bow - redictive was ontrated is the statement dig of these and all redeventsary as the detect protection of the statements PROFILE C GSO/90

1053.0	Et Bor Dast	<u>671</u>	<u>\$P05808</u> 9   135
	1200	1900	<u>SITE:</u> Score Corlebed, Sew Mexical 32° 15° 59° 5
$\underline{100M}$	21. 194 3.4 kt		103° 5° 57° W
2 - 1 <b>4</b> 1 - 1			STERESSON (* 281
<u>GRAD PATA:</u> So crater			<u>08040 (00 10087</u> 4 - 1185 fx
			<pre>TYPE_IF_REESE_ADD_FLATEDENCE Undergreened, in beckeel tech salt</pre>

#### VERSINGS

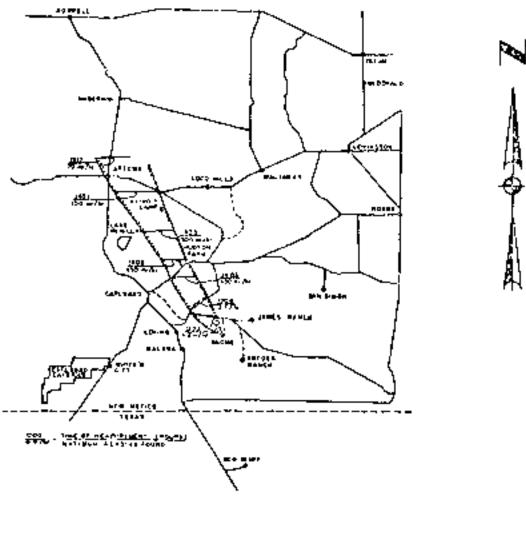
Radiation was detected at the blast date at the bottom of the shaft less than one minute following the explosion; and at the shaft collar, ) don'ts and 40 seconds ifter the detonation. At approximately / minutes after the detonation, yray made, steam, and associated radiumetivity surged true the shaft opening. By 11 minutes following the explosion replets quantities of steam were issuing from both shaft and ventilation (in s. A large they continued for about 10 constant before gradually decrements. A small they use still detected the following day. The padioactive elements that vented through the shoft were velatile upd noble gases.

# RETAILSE

Figure 8 shows the constant road pattern and times of reastrument. All readings are gress going resoured inside the attention. Attendation of radiation by the aircraft structure was not determined, but was probably in the range of 54 to 50 percent.

Meteorolegical Information:

Wied at the surface: 150 degrees - 4,6 pph Wied at 100 foots: 140 degrees - 16 pph Surface air temperature: 45,3°F Surface relative humbdity: 72% Surface atmosphesic pressure: 26.74 turkes of mercury



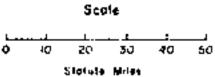


Figure 311. Project Gaune - Cloud pattern as found by Actial Monitoring

Maul

<u>рудна 13 Бес 1961 — Смт</u> <u>тиле:</u> 13 Бес 1961 — 13 Бес 1961 <u>тиле</u>: 1000 — 1600

TOFAL VIELD: 0.43 kt

CRATER DATA: No gratur

<u>\$POASOR</u> : LRL
<u>SJTJ</u> C: NTS - U95 37° 07' 35.77" X 116° 0?' 55.54" W
DEPTH OF BLRST: 594 ft
TYPE OF BERST AND PLACEMENT:

Underground, in slightly consolidated allevions

# VENTING:

This event released small visible quantities of radioactive steam and/or gaves.

#### REMARKS ;

Radiation was detected on-site from radioactivity released by this detonation. No radiation levels above background were detected oil the DOM is populated areas from radioactivity released by this detonation.

No radiation was detected at the worksite or any other location. from releases of gaseous radioactivity during post-shot drilling. OPERATION NOTBAT -

Ringtail

	I'ST	C ST
DATE :	17 Dec 1961	17 Dec 1961
TENSEE	0835	1635

<u>SPONSOR</u>: LASE <u>SITE</u>: NTS - U3ak 37° 02' 35.38" N 116° 01' 31.13" W <u>DEPTH OF EMEST</u>: 119: 11

TYPE OF SURST AND PLACEMENT: Underground, in allovium

#### VENTING:

This event released small visible quantities of radioactive steam and/or gases.

# REMARKS :

Radiation was detected on-site from radioactivity released by this detonation. No radiation levels above background were detected oil the NTS in populated areas, from radioactivity released by this detonation.

No radiation was detected at the worksite or any other location from releases of gaseous radioactivity during post-shot drilling.

Feather

	PST	GMT
DATES	22 Dec 1961	22 Dec 1961
T1360)	0839	1630

<u>SPONSOR</u>: LRL <u>SITE</u>: NIS = U126.00 37° 11' 41.76" N 116° 12' 29.84" W <u>SITE ELEVACION</u>: 7449 it MSL <u>DEPTH OF EURST</u>: 812 Ft

TYPE OF BURST AND PLACEMENT: Tunnel, in competent to incompetent inff.

# VENTING:

At it hoos a small rhoud which appeared to be typical pasaventing, rose from a tennel portal and vent pipes on top of the mesa and endured for 11 minutes.

The estimated dose rate at the tunnel portal, normalized to U+1 hour, was 18 %/hr. The estimated total release, normalized to H+1 minute, was 1x10<sup>6</sup> curies. The isotope identities are not available.

#### REMARKS:

At H+30 minutes a branch tunnel was monitored at 40 m8/hr, and a location 1/2 mile sourbwest and dowawind from the vonting origin was monitored to be 100 m8/hr at the same time.

Some radioactivity was detected in off-site areas. No radiation was detected at the worksite or any other location, from releases of gaseous radioactivity during post-shot drilling or tunnel re-entry operations.

OPERATION NOTAT --

Stoat

	PS C	<u> </u>
$\frac{DATE}{T(MC)}$	9 Can 1962 0830	9 Jan 1962 1630

TOTAL YIELD: 4.5 kt

#### CRATES DATA:

Substance crater Diameter: 356 ft Nepth: 7 it

#### VENTING:

Vented

#### REMARKS :

Radiation was detected on-site from radioactivity released by this detonation. No radiation levels above background were detected off the KTS is populated areas, from radioactivity released by this detonation.

Some radiation was detected in the area surrounding, 52 from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations.

<u>SPGYSOR</u>: LASL <u>SITE</u>: STS - DBop 37° 02' 40.70" N 116° 02' 06.23" W <u>DEPTH OF BUXET</u>: 992 ft

Type of GURST AND PLACEMENT: Underground, in allovier

Agouti

	PST	C <u>MT</u>
DATE:	18 Jan 1962	18 Jan 1962
TIME:	1000	1800

TOTAL YIELD: 5.9 Kt

# CRATER DATA:

Subsidence crater Diemeter: 500 ft Depth: 50 ft

#### VENTING:

None

#### REMARKS :

No radiation levels above background were detected on or off the NTS, from radioactivity released by this detonation.

No radiation was detected at the workelle or any other teration, from releases of gaseous radioactivity during post-shot drilling.

<u>SPONSOR</u>: LASL <u>SITE</u>: NTG ~ UJac 37° 02' 50.08" K 116° 02' 03.69" W

DEPTH OF BURST: 856 ft

TYPE OF BURST AND PLACEMENT: Underground, in alluvium OPERADION NOUCAT -

Dornouse

	PST	CMT
$0\Lambda(E)$	30 Jan 1962	30 Jan 1962
T : 552 :	1000	1500

SPONSOR: LASI.

SITE: NSS - O3aq 37° 02' 48.64" N 116° 02' 22.14" N

DEPTH OF BURST: 1191 Et

TYPE OF BURST AND PLACEMONT: Underground, in alloyium

# VEN JING :

This event released small visible quantities of radioactive stram and/or gases.

# REMARKS :

Radiation was detected op-site from radioactivity released by this defonation. No radiation levels above background were detected off the NTS in populated areas from radioactivity released by this defonation.

Some radiation was detected in the area surrounding SZ from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations.

Stillwater

537.65	857 8 Feb 1962	<u> </u>	<u>s</u>
<u>11M8</u> :		1690	5
<u>, totat, s</u>	<u>8119</u> @: 2.7 kt	L	
OBATER	<b>347.5</b>		5
<u>CRATER</u> Sy	absidence era		<u>n</u>
	Diameter: 4 Depth:		<u>1</u>

#### VENCENCE

None, except during post-shot drilling

<u>STONSOR</u>: LEL <u>SITE</u>: NTS = 09+ 37\* 07' 38.09" N 116\* 03' 09.15" W <u>SITE ELEVATION</u>: 4208 ft MSL <u>DEPTH OF BURST</u>: 635 ft <u>TYPE OF BURST AND PLACEMENT</u>:

Underground, in slightly consciidated allevium

# REMARKS :

No radiation levels were detected above background on or off the WTS, from radicativity released by this detonation.

Some radiation was detected in the area surrounding 52 from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the 575 from post-shot operations.

OPERATION NOUGAG -Arsad: 11o SPONSOR: LASL PST0321 DATE: 9 Feb 1962 9 Feb 1962 T1M0; 1000 1800 SETE: NTS - UBar 37" 02' 36.88" N 116° 02' 20.24" W TOTA: 2151.0: 6.6 kt CRATER DATA: Subsidence crater Undergranual, in allovium Diameter: 500 ft Depth: 35 ft VESTING; Vented

# DEPTH OF BURST: 780 fc TYPE OF BOUSE AND PLACEMENT:

#### REMARKS :

Radiation was detected on-site from radioactivity released by this dependion. No radiation toyots above background were detected off the NTS in populated areas from radioactivity released by this detonation.

Some radiation was detected in the area surrounding S7 from gaseous radioactivity released during post-shot drilling. No radioactivity was deterted off the NTS from post-shot operations.

Hardhae

DATE: 15 Feb 1962 15 Feb 1962	<u>spoasoz</u> : nod
<u>DATE:</u> 15 Feb 1962 15 Feb 1962 <u>TEME</u> : 1000 1800	<u>SITE:</u> XIS - 815a
<u>TO)AJ, Y101</u> 0; 5.9 kL	37° 13' 34.7:40" 5 116° 33' 33.5234" N
	SITE DISVATION: 5114 ft 981
<u>CRAIER DATA:</u> No cratot	DEPIS OF BURST: 944 ft
VERTING: Vented	TYPE OF BURST AND PLACEMENT; Underground, bottom of 36-

Ench diamotor shafe in

grandodiorite.

#### REMARKS:

Radiation was detected on-site from radioantivity released by this defonation. Re radiation levels above background were detected off the XTS in populated areas from radioactivity released by this detonation.

Some radiation was detected in the area surrounding SZ from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations,

Chinchilla 1

	FST	<u> </u>
DATE :	39 Feb 1992	19 Feb 1962
TUBE	0830	1630

TOTAL YIE D: 1.8 kc

DEPTH OF BURST: 492 [t

<u>\$170</u>; KTS - U3ag

LAS1.

SPO4SO:::

CRATICS DATA:

Subsidence crater Diameter: 300 ft Depth: 50 ft TYPE CD SUGST AND PRACEEDER: Duderground, in allavium

37° 02° 56.5909" N

1)6° Ok" 46.3128" W

#### VENTING:

This event released small visible quantities of radiorelly-steam and/or gases.

#### REMARS:

Radiation was detected op-site from radioactivity released by this detonation. No radiation levels above background were detected off the NTS in populated areas from radioactivity released by this detonation.

Some radiation was detected in the area surrounding SZ from gaseous radioactivity released during post-thet defiling. No radioactivity was detected off the NDS from post-shot operations

Cadsaw

	PST	CMT
<u>DAG K</u> ara	19 Fcb 1962	19 Feb 1962
<u>T186</u> 2	0950	1759

<u>spons</u> i	<u>0R</u> : 1	rbr				
51101:		071	38.8			И
<u>strič (</u>	SLEVA:	r108;	42	818	£)	MSL.

DEPTH OF BURST: 696 (t

TYPE OF BERST AND PLACEDONT: Underground, to semiwelded tott

#### VENTING: Vented

# REMARKS :

Radiation levels were detected near SZ, above permai background, from radioectivity released by this detonation. No other radiation levels were detected on or off the MTS, from radioactivity released by this detonation.

No radiation was detected at the worksite or any other location from releases of gaseous radioactivity during post-shot drilling.

OPERATION SOUGAT -Generation: CMT PST SPONSOR: LR2 DATES 23 Feb 1962 23 Feb 1962 <u>SUTE:</u> NTS - 095 YIME: 1800 10041 37° 07' 43.88" N YOTAL YIE D: 11.2 kt 116" 02" 53.91" % SITE ELEVATION: 4208 ft MSL CRATER DATA: Subsidence crater DEPTH OF BURSHE 1000 Ct Disseter: 500 ft Depth: 40 ft TYPE OF BURST AND PLACEMENT: Underground, in slightly con-VESTINUE solidated alluvium None except during post-shot drilling

REMARKS :

No radiation levels above background were detected on or off the NTS, from radioactivity released by this detonation.

Some radiation was detected in the area surrounding SZ from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS, from post-shot operations.

Platypes

-

	PST	<u> </u>
	The second s	and the second s
16471	24 Feb 1962	24 Feb 1962
<u>1.111</u>	0830	1630

SPONSOR: LASL

<u>SITE</u>: NTS - UBad 37° 02' 54" N 116° 01' 54.85" W

DEPTH OF NURST: 190 ft

TYPE OF BURST AND PLACENESS: Underground, to allusion

#### <u>VENTING</u>: Vented

### REMARKS:

Radiation was detected on-site from radioactivity released by this detonation. No radiation levels above background were detected off the NTS in populated areas from radioactivity released by this detonation.

No radiation was detected at the worksite or any other location licereleases of gaseous radioactivity during post-shot drilling.

Parspas

	PST	GNT
DATE: TINE:	1 Xar 1952	1 Mar 1962 1910

<u>STOUSOR:</u> LASE/UK

<u>SITE:</u> NFS = UPal 37° 02' 30.54" S 116° 01' 44.799" W

SITE ELEVATION: 4012 1: MSL

DEFTE OF BURST: 1191 34

DUPTH OF DEPLACEMENT POLE: 1201 CC

TYPE OF NORSE AND PLACEMENT: Underground, in alloving

#### VENTING:

Immediately after defonation, two small clouds floated abound in Area 3.

#### REMARKS

A maximum done rate reading of 37 mK/hr at 3445 minutes was evidenced at the RUSTER JANGLE Y (BJY) of the NTS read network, "Scap radioactivity was detected in oif-site areas. Some radiation was detected in the area sorrounding 32 from gaseous radiaactivity released during post-shot drilling. No radioactivity was detected off the NTS from postshot operations.

, ,	
PST <u>CNT</u> PATE: 5 Nat 1962 - 5 Mar 1962	<u>\$PGNSGR</u> : LFL/D9D
<u>1182</u> : 1015 1815	<u>\$156</u> : NTS - Area 18 37° 05' 30.79" N
7 <u>0</u> 741, Y1 <u>214</u> 0; 0.42 kt	116° 21' 53.82" W
and and the second s	SITE ELEVATION: 5477 fr MSL
<u>CRATER DATA</u> : Diameter: 214 ft Depth: 62 ft	<u>puppa or mosso</u> : 110 Ct
eepent of it	TYPE OF BOPST AND PLACE(EST) Underground, in basail

Dansy Boy

#### VEXTING:

OPERATION NOUSAR -

A persistent cloud was produced containing appreciable quantities of radioactivity associated with particulates

### REMARKS :

The close-in and distant fallout docementation (Figures 1 and 2) was performed by the RDC. AN/PDR-39A (on-charber instruments were used to measure field gamma dose takes. Most of the relation of (from 2.560 f) to 25,000 it from 62 were accomplished from 642 hours to 3429 hours. Ground surveys beyond 2,500 ft downwind from 62 continued through D49 days. The area from 62 to a distance of 2,500 ft downwind was surveyed at later times. The dose-rate readings were extrapolated to SF1 hour using a decay approximation. The dotted portions of the patterns indicate uncertainty.

The off-site patterns (Figs.314 & 335) were constructed from aerial survey reasurements performed by EGAG and the COGS. The EGAC survey which took place from 0.5 to 0.47 hours, defines the pettern from miles to approximately 25 miles. Two days later the long-range survey out to 140 miles was made by the USGS.

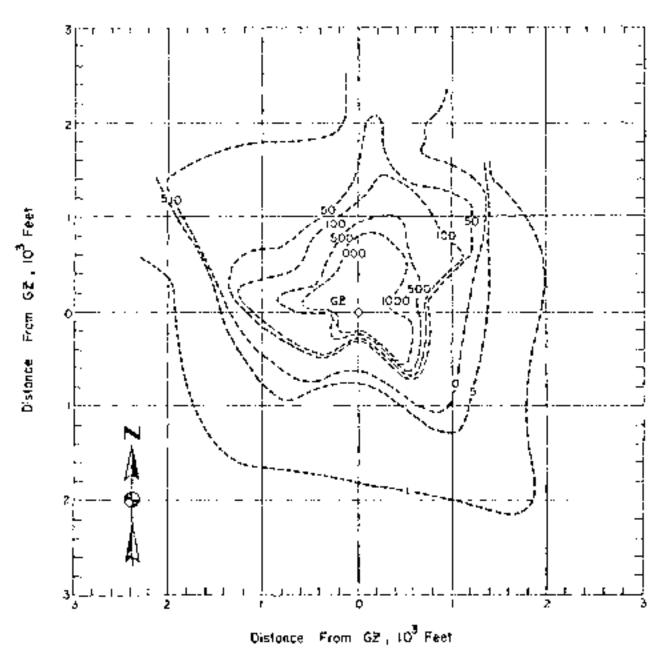


Figure 312 OPERATION NOUGAT - Danny Boy contours of residual radiation in R/hr at R+l hour to 2,000 feet downwind

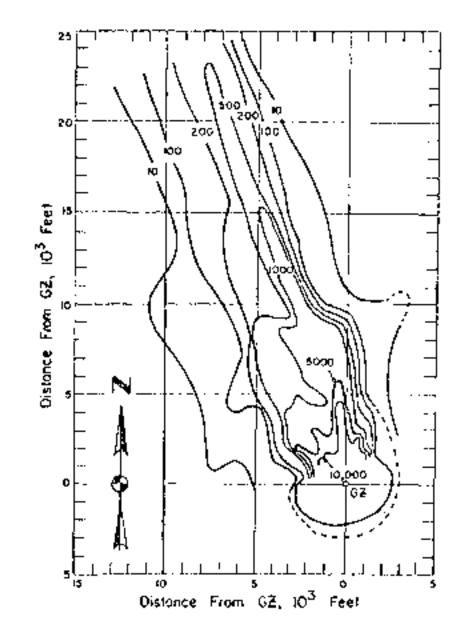


Figure313 OPERATION NOUGAT - Doany Boy contours of residual gamma radiation in mR/hr at 8+1 hour to 25,000 feet downward

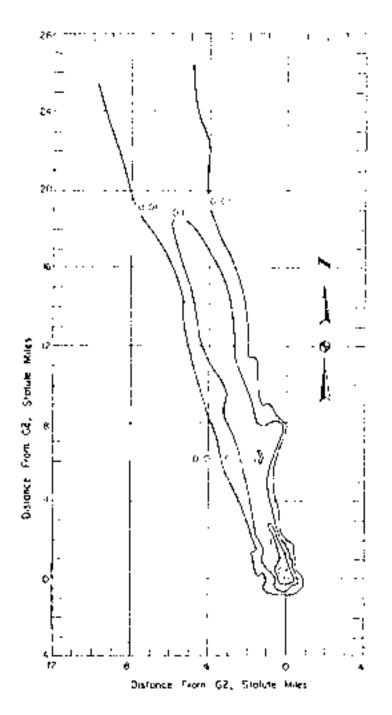


Figure 511 OPEXAILON NOUGHT - During Dow mentories of revealed lighted rescalter in Reflectat list hour to 26 balles downstor.

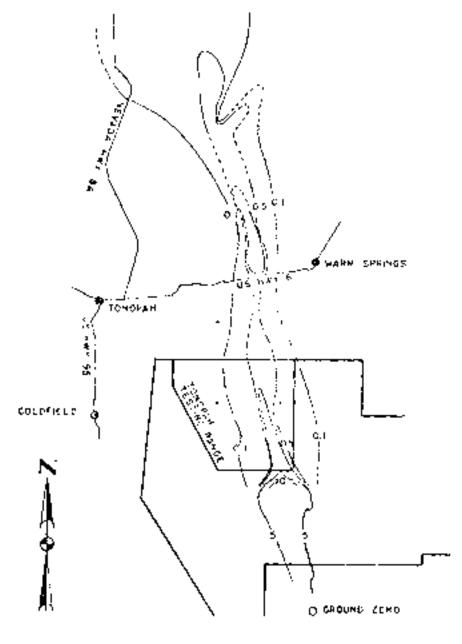


Figure 51%OPEEATION NOUGAT - Danny Boy contents of reactual gauges radiation in mU/hr at Erl hour to 140 males downwind

TABLE 104 NEVADA WIND DATA FOR OPERATION NODGAT - DANNY BOY

Altitude	<u>8+10i</u>		
(MSL)	Direction	Spred	
teet	degrees	աշչեւ	
5.417	170	)3.5	
6,000	171	15.0	
7,000	178	17.3	
8,000	184	23.0	
9,000	190	31.2	
10,000	292	34.5	
11,000	195	39.1	
12,000	199	42.6	
13,000	202	52.5	
14,000	206	54,1	

### Notes

- ). Observations made at Area 18 radar site.
- Atmospheric pressure was 832 millibars, the temperature was 5.3°C, the dew point comperature was -12.2°C, and the relative humidity was 27% at GZ at 1015 PST.

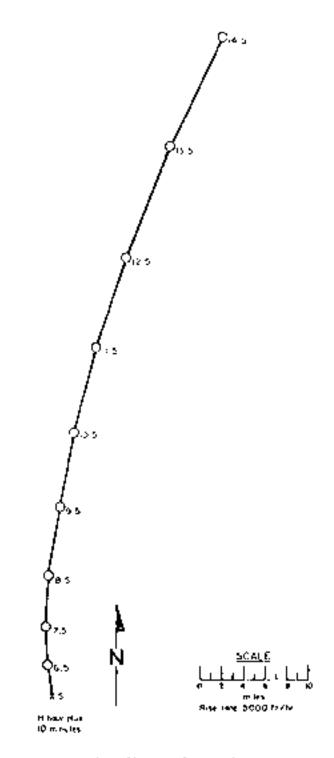


Figure 316, Hodograph for OPERATION NOUGAT -

Dampy Pay.

OPERATE OF STATEAU -

Equal the

 Port
 GMT

 (Nord)
 (Nord)
 6 Marc 1962

 (100)
 04 Marc 1962
 1600

\$1700000 - 1751

<u>SITE:</u> STS = 0.55 37° 001 57.055" N 135° 001 01,067 W

BEPTH AVECTORS (C. 250) FU

# $\frac{3 \operatorname{YP} h}{\operatorname{Berlem}_1^2 (100007_{10}^{-1} \operatorname{Au} + \operatorname{Pr} (100037_{10}^{-1} \operatorname{Berlem}_1^{-1} \operatorname{Orb}_1 \operatorname{Au})}{\operatorname{Berlem}_1^2 (10007_{10}^{-1} \operatorname{Berlem}_1^{-1} \operatorname{Orb}_1 \operatorname{Orb}_1)}$

 $\frac{V(N_{\rm e} 1.61)}{h_{\rm e} m_{\rm e}} \approx 10^{-1} {\rm d} (10^{-1} {\rm d} g_{\rm e}) \approx 10^{-1} {\rm d} (10^{-1} {\rm d} g_{\rm e})$ 

# <u>X:25</u>X:254:

No radiation levels were detected above block count on or of) the bis from radiation tivity released by this detonation.

ions islighting was deterted in the area surrounder; SZ trailing and publicativity released do intropent-sour dribling. We radiancelivity was directed off the NTS frequent-clust spectrees.

OPD2ATION NAMES -Brazos 6317 SPC2SOF : LLU.  $\mathbf{P} > 3$ DATE: 8 Mar 1951 8 Mar 1962 STTE: NTS - 1911 CIMU: 1000 180.0 37° 07' 19.7891" 2 116" 0.1 55,9678" 2 20148\_21819: 715 kt \$1.7 <u>ULEVATION:</u> 4701 (0.223) CRATER DATA: Subsidence crater FIRE OF CLASS. SAL FI Diameter: 450 ft SYPE OF LUCCE AND PLACEMENTS: Depther 40 Sc Underground, to slightly consult date of utilizing

## YESTING:

this event refeased small visible quantities of radioactive steat and/or gases.

# REMARKS (

Rediction was detected on-site from radiometivity schowed by this detendion. So induction levels above background were detected off the Nix in produced areas from radiometivity inleased by this detending. Some radiation was detected in the area surrounding S2 from gasenum ratio activity released during post-shot drilling. So radiometivity was released from pust shot operation. OPERATION ROYCAL -

Hogonse

	P.8 i	GMT
DA162	15 Mar 1962	15 Mar 1952
$\underline{TTME}$ :	08,00	16 33

 $\frac{\text{SP}(0) \text{SOR}}{\text{STED}}: = \text{LASL}$   $\frac{\text{STED}}{37^{*}} = 0.3.6$   $37^{*} = 0.2^{+} - 39.769^{+} - 8$ 

116° 01' 51,774° W

DEPTH OF BURST: 789 FL

TYPE OF BUSS! AND PLACEMENT: Underground, in allovium

# VENDONGE

None except during post-shot drilling

# RL/MARKS :

No radiation levels were detected above background on or off the STS from radioactivity released by this detonation. Some radiation was detected in the area surrounding SZ from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations.

OPERATION NOUGAT - Recaid	
DATE: 28 Mar 1962 28 Mar 1962	<u>81988599</u> 2 1.33.
<u>VINE</u> : 1000 1800	<u>\$177</u> ; XIS - 09j 37° 07' 27.5474" N
TOTAL YIFLD: 3 kt	116° 02' 01,9685" W
CRATER DATA:	SITE ELEVATION: 4233 if MSL
Subsidance crater Diameter: 310 ft	DEPTH OF MORST: 614 (t
Depth: 25.3 ft	TYPE OF SUBST AND PLACEMENT: Coderground, in sulf below allovide

# VENTING:

Noun except during post-shot defiling

# REMARKS :

No radiation levels were detected above background on or off the NTS from radioactivity released by this detenuities. Some radiation was detected in the area surrounding SZ from gammans radiantivity released during post-shot drilling. No radioactivity was detected off the NTS frum post-shot operations. OPERATION NOTION CERTIFICATION P

$\frac{P_{55}}{(M_{1}^{2})^{12}} = \frac{P_{55}}{(5.5)^{12}} = \frac{1671}{(9.62)} = \frac{671}{(5.5)^{12}} = \frac{1002}{(5.60)} = \frac{1002}$	$\frac{5P0080}{9120} = 0.083$ $\frac{9120}{37} = 303 = 0.385$ $\frac{37}{10} \frac{0.24}{10} \frac{58}{5} \frac{5759}{37} 0.$ $116 = 00^{2} - 12.35 0^{2} 0.3$
	S <u>CLE ELENATION</u> E - NOVE SE BAL
	BERTH AT ARREST AND AND A
GLOUD TOP BELIERS: STOR AC ASD	01918
	<pre>0YEL_CL_1() a (VO_22) (creation) 0macroscology (creation))</pre>

# <u>VEST (655</u> :

A dust cloud was closerved at 0 bruck

# REMARKS :

A ranking radiation reading of 20 mS/Wr was teented at SZ at 845 minutes. Some other radiation levels above second background were notected near St. No other radiation lowers detected on or off the NTS free radioactivity released by this detonation. Core radiation was detected in the area surrounding SZ free pressus publicantivity polyment during post-shot drilling. No radioactivity was detected off the KTS from post-shot operations.

OP21051103 R026AT - Dormonso 11

	PST	0.007
$D\Delta(23)$	5 6pr 1952	5 Apr 1962
21%/12	1000	1800

TODAY, YOUND IN AN AN

#### CRATER DATA:

# VESTING:

Note except during post-shot drilling

# <u>BIPLANKS</u>T

No radiation levels were detected above background on or off the NTS from radious (ivity released by this detension. Some radiation was detected in the area surrounding SZ from gasedes radioactivity released during past-shot drilling. No radioactivity was detected off the STS from post-shot operations.

# <u>SPORCOR</u>: (ASL <u>SITE</u>) NO - CBAZ 37' 02' 40.219" N 116" 01' 24.700" W

# printe on joinstly sparify

TYPE OF BOARD AND DEVICESOR Underground, in allovia: OPERATION NOTOAT -

Passole

	PST	СИТ
DATE:	6 Apr 1962	6 Apr 1962
$\underline{m}_{\underline{n}}$	1000	1800

<u>SPONSOR</u>: LRL <u>SITE</u>: NTS-U91 37° 07' 03.6276" H )16° 02' 38.4413" W

SITE ELEVATION: 4183 ft MSL

DUPTH OF BURST: 764 fc

TYPE OF BURST AND PLACEMENT: Underground, allovium tuff contact

VERTING:

None, except during post-shot drilling

#### REMARKS :

No radiation levels were detected above background on or off the NTS, from radioactivity released by this detenation. Some radiation was detected in the area surrounding 5% from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations,

OVERATION NOUGAT -	Hodson	
<u>PST</u> <u>DATE: 12 Apr 1962</u> <u>TINE: 1000</u>	GMT 12 Apr 1962 1800	<u>SPONSOR</u> : LUL <u>SITE</u> : NYS - CON 37* 07* 37.8426" N
		136" 07" 41.5226" W SIGE ELEVATION: 4000 (1 383.
		<u>DEPTH_07_50KSC</u> : 480 C(
<pre>VENTING: None, except during post-shot drilling</pre>	ĥ	<pre>YYPE OF EDEST AND PLACEMEST: Underground, in slightly consoludated alluvine</pre>

# REMARKS :

No radiation levels were detected above background on or off the NTS from radioactivity released by this detonation. Some radioactives was detected in the area surrounding SZ fram gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the SIS from post-shot operations.

49PERATION SUCCASE - Pilotus SPOUSOUS - EDD <u>- 16 April 1962</u> - 14 April 1962 o vina e 10.000 1000 \$4.0E) - Book - C120 (C1 18.5 NY 141 180361 X 1165 001 20172110 TOTAL STODE LLT KU STOLIGY THE CONTRACTOR CRACER DATA: Second on 0.07<u>16.0</u>0 (c. 1826) 51 CLODE LOY HELIGATE SLOW \$1 MAL SLAND, S. P. C. NOT G. TYPE COLOR OF AN ADDRESS AND Summer, to weath conso is set toff

STONED BE MADERING:

lumnel - interbodded brown sandy toff and yellow gray lap 102 to01

#### VESSING:

Venting becared at the tendel yestal, through the aven, while at vent hele at 0+1.5 seconds. The firsters while tended on the tide of the bird, the radial crucks to bell on the state of the bird. A periodical vendes attracted to be an array approximate operatives of indicativity associated with perficht. The estimated down are at the tonnel perful, normalized to bell near, weight down and the estimated total tilesse, formulated to bell memory, we following the release products contained the following known instrument 100°, Ta °, 2r-NS°, Ca<sup>111</sup>, Ca<sup>110</sup>, C<sup>1101</sup>, C<sup>1101</sup>, C<sup>1101</sup>, C<sup>1101</sup>, C<sup>1101</sup>, C<sup>1101</sup>

#### REMARKS :

The cloud diffed is a northerly direction. The radiation area at H+4.5 hours extended upsted oppresidentely one mile from to and was contored at 10 p3/hr. Some radioactivity was detected in eff-site areas. No radiation was detected at the worksite or any other location from releases of gaseous radioactivity dering post-shot drilling or tennet re-entry operations. OPECATICS NOS-AT -

Delad

	<u> </u>	<u>681</u>
<u>25</u> ATE :	21 Apr 1962	21 Apr 1952
11:0.5	1040	1840

<u>SPAGEOR:</u> ERL <u>SITUE ATS - 109x</u> 37° 07° 0814176° 3 116° 01° 5314347° % <u>S736 EULONDOR</u>: 4761 (1985)

DUPER OF CLASSES 634 ft

INPE OF ECOSE ASA PLACEDENT: Underground, in oflowing.

VER DESCE

New, except during post-shot drilling

REMARKS

We radiation levels were detected above background on on off the UIS from radioactivity released by this detonation. Some radiation was detected in the area surrounding S2 free gaseous radioactivity released derivation perturbed detiling. No radioactivity was detected off the NTS tree post-shell operations.

OPERATION NOUGHT -

Black

	PS1	<u> </u>
DATE:	Z2 Apr 1962	27 Apr 1962
TIME:	1099	1800

5900508: 1.RE.

<u>SITE</u>: 31S-C9p 37° 07' 06.4610" N 116° 07' 35.9730" W

SITE SLAVATION: 6217 It MSL

DEPTH OF BURST: 714 (1

## TYPE OF BURST AND PLACEMENT: Underground, in tuff helow allevium

<u>VENCING</u>: None, except during pest-shot drilling

## REMARKS :

No radiation levels were detected above background on or off the STS from radioactivity released by this detonation. Some radiation was detected in the area surrounding SZ from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the STS from post-shot operations.

OPERATION NORGAT - Paca

	PST	CX7
<u>dati</u> :	7 May 1962	7 May 1962
TIME :	1133	1933

<u>spoxsor</u>	: LASU	
<u>8176</u> :	NVS - Upix 37° 02' 47.6237"	Ы

116° 01' 30.0318" W

DEPTH\_ST\_DURST: 848 ft

TYPE OF BURST AND PLACEMENT: Underground, in allevium

#### VENTING:

None, except during post-shot drilling

## REMARKS :

No radiation levels were detected above background on or off the SIS from radioactivity released by this detenation. Some radiation was detected in the area surrounding S2 from gaseous radioactivity released. during post-shot drilling. No radioactivity was detected off the MTS from post-shot operationOPERATION NOCCAT -Aardvark PNT <u>.c:r</u> 52005<u>503</u>; 1ASL 12 May 1962 32 /lay 1962 DATE: SATE: NED - Ugoma T.ME: 1100 1960 37° 03' 54.6976" X 116° 01' 49.3656" % TOTAL VIELDS 38 Kt DEFIG\_OF\_BURST: 1624 ft CRATER DATA: Schuffence crater TYPE OF BORST AND PLACEMENTS Diameter: 950 ft Underground, in tuif Depth: 75 ft VENTING: Vented

#### REMARKS :

Radiation was detected on-site from radioactivity released by this detenation. No radiation levels above background were detected off the NTS in populated areas from radioactivity released by this deronation. Some radiation was detected in the area surrounding SZ from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations. 0170943 fOD 18002031 -

Ee i

	1947	GMT
DATA: TIRZ:	<u>19 209 1982</u> 0700	10 May 1903 1900
11020	01.00	1,000

SPORSOR: ERL

<u>811E</u>: 000 - 095 37° 07' 21.557° 0 116° 02' 50.9565° ₩

SIN MANATICN: A199 FU MAL

DEPTH OF BURGIE - 714 Ft

TYPE OF BURCT ADD PLACEMENT: Independent, is alloying

#### MOST COST

Ventice in the form of a geymer, occurred at H+10 seconds at ventical Dym-2 and continued steadily until H+19 minutes W2 seconds. A similar venting occurred at H+15 seconds at venticate U9-m3 and lasted on til H+11 seconds the ventical exact with cruter rule idence The pointized H+1 bour estimated dure rate at 500 first from 02 and the negralized H+1 minute est)mated total referees respectively area 7 R/se and 500° curies. The known isotopes area  $\frac{1000}{100}$ ,  $\frac{1$ 

#### REMARKS (

Some radioactivity was detected in off-site areas. No radiation was detected at the Warksite or any other location from releases of gascows radioactivity during post-shot drilling. At S+30 minuter readings at 1000 feet from SZ varied between 250 and 500 mR/hm with the exception of a location 1000 feet morth of SZ where readings continued at more tuan 100 B/hm contrary to prediction.

OPERATION NOUGAT -

Shite

	<u>PST</u>	CMT.
DA016 (	25 May 1962	25 May 1962
TIME:	0700	1500

- SPONSOR: LEL
- <u>8115</u>: (mm = trpe 37° 07' 29.4725" N 116° 03' 07.1518" W

SITE ELEVATION: 4200 fr MSL

DEPTE OF LORST: 635 ft

## TYPE OF MURST AND PLACEMENT: Underground, in allovion (Loff)

VENTING:

None, except during post-shot during

#### REMARKS :

No radiation levels were detected above background on or off the NTS from radioactivity released by this detonation. Some radiation was detected in the area surrounding SZ from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations.

OPERATION NOUGAT -

Raccoon

	PST	GY:T
<u>DATE</u> :	1 Jun 1962	1 Jun 1962
TIME:	6900	1700

SPONSOR: LASL

<u>SI)%</u>: NTG - URaje 37° 02' 44.206" N 116° 02' 64.059" W

## DEPTH OF BURST: 539 fc

TYPE OF BURST AND PLACEMENT: Underground, in alluvium

#### <u>VENTING:</u> None

## REMARKS :

No radiation levels were detected above background on or off the NTS from radioactivity released by this detonation. No radiation was detected at the worksite or any other location from releases of gaseous radioactivity during post-shot detiling.

OPERATION SOUGAN -

Расктан

	<u></u>	<u></u>
DATES	6 Jua 1962	6 Juni 1962
TINES	0900	1700

SPOSSOE: LASL

DEPTH OF BURST: 860 ft

TYPE OF ETEST AND PLACEMENT: Underground, in alluvium

VESTING

Vented

## REMARKS :

Radiation levels were detected near SZ above normal background from radioactivity released by this detonation. No other radiation levels were detected on or off the NTS from radioactivity released by this detonation. Some radiation was detected in the area surrounding SZ from gaseous radioactivity released during post-shot drilling. No radioactivity was detected all the NTS from post-shot operations. OPERATION NOUGHT - Des Moines

	PS3	623	SPOresore -
DATE:	13 Jun 1962	13 Jun 1962	
T1 M5 ±	1300	2100	51TE: 5
··			

עדא: אדא - 5125.01 37° 13' 20.00" א 116° 09' 43.78" ש

1.3.L

SATE ELECATIONS 5:001 fr. MSL.

DEPTH OT SUSSE: 660 ft

SLANT DECTU: 610 ft

TYPE OF BESST AND PLACEMENT: Turnel, in weakly consulidated tuff

#### VENTING:

Venting began at 000.2 seconds on top of the kill at SZ, then from a yout hole at the face of the kill and finally through the period. The duration of the release was approximately 5 minutes.

The estimated dose rate at Access Road consolized to SF1 hour, was 100 R/hr, and the estimated total release, normalized to SF1 minote, was  $3810^{10}$  curies. The release products centained the following isotopest  $1^{100}$ ,  $1^{100}$ 

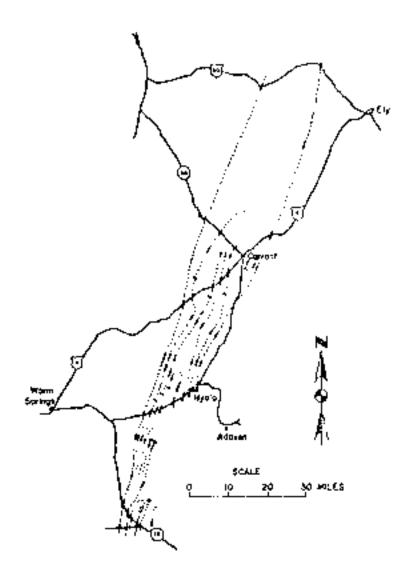
## REMARKS:

The shot vented out of the tunnel mouth with sufficient pressure and flow rate that radioactive debris was projected entirely across the canyon and deposited on the slope behind a traiter shelter. This shelter was not shielded from failant. The entrance to the shelter faced away from the tunnel but the door was open. CENERAL (OS NOBORT - Des Malaca

The shot caused  $\mathbf{J}^{1,n,2}$  will contamination in the following locations: Adavam, Nevada, 360 pc/f on 20 June; Elko, Kevada, 610 pc/f on 22 June; and Spekane, Washington, 1,240 pc/f on 20 June. All measurements were made from samples taken from fresh milk except those at Spekane which were made from peoled milk at a pasteurizing plant.

Figure 317 shows contours of residual parama radiation in units of thousands of counts per second at 500 feet above the ground and are dashed where estimated. Pre-Des Meines background is assumed to be 1,000 counts per second. The cerial surveys were performed by ACMS-1 (USGS) on 27, 28, and 30 June 1962.

No radiation was detected at the worksite or any other location from releases of gaseous radioactivity during post-shot drilling and tunnel re-entry operations.



G2

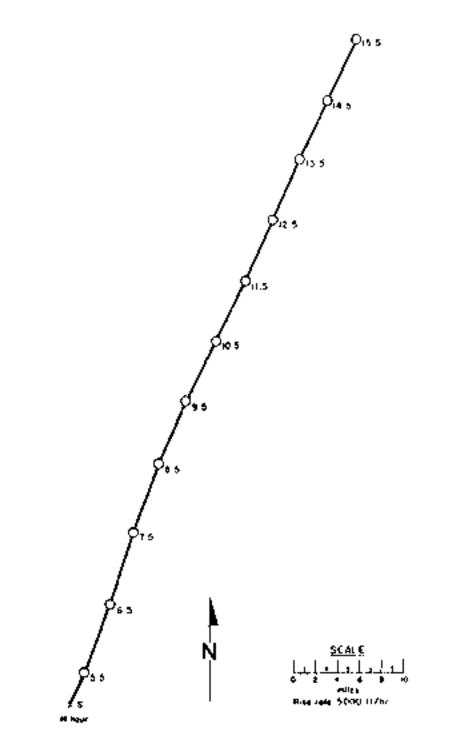
Figure 317 OPERATION NOUGAT - Days Motices contours of residual gamma radiation in thousands of counts per second at 300 feet above the ground at H-14 days

TABLE 105 NEVADA GING DATA FOR OPERATICS NOSCAR - BUS MOINTS

Altirude	H-hpur (Note 1)	
(MST,)	Disculion	ភព្វ ខេត្
fret	degrees	ութեւ
5,635	2()4	32.2
6,000	200	32.2
7,000	198	33.4
8,000	200	33.4
9,000	204	29.9
10,000	205	29.9
11,000	205	29.9
12,000	204	29.9
13,000	205	28.8
14,000	206	28.8
15,000	206	29.9

## Notes

- 1. Observations made at Yucca weather station,
- 2. Surface data (from KADS) at level of GZ over Area 12, 3-houst Atmospheric pressure 819 millibars, temperature 20.3°C, relative humidity 12%.



Pigure 518.Rodograph for OPERATION NOUGAT -

Des Moines

OPERATION SOUGAT -

Dattan I

	1.25	<u> </u>	
•	71 Suc. 1962	21 Jun 1962 1766	
THE	6966	1700	

SPOUSOR: LASL

<u>SITE</u>: NCS - C3be 37° 02° 35.0325° N 116° 01° 49.9090° W

## DEFTE OF BURST: 854 Et

TYPE OF BURST AND PLACEDENT: Underground, in alloving

#### VEN 22802 Venced

#### REMARKS :

Radiation levels were detected near SZ above normal background from radioactivity released by this detonation. So other radiation levels were detected on or off the STS from radioactivity released by this detonation. Some radiation was detected in the area surrounding SZ, from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the STS from post-shot operations, OPERATION NOUGHT -

Naymaker

DIGK -	PST 27 Jun 1962	<u>GNT</u> 21 1mg 1062	SPOSSOR: LASL
<u>DATE</u> : <u>TOME</u> :	1000	1800	<u>SITE</u> : NTS - U3aus 37° 021 29,7466″ N
TOTAL	<u>YICLO</u> : 56 kt		116° 02' 06.8626" W
			DEPTH OF BURST: 1340 ft
Ľi	<u>DAVA</u> ; Jdenon crater ameter: 950 f pth:	-	TYPE OF BURST AND PLACEMENT: Underground, in allovium

VENTING:

Small visible quantities of radioactive steam and/or gas were released.

## REMARKS :

Fractionation of debris made analysis of yield difficult,

Some radiation was detected on-site from radioactivity released by this deconation. The shot produced detectable  $I^{101}$  contamination in milk. It produced levels of 180 pc/2 in milk on 30 June at Austin, Nevada Sume radiation was detected in the area surrounding SZ from gascous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations.

	• • • • • • • • • • • • • • • • • • • •		
DATES	155 28 Jun 1962	<u>- 0MT</u> 73 June 1962	5P03S08: 020
TIM:		1700	<u>SITE:</u> NTS - 016a 37° 00' 32,7636" 8 116° 12' 03,7533" W
			STERLEVATION: CORP. P.
			<u>DEFUT OF RUEST</u> : 1050 CC
Vented			\$1,4X1 DEPTH: 900 ft
			TYPE OF RUNST AND PLACEDUAT: Tunnel, in seriogided 1011

OPERATION NOBCRE - Marsimalley

## REMARKS :

Radiation was detected on-site from radioactivity pleased by this detonation. No radiation levels above background were detected off the NTS in populated areas from radioactivity by this detonation. No radiation was detected at the worksite or any other location from releases of gaseous radioactivity during post-shot deilling and tunnel re-entry operations, OPERATION NOUGAT -

Sactumento

	PST		GMT	
DATE:	30 Jun 1330	1962	30 Jun 2130	1962
<u>TINE;</u> ;	1000			

<u>SITE:</u> NTS - 69v 37° 07° 02.6883″ N 116° 02° 50.6975″ W

SITE ELEVATION: 4178 ft MSL

DEPTH OF BURST: SUD 1:

SPONSOR: LRL

TYPE OF BURST AND PLACEMENT:

Underground, in slightly consolidated alluvium

#### VENTING: None

#### REMARKS :

No radiation levels were detected above background on or off the NTS from radioactivity released by this detonation. No radiation was detected at the weiksite or any other location from releases of paseous radioactivity during post-shot drilling. PROJECT SELAN

<u> </u>		<u>576255-8</u> 2 LRI.
<u>DAGL</u> : 6 Aul 1 <u>TINL</u> : 6900 TOTAL YICED:	982 6 Jul 1952 1700 119 kt	<u>SITE:</u> NIS - USON 37° 10' 37.2249" N 186° 02' 43.3003" W
		SITE ELEVATION: 4317 (c. US).
CRATER DATA: Diamotor: 12	14 ×15 F.	DEPTH OF SURSY: 635 ft
	14 -17 16 920 ft	TYPE OF HERET AND PLACEMER "- Underground, in alluvium
CLOOD TOP USICE	T:	

16,000 H ( 51,

## STERMING RATERIAL:

A 36-inch digneter cased drill hole backfilled with dry sand

#### VENTING:

A persistent cloud was produced containing appreciable quantities of radioactivity associated with particulates,

#### REMARKS:

The fallout was documented to a distance of approximately 140 statutemiles devoxing. The bulk of the data was taken in the period K+20 to 0+28 hours and, since the decay was unknown, by referencing these data to H+24hours using  $t^{-1}$ ,<sup>2</sup> decay, the error introduced is relatively small. The values thus obtained are considered reasonably reliable both on-site and oif-site.

The significant contributors to the N+24-hour gamma dose rate were fission products,  $W^{107}$ , and  $Na^{14}$ . Approximately 52% of the gamma dose rate (H+24 hour) was due to fission products, 55% due to  $W^{107}$ , 2% due to  $Na^{24}$  and 41% due to  $W^{101}$ ,  $W^{100}$ , Be<sup>7</sup>, Ma<sup>10</sup> and tracets, It was assumed that there was no fractionation and that like fractions of components escaped from the crates.

Figs.319& 320 present the gamma dose-rate contours at H+1 hour for the close-in and distant areas respectively. Dashed portions of contours indicate uncertainty. The patterns were reduced to show dose rate from fission products at H+1 hour, by multiplying the E126-hour contour values by 0.42 mill extrapolating these values to H+1 hour.

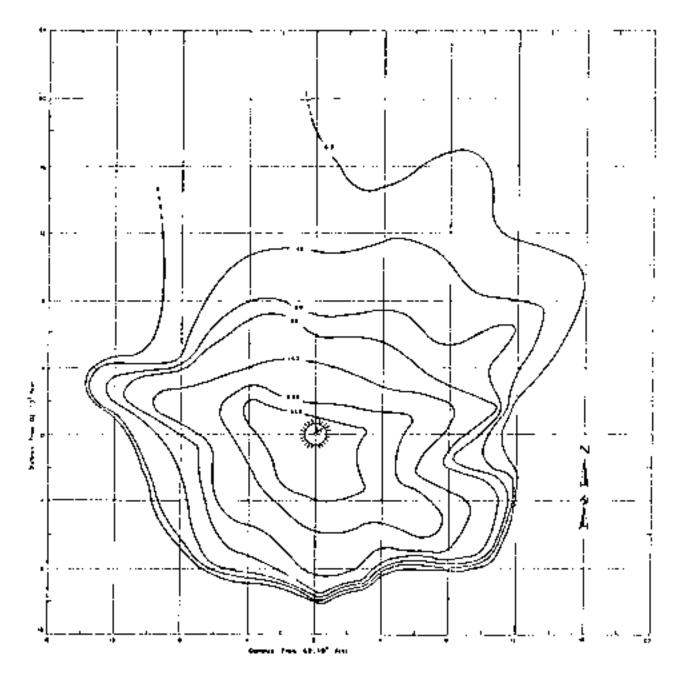
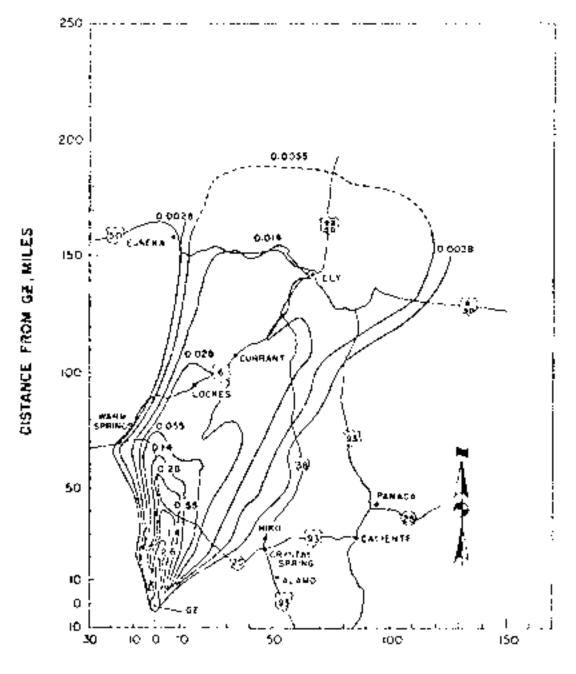


Figure 319 Project Sedan - Contours of residual gauna reduction (for fission products) in R/br at H-1 hear to 20,000 Feet



DISTANCE FROM GE, MILES

Pigure 520, Project Solar - Contours of residual gamma radiation (for fission products) in R/hr at 0.1 hour to 160 million (losinghad)

A)Litode	II+[3	sinutes
_(2.S2.)	Direction	Speed
Test:	degrous	թերի
Surface	160	11.5
5,000	150	11.5
6,000	170	10,4
7,000	200	10.4
ຮູດບຸດ	210	12,7
9,000	220	15.0
10,000	210	18.4
11,000	200	23.0
12 1556	200	30.0
13,030	190	26.5
14,000	190	19.6
15,000	150	15.0
16,500	180	9.2
17,900	220	6.9
18,000	220	6.9
19,000	250	6.9

# TABLE 106 KEVADA WIND DATA AN BUS INCLERT SEDAN

# Sec. 18

- ). Observation point: BCY, 4076 fr MSL; 4200 ft south of GZ.
- 2. Surface data for Area 10 at 8-22 minutes:

Almospheric prossure: Temperature:	868 ⊐il)ibars 28.5°C	
Dew point Lesporature: Relative heroidity:	below instrumental below instrumental	

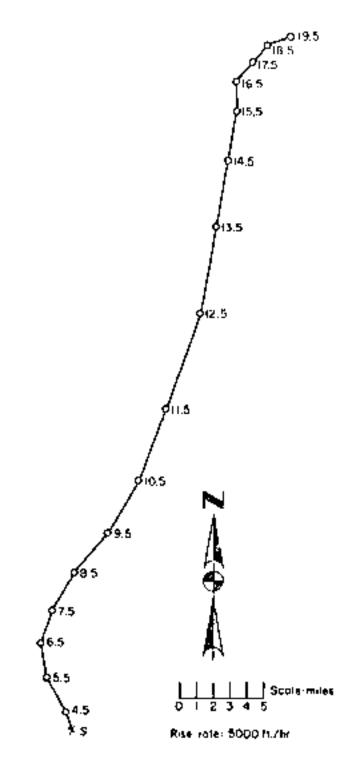


Figure 321, Hodograph for project Sedan

OPERATION SUCCESSM - Little Feller 11

Dartic	1987 7 Jul 1962	<u>6.91</u> 7 1.1 1562	<u>sponson</u> : dod
<u>T1200</u> :		1900	<u>SLUE</u> : STS - Area 18 37° 07' 09.1411" S 116° 18' 10.3321" W
			SITE ELEVATION: 5129 ft MSL
			HEIGHT OF BURST: 3 FC
11,0	<u>199 нејсн</u> у; 00 fi gisl		TYPE <u>OF DUDST AND PLACEMENT</u> : Near-Aurface, over Nevada soil. Device separted by a cable suspended between two posts.
- BUMA 65	F.		

REMARKS :

The close-in and distant contours of residual radiation are shown in Figures 322 thru 324. All the contours are considered reliable. The contours in Figures 322 thru 324 were supplemented by data from REECo Rad-Safe Group and other projects.

The REECO D-Day and D+1 day data used were corrected to i+1 hour. Dashed portions of contours indicate uncertainty.

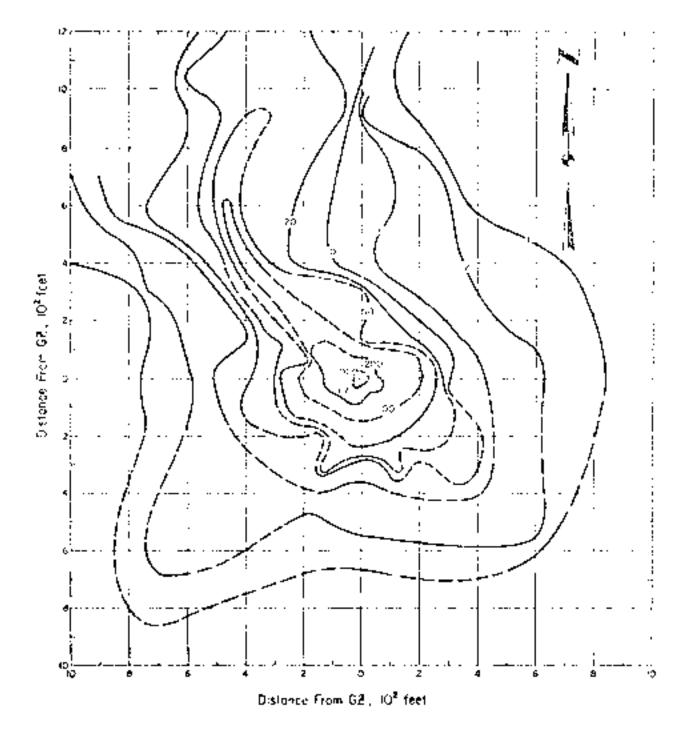


Figure 322. OPERATION SUNDERM - Little Felter II contours of residual goods cadiation in R/br 31 Url hour to 1,200 feet downwind

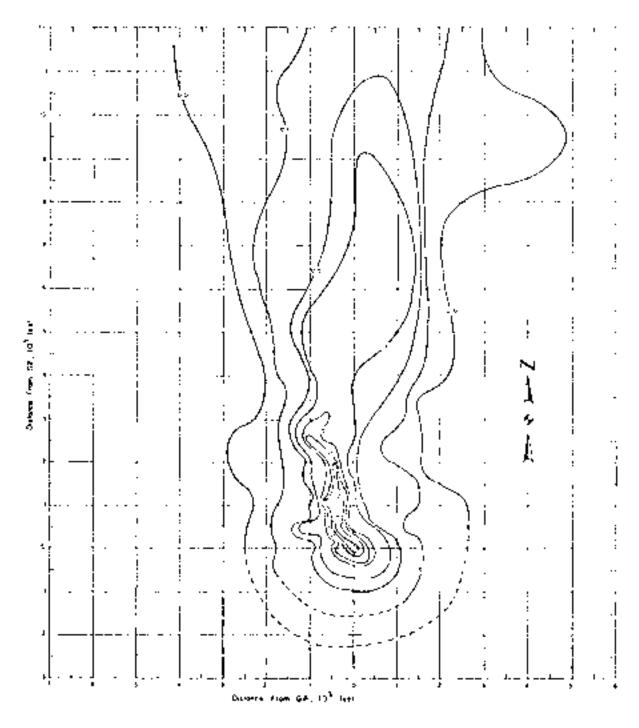
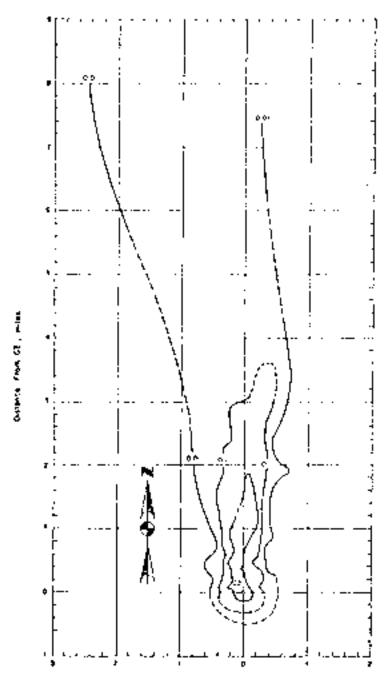


Figure 323 OFERATION DENORM - Little Poller 11 contours of residual gamma radiation in R/hr at Rel hour to 12,000 feet downwird



Descence Search 62, million

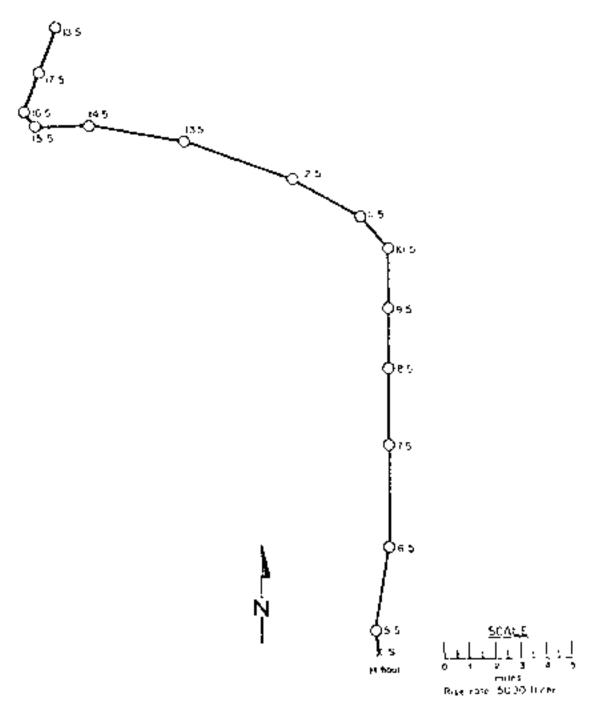
Figure 324. OPERATION SUNBRAM ·· Little Feller 11 contours of relational gamma emplation in 10 he at H+1 hour to H miles downwind

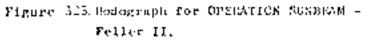
TABLE 107 NEVADA WIS	> DATA FOR	OPERATION.	SGREAM =	titring Plunger ft
----------------------	------------	------------	----------	--------------------

Aititude	H -h	aur
(MSL)	Direction	Speed
feel	degrees	ווחש
Serface	171	8.1
6,600	199	16.1
7,000	180	19.6
8,000	180	tS,0
9,000	120	11.5
10,039	180	11.5
11,000	140	B.1
12,000	120	15.0
13,000	110	21.9
14,003	100	18.4
15,000	90	10.4
16,000	140	3.5
17,000	200	8.1
18,000	200	9.2

# Notes:

- 1. Observations made at forward control point, Area 18.
- Air temperature at the surface was 35.5°C, and the relative humidity was too low to measure.





L15136

GPERAFION SUBBEAM -Johnse Boy  $PST_{p_1}$ GST SPONSON; DOD 11 061 0962 DATE : 11 Jul 1962 SITE: STS - Area 18 T1(20) = 08351645 37° 07' 20,9852" N 116° 19' 58,9352" W TOTAL YOU DI 0.5 KC SETE ADEVATIONS: 5153 (C. MSL. CRATER DATA: DEPTH OF SURST: 23 inches Discussorie 122 tt. 30.6 fc Depth: TYPE OF BERST AND PLACEMENT: CLOBE TOP REFORME 17,000 I: MSL Shallow undergroan!, in Nevada entit. CLOUD NOTICH ECICET: 12,500 ft MSL

<u>VOSCING</u>a

A persistent cloud was preduced containing appreciable quantities of radioactivity associated with particulates

#### DOMARGS :

The close in and distant contours of residual radiation are shown in Figures 326 a 327. Both contaurs are considered reliable. The close-in pattern of Figure 320 was supplemented by data from NRDL Project 2.9, SEL Project 2.20, and the REECU Rad-Safe unit. Decay corrections were made using the composite decay curve.

Figure 327 was supplemented in the distant portion by RhECO Rad-Safe Group data taken on D-day and by the Public Health Service on D+1 day. Decay corrections in the distant regions were made using a decay exponent of 1.2.

Dashed portions of contours indicate uncertainty.

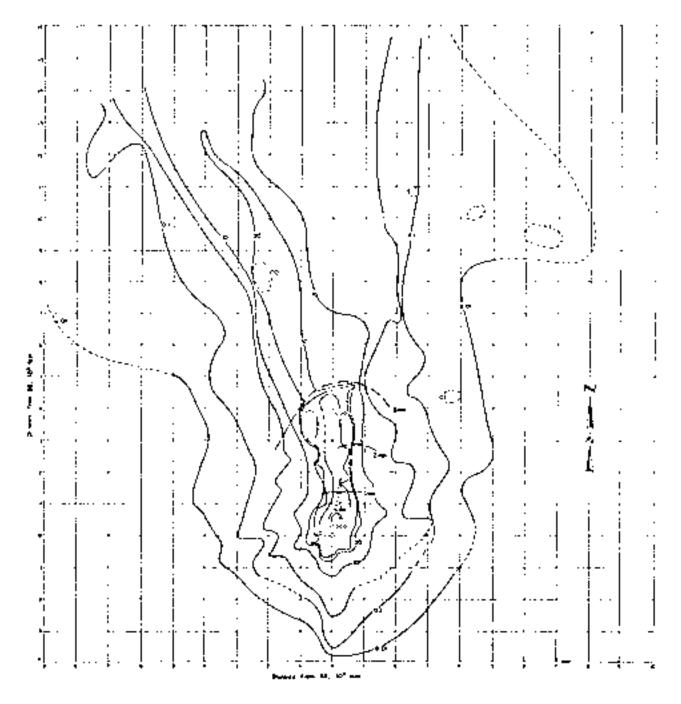


Figure 326. OPERATION SUBJEAX- Johnie Boy contours of residuol gamma radiation in R/hr at H+ 1 hour to 16,000 feet downwind, together with times of arrival based on experimental data

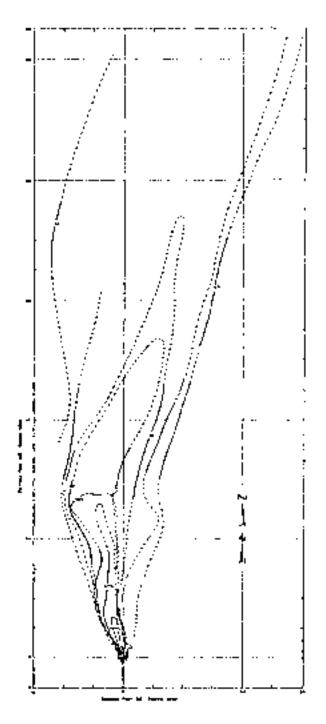


Figure 327 OFERATION SUNDERM - Johnte Boy contours of residual gamma rediction in mR/hr at N+1 hour to 100 miles downwind

Altinde	<u> </u>	<u>707</u>	164 ( )	berge
(MSL)	Direction	Speed	Digestion	Spec.
feat	Regions	m pbs	degrees	mp <sup>1</sup> :
Surface	195	8.1	210	12.3
6,000	170	5.1	210	11.5
7,390	160	8.1	170	10.4
8,000	160	12.7	150	32.7
9,000	169	18.4	1.70	32.7
10,000	170	17.3	190	15.5
11,000	180	13.8	200	11.5
12,000	180	17.3	200	17.3
13,000	190	20.0	200	25.3
14,000	200	24.2	200	25.0
15,000	200	25.3	210	29.0
16,000	200	25.3	210	29.9
17,000	200	31.1		
18,000	200	31.1		
19,030	210	29.9		
20,000	200	26.5		

## Notics :

- 1. Observations made at forward control point, Area 13,
- 2. All temperature at the surface was 24.3°C and the relative huraidity was 12%

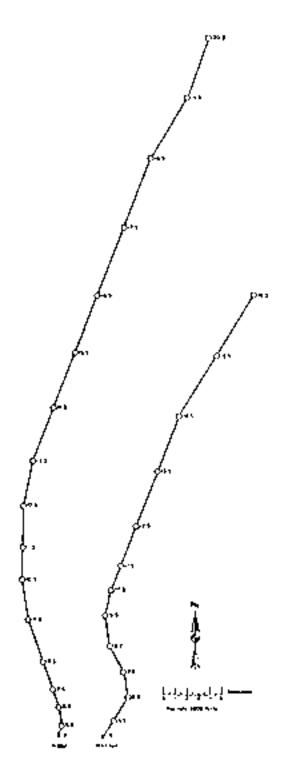


Figure 32S. Hodograph for OPTINTICS SUPERAM -

Jobstale 16-5

OFGRATICS CLARK -

Merriane

	207	1.12
<u>1777 %;</u>	15 842 1977	13 030 0582
1 <u>1779</u> ;	eDen	1630

- <u>SPONDOM</u>: LBL <u>STUB</u>: NTS - US66
- 37"03\* 10".0551" # 116"02\* 001000" #

SATE USAUTORS POPO NA KAP

DEFICION BURGT: 1385 ft

TYPE OF STOOL AND PLACEDURY Uniterprotein, is addinedly composition their allevien.

## VINCING:

This event released small visible quantities of radioactive steam and/or passa.

## 201565.01

Rediation was detected on-site from radioactivity released by this detonation. To radiation levels above background were detected off the NIC in populated areas from radioactivity released by this detonation.

Some radiation was detected in the area serrounding SZ, from gamman radiality released during post-shot drilling. We radjanctivity was detected off the STS from post-shot operations,

OPERATION SUNBEAN -

Small Boy

	PST	<u>CMT</u>
<u>DATR</u> :	14 Jul 1962	14 Jul 1962
<u>11ME</u> :	1030	1830

SPENSC	<u>)R</u> ; (	000		
ST TE:				
	36°	481	CB.9942"	н
	115°	\$51	89,2031*	Ж

SITE BLEVATION: 3070 ft MSL

HEIGHT OF SURST:

CLOUD TOP HEICHT: 19,000 ft MSL

TYPE OF BURST AND PLAGRENT: Tower, over Nevada doil

#### REMARKS :

The close-in and distant contours of residual radiation are shown in Figures 329 thru 332 The estimated Small Boy GZ contours of Figure 329 are based on data taken from D-day to D+2 days by NDL, NRDL, and REECO. The composite decay curve of NUL Project 2.8 was used to correct the data to H+1 hour. The close-in contours of Figure 330 are revisions of those it data from NLDL. Troject 2.11 included and supplemented by data from the REECo Rad Safe Group and NDL Project 2.9.

The two off-site contour patterns are shown in Figure 331 (out to 29 miles) and Figure 332 (out to 300 miles). The middle portion of Figure 331 (around 15 miles downwind) was constructed using data from NDL, UCLA, NRDL, and the PMS. The portion farthest downwind was constructed from data obtained by NDL and UCLA. The contours were corrected to 8+1 hour using a decay constant of 1.27. Figure 332 is based almost entirely on ground monitor surveys conducted by NDL, UCLA, and the FMS, supplemented by aerial surveys by CETO Project 62.80. The data were extrapolated back to 8+1 hour by  $1^{-1}$ . The fallout started arriving at 25: to 400 miles downwind sometime in the latter part of 0+1 day reaching a peak at 0+2 days. Figure 373 shows the probable path of the Small boy cloud as determined by exposure rate measurements as far as western Nebraska.

In all the figures the dashed portions indicate uncertainty.

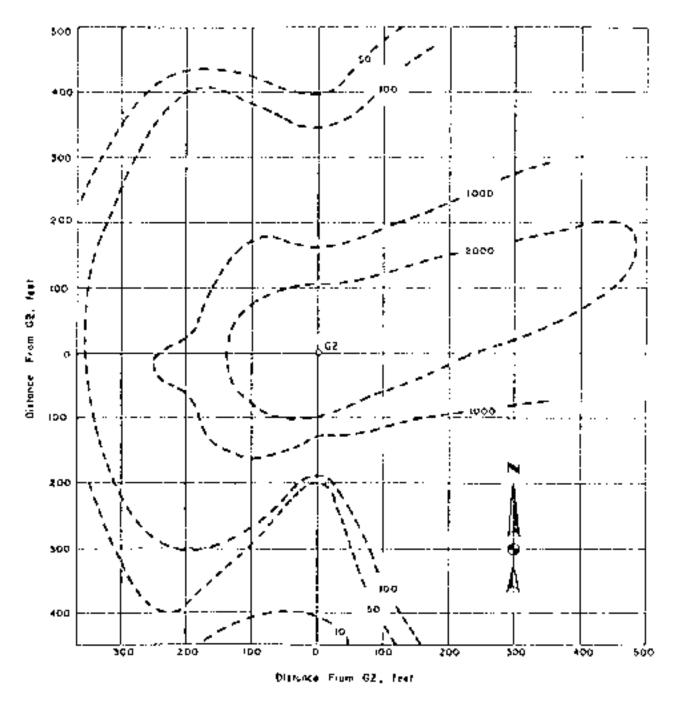
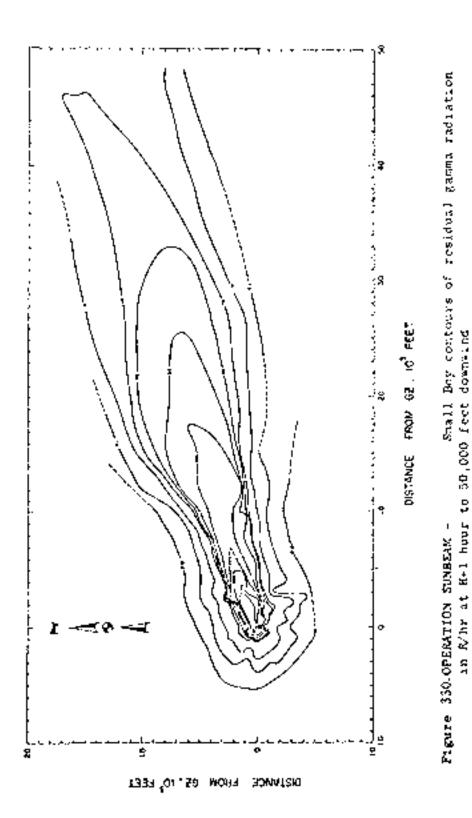
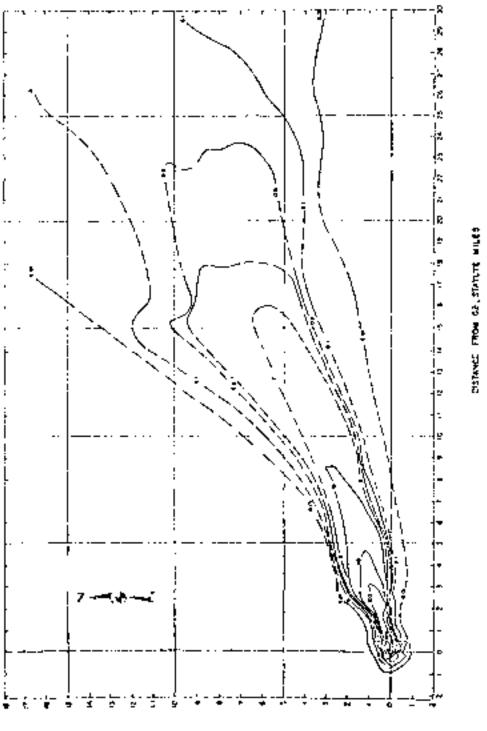


Figure 329. OPENATION SUBMIAM - Small Boy 62 area contours in N/hr at H+1 hour





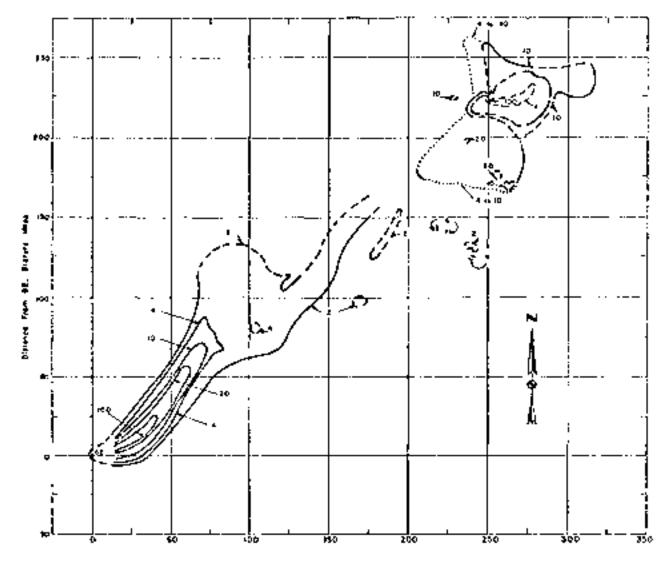


Shall Boy contours of residual garna radiation

in RVhr at H+1 hour to 29 miles downwind

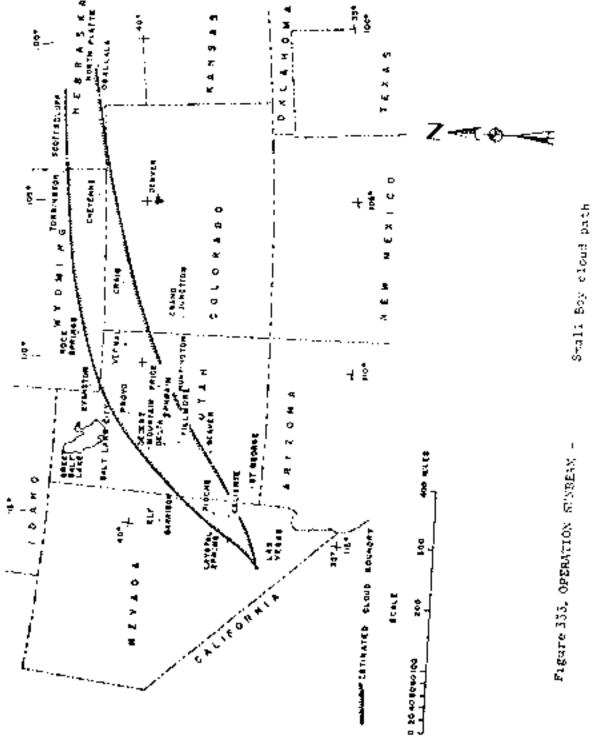
Figure 331, OPERATION SUNDERM -

CREWHCE LARM OS " 2142/12 MILES



Disignes Fran. 42, Statute Milles

Figure 332. OPERATION SUNBEAM - Small Boy contours of residual gamma radiation in f/hr at N+l hour to 300 miles downwind

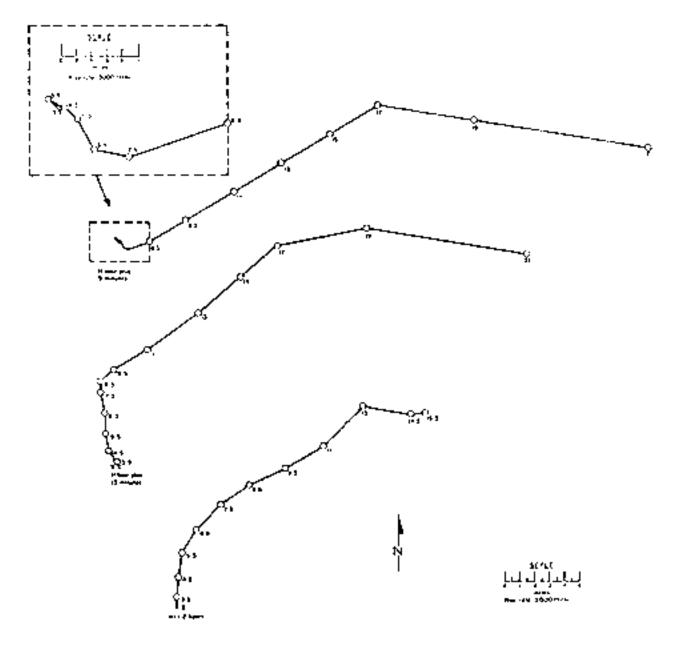


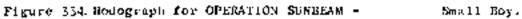
Altitude (MSL)	H+5 Strutes		R+1/4 Nour		E470 Minutes	
	Direction	Spe+-d	Direction	Speed	Direction	Speed
fect	degrees	ությո	degrees	ripta	digravs	ւորի
3,076	135	2.3	120	12.3	031	6.9
4,000	300	1.2	145	6.6	185	6.9
5,000	310	1.2	170	5.8	188	8.1
6,000	3.30	2.3	180	6.9	212	9.2
7,000	2 80	2.3	170	6.9	224	11.5
8,000	250	6.9	180	3.5	2 3 7	11.5
9,000	240	13, B	2.30	5.8	245	12.7
10,000	240	18.4	240	12.7	240	15.0
12,000	240	9,2	235	10.4	225	9.2
14,000	240	9,2	230	9.2	280	8.1
15,000	-	-	-	-	265	4.6
16,000	240	9.2	230	8,1		
18,000	2.80	16.1	260	15.0		
20,000	280	28.8	280	25.5		

# TABLE 109 NEVADA NIND DATA FOR DESEATION SUBSEAR - SHALL ROY

# Note<u>s</u>:

- 1. Observations made at Frenchman's Flat.
- Air temperature at the serface was 31.7°C; the collative humidity was 16%.





OPERATION SCHEMAN - Little Feller I

	293_2	G992
	17 56 19 2	17 JUL 362
27266	0900	1700

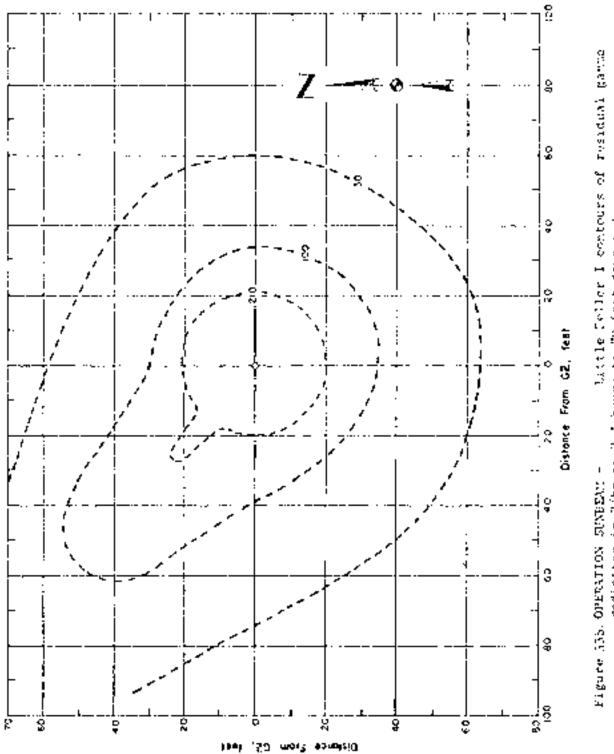
$\underline{\operatorname{SPC}(\operatorname{SCR})}_{1} = \operatorname{DCD}$
$\frac{\text{SIME}}{37^6};  \frac{1013}{37^6};  \text{Area} = \frac{13}{30.77947}; \\ \frac{37^6}{116^6};  \frac{30.77947}{107};  \frac{30}{277777};  \frac{30}{27}; \\ \frac{116^6}{37};  \frac{107}{37777};  \frac{30}{77777};  \frac{30}{77777};  \frac{30}{77777};  \frac{30}{77777};  \frac{30}{77777};  \frac{30}{777777};  \frac{30}{777777};  \frac{30}{777777};  \frac{30}{7777777};  \frac{30}{7777777};  \frac{30}{77777777};  \frac{30}{7777777777};  \frac{30}{777777777777777777};  \frac{30}{77777777777777777777777777777777777$
<u>5116 (6909/5000); 5055 m. 1955</u>
<u>19:15;77</u> CF 2:287;
TYPE OF MORTAND PLACEMENT: Near stream, over level: spill - Witheas fired from Davy

CL/CD TOP HEIGHT: 11,000 ft MSL

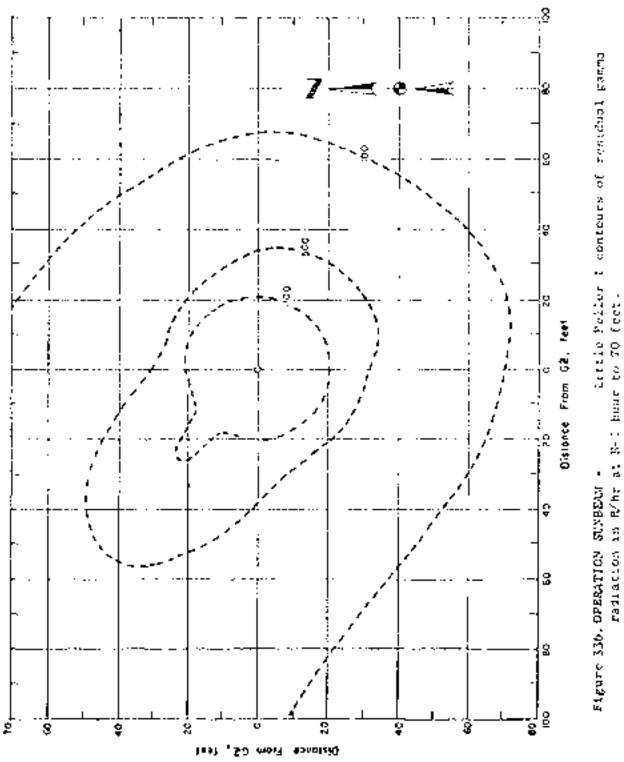
spill Winnerd fire/ from P Crockell Weapon system.

#### REMARKS:

The close-in and distant contours of realded) radiation are shown in Figure: 335 thru 338. The very close-in collours are shown in Figure 335 - Figure 337 change contours of resident genus addiction at File hours to 12,000 feet durated, The earliest reasons, were not taken unted approximately H+4 hours because troop expresses are extended in to ares of interest st earlier times. The application of an average decay exponent to the ownall pattern or representative particles of the pathenes did not appear to be justified; Domefore the H-b-how patterns in proseared at the basic petterns and are considered reliable. The ark-hour patients were constructed from date obtained by 20%, REECO Red Sub- Snowj remote units, and DBS off-site surveys. Figures 356 and 338 are the recall of arbitraryly applying a decay exponent of 1.2 to produce 203-hour patterns. There petterns are given only to veresuet the order of magnitude of the H+1-hour dose rates and are considered to be much loss reliable then the oner representing X-4 hours.









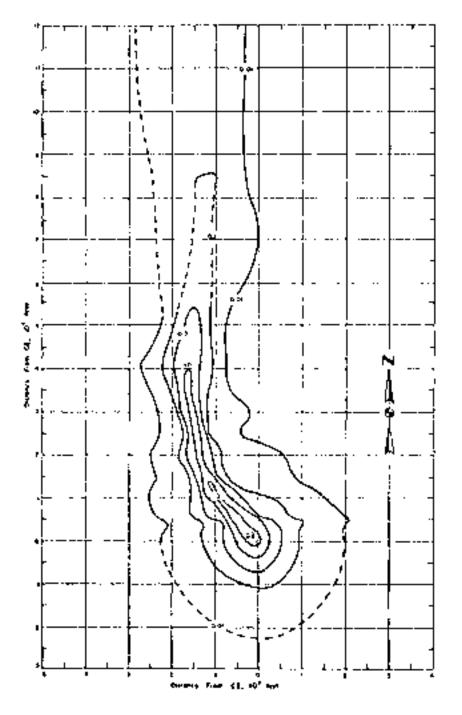


Figure 337. OPERATION SUNBEAM - Little Feller I contours of residual gamma radiation in R/hr at 0+4 hours to 12,000 feet downwind.

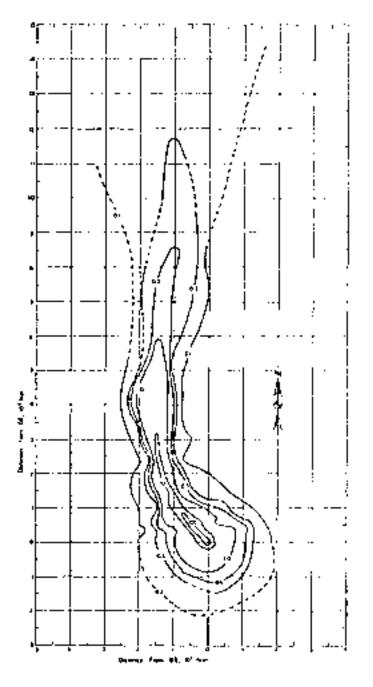


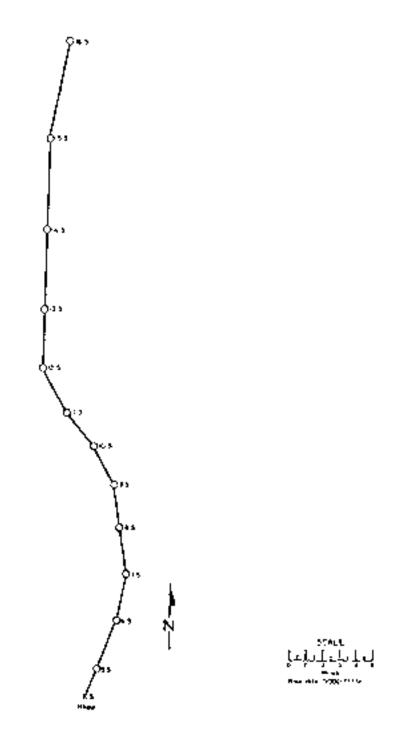
Figure 338. OPERATION SUBBEAM - Lettle Feller I contents of residual gommo radiation in R/hr at Hit home to 12,000 (cet downwind.

TABLE 110 NEVADA RIND D	IA FOR OPERATION	I SUNKEAN -	LUTTLE VELLER I
-------------------------	------------------	-------------	-----------------

Altitude	<u>h-fio</u>	<u></u>
(MSL)	Direction	Speed
feet	degrees	որի
Surface	200	17.3
6,000	200	15.0
7,000	190	13.8
B_000	170	13.8
9,000	170	12.7
10,000	150	12.7
11,000	140	17.7
12,000	150	15.0
13,000	380	17.3
14,000	160	23.0
15,000	180	26.5
16.000	190	28.8

# Notest

- 1. Observations made at forward control point, Area 18.
- Air temperature at the surface was 29.7°C and the relative humidity was 17 percent.



OPERATION STORAGE

សីវ លោក ខែ 🖪

	<u>   ST   </u>	GST
10%7%	27 Jul 1962	27 Jul 1462
	1.100	2100

SPONSOR: U.RI.

<u>S)[[E:</u> NTS = 199y 37° 07′ 46.9592″ N 116° 03′ 23.3114″ W

SITE ELEVATION: 4238 ft MSL

DEPTH\_OF HURST: 493 ft

TYPE OF MURST AND PLACEMENT: Underground, in slightly consolidated alluvium.

#### VENTIANS:

Low velocity testing was observed at 8+0.5 second with an initial height of 200-500 feet. AT E+76 seconds, gas vested from a fissure in the earth approximately 50 feet north of the emplacement hole and continued for 5 minutes. The estimated dose rate at 500 feet from G2, normalized to  $N^{*}$ ) hour was > 10 R/hr, and the entimated total release normalized to H41 minute was  $2\times10^{5}$  cories. The only isotope identified in the release products was  $1^{3/5}$ 

# REMAJORS :

Radiation was deterted on-site from radioactivity released by this detonation. No radiation levels above background were detected off the NTS in populated areas from radioactivity released by this detonation. No radiation was detected at the worksite or any other location from releases of gaseous radioactivity during post shot drilling

0152247700	CDC	
0101010100	the second of the	

York

	507	G°T
DATES	20.000	24 Aug 1932
	0700	1500

SPOCO	2	LRL				
<u>011%</u> ;	ःπs 37° 116°	-092 071 021	07.0 22.1	260" 145"	і; М	
<u>5170 F</u>	TE.W.	<u>non</u> :	- 12	°0S	?÷	MSL
<u>herch</u>	QR 53	.7:11	75	7 :	t	

TYPE OF BURST AND FLACDWRIT: Underground, in alluvium

VERTICA:

None, except during post-shot drilling

# REMARKO :

No radiation levels were detected above background on or off the NTO from radioutivity released by this detection. Some radiation was detected in the area surrounding SE flum gaseous radiouctivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations

0710042000 00 704X - Sob 2

Weid Life None, except during post-shot Graffing

#### NW282;

The relation levels of restricted as we backgroup a consol the SUG free relations in the level is the relation formula in the area correction  $\mathbb{C}^2$  from generation of the level during particles the fitting. To relate the particulation of the Level from particles during to relate the relation of the Level from particles during to reader the level for the Level from particles during to reader the level of the Level from particles during to reader the level of the Level from particles the level of the level of the Level from particles the level of the level of the Level from particles the level of the l

OPERATION STORAG -

Hycax

	PST	CNT
DATE:	34 Sep 1962	14 Sep 1962
<u><b>T</b>1ME</u> ;	0900	1700

SPOCSOR: LASL

<u>\$1</u>TJ() NTS - 0365 37° 02' 38.1654" X 146° 01' 16.0105" %

DEPTH OF EURST: 700 fc

TYPE OF MERST AND PLANDCUST: Underground, in alluvity

# VENTING: Vented

### ALMARKS :

Radiation levels were detected near SZ above normal background from radioactivity rejeased by this deconation. No other radiation levels were detected on or off the NTS, from radioactivity released by this deconation. Some radiation was detected in the area surrounding S2 from paseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operation OFERATION STOLAY - NEW

		GMC
DATE :	C2 / 1 / 196	(9) Solid (5)
<u>1 iMa</u> t	0503	1700

51 06263; TASU S1778: 017 - 0306 37 621 2010 01 6 1161 611 45 46 6 7 W

DEPARTON CONCERNMENTS

TYPE OF PICT ASS HIA DOCDER Jate group, in clauses

# VALUE CONTRACTOR No vepting

OPERANCE	DO OTOMAX -	All logistics
DATS: 2 TINE: 0		005 - 29 Sep 1955 1700

<u>SF02308</u> : 14%
<u>0100</u> ; 530 - 00x - 37° 07° 05.070° 1 156° 01° 07.0335° M
SITE SERVICETIONS - ADMR. OR NOT
DSPNM OF MORE FOR ALL
TITE OF 901 ST AG5 19 ACKM2721; UnderGrouper, in schemel 0-4 (CG7)

#### VENT1000:

This event released scall visible quantities of reliandity, steam and/or passa

#### SEMARKS (

Rediation was detected on-site from sufficientivity released by this detonation. No radiation levels above background were detected off the MIS in populated areas from radioactivity released by this defonation. No rediction was detected at the worksile or any other location from releases of gaseous radioactivity during post-shot drilling

OPPRACION STORAX -Mississippi PSEGMT \$TYNSOR: LSL DATE: 5 Oct 1967 5 Oct 1962 <u>SUTE</u>: NTS - 09ad TEN: 0500 1700 37° 08° 71.8546° 8 116° 03' 01.1677" W TOTAL YUGDS: 110 kt SITE ELEVATION: 4204 ft MSL CRACER DATA: Subsidence erater DEPID OF REASY: 1622 fi Diameters 900 ft Depth: 160 it TYPE OF BURST AND PLACEDEST: Underground, in persistion VENTING: Luff None, except during post-shot drilling

#### REMARKS :

No radiation levels were detected above background on or off the NTS from radioactivity released by this detonation. Seeme radiation was detected in the area surrounding S2, from gaseous radioactivity released during post-shot drilling. No radioactivity was detected off the NTS from post-shot operations

ODIGAT	100 (h.C.V2 -	Research in	
<u>17477</u> ); <u>71327</u> ;	The second secon	 110 - 501, 119€ 11000	<u>87007 8.</u> : 208. <u>8100</u> : 0.00 - 0.01 37 - 691 - 1.3 5.5 g 105 - 631 - 0.0917" 8
			<u>oral stors, en</u> er "Trocks dar
			<u>00019-02-02-02</u> 9-039-051
			$\frac{(2\gamma 1)^2}{(0)^2} \frac{(0)^2 \left[ \frac{1}{2} \left[ \frac$

#### 1000 (DATA

Government of the property of the contrast of the second BeV minutes of  $C_{1}$  through the employment halo contrast of the contrast of the contrast for the contrast of the contrast for the contrast. The estimate the end of the transformer of the contrast of the contra

#### ROMARCEN:

No other radiation levels were detected on or off the NTE from radioactivity managed by this detonation. Not radiation, we detected in the area correcting SE from pathods radiatativity of bases during post-shot del ling. To redicativity was detected off the NTE from post-shot of basics

(iPDDtAT	(or streak -	BandLeoot	
DATE: J199.5	<u>19-061-1965</u> 19-061-1965 1006	GMT 19 Oct 1962 15CU	<u>SPONSON</u> : LASL <u>SITE</u> : STS = 006 { 37 <sup>6</sup> 02 <sup>6</sup> 22.3431 <sup>0</sup> N 116 <sup>6</sup> 01 <sup>6</sup> 16.0207 <sup>0</sup> 6
			STIR ELEVATION: 4009 ft MED
			DEPTH OF BUILS .: 792 ft
			DEPTH OF ENDLACENES PROLESS STUDIES OF FU
<u>eroup</u>	7 <u>0%_10%769</u> 47; 1	10,500 (t WSL	TYPE OF SUPST AND PLACEMENT: Underground, in allowium

VERTING

Isomediately following the event a persistent cloud was produced containing appreciable generities of radioactivity associated with particulates

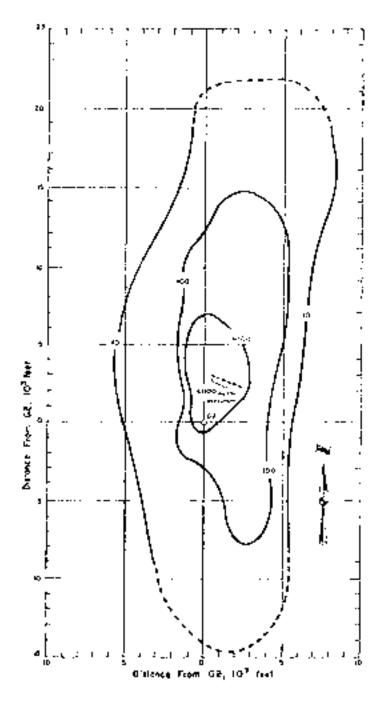
The intensity of the N-hour release activity was > 7500 R/hr. This value was reduced in 5 hours to a minimum of 150 R/hr. The thoud diffused to the marth and spoth and deposited a maximum dose rate of 20 mK/hr at 1416 hours at Area 16 and was reduced to 9 mK/hr at 1445 hours. The Completency maximum dose rate was 5.75 mK/hr at 1535 hours and was reduced to 1.5 mK/hr at 1450 hours.

CPONAULCO ON SHAR - Danuel Cool REMARCES

The radioactive cloud split into two portions. The lower portion of the cloud traveled is a NSU dipertion to Area 9 where it remained stagmast, then west slowly acress Flat Jop Mess and north to the Area 12 compound the cloud dispersed in the valleys north of the test site and no exposures to people were detected.

The upper mention of the cloud traveled in a southern direction and traversed a course over the CP Compound, Camp Mercury, Cactus Springs, he Indian Springe, Lathrop Wells and Elgheray 95. cloud was first detected over Highway 95 at H+2 hours Upon receiving US\_havey 95, the cloud was 9 miles wide, was diffesing rapidly, and cas proceeding SV. The intensity at ground level was approxinstely twice background. A maximum intensity of 50 ak/kr was detected at 4 milles west of the Mercury juantion on Highway 95. Δ. 20-mR/St dose rate was recorded 7 miles west of the Marcary junction at 1143.5 hours Maximum intensities by portable instruments (3 feet aboveground) were recorded for Julaite, 12 mR/hr; Ash Mendows, 16 mK/hy; Death Valley Jumetion, 3 mK/hy and Gamp Mercury, 5 mK/hr. No. radiation was detected off-site at Area 51, Indian Springs and Palgroop The highest reading at ground level at Captus Springs. (16 miles from SZ) was approximately 0.6 mB/hr

Figure 340 shows contours of residual gamma activity in mR/hr for a midtime of 3424 hours. The convours were constructed from Kad Safe Group survey periodsed by the SEECo



Pigure 340. OPERATION STORAX - Bandscool contours of residual gamma radiation to aR/Sr at a mailtime of B+24 hours to 22,000 feet desorted.

Altitude	If-it.our	(Sote)
(MSL)	Direction	See. 2
feet	degrees	rojis
4,010	calm	ente
5,000	191	2. >
6,000	305	6,0
7,000	353	10.1
8,000	10	12.3
9,000	9	20.7
10,000	14	74-5
11,000	23	29.9
12,000	27	23.0
15,000	27	35.0
14,000	22	50.1
15,000	24	39.1

TABLE III NEVADA WIND DAVA FOR OPERATION STORAN - 200010000

# Notes:

- 1. Observations mide at Yucca weather station.
- 2. Surface data (free RAGE) at level of G2 ever Area 2, H-Court Atrospheric pressure 878 millibors, torgetature 15.0 °C. dew point temperature 9.8°C, pelocive habidity 94%.

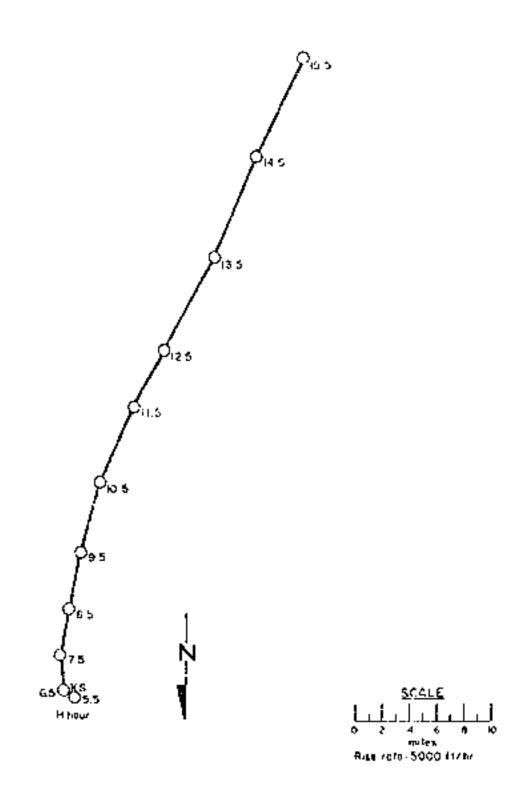


Figure 341. Modegraph for OPERATION STORAX -

Bands coot

OPULATION 0102A3 -Suntee P5.0 \_\_<u>GMT</u>\_ DATE: 27 Oct 1962 27 Oct 1962 SPOCCOR: 120. 112953 - 6709 1500 SICE: STS - FICE 37° 081 57.5068" N 116° 07' 12.6192" W 5175 ELEVATION: 4254 ft Mail DEPTH OF BERSI: 1048 FL TYPE OF BURST AND PLACEDONT: Underground, in alleviar

VEN, ESG :

None, except during post-shot drilling

#### REMARKS :

No radiation levels were detected above background on or off the NTS from radioactivity released by this detonation. Some radiation was detected in the area surrounding SZ from gaseous radicactivity released duting post-shot drilling. No radioactivity was detected oif the WIS fram post-shot operations.

OPERATION STORAGE

Anacostie

DATE •	PST 27 Nov 1962	GNT 27 Nov 2662	<u>SP09450R</u> : 1.10.
11:28.;		1800	517 <u>6</u> ; NTS + N94 37° 07' 22.1149″ N 116° 01' 44.4795″ W
			SINE ELEVITION: 4268 IT MSL
			DEPCH OF MISCEL 741 Fr
			TYPE OF NURSH AND PLACEMENT: Underground, an servicelded tuff

#### VENTING:

Venting occurred at H+8 seconds at the radioclassistry sampling area and at H+35 seconds between the emplacement pipe and the prompt sampling pipe. The release endured for 23.7 minutes

The estimated dose rate at SZ cormalized to  $H^{+}I$  hour, was  $B_{1}I = R/hr$ , and the estimated total release, normalized to  $H^{+}I$  minute, was  $5\times10^{5}$ covies. The isotope identities are not available.

#### 3EMA1015 (

The effluent gas gave a maximum reading of 95 ck/hr on the ground onemile downwind from S2 at 040.5 hour. The most significant radiation was confined to the crater and radiochemistry sampling area OPERATION CTULEX - lenders

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DADA ( Tijna) (	<u>187</u> 7 301 1865 1160	<u>6997</u> 7 Dec 1962 1900	<u>SPOSSOR</u> : LASL/CK <u>S178</u> : S1S = C35a 37° 05° 06.2914° N 116° 01° 45.5161° N
			<u>8136 ELEVA(108</u> ) - 4033 fr MSL
			<u>BEPRE OF BUILST</u> : 1001 1:
<u>VENTÍNG</u> Element	;		TYPE OF CUST PLACEDUS: Underground, in allavium

None

01552/01010-00054	W - Mulist	n
$\frac{P_{\rm eff}}{\frac{16576}{1.020}} = \frac{P_{\rm eff}}{1620} = 0.327$	<u>- 6942</u> 1919 - Ler Diele, 1966 19672	$\frac{SP(2P(0))}{SP(2)} = 0.22$ $\frac{SP(2P(0))}{SP(2)} = \frac{PP(2P(0))}{PP(2P(0))}$ $\frac{SP(2P(0))}{PP(2P(2P(0)))} = \frac{PP(2P(2P(0)))}{PP(2P(2P(2P(2P(2P(2P(2P(2P(2P(2P(2P(2P(2$
		STORE STATES (MARKED STATES AND
		ha <u>pty of prepar</u> s (347-54
Value 1000 Victoria		SLAVI POLISH CIGO PO
11 I V 14		Trans College (Collector States)

ROWARDS :

Exclusion low is were detected near 52 above mercal background from redisactivity released by this determine. No other redistrict 1 were were detected record of the LHS from relies their released by the determined. Some redistion was detected in the reducer regular SZ from encoder calcentivity released on ing pertacted with electrony operations. The reducertivity was not used off the LHS from part above the LHS released on ing pertacted with the LHS from part shows a pertaktion. The reducertivity was not used off the LHS from part above the LHS reducertivity and not used off the LHS from part above producers. CONDUCTION SCOUL - Destration

$\frac{1837}{2.771} = \frac{1617}{1659} = \frac{1617}{1670} = \frac{1617}{167$	<u>SPCCDOR</u> : LACE <u>SPCCDOR</u> : MOD = Disbu <u>3</u> V <sup>**</sup> (e <sup>(1)</sup> - e <sup>(2)</sup> - e <sup>(2)</sup> - i (e <sup>(2)</sup> - C <sup>**</sup> - (d (20)) <sup>**</sup> - i
	SITC REPORT DO DO DO DE
	DEPTH OF LOPACE OF 1 OF
ለውስ ባ በስርድ «	<u>1999</u> OP 1953/n ADD statements Definitions, is all officer

# VESTING: Vestor

REMARKIN:

Radiation levels were detected over 02 theory nersel ) is new address. radioactivity released by this detaivtuon. To other mass that he to come detrated on or off the MSL. Some releation the detector is the opsurrounding 22 from general radio and price in the total of the body drilling. No redicectivity was detected off the NTS from protochat operations.

APPENDIX A

Announced United States Suclear Detonations

Yields are listed as: Low (less than 20 kt) Intermediate (20 to 999 kt inclusive) Low Megaton (one to several megatons).

Prior to October 1958, testing was conducted on an intermittent basis and each series of tests was designated by a series name, such as OPERATION CROSSROADS. The United States conducted no tests from October 30, 1958 to September 1961. After resumption of testing, tests were conducted year around and were listed by fiscal year. For example, all NIS tests during FY-1962, which ended June 30, 1962, were in the OPERATION NONGAT series except for four surface tests (Little Seller I and 11, Small Boy and Johnny Boy) designated DOMINIC 11, which were a continuation of the DOMINIC I series conducted in the Pacific.

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EVENT NAME	DATE ICE FI	NOTION L	TYPF	\$50abme	VIELO RANGF
reinery Ftest (51 Or	8478-4 MJ 97/16/45		TJMEP	de a fons related	זקער
MOGLA 44R II First Combat us	01/05/45 01/05/45	1444 1	d0ąÇatą	COMERT	13 KC
мақыр мақ II қола9/45 Second сомдат USE-мабаsақI	1%esq340-35N 9844648	JAPAN Refution reaction	4 î ê û Rûp	CO MEN 1	73 KT
<b>134</b> , E	96/90/46	GIKIHI	duata te	134745 SHOAT JH	13 52
<b>B a</b> KE R	47/24/46	BININI Spiaatson saassoye	Ą	MÉ À PONS RELATED	23 KT
X-R11	82/11/40	ENT HETOK	10468	NEAFONS RELATED	3741
TOKE	84195148	EMINETOX	tonę e	NE A PONS 96LATED	1964
ZEDRA	D5/24/48	EMINETOK Sockation Rånger	t DWF P	MENFONS RELATED	1 BKT
N PLE	15/13/10	NTS	404541.	NEEPONS RELATED	147
BAKER	91/29/51	NTS	LICORDE	WEAPONS RELATED	₿KT
E457	\$2/\$1/\$1	415	4000914	NEAPONS RELATED	141
84468-2	02102151	MTS	40409 (4	NE NEDNS RFLATED	841
FOX	15190125	NTS OFLATION CALENVOUSE	4680814	NENDONS RELATED	224T
<b>10</b> 0	\$410213	AUT HE TOK	TOVER	NE A POUS OFLATED	
LAST .	15/02/76	ENI AETAR	t 3MC t	O THE REAL OF THE O	4.747
Ç F DRÇ F	15/90/50	E41 NE LOK	TOMES	WEAPONS GELATED	
LTE <b>-</b>	15/12/50	FYENFTON OPFORTON PUSTFOR CANOLI	TBMER	KFAQUS RELATED	
JUR	10/22/81	Nts	tour e	GETERS RELATED	LESS THAN D. LET
PAKE9	75/W//DF	415	d€b0ø]¶	MERTED RELATED	3.547
CHRAL 1C	13/36/61	475	4CAC914	CELLIES SNOT BY	1445
90¢	11/01/51	NIN	dübCal¶	WEAFONS RELATED	23 KT
F ASY	12195151	473	4C6DAIN	4CASONS QFLATED	3465
Suc AR	15761711	475	SUDÝACF	ME & PONS RELATED	1,241

				C=01.	
EYENT MANE	1101 E 16CT )	LOCATION	TYPE	PLAPOSE	YJELO RANGF
INCLE	11/29/51	HTS RPRATION TUMBLES SAAPER	CONTER C	GJINIS SKULVIN	1.247
ABLE	2910110	MT 5	d08C≱I₹	CITATONS RELATED	LKT
MAKE R	25/51/40	NTS	dQ9 Da I V	WFAPONS QFLATED	IKT
GHARL SE	25/22/40	475	4040¥IT	MENGONS RELATED	31.67
300	25/60/50	NTS	10aua in	031T238 5404T3M	1947
EaST	95107152	415	7 346 4	WÉ O FONS RÉLATED	1267
FUX	25/52/50	475	† diel Q	NEAPONS RELATED	1187
GE OVER E	<u> 06/01/52</u>	WTS	1 Q MEA	HETPONS RELATED	150
мон	96105152	HTS	towe t	KEAPONS RELATED	1 4KT
		CPERATION IVE			
HIGE EXPERIMENTAL	LD/51/52 THE940HUCLEA9	FNIMETOK DEVIĈE	20 PF R.C.E	NE NPOTS RELATED	L0+4MT
SNEX	25/51/11	ENI VET DA	4040e	6144 SEC 4463	300 KT
		27004.0KX+2045a7 4011983a0			
3 IMMT	95117753	#15	10458	KERPONS CELATED	16KT
NAMEY	03724753	514	r û MÊ R	NENFONS RELATED	2445
RUTH	£5/1£/£\$	475	Tould C	אניואסאצ בנייננס	0.241
01815	04/D6/53	MTS	dûaûaI∎	NEAGONS RELATED	1147
P.T.	62/T1/1Q	NES	10 MC4	L318738 БКСТ118	0.247
8406E <i>4</i>	04/L&/53	475	TONER	RENCONS RELIED	23KT
4 <b>0</b> MES	84/25/23	AT5	13464	NEAFONS RELATED	THEP
FNCORE	15/09/53	415	4686811	NT REAKS RELITED	2745
4 <b>6 Q R T</b>	62/61/50	k15	13469	ИЕ МЕОНУ RELATED	3247
ісынаса сайна Сервік	8575750 0044 644	k15	G U N	NEAPONS RÉLATED	1547
CL PHAX	£5740790	MTS	dQaQaI¶	NETTENS RELATED	6947
		OPERACTION CASTLE			
GRAVD FRPERI+FNTAL	02/20/54 THE990UCLE49	BIKIVI Device	SURFACE	KFAPCHS RELATED	1541

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4 OMED	45/92/54	BĽKTNE	j'hah B	ME # PONS AEL # 160	11 MT
K00	45298240	81K [M]	SJAFAGE	DÈITÀIN SNUJTÌN	110 611
11N E 040	45/52/40	BCK CN1	RARCÉ	NEAFONS ACLATED	6.4 MT
4 ANKEF	45/44/50	<u>B</u> [k]N]	12046	AEAPONS RELATED	13.5 MT
MECTAR	45×13×54	EMINEFOX	RAGE	NE 49045 RFLITED	1.69 MT
		00E84110411F101			
484	55/11/20	NTS	e036el€	NÉ APONS RELATED	147
H014	1512720	нгс	4 JMC J	VE ADUNS RELATED	2 KT
17 SLA	03/01/55	5 E N	TONER	WEAPONS RELATED	741
tuar	D tr9 2/55	HIS	T 3 m [ R	NEAFONS RELATED	4347
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9CE	55/22/1 Q	hrs	a j ka l	NEAFCYS RELATED	<u>OKT</u>
ESS	\$5752750	NIS	CRATER	NELADYS RELATED	141
N PPLE-1	2279725	N15	TOMER	NC RECKS RELATED	1441
jw∐ag d≷dw	45/62/EØ	N15	aDaUbl¥	NFAPONS RELATED	3407
¥,	94/36/10	N 7 S	a Cià Cià I y	альноя встанер	1kT
PDS1	04/09/55	NI'S	TONER	NE LPONS RELATED	2 KT
не Т	94125155	K13	TOMEP	HE APONS RELATED	22*T
4 PPLE -2	45/50/SQ	NIS	TONFE	אל דבלאב מבר ענוס	1965
5 M R020Z	9579929	NTS DREATION WIGHTN	TONER	GJUTTJY SNOOT JK	2867
NJGHAM 29 DEGREESN-120	126 DEGREES -		<b>1</b> 0	46 A POMS 961 ATEO	39KT
		UNE MODEL MOTION AND			
LIGROSSE	95/40/50	ENTMETOK	SURFACE	AFADNS RELETED	40 KT
CHERDREE FIRST NS4 DROP	05/20/20 87 U.S. QF 1	BIKIN: Thermonuclear meason	AURUAIA	KEAPONS RELATED	SEVERAL MT
1MD2	45/22/58	alk INI	304 J US	NEAPONS RELATED	3. Ş. MT
	05/23/56	ENLINE FOR		CELETER SNODE AN	

EVENT MANE	01291324G	L0C4110N	7795	3504004	TTELO PANGC
ERIE	95/11/50	ENTLETOR	10468	MEADONS RELATED	
3 10#1#9S	46/00/35	ÉNŢMĘTOK	SURFACE	WENDONS RFLATED	
FLATHEAD	96/11/30	BLK IN]	BARGE	MÉAFONS RÉLATEO	
OLACKFOOT	95/11/30	EMINEIGH	TOWER	NEAPONS RELATED	
KICKAPOD	96/13/9P	ENTHE FOR		MEAFONS 96LAPED	
05446	94759740	ENINETOK	41¢b¢0P	NEAFONS AFLATED	
• 3 H E	06/21/3P	ENTHETOR		HERFONS RELATED	
QAKOTA.	06/22/2P	BILINI	AARSE	NEAPONS RELATED	
THANT	8770215	FNTMETOR		NEAPONS RELATED	
APACHE	07/08/96	ENTME FOR	30ar8	MEAPONS GELATED	
07774	Q7/10/56	141 MI	<b>BARGE</b>	MEAPONS RELATED	
1546	97/29/56	8341W]	84RGT	WERPONS RELATED	5 AT
MUROW	07/21/56	ENINETOK	BLRGE	MERCINS RELATED	
		CARACTION PLUMBERE			,
BOLT PARK	#5/58/51	512	TONER	WÉN FONS RELATED	1247
FRANKLYN	06/02/57	NTS	TO ME R	NEAFONS RELATED	14010NS
r uzsen	06/02/ <u>5</u> ]	413	441LOON	RELEGNS RELATED	2.5 TON5
43L504	₩6118/5}	213	400719Q	QJJUTSY SNOJUJN	10K7
P1125134	\$\$15M257	51N	NO0 1148	AEATUNS SELATED	37KT
0004	25150220	NIS	M0011186	MEAPONS RELATED	7447
DIANG	25751220	415	TDNER	HEAPONS RELATED	1741
MHQT	12191250	NS	ROCKET	MEAPONS SELATED	483UT 2KT
RfPLE4	25124182	51N	TOWER	NEARDHS RELATED	I BKT
OMEMS	07/25/57	51M	9414 00N	WEAPOWS RFLATED	9.757
STOKES	25/26/00	415	8 ML DON	NEAPONS RELATED	3 9 K T
A T2M2	25/81/89	NTS	10H\$ 4	HEAPONS RELATED	1741
úq <del>ppl f</del> e	45/52/60	<b>HI</b> S	BALL OON	MENDONS RELATED	נוגל

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FRANKLIN PALME	12185180	214	94LL 00M	0310138 S40403M	4.7et
<b>SMOKT</b>	4971876D	475	7 3 6 5	NEAPONS RELATED	1441
GALLED	94/02/57	NPS.	10ME4	KFAPOMS RELATED	1141
MEELER	99/06/51	HT3	8411 804	KENFENS GELATED	SM01 461
LAPLACE	44/94/92	NTS	BALLOOM	NE KAMAS RELATED	IKT
FTZEAU	19/11/95	NFS	4 JmD 1	WELFONS RELATED	1147
WENTOW	19/16/97	475	M001198	NE A PONS RELITED	1241
PATNIER Patnier Isast tummel i	09/19/57 519/19/57	N15	TU NNÊ L	VENEDYS RELATED	1,745
t]nt[t	25165190	NT5	T GUE U	MEASCHS RELATED	1947
CHARLESTON	25182160	NT5	N00 17 # 8	MERPONS RELATED	1, 2, K T
HORÇAN	10/07/57	NTS	HALL DON	CJITIJA SNOATAR	<b>5KT</b>
		CPERATION HARDTAUK			
TUCCA Lè degates jr	04/29/38 MIM X-163	DEGREES DI MIM E	NOO 11VQ	WEAPONS RELATED	
CHC TUS	05/50/50	ENTMETOR	30444AS	MENEDWS RELEVED	18 41
FIT	0671175Q	BEK EN J	97478	NEAPONS RELATED	
BUTTERNUT	45/11/50	<u>Enimetok</u>	BIRGE	WENDINS RELATED	
×04	05/12/96	ENTWETOK	359360\$	NFAFONS RELATED	1.37 41
00447	45/97/50	PLINE NO.	ŝ	WENNING RELATED	
HDLLY	6572075A	ÉNINF FOK	304VB	WEAFONS WELATED	
HUT REG	95/12/59	BIKIMI BIKIMI	944GE	MEASONS RELATED	
46110MM000	85/92/58	ENIMETOR	914GF	NETPORS RECALED	
MAGNOL 34	95/29/20	ewtw\$ tok	BLACE	NEMPONS RELATED	
TOBACCO	05/30/54	ENINETOK	BLAGE	NEAPONS RELATES	
5 C L M Q P E	85/11/50	AS X INI	BARGF	NERPONS RELATED	
402F	06/02/99	EN ING TOR	B48GF	NEAFONS RELITED	
NUBRELL N	85/80/50	ENIMETOR	3	WFAPOYS PELATED	

		LANDUMGED UNITED STATES MUCLEAR JETCHATIDAS	KLEAP JETHA	54011	
EVENT NAME	047614611	LOCATIÓN	14PE	PURPOSE	TIELD RINGE
ALPR F	06/10/50	DIRING	BARGE	RENEONS RELATED	
N 20EN	06/14/58	INCOLU	BARGE	NEAFDHS RELATED	
TUPLIN	06/LW/50	EN (NETOK	1994.R	NE160N5 46L1760	
LINDEN	06/2 6/ <b>5</b> 8	EMTHETOK	RACEF	NE 15045 4611160	
000NQ34	96/27/58	THININ	Part 5	NETRONS RELITED	
ELOFR	06/27/58	É#TWEEDK	Baace	NEIFONS RELATED	
245	06/20/50	EHINE TOK	334€8	WFAFOMS RELATED	6.9 ×r
MICHORY	99/52/99	91 K TNT	39846	WEAPON'S RELATED	
SE QUOI &	81/01/0	ÉNIME TÛK	BARGE	METRONS REFILED	
CEALP	97/92/58	BIKINI	359VB	MERFORS RELATED	
000N000	m//05/56	ENIMETOK	B4RCE	VE APONS RELATED	
POPLAR	97/12/98	<b>B</b> JKINI	330 WB	VEAPONS RELATED	
FINOSIA	45/25/26	ENINETÓK		HETPOHS RELATED	
a Jahan	01/22/58	вјкћиј	94466	WEAPONS RELATED	
OLTYE	41/22/54	AUT NE TOK	BARGF	HERPOKS RCLATED	
0 I NE	85792720	ENIMEROK	3.2 QFF	HE & FONS RELATED	
TÊAK	44/07kB	NOT A ST AST AST AST	ROCKFT	NEAPONS RELATED	чератом рамсе
SUCNEE	82/90/8 <b>0</b>	ENTNETOK		ÇJIT']A ŞMOIQA	
DPANGE	09/12/58	T360 151 HUJSNAOP	ROCKET	MEAPONS RELATED	#EGATON RANGE
914	68/10/58	ENTYE! UK		WEAFONS RELATED	
		CPERATOR PHOLS			
lim qog indên I sojat	04/27/50 HILES ALTITUDE	SQUTH ATLANTIC	ROCKET	NC APONS RELATED	1-241
486US IT Abgut 309	83/30/58 Mil£s alitude	SOUTH ATLANTIC	ROCKFT	NETPUNS REFTLED	1-241
APGUS II ABDUT 303	90NLIJ <b>T S</b> jim <b>Co</b> s ingev 95/90/60	SOUTH ATLANTIC Defeation Martack IC	POĽKÉT C	NE A FONS RELATED	1-247
£001	89/41/18	NTS	001110	WEAFONS RELATED	SNOT EA

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EVENT HAME	DATENCEL	LOCATION	1 Y P E	PURPOSE	TIELD RANGE
члеа	42/62/60	475	BALLDON	VELPONS RELATED	2KT
ганадрају Ганадрају	10/04/58	нтс	1 TH HET	46400HS RELATED	12 FBMS
QUAT	10/19/50	475	TONER	WEAFONS RELATED	SND1 P1
LEA	10/13/58	415 214	NUC THE	4576045 RELATED	1.4KT
H011240H	10/15/28	HT5	TOMER	NETE002 RELATE?	1.2 TO45
L 0544	10/16/58	#75	TUNNEL	NEAPOHS RELATED	547
NUN AND	20/16/98	N75	NGQ 7798	ALADYS RELATED	37 TONS
RIG ARGENT	19/28/91	4rs	10MER	0312738 SHOW 2 4647160	5401 06
5 000 <b>0 8</b> 0	19/22/68	415	GALE ODW	NEAPONS RELATED	<b>b</b> KŤ
HRAMGELL	19/22/99	hts	BALLOON	NEAPONS RELATED	SWD1 511
qu5wi04E	95/22/01	NTS .	100H	NE A POHS RELATED	185 FÚNS
SANFORD	10/26/58	415	HUD T TPB	MENSONS RELATED	4.9KT
DE BACH	10/26/58	Nrs	BALL GON	NEAPONS RELATED	Z+2KT
EVINS VENTING	10729758	нт5	TUNNEL	NEAPONS RELATED	55 TOMS
нц <b>я BOL D</b> T	<b>05</b> /62/01	NIS	TONER	KENPONS GELNTED	7.6 TOM5
SAMTA FE	19/34/90	NTS	NO0 1198	NEAPONS RELATED	h+3K7
BLANCA Struct	95/96/01	NTS	TUNNEL	MEAPONS RELATED	1 9 47
		OPERATION MONGAT			
ANTLER	19/12/61	NES	TUNNEL	NENFONS RELATED	2.447
SM9EN Lon vield menns	04/16/61 ANS LESS THAN 20	N45 2017	SMAFT	WEAPONS RFLATET	101
CHEME	19/101/qt	NTS	T 13M ME L	NEAPONS RELATED	LC.
нјик	10/29/61	514	54AFT	4678045 SELATED	L û H
FISHEA	13/60/21	NT5	544F7	NEAFONS RELATED	13+547
GMOME 17/12/61 Multiple-purpose fererinent 60-00 ft,#164	17/19/61 56 FEPERINENT	CAQUSARD SMLFT PLONGED CAVITY 160-170 FT.435AMERE In Sall.Formed Cavity 160-170 FT.435Amerer	5MLFT 160-170 FT,1	PLONS+ARE Jimeten	3.145

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		ANNOUNCED UNITED STATES NUCLEUR DEFONATIONS	NUCLEAR DETON	ALT JONS	
EVENT AAYE	1100 JIN4	1) LIQATION	TYPĘ	PURPOSE	YIELS RANGE
MAD	18/51/21	415	ЗНАЕ С	HE REGHT RELATED	0.4541
RINGTAIL	19/11/2T	RTS	SHLFT	MED PONS RELATED	LON
FEATHER	19/22/61	475	TUSINEL	MEAPONS RELATED	LON
STOLT	21/66/14	NT5	SHAF C	NE APONS 46LATED	1.511
110094	01/14/62	мТ\$	SHLFF	NE APONS RELATED	7.9×9
DO PHOUSE	01/30/62	475	SHEFT	NE & ROMS RELATED	רטה
STILLWATER	29/00/20	NT 5	SHAFT	NETPONS RELATED	2,785
акчар ГС Со	42/09/45	415	SHAFT	NENFONS RELATED	6+6KF
H # ROMAT G PANITE	29/61/20	+1\$	11445	VERFOWS RELATED	5, 94F
CHINCHELLE	29/61/20	475	SHAFT	VELERONS RELATED	1.6KT
CODS N M	29761720	MTS	SHAFT	NE E FONS RELATED	Y DN
CT MARRON	29/22/24	MT5	SHAFT	NENPONS RELATED	11.243
PLATTPUS	42/24/62	\$1*	SHAFF	NE & POWS RELATED	LON
2 MANU 4	29/10/00	¥T\$	SHAFT	ХА-5П INIOF	LON
ОЛНОНТ ВОТ Сратер Пілнерт	83/86/62 TFR 265 FT.	415 06914 84 FT, IN RASALE	¢RATER	MEAPONS RELATED	9.424T
EQUINE	03/06/62	475	5HAFT	VE A POMS RELATED	L DM
86AZ05	29/00/00	HT5	5HAFT	NET FONS GELATED	7+647
HOCHIDE	29/51/64	415	5H1F7	NEAPONS RELATED	LON
H0051C	•3/28/6Z	514	5 MAR 1	NE 4 PONS RELATED	347
CHIMCHELLN I]	28/25/60	NTS	\$MÅFT	MENDINS RELATED	L 0 4
DORMOUSE II	29/50/45	#T5	5 MAF T	WFAPONS RELATED	ICKT
PASSALC	29/94/94	NTS	5 MAFT	MEAPONS RELATED	1.04
ма\$али	29121140	¥15	SHLFT	NE LOONS RELATED	Lev
PL AT 75	94794762	wts	TURNEL	WEAPONS RELATED	1.7KT
00,00	04/23/42	5 Lu	SHAFT	NEAFONS GELATED	Lâr

ANNOUNCED UNITED STATES NUCLEAR DEFONATIONS

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H 3141034831N1 30004	HEANS 20 TO 1000 KI	REPORTED VITALIA VALUE CHRISTNUS ISL AREA 000 Ki	A1 90409	NEAPONS RELATED	JMTERMED] A SF
AZTEC	29/22/40	CHRISTMAS ESL AREA	#Ü20a 1 T	NE LEGNS RELATED	INTERMEDIATE
BLACK	04/27/62	415	3H1FT	NE LPONS RELITED	L DK
2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	05/02/62	CHRISTARS ISL AREA	402055	ú∃Lulas Skúdulan	LON MEGNTON
00FST4	29/10/50	CWRISTALS [SL AREA	4630811	NG N PONS RELATED	JHTERMEDIATE
FPIGATE BLRD Maquedo in RIS	05/05/62 1551/E LAUMGHED	CARTSTMIS (SL ARFA F904 PDLATS SUBMARINE	97155 in	NENDONS RELATED	
PACN	<b>9</b> 5/87/62	NTS	SHAFT	VE≜\$ONS RELATED	١٠٣
YUKON	<b>\$/\$\$/£</b> 2	CHRESTARS ISL ADEA	4090811	VEAPONS RELATED	I MTERMEOSN FE
HCSTLLA	05/29/62	CHRISTHLS I'LL AREL	408Ca i T	NEW PONS RELATED	JINTERMEDIATE
HOS ME COM	29/11/55	tian își strușia-ĉ	40x0¢ 14	NEAFONS RELATED	TNTERMEDINTE
SMARDEJSM Lutisurvarine	05/13/67 POCKET /05H95	OSX11/67 RASTFRN PACIFIC Pocket /Askac/ System Paode Pest	5	AEAPONS NFLATER	101
GMTUP	0\$/12/EZ	C4RIST445 ISL 6064	4 ) A () 4 ) 4	MERSONS RELATED	INTERMEDIATE
1480VLRX	05/12/62	NTS	SHAF F	NETHONS RELATED	1847
3nah6E	23101250	CHATSTNLS ISL AREA	4080b 17	NEAPCH5 RELATED	[HTEPHEDCATE
Eft.L	\$51631 <b>5</b>	N#5	SWAFT	CALVIA SACATAN	101
2ML 700	29/61/50	APPENDED IST AREA	N L K BROP	NEAFONS PELATED	turent activ
LH TE	23/52/50	NTS	546°7	нстерих абшагба	101
7 J.444.4	29/62/50	CHRTSTMAS 151 AREA	dodue 1 🛙	NETPONS RELATED	LDM
JAN 44	95/27/62	CHRTSTMAS ISL A9F4	a l R hR hP	QJIY'YY SHOAYYK	JNTFRMÉDJÅRE
PACCORM	29738790	N15	5- LFT	C312138 Sm04738	LĜM
7 A C KR I T	06/96/62	818 8	SHAFT	0317738 S404744	LC.
чгна	06/3 <b>0</b> /62	CHRESTHES FSL AREA	40a0a 11	KEAPONS PELATED	] N TERMEO] A TE
TRUCKEE	06×09×62	CARTSTARS [54 BREA	eDaus:¥	GIITIG BELLTED	ZMFE9MEN]ATE
VE \$0	04/10/62	сметегние ст. меем	4C608 <b>.T</b>	CETALER RELATED	LOM MEGATON
W31624	06/12/62	CHRTSTMAS 151 AREA	achta ( P	NETEDNS RELATED	314CO3M831+C

	-	PHANOLOGIC GROAFED STRIFT HUGLERS OF GROAFS (1945)	5LE 48 061044	54015	
EVENT NAME	94TC (GCTA	1 LOCALSON	3015	950ab04	13476 G1311
DES MOLNES	2974 1762	k15	TURNEL	6319138 \$484934	1.64
R NCONADA.	29/41/90	CHRISTHAS ISL AREL	L7 R040P	CITERNS RELATED	TNTFRHFOIMAF
DULCE	94/11/00	CRETSTHAS ISL AREA	ADBOR IT	NETGONS RELATED	INTERMEDENTE
PERIT	96/19/62	CHRESTHAS ISL 4461	40809 IX	ME 16045 RELATED	T Q R
I NYLYG	29/12/90	475	<b>SHAFT</b>	NETROMS BELATED	Lak
010M	29/22/90	CHAISTMES ISL AREA	4080611	NETEONS SEPARED	INTERNEDIATE
H GHORM	29/12/40	CHRISTMAS TSL AREA	d¢3Ú∂1₹	NEAPONS RELATED	KECNTON PANGE
HAYNAH(ER	29/12/90	475	SHLF F	NEAFONS RELATED	56KT
MARSHMALLQM Dog Evęnt	29/92/90	kT5		VE APONS RELATED	LON
AL VEST PNE	\$170C/\$ <del>\$</del>	CHEISINAS ISL ANEN	A C R D R D P	NEAPONS GFLATED	LOW MEGATON
SACRAMENTO	06/30/62	415	SH4F I	METDONS RELATED	104
		CPERATICH STORAL			
SEGAN Eacanation eap	17/16/67 Friment-Cri	år/mg/47 mts crafer plømmer Escavation experiment-crater 1240 ft,dinn 320 ft,defp+thermon-jclear dev.	СРАТЕЯ Еератнея можу(	1648 064+ 1648-486	10447
111115 FELLEGII 51 IGHTLY 19045	07/07/62 690440.	HTS SEPICS. Ocathic II Sepics.	SURFACE	NE NPONS RELATED	L DM
STARFISH PRIME ∎7.494 Чібн А∟тітчиць-450 ки	47744762 450 KR	JUNNSTON ISL AREA	90CKET	NEAPONS RELATED	1.4 MEGATONS
SUNSE F	22/10/25	VIAV TEL STRISTRO	4187809	45 APONS RELATED	34TERAC914TE
PERLEG	29/11/20	CHRISINAS ISL AREA	≜teneoe	NENFONS 46LATED	LON HÉGNTON
JOHNNY 807 Sleghtly Angve	47/11/67 680460.	NTS Dominic II Sertes.	şuêr AGE	NEMFONS GELATED	3.5
3041443¥	DT/L3/62	415	SWAG T	NE APONS RELATED	L CL
SMALL RUY Shall Ruy	07714762 GROUND.	HTS Dominic II SEQIES.	SURFACE	NEMPONS RELATED	L DW
LITILE FELLER I TROOP PAGTICIP	07/17/67 47104. 5416	LITILE FELLEE 1 07/17/62 HTS 5JUND. TOMEMER 5JUSELE Tedde pastgipation. Slightet Abové cróumd. Tomenec is sfris.	5⊴¢FÆCÊ Ç is séqfis.	NÊ MÊDNŞ RÊLATÊD	r Dw
#10411T	97/27/b2	N15	5ињг †	WF # POWS & EL # TED	r Ce
TOPK	29/54/62	51N	5417.1	MEAFONS GELATED	L DM
3080k	29/12/64	NTS	SHAFT	MEN PONS RELATED	رمس

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EVENT MANE	DATE (CCF)	L DC NTION	ł ₹ ÞĘ	9 U&POSE	TIELD RANGE
НТЯАХ	24/11/60	HTS	54467	531573N 540453M	=01
183d	29/02/64	K15	SHEFT	CELES SHOLES	104
ALLEGHENT	29/62/60	hTS.	13745	GJITIJA SHDAYAN	1.04
#105005030HY	10/02/62	JOHNSTON ISL AREA	41 E DEQ9	KEAFOWS RELATED	INVEQUED LATE
MISSISSIPPİ	10/25/62	+15	3H167	NE APONS RELATED	119 47
Shidkid	1 0/06/42	JOHNSTON ISL AREA	düəÜələ	NEXPONS RELATED	-01
ROMMOKE	18/12/62	<b>#15</b>	2H457	ME APONS RELATED	1. GM
CHANA	29/01/01	JOHNSTON ISL AFFL	4636314	WE APCNS RELATED	LOM 4668704
AAMDICODT	10/19/62	HTS	7 4 4 F T	WE ROOMS RELATED	רטא
СНЕСКМАТЕ Нісм ягеттоб	10/20/62 - TEM5 OF K43	JOHNSTÓM ISL AREA S	ROCKET	NE APONS RELATED	, 0x
900111346148 910€6111346146	10/26/67 - TENS CF #45	JOHNSTON JSL JREA S	4 DCKET	HÉAPOMS RELATED	SUBMEG LIQN
SANTEE	79722701	415	3+a47	NEAPONS RELATED	1 C.K.
CHLANGTT	29122701	JUMNSTON TSL AREL	40e0a I 4	MÉ A PONS RÉLATED	THTERNEDLATE
10450 1046C	29/06/01	JOHNSTON ISL AREA	duadal.	NE AFONS RELATED	месаток илисе
KINGFISH HIGH ALTITUDE	- 1645 CF 245	JUHNSTON ISI AREA	ROCKET	NEAPONS RELATED	5U8HEG#10H
тіснтерне Нісніерне	11/04/62 • 1845 CF XMS	S Johnston [5] April 18	4 OCKE	VETRONS RELATED	L Or
4MACD511A 11/27/62 DEVICE NEVELOPMENT	11/27/62 MENT	kT5	L∃₩₽S	bl aksuret	L Dir
TENDRAC	29720721	HTS	1 <b>4</b> 842	JU-20 1KTOL	LON
NQ21014	29121121	415	TUNNEL	NEAFONS RELATED	10×
1 VÊMIH	17/12/62	HTS.	54457	VERPORS RELITED	LON

ANNOUNCED UNITED STATES NUCLEUR RETONATIONS

5, the U.S. Atomic Energy Lommission has conducted a number of safety the the Nevada Test Site to determine the safety of nuclear weapons in case The following list includes those experiments which resulted in a measurable		:	Stigat dorfear pict: 0.3 El	Stiga arelu	 dor rented rythiga s.a.d.s.a.d. s.a.d.s.a.d.s.s.s.s.s.s.s.s.s.s.s.s.s.s.	
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comic Energ ssi Site to list inclu	r	-			2422 B32 0 - 5	
Since 1955, the U.S. Atomic Energy Commission has conducted a number of safety experiments at the Nevada Test Site to determine the safety of nuclear weapons in case of accident. The following list includes those experiments which resulted in a measurneelear yield.	jo haranna. Jo haranna	Keente -		· · · · F FAuX		
	10.00 10.00 10.00	0(7)	194 194	2015		5
experiments at of accident. moelear yiuld.		<ul> <li>[K/01756]</li> </ul>	- 21-20152 0/19715	1012154	<ul> <li>March 12, 000 March 12, 000 Mar</li></ul>	activities .
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