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U. S. NAVAL TECHNICAL MISSION TO JAPAN
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December 1945

RESTRICTED

From: Chief, Naval Technical Mission to Japan.
To : Chief of Naval Operations.

Subject: Target Report - Japanese Bombs.

Reference: (a)"Intelligence Targets Japan" (DNI) of 4 Sept. 1945.

1. Subject report, covering Target O-23 of Fascicle O-1 of reference (a), is submitted herewith.

2. The investigation of the target and the target report were accomplished by 1st Lt. E.W. Graham, USMCR, and Lt.(jg) R.E. Quale, USNR, with the assistance of Lt.(jg) F.T. Purdy, USNR, Lt.(jg) P.R. Eells, USNR, and Sgt. I.N. Rosenbaum, USMCR.



C. G. GRIMES
Captain, USN

RESTRICTED

O-23

JAPANESE BOMBS

"INTELLIGENCE TARGETS JAPAN" (DNI) OF 4 SEPT. 1945

FASCICLE O-1, TARGET O-23

DECEMBER 1945

U.S. NAVAL TECHNICAL MISSION TO JAPAN

SUMMARY

ORDNANCE TARGETS

JAPANESE BOMBS

Bombs are discussed according to Japanese designations, and are grouped according to Japanese classes. These are: Land Bombs; Ordinary Bombs; Special Bombs designated by Mark Numbers 1 to 33; and Practice Bombs.

The report on each bomb includes its use, history, fuzing, a list of previous reports, a list of documentary references, a general description, and a statement of the status of specimens of the bomb.

This report should be used in conjunction with the Japanese documents referred to in connection with each bomb, and with the U.S. Navy publications listed as previous reports.

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REFERENCES

Location of Targets:

Branch of the First Air Technical Arsenal, Kanazawa, YOKOHAMA.

Gunnery School, Yokosuka Naval Base, YOKOSUKA.

Ikego Ammunition Dump, ZUSHI.

Japanese Personnel Interrogated:

Captain SUZUKI, Ordnance Officer of Gunnery School, YOKOSUKA.

Commander HAYAKAWA, Head of Design Sub-Section of Bombing Section, First Air Technical Arsenal.

Lieut. Commander KAMIYA, Design Sub-Section of Bombing Section, First Air Technical Arsenal.

Lieut. Commander TAKAGI, Head of Pyrotechnics Section, First Air Technical Arsenal.

Japanese Personnel Who Assisted in Collection of Documents and Equipment:

Mr. ISHIZAKA, civilian chemist at First Air Technical Arsenal.

INTRODUCTION

This report describes findings in the field of Japanese Navy Bombs and bomb components. The material has been collected from Japanese personnel intimately connected with this subject in the field of research and design.

The material in this report has been verified, so far as possible, by inspection of equipment and by means of previous reports.

The documents listed as references have been translated only where necessary to provide information on specific points. They will be available at Washington Document Center and will provide detailed information.

For convenience, the following information is given here:

Common Bomb Fillers

Shimose	Picric Acid
Type 91	Trinitroanisol
Type 98	Trinitroanisol 70%, HND 30%

Bomb Designation

Type	Year of adoption
Number	Approx. wt. in kg by adding zero
Model	Major change in bomb
Modification	Minor change in bomb
Land	Land use bomb
Ordinary	General purpose
Mark 1-33	Special bombs

THE REPORT

A. LAND BOMBS

NUMBER 6 LAND BOMB

Use: Against land installations.

History: Obsolete.

Fuzing: Type 2 Model 2 or Type 2 Model 2 Modification 1 nose bomb fuze.

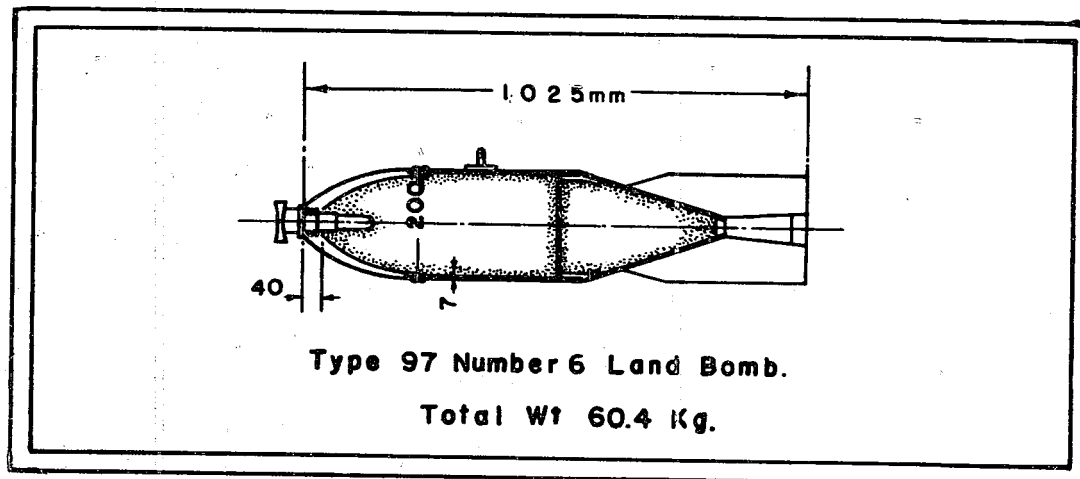
Previous Reports: Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4034 ND21-4035 ND21-4036

General: The case of this bomb is similar to the Type 99 Number 6 Mark 2. It is loaded with Shimose, and later Type 98 was used. Whenever the bomb was filled with Type 98, the designation was changed to Number 6 Modification 1 land bomb. The suspension lug is capable of lifting 630 kg. Total Weight is 63.5kg.

Specimens: None available.

TYPE 97 NUMBER 6 LAND BOMB

Use: Against land installations.

History: Most common Navy bomb.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 nose fuze with A or B gain for Type 97 bomb or Type 92 Model 2 Modification 2, 3, 4, or 5 bomb fuze.

Previous Reports: MEIU #1 R-11C. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

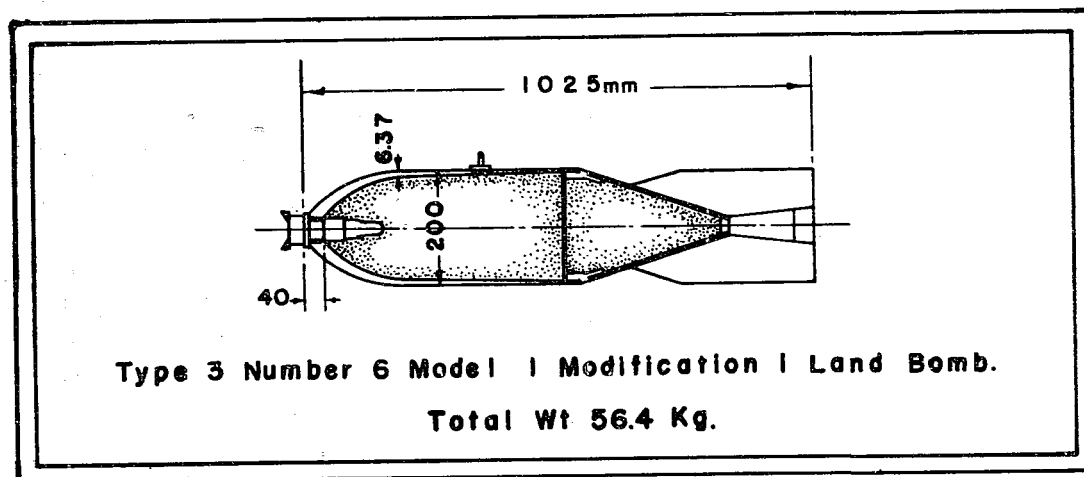
References:

NavTechJap Document No.

ND21-4025 ND21-4007.1

General: This bomb is loaded with Type 98 Modification 1 explosive charge with a loading factor of 39.07%. It will penetrate 200mm of reinforced concrete. The nose section is riveted to the tubular body.

Specimens: Previously shipped.

TYPE 3 NUMBER 6 MODEL 1 MODIFICATION 1 LAND BOMB

Use: Against land installations.

History: Designed in 1944.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 nose fuze with Type 97 land bomb gain A or B or Type 92 bomb gain Modification 2, 3, 4, or 5.

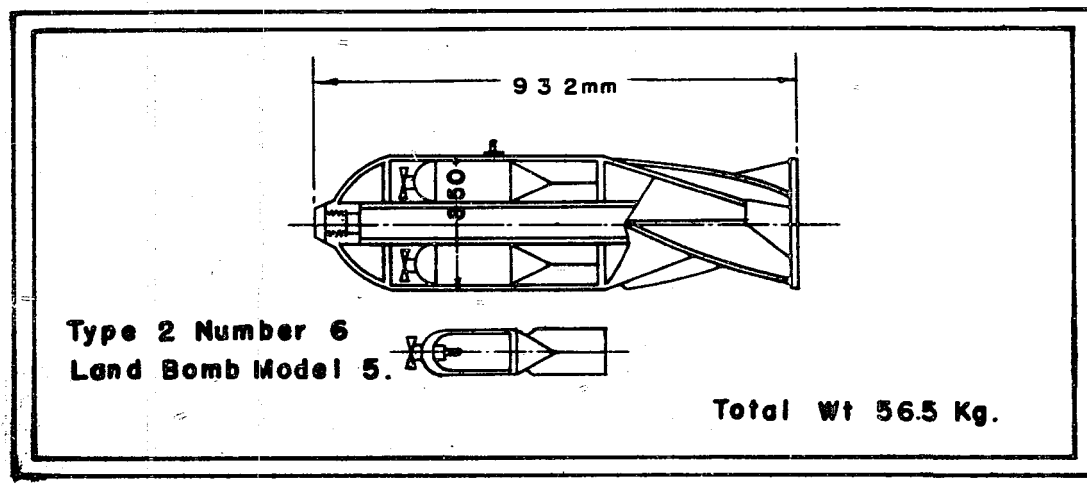
References: NavTechJap Document No.

ND21-4025 ND21-4007.1

General: This bomb is very similar to the Type 97 Number 6 Modification 1 land bomb but differs in nose construction in that the nose section is not riveted to the body. It is loaded with Type 98 Modification 1 explosive charge with the loading factor being 41.7%. The bomb will penetrate 200mm of reinforced concrete.

Specimens: None available.

TYPE 2 NUMBER 6 MODEL 5 LAND BOMB
 (Container for five 7kg bombs)



Use: Against airstrips.

History: Designed January 1943; adopted June 1943.

Fuzing: Type 97 land bomb nose fuze with A or B gaine.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS. (July 1944-May 1945)

References: NavTechJap Document No.

ND21-4007.1

General: This bomb is a sheet metal container having five 7kg A/P or anti-parked aircraft bombs. It is composed of two end sections, nose and tail, and a central burster tube. The tail section has offset fins to cause the bomb to rotate. Centrifugal force at 1000 RPM induced by rotation of the bomb expells the 7kg bombs.

Specimens: Previously shipped.

NUMBER 25 LAND BOMB AND MODIFICATION 1

Use: Against large land installations.

History: Obsolete.

Fuzing: Type 2 nose bomb fuze with A or B gaine. Type 15 Model 2 tail bomb fuze with A or B gaine.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance.

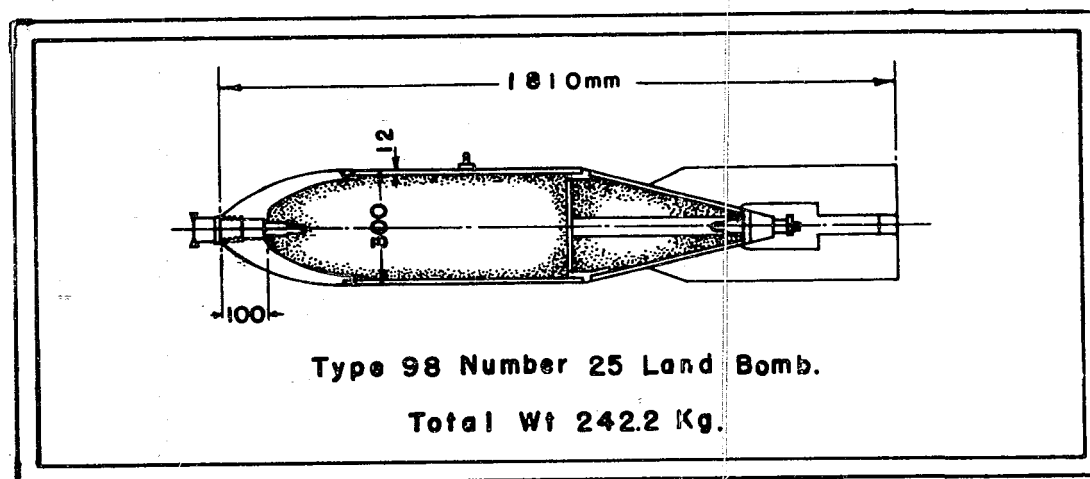
References: NavTechJap Document No.

ND21-4037	ND21-4039	ND21-4041	ND21-4043
ND21-4038	ND21-4040	ND21-4042	

General: This is a typical land bomb designed in 1938. It was reported that production ceased during the early stages of the war. Complete drawings of this bomb and manufacturing details may be found in the references mentioned above. Total Weight 258 kg.

Specimens: None available.

TEMPORARY DESIGNATION TYPE 98 NUMBER 25 LAND BOMB
TYPE 98 NUMBER 25 LAND BOMB
TYPE 98 NUMBER 25 MODEL 1 LAND BOMB
TYPE 98 NUMBER 25 MODEL 1 MODIFICATION 1 LAND BOMB



Use: Against land installations.

History: Designed in 1937; adopted 1938.

Fusing: Type 97 Mark 2 Model 2 Modification 1 nose bomb fuze and Type 15 Model 2 Modification 1, 2, or 3 with Type 97 land bomb gaine A or B, or Type 92 Modification 2, 3, 4, or 5 bomb gaine.

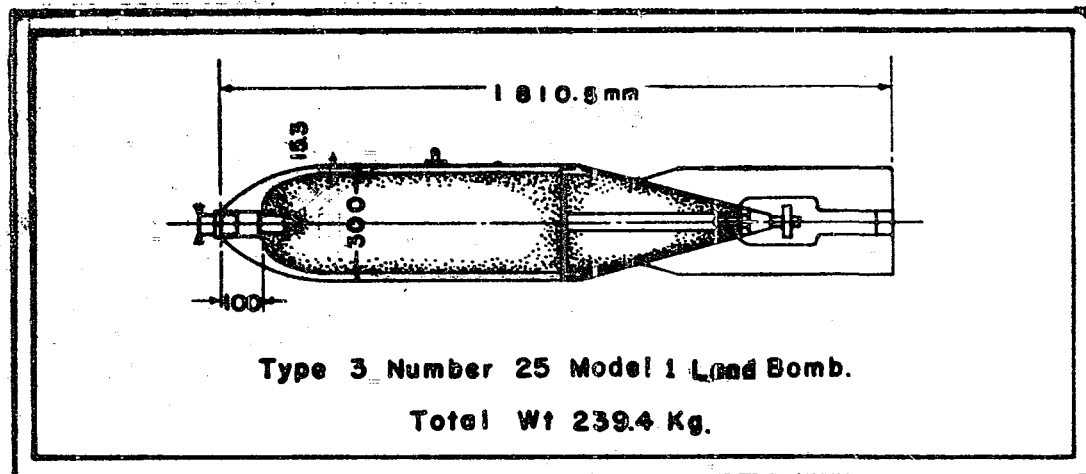
Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

References: NavTechJap Document No.

ND21-4036 ND21-4045 ND21-4047 ND21-4050.1
 ND21-4044.1 ND21-4046 ND21-4049

General: These bombs have a 57mm larger diameter and a shorter nose than the Number 25 and Number 25 Modification 1 land bomb. They will penetrate 400mm of reinforced concrete. The bombs are filled with Type 98 explosive charge, with a loading factor of 39.88%.

Specimens: Previously shipped.

TYPE 3 NUMBER 25 MODEL 1 LAND BOMB

Use: Against land installations.

History: Adopted 1944.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 nose bomb fuze and Type 15 Modification 1, 2, 3 tail bomb fuze with Type 97 land bomb gaine A or B or Type 92 Modification 2 bomb gaine.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025

General: This bomb has the typical ordinary bomb construction. The nose and barrel are manufactured as one piece. The case of this bomb 3.3mm thicker than Type 98 Number 25 Model 1. The explosive charge is Type 98 with a loading factor of 40.5%. It will penetrate 400mm of reinforced concrete.

Specimens: Not available.

NUMBER 30 LAND BOMB
NUMBER 33 LAND BOMB

References:

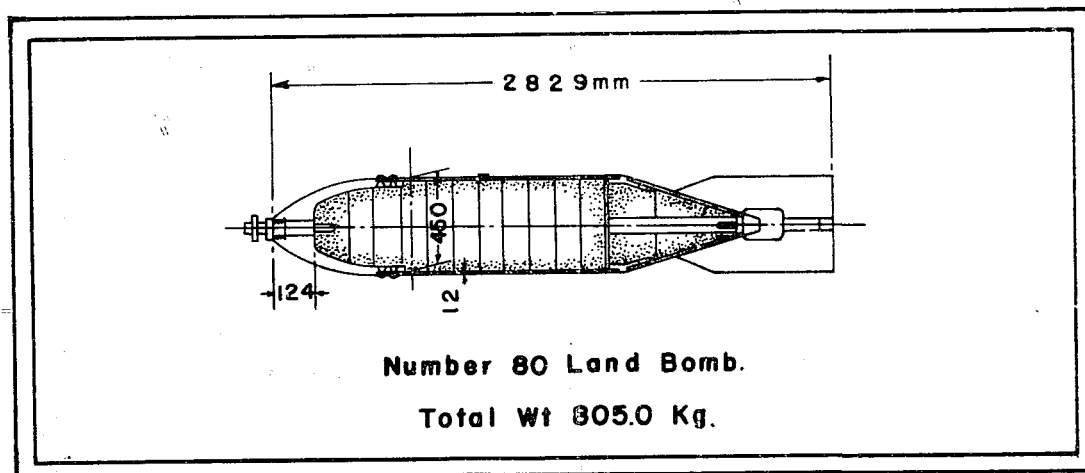
NavTechJap Document No.

ND21-4054 ND21-4056 ND21-4058
ND21-4055 ND21-4057

General: These two bombs are obsolete and were not used in this war, but are herein reported as being of possible interest in connection with the evolution of Japanese Navy bombs. Although their designations described them as land use bombs, their characteristics are actually those of ordinary streamlined bombs. Number 30 is nose fuze with Type 2 Model 2 nose fuze, while Number 33 has the same nose fuze but is also tail fuze with Type 15 Model 2 tail fuze.

Specimens: None available.

NUMBER 80 LAND BOMB
NUMBER 80 MODIFICATION 1 LAND BOMB



Use: Against land installations.

History: Designed 1937; adopted 1938.

Fuzing: Type 97 Mark 2 Model 1 Modification 1 nose bomb fuze and Type 15 Model 1 Modification 2, 3 tail bomb fuze with Type 97 land bomb fuze A or B or Type 92 Modification 2, 3, 4, or 5 gaine.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

References:

NavTechJap Document No.

ND21-4007.1 ND21-4051 ND21-4053
ND21-4025 ND21-4052

General: These bombs will penetrate 400mm of reinforced concrete and have a loading factor of 47.45%. The explosive charge of the Number 80 land bomb is Shimose; the modification is filled with Type 98. Suspension of these bombs is accomplished by an eyebolt of regular Navy type welded to a steel band. The band is placed at the center of gravity of the bomb and held in place by the two rectangular lugs on the bomb body.

Specimens: Previously shipped.

B. ORDINARY BOMBS.**NUMBER 3 MODEL 2 ORDINARY STREAMLINE BOMB**

Use: General bombardment.

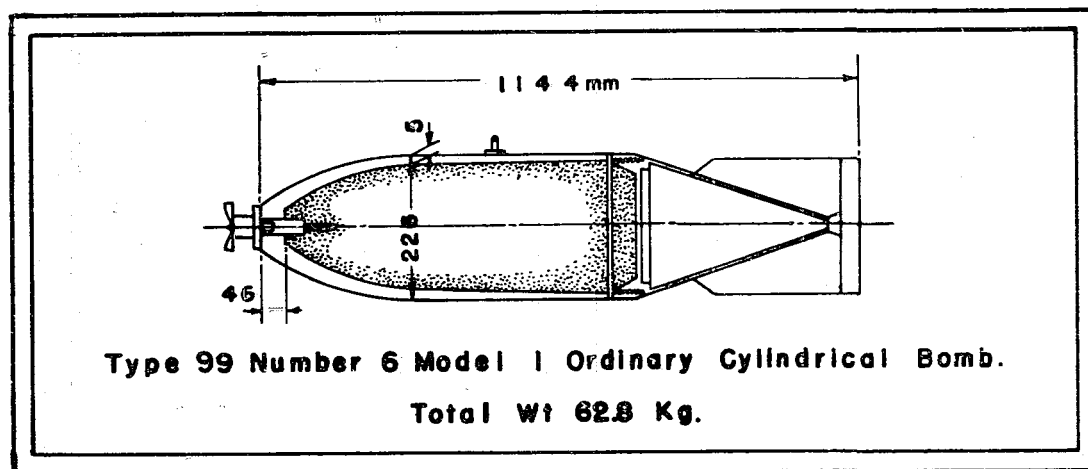
History: Very early bomb; obsolete.

Fuzing: Some form of Type 97 nose fuze.

Previous Reports: MEIU #1 R-110.

General: This is a typical ordinary streamline bomb, designed and used very early. It has been obsolete since the early stages of the war, probably because of its size. It is Shimose loaded with a loading factor of approximately 40%.

Specimens: Specimens of this bomb have been previously recovered and shipped.

TYPE 99 NUMBER 6 MODEL 1 ORDINARY CYLINDRICAL BOMB

Use: Against ship targets.

History: Designed 1938; adopted 1939; very common operationally.

Fuzing: Type 97 Mark 2 Model 2 nose fuze, Type 99 gaine A or C.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.
ND21-4007.1 ND21-4025

General: One of the most common Japanese Navy bombs, the Type 99 is of standard construction for ordinary cylindrical bombs. It is designed for and is capable of penetrating 25mm of armor plate. Standard filling is Shimose with loading factor of 47.73%. With instantaneous gaine, it produces effective fragmentation.

Specimens: Specimens have been shipped.

NUMBER 6 MODEL 2 ORDINARY STREAMLINE BOMB
NUMBER 6 ORDINARY STREAMLINED BOMB
NUMBER 6 MODEL 1 ORDINARY STREAMLINED BOMB

Use: General bombardment.

History: Very early bombs; obsolete; production ceased in 1940 or 1941.

Fuzing: Type 2 Model 2 nose fuze.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

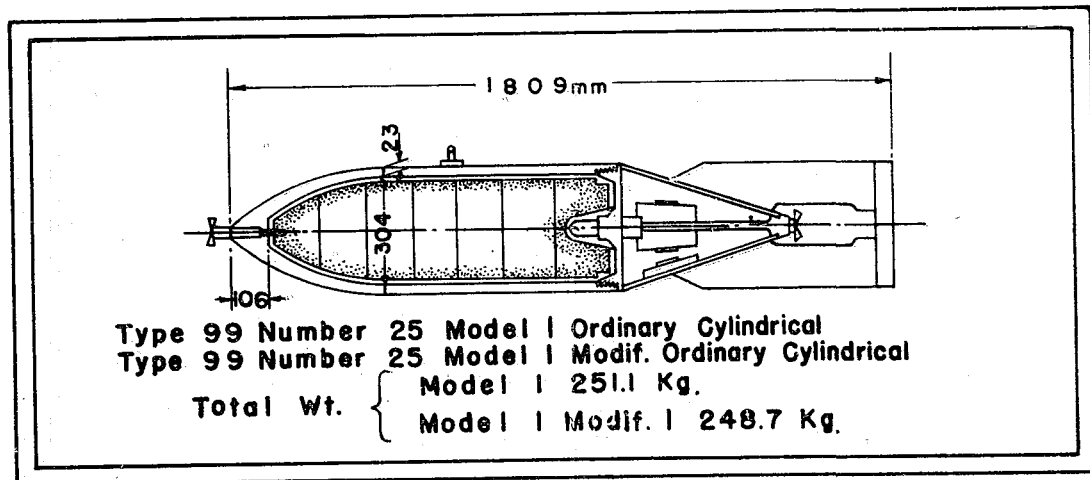
References: NavTechJap Document No.

ND21-4076.1,.2 ND21-4078 ND21-4080
ND21-4077 ND21-4079 ND21-4081

General: These are early bombs, much used during this war although production ceased in 1940 or 1941. They have a typical ordinary streamlined shape. The loading is Shimose with a loading factor of 35% approximately. Total weight is 63.0 kg.

Specimens: Specimens of these three bombs have previously been collected and shipped to the United States.

TYPE 99 NUMBER 25 MODEL 1 ORDINARY CYLINDRICAL
TYPE 99 NUMBER 25 MODEL 1 MODIFICATION 1 ORDINARY CYLINDRICAL



Use: Against ship targets.

History: Designed 1938; adopted 1939. Modification 1 eliminated booster tube in 1943. These were designed to take the place of previous Number 25 bombs which shattered on impact.

Fuzing: Type 97 Mark 2 nose fuze Model 2 Modification 1 Type 99 Number 25 tail fuze. Type 99 ordinary bomb gains A or C.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. Japanese Bombs and Fuzes USNBDS.

References:

NavTechJap Document No.

ND21-4007.1 ND21-4070 ND21-4072
 ND21-4025 ND21-4071 ND21-4073

General: These bombs have standard ordinary cylindrical bomb shape with ogival nose. They are fuzed nose and tail for either instantaneous or delay firing. The bombs are heavy construction for penetration of 50mm of armor plate. Explosive charge of Shimose or Type 98 explosive is pre-cast and inserted in paper covered layers. Loading factor 24.5%.

Specimens: Specimens have previously been recovered and shipped to the United States.

NUMBER 25 MODEL 2 ORDINARY STREAMLINED BOMB
NUMBER 25 MODEL 2 MODIFICATION 1 ORDINARY STREAMLINED BOMB

Use: General bombardment.

History: Out of production but in use until end of war.

Fuzing: Type 2 Model 2 nose fuze. Type 15 Model 2 tail fuze.

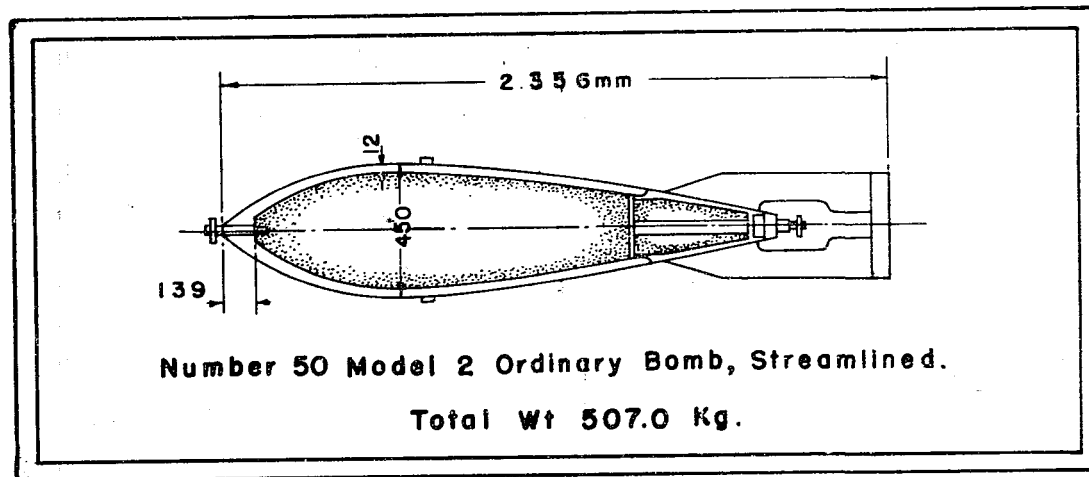
Previous Reports: MEIU #1 R-110, R-112. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNEDS.

References: NavTechJap Document No.

ND21-4064	ND21-4066	ND21-4068
ND21-4065	ND21-4067	ND21-4069

General: The bomb is of typical ordinary streamlined shape, constructed in two pieces, body and tail. It is Shimose filled with a loading factor of 40.7%. This is no longer a standard issue bomb, but existing stocks were being used operationally. Total Weight 25 kg.

Specimens: Specimens of this bomb have been previously recovered and shipped to the United States.

NUMBER 50 MODEL 2 ORDINARY STREAMLINED BOMB

Use: Against ship targets.

History: Adopted 1930. Still in use.

Fuzing: Type 97 Mark 2 Model 1 nose fuze. Type 99 ordinary bomb gaine A or C.
Type 15 Model 1 or 2 tail fuze.

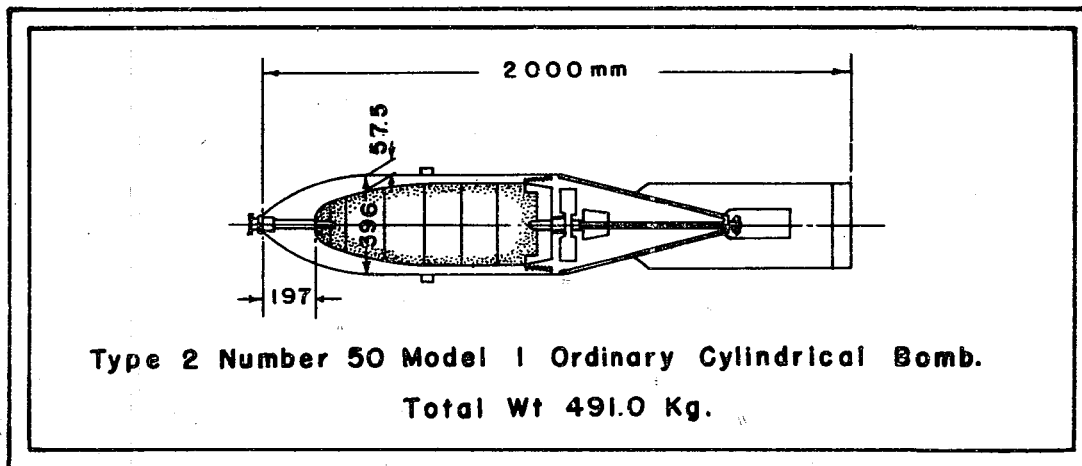
Previous Reports: MEIU #1 R-110, R-144. - Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025

General: This bomb is of typical ordinary streamlined construction, nose and tail fuzed, and part of the Japanese Navy's older bomb series. It was still in limited use at the end of the war. Loading is either Shimose or Type 98 explosive with a loading factor of 43.58%.

Specimens: Specimens of this bomb have been recovered and shipped to the United States.

TYPE 2 NUMBER 50 MODEL 1 ORDINARY CYLINDRICAL BOMB

Use: Against ship targets.

History: Designed 1941; adopted 1942.

Fuzing: Temporary designation Type 2 Number 50 ordinary bomb nose fuze. Type 2 Number 50 bomb tail fuze. Type 99 ordinary bomb gaine A or B.

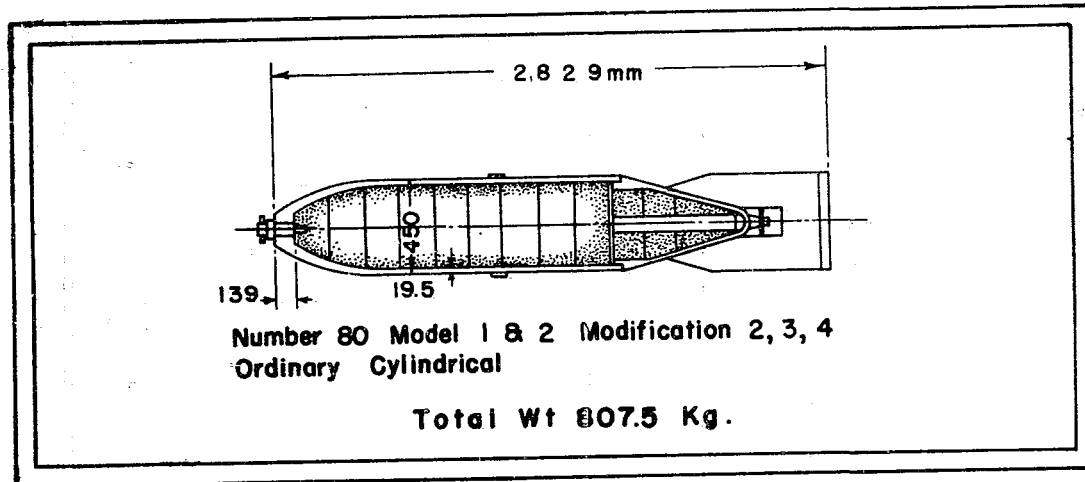
Previous Reports: MEIU #1 R-110. - MEIU #4 R-47. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

References: NavTechJap Document No.
ND21-4007.1 ND21-4025

General: This bomb is of one piece forged steel construction, designed for and capable of penetrating 80mm of armor plate. It is fuzed nose and tail. The charge of Type 91 or Type 98 explosive is fitted into the case in the pre-cast paper-wrapped blocks. The loading factor is 12.5%. The bomb would be called armor piercing in U.S. Navy terminology.

Specimens: Specimens have been previously collected and sent to the United States.

NUMBER 80 MODEL 1 MODIFICATION 2, 3, AND 4 ORDINARY CYLINDRICAL BOMB
NUMBER 80 MODEL 2 MODIFICATION 2, 3, AND 4 ORDINARY CYLINDRICAL BOMB



Use: Against ship targets.

History: Designed 1937; adopted 1938.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 bomb nose fuze. Type 15 Model 1 and Model 2 Modification 3 base fuze. Type 99 ordinary bomb gaine A or C. Type 2 Model 2 nose fuze.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. Japanese Bombs and Fuzes USNBDS.

References:

NavTechJap Document No.

ND21-4007.1 ND21-4059 ND21-4061.1,.2
 ND21-4025 ND21-4060

General: These are the largest bombs considered to be operational by the Japanese Navy. They have the typical cylindrical barrel and ogival nose of ordinary bombs of later types. Model 2 differs from Model 1 in having Type 2 Model 2 nose fuze. The explosive charge fillings of the three modifications are:

- Modification 2 Shimose
- Modification 3 Type 91
- Modification 4 Type 98

The loading factor is approximately 40% with all three types of explosive. The explosive is fitted in the bombs in pre-cast, paper-wrapped blocks. The bombs are capable of penetrating 70mm of armor plate.

Specimens: Samples of these bombs have previously been collected and returned to the United States.

NUMBER 100 MODEL 1 ORDINARY CYLINDRICAL BOMB

No definite material has been found concerning this bomb. Japanese personnel interrogated have no recollection of the bomb, and no documents have been recovered which contain information concerning the bomb. It is surmised that this bomb has never been put into production.

* * * * *

NUMBER 100 MODEL 2 ORDINARY STREAMLINED BOMB

Use: Against large ships.

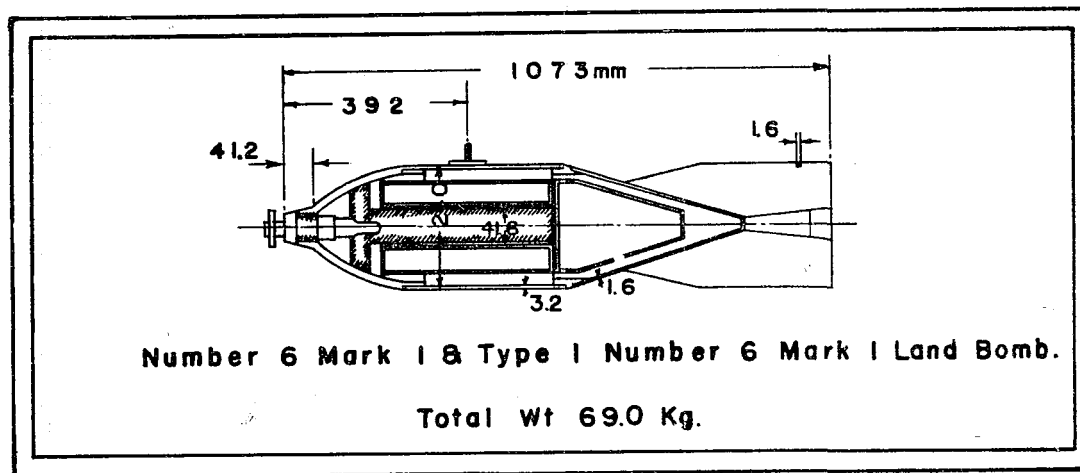
History: Not used in this war; probably never in production.

Fuzing: Unknown.

Previous Reports: MEIU #1 R-110.

General: The bomb is reported to be of typical streamlined construction, nose and tail fuzed and filled with Shimose; the loading factor of this bomb is unknown.

Specimens: No bombs of this type have ever been recovered and none are available.

C. SPECIAL BOMBS DESIGNATED BY MARK NUMBERS 1 TO 33NUMBER 6 MARK 1 LAND BOMB - TYPE 1 NUMBER 6 MARK 1 LAND BOMB
TEMPORARY DESIGNATION TYPE 4 MODEL 1 LAND BOMB

Use: Neutralization of important enemy territory and installations.

History: These bombs have been adopted in the following order: 1936 Number 6 Mark 1, 1941 Type 1 Number 6 Mark 1, 1944 Temp. Designation Type 4 Model 1. The first two are adaptations of other standard bombs: Number 6 Mark 1 from Type 97 Number 6 land; Type 1 Number 6 Mark 1 from Type 99 Number 6 Mark 2. Temporary designation Type 4 Model 1 is an original design for gas bombs, based on observation of the two previous bombs.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 nose fuze. Type 92 Model 2 Modification 3-5 gaine.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4085 ND21-4087 ND21-4089 ND21-4091 ND21-4007.1,.2
ND21-4086 ND21-4088 ND21-4090 ND21-4092.1,.2

General: Number 6 Mark 1 and Type 1 Number 6 Mark 1 have the same construction externally as the bombs from which they were adapted. Internal construction is shown in the references listed. Temporary designation Type 4 Model 1 has a special design, considered by the Japanese to be well suited to gas bomb construction. It has a thin cylindrical barrel, closed at the nose, with an ogival wooden plug. No attempt is made to achieve a streamlined shape. All these three bombs are fuzed in the nose and fire central burster tubes of Shimose or Type 98 explosive. The two modified bombs are credited with a radius of spread gas of 10 meters. Temporary designation Type 4 Model 1 is designed to increase this spread. The chemical filling of these bombs is designated Mark 3 persistent gas, the composition of which was not known to Japanese interrogated. It is reported to be a thick yellowish green liquid. Special color markings on these bombs consist of a yellow band painted around the bomb just aft of the green loading band at the nose, and yellow painted trail struts.

Specimens: Specimens of each of these bombs, unloaded, have been returned to the United States by NavTechJap.

TYPE 99 NUMBER 6 MARK 2

Use: Anti-submarine.

History: One of the first anti-submarine bombs.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 with Type 1 Mark 2 gaine, A, B,
or C.

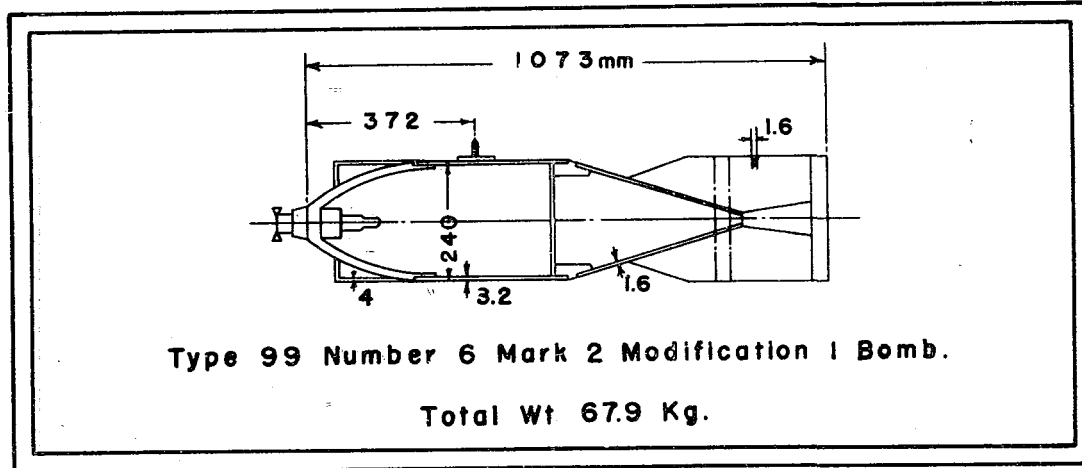
Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. -
Japanese Bombs and Fuzes USNBDS.

References: NavTechJap Document No.

ND21-4093

General: Total Weight is 63.6 kg.

Specimens: Previously shipped.

TYPE 99 NUMBER 6 MARK 2 MODIFICATION 1

Use: Anti-submarine.

History: Adopted 1940.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 with Type 1 Mark 2 gaine A, B, or C.

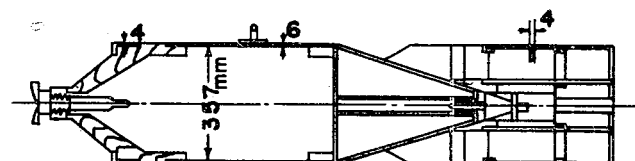
Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025

General: This bomb is loaded with Type 98 explosive with a loading factor of 55.9%. The effective range is 4-5 meters. This bomb has an anti-ricochet nose ring. The ring is tack welded to the nose of the bomb.

Specimens: Not available.

EXPERIMENTAL 19 NUMBER 25 MARK 2 BOMB

Experimental 19 Number 25 Mark 2 Bomb.

Total Wt 180 Kg.

Use: Anti-submarine.

History: At one time a slight magnetism was tried on this bomb.

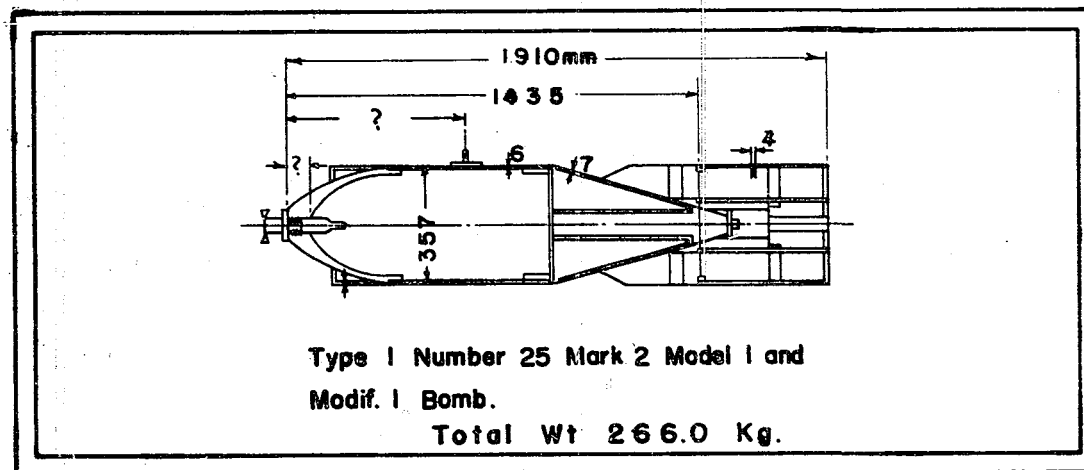
Fuzing: Type 99 Model 1 Modification 2 nose fuze with Type 1 Mark 2 gaine, A, B, or C. Type 15 Model 2 Modification 3 or Type 3 Mark 2 tail fuze with same gaine as above.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025

General: The nose is made of wood while the case and fins are constructed of fiber. The effective range is approximately 8 meters. It is loaded with Type 98 explosive charge and tne loading factor is 77.8%. This bomb was used in conjunction with the magnetic airborne detector. (See NavTechJap Report, "Japanese Magnetic Airborne Detector," Index No. E-14.)

TYPE 1 NUMBER 25 MARK 2 MODEL 1 BOMB
TYPE 1 NUMBER 25 MARK 2 MODEL 1 MODIFICATION 1



Use: Anti-submarine.

History: Adopted in 1941.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 nose bomb fuze. Type 15 Model 2 Modification 3 and Type 3 Mark 2 Model 2 tail fuze with Type 1 Mark 2 bomb gaine A, B, or C.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. Japanese Bombs and Fuzes USNBDS.

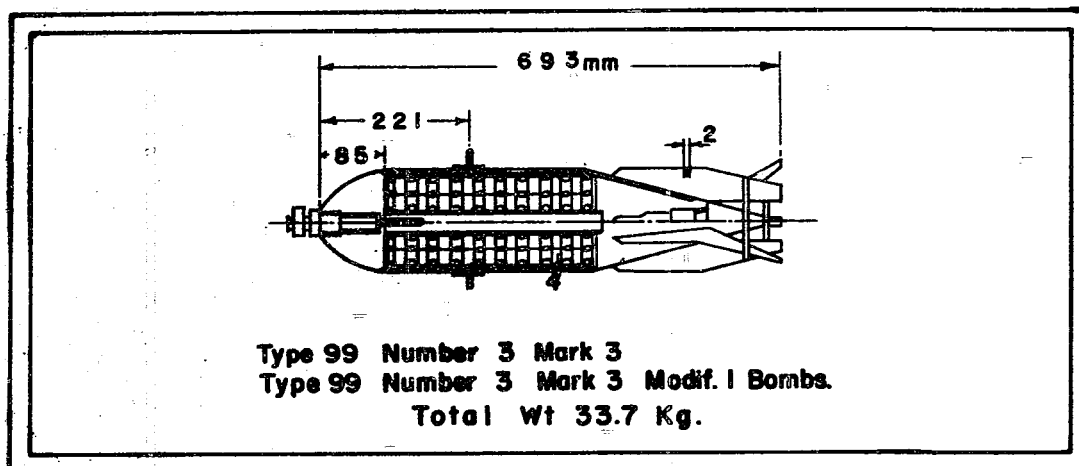
References:

NavTechJap Document No.

ND21-4007.1 ND21-4094 ND21-4096
 ND21-4025 ND21-4095

General: The effective radius of these bombs is 10 meters. The explosive charge of these is Type 98 with a loading factor of 54%. The Modification 1 has an anti-ricochet nose ring. The tail of these bombs is constructed of sheet metal fins welded to the tail cone and the second section is made of eight plywood fins in steel frames and attached to the first section by bolted steel plates on the eight fins. The distinguishing color of these bombs is blue.

TYPE 99 NUMBER 3 MARK 3
TYPE 99 NUMBER 3 MARK 3 MODIFICATION 1



Use: Air to air against bomber formation.

History: Designed 1938; adopted 1939.

Fuzing: Type 2 Model 2 nose fuze or Type 3 Model 2 nose initiator. Type 99 Mark 3 Model 1 tail fuze. Type 99 Mark 3 tail gaine. Practice bomb nose gaine.

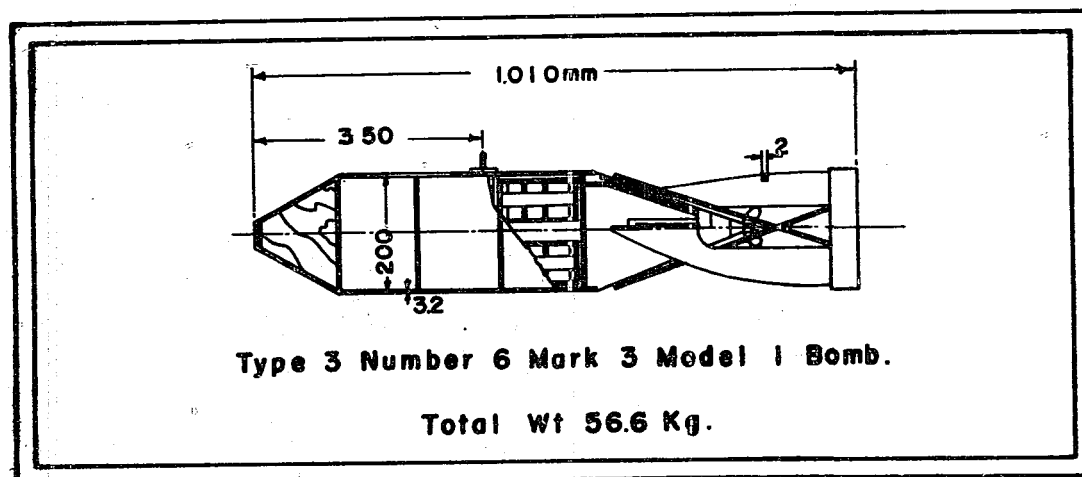
Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. Japanese Bombs and Fuzes USNBDS.

References: NavTechJap Document No.

ND21-4007.1,.2,.3 ND21-4098 ND21-4100
ND21-4025 ND21-4099 ND21-4101

General: These bombs are aerial burst incendiary bombs, designed to scatter 144 white phosphorus filled pellets over bomber formations. They are cylindrical in shape with offset tail fins which cause the bombs to rotate in flight. This rotation is necessary to arm the clockwork aerial burst tail fuze. Modification 1 has additional body fins to accelerate rotation of the bomb. Both bombs have a central burster tube of Shimose or Type 98 explosive to spread the incendiary pellets, and an explosive tail core charge to force pellets downward. The bombs are impact nose fuzed to provide for failure of the tail fuze. Special color markings are silver nose and red tail struts.

Specimens: Samples of these bombs have been previously collected and returned to the United States.

TYPE 3 NUMBER 6 MARK 3 MODEL 1 BOMB

Use: Against formations of large aircraft.

History: Designed 1943; adopted 1944. Designed as an expansion of the theory of Type 99 Number 3 Mark 3.

Fuzing: Type 99 Mark 3 Modification 1 tail fuze. Type 99 Mark 3 bomb gaine.

Previous Reports: Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

References:

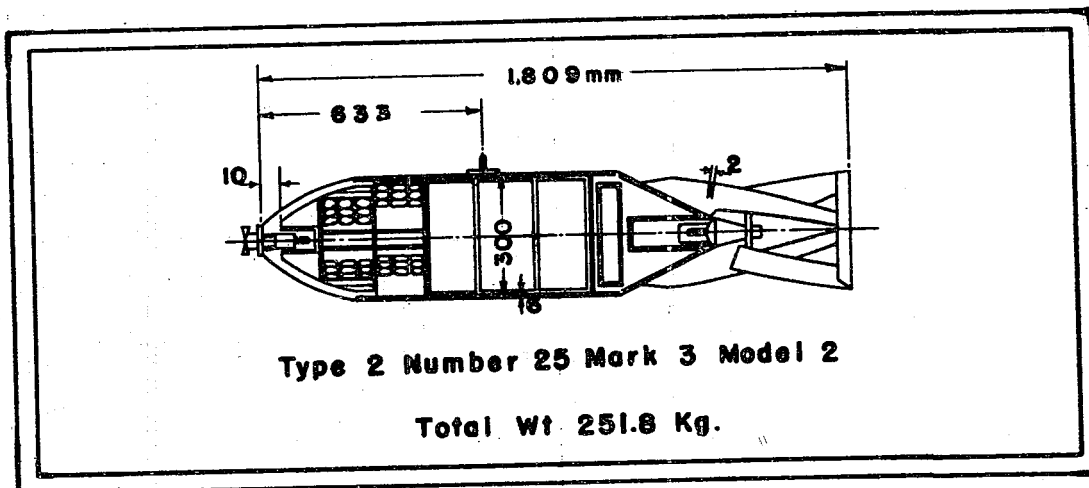
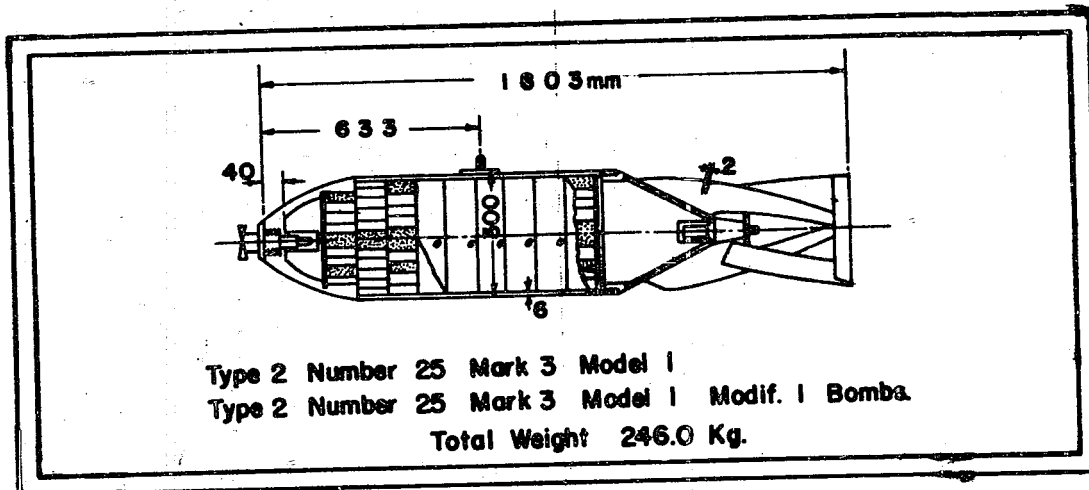
NavTechJap Document No.

ND21-4007.1,.2,.3

General: This bomb has almost the same characteristics as Type 99 Mark 3 Number 3. It is cylindrical in shape with a conical nose, the nose section being filled with a wooden plug. The barrel is filled with 144 white phosphorus filled pellets. The tail cone and burster tube are filled with Type 98 explosive. It is fuzed only in the tail with a standard clockwork aerial burst fuze and instantaneous gaine. Special color markings are silver nose and red tail struts.

Specimens: Samples of this bomb have been previously recovered and shipped to the United States.

TYPE 2 NUMBER 25 MARK 3 MODEL 1
TYPE 2 NUMBER 25 MARK 3 MODEL 1 MODIFICATION 1
TYPE 2 NUMBER 25 MARK 3 MODEL 2



Use: Against airstrips.

History: Model 1 was designed in 1942; adopted 1943. Model 2 was designed early in 1945 to take the place of Type 99 Mark 3 Number 3 bombs which were becoming scarce. It was in production by June 1945, but only for test purposes.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 nose fuze. Type 92 Modification 2-5 gaine. Type 2 Mark 3 Model 2 tail fuze. Type 99 Mark 3 gaine.

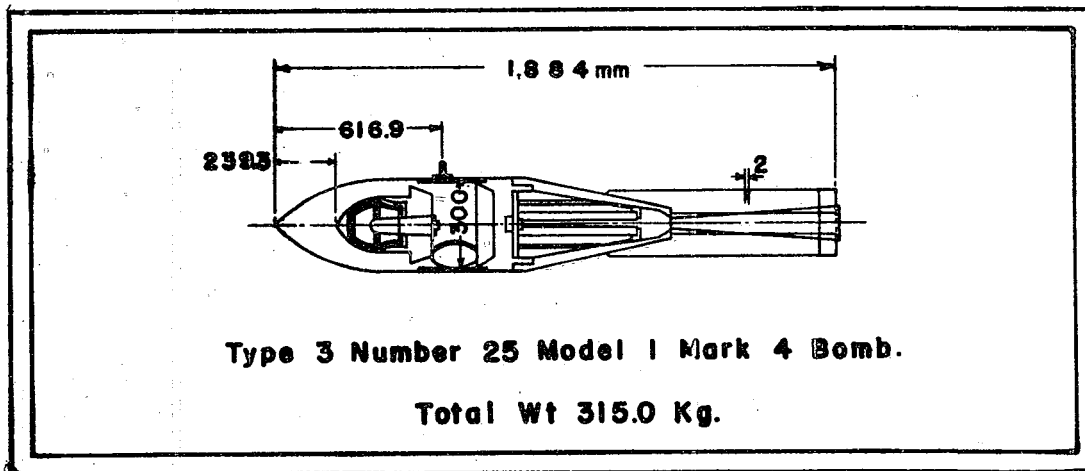
Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4007.1,.2,.3 ND21-4101

General: These bombs are a further expansion of the idea started with Type 99. The fuzing is the same for both bombs, and the composition of the filling is the same in both. They differ only in the number of pellets contained, those in Model 2 being smaller. Model 1 contains 780 pellets, while Model 2 has 1087. Both have nose and tail burster charges of Type 98 explosive. The incendiary pellets consist of steel pipe into which is pressed a mixture of 50% aluminum powder and 50% barium nitrate. Modification 1 of Model 1 concerns sealing of the case for safety. Special color markings are silver nose and red tail struts.

Specimens: Specimens of Model 1 have been shipped to the United States. No specimens of Model 2 have been recovered.

TYPE 3 NUMBER 25 MODEL 1 MARK 4 BOMB

Use: Against heavy ships.

History: Planned 1939; adopted 1944.

Fuzing: Type 3 Number 25 Mark 4 fuze. Type 0 Mark 5 gaine.

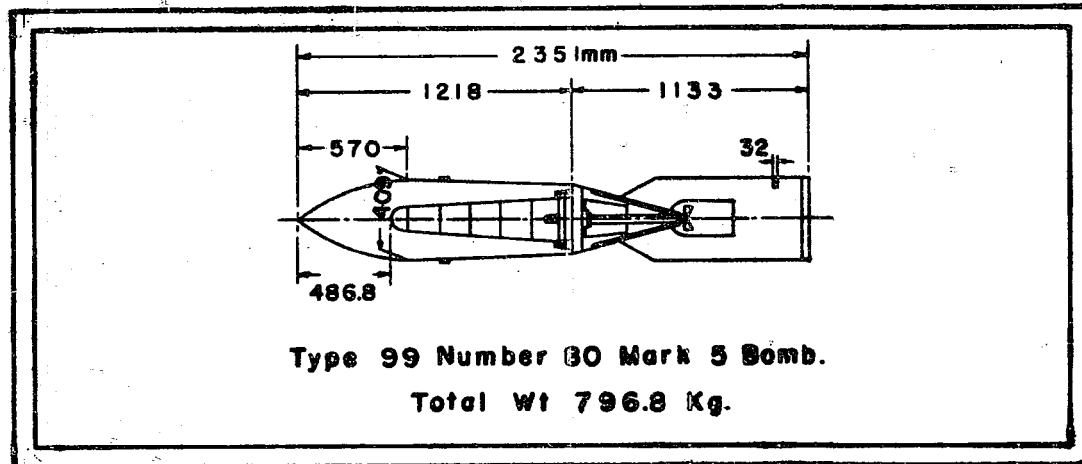
Previous Reports: Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025 ND21-4102 ND21-4103
 ND21-4104 (Materials for experimental 14 Number 25 Mark 4 bomb - 1943.)
 ND21-4105 (Described ground tests of Mark 4 bombs - 1939.)

General: This was the first rocket bomb used by the Japanese Navy. The bomb body will penetrate 125-150mm armor plate. The speed increase of this bomb by the rocket propellant is 90 m/sec. The explosive charge is Type 91 with a loading factor of 1.26%. The booster charge is Model 1 for Type 3 Mark 4 bombs. The propellant of this bomb weighs 15 kg. Nose and body resemble those of an armor piercing bomb. There is a compartment separated by a steel wall between the propellant and the explosive. A small door is on the side of the compartment so the fuze can be inserted.

Specimens: Previously shipped.

TYPE 99 NUMBER 80 MARK 5 BOMB

Use: Against armored capital ships.

History: Adopted 1941; converted 40cm AP shell.

Fuzing: Type 99 Number 80 Mark 5 tail fuze. Type 0 Mark 5 gaine.

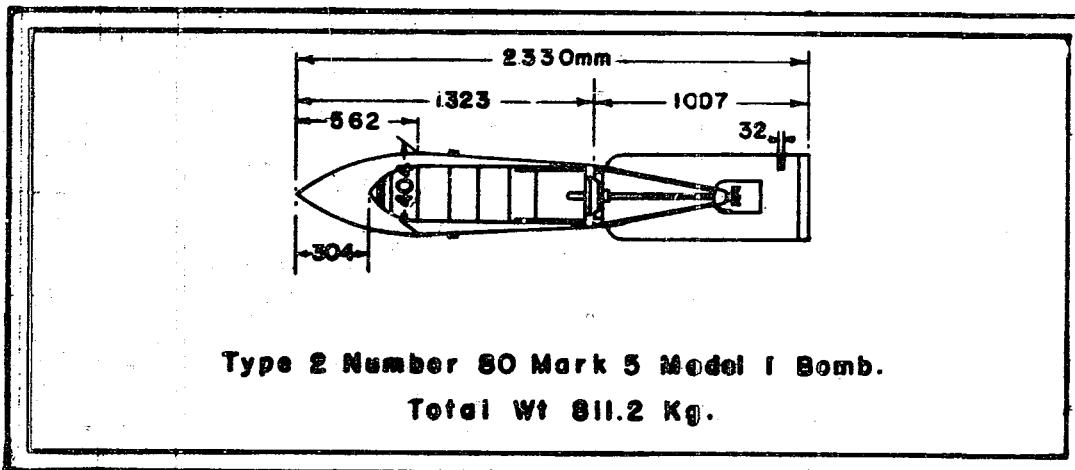
Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. Japanese Bombs and Fuzes USNBDS.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025 ND21-4106

General: This is a very heavy armor piercing bomb manufactured by turning down a 40cm AP projectile and enlarging the explosive cavity. It is streamlined in shape, with a heavy base plate. Two tail fuzes are used to insure detonation. The explosive charge is Type 91, considered by the Japanese Navy to be best suited to AP bombs because of its ability to stand shock of impact. The loading factor is 2.8%. The bomb is rated by the Japanese as capable of penetrating 150mm of armor plate. Special color marking is a white nose band.

Specimens: One specimen of this bomb was returned to the United States early in the war. No specimens have been found by NavTechJap.

TYPE 2 NUMBER 80 MARK 5 MODEL 1 BOMB

Use: Against armored capital ships.

History: Designed 1939; adopted 1942; still in production at end of war.

Fuzing: Type 2 Number 80 Mark 5 Modification 1 tail fuze. Type 0 Mark 5 gaine.

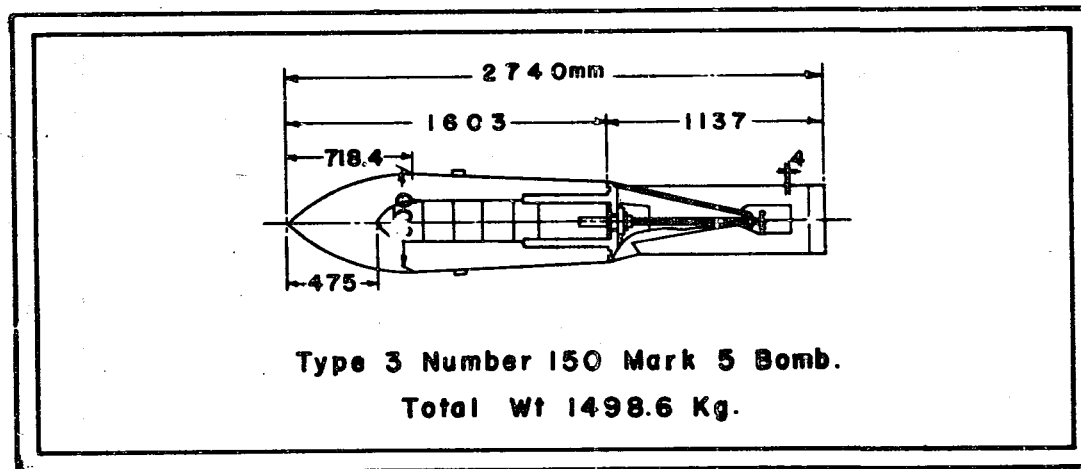
Previous Reports: Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025 ND21-4107

General: This bomb is very similar to Type 99 Number 80 Mark 5. It also is a converted naval AP shell. It differs in having a larger explosive charge cavity and slightly greater weight. The loading is Type 91 explosive with a loading factor of 4.4%. Like Type 99 Number 8 Mark 5 the explosive is loaded in paper-wrapped wafers, with a shock absorber plug in the forward end of the explosive charge. Identical fuzing is used in both bombs.

Specimens: A specimen of this bomb, loaded, has been shipped to the United States by NavTechJap.

TYPE 3 NUMBER 150 MARK 5 BOMB

Use: Against heavy armored ships.

History: Designed 1942; tested 1944; in experimental production at end of war.

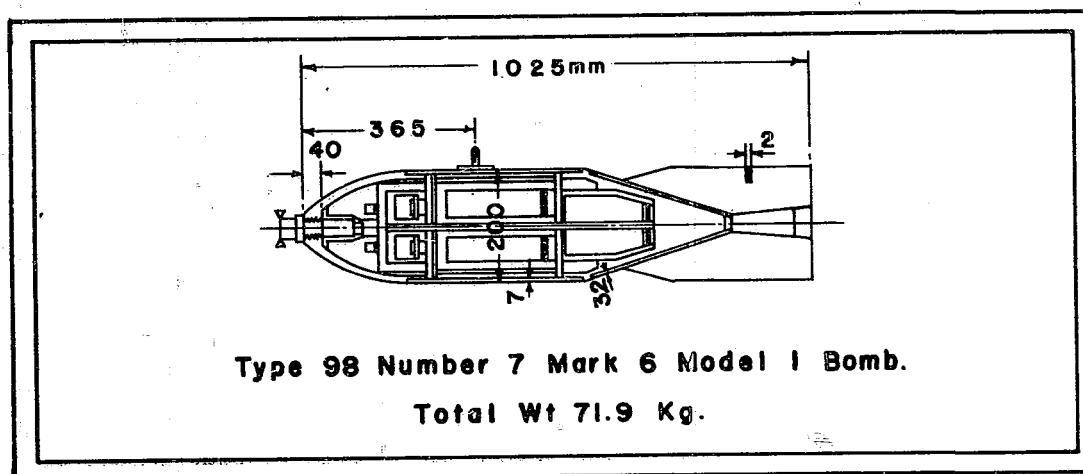
Fuzing: Experimental 14 Type 3 Number 150 Mark 5 fuze. Type 0 Mark 5 gaine.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025 ND21-4108

General: This bomb is enlarged version of the earlier Mark 5 bombs. It is definitely in the large bomb class, having a weight of 1498 kg. The explosive charge, loaded in paper-wrapped wafers, is Type 91 explosive with a loading factor of 3.3%. Armor piercing properties have not been determined. Color marking is a white nose band.

Specimens: A specimen of this bomb, loaded, has been shipped to the United States by NavTechJap.

TYPE 98 NUMBER 7 MARK 6 MODEL 1

Use: Against large concrete buildings.

History: Experiments 1938; adopted 1945.

Fuzing: Type 97 Mark 2 Modification 1 nose fuze with Type 98 Mark 6 gaine.

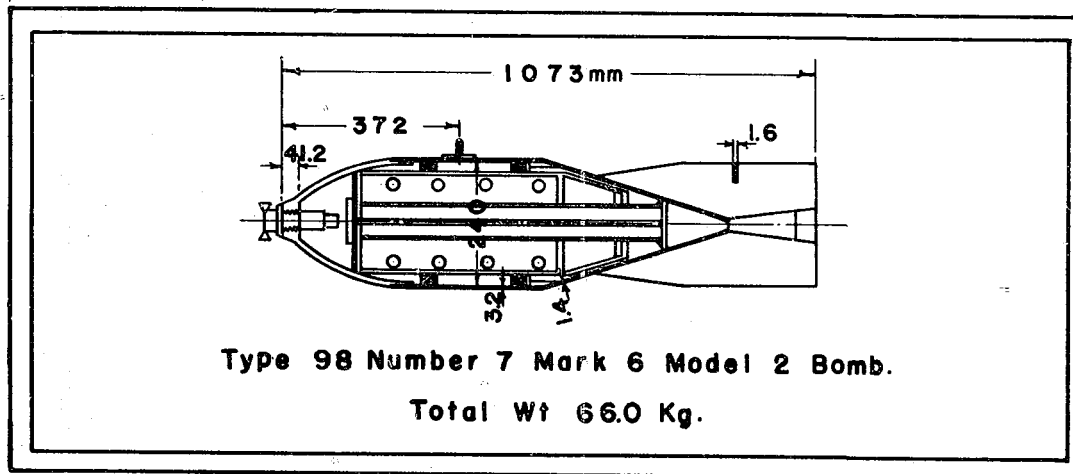
Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance.
Japanese Bombs and Fuzes USNBDS.

References: NavTechJap Document No.

ND21-4007.1,.2,.3 ND21-4025

General: The case of this bomb is same as Type 97 Number 6 land bomb with four electron fire pots. It will penetrate 200mm of concrete and the electrons will burn for about two minutes. A fuze cord passes through the bomb to ignite the electron and black powder charge. Red nose and tail struts are the distinguishing marks.

Specimens: Previously shipped.

TYPE 98 NUMBER 7 MARK 6 MODEL 2

Use: Against warehouses and dwelling houses.

History: Experiments and adoption 1938.

Fuzing: Type 97 Mark 2 Modification 1 nose fuze with Type 98 Mark 6 Model 2 gaine.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. Japanese Bombs and Fuzes USNBDS.

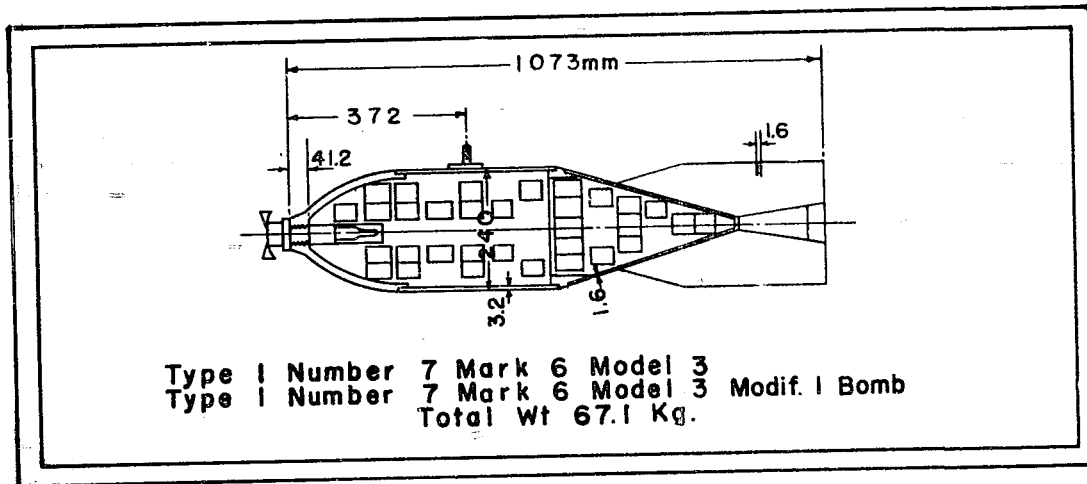
References: NavTechJap Document No.

ND21-4007.1,.2,.3 ND21-4025

General: The case of this bomb is the same as Type 97 Mark 2 Number 6. On impact, the fuze explodes a black powder charge which blows the inner case out, shearing the screws at the same time quick-match ignites and burns the congealed oil and throws a flame about 2 meters long. Red nose and tail struts are the distinguishing marks.

Specimens: Previously shipped.

TYPE 1 NUMBER 7 MARK 6 MODEL 3
TYPE 1 NUMBER 7 MARK 6 MODEL 3 MODIFICATION 1



Use: Against buildings.

History: Designed 1941.

Fuzing: Type 97 Mark 2 Model 2 Modification 1 nose fuze with Type 92 Modification 2, 3, 4, and 5 long gaine.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNEBS.

References: NavTechJap Document No.

ND21-4007.1,.2,.3 ND21-4025

General: These cases are the same as Type 99 Number 6 Mark 2. They have a high explosive burster tube. The igniting powder is aluminum powder and barium nitric acid. There are 520 pellets in Type 1 Number 7 Mark 6 Model 3 and Modification 1 contains 180 thermite pellets. Pellets are thrown within a radius of 80 meters and burn for approximately 20 seconds. These were unsatisfactory as incendiary bombs because of the short burning time and insufficient dispersion. Red nose and tail struts distinguish these bombs.

Specimens: Specimens of Modification 1 have previously been shipped.

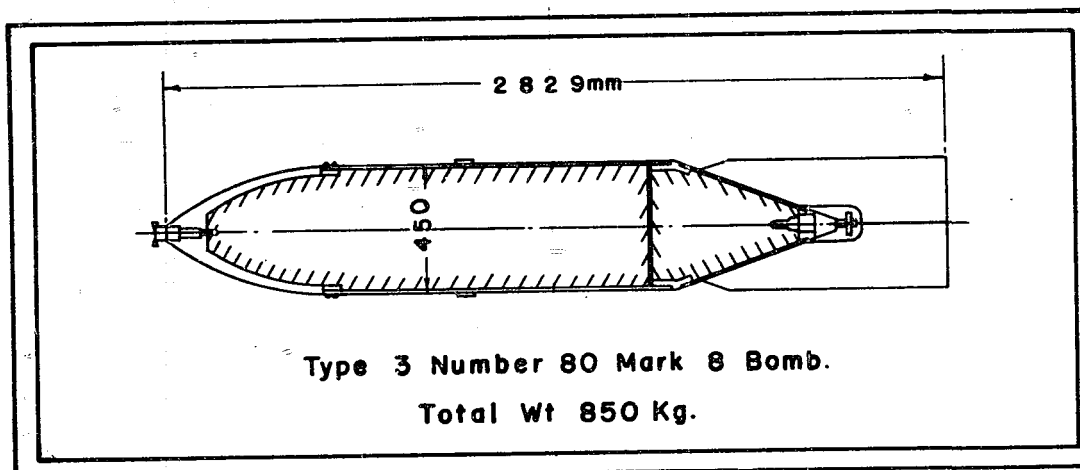
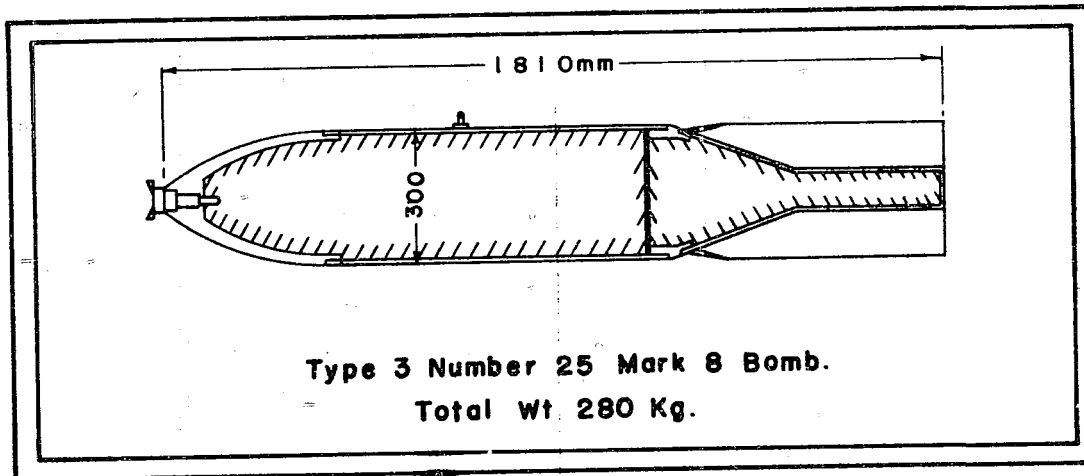
MARK 7 BOMB

History: This bomb was never more than a drawing. It was conceived by the Branch of the First Air Technical Arsenal at the request of the Navy Department about 10 years ago. It was discussed at one conference and abandoned as not yet necessary. The problem of developing a bacillus bomb was considered too great in relation to the need for such a bomb. The idea was advanced again toward the end of the war when desperate measures were being considered but was dropped for the same reasons in favor of guided missiles.

General: The prospective design for the Mark 7 bomb was a modification of the 1 kg practice bomb with rubber nose. The plan was to replace the conical detachable tail section of the practice bomb with a tail containing a conical glass bottle filled with the bacillus mixture. The bacillus mixture was to be spread simply by the force of impact. No explosive was to be used as a burster and spreading charge because it was thought that the explosion would render the bacteria inert. No information has been received regarding the type of bacillus mixture to be used. It is thought by the Japanese interrogated that no selection had been made as to the material to be used in the bomb. Color marking decided upon for the Mark 7 bomb was purple nose and purple tail.

Specimens: None recovered.

TYPE 3 NUMBER 25 MARK 8 BOMB
TYPE 3 NUMBER 80 MARK 8 BOMB



Use: Against ships.

History: Designed 1943; adopted 1944.

Fuzing: Type 97 Model 2 nose fuze with Type 4 gaine.

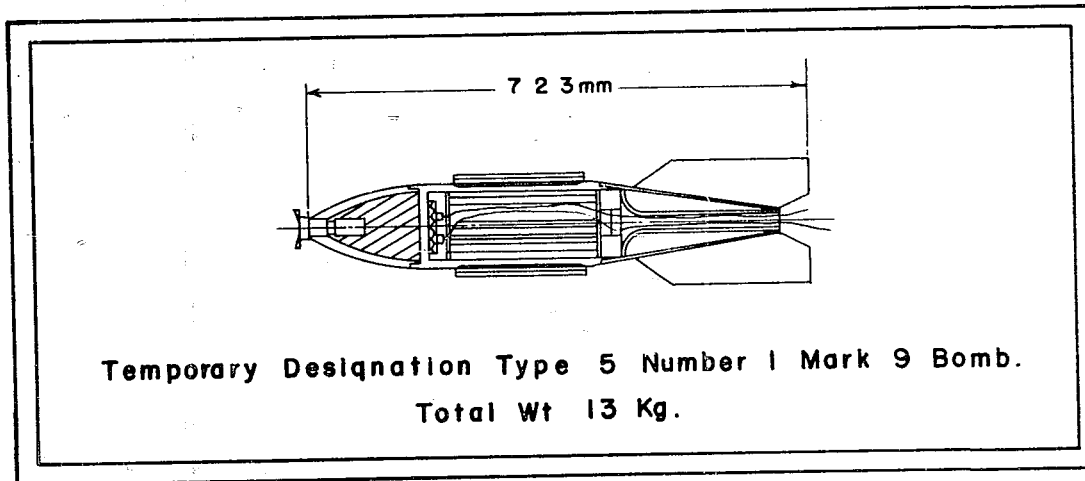
Previous Reports: MEIU #1 R-110. - MEIU #1 R-132. - Handbook of Japanese Explosive Ordnance.

References:

NavTechJap Document No.

ND21-4007.1	ND21-4013	ND21-4025
ND21-4009	ND21-4014	

General: These bodies are similar to Type 98 Number 25 land case with four thickened hollow fins welded to the tubular tail which is filled with explosive. These bombs are dropped on the sea from very low altitude at high speed. The skip distance of Number 25 bomb is 150-250 meters and the maximum altitude of skip is 5-10 meters. The Number 80 bomb has a skip distance of 150-300 meters and the maximum altitude of skip is 5-20 meters. The Japanese Army has produced more types and better anti-shiping bombs than the Japanese Navy. Loading is Type 98 explosive with a loading factor of 37%.

TEMPORARY DESIGNATION TYPE 5 NUMBER 1 MARK 9 BOMB

Use: Against surfaced submarines and landing craft.

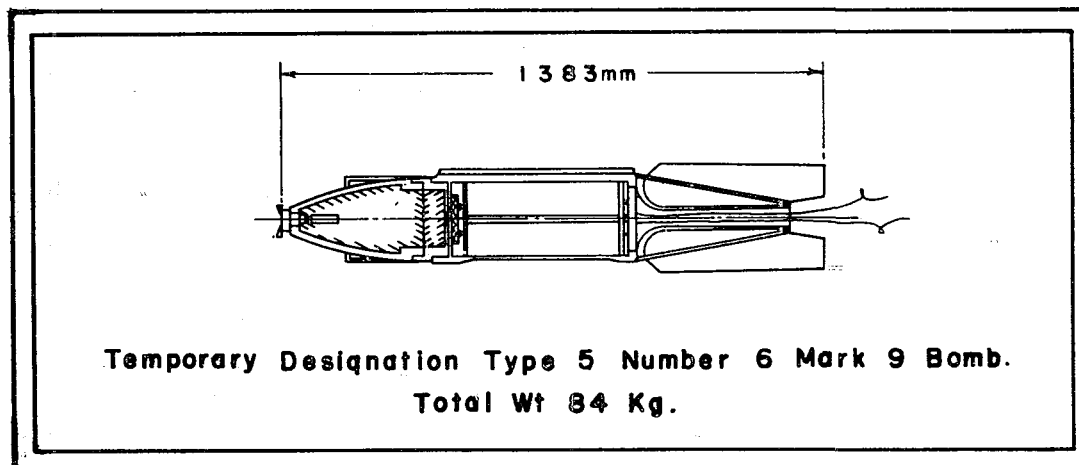
History: Experiments in June 1944; adopted 1945 and production started, but was not used in the war.

Fuzing: Impact nose fuze.

References: NavTechJap Document No.

ND21-4005.1	ND21-4009	ND21-4016	ND21-4025
ND21-4007.1	ND21-4010	ND21-4019	

General: The Japanese fighter planes carry two or four of these under the wings of the planes. This rocket bomb has two firing rails. It is fired electrically and the maximum velocity is 230 m/sec. The nose section is thick and will penetrate 25mm of steel plate. There is .9 kg of Type 91 as the explosive charge. The motor body contains 2 kg propellant for propulsion. The gaine has 0.2 seconds delay for penetration. This bomb was manufactured at the Branch of the First Technical Arsenal of the Japanese Navy.

TEMPORARY DESIGNATION TYPE 5 NUMBER 6 MARK 9 BOMB

Use: Against landing craft.

History: Designed 1945. Experimental - only ground tests completed.

Fuzing: Impact nose fuze.

References: NavTechJap Document No.

ND21-4007.1 ND21-4010 ND21-4025
ND21-4009 ND21-4017

General: This rocket bomb is very similar to the Type 5 Number 1 Mark 9 in construction. However, this bomb has only one firing rail and the nose section has a kopfing around the head of the rocket nose. This nose section contains 10 kg of explosive charge. The rocket motor has 10 kg of propellant. The maximum velocity is 230 m/sec. Air tests of this rocket bomb had not been completed. Filling was not yet decided upon.

MARK 16 BOMB

This was the so-called "curtain of flak" bomb reported early in the war. The idea was conceived by the Air Ministry in 1939 but was never carried any farther than the design stage. An experimental mark number was assigned to it at that time. The idea was abandoned as impractical before the bomb was produced for test purposes. Fuzing was to be some form of the standard time clock fuze in use by the Japanese Navy.

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MARK 18 BOMB

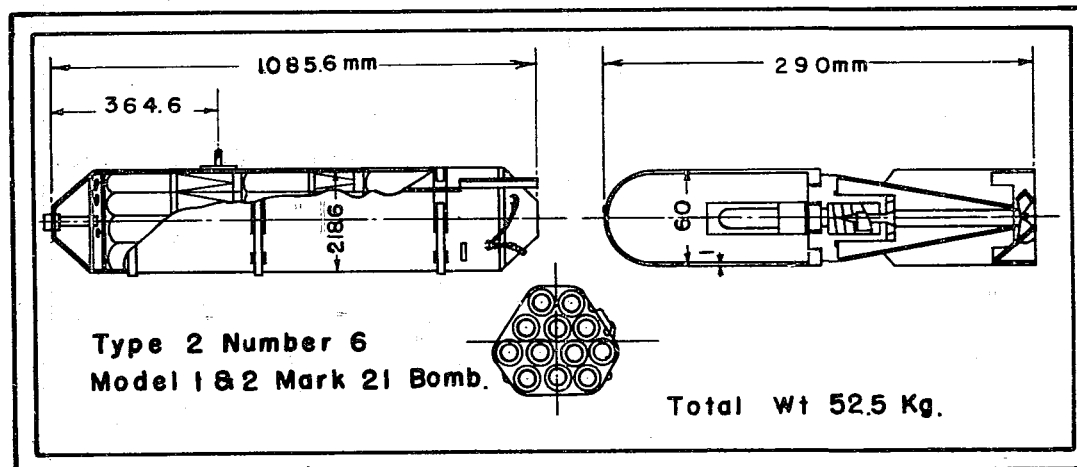
This was another early bomb which was never tested. It was intended to be used for destruction of parked aircraft. Apparently a small bomb, it was to be hand armed and dropped. It is considered by the Japanese to be a "dead" mark number.

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MARK 19 BOMB

This mark number was assigned to a small (7.5kg) rocket bomb designed for use against formations of aircraft by fighter planes. The idea was considered good, and the bomb was designated Mark 28. As such it was further developed and put into production. As Mark 19 the bomb was not produced, and fuzes were not designed for it.

TYPE 2 NUMBER 6 MODEL 1 MARK 21 BOMB
TYPE 2 NUMBER 6 MODEL 2 MARK 21 BOMB
 (Containers for 1 kg Bombs)



Use: Against airfields.

History: Model 1 designed 1943; final tests 1944. Model 2 designed and adopted 1944.

Fuzing: Type 3 Model 1 igniter.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. Japanese Bombs and Fuzes USNBDS.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025

General: The canister of these containers consists of a blunt nose section and a light tail section which have a segmented cylinder held together by two straps. Two steel wires run longitudinally along the canister through the buckles of the straps. When the burster charge, which is contained in the nose section, is fired by the aerial burst fuze, the nose piece is blown off, withdrawing the steel wires from the buckles of the straps, thus freeing the segments. The small bombs then fall free. The Model 1 container holds 40 one kg hollow charge small bombs fuzed with B-5(B) tail fuze and Type 2 small gaine Model 1. The Model 2 container holds 36 one kg small bombs (not hollow charge) and the tail fuze is B-5(c) with Type 2 Model 1 small gaine. The construction is similar but has only three side sections held by straps instead of four sections as in the Model 1. The explosive charge in the small bombs is Type 98.

EXPERIMENTAL 18 NUMBER 80 MARK 22

Use: Against airfields.

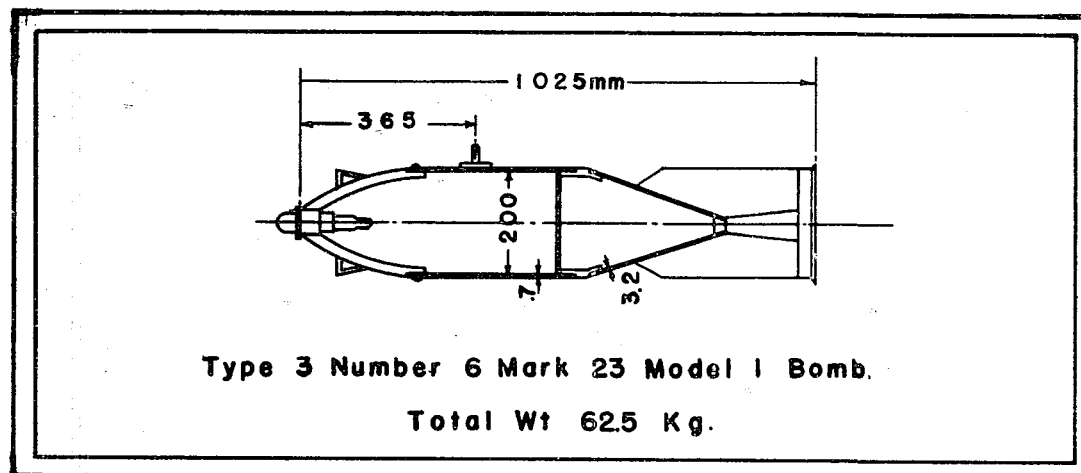
History: Not used in this war; design only.

Fuzing: None designed. Planned for nose time fuze and anti-disturbance tail fuze.

Previous Reports: Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNEDS.

General: An aerial burst container holding 19 spike-nosed bombs, fuzed with anti-disturbance and long delay time fuzes. The spikes on bomb noses are designed to split upon impact and cause force to be applied in order to move the bomb.

Specimens: This bomb was never put into production.

TYPE 3 NUMBER 6 MARK 23 MODEL 1

Use: Against airfields.

History: Completed April 1943.

Fuzing: Type 99 Model 1, 2 special nose fuze. Type 1 Model 1, 2 special fuze.
Type 92 Modification 2, 3, 4, or gaine.

Previous Reports: MEIU #1 R-110. - Handbook of Japanese Explosive Ordnance. -
Japanese Bombs and Fuzes USNBDS.

General: This bomb is very similar to Type 97 Number 6 land bomb. The difference being that the Type 3 has a kopfring at the nose and retarding plate on the tail fins. The explosive charge in this bomb is Type 98 with a loading factor of 37.76%. It will sink 1 meter in sandy soil. A Number 25 time bomb was designed but the penetration depth was not successful.

Specimens: Previously shipped.

EXPERIMENTAL 18 NUMBER 6 MARK 24 BOMB

This is a container for 5 parachute bombs. It was designed as an aimable cluster but was not put into production because it did not look practical on paper. No specimens have been found.

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EXPERIMENTAL 18 NUMBER 4.5 MARK 25

Use: Against airfields.

History: Design stage only.

Fuzing: Designed as long delay, but never completed.

Previous Reports: Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

General: Mark 25 was designed as a container for three wedge shaped bombs of about 15 kg size. The bombs were to be fuzed for long delay and possibly for anti-disturbance. The wedge shaped construction was designed to prevent penetration of the bombs. Contrary to former reports, the container was not planned for use with other types of bombs.

Specimens: Since the bomb was never produced, no specimens have been recovered.

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EXPERIMENTAL 18 NUMBER 25 MARK 26 BOMB

Use: Against airfields.

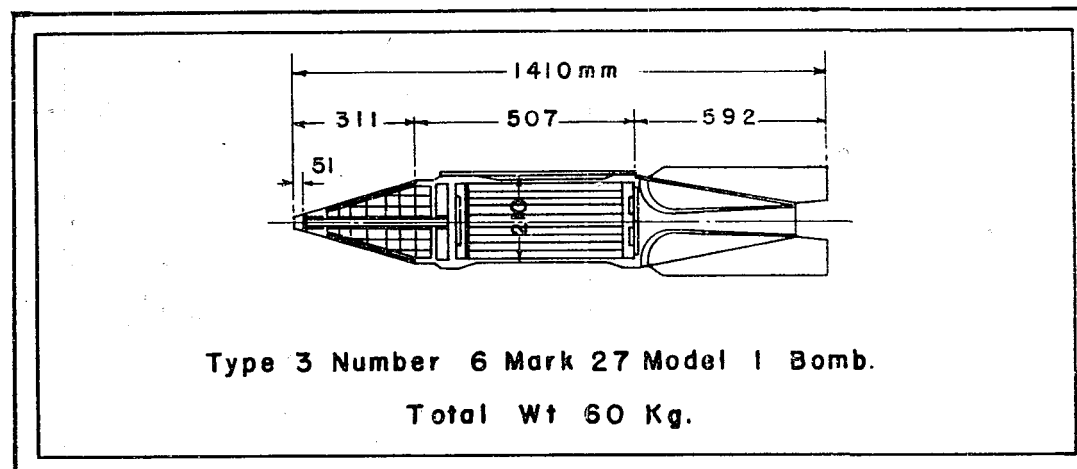
History: Test stage only. Drop tests proved the bomb to be impractical.

Fuzing: Instantaneous nose fuze and gaine. Long delay time tail fuze, not selective.

Previous Reports: Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

General: This bomb was planned as a standard land bomb, time fuzed in the tail, with a false nose filled with explosive and impact fuzed to prevent penetration of the main bomb. It was drop tested about 1939 or 1940, and found to be impractical. No production of other than test specimens was ever attempted.

Specimens: None recovered.

TYPE 3 NUMBER 6 MARK 27 MODEL 1 BOMB

Use: Against large airplanes..

History: Designed January 1944; adopted February 1945. Before the outbreak of the war the Japanese had the Number 3 incendiary shrapnel bomb which is exploded in the air by a clockwork tail fuze. Since it was difficult for Japanese fighter pilots to use this bomb against flying planes the Mark 27 bomb was planned.

Fuzing: Special nose fuze for the Mark 27 rocket bomb (See ND21-4027).

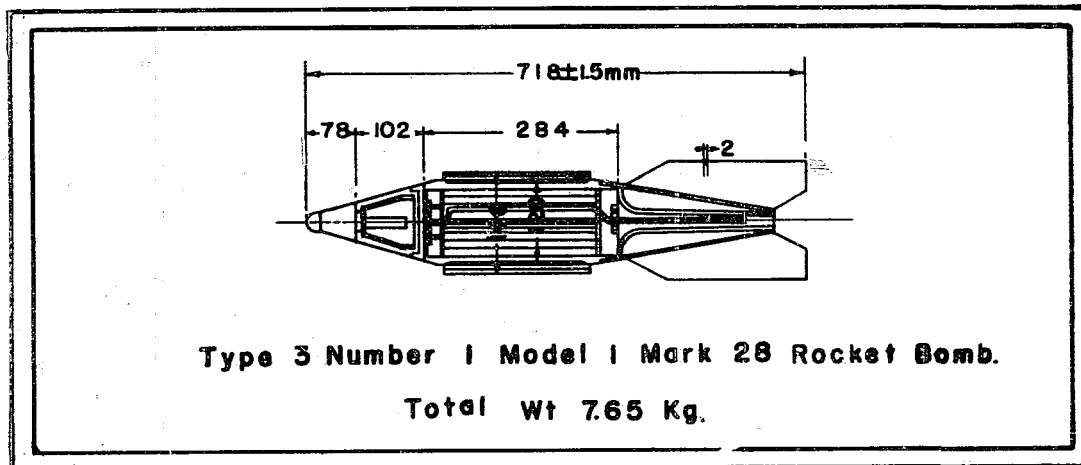
Previous Reports: Handbook of Japanese Ordnance.

References: NavTechJap Document No.

ND21-4005.1	ND21-4009	ND21-4019	ND21-4025
ND21-4007.1	ND21-4010	ND21-4024	ND21-4027

General: The conical nose section of this rocket bomb contains a central burster tube and incendiary material consisting of 140 iron pellets embedded in 4 kg of white phosphorus. The motor body has 10 kg of propellant. The rocket has a single firing rail. The tail section is conical with two wires leading out the end of the nozzle and four fins welded to the tail cone. The maximum velocity of this rocket bomb is 270 m/sec and it has arc of dispersion of 60°. Experiments were completed in April 1945. Japanese fighter planes used the bombs in this war. Manufacture was at the Branch of the First Technical Arsenal of the Japanese Navy. Tests took place at the Second Powder Factory Arsenal (HIRATSUKA), the First Technical Arsenal, and Kashima Bombing Experimental Field (IBARAKI Ken).

Specimens: Specimens of the bomb and fuze have been sent to the United States by NavTechJap.

TYPE 3 NUMBER 1 MODEL 1 MARK 28 ROCKET BOMB

Use: Against large planes.

History: Experiments completed late in 1944.

Fuzing: Special nose fuze for Mark 28 bomb.

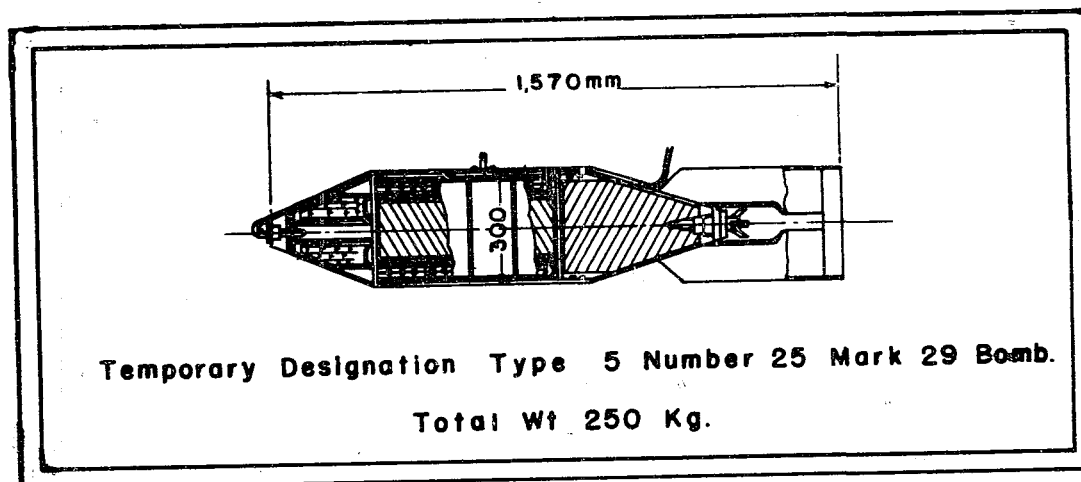
Previous Reports: Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4005.1	ND21-4009	ND21-4019	ND21-4025
ND21-4007.1	ND21-4010	ND21-4024	

General: This rocket bomb, except for its two firing rails, has the same construction as the Mark 27, with conical nose and tail section. This bomb is very small and contains only .6 kg explosive charge in the nose. The explosive charge is Type 98. There is 2 kg of propellant in the rocket motor. The maximum velocity is 400 m/sec. This bomb was manufactured at the Branch of the First Technical Arsenal. It was tested at the Second Powder Arsenal (HIRATSUKA), the Branch of the First Technical Arsenal, and Kashima Bombing Experimental Field (IBARAKI Ken).

Specimens: Specimens of the bomb and fuze have been sent to the United States by NavTechJap.

TEMPORARY DESIGNATION TYPE 5 NUMBER 25 MARK 29 BOMB

Use: Against large planes.

History: Planned 1944; experimentally produced.

Fuzing: Type 99 Mark 3 tail fuze. Type 3 electric gaine in nose.

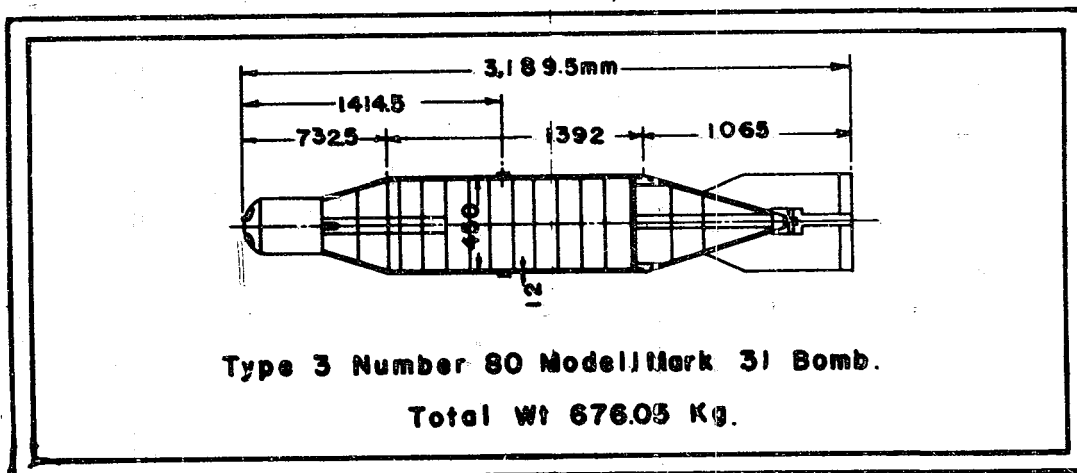
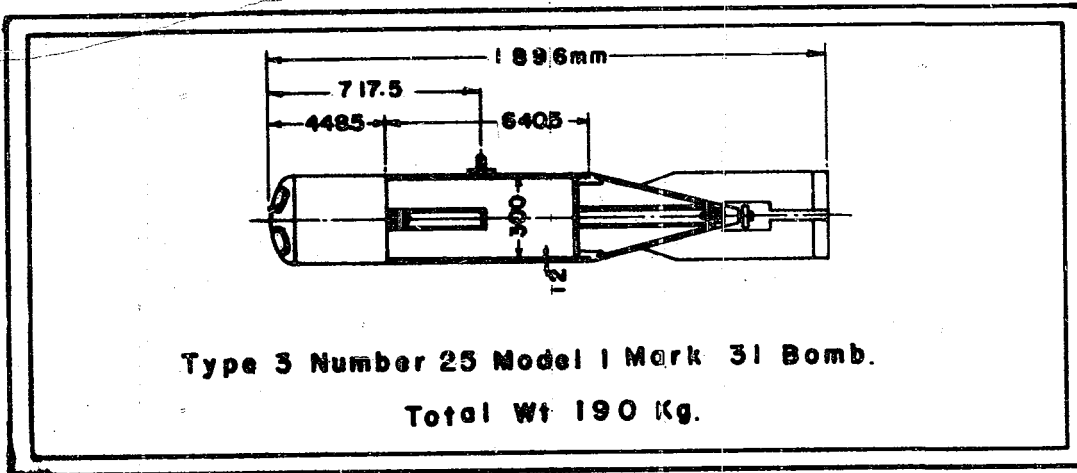
References: NavTechJap Document No.

ND21-4005.1 ND21-4018 ND21-4025
ND21-4007.1 ND21-4019

General: This is a burning shrapnel bomb which is exploded in the air by the clockwork tail fuze or by the electric gaine. The nose and tail section are conical and filled with 50 kg of white phosphorus and 1100 pellets. The four fins are welded to the tail cone. The bomb was to be used by KAMIKAZE planes against planes in formation. To explode the bomb the pilot could turn a switch which was connected to the Type 3 electric gaine in the nose of the bomb by a delicate cable. An alternative was to drop the bomb and allow the clockwork tail fuze to explode it. This bomb was to replace the Number 25 Mark 3 because it will disperse the incendiary pellets at right angles to the bomb, whereas the Mark 3 disperses its pellets downward in an arc of 100°. The experiments on the ground were almost complete and one bomb was dropped from the air.

Specimens: None available.

TYPE 3 NUMBER 25 MODEL 1 MARK 31 BOMB
TYPE 3 NUMBER 80 MODEL 1 MARK 31 BOMB



Use: Against airfields and landing operations.

History: Experiments began November 1943; tests completed July 1944.

Fuzing: Type 3 electric firing nose fuze with Type 3 electric gain. Type 15 Model 1 tail fuze with Type 92 land bomb gain.

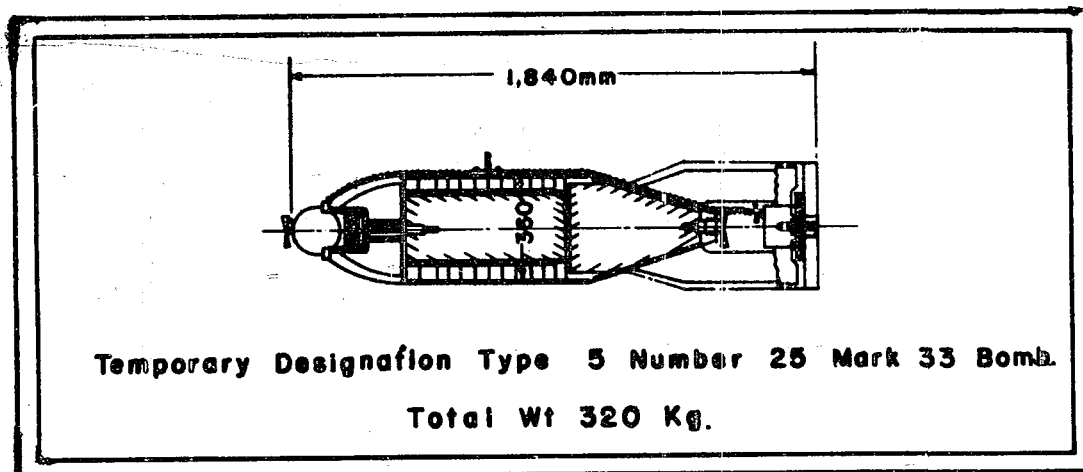
Previous Reports: MEIU #1 R-142. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

References: NavTechJap Document No.

ND21-4007.1 ND21-4025

General: These bombs consist of a nose section, barrel, and tail assembly. The slightly tapered longitudinally welded nose piece is closed at its forward end by a flat plate. The tail section is plug welded to the barrel. The Type 15 Model 1 impact tail fuze fits in the apex of the tail cone. It is filled with Type 98 explosive. The Type 3 electric fuze is fired between 3-15 meters above the ground. If 50% of these electric fuzes fired, the Japanese considered it satisfactory. For this reason the standard impact tail fuze was used. The Number 25 and 80 are similar except for size and loading factor: The Number 25 has a loading factor of 40.5%; the Number 80 has 58% loading factor.

Specimens: Previously shipped.

TEMPORARY DESIGNATION TYPE 5 NUMBER 25 MARK 33 BOMB

Use: Against airfields and landing operations.

History: Designed in 1944; experimentally produced and tested at end of war; not in production for use.

Fuzing: All-ways action electric nose fuze with Type 3 electric gains.
Impact tail fuzing, planned as Type 15 Model 2 with instantaneous gains.
Barometric arming mechanism in tail.

References: NavTechJap Document No.

ND21-4007.1' ND21-4015 ND21-4019

General: The Mark 33 bomb is an attempt at proximity fuzing a bomb by mechanical means. The bomb is constructed from a Mark 2 Number 25 case altered to the needs of Mark 33. It has a cylindrical barrel with ogival nose and explosive-filled tail cone. Just under the skin of the barrel is a layer of cylindrical steel fragments held in place by a second barrel inside the bomb. The barrel is explosive-filled. The ogival nose is filled with a wooden plug recessed at the nose to take a hollow steel sphere and with 35 meters of silk-wrapped copper cable. An all-ways action fuze and a battery carried in the hollow steel nose sphere are connected by a copper cable to a Type 3 electric gain projecting into the barrel explosive charge of 110 kg of Type 91 or 98 explosive. The standard four fin tail is modified to include four triangular steel plates hinged to the tail in such a way that when forced they will form a tail air brake on the bomb to slow its descent. These plates are controlled by a barometric arming mechanism carried in the center of the tail section. This fuze is also fitted with a 45 volt dry cell. Two steel wires extend from two of the tail retarding plates along the exterior of the bomb to locking levers holding the nose sphere in place. When the bomb is dropped, the barometric tail mechanism at a set altitude blows out a steel plug by closing contact and firing a black powder charge. By thus releasing the retarding plate at the tail, the descent of the bomb is slowed. The outward swing of the tail plates, by means of the two wires on the exterior of the bomb, releases locking levers at the nose of the bomb and the nose sphere is allowed to fall to the end of its cable. When the sphere makes contact with the target, the all-ways action fuze closes a contact which fires the main charge of the bomb while it is still some

distance above the target. In case of failure of the nose fuze, the bomb is detonated by the standard impact tail fuze. Tests of the Mark 33 bomb completely satisfied the Japanese and it was about to go into production.

Specimens: A specimen of this bomb has been shipped to the United States by NavTechJap.

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TYPE 3 NUMBER 6 TARGET MARKER BOMB

Use: Target marker.

History: Produced 1944.

Fuzing: Type 97 Model 2 nose fuze. Type 92 Modification 2 land bomb gains.

Previous Reports: MEIU #1 R-145. - Handbook of Japanese Explosive Ordnance. - Japanese Bombs and Fuzes USNEDS.

General: The bomb uses the same case as Type 1 Number 7 Mark 6 Model 3, modified by the presence of four longitudinal grooves cut into the barrel, 90° apart, to provide for easy bursting of the case. The barrel contains three steel canisters filled with white phosphorus and steel pellets. A small burster charge of Type 98 explosive is carried in the nose of the bomb. The bomb will produce flame and smoke for half an hour. Total weight 70.3 kg.

Specimens: Specimens of this bomb previously have been shipped to the United States.

SILVER PAPER SCATTERING BOMB

Use: False radar target.

History: Used extensively during the last two years of war.

Fuzing: Pull igniter in nose.

Previous Reports: Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4028

General: Sheet metal cylinder with fins, fuzed with a pull igniter and dropped by hand. A block powder charge expels 200 pieces of metal-coated paper 27mm by 700mm to serve as false radar target.

Specimens: This bomb has been shipped previously to the United States.

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NUMBER 3 MODEL 2 SMOKE BOMB
TYPE 99 NUMBER 3 MODEL 1 SMOKE BOMB
TYPE 99 NUMBER 6 SMOKE BOMB

Use: Tactical production of smoke.

History: The two Number 3 bombs were both abandoned after testing because it was concluded that they were too small. Type 99 Number 6 was produced, but never used.

Fuzing: Unknown.

Previous Reports: Handbook of Japanese Explosive Ordnance.

References: NavTechJap Document No.

ND21-4113 ND21-4119

General: Two two unproduced Number 3 bombs employed a Mark 3 case, and contained a black powder ejection charge, Shimose burster, and white phosphorus smoke agent. Type 99 Number 6 is an adaptation of Type 99 Number 6 Mark 2 case and contains sodium as smoke agent. Color marking is a black band aft of the nose.

Specimens: Nosspecimens of these bombs were recovered.

D. PRACTICE BOMBS

TYPE 99 NUMBER 3 30 KG MODEL 1 AND 2
TYPE 99 NUMBER 1 4 KG MODIFICATION 1, 2, 3
AND MODEL 1 1 KG MODIFICATION 1, 2, 3

Use: Practice.

Fuzing: Type 99 Number 3 and 30 kg Model 1 and 2: Type 97 tail initiator;
Practice gaine.

Type 99 Number 1: Unknown.

4 kg Modification 1, 2, 3 and Model 1: Self-Contained.

1 kg Modification 1, 2, 3: Self-Contained.

Previous Reports: MEIU #1 R-110. - MEIU #4 R-41. - Handbook of Japanese
Explosive Ordnance. - Japanese Bombs and Fuzes USNBDS.

References:

NavTechJap Document No.

ND21-4109 ND21-4111
ND21-4110 ND21-4112

General: These bombs are of various sizes and types, as shown in previous reports. All of them carry spotting charges of red-phosphorus, smoke fluid, or titanium tetrachloride. They are loaded to proper weight with sand, glass, clay, or marble. Color marking of these bombs is half black, half white.

Specimens: No specimens of these bombs were recovered by NavTechJap.

ENCLOSURE (A)

LIST OF DOCUMENTS FORWARDED TO THE WASHINGTON DOCUMENT CENTER

<u>NavTechJap No.</u>	<u>Atis No.</u>	<u>Title</u>
ND21-4005	3713	Experimental items under investigation.
ND21-4006	3714	Drawing: Type 11 Parachute Flare.
ND21-4007.1 to .2	3715	Drawings and characteristics of Japanese Naval bombs.
ND21-4009	3716	State of principal bomb experiments and studies.
ND21-4010	3717	List of aircraft rocket bombs.
ND21-4011	3718	Testing of Incendiary bombs.
ND21-4012	3719	Drawings and description of BAKA bomb fuzes and standard impact fuzes.
ND21-4013	3720	Blueprint: Number 8 Mark 8 Bomb.
ND21-4014	3721	Blueprint: Number 25 Mark 8 Bomb.
ND21-4015	3722	Blueprint: Number 25 Mark 33 Bomb.
ND21-4016	3723	Blueprint: Number 1 Mark 9 Bomb.
ND21-4017	3724	Blueprint: Number 6 Mark 9 Bomb.
ND21-4018	3725	Blueprint: Number 25 Mark 29 Bomb.
ND21-4019	3726	Chart of experimentally manufactured ordnance and its capacity.
ND21-4021	3727	Drawings and notes on aircraft pyrotechnics.
ND21-4024	3728	Blueprint: Number 6 Mark 27 Bomb.
ND21-4025	3729	Summary of research development of aircraft ordnance.
ND21-4027	3730	Drawings: Mark 3 Bomb Fuze; Mark 27 Bomb Fuze.
ND21-4028	3731	Blueprints: Window Bomb; Target Marker Bomb.
ND21-4034	3732	Blueprint: Number 6 Modification 1 Land Bomb.
ND21-4035	3733	Blueprint: Number 6 Land Bomb.
ND21-4036	3734	Test data: Pressure strength of Number 6 and Number 25 Land Bombs.
ND21-4037	3735	Blueprint: Number 25 Land Bomb.
ND21-4040	3738	Blueprint: 250 kg Land Bomb.
ND21-4041	3739	Blueprint: Number 25 Land Bomb (empty case).
ND21-4042	3740	Blueprints: Number 25 and Number 25 Modification 1 Land Bomb.
ND21-4043	3741	Blueprints: Number 25 and Number 25 Modification 1 Land Bomb.
ND21-4044	3742	Blueprint: Type 98 Number 25 Model 1 Land Bomb (empty case).
ND21-4045	3743	Blueprint: Type 98 Number 25 Model 1 Land Bomb (breakdown).
ND21-4046	3744	Blueprint: Temporarily designated Type 98 Number 25 Land Bomb (nose and connecting plug).
ND21-4047	3745	Blueprint: Temporarily designated Type 98 Number 25 Land Bomb (empty case).
ND21-4048	3746	Blueprint: Temporarily designated Type 98 Land Bomb (components).
ND21-4049	3747	Blueprint: Type 98 Number 25 Land Bomb (breakdown).
ND21-4050	3748	Blueprints: Type 98 Model 1 Number 25 Land Bomb; Type 98 Number 25 Modification 1 Land Bomb (assembly).
ND21-4051	3749	Blueprint: Number 80 Land Bomb (empty case).
ND21-4052	3750	Blueprint: Number 80 Land Bomb (complete).
ND21-4053	3751	Blueprints: Number 80 and Number 80 Modification 1 Land Bomb (complete).
ND21-4054	3752	Blueprint: Number 30 Land Bomb (breakdown).
ND21-4055	3753	Blueprint: Number 30 Land Bomb (breakdown).
ND21-4056	3754	Blueprint: Number 30 Land Bomb (assembly).
ND21-4057	3755	Blueprint: Number 33 Land Bomb (breakdown).
ND21-4058	3756	Blueprint: Number 33 Land Bomb (assembly).

ENCLOSURE (A), continued

<u>NavTechJan No.</u>	<u>Atis No.</u>	<u>Title</u>
ND21-4059	3757	Blueprint: Number 80 Model 2 Modification 2 Ordinary Bomb (empty case).
ND21-4060	3758	Blueprint: Number 80 Model 2 Modification 2 Ordinary Bomb.
ND21-4061	3759	Blueprint: Number 80 Modification 1, 2 and 4 Ordinary Bomb.
ND21-4062	3760	Manufacture of material for Number 60 GP Bomb, using special ingot molds.
ND21-4063	3761	Materials for Number 50 Model 2 GP Bomb.
ND21-4064	3762	Blueprint: Number 25 Model 2 Modification 1 GP Bomb (assembly).
ND21-4065	3763	Blueprint: Number 25 Model 2 Modification 1 GP Bomb (empty case).
ND21-4066	3764	Blueprint: Number 25 Model 2 Modification 1 GP Bomb (breakdown).
ND21-4067	3765	Blueprint: Number 25 GP Bomb (assembly).
ND21-4068	3766	Blueprint: Number 25 Model 2 GP Bomb (explosive charge).
ND21-4069	3767	Blueprint: Number 25 Model 2 GP Bomb (construction of body).
ND21-4070	3768	Blueprint: Type 99 Number 28 Model 1 Ordinary Bomb (empty case).
ND21-4071	3769	Blueprint: Temporarily designated Type 99 Number 25 GP Bomb (explosive charge).
ND21-4072	3770	Blueprint: Type 99 Number 25 Model 1 GP Bomb (assembly).
ND21-4073	3771	Type 99 Number 25 Model 1 GP Bomb (breakdown).
ND21-4074	3772	Development of Experimental Number 25 GP Bomb.
ND21-4075	3773	Data on Experimental Number 25 Ordinary Bomb.
ND21-4076	3774	Blueprint: Number 6 Model 2 Ordinary Bomb (body construction).
ND21-4077	3775	Blueprint: Number 6 Model 2 Ordinary Bomb (complete).
ND21-4078	3776	Blueprint: Number 6 Model 1 Ordinary Bomb (assembly).
ND21-4079	3777	Blueprint: Number 6 Model 1 Ordinary Bomb (breakdown).
ND21-4080	3778	Blueprint: Number 6 Model 1 Ordinary Bomb (assembly).
ND21-4081	3779	Blueprint: Number 6 Ordinary Bomb.
ND21-4082	3780	Fabrication of Number 6 Ordinary Bomb by means of seamless tube.
ND21-4083	3781	Shock tests of materials for ordinary bomb bodies.
ND21-4084	3782	Tests on Number 6 Ordinary Bomb.
ND21-4085	3783	Blueprint: Number 6 Mark 1 Land Bomb (interior breakdown).
ND21-4086	3784	Blueprint: Temporarily designated Type 4 Number 6 Mark 1 Bomb (tail section).
ND21-4087	3785	Blueprint: Temporarily designated Type 4 Number 6 Mark 1 Bomb (burst tube).
ND21-4088	3786	Blueprint: Temporarily designated Type 4 Number 6 Mark 1 Bomb (assembly).
ND21-4089	3787	Blueprint: Number 6 Mark 1 Bomb (assembly).
ND21-4090	3788	Blueprint: Number 6 Mark 1 Land Bomb (gas flasks).
ND21-4091	3789	Blueprint: Number 6 Mark 1 Bomb (nose and barrel).
ND21-4092	3790	Blueprint: Number 6 Mark 1 Bomb (tail breakdown).
ND21-4093	3791	Blueprint: Type 99 Number 6 Mark 2 Bomb (nose and barrel).
ND21-4094	3792	Blueprint: Type 1 Number 25 Mark 2 Model 1 Bomb (assembly).

ENCLOSURE (A), continued

<u>NavTechJap No.</u>	<u>Atis No.</u>	<u>Title</u>
ND21-4095	3793	Blueprint: Type 1 Number 25 Mark 2 Model 1 Bomb (breakdown).
ND21-4096	3794	Blueprint: Type 1 Number 25 Mark 2 Model 1 Bomb (assembly of empty case).
ND21-4097	3795	Test and performance data: Mark 3 Bombs.
ND21-4098	3796	Blueprint: 30 kg Mark 3 Bomb (assembly).
ND21-4099	3797	Blueprint: Type 99 Number 3 Mark 3 Bomb (pellets).
ND21-4100	3798	Blueprint: Type 99 Number 3 Mark 3 Bomb (empty case).
ND21-4101	3799	Blueprint: Type 2 Number 25 Mark 3 Bomb (tail-section breakdown).
ND21-4102	3800	Blueprint: Type 3 Number 25 Mark 4 Bomb (propellant).
ND21-4103	3801	Blueprint: Experimental 14 Number 25 Mark 4 Bomb (propellant).
ND21-4104	3802	Metallurgical data: Experimental 14 Number 25 Mark 4 Bomb.
ND21-4105	3803	Complete description of Mark 4 Bomb.
ND21-4106	3804	Blueprint: Temporarily designated Type 99 Number 80 Mark 5 Bomb (explosive charge).
ND21-4107	3805	Blueprint: Type 2 Number 80 Mark 5 Model 1 Bomb (explosive charge).
ND21-4108	3806	Blueprint: Experimental 14 Number 150 Mark 5 Bomb (explosive charge).
ND21-4109	3807	Blueprint: 30 kg Bomb for Tests.
ND21-4110	3808	Blueprint: 30 kg Model 2 Practice Bomb.
ND21-4111	3809	Blueprint: 30 kg Model 1 Practice Bomb.
ND21-4112	3810	Blueprint: 30 kg Model 1 Practice Bomb.
ND21-4113	3811	Surface Smoke Bomb.
ND21-4114	3812	Forty-first bomb experiments.
ND21-4115	3813	Pictures of bomb trials.
ND21-4116	3814	Thirty-third bomb experiments.
ND21-4117	3815	Chemical data on bomb composition.
ND21-4118	3816	Heat treatment of materials for Number 25 GP Bomb.
ND21-4119	3817	Second experiment on anti-aircraft smoke bomb.
ND21-4120	3818	Annealing of bombs.
ND21-4121	3819	Illuminant for Flare B.
ND21-4122	3820	Test of large parachute flares.
ND21-4123	3821	Blueprint: Type 15 Model 2 Modification 1 Base Arming Mechanism (complete).
ND21-4124	3822	Blueprint: Type 97 Mark 2 Model 2 Nose Arming Mechanism (complete).
ND21-4125	3823	Blueprint: Nose Fuze (obsolete) on Mark 3 Bomb.
ND21-4126	3824	Blueprint: Type 2 Arming Mechanism for 30, 60, 125, and 250 kg bombs (assembly).
ND21-4127	3825	Blueprint: Type 2 Arming Mechanism for 30, 60, 125, and 250 kg bombs (breakdown).
ND21-4128	3826	Blueprint: Electrical Arming Mechanism for 250 kg Land Bomb (assembly for underwater tests).
ND21-4129	3827	Nose Arming Mechanism for 30 kg and 10 kg Mark 3 Bombs.
ND21-4130	3828	Chart of bomb-gaine information.
ND21-4131	3829	Experimental data on bomb fuzes and gaines.

ENCLOSURE (B)

LIST OF EQUIPMENT SHIPPED TO ORDNANCE INVESTIGATION LABORATORY,
NAVAL POWDER FACTORY, INDIANHEAD, MARYLAND

<u>NavTechJap No.</u>	<u>Item</u>	<u>Quantity</u>
JE21-4423	½ kg Bombs	1 Bx
JE21-4369(1)	1 kg (Modified) Smoke Bombs	1 Bx
JE21-4370	1 kg Modified Bombs	1 Bx
JE21-4087(1-2)	1 kg Practice Bombs	2 Bx
JE21-4444	2 kg Concrete Bombs	1 Bx
JE2-210	2 kg Incendiary Training Bombs	
JE21-4434	4 kg Experimental Type Practice Bombs	1 Bx
JE21-4075(1-2)	5 kg Practice Bombs	2 Bx
JE2-210	5 kg Incendiary Training Bombs	
JE21-4433	7 kg Experimental Type Practice Bombs	1 Bx
JE214497	10 kg Bombs	1 Bx
JE21-4108	10 kg Type 94 Practice Bombs	2
JE21-4352	10 kg Spherical Bombs	1 Bx
JE21-4068(1-2)	10 kg Rocket Bombs	2 Bx
JE21-4065(1-3) JE21-4436 JE21-4437	12 kg 12th Year Type Streamlined Bombs	5
JE21-4358	12 kg Incendiary Bomb	1
JE21-4360 JE21-4362	15 kg Bombs	2
JE21-4361	15 kg Bomb, Long Tail	1
JE21-4429	15 kg Bomb with Flange Futtsu	1
JE21-4445	30 kg Bomb, Small	1
JE21-4443	30 kg Bomb, Short	1
JE21-4496	30 kg Concrete Bomb	1
JE21-4066 JE21-4439	50 kg 12th Year Type Streamlined Bombs	2
JE21-4488	50 kg Rough Coated Bomb	1
JE21-4490	50 kg Bomb with Slotted Nose	1
JE21-4489(1-2)	50 kg Gliding Bombs	2

ENCLOSURE (B), continued

<u>NavTechJap No.</u>	<u>Item</u>	<u>Quantity</u>
JE21-4456	50 kg "FO-1" Rocket Bomb	1
JE21-4486	50 kg Bomb with Four Holes in Nose	1
JE21-4466	50 kg Photo-Flash Bomb	1
JE21-4484	50 kg Circular Tail Shroud	1
JE21-4096	60 kg Mark 27 Rocket Bomb	1
JE10-4151(1-5)	70 kg Incendiary Bombs	5
JE2-111	100 kg Bombs	5
JE21-4455	150 kg Mark 2 "RO-3" Bomb with Large Tail	1
JE21-4457	"RO-3" Mark 2 (150 kg) Bomb	1
JE21-4058	250 kg Navy Aerial Burst Experimental Bomb	1
JE2-106	250 kg Bombs	5
JE10-4121(1-4)	250 kg GP Bombs	4
JE10-4107(1-5)	250 kg GP Bombs for VT Fuzes	5
JE2-101	500 kg Bombs (New)	10
JE10-4156(1-3)		
JE10-4157(1-2)		
JE10-4119(1-2)	500 kg Streamlined Kamikaze Bombs	2
JE10-4117(1-5)	800 kg GP Bombs	5
JE10-4118(1-3)	800 kg Bombs for Kamikaze	3
JE10-4120(1-5)	800 kg Bombs for VT Fuzes	5
JE21-4077(1-9)	Type 93 Incendiary Bombs	9
JE21-4454	Type 96 Number 6 Bomb	1
JE23-0002(1-2)	Type 1 Number 25 Mark 2 Model 1 Bombs	2
JE21-4052	Type 2 Number 80 Mark 5 (Bomb?)	1
JE10-2005	Type 3 Mark 27 Number 6 Aircraft Rocket Bombs	4
JE21-4050	Mark 4 Bomb	1
JE21-4440	Number 6 Gas Bomb	1
JE21-4043	Number 6 Mark 1 Bomb	1
JE21-4051	Number 150 Mark 5 (Bomb?)	1
JE21-4431	"KO-2" Bomb	1

ENCLOSURE (B), continued

<u>NavTechJap No.</u>	<u>Item</u>	<u>Quantity</u>
JE21-4067	Bell-Ringing Bomb	1
JE21-4469	Large Rubber Nosed Bomb	1
JE21-4468	Medium Rubber Nosed Bomb	1
JE21-4467	Small Rubber Nosed Bomb	1
JE21-4345 JE21-4354	Smoke Bombs	2
JE21-4050 JE21-4059	Armor-Piercing Rocket Bombs	2
JE21-4487	Bomb with Four Side Pockets	1
JE21-4479 JE21-4480	Folding Tail Bombs	2
JE21-4430	Long Tailed Bomb	1
JE21-4060	Rocket Bomb	1
JE21-4452	Gray Cluster Bomb	1
JE21-4347	Experimental Bomb	1
JE21-4353	Wooden Case Bomb	1
JE21-4365 JE21-4418	Assorted AP Bombs	
JE21-4368	Air-to-Air Bomb	1
JE21-4465	Large Sheet Metal Bomb	1
JE10-4150(1-5)	Rocket Bombs	5
JE21-4479 JE21-4480 JE21-4481	Folding Tail Bombs	3
JE21-4493 JE21-4494 JE21-4495	Rocket Bomb Tail Sections	3
JE21-4478	Tail Section (Bomb?)	1
JE50-5017 JE50-5816	**Heat Homing Bomb Heads	2
JE21-4491	Fort-7 Body Section	1
JE21-4492	Fort-6 Body Section	1

 **Shipped to: Naval Research Laboratory, Bellevue, Washington 20 D.C.

ENCLOSURE (B), continued

<u>NavTechJap No.</u>	<u>Item</u>	<u>Quantity</u>
JE21-4366	Bomb Spacer	1
JE22-3474(A-J)	Type 6 Rack Bomb Releases	
JE22-3431	Type 97 Modification 1 Model Bomb Suspension Hook	4
JE22-3432		
JE22-3433		
JE22-3434		