APPENDIX TWO: Munitions Supply Laboratories, Report on Demolition Charge from Japanese Submarine Recovered at Sydney (NAA# 400146 (1942-43))

SECRET.

MUNITIONS SUPPLY LABORATORIES

REPORT

on

DEMOLITION CHARGE FROM JAPANESE SUBMARINE RECOVERED AT SYDNEY

by

D.J. DAVIS

(5/10/42)

REPORT E.& A.R.No.35.

12 OCT 1942

37431

R.R. Summers

CHIEF CHEMIST (EXPLOSIVES)
MUNITIONS SUPPLY LABORATORIES.

MEMORANDUM FOR:

Inspector of Naval Ordnance,
MARIBYRNONG. N.3.

For your information and retention.

J.T. McCormick

SUPERINTENDENT.

12 OCT 1942

DEMOLITION CHARGE FROM JAPANESE SUBMARINE RECOVERED AT SYDNEY

Reference: Memorandum from Inspector of Naval Ordnance, No.78/0/1, 11,519 of 7th July, 1942.

The appearance of the demolition charge as received is seen in Fig.1. The casing of the charge is of welded steel construction and a lug is attached to facilitate handling. At one end of the casing is a flange on to which a steel cover plate is held by eight bolts. A rubber gasket is present between the cover-plate and the flange. A central hole cut in the cover takes a 2½" internal diameter collar welded to the outside of the cover. This internal diameter enlarges to 3" at the outer end, leaving a shoulder against which a rubber disc and a steel plate are held firmly by a cap (Fig.1) screwing on to the collar. Three lengths of safety fuze pass through the plate and rubber, and thence through the hole in the cover plate into the interior of the demolition charge. A 7/16th" dia. steel rod 2 3/8th" long is welded centrally to the steel plate and has a small plate welded to the far end. Three slots in this plate take the safety fuze.

The dimensions of the casing are:-

Length of body to cover plate	18"
External diameter of body	10¼"
Internal diameter of body	10"
External diameter of flange	11⅜"

Removal of the cover disclosed a perforated cardboard disc beneath which was the explosive filling (Fig.2). The filling, consisting of preformed blocks covered by waxed paper, was built up into an hexagonal prism, and held rigid in the cylindrical casing by six shaped wooden strips (Fig.2.g). A cardboard disc was present between the base of the filling and the base of the casing.

The filling was made up of two layers, the first being 11-13/16" deep and the second, at the base, being 5-7/8" deep. In Fig.3 some of the blocks have been reassembled to show the construction.

The lower layer consisted of six blocks (Fig.3.e) surrounding a central hexagonal-sectioned block (f). The upper layer consisted of six blocks (a) of the same cross section as blocks (e). Filling the central hexagonal space were three blocks, a cylindrical block (b), and a large cylindrical block (c) and an hexagonal sectioned block (Fig.2.d) with central cylindrical cavity into which (b) and (c) fit. This latter block is not shown in Fig.3, but the space it occupies is shown.

Small cardboard strips were present between some of the blocks at the upper surface of the filling to act as packing pieces.

The dimensions of the blocks are:-

Lengths of edges of cross section of blocks (a) and (e)	(2-7/16", 2-7/16", 2-7/16", 4-15/16"
Depth of blocks (a) and (d)	11-13/16"
Depth of blocks (e) and (f)	5-7/8"
Length of edge of cross-section of blocks (f) and (d)	2-7/16"
Diameter of blocks (b) and (c), and diameter of cylyndrical cavity in (d)	3-3/4"
Length of block (b)	4"
Length of block (c)	7-13/16"

/....

The total weight of explosive in the demolition charge is approximately 67 lbs; weight of steel container 35 lbs; wood packing pins 3¾ lbs. Total weight of filled container 104¾ lbs.

The central cylindrical block (b) serves as a primer, and is made of pressed, powdered Picric Acid. Three holes in its upper surface (Fig.2) take the detonators at the end of the lengths of safety fuze. Although the detonators were not received with the demolition charge, they were stated to be of the commercial type. Block (d) is made of biscuit-cast Picric Acid, except for the upper portion which surrounds block (b). This portion is made of cast Picric Acid. The remainder of the blocks are made of cast Picric Acid made by the biscuit method.

MARKINGS ON BLOCKS:

Every block has at least one label on it. Where possible photographs have been taken to show these.

Blocks	(a)	Fig.7 shows the label present on each in the centre of the side nearest to (d). One block only had, in addition, the label in Fig.9.
Block	(b)	A label was present on the top surface but was so discoloured as to make photography impossible.
Block	(c)	Fig.4 shows the label on the top surface. In addition, on the side wall, were an anchor and the numbers 98-1914. (Fig.3)
Block	(d)	Fig.10 shows the label from this block.
Block	(e)	Each block had on its upper surface the label shown in Fig.6, and half of the label shown in Fig.7 on the upper part of the side nearest (f).
Block	(f)	Label on upper surface as in Fig.5 and on the side as in Fig.8. (See also Fig.3)

A label on the outside of the casing (Fig.1) was practically indecipherable.

Fig.1

SIDE VIEW OF JAPANESE DEMOLITION CHARGE, SHOWING COVER PLATE, SAFETY FUZE AND COLLAR

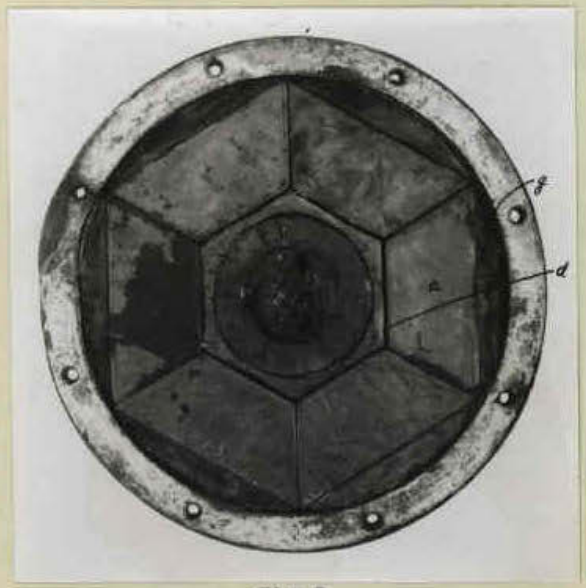

Fig.2

VIEW OF END OF JAPANESE DEMOLITION CHARGE AFTER REMOVAL OF COVER, SHOWING ARRANGEMENT OF BLOCKS OF EXPLOSIVE AND WOODEN STRIPS. NOTE RUBBER GASKET ON FLANGE

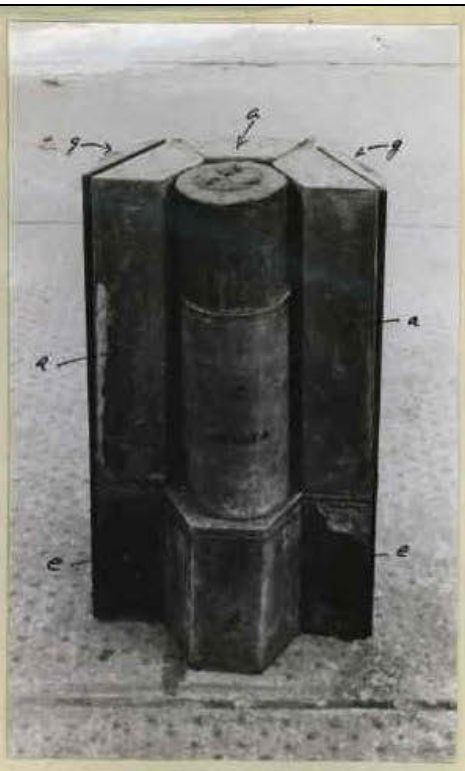

Fig. 3

A PORTION OF THE BLOCKS OF EXPLOSIVE FROM THE JAPANESE DEMOLITION CHARGE, REASSEMBLED, SHOWING ARRANGEMENT

Fig. 4

(x 2)

Fig.5

(x 2)

Fig.6

(x 2)

Fig.7 (x 2)

Fig.8 (x 2)

Fig.9 (x 2)

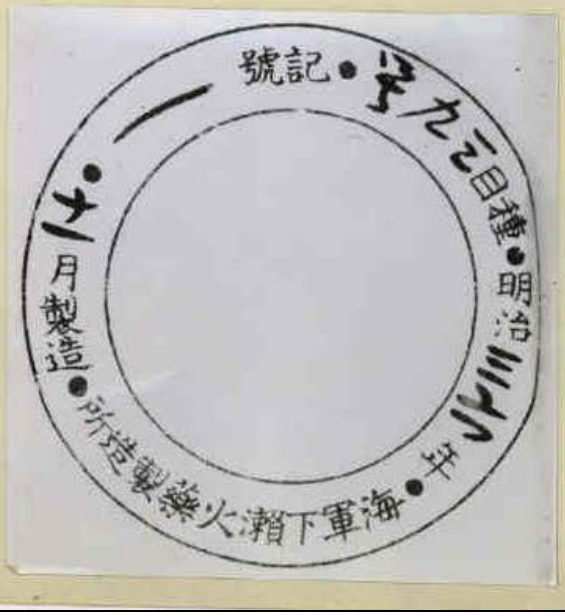

Fig.10
(x 2)

JAPANESE DEMOLITION CHARGE.

Figure 4.

Primer, demolition.	
Filling	Shimose powder
Lot.	714
Manufactured.	August, 1939.
Cast.	October, 1939.
Exchange	February, 1943.

Figure 5.

Hexagon, Shimose powder, Part 1.	
Filling	Shimose powder
Lot.	238
Manufactured	July, 1922.
Cast.	September, 1922
Exchange.	February, 1943.

Figure 6.

Hexagon, Shimose powder, Part 2.	
Filling	Shimose powder
Lot.	169
Manufactured.	February, 1917.
Cast.	March, 1917.
Exchange.	February, 1943.

Figure 7

Nature of filling - Hexagon, Shimose powder

Lot No. 169.

Manufactured - February, 1917

Cast - March 1917.

Figure 8.

Repaired July, 1930 (?)

(Name of Laboratory).

(Year has been overwritten, and is partly illegible - Trans).

Figure 9.

Repaired - July 1917.

(Name of Laboratory).

Figure 10.

Lot No. 39

Mark - (blank - Trans).

1904 November.

Naval Shimose Powder Factory.

REPORT E. & A.R. No. 35.

The translation of the partly effaced label shown on the side wall of the demolition charge in Fig. 1 is: -

EXPLOSIVE CONTAINER.
30 KILOGRAM EXPLOSIVE HOLDER.

Type of Explosive		Picric acid Explosive	
	Item	Date of Manufacture	Date of Casting
(effaced)	No.238 No.169 No.169 No. 39	July (X) Feb. (X) Feb. (X) Nov. (X)	Sept. 1927 March 1917 March 1917 - -
fire-transmitting explosive	No. 714 No. 745	Aug. (X) June 1938	Oct. 1938 Feb. 1938
Name of place of Manufacture		Picric Acid explosive Manufacturers	
Body Weight - - Weight		13 Kgm. 700 44 Kgm. 520	
		February 1942 Yokohama No. ---	

(Note (X) = effaced)

(Fire transmitter = booster, in this case referring to blocks (b) and (c) in E. & A.R. No. 35

Translation of the discoloured label on the top of block (b) (Fig. 2) is :-

Type of Explosive: Picric Acid explosive. Item No. 45 manufactured August 1938, compressed February 1936, designation (short) explosive.

The labels reproduced in Figs. 4-10 of E. & A.R. No. 35 are translated : -

Fig. 4:

Powder train chemicals.	Long.
Type of Powder	Picric Acid explosive
Item	No. 714
Manufacture	August, 1938
Casting	October, 1938
Reconstruction	February, 1942

Fig. 5:

Picric acid, type 6 explosive.	Short
Type of powder	Picric acid explosive
Item	No. 238
Manufacture	July, 1922
Casting	September, 1922
Reconstruction	February, 1942

Fig. 6:

Picric acid (Improvement 6) explosive No. 2. Short	
Type of Powder	Picric acid explosive
Item	No. 169
Manufacture	February, 1917
Casting	March, 1917
Reconstruction	February, 1942

(Note: the terms "long" and "short" in some of the previous labels refers to the two lenghhs of explosive blocks in the demolition charge).

Fig. 7:

Item No. 961
Manufactured Feburary, 1917
Cast February, 1917
Type of explosive : Type 6 picric acid, high power explosive
No. 2 long.

Fig. 8:

July 1939
Yokohama workshops, Japan
Repairs.

Fig. 9:

July 1917
Yokohama workshops, military section, Japan.
Repairs.

Fig. 10:

Item No. 93
Naval Picric acid explosive manufacturers
No. -
Manufactured November, 1903.

Australian Government | NATIONAL ARCHIVES OF AUSTRALIA RecordSearch

Item details

Item details for: MP1049/5, 1872/2/161

View digital copy Request copy

Title	[Demolition charge from Japanese submarine recovered at Sydney- Report on]
Contents date range	1942 - 1943
Series number	MP1049/5 Click to see which government agency or person created this item.
Control symbol	1872/2/161
Item barcode	400146
Location	Melbourne
Access status	Open
Date of decision	23 Oct 1975
Physical format	PAPER FILES AND DOCUMENTS (allocated at series level)
Visibility and availability indicators	26. No issue outside the Archives - age related
Date registered	12 Sep 1992

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APPENDIX THREE: Sediment Testing Report from ChemCentre, Curtin University, February 2017

Chem Centre
EXPERT SOLUTIONS

Your ref: Heritage NSW
Our ref: 16F1180
Enquiries: David De Tata
9422 9838
Email: ddetata@chemcentre.wa.gov.au

Office of Environment and Heritage
Maritime Heritage Program (NSW)
Locked Bag 5020
PARRAMATTA NSW 2124

Attention: **DR BRAD DUNCAN**

REPORT ON TWO ITEMS RECEIVED BY COURIER ON THE 15TH OF DECEMBER, 2016.

Exhibits:

ITEM	MARKS (in part)	Lab No. 16F1180
1 Sediment	Midships Battery Room	001
2 Sediment	Aft Engine Room	002

The items were examined for the presence of Picric Acid.

Methods of Analysis:

High pressure liquid chromatography-ultra violet detection

Result of Examination:

Examination of Item 1 Sediment (16F1180001).

The item comprised a 250mL glass bottle containing a mixture of sediment and water. The item was examined for the presence of Picric Acid with negative result.

Examination of Item 2 Sediment (16F1180002).

The item comprised a 250mL glass bottle containing a mixture of sediment and water. The item was examined for the presence of Picric Acid with negative result.

Discussion:

Picric Acid (2,4,6-trinitrophenol) is a yellow crystalline solid that is readily soluble in water. Picric acid is an explosive material that historically has been used as an explosive fill in military munitions.

10/2/17

David Alan DeTata
TEAM LEADER
PHYSICAL EVIDENCE SECTION
FORENSIC SCIENCE LABORATORY

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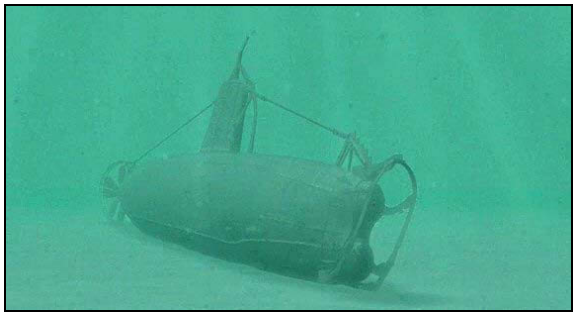
APPENDIX FOUR: Unexploded Ordnance and the *M-24* Japanese Submarine Wreck Site: Permit Holder Information Sheet

M24 Japanese Midget Submarine (1942): Historic Shipwreck Protected Zone and Site

Information Sheet - Heritage Division



CGI model of M24 on seabed when it first sank (Image: Model Animax Films).

Introduction

After their successful surprise attack on American shipping at Pearl Harbour (Hawaii), the Imperial Japanese Navy (IJN) conducted a series of follow-up raids around the Pacific and Asia Region. Amongst their military technology, were midget submarines, which provided stealth attack capacity for enclosed shallow waters to the Japanese arsenal.

The *M24* was one such vessel, which disappeared in covert circumstances off the coast of Sydney in 1942.

The vessel

The midget submarines used during the Sydney Harbour Attack were an improved version of the Ko-Hyoteki (甲標的) Class (also known as *Type A* vessels). These vessels were second generation Japanese midget submarines and normally carried a *Ha* prefix and a number. The *M24* derived its name from its mothership submarine *I24*, as its *Ha* number was not known.

The *M24* midget submarine was commissioned by the Japanese Imperial Navy. At approximately 24m (80 ft) long, this submarine had a crew of two, had pre-charged batteries driving a 600hp electric motor, and could remain submerged for about 12 hours. The vessel was armed with two 18-inch torpedoes.

History

In May 1942, a fleet of five Imperial Japanese Navy *I* Class submarines deployed from Chuuk (Truk) Lagoon in the Carolina Islands carrying three midget submarines on their decks and two with seaplanes in a deck hangers. As the fleet rallied off the coast of Sydney, the *I21*'s seaplane undertook a reconnaissance flight over Sydney. On the night of 31 May 1942, the midget submarines attempted an attack of the Allied shipping they had discovered moored inside in the Harbour.

During the evening, three *Ha* Class midget submarines entered the harbour to attack Naval shipping moored close to Garden Island. Two of the submarines were discovered before they could do any damage. One, the *Ha-14*, detonated an explosive scuttling charge when it was apparent that the vessel was about to be captured after becoming entangled in the anti-submarine net inside the entrance to Sydney Harbour. The other submarine, *Ha-21*, was destroyed by small naval auxiliary vessels using depth charges in Taylor's Bay.

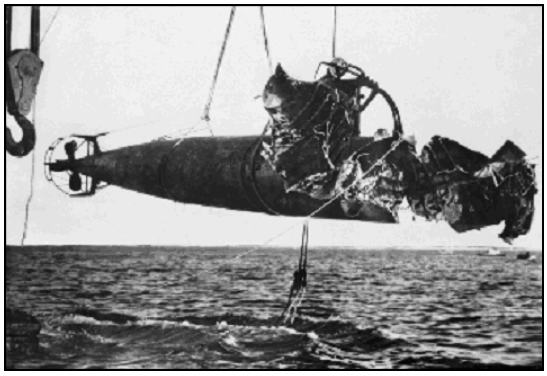
The third submarine known locally as the *M24,* launched two torpedoes at Allied shipping (in particular the heavy cruiser USS *Chicago)*, one of which failed to detonate and ran ashore at Garden Island. The other exploded under the requisitioned ferry HMAS *Kuttabul,* which was used as a naval dormitory, sinking the vessel and killing 21 sailors onboard. It was the largest single loss of naval personnel associated with enemy action to occur in NSW during WWII. After the engagement, the *M24* snuck out of the harbour and was lost to history for the next 64 years.

Japanese Floatplane reconnaissance over Sydney Harbour (From a painting by David Marshall, Aviation Artist)

It was later widely speculated by researchers that the submarine had become lost when searching for its original mothership, and had gone to ground on the seabed to avoid enemy shipping and aircraft searching for it. Whilst on the bottom, Sub Lieutenant Ban and Petty Officer Ashibe possibly ran out of air or committed ritual suicide (the latter of which also occurred in *Ha-21*).

Whilst the attack led to the loss of all three vessels, it was successful in that it revealed the vulnerability of ports like Sydney to long-range submarine patrols and the need for heightened security. On a social level, the attack brought the reality of the 'northern' war home to Sydney's somewhat complacent population, and many harbour-siders still recall the moments at night on 31 May as the harbour lit up with depth charge explosions, torpedo detonations, tracer fire and searchlights.

Salvage of the Recovered Hulls



Lieutenant Chuman's midget submarine *Ha-14* recovered from the boom net Sydney Harbour 1942 (Image AWM #042074)

The remains of the two captured midget submarines (*Ha-14* and *Ha-21*) were raised not long after the attack and displayed around NSW and Victoria to raise money for the war effort. They are now on display at Australia War Memorial in Canberra as a combined exhibit.

Composite hull reconstruction of *Ha-14* and *Ha-21* pieced together for a display at Australian War Memorial. (Image: B. Duncan, Heritage Division).

Analysis of these submarines revealed that they were fitted on-board with two explosive demolition charges in the fore and aft battery compartments, which were rigged to explode and sink the submarine after the crew rendezvoused with the mothership or to avoid being captured. Their explosive power was demonstrated by the damage caused to the *Ha-14* when it was detonated, which peeled the hull back like a banana skin around the conning tower. Other ordnance included a Nambu pistol and a *Very pistol* (flare gun).

Site discovery

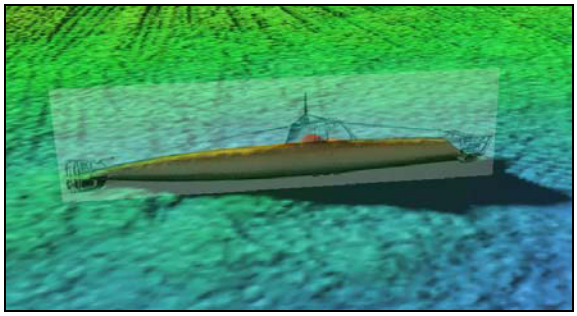
Sydney-based recreational SCUBA divers from a private club, No Frills Divers, located the remains of the missing *M24* midget submarine off Sydney's Northern Beaches in November 2006. The wreck was found some three miles offshore from Bungan Head near Newport in over fifty metres of water.

The wreck was found largely intact sitting upright on its keel under a large fishing net (with the exception of a section of the conning tower, stern cage and some of the net-cutter at the bow missing. It has been speculated that these sections became detached after the submarine was possibly rolled after becoming entangled in the net or through being caught by several fishing net hookups.

M24 midget submarine wreck on seabed (Image: No-Frills Dive Club).

Site Inspections

Several inspections of the site have been undertaken since its discovery, including co-operative inspections with the Royal Australian Navy, Port Authority of NSW, NSW Water Police, OEH survey vessel RV *Bombora,* Royal Australian Army and ArcheoTechnic. Ongoing annual inspections are undertaken by contractor Professional Diving Services which are currently monitoring the condition of the wreck and have installed cathodic anodes to further protect the wreck.



Sidescan survey interpretive image of the wreck of M24 in 2007 (Image: NSW Ports Corporation – now Port Authority of NSW)

Wreck Site Protection

The *M24* site was declared a protected Historic Shipwreck under the Commonwealth *Historic Shipwrecks Act 1976,* and a Historic Shipwrecks Protected Zone was placed around this internationally significant wreck in 2006. The No Entry zone is bounded by a circle with radius of 500 metres, centred on 33° 40' 21" South latitude with the meridian 151° 22' 58" East longitude (WGS84 datum).

The site has also been added to the NSW State Heritage Register (SHR # 01785) and is of particular significance to the Japanese people due to the presence on-board of the two deceased submariners. Heritage Division (Office of Environment and Heritage) works closely with the Japanese Government to manage the site, who are consulted in regards to any works that are proposed. The site is actively monitored by a shore based surveillance camera, and the protected zone is only accessible via a Permit system.

Unexploded Ordnance (UXO) aboard M24

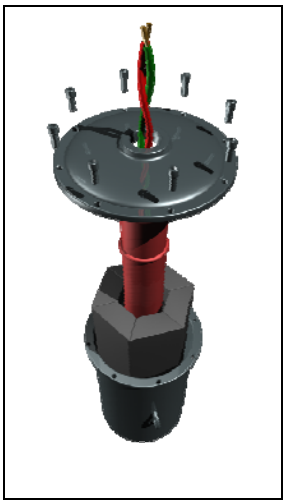
Recent investigations into the *M24* have revealed that the two 67 lb (30.39kg) demolition charges carried aboard the submarine are possibly still volatile. The charges consist of shimose powder (a picric acid derivative), which is known for its very high instability under certain conditions and its high toxicity. A risk assessment has determined that the site can be safely accessed under certain conditions (see Duncan and Smith 2017). To minimise exposure to catastrophic explosion or toxic chemicals, it is imperative that the site not be disturbed in any way.

Historic Shipwreck Protected Zone Permit Access Conditions

It is illegal to enter the M24 Historic Shipwreck Protected Zone without a valid Permit. Penalties up to $AUS1.1 million apply for disturbance to the wreck and surrounding debris field under the NSW *Heritage Act 1977*. The Heritage Division coordinates the archaeological management and site protection measures.

The following access conditions are imposed as part of any Permit to access the site:

- **No anchoring or mooring permitted onsite;**
- **The use of drag lines and/or grapples to locate the wreck is prohibited;**
- **Shot lines must not be attached to the wreck;**
- **Soft shots only to be used as diver guides to the seabed (i.e. no hard weighted lines are to dropped on the site)**
- **No access to the interior areas;**
- **Look but don't touch;**
- **Do not move or disturb any relics onsite.**



3D representation of the explosives charges showing components of the demolition charge (Image: Courtesy Gary Jackson, Headland Creative).

This wreck is essentially a grave site, so please respect those submariners whose remains are still on-board!

This information sheet and a report on the UXO potential of the wreck site are available free at the Heritage Division's NSW Maritime Heritage Online Website: http://www.environment.nsw.gov.au/maritimeheritage/index.htm

Sources:

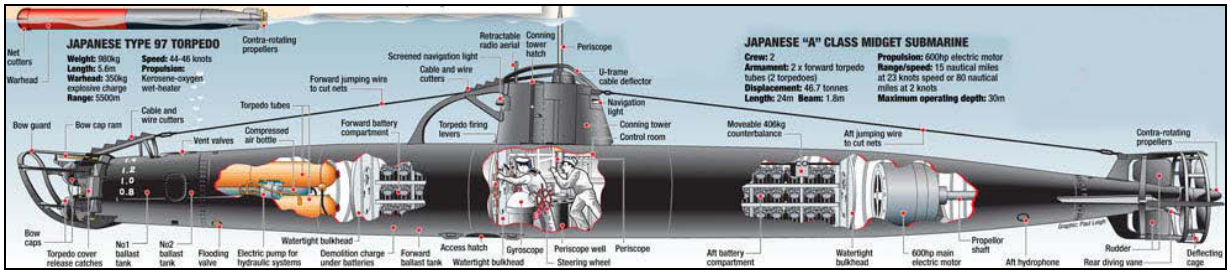
- **Heritage Branch, Office of Environment and Heritage**, *Maritime Heritage (Online),* http://www.environment.nsw.gov.au/maritimeheritage/index.htm

- ***Duncan and Smith 2017****: An assessment of potential unexploded ordnance (UXO) about the M24 Japanese midget submarine wreck (1942),* *http://www.environment.nsw.gov.au/MaritimeHeritage/researchcentre/sitereports.htm*

- **Smith, Tim, 2007,** *Wreck of the Japanese Type 'A' Midget Submarine M24 Preliminary Archaeological Survey Report, Bungan Head, Newport, Sydney*, Australia, Heritage Branch, NSW Department of Planning, Underwater Cultural Heritage Program. Available at: http://www.environment.nsw.gov.au/resources/heritagebranch/m24/m24prelimsurvey.pdf

- **Smith, Tim, 2008,** Managing an Australian midget: The Imperial Japanese Navy Type A Submarine M24 at Sydney. *Bulletin of the Australasian Institute for Maritime Archaeology* (2008), 32: 79–89. Available at: http://www.environment.nsw.gov.au/resources/heritageoffice/M24Management.pdf

- **Office of Environment and Heritage 2012**, *M24 (Japanese) Midget Submarine website,* http://www.environment.nsw.gov.au/M24/



Schematic diagram of interior of a Type A *Japanese* midget submarine (Image: After Heritage Division 2012 and © Newspix/News Limited).

The Heritage Division would like to gratefully acknowledge the support of many organisations and individuals from both the public and private sectors who have assisted with the management of this site.

For more information, please contact:

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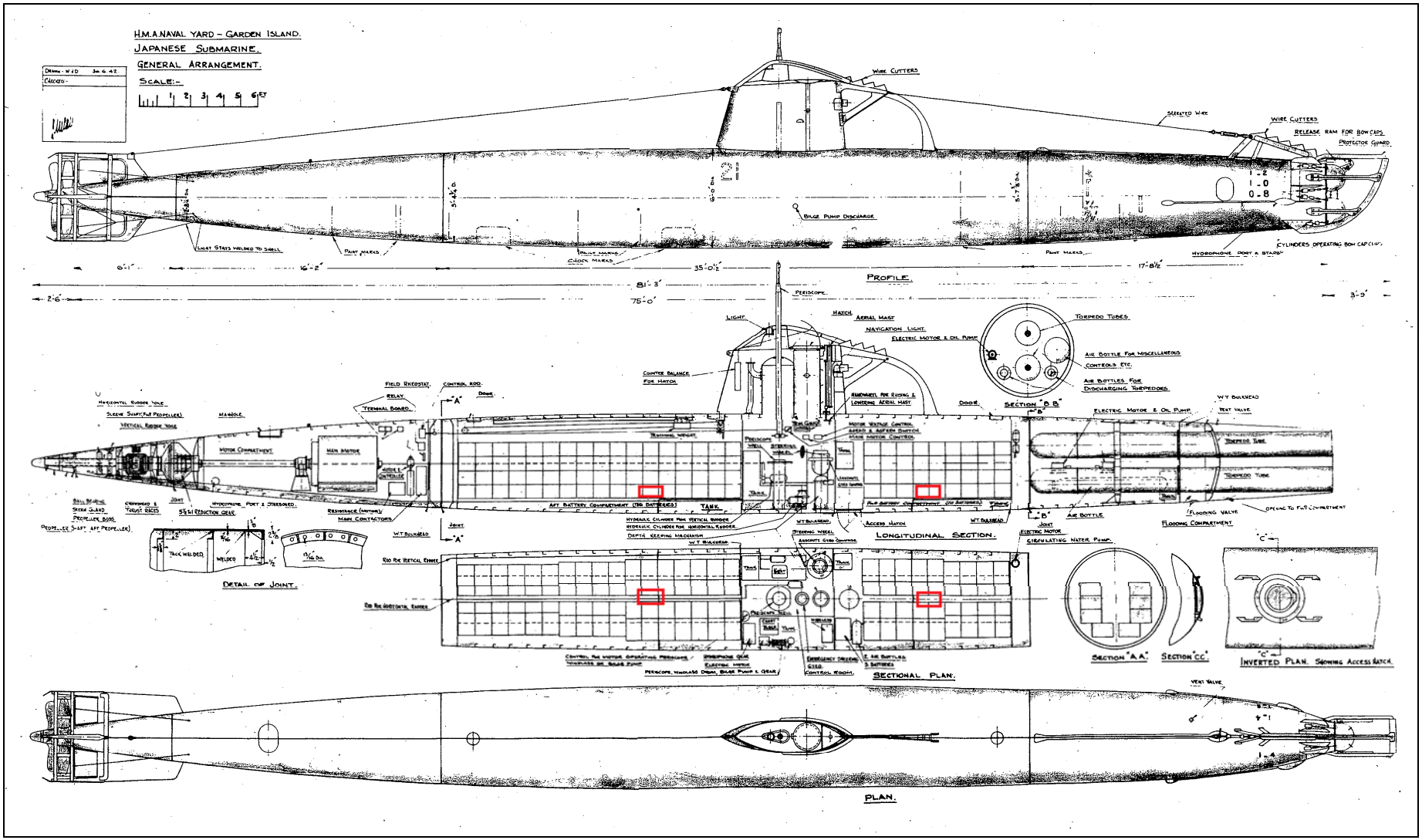
Supported by the Commonwealth Historic Shipwrecks Program

Australian Government
Department of the Environment and Energy

AUSTRALIAN HISTORIC SHIPWRECKS PROGRAM



Interpretation of likely locations for demolition charges shown in red (Image: After plans held at Australian War Memorial, AWM54, 505/6/7, NAA # 485279).

APPENDIX FIVE: _Extracts From National Archives Of Australia / Australian War Memorial/ National Archives (UK) Files

(ADM 1/17012 (1942) p.18): Report on Japanese Submarine (Electrical): *It will be noted that Batteries are numbered 1 to 56, but that Nos. 4, 5, 24, 25 are missing. These missing units are from a position immediately forward of the Conning Tower, and have been removed to allow fitting of a small hatch in the bottom of the submarine. (It is understood that the submarine investigated at Pearl Harbour had these batteries fitted and had no hatch. The use of the hatch is dealt with elsewhere).*

(ADM 1/17012, (1942) p. 20): Report on Japanese Submarine (Electrical): *Provision is made for charging the Batteries by connecting mains from some outside source to a pair of connection points on the bars in the " After Battery Room: This puts the batteries in series. At After end of After Battery Room, four in number Hull Pressure Glands are fitted. From the two on the Port Side, about three feet of T.R.S Single Core Cable of about 50 Amp capacity was trailing and from those on the Starboard side, about the same length of twin cable. The Single core cables connected to 7/044 V.I.R. inside and were connected to the Busbars through a switch in the Conning Tower. The Twin cores were run to Conning Tower where one pair was connected to a telephone and the other pair to a meter, which was damaged beyond investigation. The reason for these leads is very obscure. There is a possibility that the power leads may be connected to some release gear, for detaching from the Mother ship, but the telephone leads are hard to explain. Some conjecture that single core leads are charging mains, for a trickle charge, (but the current carrying capacity of these cables, would not allow enough current to do any good to the Batteries), and phone cables for communication between small sub. And Mother Subs., when small sub. is buttoned on to big ship, but it is unlikely that cables would be connected outside the ship when a perfectly good hatchway exists.*

(AWM PR84/047) *Technical Report on Japanese Midget Submarines: Certificate & Technical Report*, July 1942, AWM File 419/11/48: *The scuttling charges were wired in a temporary fashion through a clockwork timer to 4 dry cells. Each charge was about 60 pounds of explosive with 4 primers in each charge.*

(AWM MP1049/2, (1942)): *Scuttling Charges, Sheet No. 30. , Technical Report on Japanese Midget Submarines (Excluding Reports on Wireless and Electrical Equipment – Dealt with Separately). Garden Island, Sydney, July 1942. Copy No. 4. Each Midget Submarine carried two scuttling Charges – in the passage ways of each of the Battery Rooms (see Figure XIII).*
Each Charge weighed 103 lbs. total – estimated weight of explosive – 60 lbs. The temporary method of securing and firing indicated that the scuttling charges were only fitted at the last minute. A switch in Control Room fired them through a clockwork operated delay.
Four special dry cell batteries, operated the firing of the charges. Each charge had four primers.
Only one charge had been fired – the forward one in No. 14. Attempt had been made to fire the others.
It is interesting to note that the disruptive force which tore the plates of the shell, in no instance caused fracture along a weld.

(**AWM # PR89/172, p.6**: "*the demolition charges were very temporarily wired in ordinary twin flex (23/0076)*"

(**NAA # 398841, p41**: Doc. 496: 11/6/1942, p. 1): *Notes on submarines captured in Sydney Harbour: Two demolition charges are carried in each submarine 1 fore and the other aft, and packed in a round canister 2 fuses to*

each, 1 electric contact and 1 match. One submarine was blown up from inside by demolition charge…All electric wiring made of very heavy brass. …Interesting to note that of the two men found in the submarine one was an officer found dead in the conning tower and the rating was found in the stern shot obviously by the officer who himself committed suicide

(**NAA # 398841, p. 48**: Doc. 496: 25/8/1942, p. 5): *Japanese employment of midget submarines in an attack on Sydney Harbour, description of the midgets used and suggested methods of countering this form of attack* Eastern Fleet Intelligence Summary: Midget Submarines. Index No.915, 1st Edition A. September 1942. prepared by COIS E.F. Kilindini, 2 Sept 1942: "*Whereas the Pearl Harbour design only had a self-demolition charge fitted aft, the Sydney type had two such charges, one forward and one aft*".

(**NAA # 398841, p. 61**: Doc. 375/31: 25/8/1942, p. 3): *Secret NZ Naval Intelligence Memoranda. Serial No.11, 3rd September 1943:Japanese Midget Submarines, …Torpedoes: Inertia type pistol fitted to side of head. …Demolition Charges: At Pearl Harbour – 300lbs demolition charges in aft compartment, with 50ft fuse. Sydney Harbour – two charges , one forward and one aft.*

(**NAA # 398841, p. 71**: Doc.TOO 1923a/8: 18/12/1941): re: Pearl Harbour Midget Submarines: *demolition charges 300lb in aft Sector (?) with 50 foot powder fuse*

(**NAA # 398841, p. 72, 73**: Doc. TOO 1720a/16: 16/12/1941): Pearl Harbour Midget Submarines: *1-300 pound bomb attached to battery.*

(**NAA # 398841, p. 99**: Doc. OPR No.1: 27/2/1945): *Statistical Data of Midget Submarines (Extract from ONI 220-J) …Scuttling Charge: 300lb (Pearl Harbour Type). Same (Sydney Harbour Type) (The appearance of this is unknown).*

(**NAA #399556, p6**: Doc. 1855/3/193, 1/6/1942): *No 1 destroyed herself after apparently attempting to penetrate the net...*

(**NAA #399556, p15**: Doc. TOO 0801z/6, 6/6/1942): *Second submarine recovered except for foremost compartment which had been severed by internal explosion but was intact with torpedoes in tubes.*

(**NAA #399556, p.17**: Doc. TOO 0725z/11, 11/6/1942): *My 0945/10. Bow portion of submarine No. 14 recovered today Thursday AM. Bow Completely intact with torpedoes in tubes and bow caps on. One Japanese ensign recovered and one verey pistol. Pistol has three barrels, one painted white one painted red and yellow, one painted green and possibly another colour may be blue with selective trip hammer. Cartridges have also been recovered.*

(**NAA #399556, p18**: Doc. 0043z/13, 23/6/1942): *Both submarines contained 2 repetition 2 bodies with revolver wounds in the Head. 2. Both Submarines were fitted with demolition charges one foreward and one aft. Fuses were non electric and in one case fuse of second charge was extinguished by water admitted XXXX probably by the first explosion. 3 torpedo tubes had been fired but torpedoes were jammed in tube by bow caps which are fitted with telemotor operated release clips permitting bow caps to fall off.*

(**NAA #399556, p19**: Doc. 1436/12, 13/6/1942): *Submarines equipped with two demolition charges one aft and one foreward and manned by two men*

(**NAA #399556, p21**: Doc. TOO 0729z/24, 24/6/1942): *Number one destroyed herself in the net*

(**NAA #399556, p22**: Doc. TOO 1236z/23, 23/6/1942): *Number 21 is missing approximately 20 feet of the stern and number 14 is minus the bows just forward of the conning tower….Five compartments accessible to crew with water tight divisional bulkheads and two small compartments around torpedo tubes and one aft at stern the later filled with oil and all three inaccessible to crew.*

(**NAA #399556, p22**: Doc. TOO 1236z/23, 23/6/1942): *(ii) Displacement estimated 40 to 50 tons. Overall length 80.5 feet. Beam 6 feet as against 7ft and 5.5 ft. Endurance and speed not yet estimated. Plating five sixteenths inch as against quarter inch. Saw toothed net cutter above bows (five teeth) and upper side fore part conningtower (four teeth). Five compartments accessible to crew with water tight divisional bulkheads and two small compartments around torpedo tubes and one aft at stern, the latter filled with oil and all three inaccessible to crew. Estimated height of periscope above coning tower seven to eight feet as against five feet.*

(**NAA #399556, p30**: Doc. TOO 1303/21, 21/6/1942): Notes configuration of batteries and differences between Pearl Harbour subs *Only structural channel noted since Pearl Harbour possibly having magnetic influence is removal of six flasks forward battery compartment to make room for access hatch in submarine.*

(**NAA #399556, p35**: Doc. TOO 0801z/6, 6/6/1942): *Second submarine recovered except for foremost compartment which had been severed by internal explosion but was intact with torpedoes in tubes. Number of boat was fourteen.*

(**NAA #399556, p35**: Doc. TOO 1151z/15, 15/6/1942): *Verey pistol sent to Capt Superintendent of training for examination by Gunnery School. Cartridges to Assistant Armament Supply Officer Maribyrnong for examination of explosives.*

(**NAA #399556, p50**: Doc. TOO 0445z/22, 22/6/1942): *Verey pistol recovered from H21 being forwarded to NOC FHD for examination by Gunnery School*

(**NAA #399556, p65**: Doc. TOO 0938z/4, 4/9/1942): *Explosives filling for torpedo warhead is 780 pounds of following mixture: Hexamite: forty five per cent. TNT: fifty five per cent.*

(**NAA #399556, p66**: Doc. TOO 0406z/15, 15/9/1942): *Torpedo had pistol primer detonator and two igniters.*

(**NAA #399556, p138**: Doc. TOO 0800z/13, 13/6/1942: *Self demolition charge found forward as well as aft.*

(**NAA #399556, p153**: Doc. TOO 1850B/2, 2/6/1942): *Five compartments comprise torpedo, forward battery, control room, after battery, motor room.*

(**NAA #399556, p163**: Doc. TOO 2254z/4, 2/6/1942): *Warhead and exploder should be forwarded A1/2 ASO Marybyrnong.*

(**NAA #399556, p209**: Doc. TOO 0800z13, 13/6/1942): *Part 2: Midget Submarines. Fabricated three sections. Jointed by Internal Flanges Bolted*

together with insertion in between. Overall length 80.5 ft. Forward section 17 feet. Amid-ship section 34 feet 11 inches. After section 22 feet 4 inches. Balance nose guard 3 feet. Propellers and guard 3 feet 3 inches. Midships diameter 6 feet. Height conning tower 4 feet 6 inches with additional 6 inches guard structure. Midget apparently secured above parent by (1) chocks under and holding down bands...

(**NAA #399556, p209**: Doc. TOO 0800z13, 13/6/1942): *Torpedoes. Weight of explosive approximately 700 LBS. Type not yet ascertained. Yellow in Colour. Propulsion by compressed air with heater. Air vessel short and propellers small evidently short range and slow running. Cutter on head in form of cross centre portion being knife edged pyramidal devise comprising of four cutters at ninety degrees. This removable from additional saw like cutters extending back to full diameter of torpedo. Inertia pistol fitted to side of head.*

(**NAA #413209, p. 26**: Doc. BS1749/201/37, 16/7/1942, p.2): *Midget submarine H14 blew herself up in submarine net at 22:35 after becoming stuck.*

(**NAA #413209, p. 27,28**: Doc. BS1749/201/37, 16/7/1942, p.3-4): *Midget 21: Both members of the crew had been shot through the head; demolition charges had been fired but the fuzes were drowned.*

(**NAA #413209, p. 29**: Doc. BS1749/201/37, 16/7/1942, Appendix 1, p.1): *2235: "Yarroma "reported submarine had blown up"*

(**NAA #413209, p. 35**: Doc. BS1749/201/37, 16/7/1942, Appendix 3, p.1): *Demolition Charges 1 fired. 2 fuzes. 1 fuze drowned*

(**NAA #413209, p. 39**: Doc. BS1749/201/37, 16/7/1942, Appendix 6, p.1). Rear *Admiral Murihead Gould Commendation Report*: *Recommendations for Recognition of Personnel….(9) Mr FJ Lingard (Torpedo Fitter): For the removal of pistols and primers from torpedoes, and demolition charges from submarines, this being carried out entirely voluntarily.*

(**NAA #413209, p. 43**: Doc. TOO 0729z/24, 24/6/1942): *Number one* (submarine) *destroyed herself in the net*

(**NAA #413209, p. 51**: Doc. BS 1495.201.37, 17/6/1942): *Submarine 1. Self destroyed.*

(NAA #413209, p. 67): *The Navy; The Secretary, Department of External Affairs and The Secretary Department of Navy; 13/6/1942: Secret, Self demolition charge found forward as well as aft.*

(**NAA #413209, p. 69**: Doc. TOO 0900z/13, 13/6/1942): *Fourth* (submarine) *blew itself up and was later found to have propeller fouled in net*

(**NAA #413209, p. 100**: Doc. TOO 0801z/6, 6/6/1942): *Second submarine recovered except foremost compartment which was severed by internal explosion but was intact with torpedoes in tubes. Number of boat 14… The Submarine contained at least 3 bodies.*

(**NAA #413209, p. 102**: Doc. TOO 0330z/6, 6/6/1942): *No.2 blew itself up endeavouring to pass through the net. This submarine has been examined by a diver and is seriously damaged.*

(**NAA #413209, p. 103**: Doc. TOO 0750z/5, 5/6/1942): *Submarine raised and placed on Clarke Island this afternoon damage by depth charges. 15-20 ft of stern missing. No 21 painted on side...*

(**NAA #413209, p. 126, 127**: Doc. TOO 0900z/1, 1/6/1942): *No 1 Destroyed itself after apparently trying to penetrate the net defences*… (Midget submarines are) *Armed with Two 18" torpedoes and 300lb TNT demolition charge carried under the stern to permit self destruction or suicide attack.*

> (**NAA #475195,** Doc. 910-3800, p1, 24 Jan 1942): *Issued by the Intelligence Division, Office of Chief of Naval Operations Navy Department: Japan Navy Ordnance Torpedoes: Japanese Torpedo Exploder Mechanism No. 2121 (A Description and sketch of Japanese exploder mechanism from 18 inch torpedo in a midget submarine captured at Pearl Harbour Dec 7 1941 as received from the Bureau of Ordnance)... 1. Exploder mechanism, detonator, and booster are assembled in one unit… which can be removed from the warhead after turning the locking ring… which holds it in place…The exploder is contained in two cylindrical cases screwed together… The lower case contains all the explosives in this assembled unit i.e. detonator and booster, and no mechanism.*

(NAA# AWM 124, p. 7): *Report of investigations into a Japanese torpedo fired from midget submarine during the attack on Sydney Harbour, dated 7-8 June 1942. Torpedo School, Flinders Naval Depot. Report released 14 Jan 1943. Head not yet at Flinders naval Depot*,