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Proving Ground

Final Report

Test Conducted at

EGLIN A.F.B. FLORIDA

PROJECT NO. APG/SAB/32-A

SUBJECT: Operational Evaluation Test Of The Bomb, Propaganda Leaflet, 500-LB M105, Employing The Adapter Cluster M16A2

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HEADQUARTERS
AIR PROVING GROUND
Eglin Air Force Base, Florida

OPERATIONAL EVALUATION TEST OF THE BOMB, PROPAGANDA LEAFLET, 500-LB M105, EMPLOYING THE ADAPTER CLUSTER M16A2

PROJECT NO. APG/SAB/32-A

1. Transmitted herewith is the final report on Project No. APG/SAB/32-A, the object of which was to determine the maximum altitude at which these bombs could be released and remain ballistically stable in flight.

2. The Bomb, Propaganda Leaflet, 500-lb M105, employs the Adapter Cluster M16A2 as a means of carrying approximately 36,000 propaganda leaflets 5 x 7 inches in size. The M16A2 Cluster Adapter resembles a 500-lb light case bomb, except that the upper half of the adapter is hinged at the tail section and opens to provide access for the loading of the leaflets. The approximate weight of the filled bomb is 180 pounds. The M155 mechanical type nose fuze provides the means of bursting the bomb at the desired altitude above the terrain and scattering the leaflets.

3. The bomb is relatively stable when released from both B-29 and B-50 type aircraft at true altitudes up to and including 32,000 feet. It was found necessary to modify the M16A2 Cluster Adapter before it was suitable as a container for propaganda leaflets. It is recommended that a true altitude of 30,000 feet be established as the maximum ballistically stable altitude for the release of this bomb. It is further recommended that the altitude of cluster opening be established at 1,500 feet above target to insure effective leaflet dispersion for all wind conditions.

FOR THE COMMANDING GENERAL:

Stuart P. Wright

STUART P. WRIGHT
Brigadier General, USAF
Deputy Commanding General

HEADQUARTERS
ARMY PROVING GROUND
Eglin Air Force Base, Florida

FINAL REPORT

ON

OPERATIONAL EVALUATION TEST OF THE BOMB, PROPAGANDA LEAFLET, 500-LB M105, EMPLOYING THE ADAPTER CLUSTER M16A2

PROJECT NO. APG/SAB/32-A

PROJECT NO. APG/SAB/32-A

INDEX

1. INTRODUCTION:

a. General:

This test was initiated at the request of Headquarters USAF, in a letter dated 24 August 1950, to provide operational data on the M-105 Propaganda Leaflet Bomb when released from altitudes above 25,000 feet, and to obtain information useful for the development of new and improved items.

b. Description:

The Bomb, Propaganda Leaflet, 500-Lb M105, employs the Adapter Cluster M16A2 as a means of carrying approximately 36,000 propaganda leaflets 5 x 7 inches in size. The M16A2 Cluster Adapter resembles a 500-lb light case bomb with box type fins, except that the upper half of the adapter is hinged at the tail section and opens to provide access for the loading of the leaflets. A nose cup, equipped with two slotted locking screws, provides the means for locking the upper and lower halves of the adapter. The approximate weight of the filled bomb is 180 pounds. The M155 mechanical type nose fuze provides the means of bursting the bomb at the desired altitude above the terrain and scattering the leaflets.

2. OBJECT:

To determine the maximum altitude at which the bombs can be released and remain ballistically stable in flight.

3. DISCUSSION:

a. General:

Testing was accomplished using B-29 and B-50 type aircraft. The following were investigated and evaluated during the test:

(1) Maximum altitude of ballistically stable release.

(2) Personnel, equipment and procedures required to load large numbers of the test bombs rapidly and efficiently.

(3) Expected dispersion of the leaflets when scattered at 1,000, 1,500 and 2,000 feet above the terrain.

b. Procedure:

(1) Prior to testing, it was found necessary to modify the M16A2 Cluster Adapter to permit utilization of all available space in the bomb for the storing of leaflets. Without modification, it was found to be impossible to load the two center compartments with leaflets of this size. This modification consisted of removing objectionable flanges on the front and rear partitions, and the upper half of the center partition containing the single suspension lug bracket. Details of this modification are given in Appendix I.

(2) Several methods for preparing the leaflet rolls were studied in an attempt to develop a better method than is presently used. A suitable method for preparing these rolls rapidly and efficiently is described in Appendix 2. The majority of the leaflet rolls used for the test, however, were supplied by the test requesting agency, prepared for loading directly into the bombs.

(3) Four (4) pounds of black powder was used in conjunction with the M155 nose fuze to provide the spotting charge necessary for recording burst altitudes. Four (4) pounds of sand was placed in the rear section of the bomb to counterbalance the spotting charge, thus preventing a change in the center of gravity of the bomb. The increase in moment of inertia due to this added weight was not considered sufficient to appreciably affect stability.

(4) The bombing aircraft were equipped with motion picture cameras and aerial cameras to record the release and "fall-away" of the test bombs on each mission.

(5) Bombs were loaded and released from the rear racks of the front bomb bay, and the front racks of the rear bomb bay. This gave data on the behavior of the bombs from one of the most turbulent areas and one of the least turbulent areas of the bomb bays of B-50 and B-29 type aircraft (Reference APG Project No. 6-44-2-1a).

(6) Missions were flown at specified true altitudes above a water target, under VFR conditions, utilizing the M-9B Norden bombsight as a means of sighting. All fuze settings and dropping angles were obtained from bombing tables of the M105 Propaganda leaflet bombs.

(7) Originally a total of nine (9) bombs (3 each with fuze settings for burst altitudes of 1,000, 1,500 and 2,000 feet respectively) were scheduled for release from each altitude under investigation. Because of the limited number of bombs available for testing, deviations were made from this schedule to obtain more conclusive data where necessary.

(8) Single releases were made for all bombs dropped over the water range. As far as practical, all data from previous missions were analyzed prior to scheduling of the next mission at a different bombing altitude.

(9) Releases were made at an indicated airspeed of 190 mph and 210 mph to obtain comparative data on the behavior of the bombs at normal and higher bombing speeds.

(10) Photo theodolites, MSQ-2 and a K-24 camera with a 7-inch lens were used in the vicinity of the target to accurately determine the burst altitudes for all releases.

(11) Dispersion patterns of the leaflets were obtained by aerial photography from a photo aircraft flying at an altitude of 4,000 to 5,000 feet.

(12) Two (2) bombs were dropped in minimum train from an altitude of 10,000 feet over a land range with fuzes set for a burst altitude of 1,500 feet. These releases were made without the usual four pound black powder spotting charge in the nose section of the bomb. Bombs were recovered to determine the percentage of the leaflets dispersed from the bomb. This release also gave comparative data on the "fall-away" characteristics and ballistic stability of the bomb at a low bombing altitude.

c. Results of Test:

(1) A total of fifty-seven (57) bombs were released in accordance with Table I below.

No. Bombs	True Alt. (feet)	IAS (MPH)	Fuze Setting (secs)	Fuze Setting Alt. (feet)	Av. Burst Alt. (Recorded aerial burst)
2	30,000	190	Inert	—	water impact
6	30,000	190-210	52.5	1,000	1216
12	30,000	190-210	52.0	1,500	1747
3	30,000	190	50.5*	2,000*	2735*
3	31,000	195	53.0	1,500	1854
4	32,000	195	54.0	1,500	1403
3	33,000	190	56.0	1,000	1471
3	33,000	190	55.5	1,500	2611
3	33,000	190	54.5	2,000	4628
6	34,000	190	56.5	1,500	1008
6	35,000	190	57.5	1,500	5994
6	35,000	190	58.0	1,000	3615

* This fuze setting should have been 51.5 seconds for burst height of 2000 feet instead of 50.5 seconds, thus explaining the high burst heights obtained.

The first mission consisted of eleven (11) bombs released individually from 30,000 feet, using a B-50 type aircraft. As a safety precaution, the first two bombs released were equipped with inert fuzes in the event the bomb failed to clear the bomb bay when released from this altitude. The remaining nine bombs were released in accordance with the established schedule. (Three

bombs each with fuze settings for burst altitudes of 1,000, 1,500 and 2,000 feet, respectively). No recorded burst heights were obtained for those bombs set to burst at 1,000 feet and 1,500 feet due to an insufficient spotting charge; however, visual results indicated all were aerial bursts, and were within ±500 feet of the pre-set burst altitudes. Accurate burst heights were obtained for those three released to burst at 2,000 feet. These bursts ranged from 1767 feet to 3537 feet, averaging 2735 feet. The fuze setting for this burst height had erroneously been set at 50.5 seconds, whereas the correct setting should have been 51.5 seconds, thus accounting for the high burst heights. All releases were normal, and displayed excellent fall-away characteristics.

(2) On the second mission, an additional nine bombs were released at 190 mph IAS from 33,000 feet true altitude in a further attempt to bracket the maximum ballistically stable altitude. Three bombs each were released with fuzes set for each of the three different burst altitudes. One bomb wobbled excessively and burst at an altitude of 7,434 feet. One other bomb dropped intact into the water; however, a later investigation revealed that the arming pin had not been removed from the fuze. The remaining seven bombs were aerial bursts, and had good fall-away characteristics. The recorded burst heights showed a greater altitude variation for each fuze setting than was obtained on the first mission. This data indicated that a "transition zone" had been reached, separating the maximum ballistically stable altitude and an altitude of relative unstability.

(3) Mission No. 3 was accomplished at 34,000 feet to obtain conclusive data regarding this transition zone. Six bombs, all with fuze settings for a burst altitude of 1,500 feet, were released. All were aerial bursts, and ranged from a burst height of 235 feet to 2,700 feet. Aerial film showed comparatively stable fall-away characteristics.

(4) Since more favorable results were obtained from the releases at 34,000 feet than were expected, the next mission consisted of twelve releases from a true altitude of 35,000 feet. The fuzes of six bombs were set for a burst altitude of 1,000 feet, and the remainder set to burst at 1,500 feet. Results obtained were conclusive as to the definite unstability of this bomb at this altitude. Aerial photography showed that the majority of the releases wobbled excessively. The burst heights ranged from one burst in the water to a maximum recorded burst altitude of 8,100 feet. In addition, the burst altitudes for all releases averaged considerably higher than for previous releases at the lower bombing altitudes. (See Table I).

(5) Mission No. 5 consisted of seven releases, all with fuze settings for 1,500 foot bursts. Four bombs were released from 32,000 feet, and three from 31,000 feet. One bomb, released from 31,000 feet, went into the water intact due to a fuze failure. The remaining six, however, were aerial bursts, and ranged from a minimum burst altitude of 785 feet to a maximum of 2,129 feet. Release and fall-away for all these bombs was normal.

(6) The remaining twelve bombs were released from an altitude of 30,000 feet, three of which had fuze settings for a burst at 1,000 feet, and nine set for a 1,500 foot burst. Of these twelve, only seven (7) were aerial bursts. Smoke from the combined fuze and spotting charge combination was observed on two of the five which dropped intact into the water. Fall-away characteristics for all these releases were excellent. It is assumed these five water impacts were due to improper fuze functioning.

(7) Both bombs released over the land range from 10,000 feet altitude were recovered and checked for leaflets. This inspection revealed that all leaflets had been ejected from both adapters prior to impact. Bursts of both bombs were estimated at approximately 1,500 feet.

(8) Aerial photographs taken of leaflet dispersion disclosed that the pattern obtained was dependent entirely on wind velocity and burst height. Successive passes over the ejected leaflets at altitudes of 4,000 feet to 5,000 feet were timed as accurately as possible to record the growth of the leaflet pattern as it dropped from the burst altitude. In all cases, this pattern had a characteristic length-width ratio that varied from 4 to 1 for a wind velocity of 5 - 8 mph, to as much as 8 to 1 for winds of 10-12 mph, length being measured in the direction of the wind. For wind velocities higher than 12 mph, no dispersion data could be obtained, because of the rapid leaflet separation. This pattern is the result of the vertical distance traveled by the bomb during leaflet ejection, together with the effect of the difference in wind velocity at the burst altitude and at the target altitude. Results indicate that all leaflets were ejected during 600-800 feet of bomb travel following burst.

(9) Proper closure of the M16A2 adapter cluster requires the complete removal of the thread protector shown in Figure 1 below.

Figure 1. Thread protector in position.
NOTE: Cut-away portion in the nose section was necessary for testing only.

This protector is secured in the fuze mount by means of a small Allen screw, which must be loosened by a special tool prior to removal of the protector. Difficulty was experienced in removing this protector without this special Allen wrench. This locking feature is not necessary for securing the protector in the mount.

d. Discussion of Results:

(1) The release and fall-away characteristics of all bombs dropped from true altitudes of 30,000, 31,000 and 32,000 feet were comparable to those released from 10,000 feet. Burst heights for these releases, on the average, were within the tolerances of the mechanical type nose fuze. At the higher altitudes investigated, fall-away characteristics of the bombs showed a tendency toward excessive oscillation. Burst heights of bombs released at 33,000 and 35,000 feet were more inconsistent than at the lower altitudes, and averaged much higher than the set fuze functioning altitude.

(2) The increase of bombing speeds above the normal indicated speed of 190 mph, and the change in location of the bombs in the bomb-bay, together with the use of both B-50 and B-29 type aircraft, did not noticeably affect the fall-away characteristics or the bursts heights of these bombs when released from 30,000 feet.

(3) Rate of fall of the leaflets was estimated to be 250-350 feet per minute for a wind velocity of 5-8 miles-per-hour. Higher wind velocities gave correspondingly lower rates of fall. Photographic coverage of the leaflets on the water was unsatisfactory because of the wide dispersion and turbulent water conditions. Estimates of pattern size as affected by wind velocity and burst height, assuming an average rate of fall for the leaflets of 250 feet per minute, as follows:

Wind Velocity (mph)	Burst Height (ft)	Pattern Length (ft)	Size Width (ft)
5-8	1000	2000	500
	1500	2500	600
	2000	3000	700
9-12	1000	2500	300
	1500	3000	400
	2000	4000	500

4. CONCLUSIONS: It is concluded that:

a. The Propaganda Leaflet Bomb, M105, employing the M16A2 Cluster Adapter is relatively stable when released from true altitudes up to and including 32,000 feet.

b. The M16A2 Cluster Adapter, when modified, is suitable as a container for approximately 36,000 leaflets 5 x 7 inches in size.

c. These bombs may be successfully released from both bomb bays of B-29 and B-50 type aircraft at bombing speeds up to 210 mph indicated.

d. A suitable method for rapid and efficient preparation of leaflet rolls is given in Appendix 2.

5. RECOMMENDATIONS: It is recommended that:

a. A true altitude of 30,000 feet be established as the maximum ballistically stable altitude for the release of the Propaganda Leaflet Bomb, M105.

b. The altitude of cluster opening be established at 1,500 feet above target to insure effective leaflet dispersion for all wind conditions.

FOR THE COMMANDING GENERAL:

Stuart P. Wright

STUART P. WRIGHT
Brigadier General, USAF
Deputy Commanding General

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
Washington 25, D. C.

24 August 1950

SUBJECT: Operational Evaluation testing of Bomb, Propaganda Leaflet, 500-lb M105 Employing Adapter Cluster M16A2

TO : Commanding General
Air Proving Ground
Eglin Air Force Base
Florida

1. The Bomb, Propaganda, Leaflet 500 lb M105 utilizing the M16, M16A1 and M16A2 Adapter Clusters have been tested and proven ballistically unstable when released at 35,000' from B-29 type aircraft. The Fuze, Bomb, Nose, MT, M155 is employed with this bomb. The unstability of these bombs and the associated variations in the time of fall result in unacceptable variation in altitudes of burst. Subject bomb has been found ballistically stable when released at 25,000' from B-29 type aircraft. The object of this test therefore is to determine the maximum altitude from which these bombs can be released and remain stable.

2. Reports of previous testing together with discriptive photographs and bombing tables are inclosed for your information. It is requested that these inclosures be returned to this headquarters upon completion of the project, Attention: Psychological Warfare Division, DSC/O. Your attention is also invited to AAFPG Report No. 38310471.6 dated 24 November 1944, which contains data on procedures for packing leaflet bombs.

3. The purpose of this test is to determine the following:

a. Determine maximum altitude at which subject bomb can be released and remain ballistically stable.

b. Proper procedures, equipment and personnel required to fill subject bombs in large numbers rapidly and efficiently.

c. Ground dispersion pattern of leaflets when bomb is opened at 1000', 1500' and 2000' above ground surface level.

4. This project is required to provide operational data and to provide information useful in the development of new and improved items.

5. It is requested that this project be completed within 45 days after receipt of the test items. Ordnance Department expects delivery of 60 complete items for this test in late August 1950. The paper for filling these bombs is to be procured locally. This project is assigned this priority of 1-A, and, an APG relative priority of Number 28.

BY COMMAND OF THE CHIEF OF STAFF:

s/s Robert V DeShazo, Col. USAF

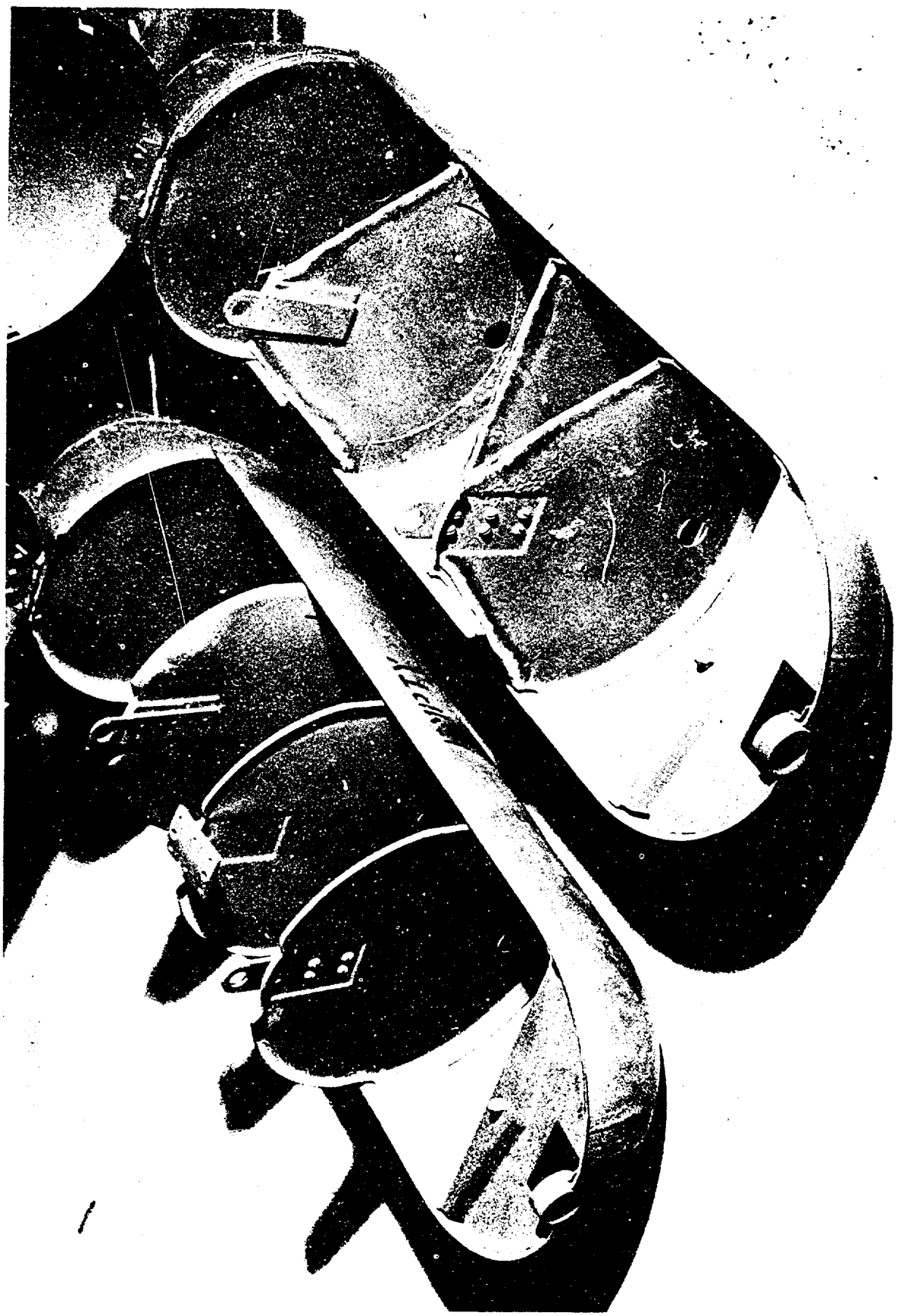
1 Incl
Rpt & photos of
Bomb Test, Aberdeen
Proving Ground, Md.

CARL A BRANDT
Major General, USAF
Director of Requirements

RELATED TESTS

1. "Test of Propaganda Leaflet Bomb," APG Project 1-44-59, dated 24 November 1944

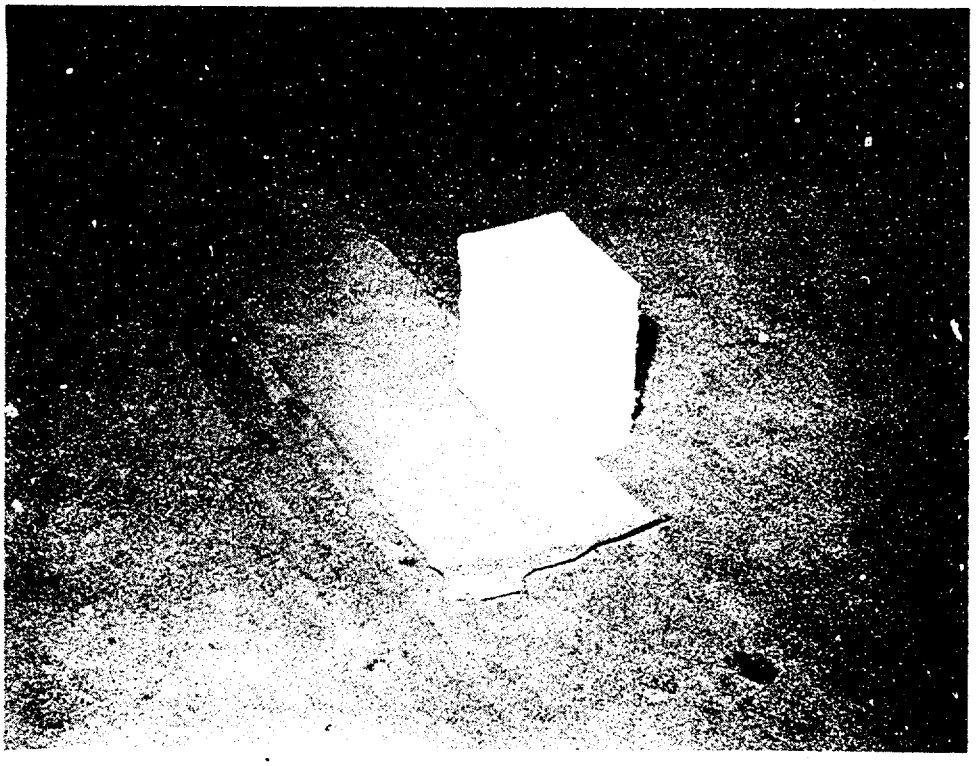
View of the standard M16A2 Cluster Adapter (at top) and the modified version (at bottom). Note that the entire upper half of the center partition and the rolled flanges on the front and rear partitions have been removed by means of an oxyacetylene torch.



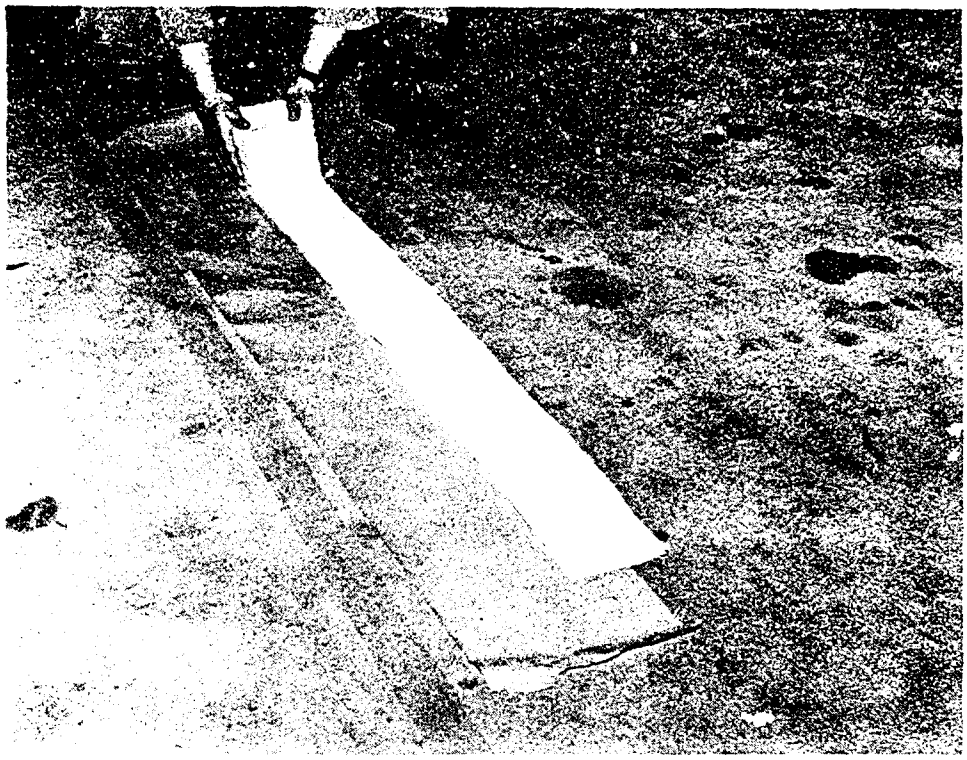
Comparison of the standard (at left) and modified M16A2 Cluster Adapter

PREPARATION OF LEAFLETS AND FILLING PROCEDURES

The method developed to rapidly and efficiently prepare the leaflet rolls, together with the proper procedures for filling the bomb, are shown below pictorially.



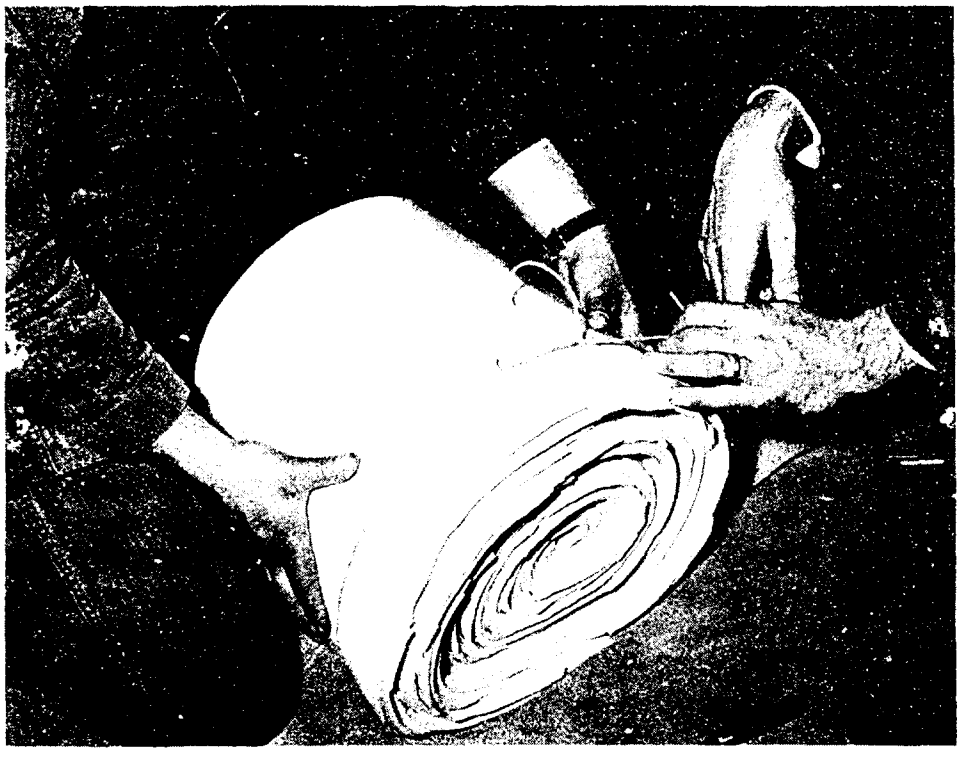
A strip of cloth, (or heavy paper as shown in the illustration above) approximately 20' in length and 12" wide, is first placed on a flat surface. A stack of leaflets is then placed at one end, centered along the edge of one side of the cloth strip.



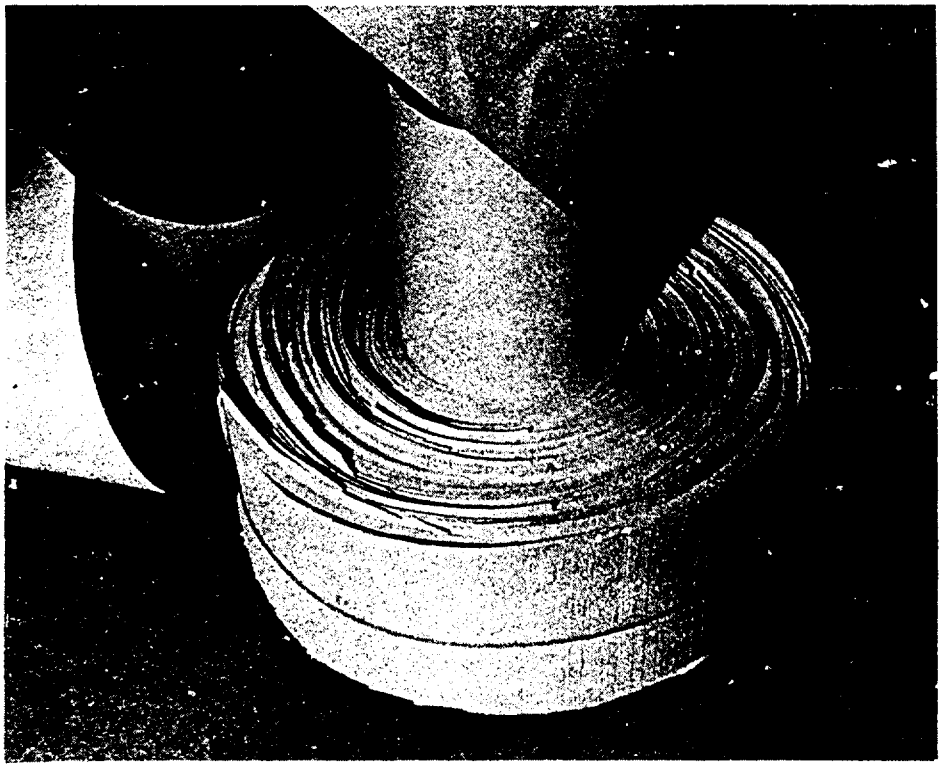
Next, the leaflets are spread out along the length of the cloth strip.

The cloth strip and leaflets are then rolled together tightly.

When rolling is completed, a cardboard template, having the size of the interior diameter of the bomb, is used to determine the correct diameter of the roll.

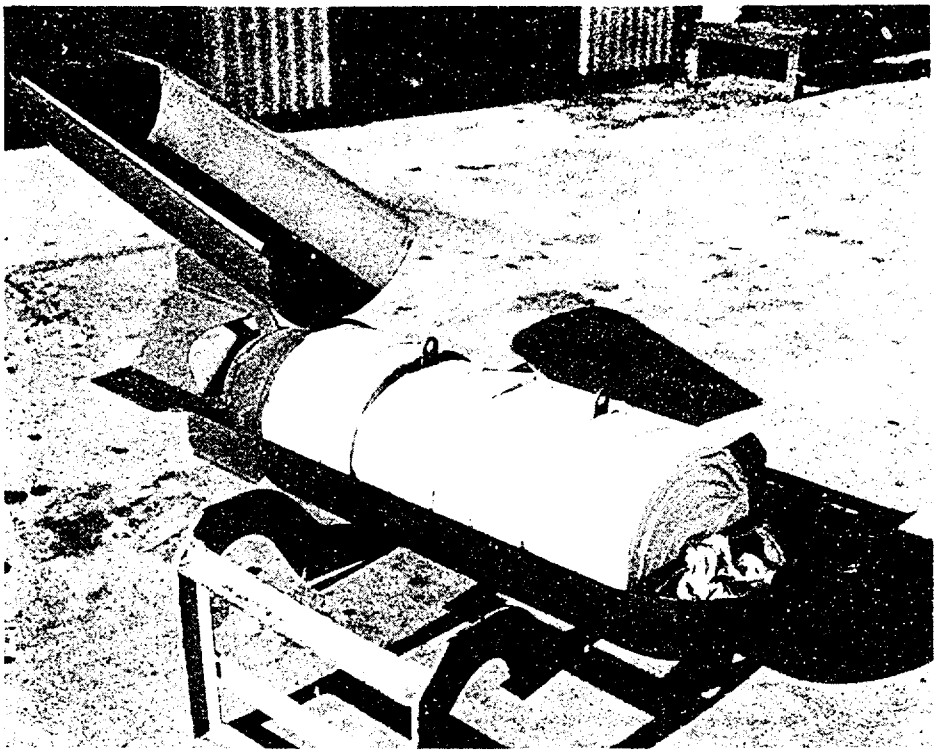


A single string is tied in a slip knot around that part of the leaflet roll not covered by the cloth.

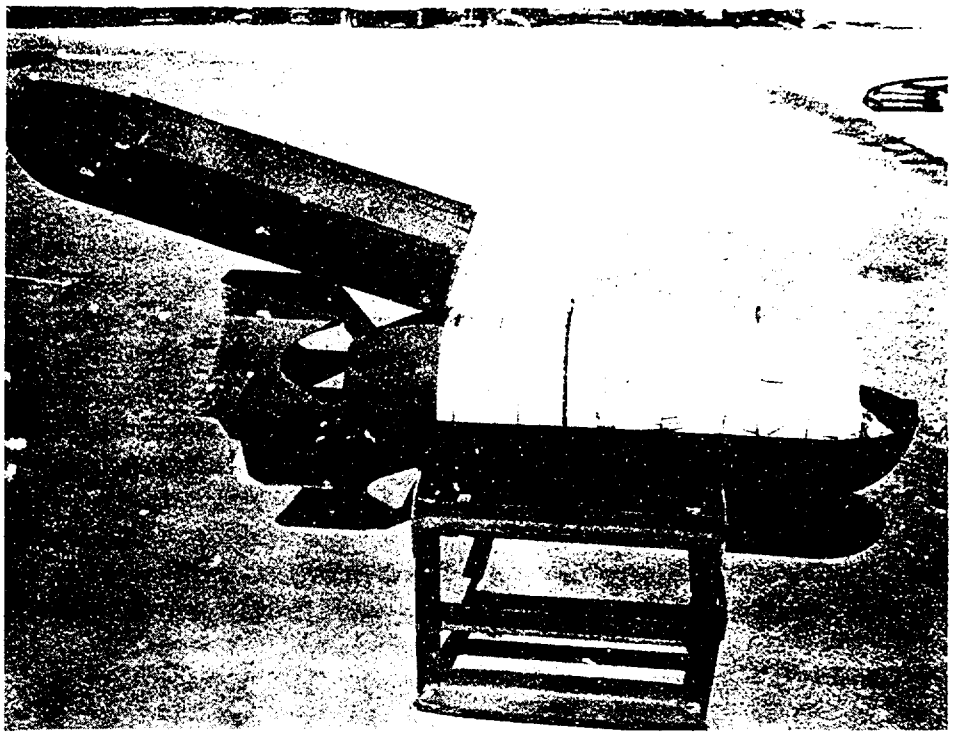


With the roll on its side, the cloth strip is removed.

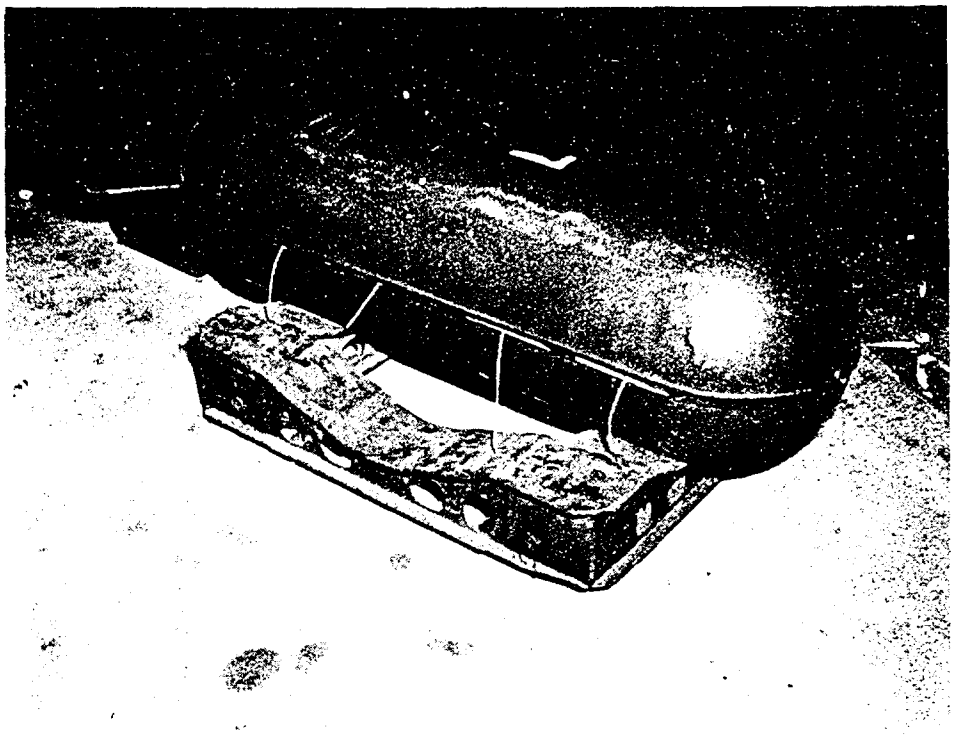
Leaflet roll completed, and ready for insertion into the bomb. It requires two men 5 minutes to complete one leaflet roll using this method.



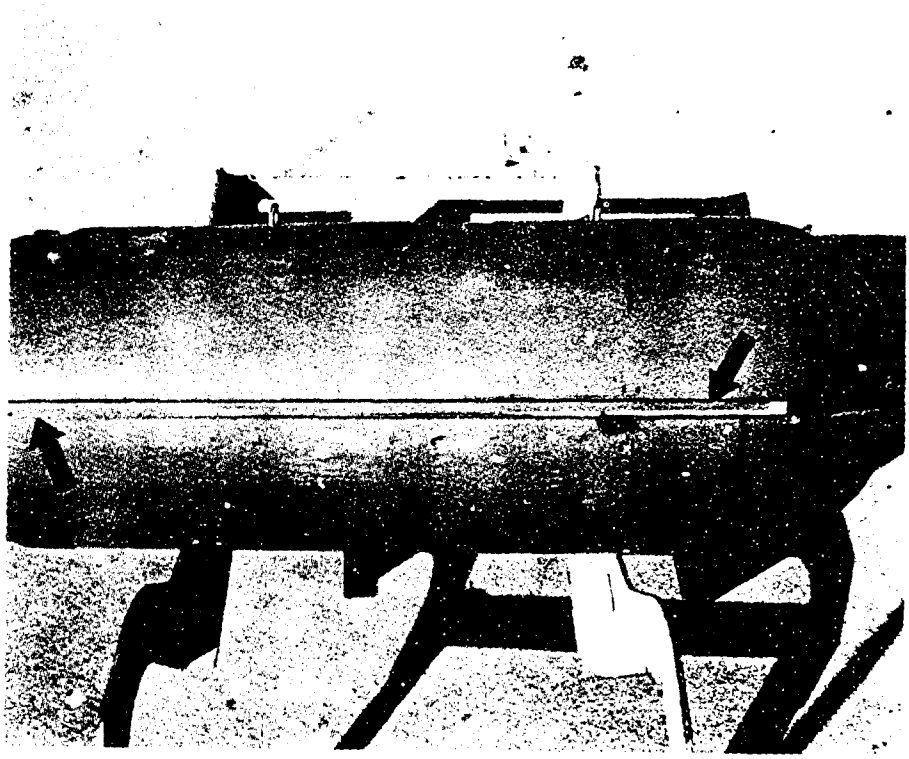
Bomb filled with leaflet rolls.



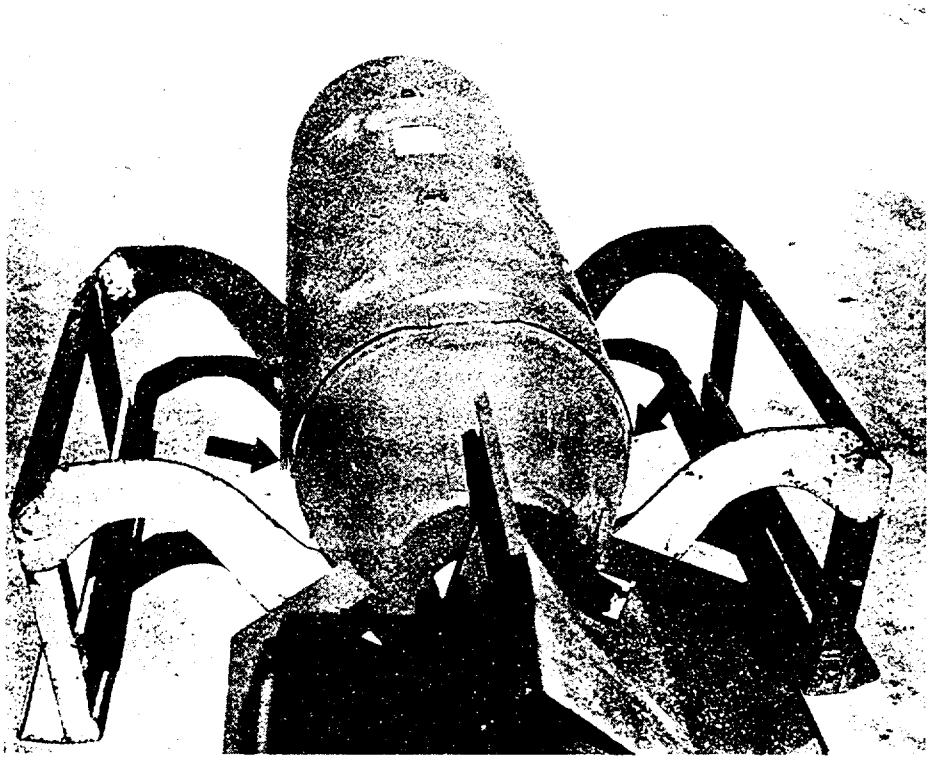
Two 5-inch rolls are loaded in the rear compartment, and three 7-inch rolls are loaded in the front and center compartments.



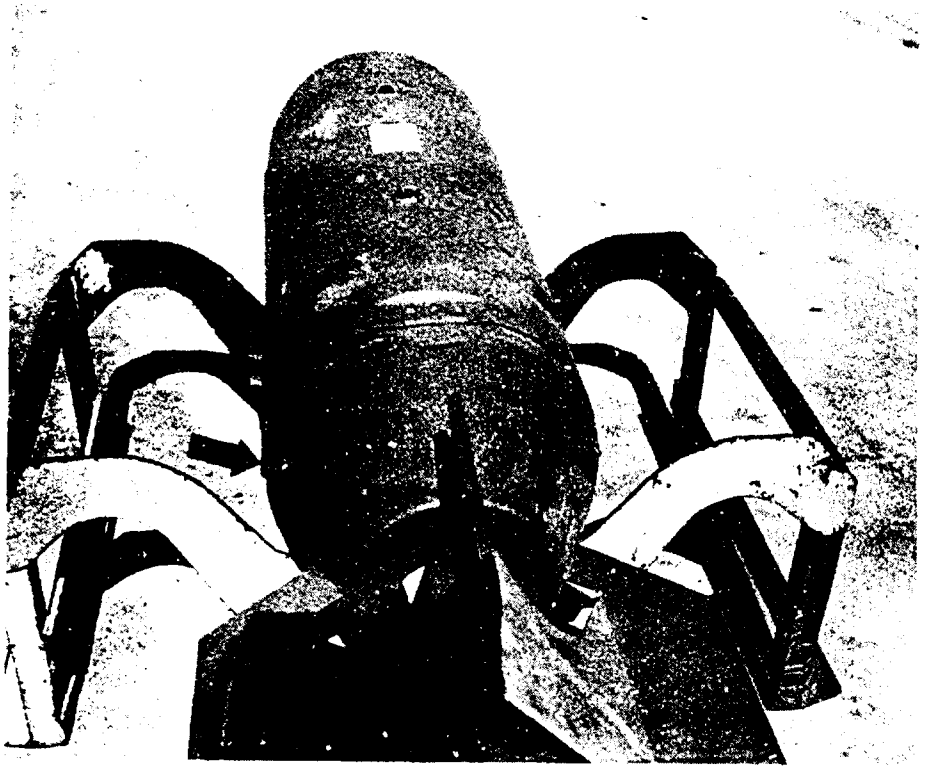
The ends of the string used to tie the leaflet rolls are placed outside the case and can be removed prior to complete closure of the cover. This releases the leaflets within the bomb. When rolls are not tied with a slip knot, the strings may be cut as the cover is closed, starting with those in the rear compartment.



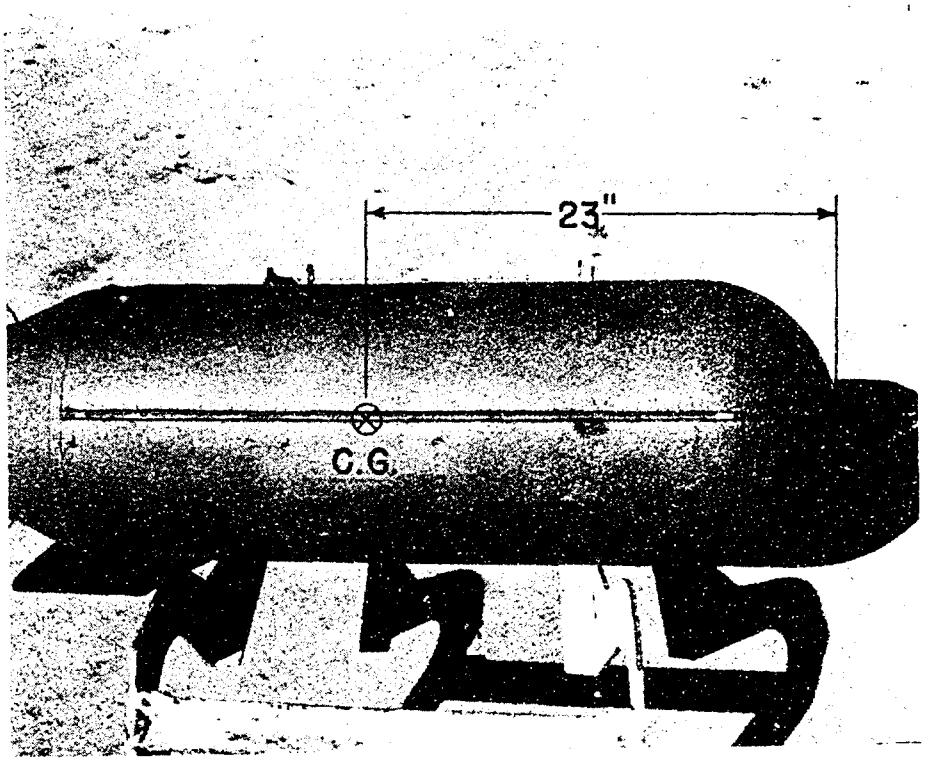
When closing the cover of the adapter, care must be taken to insure that the lip around the sides of the cover are placed inside the lower half of the adapter. Photograph above shows a cover improperly closed.



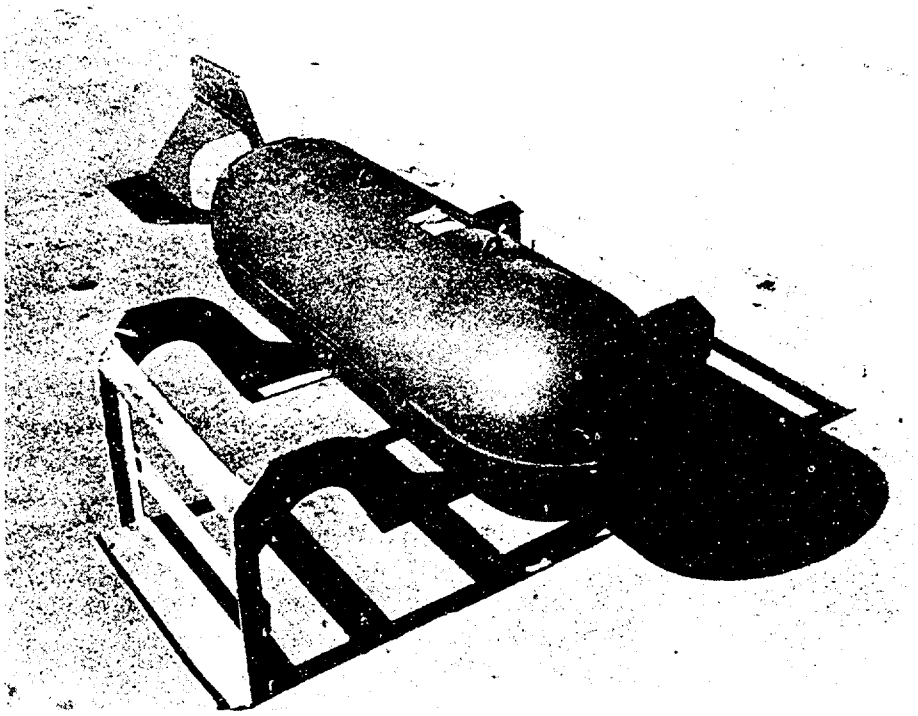
Rear view of bomb with cover improperly closed.



Rear view showing cover properly closed.



Side view of bomb showing cover properly closed, together with location of the center of gravity of the filled bomb.

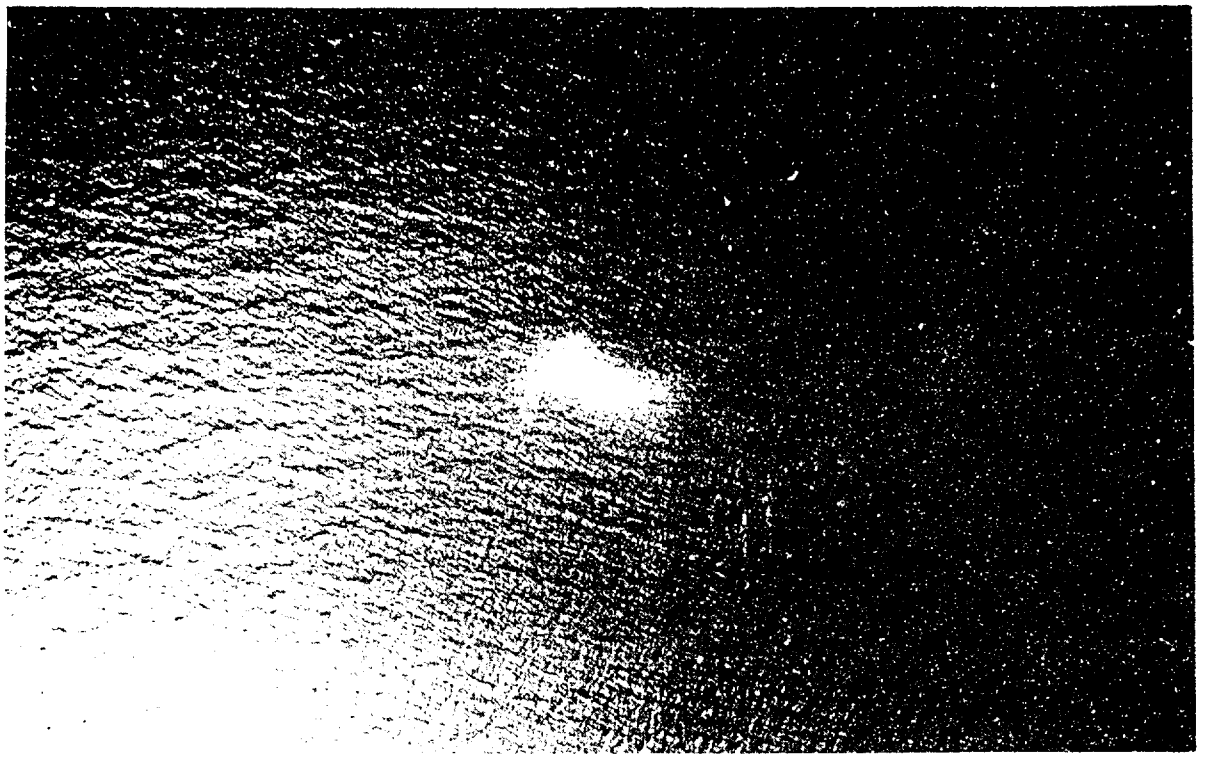


Bomb prepared for fuzing.

LEAFLET DISPERSION

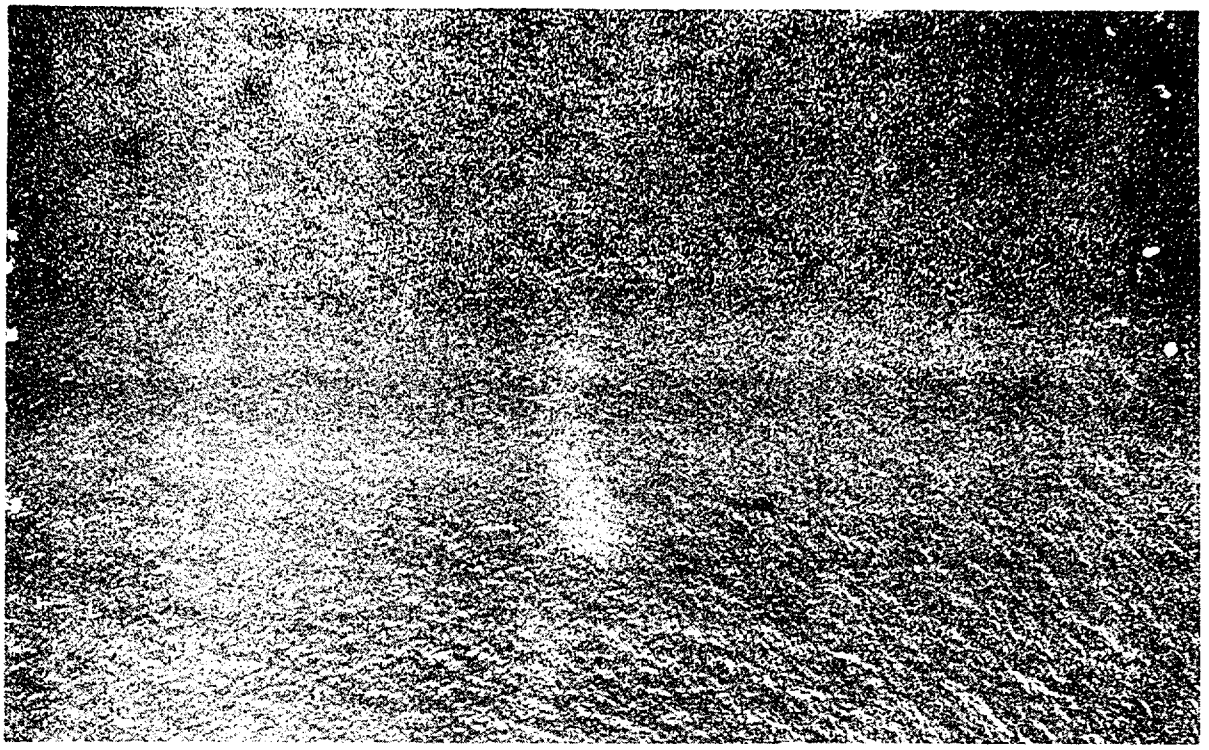
Aerial photographs taken of leaflet dispersion disclosed that the pattern obtained was dependent on wind velocity and burst height. A typical leaflet burst at an altitude of approximately 2,600 feet, with wind velocity ranging from 10 mph at the burst altitude to 7 mph at sealevel is shown below. Successive passes over the ejected leaflets were timed as accurately as possible to show the growth of the leaflet pattern as it dropped from the burst altitude.

Time: 25 secs after burst.

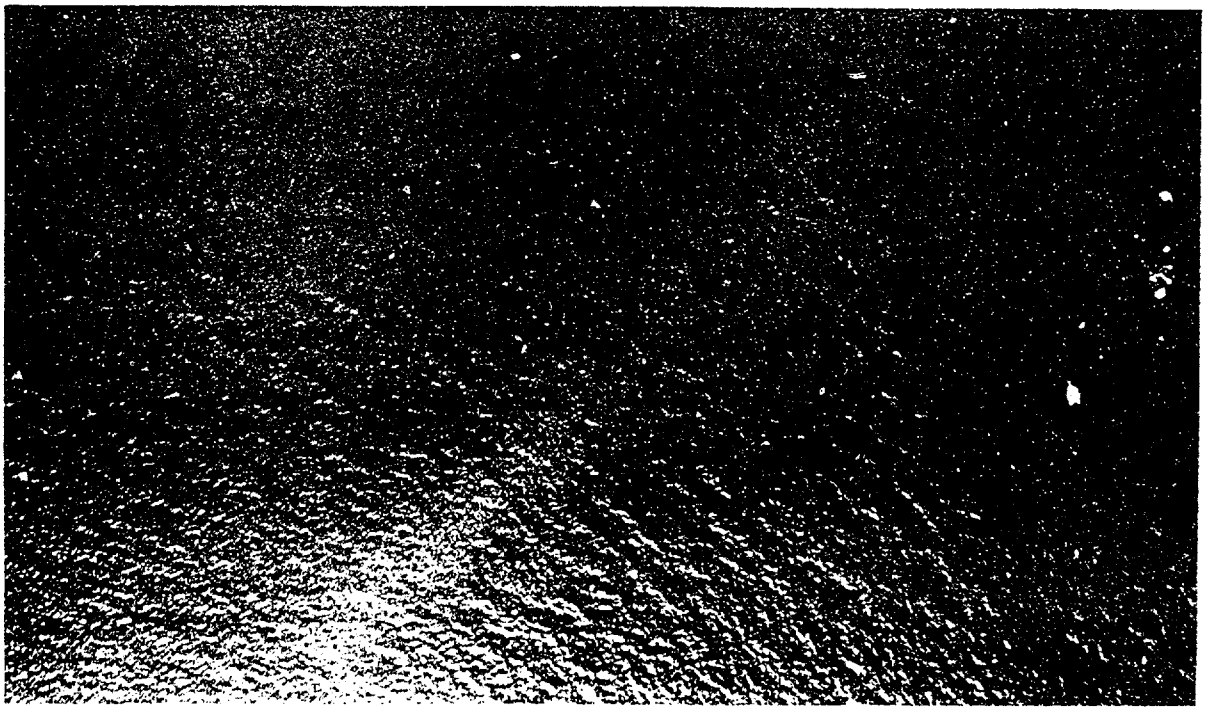


Time: 1 Min, 5 secs after burst

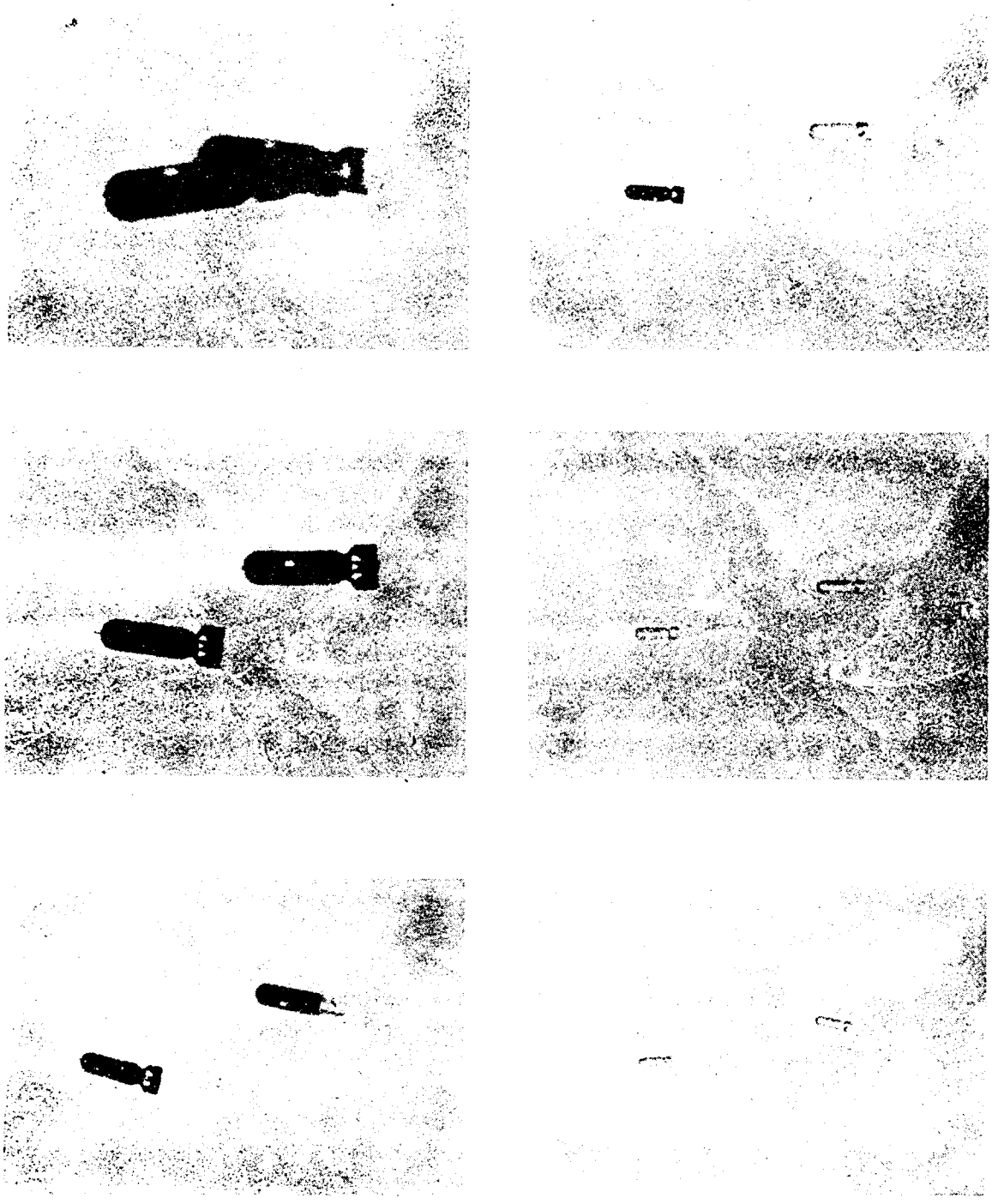
Time: Approximately 2 mins, 10 sec after burst.
Notice characteristic lengthening due to effect of wind.



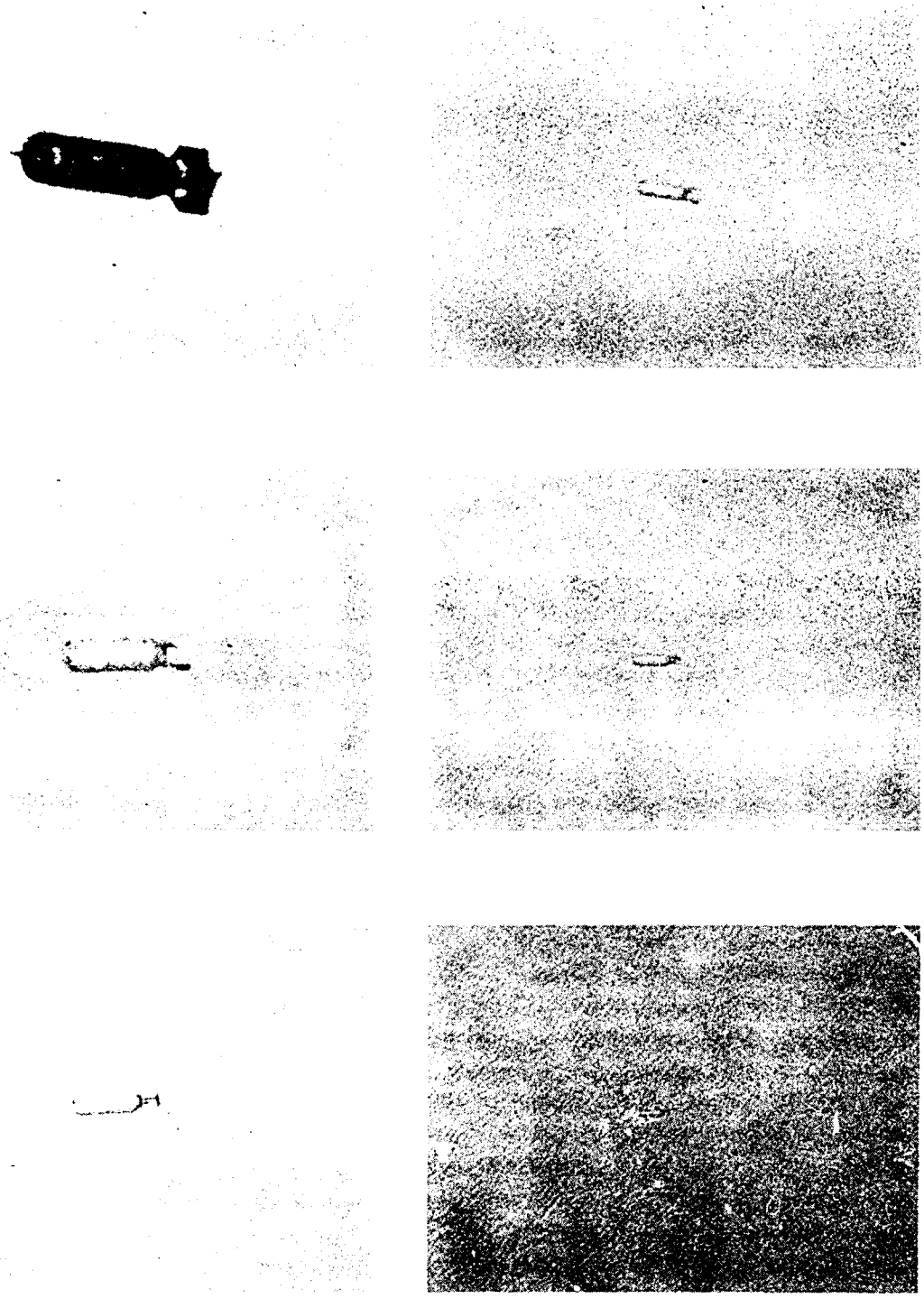
Time: Approximately 3 mins 30 secs after burst.



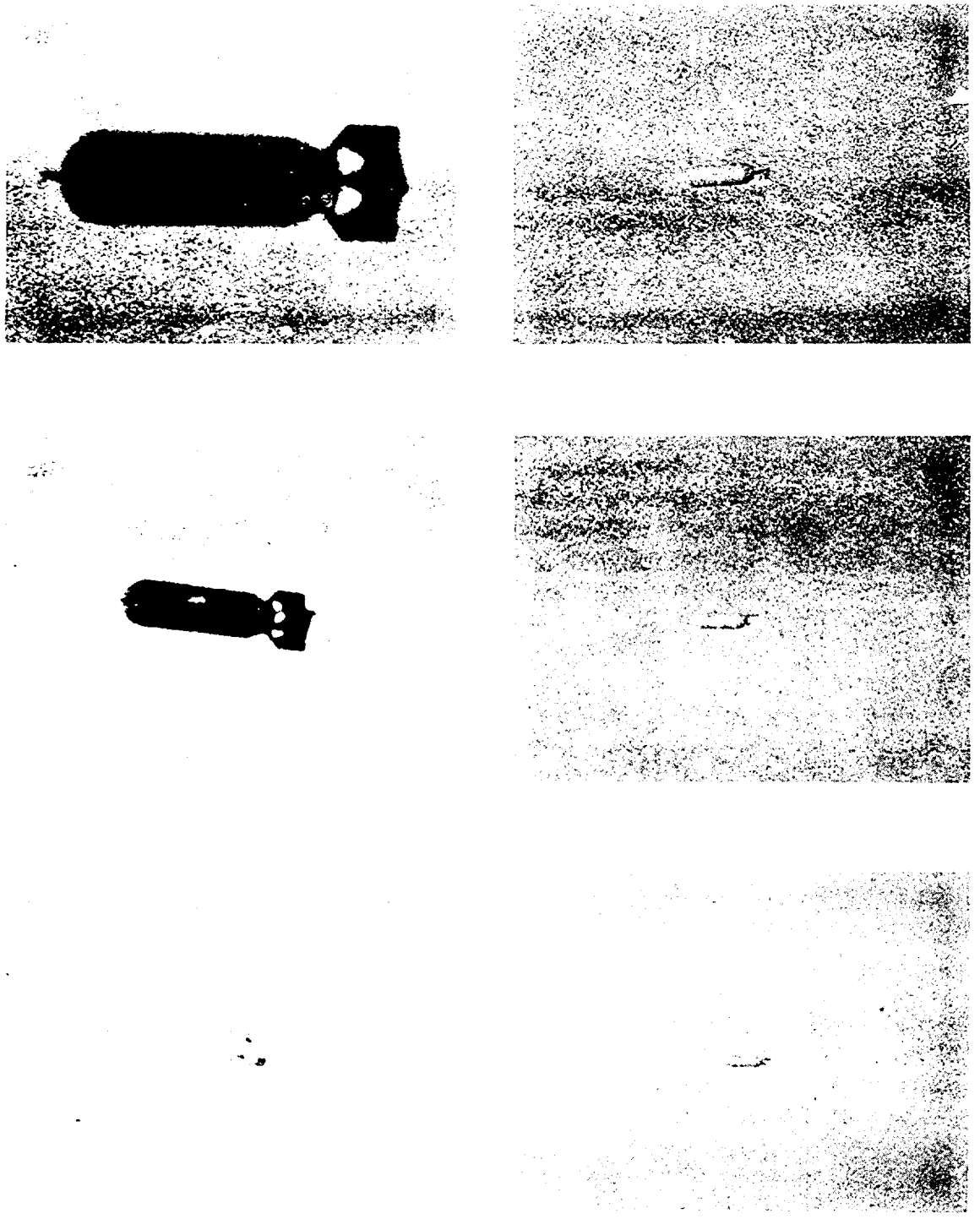
Time: Approximately 7 mins after burst. The leaflet pattern has reached an altitude estimated at 1000 feet, and covers an area 350 x 2000 feet.



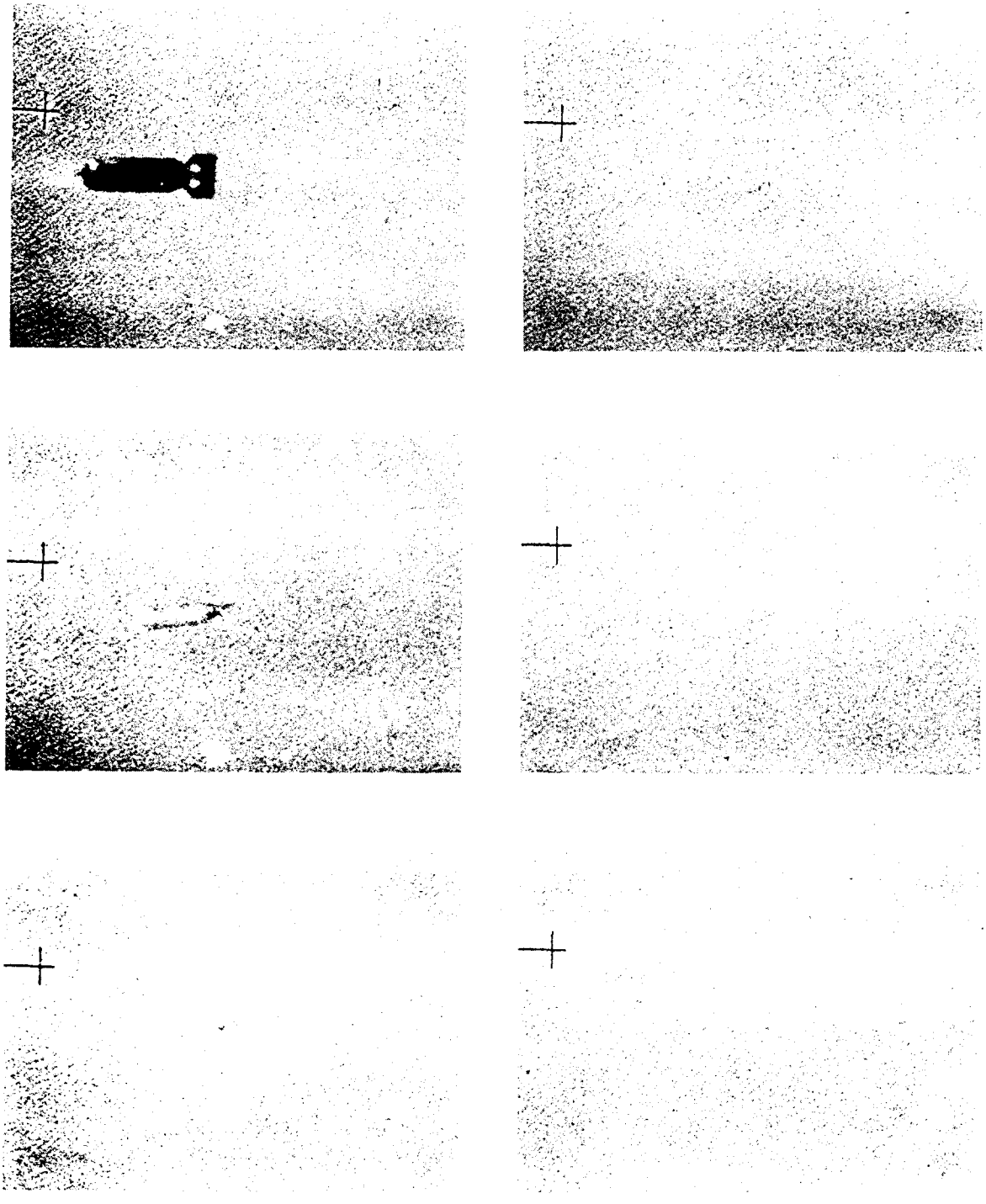
Minimum train release of two bombs over a land range from an altitude of 10,000 feet.



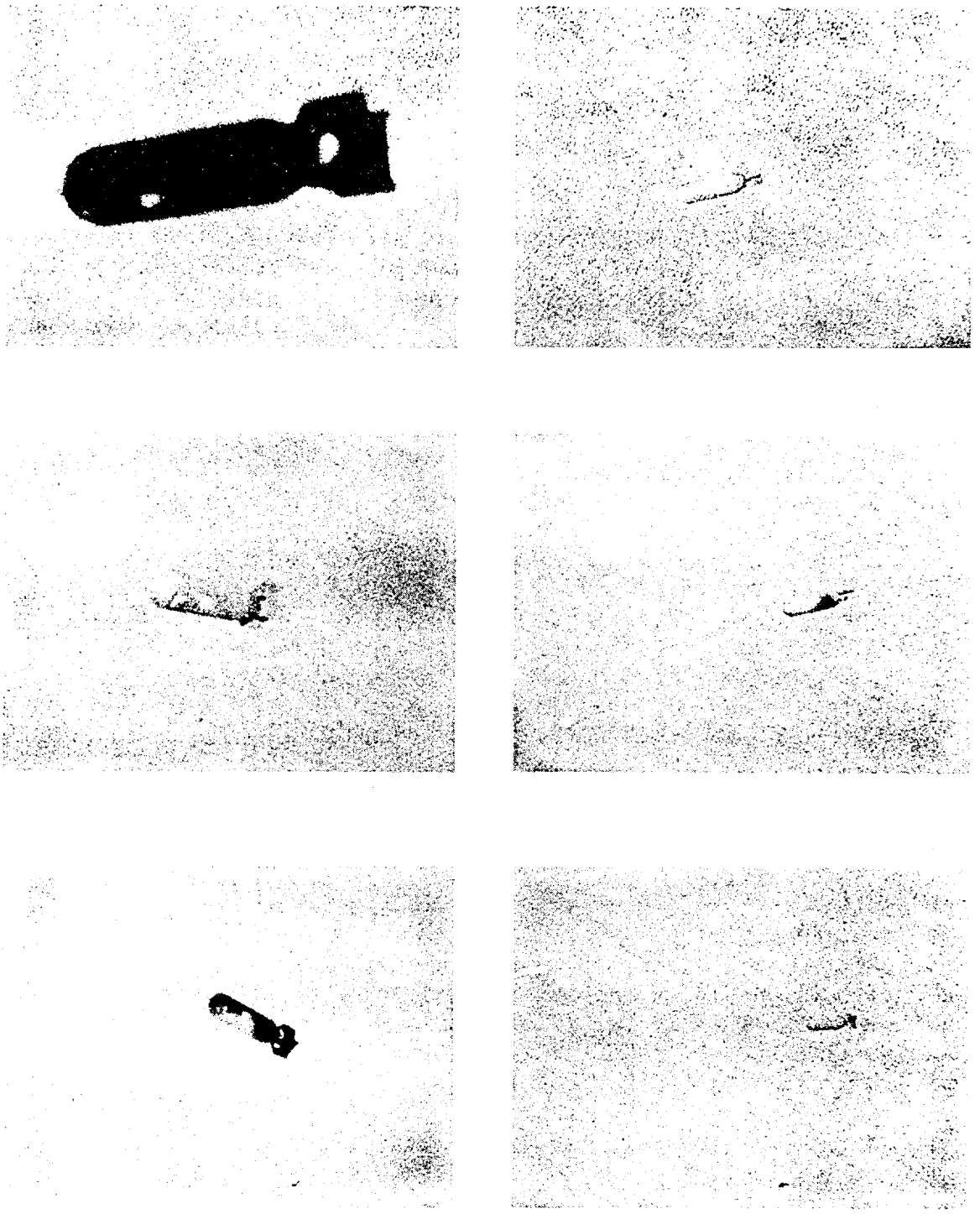
Typical release from a true altitude of 30,000 feet. Bomb was released from the forward bomb bay of a B-50 aircraft at an IAS of 190 mph. Note tendency to rotate along the longitudinal axis. This was characteristic of the majority of the releases.



Bomb release from the rear bomb bay of a B-50 aircraft at an indicated airspeed of 210 mph. Altitude of release: 30,000 feet.



Bomb released from the rear bomb bay of a B-29 aircraft at an indicated airspeed of 190 mph. Altitude of release: 30,000 feet.



Release of bomb from a true altitude of 35,000 feet.
Note excessive oscillation.

HEADQUARTERS
AIR PROVING GROUND
Eglin Air Force Base, Florida

PROJECT DISTRIBUTION LIST

Project No. APG/SAB/32-A, "Operational Evaluation Test of the Bomb, Propaganda Leaflet, 500-Lb M105, Employing the Adapter Cluster M16A2

	Quantity
Dept. of the Air Force, Director, R & D, Hq, USAF, Wash. 25, D. C.	3
Production Engineering Division, Director Procurement & Engineering, Hq, USAF, Wash. 25, D. C.	1
Special Weapons Team, War Plans Division, D/P, DCS/O, Hq, USAF, Wash. 25, D. C.	1
Electronics Systems Division, Director of Communications, Hq, USAF, Wash. 25, D. C.	1
Operations Analysis Division, DCS/O, Hq, USAF, Wash. 25, D.C.	1
Hq, Eastern Air Defense Force, Stewart AFB, Newburgh, N. Y.	2
Hq, Far Eastern Air Forces, APO 925, % PM, San Francisco, California	5
Armour Research Foundation, Illinois Tech, Chicago 16, Ill. ATTN: E. F. Bicknell	1
Instrumentation Laboratory, M. I. T., Hood Bldg., Cambridge 39, Mass.	1
Project Meteor, M. I. T., Cambridge 39, Mass. ATTN: Guided Missles Laboratory	1
University of Chicago Museum of Science and Industry, Chicago 37, Ill.	1
The Rand Corp., 1500 4th St., Santa Monica, Calif.	1
Solid Propellant Info. Agency, Applied Physics Laboratory, John Hopkins University, Silver Springs, Maryland	1
Hq, 9th AF (TAC), Pope AFB, Ft. Bragg, N. C.	1
Hq, 1st AF, Mitchell AFB, Newburgh, N. Y.	2
Hq, 2nd AF, Barksdale AFB, La.	6
Hq. 8th AF, Carswell AFB, Ft. Worth, Texas	1
Hq, 15th AF, March AFB, Riverside, Calif.	1
Hq, 13th AF, D/O PHILCOM, APO 74 % PM, San Francisco, Calif.	1
Hq, 5th AF, APO 970, % PM, San Francisco, Calif. ATTN: Asst. Adj. Gen.	1
Hq, Northeast Air Command, APO 862, % PM, N. Y., N. Y.	3
Hq, Strategic Air Command, Offutt AFB, Omaha, Neb.	3
Hq, CONAC, Mitchell AFB, N. Y.	1
Hq, Air Development Force, Wright-Patterson AFB, Dayton, Ohio, ATTN: Mr. R. E. Teter (DCSET)	10
Hq, Caribbean Air Command, Albrook AFB, C. Z.	1

	Quantity
Hq, 509th Bomb Wing, Walker AFB, Roswell New Mexico	3
544th Reconnaissance Sq., Bolling AFB, Wash., D. C.	3
92nd Bomb Wing (M), Fairchild AFB, Fairchild, Wash.	5
Hq, 19th Air Division, Carswell AFB, Ft. Worth, Texas	2
Hq, 6th Air Division, McDill AFB, Fla.	10
22nd Bomb Wing (M), March AFB, Calif.	1
97th Bomb Wing (M), Biggs AFB, Texas	2
28th Strategic Recon. Wg. (H), Rapid City AFB, South Dakota	3
3415th Tech Training Wing, Lowry AFB, Denver, Colorado	5
Hq, Barksdale AFB, La.	12
2nd Bomb Wing, Hunter AFB, Savannah, Ga.	12
3499th Training Aids Wing, Chanute AFB, Ill.	1
3535th Bomb Training Wing, Mather AFB, Mather Field, Calif.	2
43rd Bomb Wing (M), Davis-Monathan AFB, Tucson, Ariz.	2
98th Bomb Wing (M) (ADVON), APO 328, % PM, San Francisco, California	4
Navy Dept., Bureau of Ordnance Tech Library, Wash. 25, D. C., ATTN: RE-3	1
CO, U. S. Naval Ordnance Plant, Indianapolis 18, Indiana, ATTN: Library	1
CO, 36th Fighter-Bomber Wing, APO 208, % PM, N. Y., N. Y., ATTN: Armament Officer	2
Chief, Division 13.0, National Bureau of Standards, Wash. 25, D. C., ATTN: Lib. Division 13	1
Office, Chief of Ordnance, Dept. of Army, Wash. 25, D. C., ATTN: ORDTA	1
Air Force Engineering Field Officer, Room 227, Bldg 1, Army Chemical Center, Maryland	1
CO, Redstone Arsenal, Huntsville, Ala., ATTN: ORC Tech. Library	2
Office, Chief of Ordnance, Dept of Army, Wash. 25, D.C. ATTN: ORDTB-Ballistic Section	1
Office, Chief of Ordnance, Dept of Army, Wash. 25, D. C. ATTN: ORDIM	1
CG, Aberdeen Proving Ground, Maryland, ATTN: Tech Info. Section, Bldg. 313	1
CG, Air FMF, Atlantic, 2nd Marine Air Wing, FMF, Marine Corps Station, Cherry Point, N. C.	2
Chief, Naval Operations (OP-551), Navy Dept., Wash. 25, D.C.	1
U. S. Naval Ordnance Laboratory, White Oak, Silver Spring 19, Maryland	1
Navy Dept., (OP-55), Washington 25, D. C.	1
President, Marine Corps Equipment Board, Quantico, Va.	1
CO, Naval Proving Ground, U. S. Naval Proving Ground, Dalgreen, Va.	1

	Quantity
Operations Evaluation Group, Office, Chief of Naval Operations (OP-374), Navy Dept., Wash. 25, D. C.	1
Commander, U. S. Naval Ordnance Test Station, Inyokern, China Lake, Calif.	1
CO, Marine Corps Aviation Tech School, U. S. Marine Corps Air Station, Quantico, Va.	1
Director of Intelligence, ATTN: AFOIN, C/DD, Hq, USAF, Wash., 25, D. C.	2
Hq, Western Defense Force, Hamilton, AFB, Calif.	2
CG, Air University, Maxwell AFB, Ala. ATTN: Communications	1
CO, Air Force Cambridge Research Labs., 230 Albany St., Cambridge 39, Mass.	1
Operations Research Office, Johns Hopkins University, 6410 Connecticut Ave., Chevy Chase, Maryland.	1
Hq, 15th AF, March AFB, Riverside, Calif., ATTN: ECM Officer	1
Hq, 20th AF, APO 239, % PM, San Francisco, Calif	2
Hq, Air Development Force, Wright-Patterson AFB, Dayton, Ohio, ATTN: DCERO	2
Hq, 14th Air Division, Travis AFB, Calif	3
3380th Tech Training Wing, Keesler, AFB, Miss.	3
20th Fighter-Group, Shaw AFB, S. C.	1
CG, Ellington AFB, Houston, Texas	1
Navy Dept., Bureau of Ordnance, Wash. 25, D. C. ATTN: RE-8	1
Navy Dept., Bureau of Ordnance, Wash. 25, D. C. ATTN: RE-3	1
Armed Forces Staff College, Norfolk 11, Va.	1
Dept of the Army, Office, Chief of Ordnance, Wash. 25, D. C. ATTN: ORDTB-Ballistic Section	1
Army Field Forces Board 4, Fort Bliss, Tex.	1
CO, US Naval Air Test Center (Armament), Patuxent River, Md.	1
CO, U. S. Naval Ordnance Plant, Indianapolis 18, Indiana, ATTN: Library	1
CG, Flying Training AF, Waco, Texas	1
CG, Technical Training AF, Gulfport, Miss.	1
CO, James Connally AFB, Texas	1
CG, Craig AFB, Ala.	1
CO, Goodfellow AFB, Texas	1
CG, Luke AFB, Arizona	1
CG, Nellis AFB, Texas	1
CG, Reese AFB, Texas	1
CG, Francis E Warren AFB, Wyo.	1
CG, Mather AFB, Mather Field, Calif.	1
CO, Perrin AFB, Texas	1
CG, Randolph AFB, Randolph Field, Texas	1
CO, San Marcos AFB, Texas	1
CG, Tyndall AFB, Fla.	1

	Quantity
CG, Vance AFB, Okla.	1
CG, Williams AFB, Chandler, Ariz	1
CG, Amarillo AFB, Texas	1
CG, Chanute AFB, Ill.	1
Director of Requirements, DCS/D, Hq, USAF, Wash. 25, D.C.	10
The Air Adjutant General, ATTN: Air Force Document Reference and Research Br., Hq USAF, Wash. 25, D.C.	2
Director of Program Standards and Cost Control, Comptroller, Hq USAF, Wash. 25, D.C.	1
Director of Operations, DCS/O, Hq USAF, Wash. 25, D.C.	1
Office of the Surgeon General, Hq USAF, Wash. 25, D.C.	2
Director of R&D, DCS/D, Hq USAF, Wash. 25, D.C.	1
Director of Procurement and Engineering, DCS/M, Hq USAF, Wash. 25, D.C.	1
Director of Maintenance, Supply, and Services, DCS/M, Hq USAF, Wash. 25, D.C.	1
Inspector General, Director of Flight Safety Research, Engineering Division, Hq USAF, Wash. 25, D.C.	1
Assistant for Programming, DCS/O, Hq USAF, Wash. 25, D.C.	1
Director of R&D, Engineering Div. DCS/M, Hq USAF, Wash. 25, D.C.	1
Director of Maintenance, and Supply, Supply Div., DCS/M, Hq USAF, Wash. 25, D.C.	1
Plans, Programs, and Policy Div., DCS/M, Hq USAF, Wash. 25, D.C.	2
CG, AMC, Wright Patterson AFB, Dayton, Ohio, ATTN: APG Liaison Officer	1
CG, AMC, Wright-Patterson AFB, Dayton, Ohio, ATTN: Central Air Documents Office	10
Air University Libraries, Maxwell AFB, Ala.	3
CG, Air Training Command, Scott AFB, Belleville, Ill.	5
CG, Tactical Air Command, Langley AFB, Virginia	2
CG, Continental Air Command, Mitchel AFB, Hempstead, N. Y.	9
CG, USAF in Europe, APO 633, % PM, New York, N. Y.	2
Headquarters, Tactical Air Force, Pope AFB, N. C.	2
CG, Air Defense Command, Colorado Springs, Colo.	1
CG, Research and Development Command, Wright-Patterson AFB, Dayton, Ohio	2
CG, Airways and Air Communications Service, Washington. D.C. ATTN: D/M, Research Liaison Division	1
CG, Fourth Air Force, Hamilton AFB, Calif.	1
CG, Ninth Air Force, Langley AFB, Va.	1
CG, 28th Bombardment Wing, Rapid City ARB, Weaver, S.D.	2
CG, 93rd. Bombardment Wing, Castle AFB, Calif.	2
CG, 301st Bombardment Wing, Barksdale AFB, La.	2

	Quantity
CG, 9th Bombardment Wing, Travis AFB, Fairfield, Calif.	2
CG, 5th. Strategic Reconnaissance Wing, Travis, AFB Fairfield, Calif.	2
CG, 91st. Strategic Reconnaissance Wing, Barksdale AFB, La.	5
CG, 301st Strategic Reconnaissance Wing, Hunter AFB, Ga.	2
CG, 7th Bombardment Wing, Carswell AFB, Fort Worth, Tex.	2
Chief, Bureau of Aeronautics (Aer-TD-41) Navy Dept., Wash. 25, D.C.	2
Commandant of the Marine Corps, Hdqs U.S. Marine Corps, Wash. 25, D.C.	1
Cdr Air Force, U.S. Pacific Fleet, % FPO San Francisco, Calif.	1
Naval Liaison Officer, APG, Eglin AFB, Fla.	1
Research and Development Division, Bureau of Yards and Docks, Dept. of the Navy, Wash. 25, D.C.	1
Ballistics Research Lab., Aberdeen Proving Ground, Aberdeen, Md., ATTN: Dr. T. E. Sterne	1
Operations Research Office, Dept. of the Army, Ft. Leslie J. McNair, Wash. 25, D.C.	2
President, AFF Board No. 1, Fort Bragg, N. C.	1
Adjutant General Master File, APG	1
Strategic Air Branch, OTD	11
CG, 5001st Wing, APO 731, c/c PM Seattle, Wash.	2
CO, Cold Weather Materiel Test Unit, APO 731, c/o PM, Seattle, Wash.	2
Research and Development Board, Wash. 25, D.C. ATTN: Air Force Secretary.	3
AMC Engineering Field Officer, Naval Air Development Center, Johnsville, Pa., ATTN: Maj. T. J. Rall, Jr.	1
AF Liaison Office, Director of Armament, Edgewood, Md. ATTN: Maj. Carruth	1
Headquarters, Fourth Fighter Wing, Langley AFB, Va.	2
Director of Flying Safety Research, Norton AFB, San Bernadino, Calif.	2
AMC Liaison Officer, D/O Eglin AFB, Fla.	1
Weapons System Evaluation Group, Office of Secretary of Defense, Wash. 25, D.C.	1
Armed Forces Staff College, Norfolk, Va.	1
CG, 7th Air Div., Victoria Park Estate, So. Ruislip, Middlesex, Eng.	2

AF - EGLIN AFB, FLORIDA

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT PATTERSON AIR FORCE BASE, OHIO

Redef 4/16/2001

APR 12 2001

File

MEMORANDUM FOR DTIC/OCQ (ZENA ROGERS)
8725 JOHN J. KINGMAN ROAD, SUITE 0944
FORT BELVOIR VA 22060-6218

FROM: AFMC CSO/SCOC
4225 Logistics Avenue, Room S132
Wright-Patterson AFB OH 45433-5714

SUBJECT: Technical Reports Cleared for Public Release (Case AFMC 00-265)

1. The following reports listed in the attached HQ AFMC/PAX Memo, 28 Dec 00, para 1.a., b., and c. were reviewed and cleared for public release in accordance with AFI 35-101, 1 Dec 99, *Public Affairs Policies and Procedures*, Chapter 15.

- AD 330051
- AD 333266
- AD B972544

2. Please direct further questions to Lezora U. Nobles, AFMC CSO/SCOC, DSN 787-8583.

Lezora U. Nobles

LEZORA U. NOBLES
AFMC STINFO Assistant
Directorate of Communications and Information

Attachment:
HQ AFMC/PAX Memo, 28 Dec 00, w/1 Atch

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE OHIO

Received 4/16/2001

DEC 28 2000

MEMORANDUM FOR HQ AFMC/HO
ATTENTION: WILLIAM ELLIOTT

FROM: HQ AFMC/PAX

SUBJECT: Security and Policy Review, AFMC 00-265

1. The following documents have been reviewed for security and policy IAW AFI 35-101, Chapter 15. They are cleared for public release.

a. "Environmental Control Systems Selection for Manned Space Vehicles," ASD TR-61-240, Part I, Vol. II (May 62) AD-330 051

b. "Environmental Control Systems Selection for Manned Space Vehicles," ASD TR-61-240, Part II, Vol. II (Oct 62) AD-333 266

c. "Operational Evaluation Test of the Bomb, Propaganda Leaflet, 500-lb M105, Employing the Adapter Cluster M16A2," (1951) AD-B972 544

d. "F-105 Historical Data (Chapter I of History of MOAMA, 1 Jul – 31 Dec 1956)

2. If you have any questions, please call me at 77828. Thanks.

JAMES A. MORROW
Security and Policy Review
Office of Public Affairs

Attachment:
Security Review Case

27 December 2000

MEMORANDUM FOR: HQ AFMC/PAX
Attn: Jim Morrow

FROM: HQ AFMC/HO

SUBJECT: Releasability Reviews

1. Please conduct public releasability reviews for the following declassified reports:

a. "Environmental Control Systems Selection for Manned Space Vehicles," ASD-TR-61-240, Part I, Vol. II (May 62) [DTIC AD- 330 051]; requested as part of an internal AFMC/HO review.

b. "Environmental Control Systems Selection for Manned Space Vehicles," ASD-TR-61-240, Part II, Vol. II (Oct 62) [DTIC AD- 333 266]; requested as part of an internal AFMC/HO review.

c. "Operational Evaluation Test of the Bomb, Propaganda Leaflet, 500-lb M105, Employing the Adapter Cluster M16A2 (1951) [DTIC AD-B972 544); requested by Edward Hagerman, a citizen of Canada.

d. "F-105 Historical Data" (Chapter II of *History of MOAMA*, 1 Jul - 31 Dec 1956); requested by Theo van Geffen, a citizen of the Netherlands.

2. The AFMC/HO point of contact for these reviews is Dr. William Elliott, who may be reached at extension 77476.

JOHN D. WEBER
Command Historian

4 Attachments:
a. AD- 333 051
b. AD- 333 266
c. AD-B972 544
d. "F-105 Historical Data"

AFMC 00-265