DTIC FILE COPY

(12)

WT-568(EX)
EXTRACTED VERSION

OPERATION TUMBLER-SNAPPER

TECHNICAL AIR OPERATIONS

Paul H. Fackler
4925th Test Group (Atomic)
Special Weapons Center

AD-A995 460

January 1953

NOTICE:
This is an extracted version of WT-568, OPERATION TUMBLER-SNAPPER, Technical Air Operations.

Approved for public release;
distribution is unlimited.

DTIC
ELECTE
APR 0 7 1987
S D
D

Extracted version prepared for
Director
DEFENSE NUCLEAR AGENCY
Washington, DC 20305-1000

15 January 1987

20030715105

DISTRIBUTION LIST UPDATE

This mailer is provided to enable DNA to maintain current distribution lists for reports. We would appreciate your providing the requested information.

☐ Add the individual listed to your distribution list.

☐ Delete the cited organization/individual.

☐ Change of address.

NAME: _____

ORGANIZATION: _____

OLD ADDRESS	CURRENT ADDRESS
_____	_____
_____	_____
_____	_____

TELEPHONE NUMBER: ( ) _____

SUBJECT AREA(s) OF INTEREST:

_____ _____

_____ _____

_____ _____

DNA OR OTHER GOVERNMENT CONTRACT NUMBER: _____

CERTIFICATION OF NEED-TO-KNOW BY GOVERNMENT SPONSOR (if other than DNA):

SPONSORING ORGANIZATION: _____

CONTRACTING OFFICER OR REPRESENTATIVE: _____

SIGNATURE: 2C1811T08006

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

AD-A995 460

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)	5. MONITORING ORGANIZATION REPORT NUMBER(S) WT-568(EX)
6a. NAME OF PERFORMING ORGANIZATION 4925th Test Gp.(Atomic) Special Weapons Center 6b. OFFICE SYMBOL (If applicable)	7a. NAME OF MONITORING ORGANIZATION Director Defense Nuclear Agency
6c. ADDRESS (City, State, and ZIP Code) Kirtland AFB, NM	7b. ADDRESS (City, State, and ZIP Code) Washington, DC 20305-1000
8a. NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification) TECHNICAL AIR OPERATIONS, OPERATION TUMBLER SNAPPER, Report to the Test Director

12. PERSONAL AUTHOR(S)
Fackler, Paul H.

13a. TYPE OF REPORT	13b. TIME COVERED FROM TO	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
		530100	

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Tumbler Snapper, Bomb-Drop Data, Decontamination, Cloud Tracking, Terrain Surveys
18	3		

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This report presents data on all phases of technical air operations during Operation Tumbler-Snapper. The phases covered are cloud sampling and tracking, bomb-drop data, terrain surveys and decontamination of personnel and aircraft. All observations, technical data and statistics are documented.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT ☐ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED
22a. NAME OF RESPONSIBLE INDIVIDUAL Mark Flohr	22b. TELEPHONE (Include Area Code) 202-325-7759 22c. OFFICE SYMBOL ISCM

DD FORM 1473, 84 MAR 83 APR edition may be used until exhausted. All other editions are obsolete.

SECURITY CLASSIFICATION OF THIS PAGE

FOREWORD

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

The material which has been deleted is either currently classified as Restricted Data or Formerly Restricted Data under the provisions of the Atomic Energy Act of 1954 (as amended), or is National Security Information, or has been determined to be critical military information which could reveal system or equipment vulnerabilities and is, therefore, not appropriate for open publication.

The Defense Nuclear Agency (DNA) believes that though all classified material has been deleted, the report accurately portrays the contents of the original. DNA also believes that the deleted material is of little or no significance to studies into the amounts, or types, of radiation received by any individuals during the atmospheric nuclear test program.

QUALITY INSPECTED 1

Accesion For
NTIS CRA&I
DTIC TAB
Unannounced
Justification
By
Distribution
Availability Codes
Dist | Avail and/or Special
A-1

UNANNOUNCED

Report to the Test Director

TECHNICAL AIR OPERATIONS

Operation Tumbler-Snapper

By

Paul H. Fackler
Lieutenant Colonel, USAF

4925th Test Group (Atomic)
Special Weapons Center
Kirtland Air Force Base
Albuquerque, New Mexico
January 1953

CONTENTS

Page

CHAPTER 1 MAPS AND CHARTS 7

1.1 Scope 7
1.2 Code of Abbreviations 7

CHAPTER 2 TEST-AIRCRAFT OPERATIONAL DATA 17

CHAPTER 3 BOMB-DROP DATA 31

CHAPTER 4 CLOUD SAMPLING BY MANNED AIRCRAFT 45

4.1 Scope 45
4.2 Organization and Planning 45
4.2.1 Personnel 45
4.2.2 Training 45
4.2.3 Equipment 45
4.2.4 Facilities 46
4.3 Factual Data 46
4.3.1 Manned Sampling for Tumbler Able X Ray (Dry Run) 46
4.3.2 Manned Sampling for Tumbler Able 46
4.3.3 Manned Sampling for Tumbler Baker 50
4.3.4 Manned Sampling for Tumbler Charlie 50
4.3.5 Manned Sampling for Tumbler Dog 53
4.3.6 Manned Sampling for Snapper Easy 56
4.3.7 Manned Sampling for Snapper Fox 58
4.3.8 Manned Sampling for Snapper George 58
4.3.9 Manned Sampling for Snapper How 62

CHAPTER 5 CLOUD TRACKING 65

5.1 Scope 65
5.2 Organization and Planning 65
5.2.1 Personnel 65
5.2.2 Equipment 65
5.2.3 Facilities 65
5.3 Factual Data 65
5.4 General 65

CHAPTER 6 TERRAIN SURVEY 87

6.1 Scope 87
6.2 Organization and Planning 87
6.2.1 Personnel 87

CONTENTS (Continued)

Page

6.2.2 Training 87
6.2.3 Equipment 87
6.2.4 Facilities 87
6.2.5 General 88
6.3 Factual Data 88

CHAPTER 7 DECONTAMINATION OF PERSONNEL AND AIRCRAFT 112

7.1 Scope 112
7.2 Organization and Planning 112
7.2.1 Personnel 112
7.2.2 Training 112
7.2.3 Equipment 112
7.2.4 Decontamination Agents 113
7.2.5 Protective Clothing 113
7.2.6 Facilities 113
7.2.7 General 114
7.3 Factual Data and Statistics 114
7.3.1 Contamination 114
7.3.2 Decontamination 114
7.3.3 Statistics 115
7.4 Personnel Rad Safety and Dosimetry 115
7.5 Conclusions and Recommendations 115
7.5.1 Personnel 115
7.5.2 Supply 115
7.5.3 Equipment 116
7.5.4 Decontamination Agents 116
7.5.5 Protective Clothing 116
7.5.6 Transportation 116
7.5.7 Facilities 116

ILLUSTRATIONS

CHAPTER 1 MAPS AND CHARTS

1.1 B-50 Bomb-run Pattern and Associated Aircraft, Frenchman Flat Target 10
1.2 B-50 Bomb-run Pattern and Associated Aircraft, Area 7, Target 3 11
1.3 B-45 Bombing Pattern and Associated Aircraft, Shot 4 12
1.4 Associated Aircraft in Snapper Phase, Shot 5 13
1.5 Associated Aircraft Participating in Shot 6, Snapper Phase 14
1.6 Map of Coordinates To Be Used in Determining Plane Positions for Terrain Survey and Cloud Tracking 15

CHAPTER 5 CLOUD TRACKING

5.1 Cloud Progression for Tumbler Able Shot, 1 Apr. 1952, 0900:07.5 PST 83
5.2 Cloud Progression for Tumbler Baker Shot, 15 Apr. 1952, 0929:57.05 PST 83
5.3 Cloud Progression for Tumbler Charlie Shot, 22 Apr. 1952, 0930:10 PST 84
5.4 Cloud Progression for Tumbler Dog Shot, 1 May 1952, 0829:58.6 PST 84

ILLUSTRATIONS (Continued)

Page

5.5 Cloud Progression for Snapper Easy Shot, 7 May 1952, 0414:59.29 PST . . 85
5.6 Cloud Progression for Snapper Fox Shot, 25 May 1952, 0359:59.6 PST . . 85
5.7 Cloud Progression for Snapper George Shot, 1 June 1952, 0354:59.8 PST . . 86
5.8 Cloud Progression for Snapper How Shot, 5 June 1952, 0355:00.3 PST . . 86

CHAPTER 7 DECONTAMINATION OF PERSONNEL AND AIRCRAFT

7.1 Decay Pattern for Contaminated Aircraft B-29 No. 386 After Able Shot . . 161
7.2 Decay Pattern for Contaminated Aircraft T-33 No. 913 After Able Shot . . 162
7.3 Decay Pattern for Contaminated Aircraft T-33 No. 048 After Able Shot . . 163
7.4 Decay Pattern for Contaminated Aircraft T-33 No. 951 After Able Shot . . 164
7.5 Decay Pattern for Contaminated Aircraft B-29 No. 386 After Baker Shot . . 165
7.6 Decay Pattern for Contaminated Aircraft T-33 No. 048 After Baker Shot . . 166
7.7 Decay Pattern for Contaminated Aircraft T-33 No. 913 After Baker Shot . . 167
7.8 Decay Pattern for Contaminated Aircraft T-33 No. 920 After Baker Shot . . 168
7.9 Decay Pattern for Contaminated Aircraft T-33 No. 951 After Baker Shot . . 169
7.10 Decay Pattern for Contaminated Aircraft B-29 No. 386 After Charlie Shot 170
7.11 Decay Pattern for Contaminated Aircraft T-33 No. 048 After Charlie Shot 171
7.12 Decay Pattern for Contaminated Aircraft T-33 No. 951 After Charlie Shot 172
7.13 Decay Pattern for Contaminated Aircraft B-29 No. 386 After Dog Shot . . 173
7.14 Decay Pattern for Contaminated Aircraft T-33 No. 913 After Dog Shot . . 174
7.15 Decay Pattern for Contaminated Aircraft T-33 No. 048 After Dog Shot . . 175
7.16 Decay Pattern for Contaminated Aircraft T-33 No. 951 After Dog Shot . . 176
7.17 Decay Pattern for Contaminated Aircraft T-33 No. 920 After Dog Shot . . 177
7.18 Decay Pattern for Contaminated Aircraft B-29 No. 285 After Easy Shot . . 178
7.19 Decay Pattern for Contaminated Aircraft T-33 No. 913 After Easy Shot . . 179
7.20 Decay Pattern for Contaminated Aircraft T-33 No. 920 After Easy Shot . . 180

TABLES

CHAPTER 1 MAPS AND CHARTS

1.1 Tumbler-Snapper Test-aircraft Participation 8

CHAPTER 2 TEST-AIRCRAFT OPERATIONAL DATA

2.1 Test-aircraft Operational Data for Tumbler Able, X Ray 18
2.2 Test-aircraft Operational Data for Tumbler Able 19
2.3 Test-aircraft Operational Data for Tumbler Baker 20
2.4 Test-aircraft Operational Data for Tumbler Charlie 21
2.5 Test-aircraft Operational Data for Tumbler Dog 24
2.6 Test-aircraft Operational Data for Snapper Easy 25
2.7 Test-aircraft Operational Data for Snapper Fox 27
2.8 Test-aircraft Operational Data for Snapper George 28
2.9 Test-aircraft Operational Data for Snapper How 30

TABLES (Continued)

Page

CHAPTER 3 BOMB-DROP DATA

3.1 Actual Weather Conditions for Nuclear Detonation One, 1 April 1952 . . . 37
3.2 Actual Weather Conditions for Nuclear Detonation Two, 15 April 1952 . . 38
3.3 Actual Weather Conditions for Nuclear Detonation Three, 22 April 1952 . . 39
3.4 Actual Weather Conditions for Nuclear Detonation Four, 1 May 1952 . . . 40
3.5 Actual Weather Conditions for Nuclear Detonation Five, 7 May 1952 . . . 41
3.6 Actual Weather Conditions for Nuclear Detonation Six, 25 May 1952 . . . 42
3.7 Actual Weather Conditions for Nuclear Detonation Seven, 1 June 1952 . . 43
3.8 Actual Weather Conditions for Nuclear Detonation Eight, 5 June 1952 . . 44

CHAPTER 4 CLOUD SAMPLING BY MANNED AIRCRAFT

4.1 Film-badge Readings for Manned-sampling Personnel 47
4.2 Manned-sampling Data for Tumbler Able 49
4.3 Manned-sampling Data for Tumbler Baker 51
4.4 Manned-sampling Data for Tumbler Charlie 52
4.5 Manned-sampling Data for Tumbler Dog 54
4.6 Manned-sampling Data for Snapper Easy 57
4.7 Manned-sampling Data for Snapper Fox 59
4.8 Manned-sampling Data for Snapper George 61
4.9 Manned-sampling Data for Snapper How 63

CHAPTER 5 CLOUD TRACKING

5.1 Cloud-tracking Data for Tumbler Able 66
5.2 Cloud-tracking Data for Tumbler Baker 68
5.3 Cloud-tracking Data for Tumbler Charlie 70
5.4 Cloud-tracking Data for Tumbler Dog 72
5.5 Cloud-tracking Data for Snapper Easy 74
5.6 Cloud-tracking Data for Snapper Fox 76
5.7 Cloud-tracking Data for Snapper George 78
5.8 Cloud-tracking Data for Snapper How 80

CHAPTER 6 TERRAIN SURVEY

6.1 Terrain Survey for Tumbler Able 89
6.2 Terrain Survey for Tumbler Baker 91
6.3 Terrain Survey for Tumbler Charlie 94
6.4 Terrain Survey for Tumbler Dog 97
6.5 Terrain Survey for Snapper Easy 100
6.6 Terrain Survey for Snapper Fox 103
6.7 Terrain Survey for Snapper George 106
6.8 Terrain Survey for Snapper How 109

CHAPTER 1

MAPS AND CHARTS

1.1 SCOPE

The material contained in this chapter is of value only as a guide in finding locations of certain aircraft, target areas, and bombing flight patterns. A list of abbreviations used throughout this report is also included. A special grid map (Fig. 1.6) identical to the one used by the crew on manned-sampling, terrain-survey, and cloud-tracking aircraft is also included as a means of identifying the location of data collected (see Chaps. 4, 5, and 6).

1.2 CODE OF ABBREVIATIONS

IBDA, indirect bomb damage assessment
RADIAC, radiation detection, indication, and computation
WADC, Wright Air Development Center
SWC, Special Weapons Command (now Special Weapons Center)
SAC, Strategic Air Command
NRDL, Naval Radiological Defense Laboratory
EG&G, Edgerton, Germeshausen & Grier, Inc.
CAA, Civil Aeronautics Administration
CE, circular error in feet
CG, center of gravity
IFR, instrument flight rules
HE, high explosives
AEC, Atomic Energy Commission
APGC, Air Proving Ground Command
LASL, Los Alamos Scientific Laboratory
IFI, inflight insertion
MAFB, Maxwell Air Force Base
KAFB, Kirtland Air Force Base
ISAFB, Indian Springs Air Force Base
Jumbo, 4925th Operations Office
Seminole, Indian Springs Air Force Base
Bingo, Nellis Air Force Base
Rosie, atomic cloud
Sharkbait, Silver Lake
Sourdough, Yucca Flat
Ellen, Las Vegas radio range
Big Deal, live run
Angels, altitude measured in 1000-ft increments
Hairpin, Control Point
Buttercup, general call for the SAC
Zero Fox, pilot has no radiation exposure
Zebra, Greenwich time
Chili Pepper, contaminated aircraft

Table 1.1--TUMBLER-SNAPPER TEST-AIRCRAFT PARTICIPATION

(Primary Aircraft)

Type aircraft	Serial No.	Use of aircraft	Code name*	Parent organization	Location of aircraft
B-50	169	Drop	Hazel	4925th TG(A)	KAFB
B-50	165	Alt drop	Hazel	4925th TG(A)	KAFB
B-50	169	Drop	Bluefish	4925th TG(A)	KAFB
B-50	165	Alt drop	Bluefish	4925th TG(A)	KAFB
B-50	169	Drop	Tugboat	4925th TG(A)	KAFB
B-50	165	Alt drop	Tugboat	4925th TG(A)	KAFB
B-45	001	Drop	Cutthroat	4925th TG(A)	KAFB
C-47	197	Disaster	Milkman	4901st SW(A)	KAFB
C-47	197	Disaster	Armchair	4901st SW(A)	KAFB
C-47	197	Disaster	Rainbow	4901st SW(A)	KAFB
C-47	197	Disaster	Dagwood	4901st SW(A)	KAFB
B-29	818	Telemeter	Copy Cat 1	4925th TG(A)	KAFB
B-50	169	Telemeter	Copy Cat 2	4925th TG(A)	KAFB
B-50	260	IBDA	Tiger 1	SAC	KAFB
B-50	276	IBDA	Tiger 2	SAC	KAFB
B-50	337	IBDA	Tiger 3	SAC	KAFB
B-17	9246	Radiac	Scarecrow	WADC	KAFB
B-29	1863	Blast	Hot Foot 1	RADC	KAFB
B-29	1742	Blast	Hot Foot 2	RADC	KAFB
B-29	386	Obser. sampling	Crystal	4925th TG(A)	ISAFB
B-29	285	Sampling	Bullhead 1	4925th TG(A)	ISAFB
T-33	9920	Sampling	Bullhead 2	APG	ISAFB
T-33	9951	Sampling	Bullhead 3	APG	ISAFB
T-33	4048	Sampling	Bullhead 4	APG	ISAFB
T-33	9913	Sampling	Bullhead 5	ARDC	ISAFB
F-84	1033	Sampling	Bullhead 6	SAC	ISAFB
F-84	1051	Sampling	Bullhead 7	SAC	ISAFB
F-84	1054	Sampling	Bullhead 8	SAC	ISAFB
F-84	1043	Sampling	Bullhead 9	SAC	ISAFB
F-84	1042	Sampling	Bullhead 10	SAC	ISAFB
B-29	1826	Tracking	Hound Dog 1	AWS	ISAFB
B-29	774	Tracking	Hound Dog 2	AWS	ISAFB
B-29		Tracking (weather recon.)	Hound Dog 3	AWS	MAFB
B-25	099	Tracking	Hound Dog 4	4901st SW(A)	[illegible]AFB
C-47	308	Terrain survey	Badger 1	4901st SW(A)	[illegible]FB
C-47	386	Terrain survey	Badger 2	4901st SW(A)	ISAFB
L-20	464	Terrain survey	Woodchuck 1	4901st SW(A)	ISAFB
L-20	467	Terrain survey	Woodchuck 2	4901st SW(A)	ISAFB
C-45	750	Terrain survey	Woodchuck 3	4901st SW(A)	ISAFB
YH-12	225	AEC	Dreamboat 1	4925th TG(A)	ISAFB

Table 1.1 — (Continued)

Type aircraft	Serial No.	Use of aircraft	Code name	Parent organization	Location of aircraft
C-46		Paradrop	Shanghai 1-6	TAC Troop Carrier	Nellis AFB
C-47		Air evacuation	Shanghai 7	TAC Troop Carrier	Nellis AFB
C-47	990	Photo	Eyeball	Air Pictorial Service	ISAFB
B-50		Observation	Buttercup 1-12	SAC	Castle AFB
B-50		Observation	Buttercup 1-12	SAC	Barksdale AFB
B-29		Observation	Buttercup 1-4	SAC	Travis AFB
B-36		Observation	Buttercup 1-2	SAC	Travis AFB
B-36 or B-50		Photo recon.	Buttercup 13-14	SAC	Travis AFB

*Code numbers in chapters indicate the chronological use of an airplane for a particular mission, i.e., Copy Cat 2 of this master list becomes Copy Cat 1 when it is used as the observer sampling plane.

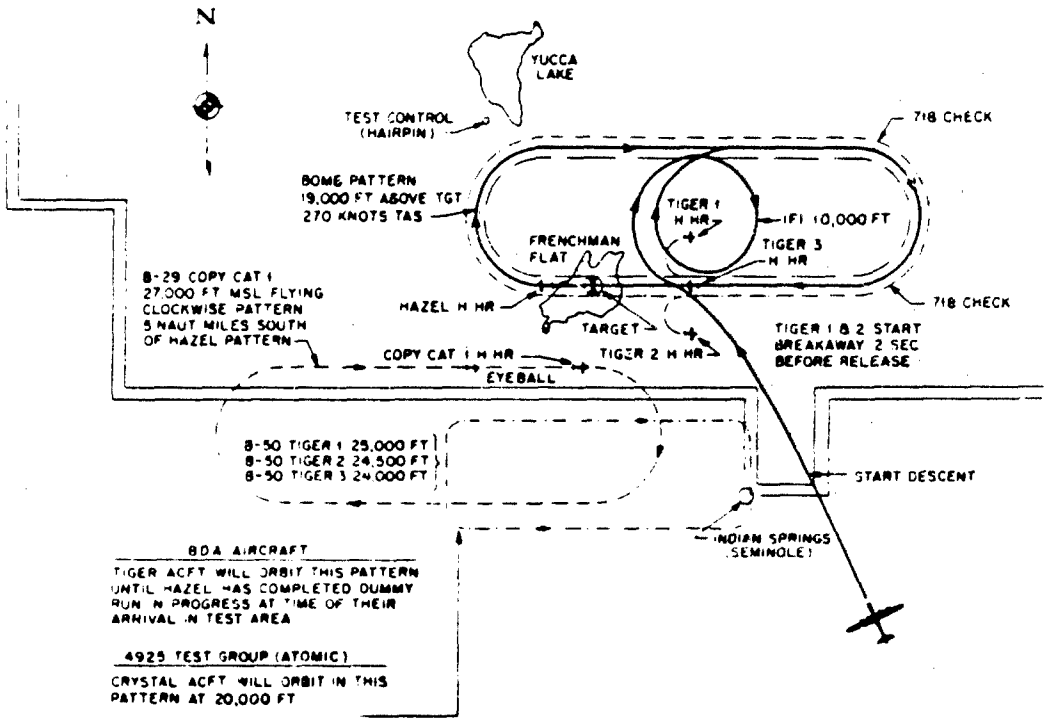

Fig. 1.1 — B-50 bomb-run pattern and associated aircraft, Frenchman Flat target. Bombing track, 223 to 303° or 64 to 123°. Participating IBDA aircraft at shots 0 and 1 included: B-50 Tiger 1, 1800 ft above and in loose formation on right wing of Hazel in bombing pattern. B-50 Tiger 2, 1300 ft above and in loose formation on left wing of Hazel in bombing pattern. B-50 Tiger 3, 800 ft above and 7 nautical miles in trail of Hazel in bombing pattern. Eyeball (Air Pictorial Service), 7 nautical miles south of target at 10,000 ft in clockwise pattern. Aircraft at Seminole included: Hound Dog 1 and 2 (B-29); Hound Dog 4 (B-25); Bullhead 1 (B-29); Bullhead 2, 3, 4, and 5 (T-33); and Badger 1 and 2 (C-47).

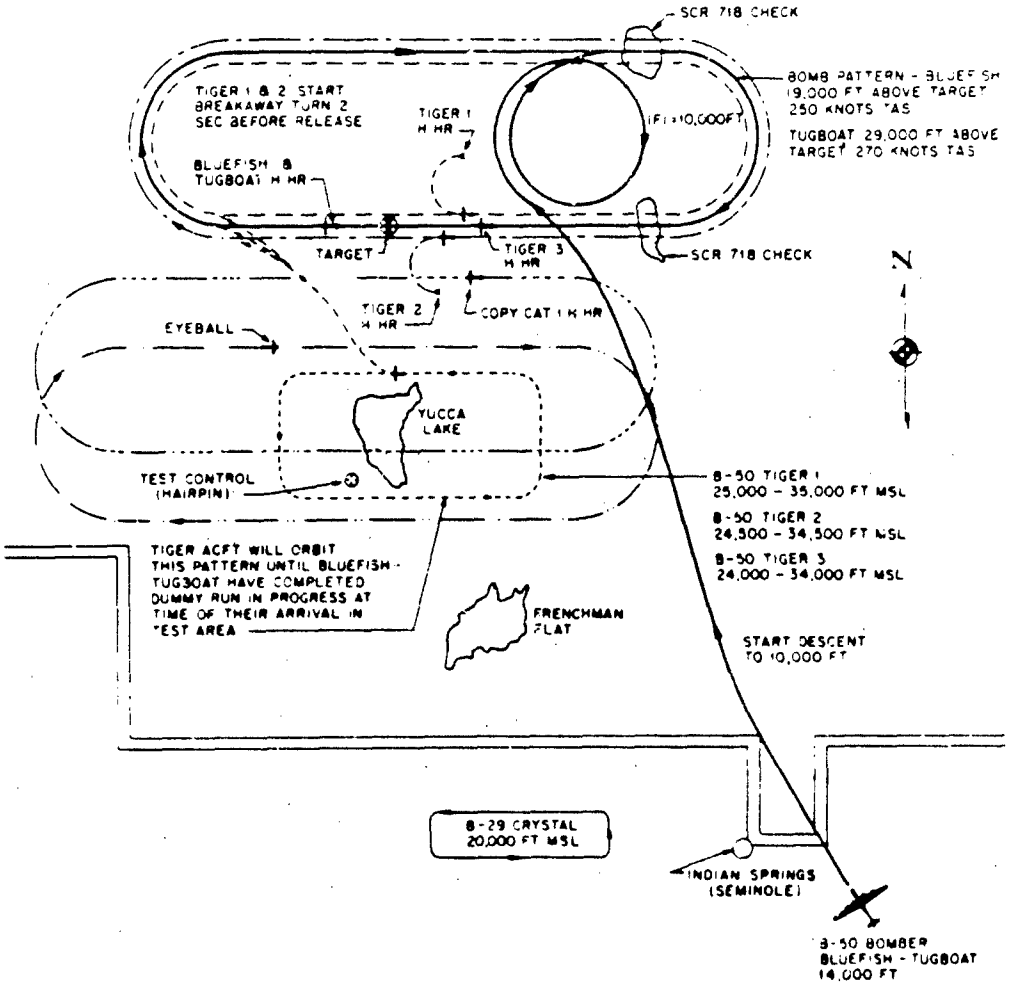

Fig. 1.2 — B-50 bomb-run pattern and associated aircraft, area 7, target 3. Bombing track, 240 to 305°. Participating IBDA aircraft at shots 2 and 3 included: ----, B-50 Tiger 1, 1800 ft above and in loose formation on right wing of Bluefish and Tugboat in bombing pattern. — —, B-50 Tiger 2, 1300 ft above and in loose formation on left wing of Bluefish and Tugboat in bombing pattern. ——, B-50 Tiger 3, 800 ft above and 7 nautical miles in trail of Bluefish and Tugboat in bombing pattern. — —, B-29 Copy Cat 1, 27,000 ft MSL flying clockwise pattern 5 nautical miles south of Bluefish pattern and 28,000 ft MSL flying counterclockwise pattern 3 nautical miles south of Tugboat pattern. ----, Eyeball (Air Pictorial Service), 7 nautical miles south of target at 10,000 ft in clockwise pattern. Aircraft at Seminole included: Badger 1 and 2 (C-47); Hound Dog 1 and 2 (B-29); Hound Dog 4 (B-25); Bullhead 1 (B-29); and Bullhead 2, 3, 4, and 5 (T-33).

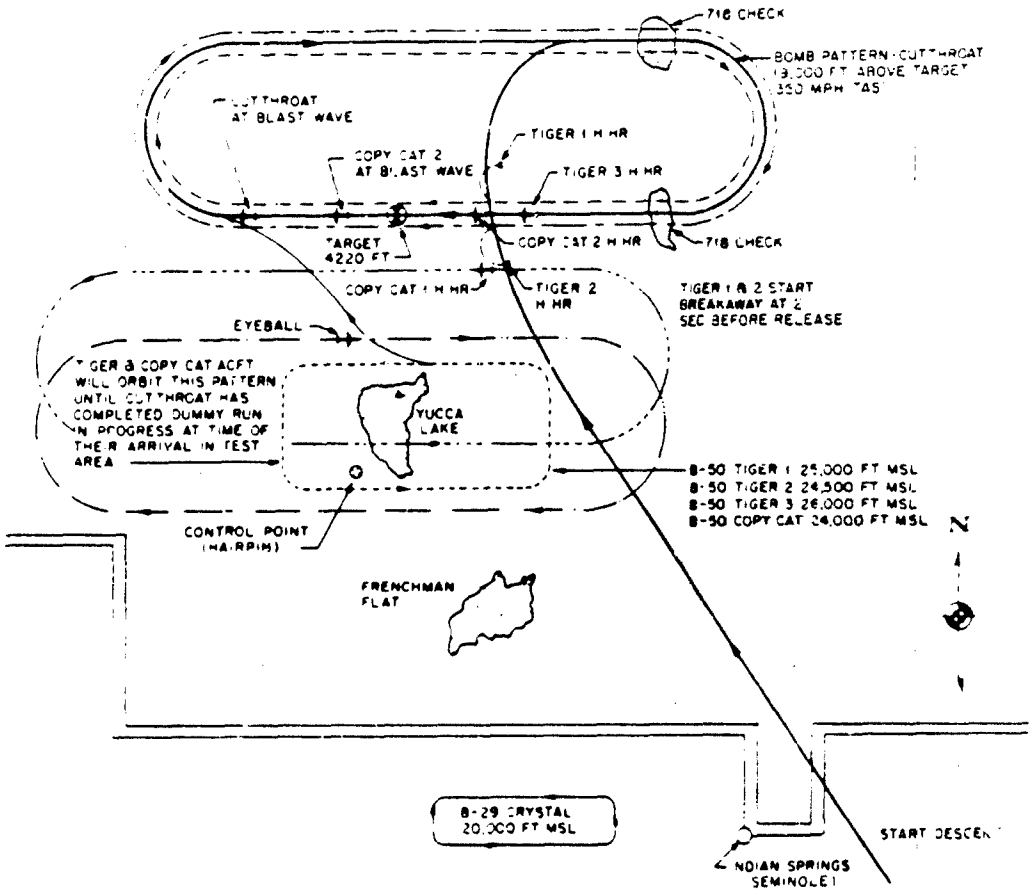

Fig. 1.3 — B-45 bomb-run pattern and associated aircraft, shot 4. Bombing track, 240 to 305°. Participating IBDA aircraft included: ----, B-50 Tiger 1, 1800 ft above and in loose formation on right wing of Cutthroat in bomb pattern. ---, B-50 Tiger 2, 1300 ft above and in loose formation on left wing of Cutthroat in bomb pattern. ——, B-50 Tiger 3, 2800 ft above and 7 nautical miles in trail of Cutthroat in bomb pattern. 4925th aircraft included: - --, B-29 Copy Cat 1, 27,000 ft MSL flying counterclockwise pattern 3 nautical miles south of Cutthroat. ——, B-50 Copy Cat 2, 800 ft above and 5 nautical miles in trail of Cutthroat in bomb pattern. - -, Eyeball (Air Pictorial Service), 7 nautical miles south of target at 10,000 ft in clockwise pattern. Aircraft at Seminole included: Hound Dog 1 and 2 (B-29); Hound Dog 4 (B-25); Bullhead 1 (B-29); Bullhead 2, 3, 4, and 5 (T-33); and Badger 1 and 2 (C-47).

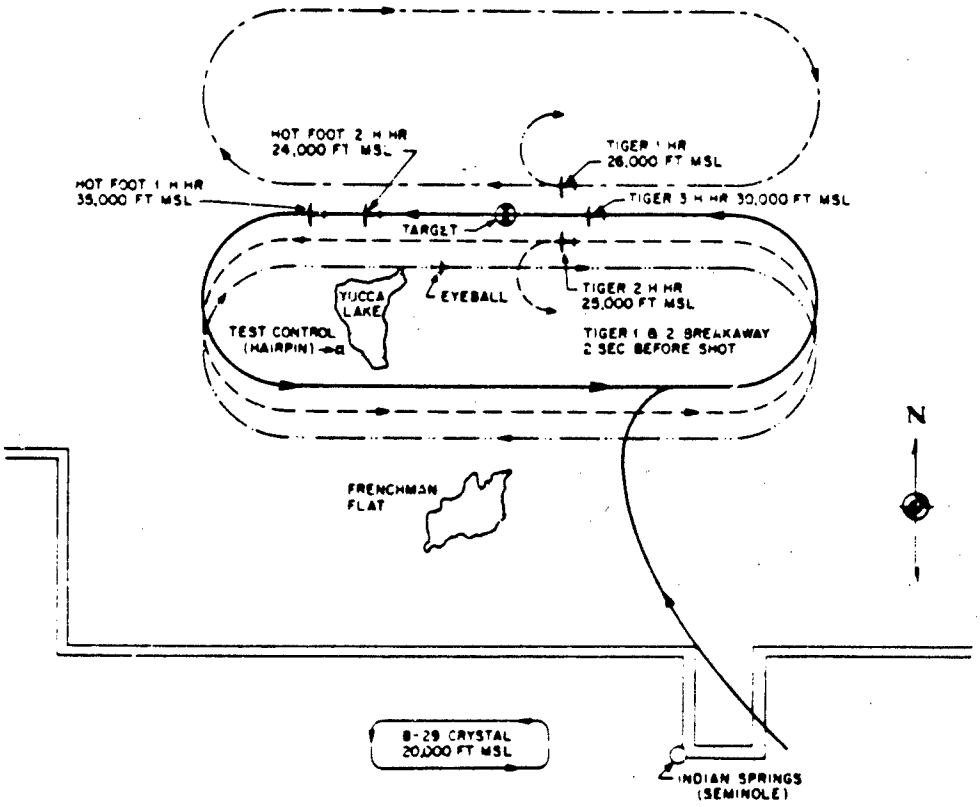

Fig. 1.4—Associated aircraft in Snapper phase, shot 5. Participating IBDA aircraft included: —·—, B-50 Tiger 1, right-hand pattern approach 4 miles right of target at 26,000 ft MSL. ----, B-50 Tiger 2, left-hand pattern approach 4 miles left of target at 25,000 ft MSL. ——, B-50 Tiger 3, left-hand pattern at 30,000 ft MSL and 9 miles from target on final approach at H hour. Aircraft in blast pattern for shots 5 and 8 included: ——, B-29 Hot Foot 1, left-hand pattern at 31,800 ft MSL, regular bomb-run pattern; ——, B-29 Hot Foot 2, left-hand pattern at 24,000 ft MSL, regular bomb-run pattern; and ----, Eyeball (Air Pictorial Service), 7 nautical miles south of target at 10,000 ft in clockwise pattern. Aircraft at Seminole included: Badger 1 and 2 (C-47); Hound Dog 1 and 2 (B-29); Hound Dog 4 (B-25); and Bullhead 1 (B-29); and Bullhead 2, 3, 4, and 5 (T-33).

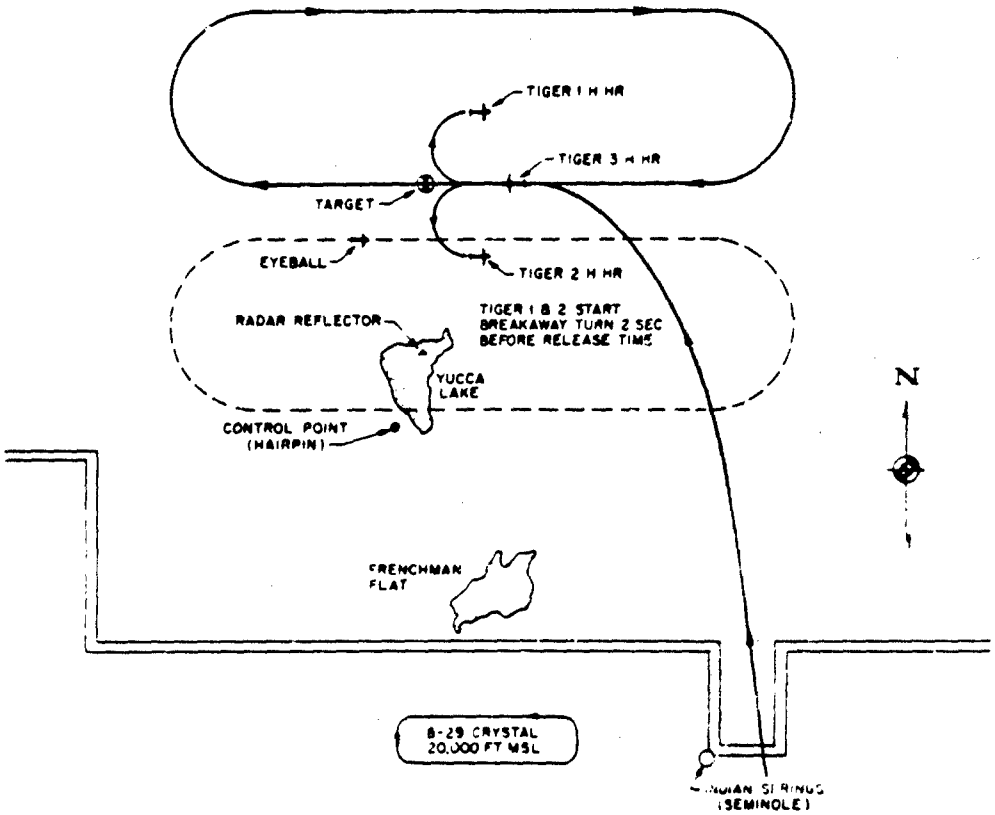

Fig. 1.5—Associated aircraft in Snapper phase, shot 6. Participating IBDA aircraft included: B-50 Tiger 1, 28,000 ft MSL, simulated bomb run; B-50 Tiger 2, 27,000 ft MSL, simulated bomb run; B-50 Tiger 3, 27,000 ft MSL, simulated bomb run to be 7 miles in trail and 7 miles from target at H hour; and Eyeball (Air Pictorial Service), 7 nautical miles south of target at 10,000 ft in clockwise pattern. Aircraft at Seminole included: Badger 1 and 2 (C-47); Hound Dog 1 and 2 (B-29); Hound Dog 4 (B-25); Bullhead 1 (B-29); and Bullhead 2, 3, 4, and 5 (T-33).

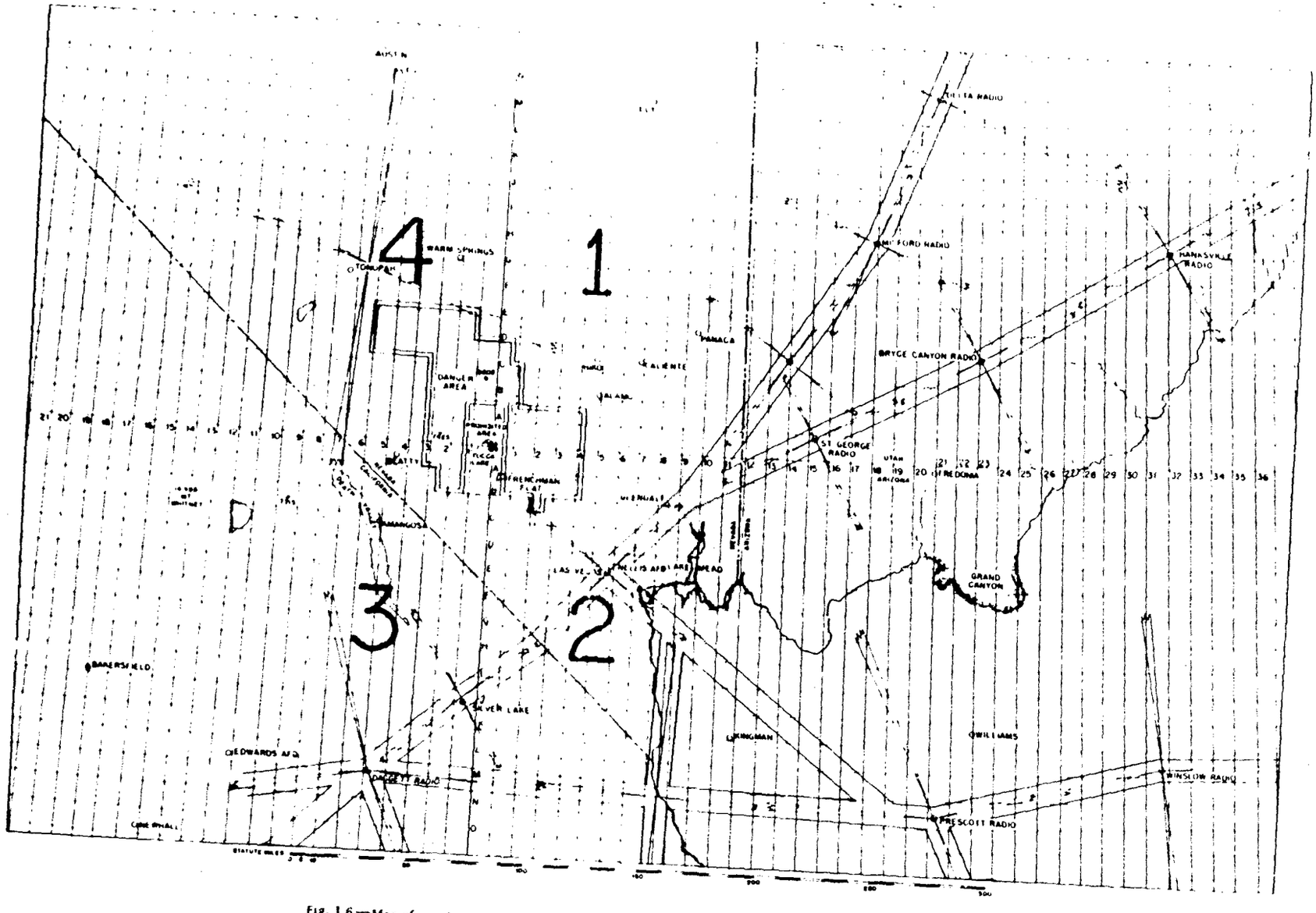

Fig. 1.6 — Map of coordinates to be used in determining plane positions for terrain survey and cloud tracking.

CHAPTER 2

TEST-AIRCRAFT OPERATIONAL DATA

To present a chronological time sequence of all test-aircraft participation prior to and after each nuclear explosion and/or practice mission, these data are presented in a columnated form. The data were recorded by the test-aircraft controller (Hairpin control) located at the AEC Command Post, Mercury, Nev.

Table 2.1 — TEST-AIRCRAFT OPERATIONAL DATA FOR TUMBLER ABLE, X RAY

Shot Time: 0929:24 PST, 30 March 1952

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
C-47	Milkman	Disaster	Jumbo	0430			0448	Abort at home station, mag. trouble; canceled
B-50	Hazel	Strike	Jumbo	0500	0736	0932	1410	IFI, start, 0738; complete, 0807. Landing, Seminole at 0939; airborne, Seminole at 1207
B-29	Copy Cat 1	Telemeter	Jumbo	0550			0734	Abort at home station, engine trouble
B-50	Tiger 1	IBDA	Jumbo	0600	0829	0940	1154	Over Ellen at 0814; winds report, 302° at 41 mph at 25,000 ft
B-50	Tiger 2	IBDA	Jumbo	0610	0905	0935	1145	Over Ellen at 0824
B-50	Tiger 3	IBDA	Jumbo	0620	0859	0934	1122	
B-50	Buttercup	SAC obser.	Castle AFB		0849			Departed Sharkbait at 0751
B-50	Buttercup 13	SAC obser.	Travis AFB		0901	0933		
B-50	Buttercup 14	SAC obser.	Travis AFB		0901	0933		
B-29	Crystal[a]	Observation sampler	Seminole	0838	0855	0936	1046	Crystal instructs Bullheads' take-offs at 1005, 1007, 1009, and 1011; proceed to 2A3 at B-15
C-47	Eyeball	Photo	Seminole	0848	0859	1014	1025	Starting photo mission at 0950
B-29	Hound Dog 1	Tracker	Seminole	0942			1100	
B-25	Hound Dog 4	Tracker	Seminole	0944			1100	Requests Baker Dog; advised simulate mission, proceed to 2B1
B-29	Bullhead 1[b]	Sampler	Seminole	0955			1125	Simulated mission directed by Crystal
T-33	Bullhead 2[c]	Sampler	Seminole	1007			1105	Simulated mission
T-33	Bullhead 3[d]	Sampler	Seminole	1010			1110	Simulated mission
T-33	Bullhead 4[e]	Sampler	Seminole	1010			1110	Simulated mission
T-33	Bullhead 5[f]	Sampler	Seminole	1011			1105	Simulated mission
C-47	Badger 1	Terrain survey	Seminole	1135			1545	Simulated mission, radio check-out

[a]Serial No. 386. [b]Serial No. 285. [c]Serial No. 920. [d]Serial No. 951. [e]Serial No. 048. [f]Serial No 913.

Table 2.2 — TEST-AIRCRAFT OPERATIONAL DATA FOR TUMBLER ABLE

Shot Time: 0900:07.5 PST, 1 April 1952

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
C-47	Milkman	Disaster	Jumbo	0330	0750	0903	1200	Landed Bingo at 0645
B-50	Hazel	Strike	Jumbo	0430	0655	0905	1110	Completed Big Deal at 0859:45; IFI, start, 0656; complete, 0721
B-29	Copy Cat 1	Telemeter	Jumbo	0506	0736	0904	1037	
B-50	Tiger 1	IBDA	Jumbo	0515	0740	0906	1125	At 0820 reports base of cloud about 3000 ft thick
B-50	Tiger 2	IBDA	Jumbo	0525	0800	0903	1125	Reports winds 284° at 31 mph
B-50	Tiger 3	IBDA	Jumbo	0535	0819	0910	1105	Reports winds 216° at 9 Angels
B-50	Buttercup 1–12	SAC obser.	Castle AFB		0852	0903		
B-50	Buttercup 14	SAC obser.	Travis AFB		0830	0903		
B-29	Crystal[a]	Observation sampler	Seminole	0755	0815	1118	1145	Reports top of Rosie 16,000 ft, bottom of Rosie 14,000 ft
C-47	Eyeball	Photo	Seminole	0759	0812	0903	0909	
B-29	Hound Dog 1	Tracker	Seminole	0935			1615	
B-29	Bullhead 1[b]	Sampler	Seminole	0910			1145	
B-29	Hound Dog 2	Tracker	Seminole	0915			0920	Abort engine 1
B-25	Hound Dog 4	Tracker	Seminole	0918			1425	
T-33	Bullhead 2[c]	Sampler	Seminole	1020			1100	
T-33	Bullhead 3[d]	Sampler	Seminole	1026			1055	
T-33	Bullhead 4[e]	Sampler	Seminole	1031			1105	
T-33	Bullhead 5[f]	Sampler	Seminole	1036			1105	
C-47	Badger 1	Terrain survey	Seminole	1130			1540	
C-47	Badger 2	Terrain survey	Seminole	1220			1530	

[a]Serial No. 386. [b]Serial No. 285. [c]Serial No. 920. [d]Serial No. 951. [e]Serial No. 048. [f]Serial No. 913.

Table 2.3 — TEST-AIRCRAFT OPERATIONAL DATA FOR TUMBLER BAKER

Shot Time: 0929:57.05 PST, 15 April 1952

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
C-47	Armchair	Disaster	Jumbo	0400	0830	0935	1230	
B-50	Bluefish	Strike	Jumbo	0500	0735	0935	1133	IFI, start, 0740; complete, 0817. Completed Big Deal at 0930
B-29	Copy Cat 1	Telemeter	Jumbo	0535	0814	0935	1130	
B-50	Tiger 1	IBDA	Jumbo	0545	0820	0935	1140	
B-50	Tiger 2	IBDA	Jumbo	0555	0859	0935	1135	
B-50	Tiger 3	IBDA	Jumbo	0605	0846	0935	1125	
B-50	Buttercup 1–12	SAC obser.	Barksdale AFB		0829	0935		
B-50	Buttercup 13–14	SAC obser.	Travis AFB		0835	0935		
C-47	Eyeball	Photo	Seminole	0830	0850	0939	0955	
B-29	Crystal[a]	Observation sampler	Seminole	0935	0938	1240	1300	
L-20	Woodchuck 2	Terrain survey	Seminole	0940			1010	Preliminary Rad-Safe mission
B-29	Hound Dog 1	Tracker	Seminole	0945			1430	
B-25	Hound Dog 4	Tracker	Seminole	0948			1518	
T-33	Bullhead 2[b]	Sampler	Seminole	1100			1145	
T-33	Bullhead 4[c]	Sampler	Seminole	1105			1150	
T-33	Bullhead 5[d]	Sampler	Seminole	1110			1200	
T-33	Bullhead 3[e]	Sampler	Seminole	1125			1230	
C-47	Badger 1	Terrain survey	Seminole	1210			1740	
C-47	Badger 2	Terrain survey	Seminole	1215			1715	
L-20	Woodchuck 1	Terrain survey	Seminole	1430			1800	

[a]Serial No. 386. [b]Serial No. 920. [c]Serial No. 048. [d]Serial No. 913. [e]Serial No. 951.

Table 2.4 — TEST-AIRCRAFT OPERATIONAL DATA FOR TUMBLER CHARLIE

Shot Time: 0930:10 PST, 22 April 1952

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
B-29	Hound Dog 3	Tracker	McClellan AFB	0025				Weather recon. at 0200; position, 37° 19′ north at 30,000 ft; winds, 120° at 16 knots; position, 38° 15′ north, 117° 46′ west at 30,000 ft; temp. 44°F, humd. 43% at 0225; no clouds over area; visibility, 50 miles; position, 38° 2′ north, 118° 20′ west; humd. 50%
C-47	Rainbow	Disaster	Jumbo	0345	0800	0934	1250	Landed Bingo at 0656; airborne Bingo at 0747
B-50	Tugboat	Strike	Jumbo	0445	0705	0941	1145	IFI, start, 0705; complete, 0750
L-20	Woodchuck 2	Security	Seminole	0511			0818	Security patrol of Forward Area
B-50	Copy Cat 2	Telemeter	Jumbo	0520	0753	0933	1210	At 0805 wind report, 310° at 25 knots; at 0820, permission granted to drop 1000 ft in altitude
B-50	Tiger 1	IBDA	Jumbo	0530	0751	0936	1530	At 0757 wind report, 334° at 15 knots; at 0818 wind report, 320° at 24 knots; not returning direct to Jumbo
B-50	Tiger 2	IBDA	Jumbo	0540	0759	0936	1210	
B-50	Tiger 3	IBDA	Jumbo	0550	0819	0946	1140	At 0818 wind report, 302° at 16 knots
F-84	Bullhead 8	Sampler	Seminole	0620			0640	Communications check flight
B-50	Buttercup Pathfinder	SAC obser.	Sharkbait		0656	0946		Entering Topside for three wind runs; at 0714 wind report, 307° at 25 knots
YH-12	Dreamboat	Rad. safety	Hairpin Mat	0715			0810	At 0738 plans on remaining in air until 0810 to burn fuel and recharge batteries
B-29	Crystal[a]	Observation sampler	Seminole	0815			1430	At 0934 top of Rosie 26,000 ft; at 1108 leading edge 105, velocity 26 knots, direction 208°; at 1124 position B-30 at 2C3; at 1131 Rosie 2E2 B-30; at 1204 Rosie at B-16

[a]Serial No. 285.

Table 2.4 — (Continued)

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
B-50	Buttercup 13	SAC obser.	Sharkbait	0821	0847	0934		
B-50	Buttercup 14	SAC obser.	Sharkbait	0822				
B-50	Buttercup Leader	SAC obser.	Sharkbait	0828				With 12 Buttercups
C-47	Eyeball	Photo	Seminole	0832	0845	0941	1000	
B-29	Bullhead 1[a]	Sampler	Seminole	0838			1327	At 1058 Rosie is splitting and dispersing, appears to be at B-16; at 1312 returning to Seminole
B-29	Hound Dog 1	Tracker	Seminole	0945			1505	
B-25	Hound Dog 4	Tracker	Seminole	0948			1248	
C-46	Shanghai Leader	Paradrop	Ellen	1050				Drop time of troops 111[illegible] in primary zone; entered Sourdou[illegible] 1105; at 1125 leaving penetration
C-46	Shanghai 2, 3, 5, and 6	Paradrop	Ellen	1050				To stay on HF, no contact on VHF; at 1125 leaving penetration
C-46	Shanghai 4	Paradrop	Ellen	1050				At 1120 explains troopers jumped on red light instead of green; at 1126 requests helicopter be sent to troopers; at 1143 landing at Sourdough; at 1352 on way to Seminole; at 1400 leaving area
L-20	Woodchuck 2	Rad. safety	Seminole	1120			1405	Landing at Sourdough
YH-12	Dreamboat	Rad. safety	Hairpin Mat	1141			1225	Going to SSW corner of Yucca to assist paratroopers; at 1151 reports two injured troopers; advised to return to Sourdough; at 1200 reports, as a guess, that injuries are light and no more injured troopers are left in area; at 1611 airborne for Seminole
T-33	Bullhead 2[b]	Sampler	Seminole	1145			1255	
T-33	Bullhead 3[c]	Sampler	Seminole	1152			1249	Will be airborne in 10 min; driver has Zero Fox; proceeding to 247, B-40

[a]Serial No. 386. [b]Serial No. 951. [c]Serial No. 920.

Table 2.4—(Continued)

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
T-33	Bullhead 4[a]	Sampler	Seminole	1155			1310	At 1206 change to 202 at B-20; penetrate to the east and upper portion of Rosie
T-33	Bullhead 5[b]	Sampler	Seminole	1205			1218	At 1208 proceeding to 2E5, B-4; at 1218, aborting because of engine trouble, return to Seminole
C-46	Shanghai 5	Paradrop	Ellen	1223		1230		Airborne Sourdough at 1223
B-29	Hound Dog 2	Tracker	Seminole	1230				
C-47	Badger 2	Terrain survey	Seminole	1252			1550	
C-47	Badger 1	Terrain survey	Seminole	1300			1730	
F-84	Bullhead 6[c]	Sampler	Seminole	1306			1358	At 1312 proceeding to 2A7, B-39.5
F-84	Bullhead 8[d]	Sampler	Seminole	1312			1420	Proceeding to 2A7, B-39
F-84	Bullhead 7[e]	Sampler	Seminole	1328			1425	At 1332 proceeding to 2A7, B-39.5
F-84	Bullhead 9[f]	Sampler	Seminole	1330			1425	At 1339 proceeding to B-41
F-84	Bullhead 10[g]	Sampler	Seminole	1335			1435	At 1338 at 2A7, B-40
T-33	Bullhead 3[h]	Sampler	Seminole	1345			1455	
L-20	Woodchuck 1	Rad. safety	Seminole	1557			1635	At 1557 inbound to Sourdough; at 1603 requests transportation to pick up reports; at 1613 departing Sourdough for Seminole

[a]Serial No. 048. [b]Serial No. 913. [c]Serial No. 033. [d]Serial No. 054. [e]Serial No. 051. [f]Serial No. 043. [g]Serial No. 042.
[h]Serial No. 920.

Table 2.5 — TEST-AIRCRAFT OPERATIONAL DATA FOR TUMBLER DOG

Shot Time: 0829.58.6 PST, 1 May 1952

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
B-50	Copy Cat 2	Telemeter	Jumbo	0420			1058	
C-47	Dagwood	Disaster	Jumbo	0440	0700	0834	1125	
B-50	Tiger 1	IBDA	Jumbo	0450	0710	0836	1058	At 0815 wind report, 261° at 20 knots
B-50	Tiger 2	IBDA	Jumbo	0500	0710	0836	1125	At 0840 wind report, 281° at 30 knots
B-50	Tiger 3	IBDA	Jumbo	0510	0743	0840	1035	
B-50	Buttercup Weather	SAC obser.	Sharkbait		0521	0619		Wind runs in area, departing for Sharkbait
B-45	Cutthroat	Strike	Jumbo	0600	0724	0832	0947	IFI completed at 0920
B-50	Buttercup Leader	SAC obser.	Sharkbait					At 0801 with 12 Buttercups over 2B, proceeding with mission
B-29	Copy Cat 1	Telemeter	Jumbo	0625			1040	Abort, engine 3 feathered, returning to Jumbo. Land at 0500; first take-off at 0430
B-50	Buttercup 14	SAC obser.	Sharkbait		0744	0834		
B-50	Buttercup 13	SAC obser.	Sharkbait		0749	0836		At 0824 over Sharkbait
B-29	Bullhead 1[a]	Sampler	Seminole	0730			1215	Reports top of Rosie, estimated at 27,000 to 28,000 ft
C-47	Eyeball	Photo	Seminole	0732	0744	0839	0907	
B-29	Hound Dog 2	Tracker	Seminole	0845			1347	
YH-12	Dreamboat	Rad. safety	Hairpin Mat	0846			1158	Mission completed at Groom Lake at 0935. Returned Indian Springs at 1700
B-25	Hound Dog 4	Tracker	Seminole	0848			1240	
T-33	Bullhead 3[b]	Sampler	Seminole	0920			1010	At 1036 suggest that more Bullheads be dispatched, Rosie moving fast
B-29	Crystal[c]	Observation sampler	Seminole	0947			1150	Reports receiver inoperative, landing at Seminole at 0920; first take-off at 0720
T-33	Bullhead 2[d]	Sampler	Seminole	0949			1040	At 1102 proceeding to 2B8

[a]Serial No. 386. [b]Serial No. 920. [c]Serial No. 285. [d]Serial No. 951.

Table 2.5 — (Continued)

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
T-33	Bullhead 4[a]	Sampler	Seminole	1004			1104	
T-33	Bullhead 5[b]	Sampler	Seminole	1015			1155	
L-20	Woodchuck 2	Rad. safety	Seminole	1020			1240	
H-12	Dreamboat	Rad. safety	Hairpin Mat	1108			1200	Returning to Seminole at 1610
F-84	Bullhead 6[c]	Sampler	Seminole	1110			1210	
F-84	Bullhead 7[d]	Sampler	Seminole	1115			1220	
F-84	Bullhead 8[e]	Sampler	Seminole	1118			1153	
F-84	Bullhead 9[f]	Sampler	Seminole	1120			1220	
F-84	Bullhead 10[g]	Sampler	Seminole	1126			1208	
C-47	Badger 1	Terrain survey	Seminole	1131			1656	
C-47	Badger 2	Terrain survey	Seminole	1155			1620	At position 1D4. You are directed to remain at this position and try to contact vehicles as listed. Remain at this position for instructions

[a]Serial No. 048. [b]Serial No. 913. [c]Serial No. 033. [d]Serial No. 051. [e]Serial No. 054. [f]Serial No. 043. [g]Serial No. 042.

Table 2.6 — TEST-AIRCRAFT OPERATIONAL DATA FOR SNAPPER EASY

Shot Time: 0414:59.29 PST, 7 May 1952

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
B-29	Hot Foot 1	Para-gauge	Jumbo	2205	0132	0424	0625	At 0350 unable to establish wind run, Zebra 240°
B-29	Hot Foot 2	Para-gauge	Jumbo	2221	0112	0422	0634	At 0255, altitude correction 2.9; at 0406 wind report, 230° at 24 knots at 24,000 ft
B-50	Tiger 1	IBDA	Jumbo	0045	0334	0422	1045	
B-50	Tiger 3	IBDA	Jumbo	0105	0350	0423	0635	
B-50	Tiger 2	IBDA	Jumbo	0127	0402	0423	0845	At 0150, delayed take-off, oil leak

Table 2.6 — (Continued)

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
C-47	Eyeball	Photo	Seminole	0335	0351	0430	0440	
B-29	Crystal[a]	Observation sampler	Seminole	0350			1030	At 0634 top of Rosie is 29,000 ft
B-29	Bullhead 1[b]	Sampler	Seminole	0400			0925	At 0524 top of Rosie is 25,000 ft
F-84	Bullhead 6[c]	Sampler	Seminole	0426			0455	
B-29	Hound Dog 1	Tracker	Seminole	0430			0700	Aborted, replaced by Hound Dog 2
B-25	Hound Dog 4	Tracker	Seminole	0433			0950	Look for T-33 at 1C7, down and out of gas, believed to be in that vicinity. Airborne Caliente at 0805, for area; returning to Seminole at 1037
H-12	Dreamboat	Rad. safety	Hairpin Mat	0458				
T-33	Bullhead 2[d]	Sampler	Seminole	0520			1430	At 0608 emergency landing north of Ellen at Caliente. Land at 0615
T-33	Bullhead 4[e]	Sampler	Seminole	0526			0625	
C-47	Badger 2	Terrain survey	Seminole	0530			1200	At 0653 proceeding to 1O2; at 0743 proceeding to 1D2 at 10,000 ft
T-33	Bullhead 3[f]	Sampler	Seminole	0535			0725	
T-33	Bullhead 5[g]	Sampler	Seminole	0535			0725	
B-29	Hound Dog 2	Tracker	Seminole	0556			1235	At 1118 proceeding to 1X22
F-84	Bullhead 6[h]	Sampler	Seminole	0558			0715	
F-84	Bullhead 7	Sampler	Seminole	0605			0745	Aborted, left wing tip did not feed
F-84	Bullhead 8[i]	Sampler	Seminole	0605			0735	
F-84	Bullhead 9[j]	Sampler	Seminole	0608			0735	
F-84	Bullhead 10[k]	Sampler	Seminole	0610			0745	
C-47	Badger 1	Terrain survey	Seminole	0715			1230	
L-20	Woodchuck 1	Rad. safety	Seminole	0719			1106	Reports no readings at 1D2 area; proceeding to 5 miles SSE of 1D2 to road intersection, making readings, and returning to Seminole
L-20	Woodchuck	Rad. safety	Seminole				0910	At 1049 returning to Seminole; at 1105 airborne Sourdough

[a]Serial No. 386. [b]Serial No. 285. [c]Serial No. 040. [d]Serial No. 951. [e]Serial No. 048. [f]Serial No. 920. [g]Serial No. 913.
[h]Serial No. 040. [i]Serial No. 054. [j]Serial No. 043. [k]Serial No. 042.

Table 2.7 — TEST-AIRCRAFT OPERATIONAL DATA FOR SNAPPER FOX

Shot Time: 0359:59.6 PST, 25 May 1952

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
B-50	Tiger 2	IBDA	Jumbo	2300	0246	0404	0927	At 0252 wind report, 231° at 25 knots radar and clear at 30,000 ft; at 0637 proceeding to 1D2
B-50	Tiger 1	IBDA	Jumbo	0015	0236	0420	0615	At 0328 wind report, 228° at 28 knots radar, est. Baker clouds $^{1}/_{10}$ - $^{2}/_{10}$ stratus at 15,000 - 17,000 ft; at 0512 top of Rosie 33,000 ft; landed Seminole at 0615
B-50	Tiger 3	IBDA	Jumbo	0025	0245	0404	0627	
B-50	Buttercup Snooper	SAC obser.	Sharkbait		0156	0405		At 0142 starting speed runs
B-50	Buttercup Leader	SAC obser.	Sharkbait		0340	0407		With seven Buttercups
C-47	Eyeball	Photo	Seminole	0320	0337	0404	0415	
B-29	Crystal[a]	Observation sampler	Seminole	0344			0918	At 0554 position of Rosie 1A2; at 0618 leading edge 1A3 at 39,500 ft
B-29	Bullhead 1[b]	Sampler	Seminole	0345			0700	At 0510 special mission canceled
F-84	Bullhead 6[c]	Sampler	Seminole	0408			0445	At 0527 top of Rosie 39,500 ft; at 0531 bottom of Rosie sloping 30,000 ft to partially 31,000 ft
B-29	Hound Dog 1	Tracker	Seminole	0415			1018	
B-25	Hound Dog 4	Tracker	Seminole	0418			0805	At 0715 unable to maintain 1D4
T-33	Bullhead 2[d]	Sampler	Seminole	0625			0740	
C-47	Badger 2	Terrain survey	Seminole	0625			0840	At 0728 orbiting over 1E1
T-33	Bullhead 4[e]	Sampler	Seminole	0630			0735	
C-47	Badger 1	Tracker	Seminole	0631			1130	At 1131 position at 1D4
T-33	Bullhead 3[f]	Sampler	Seminole	0637			0815	
T-33	Bullhead 5[g]	Sampler	Seminole	0645			0910	
F-84	Bullhead 7[h]	Sampler	Seminole	0711			0820	
F-84	Bullhead 8[i]	Sampler	Seminole	0746			0900	

[a]Serial No. 285. [b]Serial No. 386. [c]Serial No. 834. [d]Serial No. 951. [e]Serial No. 048. [f]Serial No. 920. [g]Serial No. 913. [h]Serial No. 030. [i]Serial No. 791.

Table 2.7 (Continued)

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
F-84	Bullhead 9[a]	Sampler	Seminole	0753			0910	
F-84	Bullhead 10[b]	Sampler	Seminole	0805			0945	
YH-12	Dreamboat 3	Rad. safety	Sourdough	0835			0932	Mission completed to Groom Lake at 0935. Returning to Seminole at 1101
F-84	Bullhead 11[c]	Sampler	Seminole	0900			0930	
L-20	Woodchuck 2	Rad. safety	Seminole	0927			1125	

[a]Serial No. 845. [b]Serial No. 782. [c]Serial No. 717.

Table 2.8 — TEST-AIRCRAFT OPERATIONAL DATA FOR SNAPPER GEORGE

Shot Time: 0354:59.8 PST, 1 June 1952

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
B-50	Buttercup 13	Weather recon.	Sharkbait	0100				Weather reports at 25,000 ft, 260° 100-mile course from Sourdough
B-50	Buttercup 1	SAC obser.	Sharkbait	0259		0400		At 0424 speed run at 25,000 ft
C-47	Eyeball	Photo	Seminole	0327	0334	0400	0416	
B-29	Bullhead 1[a]	Sampler	Seminole	0352			0627	
B-29	Crystal[b]	Observation sampler	Seminole	0404			1000	At 0524, leading edge of Rosie 1B2; at 0545, leading edge 1D2; at 0708, leading edge 1J3
T-33	Bullhead 3[c]	Sampler	Seminole	0407			0505	
T-33	Bullhead 7[d]	Sampler	Seminole	0407			0525	
B-29	Hound Dog 2	Tracker	Seminole	0410			1155	
B-25	Hound Dog 4	Tracker	Seminole	0418			0905	At 0856 reports Easy reading negative, think not necessary to continue; at 0859 instructed to continue

[a]Serial No. 386. [b]Serial No. 285. [c]Serial No. 920. [d]Serial No. 030.

Table 2.8 - (Continued)

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
F-84	Bullhead 6[a]	Sampler	Seminole	0506			0532	At 0516, top of Rogie 32,500 ft, east; at 0519, lower Rogie west at 19,000 ft; at 0523, lower stem 18,500 ft down to 14,000 ft
L-20	Woodchuck 2	Terrain survey	Seminole	0530			0805	
T-33	Bullhead 2[b]	Sampler	Seminole	0622			0744	
T-33	Bullhead 5[c]	Sampler	Seminole	0629			0736	
C-47	Badger 1	Terrain survey	Seminole	0630			1125	
T-33	Bullhead 4[d]	Sampler	Seminole	0634			0803	At 0758 beginning penetration at B-32
F-84	Bullhead 9[e]	Sampler	Seminole	0639			0800	At 0801 proceeding to 1L6
C-47	Badger 2	Tracker	Seminole	0650			1255	At 0755 proceeding to 4F7; at 1001 proceeding to 1J1; at 1019, to 1O0; at 1053, to 1B4; and at 1314, to 1B2
F-84	Bullhead 6[f]	Sampler	Seminole	0719			0809	
F-84	Bullhead 8[g]	Sampler	Seminole	0725			0840	
F-84	Bullhead 10[h]	Sampler	Seminole	0730			0843	
F-84	Bullhead 11[i]	Sampler	Seminole	0733			0838	
F-84	Bullhead 12[j]	Sampler	Seminole	0852			0958	At 0956 proceeding to 1M5 at B-33
B-29	Hound Dog 1	Tracker	Seminole	0917			1300	At 1215 reports at 1D0; at 1354 reports at 1K2, proceeding to Point 0 to survey, then home

[a]Serial No. 781. [b]Serial No. 951. [c]Serial No. 913. [d]Serial No. 048. [e]Serial No. 834. [f]Serial No. 781. [g]Serial No. 791
[h]Serial No. 717. [i]Serial No. 859. [j]Serial No. 781.

Table 2.9 — TEST-AIRCRAFT OPERATIONAL DATA FOR SNAPPER HOW

Shot Time: 0355:00.3 PST, 5 June 1952

Type aircraft	Code name	Use of aircraft	Take-off location	Take-off time	Enter area	Leave area	Landing time	Remarks
B-29	Hot Foot 1		Jumbo	2150	0128	0401	0510	
B-29	Hot Foot 2		Jumbo	2155	0045	0358	0510	
B-36	Buttercup 4180		Sharkbait	0034	0338	0408		What are your Angels? Ans., 38
C-47	Eyeball	Photo	Seminole	0320		0400	0430	
B-29	Crystal[a]	Observation sampler	Seminole	0346		0401	0916	
B-29	Bullhead 1[b]	Sampler	Seminole	0346			0836	
F-84	Bullhead 6[c]	Sampler	Seminole	0402				Top of Rosie (lower) Baker 17,000 ft at 0509, 0526 reports top of Rosie, 41,500 ft
B-29	Hound Dog 1	Tracking	Seminole	0410			1000	
B-25	Hound Dog 4	Tracking	Seminole	0413		0801		0744 Chili Pepper, returning to Seminole at 0847
T-33	Bullhead 2[d]	Sampler	Seminole	0431			0519	
F-84	Bullhead 7[e]	Sampler	Seminole	0510			0621	
L-20	Woodchuck 2	Terrain survey	Seminole	0521			0811	
C-47	Badger 1	Terrain survey	Seminole	0555			1139	
C-47	Badger 2	Terrain survey	Seminole	0605				Part of Rosie located at 412. Returning to Seminole at 1131
T-33	Bullhead 3[f]	Sampler	Seminole	0627		0743		
T-33	Bullhead 4[g]	Sampler	Seminole	0631		0734		
T-33	Bullhead 5[h]	Sampler	Seminole	0640				
F-84	Bullhead 9[i]	Sampler	Seminole	0642		0735		Canceled 2d mission
F-84	Bullhead 6[j]	Sampler	Seminole	0659			0740	
F-84	Bullhead 8[k]	Sampler	Seminole	0703		0731		
F-84	Bullhead 10[l]	Sampler	Seminole	0706				Returning to Seminole at 0915
F-84	Bullhead 11	Sampler	Seminole	0714				Returning to Seminole at 0855
L-20	Woodchuck 2	Terrain survey	Seminole	0925			1155	Special mission for J-6, Rad. safety
L-20	Woodchuck 1	Terrain survey	Seminole	1230			1153	Left Sourdough at 1207, flew 30 min and returned to Sourdough, on ground at 1153. Airborne Sourdough at 1238, returning to Seminole

[a]Serial No. 285. [b]Serial No. 386 [c]Serial No. 859. [d]Serial No. 951. [e]Serial No. 030. [f]Serial No. 920.
[g]Serial No. 048. [h]Serial No. 913. [i]Serial No. 834. [j]Serial No. 859. [k]Serial No. 791. [l]Serial No. 717.

CHAPTER 3

BOMB-DROP DATA

This chapter presents data collected by the telemetering aircraft and telemetering ground stations (unevaluated) and reports actual weather conditions at the nuclear detonation time as supplied by the Air Force Weather Service.

Table 3.1 — ACTUAL WEATHER CONDITIONS FOR NUCLEAR DETONATION ONE, 1 APRIL 1952 (0900 PST)

Location: Mercury Weather Station, NPG, Mercury, Nev.
Cloud cover: $^{1}/_{10}$ alto-stratus at 18,000 ft MSL. $^{5}/_{10}$ cirro-stratus at 25,000 ft MSL
Precipitation: no precipitation within 1000 miles
Pressure: Ground Zero, 914 mb
Burst height, 888.5 mb
Virtual temperature: Ground Zero, 58.5°F
Burst height, 57.0°F
Actual temperature: Ground Zero, 58.0°F
Burst height, 56.5°F
Relative humidity: Ground Zero, 28 %
Burst height, 30 %
Altimeter setting: 30.19 in.
Surface observation at Control Point, 0900 PST: sky, overcast with two layers of clouds, a scattered layer at 18,000 ft MSL and overcast at 25,000 ft MSL; visibility, 40 miles; sea-level pressure, 1002.6 mb; temperature, 54.0°F; dew point, 22.0°F; wind, NW at 6 knots; station pressure, 25.971 in.; relative humidity, 32 %

Winds above Ground Zero			Winds above Ground Zero		
Height above MSL, ft	Deg from true north	Speed, knots	Height above MSL, ft	Deg from true north	Speed, knots
Surface	050	06	14,000	250	14
5,000	090	05	15,000	260	17
6,000	120	05	16,000	260	20
7,000	140	07	18,000	260	34
8,000	170	08	20,000	260	37
9,000	200	08	25,000	260	43
10,000	210	10	30,000	270	64
12,000	250	15			

Table 3.2 — ACTUAL WEATHER CONDITIONS FOR NUCLEAR DETONATION TWO, 15 APRIL 1952 (0930 PST)

Location: Mercury Weather Station, NPG, Mercury, Nev.
Cloud cover: clear, visibility 40 miles
Precipitation: nearest precipitation at Salt Lake City, Utah
Pressure: Ground Zero, 878 mb
Burst height, 842 mb
Virtual temperature: Ground Zero, 55.0°F
Burst height, 48.3°F
Actual temperature: Ground Zero, 52.8°F
Burst height, 48.0°F
Relative humidity: Ground Zero, 30 %
Burst height, 30 %
Altimeter setting: 30.19 in.
Surface observation at Control Point, 0930 PST: sky, clear; visibility, 40 miles; sea-level pressure, 1002.5 mb; temperature, 54.0°F; dew point, 24.0°F; wind, NNW at 9 knots; station pressure, 25.970 in.; relative humidity, 30 %

Winds above Ground Zero			Winds above Ground Zero		
Height above MSL, ft	Deg from true north	Speed, knots	Height above MSL, ft	Deg from true north	Speed, knots
Surface	050	06	16,000	310	18
5,000	040	06	18,000	310	18
6,000	040	06	20,000	300	25
7,000	050	09	25,000	270	30
8,000	040	12	30,000	260	35
9,000	030	12	35,000	260	22
10,000	360	09	40,000	270	28
12,000	340	08	45,000	270	40
14,000	320	09	50,000	270	40
15,000	310	14	55,000	270	23

Table 3.3 — ACTUAL WEATHER CONDITIONS FOR NUCLEAR DETONATION THREE, 22 APRIL 1952 (0930 PST)

Location: Mercury Weather Station, NPG, Mercury, Nev.
Cloud cover: cumulus with less than $^{1}/_{10}$ coverage
Precipitation: no precipitation within 1000 miles
Pressure: Ground Zero, 873 mb
Burst height, 770 mb
Virtual temperature: Ground Zero, 68.2°F
Burst height, 47.0°F
Actual temperature: Ground Zero, 66.1°F
Burst height, 45.3°F
Relative humidity: Ground Zero, 30 %
Burst height, 47 %
Altimeter setting: 30.06 in.
Surface observation at Control Point, 0930 PST: sky, clear with few cumulus NE (less than $^{1}/_{10}$ coverage); visibility 30 miles; sea-level pressure, 1014.1 mb; temperature, 65.0°F; dew point, 38°F; wind, calm; station pressure, 25.855 in.; relative humidity, 37 %

Winds above Ground Zero			Winds above Ground Zero		
Height above MSL, ft	Deg from true north	Speed, knots	Height above MSL, ft	Deg from true north	Speed, knots
Surface	230	06	15,000	330	16
5,000	220	08	16,000	330	14
6,000	220	08	18,000	330	13
7,000	210	07	20,000	340	15
8,000	210	05	25,000	330	16
9,000	240	03	30,000	310	29
10,000	290	05	35,000	290	15
12,000	350	08	40,000	270	22
14,000	360	16	45,000	250	28

Table 3.4 — ACTUAL WEATHER CONDITIONS FOR NUCLEAR DETONATION FOUR, 1 MAY 1952 (0830 PST)

Location: Mercury Weather Station, NPG, Mercury, Nev.
Cloud cover: clear
Precipitation: no precipitation within 1000 miles
Pressure: Ground Zero, 877 mb
Burst height, 845 mb
Virtual temperature: Ground Zero, 65.2°F
Burst height, 61.4°F
Actual temperature: Ground Zero, 62.8°F
Burst height, 59.0°F
Relative humidity: Ground Zero, 47 %
Burst height, 50 %
Altimeter setting: 30 17 in.
Surface observation at Control Point, 0830 PST: sky, clear; visibility, 50 miles; sea-level pressure, 1018.2 mb; temperature, 63.0°F; dew point, 42.0°F; wind, W at 2 knots; station pressure, 25.950 in.; relative humidity, 47 %

Winds above Ground Zero			Winds above Ground Zero		
Height above MSL, ft	Deg from true north	Speed, knots	Height above MSL, ft	Deg from true north	Speed, knots
Surface	020	03	14,000	250	12
5,000	240	04	15,000	260	18
6,000	210	06	16,000	280	19
7,000	200	09	18,000	270	26
8,000	190	11	20,000	260	31
9,000	180	12	25,000	260	21
10,000	190	13	30,000	250	38
12,000	190	12	35,000	260	41

Table 3.5 — ACTUAL WEATHER CONDITIONS FOR NUCLEAR DETONATION FIVE, 7 MAY 1952 (0420 PST)

Location: Mercury Weather Station, NPG, Mercury, Nev.
Cloud cover: $^{8}/_{10}$ alto-cumulus and alto-stratus at 18,000 ft MSL
Precipitation: nearest precipitation at Salt Lake City, Utah
Pressure: Ground Zero, 868 mb
Burst height, 858 mb
Virtual temperature: Ground Zero, 62.4°F
Burst height, 64.0°F
Actual temperature: Ground Zero, 60.5°F
Burst height, 63.8°F
Relative humidity: Ground Zero, 40 %
Burst height, 37 %
Altimeter setting: 29.89 in.
Surface observation at Control Point, 0420 PST: sky, overcast; visibility, 35 miles; sea-level pressure, 1007.8 mb; temperature, 57.0°F; dew point, 30.0°F; wind, calm; station pressure, 25.700 in.; relative humidity, 35 %

Winds above Ground Zero			Winds above Ground Zero		
Height above MSL, ft	Deg from true north	Speed, knots	Height above MSL, ft	Deg from true north	Speed, knots
Surface	Calm	Calm	12,000	190	45
4,000	Calm	Calm	14,000	190	54
5,000	Calm	Calm	15,000	190	49
6,000	180	20	16,000	210	48
7,000	180	26	18,000	210	58
8,000	180	32	20,000	220	67
9,000	190	35	25,000	220	78
10,000	180	36	30,000	220	93

Table 3.6 — ACTUAL WEATHER CONDITIONS FOR NUCLEAR DETONATION SIX, 25 MAY 1952 (0400 PST)

Location: Mercury Weather Station, NPG, Mercury, Nev.
Cloud cover: $^{2}/_{10}$ alto-cumulus at 18,000 ft MSL
Precipitation: nearest precipitation at Pocatello, Idaho
Pressure: Ground Zero, 868 mb
Burst height, 858 mb
Virtual temperature: Ground Zero, 58.4°F
Burst height, 69.3°F
Actual temperature: Ground Zero, 57.1°F
Burst height, 67.0°F
Relative humidity: Ground Zero, 41 %
Burst height, 41 %
Altimeter setting: 30.00 in.
Surface observation at Control Point, 0400 PST: $^{2}/_{10}$ alto-cumulus at 18,000 ft MSL; visibility, 40 miles; sea-level pressure, 1011.0 mb; temperature, 56.0°F; dew point, 37.0°F; wind, NNW at 3 knots; station pressure, 25.801 in.; relative humidity, 48 %

Winds above Ground Zero			Winds above Ground Zero		
Height above MSL, ft	Deg from true north	Speed, knots	Height above MSL, ft	Deg from true north	Speed, knots
Surface	Calm	Calm	14,000	200	06
5,000	210	02	15,000	150	04
6,000	210	08	16,000	120	06
7,000	220	11	18,000	140	09
8,000	220	11	20,000	220	08
9,000	220	11	25,000	240	23
10,000	220	10	30,000	230	25
12,000	210	09	35,000	240	35

Table 3.7 — ACTUAL WEATHER CONDITIONS FOR NUCLEAR DETONATION SEVEN, 1 JUNE 1952 (0355 PST)

Location: Mercury Weather Station, NPG, Mercury, Nev.
Cloud cover: clear
Precipitation: nearest precipitation at Salt Lake City, Utah
Pressure: Ground Zero, 872 mb
Burst height, 862 mb
Virtual temperature: Ground Zero, 54.0°F
Burst height, 59.3°F
Actual temperature: Ground Zero, 52.6°F
Burst height, 57.4°F
Relative humidity: Ground Zero, 48 %
Burst height, 50 %
Altimeter setting: 29.82 in.
Surface observation at Control Point, 0355 PST: sky, clear; visibility, 30 miles; sea-level pressure, 1005.4 mb; temperature, 52.0°F; dew point, 25.0°F; wind, calm; station pressure, 25.640 in.; relative humidity, 34 %

Winds above Ground Zero			Winds above Ground Zero		
Height above MSL, ft	Deg from true north	Speed, knots	Height above MSL, ft	Deg from true north	Speed, knots
Surface	Calm	Calm	14,000	180	26
5,000	Calm	Calm	15,000	170	26
6,000	170	17	16,000	170	29
7,000	170	18	18,000	190	30
8,000	170	17	20,000	190	44
9,000	160	17	25,000	200	42
10,000	160	15	30,000	190	36
12,000	180	17			

Table 3.8 — ACTUAL WEATHER CONDITIONS FOR NUCLEAR DETONATION EIGHT, 5 JUNE 1952 (0355 PST)

Location: Mercury Weather Station, NPG, Mercury, Nev.
Cloud cover: clear
Precipitation: no precipitation within 800 miles
Pressure: Ground Zero, 863 mb
Burst height, 854 mb
Virtual temperature: Ground Zero, 65.3°F
Burst height, 72.0°F
Actual temperature: Ground Zero, 64.0°F
Burst height, 68.7°F
Relative humidity: Ground Zero, 45 %
Burst height, 50 %
Altimeter setting: 30.04 in.
Surface observation at Control Point, 0355 PST: sky, clear; visibility, 50 miles; sea-level pressure, 1011.3 mb; temperature, 64.0°F; dew point, 36.0°F; wind, N at 2 knots; station pressure, 25.836 in.; relative humidity, 37 %

Winds above Ground Zero			Winds above Ground Zero		
Height above MSL, ft	Deg from true north	Speed, knots	Height above MSL, ft	Deg from true north	Speed, knots
Surface	Calm	Calm	14,000	120	25
5,000	Calm	Calm	15,000	120	24
6,000	210	05	16,000	120	22
7,000	170	06	18,000	150	19
8,000	150	06	20,000	150	15
9,000	140	11	25,000	160	22
10,000	140	13	30,000	150	25
12,000	130	17			

CHAPTER 4

CLOUD SAMPLING BY MANNED AIRCRAFT

4.1 SCOPE

The purposes of this chapter are to report on all phases of cloud-sampling operations including the F-84G training program for Task Group 132.4; to give an account of personnel radiation dosages encountered during operations; to narrate in detail the actual operation of the airborne sampler-controller and each manned sampler; and to present a record of data collected which includes the sample size attained during each penetration through a nuclear cloud.

4.2 ORGANIZATION AND PLANNING

4.2.1 Personnel

The sampler-controller aircraft crew consisted of a B-29 flight crew, radiological director, and a representative from SWC and LASL. Manned-sampling aircraft crews consisted of a B-29 flight crew, 8 T-33 pilots, and 10 radiological officers. The personnel were from 4925th Test Group (ATOMIC), WADC, APGC, and SAC. The F-84G pilots assigned to SWC for training were to be a part of Task Group 132.4.

4.2.2 Training

Sixteen SAC officers with passive defense backgrounds arrived for training in cloud sampling and terrain survey 10 March. Twelve SAC officers received complete training in ground and terrain survey, and four were sent to MAFB, California, for a special course in terrain survey and instrumentation. Following the lecture series at KAFB on terrain survey and cloud sampling, a flying program was initiated demonstrating techniques and procedures for each officer so that he would become fully acquainted with all instruments and equipment. The following flights were accomplished during this period: seven B-29 airborne control flights; thirty T-33 sampler flights; and three C-47 terrain survey flights.

4.2.3 Equipment

The major items of operating equipment used at ISAFB consisted of the following radiac instruments:

(a) AN/PDR T1-B ion chamber
(b) 200-mr pocket dosimeter
(c) 1-r pocket dosimeter
(d) 10-r pocket dosimeter

(e) Electronic integrating gamma-dosage device (developed by the Electronics Section, LASL)
(f) 4.5 density goggles

4.2.4 Facilities

Manned-sampling headquarters, briefing and operations, were located in a large quonset hut on the eastern end of the flight line at ISAFB.

4.3 FACTUAL DATA

Tables 4.1 to 4.9 of this chapter outline in columnated form all data collected by each sampling aircraft for each penetration made through the nuclear cloud. A detailed summary of each shot is given in Secs. 4.3.1 to 4.3.9.

4.3.1 Manned Sampling for Tumbler Able X Ray (Dry Run)

An HE unit was dropped at 0929:24, 30 March 1952. The sampler-controller aircraft, B-29 No. 386, was on orbit as scheduled. The T-33 type aircraft flew normal missions, making 10 simulated penetrations and returning to ISAFB. The entire mission took approximately 50 min.

The sampler-controller, B-29 No. 386, took off at 0838 and was on orbit at 0900. Aboard were the assigned crew and the radiological directors. At 0955 the first sampler, B-29 No. 285, was called up for a penetration; three succeeding penetrations were made through simulated clouds, and practice messages were transmitted to the airborne controller. The second sampler, T-33 No. 920, was vectored to a position, made three passes, and returned to ISAFB. The third sampler, T-33 No. 951, took off at 1010, made three practice penetrations, transmitted simulated inflight reports to the airborne controller, and returned to ISAFB. The fourth and fifth samplers, T-33 Nos. 048 and 913, each took off at 1-min intervals, climbed to an altitude of 15,000 ft, made three passes at simulated atomic clouds, checked radio procedures for reporting, and then returned to ISAFB.

This mission was the dress rehearsal for the forthcoming nuclear tests. Radiological monitors, pilots, and other crew members received a final check-out in sampling Standing Operating Procedures, and pilots received additional familiarization on terrain features and vectoring procedures. A final debriefing was held to clear up minor discrepancies.

4.3.2 Manned Sampling for Tumbler Able

The mission was completed in accordance with the schedule. The grid system proved to be satisfactory. The T-33 aircraft took off as called for, completed their sampling penetrations, and returned to ISAFB in approximately 30 min after take-off.

The sampler-controller, B-29 No. 386, took off at 0755 and was in orbit at 0758; aboard were the assigned crew plus the radiological directors. At 0840 the first sampler, B-29 No. 285, was called and was given a vector for its first penetration; two penetrations were made at 14,500 ft. Radiation was initially detected at 5 miles out from the cloud on an MX-5 type of radiac instrument. The aircraft contamination background after leaving the cloud was approximately 5 mr/hr.

The second sampler, T-33 No. 920, was given its first vector at 1020 and flew directly to the cloud. This aircraft could not go faster than 320 mph indicated air speed due to landing gear trouble. However, two passes on headings of 260 and 80° were made, and the aircraft then returned to ISAFB with a dosimeter reading of 80 mr.

The third sampler, T-33 No. 951, was called up at 1026; it made two penetrations and returned to ISAFB with a dosimeter reading of 90 mr.

The fourth sampler, T-33 No. 048, took off at 1031, made three penetrations, and returned to ISAFB with a dosimeter reading of 85 mr.

Table 4.1 — FILM-BADGE READINGS FOR MANNED-SAMPLING PERSONNEL (IN MILLIROENTGENS)

Personnel	Tumbler					Snapper					Total
	Able	Baker	Charlie	Dog	Total	Easy	Fox	George	How	Total	T-S
Pilot	40	250	154	25	469	15	840	0	375	1230	1699
Copilot	52	300	140	25	517	0				0	517
L. scanner	38	300	135		473	0	1025	0	510	1535	2008
R. scanner	20	310	100		430	15	1100	8		1123	1553
Rad. officer	38	260	120	25	443	25	24	8		57	500
SWC	38	160	130	20	348	25	15	8		48	396
LASL	40	215	130	25	410	0	40	8		48	458
Pilot	225		450		675	1070	24	980		2074	2749
Copilot	225		410		635	990	950	0		1940	2575
Engineer	225				225					0	225
L. scanner	270		480	35	785	1085	32	960		2077	2862
R. scanner	255		510	25	790	1115	24	1210		2349	3139
Rad. officer	220	360	1240	1990	3810					0	3810
Pilot	175	60	780	760	1775					0	1775
Rad. officer	160	50		1830	2040					0	2040
Pilot	225	90	340	1890	2545					0	2545
Rad. officer	190				190					0	190
Pilot	200	90	1300	1130	2720					0	2720
Rad. officer	200	90	1740	1160	3190					0	3190
Engineer		280			280	0	910	0		910	1190
Rad. officer		90	160	875	1125					0	1125
Pilot		340	1370	2330	4040					0	4040
Rad. safety			430	1910	2340					0	2340
Eng. officer			450		450					0	450
Copilot									320	320	320
Engineer									0	0	0
Pilot			360		360					0	360
Pilot			180		180					0	180
Pilot			230		230					0	230
Pilot			130		130					0	130
Pilot			160		160					0	160
Pilot			180		180					0	180
Pilot				60	60					0	60
Pilot				80	80					0	80
Pilot				155	155					0	155
Pilot				115	115					0	115
Pilot				45	45					0	45
Pilot				2045	2045					0	2045
Copilot				1130	1130					0	1130
Engineer				2000	2000					0	2000

Table 4.1 — (Continued)

Personnel	Tumbler					Snapper					Total
	Able	Baker	Charlie	Dog	Total	Easy	Fox	George	How	Total	T-S
L. scanner				2370	2370					0	2370
R. scanner				2300	2300					0	2300
Engineer	20			25	45	1100	15	970	15	2100	2145
Rad. officer						991	460	5000		6451	6451
Rad. officer						0	1100	375	420	1895	1895
Pilot						0	1050	410	490	1950	1950
Pilot						1160	470	4600		6230	6230
Rad. officer						1080		880	35	1995	1995
Pilot						0	220	1320	120	1660	1660
Rad. officer						0	230	1225	130	1585	1585
Pilot						886	190	530	92	1698	1698
Rad. officer						992	220	500	74	1786	1786
Pilot						140				140	140
Pilot						15			66	81	81
Pilot						405				405	405
Pilot						140				140	140
Pilot						24				24	24
Pilot									15	15	15
Rad. officer						800			310	1110	1110
Pilot						450				450	450
Pilot						140				140	140
Pilot						50				50	50
Pilot									8	8	8
Pilot						65				65	65
Pilot						65				65	65
Pilot									48	48	48
Pilot						170				170	170
Rad. office.								930		930	930
Pilot								75		75	75
Pilot									48	48	48
Pilot								*			*
Pilot									66	66	66
Pilot								35		35	35
Pilot									66	66	66
Pilot								215		215	215
Pilot								25		25	25
Pilot								8		8	8
Pilot								75		75	75

*No reading.

Table 4.2 — MANNED-SAMPLING DATA FOR TUMBLER ABLE

Shot Time: 0900:07.5 PST, 1 April 1952
Apparent Fireball Yield: 1.28 ± 0.13 Kt*

Aircraft type and code No.	Penetration No.	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir. and dist. from zero point	Max. A/C intensity, mr/hr	Sample size per sq ft of filter paper
Crystal B-29 No. 386†										
Bullhead 1	1	14.5	205	NR	6	70	65	112°, 26 mi	Neg	
B-29 No. 285	2	14.5	210	NR	5	NR	105	112°, 26 mi	Neg	1.1×10^{-10}
Bullhead 2	1	14.5	320	30	10	26	40	108°, 33 mi	1100	
T-33 No. 920	2	14.5	310	60	5	85	80	108°, 33 mi	1100	4.35×10^{-10}
Bullhead 3	1	14	390	60	8	35	35	112°, 26 mi	240	
T-33 No. 951	2	14.5	400	60	8	NR	90	112°, 26 mi	240	2.4×10^{-9}
Bullhead 4	1	14	400	60	10	28	5	108°, 33 mi	900	
T-33 No. 048	2	14.5	400	60	12	NR	60	108°, 33 mi	900	
	3	15	400	60	10	NR	85	108°, 33 mi	900	1.7×10^{-10}
Bullhead 5	1	14.5	360	55	9	52	35	108°, 33 mi	140	
T-33 No. 913	2	15	375	NR	3		90	108°, 33 mi	140	3.3×10^{-10}

*Taken from Tumbler-Snapper Summary Report on Diagnostic Measurements, WT-550, November 1952.

†Sampler-controller.

The fifth sampler, T-33 No. 913, was vectored at 1036, made two penetrations, and returned to ISAFB with a dosimeter reading of 90 mr.

4.3.3 Manned Sampling for Tumbler Baker

After H-hour the cloud ascended to approximately 16,000 ft. It slowly dispersed with the lower part moving south and the upper part moving 135° from zero point (see grid map Chap. 1). The sampler-controller, B-29 No. 386, was on orbit as scheduled, but owing to communication difficulties returned to ISAFB, repa[illegible] set, and was back in the air at 0935. After observing the cloud and taking photographs of [illegible] formation, the controller alerted the sampling aircraft for take-off, and then actual [illegible] of the nuclear cloud took place within 100 min. Sampler one, B-29 No. 285, had a gas leak and aborted the mission. It was necessary to use the sampler-controller, B-29 No. 386, as a number one sampler; with this double mission, the sampler aircraft made four penetrations through the nuclear cloud after directing the T-33 samplers. Sampler two, T-33 No. 920, had no difficulty in locating the cloud in the grid path. The cloud was easily visible after take-off but the determination of a good penetration altitude was hard. The first penetration gave a peak reading of only 200 mr. It was noted by the radiological officer that on a sharp turn to the right, with gravity forces approximately 2.5, the integrated dosimeter gained about 50 mr; no explanation other than a possible geometry factor involved could be given.

Samplers two and four, T-33 No. 920 and T-33 No. 048, were requested to sample crosswinds, and samplers three and five, T-33 No. 951 and T-33 No. 913, sampled upwind and downwind. Sampling, in general, was difficult since there were no directional shears of the wind. The sampling operation was completed in approximately 2 hr 45 min.

Four penetrations by Bullhead 2 were made with a maximum dosimeter reading of 30 mr. The third sampler, T-33 No. 951, was called up at 1125. Three penetrations were made with a dosimeter reading of 60 mr. This aircraft had difficulty in making passes through the cloud at an altitude of 10,000 ft. The cloud was irregular and not clearly defined at this altitude. The fourth, T-33 No. 048, was given a vector at 1105 and also had difficulty in penetrating the cloud at a proper altitude; however, four penetrations were made with a dosimeter reading of only 45 mr. The fifth sampler, T-33 No. 913, was called at 1110. This aircraft orbited for 15 min at 20,000 ft. The nuclear cloud was easily visible below, although it was spread out over several miles. Penetrations were made through the dense portion of the cloud with layers of the cloud above and below. Three penetrations were made, and the aircraft returned to ISAFB with a dosimeter reading of 148 mr.

The mission was successful in accordance with instructions. It was recommended that longer separation in take-off times for the T-33 aircraft be established, because a large part of the time was spent orbiting and waiting for other sampler aircraft to leave the nuclear cloud before making an initial, second, or a third penetration. The additional dosages from aircraft contamination occurred during these waiting periods. It was noted that in several cases the integrated dosage instruments in the T-33's read lower than the dosimeter readings; the probable cause might have been due to the proximity of the instrument to the outside skin of the aircraft.

4.3.4 Manned Sampling for Tumbler Charlie

The sampler-controller aircraft, B-29 No. 285, was airborne and on orbit at 0825 at an altitude of 21,000 ft. The mission lasted approximately 2 hr longer than was expected. This was due to slower dissipation of the cloud, and hence sampler aircraft were held out for maximum periods. The best samples were obtained from the upper portion of the cloud. The best penetration altitude was 39,200 ft. Movies were taken of the cloud formation by an AEC Photo Laboratory representative and will be used in training F-84 manned-sampling personnel.

The first sampler, B-29 No. 386, was airborne at 0838, observed the shot, and then tracked the cloud for 1½ hr. Four penetrations were made with dosimeter readings of 125 mr and an

Table 4.3 — MANNED-SAMPLING DATA FOR TUMBLER BAKER

Shot Time: 0929:57.05 PST, 15 April 1952
Apparent Fireball Yield: 1.29 ± 0.13 Kt*

Aircraft type and code No.	Penetration No.	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Cockpit background after pen., mr	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir. and dist from zero point	Max. A/C intensity, mr/hr	Sample size per sq ft of filter paper
Crystal B-29 No. 386	1	15	225	NR	NR	1.3	20	15	140°, 30 mi	600	
	2	14.5	225	NR	NR	1.2	NR	45	140°, 30 mi	600	
	3	14	210	NR	NR	2.2	NR	70	140°, 30 mi	600	
	4	14	225	NR	NR	3.2	NR	140		600	1.4×10^{-9}
Bullhead 2 T-33 No. 920	1	12	405	NR	NR	0.2	NR	NR	125°, 20 mi	1000	
	2	12	410	NR	NR	1.0	8	10	125°, 20 mi	1000	
	3	13	410	NR	NR	2.0	22	20	125°, 20 mi	[illegible]	
	4	11.5	420	30	NR	4.5	27	30	125°, 20 mi	1000	8.2×10^{-10}
Bullhead 3 T-33 No. 951	1	11.5	410	NR	NR	2.0	20	10	140°, 26 mi	400	
	2	11.5	410	NR	NR	1.5	NR	20	140°, 26 mi	400	
	3	11.5	400	NR	NR	1.5	NR	50	140°, 26 mi	400	1.36×10^{-9}
Bullhead 4 T-33 No. 048	1	15.5	400	51	NR	1.5	9	8	123°, 20 mi	230	
	2	14.5	400	NR	NR	2.5	12	15	123°, 20 mi	230	
	3	14.5	400	NR	NR	2.5	19	25	123°, 20 mi	230	
	4	15	400	NR	NR	12.0		45	123°, 20 mi	230	6.9×10^{-10}
Bullhead 5 T-33 No. 913	1	15	410	NR	NR	3.0	30	20	140°, 13 mi	1500	
	2	14	450	NR	NR	8.0	NR	80	140°, 13 mi	1500	
	3	14.5	400	NR	NR	7.0	NR	148	140°, 13 mi	1500	6.9×10^{-9}

*Taken from Tumbler-Snapper Summary Report on Diagnostic Measurements, WT-550, November 1952.

Table 4.4 — MANNED-SAMPLING DATA FOR TUMBLER CHARLIE

Shot Time: 0930:10 PST, 22 April 1952
Apparent Fireball Yield: 30.8 ± 1.5 Kt*

Aircraft type and code No.	Penetration No.	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Cockpit background after pen., mr	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir. and dist. from zero point	Max. A/C intensity, mr/hr	Sample size per sq ft of filter paper
Crystal† B-29 No. 285											
Bullhead 1 B-29 No. 386	1	29	220	NR	4	0.8	NR	100	141°, 74 mi	300	
	2	30	220	NR	4.5	0.35	NR	100	136°, 79 mi		
	3	30	210	NR	4	0.25	NR	100	133°, 87 mi		
	4	33	220	NR	7	1.00	5	125	128°, 93 mi		2.65×10^{-11}
Bullhead 2 T-33 No. 951	1	38	255	NR	0.5	0.3	NR	0	NR		
	2	38.5	255	NR	0.5	1.4	22	0.25	NR	1900	
	3	40	245	NR	0.3	12.5	NR	0.3	NR		2.69×10^{-10}
Bullhead 3 T-33 No. 920	1	36	320	NR	0	0	0	0	162°, 60 mi	1700	
	2	34	320	NR	80	3.6	120	100	141°, 73 mi		
	3	31.5	310	NR	Neg	2.4	30	150	141°, 73 mi		1.57×10^{-9}
Bullhead 3 T-33 No. 920 (2d mission)	1	39	250	30	Neg	8	90	250	95°, 112 mi		
	2	39.0	260	NR	500	6	NR	400	95°, 112 mi		
	3	39.5	250	NR	100	10	NR	500	95°, 112 mi	5000	8.7×10^{-10}
Bullhead 4 T-33 No. 048	1	39.5	260	8	4.5	3.0	52	100	103°, 47 mi	8000	
	2	39.5	260	180	0.9	17	180	950	162°, 181 mi		
Bullhead 6 F-84 No. 033	1	40	215	35	0	1.5	15	125	102°, 56 mi	8	
	2	40	280	60	0	1.7	NR	200	76°, 48 mi		
Bullhead 7 F-84 No. 051	1	39.5	245	25	0	40	25	10	99°, 65 mi	12	
Bullhead 8 F-84 No. 054	1	39.2	250	NR	0	20	180	180	NR		
Bullhead 9 F-84 No. 043	1	41	240	NR	0	1	0	175	99°, 65 mi	10	
Bullhead 10 F-84 No. 042	1	40	275	14	0.01	0.88	NR	100	99°, 65 mi	2	

*Taken from Tumbler-Snapper Summary Report on Diagnostic Measurements, WT-550, November 1952

†Sampler-controller.

integron reading of 160 mr; however, because of fall-out, the aircraft became contaminated with an integrated dosage of 100 mr before a penetration was made. The second sampler, T-33 No. 951, took off at 1145 and made an initial climb to 38,500 ft; plexiglass in the canopy was iced up heavily which made the cloud difficult to see. The first two penetrations were made to "nip" a corner of the cloud; very low readings were obtained in this manner. Penetration three was excellent; the pass was made through the dense portion of the cloud picking up a peak reading of 12.5 r. Maximum reading upon landing was 0.3 mr. These penetrations were good, but it was suggested that the first and second penetrations should have been made directly into the cloud instead of as tangential passes.

Sampler three, T-33 No. 920, flew two missions on this shot because sampler five, T-33 No. 913, was forced to abort on a climb at 30,000 ft due to the engine cutting out and fluctuation of fuel pressure. On the first mission sampler three was airborne at 1152 and climbed to orbit at 36,000 ft. The cloud at this time was approximately 40 miles northeast of the vectored position (2E2, see Fig. 1.6 for grid map of area). Three passes were made in small strips of a brown cloud (probable lower portion of main nuclear cloud); light dosimeter readings were observed, the maximum readings being 150 mr. The second mission was off at 1345. No decontamination was performed at this time; the cockpit reading was 40 mr prior to take-off, but, because of the importance of obtaining more samples, the crew was replaced, the aircraft was refueled, and the oxygen supply was replenished. Three penetrations were made at an altitude of 40,000 ft. The cloud was observed as top being 40,000 ft and base at 37,000 ft (upper portion of nuclear cloud). The maximum dosimeter reading upon landing was 500 mr; however, in spite of the high readings, the radiological officer was found to have only a 30-mr reading on his clothing and the pilot none. Sampler four, T-33 No. 048, was airborne at 1155, made two penetrations, and returned to home station. Maximum dosimeter reading was 950 mr. Sampler six, F-84 No. 033, took off at 1306 and made two penetrations at 40,000 ft without difficulty with only a 200-mr dosimeter reading upon landing. The pilot was not found to be contaminated. Sampler seven, F-84 No. 051, was called for at 1328. Take-off was accomplished as briefed, and no difficulty was encountered in locating the nuclear cloud or making a penetration.

The rate meter on this aircraft was highly erratic and was working improperly so that readings obtained were only approximations. Only a 10-mr reading on a dosimeter was found upon landing. The pilot was not contaminated. Sampler eight, F-84 No. 054, aborted mission after take-off because of fuel leakage. Sampler nine, F-84 No. 043, took off at 1330 as directed by the sampler-controller aircraft. It made one penetration at 41,000 ft and returned to base with a maximum dosimeter reading of 175 mr. Sampler ten, F-84 No. 042, was off at 1335, reached assigned altitude of 40,000 ft, and was given a vector by the sampler-controller at 1354. The first penetration was made at an altitude of 40,000 ft at 1502. This altitude placed the aircraft approximately 1100 ft above the cloud. Readings taken were low and of little value; highest dosimeter reading was 100 mr. Another pass was anticipated, but the sampler-controller recalled sampler ten to home station.

This mission was highly successful from the LASL representative's point of view. The F-84G air crews gained considerable experience in sampling techniques as well as a knowledge of the many problems to be encountered in making penetrations of a nuclear cloud. Personnel exposures for the F-84 crews were cut down to a minimum, and contamination of aircraft and radiac equipment was little or none.

4.3.5 Manned Sampling for Tumbler Dog

This mission went off as scheduled, with the exception of the sampler-controller aircraft, B-29 No. 285, which had communication trouble and had to return to ISAFB; however, this trouble was located and repaired, and the sampler-controller took off and assumed its position. During this period, the aircraft controller officer at the Control Point, through Hairpin Control, directed and vectored the sampling phase until the sampler-controller was airborne.

Sampler one, B-29 No. 386, was off the ground and in orbit at 0757. After the shot went

Table 4.5 — MANNED-SAMPLING DATA FOR TUMBLER DOG

Shot Time: 0829:58.6 PST, 1 May 1952
Apparent Fireball Yield: 20.0 ± 1.0 Kt*

Aircraft type and code No.	Penetration No.	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Cockpit background after pen., mr	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir. and dist. from zero point	Max. A/C intensity, mr/hr	Sample size per sq ft of filter paper
Crystal† B-29 No. 285											
Bullhead 1 B-29 No. 386	1	16.5	250	NR	3.5	0.8	0	10		500	
	2	21	220	NR	8.5	1.5	30	40	157°, 43 mi		
	3	26	210	NR	600	0.5	NR	55	140°, 30 mi		
	4	31.5	200	NR	NR	6.5	NR	500	108°, 69 mi		
	5	33.5	190	NR	100	4.0	NR	830	104°, 86 mi		
	6	35	185	NR	100	2.0	NR	1000	102°, 94 mi		
	7	35	210	NR	150	2.0	NR	1100	104°, 86 mi		
	8	31.5	185	NR	150	3.0	NR	1250	101°, 105 mi		
	9	31	200	NR	130	3.25	NR	1400	102°, 94 mi		
	10	31	195	NR	150	2.0	NR	1500	96°, 102 mi		2.76×10^{-10}
Bullhead 2 T-33 No. 951	1	36.5	285	NR	150	23	68	600	104°, 95 mi		
	2	36	295	NR	500	22	NR	1600	102°, 103 mi	1500	3.41×10^{-10}
Bullhead 3 T-33 No. 920	1	40	250	80	600	48	78	300	104°, 87 mi		
	2	42	250	15	800	50	45	600	104°, 87 mi	7000	5.7×10^{-10}
Bullhead 4 T-33 No. 048	1	37.5	280	NR	0.1	22	0.35	200	95°, 110 mi	2000	
	2	36	290	NR	0.2	11	NR	500	96°, 102 mi		
	3	30	310	NR	0.33	11	NR	850	97°, 93 mi		
	4	34.5	300	NR	50	6.5	NR	1600	NR		7.5×10^{-10}

Table 4.5 — (Continued)

Aircraft type and code No.	Penetration No.	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Cockpit background after pen., mr	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir. and dist. from zero point	Max. A/C intensity, mr/hr	Sample size per sq ft of filter paper
Bullhead 5	1	41	200	NR	NR	6	70	70	95°, 138 mi	6000	
T-33 No. 913	2	39	260	NR	NR	4	NR	200	95°, 138 mi		
	3	37.5	250	NR	NR	4	NR	270	95°, 138 mi		
	4	37.5	250	NR	NR	8	NR	500	95°, 138 mi		
	5	37	250	NR	NR	6	NR	600	95°, 138 mi		
	6	37	250	NR	NR	6	NR	670	95°, 138 mi		
	7	37	250	NR	NR	6	NR	1750	95°, 138 mi		2.23×10^{-3}
Bullhead 6	1	40	280	42	NR	2.8	74	75	42°, 220 mi	30	
F-84 No. 033											
Bullhead 7	1	34.5	290	240	20	0.5	NR	0	95°, 121 mi	100	
F-84 No. 051	2	32	290	260	50	0.5	40	75	96°, 103 mi		
Bullhead 8	1	33.5	290	NR	Neg	1	Neg	Neg	85°, 110 mi	35	
F-84 No. 054	2	35	290	NR	10	5	40	75	87°, 93 mi		
Bullhead 9	1	38.2	290	NR	25	1.0	5	10	95°, 138 mi	26	
F-84 No. 043	2	38.5	290	NR	50	3	35	15	95°, 146 mi		
	3	38.0	290	NR	75	1.5	42	75	95°, 128 mi		
Bullhead 10	1	42.5	290	NR	Neg	1.5	12	75	NR	22	
F-84 No. 042											

*Taken from Tumbler-Snapper Summary Report on Diagnostic Measurements, WT-550, November 1952.

†Sampler-controller.

off, sampler one was directed to make a first penetration at 0919; nine penetrations followed in a period of 2 hr 10 min. Engines 2 and 4 of this aircraft became rough running and would not hold manifold pressure above 31,000 ft; thus only the lower portion of the nuclear cloud was sampled, and this at 35,000 ft. Also this aircraft had landing gear trouble, the shimmy dampener on the nose wheel was not operating correctly, and this kept the crew aloft for a longer period of time. The total dosimeter reading upon landing was found to be 1500 mr. Sampler two, T-33 No. 951, was off at 0949 and made two penetrations. Passes were made at 35,000 ft and 37,000 ft, and both times high peak readings were obtained. The final dosimeter reading upon landing was 1600 mr, maximum. Sampler three, T-33 No. 920, was airborne 50 min after burst. It then climbed to 40,000 ft and made its first penetration. The T1-B radiac instrument registered 48 r as a peak reading for this pass. On the second penetration the G-M instrument went off scale and stayed on the peg for 5+ sec. The cockpit of the aircraft read 2 r all during the flight back to base. The highest dosimeter reading upon landing was 600 mr.

Sampler four, T-33 No. 048, was off at 1004. The cloud at this time was observed to be highly dispersed but was easily recognized. Some fall-out was picked up from the higher portions of the nuclear cloud prior to entering the lower portion. Four penetrations were made in only 3 min; however, the dosimeter reading upon landing was 1600 mr, maximum.

Sampler five, T-33 No. 913, was off the ground at 1015, climbed to 41,000 ft, and made its first penetration at 1155. Successive passes were made at 37,000 ft. Seven penetrations were made, and, when the integron reached a reading of 100 mr, the aircraft left the area and proceeded to land at ISAFB. The maximum dosimeter reading when landing was 1750 mr. Sampler six, F-84 No. 033; sampler seven, F-84 No. 051; sampler eight, F-84 No. 054; and sampler nine, F-84 No. 043, took off at 1110 at 5-min intervals, made seven penetrations in all, and landed at base with each a maximum dosimeter reading of 75 mr. These sampling aircraft were successful in completing their assigned missions.

It was observed that the cloud had broken up into three distinctive formations, an upper, an intermediate, and a lower cloud. This formation was anticipated by the radiological directors, and a briefing prior to the shot explained this phenomenon.

4.3.6 Manned Sampling for Snapper Easy

This was the first tower shot. There were multiple layers of clouds with a total of approximately $^7/_8$ coverage. The top was variable at 25,000 ft and higher to the north. Winds were strong, and the nuclear cloud strung out in a long ribbon, with a concentration about 10 miles in back of the leading edge. With wind and cloud coverage as they were, conditions were extremely unsatisfactory for sampling. Two T-33's could not make it to the cloud, so they returned to ISAFB. One of these aircraft made a forced landing because of a loss of oxygen which forced the pilot to fly at lower altitude and thus exhausted the fuel sooner than anticipated. The other aircraft was held in a waiting position and, when called for by the control, was unable to find the cloud. Samples collected by the other T-33 and the B-29 No. 285 were satisfactory; F-84G penetrations were successful.

Sampler one, B-29 No. 285, was off the ground at 0400 and climbed to an altitude of 33,000 ft. Three passes were made from this altitude at 10-min intervals. Total dosimeter reading upon landing was 675 mr; however, it was found that 100 mr was accumulated prior to the first penetration due to leaving the orbit too soon. Sampler two, T-33 No. 951, was off at 0520 and, after climbing to the assigned altitude, had to abort as stated in the above paragraph. Sampler three, T-33 No. 920, was off the ground at 0535. First penetration was made at 0610 at an altitude of 31,000 ft.

Four additional penetrations were made at 32,000 ft. The total dosimeter reading upon landing was 700 mr. Sampler four, T-33 No. 048, was called for by the controller at 0526, climbed to an altitude of 32,000 ft, and waited for directions for his first penetration. When directed to proceed with a pass, this aircraft was low on fuel and returned to ISAFB. Sampler five, T-33 No. 913, was off the ground at 0535. First penetration was made at 0725, two ad-

Table 4.6 — MANNED-SAMPLING DATA FOR SNAPPER EASY

Shot Time: 0414:59.29 PST, 7 May 1952
Apparent Fireball Yield: 13.0 ± 2.0 Kt*

Aircraft type and code No	Penetration No.	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Cockpit background after pen., mr	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir and dist. from zero point	Max A/C intensity, mr/hr	Sample size per sq ft of filter paper
Crystal†											
B-29 No. 386											
Bullhead 1	1	33	190	NR	150	1.5	30	200	67°, 73 mi	800	
B-29 No. 285	2	32.5	210	NR	200	6	NR	300	67°, 73 mi		
	3	32	210	NR	250	5	NR	675	67°, 73 mi		2.83×10^{-13}
Bullhead 2‡											
T-33 No. 951											
Bullhead 3	1	31	280	NR	100	14	45	50	49°, 206 mi	900	
T-33 No. 920	2	32	280	NR	200	10	NR	100	49°, 206 mi		
	3	32	280	NR	340	9	NR	200	49°, 207 mi		
	4	32	280	NR	420	6.5	NR	300	49°, 257 mi		
	5	31.5	280	NR	600	14.5	NR	700	49°, 257 mi		4.57×10^{-3}
Bullhead 4	1	NR	NR	NR	NR	NR	NR	NR	NR	NR	5.4×10^{-3}
T-33 No. 048											
Bullhead 5	1	32.5	320	NR	300	9	28	200	NR	700	
T-33 No. 913	2	32	310	NR	410	6	NR	300	NR		
	3	32	310	NR	465	5.2	NR	440	NR		3.40×10^{-10}
Bullhead 6	1	32.5	330	NR	50	15	80	50	67°, 169 mi	100	
F-84 No. 040											
Bullhead 7‡											
Bullhead 8	1	32.8	310	NR	80	4	72	30	49°, 257 mi	80	
F-84 No. 054											
Bullhead 9	1	32.5	325	120	250	17	132	150	49°, 214 mi	500	
F-84 No. 043	2	32.5	325	NR	150	NR	NR	NR	49°, 214 mi		
Bullhead 10	1	33	310	NR	20	4	25	800	42°, 244 mi	100	
F-84 No. 042											

*Taken from Tumbler-Snapper Summary Report on Diagnostic Measurement, WT-550, November 1952.

†Sampler-controller

‡Aborted mission

ditional passes were made, and the aircraft returned to ISAFB with a total dosimeter reading of 440 mr. The four F-84G samplers were off the ground at 5-min intervals; one F-84G aborted mission because the tip tank did not feed. Penetrations for these aircraft were made at approximately 32,000 ft. Samples collected from these aircraft were adequate. Contamination of aircraft was nil. The total reading averaged 356 mr per aircraft crew.

4.3.7 Manned Sampling for Snapper Fox

The sampler-controller aircraft, B-29 No. 285, was airborne and in orbit at 0344 at an altitude of 25,000 ft. After shot time this aircraft left its orbit at 0404 and proceeded to the nuclear cloud.

The first sampler, B-29 No. 386, was off the ground at 0345 and in orbit at an altitude of 20,000 ft. At 0535 a first penetration through the nuclear cloud was made at 30,000 ft. The snap-sampler bag was filled during this pass. Four succeeding penetrations were made with average peak readings of 4.5 r per pass. It was apparent from the radiac instruments that the aircraft did not get fully clear of the cloud at the end of each penetration with the result that background readings were higher at the end of the first two passes and dropped off as the aircraft left the fifth pass. After the plane landed, the dosimeter read 550 mr, and the aircraft contamination was 1900 mr/hr. Personnel contamination was approximately 1 r.

The second sampler, T-33 No. 951, was called for a first penetration at 0625, climbed to an altitude of 37,000 ft, and made its first pass at 0655. The cloud was visible at this altitude. Five penetrations were made with an average peak reading of 3.5 r. The aircraft left the area at 0716 and returned to ISAFB. The dosimeter reading upon landing was approximately 550 mr, personnel exposure averaged 1 r, and aircraft intensity was 2600 mr/hr. Good samples were obtained. The third sampler, T-33 No. 920, took off at 0637, climbed to an altitude of 39,500 ft in orbit, and awaited a call from the controller. At 0750 it penetrated through the nuclear cloud. Difficulty was found in defining the pass and in finding the portion of the cloud which it had been instructed to sample. This was due to the variable wind shears which broke the nuclear cloud in scattered masses. Readings from this penetration were light, although a peak reading of 3 r was pegged for 5 sec. The dosimeter reading upon landing was 250 mr, the aircraft contamination was 1000 mr/hr, and actual personnel exposure amounted to approximately 460 mr. The fourth sampler, T-33 No. 048, was airborne at 0630 and was instructed to penetrate the cloud at 0656 at an altitude of 37,000 ft. Three passes were made at this altitude with a peak reading of 5 r. The dosimeter reading upon landing was 250 mr with an aircraft contamination of only 310 mr/hr. Final personnel exposures for the pilot and radiological officer were 1050 and 1100 mr. The fifth sampler, T-33 No. 913, was off the ground at 0645, climbed to an altitude of 38,000 ft, and made two penetrations. The first penetration gave a peak reading of 3.2 r, but in the second pass the readings were under 1 r; therefore no record was made. The final accumulative dosage on the ground was 215 mr. The aircraft intensity was 400 mr/hr, and the final personnel exposure averaged 200 mr. The F-84 participation in this mission was successful. These aircraft made penetrations as directed by the sampler-controller with minimum exposures both to personnel and aircraft. (See Table 4.1 for personnel film-badge reading and factual sampling data.) This mission was again a success for the manned-sampling project. The B-29 aircraft performed with no difficulties; the T-33 collected favorable samples, and the F-84 pilots gained experience in sampling techniques. In addition to the regular samplers, an IBDA aircraft (B-50) made four penetrations through the nuclear cloud. This mission was performed to determine the ionization effects on radar equipment.

4.3.8 Manned Sampling for Snapper George

The sampler-controller aircraft, B-29 No. 285, was airborne at 0404. Take-off was delayed after the detonation due to hydraulic trouble in the aircraft. This mission went off with no difficulties. The T-33 aircraft took off as called for by the controller aircraft, made their respective penetrations, and returned to ISAFB. The F-84 pilots made good penetrations

Table 4.7 — MANNED-SAMPLING DATA FOR SNAPPER FOX

Shot Time: 0359:59.6 PST, 25 May, 1952
Apparent Fireball Yield: 12.0 ± 2.0 Kt*

Aircraft type and code No.	Penetration No.	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Cockpit background after pen., mr	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir. and dist from zero point	Max A C intensity, mr/hr	Sample size per sq ft of filter paper
Crystal† B-29 No. 285											
Tiger II‡ B-50 No. 260	1	38	190	82	0	5	66	50	66°, 30 mi		
	2	38	190	214	48	40	198	880	66°, 30 mi		
	3	33.5	195	215	70	21	199	1350	72°, 38 mi		
	4	35	195	169	180	30	153	1600	58°, 43 mi		
Bullhead 1 B-29 No. 386	1	30	165	NR	65	7	25	100	75°, 47 mi	1900	
	2	30	165	NR	120	4	NR	260	57°, 44 mi		
	3	30	170	NR	200	2.2	NR	300	63°, 51 mi		
	4	20	185	NR	330	8	NR	450	72°, 38 mi		
	5	30	190	NR	110	4.5	NR	550	57°, 44 mi		1.96×10^{-13}
Bullhead 2 T-33 No. 951	1	37	290	NR	100	4	72	100	69°, 97 mi	2600	
	2	36.5	250	NR	NR	4.5	90	275	69°, 97 mi		
	3	36	250	NR	500	3.5	127	400	71°, 106 mi		
	4	36	250	NR	300	3	75	480	71°, 106 mi		
	5	36.5	250	NR	600	3.5	105	550	69°, 97 mi		9.9×10^{-13}
Bullhead 3 T-33 No. 920	1	39.5	250	300	200	3	300	250	69°, 165 mi	1000	6.21×10^{-10}
Bullhead 4 T-33 No. 048	1	37	280	NR	80	3	47	50	NR	310	
	2	37	340	NR	100	4	NR	100	NR		
	3	37	340	NR	180	5	NR	250	NR		1.65×10^{-10}

Table 4.7 — (Continued)

Aircraft type and code No	Penetration No	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Cockpit background after pen., mr	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir and dist from zero point	Max A/C intensity, mr/hr	Sample size per sq ft of filter paper
Bullhead 5 T-33 No. 913	1	37.5	300	30	310	3.2	22	215	76°, 206 mi	400	2.05×10^{-10}
Bullhead 6 F-84 No. 834	1	37	260	NR	45	NR	340	50	60°, 95 mi	500	
	2	39	260	NR	40	NR	45	140	69°, 97 mi		
Bullhead 7 F-84 No. 030	1	40	270	NR	0	1.4	16	100	72°, 190 mi	60	
	2	40	270	NR	0	0.5	NR	75	82°, 182 mi		
Bullhead 8 F-84 No. 791	1	34.5	300	NR	0	1.5	15	50	71°, 106 mi	50	
	2	35	300	NR	0	3	NR	85	74°, 132 mi		
Bullhead 9 F-84 No. 846	1	33.5	310	NR	0	0.5	0	0	69°, 145 mi	48	
	2	40	310	NR	0	0.4	0	0	70°, 135 mi		
	3	23	380	NR	0.02	0.35	0	5	38°, 60 mi		
	4	20	395	NR	0.06	0.07	0	5	45°, 65 mi		6.46×10^{-9}
Bullhead 10 F-84 No. 782	1	37	280	NR	0	0.1	0	0	69°, 125 mi	260	
	2	40	270	NR	0	0.2	0	40	74°, 171 mi		
	3	40	270	NR	0	0.1	0	NR	71°, 174 mi		
Bullhead 11 F-84 No. 717	1	36.5	300	NR	0.01	1.2	3	0	60°, 169 mi	15	
	2	36.5	280	NR	0.05	1.5	12	25	63°, 181 mi		
	3	38.5	275	NR	0.12	1.2	30	50	68°, 177 mi		

*Taken from Tumbler-Snapper Summary Report on Diagnostic Measurements, WT-550, November 1952.

†Sampler-controller

‡Special mission

Table 4.8 — MANNED-SAMPLING DATA FOR SNAPPER GEORGE

Shot Time: 0354:59.8 PST, 1 June 1952
Apparent Fireball Yield: 17.0 ± 0.7 Kt*

Aircraft type and code No.	Penetration No.	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Cockpit background after pen., mr	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir. and dist. from zero point	Max. A/C intensity, mr/hr	Sample size per sq ft of filter paper
Crystal†											
B-29 No. 285											
Bullhead 1	1	27.5	165	NR	180	24	118	750	17°, 61 mi	1000	1.45×10^{-13}
B-29 No. 386											
Bullhead 2	1	34	300	NR	NR	NR	NR	40	28°, 132 mi	1600	
T-33 No. 951	2	34	300	NR	NR	NR	NR	185	28°, 132 mi		
	3	35	300	NR	NR	NR	NR	260	28°, 132 mi		5.16×10^{-10}
Bullhead 3	1	33.5	260	53	6000	140	50	6000	23°, 50 mi	2600	1.3×10^{-9}
T-33 No. 920											
Bullhead 4	1	32	300	NR	90	4.6	51	100	NR	3600	
T-33 No. 048	2	33	300	NR	460	8	120	300	NR		
	3	32.5	300	NR	1000	4.6	480	1400	NR		1.23×10^{-9}
Bullhead 5	1	32	280	60	140	10	55	80	17°, 121 mi	1600	
T-33 No. 913	2	32.5	290	60	320	11	72	380	17°, 121 mi		3.08×10^{-9}
Bullhead 6	1	35	295	120	32	1.5	40	80	150°, 192 mi	125	
F-84 No. 781											
Bullhead 7	1	33	300	NR	200	70	12	400	45°, 66 mi	1900	
F-84 No. 050											
Bullhead 8	1	34	320	180	150	1.5	20	100	15°, 192 mi	80	
F-84 No. 791											
Bullhead 9	1	27	300	NR	NR	NR	NR	75	207°, 163 mi	800	
F-84 No. 834	2	35	300	NR	NR	NR	NR	75	16°, 181 mi		2.43×10^{-10}
Bullhead 10	1	33	270	40	25	3	40	50	17°, 158 mi	20	
F-84 No. 717	2	33	270	60	50	2	60	50	17°, 158 mi		
Bullhead 11	1	27	300	NR	125	1.5	40	100	15°, 192 mi	28	
F-84 No. 859											
Bullhead 12	1	34	300	NR	NR	4	120	50	15°, 178 mi	180	
F-84 No. 781	2	35	300	NR	NR	3	45	70	15°, 178 mi		

*Taken from Tumbler-Snapper Summary Report on Diagnostic Measurements, WT-550, November 1952

†Sampler-controller

through the cloud and had little difficulty in reading the radiac instruments.

The first sampler, B-29 No. 386, took off at 0352 and, after orbiting until H+1:43 hr, went in and made a first penetration through the nuclear cloud. Only one penetration was made. A snap-sampler was used, and it was estimated that a good sample was taken. A peak reading of 24 r was attained with duration of 1 r to 1 r of 118 sec. The accumulative dosage was 750 mr. The aircraft contamination upon landing was 1000 mr/hr, and the crew had an average exposure of 767 mr. The second sampler, T-33 No. 951, took off at 0622 and was on orbit at 0730; its altitude was 34,000 ft. Sampler-controller called for a penetration at 0740; negative readings were taken for this and two succeeding passes. It was discovered upon landing that the radiac equipment was inoperative during all passes; however, the dosimeter gave a final reading of 260 mr. The third sampler, T-33 No. 920, was off the ground at 0407 and was ready for its first penetration at 0445. Only one pass was made, and this was through a hot portion of the nuclear cloud. This aircraft entered the cloud at 0445 at an altitude of 33,500 ft and immediately hit a hot pocket of contaminated particles; the rate meter indicated from 1 to 70 r for 25 sec, then dropped to 50 r and held for 26 sec, and then instantly rose to 140 r, then back to 6 r, and then to 1 r within 50 sec. After reporting these data to the controller, this aircraft was cleared to return to ISAFB. After the aircraft was landed, contamination was found to be 1000 mr/hr and the accumulative dosage, 6000 mr. Final film-badge exposure reading for this crew was pilot, 4600 mr, and radiological officer, 5000 mr. The fourth sampler, T-33 No. 048, was called for at 0634. First penetration was at 0703, and two succeeding passes were made at 7-min intervals. A total dosimeter reading upon landing was 1400 mr, with a cockpit background of 1000 mr. Highest peak intensity reached was 8 r. The aircraft contamination was only 3600 mr/hr, and personnel film-badge readings were pilot, 1320 mr, and radiological officer, 1225 mr. The fifth sampler, T-33 No. 913, was off the ground at 0629. First penetration was made at 0705 and the second pass was at 0710. Highest peak reading was 11 r. Cumulative dosage upon landing was 380 mr, and the cockpit background was 320 mr. Personnel received an average exposure of 525 mr. The sixth sampler, F-84 No. 781, was off the ground at 0719, climbed to 35,000 ft, made one penetration, and returned to ISAFB. A peak reading of 1.5 r was recorded with a dosimeter reading of only 80 mr. The pilot received an exposure of 75 mr. Sampler seven, F-84 No. 030, was called for at 0407, climbed to an altitude of 33,000 ft, and made one pass at 0459. A peak reading of 70 r was received on the radiac instrument. A cumulative dosimeter reading of 400 mr and a cockpit background of 200 mr were recorded upon landing. The eighth sampler, F-84 No. 791, was off the ground at 0725, made one penetration at 0752, and landed at ISAFB. The ninth sampler, F-84 No. 834, was off at 0639, made two penetrations, and returned to ISAFB. No readings were taken because the radiac instruments proved inoperative. The tenth sampler, F-84 No. 717, was called up by the sampler-controller at 0730 and made two penetrations at 33,000 ft with a peak reading of 3 r and a cumulative dosage of 50 mr. This aircraft returned to ISAFB upon completion of the second pass. Sampler eleven, F-84 No. 859, was airborne at 0733, climbed to an altitude of 27,000 ft, made one pass, and returned to ISAFB. The readings recorded were low. The twelfth sampler, F-84 No. 781, was called for at 0852, climbed to an altitude of 34,000 ft, and made the first penetration at 0919. An additional pass was made at 35,000 ft. Peak reading recorded was 4 r, with a cumulative dosage of only 70 mr. This mission was accomplished with no difficulties. The aircraft returned to ISAFB with an intensity of only 180 mr/hr, and the pilot had a film-badge exposure of 75 mr.

The mission as a whole was a success. The B-29 observer and sampler had no mechanical troubles, the T-33's collected good samples, and the F-84 personnel checked out final manned-sampling techniques.

4.3.9 Manned Sampling for Snapper How

The shot went off as scheduled. Sampler-controller, B-29 No. 285, took off at 0346 and was on orbit at 0410. Difficulties were encountered by the controller in finding the cloud and

Table 4.9 — MANNED-SAMPLING DATA FOR SNAPPER HOW

Shot Time: 0355:00.3 PST, 5 June 1952
Apparent Fireball Yield: 17.6 ± 1.2 Kt*

Aircraft type and code No.	Penetration No.	Altitude, 10^3 ft MSL	Indicated air speed, mph	Total time in cloud, sec	Cockpit background after pen., mr	Peak intensity, r	Time from 1 r to 1 r, sec	Cumulative dosimeter reading, mr	Dir. and dist. from zero point	Max. A/C intensity, mr/hr	Sample size per sq ft of filter paper
Crystal† B-29 No. 285											
Bullhead 1 B-29 No. 386	1	24	195	NR	30	1.1	35	100	354°, 101 mi	450	
	2	24	185	NR	80	1.1	50	200	351°, 105 mi		
	3	24	185	NR	80	0.8	0	250	354°, 101 mi		
	4	23	195	NR	60	1.0	25	300	354°, 101 mi		
	5	22	190	NR	60	0.4	0	325	351°, 125 mi		
	6	21.5	200	NR	65	0.6	0	375	342°, 94 mi		1.1×10^{-10}
Bullhead 2 T-33 No. 951	1	36	250	NR	550	20	90	200	25°, 63 mi	3100	2.3×10^{-10}
Bullhead 3 T-33 No. 920	1	35	250	NR	0	0	0	0	NR	80	
	2	35	250	NR	0	0	0	0	NR		
	3	35	250	NR	0	0	0	0	NR		
	4	35	250	NR	0	0	0	0	NR		Neg
Bullhead 4 T-33 No. 048	1	34.5	260	NR	100	0.2	0	100	50°, 109 mi	270	
	2	35	260	NR	150	0.6	0	200	50°, 109 mi		0.76×10^{-10}
Bullhead 5 T-33 No. 913	1	35	260	NR	0	0	0	0	NR	260	0.607×10^{-10}
Bullhead 6 F-84 No. 859	1	17	350	180	50	1.3	50	75	329°, 78 mi	100	
Bullhead 7 F-84 No. 030	1	35	300	NR	20	3	60	40	51°, 102 mi	100	
Bullhead 8 F-84 No. 791	1	18	310	60	0	1.3	4	0	343°, 70 mi	120	
	2	18	330	120	50	1.9	20	25	343°, 70 mi		
Bullhead 9 F-84 No. 834	1	35	0	0	0	0	0	0	NR	11	0.03×10^{-10}
Bullhead 10 F-84 No. 717	1	30	350	120	0	0.2	0	0	328°, 92 mi	75	
	2	22	380	120	0	0.5	0	15	328°, 79 mi		
Bullhead 11	1	24	350	NR	0	0	65	20	377°, 92 mi	170	

*Taken from Tumbler-Snapper Summary Report on Diagnostic Measurements, WT-550, November 1952.

†Sampler-controller.

vectoring the sampling aircraft. The nuclear cloud rapidly rose to a height of 41,000 ft and then began to disperse in several shearing directions. The lower portion of this cloud (17,000 to 20,000 ft) also moved rapidly to the northwest, and the upper part moved to the northeast. The velocity of leading edge of this cloud was approximately 60 mph, twice as much as was anticipated during the briefing. This caused maximum dispersion at the most important sampling levels. The sampler aircraft were vectored to the lower cloud where most of the air sampling took place. Radiation intensities encountered by the sampling aircraft were much less than expected; this was also due to the dispersion. Sample sizes picked up by the sampling aircraft, according to field calculations, averaged 2×10^{-10} per square foot of filter paper.

The first sampler, B-29 No. 386, was off the ground at 0346. The first penetration was made at 0703. The cloud was visible to the radiological officer, but only low radiation intensities were encountered; the maximum peak reading, 1.1 r, was held for 35 sec. Six penetrations were made through the nuclear cloud with an average peak reading of 1 r. The snap-sampler was triggered at 0739 on the fourth pass, although the known radiation intensities were far below the desirable level; it was then or never. The cumulative dosimeter reading was 375 mr upon landing, and the aircraft-contamination intensity was 450 mr/hr which was nil to both personnel and aircraft.

The second sampler, T-33 No. 951, was vectored at 0431, climbed to 36,000 ft, and made one penetration. This pass was successful. A peak reading of 20 r was observed. The aircraft contamination was found to have a reading of 3100 mr/hr; the personnel had, on the average, a total cumulative dose reading of 455 mr. This penetration was an excellent one and one of the few which obtained good samples. Sampler three, T-33 No. 920, was called for by the sampler-controller at 0627. Four penetrations were made, but no readings were obtained; however, the aircraft was found to have a contamination of 80 mr/hr. The personnel dosages were only 15 mr for the pilot and 35 mr for the radiological officer. The fourth sampler, T-33 No. 048, was called for at 0631 and made two penetrations at 35,000 ft with a peak reading of 0.6 r. The cloud was observed at this altitude to be thin and highly scattered. This was very unsatisfactory for sampling. The fifth sampler, T-33 No. 913, was off the ground at 0640. Four passes were made through the cloud, but no readings were obtained; however, the aircraft was found to have a contamination of 260 mr/hr, and the personnel were found to have an average cumulative dosage of 80 mr. The F-84 samplers encountered the same difficulties in sampling. The nuclear cloud was very thin and widely scattered at the time they were vectored. Very low readings were observed, and in one case a peak reading of 3 r was recorded. This particular penetration was made by sampler seven, F-84 No. 030. The pass was completed at 35,000 ft at an air speed of 300 mph. The sample collected was roughly calculated to be sufficient for chemical analysis.

This particular nuclear cloud was difficult to sample. The anticipated characteristic phenomena were not encountered because of shifting winds and the nature of the bomb itself. The cloud arising from the detonation was typical in shape and form but was more rapid in its ascent. At 40,000 ft the shearing effect of the winds cut into the cloud rise and quickly scattered it. The cloud dissipated rapidly, and the fact that the sampling aircraft were held out too long by the sampler-controller made the operation difficult to accomplish. However, it was calculated that adequate samples were obtained for LASL.

CHAPTER 5

CLOUD TRACKING

5.1 SCOPE

The purpose of this chapter is to report on all phases of cloud-tracking operations; to present the data collected for each shot; to give a schematic diagram of the nuclear-cloud progression in relation to winds at various altitudes and directions and in relation to the point of burst.

5.2 ORGANIZATION AND PLANNING

5.2.1 Personnel

Cloud-tracking crews consisted of two B-29 crews from Air Weather Service and one B-25 crew from 4901st Support Wing (ATOMIC) with a radiological observer from Test Command on each aircraft.

5.2.2 Equipment

The equipment used for cloud tracking was as follows:

1. AN/PDR-T1B ion chamber.
2. AN/PDR 2610A gamma survey meter.
3. MX-5 (Beckman model) beta-gamma survey meter.
4. 200-mr to 0-10-r pocket dosimeter.
5. The aircraft used on these missions were furnished by the SWC and the 55th Weather Reconnaissance Squadron, MAFB. They included two B-29's and one B-25.

5.2.3 Facilities

The same buildings and facilities that were used for manned sampling were used here.

5.3 FACTUAL DATA

Tables 5.1 to 5.8 of this chapter outline the data collected. (Also see Fig. 1.6 to locate positions.)

5.4 GENERAL

In addition to charting cloud progression and radiation intensities for scientific research, an additional mission of clearing civil air lanes for civil traffic after each atomic detonation was performed.

Table 5.1 — CLOUD-TRACKING DATA FOR TUMBLER ABLE

Shot Time: 0900:07.5 PST, 1 April 1952

Aircraft type and code No.	Report No.	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1 B-29 No. 826	1	207	0950	25	0.08	24	152°, 35 kn	
	2	208	1015	21	0.8	19	NR	
	3	NR	NR	NR	NR	NR	NR	
	4	1A5	1045	21	0.08	NR	NR	
	5	106	1100	21	1	NR	NR	
	6	107	1109	21	0.2	NR	NR	
	7	2A8	1121	21	0.5	NR	NR	
	8	107	1136	21	0.7	NR	NR	
	9	1A8	1151	21	0.9	NR	NR	
	10	1A9	1214	21	0.2	NR	NR	
	11	1A9	1228	19	1	19	NR	Cloud scattered
	12	1A10	1235	19	0.7	19	NR	
	13	1B11	1257	19	0.4	17	NR	
	14	1A11	1312	19	3	17	NR	
	15	1B14	1327	19	6	15	NR	
	16	1B15	1336	19	5	19	NR	
	17	1B15	1359	17	10	17	NR	
	18	1B15	1414	17	7	17	NR	

Table 5.1 — (Continued)

Aircraft type and code No.	Report No.	Position grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 4 B-25 No. 099	1	2A0	0834	10	14	NR	NR	
	2	2A1	0846	11.5	100	NR	NR	
	3	2A2	0901	12	110	15	NR	
	4	2A3	0915	12	25	15	NR	
	5	2A4	0927	12	18	15	NR	
	6	2A4	0942	12	80	17	NR	
	7	205	0958	12	27	17	NR	
	8	106	1015	12	11	17	NR	
	9	2B7	1033	12	50	NR	NR	
	10	2A8	1045	12	60	NR	NR	
	11	2A8	1100	12	360	NR	NR	
	12	2A8	1116	12	28	NR	NR	
	13	2A8	1130	12	110	NR	NR	
	14	2B9	1144	12	95	NR	NR	
	15	2B10	1158	12	90	NR	NR	
	16	2A10	1214	12	28	NR	NR	
	17	109	1229	12	75	NR	NR	
	18	110	1242	12	85	NR	NR	

Table 5.2— CLOUD-TRACKING DATA FOR TUMBLER BAKER

Shot Time: 0929.57.05 PST, 15 April 1952

Aircraft type and code No.	Report No.	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1 B-29 No. 826	1	2B4	0930	12	NR	NR	350°, 17 kn	
	2	2B2	1058	17	4	16	300°, 12 kn	Extremely scattered
	3	2B2½	1111	17	2	16	NR	
	4	2A1	1139	17	1.4	16	NR	
	5	2B2	1143	15	1.5	15	330°, 11 kn	Thin and scattered
	6	2A2	1155	15	0.5	15	NR	
	7	2C3	1206	15	4	15	NR	
	8	2B0	1211	14	4	14	305°, 13 kn	
	9	2D0	1240	13	6	14	008°, 12 kn	
	10	2D4	1253	13	6	15	NR	Long, thin diffused streamers
Hound Dog 4 B-25 No. 099	1	000	0901	9	0.15	10	NR	Cloud broken
	2	101	0915	12	0.1	14	NR	
	3	401	1027	10	0.08	NR	NR	Dust cloud visible
	4	2A1	1043	6	0.12	15	NR	Scattered
	5	2A1	1059	8.5	0.13	16	NR	

Table 5.2 — (Continued)

Aircraft type and code No.	Report No.	Position, grid No.	Time of report, PST	Altitude nearest 500 ft 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 4 B-25 No. 099 (continued)	6	100	1113	9	1	16	NR	Horseshoe shaped
	7	2A0	1129	10	0.15	11 – 16	NR	
	8	2A2	1145	11	0.12	16	NR	Scattered thinly
	9	2B2	1200	12	0.2	14	NR	
	10	3D2	1215	10	1	NR	NR	Extremely scattered
	11	2B2	1230	7.5	2	NR	NR	
	12	2B1	1238	8	1.1	NR	NR	
	13	2C1	1245	7.5	3	NR	NR	
	14	2B½3	1258	8	0.9	NR	NR	
	15	2B½1	1304	8	1.8	NR	NR	
	16	2B½0	1316	8	0.8	NR	NR	
	17	3B½1	1318	0.8	0.9	NR	NR	
	18	3B½2	1323	8	0.8	NR	NR	
	19	2C1	1339	7.5	6.5	NR	NR	Cloud not visible

Table 5.3 — CLOUD-TRACKING DATA FOR TUMBLER CHARLIE

Shot Time: 0930:10 PST, 22 April 1952

Aircraft type and code No.	Report No.	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1 B-29 No. 826	1	2C1	0917	20	0	NR	360°, 6 kn	
	2	2B1	0942	20	9	NR	NR	Cloud stratus form
	3	2A0	1000	20	7	NR	NR	
	4	2B1	1008	15	5	15	NR	Diffusing rapidly
	5	2B1	1030	22	3	NR	NR	Diffusing rapidly
	6	2B0	1034	22	19	NR	NR	
	7	2B4	1043	22	4	NR	350°, 21 kn	
	8	2C4	1047	22	8	NR	NR	
	9	2E6	1135	26	18	NR	318°, 23 kn	Lightly scattered
	10	2D7	1146	26	3.5	NR	NR	Extremely scattered
	11	2C6	1155	26	4	NR	310°, 26 kn	Extremely scattered, big shear
	12	2B9	1205	26	2	NR	NR	
	13	2D7	1215	26	30	NR	NR	
	14	2G7	1228	26	110	NR	NR	No visible cloud in area
	15	2H8	1235	25	7	NR	NR	
	16	2E5	1300	26	14	NR	308°, 34 kn	
	17	2E5	1328	15	0.1	NR	NR	

Table 5.3 (Continued)

Aircraft type and code No	Report No	Position, grid No	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 4 B-25 No. 099	1	410	0915	11	0.5	12.5	NR	
	2	4A0	0930	8.5	NR	12.5	NR	Cloud stratus form
	3	300	0951	13	20	13	NR	
	4	2A3	1023	22	0.4	NR	350°, 26 kn	Upper cloud stratus form
	5	2A1	1035	8.5	7	NR	NR	Extremely diffused
	6	2B2	1106	10	0.4	NR	NR	
	7	2E5	1116	10	0.3	NR	NR	
	8	2G7	1126	10	0.3	NR	NR	
	9	2D4	1136	10	0.2	NR	NR	

Table 5.4 CLOUD TRACKING DATA FOR TUMBLER DOG

Shot Time: 0829:58.6 PST, 1 May 1952

Aircraft type and code No.	Report No	Position, grid No	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 2 B-29 No. 774	1	2A8	1020	23	0.7	40	274°, 27 kn	Thin stratus between top and lower cloud
	2	109	1037	23	13	30	NR	Thin and scattered
	3	209	1045	23	10	30	NR	Lower cloud 23,000 ft
	4	2A15	1100	23	1.5	NR	276°, 20 kn	
	5	2A16	1115	22	1	30*	NR	Dissipating rapidly
	6	1A10	1130	22	21	30*	275°, 24 kn	Thin and scattered, middle cloud 30,000 ft drifting SSE
	7	209	1150	19	80	30*	NR	
	8	2B7	1205	19	0.5	30*	270°, 20 kn	Extremely scattered
	9	1C9	1220	19	4	23*	NR	
	10	2B14	1237	19	3	23*	NR	Lower cloud topping mountains from 2C1 to 2C10
	11	1A3	1255	17	6	23*	NR	
	12	2A9	1320	17	0.5	20*	NR	
	13	1B11	1335	17	4	20*	257°, 15 kn	Very widely scattered

Table 5.4 — (Continued)

Aircraft type and code No.	Report No.	Position, grid [illegible]	Time of report, PST	Altitude nearest 500 ft 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 4 B-25 No. 099	1	4A1	0908	7.5	0.2	NR	NR	
	2	1B0	0920	8.5	0.4	NR	NR	
	3	2A2	0932	12	0.5	NR	NR	
	4	1A4	0944	11.5	3	NR	NR	Lower cloud 14,000 ft
	5	1A1	1001	8	0	NR	NR	Thin and scattered
	6	204	1018	9.5	0.03	NR	NR	Scattered
	7	106	1033	10	0.5	NR	NR	
	8	1B5	1050	8.5	0.3	NR	NR	Thin and scattered
	9	$104\frac{1}{2}$	1102	7	3	NR	NR	Thin and scattered

*Base.

Table 5.5 CLOUD-TRACKING DATA FOR SNAPPER EASY

Shot Time: 0414.59.29 PST, 7 May 1952

Aircraft type and code No.	Report No	Position, grid No	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1 B-29 No 826	1	2C3	0453	15	0	15*	208°, 41 kn	
	2	3A1	0512	15	0	15*	186°, 44 kn	
	3	1G2	0552	15	3	NR	NR	Thin and scattered
	4	1H2	0558	15	15	NR	0	
	5	1H3	0606	14	1	NR	195°, 49 kn	Cloud not visible
	6	1M17	0727	24	0	NR	226°, 68 kn	Aborting, Hound Dog 2 replacement
	7	1N18	0805	20	13	NR	223°, 56 kn	Thin and scattered
	8	1O22	0829	17	100	NR	NR	
	9	1P24	0835	17	14	NR	217°, 51 kn	
	10	1O25	0843	17	28	NR	NR	
	11	1N25	0846	16	11	NR	NR	
	12	1N26	0848	15	3	NR	NR	
	13	1S23	0841	15	8	NR	NR	
	14	1S22	0914	15	15	NR	209°, 33 kn	
	15	1V18	0914.30	15	0.6	NR	NR	Alto-cumulus, merging with cloud
	16	1X22	1022	10	1.1	NR	NR	
Hound Dog 4 B-25 No 099	1	4A1	0452	4	NR	NR	NR	
	2	4A2	0456	8	NR	NR	NR	
	3	4A2	0458	9	NR	NR	NR	
	4	4B3	0501	10	0.2	NR	NR	
	5	4B2	0503	11	20	NR	NR	

Table 5.5 —(Continued)

Aircraft type and code No.	Report No.	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 4 B-25 No. 099 (continued)	6	4C1	0506	12	NR	NR	NR	
	7	4C2	0509	13	NR	NR	NR	Lower cloud dispersed
	8	4C2½	0512	14	1	NR	NR	
	9	4B1	0515	13	NR	16	NR	
	10	4B0	0519	12	NR	NR	NR	
	11	4A1	0523	10	1	NR	NR	
	12	4A1½	0526	9	NR	NR	NR	
	13	4B1	0530	10	0.7	NR	NR	
	14	4C0	0535	12	NR	NR	NR	
	15	1E1	0539	13	NR	NR	NR	
	16	1H3	0543	14	2	NR	NR	Lower cloud not visible
	17	1I2	0548	13	5	NR	NR	
	18	1G1	0533	12	NR	NR	NR	
	19	4F0	0556	10	0.7	NR	NR	
	20	1G2	0603	11	NR	NR	NR	
	21	1J5	0617	13	5	NR	NR	Cloud not visible
	22	1J5	0620	13	30	NR	NR	
	23	1H2	0625	12	NR	NR	NR	
	24	1A3	0644	11	NR	NR	NR	
	25	1I2	0658	12	0.3	NR	NR	
	26	1I8	0714	10	0.3	NR	NR	
	27	1D7	0732	8.5	0.15	NR	NR	
	28	1E3	0748	9	0.4	NR	NR	
	29	1I1	0800	10.5	0	NR	NR	

*Base.

Table 5.6 CLOUD-TRACKING DATA FOR SNAPPER FOX

Shot Time 0350.59.6 PST, 25 May 1952

Aircraft type and code No.	Report No	Position, grid No	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1 B-29 No 826	1	1A3	0505	22.5	550	NR	NR	Top cloud thin connecting to lower cloud by a tail ending at 1B2. Edge of top cloud, 1D4
	2	1C2	0517	22	6.4	NR	NR	
	3	4A1	0530	24	7	NR	NR	
	4	101	0535	24	6	NR	Neg	
	5	1A4	0545	24	12	NR	NR	
	6	1C5	0550	24	22	27*	NR	Top cloud merging with cover, lower cloud thin and scattered
	7	1C7	0604	24	6	NR	NR	
	8	1D7	0611	24	3	NR	NR	
	9	1C4	0620	24	8	NR	NR	
	10	1C3	0630	24	9	NR	NR	
	11	2A3	0644	24	10	NR	NR	
	12	1D8	0657	24	10	NR	NR	
	13	1E6	0713	24	10	NR	NR	
	14	1I4	0717	24	12	NR	NR	
	15	1E6	0721	24	14	NR	NR	
	16	1A3	0721	24	14	NR	NR	
	17	1D3	0732	24	10	NR	NR	
	18	1E2	0735	24	10	NR	NR	Thin and scattered
	19	1A4	0745	24	10	NR	NR	
	20	1A6	0751	24	200	NR	NR	
	21	1B9	0800	24	10	NR	NR	
	22	1E9	0806	24	10	NR	NR	
	23	1G14	0818	24	10	NR	NR	Cloud dissipated except for isolated patches

Table 5.6 (Continued)

Aircraft type and code No.	Report No.	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1	24	1F13	0835	24	36	NR	NR	
B-29 No. 828	25	1C10	0643	24	20	NR	NR	
(continued)	26	1A7	0852	24	22	NR	NR	G-M reading taken in isolated patches
	27	1C3	0910	24	10	NR	NR	
	28	1B4	0915	24	30	NR	NR	
	29	1A6	0924	24	12	NR	NR	
	30	1A6½	0945	24	13	NR	NR	
	31	1A9	0950	24	22	24	NR	Cloud thin, no reading on G-M instrument
Hound Dog 4								
B-25 No. 099	1	1A0	0440	5	2	NR	NR	
	2	4A½1	0443	9	2	NR	NR	
	3	1A0½	0502	9	2	NR	NR	
	4	1B½1½	0505	9	2	NR	NR	
	5	1B3	0510	9	3	NR	NR	
	6	1B0	0525	9	NR	NR	NR	
	7	1A1	0548	14	14	NR	NR	
	8	4C0	0555	14	90	NR	NR	
	9	1C4	0608	14	36	NR	NR	
	10	1C4½	0630	13	16	NR	NR	
	11	1B0	0708	9	4	NR	NR	
	12	1B1	0722	9	3	NR	NR	
	13	NR	NR	16.6	18	NR	NR	Unable to get G-M reading quadrant 4, aircraft heavily contaminated
	14	NR	NR	NR	18	NR	NR	

*Top.

Table 5.7 — CLOUD-TRACKING DATA FOR SNAPPPER GEORGE

Shot Time: 0354.59.8 PST, 1 June 1952

Aircraft type and code No.	Report No.	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1 B-29 No. 826	1	4D4	0445	18	0	NR	190°, 22 kn	Small portion of cloud flanking 10° over horizon
	2	4A1	0455	18	1	NR	NR	
	3	1D3	0506	18	0.2	NR	NR	High cloud scattered and thin SW direction
	4	1E5	0509	18	0	NR	NR	
	5	1E3	0515	18	9	NR	NR	
	6	1F2	0518	18	10	NR	NR	
	7	1F1	0522	18	20	NR	NR	
	8	1D2	0531	16	70	NR	NR	Thin and scattered in a W-shaped form
	9	1C3	0550	22	1700	NR	195°, 32 kn	
	10	1H4	0555	22	2	NR	NR	
	11	1J3	0609	22	10	NR	NR	
	12	4I1	0617	22	2.5	NR	NR	
	13	1G6	0648	18	0.04	NR	NR	
	14	1M6	0702	18	0.5	18	190°, 38 kn	
	15	1O6	0708	18	1	18	NR	240° from point 1O6
	16	1O3	0712	18	2	15	NR	
	17	1O1	0717	18	6	22	NR	
	18	4O1	0721	18	4	22	NR	Cloud clearly defined
	19	4O1	0738	18	10	NR	NR	
	20	1F0	0955	18	7	NR	NR	Lower cloud dissipating rapidly
	21	4W1	1022	22	2	16	NR	
	22	4R2	1038	22	0	18	NR	
	23	1Y9	1113	18	2	NR	NR	

Table 5.7 – (Continued)

Aircraft type and code No	Report No	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1	24	1Y4	1136	20	12	NR	NR	
B-29 No. 826	25	1X3	1152	22	3	NR	NR	
(continued)	26	1Z7	1207	22	3	NR	NR	
	27	1Y8	1215	22	2	NR	NR	
Hound Dog 4	1	2A1	0425	0.9	48	13	NR	
B-25 No. 099	2	1A0	0435	9	1	11.5	NR	
	3	4C0	0447	4	1	12	NR	
	4	4C1	0450	9	6	10	NR	
	5	4C1½	0454	9	8	10	NR	
	6	4B2	0456	9	2	10	NR	
	7	4C0	0505	13.4	2	NR	NR	
	8	4C1	0512	14	2	13	NR	
	9	4C1½	0514	14	2	15	NR	
	10	4D0	0516	14	20	16	NR	
	11	4C1	0518	14	2	16	NR	
	12	1D1	0523	14	8	14	NR	
	13	1E1	0524	14	10	14	NR	
	14	1D2	0526	14	5	NR	NR	
	15	1B1	0534	14	4	9–16	NR	
	16	1B1	0537	14	3	0	NR	
	17	1C4	0546	14	3	22	NR	Thin and scattered
	18	1D4	0550	14	3	22	NR	Scattered to north of 1D4
	19	1E6	0600	14	3	22	NR	Thin and scattered
	20	1D3	0605	13	20	22	NR	Scattered
	21	1I1	0612	13	4	22	NR	Scattered to the east of 1I1
	22	1D0	0621	13	5	22	NR	Scattered and light
	23	4D1	0629	13	4	NR	NR	
	24	4B1	0636	10	3	NR	NR	

Table 5.8 — CLOUD-TRACKING DATA FOR SNAPPER HOW

Shot Time: 0355.00.3 PST, 5 June 1952

Aircraft type and code No.	Report No.	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1 B-29 No. 826	1	1D2	0450	18	1.5	17 (base)	158°, 9 kn	Cloud inverted corkscrew with long point
	2	1B4	0458	18	0.4	NR	NR	
	3	1D6	0506	18	0.1	40 (top)	NR	Thin and scattered
	4	1C4	0512	18	0.3	NR	NR	
	5	1D2	0516	18	1	30	NR	Background 0.1 mr under leading edge, thin and scattered
	6	4D0	0521	18	6	NR	NR	
	7	4C1	0528	18	30	18	NR	Middle portion of cloud thick
	8	4B4	0530	18	0.5	NR	137°, 6 kn	
	9	402	0535	18	35	NR	NR	
	10	4D1	0551	22	45	NR	NR	
	11	4F1	0554	22	5	NR	NR	
	12	1E2	0559	22	0.6	NR	NR	
	13	1F4	0605	22	0.6	NR	NR	
	14	1F7	0611	22	0.6	NR	NR	
	15	1G9	0618	22	0.4	NR	NR	
	16	1G8	0625	22	0.6	NR	150°, 32 kn	
	17	1H3	0633	22	0.7	NR	NR	
	18	3I4	0646	22	1.8	NR	NR	
	19	4E6	0658	18	1.3	NR	NR	
	20	4E5	0702	18	1.1	NR	NR	

Table 5.8 — (Continued)

Aircraft type and code No.	Report No	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 1 B-29 No. 826 (continued)	21	4C2	0711	18	1.1	NR	NR	
	22	4F1	0718	18	1.3	NR	NR	
	23	4A1	0730	18	1.5	NR	NR	
	24	4L1	0734	18	1.6	24	NR	Thin and scattered
	25	4A4	0747	22	1.5	NR	NR	
	26	4K4	0751	22	2.5	NR	NR	
	27	4H5	0811	22	2	NR	170°, 24 kn	Lower cloud, thin and scattered merging with cumulus clouds
	28	4N2	0830	22	3	NR	NR	
	29	4L4	0840	19	5	NR	NR	Active cloud merged with cumulus. No readings
	30	4L5	0846	19	3	NR	NR	
Hound Dog 4 B-25 No. 099	1	4A1	0430	9	0.2	10.5	NR	
	2	4C1	0435	9	0.2	11	NR	
	3	4A2	0439	9	0.2	10.5	NR	
	4	4A1	0441	9	5	10.5	NR	
	5	001	0444	9	100	6	NR	
	6	4B3	0453	14	0.2	15	NR	
	7	4C2	0458	14	18	16	NR	
	8	4B2	0501	14	5	15	NR	
	9	4B1	0504	14	1	15.5 (top)	NR	Top, 15,500 ft, base, 8000 ft
	10	4C1	0509	14	20	18	NR	Thin and scattered

Table 5.8 (Continued)

Aircraft type and code No	Report No.	Position, grid No.	Time of report, PST	Altitude nearest 500 ft, 10^3 ft MSL	G-M reading, mr/hr	Altitude of cloud, 10^3 ft MSL	Double-drift reading	Remarks
Hound Dog 4 B-25 No. 099 (continued)	11	0C0	0511	14	1	18	NR	Thin and scattered
	12	4C1	0514	14	10	18	NR	
	13	4B1	0515	14	0.5	15	NR	
	14	4C4	0519	14	0.8	Neg	NR	
	15	4D4	0523	14	20	Neg	NR	
	16	4D3	0529	14	0.5	16	NR	
	17	4C1	0532	9.5	20	16	NR	Light and scattered
	18	4B1	0534	9	5	16	NR	Light and scattered
	19	4A1	0538	9	14	Neg	NR	
	20	4B2	0542	9	5	Neg	NR	
	21	4C4	0545	9	5	Neg	NR	
	22	4D5	0547	9	5	Neg	NR	
	23	4D4	0559	9	0.5	Neg	NR	
	24	4C2	0608	14	2	Neg	NR	
	25	4D4	0613	14	4	Neg	NR	
	26	4D5	0616	14	9.2	Neg	NR	
	27	4E5	0625	14	1.5	18	NR	
	28	4E4	0627	14	100	Neg	NR	
	29	4D5	0636	14	10	Neg	NR	
	30	4E4	0702	14	3	Neg	NR	
	31	4E5	0704	13	1.5	14	NR	Cloud west of 4E5 light and scattered
	32	4E6	0705	13	4	14	NR	
	33	4E5	0711	9	4	Neg	NR	
	34	4E4	0713	9	2	Neg	NR	
	35	4E4	0714	9	1	Neg	NR	

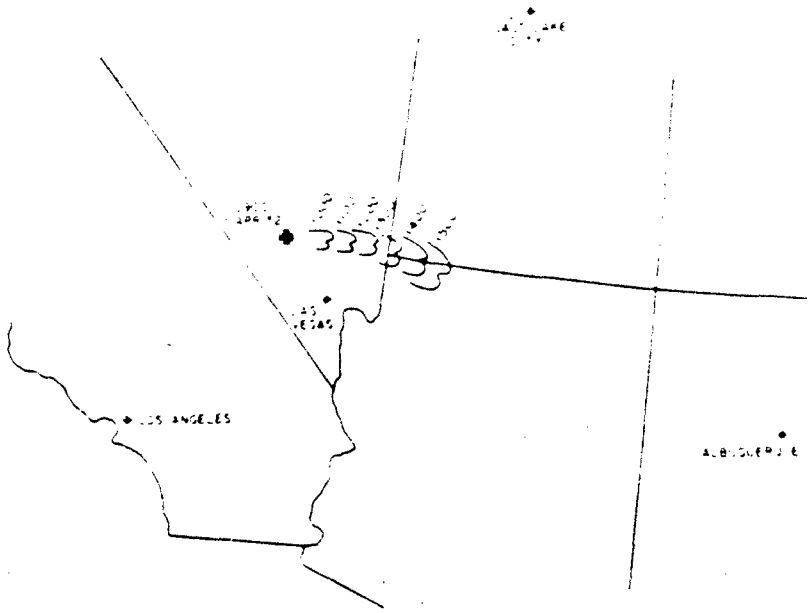

Fig. 5.1 — Cloud progression for Tumbler Able Shot, 1 Apr. 1952, 0900 07.5 PST.

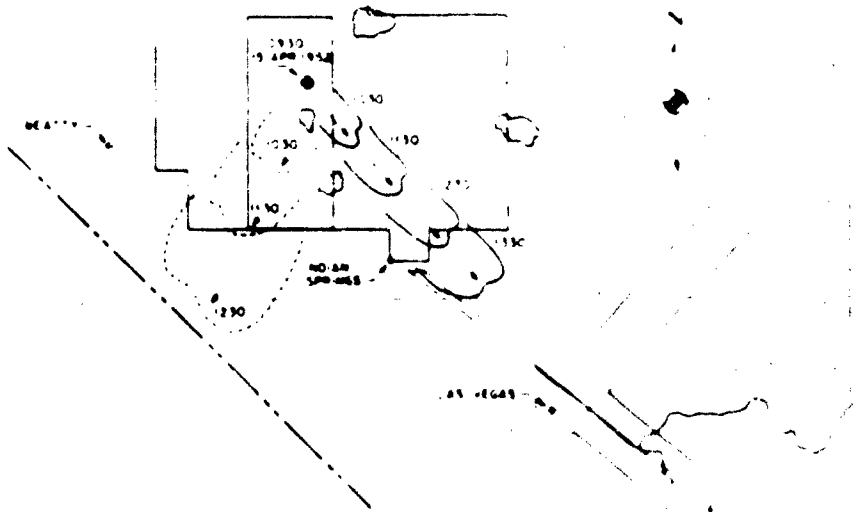

Fig. 5.2 — Cloud progression for Tumbler Baker Shot, 15 Apr. 1952, 0929 57.08 PST. Winds surface, 9000 ft, dust cloud and ——, surface, 13,000 to 15,000 ft, puff.

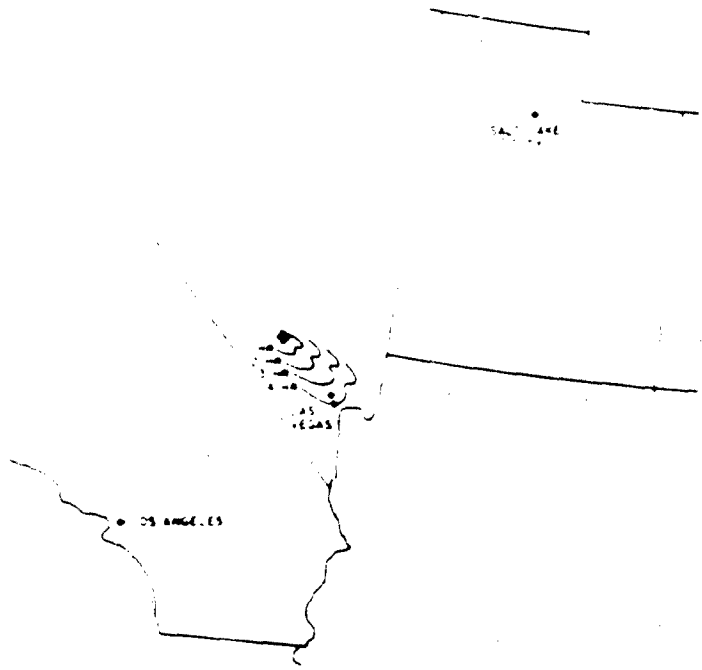

Fig. 5.3 — Cloud progression for Tumbler Charlie Shot, 22 Apr. 1952, 0930 10 PST.

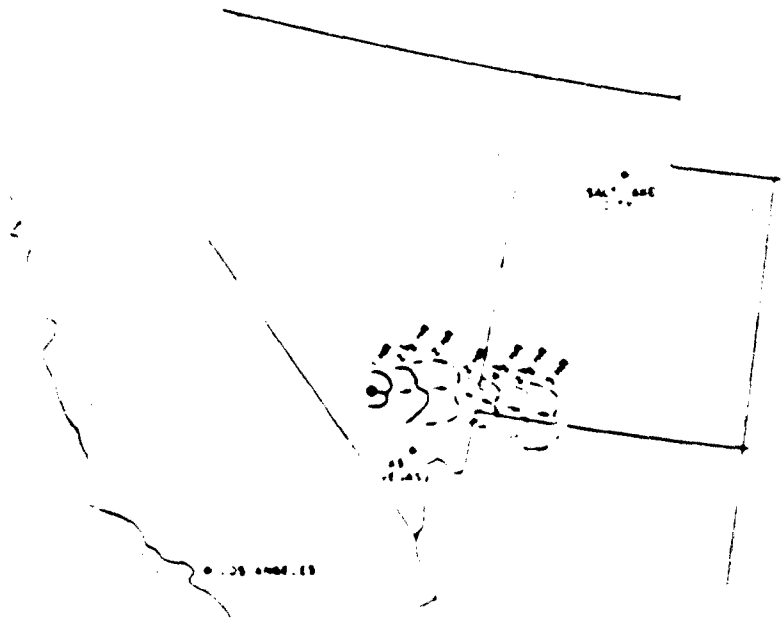

Fig. 5.4 — Cloud progression for Tumbler Dog Shot, 1 May 1952, 0829 56.6 PST. Winds —— 15,000 ft, - - 20,000 ft, - - - 30,000 ft, and 40,000 ft.

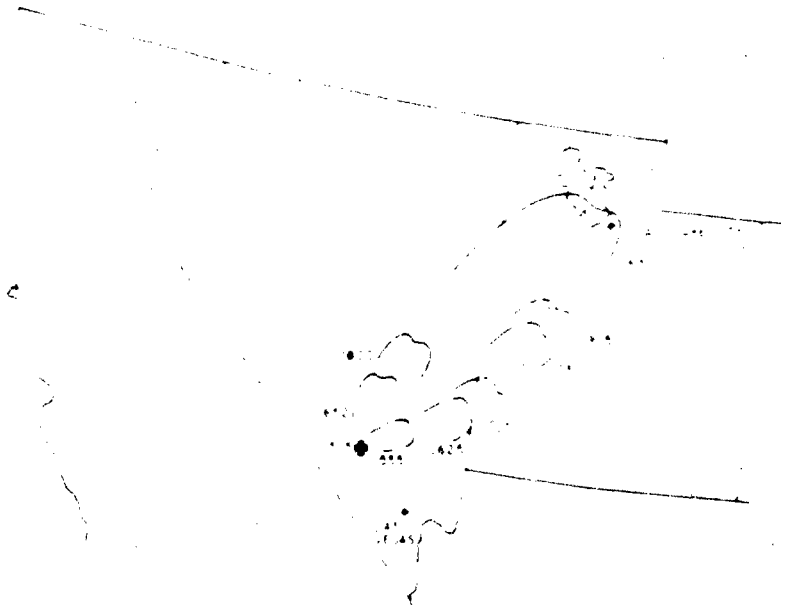

Fig. 5.5 — Cloud progression for Snapper Easy Shot, 7 May 1952, 0414:59.29 PST. Winds ——, 10,000 ft; - - -, 20,000 ft, and - - -, 30,000 ft.

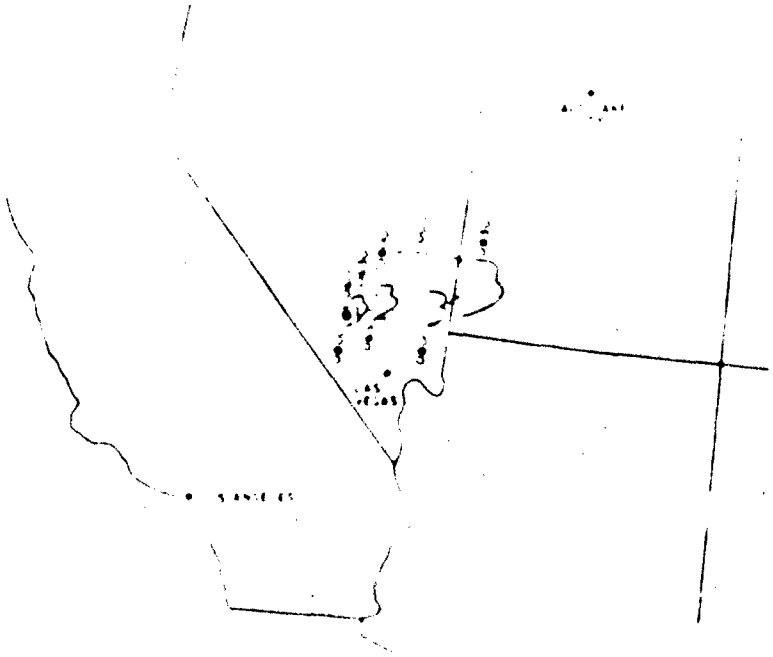

Fig. 5.6 — Cloud progression for Snapper Fox Shot, 25 May 1952, 0359:59.6 PST. Winds ——, 9000 to 14,000 ft, - - -, 20,000 to 25,000 ft, and - - -, 35,000 to 40,000 ft.

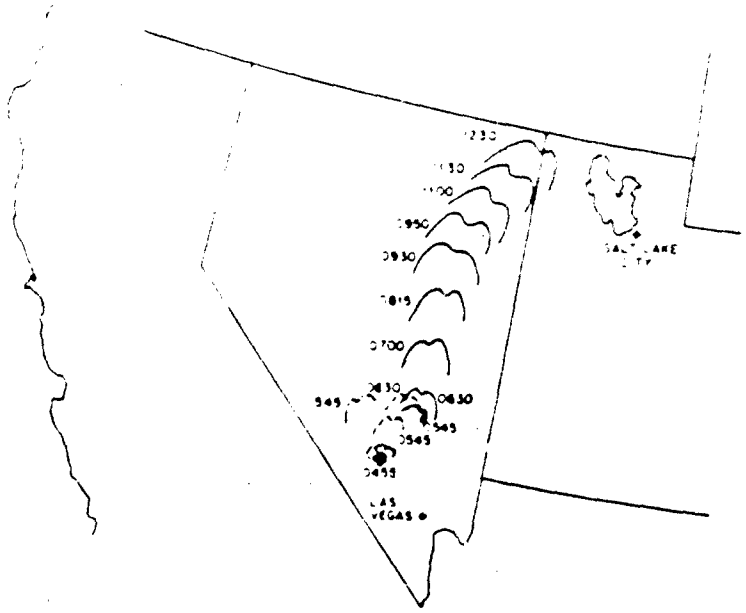

Fig. 5.7 — Cloud progression Snapper George Shot, 1 June 1952, 0354 59.8 PST. Winds ---, 10,000 ft; —, 25,000 to 30,000 ft and ---, 15,000 to 20,000 ft.

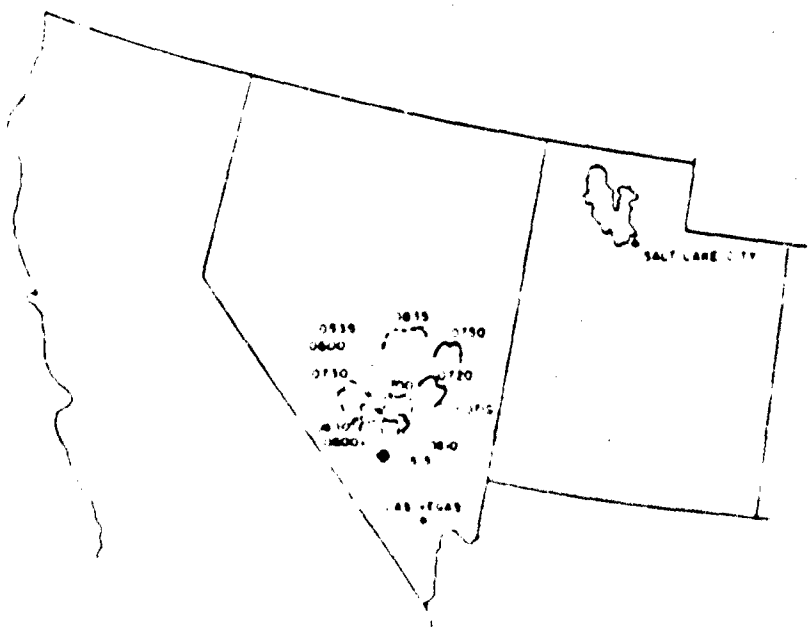

Fig. 5.8 — Cloud progression Snapper How Shot, 5 June 1952, 0355 00.3 PST. Winds —, 10,000 ft, —, 20,000 ft, —, 30,000 ft, and —, 40,000 ft.

CHAPTER 6

TERRAIN SURVEY

6.1 SCOPE

This chapter reports all phases of the aircraft terrain survey and presents the data collected. These phases include the personnel training, instrumentation, and operations.

6.2 ORGANIZATION AND PLANNING

6.2.1 Personnel

There were four radiological officers and two airmen assigned to SWC from SAC. The airmen utilized for ground maintenance and installation of radiac equipment came from various squadrons and groups at KAFB. The Radiological Safety Section of Test Command assigned four officers and four airmen to supplement the assigned personnel. Pilots and crews were furnished by SWC.

6.2.2 Training

Training in the uses of specialized radiac equipment was given at KAFB by SWC instructors and also by the 1009th Squadron MAFB. Training flights were conducted by the 4925th Test Group (ATOMIC) at KAFB and ISAFB.

6.2.3 Equipment

The following were the major items of operational equipment used at ISAFB.

1. B-21 radiac instrument (consisted of an air-conductivity tube, an air-ionization chamber, and a recorder).
2. Scintillation counter (adapted for airborne use in recording intensities of the filtering papers).
3. AN/PDR T-1B ionization chamber
4. MX-5 Beckman model) beta-gamma survey meter
5. 200-mr to 1-r, pocket dosimeter
6. Film badges.

6.2.4 Facilities

The same buildings and facilities were used as were used for manned sampling

6.2.5 General

Data collected in flight were radioed to the Control Point, Mercury, Nev. The information received was charted on a map and a progression map of fall-out intensities was maintained. The Radiological Safety Section and Test Command maintained this map with the information gathered by ground-survey teams; they were able to plot zones of contamination, giving the various degrees of intensities. (See Fig. 1.6 for areas concerned.)

6.3 FACTUAL DATA

Tables 6.1 to 6.8 outline the data collected. Use Fig. 1.6 to find locations.

Table 6 1 – TERRAIN SURVEY FOR TUMBLER ABLE

Shot Time: 0900 07 5 PST, 1 April 1952

Aircraft	Report No	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	1	2C2	1135	5	55 55	25	0.02	NR
C 47 No 388	2	2C1	1140	4 5	55 55	30	0	NR
	3	2C0	1145	5 5	40 40	30	0.02	NR
	4	2B0	1150	4 5	47 57	40	0.01	NR
	5	2A0	1155	4 5	50 950	520 C2		NR
	6	000	1200	5 6	60 140	40	0.03	NR
	7	1A1	1205	5 5	60 300	Neg	3.5	NR
	8	1B1	1210	6 4	300/700	3200	1.5	Contaminated
	9	1B1	1215	4 6	500/3200	Neg	1	Contaminated
	10	001	1220	6	450 550	Neg	0.2	Contaminated
	11	2A1	1225	5 6	400 900	Neg	0.3	NR
	12	2B1	1230	4 5	38 38	1000	0.2	NR
	13	2C1	1235	5	370 370	1000	0.3	NR
	14	2B2	1240	4 8	370 370	900	0.2	NR
	15	2A2	1245	3 5	370 370	900	0.1	NR
	16	002	1250	5 2	370 430	1100	0 3	NR
	17	1A2	1255	4 6	370 550	1200	0.3	NR
	18	1B2	1300	6 5	370 3300	10,000 +	2	NR
	19	1B3	1305	4 5	900 2300	Neg	1.5	Contaminated
	20	1A3	1310	4.4	700 3900	Neg	0.5	Contaminated
	21	003	1315	5	650 650	Neg	0.3	Contaminated
	22	003	1320	6	500 500	2200	0.3	NR
	23	2A3	1325	4	600 600	2200	0.3	NR
	24	2B3	1330	3 7	700 700	2200	0 3	NR
	25	NR	NR	NR	NR	NR	NR	NR
	26	NR	NR	NR	NR	NR	NR	NR
	27	2D4	1345	2 7	560 710	160	0.3	NR
	28	2C4	1350	4	650 650	1700	0.3	NR
	29	2B4	1355	5 2	670 670	1800	0 3	NR
	30	2A4	1400	5 8	650 650	1700	0 3	NR

Table 6 1 (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	31	1A5	1405	5 2	660 660	1800	0 3	NR
C-47 No 386	32	1B5	1410	8	570 570	1600	0.4	NR
(continued)	33	2C5	1415	7 5	600 600	1600	0 3	NR
	34	2D0	1420	Unknown	000 000	1600	0.4	NR
	35	2E5	1425	2 6	570 570	1700	0.4	NR
	36	2F5	1430	2 6	550 550	1700	0.3	NR
	37	2F6	1435	2 5	600 600	1600	0.3	NR
	38	2E6	1440	3 6	600 600	1600	0.2	NR
	39	2D6	1445	3 5	600 600	1600	0.3	NR
	40	2C6	1450	3 5	610 610	1500	0.2	NR
	41	2B6	1455	4 5	590 590	1400	0.11	NR
	42	2A6	1500	4 5	600 600	1400	0.3	NR
	43	2A7	1505	5	600 600	1400	0.3	NR
Badger 2	1	2C2	1230	Neg	65 65	10	Neg	Climbing
C-47 No 303	2	2A3.1	1245	10	85 90	10	0.02	Off-scale
	3	1A3 1	1250	10	12,500	Neg	0.4	Air-conductivity tube
	4	1A3 1	1300	10	11,500	Neg	0.6	Contaminated
	6	1A3.1	1320	10	11,000 11,000	Neg	0.15	Off-scale
	7	1A9.1	1330	10	1100 1100	Neg	0.7	Off-scale
	8	1A8	1340	19	Neg	Neg	0 2	Off-scale
	9	2B9	1355	10	Neg	Neg	0.2	Off-scale
	10	2D9	1410	10	Neg	Neg	0.2	Off-scale
	11	3A5	1420	10	Neg	Neg	0.1	Off-scale
	12	4A8	1430	10	Neg	Neg	0.2	Off-scale
	13	4A8	1440	10	Neg	Neg	0.5	Off-scale
	14	3B2	1450	10	Neg	Neg	0.3	Off-scale
	15	3E2	1500	10	Neg	Neg	0.15	Off-scale
	16	3D3	1510	10	100 300	860	0.5	NR

Table 6.2 — TERRAIN SURVEY FOR TUMBLER BAKER

Shot Time: 0929.57.05 PST, 15 April 1952

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1 C-47 No. 308	1	1B2	1238	7	75/75	40	0	
	2	1B0	1243	1	75/140	40	0	
	3	4B1	1248	0.5	75/205	45	0	
	4	4B2	1253	0.5	80/100	45	0	
	5	4A2	1256	0.6	80/95	45	0	
	6	4A1	1302	0.4	75/90	40	0	
	7	4A0	1305	1	80/990	100	0	
	8	1A0	1312	0.7	75/75	40	0	
	9	3D1	1319	0.4	75/170	80	0	
	10	3A3	1324	1	70/70	40	0	
	11	3B5	1333	0.6	70/70	40	0	
	12	3B4	1340	1.5	70/70	40	0	
	13	3B3	1343	0.7	70/70	40	0	
	14	3B2	1348	0.5	70/320	500	0	
	15	3B1	1354	0.5	70/475	1200	0	
	16	2B0	1357	0.6	75/120	1200	0	
	17	2B1	1400	1	75/530	3000	1.5	
	18	2D3	1421	0.5	420/420		1.3	
	19	2E4	1431	1	460/460	1800	1.1	
	20	2E3	1444	0.5	400/400	2000	1.2	
	21	NR	NR	NR	NR	NR	NR	
	22	3F2	1503	0.6	450/6000	10,000	7.5	
	23	3E4	1508	NR	Neg	NR	1.8	Rate meter and B-21 equipment not in operation
	24	3D6	1520	NR	Neg	NR	1.5	
	25	3D8	1525	NR	Neg	NR	1.4	
	26	3D9	1530	NR	Neg	NR	1.4	
	27	3D10	1533	NR	Neg	NR	1.4	
	28	3E10	1538	NR	Neg	NR	1.4	
	29	3F10	1542	NR	Neg	NR	1.4	
	30	3F9	1546	NR	Neg	NR	1.4	

Table 6.2 (Continued)

Aircraft	Report No	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	31	3F7	1551	NR	Neg	NR	1.4	
C-47 No. 308	32	3F6	1555	NR	Neg	NR	1.3	
(continued)	33	3F4	1602	NR	Neg	NR	1.4	
	34	3F3	1605	NR	Neg	NR	1.4	
	35	3F2	1610	NR	NR	NR	2.0	
	36	3F½	1615	NR	NR	NR	3.5	
	37	2F1	1620	NR	NR	NR	1.5	
	38	2F2	1623	NR	NR	NR	1.5	Rate meter and B-21 equipment not in operation
	39	2F3	1628	NR	NR	NR	1.5	
	40	2F4	1632	1.2	2500/2500	NR	1.5	
	41	2F5	1636	NR	NR	NR	1.4	
	42	2F6	1641	NR	NR	NR	1.4	
	43	2E4					1.4	
	44							
	45	2E2	1703	NR	NR	NR	1.3	
	46	2E1	1707	NR	NR	NR	2.0	
	47	2E0	1711	NR	NR	NR	1.5	
Badger 2	1	3C3	1245	10	60/27,000	Neg	0.6	
C-47 No. 366	2	3D4	1300	10	1750/1750	Neg	0.4	
	3	3B2	1315	10	1550/2800	Neg	0.5	
	4	3C2½	1330	10	1500/2000	Neg	0.4	
	5	3D2½	1345	10	1500/1500	Neg	0.4	
	6	3B1½-1	1400	10	1200/1200	Neg	0.3	
	7	3C1½	1415	10	1200/3000	Neg	3.5	
	8	3F0	1430	10	10,000/10,000	Neg	0.4	
	9	3D0	1445	10	850/880	4000	0.5	
	10	2C1½-1	1500	10	1300/5500	6500	3.0	

Table 6.2 – (Continued)

Aircraft	Report No	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 2	11	2D0	1515	10A	1000/8700	2000	0.8	
C-47 No. 386	12	2G3	1530	10A	2000/2000	3500	0.5	
(continued)	13	2D4	1545	10A	2000/2000	2800	0.7	
	14	2C3	1548	10A	2000/2000	2000	0.5	
	15	2D3	1553	10	2000/2000	1500	0.6	
	16	2F3	1600	10	2000/2000	500	0.7	
	17	2F1	1606	10	1900/1900	300	0.5	
	18	2D1	1612	10	1900/7000	10	8.0	
	19	2C1	1617	10	1900/18,000	0	24.0	
	20	3C3	1700	10	5300/5300	1400	1.2	
Weasel hawk 1	1							
L-20 No. 464	2	2C0	1502	0.1	Neg	Neg	0.4	Not equipped with B-21 or rate meter
	3	3C1	1508	0.1	Neg	Neg	0.3	
	4	3C2	1513	0.2	Neg	Neg	0.4	
	5	3C3	1517	0.1	Neg	Neg	0.3	
	6	3C4	1521	1	Neg	Neg	0.4	
	7	3C5	1536	0.25	Neg	Neg	0.3	
	8	3C6	1540	0.3	Neg	Neg	0.3	
	9	3C½	1614	0.4	Neg	Neg	0.8	
	10	3C½	1619	1	Neg	Neg	2	
	11	2B0	1620	0.8	Neg	Neg	0.5	

Table 6.3 – TERRAIN SURVEY FOR TUMBLER CHARLIE

Shot Time: 0930:10 PST, 22 April 1952

Aircraft	Report No	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	1	2A4	1312	1	320/320	NR	0.04	
C-47 No. 308	2	203	1318	0.5	320/450	NR	0.05	
	3	202	1321	1	320/680	NR	0.1	
	4	2A3	1325	0.8	320/810	NR	0.05	
	5	2B4	1333	1	NR	NR	0.03	
	6	2C5	1340	1.5	320/320	NR	0.02	
	7	2D5	1344	1.5	320/320	NR	0.05	
	8	3C4	1348	0.5	NR	NR	0.03	
	9	2B3	1352	0.5	320/320	NR	0.03	
	10	2A2	1356	0.7	320/320	NR	0.03	
	11	2O1	1405	0.7	320/1000	NR	0.1	
	12	2A1	1409	1.5	320/960	NR	0.2	
	13	2B2	1415	0.6	350/350	NR	0.05	
	14	2C3	1420	0.5	330/330	NR	0.03	
	15	2D4	1429	0.5	310/310	NR	0.03	Rate meter inoperative
	16	2E4	1435	0.5	310/310	NR	0.03	
	17	2D6	1443	1	320/320	NR	0.03	
	18	2D7	1337	1	340/340	NR	0.04	
	19	2D4	1451	0.5	330/330	NR	0.03	
	20	2D9	1455	0.8	340/340	NR	0.03	
	21	2D10	1459	1.5	340/340	NR	0.04	
	22	2E10	1504	1	340/340	NR	0.02	
	23	2E9	1507	1	340/340	NR	0.03	
	24	2E8	1511	0.5	330/330	NR	0.02	
	25	2E7	1515	0.5	340/340	NR	0.04	
	26	2E6	1519	0.5	300/300	NR	0.03	
	27	2E5	1523	0.5	310/310	NR	0.03	
	28	2E4	1527	1	330/330	NR	0.03	
	29	2D3	1530	0.5	320/320	NR	0.03	
	30	2C2	1537	0.5	320/500	NR	0.05	

Table 6 3 — (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	31	2B1	1545	0 2	320 810	NR	0.12	
C-47 No. 305	32	2B6	1549	1 5	320/970	NR	0.2	
(continued)	33	2C1	1557	0 8	320/830	NR	0.18	
	34	2E2	1602	0.5	320/500	NR	0.04	
	35	2E3	1608	1 5	340/340	NR	0.03	
	36	2F4	1615	1	360/360	NR	0.04	
	37	2F5	1618	1 5	380 380	NR	0.03	
	38	2F6	1621	1	360/360	NR	0.03	
	39	2F7	1625	0 1	360 360	NR	0.04	Rate meter inoperative
	40	2F8	1628	0 5	360/360	NR	0.03	
	41	2F9	1632	1.5	350/350	NR	0.03	
	42	2F10	1637	0 5	350/350	NR	0.03	
	43	2G10	1642	0 5	350/350	NR	0.03	
	44	2G9	1646	1	330/330	NR	0.03	
	45	2G8	1650	0 5	330/330	NR	0.03	
	46	2G7	1653	0.4	330 330	NR	0.03	
	47	2G6	1656	0 7	350/350	NR	0 03	
	48	2G5	1700	0 4	330 330	NR	0.04	
Badger 2	1	4D2	1315	10	1300/3000	3500	0.05	
C-47 No. 386	2	4C4	1330	10	1300/1300	3500	0 04	
	3	4E6	1345	10	1200 1200	3500	0.03	
	4	4F6	1400	10	1100/1100	3500	0.04	
	5	4A$^1/_2$5	1415	10	500/500	3500	0.04	
	3	3B4	1430	10	480/480	3500	0.05	
	7	3B1	1445	10	480 2600	3500	0 5	
	8	3C1	1500	10	1500 2700	3500	0 4	
	9	3F1	1515	10	530 530	3500	0 1	

Table 6.3 (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Wheelhouse 2 L-20 No. 467	1	1C0	1544	0.5	NR	NR	NR	
	2	4C$^1/_2$	1546	0.2	NR	NR	NR	
	3	40$^1/_2$	1601	0.2	NR	NR	NR	
	4	401	1603	0.2	NR	NR	NR	
	5	4C1	1616	0.3	NR	NR	NR	
	6	4C1$^1/_2$	1620	0.2	NR	NR	NR	
	7	401$^1/_2$	1636	0.1	NR	NR	NR	
	8							
	9	1A$^1/_2$-2	1137	0.2	NR	NR	0.1	Not equipped with B-21 or rate meter
	10	4A$^1/_2$-2	1157	0.5	NR	NR	0.1	
	11	4A2	1202	0.5	NR	NR	0.1	
	12	1A2	1215	0.2	NR	NR	0.1	
	13	1$^1/_2$A2	1218	0.1	NR	NR	0.1	
	14	4$^1/_2$A2	1238	0.1	NR	NR	0.1	
	15	402	1241	0.1	NR	NR		
	16	102	1259	0.5	NR	NR		
	17	2$^1/_2$A2	1302	0.1	NR	NR		
	18	3$^1/_2$A2	1319	0.1	NR	NR		
	19	3A2	1322	0.5	NR	NR		
	20	2A4	1345	0.2	NR	NR		

Table 6.4 — TERRAIN SURVEY FOR TUMBLER DOG

Shot Time: 0829:58.6 PST, 1 May 1952

Aircraft	Report No.	Position, grid No.	Time	Altitude 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	1	300	1148	1	85/85	400	0.025	
C-47 No. 306	2	301	1153	1.5	90/90	400	0.02	
	3	4A1	1157	1	90/90	600	0.03	
	4	4B1	1202	1	90/90	600	0.025	
	5	4C1	1207	1	90/130	700	0.035	
	6	4B8	1208	1	90/175	700	0.045	
	7	4B4	1212	0.7	80/05	700	0.025	
	8	1B3	1216	1.5	100/145	800	0.04	
	9	1A5	1220	1.5	110/180	800	0.035	
	10	1A2	1223	1	130/285	900	0.08	
	10A	105	1225	1	130/470	1000	0.085	
	11	105	1231	1.5	90/90	800	0.025	
	12	105	1235	8	90/90	800	0.025	
	13	205	1238	0.2	80/80	700	0.02	
	14	2A7	1243	1	75/75	800	0.012	
	15	2B7	1246	0.8	75/75	800	0.02	
	16	2B8	1251	2	75/75	800	0.02	
	17	2A8	1255	1.5	75/75	800	0.02	
	18	205	1259	0.8	80/80	1300	0.18	
	19	206	1304	1	80/80	800	0.02	
	20	105	1309	0.5	90/300	900	0.1	
	20A	107	1311	0.8	90/700	1300	0.18	
	21	1A4	1314	0.5	90/410	900	0.12	
	22	1A5	1319	1	100/300	900	0.08	
	23	1B2	1323	0.4	100/180	900	0.035	

Table 6.4 — (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	24	1B5	1327	0.5	100/180	2000	0.03	
C-47 No. 304	25	1C0	1330	0.4	100/100	900	0.025	
(continued)	26	1D0	1334	1	90/90	800	0.02	
	27	1C5	1339	1	90/90	900	0.02	
	28	1C2	1344	0.5	110/110	900	0.03	
	29	1B5	1348	1	110/170	900	0.035	
	30	1B4	1353	0.5	110/175	1000	0.04	
	31	1A5	1359	1	110/110	1000	0.03	
	32	1A8	1403	1.5	90/90	900	0.025	
	32A	1A5	1355	0.6	110/250	1100	0.055	
	33	105	1406	1.5	90/90	1000	0.025	
	34	208	1400	1.5	90/120	650	0.03	
	35	205	1415	0.5	90/90	650	0.02	
	36	2A10	1419	0.8	80/80	650	0.02	
	37	2B10	1424	0.7	85/85	650	0.02	
	38	2C10	1430	1.5	80/80	650	0.015	
	39	2C11	1433	1	90/90	650	0.02	
	40	2C12	1438	1	90/90	650	0.015	
	41	2C13	1441	1.5	90/90	650	0.02	
	42	2C14	1445	0.2	90/90	800	0.02	
	43	2C15	1448	0.5	95/95	700	0.02	
	44	2B15	1451	1	95/95	700	0.025	
	45	2A5	1455	0.5	95/95	700	0.025	
	46							
	47	2C5	1504	1	90/90	700	0.02	
	48	2D11	1508	0.5	90/310	1400	0.05	
	49	105	1511	0.7	90/370	100,000	0.13	

Table 6.4 -- (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	50	1A9	1515	1.5	90/315	100,000	0.045	
C-47 No. 308	50A	108	1513	1	90/670	100,000	0.25	
(continued)	51	1A5	1519	1	90/240	100,000	0.04	
	52	1B7	1524	0.5	90/255	100,000	0.045	
	53	1B5	1529	0.5	90/200	1000	0.035	
Badger 2	1	1B3	1245	10	200/1400	360	0.02	
C-47 No. 380	2	1B5	1256	4.5	200/410	340	0.02	
	3	1B½3½	1305	1.7	200/400	Neg	0.02	
	4	1C3	1310	5.5	200/220	500	0.01	
	5	1C1	1315	6.4	195/195	390	0.01	
	6	4D0	1320	6.7	180/190	400	0.02	
	7	4E1	1322	6	180/180	400	0.02	
	8	1E5	1402	10	200/830	600	0.02	
	9	1E8	1410	10	200/200	780	0.02	
	10	1D7	1425	10	200/1300	1100	0.2	
	11	1D5	1439	4.7	200/200	200	0.02	
	12	1D3	1446	5.6	230/230	500	0.02	
	13	1E2	1455	7.5	200/200	500	0.02	
	14	1E2	1458	7	190/190	500	0.01	
	15	1F0	1509	6.2	180/180	500	0.02	
	16	4G1	1515	7.5	180/180	500	0.02	
Woodchuck 1	1	401	1026	7.5	NR	NR	0.03	
L-20 No. 464	2	4B1	1033	2.0	NR	NR	0.1	
	3	4B0	1041	1.0	NR	NR	0.2	
	4	2A6	1109	6.0	NR	NR	0.02	

Table 6.5 TERRAIN SURVEY FOR SNAPPER EASY

Shot Time: 0414:59.29 PST, 7 May 1952

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	1	1B0	0735	0.8	70/70,000	85,000	5.10	
C-47 No. 386	2	1C0	0741	5	70/12,000	80,000	4.2	
	3	1C1	0746	5	70/800	10,000	0.3	
	4	1C2	0749	1.5	70/120	10,000	0.01	
	5	1C3	0752	1.5		9000	0	
	6	1C4	0756	0.4	110/110	850	0	
	7	1C5	0800	5	70/70	3800	0.01	
	8	1D5	0803	0.5	70/70	700	0	
	9	1D4	0807	0.5	70/70	700	0.02	
	10	1D3	0810	1	70/100	2500	0.45	
	11	1D2	0815	1	70/2300	6200	1.20	
	12	1D1	0818	1.5	70/1000	2400	0.45	
	13	1D0	0823	5	40/500	3800	0.01	
	14	1E0	0829	1.5	90/90	3800	0	
	15	1E1	0833	1	90/270	4200	0.02	
	16	1E2	0836	1.5	90/400	5000	0.18	
	17	1E3	0840	0.7	90/2800	12,600	2.6	
	18	1E4	0846	1.5	90/500	7600	0.08	
	19	1E5	0849	1.5	80/80	7000	0	
	20	1E6	0853	1	80/80	7000	0	
	21	1E7	0856	0.7	80/80	7000	0	
	22	1E8	0900	1	80/80	7000	0	
	23	1E½10	0906	0.8	80/80	7000	0	
	24	1F10	0910	0.8	80/80	6000	0	
	25	1F9	0915	1	80/80	7000	0	
	26	1F8	0919	1	90/90	6800	0	
	27	1F7	0923	0.8	80/80	6800	0	

Table 6.5 — (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	28	1F6	0926	1.5	80/80	2000	0	
C-47 No. 386	29	1F5	0930	1	80/500	7000	0	
(continued)	30	1F4	0934	1.5	80/800	8000	0.55	
	31	1F3	0938	1.5	80/600	7600	0.28	
	32	1F2	0943	1	80/400	11,000	0.00	
	33	1F1	0946	0.5	80/250	12,500	0.01	
	34	1F0	0949	1.5	80/130	13,000	0	
	35	1G0	0954	1	100/100	13,000	0	
	36	1G2	1001	0.5	90/150	14,000	0.02	
	37	1G3	1006	1	90/250	2000	0.02	
	38	1G5	1014	1.5	90/380	3400	0.04	
	39	1G6	1018	1	90/400	3500	0.03	
	40	1G7	1022	1	90/90	3500	0	
	41	1G8	1025	5	90/90	3500	0	
	42	1G9	1028	1.5	90/100	3500	0	
	43	1G10	1032	1	90/90	3500	0	
	44	1G11	1034	1.5	90/90	3500	0	
	45	1G12	1037	1	100/100	3500	0	
	46	1G½13	1040	0.8	90/900	3400	0	
	47	1H13	1044	2	100/100	3400	0	
	48	1H12	1048	1.5	100/100	3400	0	
	49	1H11	1052	1	90/200	4000	0.3	
	50	1H10	1056	5	100/950	4100	0.3	
	51	1H9	1100	1.5	100/250	3400	0	
	52	1H8	1104	5	100/570	4400	0.3	
	53	1H7	1107	1.5	100/730	3800	0.06	
	54	1H6	1111	1	100/400	3400	0.02	

Table 6.5 — (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Woodchuck 1 L-20 No. 464	1	1B4	0756	0.2	NA	NA	0.001	Not equipped with B-21 or rate meter
	2	1C3	0805	0.15	NA	NA	20	
	3	1D2	0817	0.5	NA	NA	0.005	
	4	1E1	0824	2.5	NA	NA	0.005	
	5	1D2	0955	1.5	NA	NA	5.0	
Woodchuck 2 L-20 No. 467	1	401	0704	2.0	NA	NA	Neg	Not equipped with B-21 or rate meter
	2	103	0721	2.5	NA	NA	0.03	
	3	1½A3	0723	2.0	NA	NA	0.02	
	4	4½A1	0740	2.5	NA	NA	Neg	
	5	4A1	0743	2.5	NA	NA	Neg	
	6	1A3	0759	2	NA	NA	Neg	
	7	1A½3	0801	2	NA	NA	0.04	
	8	4A½3	0822	0.5	NA	NA		
	9	4B1	0830	0.1	NA	NA	0.03	
	10	1B5	0846	0.5	NA	NA	0.02	
Badger 2 C-47 No. 308	1	102	0600	10	40	140/670	0.0	
	2	1B2	0608	10	40	140/840	0.05	
	3	4E1	0620	10	40	150/150	0.05	
	4	1D2	0640	10	60	210/425	0.5	
	5	1D4	0704	10	160	160/555	0.1	
	6	1F9	0719	10	20	150/160	0.05	
	7	1B2	0804	10	40	150/350	0.1	
	8	1F2	0840	10	100	150/250	0.05	
	9	1D½2	0928	10	200	150/360	0.05	
	10	1D2	1042	10	Neg	140/320	0.05	

Table 6.6 —TERRAIN SURVEY FOR SNAPPER FOX

Shot Time: 0359:59.6 PST, 25 May 1952

Aircraft	Report No	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1 C-47 No. 386	1	1C8	0708	1	70/70	400	Neg	Background only
	2	1C7	0712	1	70/70	450	Neg	No background
	3	1C6	0716	1	70/70	450	Neg	
	4	1C5	0719	0.7	70/165	600	0	
	5	1C4	0725	0.5	70/9300	100,000	5	
	6	1C6	0726	0.3	70/11,000	100,000	30	
	7	1C3	0729	1	70/7200	100,000	5	
	8	1C2	0733	1	70/3900	10,000	4	
	9	1C1	0738	1.5	70/9000	100,000	15	
	10	1C0	0743	7	70/8006	Neg	10	
	11	4C1	0748	1.5	70/4600	Neg	3	Rate meter contaminated
	12	4C2	0751	0.5	70/3900	Neg	3	
	13	4D2	0755	1	70/3900	Neg	3	
	14	4D1	0800	1	70/3800	Neg	3	
	15	1D1	0804	0.8	70/3900	Neg	2.8	
	16	1D2	0810	1	70/3600	Neg	2.6	
	17	1D3	0815	0.5	70/3500	Neg	2.4	
	18	1D4	0820	1.5	70/3100	Neg	2.3	
	19	1D5	0823	5	70/3700	Neg	2.4	
	20	1D6	0827	1	70/12,000	Neg	30	
	21	1D6	0829	0.4	70/5000	Neg	7	
	22	1D7	0831	0.5	70/8500	Neg	4.2	
	23	1D8	0835	0.5	70/6500	Neg	3.2	
	24	1D9	0839	0.5	70/3800	Neg	2.8	
	25	1D10	0844	0.5	70/3800	Neg	2.8	
	26	1D½11	0848	1	70/3700	Neg	2.8	
	27	1D½12	0854	0.5	70/3700	Neg	2.8	
	28	1E13	0857	0.5	70/3400	Neg	2.5	
	29	1E12	0901	0.5	70/3500	4200	2.5	
	30	1E11	0905	1	70/3500	6000	2.4	

Table 6.6 — (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr-hr	Remarks
Badger 1	31	1E10	0909	0.7	70/3500	6000	2.4	Rate meter contaminated
C-47 No. 386	32	1E9	0912	1	3000/5000	1500	3.2	
(continued)	33	1E8	0917	1	3000/8000	None	4.8	
	34	1E7	0921	1	3000/3800	None	2.8	
	35	1E6	0924	1	3000/3300	None	2.3	
	36	1E5	0928	0.5	3000/3700	None	2.3	
	37	1E4	0933	1	3000/3600	None	2.4	
	38	1E2	0939	1	3000/3500	None	2.4	
	39	1E1	0943	1	3000/3500	None	2.4	
	40	1E0	0946	1	3000/3400	None	2.3	
	41	4E1	0951	1	3000/3100	None	2.3	
	42	4E2	0954	1	3000/3000	None	2	
	43	4E2	0959	1	3000/3000	None	2	
	44	4E1	1003	1	2800/2800	None	2	
	45	4E0	1007	1	2800/2800	None	2	
	46	1E1	1011	0.5	2800/2800	None	2	
	47	1E2	1014	1	2700/2700	None	1.9	
	48	1E3	1017	1	2800/2800	None	1.9	
Badger 2	1	1B2	0658	10	110/9200		20	
C-47 No. 308	2	1B½	0617	10	940/16,000		20	
	3	1C2	0723	10	10,000/95,000	23	23	
	4	1B½3	0734	10	19,000/19,000		4	
Woodchuck 1	1	1½A2	0526	1	NA	NA	0.03	Not equipped with B-21 or rate meter
L-20 No. 464	2	4½A2	0546	1.5	NA	NA	0.01	
	3	4A2	0552	0.2	NA	NA	0.03	
	4	1A2	0606	0.5	NA	NA	1.8	
	5	1B3	0621	0.2	NA	NA	1.5	

Table 6.6 — (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Woodchuck 1 L-20 No. 464 (continued)	6	4B2	0648	1	NA	NA	5.0	Not equipped with B-21 or rate meter
	7	4B½2	0652	1.5	NA	NA	5.5	
	8	1B½1½	0721	3	NA	NA	3.5	
	9	1B3	0725	10	NA	NA	4.8	
	10	1B½6	0742	5	NA	NA	4.2	
Woodchuck 2 L-20 No. 467	1	4D2	0954	0.2	NA	NA	0.1	Not equipped with B-21 or rate meter
	2	4B½2	0957	0.1	NA	NA	0.5	
	3	4A2	0960	0.1	NA	NA	0.2	
	4	4A½2	1003	0.05	NA	NA	0.4	
	5	4B2	1006	0.05	NA	NA	0.2	
	6	4B½3	1010	0.05	NA	NA	0.3	
	7	4C2	1013	0.05	NA	NA	0.3	
	8	4C½2	1016	0.05	NA	NA	0.2	
	9	4D2	1019	0.05	NA	NA	0.2	
	10	4D3	1021	0.02	NA	NA	0.3	
	11	4D4	1023	0.02	NA	NA	0.2	
	12	4C½4	1026	0.02	NA	NA	0.1	
	13	4C4	1027	0.02	NA	NA	0.2	
	14	4B½4	1032	0.05	NA	NA	0.15	
	15	4B4	1036	0.1	NA	NA	0.2	
	16	4A½4	1038	0.02	NA	NA	0.2	
	17	4A4	1042	0.05	NA	NA	0.15	
	18	4B½4	1045	0.05	NA	NA	0.3	
	19	4D4	1048	0.05	NA	NA	0.2	

Table 6.7 — TERRAIN SURVEY FOR SNAPPER GEORGE

Shot Time: 0354:59.8 PST, 1 June 1952

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1 C-47 No. 386	1	1B4	0653	0.5	200/200	2500	0	
	2	1B3	0657	0.8	200/200	2600	0	
	3	1B2	0701	0.5	200/80	3000	0.1	
	4	1B1	0704	0.8	200/500	2600	0	
	5	1B0	0707	0.5	200/11,500	100,000	70	
	6	4B1	0711	0.4	200/2900	1800	0.2	
	7	4B2	0715	0.3	200/290	18,000	0	
	8	4B3	0718	1	200/200	17,000	0	
	9	4B4	0722	0.8	200/200	9000	0	
	10	4C4	0724	1	200/200	80,000	0	
	11	4C3	0727	1	200/200	8000	0	
	12	4C2	0731	0.3	200/250	8000	0	
	13	4C1	0736	1.5	200/1000	11,000	0.4	
	14	4C½	0737	0.5	200/4900	64,000	18	
	15	4C0	0739	1.5	200/4000	54,000	0	
	16	1C½	0741	1	200/2000	40,000	0	
	17	1C1	0743	1.5	200/200	24,000	0	
	18	1C2	0746	1.5	200/200	2400	0	
	19	1C3	0750	1.5	200/300	2400	0	
	20	1C4	0754	0.2	200/700	24,000	0	
	21	1D4	0758	0.5	200/270	22,000	0	
	22	1D3	0802	0.7	200/400	22,000	0	
	23	1D2	0806	1	200/300	22,000	0	
	24	1D1	0810	1	200/400	60,000	0.5	
	25	1D0	0813	0.5	200/500	6400	4	

Table 6.7 — (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	26	1D1	0810	0.7	200/4100	50,000	5	
C-47 No. 386	27	4D2	0820	0.5	200/1500	30,000	0	
(continued)	28	4D3	0824	1	200/200	28,000	0	
	29	4D4	0827	0.5	200/200	2400	0	
	30	4E5	0833	0.5	200/200	2400	0	
	31	4E4	0837	1	200/200	2200	0	
	32	4E3	0841	1	200/350	2200	0	
	33	4E2	0844	0.5	200/600	2400	0	
	34	4E1	0848	0.8	200/1500	10,000	1.5	
	35	4E0	0852	0.7	200/2400	14,000	1.7	
	36	4E0	0852	1.5	200/1700	10,000	6	
	37	1E1	0855	0.5	200/440	20,000	4	
	38	1E2	0900	1	200/200	7600	0	
	39	1E3	0904	0.8	200/400	8000	0	
	40	1E4	0909	1	200/300	70,000	0	
	41	1E4	0912	0.8	200/200	7000	0	
	42	1G4	0915	0.8	200/200	7000	0	
	43	1G3	0919	1.5	200/200	7000	0	
	44	1G2	0923	0.5	200/500	7000	0.1	
	45	1G0	0929	1	200/1000	7000	0.1	
	46	4G1	0933	0.7	200/1700	9000	1	
	47	4G2	0936	0.4	200/2500	12,000	0	
	48	4G3	0939	0.5	200/1000	50,000	0.1	
	49	1G4	0942	0.5	200/400	60,000	0	
	50	1G5	0946	1	200/300	55,000	0	

Table 6.7 — (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	51	4H6	0951	1.5	200/200	2500	0	
C-47 No. 386	52	4I7	0956	0.8	250/250	3000	0	
(continued)	53	4I6	1001	0.5	250/500	5000	0	
	54	4I5	1005	1	250/800	5000	0.2	
	55	4I0	1009	0.5	250/1000	10,000	0.2	
	56	4I3	1011	1	250/1300	Inop	0.2	
	57	4I2	1015	1.5	250/600	Inop	0	
	58	4I1	1018	1	250/800	70,000	0.1	
	59	4I0	1022	0.7	250/800	7000	0.1	
	60	1I1	1026	1	250/1100	7000	0.1	
	61	1I2	1031	1.5	250/600	7000	0	
	62	1B4	1038	1	200/200	7000	0	
Badger 2	1	1E4	0755	10	170/610	900	0.1	
C-47 No. 308	2	1D0	0915	1	1000/1000	1000	0.2	
Woodchuck 2	1	NR	0613	0.3	NR	NR	0.03	Not equipped with B-21 or rate meter
L-20 No. 467	2	4D3	0611	0.5	NR	NR	0.02	
	3	4½A3	0615	0.2	NR	NR	0.04	
	4	1½A3	NR	0.5	NR	NR	0.03	
	5	1½A3	0637	0.1	NR	NR	0.04	
	6	4A3	0702	0.2	NR	NR	0.04	
	7	4A4	0705	0.2	NR	NR	0.03	
	8	4A½4	0708	0.2	NR	NR	0.03	
	9	1A½4	0730	0.2	NR	NR	0.01	

Table 6.8 — TERRAIN SURVEY FOR SNAPPER HOW

Shot Time: 0355.00.3 PST, 5 June 1952

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1 C-47 No. 308	1	4G5	0627	1	115/140	100	0	
	2	4A4	0632	0.5	115/135	100	0	
	3	4B3	0638	0.5	140/150	100	0	
	4	4C2	0643	0.5	3500/4450	100	6	
	5	4D7	0649	1	3000/5700	150	0.6	
	6	4G0	0655	1	1000/2300	175	0.3	
	7	4F0	0659	1	450/600	175	0.2	
	8	4E1	0707	1	700/1100	175	0.3	
	9	4D2	0713	0.5	2000/4000	200	0.3	
	10	4C3	0719	1	1000/4000	200	0	
	11	4B4	0724	0.5	135/155	200	0	
	12	4A5	0729	1	140/195	200	0	
	13	4A6	0735	1.5	120/125	200	0	
	14	4B5	0741	0.5	130/165	200	0	
	15	4C4	0747	0.5	140/160	200	0	
	16	4D3	0752	0.5	4000/6100	200	11	
	17	4E2	0759	0.5	3000/6000	200	1.8	
	18	4F1	0805	0.5	900/2250	200	0.5	
	19	4G0	0811	1	500/1100	200	0.05	
	20	4H0	0815	0.5	500/830	200	0.2	

Table 6.8 — (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	21	4G1	0822	0.8	550/850	200	0.2	
C-47 No. 308	22	4E1	0827	1	550/750	200	0.1	
(continued)	23	4E3	0833	0.8	1000/2000	200	5	
	24	4D4	0839	1	2300/4000	200	0.05	
	25	4C5	0846	1	145/175	200	0	
	26	4B6	0851	0.5	140/160	200	0	
	27	4A7	0858	1	140/165	200	0	
	28	4A8	0902	0.5	145/165	200	0	
	29	4A9	0905	1.5	135/145	200	0	
	30	4BH	0911	0.5	140/150	2 0	0	
	31	4C7	0916	0.8	140/150	200	0	
	32	4D6	0922	1	145/165	200	0	
	33	4E5	0927	0.5	145/170	200	2	
	34	4F4	0933	0.5	2500/4250	200	5	
	35	4G3	0939	0.5	3000/4100	200	0.3	
	36	4H2	0945	1	450/650	200	2	
	37	4I1	0951	1	500/780	200	0	
	38	4J0	0958	0.5	400/600	200	0.05	
	39	4J1	1001	1	300/590	200	0.05	
	40	4J2	1006	0.5	450/710	200	0.1	
	41	4I3	1014	1	600/940	200	0.3	
	42	4H4	1022	1	800/1000	200	0.6	
	43	4G5	1027	1	800/1500	200	0.3	
	44	4F6	1033	0.5	700/2100	200	0	
	45	4E7	1038	0.5	140/190	200	0	

Table 6.8 (Continued)

Aircraft	Report No.	Position, grid No.	Time	Altitude, 10^3 ft MSL	B-21 readings, mv	Rate meter, counts/min	G-M readings, mr/hr	Remarks
Badger 1	46	4D8	1045	0.5	135/155	200	0	
C-47 No. 308	47	4C9	1053	0.5	140/165	200	0	
(continued)	48	4B10	1058	1	135/140	200	0	
Woodchuck 2	1	401	0541	0.01	NR	NR	0	
L-20 No. 467	2	1B0	0554	0.02	NR	NR	5	
(1st mission)	3	1C1	0603	0.02	NR	NR	0	
	4	402	0630	0.02	NR	NR	0	
	5	4A2	0637	0.03	NR	NR	0	
	6	1C0	0657	0.02	NR	NR	0 6	
	7	1D0	0704	0.02	NR	NR	0.2	
	8	404	0738	0.02	NR	NR	0	
Woodchuck 2	1	1C1	0950	0.01	NR	NR	0.3	
L-20 No. 467	2	1G1	1010	0.02	NR	NR	0.6	
(2d mission)	3	1G2	1013	0.01	NR	NR	0.5	
	4	1C2	1032	0.01	NR	NR	2	
	5	1C3	1035	0.01	NR	NR	0.02	
	6	1G3	1052	0.02	NR	NR	0.35	
	7	1G4	1057	0.1	NR	NR	0.1	
	8	1C4	1117	0.01	NR	NR	0.2	

CHAPTER 7

DECONTAMINATION OF PERSONNEL AND AIRCRAFT

7.1 SCOPE

This chapter is a report on all phases of the radiological safety operations and gives an account of the contamination encountered and the procedures used in decontamination of aircraft and personnel as accomplished by the 4925th Test Group (ATOMIC) Detachment at ISAFB. These phases include monitoring of aircraft, equipment, and personnel; operation of an aircraft-decontamination area; operation of a personnel-decontamination area; and coordination with the Radiological Safety Unit at the Control Point for acquisition, issue, and control of film badges. All observations and technical data concerned with contamination and decontamination are included. Conclusions and recommendations are also given.

7.2 ORGANIZATION AND PLANNING

7.2.1 Personnel

Two officers and ten airmen were originally assigned to the Radiological Safety Section on a full-time basis. This was later amended to include only eight airmen. The officer in charge came from the Radiological Section of the 4925th Test Group (ATOMIC) at KAFB. The remainder of the personnel came from various squadrons and groups at KAFB.

The two officers acted in a supervisory capacity for the over-all Rad-Safety operation. The eight airmen were used in the following manner:

1. One airman was made NCOIC and was given the responsibility of seeing that decontamination procedures were accomplished in a safe manner.
2. One airman was assigned as decontamination-equipment operator.
3. Six airmen functioned as personnel monitors and doubled as wash-crew personnel.

In addition to the above personnel, one man from supply handled all film-badge records as well as issuing and receiving badges.

7.2.2 Training

No specific training was given to any of the decontamination personnel. However, the NCOIC had received training in the Passive Defense Section of the 34th Air Division, and several of the airmen had attended a 40-hr lecture course in basic nuclear science.

7.2.3 Equipment

(a) Decontamination. The following were the major items of operational equipment used at ISAFB:

1. Two M3A2 decontamination trucks.

2. One gunk dispenser.

3. One weapons carrier to pull the gunk dispenser and to transport personnel from the planes to the personnel-decontamination center. It was found that, on shot day, two vehicles were needed.

4. Two B-29 type engine stands. (These were borrowed from Engineering as needed.)

5. One spinner type washing machine for clothing decontamination.

6. Eight large G.I. cans.

The radiac instruments used included:

1. AN PDR-T1B ion chamber.
2. AN PDR-23 ion chamber.
3. Beckman model MX-5 beta-gamma survey meter.
4. Electronic integrating ion-chamber dosimeter (integron).
5. 0–200-mr pocket dosimeter.
6. 0–1-r pocket dosimeter.
7. 0–5-r pocket dosimeter.
8. 0–10-r pocket dosimeter.

7.2.4 Decontamination Agents

The following decontamination agents were used:

1. Gunk which is a mixture of aircraft cleaning compound No. 20015 and dry cleaning solvent Spec. No. P-3-661 in the ratio of 1 part to 5 parts. Approximately 20 gal for each T-33 and 120 gal for each B-29 were used per shot.

2. Steam-cleaning compound, Formula C. Approximately 100 lb were used for the total mission.

3. Tide detergent. For the whole mission 100 lb were used.

4. Twenty bars of Ivory soap, large size.

7.2.5 Protective Clothing

A list of the protective clothing used included:

1. Fifty one-piece fatigue suits, various sizes
2. Fifty fatigue caps, various sizes.
3. Fifty pairs of shoes, various sizes.
4. Twenty pairs of rubber chemical gloves.
5. Twelve pairs of hip-length rubber boots.
6. Two hundred pairs of white cotton gloves.
7. Twenty-five pairs of drawers, various sizes.
8. Twenty-five undershirts, various sizes.
9. Fifty pairs of socks, various sizes.
10. One hundred towels for the shower room.

The above items and quantities were requisitioned on the assumption that there would be two B-29 and four T-33 sampling plane crews plus the decontamination crew. There proved to be a sufficient quantity of all items except shoes.

7.2.6 Facilities: Rad Safety Office and Personnel-decontamination Center

(a) Rad Safety Office. The Rad Safety office and personnel-decontamination center were located in a large quonset hut on the eastern end of the flight line. They consisted of a Rad Safety office, supply room, dressing room, shower, and two latrines. The installation comprises a permanent personnel-decontamination center.

(b) Aircraft-decontamination Area. The northeast corner of the concrete parking apron was used as the aircraft-decontamination area. Natural drainage was available and the "wash" was allowed to drain off the apron into the sand. Water and electric outlets were available at this area.

7.2.7 General

Approximately one month prior to the first test date, a trip was made to ISAFB in order to determine the condition of the facilities and stored equipment. In general, things were in good condition; however, it was necessary to replace some of the water lines and connections that had been damaged during the winter. One week prior to the first test, personnel moved to ISAFB and readied the personnel center and aircraft-decontamination areas for use.

7.3 FACTUAL DATA AND STATISTICS

7.3.1 Contamination

(a) B-29 Aircraft. An airplane was considered contaminated if at any point on the plane the reading of gamma intensities was above 20 mr/hr. Only one B-29 sampler was used per shot, and in each case it became contaminated. In all cases the contamination was greatest on the engines. The highest reading was 1000 mr. In looking over the data, it must be remembered that on the first (or hasty) survey the reading obtained at the filter boxes was taken with the filters still in place.

(b) B-50 Aircraft. One special mission was made with a B-50 aircraft in which an early penetration of the cloud was made. Upon landing, the plane was monitored, and the contamination recorded was 12.5 r. This was at $2\frac{1}{2}$ hr after H-hour.

(c) T-33 Aircraft. There were four T-33 aircraft used as samplers. Contamination was considered the same as for B-29 aircraft, and, in all cases where the plane penetrated the cloud, it became contaminated. In all cases the highest intensities of radiation were found near the compressor section. The highest intensity encountered was 26 r, recorded 1 hr, 10 min after H-hour.

(d) F-84 Aircraft. From five to seven F-84 aircraft participated in each shot in an on-the-job training program. Again as with the T-33's, the highest intensities encountered were in the compressor section with the highest intensity being 1900 mr, recorded 1 hr, 25 min after H-hour.

In addition to the above, there were three instances where the B-25 cloud-tracker aircraft and two C-47 terrain-survey aircraft were contaminated.

It is to be pointed out that the above data are given as they were recorded and may not give a true picture of the intensities encountered. To obtain a true picture, the intensities would need to be computed for a standard time (1 hr) after H-hour.

(e) Area Contamination. No fall-out occurred at ISAFB, and the personnel-decontamination area never became seriously contaminated. The aircraft-decontamination area became contaminated slightly; however, owing to copious use of water and early drain-off, the highest readings obtained were 18 mr/hr.

7.3.2 Decontamination

(a) B-29 Aircraft. During the Tumbler phase of operations the following procedure was used in decontamination: First gunk was applied in the form of a spray; then it was flushed off with cold water. Toward the end of Operation Tumbler a steam generator became available and during Operation Snapper the following procedure was used: Gunk was applied to the skin of the aircraft and cleaned off with steam containing a steam-cleaning compound (Formula C); this was followed with a cold-water rinse. For the engines (it was felt that steam might be injurious and so was not used) gunk was applied followed with a detergent and a cold-water solution as a rinse, then flushed off with cold water.

(b) T-33 Aircraft. The same procedures were used on the T-33 aircraft as were used on the B-29's, with the accessory section of the T-33's being treated similar to the B-29 engines.

(c) F-84 Aircraft. On the F-84 aircraft, only the surfaces of the planes were treated; no attempt was made to reach either the engine or the accessory section. The main operation was the use of gunk, the use of steam spray, and rinsing with water.

(d) Personnel. Personnel contamination was greatest on the hands, and this was effectively lowered by repeated scrubbings with soap and hot water. In one instance a dry-cleaning solvent was used to remove contaminated oil and grease from the hands. This, followed with soap and water scrubbing, proved effective.

(e) Clothing. A spinner type washing machine was obtained for decontamination of fatigues, caps, and cotton gloves. However, a quartermaster laundry (for decontamination of clothing) became available, and full use was made of this facility.

7.3.3 Statistics

Statistics are given in the form of columnated data with typical decay curves plotted for each plane involved (Figs. 7.1 to 7.20).

7.4 PERSONNEL RAD SAFETY AND DOSIMETRY

All film badges were picked up prior to each shot from the Test Command Rad Safety Section at the AEC Control Point, 45 miles by road from ISAFB. Exposed badges were delivered to the same place, and exposure records were received from this office. After the second shot it was believed that some of the film badges were giving erroneous readings; therefore it became the procedure to carry two badges, taped side by side, and the average of the two readings was recorded. The allowable cumulative exposure for all sampler personnel was set at 3.9 r; for other personnel it was 3.0 r. Radiation-exposure records, obtained from film-badge readings, are listed in Table 4.1 for all manned sampling personnel under the operational jurisdiction of the 4925th Test Group (ATOMIC).

7.5 CONCLUSIONS AND RECOMMENDATIONS

7.5.1 Personnel

The number, training, and job assignments of officers and enlisted personnel used in Operation Tumbler-Snapper were satisfactory. However, for accelerated tests more enlisted personnel could be utilized. The following recommendations are made:

1. The majority of personnel should possess military drivers' licenses for vehicles up to and including $2\frac{1}{2}$-ton capacity.
2. All officers and at least two airmen should have security clearances sufficiently high so that coordination with the Control Point Rad Safety Section may be easily accomplished.

7.5.2 Supply

Insofar as possible all supplies should be on hand at least two weeks prior to the first test. Difficulties were encountered in this respect.

The local purchase system proved entirely unsatisfactory. For example, it took more than six weeks to obtain some graph paper. It should be realized that special requirements arise, and, due to lack of time, regular supply channels cannot be used to satisfy these requirements. Any attempt to do so is a waste of time. For example, a pump was found broken on a decontamination truck during a test two weeks prior to the first test. The base supply organization insisted on using regular supply channels to requisition the pump. When the tests were all over, the pump had still failed to arrive; consequently, one decontamination truck sat idle through all the operations. If the second truck had broken down, the decontamination operations would have been seriously impaired.

7.5.3 Equipment

The equipment used proved to be satisfactory.

7.5.4 Decontamination Agents

The agents used were satisfactory.

7.5.5 Protective Clothing

1. Knee-length rubber boots should be used by the decontamination crew. Hip-length boots were used and proved to be too cumbersome.
2. One-piece fatigues were satisfactory.
3. Shoe sizes should run from $6\frac{1}{2}$D through 11D. In general, more small sizes were required than large.

7.5.6 Transportation

On shot day two weapons carriers are needed; on other days one is sufficient. A jeep was also available from the operations section and was frequently needed.

7.5.7 Facilities

The Rad Safety office and personnel-decontamination-center facilities were adequate. The aircraft-decontamination area was adequate to wash one plane at a time. Considerable effort would have to be expended to enlarge this facility.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-29 Acft #386 SHOT "ABLE" DATE 1 April 1952

SHOT TIME 0900:07.5 EST

DECON. SURVEY	A	B	C	D	E	F	REMARKS
TIME (H + hours) Date / Time	1/4 1155	2/4 0845	2/4 0937				All readings in milli-roentgens per hour.
POSITION							
1 Nose	100	20.0	.6				a. A readings taken after plane had landed and parked.
2 Air Intake Engine #3	70	6.0	2.8				b. B readings taken after plane had stood for 24 hours; immediately before washing.
3 Left Turbo Engine #3		10.0					
4 Right Turbo Engine #3		8.0					c. C readings taken after plane had a gunk application followed by cold water rinse.
5 Air Intake Engine #4	90	8.0	3.4				
6 Left Turbo Engine #4		6.0					
7 Right Turbo Engine #4		6.0					
8 Leading Edge Right Wg		4.0					
9 Tip Right Wing		4.0					
10 Trailing Edge Rt Wing		3.0					
11 Right Scanner Blister		2.0					
12 Right Horiz. Stabilizer		2.0					
13 Left Horiz. Stabilizer		3.0					
14 Left Scanner Blister		4.0					
15 Trailing Edge Wing		2.0					
16 Tip Left Wing		1.0					
17 Leading Edge Left Wing		3.0					
18 Air Intake Engine #1	80	5.0	2.9				
19 Left Turbo Engine #1		4.0					
20 Right Turbo Engine #1		4.0					
21 Air Intake Engine #2	40	6.0	4.0				
22 Left Turbo Engine #2		4.0					
23 Right Turbo Engine #2		4.0					
24 Filter Box, Left Wing	500	2.0					
25 Filter Box, Right Wing	220	5.0					
26 A-1 Filter Box	140	4.0					

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

"ABLE"

AIRCRAFT T-33 #913 SHOT TIME 0900 DATE 1 April 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	1 Apr 1129	2 Apr 1039				
POSITION						
1 Nose	11	.6				
2 Right Air Intake	36	1.6				
3 Leading Edge Right Wing		1.0				
4 Front of Right Filter Box	90	1.0				
5 Tip Right Wing		1.2				
6 Right Horizontal Stabilizer		.6				
7 Tail Pipe Opening		1.4				
8 Left Horizontal Stabilizer		1.2				
9 Tip Left Wing		1.0				
10 Front of Left Filter Box	60	1.0				
11 Leading Edge Left Wing		.8				
12 Left Air Intake		1.6				
13 Rear Cockpit		2.0				
14 Accessory Section		2.0				
15 Compressor Right Side	140	6.0				
16 Turbine Right Side		4.0				
17 Turbine Left Side		3.2				
18 Compressor Left Side	140	6.0				

REMARKS.

All readings taken in milli-roentgens per hour.

a. A readings taken after plane landed and parked. 1129-1131.
b. B readings taken after plane had stood for 24 hours. 1039-1043.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #048 "ABLE" SHOT TIME 0900 DATE 1 April 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	1 Apr 1127	2 Apr 1034				
POSITION						
1 Nose	50	1.0				
2 Right Air Intake	200	8.0				
3 Leading Edge Right Wing		2.6				
4 Front of Right Filter Box	460	2.4				
5 Tip Right Wing		3.8				
6 Right Horizontal Stabilizer		3.8				
7 Tail Pipe Opening		8.0				
8 Left Horizontal Stabilizer		3.2				
9 Tip Left Wing		2.6				
10 Front of Left Filter Box	390	2.2				
11 Leading Edge Left Wing		2.0				
12 Left Air Intake	200	8.0				
13 Rear Cockpit		0.0				
14 Accessory Section		11.0				
15 Compressor Right Side	900	26.0				
16 Turbine Right Side		14.0				
17 Turbine Left Side		14.0				
18 Compressor Left Side	900	22.0				

REMARKS.

All readings in milli-roentgens per hour.

a. A readings taken after plane had landed and parked. 1127-1129.
b. B readings taken after plane had stood for 24 hours. 1034-1039.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #951 SHOT "ABLE" SHOT TIME 0900 DATE 1 April 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	1/4/52 1120	2/4/52 1030				
POSITION						
1 Nose	22	1.4				
2 Right Air Intake	40	1.6				
3 Leading Edge Right Wing		1.5				
4 Front of Right Filter Box	110	1.2				
5 Tip Right Wing		1.2				
6 Right Horizontal Stabilizer		1.8				
7 Tail Pipe Opening		1.6				
8 Left Horizontal Stabilizer		1.5				
9 Tip Left Wing		0.8				
10 Front of Left Filter Box	110	0.4				
11 Leading Edge Left Wing		0.8				
12 Left Air Intake	60	1.6				
13 Rear Cockpit		0.0				
14 Accessory Section		1.0				
15 Compressor Right Side	240	10.0				
16 Turbine Right Side		4.0				
17 Turbine Left Side		4.8				
18 Compressor Left Side	240	8.0				

REMARKS:

All readings in milli-roentgens per hour.

a. A reading taken after plane landed and parked. 11:20 - 11:25.
b. B reading taken after the plane had stood for 24 hours. 10:30 - 10:34.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-29 Acft #286 SHOT BAKER DATE 15 April 1952

SHOT TIME 0929:57.05 EST

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	15/4 1315	16/4 0810	16/4 0925	16/4 1000	17/4 1055	17/4 1315
POSITION						
1 Nose	90	30	4	2		
2 Air Intake Engine #3	420	80	28	18	16	10
3 Left Turbo Engine #3		44	22	18	16	8
4 Right Turbo Engine #3		48	22	14	12	7
5 Air Intake Engine #4	600	60	44	30	26	12
6 Left Turbo Engine #4		38	16	12	9	6
7 Right Turbo Engine #4		42	14	8	7	8
8 Leading Edge Right Wg		6				
9 Tip Right Wing		3	2			
10 Trailing Edge Rt Wing		4	1			
11 Right Scanner Blister		6	2			
12 Right Horiz. Stabilizer		4	1			
13 Left Horiz. Stabilizer		2	2			
14 Left Scanner Blister		8	2			
15 Trailing Edge Wing		6	4			
16 Tip Left Wing		2	2			
17 Leading Edge Left Wing		8				
18 Air Intake Engine #1	430	80	42	32	27	14
19 Left Turbo Engine #1		70	20	16	15	8
20 Right Turbo Engine #1		46	16	14	13	8
21 Air Intake Engine #2	600	90	38	32	30	15
22 Left Turbo Engine #2		46	24	16	12	6
23 Right Turbo Engine #2		49	32	22	16	7
24 Filter Box, Left Wing	210	18	12			
25 Filter Box, Right Wing	240	22	10			
26 A-1 Filter Box	220	18	11			

REMARKS

All readings in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.

b. B readings taken after plane had stood for 25 hours; immediately before washing.

c. C readings taken after plane had been decontaminated. (See item g)

d. D readings taken after plane had been decontaminated. (See item g)

e. E readings taken after plane had landed for 48 hours; immediately before washing.

f. F readings taken after plane had been decontaminated. (See item g)

g. Decontamination process: Gunk application followed with cold water rinse.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #048 "BAKER" SHOT TIME 0930 DATE 15 April 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	15 Apr 1150	16 Apr 0828	16 Apr 0906	17 Apr 1035	17 Apr 1128	
POSITION						
1 Nose	11	1	.5			
2 Right Air Intake	50	2	1.6			
3 Leading Edge Right Wing		1	1			
4 Front of Right Filter Box	120	2	1			
5 Tip Right Wing		2	1			
6 Right Horizontal Stabilizer		2	1			
7 Tail Pipe Opening		4	1			
8 Left Horizontal Stabilizer		2	1			
9 Tip Left Wing		2	1			
10 Front of Left Filter Box	150	2	1			
11 Leading Edge Left Wing		2	1			
12 Left Air Intake	50	4	2			
13 Rear Cockpit		2	1	1	1	
14 Accessory Section		15	12	10	6	
15 Compressor Right Side	200	12	8	6	2	
16 Turbine Right Side		8	3			
17 Turbine Left Side		6	3			
18 Compressor Left Side	230	10	4	8	2	

REMARKS.

All readings in milli-roentgens per hour.

a. A readings taken after plane had landed and parked. 1150-1155.
b. B readings taken after plane had stood for 24 hours.
c. C readings taken after plane had been decontaminated. 0906-0910. (See item f)
d. D readings taken after compressor and accessory were decontaminated. 1035-1038 17 Apr 52.
e. E readings taken after compressor and accessory were decontaminated. 1125-1128 17 Apr 52.
f. Decontamination process of plane consisted of gunk application followed by a cold water rinse.
g. Decontamination process for items d & e was an application of detergent followed by a cold water rinse.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

"BAKER"

AIRCRAFT T-33 #913 SHOT TIME 0930 DATE 15 April 1952

DECON SURVEY	A	B	C	D	E	F	G
TIME (H + hours) Date Time	15 April 1157	16 April 0745	15 April 0911	17 April 1020	17 April 1040	17 April 1055	17 April 1130
POSITION							
1 Nose	90	2	1.5	1			
2 Right Air Intake	1000	26	18	9			
3 Leading Edge Right Wing		4	2	1.1			
4 Front of Right Filter Box	1500	8	6	5			
5 Tip Right Wing		18	8	3			
6 Right Horizontal Stabilizer		20	20	6			
7 Tail Pipe Opening		46	20	15			
8 Left Horizontal Stabilizer		20	20	6			
9 Tip Left Wing		11	7	2			
10 Front of Left Filter Box	2000	4	2	1			
11 Leading Edge Left Wing		7	2	1			
12 Left Air Intake	1000	20	18	5			
13 Rear Cockpit		6	3	8	2		
14 Accessory Section		220	160	80	50	35	
15 Compressor Right Side	1500	120	105	90	45	38	20
16 Turbine Right Side		60	40	24			
17 Turbine Left Side		65	40	34			
18 Compressor Left Side	1500	120	105	90	45	38	20

REMARKS:

All readings taken in milli-roentgens per hour.

a. A readings taken after plane had landed and parked. 1157-1200.

b. B readings taken after plane had stood for 24 hours. 0745-0750; immediately before washing.

c. C readings taken after plane had been decontaminated by washing with a gunk application and followed by rinsing with cold water.

d. D readings taken after plane had been decontaminated process same as item c.

e. E readings taken after compressor and accessory section were decontaminated with the use of plain cold water. f. F readings taken after compressor and accessory were decontaminated. g. G readings taken after compressor and accessory were decontaminated.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

SHOT "BAKER"

AIRCRAFT T-33 #920 SHOT TIME 0930 DATE 15 April 52

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	15 Apr 1220	16 Apr 0800	16 Apr 0915	17 Apr 1025	17 Apr 1040	
POSITION						
1 Nose	20	2	1.8			
2 Right Air Intake	90	4				
3 Leading Edge Right Wing		3				
4 Front of Right Filter Box	280	2				
5 Tip Right Wing		2				
6 Right Horizontal Stabilizer		3	1			
7 Tail Pipe Opening		4	2			
8 Left Horizontal Stabilizer		3	1			
9 Tip Left Wing		4	2.7			
10 Front of Left Filter Box	280	3	3			
11 Leading Edge Left Wing		3	2.4			
12 Left Air Intake	100	4	3			
13 Rear Cockpit		40	2	2	1	
14 Accessory Section		80	36	20	12	
15 Compressor Right Side	380	20	16	14	8	
16 Turbine Right Side		12	8			
17 Turbine Left Side		14	12			
18 Compressor Left Side	1000	24	14	14	8	

REMARKS All readings in milli-roentgens per hour.

a. A readings taken after plane had landed and parked. 1220 - 1225.
b. B readings taken after plane had stood for 25 hours. 0800 - 0806, 16 April 1952.
c. C readings taken after plane had been decontaminated. 0915 - 0920, 16 April 1952.
d. D readings taken after compressor and accessory were decon. 1025 - 1028, 17 April 52.
e. E readings taken after compressor and accessory were decon. 1040 - 1044, 17 April 52.
f. Decontamination of plane before C readings consisted of gunk application followed with a hot water rinse.
g. Decontamination of compressor and accessory section consisted of gunk application followed with a hot water rinse. Same process was used for both D & E readings.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

SHOT "BAKER"

AIRCRAFT T-33 #951 SHOT TIME 0930 DATE 15 April 52

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	15/4 1145	16/4 0755	16/4 0900	16/4 1029	16/4 1115	
POSITION						
1 Nose	15	8	2			
2 Right Air Intake	50	6	2.5			
3 Leading Edge Right Wing		3	1.6			
4 Front of Right Filter Box	150	2	1			
5 Tip Right Wing		2	1			
6 Right Horizontal Stabilizer		2	1			
7 Tail Pipe Opening		8	1			
8 Left Horizontal Stabilizer		6	1			
9 Tip Left Wing		6	1			
10 Front of Left Filter Box	190	4	1			
11 Leading Edge Left Wing		5	1.6			
12 Left Air Intake	50	6	2			
13 Rear Cockpit		40	3	4		
14 Accessory Section		60	16	12	6	
15 Compressor Right Side	400	20	12	8	4	
16 Turbine Right Side		10	4			
17 Turbine Left Side		14	4			
18 Compressor Left Side	300	20	10	8	4	

REMARKS.

All readings in milli-roentgens per hour.

a. A readings taken after plane landed and parked. 11:45 - 11:50

b. B readings taken after plane had stood for 25 hours; immediately before washing.

c. C readings taken after plane had been decontaminated with a gunk application followed with a cold water rinse.

d. D reading taken after compressor had been decontaminated with plain cold water.

e. E reading taken after compressor and accessory had been decontaminated with cold water for the second time.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-29 No. 386 SHOT "CHARLIE" DATE 22 April 1952

SHOT TIME 0930:10 PST

DECON. SURVEY	A	B	C	D	E	F	REMARKS
TIME (H + hours) Date / Time	22/4 1333-1354	23/4 0730	23/4 1350	24/4 0830			All readings in milli-roentgens per hour.
POSITION							
1 Nose	12	2	2	1.4			a. A reading taken as soon as plane landed and was parked.
2 Air Intake Engine #3	120	20	18	7			b. B reading taken as soon as plane had stood 24 hours.
3 Left Turbo Engine #3	130	26	26	6			c. C reading taken after plane had been decontaminated with a gunk application followed with detergent and rinsed with cold water.
4 Right Turbo Engine #3	120	25	24	5			
5 Air Intake Engine #4	140	23	22	8			
6 Left Turbo Engine #4	120	25	24	5			
7 Right Turbo Engine #4	130	23	22	4			d. D reading was taken after plane had stood 48 hours.
8 Leading Edge Right Wg	80	6	4	2			
9 Tip Right Wing	10	3	.5	.4			
10 Trailing Edge Rt Wing	60	3	2	1			
11 Right Scanner Blister	20	1	0	0			
12 Right Horiz. Stabilizer	10	1	0	0			
13 Left Horiz. Stabilizer	10	1	0	0			
14 Left Scanner Blister	20	2	0	0			
15 Trailing Edge Wing	20	2	0	0			
16 Tip Left Wing	10	3	0	0			
17 Leading Edge Left Wing	60	6	0	0			
18 Air Intake Engine #1	100	23	18	8			
19 Left Turbo Engine #1	160	24	17	7			
20 Right Turbo Engine #1	60	26	20	6			
21 Air Intake Engine #2	130	26	18	8			
22 Left Turbo Engine #2	120	26	20	8			
23 Right Turbo Engine #2	120	28	24	6			
24 Filter Box, Left Wing	180	8	0	0			
25 Filter Box, Right Wing	300	11	0	0			
26 A-1 Filter Box	300	8	.8	0			

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #048 "CHARLIE" SHOT TIME 0930 DATE 22 April 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	22 Apr 1300	23 Apr 0800	23 Apr 1635	24 Apr 0945	25 Apr 0815	26 Apr 0745
POSITION						
1 Nose	400	48	20	16	8	8
2 Right Air Intake	3100	240	80	30	22	18
3 Leading Edge Right Wing	800	80	40	10	6	4
4 Front of Right Filter Box	5000	110	60	10	8	6
5 Tip Right Wing	3600	120	60	26	22	14
6 Right Horizontal Stabilizer	600	80	60	12	10	7
7 Tail Pipe Opening	1000	100	26	22	18	12
8 Left Horizontal Stabilizer	600	200	140	30	14	8
9 Tip Left Wing	2500	100	60	20	16	10
10 Front of Left Filter Box	8000	100	60	16	8	8
11 Leading Edge Left Wing	800	30	20	12	6	5
12 Left Air Intake	3000	250	100	30	16	15
13 Rear Cockpit	800	80	35	18	10	8
14 Accessory Section		460	380	100	40	22
15 Compressor Right Side	8000	580	420	160	60	46
16 Turbine Right Side	2400	260	160	40	20	17
17 Turbine Left Side	2400	100	34	20	20	15
18 Compressor Left Side	8000	560	340	140	60	44

REMARKS:

All readings in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.
b. B readings taken after plane had stood for 24 hours; immediately before washing.
c. C readings taken after plane had been decontaminated with a process of gunk application followed by detergent and followed by a hot water rinse.
d. D readings taken 24 April 1952.
e. E readings taken 25 April 1952.
f. F readings taken 26 April 1952.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

"CHARLIE"

AIRCRAFT T-33 #048 (Cont'd) SHOT TIME 0930 DATE 22 April 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	28 Apr 0930	28 Apr 1330	29 Apr 0800			
POSITION						
1 Nose	3		0			
2 Right Air Intake	15	10	8			
3 Leading Edge Right Wing	3		0			
4 Front of Right Filter Box			1.4			
5 Tip Right Wing	4.5		2			
6 Right Horizontal Stabilizer	4.5		2			
7 Tail Pipe Opening	10		4			
8 Left Horizontal Stabilizer	4.5		2.5			
9 Tip Left Wing	4		2.4			
10 Front of Left Filter Box			1.4			
11 Leading Edge Left Wing	2.5		0			
12 Left Air Intake	14	8	6			
13 Rear Cockpit	3.5					
14 Accessory Section	45	22	12			
15 Compressor Right Side	50	26	16			
16 Turbine Right Side	35	14	14			
17 Turbine Left Side	35	12	12			
18 Compressor Left Side	50	34	20			

REMARKS.
All readings taken in milli-roentgens per hour.

a. A reading taken on 28 April 1952.
b. B reading taken after compressor and intakes were washed with detergent and rinsed with cold water.
c. C reading taken 29 April 1952. 0800-0815

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #951 SHOT "CHEESE" SHOT TIME 0930 DATE 22 April 1952

DECON. SURVEY	A	B	C	D	E	F	G
TIME (H + hours) Date / Time	22/4 1245	23/4 0810	23/4 1450	24/4 0800	28/4 0935	28/4 1400	29/4 0835
POSITION							
1 Nose	180	8	7	2	.8		0
2 Right Air Intake	1000	20	16	16	4	3.5	.6
3 Leading Edge Right Wing	340	18	4.8	4	1		0
4 Front of Right Filter Box	1200	34	15	12	.5		.1
5 Tip Right Wing	800	38	6	6	2		2
6 Right Horizontal Stabilizer	200	26	5	5	1.8		0
7 Tail Pipe Opening	300	24	6	5	2.5		2
8 Left Horizontal Stabilizer	200	28	40	20	1.5		0
9 Tip Left Wing	800	34	6	5	1.3		0
10 Front of Left Filter Box	1200	24	5	5	.5		.1
11 Leading Edge Left Wing	300	24	5	5	1		0
12 Left Air Intake	1000	20	16	5	3.5	3	2
13 Rear Cockpit	2500	20	8	6	1.5		
14 Accessory Section	1500	70	30	21	18	6	4
15 Compressor Right Side	1900	100	50	26	25	8	6
16 Turbine Right Side	800	40	16	16	15	5	4
17 Turbine Left Side	800	40	16	16	15	5	5
18 Compressor Left Side	1800	140	55	40	25	8	8

REMARKS:

All readings in milli-roentgens per hour:

a. A reading taken after plane landed and parked.
b. B reading taken after plane had stood 24 hours; immediately before washing.
c. C reading taken after plane had been decontaminated with a gunk application followed by detergent and then rinsed with plain cold water.
d. D reading taken after plane had been decontaminated with same process as in item c.
e. E reading taken on 28 April 1952.
f. F reading taken after compressor and intakes were washed with plain cold water.
g. G reading taken 29 April 1952.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #920 "CHARLIE" SHOT TIME 0930 DATE 22 April 1952

DECON SURVEY	A	B	C	D	E	F	G
TIME (H + hours) Date Time	22 Apr 1308	22 Apr 1500	23 Apr 0806	24 Apr 1100	25 Apr 0815	26 Apr 0800	26 Apr 0845
POSITION							
1 Nose	98	1500	250	98	80	20	14
2 Right Air Intake	1700	1800	340	60	36	28	20
3 Leading Edge Right Wing		200	98	80	20	14	10
4 Front of Right Filter Box	1200	600	40	20	16	12	8
5 Tip Right Wing	200	900	140	80	60	28	20
6 Right Horizontal Stabilizer		400	120	40	34	12	10
7 Tail Pipe Opening		1100	200	180	80	40	18
8 Left Horizontal Stabilizer		800	150	130	40	30	24
9 Tip Left Wing		700	200	160	40	28	21
10 Front of Left Filter Box	900	1000	180	80	38	16	10
11 Leading Edge Left Wing		500	100	22	20	10	9
12 Left Air Intake	1500	2000	400	60	36	28	18
13 Rear Cockpit	500	1100	80	44	30	18	14
14 Accessory Section		3300	480	180	100	80	60
15 Compressor Right Side	1000	4800	540	240	140	100	70
16 Turbine Right Side		800	500	160	100	30	24
17 Turbine Left Side		800	400	180	100	12	11
18 Compressor Left Side	1000	5000	520	240	160	100	75

REMARKS: All readings in milli-roentgens per hour.

a. A readings taken after landing after first penetration.
b. B readings taken after second penetration.
c. C readings taken after plane stood for 24 hours. d. D readings taken after plane had been washed with gunk application, followed by solvent and rinsed with cold water.
e. E readings taken after repeating same decontamination process as in item d.
f. F readings taken 25 April 1952.
g. G readings taken after plane had been washed with a gunk application followed by detergent and then rinsed with cold water.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #920 (Cont'd) SHOT TIME "CHARLIE" 0930 PST DATE 22 April 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	28 Apr 0940	29 Apr 0830	29 Apr 0830			
POSITION						
1 Nose	4.5					
2 Right Air Intake	15	6	6			
3 Leading Edge Right Wing	3.5		0			
4 Front of Right Filter Box	15		8			
5 Tip Right Wing	12		10			
6 Right Horizontal Stabilizer	4		2			
7 Tail Pipe Opening	2.5		2			
8 Left Horizontal Stabilizer	20		2			
9 Tip Left Wing	12		4			
10 Front of Left Filter Box	8		4			
11 Leading Edge Left Wing	3.5		2.5			
12 Left Air Intake	15	6	6			
13 Rear Cockpit	2	1				
14 Accessory Section	25	7	7			
15 Compressor Right Side	30	18	10			
16 Turbine Right Side	20	5	12			
17 Turbine Left Side	20	8	6			
18 Compressor Left Side	30	12	10			

REMARKS: All readings in milli-roentgens per hour.

a. A reading taken on 28 April 1952.
b. B reading taken after compressor and intakes were washed with detergent and rinsed with cold water.
c. C reading taken on 29 April 1952 0830-0835.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-29 Acft #386 SHOT "DOG" DATE 1 May 1952

SHOT TIME 0829:58.6 PST

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	1/5	2/5	2/5	3/5	5/5	
POSITION						
1 Nose	48	10	4	2	1	
2 Air Intake Engine #3	490	110	28	22	6	
3 Left Turbo Engine #3		90	34		8	
4 Right Turbo Engine #3		90	30		8	
5 Air Intake Engine #4	500	100	26	20	6	
6 Left Turbo Engine #4		80	20		9	
7 Right Turbo Engine #4		110	30		10	
8 Leading Edge Right Wg		30	4	4	2	
9 Tip Right Wing		15	4	4	2	
10 Trailing Edge Rt Wing		8	2	2	1	
11 Right Scanner Blister		12	2	2	1	
12 Right Horiz. Stabilizer		10	10	8	4	
13 Left Horiz. Stabilizer		12	10	8	5	
14 Left Scanner Blister		12	4	2	1	
15 Trailing Edge Wing		13	6	3	1	
16 Tip Left Wing		18	4	3	1	
17 Leading Edge Left Wing		14	12	4	3	
18 Air Intake Engine #1	500	160	22	16	8	
19 Left Turbo Engine #1		100	34		10	
20 Right Turbo Engine #1		150	32		10	
21 Air Intake Engine #2	420	160	24	16	6	
22 Left Turbo Engine #2		100	30		8	
23 Right Turbo Engine #2		120	32		8	
24 Filter Box, Left Wing	200	40	12		6	
25 Filter Box, Right Wing	230	40	12		6	
26 A-1 Filter Box	250	34	12		7	

REMARKS

All readings in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.

*b. B readings taken after plane had stood for 25 hours; immediately before washing.

c. C readings taken after plane was decontaminated. (See item f.)

d. D readings taken the 3d of May 1952.

e. E readings taken 5 May 1952.

f. All engines were washed with gunk application followed by cold water. This was repeated twice. Fuselage was washed with gunk application and followed by cold water one time.

*The background after B reading was 4 mr.
The 4 motors were washed twice with gunk and water. After this the background read 17 mr, then it was given a complete wash. After the pavement was washed down, the background was 4 mr.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

"DOG"

AIRCRAFT T-33 #913 SHOT TIME 0830 DATE 1 May 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	1 May 1205	2 May 0932	3 May 0805	4 May 1030	5 May 0845	
POSITION						
1 Nose	800	48	26	10	5	
2 Right Air Intake	3000	290	140	30	26	
3 Leading Edge Right Wing		90	46	14	8	
4 Front of Right Filter Box		100	46	14	8	
5 Tip Right Wing	2000	150	100	14	10	
6 Right Horizontal Stabilizer		180	100	12	6	
7 Tail Pipe Opening		280	120	50	16	
8 Left Horizontal Stabilizer		180	160	100	40	
9 Tip Left Wing	2000	200	80	14	8	
10 Front of Left Filter Box		110	44	14	6	
11 Leading Edge Left Wing		90	40	14	8	
12 Left Air Intake	3500	310	160	60	24	
13 Rear Cockpit	600	120	80	24	10	
14 Accessory Section	5000	800	360	90	75	
15 Compressor Right Side	6000	1000	410	108	80	
16 Turbine Right Side		300	250	100	44	
17 Turbine Left Side		180	160	100	40	
18 Compressor Left Side	5000	1000	300	160	60	

REMARKS:

All readings in milli-roentgens per hour.

a. A readings taken after plane landed and parked.
b. B readings taken after plane had stood for 24 hours.
c. C readings taken after plane had stood for 48 hours.
d. D readings taken after plane had been decontaminated.
e. E readings taken the 5 May 1952.
f. Plain cold water was used, this was repeated three times. Left wing was decontaminated with acid brightener and followed with cold water rinse. This was repeated three times. Fuselage was decontaminated with gunk application followed with cold water rinse. This was applied only once.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

"DOG"

AIRCRAFT T-33 #048 SHOT TIME 0830 DATE 1 May 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	1 May 1157	2 May 0800	2 May 0945	3 May 0822	5 May 0800	
POSITION						
1 Nose	300	30	12	6	3	
2 Right Air Intake	1500	150	90	28	6	
3 Leading Edge Right Wing		30	26	8	3	
4 Front of Right Filter Box		30	15	12	4.5	
5 Tip Right Wing	1500	50	21	12	5	
6 Right Horizontal Stabilizer		35	14	8	2.8	
7 Tail Pipe Opening		48	42	20	4	
8 Left Horizontal Stabilizer		32	14	10	1.8	
9 Tip Left Wing	1500	50	16	14	6	
10 Front of Left Filter Box		80	25	10	4	
11 Leading Edge Left Wing		26	10	8	3	
12 Left Air Intake	1500	150	80	22	10	
13 Rear Cockpit	210	20	15	8	6	
14 Accessory Section	1900	170	140	90		
15 Compressor Right Side	2000	200	160	110	30	
16 Turbine Right Side		60	48	40	18	
17 Turbine Left Side		60	40	10	3.8	
18 Compressor Left Side	2000	200	170	110	30	

REMARKS:
All readings taken in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.
b. B readings taken after plane had stood for 24 hours; immediately before washing.
c. C readings taken after plane had been decontaminated (see item f).
d. D readings taken after plane had stood for 48 hours.
e. E readings taken the 5 May 1952.
f. Left wing was washed with a gunk application followed by steam cleaning compound and then rinsed with hot water. This process was repeated three times. Right wing was washed with gunk and brushes followed by rinsing with steam. This process was repeated three times. Fuselage was washed with gunk and brushes followed by rinsing with hot water. This process was for one time only.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #951 SHOT "DOG" SHOT TIME 0830 DATE 1 May 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	1 May 1140	2 May 0910	2 May 1400	3 May 0830	5 May 0830	
POSITION						
1 Nose	200	15	8	5	2	
2 Right Air Intake	1000	44	20	12	8	
3 Leading Edge Right Wing		20	4	4	5	
4 Front of Right Filter Box		22	16	6	5	
5 Tip Right Wing	1000	36	10	8	3.8	
6 Right Horizontal Stabilizer		29	6	4	3	
7 Tail Pipe Opening		18	14	10	4	
8 Left Horizontal Stabilizer		29	14	8	3	
9 Tip Left Wing	1000	30	12	8	4	
10 Front of Left Filter Box		18	10	8	4	
11 Leading Edge Left Wing		15	4	2	1	
12 Left Air Intake	1000	45	16	14	5	
13 Rear Cockpit	350	12	4	4	1	
14 Accessory Section	1300	110	50	28		
15 Compressor Right Side	1500	120	60	34	12	
16 Turbine Right Side		80	36	24	10	
17 Turbine Left Side		70	6	4	3	
18 Compressor Left Side	1500	90	60	34	4	

REMARKS:

All readings in milli-roentgens per hour.

a. A readings taken after plane landed and parked.
b. B readings taken after plane stood for 24 hours; immediately before washing.
c. C readings taken after plane was decontaminated (see item e).
d. D readings taken 3 May 1952.
e. Left wing was washed with steam cleaning compound followed by hot water rinse, this process was repeated three times. Right wing was washed with gunk application followed by a hot water rinse, this process was repeated three times. Fuselage was washed with gunk application followed by cold water rinse, this process was for one time only.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #920 "DICE" SHOT TIME 0830 PST DATE 1 May 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	1 May 1115	2 May 0940	3 May 0930	3 May 1155	5 May 0820	
POSITION						
1 Nose	3000	38	8	6	5	
2 Right Air Intake	4000	180	38	22	15	
3 Leading Edge Right Wing		40	10	4	3	
4 Front of Right Filter Box		70	26	12	11	
5 Tip Right Wing	2900	125	24	12	11	
6 Right Horizontal Stabilizer		90	10	8	4	
7 Tail Pipe Opening		70	24	12	7	
8 Left Horizontal Stabilizer		100	34	30	25	
9 Tip Left Wing	3400	130	25	14	7	
10 Front of Left Filter Box		100	30	14	6	
11 Leading Edge Left Wing		60	16	10	6	
12 Left Air Intake	4400	190	36	20	13	
13 Rear Cockpit	1000	60	12	8	5	
14 Accessory Section	6500	190	82	45	32	
15 Compressor Right Side	7000	200	86	50	37	
16 Turbine Right Side		90	42	32	25	
17 Turbine Left Side		125	16	10	5	
18 Compressor Left Side	7000	200	86	50	37	

REMARKS All readings in milli-roentgens per hour.
a. A readings taken after plane landed and parked. b. B readings taken after plane stood for 24 hours. c. C readings taken after plane stood for 48 hours; immediately before washing. d. D readings taken after plane had been decontaminated. (see item f). e. E readings taken 5 May 52. f. Right wing - gunk was applied by a spray and followed by a cold water rinse. This process was repeated three times. Left wing - gunk was applied with brush and followed by a cold water rinse. This process repeated three times. Fuselage - gunk applied with spray and followed with water rinse. This process applied once.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-29 No. 285 SHOT "BIGY" DATE 7 May 1952

SHOT TIME 0414:59.25 PST

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	7/5 1020	8/5 0915	9/5 0807	9/5 1000	10/5 0800	
POSITION						
1 Nose	40	15	7	3	1.4	
2 Air Intake Engine #3	900	110	100	44	20	
3 Left Turbo Engine #3	800	75	60	42	14	
4 Right Turbo Engine #3	800	75	50	40	12	
5 Air Intake Engine #4	900	90	60	48	18	
6 Left Turbo Engine #4	800	75	50	46	14	
7 Right Turbo Engine #4	800	75	40	34	12	
8 Leading Edge Right Wg		30	10	5	2	
9 Tip Right Wing		20	6	2	4	
10 Trailing Edge Rt Wing		40	10	5	1	
11 Right Scanner Blister		20	10	4	2	
12 Right Horiz. Stabilizer		30	10	4	2	
13 Left Horiz. Stabilizer		30	8	4	4	
14 Left Scanner Blister		20	8	2.5	2	
15 Trailing Edge Wing		35	7	5	1	
16 Tip Left Wing		20	4	1	1	
17 Leading Edge Left Wing		20	5	5	2	
18 Air Intake Engine #1	800	90	55	30	21	
19 Left Turbo Engine #1	800	80	55	50	16	
20 Right Turbo Engine #1	800	75	50	38	15	
21 Air Intake Engine #2	900	90	50	19	16	
22 Left Turbo Engine #2	800	80	55	20	12	
23 Right Turbo Engine #2	800	80	60	36	16	
24 Filter Box, Left Wing	1000	65	34	8	6	
25 Filter Box, Right Wing	1100	75	38	10	6	
26 A-1 Filter Box	1000	75	50	20	12	

REMARKS

All readings in milli-roentgens per hour.

a. A readings taken after the plane had landed and parked.

b. B readings taken after the plane had stood for 24 hours.

c. C reading was taken 48 hours after plane landed; immediately before washing.

d. D reading was taken after plane had been decontaminated with a gunk application followed by detergent and rinsed with cold water.

e. E reading was taken 10 May 1952.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #913 "DESERT" SHOT TIME 0445 PST DATE 7 May 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	7 May 0855	8 May 0900	8 May 1530	9 May 0830	10 May 0820	14 May 0748
POSITION						
1 Nose	80	20	10	4	2	1.4
2 Right Air Intake	700	75	35	20	10	6
3 Leading Edge Right Wing		30	15	4	3	1.6
4 Front of Right Filter Box	450	25	10	2	2	.8
5 Tip Right Wing	450	30	15	6	4	1.8
6 Right Horizontal Stabilizer		30	10	6	4	1.6
7 Tail Pipe Opening		35	35	28	20	6
8 Left Horizontal Stabilizer		30	10	6	4	1.8
9 Tip Left Wing	450	35	25	10	6	1.7
10 Front of Left Filter Box	450	25	20	6	4	.6
11 Leading Edge Left Wing		24	15	6	4	1.4
12 Left Air Intake	700	75	35	20	12	4.8
13 Rear Cockpit	620	30	15	6	4	18
14 Accessory Section	650	90	60	50	40	18
15 Compressor Right Side	700	100	65	60	48	20
16 Turbine Right Side		60	35	16	10	8
17 Turbine Left Side		60	20	12	10	8
18 Compressor Left Side	700	100	65	60	45	20

REMARKS All readings in milli-roentgens per hour.

a. A readings taken after the plane landed and parked.
b. B readings taken after the plane stood for 24 hours; immediately before washing.
c. C readings taken after the plane had been decontaminated.
d. D readings taken after the plane had stood for 48 hours.
e. E readings taken 10 May 1952.
f. F readings taken 14 May 1952.

Decontamination Procedure: Left wing - detergent followed by brushing and rinsed by low pressure cold water. Right wing - low pressure water with brush, three times. Gunked the fuselage then washed it with steam. Washed the intakes and accessory section with steam.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #920 "EASY" SHOT TIME 0415 PST DATE 7 May 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	7 May 0825	8 May 0845	8 May 1545	9 May 0840	10 May 0815	13 May 0805
POSITION						
1 Nose	60	30	10	4	2	1.4
2 Right Air Intake	400	60	30	20	16	6
3 Leading Edge Right Wing		20	10	6	2	1.5
4 Front of Right Filter Box	900	20	15	4	2	1.5
5 Tip Right Wing	600	35	15	6	6	1.8
6 Right Horizontal Stabilizer		20	15	8	4	2.4
7 Tail Pipe Opening		45	18	7	5	5
8 Left Horizontal Stabilizer		30	25	10	4	1
9 Tip Left Wing	400	40	15	6	4	2.4
10 Front of Left Filter Box	900	30	20	4	2	1.2
11 Leading Edge Left Wing		20	10	6	2	1
12 Left Air Intake	400	60	30	20	12	7
13 Rear Cockpit	320	30	12	4	1	1
14 Accessory Section	750	90	60	45	32	12
15 Compressor Right Side	800	100	75	60	36	16
16 Turbine Right Side		40	20	6	5	4
17 Turbine Left Side		40	20	8	4	4
18 Compressor Left Side	800	100	75	60	28	10

REMARKS: All readings in milli-roentgens per hour.

a. A readings taken after plane landed and parked. b. B readings taken after plane stood for 24 hours; immediately before wash. c. C readings taken after plane was decontaminated (see item g). d. D readings taken after plane stood for 48 hours. e. E readings taken 10 May 52. f. F readings taken 13 May 52. g. Right wing - washed three times with detergent and rinsed each time with cold water. Left wing - gunk, detergent and rinsed with plain water. Same process three times. Fuselage - gunk and rinsed with cold water one time.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-29 No. 386 SHOT "FOX" DATE 25 May 1952

SHOT TIME 0359:59.6 PST

DECON. SURVEY	A	B	C	D	E	F	REMARKS
TIME (H + hours) Date / Time	25/5 0758	26/5 0900	26/5 1245				All readings in milli-roentgens per hour.
POSITION							
1 Nose	70	5	2				a. A readings taken after the plane had landed and parked.
2 Air Intake Engine #3	1000	50	18				b. B readings taken after the plane had stood for 24 hours; immediately before washing.
3 Left Turbo Engine #3		44	16				
4 Right Turbo Engine #3		46	11				c. C readings taken after the plane had been decontaminated with an application of gunk and steam cleaning compound followed with a cold water rinse.
5 Air Intake Engine #4	800	60	18				
6 Left Turbo Engine #4		42	14				
7 Right Turbo Engine #4		41	14				
8 Leading Edge Right Wg		11	3				
9 Tip Right Wing		4.1	1.5				
10 Trailing Edge Rt Wing		5	2				
11 Right Scanner Blister		6	2				
12 Right Horiz. Stabilizer		12	4				
13 Left Horiz. Stabilizer		12	4				
14 Left Scanner Blister		8	2				
15 Trailing Edge Wing		9	3				
16 Tip Left Wing		6	1.5				
17 Leading Edge Left Wing		15	5				
18 Air Intake Engine #1	350	60	20				
19 Left Turbo Engine #1		50	18				
20 Right Turbo Engine #1		30	17				
21 Air Intake Engine #2	300	60	18				
22 Left Turbo Engine #2		50	15				
23 Right Turbo Engine #2		60	14				
24 Filter Box, Left Wing		20	8				
25 Filter Box, Right Wing		17	6				
26 A-1 Filter Box	1900						

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-50 Acft #9260 SHOT "FOX" DATE 25 May 1952

SHOT TIME 0359:59.6

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	25May 0703	26 May 0922	26May 1525	27May 0740	27May 1500	28 May 0810
POSITION						
1 Nose	1800	32	12	4		
2 Air Intake Engine #3	12500	410	190	100	80	50
3 Left Turbo Engine #3		190	90	60		
4 Right Turbo Engine #3		200	90	50		
5 Air Intake Engine #4	11500	410	180	100	75	60
6 Left Turbo Engine #4		175	145	60		
7 Right Turbo Engine #4		295	160	60		
8 Leading Edge Right Wg		20	10	4		
9 Tip Right Wing		30	12	10		
10 Trailing Edge Rt Wing		60	22	14		
11 Right Scanner Blister		39	15	10		
12 Right Horiz. Stabilizer		36	10	8		
13 Left Horiz. Stabilizer		40	12	8		
14 Left Scanner Blister		48	15	8		
15 Trailing Edge Wing		60	20	15		
16 Tip Left Wing		30	12	8		
17 Leading Edge Left Wing		26	10	8		
18 Air Intake Engine #1	6000	415	145	120	110	60
19 Left Turbo Engine #1		280	115	70		
20 Right Turbo Engine #1		175	80	60		
21 Air Intake Engine #2	11000	420	180	100	80	50
22 Left Turbo Engine #2		210	95	70		
23 Right Turbo Engine #2		280	90	60		
24 Filter Box, Left Wing						
25 Filter Box, Right Wing						
26 A-1 Filter Box						

REMARKS

All readings taken in milliroentgens per hour.

a. A readings taken after the plane had landed and parked.

b. B readings taken after the plane had stood for 24 hours; immediately before wash.

c. C readings taken after the plane had been decon with an application of gunk and steam cleaning component followed with a cold water rinse.

d. D readings taken 16 hours after last reading.

e. E readings taken after the plane had stood 16 hours after washing.

f. F readings taken the following morning or 17 hours after last reading.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-25 Acft No. 073 SHOT "FOX" DATE 25 May 1952

SHOT TIME 0455 PST

DECON SURVEY	A	B	C	D	E	F	REMARKS
TIME (H + hours) Date / Time	25/5 0938	26/5 1011					All readings taken in milli-roentgens per hour.
POSITION							a. A readings taken after the plane had landed and parked.
1 Nose	16	1.5					b. B readings taken after the plane had been decon with an application of gunk and rinsed with water.
2 Air Intake Engine #3							
3 Left Turbo Engine #3							
4 Right Turbo Engine #3							
5 Air Intake Engine #4							
6 Left Turbo Engine #4							
7 Right Turbo Engine #4							
8 Leading Edge Right Wg							
9 Tip Right Wing							
10 Trailing Edge Rt Wing							
11 Right Scanner Blister							
12 Right Horiz. Stabilizer							
13 Left Horiz. Stabilizer							
14 Left Scanner Blister							
15 Trailing Edge Wing							
16 Tip Left Wing							
17 Leading Edge Left Wing							
18 Air Intake Engine #1	100	10					
19 Left Turbo Engine #1							
20 Right Turbo Engine #1							
21 Air Intake Engine #2	60	8					
22 Left Turbo Engine #2							
23 Right Turbo Engine #2							
24 Filter Box, Left Wing							
25 Filter Box, Right Wing							
26 A-1 Filter Box							

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT C-47 No. 386 SHOT "FOX" DATE 25 May 1952

SHOT TIME 0359:59.6

DECON SURVEY	A	B	C	D	E	F	REMARKS
TIME (H + hours) Date / Time	25/5 0910	25/5 1400	25/5 1405				All readings taken in milli-roentgens per hour.
POSITION							a. A readings taken after plane had landed and parked.
1 Nose	3	1	.2				b. B readings taken immediately before washing.
2 Air Intake Engine #3							c. C readings taken after the plane had been decon with a gunk application and steam cleaning compound followed with a cold water rinse.
3 Left Turbo Engine #3							
4 Right Turbo Engine #3							
5 Air Intake Engine #4							
6 Left Turbo Engine #4							
7 Right Turbo Engine #4							
8 Leading Edge Right Wg							
9 Tip Right Wing		1	1				
10 Trailing Edge Rt Wing		1	1				
11 Right Scanner Blister							
12 Right Horiz. Stabilizer		.5	.5				
13 Left Horiz. Stabilizer		.5	.4				
14 Left Scanner Blister							
15 Trailing Edge Wing		1.5	1				
16 Tip Left Wing		1	1				
17 Leading Edge Left Wing		2	.3				
18 Air Intake Engine #1	10	5	1				
19 Left Turbo Engine #1	40	4	1				
20 Right Turbo Engine #1							
21 Air Intake Engine #2	10	6	1				
22 Left Turbo Engine #2							
23 Right Turbo Engine #2		4	1.5				
24 Filter Box, Left Wing							
25 Filter Box, Right Wing							
26 A-1 Filter Box							

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT C-47 No. 308 SHOT "FOX" DATE 25 May 1952

SHOT TIME 0359:59.6 PST

DECON SURVEY	A	B	C	D	E	F	REMARKS
TIME (H + hours) Date / Time	5/25 1330	5/25 1350					All readings taken in milli-roentgens per hour.
POSITION							
1 Nose	2	0					a. A readings taken after plane landed; immediately before washing.
2 Air Intake Engine #3							
3 Left Turbo Engine #3							b. B readings taken after plane had been decon with an application of gunk and steam cleaning compound followed with a cold water rinse.
4 Right Turbo Engine #3							
5 Air Intake Engine #4							
6 Left Turbo Engine #4							
7 Right Turbo Engine #4							
8 Leading Edge Right Wg							
9 Tip Right Wing							
10 Trailing Edge Rt Wing							
11 Right Scanner Blister							
12 Right Horiz. Stabiliser							
13 Left Horiz. Stabiliser							
14 Left Scanner Blister							
15 Trailing Edge Wing							
16 Tip Left Wing							
17 Leading Edge Left Wing							
18 Air Intake Engine #1	10	2					
19 Left Turbo Engine #1	30	2					
20 Right Turbo Engine #1							
21 Air Intake Engine #2	10	4					
22 Left Turbo Engine #2							
23 Right Turbo Engine #2	30	8					
24 Filter Box, Left Wing							
25 Filter Box, Right Wing							
26 A-1 Filter Box							

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #920 "FOX" SHOT TIME 0400 PST DATE 25 May 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	25 May 0923	26 May 0923	26 May 1001			
POSITION						
1 Nose	60	10	7			
2 Right Air Intake	440	60	18			
3 Leading Edge Right Wing		19	4.8			
4 Front of Right Filter Box	400	10	2.6			
5 Tip Right Wing	360	27	11			
6 Right Horizontal Stabilizer		11	6			
7 Tail Pipe Opening		80	18			
8 Left Horizontal Stabilizer		70	6			
9 Tip Left Wing	340	20	6			
10 Front of Left Filter Box	500	13	8			
11 Leading Edge Left Wing		13	7			
12 Left Air Intake	400	40	20			
13 Rear Cockpit	200	10				
14 Accessory Section		160	50			
15 Compressor Right Side	1000	180	50			
16 Turbine Right Side		100	31			
17 Turbine Left Side		110	25			
18 Compressor Left Side	1000	150	60			

REMARKS: All readings in milli-roentgens per hour.

a. A readings taken after the plane had landed and parked.

b. B readings taken after the plane stood for 24 hours; immediately before washing.

c. C readings taken after the plane had been decontaminated with an application of gunk and steam cleaning compound followed with a cold water rinse.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #951 SHOT "FOX" SHOT TIME 0400 PST DATE 25 May 52

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	25 May 0845	26 May 1015	26 May 1203	27 May 0815	28 May 0823	
POSITION						
1 Nose	380	14	10	7	5	
2 Right Air Intake	2200	80	55	38	22	
3 Leading Edge Right Wing		26	20	10	4.8	
4 Front of Right Filter Box	1100	34	22	13	5	
5 Tip Right Wing	2000	40	24	11	6	
6 Right Horizontal Stabilizer		24	15	9	6	
7 Tail Pipe Opening		34	26	18	12	
8 Left Horizontal Stabilizer		75	14	10	6	
9 Tip Left Wing	1600	42	8	9	4.8	
10 Front of Left Filter Box	1600	22	12	9	4.6	
11 Leading Edge Left Wing		24	12	8	4	
12 Left Air Intake	2200	70	38	28	16	
13 Rear Cockpit		38				
14 Accessory Section		180	125	90	40	
15 Compressor Right Side	2600	200	140	100	50	
16 Turbine Right Side		75	60	55	38	
17 Turbine Left Side		126	80	50	32	
18 Compressor Left Side	2400	160	130	100	60	

REMARKS: All readings in milli-roentgens per hour.

a. A readings taken after the plane had landed and parked.
b. B readings taken after the plane had stood for 25 hours; immediately before wash.
c. C readings taken after the plane had been decontaminated with an application of gunk and steam cleaning compound followed with a cold water rinse.
d. D readings taken 22 hours after C readings.
e. E readings taken 24 hours after D readings.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

"FOX"

AIRCRAFT T-33 #913 SHOT TIME 0400 PST DATE 25 May 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	25 May 0904	26 May 0950				
POSITION						
1 Nose	26	2.2				
2 Right Air Intake	120	90				
3 Leading Edge Right Wing		7				
4 Front of Right Filter Box	160	6				
5 Tip Right Wing	105	11				
6 Right Horizontal Stabilizer		3.4				
7 Tail Pipe Opening		10				
8 Left Horizontal Stabilizer		4.2				
9 Tip Left Wing	110	6				
10 Front of Left Filter Box	180	3				
11 Leading Edge Left Wing		3.5				
12 Left Air Intake	140	10				
13 Rear Cockpit	13	6				
14 Accessory Section		40				
15 Compressor Right Side	400	46				
16 Turbine Right Side		26				
17 Turbine Left Side		21				
18 Compressor Left Side	360	36				

REMARKS:

All readings in milli-roentgens per hour.

a. A readings taken after the plane had landed and parked.
b. B readings taken after the plane had stood for 24 hours.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #048 "FOX" SHOT TIME 0400 DATE 25 May 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	25 May 0839	26 May 1027	26 May 1230			
POSITION						
1 Nose	27	2.8	1.4			
2 Right Air Intake	180	10	4.5			
3 Leading Edge Right Wing		3.1	2			
4 Front of Right Filter Box	200	2.5	2			
5 Tip Right Wing	80	7	1.6			
6 Right Horizontal Stabilizer		1.3	1			
7 Tail Pipe Opening		4.6	3.4			
8 Left Horizontal Stabilizer		2.6	1.5			
9 Tip Left Wing	80	3	1			
10 Front of Left Filter Box	200	1.5	1.4			
11 Leading Edge Left Wing		2.5	1.2			
12 Left Air Intake	180	10	4.6			
13 Rear Cockpit	120					
14 Accessory Section		30	16			
15 Compressor Right Side	310	35	18			
16 Turbine Right Side		19	8			
17 Turbine Left Side		13	8			
18 Compressor Left Side	300	28	18			

REMARKS:

All readings in milli-roentgens per hour.

a. A readings taken after the plane had landed and parked.
b. B readings taken after the plane had stood for 24 hours; immediately before wash.
c. C readings taken after the plane had been decontaminated with an application of gunk and steam cleaning compound followed with a cold water rinse.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-29 Acft #386 SHOT "GEORGE" DATE 1 June 1952

SHOT TIME 0354:59.9 PST

DECON. SURVEY	A	B	C	D	E	F	REMARKS
TIME (H + hours) Date Time	1/6 0740	2/6 0700	2/6 1000	3/6 0655			All readings taken in milli-roentgens per hour.
POSITION							a. A readings taken after plane had landed and parked.
1 Nose	100	8	6				b. B readings taken immediately before washing.
2 Air Intake Engine #3	1000	60	40	30			c. C readings taken after plane had been decon with an application of gunk and steam cleaning compound followed with a cold rinse.
3 Left Turbo Engine #3		60	44				d. D readings taken the following day after plane had stood for 19 hours.
4 Right Turbo Engine #3		50	36				
5 Air Intake Engine #4	1000	60	40	30			
6 Left Turbo Engine #4		50	38				
7 Right Turbo Engine #4		48	33				
8 Leading Edge Right Wg		18					
9 Tip Right Wing		8					
10 Trailing Edge Rt Wing		10					
11 Right Scanner Blister		14					
12 Right Horiz. Stabilizer		22					
13 Left Horiz. Stabilizer		20					
14 Left Scanner Blister		16					
15 Trailing Edge Wing		12					
16 Tip Left Wing		15					
17 Leading Edge Left Wing		22					
18 Air Intake Engine #1	900	50	32	20			
19 Left Turbo Engine #1		60	36				
20 Right Turbo Engine #1		60	30				
21 Air Intake Engine #2	800	60	37	28			
22 Left Turbo Engine #2		60	32				
23 Right Turbo Engine #2		60	43				
24 Filter Box, Left Wing	1600	70					
25 Filter Box, Right Wing	1400	24					
26 A-1 Filter Box	700	29					

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-25 Acft No. 073 SHOT "GEORGE" DATE 1 June 1952

SHOT TIME 0354:59.8

DECON SURVEY	A	B	C	D	E	F	REMARKS
TIME (H + hours) Date / Time	1/6 1005	2/6 1205					All readings taken in milli-roentgens per hour.
POSITION							
1 Nose	20	8					a. A readings taken after plane had landed and parked.
2 Air Intake Engine #3							b. B readings the following morning after plane had stood for 26 hours.
3 Left Turbo Engine #3							
4 Right Turbo Engine #3							
5 Air Intake Engine #4							
6 Left Turbo Engine #4							
7 Right Turbo Engine #4							
8 Leading Edge Right Wg							
9 Tip Right Wing							
10 Trailing Edge Rt Wing							
11 Right Scanner Blister							
12 Right Horiz. Stabilizer							
13 Left Horiz. Stabilizer							
14 Left Scanner Blister							
15 Trailing Edge Wing							
16 Tip Left Wing							
17 Leading Edge Left Wing							
18 Air Intake Engine #1	18	18					
19 Left Turbo Engine #1							
20 Right Turbo Engine #1							
21 Air Intake Engine #2	30	10					
22 Left Turbo Engine #2							
23 Right Turbo Engine #2							
24 Filter Box, Left Wing							
25 Filter Box, Right Wing							
26 A-1 Filter Box							

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

"GEORGE"

AIRCRAFT T-33 #913 SHOT TIME 0355 DATE 1 June 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	1/6 0840	3/6 1057	3/6 1450			
POSITION						
1 Nose	1000	30	10			
2 Right Air Intake	1000	32	19			
3 Leading Edge Right Wing		30	6			
4 Front of Right Filter Box	1400	28	18			
5 Tip Right Wing	750	13	12			
6 Right Horizontal Stabilizer		7	3			
7 Tail Pipe Opening		10	8			
8 Left Horizontal Stabilizer		6	3			
9 Tip Left Wing	700	12	10			
10 Front of Left Filter Box	1400	30	17			
11 Leading Edge Left Wing		32	7			
12 Left Air Intake	1000	26	16			
13 Rear Cockpit	600	12				
14 Accessory Section						
15 Compressor Right Side	1600	360	50			
16 Turbine Right Side		26	14			
17 Turbine Left Side		20	10			
18 Compressor Left Side	1400	60	50			

REMARKS:
All readings taken in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.
b. B readings taken 48 hours later or immediately before washing.
c. C readings taken after plane was decontaminated with an application of gunk followed with a cold water rinse.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #043 "ZERO" SHOT TIME 0355 DATE 1 June 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	1 June 0915	2 June 0825	3 June 1012			
POSITION						
1 Nose	2000	130	42			
2 Right Air Intake	2600	280	36			
3 Leading Edge Right Wing		270	70			
4 Front of Right Filter Box	3600	220	50			
5 Tip Right Wing	1600	160	12			
6 Right Horizontal Stabilizer		220	22			
7 Tail Pipe Opening		140	24			
8 Left Horizontal Stabilizer		200	60			
9 Tip Left Wing	1200	120	12			
0 Front of Left Filter Box	4200	200	80			
11 Leading Edge Left Wing		250	90			
12 Left Air Intake	2000	220	28			
13 Rear Cockpit	800	60	12			
14 Accessory Section						
15 Compressor Right Side	3600	390	90			
16 Turbine Right Side		260	50			
17 Turbine Left Side		200	60			
18 Compressor Left Side	3600	390	100			

REMARKS:
All readings taken in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.
b. B readings taken immediately before washing.
c. C readings taken after plane had been decontaminated with an application of gunk, brush, and water.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #920 SHOT "GEORGE" SHOT TIME 0355 DATE 1 June 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	6/1 0605	6/2 0640	6/2 0830	6/3 1016		
POSITION						
1 Nose	9000	100	48	42		
2 Right Air Intake	16000	220	160	60		
3 Leading Edge Right Wing		100	90	33		
4 Front of Right Filter Box	14000	100	42	42		
5 Tip Right Wing	7000	80	32	14		
6 Right Horizontal Stabilizer		130	80	28		
7 Tail Pipe Opening		100	86	42		
8 Left Horizontal Stabilizer		148	100	90		
9 Tip Left Wing	8000	80	37	18		
10 Front of Left Filter Box	24000	121	100	100		
11 Leading Edge Left Wing		160	40	30		
12 Left Air Intake	16000	200	100	75		
13 Rear Cockpit	6000	60	32	26		
14 Accessory Section						
15 Compressor Right Side	26000	400	320	180		
16 Turbine Right Side		160	110	100		
17 Turbine Left Side		240	200	124		
18 Compressor Left Side	26000	420	340	180		

REMARKS: All readings in milli-roentgens per hour.

a. A readings taken after the plane had landed and parked.
b. B readings taken after plane had stood for 24 hours; immediately before wash.
c. C readings taken after plane had been decontaminated with gunk put on by brushes and rinsed with water.
d. D readings taken 25 hours after washing.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #951 SHOT "GEORGE" SHOT TIME 0355 DATE 1 June 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	1/6 0845	3/6 0754	3/6 1320			
POSITION						
1 Nose	120	9	4			
2 Right Air Intake	900	30	14			
3 Leading Edge Right Wing		8	4			
4 Front of Right Filter Box	900	8	3			
5 Tip Right Wing	800	10	5			
6 Right Horizontal Stabilizer		10	3			
7 Tail Pipe Opening		18	9			
8 Left Horizontal Stabilizer		10	5			
9 Tip Left Wing	900	12	6			
10 Front of Left Filter Box	900	8	4			
11 Leading Edge Left Wing		8	4			
12 Left Air Intake	800	26	13			
13 Rear Cockpit	260	12	4			
14 Accessory Section						
15 Compressor Right Side	1000	100	40			
16 Turbine Right Side		50	22			
17 Turbine Left Side		50	20			
18 Compressor Left Side	1600	90	42			

REMARKS: All readings taken in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.

b. B readings taken before washing.

c. C readings taken after decontamination with an application of gunk, steam cleaning compound, cold water rinse.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-29 Acft No. 386 SHOT "HOW" DATE 5 June 1952

SHOT TIME 0355:00.3 PST

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	5/6 0940	5/6 1545	6/6 0715	6/6 0915	6/6 0930	
POSITION						
1 Nose	32	20	9		3	
2 Air Intake Engine #3	450	160	60	28	26	
3 Left Turbo Engine #3		100	50		26	
4 Right Turbo Engine #3		90	70		22	
5 Air Intake Engine #4	410	160	60	28	26	
6 Left Turbo Engine #4		100	60		25	
7 Right Turbo Engine #4		80	50		20	
8 Leading Edge Right Wg		20	16		6	
9 Tip Right Wing		20	10		6	
10 Trailing Edge Rt Wing		28	12		4	
11 Right Scanner Blister		18	10		4	
12 Right Horiz. Stabilizer		34	18		7	
13 Left Horiz. Stabilizer		40	22		12	
14 Left Scanner Blister		20	10		6	
15 Trailing Edge Wing		42	18		7	
16 Tip Left Wing		14	6		4	
17 Leading Edge Left Wing		26	18		10	
18 Air Intake Engine #1	360	180	60	28	26	
19 Left Turbo Engine #1		100	70		25	
20 Right Turbo Engine #1		80	60		20	
21 Air Intake Engine #2	380	126	60	26	24	
22 Left Turbo Engine #2		100	50		22	
23 Right Turbo Engine #2		100	50		26	
24 Filter Box, Left Wing	160	50	36		16	
25 Filter Box, Right Wing	150	60	40		12	
26 A-1 Filter Box	380	80	42		18	

REMARKS

All readings taken in milliroentgens per hour.

a. A readings taken after the plane had landed and parked.

b. B readings taken 6 hours after landing.

c. C readings taken immediately before washing the plane.

d. D readings taken on the engines in wash area.

e. E readings taken after the plane had been moved out of wash area after it had been decon with gunk, steam cleaning compound and cold water rinse.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT B-25 Acft #073 SHOT "HOW" DATE 5 June 1952

SHOT TIME 0355:00.3

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	5/6 0917	5/6 1545	6/6 0910	6/6 0953		
POSITION						
1 Nose	65	6	2			
2 Air Intake Engine #3						
3 Left Turbo Engine #3						
4 Right Turbo Engine #3						
5 Air Intake Engine #4						
6 Left Turbo Engine #4						
7 Right Turbo Engine #4						
8 Leading Edge Right Wg		6				
9 Tip Right Wing		2				
10 Trailing Edge Rt Wing		3				
11 Tip Rt. Horiz Stabilizer		3				
12 Leading Edge Right Horiz Stabilizer		3				
13 Leading Edge Left Horiz Stabilizer		9				
14 Tip Lt. Horiz Stabilizer		2				
15 Trailing Edge Wing Left		2				
16 Tip Left Wing		1				
17 Leading Edge Left Wing		6				
18 Air Intake Engine #1	140	60	16	5		
19 Left Turbo Engine #1						
20 Right Turbo Engine #1						
21 Air Intake Engine #2	65	22	8	3		
22 Left Turbo Engine #2						
23 Right Turbo Engine #2						
24 Filter Box, Left Wing						
25 Filter Box, Right Wing						
26 A-1 Filter Box						

REMARKS

All readings taken in milli-roentgens per hour.

a. A readings taken after the plane had landed and parked.

b. B readings taken after the plane had stood for 6½ hours.

c. C readings taken immediately before washing the plane.

d. D readings taken after the plane had been decon with gunk and water.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #048 "HOW" SHOT TIME 0355 DATE 5 June 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	June 5 0908	June 5 1250	June 5 1320	June 6 0726		
POSITION						
1 Nose	28	24	17	12		
2 Right Air Intake	80	42	24	12		
3 Leading Edge Right Wing		34	18	14		
4 Front of Right Filter Box	140	44	16			
5 Tip Right Wing	80	20	8	4		
6 Right Horizontal Stabilizer		16	14	8		
7 Tail Pipe Opening		28	16	10		
8 Left Horizontal Stabilizer		12	8	6		
9 Tip Left Wing	40	18	8	2.6		
10 Front of Left Filter Box	120	48	18			
11 Leading Edge Left Wing	38	18	12			
12 Left Air Intake	100	46	24	13		
13 Rear Cockpit	28	16	8	3.6		
14 Accessory Section						
15 Compressor Right Side	270	120	60	50		
16 Turbine Right Side		60	50	32		
17 Turbine Left Side		60	50	30		
18 Compressor Left Side	240	80	60	50		

REMARKS:
All readings in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.
b. B readings taken after plane had stood for 2½ hours; immediately before wash.
c. C readings taken after plane had been decontaminated with gunk, brush, and water.
d. D readings taken the following day.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #951 "HOW" SHOT TIME 0355 DATE 5 June 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date Time	5 June 0620	5 June 1155	5 June 1243	6 June 0721		
POSITION						
1 Nose	380	34	18	4.4		
2 Right Air Intake	1300	100	44	16		
3 Leading Edge Right Wing		44	14	8		
4 Front of Right Filter Box	1700	42	16			
5 Tip Right Wing	1000	48	8	5		
6 Right Horizontal Stabilizer		40	14	10		
7 Tail Pipe Opening		48	20	13		
8 Left Horizontal Stabilizer		26	12	10		
9 Tip Left Wing	1000	60	10	6		
10 Front of Left Filter Box	1700	42	17			
11 Leading Edge Left Wing		36	16	8		
12 Left Air Intake	1100	120	44	18		
13 Rear Cockpit	420	10	5	3.2		
14 Accessory Section						
15 Compressor Right Side	3100	350	270	80		
16 Turbine Right Side		150	130	40		
17 Turbine Left Side		120	100	40		
18 Compressor Left Side	2800	300	130	90		

REMARKS:

All readings in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.
b. B readings taken after plane stood for 24 hours; immediately before washing.
c. C readings taken after plane was decontaminated with gunk, brush, and water.
d. D readings taken the following day.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 No. 913 SHOT TIME 0355 DATE 5 June 1952

DECON. SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	5/6 0913	5/6 1508	5/6 1600	6/6 0740		
POSITION						
1 Nose	22	8	6	5		
2 Right Air Intake	80	14	12	10		
3 Leading Edge Right Wing		18	5	4		
4 Front of Right Filter Box	120	10	8			
5 Tip Right Wing	80	9	5	1		
6 Right Horizontal Stabilizer		10	7	6		
7 Tail Pipe Opening		9	7	5		
8 Left Horizontal Stabilizer		9	6	5		
9 Tip Left Wing	60	6	4	2		
10 Front of Left Filter Box	100	6	4			
11 Leading Edge Left Wing		14	10	7		
12 Left Air Intake	60	16	10	8		
13 Rear Cockpit	20	7	4	2.6		
14 Accessory Section						
15 Compressor Right Side	260	70	46	38		
16 Turbine Right Side		23	21	18		
17 Turbine Left Side		26	22	20		
18 Compressor Left Side	210	70	52	40		

REMARKS:
All readings in milli-roentgens per hour.

a. A readings taken after plane had landed and parked.
b. B readings taken after the plane had stood for 6 hours; immediately before wash.
c. C readings taken after plane had been decontaminated with gunk and steam cleaning compound followed with a cold water rinse.
d. D readings taken the following morning.

CONSOLIDATED REPORT OF AIRCRAFT CONTAMINATION

AIRCRAFT T-33 #920 SHOT "HOW" SHOT TIME 0355 DATE 5 June 1952

DECON SURVEY	A	B	C	D	E	F
TIME (H + hours) Date / Time	5/6 0904	5/6 1138	5/6 1310			
POSITION						
1 Nose	12	8	6			
2 Right Air Intake	24	24	20			
3 Leading Edge Right Wing		8	6			
4 Front of Right Filter Box	10					
5 Tip Right Wing	8	6	5			
6 Right Horizontal Stabilizer		18	10			
7 Tail Pipe Opening		20	18			
8 Left Horizontal Stabilizer		19	12			
9 Tip Left Wing	10	6	5			
10 Front of Left Filter Box	18					
11 Leading Edge Left Wing		10	8			
12 Left Air Intake	22	22	20			
13 Rear Cockpit	8					
14 Accessory Section						
15 Compressor Right Side	80	80	40			
16 Turbine Right Side		34	30			
17 Turbine Left Side		40	34			
18 Compressor Left Side	80	80	60			

REMARKS: All readings in milli-roentgens per hour.

a. A readings taken after the plane had landed and parked.
b. B readings taken before the plane had been decontaminated.
c. C readings taken after the plane had been decontaminated with an application of gunk and steam cleaning compound followed with a cold water rinse.

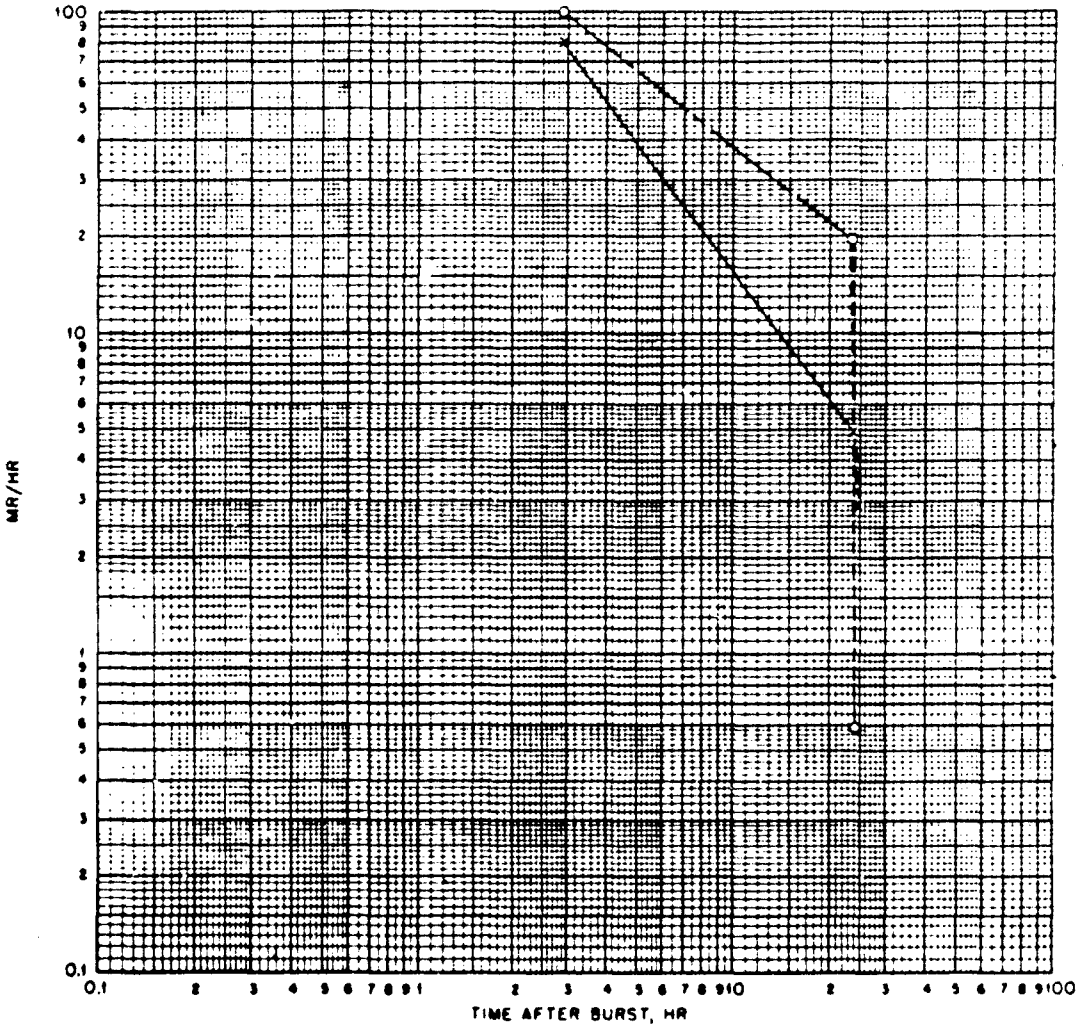

Fig. 7.1 — Decay pattern for contaminated aircraft B-29 No. 386 after Able Shot. —•—, nose. —·—, air intake, engine 1. ----, decay after treatment with gunk, detergent, and water.

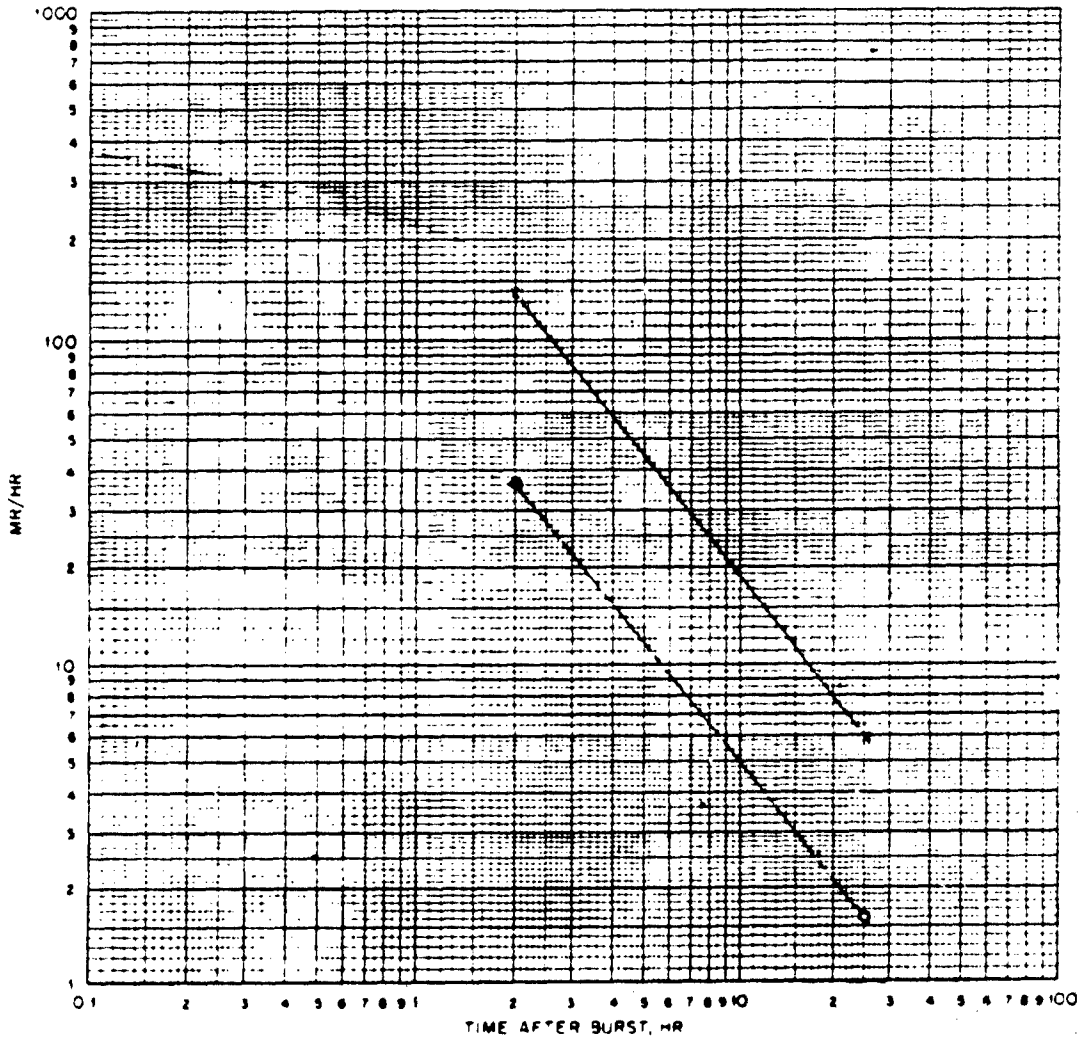

Fig. 7.2—Decay pattern for contaminated aircraft T-33 No. 913 after Able Shot. —•—, right air intake. -•-, right compressor.

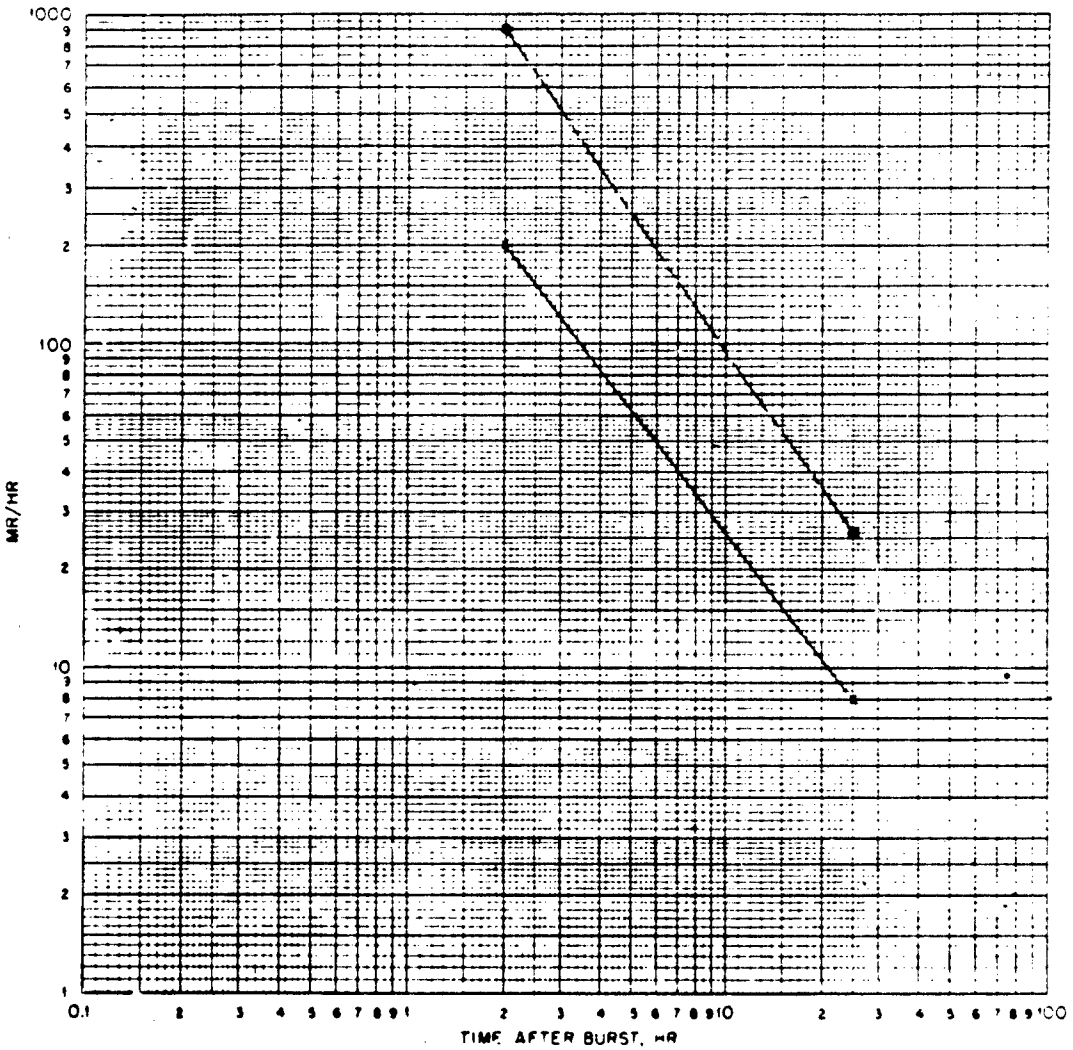

Fig. 7.3—Decay pattern for contaminated aircraft T-33 No. 048 after Able Shot. -+-, right air intake. ← →, right compressor.

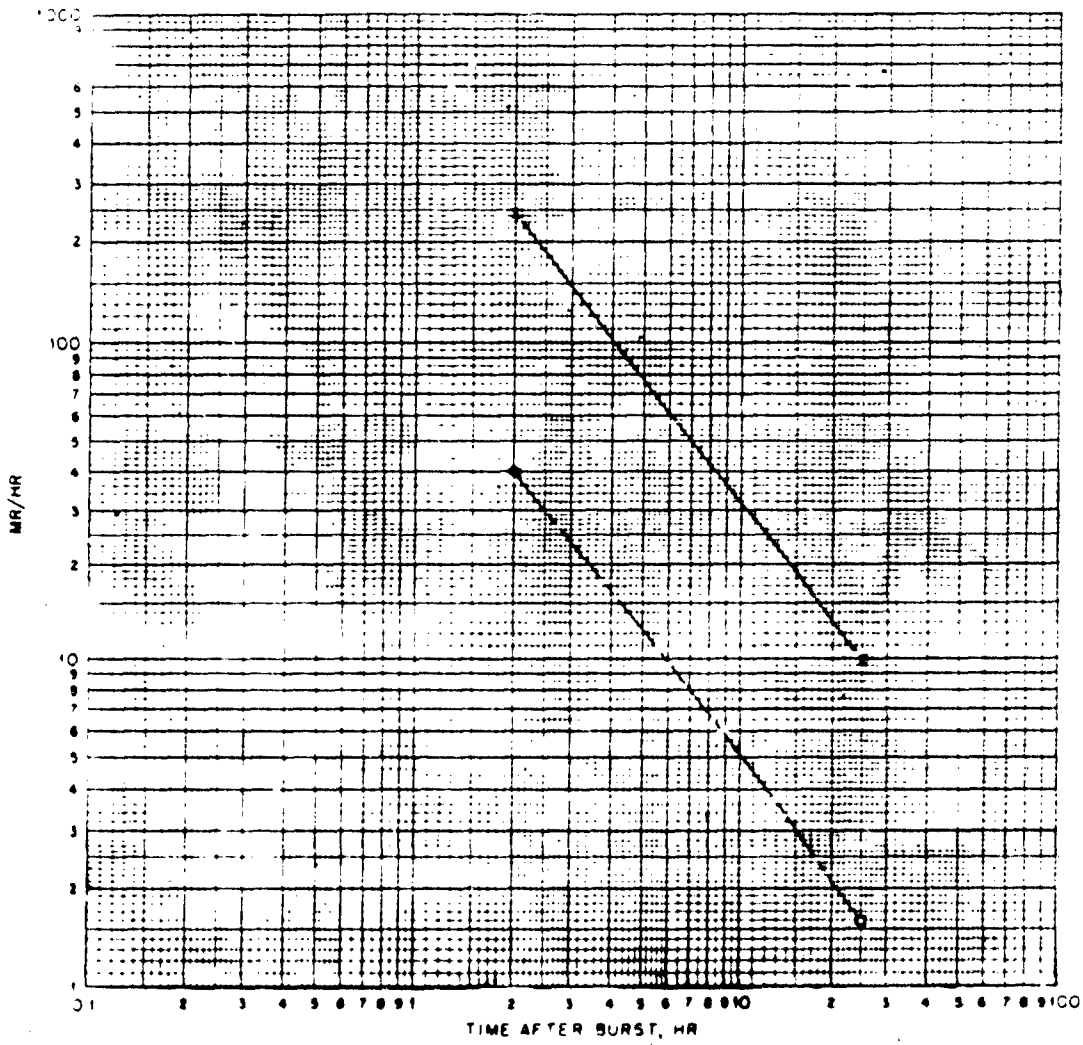

Fig. 7.4 — Decay pattern for contaminated aircraft T-33 No. 951 after Able Shot. —•—, right air intake. -•-, right compressor.

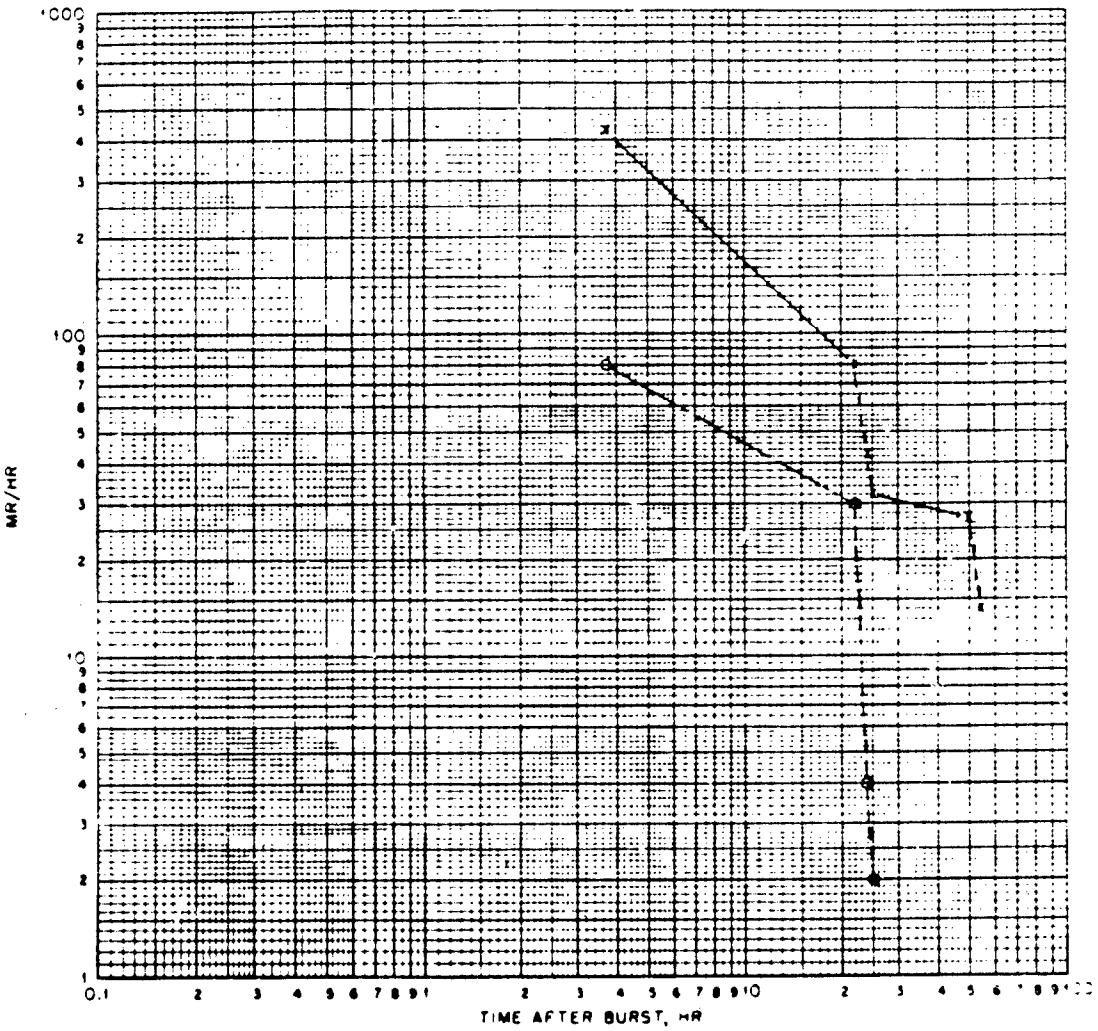

Fig. 7.5 — Decay pattern for contaminated aircraft B-29 No. 386 after Baker Shot. [illegible], nose. [illegible], air intake, engine 1. ----, decay after treatment with gunk, detergent, and water.

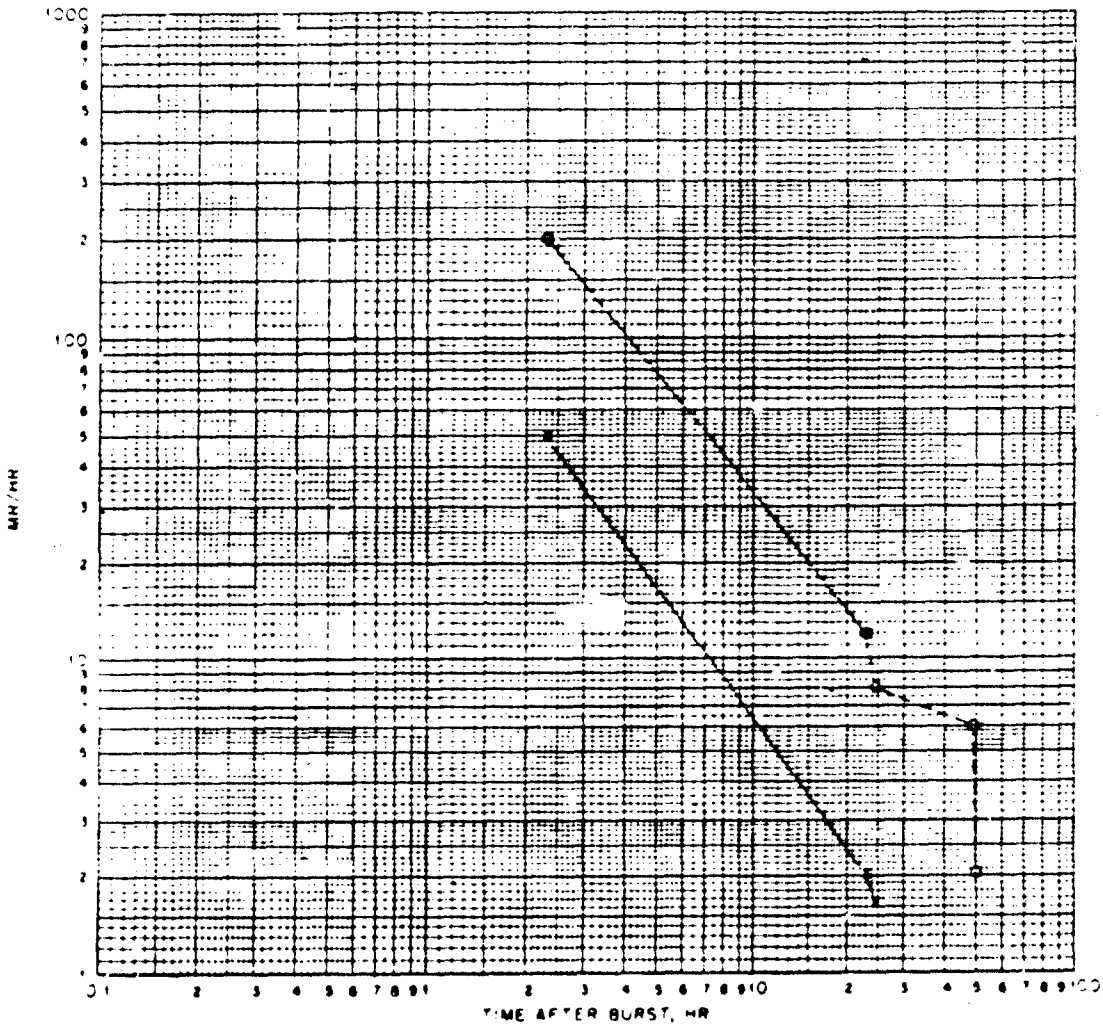

Fig. 7.6 — Decay pattern for contaminated aircraft T-33 No. 948 after Baker Shot. —•—, right air intake; —×—, right compressor; - - - -, decay after treatment with gunk and water.

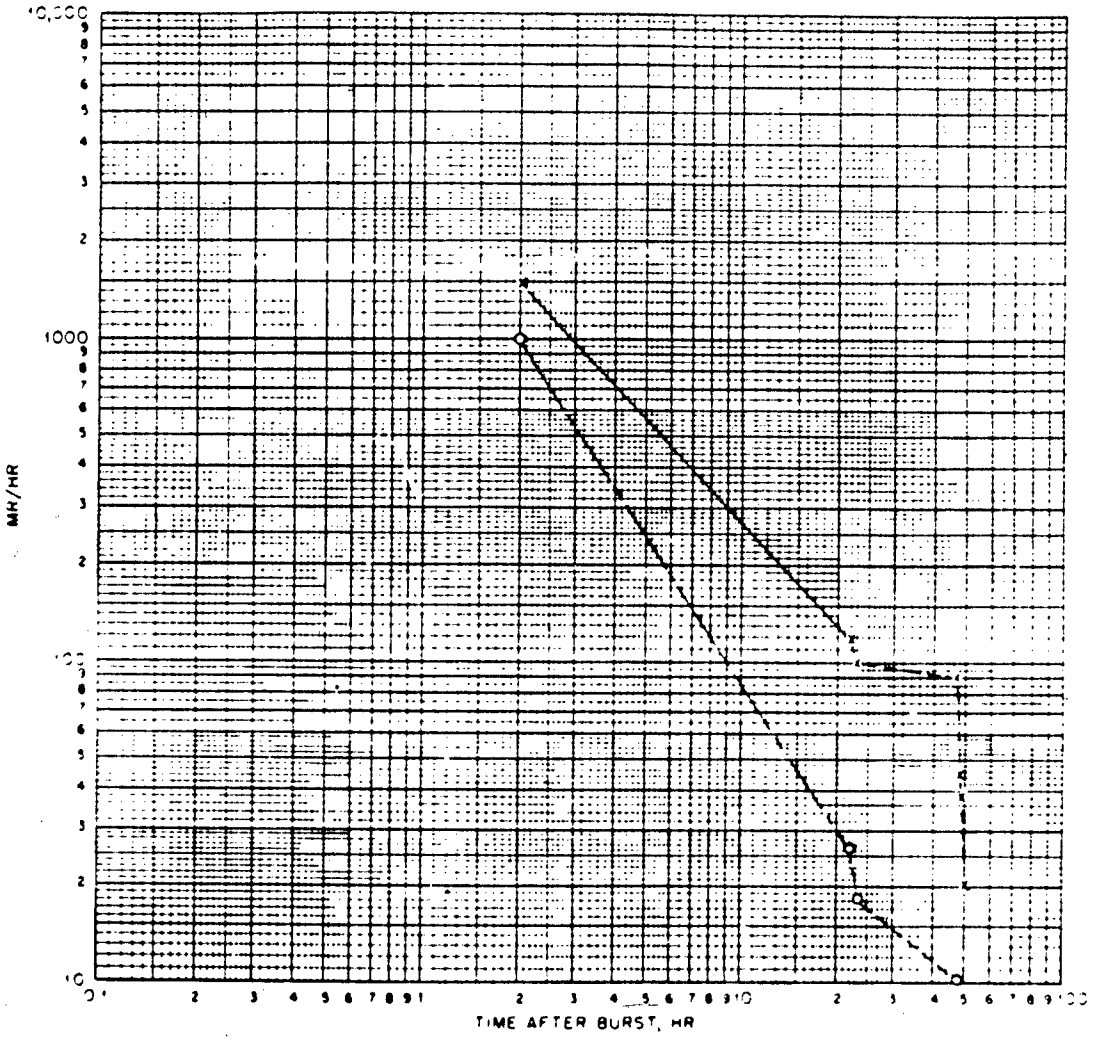

Fig. 7.7 — Decay pattern for contaminated aircraft T-33 No. 913 after Baker Shot. . . . right air in-take. -·-, right compressor. ----, decay after treatment with gunk and water.

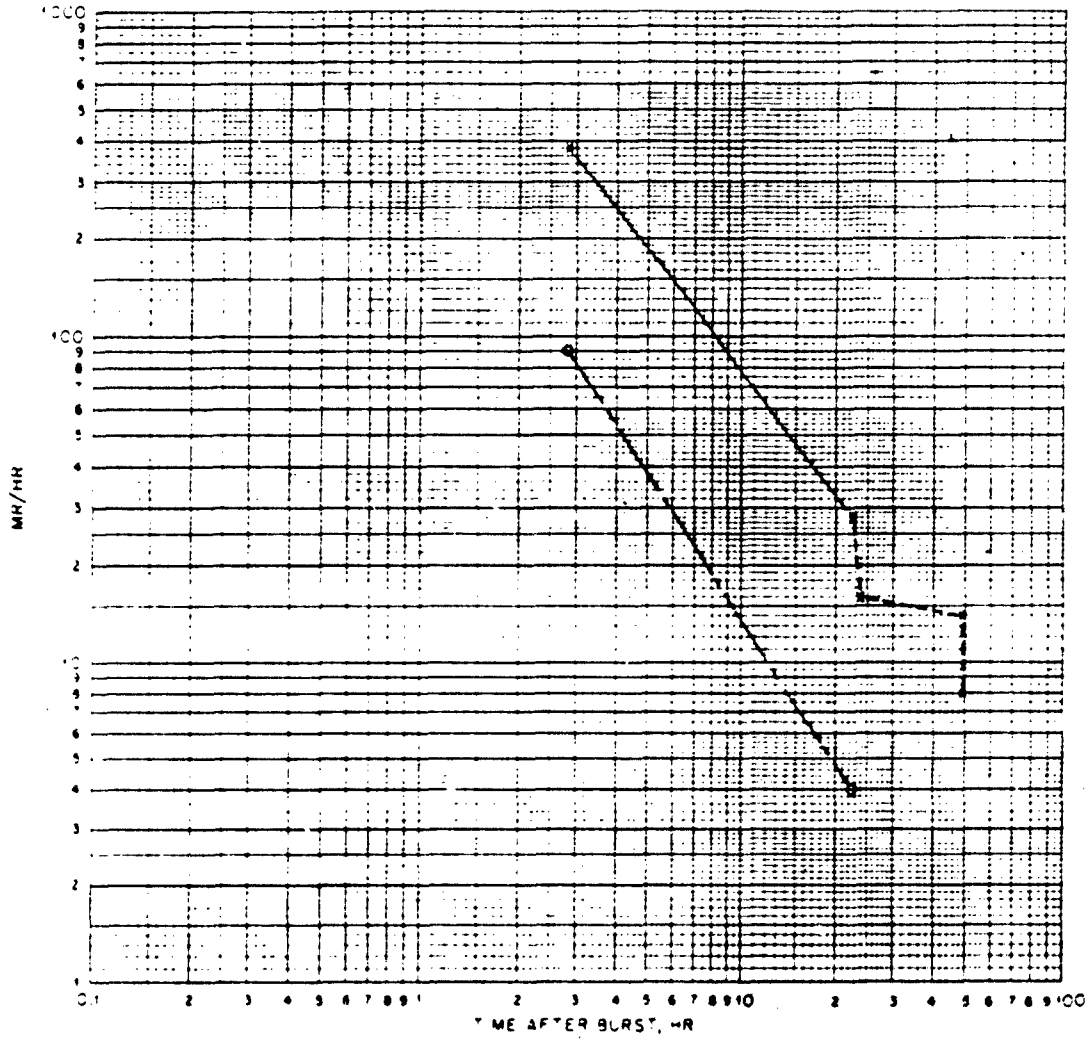

Fig. 7.8—Decay pattern for contaminated aircraft T-33 No. 920 after Baker Shot. —•—, right air intake. -•-, right compressor. ----, decay after treatment with gunk and water.

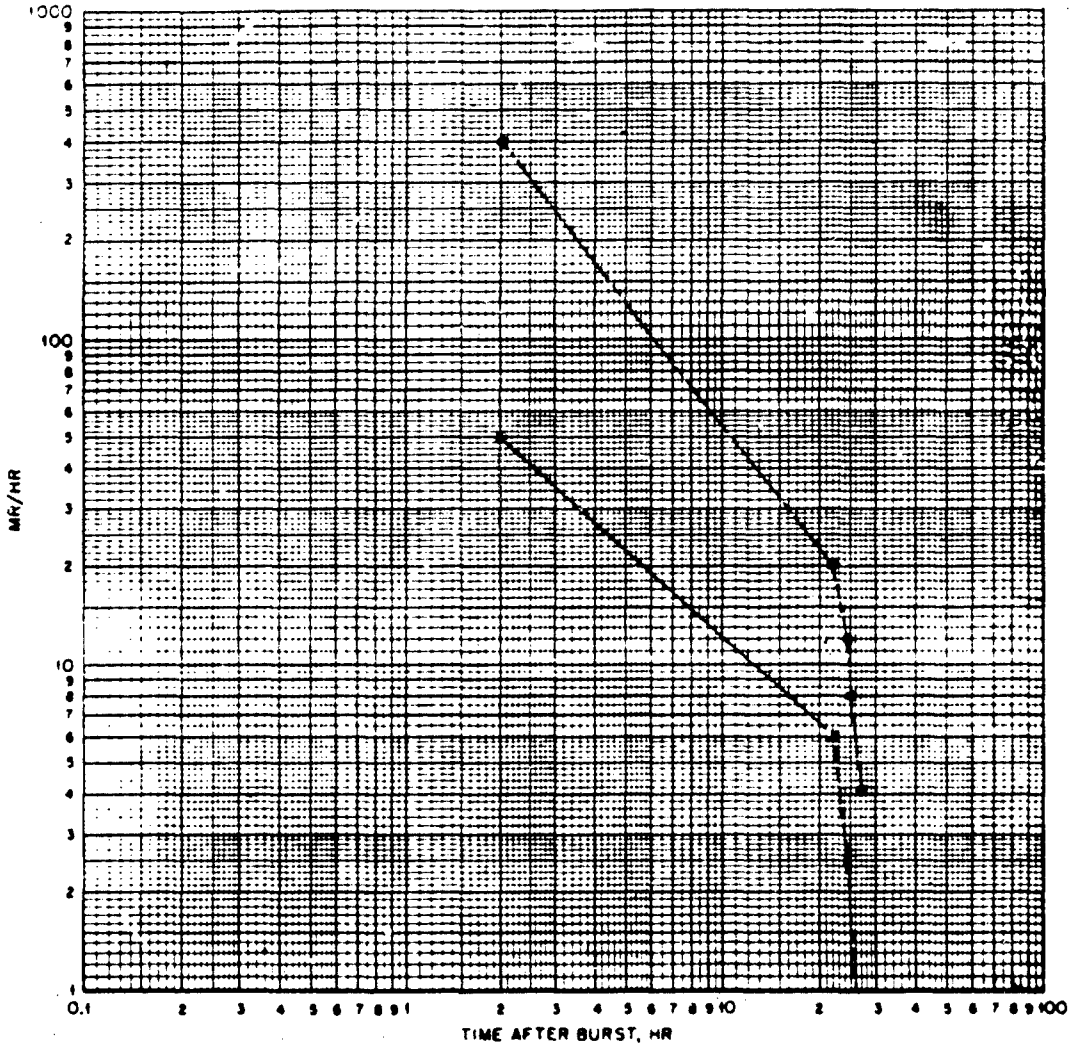

Fig. 7.9—Decay pattern for contaminated aircraft T-33 No. 961 after Baker Shot. -•-, right air intake. ←—→, right compressor. ----, decay after treatment with gunk and water.

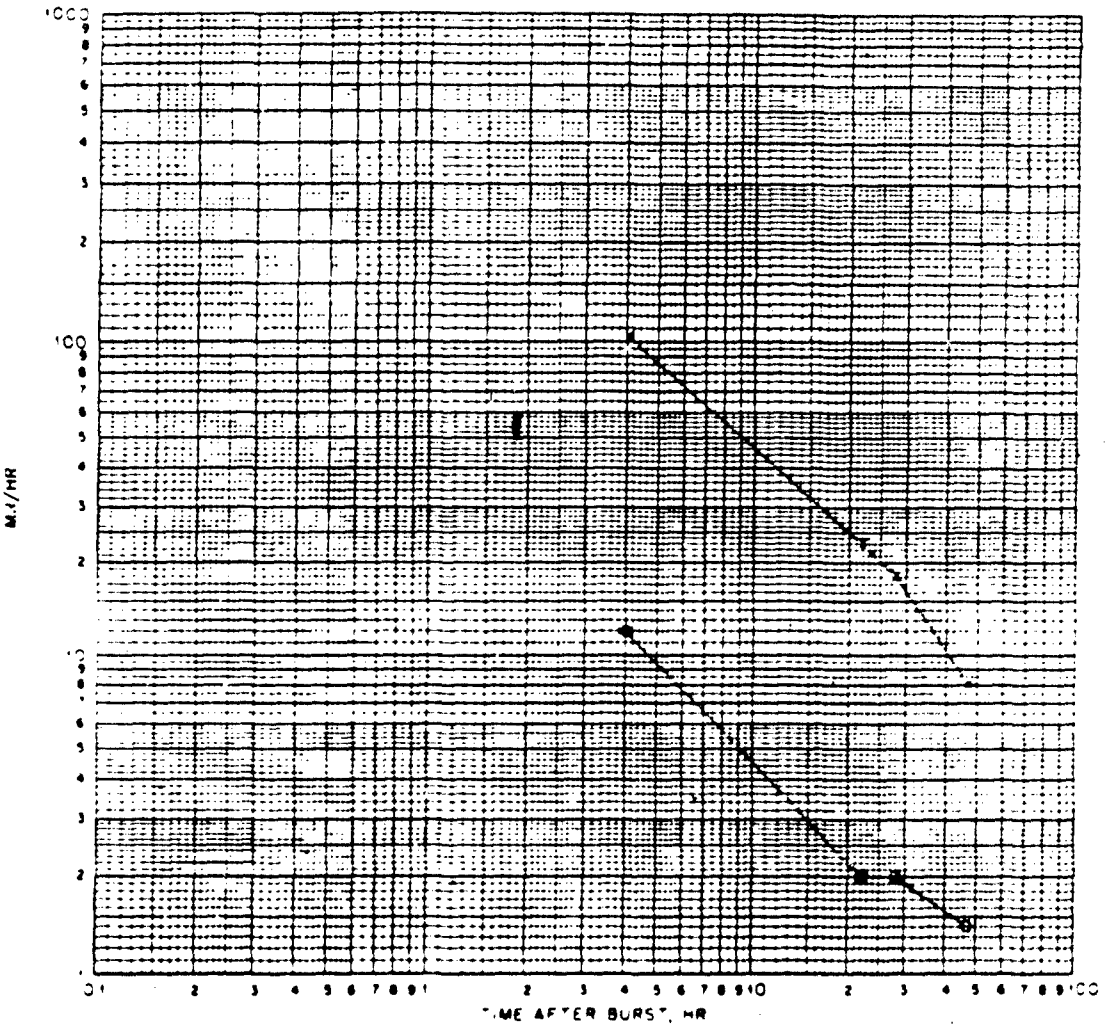

Fig. 7.10 — Decay pattern for contaminated aircraft B-29 No. 386 after Charlie Shot. ——, nose. ·-·-, air intake, engine 1. - - - -, decay after treatment with gunk, detergent, and water.

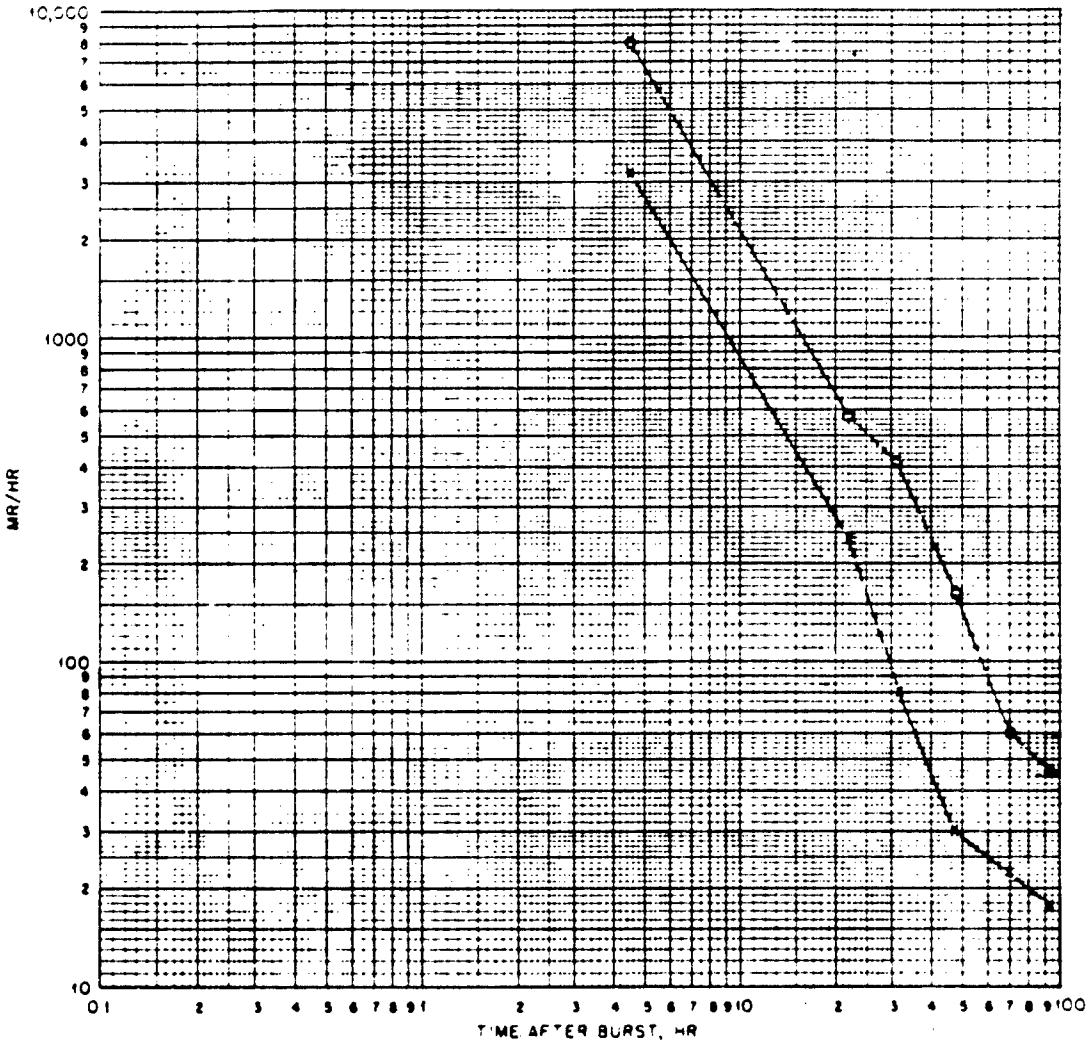

Fig. 7.11 — Decay pattern for contaminated aircraft T-33 No. 048 after Charlie Shot. ---, right air intake. ← →, right compressor. ----, decay after treatment with gunk, detergent, and water.

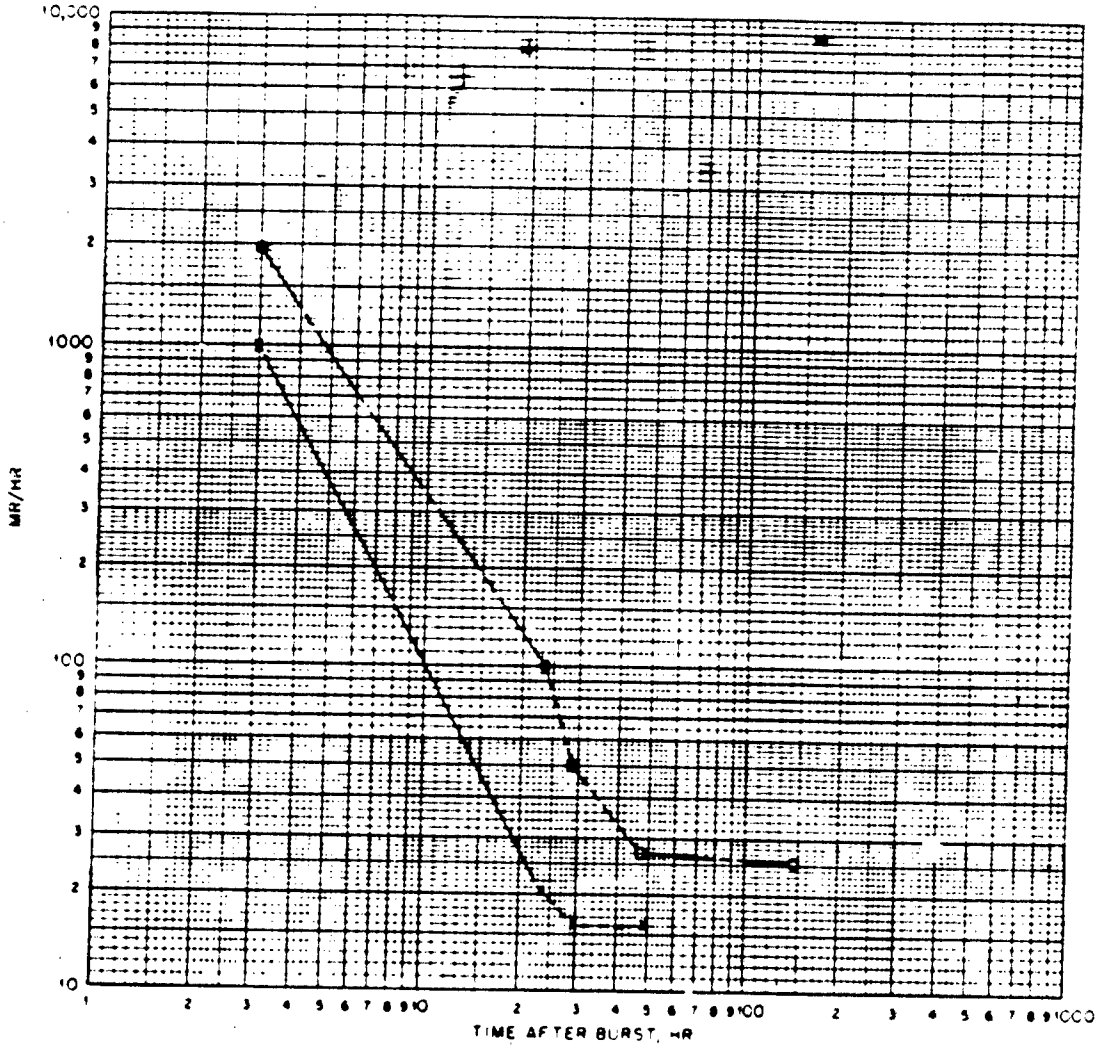

Fig. 7 12 — Decay pattern for contaminated aircraft T-33 No. 951 after Charlie Shot. —·—, right air intake. ---, right compressor. ----, decay after treatment with gunk, detergent, and water.

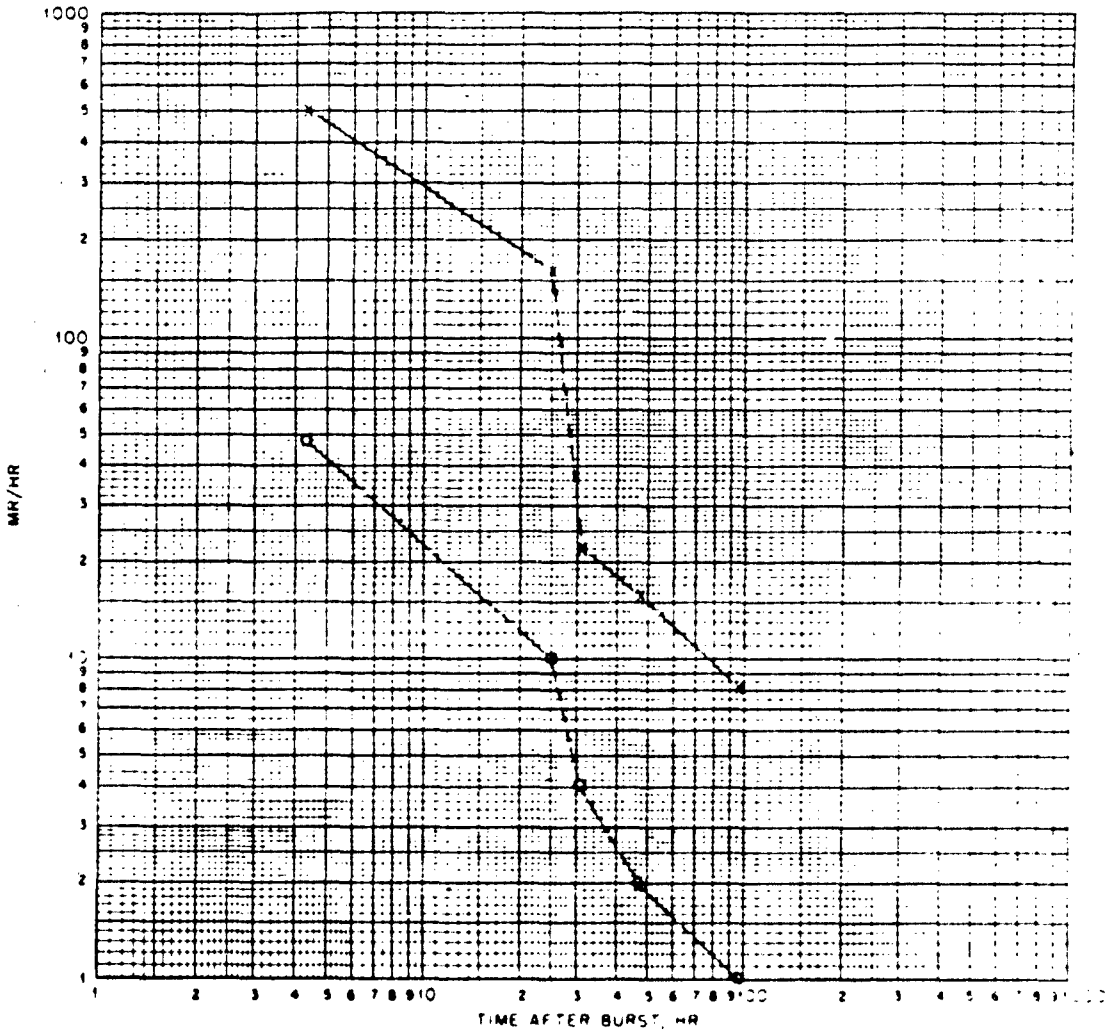

Fig. 7.13 — Decay pattern for contaminated aircraft B-29 No. 386 after Dog Shot. [illegible] air intake, engine 1. ----, decay after treatment with gunk, detergent, and water.

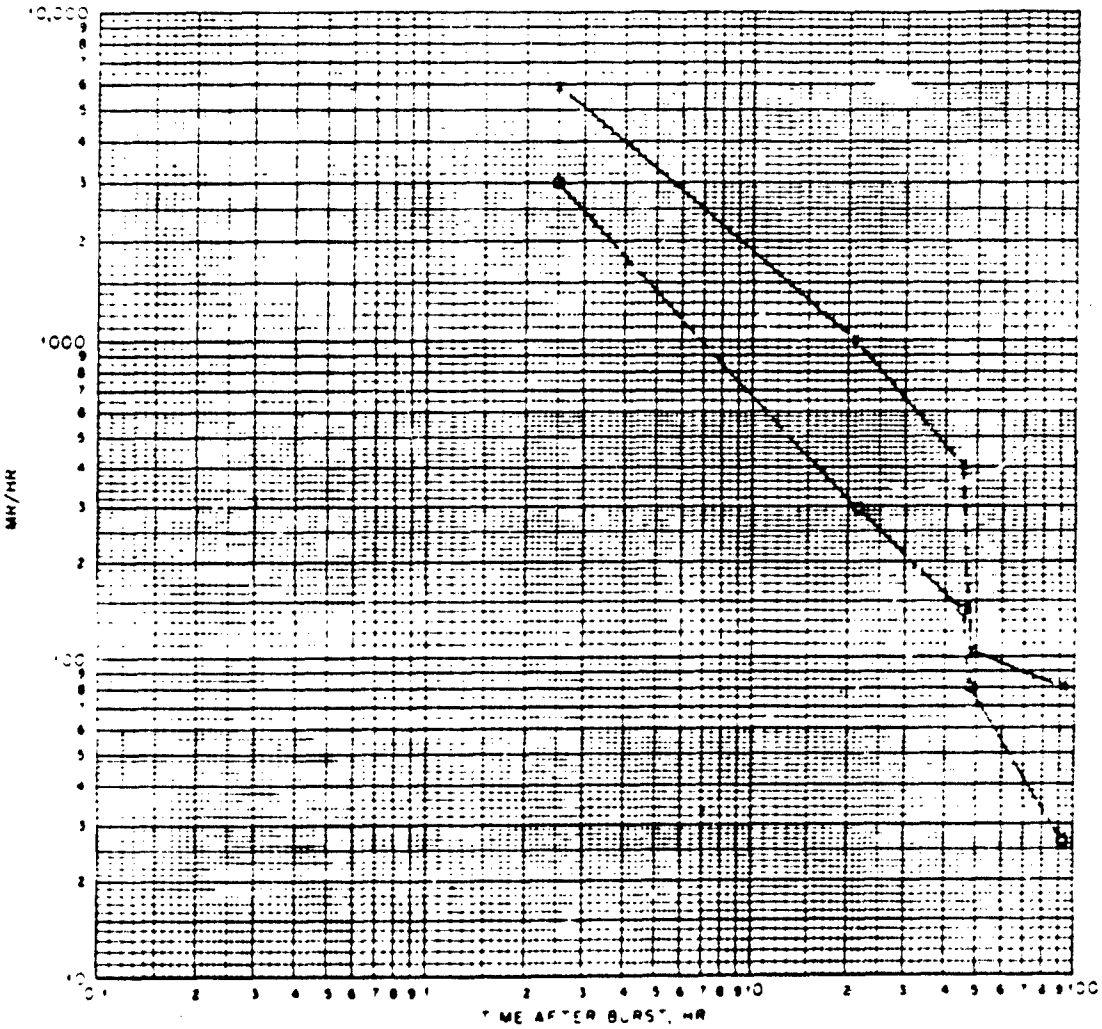

Fig. 7.14—Decay pattern for contaminated aircraft T-33 No. 913 after Dog Shot. —·—, right air intake. ·····, right compressor. - - - -, decay after treatment with gunk and water.

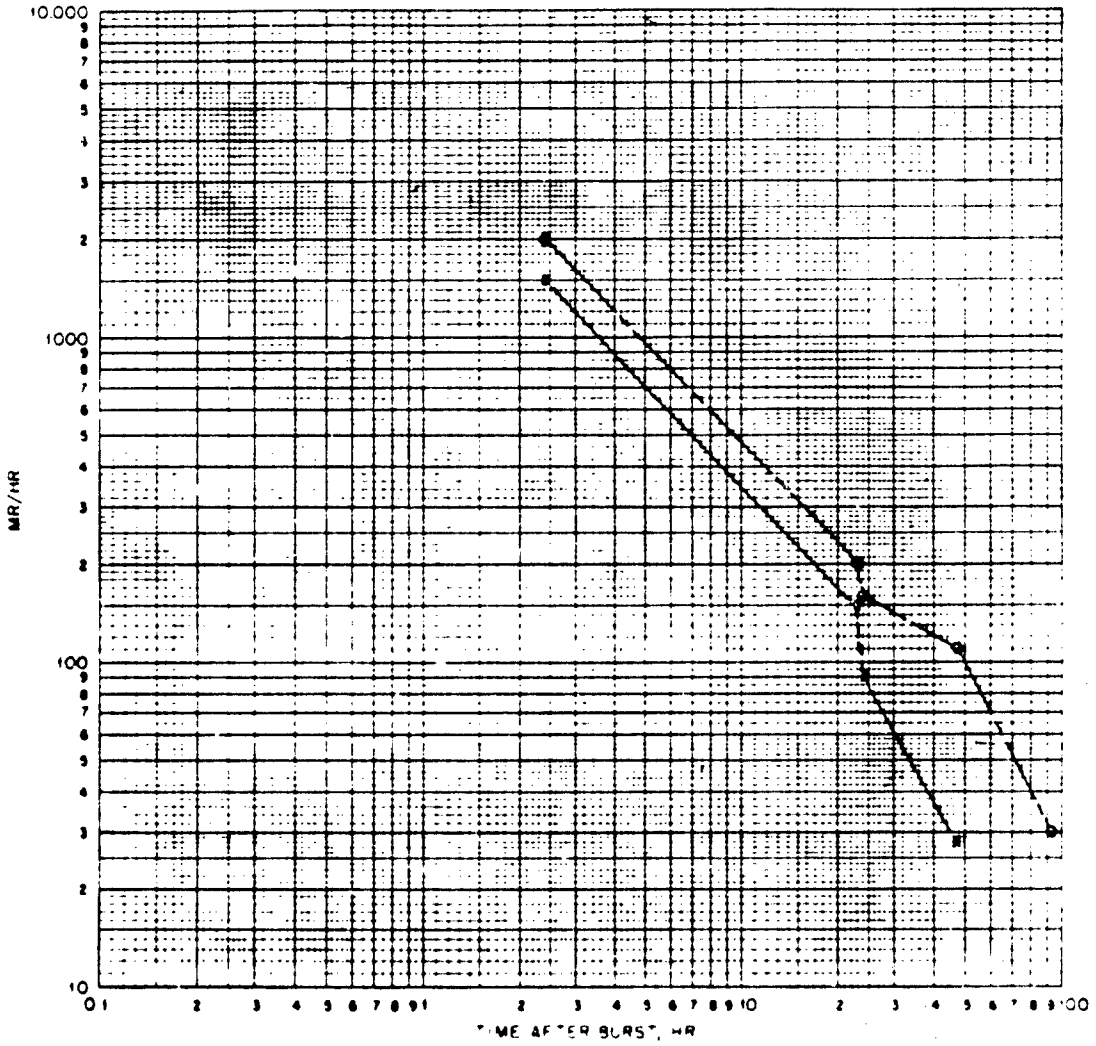

Fig. 7.15—Decay pattern for contaminated aircraft T-33 No. 048 after Dog Shot. -·-, right air intake. ← →, right compressor. ----, decay after treatment with gunk and steam.

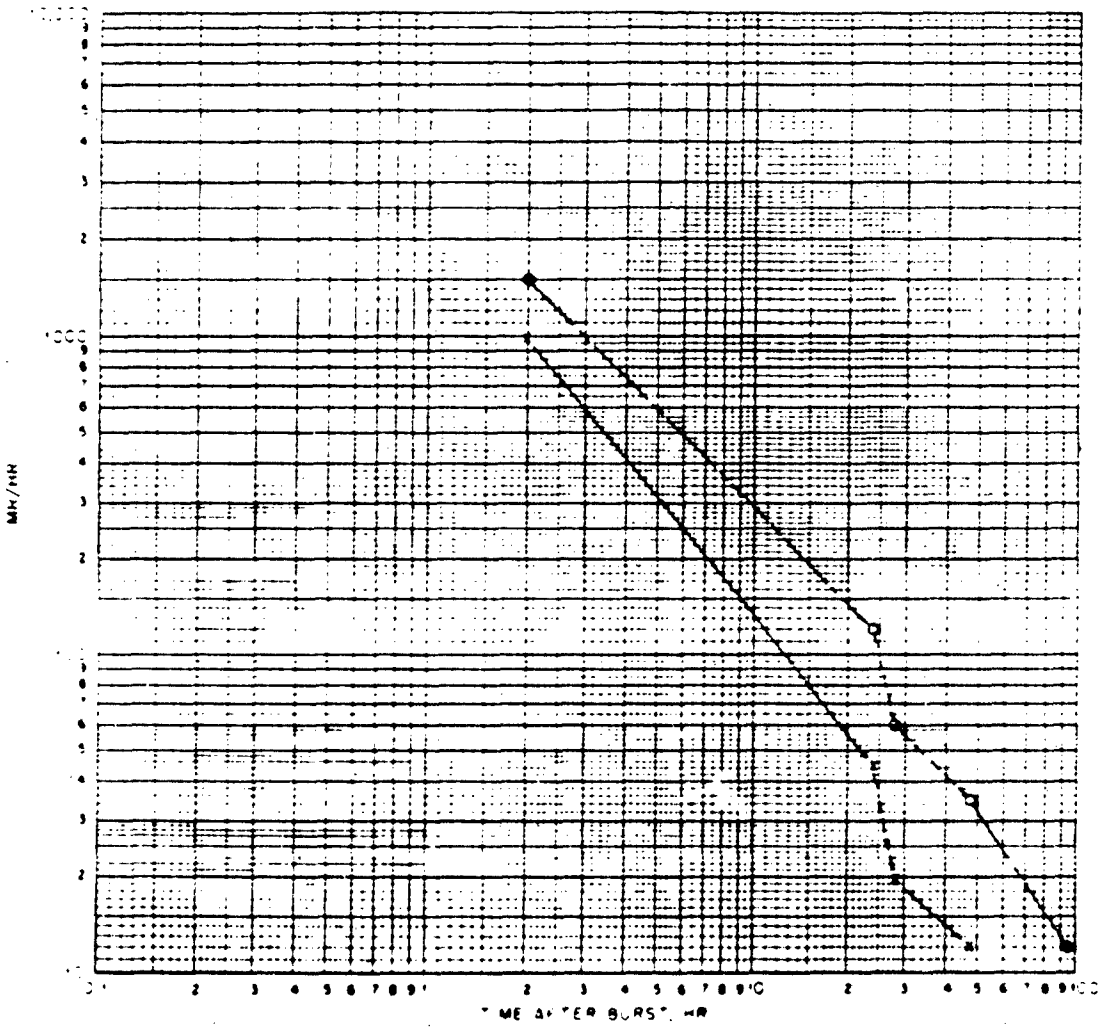

Fig. 7.16 — Decay pattern for contaminated aircraft T-33 No. 351 after Dog Shot. —•—, right air intake. —×—, right compressor. - - - -, decay after treatment with gunk and water.

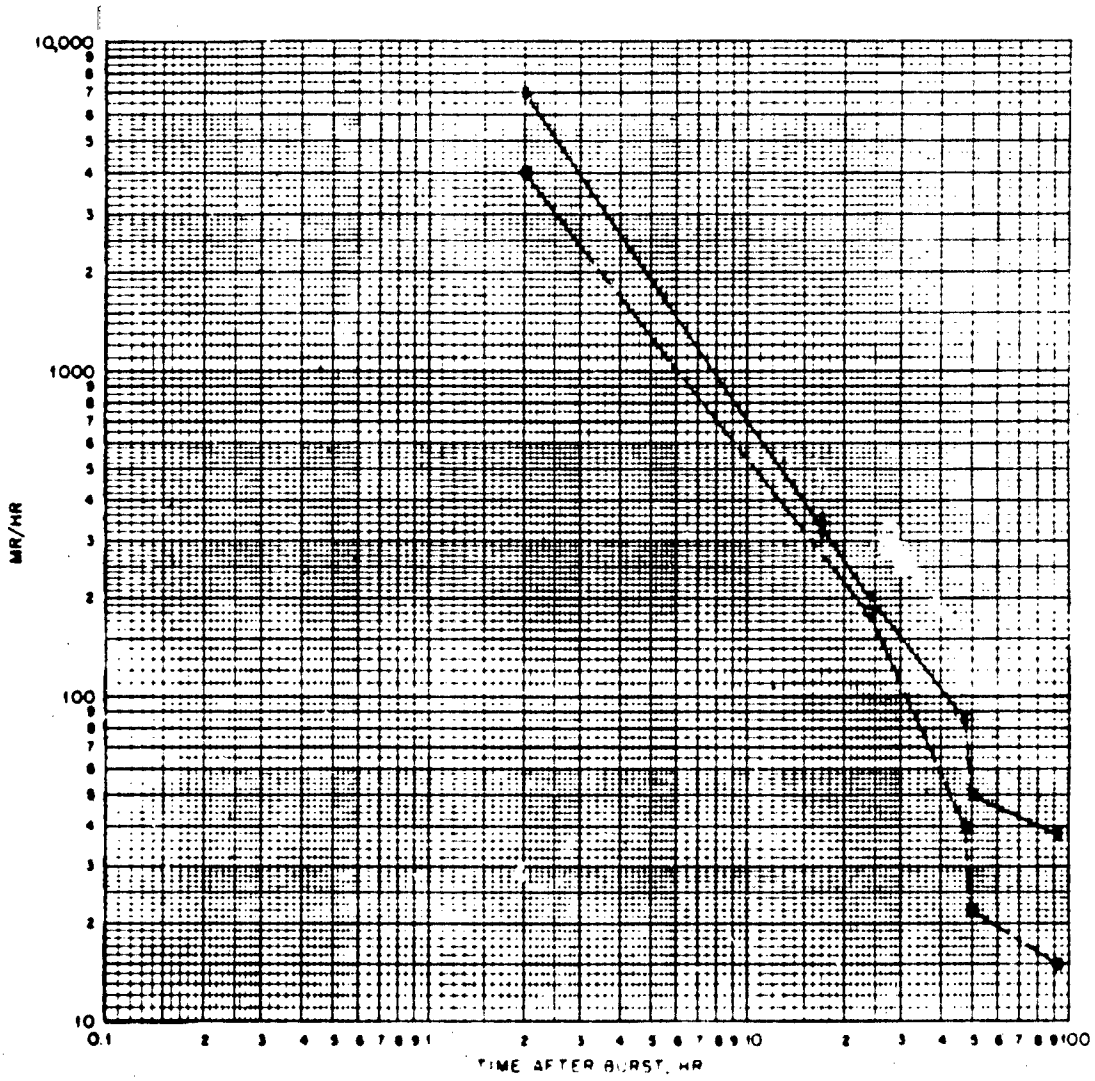

Fig. 7.17—Decay pattern for contaminated aircraft T-33 No. 920 after Dog Shot. —•—, right air intake. -•-, right compressor. ----, decay after treatment with gunk and water.

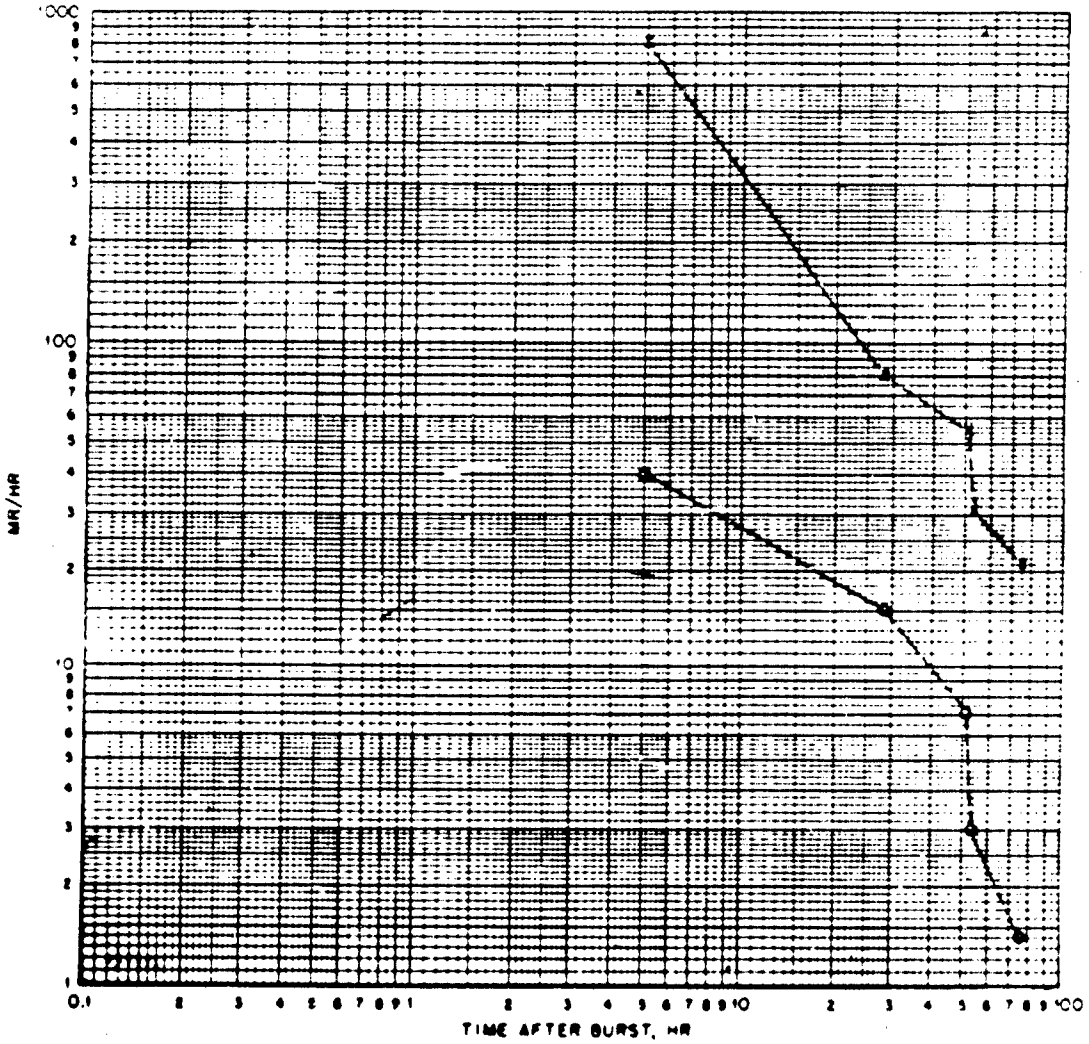

Fig. 7.18 — Decay pattern for contaminated aircraft B-29 No. 260 after Easy Shot. —●—, nose. ---, air intake, engine 1. ----, decay after treatment with gunk, detergent, and water.

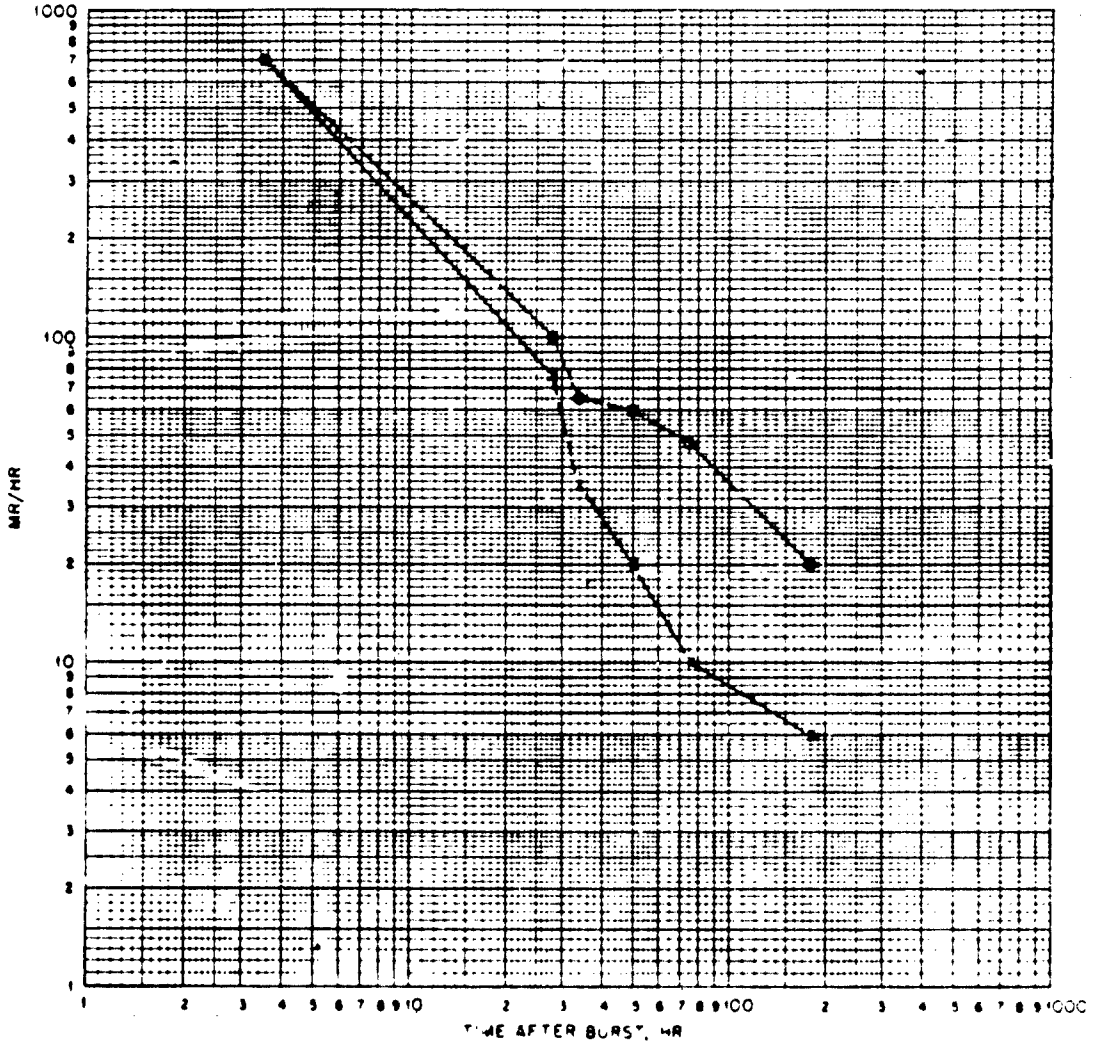

Fig. 7.19—Decay pattern for contaminated aircraft T-33 No. 913 after Easy Shot. ---, right air intake. ←—→, right compressor. ----, decay after treatment with gunk, soap, and water

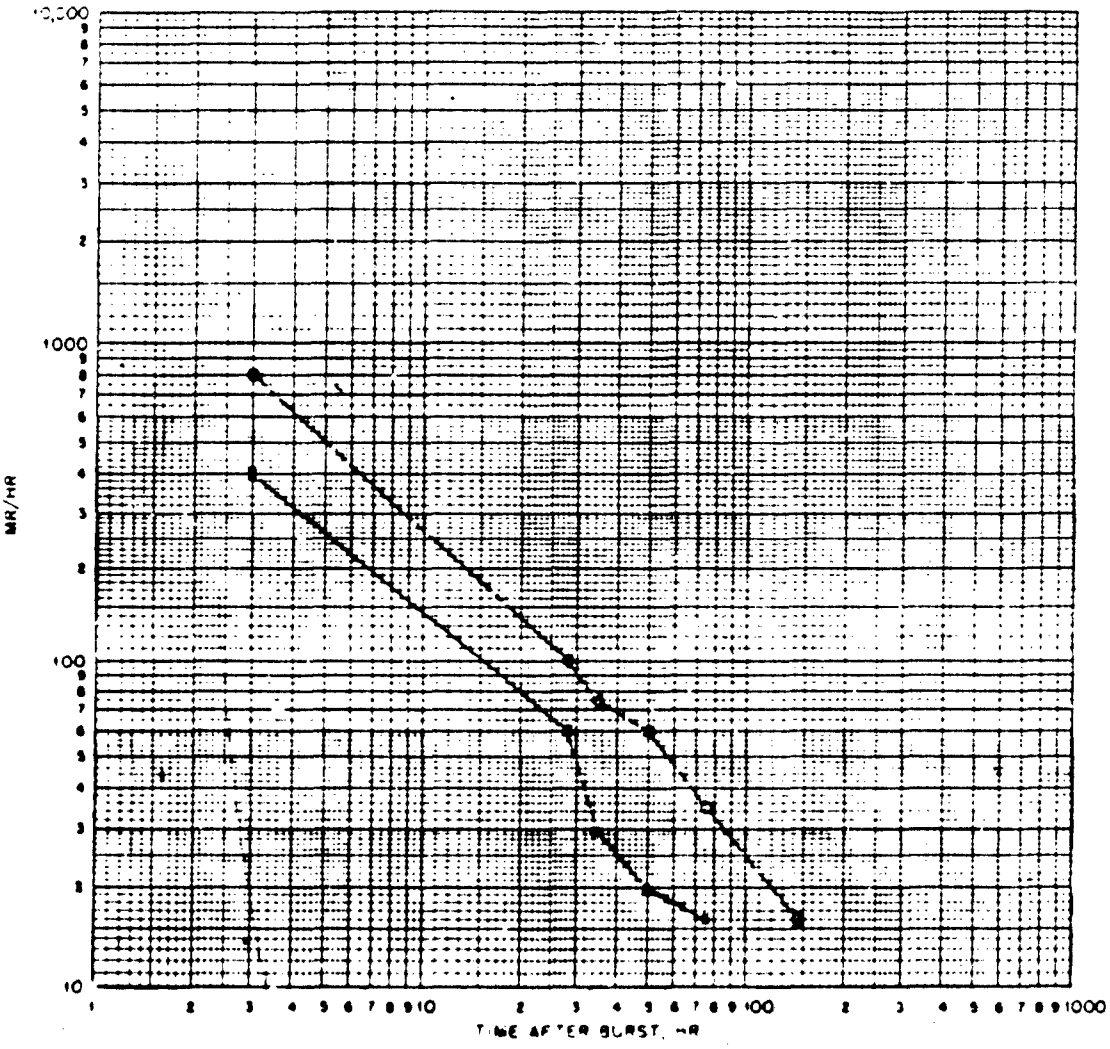

Fig. 7.20—Decay pattern for contaminated aircraft T-33 No. 920 after Easy Shot. —•—, right air intake. ← →, right compressor. ----, decay after treatment with gunk, soap, and water.