INTELLIGENCE REPORT

ON

JAPANESE CHEMICAL WARFARE

Volume V

Part D

JAPANESE CHEMICAL WELFARE EQUIPMENT AND MATERIEL

15 May 1946

OFFICE OF THE CHIEF CHEMICAL OFFICER
GENERAL HEADQUARTERS, ARMY FORCES, PACIFIC
TOKYO, JAPAN

TABLE OF CONTENTS - PART D

PAGE

III WEAPONS AND MUNITIONS

A) Grenades 1

70 -Grenade, Frangible Smoke, "A" 2
410 -Grenade, Frangible Smoke "B" 3
600 -Grenade, Frangible Smoke "C" 4
610 -Frangible, Smoke Grenade "D" 5
527 -Grenade, Tear Gas, Type 1, Model B, Improved 6
626 -Grenade, Rifle, Model 3, Mod.1 (Liquid) 8
708 -Ball H.E. 9

B) Bombs 10

1. Gas Casuelty Agent Bombs

299 -Bomb, 60 Kg, No 6, Mk 1, Land 11
299C-DC Container For Bomb, 60 Kg, Type 1, No. 6, Mk. 1 Land (Sneezing Gas) 12
299D-Container, For Bomb, 60 Kg, No. 6, Mk 1, Land 14
299E-Bomb, 60 Kg, Type 4, No 6, Mk 1, Land 15
578 -Bomb, 200 Kg, Gas 16
667 -Bomb, 30cm, Gas, Wooden (w/o Tail Section) 17
666 -Bomb, 14" diameter, Gas, Wooden (w/o Tail Section) 18
663 -Bomb, Large Wooden, Vesicant 19

2. Incendiary and Smoke Bombs

79A -Bomb, 2 Kg, Smoke Float, Mod. 4, Yellow 20
79B -Bomb, 2 Kg, Smoke Float, Mod, 4, Black 21
635 -Bomb, 2 Kg, Smoke, Mod. 2 (1932) 22
633 -Bomb, 5 Kg, Type 4, Incendiary 24
609 -Bomb, Floating Smoke Flare 26
11 -Insert, Incendiary, For 40 Kg. Bomb 27
419 -Bomb, 60 Kg., Type 3, No. 6, Mk 27, Model 1, Rocket 29
304B-Bomb, 70 Kg., Type 1, No. 7, Mk. 6, Model 3, Mod. 2 31

3. Training Bomb

88 -Bomb, Practice, Type 95, 4 Kg. 32
328 -Bomb, 10 Kg., Mk 1, Practice 33
328A-Bomb, 10 Kg., Mk 1, Practice 35
364 -Bomb, Training Smoke 36
661 -Bomb, 30 Kg, Model 1, Practice 37
661A-30 Kg, Model 1 Practice 39

4. Special Purpose Bombs

34 -Bomb, Target Indicator, 2 Kg. Type 2 40
662 -Bomb, 2 Kg. Model 1 and 2 41
636A-Bomb, Flare, Illuminating A 43
636B-Bomb, Flare, Illuminating B 45
669 -Bomb 15 Kg Anti-Personnel H.E 47

III. WEAPONS AND MUNITIONS

In this section of the volume are the reports on equipment used for offensive and active defensive action. Further division under this heading has been in common categories, grenades, bombs, projectiles, fuzes and gaines, etc. Included is the flamethrower and vesicant agent handling equipment which would serve as weapons or at least add in keeping CW weapons in operation.

An attitude of defensive preparation is noticeable in these items illustrated by the Japanese apparent concentration on blister gas fillings for munitions. Admitting the plausibility of using these agents offensively, it still seems more likely that the Japanese had a defensive attitude.

For the most part the reports are non-technical, performance data being absent on most of the items. In general the opinion gathered from a close inspection on all the items in the preparation of the descriptions was that the Japanese did most of their development work considerably before the war and relied on these throughout the war making modifications occasionally. Exceptions to this conclusion are in the mortar and rocket projectile field where considerable recent work seems to have been done.

Marking systems are generally confusing often non-existent There seemed to be a lack of standardization whenever markings were used.

That steel and other common metals were in a critically deficient category is suspected from the considerable developments made substituting non-metallic parts. This is especially true in the case of chemical agent bombs and projectiles.

A.) GRENADES

Included in this group are frangible grenades of the type frequently found earlier. The fillings for those reported upon here are smoke liquids, FS or FM in most cases. These grenades are not marked in a way in which they can be easily identified. Information taken from documents indicate these smoke grenades were intended for use in local action taking place on landing operations. These grenades are not practical for front line use as they are to easily broken and could be injurious to soldiers carrying them.

The remaining grenades are for a variety of purposes and have in common to summarize upon.



70-GRENADE, FRANGIBLE SMOKE, "A"

General:

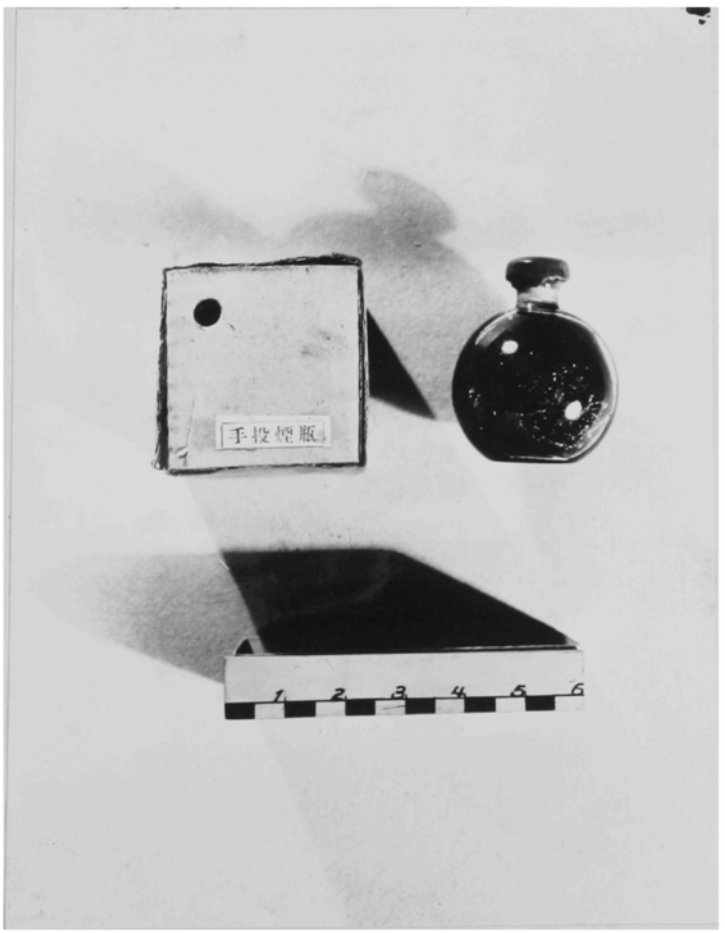
Color:	Clear glass with muddy brown filling
Markings:	Red seal over closure
Dimensions:	3 1/2" high, 2-7/8" diameter
Weight:	.88 lb.

Description: A frangible grenade is made of thick "bottle glass" of squat flask shape and closed with a glass plug. Red sealing wax covers the top of the glass plug closure. The grenade is packed in a simple corrugated cardboard container filled with rice grains. Four Japanese characters on a small label are translated "Hand Throwing Smoke Bottle".

The grenade is filled with chlorosulphonic acid and glass wool. The filling is a muddy brown color and occupies approximately three quarters of the flask. The glass wool is used to prolong the effect of the chlorosulphonic acid.

Remarks: This grenade was developed to replace the titanium tetrachloride filling because of shortage of the latter. The present filling is far more efficient, supplying a dense smoke cloud of 60 seconds duration.





410-GRENADE, FRANGIBLE SMOKE "B"

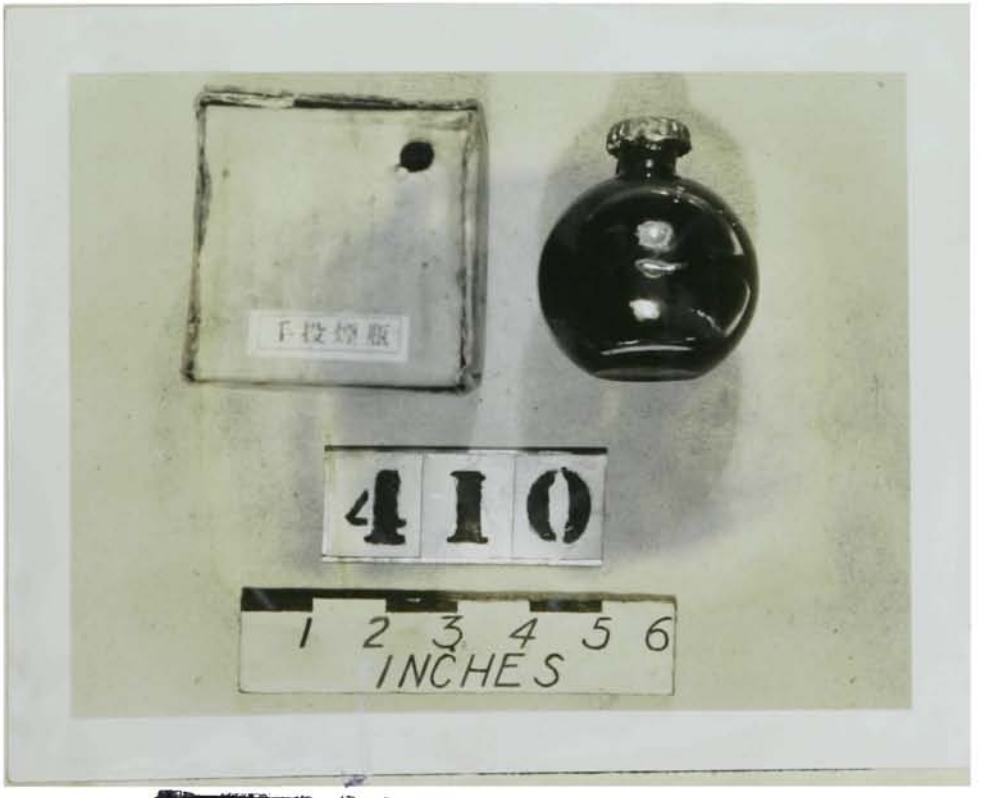
General:

Color:	Clear glass, brown filling.
Markings:	None
Contents:	Titanium tetrachloride.
Dimensions:	3-3/8" high, 2-7/8" diameter.
Weight:	.84 lbs.

Description: A glass frangible grenade is packed in a rectangular cardboard container which has a slip-in cover. Rice grains are used as a packing material to protect the grenade in transit. A small black and white label on one side reads "Hand Throwing Smoke Bottle".

The grenade is a short squat bottle made of thick "bottle glass". It has a flat bottom and a short neck sealed with a tight fitting glass plug. The filling, titanium tetrachloride, is a clear brown liquid and fills only about three quarters of the bottle.

Remarks: Smoke clouds are effective for approximately five seconds. Its tactical use is too limited to be considered practical.



[redacted]

600-GRENADE, FRANGIBLE SMOKE, "C"

General:

Color:	Amber
Dimensions:	3½" high, 2-5/8" diameter.
Weight:	14-3/4 ozs.

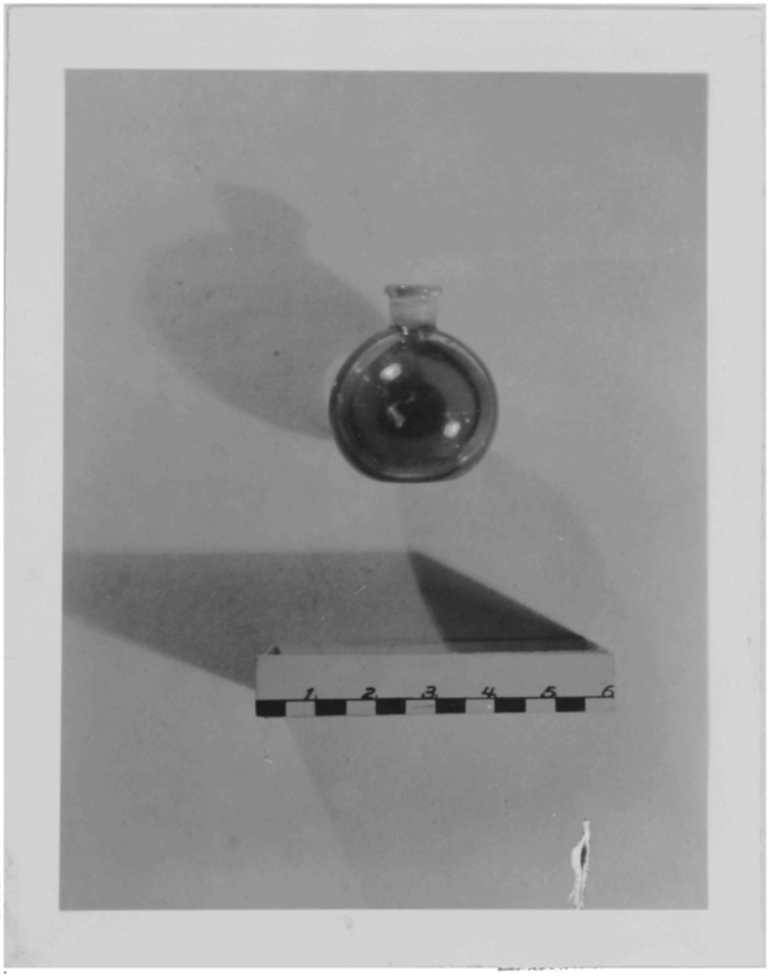
Description: This smoke grenade is a heavy glass spherically shaped flask which is 3/4 full of smoke liquid.

The flask mouth is sealed with a glass stopper, cemented into place to prevent leakage.

This grenade is about the size of a baseball and could be thrown easily.

Analysis of the liquid filling showed it to be chlorsulphonic acid (FS).

Performance: The screen given by this grenade lasted approximately one minute. The splattering of the filling upon the breaking of the grenade dispersed the smoke too much. This grenade is not as effective as the type "A".



[redacted]

610-FRANGIBLE, SMOKE GRENADE, "D"

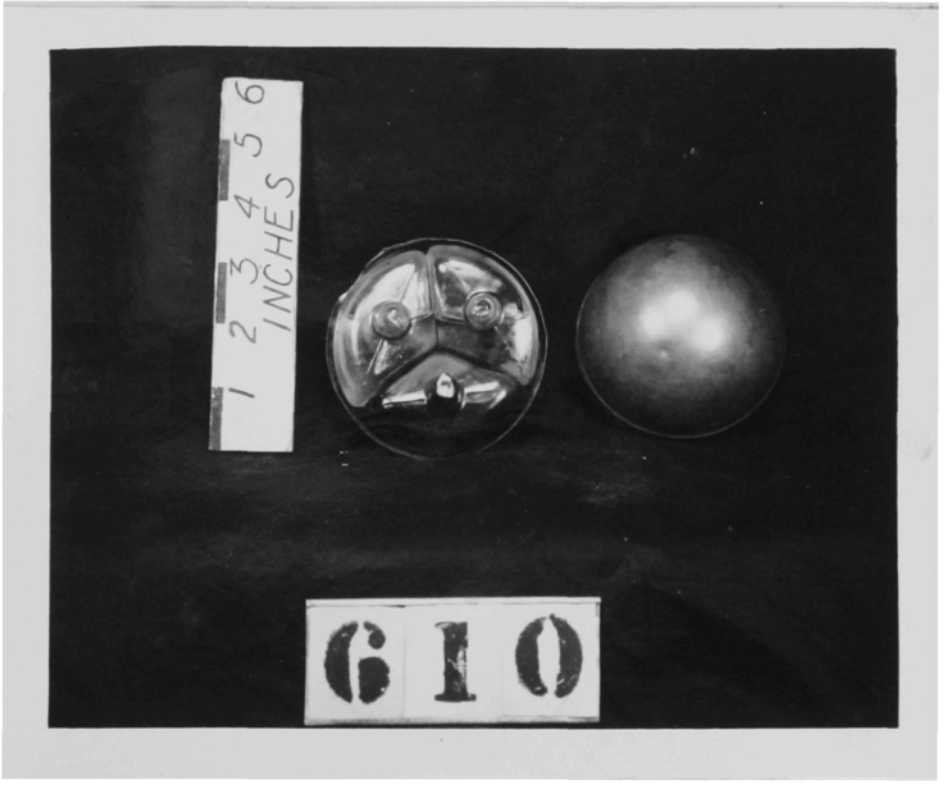
General:

Color:	Copper colored
Markings:	Marking on the carton only.
Components:	Copper sphere. Three enclosed glass viale containing a liquid smoke agent.
Dimensions:	3½" in diameter.
Weight:	1 lb.

Description: The grenade is formed of two thin walled copper hemispheres loosely joined together but cemented firmly in place with a brittle cement. The hollow sphere thus formed contains three glass vials shaped somewhat like Brazil-nuts. One vial contained a liquid smoke agent tentatively identified as arsenic trichloride. The other two vials contained aqueous ammonia. The grenade is packaged in a corrugated cardboard container measuring 3-3/4" square.

Remarks: From the difficulty encountered in opening the sphere without breaking the vials and from the contents it is obvious that the grenade was intended to be thrown without first opening it. Theoretically any jar imparted to this grenade on striking its objective should be sufficient to shatter the brittle cement, break open the sphere, and shatter the three enclosed glass vials. The grenade was performance tested* A very poor smoke was emitted and one vial remained unbroken.

*Conditions: Weather cold and raining, little wind.



[redacted]

527-GRENADE, TEAR GAS, TYPE 1, MODEL B, IMPROVED

General:

Color:	Brass finished metal with white labels.
Components:	Metal container, tear gas grenade, wooden washer, cardboard and excelsior.
Dimensions:	3-3/4" long, 2-1/8" Diameter.
Weight:	0.44 pounds.

Description: Container: The container is made of metal of 0.020" thickness.

Grenade: The grenade is 3¼" long, 1-13/16" in diameter and weighs 0.29 lbs. It is made of glass and covered with a waxed paper and has a match scratcher combination fuse. According to the translation of the label the grenade is filled with tear gas and black powder, and upon explosion the glass fragments and gas will cover a radius of 50 feet.

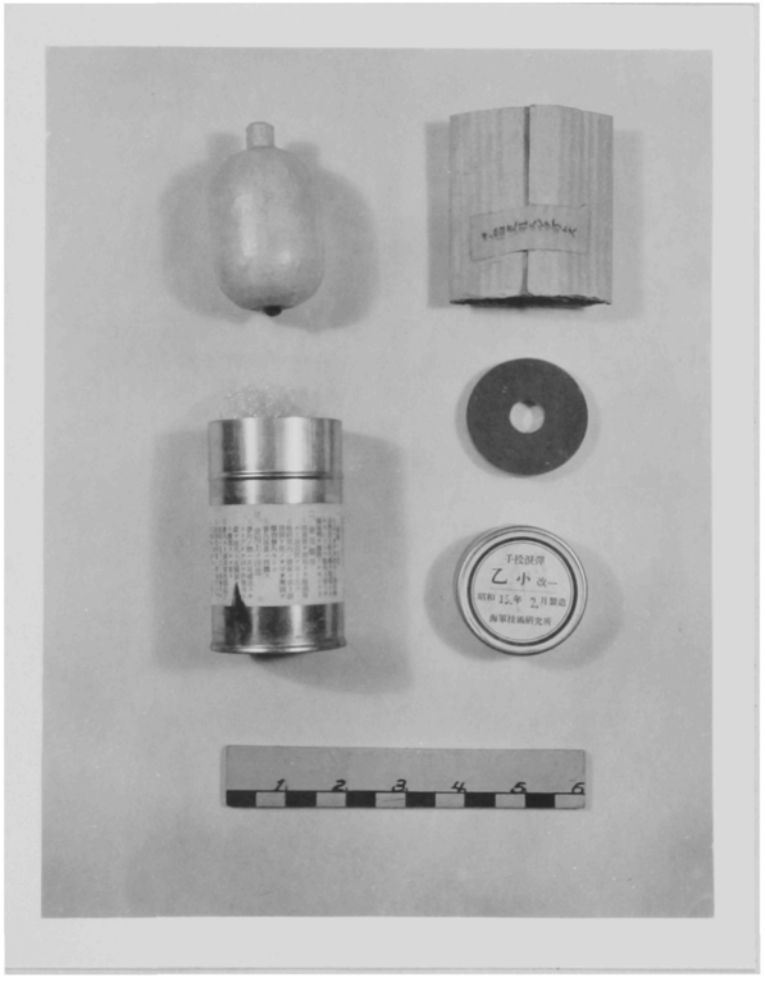
Wooden Washer: The wooden washer serves as a protector for the fuse before use and is used as a scratcher when ready for use.

Cardboard and Excelsior: These are used as packing and protection for the grenade while it is in the metal container.

Performance: This tear gas grenade has an approximate 5 second fuse. When exploded the glass disperses in a radius of approximately 10 yards and the tear gas about 5 yards. The grenade would be efficeint only in confined places such as foxholes. Apparently the agent was CN.

[redacted]

[redacted]



527-GRENADE, TEAR GAS, TYPE 1, MODEL B, IMPROVED

[redacted]

626-GRENADE, RIFLE, MODEL 3, MOD. 1, (LIQUID)

General:

Color: Gray main body with black tail and fins, and light yellow labels.

Components: Main body, Tail with fins.

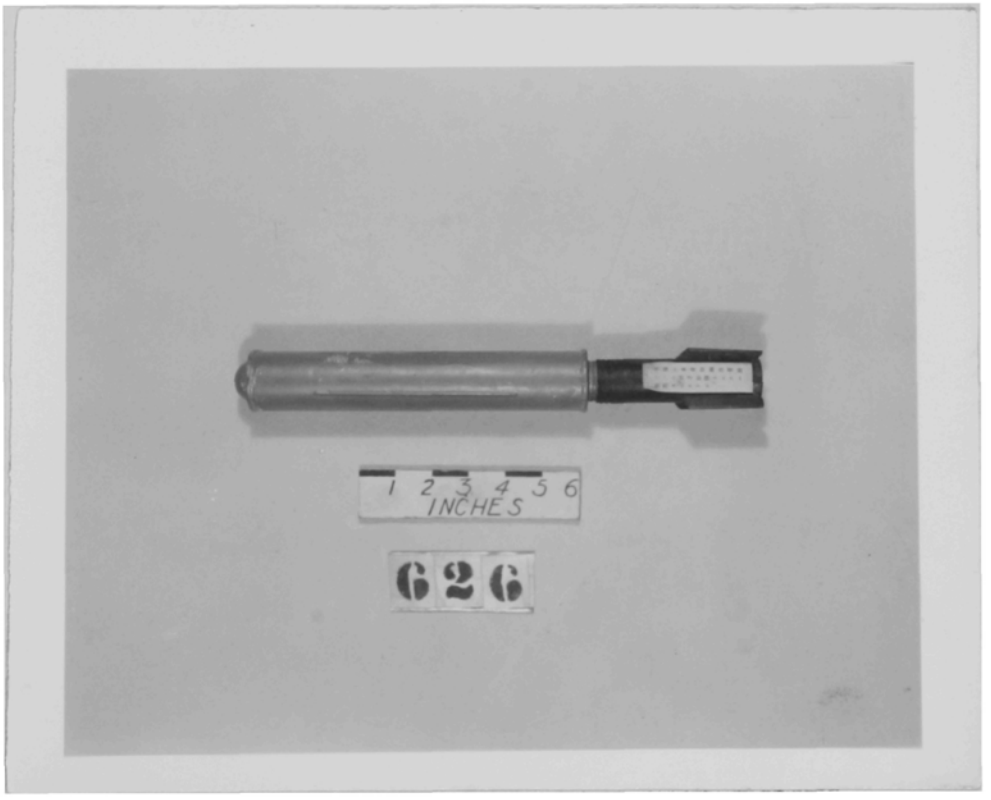
Weight: (Total) 1.05 pounds.

Description: Main Body: The main body is 10 inches long and 1 5/8 inches in diameter. The nose is oval in shape, 1/2 inch long, and 1 1/8 inches in diameter. There are four ridges, 5 1/2 inches long, equidistant from each end of the main body of the grenade. On the tail end of the main body there is a threaded extension, 1/2 inch long and 1 1/8 inches in diameter.

This rifle grenade is partially filled with liquid and according to translation of the label is equipped with an instantaenous fuse.

Tail with fins: The tail is a tube threaded on the end that is connected to the main body. This tube is 4 3/8 inches long and 1 1/8 inches in diameter. Four fins, 2 inches long and 1/2 inch wide, are welded to tail. The edges of all fins are bent the same so as togive the grenade a spiraling motion.

Remarks: According to the translation of the label, by using a wooden bullet, this grenade can be launched from either Type 38 Rifle or Type 99 Rifle.



[redacted]

626-GRENADE, RIFLE, MODEL 3, MOD. 1, (LIQUID)

General:

Color: Gray main body with black tail and fins, and light yellow labels.

Components: Main body, Tail with fins.

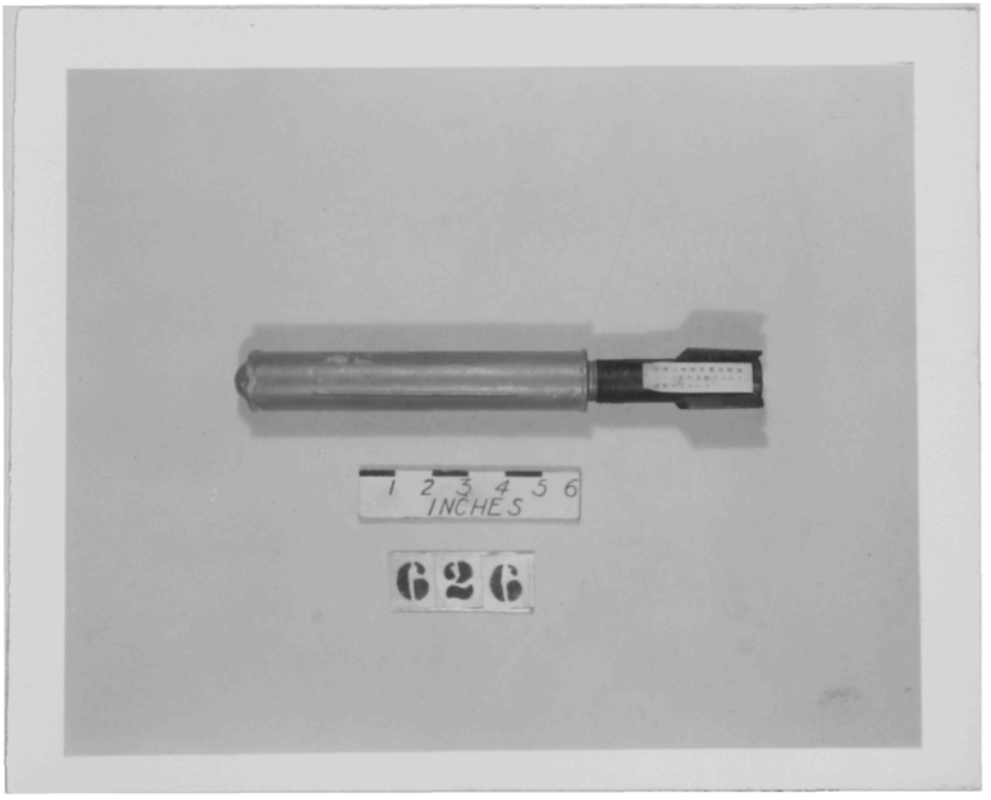
Weight: (Total) 1.05 pounds.

Description: Main Body: The main body is 10 inches long and 1 5/8 inches in diameter. The nose is oval in shape, 1/2 inch long, and 1 1/8 inches in diameter. There are four ridges, 5 1/2 inches long, equidistant from each end of the main body of the grenade. On the tail end of the main body there is a threaded extension, 1/2 inch long and 1 1/8 inches in diameter.

This rifle grenade is partially filled with liquid and according to translation of the label is equipped with an instantaenous fuse.

Tail with fins: The tail is a tube threaded on the end that is connected to the main body. This tube is 4 3/8 inches long and 1 1/8 inches in diameter. Four fins, 2 inches long and 1/2 inch wide, are welded to tail. The edges of all fins are bent the same so as togive the grenade a spiraling motion.

Remarks: According to the translation of the label, by using a wooden bullet, this grenade can be launched from either Type 38 Rifle or Type 99 Rifle.



[redacted]

708-BALL H.E.

General:

Color-	Paper white
Markings-	Translation "Five Section Thundered"
Components-	Paper sphere, five segment charge, stemlike fuse, small string loop, cotton-seed ballast
Dimensions-	8½ cm. diameter
Weight-	5 ozs.

Description: This is a sphere built up of two hollow hemispheres of laminated paper fastened together with a glued paper wrapper. The two hemispheres are built up of layers of old news papers and handbills to a wall thickness of about 2 mm. The top half of the ball contains five egg shaped charges built up of glued paper and filled with an explosive mixture which was identified tentatively as a mixture of finely powdered aluminum and powdered orpiment. Each egg terminates in a short fuse train and they are nested around a small black powder charged paper bag which connects with a short stem like delay fuse. The stem of this delay fuse protrudes slightly through a hole in the top of the ball where it is held in place by a short length of glued twine covered with the outside paper wrapper. The bottom hemisphere is drilled with two small holes through which a small loop of string isfastened and is filled with raw cotton seed.



[redacted]

B.) BOMBS

Bombs reported here were both Navy and Army with the Naval type predominating. Markings of Japanese bombs, especially Navy give a good indication of the filling and use. Navy nomenclature consists of type, number, mark and modification which yield the following information.

Type - Year of adeption (Empire age)
Number - Weight in kilograms divided by ten
Mark - 0-9 Anti Shipping
10-19 Chemical
20-29 Anti Aircraft
30-39 Anti Land

Modification-variation from the original design.
Army nomenclature gives type and kilogram weight.
Signal, incendiary and anti personnel bombs are mostly in the 50 kg. and under range. The 50 kg. to 200 kg range appears the preference for vesicant and other gas fillings.

Considerable effort was made to standardize Navy bombs by developing a more or less standard casing and making use of various chemical and explosive inserts.

Further effort was made to conserve steel in these bomb casings by substituting wood and altering the design so that lighter metal part could be used. The dearth of high grade steel must have been considered critical, for in the instance of one bomb casing of part wood construction, more labor and more machining of parts was required than would have been the case with an all steel welded case.

A number of vesicant bombs of a wooden construction which would be shattered on impact were built. The effectiveness of this type is not known.

The group of bombs classified as special purpose, subheading 4, include bombs which are out of the CW field.

As shown in the table of contents the reports are arranged in following order; gas bombs, smoke and incendiary, practice and special purpose.

[redacted]

299-BOMB, 60 Kg, No. 6, Mk 1, Land

General:

Color:	Grey overall with yellow painted nose.
Markings:	Identifying Japanese characters in black on body and tail cone.
Components:	Body, nose, suspension lug, and tail assembly.
Dimension:	Diameter 9½", 3' 8" long (less fuze).
Weight:	51½ lbs. (empty and w/o fuze and gaine).

Description: The body of the bomb is a hollow cylinder formed of longitudinally welded heavy steel plate. The body is welded to a machined steel ogival nose which ends in an abruptly tapering fuze coupling. The body is bolted to a conical tail section which is also fashioned of longitudinally welded plate. Four tail fins are welded to the cone and are braced on their dorsal edge with four single tail struts. Four rivets and two weld spots attach the suspension lug to the body.

Remarks: This bomb varies somewhat from the bomb as reported fron documents (Cf. Japanese Chemical Warfare Loose Leaf Notebook p. W 33) in that this item does not have yellow tail struts. This bomb has been found with approximately 3 lbs. of H filling contained in the two inserts described in 299. The burster is either "Shimose" (picric acid) or Type 98 (70% trinitroanisol plus 30% HND) and is contained in the nose of the bomb and in the annular hollow of the cylindrical mustard container. Likely fuze and gaine for use with this bomb are Type A 3(a) fuze and Type 92 or 97 gaine.



[redacted]

299C-DC CONTAINER FOR BOMB, 60 KG, TYPE 1, NO. 6, MK 1, LAND (SNEEZING GAS)

General:

Color: A brindled Tawny color.

Markings: A small white paper label glued to each component. Labels are identical and are descriptive of item.

Components: This container is divided into two components; A conical segment which fits into the tail section of the bomb, and a hollow cylindrical segment which fits into the main body of the bomb.

Dimensions:

A. Conical Segment: Length 6 3/4", Diameter 5 1/4".

B. Cylindrical Segment: Length of small cylinder - 4 3/4"; Outside Diameter of small cylinder - 5 3/4"; Length of large cylinder - 10"; Outside diameter of large cylinder - 6 3/4"; Diameter of inside bore - 4 1/4".

Weight:

A. Conical Segment - 4 lbs.

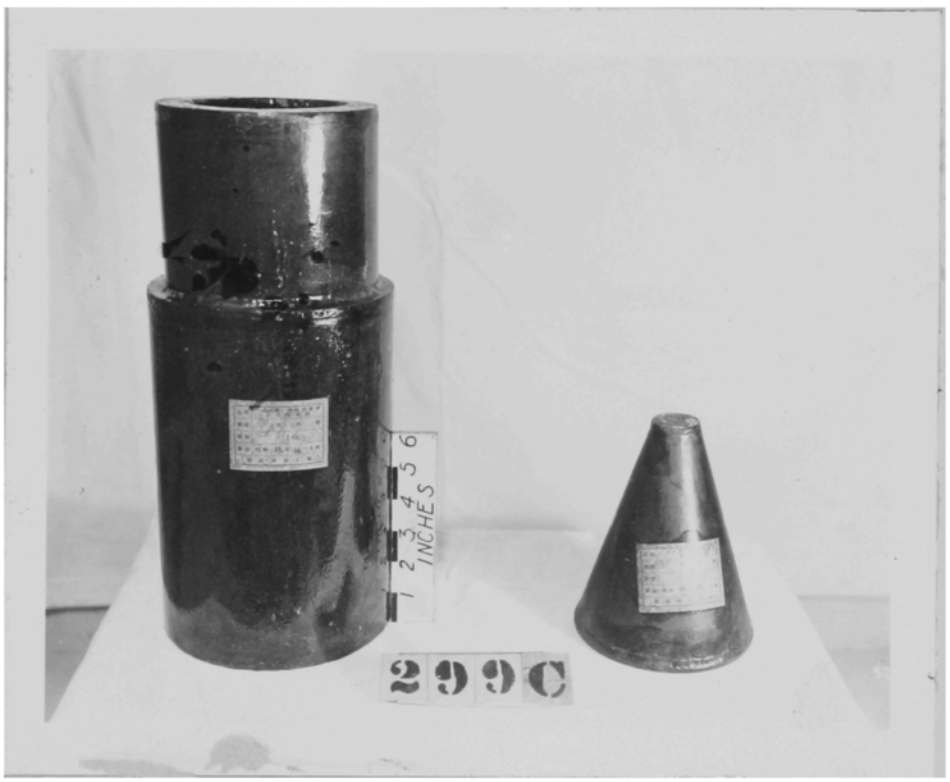
B. Cylindrical Segment - 21 1/4 lbs.

Description:

This filling is composed of two elements. One is a conical segment slightly truncated which is formed of heavy sheet metal and is joined by welding. A filling of non-persistent chemical agent* has been introduced thru an opening in the apex and sealed in with a solder plug. The other segment is in the form of two concentric pipes which have a common bore. The pipes or cylinders are hollow walled and are constructed of heavy sheet metal joined by welding. This segment also has been filled with agent. In this instance the agent has been introduced thru two ports in the base and sealed with solder plugs.

Remarks: This container functions in a similar manner to the vesicant container described under item 299. This container is designed for use also in the Type 97, No. 6, Land Body described in "Japanese Bombs & Fuzes", U. S. Navy Bomb Disposal School Publication, P. 25 (Cf. "Handbook of Japanese Explosive Ordinance" P. 95).

*This agent is identified by translated label as MK II Special Chemical Sneezing Gas. It is probably DC.



299C-DC CONTAINER FOR BOMB,60 KG,TYPE 1,NO.6,MK1,LAND(SNEEZING GAS)

[redacted]

299D-CONTAINER, FOR BOMB, 60 Kg, NO 6, MARK 1, LAND

General:

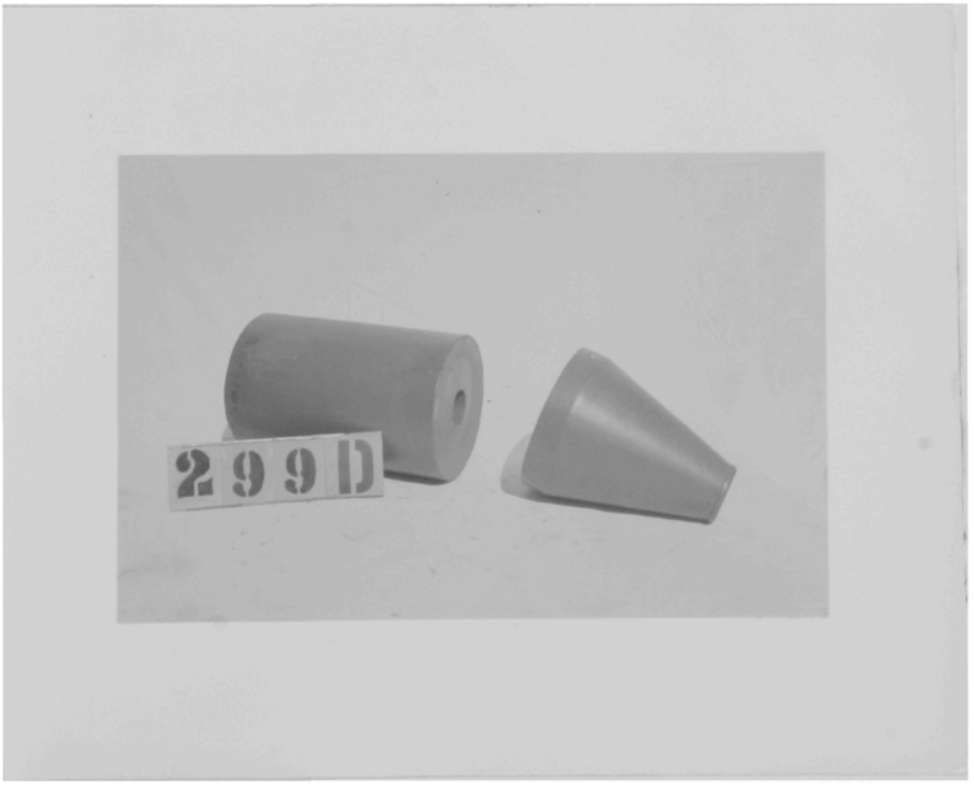
Color:	Blue-gray
Markings:	Japanese characters on the crate giving nominclature.
Components:	conical container, cylindrical container.
Weight:	14½ lbs. (two containers).

Description:

Conical container: The conical container is 10½ in. long, 8¼ in. in diameter at the base end, and 3¼ in. in diameter at the top. The ends are welded to the body. There is a hole, ½ in, in diameter, in the top which serves as a filling hole. A small metal disc accompanies the container and soldered over the hole. After filling. Weight is approx. 5 lbs. empty, holds 11 lbs of mustard.

Cylindrical Container This container is 13 in. long, 8¼ in in diameter. In the center there is a hole extending through the entire container. The ends are welded to the body. There are metal discs to soldered over the filling holes after the container has been filled. Empty weight is approx. 10 lbs; holds 25 lbs of mustard.

Remarks: These cylinders are used for vesicant gases. After they are filled, they are inserted into the bomb. A burster of picric acid or Type 98 H E fills the annular well in the cylindrical container in the assembled bomb. The inside walls of both containers have a double layered lacquered finish.



299E-BOMB, 60 Kg, TYPE 4, No. 6, MARK 1, LAND

General:

Color:	Grey overall with a yellow painted nose.
Markings:	Black identifying characters and factory numerals near the base of the body.
Components:	Nose, ogive, body, suspension band and lug, and tail assembly.
Dimensions:	9½" diameter, Length overall - 43" (less fuze).
Weight:	23 lbs. (empty w/o fuze and gaine).

Description: This bomb is essentially a cylindrical plywood barrel built aroun a wooden disc at its base and a segmented wooden ogive at its open end. A steel nose fitted for fuze coupling is securely attached to the wooden ogive with 16 screws. The barrel is reinforced with a steel hoop at its base and another at its ogival connection and, also, has a wide steel band around its girth which serves as a sling and on which is riveted the suspension lug. Four sheet metal fins are bolted to angle irons which have been riveted to the body. The fins are also secured to the base with screws and rivets. The fins are supported by a single strut linkage.

Remarks: No provision has been made for the use of standard gas inserts in this bomb (Cf. Items 299 A and 299 F). The bomb would have to be laboriously dismantled to make any such insertion. Although the plywood body has been painted inside as well as out, it is doubted that it would prove in any way a satisfactory munitions container under operational conditions of storage and use.



[redacted]

578-BOMB, 200 Kg, GAS

General:

Color-	Black
Markings-	White band around girth. Narrow yellow band around upper body and a wide yellow band around lower body. 200 (Arabic) K (Roman) C (Japanese) in white paint near the nose.
Components-	Nose, body, suspension strap, tail.
Dimensions-	Diameter of body - 13 inches Length overall - 71 inches (less fuze)
Weight-	221 lbs (empty)

Description: This bomb is essentially a heavy walled rolled steel cylinder terminationg in a short, obtuse, conical nose. The tail section is formed by a similar cone of heavy sheet metal from the apex of which a heavy steel rod extends, Four equally spaced fins ofheavy sheet metal are set around this rod and welded to it. The fins are riveted in place where they intercept the conical tail sect on. Two sets of strut rods are riveted to the fins. Around the girth are two steel half-straps bolted together to form a suspension sling. A slotted strap is hinged to one bolt of the sling to form a suspension lug.

Remarks: Markings on this bomb would indicate a blister gas filling.



[redacted]

667-BOMB, 30cm, GAS, WOODEN, (w/o tail section)

General:

Color:	Dirty dark brown.
Components:	Inside Container, Outside Container.
Dimensions:	37 inches long, 12.2 inches diameter.
Weight:	32 lbs. (partly filled).

Remarks: Except for the size this bomb is identical with Bomb, 14 in. Gas (w/o tail section). It was not possible to open this bomb body. It was partly filled with a liquid.



666-BOMB, 14 in. DIAMETER, AS, WOODEN (w/o TAIL SECTION)

General:

Color:	Dirty dark brown.
Components:	Inside container, Outside container which are bomb body, tail missing.
Dimensions:	27⅛ inches long, 15½ inches diameter.
Weight:	44 lbs. (empty).

Description: Inside container: The inside container is cylindrically shaped with ogival shaped forward end or nose. In the end of the nose there are three holes, one of which is a filling hole, while the other two are air vents. This container is made of thin sheet metal.

Outside container: The outside container is made of wooden staves held together by steel hoops which are anchored to the staves by small screws. The outside container is the same shape as, and fits very snugly over, the inside container.

Remarks: The nose plug were not available for examination. The principle advantage of the wooden container is protection to the inside container during transportation and handling. Presumably a tail is attached to this bomb body, however tail section was absent.



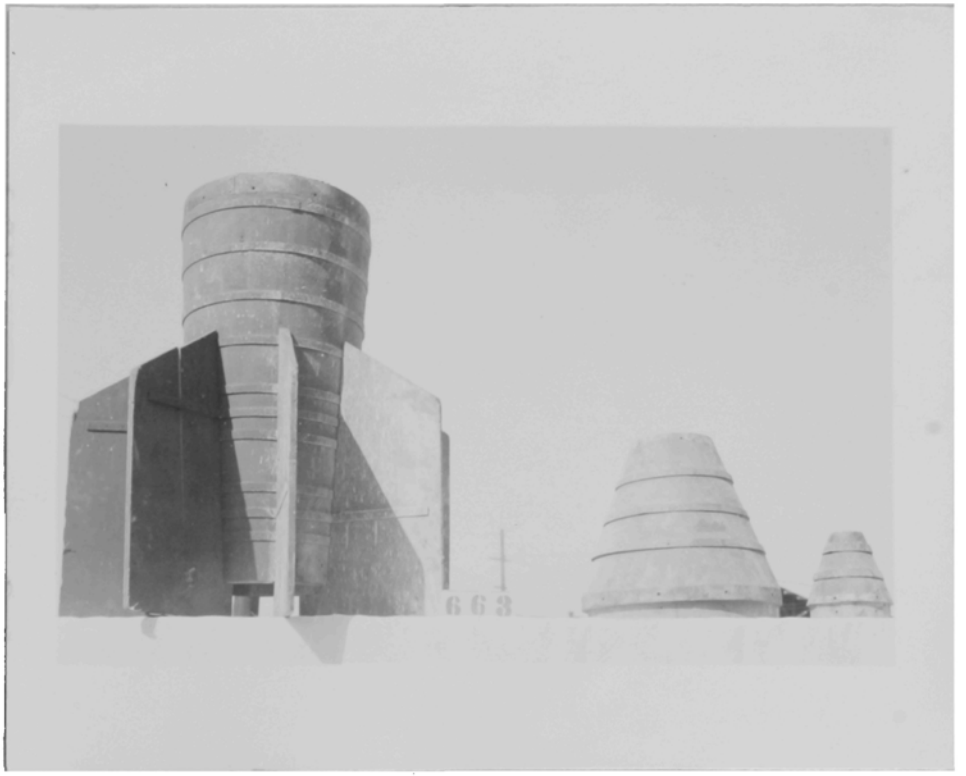
663-BOMB, LARGE WOODEN, VESICANT

General:
Color: Dirty dark brown.
Components: Nose, Tail (The body was not present for examination).

Description: Nose: The nose is divided into two parts. The base piece is conical shaped and is made of wooden staves which are held together by steel hoops. The bottom end is notched to fit into the end of the body. The upper part of the nose is conical shaped and is notched to fit into the end of the base piece. It is made of short wooden staves which are held together by two steel hoops. The entire nose is 33 in. long and 24 in. in diameter at the base.

Tail: The tail 52½ in. long, 23½ in. in diameter and weighs 123½ lbs. It is conical shaped and made of wood staves 1-5/8 in. thick. There are ten steel hoops holding the staves together. The front end is slotted to fit into the body. There are 8 fins, each of which are attached to str of steel by wood screws. The straps of steel are welded to the hoops. Each fin is 16 in. wide and 33½ in. long.

Remarks: Only the nose and tail of this bomb were availabl for examination. It is assumed that there is a wooden body t goes with the nose and tail, making an outside container for a metal container that is filled with a vesicant gas. This bomb is similar to Bomb, 14 in. Diam., Gas. (Item 666).



[redacted]

79A-BOMB, 2 Kg, SMOKE FLOAT, MOD. 4, YELLOW

General:

Color:	White body with yellow nose and two labels, one yellow and one pink.
Components:	Nose, body, tail.
Dimensions:	Overall Length 17½", Diameter 4½".
Weight:	4.9 lbs. (approx. 2 Kg)

Description: Nose: The nose is conoid shaped, made of thin sheet metal, and is spot welded to the body.

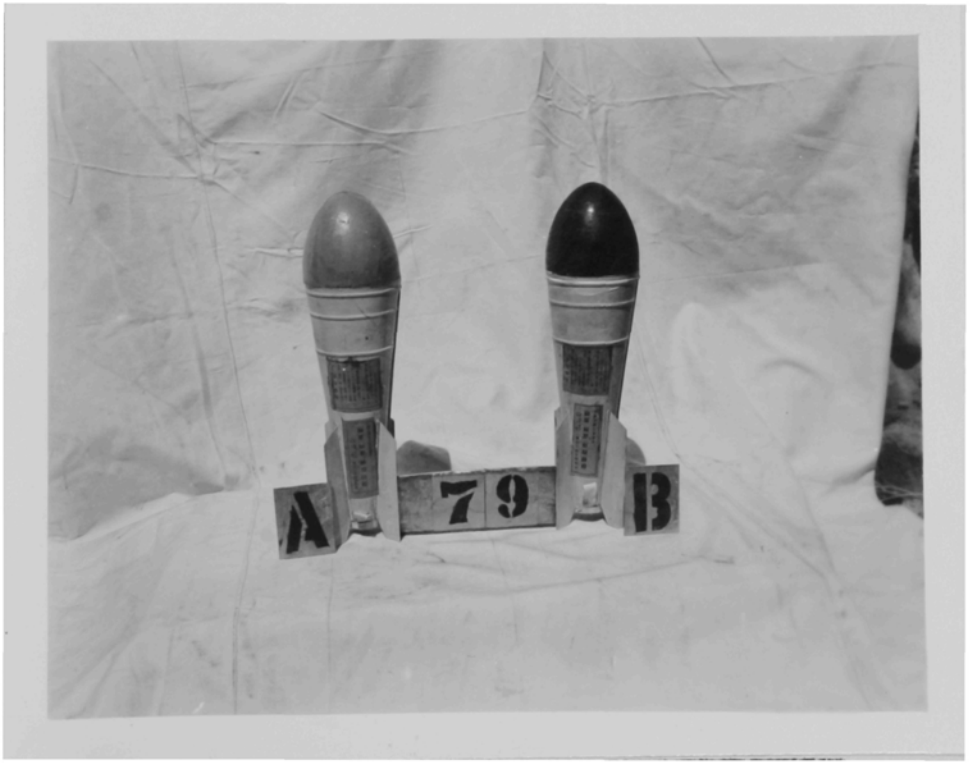
Body: The body is conical in shape, made of sheet metal, with 3 circular ridges near the nose. The body was made by crimping longitudinally.

Tail: The tail consists of four fins soldered equidistantly around the posterior part of the body. A red cardboard disc covers the trigger on the disc are Japanese characters, the translation of which is "Remove disc, pull trigger, drop at once".

Remarks: From the translation of the labels: Manufactured in March 1945 by Imperial Empire plant 7894, to be dropped from less than 700 meters.

This bomb is probably a revision Bomb, 2 Kg, Float, Smoke, described in Japanese Chemical Warfare pp. W30.

No analysis of the smoke mixture was made.



[redacted]

79B-BOMB, 2 Kg, SMOKE, FLOAT, MOD. 4, BLACK

General:

Color:	White body with black nose and two white labels
Components:	Nose, Body, Tail.
Dimensions:	Overall length 17½", Diameter 4½".
Weight:	4.77 lbs. (approx 2 Kg.)

Discussion: This bomb is identical to Bomb, 2 Kg, Smoke, Float, Mod. 4, yellow, except for the color of the nose and the color of the smoke.

Remarks: The constituents of the smoke mixture is unknown as no analyses were made.

635-BOMB, 2Kg, SMOKE, MODIFIED 2 (1932)

General:

Color:	The bomb is painted a battleship grey with chrome-yellow fins and nose. The top of the fuze reservoir is painted orange.
Markings:	There are two paper labels glued to the body section placed one above the other. The top label is description. The label below gives instructions for use and precautions to be observed in handling. There is a 4.5cm diameter cardboard cover fastened with paper over the fuze reservoir. This cover is further attached by a string and cotton ribbon to the fuze section. The cardboard bears identical labels on both sides which caution against pulling the firing pin prematurely.
Components:	The bomb is composed of a nose cap, body, and fuze reservoir.
Dimensions:	41 centimeters long, 13 centimeters in diameter at its thickest part.
Weight:	2,250 grams, (approx 5 lbs).

Description: The nose consists of a threaded brass insert in the lower end of the body and a brass conoidal cap threaded to it. The nose is slightly over 3cm long and 6cm in diameter. The body is fabricated from two pieces of 18 gage sheet iron and is crumped and soldered in joining. The shape of the body may be described as that of two inverted cones joined at their bases, and slightly truncated at their ends. Attached to the upper segment of the bomb body are three fins of 18 gage sheet iron shaped like ear lobes and measuring 16cm in length. At the upper extremity of the body is a cylindrical tube measuring 4cm in length and 4.5cm in diameter. This tube is fashioned of 18 gage sheet iron with crimped and soldered seam and is soldered to the body. This tube contains the fuse, firing trigger pin and pull ring assembly. The fuze is slightly recessed in this reservoir and is covered with the cardboard disc already described.

Remarks: The instructions as labeled indicate that this bomb is to be dropped at an altitude lower than 500 meters. Its heavy nose and bouyant design also indicate that it is intended for use by naval aircraft.

[redacted]





635-BOMB, 2Kg, SMOKE, MODIFIED 2 (1932)

[redacted]

633-BOMB, 5 Kg, TYPE 4, INCENDIARY,

General:

Color: Black bomb body with unpainted tin color tail.
Components: Body, Tail.
Weight: 5 Kg. (11 lbs.)(approx.)

Descriptions: Body: The bomb body is a steel tube, 1/8" thick, welded longitudinally and closed at the forward end by a 3/4" thick nose plug which is welded in place. Toward the rear end a circular wooden block inside the bomb tube serves to connect the body and tail of the bomb. It is secured by 6 countersunk wood screws. A simple impact fuse and spring loaded safety pin are contained in the block. Inside the bomb in approximately the middle is a cylindrical aluminum tube which contains the fuze. This tube is 2-7/8" long, and 1-3/16" in diameter, house the striker and a creep spring for setting off the fuze. The rear end is closed by a threaded plug, and a plug containing the primer screws into the forward end. The striker is held in position by a spring loaded safety pin.

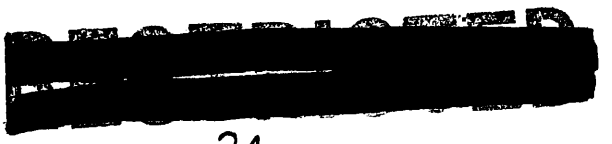
The main charge of the bomb is thermite.

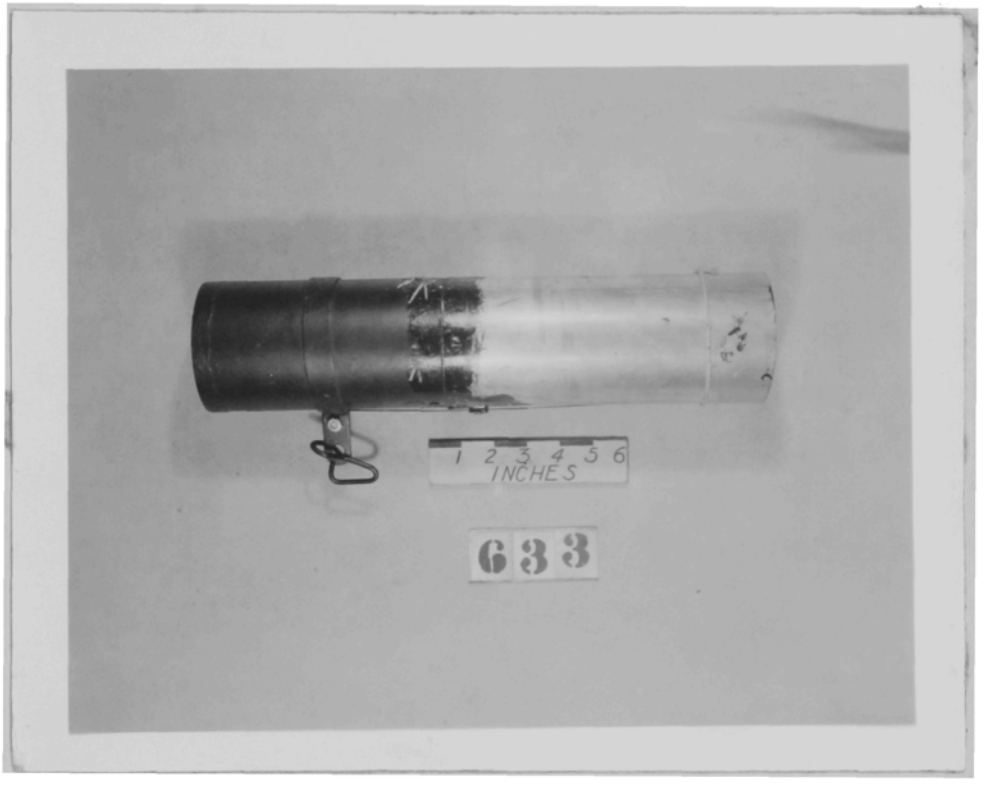
Tail: The tail, a tinned sheet steel tube, closed on the rear end, is secured to the wooden block by five screws. The wooden block is completely concealed by the body and tail, meeting flush. A slot in the tail fits the brass safety pin housing which is contained in the wooden block.

A steel band 3/4" in width is secured around the body by a bolt and nut. A hole drilled in the extension of the band accepts a metal hook which suspends the bomb on the plane.

Remarks: The bomb is armed when the arming wire is withdrawn. This occurs when the bomb is released from a plane. Impact causes ignition of primer, then fire charge, then the thermite mixture.

Reference: U.S.N.B.D., Japanese Bombs And Fuses, May 1945, pp 45C - 45D.





633-BOMB, 5 Kg, TYPE 4, INCENDIARY

[redacted]D

609-[illegible], FLOATING SMOKE FLARE

General:

Color- Blue gray
Markings- Two yellow labels giving directions.
Components - Nose, Body, Tail of thin sheet metal
Dimensions- 52 in. long, 12.1 in. diameter
Weight- 94½ lbs.

Description:

Nose: The nose is hemispherical shaped and is welded to the body.

Body: The body isconically shaped. A suspension lug is riveted and welded to the body about equidistant from each end.

Tail: The tail is made of three parts. The first part is a band, 3 in. wide, which is welded to the posterior end of the body. The second section of the tail is welded to the first section. The second section tapers to the rear and to this section are welded the front ends of the fins. The third section is cylindrically shaped and fits snugly against the second section and is attached to the fins with screws and is also spot welded. There is an extension on side of the third section and is closed with a plug that may be removed. The four fins are made of thin sheet metal.

Remarks: This flare is briefly described in Handbook of Japanese Explosive Ordanance, pp 245-246. According to this description the bomb contains an ejection charge, parachute, pull igniter and delay train, and a smoke compound. The parachute slows the fall of the bomb, and the delay train permits the flare to return to the water surface before the smoke compound is ignited.



11-INSERT, INCENDIARY, FOR 40 Kg. BOMB

General:

Color: Red
Markings: White labels
Components: Nose, First part of body, Second part of body
Weight: 39 lbs.

Description: Nose: The nose is 8 in. long and 5.4 in. in diameter at the base and 3.4 in. in diameter at the top. The posterior part of the nose piece is cylindrically shaped and the top 3½" is conical shaped. There is a hole, 0.7 in. in diameter, running through the entire piece. There are four holes, plugged with thin metal discs, in the top of the nose piece. Both ends of the nose are closed by threaded discs which can be removed with a two pronged wrench.

First Part of Body: The first part of the body is 4.1 in. long and 5.5 in. in diameter. A hole 0.7 in. in diameter runs completely through the center of the piece. There are square slots in the side wall of the hole, permitting the ignition of the black powder spots inside. The black powder spots are starting mixtures that ignite the incendiary mixture. There are four holes in one end which are plugged with thin metal discs. The other end of the cylinder is closed with a threaded disc which can be removed.

Second Part of Body: The second part of the body is made up of two half cylinders, each of which is 9.2 in. long and has a radius of 3.2 in. when the two pieces are put together they form a cylinder with a hole down the center, 0.7 in. in diameter. In the sidewall of this hole, there are ports that permit the ignition of the mixture inside the half cylinders. There are 3 holes, 0.8 in. in diameter, plugged with thin metal discs, in each of the half cylinders. The top of each cylinder is secured by nine screws.

Remarks: The type of incendiary filling was not chemically analyzed, however it appeared to be thermite. This insert would be slid into the bomb casing from the rear. Label on insert stated it was to be used in a 40 Kg bomb, however type was not specified.



11-INERT, INCENDIARY, FOR 40 Kg, BOMB

[redacted]

419-BOMB, 60KG, TYPE 3, NO. 6, MK 27, MODEL 1, ROCKET

General:

Colpr:	Blue gray
Markings:	One green band and silver band (both near the nose).
Components:	Nose, Body, Tail.
Dimensions:	54" long, 8" diameter.
Weight:	60 Kg. (approx) less fuze.

Description: Nose: The nose is conical shaped and the nose plug can be removed and replaced by a fuze.

Body: The body is a steel cylinder with bell shaped ends. The nose is fitted into one end and the tail fits into the other end. There is a machined surface slide bar, 17½" long, 1-3/16" wide, and a seat ½" deep. The slide bar is located 12" from the nose tip and is attached to the body by four counter sunk machine screws.

Tail: The tail is secured to the body by six screws. The tail is conical shaped, and to are attached four fins which are secured by rivets. A metal disc closes the end of the tail cylinder, which is held in place by a wing nut.

The tail is empty except for two wires which are attached to a perforated disc at the posterior end of the body. The opposite end of the wires are loose and, presumably are to be attached to a battery or electrical device for detonating.

Remarks: An attempt was made to disassemble the bomb, but this failed due to lack of suitable equipment. The contents of the bomb are unknown, but it is believed to be pellets as the movement of them can be heard when the bomb is rotated.

From the appearance of the slide bar, the bomb is to move along a grooved runway. It is believed that this bomb can be launched from an airplane or from a ground launcher.

[redacted]



419-BOMB, 60 LG, TYPE 3, NO. 6, MK 27, MODEL 1, ROCKET

[redacted]

304B-BOMB, 70 kg, TYPE 1, NO 7, MARK 6, MODEL 3, MODIFICATION 2

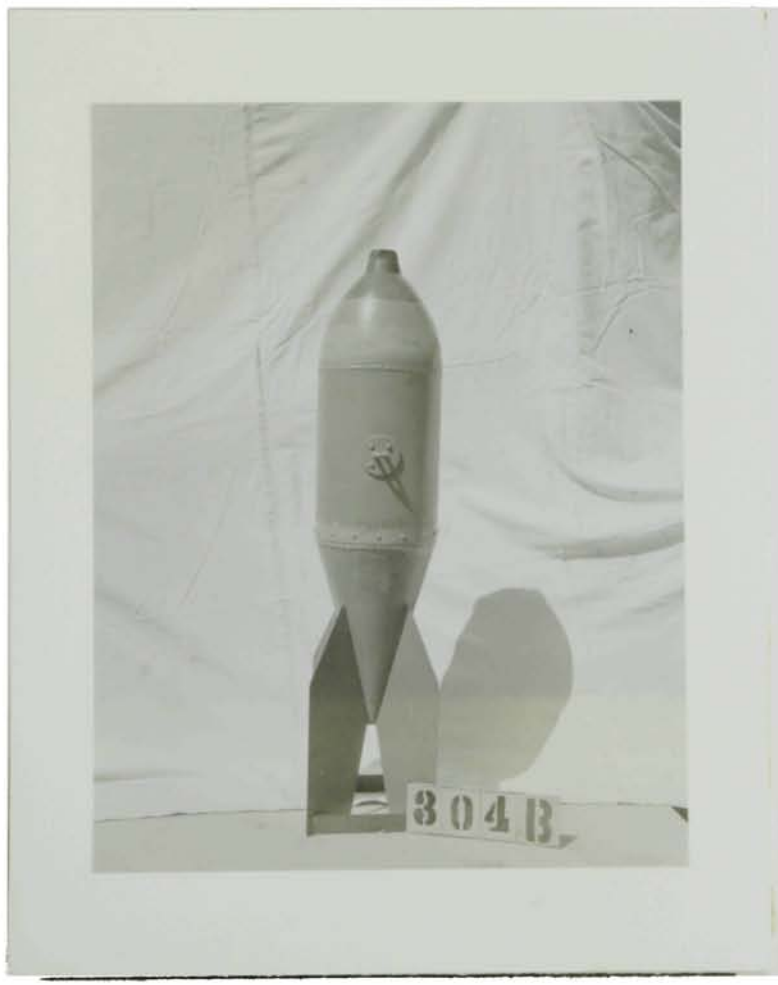
General:

Color:	Blue gray
Markings:	Red nose and red fin struts.
Dimensions:	42½ in long, 9½ in. diameter
Weight:	157 lbs.

Description: The nose is ogival shaped and has a wooden plug, threaded, which can be removed and replaced by a fuze. The nose is welded to the body. The suspension lug is riveted to the body, and the tail is secured to t the body by a row of screws. Four fins are welded to the tail and are braced by struts.

The bomb filling is made up of six components parts. There is a disc of picric acid in the nose, 0.7 in. thick, 5.5 in. in diameter. Following the disc of picric is a steel plate which is covered with cloth and burlap. There are four containers of incendiary pellets and a gray powder. The powder contains magnesium, aluminum, and iron oxide. The pellet is made of rubber, iron oxide, magnesium, aluminum, and a black powder top. No complete analysis was made on the constituents. Only spot tests were made. Perforated felt washers separate the containers.

Remarks: Presumably this bomb is a slight modification of Navy Incendiary Bomb, Type 1, No 7, Mk 3, Modif. 1, referred to in the looseleaf notebook "Japanese Chemical Warfare" p.W33, differing only in the incendiary filling.



88-BOMB, PRACTICE, TYPE 95, 4 Kg.

General:

Color:	Black
Markings:	None
Components:	Nose, Body, Tail.
Dimensions:	29.6" long, 4.75" Diameter.
Weight:	4 Kg. (approximately)

Description: Nose: The nose is hemispherically shaped and is made of concrete or some similar material that has been mixed and poured into a casting.

Body: The body is made of thin sheet metal and is conical shaped. There is a suspension lug about 4½" from front end of the body.

Tail: The tail is made of wood to which is attached a fin assembly which is made up of 4 fins and 8 fin struts. There is a perforated metal cylinder fitted between the fins and attached to the end of the wood tail. There is a safety pin and pull cord located where the tail joins the body.

Remarks: There is a diagram of this type bomb in the U.S.N. B.D. Japanese Bombs and Fuses pp 73b. Obviously it is used for practice purposes by bomber personnel.



328-BOMB, 10Kg, Mk. 1, PRACTICE

General:

Color:	Black from suspension lug forward, white from suspension lug rearward.
Markings:	Green tipped nose, one white tag and one yellow label giving data on bomb.
Components:	Nose, Body, Tail made of sheet metal.
Dimensions:	28 in. long, 4.8 in diameter
Weight:	22 lbs.

Description:

Nose: The nose is ogival shaped and is attached to the body by 6 small machine screws. The nose is one complete piece _____ no hole for a fuze

Body: The body is equipped with two suspension lugs, located diametrically oppositeeach other. The posterior part of the body is conical shaped and is equipped with one removable plug and one dummy plug, each of which is parellel to a suspension lug.

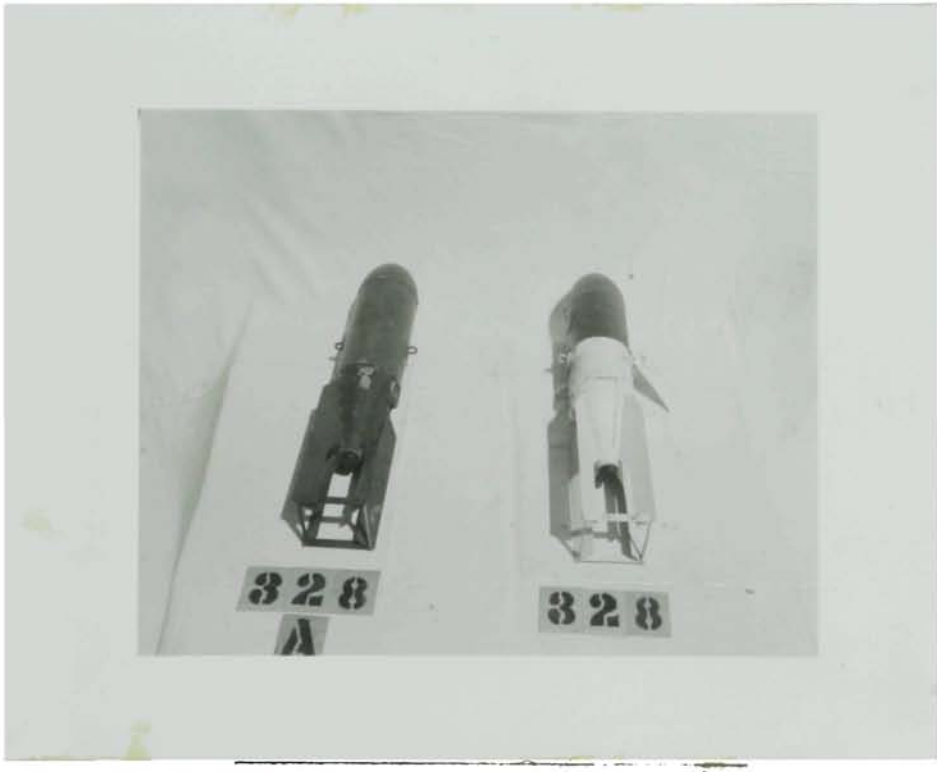
Tail: The tail is conical shaped and has four openings cut into it, one between each two fins. The tail fits around the conical part of the body and is attached to the main part of the body by 6 machine screws. The conical part of the body is separated from the main part of the body by a cardboard washer. There are four fins, with struts, attache to theconical tai tail.

Remarks: The translation of the tag and label gave the following information: The explosive, shimose powder, was manufactured in November 1942, by Mitsui Co. The filling was manufactured in March 1944 by the Yokasuka Arsenal The empty bomb was made in February 1944 by Hanakawa.

This bomb is similar to the Bomb, 30 Kg, Model 1, Practice. The size seems to be the only great difference.

Although no examination was made of th filling, it is believed to be concrete with a small amount of smoke mixture to indicate where the bomb hits. The small amount of explosive, presumably sets off the smoke mixture.

Photograph shows this item and 328..



328-Post, 1946. No. 1, IDENTICE

328 BOMB, Kg, Mk. 1, PRACTICE

General:

Color:	Red
Components:	Nose, Body, Tail
Dimensions:	20 in. long, 4.8 in. diameter
Weight:	21 lbs.

Remarks: From all outward appearences this bomb is identical with Item 328 except for different color.

Photograph illustrating 328 shows this item marked A.

[redacted]

364-BOMB, TRAINING SMOKE

General:

Color:	Olive drab.
Components:	Nose, Body.
Dimensions:	17½" long, 6" diameter.
Weight:	30 lbs.

Description: Nose: The nose is ogival shaped and is made of concrete. The nose fits inside the end of the metal body.

Body: The container is made of sheet metal. It is much like a No. 10 can. There is a perforated disc on the bottom over the end disc. There is a short threaded extension in the center of the base of the bomb. The threaded extension is surrounded by a perforated flange.

Remarks: It is not known how this bomb is dropped as there is no suspension lug. The filling in the base is unknown. As this was the only one of this kind available, no attempt was made to open it. It is believed that it is detonated by a fuze that screws on the extension on the base of the bomb.



[redacted]

661-BOMB, 30 Kg, MODEL 1, PRACTICE

General:

Color:	Black from suspension lug forward, white from suspension lug rearward except for the conical part of the body which is black.
Markings:	White tag and yellow label giving manufacturing data, parellel red stripes diametrically opposite, extending from nose to tail.
Dimensions:	34 in. long, 7 in. diameter.
Weight:	67½ lbs.

Description: The body and nose are one piece of metal which has an ogival shaped end. There are two suspension lugs located diametrically opposite each other, each attached to the body by four rivets.

The tail is attached to the body by 8 small machine screws. The tail is conically shaped and fits over the conical shaped part of the body, holding it against the main part of the body. There is a movable cap screw in the conical shaped body. Four fins are spot welded to the tail, and struts brace the fins.

Remarks: The translation of the label gave the following information: The explosive, shimose powder, was made by the Mitsui Co. in September 1944. The filling was made in November 1944, by the Yokasuka Arsenal, and the bomb case was made in April 1944, by Kotobuki Co.

This bomb is similar in description to the Bomb, 31 Kg. Type 99. No 3, given in U.S.N.B.D. pp 72-73.

Another bomb was examined and was found to be identical with the one described above except it did not have the parellel red stripes and did have a blue nose tip. (apparently marked by new system)

The filling of this bomb is unknown, but it is believed to be concrete with a small amount of smoke mixture to indicate where the bomb hit. The small amount of explosive, presumably sets off the smoke mixture.

Photograph for this item shows item 661A as well.

[redacted]



661-BOMB, 30 KG, MODEL 1, PRACTICE

[redacted]

661A-BOMB, 30 Kg, MODEL 1, PRACTICE

General:

Color:	Orange
Markings:	Blue nose tip, yellow label, white tag giving manufacturing data.
Dimensions:	34 in. long, 7 in. diameter.
Weight:	68½ lbs.

Description: The nose is ogival shaped and is welded to the body. There is one suspension lug riveted to the body of the bomb.

Remarks: Except for the above mentioned differences, the outward appearance of this bomb is identical with the one described as Item 661. Although no examination was made of the content of this bomb it believed to be the same as the one reported as item 661. It is believed that the orange color was a prime coat of paint and that the final coat of black and white was to be added before it was used.

Photograph for 661 shows this bomb marked A.

34-BOMB, TARGET INDICATOR, 2KG, TYPE 2

General:

Color:	Black
Contents:	FM (titanium tetrachloride)
Dimensions:	17" long, 3" diameter
Weight:	4 lbs. 1 oz.

Description: The bomb is a fuzeless bakelite container. The tail fins are made of sheet steel and the bomb is closed by a paper nose cap filled with iron fillings. A sealed glass tube closes the after end. A steel ring held to the body by a tin strip is for suspension.

Remarks: When the bomb is dropped from a high altitude the case will rupture on impact, releasing the FM mixture giving a smoke signal. If the case does not rupture, the glass tube in the tail may break allowing the FM to be ejected by air pressure within the bomb.

Reference: "Handbook of Japanese Explosive Ordnance", ONAV 30-3H, 15 August 1945, P. 246.



662-BOMB, 2 Kg, WINDOW, MODELS 1 AND 2

This bomb has been found in two models, 1 and 2. The two models are described separately below.

MODEL 1

General:

Color:	Battleship gray overall
Labels:	Two yellow labels, One white band near the nose,
Components:	Nose piece, barrel, four equally spaced tail fins, end cap.
Dimensions:	1-3/4" Diameter, Overall length 37".
Weight:	4 lbs.

Description: Reference is made to this bomb in "Additions No. 4 to Japanese Bombs and Fuzes" NAVORD 1387B pp 93a and 93b as follows. "Bomb case consists of a nose piece, barrel and end cap. Nose piece is made of wood and has a hole in the center to accommodate the string attached to the pull igniter. End of nose piece is sealed with a paper disc which is removed when the bomb is to be used. Nose piece is secured to barrel by six nails. Barrel is of light sheet metal construction soldered longitudinally. After end is closed by and end cap of similar metal and is held in place by a sealing tape."

"Four equally spaced tail fins are soldered to the barrel one inch from the after end of the case. Two sets of tail struts support the fins".

"Filling of the bomb case consists of 250 metal coated paper strips and an inner cylinder which contains the delay element and ejection charge. A metal disc closes the nose end and another metal disc is soldered in place 1-5/8" from the tail end. Space between the two discs is filled with 383 gr of iron pyrite to make the bomb nose heavy". Inspection of bomb on hand shows agreement in every point to above description.

Remarks: The tactical use of this bomb is to create a "window" in radar controlled flak.

In operation the nose is opened and the pull cord is held while the bomb is dropped from the plane which is making the flak run. The pull cord trigger releases a striker which ignites a fuse. The fuse ignites a propelling charge which ejects the silver paper strips.

662-BOMB, 2 Kg, INDOV, MODELS 1 AND 2

MODEL 2

General:

Color:	Black
Markings:	Three yellow paper labels. Two white bands near the nose. A red paper label glued over the nose piece.
Components:	Nose piece, barrel, four equally spaced tail fins, and end cap.
Dimensions:	2" Diameter, 37" Long.
Weight:	4 lbs.

Description: The body of the bomb is essentially a cardboard barrel. Inserted in one end and nailed to it with five nails is a hollow wooden nose plug. The nose plug well is sealed with a paper and cardboard cover which may be torn off by pulling a short cloth tape. Inside of this well is a pull cord to which is attached a $\frac{1}{4}$" lead ball marked "2".

The fins are also of cardboard and measure 11-3/4" long by $\frac{1}{2}$" in width.

The end cap is a black lacquered metal cover which is attached to the bomb with black paper tape. When this cover is removed a well containing a charge of silver paper foil is exposed.

Remarks: This bomb is similar to Model 1 described in "Addition No. 4 to Japanese Bombs and Fuzes" U.S.Navy NAVORD 1387B pp 93a and 93b. In operation and tactical use this bomb performs in a manner identical to Model 1.



[redacted]

636A-BOMB, FLARE, ILLUMINATING A

General:

Color:	Blue-gray with white band and yellow labels.
Markings.	Japanese characters giving nomenclature and directions for use.
Dimensions:	22⅓" long, 6¼" diameter, tapering to 3.4" at the nose and tapering to 5.2" at the tail.
Weight:	13.9 lbs.

Description: The body of the bomb is conical in shape and has a spherical nose which is welded to the body. The tail is attached to the body by 8 rivets. Four fins, equidistantly spaced are welded to the tail. They are 7 in. long, 2.2 in. wide, tapering to 1 in. and have rounded ends. Metal strips ½" wide connect the fins to each other.

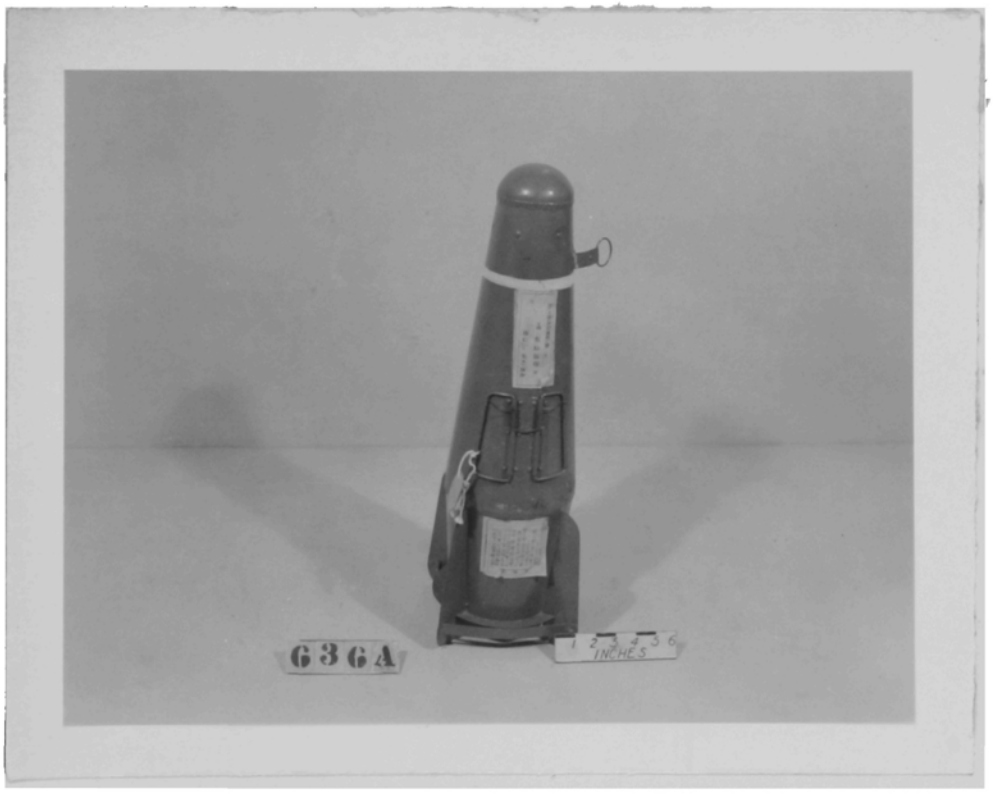
A metal cap 4.4 in. in diameter covers the end of the tail and protects the pull cord and safety pin. Two carrying handles, equipped with springs, are attached to the body of the bomb. On the exterior of the body is a tear strip which covers a small water inlet hole.

Function: This bomb is launched by hand. Before dropping, remove tear strip and safety wire and pull out the percussion igniter catch.

Remarks: No analysis was made of the contents of this bomb. In U.S.N.B.D., "Enemy Bombs and Fuses", there is described a flare bomb, very similar, which was manufactured in 1940 and does not have the fin struts. According to the label on this bomb, it was manufactured in May 1945. This bomb and Bomb, Flare, Illuminating B are very similar.

Performance: This bomb when test fired burned for 3 minutes, gave a very bright white flame and also gave off very thick smoke. It may be used as a signal day or night.

[redacted]



636A-BOMB, FLARE, ILLUMINATING A

RESTRICTED

636B-BOMB, FLARE, ILLUMINATING B

General:

Color:	Blue-gray with two white bands, and white labels.
Markings:	Japanese characters giving nomenclature and directions for use.
Dimensions:	22½" long, 6¼" diameter, tapering to 3.4 in. at the nose and tapering to 5.2" at the tail.
Weight:	13.4 lbs.

Description: This bomb is identical in its external features to Bomb, Flare Illuminating B except for the two instead of one white band on the body and the B in the nomenclature on label instead of A.

A hemispherical nose is welded to the conical shaped body. The tail is secured to the body by 8 rivets. Four fins, equi-distantly spaced are welded to the tail. They are 7 inches long, 2.2 inches wide, tapering to 1 inch and have rounded ends.

Metal struts ½ in. wide connect the fins to each other. A metal cap 4.4 in. in diameter covers the end of the tail and protects the pull cord and safety pin. Two carrying handles, equipped with springs to hold them against the body, are riveted to the bomb.

A pull strip which covers a small water inlet hole is attached to the body near the nose.

Function: This bomb is hand launched. Before lauching pull the metal strip and safety pin, and pull out the percussion igniter catch.

Remarks: The type of filling is unknown as no examination was made.

According to the label, the burning time of bomb is 3-1/3 minutes, which is 2 minutes longer than the burning time given for the very similar flare bomb described in U.S.N.B.D. "Japanese Bombs and Fuses".



636B-TOMB, FLARE, ILLUMINATING B

RESTRICTED

669-BOMB, 15 Kg, ANTI-PERSONNEL, HE

General:
Color: Gray
Components: Nose, Body, Tail
Dimensions: 25 in. long, 3.9 inches diameter.
Weight: 27½ lbs. (empty).

Description: Nose: The nose is ogival shaped and is attached to the body by three small machine screws. The fuze hole is threaded and has two grub screws to prevent the loosening of the fuze.

Body: The body is cylindrically shaped with 8 grooves running the entire length of the body. The grooves are equally spaced around the circumference of the body. There is a rectangular suspension lug located in the mid section of the body. There is a second suspension lug attached to the tip of the fins.

Tail: The tail is conical shaped to which are riveted four fins. The fins are braced by narrow struts.

Remarks: The general outside appearance is similar to the Japanese 15 Kg Anti-Personnel-HE.Bomb described in U.S.N.B.D. pp 16-17.



[redacted]