283/1.

T.

1969-1972

FILE No. 283 / 1

OIL DISCHARGED ON HARBOUR WATERS

OIL BOOMS

OIL POLLUTION

FROM 16TH JUNE 1969

TO DECEMBER 1972

Auckland Harbour Board.

To Chief Engineer:-

I cannot find S.P Chemicals Ltd letter of the 26th April on the file.

Jack N Bray

6/12/72

Messrs. South Pacific Chemicals Ltd.,
P.O. Box 41051,
Eastbourne,
Wellington.

6th December 1972.

Dear Sirs,

T-T OIL RECOVERY EQUIPMENT.

I acknowledge receipt of your letter dated the 27th November 1972, in which you requested information with regard to progress we have made in considering your T-T oil recovery equipment.

During the time when you first communicated with me, a study group was formed. This group, consisting of representatives of the Harbour and Engineer's Departments of the Board, reviewed the use of oil booms and associated equipment for the containment and removal of oil pollutants from our harbour confines.

The report has now been completed and is being considered by various authorities concerned with fire prevention and pollution control in this port.

When and if any firm decisions are made which require the installation of an oil boom or the supply of ancillary equipment for this port I shall contact you for further information on T-T oil recovery equipment.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD.

Copy to:
Mechanical Engineer
for Information.

JMB:AF.

File 283/1

Harbour Pollution by Oil.

I had the opportunity to quickly peruse some documents from Mobil (NZ) Ltd and to obtain the most interesting sections.
You will find attached.

1/ Minimum Requirements for the Onshore or Harbour Oil Booms.
This is an American Specification providing the basics to be taken into account.

2/ Wind and Oil Movements.
Selected pages 1-6, 1-7 & 1-8 from a Slick Bar publication.
SLICK BAR INC. Planning Equipment Training for Oil Pollution Control.
Address Box 295 SAUGATOCK STATION / WESTPORT / CONN / 06880 / U.S.A.
Small manual was of interest.

3/ Ship - Shore Safety Check List
All masters of Mobil Tankers required to complete this check list before pumping.

H.
25/9/72

(Chs. Nash.) to see then return to me.
Mr. Bray. "

Minimum Requirements for an Inshore

or Harbour Oil Boom

1. Performance

1.1 The boom shall be completely operational in waves where the ratio of the interval between waves to the average height of the waves is greater than 4 : 1. The boom shall be capable of maintaining integrity in winds equal to Beaufort Force 5.

1.2 The skirt or fin shall remain within 20° of the vertical when deployed perpendicular to a current for which the boom is designed. See below for minimum ballast requirements, Paragraph 5.3.

1.3 The boom must be capable of rapid deployment without any manpower requirement at the storage point, at a rate in excess of 5 knots.

1.4 1500' of 6" float and 10" fin, shall not require more than 500 cubic feet of stowage space and shall be capable of being stowed and/or deployed in one continuous length.

1.5 The boom shall be capable of towing at 10 knots in a straight line without twisting. It shall "follow in trace" when towed at 2 knots, in an "S" pattern, without twisting.

1. 6 Sections must be capable of connecting and disconnecting from small craft in Sea State 5, in not over 2 minutes by trained personnel.

1. 7 Recovery and stowage must be able to be accomplished by not more than 3 trained men.

1. 8 In calm water, the top of the boom shall be at least 4.5" above water.

1. 9 The boom shall be articulated at least every 10'. This shall allow 180° folding.

2. Flotation

2. 1. The boom shall have a reserve buoyancy of at least 200%. The buoyancy must double within 18% of the normal water line.

2. 2. The flotation shall have at least 0.2% UV oxidizer/ inhibitor or 2 years continuous exposure to direct sunlight.

2. 3 The flotation shall have a smooth surface for cleaning. It must be covered or have a densified surface for protection against puncturing (over 40 Shore durometer).

2. 4 Puncturing of the float sections shall in no way reduce flotation or allow escape of flotation.

2.5 The flotation shall be fastened in such a manner that it becomes an integral part of the entire oil boom, including any primary support cable.

2.6 The flotation must be capable of field replacement and be ready for re-use within 24 hours.

2.7 Flotation shall be of closed cell plastic material and fully resistant to all grades of hydrocarbons.

2.8 The colour shall be International Orange or Yellow.

3. Skirt or Fin

3.1 The fin material shall exceed the following:

3.1.1 Break Strength

Warp	300 lbs./inch	FTMS 191 (M 5102)
Fill	200 lbs./inch	FTMS 191 (M 5102)

3.1.2 Tear Strength

Warp	50	FTMS 191 (M 5136)
Fill	45	FTMS 191 (M 5136)

3.1.3 Elongation

Warp	40% maximum	FTMS 191 (M 5102)

3.1.4 Hydrostatic Pressure (after cold crack tests):

250 lbs min. by Mullens

Burst Test - FTMS 191 (M 5122)

3.1.5 Adhesion /coating to substrate value in excess of 25 lbs/2" of width, FTMS 191 (M 5970), with exception that specimen preparation is by electronic heat seal technique - pressure 90 psi, power setting 90, dwell 3 seconds.

After 6 months continuous water immersion, not over 10% reduction of original value.

3.1.6 Abrasion (cycles) - face and back surfaces

FTMS 191 (M5306)

Value - 1500 cycles min. Value - Taber H22 wheel/ 1000 gms/VAC60 - not to exceed 2% thread exposure

3.1.7 Low Temperature

No cracking at - 20°F, 1 hour soak, under a 10 lb roller on 180° fold, at temperature FTMS 191 (M 5874).

3.1.8 Stiffness

Not less than:	Warp 17	FTMS (M 5204)
	Fill 16	FTMS (M 5204)

3.1.9 Flame Resistance

(M 5903/SM 191) Flame out - 4 sec. (max.)

3.2 The colour shall be International Orange or Yellow.

3.3. The fabric shall not wick if raw edges are exposed to water.

3.4 No laminated materials shall be allowed

3.5 The coating shall have not less than .65% anti-fouling inhibitor and not less than .65% UV inhibitor.

3.6 If stiffeners are used, they must not rust. They shall be capable of being bent 90° over a 2" mandrel and return to normal position without outside forces.

They shall not wear through or puncture the fabric after 1 year of continuous use in the water with normal wave action.

3.7 The material shall not discolour due to contact with hydrocarbons.

4. Primary Support Loading

4.1 The boom must be capable of direct loading, end to end, of not less than 4,500 lbs. This loading shall be tested by pulling on the standard end sets of the boom.

4.2 Any primary support cable or equivalent shall not elongate (in the tested boom 4.1) more than 2% at 5,000 lbs loading.

4.3 Any primary support member shall be attached to the fin and the flotation. The support member shall be secured to the fin and skirt at not less than six (6) points every ten (ten_ feet.

4.4. Any primary support member shall be so located as not to prevent the portion of the boom above the water from remaining vertical when the boom is perpendicular to a 1.3 knot current

5. Ballast

5.1 All ballast must be non-sparking. If cable or chain is used, it must be so encapsulated as to prevent chaffing through, regardless of use.

5.2 It shall not be capable of collecting static electricity

5.3 Ballast requirements are as follows:

Minimum Ballast - Weight in Pounds

Water Velocity in Knots	.5	1	1.5	2
FIN DEPTH				
6"	.2344	.4688	.7031	1.0156
8"	.3125	.6250	1.0156	1.3281
10"	.3906	.7813	1.3281	1.6406
12"	.5469	1.0938	1.6406	2.0312

5.4 The ballast shall be sufficient to hold the fin within 10% of vertical, perpendicular to a 1.3 knot current.

5.5. Ballast shall not be rigid for more than 4" in any one place

6. Anchor Points

6.1 Anchor points should be placed every 100'. They shall allow anchoring on both sides to maintain relative angle of 1.3 knots (see notes).

6.2 The anchor points shall be directly connected to the primary support member and shall be capable of a perpendicular load of at least 1,500 lbs.

7. Connectors

7.1 Boom sections shall have end connectors so designed that when one section is joined to another, no oil

can escape from one side of the boom to the other side.

7.2 The boom section shall be capable of being joined together in less than 2 minutes without tools.

7.3 Any towing assemblies must be capable of attachment as Paragraph 7.2

8. Miscellaneous

8.1 Metal Materials

8.1.1 The only materials used are:

8.1.1.1 stainless steel

8.1.1.2 lead

8.1.1.3 aluminium. Where used in end connectors, to be anodized equal to MIL-A-8265, Type 2.

9. Test Procedures

9.1 Certification

Supplier shall give certification that the materials supplied conform with all specifications and requirements in Paragraphs 1 through 8.

9.2 The control agency shall:

9.2.1 Test check at least 30% of all certified claims by the supplier.

9.2.2 The following additional tests shall be made:

9.2.2.1 Buoyancy (salt water)

9.2.2.1.1 A section of the boom (not less than 10') shall be weighed. The section will be placed

in salt water and the height above and below water measured and compared with specified measurements.

9.2.2.1.2 Remove the boom from the water. Additional ballast shall be added to the bottom of the fin. The boom shall then be placed in the salt water and the height above water measured. The decrease in height should not exceed 18%.

9.2.2.2 Stability Tests

These tests should be made in an estuary, not in a test tank if true readings are to be taken. The current velocity should be measured at 1" and 12" below the surface. A Teledyne Gurley Model 667 Current Meter, or equal, is recommended for current measurements. Ideal current for testing should be 1.3 to 1.5 knots (see notes attached).

9.2.2.2.1 Place the boom section perpendicular to the current and moor it.

Measure the total deflection of the skirt. The maximum deflection should be 20^{o} with 10^{o} or less preferable. The flotation should not rotate or lean over more than 10^{o}.

9.2.2.2.2 Place a section of boom, not less than 50'

perpendicular to the waves, in water more than 10 times the fin width in depth. The waves should be 3' to 4' high with an interval of over 16'. The formula for measuring the distance between waves is $5.12 \times T^2$ where T is the time between waves.

9.2.2.3 Static Load Test

A 10' section complete with end sets that are standard for manufacture shall be obtained.

Utilizing the towing end sets place this unit in a pull test jig.

When the boom is under slight tension load, approximately 1,000 lbs., note the exact length. Increase the load, noting elongation, until destruction. The elongation should not exceed 2.2% and the destruction should not occur before 4,500 lbs loading. Note should be taken that component failures do not occur before total destruction.

9.2.2.4 Wind Loading

Required, one air boat motor or other type of large, high speed blower, capable of at least 50 mph wind. Place boom section in the water. Direct wind

from the blower on an axis perpendicular to the boom.

The top of the boom should remain at least 4.5" above the surface of the water.

9.2.2.5 Towing Tests

Tow not less than 250' in a straight line at 10 knots. Tow the boom in "S" figures at a speed of 2 knots. The boom should not twist. It should follow <u>exactly</u> in the path of the towing vessel.

9.2.2.6 1500' of an inshore boom should stow in not more than 500 cubic feet.

9.2.2.7 Recover and restow the boom in a manner approved by the manufacturer. Pass the two rope to a boat. Without handling on the shore side, pull the boom out at a speed of 10 knots in a line, straight out from the dock. Repeat this test at 2 knots, making a 90° turn at 100'.

9.2.2.8 Test connecting and disconnecting sections. Time required per operation should not exceed 2 minutes.

1.4 Where a spill will travel under any set of conditions

1.4.1 Wind

Wind generally has the greatest effect on the movement of oil over the water's surface; usually 3.4% of the wind velocity. The equation given in fig. 1.lis used to determine the rate of oil movement for any given wind velocity. In addition, Table 1.1 suppliesthe velocity of oil movement for winds from 1 to 40 knots.

Velocity of oil movement=

3.4 X wind velocity.

fig. 1.1

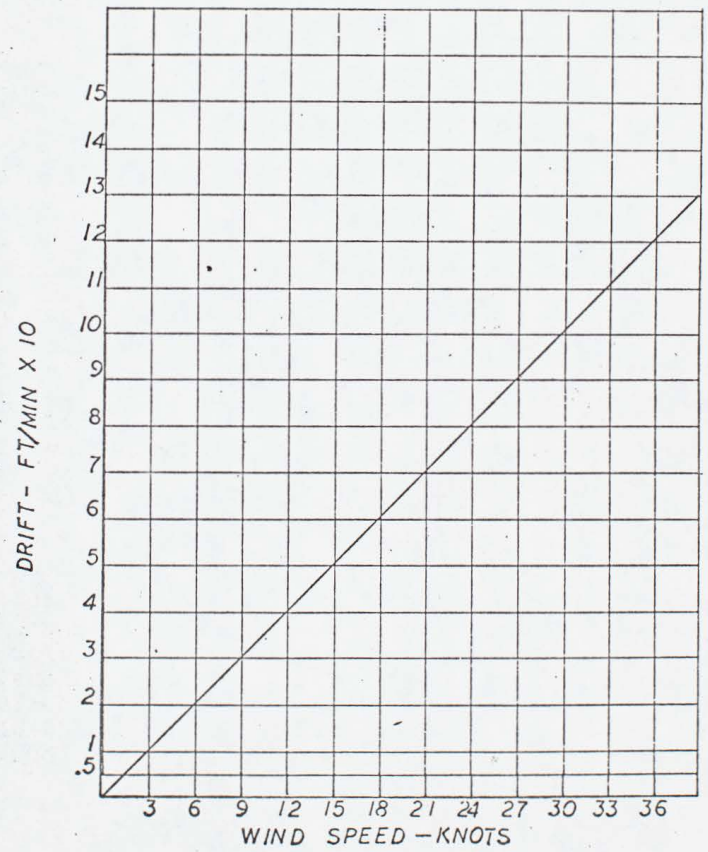

Table 1.1: Rate of Oil Movement

1.4.2 Current

Current has a secondary effect on the movement of oil, especially if the wind and current are traveling in approximately the same direction. If, for example, the wind is blowing at 29 mph (1 knot of oil movement) and the current is traveling in the same direction at approximately 2 knots, the combined effect of the wind and current is additive and the rate of movement over the bottom will be approximately 3 knots.

When wind and current are moving in opposite directions, the interaction of effects is not subtractive. Even at moderate wind velocities oil will tend to move in the direction of the wind and not with the current.

What was that? No, this is not a misprint. Oil will usually go with the wind instead of the current. Examples of this phenomenon are shown on the next page (Figures 1.2 and 1.3).

In order to determine prevailing wind directions and velocities, obtain records of prevailing winds for your location from your local weather bureau. See Figure 1.4. The average direction and velocity of the prevailing wind changes between summer and winter. For example, the summer months may have a prevailing westerly at about 10 kts. Winter months may have the wind from the north at 15 kts. Although minor (and major) changes occur by the minute, the prevailing wind is what you are looking for.

The velocity and direction of river water currents vary with the seasons. For this reason, you should have a series of current readings before continuing the planning stage.

In most locations, you can obtain a United States Coast and Geodetic Survey Chart which shows directions and velocities at specific intervals of the tide cycle. If these are not available, you will have to conduct a series of tests.

EXAMPLE I -

The current is downstream at 0.5 knot. The wind is in the same direction with a velocity of 20 mph. This will give a movement of oil on the surface of 0.7 knot, or 1.2 knots over the bottom, or 120 feet per minute.

Let us assume a fully trained crew for the following schedule:

		Time for Task (minutes)	Time After Spill (minutes)	Distance Oil Travels (feet)
1.	Spill occurs.	0	0	0
2.	Crew Aware of spill.	3	3	360
3.	Crew is in boat ready to go	5	8	960
4.	Remove boom from storage by pulling with small craft	2	10	1200
5.	Catch spill & turn ahead	6	16	1920

Deployment should be at least 2200 feet from point of spill.

The above can be accomplished only with a fully trained crew.

Figure 1.

EXAMPLE II

The current is upstream at 0.5 knots. The wind is downstream with a velocity of 20 mph. This will give a movement of oil on the surface of 0.7 knots, or over the bottom of 0.7 knot, or 70 feet per minute.

		Time for Task (minutes)	Time After Spill (minutes)	Distance Oil Travels (feet)
1.	Spill occurs	0	0	0
2.	Crew aware of spill	3	3	210
3.	Crew is in boat ready to go	5	8	560
4.	Remove boom from storage by pulling with small craft	2	10	700
5.	Catch spill and turn ahead	6	16	1120

Deployment should be at least 1250 feet from point of spill.

The above can be accomplished only with a fully trained crew.

Figure 1.3

SHIP/SHORE SAFETY CHECK LIST

VESSEL	DATE			
BERTH No.	TIME			
1. Are SMOKING regulations being observed?				
2. Are GALLEY requirements being observed?				
3. Are NAKED LIGHT requirements being observed?				
4. Are electric cables to portable equipment disconnected from power?				
5. Are the vessel's main transmitting aerials switched off?				
6. Are hand torches of an approved type?				
7. Are Portable R/T sets of approved design?				
8. Are all external doors and ports in the amidships accommodation closed?				
9. Are all doors and ports in the after accommodation that are required to be closed in fact closed?				
10. Are ventilators suitably trimmed with regard to prevailing wind conditions?				
11. Are unsafe air conditioning intakes closed?				
12. Are window-type air conditioning units disconnected?				
13. Is vessel securely moored and tension winches (if fitted) on manual brake?				
14. Are cargo/bunker hoses in good condition?				
15. Are cargo/bunker hoses properly rigged?				
16. Are unused cargo/bunker connections blanked?				
17. Is stern discharge line (if fitted) blanked?				
18. Are sea and overboard discharge valves (when not in use) closed and lashed?				
19. Are scuppers effectively plugged?				
20. Is the agreed ship/shore communication system working?				
21. Are all cargo/bunker tank lids closed?				
22. Are cargo tanks being loaded or discharged open to atmosphere via the agreed venting system?				
23. Are fire hoses and equipment ready for use?				
24. Are emergency towing wires correctly positioned?				
25. Is the vessel ready to move under its own power?				
When checking, tick items found to be satisfactory but place a X against items requiring follow-up and attention.	Checked by FOR VESSEL			
	FOR TERMINAL			

REMARKS:-

File with 283/1
Copy on 2/1

28 November 1972

THE CHIEF ENGINEER

THE SECRETARY

MARINE POLLUTION BILL

This Bill is very comprehensive and assuming that the principles to control and supervise are set then my comments are solely related to Board's future responsibilities in "New Zealand Waters" inside harbour limits for the Port of Auckland and the Manukau Harbour.

1. Enforcement of the Provisions of the Act. The Harbourmaster assumes this responsibility for the Board where stated within a pattern of responsibility by the Minister, Surveyor of Ships and duly authorised persons.

   The Engineer will continue to make available specialist staff to the Harbourmaster in cases of oil and pollutant discharges from shipping.

2. Particular Matters to be the Responsibility of Harbour Boards.
   (a) Section 9. See that Oil Companies with wharf pipelines and shore installations provide equipment to comply the requirements stated in Subsection (1) (a) and (b) if Regulations are promulgated to so require.

   (b) Section 12. To provide by Harbour Boards or in conjunction with others reception facilities enabling ships using the harbour to discharge or deposit oil residues or pollutant residues. The Minister retains and overriding power to direct the Harbour Board to provide such facilities.

   I see these matters as requiring some technical assistance and planning.

3. Sections 3(1)(b) and 15(1) record that if the discharge or escape is from a place on land within harbour limits the occupier shall immediately inform the Harbourmaster. This is somewhat related to pipelines being responsible for a discharge but more complicated if industries other than the oil industry are involved. One can imagine oil coming from private drains to the harbour and from public drains. The Harbourmaster will be responsible to clean up the mess, but past experience has shown that it is always difficult to establish who may be responsible and who should be responsible for the costs of dispersal or recovery. It certainly is not as simple as shipping.

4. Remainder of the Bill.

   No comment.

CHIEF ENGINEER TO THE BOARD

NS:GJG

TELEGRAMS & CABLES
"SPACHEM" WELLINGTON

TELEPHONE
EASTBOURNE
7253

P.O. BOX 41-051
EASTBOURNE
NEW ZEALAND

283/1.

SOUTH PACIFIC CHEMICALS LTD.

MANUFACTURERS' REPRESENTATIVES and IMPORTERS

27th November, 1972

Auckland Harbour Board
C.P.O.Box 1259
AUCKLAND

For the attention of the Chief Engineer

Dear Sir,

T-T OIL RECOVERY EQUIPMENT

In response to my letter of 26th April, 1972 you informed me that you would communicate with me after further study. As I had not heard from you I enquired with my letter of 6th October, 1972 whether you had made any progress in considering this equipment for purchase by the Board.

I have not yet received a reply to my letter and I take the liberty to follow up my request.

Ownership of T-T Oil Boom Equipment provides an insurance against possible future accidents. One always hopes that it is not necessary to use the equipment but when an oil spill accident happens it is usually a very costly business to clean it up. The T-T Equipment can economically solve the problem of cleaning up any oil pollution.

The T-T Oil Boom, a part of the complete T-T Oil Recovery System, is an improved version of the original oil boom developed in 1957; being then the only modern oil pollution equipment on the market. After proving its capability in the collection of oil spills on the water's surface, the T-T Oil Boom very rapidly became world renown and is now stationed in 44 countries including the U.S.S.R. Most harbour authorities have purchased the T-T Oil Boom with paravanes and magnet clamps and they add to the length of boom as the need arises. Many Oil Companies have also purchased the equipment. Shell, BP, Esso, Aramco, Getty and Imperial Oil are some of them. The complete system (this includes the vessel) has now been delivered to 8 customers: 3 in the U.S.A; one to Gulf Oil at Europe's largest oil terminal in Bantry Bay; one to Finland; one to Israel; one to the Oslo Harbour Board and the latest to Reykjavik in Iceland where the harbour authority and three oil companies joined together in the purchase of the complete system.

I/

Mech. Eng

6/12/72

I sincerely hope that you will be one of the New Zealand Harbour Boards to consider the purchase of this equipment.

My plans do not include another visit to Auckland this year but if you have advanced to the stage to discuss possible purchase of the Oil Boom, paravanes and magnet clamps, I will be happy to make a special trip at a time convenient for you.

Thank you.

Yours sincerely,
South Pacific Chemicals Ltd.

R. Bockhop.

R. Bockhop

Auckland Harbour Board

MEMORANDUM

FROM | TO

27 November 1972

The Secretary,
Auckland Metropolitan Fire Board,
Pitt Street,
AUCKLAND.

Dear Sir,

OIL AND PETROL SPILLS

As a part of an exercise undertaken by the Board to review its safety and anti-pollution measures generally a review of previous proposals to provide an oil boom for the containment of oil spills has been undertaken.

We are desirous of conferring with your technical Officers on the matter and obtaining their advice. In anticipation that such advice and cooperation is forthcoming I am enclosing copies (3) of the report of this Board's study group's report. The group comprised senior staff from the Engineer's and Harbour Departments.

In the light of the conclusions reached it would appear necessary for us to undertake a new appraisal of the problems of fire danger with spills of fuel oils, petrol etc., and to review as necessary the precautions and emergency measures for these situations.

Perhaps when you and your Officers have had time to study this report we could arrange to discuss the matter further.

Yours faithfully,

R.T. Lorimer
GENERAL MANAGER

c.c. CHIEF ENGINEER

Mr. Seager to see please
" Hamilton "
" Bray "

283/1

10th November 1972.

C.J. OLLIVER
MECHANICAL ENGINEER'S OFFICE

THE HARBOURMASTER.

M.V. 'MONTREAL STAR' - OIL SPILL.

I boarded the vessel at 8.20 a.m. on Thursday 9th November 1972, to investigate an oil spill stated to have occurred at 5.30 a.m. that day.

Interviewed Master and Chief Engineer who refused to supply any details acting under instructions from their Company. They also refused to supply oil samples or co-operate in any way except to allow limited examination of the engine room.

Proceeded to engine room accompanied by Chief and 4th Engineer and checked oil fuel transfer system. No. 4 Port Double Bottom valve chest was connected to the fuel oil main and the valve was closed, but the valve spindle showed signs of recent use. The Engine Room bilges were clean and empty and showed no signs of recent usage.

The vessel's forward deck was inspected and fuel oil was found dripping from No. 4 Port D.B. air pipe, the deck from there aft to the scupper was covered in oil, with several drums of an oil and sawdust mixture standing on the deck. The ships side from scupper to water line was well coated with oil.

Copy to:
Chief Engineer
for Information.

C.J.O.
C.J. Olliver
MECHANICAL ENGINEER'S OFFICE.

CJO:AF.

Engr's file 283/1

31st. October 1972.

THE CHIEF ENGINEER THE GENERAL MANAGER.

OIL POLLUTION OF HARBOUR WATERS.

(Refer General Manager's memorandums dated the 22nd. February and 20th June 1972.)

In response to the above memorandums addressed to the Chief Engineer and Harbourmaster, a group comprising the Assistant Design and Mechanical Engineers and Captain McKenzie of the Harbour Department was formed to consider the following:-

(a) Review existing problems associated with oil spillage both at the oil berths and in the harbour generally.

(b) The use of oil booms for the containment of oil spills.

(c) Make recommendations for equipment required by this Board to remove or disperse oil pollutants from harbour waters.

A copy of the study groups report is attached.

The most important conclusion in this report is that in this harbour an oil boom is not considered a practical method of controlling oil spills and especially at the tanker berths. This conclusion is based on the present knowledge of design and construction of oil booms now in use.

World wide commercial literature on various types of oil booms studied by the group indicates that their development is still proceeding. One currently available that is large enough to contain oil spills in the tide and wave conditions to be found in Waitemata Harbour could not be launched from ashore or brought from a floating storage area in reasonable time, but would be required to be located on the sea bed and raised when required. Without considering the high capital cost, the Harbourmaster finds this type of boom completely unacceptable because of the need to use ship's anchors in the area where a boom would have to be installed.

I would propose that discussions be held with the Auckland Metropolitan Fire Board to review the arrangement relating to the provision of a boom at Wynyard Wharf.

This, in turn, would require a new appraisal of the problems of fire danger with spills of fuel oils, petrol, etc. and the re-consideration of precautions and emergency measures for these situations.

Lastly the attached report sets out certain conclusions and recommendations for equipment that the Board should have for the removal of oil pollutants from Waitemata Harbour.

The Harbourmaster concurs with the report.

Copy to:

The Harbourmaster
for Information.

CHIEF ENGINEER TO THE BOARD.

JMB:AF.

Engr's file 283/1

9th November 1972.

A REVIEW INTO THE USE OF OIL BOOMS AND ASSOCIATED EQUIPMENT FOR THE CONTAINMENT AND REMOVAL OF OIL POLLUTANTS FROM WAITEMATA HARBOUR.

(Refer General Manager's memorandums dated the 22nd February and 20th June 1972).

This review examines the nature and frequency of the discharge of oil into the Waitemata Harbour and the part in which oil booms and various other oil disposal equipment could economically and gainfully be employed.

The report sets out conclusions with regard to the way in which this Board should be equipped to remove oil pollutants from the harbour waters and finally makes certain recommendations.

NATURE OF OIL SPILLAGES.

The discharge of oil causing pollution in Waitemata Harbour can be divided into the following main groups:-

a) Usually small discharges of fuel or diesel oil from cargo ships alongside the wharves and occasionally when ships are in the stream awaiting a berth.

b) Small or large discharges from tankers either at Wynyard Wharf or the tanker berth at the Eastern Tide Deflector.

Considering (a) above the occurrence of small discharges of fuel or diesel oil average out over the last four years, 32 spills per year. Not all are detected and a few may originate from land installations.

All oil discharges represent a pollution hazard and incur costs in cleaning up. Petrol and other higher volatile oils with low flash points are a special case. Fire hazards are sustained by impounding (such as with an oil boom) these types of oils whereas evaporation into the atmosphere is accelerated with the increase of the surface area of the spill. A controlled discharge from an impounded area, if an oil boom was used, would be necessary.

Residual fuel oil is probably the main source of pollution. This type of oil is liquid at the point of discharge from the vessel but can, when cool, become solid on contact with the sea. Removal by the application of chemical sprays is satisfactory with mechanical agitation. This method can be used for both large and small quantities.

From past experience relatively few spills of the heavy residual type of fuel oil, as described above occur, the majority of spills being the lighter residuals which remain liquid and can be removed by either chemical sprays or chemical high pressure water spraying.

OIL BOOMS:

The provision, storage, streaming and anchoring of an oil boom outside tankers berthed at Wynyard Wharf has been considered in detail. Such a facility can be provided, but limitations are very evident and an acceptable compromise between cost and capability to isolatethese berths must be made. The nature of the problems which could eventuate in applying an oil boom at Wynyard Wharf is set out below.

The use of a boom to isolate a single ship discharging represents the simplest configuration. The isolating of the full length of Wynyard Wharf with a boom to seaward is necessary if the fracture of pipes on the wharf - remote from the ship- is to be considered.

The disposal and recovery of the higher volatile oils with low flash points and therefore highly dangerous are a special case. Remote control and evaporation to the atmosphere is standard practice for the disposal of this type of oil spillage. The use of a boom perpetuates the fire hazard in an impounded area. Controlled discharges to the harbour, under favourable wind and tidal conditions from a boom are possible using remote control.

When considering the pollution control aspect of all types of oil, i.e. light and heavy residual fuel oils, spillage at the tanker berths at Wynyard and possibly the Eastern Tide Deflector, it is considered that substantial booms would limit the spread of oil from say ruptured storage tanks ashore or a major leak from a ships cargo tanks.

LIMITATIONS OF OIL BOOMS:

The experience this Board has had with experiments in the design of an oil boom for use at Wynyard Wharf has resulted in the idea of a boom being abandoned. The trial sections of boom are perished beyond repair, bolted connections seized and no further use of the components is envisaged.

A typical boom of cheap construction (cork and hessian on rope) with a skirt length of 18" would be restricted to a six inch wave height and a tidal movement of 1.0 ft./sec.. The boom described above is used by the Naval Dockyard for containing minor spills alongside Calliope Wharf when tidal conditions are suitable.

The commercial areas of this harbour experiences waves of two to three feet commonly and tide flows of 2.0 ft./sec. or greater for most of the time. Oil booms with deeper skirts would secure impounded areas say around tankers, but handling problems increase, along with capital and operational costs. Their size prevents the storage on shore of booms with large skirts as the time to deploy is critical.

Past experience of oil boom handling in this port and their maintenance would preclude the continued use of mobile oil booms.

The provision of a static boom stored in place on the harbour floor appears attractive other than the possible damage due to the necessity of a berthing ship having to drop an anchor. This type of boom could be laid to impound say the Wynyard Wharf tanker berth area and would be held in position with permanent anchors. Inflation of an air duct by compressed air from an ashore installation raises or lowers the booms, navigation lights being fitted for service at night.

The oil boom described above, which is suitable for wave heights encountered in this harbour is of Japanese manufacture. The cost of installing this type of system at Wynyard Wharf with its associated compressor installation is estimated at present day costs at $80,000. The other tanker berth at the Eastern Tide Deflector is even more exposed and to provide a suitable boom would probably cost $95,000.

REMOVAL OF NON-VOLATILE OILS:

The five recognized methods of containing and removing oil from harbour water are listed below:-

1) Impounding areas of oil in large quantities and pumping via a floating suction pipe into a tank for later disposal ashore.

2) As above, impounding but using a machine fitted to a punt or boat which physically lifts the oil off the surface of the water and discharges into a tank for disposal ashore.

3) Using high pressure chemical sprays with mechanical agitation of the surface to chemically change the state of the oil to allow it to decompose. One such type of installation being 'WSL' dispersant spraying equipment now used by the Northland Harbour Board.

4) Spraying the oil with water/chemical mixture so that the oil breaks up, sinks to the harbour bed and decomposes.

5) Spreading oil absorbent material on the oil, collecting and disposing ashore.

PROPOSED METHODS OF REMOVING LARGE OR SMALL SPILLS IN WAITEMATA HARBOUR:

In providing methods to meet all conditions that may occur the following variables should be considered:-

(a) Volatile nature of the oil (fire risk)
(b) Large or small volume of oil
(c) Daylight or darkness
(d) Tidal conditions
(e) Wind
(f) Spills on open water, beneath wharves and/or decks of wharves.

The remedies tabulated below apply to both small and large spills, the large spill of volatile oil (petrols etc.) being assumed to have taken place at a tanker berth. Large spills of volatiles elsewhere are not amenable to the tabulated remedies, evacuation and isolation remaining the only alternative.

SMALL SPILLS:	Remote from Wharves	Under Wharves	On Wharf Deck.
Volatiles (Petrol etc.)	1	1	1
Diesel Oils	2	2	2 or 5
Residual Oils	2 & 4	3 or 6	3 or 5

LARGE SPILLS:			
Volatiles (Petrol etc.)	1	1	1
Diesel Oils	2	2	2 or 5
Residual Oils	2 & 5	6	3 & 5

SMALL VOLUMES	LARGE VOLUMES
1. Provide water sprays and evaporation to atmosphere to reduce the fire risk quickly.	Evacuate personnel and isolate electric power - raise booms if in operation and let volatiles evaporate.
2. Spray area with chemical high pressure water sprays, the oil being reduced bacteriologically to a harmless state.	The same but use maximum amount of equipment.
3. Spray areas with chemicals using hand lances to obtain maximum penetration	ditto.
4. Spray with chemicals and mechanically agitate after spraying.	ditto.
5. Provide absorbents - sand, sawdust or chemicals and remove for disposal. Provide plugs to drainage points, through deck and bund perimeter of deck.	Recover with pump to drums or tank and use absorbents for remainder.
6. Wait for oil to emerge and dispose with method (4).	The same but use maximum amount of equipment.

DEPARTMENTAL RESPONSIBILITY WITHIN THE BOARD:

It is recommended that the Harbour Department, as at present should remain responsible for the clearing of all oil spills from the Waitemata Harbour.

In order that the Harbour Department can efficiently carry out this work, it is suggested:-

a) All equipment, chemicals etc. supplied for oil dispersal shoul continue to be stored at Queen's Wharf loft.

b) The existing pump now fitted on the "Ferro" should be convert to a portable pump and placed in the Queen's Wharf loft as a standby/back-up pump when required.

c) The Harbourmaster should be given first call, when required for the use of one or more of the Engineer's Department tov boats "Tika", "Mana" and "Kaha" to control oil spills. Th vessels are fitted with high pressure pumps suitable for chemical water spraying and can be fitted with chemical agitation spraying.

d) As a "back-up" to the tow boats when larger spills away from the wharf areas are required to be removed, I suggest that the Voith-Schneider tugs "Te Awhina" and "Tamaki" be used for chemical water spraying of the affected areas.

CONCLUSIONS:

1.) A suitable system of oil booms could be installed at both tanker berths but due to the harbour conditions encountered in Auckland their capital cost each is high ($80,000 to $95,000).

If booms were installed suitable means of collecting the oil would be needed, a target price for such equipment is probably near $20,000.

2.) The chemical high pressure water spraying method now used by the Board should be retained but the chemical spraying with agitation would be introduced as the main method of oil dispersal.

Either towboat "Tika", "Mana", "Kaha" and "Kumenga" could be used for this type of spraying, therefore the Harbourmaster's Department should be equipped with one set now and later a further set of spraying gear and chemical pumps should be purchased.

3.) It has been found overseas that instead of chemically dispersing oil pollutants the method of mechanically picking up oil and storing after separation can be used very successfully. There are a number of specialized machines available overseas, the unit cost being approximately $10,000 with suitable barge costing another $12,000.

It is doubtful if the situation in Auckland warrants a unit of this type at present.

RECOMMENDATIONS:

The following recommendations are set out as a basis for determining the Board's future requirements for equipment for disposing of oil contaminants from the Waitemata Harbour, area:-

1.) Due to the tidal and sea conditions and operational problems encountered in Waitemata Harbour and also the high capital cost involved, the installation of oil booms at either of the tanker berths is not recommended.

2.) The Harbour Department should continue the existing use of the chemical/water spraying for the removal of oil and that extra pump, nozzles and hoses etc. be purchased to increase the availability of equipment for clearing large oil spills.

3.) That, as a start, one set of portable chemical spraying/ agitation equipment be manufactured suitable for fitting to Engineer's Departments towboats, "Tika", "Mana", "Kaha" and "Kumenga".

This equipment should be held by the Harbour Department at Queen's Wharf loft ready for fitting to any of the above vessels.

4.) That the following additional oil disposal equipment be purchased this financial year:

a) A portable high pressure pump - cost $1,000.

b) Two 'Pyrene' FB5x branches - cost $260.

c) Spare hoses, chemical containers etc. - cost $200.

d) One set of "WSL" type portable chemical spraying equipment and 400 gallons of chemicals - cost $2000. (Construction and fitting costs are included).

Note: Adequate financial provision is made in the Programme of Works, item A.9.0. in amount $5000.

HARBOUR DEPARTMENT.
ENGINEER'S DEPARTMENT.
9th November 1972.

Engr's file 283/1

31st October 1972.

A REVIEW INTO THE USE OF OIL BOOMS AND ASSOCIATED EQUIPMENT FOR THE CONTAINMENT AND REMOVAL OF OIL POLLUTANTS FROM WAITEMATA HARBOUR.

(Refer General Manager's memorandums dated the 22nd February and 20th June 1972.)

This review examines the nature and frequency of the discharge of oil into the Waitemata Harbour and the part in which oil booms and various other oil disposal equipment could economically and gainfully be employed.

The report sets out conclusions with regard to the way in which this Board should be equipped to remove oil pollutants from the harbour waters and finally makes certain recommendations.

NATURE OF OIL SPILLAGES.

The discharge of oil causing pollution in Waitemata Harbour can be divided into the following main groups:-

a) Usually small discharges of fuel or diesel oil from cargo ships alongside the wharves and occasionally when ships are in the stream awaiting a berth.

b) Small or large discharges from tankers either at Wynyard Wharf or the tanker berth at the Eastern Tide Deflector.

Considering (a) above the occurrence of small discharges of fuel or diesel oil average out over the last four years, 32 spills per year. Not all are detected and a few may originate from land installations.

All oil discharges represent a pollution hazard and incur costs in cleaning up. Petrol and other higher volatile oils with low flash points are a special case. Fire hazards are sustained by impounding (such as with an oil boom) these types of oils and evaporation into the atmosphere is accelerated with the increase of the surface area of the spill. A controlled discharge from an impounded area, if an oil boom was used, would be necessary.

Residual fuel oil is probably the main source of pollution. This type of oil is liquid at the point of discharge from the vessel but can, when cool, become solid on contact with the sea. Removal by the application of chemical sprays is satisfactory with mechanical agitation. This method can be used for both large and small quantities.

From past experience relatively few spills of the heavy residual type of fuel oil, as described above occur, the majority of spills being the lighter residuals which remain liquid and can be removed by either chemical sprays or chemical high pressure water spraying.

OIL BOOMS:

The provision, storage, streaming and anchoring of an oil boom outside tankers berthed at Wynyard Wharf has been considered in detail. Such a facility can be provided, but limitations are very evident and an acceptable compromise between cost and capability to isolate these berths must be made. The nature of the problems which could eventuate in applying an oil boom at Wynyard Wharf is set out below.

The use of a boom to isolate a single ship discharging represents the simplest configuration. The isolating of the full length of Wynyard Wharf with a boom to seaward is necessary if the fracture if pipes on the wharf - remote from the ship - is to be considered.

The disposal and recovery of the higher volatile oils with low flash points and therefore highly dangerous are a special case. Remote control and evaporation to the atmosphere is standard practice for the disposal of this type of oil spillage. The use of a boom perpetuates the fire hazard in an impounded area. Controlled discharges to the harbour, under favourable wind and tidal conditions from a boom are possible using remote control.

When considering the pollution control aspect of all types of oil, i.e. light and heavy residual fuel oils, spillage at the tanker berths at Wynyard and possibly the Eastern Tide Deflector, it is considered that substantial booms would limit the spread of oil from say ruptured storage tanks ashore or a major leak from a ships cargo tanks.

LIMITATIONS OF OIL BOOMS:

The experience this Board has had with experiments in the design of an oil boom for use at Wynyard Wharf has resulted in the idea of a boom being abandoned. The trial sections of boom are perished beyond repair, bolted connections seized and no further use of the components is envisaged.

A typical boom of cheap construction (cork and hessian on rope) with a skirt length of 18" would be restricted to a six inch wave height and a tidal movement of 1.0 ft./sec.. The boom described above is used by the Naval Dockyard for containing minor spills alongside Calliope Wharf when tidal conditions are suitable.

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Past experience of oil boom handling in this port and their maintenance would preclude the continued use of mobile oil booms.

The provision of a static boom stored in place on the harbour floor appears attractive other than the possible damage due to the necessity of a berthing ship having to drop an anchor. This type boom could be laid to impound say the Wynyard Wharf tanker berth area and would be held in position with permanent anchors. Inflation of an air duct by compressed air from an ashore installation raises or lowers the booms, navigation lights being fitted for service at night.

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3. Spray areas with chemicals using hand lances to obtain maximum penetration	Ditto.
4. Spray with chemicals and mechanically agitate after spraying.	Ditto
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DEPARTMENTAL RESPONSIBILITY WITHIN THE BOARD:

It is recommended that the Harbour Department, as at present should remain responsible for the clearing of all oil spills from the Waitemata Harbour.

In order that the Harbour Department can efficiently carry out this work, I would suggest that:-

a) All equipment, chemicals etc. supplied for oil dispersal should continue to be stored at Queen's Wharf loft.

b) The existing pump now fitted on the "Ferro" should be converted to a portable pump and placed in the Queen's Wharf loft as a standby/back-up pump when required.

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CONCLUSIONS:

1.) A suitable system of oil booms could be installed at both tanker berths but due to the harbour conditions encountered in Auckland their capital cost each is high($80,000 to $95,000).

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3.) It has been found overseas that instead of chemically dispersing oil pollutants the method of mechanically picking up of oil and storing after separation can be used very successfully. There are a number of specialized machines available overseas, the unit cost being approximately $10,000 and with suitable barge costing another $12,000.

I doubt if this port warrants a unit of the type at the present time.

RECOMMENDATIONS:

The following recommendations are set out as a basis for determining the Board's future requirements for equipment for disposing of oil contaminants from the Waitemata Harbour, area:-

1.) Due to the tidal and sea conditions and operational problems encountered in Waitemata Harbour and also the high capital cost involved, the installation of oil booms at either of the tanker berths are not recommended.

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This equipment should be held by the Harbour Department at Queen's Wharf loft ready for fitting to any of the above vessels.

4.) That the following additional oil disposal equipment be purchased this financial year:

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b) Two 'Pyrene' FB5x foam branches - cost $260.

c) Spare hoses, chemical containers etc. cost $200.

d) One set of 'WSL' type portable chemical spraying equipment and 400 gallons of chemicals - cost $2000. (Construction and fitting cost are included in the previous figure).

Note: $5000 has been allowed for into the 1972/73 Programme of Work under item A 9 - Major Port and Property Works.

HARBOUR DEPARTMENT.
ENGINEER'S DEPARTMENT.
31st. October 1972.

TELEGRAMS & CABLES:
"SPACHEM" WELLINGTON

TELEPHONE:
EASTBOURNE
7253

WELLINGTON OFFICE:
P.O. BOX 41-051
EASTBOURNE
NEW ZEALAND

SOUTH PACIFIC CHEMICALS LTD.

MANUFACTURERS' REPRESENTATIVES and IMPORTERS

6th October, 1972

The Auckland Harbour Board,
C.P.O. Box No. 1259,
AUCKLAND.

for the attention of : The Chief Engineer to the Board.

Dear Sirs,

T-T Oil Recovery and Anti-Pollution Equipment

Further to your letter of 3rd May 1972, ref RAJS:JARP, may I please enquire whether you have made any progress in considering this equipment for possible purchase.

I hope to be in Auckland either next week or the week after and would appreciate being given the opportunity of discussing any details with you.

Thank you.

Yours faithfully,
South Pacific Chemicals Ltd.

R. Bockhop.

R. Bockhop

dt - 5

Mech. Eng.

73/1/2

SPENCER CLARKE & COMPANY LIMITED

CHEMICAL, ELECTRICAL AND GENERAL ENGINEERING SUPPLIES

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AUCKLAND HARBOUR BOARD
MECHANICAL SECTION
RECEIVED 18 OCT 1972

AUCKLAND HARBOUR BOARD
RECD - 9 OCT 1972
ACKD
ANSD.

5 October 1972

Auckland Harbour Board,
Box 1259,
AUCKLAND.

Dear Sirs,

OCEAN SCIENCE & ENGINEERING INC.

We think you will be interested in the accompanying presentation of the capabilities of the above organisation with particular reference to maritime activities.

You are possibly aware that our 21 years' association with the Gamlen Chemical Company, U.S.A., whose products are well known throughout New Zealand, has brought us closely in touch with the various methods adopted to combat oil pollution in waterways, and most of the port authorities in this country are carrying emergency stocks of Gamlen Oil Spill Remover for use in case of need.

You would also be aware that Gamlen have developed and are currently marketing a floating boom to entrap large masses of floating oil before they become too widespread, or to surround tankers as a precautionary measure whilst they are discharging, or to present a barrier to the entry of floating oil to special areas such as yacht basins.

Ocean Science & Engineering Inc. attack the problem from the prevention angle, viz. the transfer of oil from a damaged and disabled vessel to nylon fabric coated containers, a full description of which is given in the enclosed literature.

Our principals state that they "would be able to provide oil offloading services in the event a vessel is disabled in New Zealand but the response time to air-freight our A.P.S. System to the site would involve several days. An A.P.T.S. unit located near major New Zealand vessel traffic routes would offer the advantage of rapid deployment to the collision or grounding site for offloading the oil before it could enter the water."

cont'd..... 2

DAM

water.....If it is considered that the system has sufficient merit to justify its employment in New Zealand, it would be necessary to have regard to the number of units which would be minimal for the country's requirements and the strategy of their location.

We have not been supplied with any information on costs but it is expected that this will be readily forthcoming if serious interest is shown in the A.P.T.S. system, and we would be grateful for your reactions.

Would you also be kind enough to take note of some of the other listed capabilities of O.S.E. for which a need might be found at some future date.

Yours faithfully,
SPENCER CLARKE & CO.LTD.

A.A. Flaunty
Manager

Re Yule

20/10/72

Discussed with Bray.
Subject to Amendments
as suggested ok
Yes not yet heard from
H/ms - will check out
To November Board
meeting?

Auckland Harbour Board

[redacted] Seagar

① Please find attached draft revised report and covering memorandum with regard "Oil Pollution of Harbour Waters".

② I have given the Harbourmaster a copy of this and requested his comments.

J.B. Gray

16-10-1972.

Auckland Harbour Board.

Mr Peake.

I feel this is quite a good summation and presentation

Any comments from George and yourself?

MB 16/10/72

No comment

GHP

THE GENERAL MANAGER.

OIL POLLUTION

(Refer General Man
22nd. February an

In response to the ab
Chief Engineer and Harbourm
Assistant Design and Mechan
of the Harbour Department w

(a) Review existing proble
both at the oil berths

(b) The use of oil booms for the containment of oil spills.

(c) Make recommendations for equipment required by this Board to remove or disperse oil pollutants from harbour waters.

A copy of the study groups report is attached.

The most important conclusion in this report is that an oil boom is not considered a practical method of controlling oil spills ~~in this harbour~~ in this harbour and especially at the tanker berths. This conclusion is based on the present knowledge of design and construction of oil booms now in use.

World wide commercial literature on various types of oil booms studied by the group indicates that their development is still proceeding. One currently available that is large enough to contain oil spills in the tide and wave conditions to be found in Waitemata Harbour could not be launched from ashore or brought from a floating storage area in reasonable time, but would be required to be located on the sea bed and raised when required. Without considering the high capital cost, the Harbourmaster finds this type of boom completely unacceptable because of the need to use ship's anchors in the area where a boom would have to be installed.

I would propose that discussions be held with the Auckland Metropolitan Fire Board to review the arrangement related to provision on the basis of abandoning or at least postponing the installation of a boom at Wynyard Wharf.

12 October 1972.

THE GENERAL MANAGER.

OIL POLLUTION OF HARBOUR WATERS.

(Refer General Manager's memorandums dated the 22nd. February and 20th June 1972.)

In response to the above memorandums addressed to the Chief Engineer and Harbourmaster, a group comprising the Assistant Design and Mechanical Engineers and Captain McKenzie of the Harbour Department was formed to consider the following:-

(a) Review existing problems associated with oil spillage both at the oil berths and in the harbour generally.

(b) The use of oil booms for the containment of oil spills.

(c) Make recommendations for equipment required by this Board to remove or disperse oil pollutants from harbour waters.

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This, in turn, would require a new apprasial of the problems of fire danger with spills of fuel oils, petrol, etc. and the re-consideration of precautions and emergency measures for these situations.

Lastly the attached report sets out certain conclusions and recommendations for equipment that the Board should have for the removal of oil pollutants from Waitemata Harbour.

The Harbourmaster concurs with the report.

CHIEF ENGINEER TO THE BOARD.

JMB:AF.

DRAFT.

Engr's file 283/1
12 October 1972.

A REVIEW INTO THE USE OF OIL BOOMS AND ASSOCIATED EQUIPMENT FOR THE CONTAINMENT AND REMOVAL OF OIL POLLUTANTS FROM WAITEMATA HARBOUR.

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by the application of chemical sprays is satisfactory with mechanical agitation. This method can be used for both large and small quantities.

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OIL BOOMS:

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The commercial areas of this harbour experiences waves of two to three feet commonly and tide flows of 1.0 ft./sec. or greater for most of the time. Oil booms with deeper skirts would secure impounded areas say around tankers, but handling problems increase, along with capital and operational costs. Their size prevents the storage on shore of booms with large skirts as the time to deploy is critical.

Past experience of oil boom handling in this port and their maintenance would preclude the continued use of mobile oil booms.

The provision of a static boom stored in place on the harbour floor appears attractive other than the possible damage due to the necessity of a berthing ship having to drop an anchor. This type of boom could be laid to impound say the Wynyard Wharf tanker berth area and would be held in position with permanent anchors. Inflation of an air duct by compressed air from an ashore installation raises or lowers the booms, navigation lights being fitted for service at night.

The oil boom described above, which is suitable for wave heights encountered in this harbour is of Japanese manufacture. The cost of installing this type of system at Wynyard Wharf with its associated compressor installation is estimated at present day costs at $80,000. The other tanker berth at the Eastern Tide Deflector is even more exposed and to provide a suitable boom would probably cost $95,000.

REMOVAL OF NON-VOLATILE OILS:

The five recognized methods of containing and removing oil from harbour water are listed below:-

1) Impounding areas of oil in large quantities and pumping via a floating suction pipe into a tank for later disposal ashore.

2) As above, impounding but using a machine fitted to a punt or boat which physically lifts the oil off the surface of the water and discharges into a tank for disposal ashore.

3) Using high pressure chemical sprays with mechanical agitation of the surface to chemically change the state of the oil to allow it to decompose.

4) Spraying the oil with water/chemical mixture so that the oil breaks up, sinks to the harbour bed and decomposes.

5) Spreading oil absorbent material on the oil collecting and disposing ashore.

PROPOSED METHODS OF REMOVING LARGE OR SMALL SPILLS IN WAITEMATA HARBOUR:

In providing methods to meet all conditions that may occur the following variables should be considered:-

(a) Volatile nature of the oil (fire risk)
(b) Large or small volume of oil
(c) Daylight or darkness
(d) Tidal conditions
(e) Wind
(f) Spills on open water, beneath wharves and/or decks of wharves.

The remedies tabulated below apply to both small and large spills, the large spill of volatile oil (petrols etc.) being assumed to have taken place at a tanker berth. Large spills of volatiles elsewhere are not amenable to the tabulated remedies, evacuation and isolation remaining the only alternative.

SMALL SPILLS:	Remote from Wharves	Under Wharves	On Wharf Deck.
Volatiles (Petrols etc.)	1	1	1
Diesel Oils	2	2	#2 or 5
Residual Oils	2 & 4	3 or 6	#3 or 5
LARGE SPILLS:			
Volatiles (Petrol etc.)	1	1	1
Diesel Oils	2 [illegible]	2	#2 or 5
Residual Oils	2 or 5	6	#3 or 5

SMALL VOLUMES	LARGE VOLUMES
1. Provide water sprays and evaporation to atmosphere to reduce the fire risk quickly.	Evacuate personnel and isolate electric power - raise booms if in operation and let volatiles evaporate.
2. Spray area with chemical high pressure water sprays, the oil being reduced bacteriologically to a harmless state.	The same but use maximum amount of equipment.
3. Spray areas with chemicals using hand lances to obtain maximum penetration	Ditto.
4. Spray with chemicals and mechanically agitate after spraying.	Ditto
5. Provide absorbents - sand, sawdust or chemicals and remove for disposal. Provide plugs to drainage points through deck and bund perimeter of deck.	Recover with pump to drums or tank and use absorbents for remainder.
6. Wait for oil to emerge and dispose with method (4).	The same but use maximum amount of equipment.

DEPARTMENTAL RESPONSIBILITY WITHIN THE BOARD:

It is recommended that the Harbour Department, as at present should remain responsible for the clearing of all oil spills from the Waitemata Harbour.

In order that the Harbour Department can efficiently carry out this work, I would suggest that:-

a) All equipment, chemicals etc. supplied for oil dispersal should continue to be stored at Queen's Wharf loft.

b) The existing pump now fitted on the "Ferro" should be converte to a portable pump and placed in the Queen's Wharf loft as a standby/back up pump when required.

c) The Harbourmaster should be given first call, when required, for the use of one or more of the Engineer's Department tow boats "Tika", "Mana" and "Kaha" to control oil spills. These vessels are fitted with high pressure pumps suitable for chemical water spraying and can be fitted with chemical agitation spraying.

d) As a "back up" to the tow boats when larger spills away from the wharf areas are required to be removed, I suggest that the Voith-Schneider tugs " Te Awhina" and "Tamaki" be used for chemical water spraying of the affected areas.

CONCLUSIONS:

1.) A suitable system of oil booms could be installed at both tanker berths but due to the harbour conditions encountered in Auckland their capital cost is high ($80,000 to $95,000 each).

If booms were installed suitable means of collecting the oil would be needed, a target price for such equipment is probably near $20,000.

2.) The chemical high pressure water spraying method now used by the Board should be retained but the chemical spraying with agitation should be introduced as the main method of oil dispersal.

Either towboat "Tika", "Mana", Kaha" and "Kumenga" could be used for this type of spraying, therefore the Harbourmaster should be equipped with one set now and later a further set of spraying gear and chemical pumps should be purchased.

3.) It has been found overseas that instead of chemically dispersing oil pollutants the method of mechanically picking up of oil and storing after separation can be used very successfully. There are a number of specialized machines available overseas, the unit cost being approximately $10,000 and with suitable barge costing anouther $12,000.

I doubt if this port warrants a unit of the type at the present time.

RECOMMENDATIONS:

The following recommendations are set out as a basis for determining the Board's future requirements for equipment for disposing of oil contaminants from the Waitemata Harbour, area:-

1.) Due to the tidal and sea conditions and operational problems encountered in Waitemata Harbour and also the high capital cost involved, the installation of oil booms at either of the tanker berths are not recommended.

2.) The Harbour Department should continue the existing use of the chemical/water spraying for the removal of oil and that an extra pump, nozzles and hoses etc. be purchased to increase the availability of equipment for clearing large oil spills.

3.) That, as a start, one set of portable "WSL" type chemical spraying/agitation equipment be manufactured suitable for fitting to Engineer's Departments towboats, "Tika", "Mana", "Kaha" and "Kumenga".

This equipment should be held by the Harbour Department at Queen's Wharf loft ready for fitting to any of the above vessels.

4.) That the following additional oil disposal eqiupment be purchased this financial year.

a) A portable high pressure pump - cost $1,000.
b) Two 'Pyrene' FB5x foam branches - cost $260.
c) Spare hoses, chemical containers etc. cost $200.
d) One set of 'WSL' type portable chemical spraying equipment and 400 gallons of chemicals - cost $2000. (Construction and fitting costs are included in the previous figure).

Note: $5000 has been allowed for into the 1972/73 Programme of Work under item A 9 - Major Port and Property Works.

HARBOUR DEPARTMENT.
ENGINEER'S DEPARTMENT
16th October 1972.

Auckland Harbour Board

MEMORANDUM

AUCKLAND HARBOUR BOARD
MECHANICAL SECTION
RECEIVED 18 OCT 1972

FROM

TO

RECEIVED 12 OCT 1972 ENGINEERS DEPT

11 October 1972

The Manager,
Spencer Clarke & Co. Ltd.,
P.O. Box 30452,
LOWER HUTT.

Dear Sir,

OCEAN SCIENCE & ENGINEERING INCORPORATED

Thank you for your letter of 5 October 1972 and the enclosed brochures on techniques to combat oil pollution of the sea developed by Ocean Science & Engineering Inc.

Equipment of the nature described could be of particular interest to the New Zealand Committee on Pollution of the Sea by Oil which is administered by the Ministry of Transport (Marine Division).

You may be well aware of the existence of this Committee which is required to report to Government and make recommendations to it concerning suitable equipment that could be utilised to deal with oil pollution in the event of a serious oil spillage on our coastline or a major disaster caused by a mishap to a large oil tanker vessel. The address is, the Director, Marine Division, Ministry of Transport, Private Bag, Wellington.

Yours faithfully,

R.T. Lorimer per FG.
R.T. Lorimer
GENERAL MANAGER

THE CHIEF ENGINEER

I have attached a copy of Spencer Clarke & Co. Ltd.'s letter for your information in regard to the reference in the third paragraph to the development and marketing of a floating boom by the Gamlen Chemical Company, U.S.A.

R.T. Lorimer
R.T. Lorimer
GENERAL MANAGER
per FG.

Mr. Seagar to see please.

Messrs Park Bray Lee

2821

R.B.H. CYBERNETICS, PATENTS & PROCESSES LTD.

P. O. BOX 4205
POSTAL STATION A
VICTORIA, B. C.
TELEPHONE 658-5713
383-7255

1st September 1972

Chief Engineer to the Board
Auckland Harbour Board
53 - 55 Customs Street West
Auckland, New Zealand

Dear Sir:

Pursuant to your recent letter to us, I regret that it would be impossible for us to furnish working drawings of the Slicklicker for your use.

We produce under a license on the patent from Canadian Patents and Development Ltd., on a royalty basis which would preclude such an arrangement.

I regret to hear that you are still using chemical removal of oil. In North America the use of emulsifiers is being phased out as much as possible due to the ecological effects. Instead, absorbents which are oleophilic and hydrophobic are being used to pick up the final traces of oil. These are then retrieved with the oil which they have absorbed.

Our own absorbent product, "Graboil", is polyurethane foam of the required density, treated with inert materials which render it oleophilic and hydrophobic. After the material has absorbed the oil, the oil can be squeezed out and the "Graboil" used many times again. If you have a Slicklicker, the "Graboil" can be squeezed out by running it through the squeeze rollers, the absorbed oil is recovered, and the "Graboil" can be used again. Although this material appears expensive, its absorbent capability (20 to 40 times its own weight), plus its ability to be reused many times, make it far superior to other absorbents.

Please let us know if we can be of further service to you.

Yours truly
R.B.H. CYBERNETICS, PATENTS & PROCESSES LTD.

V. N. R. Sewell.
V. N. R. Sewell, President
VNRS/s
Enc

Mech Eng M Bray 25/9/72

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P R I C E L I S T

SLICKLICKER - $8,200.00 with 11 ft. boom
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31st August, 1972

JBM:MGD

Chief Engineer to the Board,
Auckland Harbour Board,
C.P.O. Box No. 1259,
AUCKLAND. New Zealand

Dear Sir,

SLICKLICKER - OIL RECOVERY UNIT

We have recently received a letter from Mr. Sewell, President of R.B.H. Cybernetics Patents & Processes Ltd., in regard to Slicklicker Oil Recovery Units.

We write advising that our Company are the selling agents for the Slicklicker Unit and which will be manufactured by Beck & Jonas Pty. Ltd. of Port Adelaide and we have pleasure in submitting additional information which may be of interest to you.

The most spectacular demonstration of the Slicklicker's capabilities to date has been on the scene of the "Arrow" spill. Working on heavy Venezuelan bunker fuel at 33°F. water temperatures and in freezing air temperatures, the four machines there were each picking up 2,000 to 5,000 gallons per day of oil and oil-soaked debris. The machines could have picked up more, but there was no method of removing the picked-up oil faster than this. As the oil was not boomed, the boats had to move from place to place to catch the floating gobs. As a result of its success on this spill, the head of the task force set up to handle the clean-up has recommended to the Canadian Government that each Canadian harbour have a Slicklicker in an active state and two on stand-by in case of a larger spill. As of April, 1972, the Canadian Department of Transport has twenty-seven Slicklickers, and will be ordering more. Most of our testing, however, is done on diesel fuel, so it can be seen that the machine handles oils of all viscosities.

Slicklickers have also been shipped to England, Israel, Japan and the U.S. Navy at San Pedro, California.

One very marked advantage of the Slicklicker over other pick-up systems is that the end of the pick-up boom doesn not need to be held at the

.../2

Leech. Esq. Mr Bag

28th August 1972.

J.M. BRAY
ASSIST.MECHANICAL ENGINEER

THE HARBOURMASTER.

OIL SPILL - MV. "HERULV" & "STOLT SHEAF".

Investigation into an oil spill stated to have occurred on Wynyard Wharf at approximately 1030 hours on the 25th August 1972.

- -

At 1410 hours on the 25th August 1972, I proceeded with Captin A. George aboard the 'Herulv' and interviewed the Master and 1st Engineer H.Johansen.

We proceeded to the engineroom with Mr. Johansen and took the following oil samples:-

1) Purified fuel oil: ex Bahrain, SG.8509 @ 160° F.
Viscosity 40.5 SUS @ 100° F.

2) Unpurified fuel oil from the
P & S Wing Tanks: ex Whangarei, SG.9465 @ 196° F.
Viscosity 9.20 Red.No.1 @ 100° F.

3) Sample from after bilge.

4) Sample from the cargo.

The 'Stolt Sheaf' was also visited and the Master and Chief Engineer interviewed. Captain George proceeded to the engineroom and took a sample of the vessel bunker fuel.

Specification of the bunker oil: SG.9679 @ 60° F.
Viscosity 50.5 Kinematic @ 125° F.

Chief Engineer's of both vessels stated that they had not used their bilge pumps that day.

Copy for Chief Engineer JB

ASSIST.MECHANICAL ENGINEER.

JMB:AF.

Mr. Seagar.

The report by Jack Bray says the same things as the combined report by George Hamilton, but in different words.

I see no reason to go past this original report, and regret that we got the situation where a second one was prepared. I suggest that the combined report and covering letter cover the general situation, and if particular attention to small spills is necessary this can be done separately.

C.A. Pock 9-8-72

C/E.

The attached draft by C.L.P. is generally what I feel could be conveyed to Cdn.

Could we discuss please

GS

File 724

Memo.

General Managers.

OIL SPILLAGE IN HARBOUR.

Following your memo of 22nd February 1972 addressed to the Chief Engineer and the Harbourmaster, a group comprising the Assistant Design Engineer, the Assistant Mechanical Engineer, and Captain McKenzie of the Harbour Department has made a review and further study of the problem of oil spillage both at the oil berths and in the harbour generally. Copies of their report are attached.

The most important conclusion of the report is that an oil boom is not a practical method of controlling oil spills in the harbour, at least at the present stage of their development. While the commercial literature on booms indicates that their development is still proceeding, the only boom currently available that is large enough to deal with a spill in the tide and wave conditions in Auckland could not be launched from the shore or brought from floating storage in reasonable time, and would require to be raised from the harbour bed by inflation. The report recommends that such a boom should not be installed because of its high cost, but in addition the Harbourmaster finds this type of boom completely unacceptable on account of possible damage by ships' anchors. The reports' recommendations confirm

conclusions arrived at in my
? report of . - - - - .

I would propose therefore that discussions with the Auckland Metropolitan Fire Board be re opened on the basis of abandoning or at least postponing the aquisition of a boom. This would require a fresh appraisal of the problem of fire danger with spills of volatile oil, and the re ~~drafting~~ consideration of precautions and emergency measures for this situation. The basic ideas are
? presented in the report and these could be enlarged and modified if necessary in discussion with the Fire Board.

Chief Engineer

Airmail.

The Manager,
R.B.H. Cybernetics, Patents and
Processes Ltd.,
P.O. Box 4205, Postal Stn. A,
Victoria BC,
Canada.

25th August 1972.

Dear Sir,

'SLICKLICKER' (OLEOVATOR) RECOVER MACHINE.

I acknowledge receipt of your letter, dated the 17th July 1972, and the brochures and information enclosed with regard to your 'Slicklicker' and associated oil recovery equipment.

It is noted that a 'Slicklicker', gasoline powered with a 15ft. boom would cost, ex works, approximately $8000.

My technical staff at the present time evaluating your equipment against this Board's requirements and I would like to obtain further information on the 'Slicklicker' as follows:-

First would it be possible to purchase the design construction drawings for the gasoline powered 'Slicklicker' with the 15 ft. boom? If so, what would the cost be and what drawings would be provided?

Secondly if it was possible to purchase the design what would the cost be for, say two belts for a 15ft. boom machine.

I look forward to hearing from you on this matter and thank you for the information so far provided.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD.

Copy to:
Mechanical Engineer
for Information.

JMB:AF.

R. B. H. CYBERNETICS, PATENTS & PROCESSES

P. O. BOX 4205
POSTAL STATION A
VICTORIA, B. C.
TELEPHONE 658-5713
383-7255

17th July 1972

Chief Engineer to the Board
Auckland Harbour Board
C.P.O. Box No. 1259
Auckland, New Zealand

Dear Sir:

Thank you for your letter of July 19th 1972.

I am enclosing our regular advertising material which covers the elements of our recovery system.

The Slicklicker is the key element, but the ancillary equipment we handle is, we believe, equivalent to or better than other similar equipment. For regular harbour work we would recommend the heavier Trelleborg boom, and a number of the 10 or 20 ton elastomeric containers for retaining oil picked up by the Slicklicker. If the oil is too viscous, or too full of debris, open ended drums are probably still your best bet for collection.

In harbour use, of course, it is probable that the oil will not be on the water long enough to emulsify sufficient to increase viscosity markedly.

Please note that the Slicklicker is just as effective on lighter oils as on heavy. By using the Slicklicker to pick up the bulk of spilled oil, you could reduce your use of chemicals to final clean-up, even on lighter oils.

Chemicals are still being used to an extent in Canada, but their use is being phased out in favour of pick-up by Slicklicker and absorbents.

. . 2

The Canadian Department of Transport now has twenty-eight Slicklickers, and we are expecting further sizeable orders. We have also exported to Israel, France, England, Japan, and the United States.

We are represented in Australia and New Zealand by Beck & Jonas Ltd., 2 North Parade, Port Adelaide, South Australia 5015.

I am informing them of your interest through their parent Company, Swann Winches Ltd. of Vancouver, B.C., Canada.

If you find that you require more information, or more detailed information, than Beck & Jonas can provide you with, please do not hesitate to contact us again.

I am enclosing an operating Manual on the Slicklicker which contains a diagram, not quite up-to-date, but adequate to give you the general arrangement.

Again, thank you for your interest in the Slicklicker. It will undoubtedly help you very markedly in your anti-pollution efforts.

Yours truly

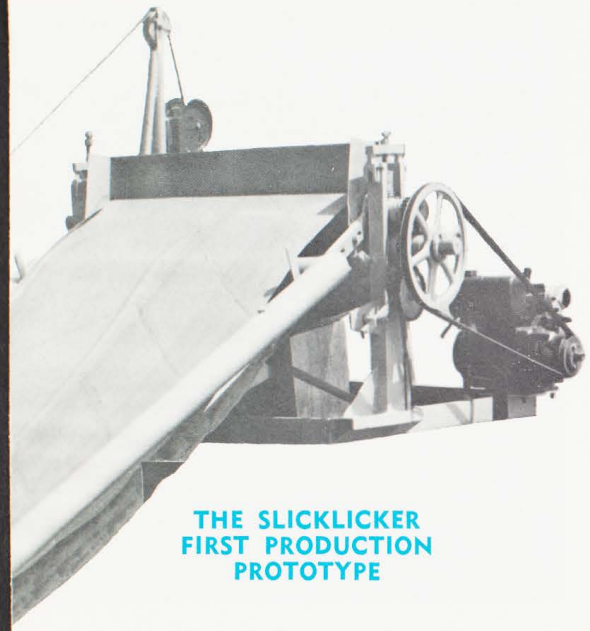
R.B.H. CYBERNETICS, PATENTS & PROCESSES LTD.

V. N. R. Sewell.

V. N. R. Sewell, President.

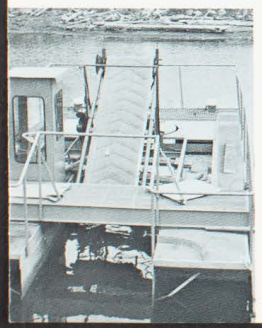
VNRS/s

cc - Mr. J. Cleeve, President
Swann Winches Ltd.
1494 Powell Street
Vancouver, British Columbia



THE SLICKLICKER FIRST PRODUCTION PROTOTYPE

This deceptively simple device can be mounted on a barge at the location of the oil spill where, it can lap up and recover over 40,000 gallons per day. Alternatively it can be mounted between pontoons and drag a plastic containment bag for collecting the crude. Under testing, the Slicklicker recovered 98% crude in medium ocean swell conditions. The impressive performance of this machine depends on "Preferential Wetting". Oil wets the treated belt but water does not. A very clean separation is attained.



Put Oil Where It Belongs With The Slicklicker (OILEVATOR)

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24L Kum Hing Court
Tomlinson Road
Singapore 10.

All Other Areas—
R. B. H. Cybernetics (1970) Ltd.
P.O. Box 4205, Postal Stn. A
Victoria, B.C.

For Further Information
R. B. H. CYBERNETICS (1970) LTD.
P.O. BOX 4205, POSTAL STATION "A"
VICTORIA, B.C., CANADA
Telephones (604) 658-5713 or (604) 383-7255

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Oil in the wrong places
POLLUTION!
the SLICKLICKER
puts it where it belongs

Unloading Bunker "C" Emulsion from "Arrow" Disaster

The tanker "Arrow" recently released large quantities of heavy bunker fuel into the near-freezing waters of Chedabucto Bay, Nova Scotia.

The Chairman of the Task Force in charge of the cleanup states, "The machines are working well under very difficult circumstances and are recovering oil that is now mixed with seaweed and debris of all kinds in a very satisfactory manner. We have studied over a hundred suggestions of how to recover oil from the water. Most of them were quite inappropriate for Bunker C in a harsh environment and open water with both strong currents and considerable winds and waves, whereas your Slicklicker has stood the test. We feel that of all the devices which we have examined, your device is the one that can do the full range of jobs . . . .

While some of the other devices on the market may work very well in quiet and sheltered waters of a harbour it is my personal opinion that your device is the best by a substantial margin to cover the full range of environmental conditions . . . . ."

From the Official Report of House of Commons Debates, Thursday, April 16th, 1970, re clean-up of oil spill from the tanker "Arrow":

Mr. St. Pierre,
Member of Parliament for Coast Chilcotin:

"I was impressed by the methods of cleaning up the mess, including one developed by a West Coaster, ... who has developed a machine called a Slicklicker which has become one of the best proven methods of cleaning oil off the surface of water . . . . ."

The Slicklicker (Oilevator) will pick up any weight of oil from the lighest diesel fuel to the heaviest bunker fuel and has demonstrated its capability to pick up and break emulsions.

Dr. E. A. Milz, Manager, Research and Development Laboratory, Shell Pipeline Corporation, P.O. Box 2648, Houston Texas 77001 in his recent paper (April 14th, 1970) entitled "An Evaluation — Oil Spill Control Equipment and Techniques", states on p. 24, para. 5, "The absorbent surface skimmers ranged in capacity from 10 to 45 gallons per minute. Oil recovery rates were generally high . . . . . Only one device was tried in a seaway and it was found to perform satisfactorily in wave heights up to two feet." This Company's first commercial Slicklicker (Oilevator) was the machine subjected to these trials at the Houston Laboratory.

On p. 30 of his paper, Dr. Milz says of the type of machine offered by this Company, "oleophilic belt type skimmers operate with high efficiency in quiescent water and appear to have a good chance of operating with reasonable efficiency in disturbed water." (As mentioned above, our machine did operate in two foot seas).

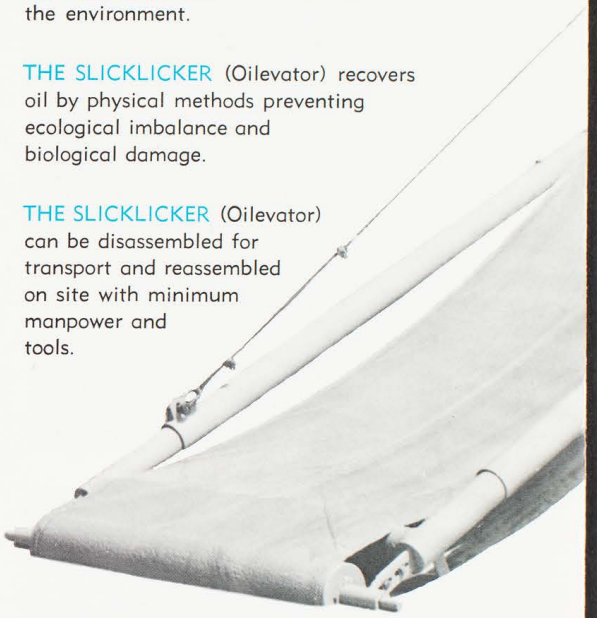
A West Coast Refinery reports, "The testing of the Slicklicker was a success." The testing . . . . . afforded an opportunity to try the machine on normal slop oils, emulsified oils and liver - like emulsions. It performed equally well in all three materials." "Analysis of the oil revealed nil % water. After removing the free oil it continued very effectively to remove the liver-like emulsion completely from the basin." "It was observed that the machine not only removed the liver - like emulsion but was instrumental in helping to break the emulsion . . . . ."

THE SLICKLICKER (Oilevator) can separate and pick up 40,000 to 50,000 imperial gallons of oil from water surface per day.

THE SLICKLICKER (Oilevator) saves oil and the environment.

THE SLICKLICKER (Oilevator) recovers oil by physical methods preventing ecological imbalance and biological damage.

THE SLICKLICKER (Oilevator) can be disassembled for transport and reassembled on site with minimum manpower and tools.



R.B.H. CYBERNETICS, PATENTS & PROCESSES LTD.

P. O. BOX 4205
POSTAL STATION A
VICTORIA, B. C.
TELEPHONE 658-5713
383-7255

Thank you for your inquiry about the Slicklicker.

I am enclosing a brochure which I believe covers many of the points you will be interested in.

The most spectacular demonstration of the Slicklicker's capabilities to date has been on the scene of the "Arrow" spill. Working on heavy Venezuelan bunker fuel at 33°F. water temperatures and in freezing air temperatures, the four machines there were each picking up 2,000 to 5,000 gallons per day of oil and oil-soaked debris. The machines could have picked up more, but there was no method of removing the picked-up oil faster than this. As the oil was not boomed, the boats had to move from place to place to catch the floating gobs. As a result of its success on this spill, the head of the task force set up to handle the clean-up has recommended to the Canadian Government that each Canadian harbour have a Slicklicker in an active state and two on stand-by in case of a larger spill. As of April, 1972, the Canadian Department of Transport has twenty-seven Slicklickers, and will be ordering more. Most of our testing, however, is done on diesel fuel, so it can be seen that the machine handles oils of all viscosities.

Slicklickers have also been shipped to England, Israel, Japan and the U.S. Navy at San Pedro, California.

One very marked advantage of the Slicklicker over other pick-up systems is that the end of the pick-up boom does not need to be held at the oil-water interface. In normal operation it extends past this interface into the water. The fact that the belt and roller can extend into the water allows the Slicklicker to be used under any wave conditions that the vessel it is mounted on can stand. The moving pick-up belt picks up only the oil, leaving the water where it is. Some water is entrained in the oil but under most circumstances the mix picked up should be close to 98% oil.

Our explosion-proof model of the Slicklicker, which we call the Oleovator, is used to improve efficiency of A.P.I. Separators in refineries and can be used in any in-plant situations where it is necessary to separate a non-miscible liquid from water. The great advantage the Oleovator has over other separators is that it will pick up, and largely break down emulsions. This decreases the amount of de-emulsifier required, effecting a considerable saving in many instances. The IOCO Refinery of Imperial Oil Enterprises now has one of these machines built into a separator designed around the Oleovator.

Price of the gasoline-powered Slicklicker for oil spill use is $7,500.00 ex-works, Victoria, B.C., Canada, plus any applicable taxes. The explosion-proof electric is $7,900.00, and a compressed air model is $8,250.00. These prices are plus applicable taxes, if any. Available through us also is a hydraulic model at $8,400.00 for gas power and $8,500.00 for electric. Prices quoted are for Slicklickers with 11 foot booms. With 15 foot boom price is $400.00 more.

The Slicklicker can be used from any boat with a fairly low freeboard. On the Arrow spill small landing craft were used. On Lake Athabasca in northern Alberta the Slicklicker was mounted on a deck made up across two 16 ft. row-boats as nothing else was available. However we have available and recommend the "Sea Truck", a 25 ft. by 10 ft. fibreglas barge, with landing ramp, which can do up to 20 mph with a 2 ton load. This is a very shallow draft, highly stable boat. Power is optional. Price on this, set up to mount the Slick-licker, is about $11,000.00, more or less depending on what motor or motors you want. Also available is the "Oil-Cat" designed expressly for mounting the Slicklicker. This has been effectively used by the Ministry of Transport in 5 foot waves. Price F.O.B. Truro, Nova Scotia, on the "Oil-Cat" is $29,400.00.

In addition, we have the "Red Eel" containment boom for protected waters, in 164 foot lengths. This is about $2.75 per foot in Canada, $2.60 per foot F.O.B. New Rochelle, N.Y., in the U.S.A. We also have the "Sea Serpent" for waters with waves up to 8 feet, at $14.50 per foot in 115 ft. lengths, F.O.B. New Rochelle, N.Y., for U.S. customers, and $14.50 per ft. F.O.B. Vancouver, in Canada. For other areas we would have to give special quotations on these booms.

We now have collapsible P.V.C. containers to hold recovered oil. These are filled by the Slicklicker, then released for any convenient boat to tow away. They come in 10 cubic metre (10 ton capacity) for less than $1,000.00 Canadian F.O.B. Victoria, B.C. and 20 cubic metre (20 ton capacity) at around $1,500.00 F.O.B. Victoria, B. C. A 50 ton capacity is also available. We will be glad to give special quotes on this. If the oil recovered is too viscous to be pumped or flow, open-ended drums are still probably the best containers.

Not only is this complete system very economical but it has already proved itself under extremely rough conditions in the field.

We cannot guarantee delivery in less than ninety days on the Slicklicker, but it is very likely that we can deliver in much less time than this. Delivery on Sea Truck and Oil Cat is about the same. On booms, allow 9 week delivery. On P.V.C. containment vessels, delivery date may be up to six months from date of order.

If you require any further information please ask us.

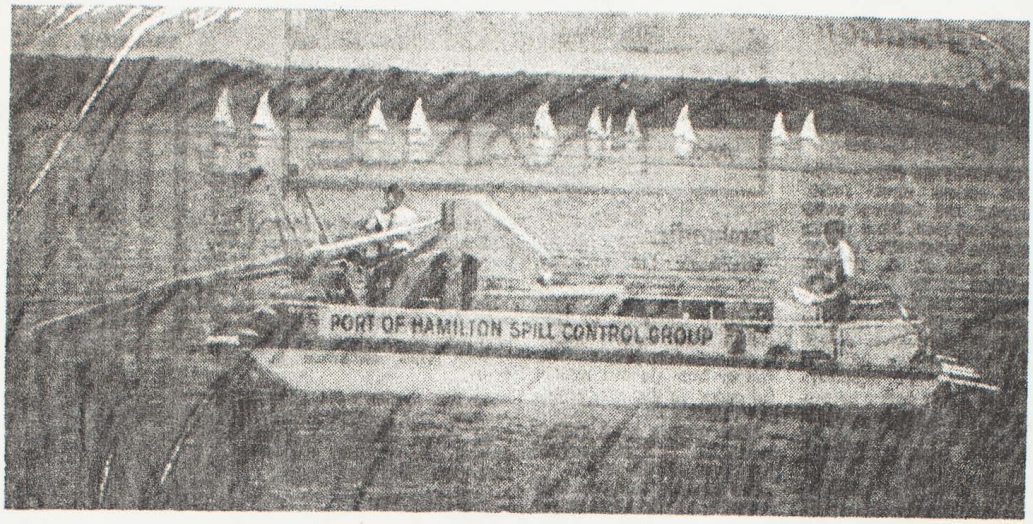
Yours truly

R. B. H. CYBERNETICS, PATENTS & PROCESSES LTD.

V. N. R. Sewell.

V. N. R. Sewell
President

VNRS/w



SEATTLE SPILL

Licker Licking

VICTORIA DAILY TIMES, FRIDAY, SEPT. 17, 1971

The prototype oil slick licker that helped mop up the massive Chedabucto Bay tanker spill last year is being used to clean up a 30,000-gallon slick in Seattle this week.

The Victoria-developed machine is one of about six types of oil skimming devices brought in to Salmon Bay by Marine Oil Pickup Service to work on the sunken Ms. Mercator.

The ship sank last Friday at its berth inside Ballard Locks, spilling diesel fuel into the harbor.

ADVANTAGE

Robert Roe, general manager of MOPS, said the Victoria slick licker has the advantage over other types because it is able to pick up debris as well as oil, taking care of absorbent material, flotsam and other solids which may have been used to contain a spill.

Roe said the accident provides "the perfect opportunity to evaluate what's on the market today." He said the exercise will help MOPS in the selection of a slick-mopping machine for purchase.

The company is a joint venture of three Seattle firms, including Puget Sound Tug and Barge, which was chosen to salvage the Mercator. Efforts to right the ship were under way today.

V. N. R. Sewell, president of R. B. H. Cybernetics, Patents and Processes Ltd., of Victoria, said the original slick licker was built under direction of R. B. H. Cybernetics by Wesley desJardins, of Esquimalt General Repair, which has since built all other west coast slick lickers.

MODIFICATIONS

When the crude-oil tanker Arrow foundered in Nova Scotia a year ago last winter, the slick licker was used to recover its spilled cargo. Design modifications to meet local conditions were done by Simon P. Nelson.

Returned to Victoria, the machine went into storage after servicing by Esquimalt General Repair. Lately it was in use as an industrial oil separator in Vancouver, from where it was shipped to Seattle.

Report of the

Task Force – Operation Oil

(Clean-up of the Arrow oil spill in Chedabucto Bay)

to

The Minister of Transport

VOLUME 1

4. Dispersants. Although considerable testing and evaluation were performed on a number of commercial dispersants (see Vol. II, chap. 6.7), these materials were not employed on a significant scale in Chedabucto Bay mainly because of the hazard of toxicity to marine life. Aside from the problem of toxicity, one must question the advisability of getting the oil out of sight by dispersing it through the water column, and further work on the possibility of reagglomeration is necessary. The trend in current commercial dispersants is in the direction of greatly reduced toxicity by lowering of the aromatic solvent content, but this in turn reduces the dispersing efficiency, particularly for heavy or weathered oils. It is believed that modern dispersants may have a place in the overall contingency plan, but only after toxicity, efficiency, cost-effectiveness in comparison to other techniques, and the fate of the dispersed oil are all studied in great detail.

5. Mechanical or Surface-skimming Devices. After initial tests indicated that it was capable of handling the very viscous floating oil, the device that was used extensively in Operation Oil was the Oilevator or, as it has become commonly known, the "slick-licker" (see Vol. III, Pt. 10). It consists of a 3-foot wide continuous conveyor belt which dips into the surface; oil adheres to the oleophilic surface of the belt while water runs back down so that oil with very little water comes off the upper end of the conveyor into suitable containers. Three slick-licker units were manufactured, and the prototype was suitably modified to handle the heavy oil, with added rollers, positive chain drive, etc. Three were mounted on small landing craft and the other on a catamaran specially designed for this operation. The oil was collected in plastic bags inserted in 45-gallon drums which were transferred by crane to an LCM, then off-loaded onto trucks and transported to dumpsites approved by provincial authorities. Each slick-licker is capable of removing about 40,000 gallons of oil/day under ideal operating conditions such as provided by a thick slick. Since by the time these devices were placed in full operation large slicks were no longer present, they were used to pick up oil and oily weed along the edge of the shore in areas such as Inhabitants Bay which acted as a catch-pool. Two to three thousand gallons of such material were collected each day over a period of ten weeks. These devices commend themselves for simplicity, low cost, and ease of operation.

contingency plan and operations in any spill of petroleum products must reflect a concern for the total environment.

A contingency plan must have three main components:

1. There should be a plan for the recovery of such oil as remains in the primary vehicle from which the oil was spilled. Here we can see a major role for National Defence because the skills and capabilities required are almost identical with those developed within the Canadian Forces' training for their primary mission. We see important supporting roles for the Canadian Coast Guard and the Meteorological Service. It is important that the contribution of each be brought to the same stage of mobility and flexibility as is indigenous to the Canadian Forces. For example, the Meteorological Service must be capable of immediately mounting a field operation as was done at Port Hawkesbury. The safety and efficiency of many of the operations will depend on a good meteorological service *in situ*. An integrated communications capability, with all units capable of operating on a common frequency, is likewise indispensable and will require careful planning and exercising. This part of the plan should also involve to a major extent the oil companies because it is important that they have immediately available a recovery vehicle. *We recommend that, until a better scheme is developed, the tankers and barges used in the petroleum trade be fitted with the Madsen valves.* In the Arctic the provision of a receiving vehicle equipped for a rapid pump-out in case of accident, while representing a substantial expense because it would have to be provided on a stand-by basis, may yet be a very cheap form of insurance.

   The two essential vehicles for the East and West Coasts should be able to earn their keep in other ways while performing a stand-by service. We refer firstly to HMCS Cape Scott and Cape Breton which would provide the headquarters' operational and factory capability, and secondly to the receiving vehicle for recovered oil which we have recommended be provided by the industry and be engaged in the normal coastal trade.

2. The second main part of the plan would be preparedness for recovering oil from the water. This will require the immediate availability of equipment and materials for containment and recovery.

   Until other vehicles are proven to be more satisfactory *we recommend that at least one slick-licker be placed at each major port on the Canadian coast and that at least two others be held in a central contingency packet.*

Until further engineering and development is done, we suggest that these slick-lickers be mounted on the equivalent of the 27-foot SP barge used at Chedabucto Bay but that as a matter of urgency a more satisfactory vehicle, probably of a catamaran basic design, should be developed. The catamaran developed for Operation Oil was a useful vehicle but we would not recommend its basic design as acceptable on an ongoing basis. The tongue of the slick-licker must project beyond the bows of the craft and the propulsion of the craft must be able to operate in highly contaminated waters.

We recommend that stockpiles of material be located at strategic ports. These would include peat moss or other absorbents, booms and boom components, and a variety of equipment not readily available which will vary with each location.

We recommend that the Canadian Coast Guard have primary responsibility for the recovery of oil floating on the water, which will include slick-lickers, containment booming, and all other ramifications.

Our basic philosophy is that just as each major port is equipped to fight fires, so it should also be equipped to fight oil pollution on the same real-time basis.

3. The third main phase of the plan is the cleaning of the beaches and the shoreline. There is much research work required here but the plan should include the use of basic equipment of tracked bulldozers, front-end loaders and trucks which can with limitations do a good job. Lightly contaminated or sensitive beach should be cleaned by manual labour. Road graders found satisfactory in other clean-ups were tried but were not useful because our beaches were either too soft or had too much slope. We believe that graders might be satisfactory on a flat hard sand beach. We developed no acceptable way of cleaning boulder beaches. It is urgent that the contingency plan develop some approach to this problem. The only encouraging result we had was in the use of finely powdered natural material as stabilizers. Finely powdered limestone did offer some hope of success as a stabilizer of oil on boulder beaches and bedrock, but much work remains to be done in this area.

   In this part of the plan we would also include the cleaning of wharves, jetties and retaining walls. After examining a number of proprietary methods used in the trade for tank cleaning, etc., we decided to use old-fashioned steam jennies and steam guns. This approach worked and we suggest should be part of the contingency plan unless some other method shows substantial improvement and cost effectiveness.

M.O.P.S.
MARINE OIL PICKUP SERVICE
PIER 17, HARBOR ISLAND, P.O. BOX 3783, SEATTLE, WA. 98124 • (206) 682-7930

October 14, 1971

Myer Franks Limited
1100 Grant Street
Vancouver, B. C.

Attn: Mr. Milton L. Applebaum
President

Dear Mr. Applebaum:

I want to take this time to thank you for your fine help and cooperation in sending us your Slick Licker to assist in cleaning yo the M.V. Mercator oil spill.

The Slick Licker was operational within one hour after arriving on the scene of the spill at Fisherman's Terminal, Seattle, Washington and operated almost continuously for several days. Depending on the utilization of the Slick Licker, we were able to pick up from three to six barrels of oil per hour.

Without your quick assistance in this cleanup operation, it is likely that M.O.P.S. would have had to remain on the scene an additional week.

Once again, thank you for your fine assistance during this oil spill.

Sincerely,

MARINE OIL PICKUP SERVICE

Barry J. Paulsen

Barry J. Paulsen
Coordinator

BJP:ce

MARINE SERVICES
SERVICES DE LA MARINE

CANADA

YOUR FILE
VOTRE RÉF:

IN REPLY QUOTE
RÉF. À RAPPELER:

DEPARTMENT OF TRANSPORT
MINISTÈRE DES TRANSPORTS

OTTAWA - ONTARIO
K1A ON7

August 9, 1971

Mr. V.N.R. Sewell
President
R.B.H. Cybernetics, Patents and Processes Ltd.
P.O. Box 4205
Postal Station A
Victoria B.C.

Dear Mr. Sewell,

As you know the Ministry of Transport had three Slicklickers built to assist in the clean-up of Chedabucto Bay following the sinking of the steam tanker "Arrow" in February 1970.

Unfortunately most of the oil spilt from the Arrow had gone ashore shortly after the grounding and before the Slicklickers were available, but despite this, there is no doubt that without the Slicklickers to gather up oil-soaked weed and eel grass in Inhabitants Bay, that area could not have been cleaned by other means. These machines operated in excellent fashion and proved to be extremely versatile in use, needing only minimal maintainance.

Because of the excellent performance obtained, this Ministry has purchased two further units of the improved type, each fitted on a special catamaran platform. One of these was utilised during a successful "mop-up" operation in Chedabucto Bay this year together with the older models. During this time assistance was also given to an Oil Refinery following a spill of Bunker Fuel, and the success in dealing with this spill gave yet another indication of the worth of the Slicklicker.

The recovery rate of these machines is of course subject to many variables, but from our experience it is felt that on average a rate of 45 gallons of oil per minute is quite realistic, and that the amount of water pick-up is virtually nil.

To sum up, the Ministry of Transport is more than satisfied with the performance of the Slicklicker and it is regarded as one of the prime tools we have to combat oil spills.

Yours truly,

W.J.H. Stuart
Senior Pollution Contingency Officer

Airmail

The Manager,
R.B.H. Cybernetics, Patents and
Processes Ltd.
P.O. Box 4205, Postal Stn. A.
Victoria B.C.
Canada.

19th July 1972.

Dear Sir,

'OLEOVATOR' OIL RECOVER MACHINE.

Early last year we received brief information from the local Canadian Government Trade Commissioner with regard the 'Oleovator" machine which has been developed by your Company.

Being a Port Authority we are most concerned with oil pollution of harbour waters and are investigating various methods of containing and cleaning up oil pollutants.

To date we have been concentrating on chemical removal of oil spills but for the removal of heavy residual fuel oils a mechanical means appears to be more satisfactory.

I would therefore be very grateful if you could forward a general arrangement drawing and any other details which you consider would be of interest. With this information I will then be able to evaluate the machine for our ports needs.

I look forward to hearing from you on this matter.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD.

Copy to:
Mechanical Engineer
for Information.

JMB:AF.

Auckland Harbour Board.

Mr Seager

" Scoales

the compost be
done before being
distributed.

Mr Bray. 18/7

Arthur - this may be of interest to you & a possible outlet for Beckert. Geoff Hutchinson

Oil Spill Treatment with Composted Domestic Refuse

WALTER G. VAUX, STEPHEN A. WEEKS, DONALD J. WALUKAS

Industrial Ecology Research
Westinghouse Research Laboratories
Pittsburgh, Pennsylvania 15235

ABSTRACT

Floating crude oil can be absorbed and recovered with compost made from domestic refuse. Experiments showed that compost floats on water without wetting until it encounters oil, then absorbs oil at 3.4 ml crude/gram compost (19 barrels/ton).

Oil-saturated compost forms cohesive masses which are easily retrieved from water. Floating masses of oily compost burn vigorously and leave a coke-like residue which sinks. Oily compost can be sunk; underwater it breaks into small suspended particles which disperse and degrade.

Ocean tests off San Diego demonstrated that very thin and thick (1.5 mm) films can be treated and removed quickly.

This method can be applied to (i) absorption and recovery, (ii) absorption and sinking, (iii) absorption and ignoring. Treated oil when left afloat is non-adhesive and will not stain vessels or wildlife, compost will aid decomposition of the sequestered oil which washes ashore. Retrieved oily compost may be burned at sea or on shore.

Economic studies show the use of compost to be competitive. Compost is inexpensive, continuously available, stable, easily transported and distributed at sea.

INTRODUCTION

The idea of treating oil slicks with composted refuse arose in a formal brainstorming session. Two researchers had independently noticed that compost is difficult to wet, yet it readily absorbs oil. The conclusion that compost might absorb floating oil led to bench-top experiments which showed the surprising effectiveness of compost in oil spill treatment.

In the lab experiments compost sprinkled over oil floating on water in a one-liter beaker quickly absorbed the oil and formed cohesive sponge-like masses. The masses remained intact and floating after agitation. Quantitative measurements of compost's absorption capacity for pump oil—no crude was available then—showed a capacity of 2.8 ml oil/gram of compost or 16 barrels of oil absorbed per ton of compost.

Compost: Character, Availability

Cura brand compost, used in all of our tests, was manufactured from domestic refuse by the International Disposal Corporation of St. Petersburg, Florida. The composting process includes magnetic, ballistic, and hand separation of noncompostables, then grinding, composting, drying and final grinding. Composting is aerobic and, in the five-day reaction, temperatures rise to 170° F with an earthy odor.

The St. Petersburg plant's daily capacity is conversion of 100 tons of refuse to 70 tons of compost.

Oil Spill Treatment Method Absorption Experiments

We evaluated compost along with two other common and somewhat similar absorbent candidates. The oil used was a sample of African Crude supplied by Gulf Research. The absorbents tested were Cura brand compost, fine sawdust with some coarse shreds, and oven-dried peatmoss.

Crude was floated on water in 1000 ml beakers. Absorbents were added in slight deficiency. When the absorbents were saturated—about 10 minutes at 20° C—the clumps formed were removed with a wire screen. After allowing the excess oil to drip from the screens for five minutes, the volume of unabsorbed oil was measured. The results of these measurements are summarized in Table 1.

Table 1: Results of Crude Oil Absorption Tests

Absorbent	Vol oil absorbed/ mass of absorbent ml/g	mean	bbl/ton
Compost	3.7 3.1	3.4	19
Sawdust	6.5 8.1	7.3	42
Peatmoss	2.5 3.8	3.2	18

The results show that there was no significant difference in the capacities of compost and peatmoss. However, the capacity of sawdust was double the capacity of compost or peatmoss.

Each absorbent took up oil to its full capacity since it was spread directly on a continuous oil surface. Compost and peatmoss are difficult to wet with water and float until they encounter a patch of floating oil. Sawdust, on the other hand, wets immediately and sinks within five seconds. Unless sawdust can be placed directly on a continuous film of oil its efficacy will be limited.

Burning of Oil Soaked Compost

Burning of spilled oil is discouraged, particularly near populated shores. The sooty smoke from possible incomplete combustion may cause secondary pollution in the air. Yet we can envision situations,—say far at sea, or when retrieval equipment is unavailable,—where it would be better to rid oil from the water before it dispersed too widely.

"Published in the Proceedings of the 1971 Conference on Prevention and Control of Oil Spills, June 15-17, 1971"

Oil burning was first tested in a laboratory in a beaker. The intensity of the flames and smoke quickly ended the indoor testing.

In a three-square-foot outdoor water trough, 1500 ml of floating crude oil was absorbed into about 500 grams of compost. Ten minutes after compost application, the saturated mass was ignited.

The oil burned vigorously on the water and generated dense black smoke. Aften ten minutes the oil combustion stopped very suddenly. A coke-like residue remained. It sank.

Biological Degradation

A beaker of oil-soaked compost in water has been kept at room temperature for several months. One month after the beginning of these observations fungus invasion of the mass was evident. The mass then broke into small—about 10 mesh—particles which suspended in the water. The particles were nonadhesive. Subsequent aerobic activity was indicated by the odor of suspended particles. After several months particles were still in suspension and nonadhesive. No free oil was evident at any time.

Field Tests At San Diego

Westinghouse Ocean Research Laboratory scientists tested the compost absorption method at sea on 28 October 1970. During the tests the sea was calm with less than a 4 knot wind. Signal Oil Company provided Huntington Beach crude oil for the test. The Cura brand compost was assayed at 14% moisture; above the 5% normal moisture, because of heavy dew and rain before the test. Test slicks were overtreated because of Coast Guard surveillance and sensitive public concern at the time.

In an initial test one gallon of crude oil spread to a circular film 120 feet in diameter. Average slick thickness was 0.00014 inches. The crew of a small boat broadcast compost over the slick. Although there was no clump formation, oil was soaked up wherever it contacted compost particles. Floating compost and oil were collected in a plywood vee suspended between the twin hulls of the recovery vessel R/V MIDWIFE. The ¼ inch mesh at the vee allowed oily compost to escape and only one quarter of the oily compost was recovered.

In a second test one gallon of crude was treated with 26.5 lb of compost after the slick had spread to a six-foot diameter circle. Average slick thickness was 0.06 inches. All of the oil was covered and formed into clumps 2 to 3 inches in diameter. As the clumps dispersed, no oil was visible.

All floating clumps were recovered within 15 minutes. No trace of oil or compost remained. The retrieval system recovered 16.5 lb of oily, wet compost. The remainder sank.

In a final test one gallon of crude in an 8 foot diameter circle was treated with compost. The floating material was sprayed with seawater and sank. Churning the compost-treated slick with the small boat's engine proved effective in sinking all traces of oil and compost.

Two hours and twenty minutes after the first test, all experiments were completed and all traces of the several slicks were gone.

The results of these experiments show that compost does absorb floating oil in very thin or heavy films, and that all remnants of a treated slick can be sunk by spraying or agitation.

Compost Distribution Tests

The primary candidate for broadcasting compost at sea is the snowblower. A machine has been tested and it picks up, transports, and broadcasts compost in the same effective manner that it handles snow.

The snowblower is well suited to skid mounting for use on a boat or barge. Either bulk or bagged compost could be blown over an oil spill with a minimum of compost handling or labor.

DISCUSSION

Other Absorbents

Today's most prevalent absorbent is straw. San Francisco treated its January, 1971 spill of 800,000 gallons with straw.

The State of Maine has prepared a contingency plan for oil spill prevention, containment, and cleanup.[1] The plan explains that, "straw is not necessarily the best absorbent available, but it is quite definitely the cheapest. We have found that it is very difficult to obtain straw in the State of Maine." The cost of baled straw, F.O.B. the farm, is close to $10.00/ton at the minimum. Straw absorbs five times its weight in oil.[2]

Other absorbents include coated talc, polyurethane foam, perlite, and pine bark.

Cost Comparison with Existing Treatments

Gilmore[4] et. al., give cost estimates for oil spill cleanup of several techniques. These include a sinking material (treated chalk) at $44 per barrel, and straw absorbent which is recovered and buried on shore at $18/barrel.

To recover the oil soaked straw aboard ship costs $7.10 per barrel. This cost includes: (1) $50 per ton of straw delivered to port, (2) $5 per hour loading cost, (3) $60 per ton loading cost, and (4) recovery costs of oil soaked straw at $64 per ton of applied straw. Thirty tons of straw is assumed to absorb 1000 barrels of oil. The cost estimate allows for a 30% excess application which results in a total application rate of 39 tons per 1000 barrels.

To treat an oil spill with compost and to recover the oil soaked compost aboard ship costs $6.10 per barrel of oil spilled. These costs include: (1) $30 per ton of compost delivered to port (This includes a credit for regular handling costs paid by the disposal company), (2) $1 per ton loading costs (by snowblower), (3) $18 per ton application to oil spill (by snowblower), and (4) $29 per ton recovery costs (by purse seiner). Allowance is made for 48% excess treatment and thus an application rate of 78 tons of compost per 1000 barrels of oil spilled.

Various Ways of Applying the Method

The results of at-sea tests off San Diego suggest several ways in which the method can be applied.

Probably the best protection to our water and shore environments would be through treatment and recovery of oily compost. The large clumps of oily compost are easily retrieved by a rigid net towed through the water.

In the absence of danger to shellfish beds, a second technique is to absorb and sink. Long-term laboratory tests have shown that oil is not released from compost, but that the oil-compost mixture suspends in water and degrades. No free oil is released and the suspension particles are not adhesive.

A third possibility is to absorb and ignore, perhaps the only possibility in an immediate threat to beaches, resorts, estuaries, or populous areas. Unlike oil-soaked straw, the oil soaked compost forms non-staining

clumps or particles which will not stain vessels or adhere to birds and animals. Waves and wind action will serve to sink the treated compost which will disperse.

A fourth possibility is to allow oily compost to wash ashore and plow it into the beach sand. Under aerobic conditions the compost will aid decomposition in much the same way that oily bilge water is decomposed in soil along the Gulf Coast.

Utilization of Recovered Compost

Much of the proposal for using recovered compost is conjecture and we can at present list only practicable possibilities.

Tests have shown that retrieved oil-soaked compost burns completely and that the compost mat remaining after recovery by squeezing burns cleanly in air. Either could be used as a fuel at sea or on shore.

Recovered oily compost could be disposed of aerobically by incorporation into the soil. Applications of 500 to 1000 tons per acre could degrade without introduction of hydrocarbons into the groundwater. Soil would be recoverable for farming within one year.

CONCLUSIONS

1. Compost, formed from domestic refuse, is hydrophobic, and oleophilic. It is effective in absorbing floating oil.
2. Oil soaked compost floats, but can be sunk by spraying or agitation.
3. Oil soaked compost initially forms into sponge-like masses which can be recovered from the water.
4. Compost oil masses eventually break up into small particles which suspend in water. Neither the large masses or fine particles will stain vessels or wildlife. The oily compost degrades biologically.
5. Compost-treated crude oil burns vigorously on water leaving a coke-like residue which sinks.
6. Tests at sea demonstrated that spilled oil can be treated, then recovered or sunk quickly.
7. A commercial snowblower is effective in compost distribution.
8. Recovered compost can be burned either as collected or after the bulk of absorbed oil is pressed out.

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ASKS ADVICE ON POULTRY WASTES RECYCLING USES

Dear Sir:

I am doing some research into the latest methods for disposing of wastes from poultry slaughtering operations. I am only interested in the disposal of blood, feathers, and inedible solids (heads, feet, viscera, lungs, and other offal).

I would like to learn what range of marketable applications may exist for these wastes through "reuse"-such as blood for fertilizers, feathers for bedding, and viscera for feed. Since the economics of reuse/recycling may perhaps restrict these latter applications to the very large poultry corporations, I am much more interested in the methods of disposal which may have to be used by smaller poultry slaughter houses. These might include incineration, lagooning, sanitary landfill, and so on. In any event, I am only guessing at this point. I would like to learn what recent scientific and engineering developments (if any) are materializing to help the poultry industry solve the above described waste disposal problems.

References to recent articles on this subject or any technical papers which may be available from your office would be appreciated.

If there will be any cost involved in rendering the above service, please advise me *beforehand.*

My thanks in advance for your kind assistance in this regard.

Sincerely yours,

William T. Emery
Technical Information Specialist
The University of Vermont,
Votey Engineering Bldg.,
Burlington, Vt. 05401

JERSEY TOWN INSTALLS PAPER RECYCLING PROGRAM

MUNICIPAL PAPER recycling was officially installed at the close of the program in Spotswood, New Jersey, a community of 8,846 residents situated close to the center of the Garden State. The program has been hailed on a trial basis as "so successful" that borough officials have contracted with Union Salvage Company, of Plainfield which buys the collected newsprint for $8 per ton and hauls it away.

Borough commissioners give credit for creation of the new municipal service to the Spotswood Environmental League, a one-year-old organization.

"It's a matter of the people that are in the group. They've been after the community constantly to see what kind of cooperation we (the commissioners) would give them. They are a very active group," said Commissioner Charles Ingulli.

Ingulli was elected last spring on a platform that included calls for a municipal trash service and recycling, measures the environmental league endorsed.

In June, the three-man commission decided not to renew the borough's contract with Princeton Disposal Service Inc. of Cranbury and instead establish a municipal trash service.

By Oct. 4, the municipal trash truck was equipped with a cage-like contraption on its front end to hold bundled newspapers set out by residents.

Ingulli, who is fond of quoting a report that states a ton of recycled newspapers is worth 16 trees, said the $8 per ton from Union Salvage Co. "won't begin to cover our expenses," which still are being calculated. However, commissioners hint that if benefits of the paper recycling program outweigh monetary loss, the service will be maintained.

DRAFT

10th July 1972
Engr's File 283/1.

TO:
THE GENERAL MANAGER.

OIL POLLUTION OF HARBOUR WATERS.

This memorandum examines the nature and frequency of the discharge of oil into the Waitemata Harbour and the part in which various types of oil disposal equipment could be economically and gainfully be employed.

The report sets out conclusions with regard to the way in which this Board should be equipped to remove oil pullutants from the harbour waters and finally makes certain recommendations.

Nature of oil spillages.

The discharge of oil causing pollution in Waitemata Harbour can be divided into the following main groups:-

a) Usually small discharges of fuel or diesel oil from cargo ships alongside the wharves and occasionally when ships are in the stream awaiting a berth.

b) Small or large discharges from tankers either at Wynyard Wharf or the tanker berth at the Eastern Tide Deflector.

Considering (a) above the occurrence of small discharges of fuel or diesel oil average out over the last four years, 32 spills per year. Not all are detected and a few may originate from land installations.

All oil discharges represent a pollution hazard and incur costs in cleaning up. Petrol and other higher volatile oils with low flash points are a special case. Fire hazards are sustained by impounding, such as with an oil boom, and evaporation into the atmosphere is accelerated with the increase of the surface area of the spill. A controlled discharge from an impounded area, if an oil boom was used, would be necessary.

Residual fuel oil is probably the main source of pollution. This type of oil is liquid at the point of discharge from the vessel but can, when cool, become solid on contact with the sea. Removal by the application of chemical sprays is satisfactory with mechanical agitation. This method can be used for both large and small quantities.

From past experience only relatively few spills of the heavy residual type of fuel oil, as described above, occur ~~are involved~~, the

the majority of spills being the higher residuals which remain liquid and can be removed by either chemical sprays or chemical/ high pressure water spraying.

Methods of Containing and Removing oil from Harbour Waters.

Four main recognized methods of containing and removing oil from harbour waters are:-

1) Oil Booms - Impounding large quantities of escaped fuel oil by the use of an oil boom may be used ~~with~~ successfully where ~~they~~ it is ~~are~~ designed for the prevailing sea and tidal conditions. Ancillary equipment such as pumps and tanks or a mechanical means of picking up the impounded oil are necessary.

A typical boom of cheap construction (cork and hessian on rope) with a skirt length of 18" would be restricted to a six inch wave height and a tidal movement of 1.0 ft./sec. The boom described above is used by the Naval Dockyard for containing minor spills alongside Calliope Wharf when tidal conditions are suitable.

The commercial areas of this harbour experiences waves of two to three feet commonly and tide flaws of 1.0 ft./sec. or greater for most of the time. Oil booms with deeper skirts would secure impounded areas, ~~as~~ say around tankers, but handling problems increase, along with capital and operational costs. Their size prevents the storage on shore of booms with large skirts as the time to deploy is critical.

Past experience of oil boom handling in this port and their maintenance would preclude the continued use of mobile oil booms.

The provision of a static boom stored in place on the harbour floor appears attractive other than the possible damage due to the necessity of a berthing ship having to drop an anchor. This type of boom could be laid to impound say the Wynyard wharf tanker berth area and would be held in position with permanent anchors. Inflation of an air duct by compressed air from a shore installation raises or lowers the booms, navigation lights being fitted for service at night.

The oil boom described above, which is suitable for wave height conditions encountered in this harbour is of Japanese manufacture, and the cost of installing this type of system at Wynyard Wharf with its associated compressor installation is estimated at present day costs at $80,000. The other tanker berth at the Eastern Tide Deflector is even more exposed and to provide a suitable boom would probably cost ~~be~~ $95,000.

If oil booms were installed at the tanker berths it would be necessary to also have specialized equipment to remove the oil impounded. There are two recognized methods for doing this, either using a pontoon mounted tank and pump unit ~~for the lighter residual oils~~ or a machine which mechanically removes the oil from the surface of the water. ~~if the oil was of the heavy residual type.~~

2.) Mechanical Collecting Machine.- There are several types of machines available which are designed for removing oil from the water surface. They are usually self-propelled and are equipped with tank storage for the separated oil. This type equipment is especially suited for the heavy residual oils and can handle small or large spills but could not be used where spills are located under wharves.

An estimated cost of a small unit suitable for this port requirements would be probably $30,000.

3.) Chemical/Water spraying - The use of special chemicals mixed with high pressure sea or fresh water has been the method used for many years in this port for breaking up and removing oils from the harbour. It is a satisfactory method for lighter oils, and is well suited for medium size spills and especially where they are located under wharf areas.

The equipment used in this method may either be portable, or fixed aboard launches. ~~with chemical mixing nozzles~~. Spraying can also be carried out from the wharves using mains pressure. Although chemical with high pressure water spraying breaks the oil contaminated areas up and drops the oil to the harbour bed, where it is supposed to de-compose there is some doubt to whether in fact this does happen.

4.) Chemical Spraying with Mechanical Agitation - A more advanced method, proved overseas and developed in the UK is to spray the contaminated areas with special chemicals from a number of small sprays at the same time agitating the oil and chemicals so that they mix, allowing the chemicals to act on the oil and decompose it rapidly.

This method is suitable for large or small spills and is probably the only method that will handle the heavy residual oils. It is not suited for dealing with oil under wharves but specially modified equipment can be used for this.

CONCLUSIONS:

a) A suitable system of oil booms with their ancillary equipment could be provided at both tanker berths but due to the conditons encountered ~~encumbered~~ on Waitemata Harbour their capital costs would be in excess of $190,000 for ~~the~~ both installations.

b) The chemical high pressure water spraying method now used by the Board is not entirely satisfactory but it should be retained for the lighter types of residual oils, diesel etc. This method is more suited for the smaller spills and where the oil contaminated areas are located under the wharves.

c) The use of chemical spraying with water agitation is a more modern approach to removing oil from harbour and sea areas. The equipment can be designed to suit large tugs for open sea use or modified for installing on workboats, launches etc. for use in harbour areas. It is especially successful for removing heavy residual oils and the equipment is ideal for both large and small spills.

d) It has been found overseas that instead of chemically attacking oil pollutants a successful method is to mechanically pick up the oil and store it after separation. There are a number of specialized machines available overseas. I am not at all certain that a machine of this type is necessary, but it could be good "back up" equipment if it could be obtained at a economical cost.

RECOMMENDATIONS.

I recommend that the following ~~xx~~ be used as the basis for determining the Board's future requirements for equipment for clearing oil contaminants from the harbour:

1) Due to the ~~harbour~~ tidal and sea conditions encountered in Auckland harbour and the high capital cost involved, the installation of oil booms at either of the tanker berths is not recommended.

2) The Harbourmaster's Department should continue the existing use of the chemical/water spraying for the removal of oil.

3) That, as a ~~the~~ start, one set of portable "WSL" type chemical spraying/agitation equipment be manufactured suitable for fitting ~~xxx~~ to the Engineer's Department vessels "Tika", "Mana", "Kaha" & "Kumenga".

This equipment should be held by the H/M Department at the Queen's Wharf loft ready for fitting to any of the above vessels as well as being operated by them when in use.

Estimated cost of one set of chemical spraying equipment $1500.

4) That investigation be carried out into the possibilities and economics of this port utilizing a machine for mechanically lifting and separating oil from the harbour.

CHIEF ENGINEER TO THE BOARD.

JMB:AF.

Mr. Swales has read this report

JB

11/7/72

Copy to Mechanical Engineer for information
" " Harbourmaster " "
" " Design Engineer "

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TELEPHONE HSN 68-814

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AUCKLAND HARBOUR BOARD
MECHANICAL SECTION
RECEIVED 12 JUL 1972

IN YOUR REPLY
PLEASE QUOTE;

6th. July, 1972

AUCKLAND HARBOUR BOARD
RECD. - 7 JUL 1972
ACKD.
ANSD.

The Secretary,
Auckland Harbour Board,
P.O. Box 1259,
AUCKLAND.

Dear Sir,

For some considerable time we have been reading articles in local papers and overseas magazines about the dangers and problems associated with oil spillage in the sea.

Our particular interest lies with the methods of collecting oil from spills, and to this end we have designed and built an oil collection float assembly which we feel could be of interest to your Board.

We are willing to demonstrate the unit to your representatives at their convenience at a place where the system can be fully observed and commented on.

Your earliest reply would be appreciated.

Yours faithfully,

H.M. HAAGH
MANAGER

Demonstrated
6.9.072
@ 9.30 am — ineffectual.
Leech Eng please follow up
Fred Claycott
George Hamilton

C/E-5

Auckland Harbour Board

MEMORANDUM 26th June 1972

FROM THE HARBOURMASTER | **TO** THE CHIEF ENGINEER

OIL BOOM

Your Memo 12th June 1972 Refers

The idea of an inflatable oil boom lying on the sea bed is completely out of the question. Tankers and other vessels berthing at the wharf frequently drop their anchors to assist with their berthing manoeuvre. Not only would the boom be damaged beyond repair but the ship would be so hampered as to cause an unnecessary serious risk to her.

A further comment I would make is to your recommendation No.11. I suggest that our spraying system be upgraded with better pumps and ancillary equipment and that an additional back up set be provided.

The best way to stop greater pollution with any oil spill is to act immediately it is detected with all available means.

With regard to oil booms generally I do not think the conditions in Auckland lend themselves to the efficient use of booms. The tidal streams are too strong and the pier type system of berths are far too open to be effectively controlled.

HARBOURMASTER

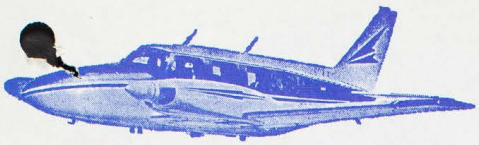
Capt. Seager

Mr. Park.

For your consideration.

I consider this is more Mr. Hamilton's problem GHP.

No problem. GHH. 28/6/72.



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Auckland Harbour Bd.,
C.P.O. Box 1259,
AUCKLAND.

RECEIVED
21 JUN 1972
ENGINEERS DEPT.

20th June, 1972

Attention: Chief Engineer.

Dear Sir,

Thank you for your letter of 15th June advising me that you are currently studying the recovery of spilt oil on your Harbour and that you will advise me when this is completed. I would assure you that the report the Worthington Corporation would supply you, would be very comprehensive and I am sure very valuable towards your study.

I look forward to hearing from you in the near future.

Yours faithfully,
AIRWORK (N.Z.) LTD.

W E Best

W.E. Best.
Manager.
Spares Division.

Mark Esq.

Auckland Harbour Board

MEMORANDUM

AUCKLAND HARBOUR BOARD MECHANICAL SECTION RECEIVED 26 JUN 1971

20 June 1972

FROM THE GENERAL MANAGER | **TO** THE CHIEF ENGINEER

RECEIVED 21 JUN 1972 ENGINEERS DEPT

OIL POLLUTION - CLEANING OF HARBOUR WATERS

In view of the increasing press publicity given to aspects of pollution control, and recently to the methods of dispersing oil spilt into the sea, we should have available some information on alternative ways and means of removing oil from the surface of the sea.

The point made by the Harbourmaster that most of the spills that occur in the harbour are of light viscosity oils probably not readily or effectively removed by mechanical means is appreciated. Nevertheless some details of equipment available, its capability and costs, should be sought. In this connection there is no reason why you should not address an enquiry to the manufacturer of the (1) "Stick Licker" referred to in your memo of 15 March 1971.

R.T. Lorimer
GENERAL MANAGER
per

Mr. Bray please action.
Mech Eng ECo.
(1) please arrange what (1) about.
(11) I think we should as soon as possible prepare a fairly full memorandum on "oil slicks" — what we do now, what other methods are being examined, what looks like a good solution for AHB, etc. Please consider & discuss with me

19 June 1972

The Managing Director,
Axisons Corporation,
30 Kelvin Avenue,
Picnic Point 2213,
N.S.W.,
AUSTRALIA

Dear Sir,

OIL POLLUTION

Thank you for your letter dated 25 May 1972. The provisions of oil recovery equipment is under investigation at this time. On completion of the examination I will contact you if further details are required.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD

CLP:GJG

12 June, 1972

THE CHIEF ENGINEER THE HARBOURMASTER

RE: OIL BOOM

Further to the General Manager's request for a report on the provision of an oil boom for Wynyard Wharf - tanker berth. It is apparent that a boom stored on the harbour floor and raised by inflation of bouyancy ducts is a best solution.

Since shipping will pass over this boom to berth damage from an anchor is a possibility. Your comments are sought to clarify the proposed use of this type of boom.

Your further comments on the matters set out in this draft memorandum, which has been the work of a Study group including Captain MacKenzie, would be appreciated.

CHIEF ENGINEER TO THE BOARD.

NS:JARP

Copy to: DESIGN ENGINEER
:For Information

CHIEF ENGINEER TO THE BOARD.

DRAFT. Engr's file 734 ~~283/1~~

WYNYARD WHARF OIL BOOM

Further to G.M.'s memorandum dated 22 February 1972 I would report as follows:-

Scope of Report

1. With regard to Dangerous Goods - White Oils.
2. With regard to Low Fire Risk - Black Oils.
3. The Condition of Existing Oil Boom.
4. Nature of Oil Spillage experienced to date and their character.
5. Limitation of an oil boom.
6. Removal of Non Volatile Oils - Black Oils.
7. Proposed methods of removing large and small spills.
8. Proposed responsibility within A.H.B.
9. Limitations.
10. Conclusions.
11. Recommendations.
12. Appendix "A"

1. With Regard to Dangerous Goods - White Oils

The provision, storage, streaming and anchoring of a boom outside tankers berthed at Wynyard Wharf has been considered in detail. This facility can be provided, but limitations are very evident and an acceptable compromise between cost and capability to isolate these berths must be made. Information on new booms is coming forward from suppliers with increasing frequency. The nature of the problems met in applying a boom to Wynyard Wharf are set out below.

It would be reasonable to record the shortcomings of the boom rather than its good points. Since it is the trouble free boom which has the highest price.

The use of a boom to isolate a single ship discharging represents the simplest configuration. The isolating of the full length of Wynyard Wharf with a boom to seaward is necessary if the fracture of pipes on the wharf - remote from the ship are considered. The outfall of all stormwater pipes below high water would need appropriate flap valves. This gives the most positive and comprehensive configuration.

The disposal and recovery of spilt white oil from the harbour is limited by the dangerous nature of the work. Remote control and evaporation to the atmosphere are standard practice. The use of a boom perpetuates the fire hazard in the impounded area. Controlled discharges to the harbour, under favourable wind and tidal conditions, from the boom is possible using remote control.

Not all booms are fire proof and very few would survive a sustained high temperature.

2. With Regard to Low Fire Risk - Black Oils

This problem is of more concern to the Board than the Auckland

... ...

Metropolitan Fire Board, but is included as pollution control with the use of a boom is a closely related problem.

The provision of a substantial boom to the Wynyard Berth would clearly limit the spread of oil from a large tank rupturing. The fire risk would remain while volatile fractions in the oil remained. These normally disperse in say twenty four hours. The problem of removing the oil would then have to be effected.

3. The Condition of the Existing Oil Boom

The fabric of the skirt has perished and is beyond repair. The floats are generally intact but the bolted connections are seized. No further use for the components is envisaged within the Board's operations. A high labour cost would attend any effort to re-use the floats - for any purpose.

4. Nature of Oil Spillages Experienced to Date, and their Character

Fire risks arising from small spillages of petrol from pleasure vessels, runabouts, etc. must occur and pass undetected for the most part. Two sources of spills are known to exist.

(a) Low fire risk spills of light oil, (Diesel), and black oil in the basins and under the wharves in the commercial area. These happen approximately 30 times a year.

(b) Small discharges from tankers at either Wynyard Wharf or at the Eastern Tidal Deflector - have occurred at say in total 3 times a year.

The massive discharge from a large tank or sunk oil barge has not been experienced in the harbour. The cost of adequate provision for this emergency is probably outside the Board's financial capacity.

Generally a residual fuel oil is the main source of pollution. This type of oil is liquid at the point of discharge from the vessel but can, when cool, become solid on contact with the sea. Removal by application of chemical sprays is satisfactory with mechanical agitation. This method can be used for both large and small quantities.

From past experience only relatively small spills of the residual type of fuel oil are involved probably up to two to three tons in quantity.

5. Limitation in the Use of an Oil Boom in Open Harbour Areas

Oil booms are matched for the wave and tidal conditions in which they are to be used.

A typical boom of cheap construction (cork and hessian on rope) with a skirt length of 18" would be restricted to a six inch wave height and a tidal movement of 1.0 ft./sec. The boom described above is used by the Naval Dockyard for containing minor spills when tidal conditions are suitable.

... ...

The commercial areas of this harbour experiences waves of two to three feet commonly and tide velocities of 2.0 ft./sec., (and greater velocities in the open harbour). Oil booms of deeper skirts would secure impounded areas of say around tankers, but handling problems increase along with capital and operational costs. The size prevents the storage on shore of large skirts as the time to deploy is critical.

Past experience of oil boom handling in the harbour and the maintenance of the components would preclude the continued use of mobile oil booms.

The provision of a static boom stored in place on the harbour floor appears attractive, excepting damage from the anchor of a berthing ship. This type of boom could be laid to impound say the Wynyard Wharf tanker berth area and would be held in position with permanent anchors. Inflation of an air duct by compressed air from an installation on the shore raises the boom, navigation lights being fitted for service at night. When the tanker is ready to leave, the air flow is reversed causing the boom to settle on the harbour floor.

The type of oil boom described above, which is suitable for wave height conditions encountered in this harbour is manufactured in Japan. The cost of installing the system at Wynyard Wharf with the associated compressor installation is estimated at $80,000. The other tanker berth at the Eastern Tide Deflector is even more exposed and to provide a suitable boom would probably cost $95,000.

6. Removal of Non Volatile Fuel Oil from Harbour Waters

Four main methods of removing oil from the harbour are listed

(1) When oil is impounded in large quantities, a pump is used with a floating suction, the oil being discharged into a tank for disposal ashore or hopper barge.

(2) A machine fitted to a punt or boat which physically lifts the oil off the surface of the water and discharges it into a tank.

(3) The use of high pressure chemical sprays with mechanical agitation of the surface to change the state of the oil so that it will de-compose.

(4) Spraying the oil with water-detergent mixture so that the oil breaks up and sinks to the harbour bottom.

7. Proposed Methods of Removing Large and Small Spills

In providing a method to meet all the conditions capable of occurring it is recognised that a single device is not able to be used.

The following variables may be combining

(i) Volatile nature of the oil (Fire Risk)

... ...

(ii) Large or small volumes
(iii) Daylight or Darkness
(iv) Tidal conditions
(v) Wind
(vi) Spills on open water - beneath wharves and on the deck of wharves.

Tabulating the problem for Small and Large Spill:-

SMALL SPILLS

	Remote From Wharves	Under Wharves	On Wharf Deck
Petrol	1	1	1
Light Oil	2	3	4
Black Oil	2 & 5	3 & 6	7

LARGE SPILLS

	Remote From Wharves	Under Wharves	On Wharf Deck
Petrol	1	1	1
Light Oil	2 & 3	3	4
Black Oil	5	6	4

The following remedies apply to small and large spills. The large spill of white oil is assumed to take place at the tanker berth. Large spills of white spirits elsewhere are not amenable to a tabulated remedy, evacuation and isolation remain the only alternative.

SMALL VOLUMES	LARGE VOLUMES
1. Provide water sprays and evaporate to atmosphere Fire risk reduced quickly	Too dangerous for manpower to be used, raise major booms by remote control. Evacuate and isolate men and electric power.
2. Spray chemical detergent to obtain a base change to the oil. The oil then reduced bacterio-logically to a harmless state.	Where a boom is in position and floating. Impounded oil is to be pumped to tanks to obtain separation from pumped water.
3. Spray as above using lances to obtain maximum penetration.	Provide massive chemical application and agitation of appropriate chemical.
4. Provide absorbent - sand or sawdust and remove by spade. Provide plugs to drainage points through deck.	Recover with pump to drums or tanks on shore.

... ...

4. (continued) Provide bunds to perimeter of deck.	
5. Provide mechanical agitation where solids are met.	Provide large pumps capable of passing solids to lighters, hoppers or tanks.
6. Wait for oil to emerge and use mechanical removal.	Wait for oil to emerge and pump.
7. Use shovels and manpower.	

8. Proposed Responsibility within A.H.B.

(i) Harbour Master staff at Queen's Wharf to operate specialist craft and equipment - (Fire Engine Service).

(ii) More equipment and staff from Engineer's Department as available.

(iii) Specific patrols by Traffic Department to watch for oil slicks day and night. Oil slike detection with remote control using photo electric cells envisaged.

9. Limitations

The use of a boom if successful must be of a specialised type. The limitations met in proposing the use of a boom are set out in Appendix 'A'.

10. Conclusions

(a) A suitable system of oil booms could be installed at both tanker berths but due to the condition encountered in Auckland their capital cost is high ($80,000 to $95,000).

(b) If booms were installed suitable means of collecting the oil would be needed, a target price for such equipment, probably $20,000.

(c) Probably the most efficient and economic means to disposing small to medium size spills in this port is the chemical spray with agitation method. Min. $2,000.

(d) That suitable equipment will become available in the not too distant future.

11. Recommendations

It is recommended that:-

(a) Oil booms are not installed at the tanker berths due to the high capital cost involved.

(b) Two sets of chemical/agitation spray equipment be made suitable for installation on any of the Engineer's Department workboats or towboats.

(c) The existing water spray/detergent method of oil disposal be retained as a back-up method to (b) above.

(d) That the methods of automatic detection be examined.

... ...

12. Appendix 'A'

The following limitations must be acknowledged if a boom is used to resist the spread of spilt oil on the Waitemata Harbour.

1. Time is the most important factor and an oil boom in place is going to contribute to the disposal of the problem. Booms stored on land or in the sea requiring towing, anchoring and connecting to the shore are unlikely to be in place in time, even given optimum working conditions.

2. Wave heights generally met in the harbour would exceed the free-board provided by medium or light weight booms. This would invalidate their use.

3. Towing a boom at speeds in excess of 1.0ft. per second would allow oil to be lost from beneath the skirt. Steerage would be difficult and tidal movement would aggrevate this problem. Spring tides produce velocities of over 2.0ft. sec. and a boom set to the north of the commercial area of the harbour would be useless for this reason.

4. A boom stored on the harbour floor raised by compressed air and operated by remote control must, accept damage from a ship which drops an anchor while berthing, be a suitable solution.

5. The material from which the booms are made by manufacturers may be fire resistant but the majority are not. Petrol on fire over a prolonged period is likely to destroy the booms free-board if not the booms in entirety.

6. A boom will, within its capacity and the above limitations accepted, only contain a spill. The removal of light oil or black oil still remains.

SYDNEY, AUSTRALIA.

YOUR REF.:

OUR REF.: 28/nzapc/72

PROGRESS THROUGH RESEARCH
A DIVISION OF AXISONS CORP. SYDNEY, AUSTRALIA

TELEPHONE: 77-9326
AREA CODE: 2213
30 KELVIN AVENUE,
PICNIC POINT, N.S.W.

~~66/95~~ 55/195

RECEIVED 14 JUN 1972

May 25, 1972

The Director,
State Pollution Control Commission,
AUCKLAND,
NEW ZEALAND.

Agnew

TOWN CLERKS | FILE No.
REFER - 9 JUN 1972 | COPY
Dow

Re Anti Polluted Waters with Oil-Slicks and Spillage Dangers.

Dear Sir,

After many years of study and drawing-board work I have designed to build a model of a "Floating Scooping Machine" which scoops the thick, black sticky oils and many other poisonous and health hazardous materials floating on the surface which are polluting our waters, beaches, harbours and impairing the health of people and killing fish, birds, marine-life, etc. This machine is the solution to these problems.

I am an engineer/inventor with many years of experience and have been successful in selling many inventions and ideas locally and overseas. I have travelled extensively to many countries and have studied this growing world-wide problem, whilst being assigned as Officer-in-Charge with Her Majesty's Dockyard contractors for the Ministry of Supplies in London, England. My responsibilities relied on sunken ships salvaging operations from harbours sea-beds and shores around Malta, G.C.

According to my calculations the building cost for such a machine and all the equipment is not very high compared with the high cost for labour force, chemicals, detergents, foam, oil absorbents and other materials to fight oil pollution and the increase of heavy fines. If the Machine is used for few oil salvaging operations it pays for itself.

Cont. P.2.

Here are a few of the advantages of the "Floating Scooping Machine".

1. Capable of scooping or picking up oil or other floating materials at the rate of about 1,500 to 2,500 gallons a minute.

2. No oil or other floating materials are left on the surface if the Machine is on the polluted oily area and preventing the drifting of oil reaching shores and beaches.

3. A spare engine and a powered pump are mounted on board in case of emergency or for faster operational and clean-up work and safety.

4. Crew of five casual workers are needed to operate the Machine.

5. Oils and other materials are automatically pumped into tanks for separation and filtration for disposal depots or oil refineries, etc.

6. The fee charges for leasing the Machine could be very high.

7. The Machine has two rows of removable rollers or permanently fixed to the bottom of the hull for easy launching.

8. All the necessary instruments, shore communication equipment, lighting generators, fresh water tanks, cooking facilities, safety equipment are on board.

9. Storage compartments are provided for: Chains, hoses, ropes, anchorage, washing equipment and for other essentialities which may be used during the salvage oil operations or when on shore launching strip.

To conclude, Sir, I would like to offer you this proposition. That I meet your representative or you give me an interview to discuss business and finance and that I will produce all my plans, patents and designs for the Machine. I can guarantee that this Machine will get rid of all oily polluted water surface and that it is the only one of its type anywhere.

It would be a great honour to hear from you at your earliest convenience if you are interested as I feel you could well be.

Yours sincerely,

(V. Axisa)
Managing Director,
Axisons Corp.

19 June 1972

Mr H. Barnett,
'Talofa',
Ocean Beach,
WHANGAREI HEADS, R.D. 4

Dear Sir,

re: OIL BOOM

Thank you for your letter dated 16 May 1972.

The provision of an oil boom is being investigated and I will contact you if further details are required.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD

CLP:GJG

H. Barnett,
"Talofa",
Ocean Beach,
WHANGAREI HEADS, R.D.4.

16th May, 1972.

The Harbourmaster,
Auckland Harbour Board,
Post Office Box 1259,
AUCKLAND.

Dear Sir,

I have recently placed in the hands of a firm of Patent Attorneys, an idea for a new type of Spillage Retention Device or Oil Boom and have taken this opportunity of forwarding to you, a description of it as I realise that amongst your many problems, the possible results of an oil spillage is not the least.

My Employers, the Northland Harbour Board, through the helpful interest shown by the Harbour Superintendent, Captain P.N. McKellar and his staff, have been most helpful and provided every possible facility for the initial testing of a 100 ft. prototype and finally a 100 yard length of standard Boom itself. In addition, all records of oil spills, reports, types of Booms and much other data has been made readily available to me as they feel that a device of this nature is of vital interest to Harbour Boards and the Oil Industry generally.

It is considered this light-weight, cheap, effective barrier could readily be transported by 'plane or helicopter if necessary and that at its initial estimated cost of $7.00 per yard, would compete favourably with current offerings.

I would be obliged if, after studying the enclosed description of the device, you would pass on any comments that you may care to make and also let me have an indication as to whether or not you think your Board would be interested in purchasing some lengths of the Boom.

It is my intention to contact as many interested parties as possible in this manner, in the hopes that from their replies I may be able to assess the probable size of the market, in order to decide whether or not to progress the Boom to the manufacturing stage.

Captain McKellar and his staff of Pilots and Tug Masters have been reasonably impressed and in some cases quite enthusiastic over the possibilities of the device and would I feel sure be most helpful should you care to contact any of them personally.

Since the final outcome of the Patent Application is not yet known, I would be obliged if any discussion you may care to hold with your own staff could be treated as confidential.

Yours faithfully,

H. Barnett

H. BARNETT.

George
Cw to you JB
15/6/72

Encls:

CONFIDENTIAL: 16th May, 1972.

O I L B O O M S

A study of the available information on the subject of Oil Retaining Devices generally, lead one to the conclusion that the following points could well be improved -

1. Initial cost.
2. Problem of stowage and transportation.
3. Effect of high wind on barrier height.
4. Strength.
5. Weighting of the skirt.
6. Deterioration in storage.
7. Treatment after use.

With these points in mind, the Boom, photographs attached, has been devised and the conditions prevailing at the time the trial took place at Marsden Point were as follows -

Wind	-	18 knots gusting to 28 knots.
Waves	-	2 and 3 feet high.
Tide	-	1½ to 2 knots
Length of Boom		100 yards, height 8" approx. skirt 12" approx.

The device consists of two inflatable tubes carrying minimum air pressure arranged in tunnels formed or sewn into both edges of a combustible skirt material - lightweight hessian or heavy weight scrim. In the fold formed between the two inflated portions, a wire rope is placed so that its weight causes the fold to sink to the designed depth and thus form the skirt of the device. In addition to the ballasting effect, the wire provides the main strength of the Boom, as well as securing points or alternatively towing points between the vessels.

In the trial the inflation was carried out by making and fitting a fan blade to an 18" lawnmower and arranging a suitable manifold to enable both inflatable tubes to be supplied with air simultaneously.

The lawnmower was secured in position on the after deck of the launch. The wire rope (¾" 6 x 13 18/20 ton) with an eye splice was secured also on the after deck.

The Boom material was arranged under the wire, the centre point being secured to it in such a position as to allow flexible hoses to conduct the air from the blower manifold into the inflatable tubes which were secured around the hoses by lashings.

In running the Boom, the progress of the operation was carefully governed by the rate of inflation, the wire and the Boom material being paid out to suit this.

contd.....

It is most important to avoid the necessity for sudden braking which could cause the wire to jump and it is recommended that the wire and skirt be clipped together at intervals so as to ensure that at all times the weight of the wire is carried by the floating tubes.

With reference to the points raised in opening paragraph -

1. Initial Cost:

It is estimated that a Boom similar to that shown could be marketed for between $2 - $3 per foot without the wire.

2. Stowage and Transportation:

A 3000 foot drum of ¾" 6 x 13 18/20 ton wire is 43" in diameter, 30" in width and weight 24 cwt. The Boom material at approximately 1 lb. per yard would be packaged in 200 yard lengths giving an estimated package size of 48" x 36" x 24". Thus 1000 yards of Boom, approximately 2 tons in weight could be stowed in a very small space and most of it being capable of being handled manually. In addition the drum of wire would require a supporting stand fitted with some form of ancilliary brake gear to control the running out operation.

3. Wind Effect:

Since the inflated sections would naturally assume a circular configuration, high winds would have little or no effect on the height above the surface of the water.

4. Strength:

The strength of the Boom may be varied by either increasing the size or the number of wire ropes used when running it out.

5. Weighting the Skirt:

With the wire rope secured, the effect of a current, tide or tow would be to carry the floating members downstream from the wire so that the skirt would offer an inclined surface with its leading edge towards the force of the water so that there would be a natural tendency for the skirt to remain submerged by virtue of the fact that the securing point was at the bottom of the skirt. Such would not be the case where the securing point was at the surface.

However, should it be considered desirable, the skirt could be ballasted with sand or crushed metal etc.

6. Deterioration:

It is proposed, during the packing of the sections, to encase each package in strong plastic sheet suitably sealed and on completion to exhaust the package by means of a vacuum pump.

7. Treatment after Use:

It is envisaged that after use the Boom could be hauled up on to a suitable beach or area where the wire could be extracted, cleaned, preserved and returned to its drum and the uncontaminated sections of the Boom could be dried out and re-folded for future use - the contaminated sections could be burned.

contd.....

Having covered the points raised in my opening paragraph, I must stress some further advantages possessed by this type of Boom.

a) It is extremely versatile in that it can be used from the shore, between vessels or from jetties. It can be inflated from either the fixed or the moving end and after being run to the desired length, the inflation can be changed over to the opposite end if required. In difficult situations or terrain, provided sea access is possible, only the blower need be transported to or landed at the site, the remainder of the gear being kept afloat and moving off once the wire is secured and the inflation commenced.

Although the 8" diameter float x 12" skirt would be the most economical to manufacture, these sizes could be varied.

The length and strength of the Boom can be altered by increasing the number of sections used and increasing the length of the wire. Extra wires or heavier ones may be used to increase the strength.

The Boom may be used to arrest or gather in an oil slick or if arranged between two mobile craft, to steer or direct floating oil to a position where it can be most easily salvaged or disposed of.

b) A most important advantage of this boom lies in its inherent reserve buoyancy. Taking the example above, the volume per foot run of the inflated members would be 44/63 cu.ft. and at 64 lbs per cu.ft. for sea water would give a reserve buoyancy of roughly 40 lbs per foot run. This reserve buoyancy could be utilised, if it was considered desirable to include a suitable flexible pipe or hose in the fold so that the transference of an oil cargo could be accomplished at the expense of some of the barrier height. Alternatively a special Boom could be designed to cope with this two fold requirement.

It is planned in the construction of the Boom, to use inflatable tubes of larger size than the tunnels formed in the skirt material. By this means there will be no stress on the tubes themselves, as it will be taken by the material forming the skirt for which it is proposed to use lightweight hessian or heavyweight scrim, on account of combustibility, resistance to tearing, lightweight and ease of manufacture. Furthermore, it is proposed to use a very low air pressure in the tubes - 3" or 4" of water pressure - roughly 1/10 lbs per square inch, so that with the fan or blower running continuously, small leakages should present no problems.

By going to the next economical size from the manufacturing point of view, 18" diameter tubes and 18" depth of skirt, we would be approximating the "Johns - Manville high seas containment barrier" recently reported on in 'Ocean Industry' October, 1971 and tested in the Gulf of Mexico under $1 - million contract to the United States Coastguard for 1,000 foot barrier.

.....

"A" Prototype showing wire feeding in.

"B" 100 yard type dried out and folded after trials.

"C" & "D" 100 yard standard type on trial Marsden Point.

"A"

"B"

"C"

"D"

14th June 1972.

J.M. BRAY
ASST. MECHANICAL ENGINEER

THE HARBOURMASTER.

OIL SPILL - M.V. "CYMRIC" & STRAAT CLARENCE".

Investigation into an oil spill stated to have occurred at Princes Wharf at approximately 07.00 hours on the 12th June 1972.

At 15.20 hours on the 12th June 1972 I proceeded with Captain R. McKenzie aboard the "Cymric" and interviewed the Chief Officer R.A. Wooding and Chief Engineer H.C.Parker.

Mr. Parker stated that they had been pumping bilges between 07.00 and 08.00 hours this day while testing No.2 hold bilges. The Chief Engineer further stated that the bilge pump was primed via the ballast main which could have been contaminated with fuel oil but he had given orders to pump the bilges via the oily water separator. He said they could have pumped some oil over-board.

The oil sample taken the previous day was purified oil from the boiler supply tank, I requested Captain McKenzie to have a oil sample taken from a bunker tank for analysis.

After leaving "Cymric" I proceeded to the "Straat Clarence" and after interviewing the Chief Officer proceeded to the engine room with the 3rd Engineer. He explained that they had pumped ballast water from No.3 starboard tank at approximately 0740 hours that day and at 0900 hours pumped the engine room bilges to the fore peak tank, which is the holding tank for bilges while in port.

Although, I verified that the No.3 was a fresh water/ saltwater ballast tank the ballast lines could have been contaminated and thus a small quantity of oil could have been pumped overboard.

As for the "Cymric" the "Straat Clarence" sample had been taken from a purified tank (Daily Service) therefore I requested a further sample be taken from a bunker tank for analysis.

CONCLUSION:

As stated above both vessels used their pumping equipment at approxiamtely the time the spill was discovered, but from my investigation I cannot say if either caused an oil discharge.

J.M. BRAY,
ASST. MECHANICAL ENGINEER.

Copy to:
The Chief Engineer,
for Information.

JMB:AF.

15 June, 1972

The Manager,
Airwork (N.Z.) Ltd.,
Christchurch International Airport,
CHRISTCHURCH

Dear Sir,

RE: OIL BOOM 6-12 P.P.D.
MANUFACTURED BY WORTHINGTON

Thank you for your letter of 24 May 1972 and enclosures.

The recovery of spilt oil on harbour waters is currently under study and I will communicate with you again following its completion.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD.

CLP:JARP

Auckland Harbour Board

MEMORANDUM

AUCKLAND HARBOUR BOARD MECHANICAL SECTION RECEIVED 16 MAY 1972

15 May 1972

FROM GENERAL MANAGER | **TO** CHIEF ENGINEER

RECEIVED 15 MAY 1972 ENGINEERS DEPT.

73/1/2

OIL POLLUTION - CLEAN UP
CANADIAN DEVELOPED "SLICK-LICKER"

With reference to your memorandum of 15 March 1971 and my enquiry to the Harbourmaster dated 3 May, attached hereto is a copy of the reply I have received.

In view of the Harbourmaster's comments I think we should withhold taking any further action in the matter, until the Deputy General Manager has had an opportunity to study these comments on his return from overseas.

R.T. Lorimer
GENERAL MANAGER

Mech Engr please note / noted EEQ
Mr Bray to note also.
JB 22/5/72

B/1/2

Auckland Harbour Board

MEMORANDUM 11th May 1972

FROM THE HARBOURMASTER **TO** THE GENERAL MANAGER

OIL POLLUTION CLEAN UP
CANADIAN DEVELOPED "SLICK LICKER"

Your Memo 3rd May Refers.

The present method of dispersal by spraying with a detergent has proved to be eminently satisfactory in emulsifying the light viscosity oils which comprise the majority of spills occurring in Auckland.

Dispersal of the higher viscosity oils has presented problems particularly after the lighter volatile fractions have evaporated.

Fortunately spills of this nature are few and far between but laboratory tests have been carried out to determine the relative toxity and emulsification factors of a series of detergents when used for dispersing oil with a viscosity of 1200° Redwood.

These tests have provided valuable information and are now being followed up in the field with promising results.

I am of the opinion that present spraying equipment with the addition of WSL spray booms will satisfactorily treat the type of spill which we experience in Auckland. I understand that Whangarei Harbour Board use WSL spraying equipment with very satisfactory results.

The use of "Slick Licker" could be of considerable value in a major oil disaster but the provision of plant of this type should be considered on a National basis and be the responsibility of the Marine Department.

HARBOURMASTER

11th May 1972

THE HARBOURMASTER

THE GENERAL MANAGER

OIL POLLUTION CLEAN UP
CANADIAN DEVELOPED "SLICK LICKER"

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The use of "Slick Licker" could be of considerable value in a major oil disaster but the provision of plant of this type should be considered on a National basis and be the responsibility of the Marine Department.

The Chief Engineer

For your information.

HARBOURMASTER

Harbourmaster

Slick Lic to see please 22/5/72

10th May 1972

THE CHIEF ENGINEER THE GENERAL MANAGER.

OIL POLLUTION AT SEA - W.S.L. DISPERSANT SPRAYING EQUIPMENT.

With reference to your memo of 9th March 1972, I have the following comments to make:-

OIL DISPERSANT OPERATIONS WITHIN HARBOUR LIMITS:

Discussions with the Harbourmaster have indicated that it is not desirable to use tugs for this operation as:-

a) Working committments may well have all tugs engaged in manoeuvring vessels when an oil spill occurs, thus preventing anyone vessel being immediately released for oil dispersal operations.

b) The tugs deep draft would preclude then working in the shallow areas of the harbour.

c) Fitting and storage of oil dispersal equipment can present problems in that it will clutter up the working areas of the vessel.

It therefore seems more practicable to utilize Engineer's Department vessels as there is a much greater likelihood of one or more of these being available at short notice.

The method proposed for dispersing with the larger spills within Harbour Limits is to make up one or more sets of equipment based on the Warren Springs Laboratory (UK) System, but which are portable and capable of being fitted to the Engineer's Department vessels 'Tika', 'Kaha', 'Mana' and 'Kumenga'. This equipment would be held at Queens Wharf loft nd operated by the Harbourmaster's Staff.

In the event of a spill the first available of the above four vessels would proceed to Queens Wharf, embark the equipment and operators and proceed to the spill area, the operators rigging the equipment en route. On arrival at the spill the tugmaster would manoeuvre the vessel to he requirements of the Harbourmasters staff.

A suitable set of equipment can be purchased and constructed locally for a total cost of $1,500.00 and financial provision has been accordingly made in the current revised Programme of Works, Item C.22.0 should it be considered necessary to proceed with this equipment.

READY USE TANKS IN BOARD'S TUGS AND DELIVERY OF DISPERSANT TO VESSELS.

Discussions with Northland Harbour Board, who have had some five years experience with W.S.L. Equipment, indicate that continuous spraying would consume as much as 200 galls. in 30 minutes. However, on actual spill work, spraying is intermittent

and they have found that the above quantity will last up to two hours.

This Board intends fitting ready use tanks in their tugs, the idea being that the tug proceeds to the spill and goes into operation immediately and then back up drums of dispersant are loaded onto a punt, towed to the spill area, lifted on board the tug and poured into the ready use tank.

The above system has the disadvantage that pouring from drums into the tank is a very slow procedure and therefore it would be far better to rely on portable units fed direct from 44 gall. drum situated on the deck.

A supply of chemicals in 44 gallon drums could be kept at Queen's wharf and/or the Workshops area and loaded onto the towboat directed for use, the workshops yard crane assisting as required.

CONCLUSIONS:

I therefore recommend for disposing of oil from the Auckland harbour area the following procedures and equipment:-

a) That at this stage one set of portable chemical spraying equipment, built to a modified 'WSL' design, is manufactured suitable for fitting to the Engineer's Department's vessels 'Tika', 'Mana', 'Kaha' and 'Kumenga'.

b) That the 'WSL' equipment be held at H/M Queen's Wharf loft ready for fitting to any of the above vessels and further that this equipment be operated by Harbourmaster's staff.

c) That on a request from the Harbourmaster the Engineer should release one of the above vessels which then proceeds to Queen's Wharf to take aboard H/M personnel, spraying equipment and drums of chemicals.

d) That a quantity of chemical in 44 gallon drums for use with the 'WSL' equipment be situated at both Workshops and Queen's Wharf areas. The workshop yard crane would load initially four drums from either of the above supplies the other quantity remaining as 'back up' as the need arises.

e) As all the above craft are fitted with existing pumps suitable for use with water/detergent spraying, that this method of oil dispersant spraying be used in conjunction with the above chemical/agitation method. Depending on the type, quantity and position of the oil spill either or both of the above methods of dispersant spraying equipment may be used.

CHIEF ENGINEER TO THE BOARD.

Copy to:

Mechanical Engineer
for Information.

JMB:AF.

3 May, 1972

Messrs South Pacific Chemicals Ltd.,
P.O. Box 41-051,
Eastbourne,
WELLINGTON

Dear Sirs,

T-T OIL RECOVERY AND ANTI POLLUTION EQUIPMENT

Thank you for your letter of April 26 and enclosures in reference to the above.

This looks like an interesting proposition and I will communicate with you again following closer study.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD.

RAJS:JARP

73/1/2

Auckland Harbour Board

MEMORANDUM

AUCKLAND HARBOUR BOARD
MECHANICAL SECTION
RECEIVED - 4 MAY 1972

3 May 1972

FROM GENERAL MANAGER | **TO** HARBOURMASTER

OIL POLLUTION - CLEAN UP
CANADIAN DEVELOPED "SLICK-LICKER"

On 19 August 1970 I forwarded to you for information a copy of a letter received from the Wellington office of the Canadian Government Trade Commission accompanied by an article concerning a device referred to as a "Slick-licker" used for cleaning up oil pollution in harbours.

The Chief Engineer has recently supplied me with his comments on the device referred to in the article (copy attached), and I would like you to do likewise. If you see some value in the use of such a machine as a means of improving our present methods of dispersing oil then I will arrange in conjunction with the Engineer to obtain further information as to cost, etc in order to implement the proposal referred to in (c) of the attached memorandum.

Please let me have your comments as soon as possible.

R.T. Lorimer
GENERAL MANAGER

JES:LT

The Chief Engineer
AUCKLAND HARBOUR BOARD.

Copy for your information. Your memorandum of 15 March 1971 refers.

Leech Eng to sell plant

R.T. Lorimer
GENERAL MANAGER

Mr Bray 5/5/72.

2821/1

File.

MITSUBISHI NEW ZEALAND LTD.

P.O. BOX 5248

TELEGRAPHIC ADDRESS:
"MITSUBISHI AUCKLAND"
TELEX N.Z. 2435
TELEPHONE 379-722
5 LINES

9TH FLOOR, A.S.B. BUILDING
CNR. QUEEN & WELLESLEY STS., AUCKLAND, 1.
NEW ZEALAND

WELLINGTON OFFICE
P.O. BOX 3245
WELLINGTON
TELEPHONE 42-212
WELLINGTON

OUR REF. AKL G160

DATE 12th April 1972

Auckland Harbour Board
Box 1259
AUCKLAND

For the attention of Mr. R.A.J. Smith, Chief Engineer

Dear Sir,

re: RUBBER SKIRT OIL BOOM

Many thanks for your enquiry letter dated 24th March, requesting our quotation for captioned, which we are pleased to detail below.

1. Bridgestone Rubber Oil Fence Model No. 300H
2. Oil Fence proper including flange
   Price: f.o.b. Japan US$88.94 per meter
   c.i.f. Auckland US$97.83 per meter
3. Anchoring Fence
   Price: f.o.b. Japan US$1668.00 per piece
   c.i.f. Auckland US$1834.80 per piece
4. Hose for submerging
   Price: f.o.b. Japan US$1668.00 per piece
   c.i.f. Auckland US$1834.80 per piece
5. Air Piping
   Price: f.o.b. Japan US$2520.00 per piece
   c.i.f. Auckland US$2772.00 per piece

Payment: The above prices are calculated on payment by Letter of Credit at sight in favour of our Principal Mitsubishi Corporation Tokyo (attention GR-K Section)

Secr. Task

A.P. Hamilton

Auckland Harbour Board G160 12th April 1972

Shipment: Within 4 months after receipt of firm order in Japan.

Import Licence: We request that this be for your care.

We trust that the above information will be sufficient for your present purposes and we would be pleased to meet and discuss any point with you at your convenience. Please do not hesitate to contact this office.

Yours faithfully,
MITSUBISHI (NEW ZEALAND) LIMITED

M. Miyake
P.P. Managing Director

24 March, 1972

Messrs Mitsubishi New Zealand Ltd.,
P.O. Box 5248,
AUCKLAND 1.

ATTENTION: MR.N.ROEBUCK

Dear Sir,

RE: RUBBER SKIRT - OIL BOOM

I am interested in obtaining your quotation, for the supply in Auckland of 33 standard lengths of the 300H model Oil Fence, as described in the Bridgestone publication issued 28 February 1972 from your office. This quotation should include for hose, elbows, air hose and floats and air operation valves. The anchoring of the fence is to be excluded from the quotation.

The quotation will be used for budgeting purposes only at this stage.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD.

GH:JARP

Auckland Harbour Board

MEMORANDUM

9 March 1972

FROM THE GENERAL MANAGER

TO THE HARBOURMASTER
THE CHIEF ENGINEER

OIL POLLUTION AT SEA : W.S.L. DISPERSANT SPRAYING EQUIPMENT

1. I would refer to my memorandum of 27 August 1971 and to the copies of photographs of Northland Harbour Board equipment forwarded to you on 19 November 1971.

2. As copies of the "Instructions for using W.S.L. Equipment" have already been made available I would appreciate an early reply to question (c) of my August memorandum, together with additional information on the estimated cost of making up a set of nozzles providing pumping equipment and breaker boards to operate the system from a tug.

3. Forwarded with this memorandum is a copy of a circular letter received from the Harbours Association concerning proposals for supply and storage of dispersant. It would seem that the discussion that preceeded the writing of the circular was somewhat vague as to methods of operation and I have sought clarification, but assuming that the Marine Department is looking for bulk storage I seek your comments on the following -

Item 3 : How would you envisage the material being delivered to the dispersal craft. Would any of the pipelines available for loading bunkers be suitable for such a purpose or would transfer by road tanker be necessary.

Item 4 : Ready use tanks in Board's tugs. Is this practicable, and if so what capacity is likely to be available?

4. The matters referred to in paragraph 3 are not urgent pending a reply to my letter to the Harbours Association but the information sought in paragraph 2 should be progressed as soon as is reasonably possible.

R.T. Lorimer

R.T. Lorimer
GENERAL MANAGER
per fss.

Auckland Harbour Board

MEMORANDUM

FROM .....

TO

c.c. CHIEF ENGINEER

9 March 1972

The Secretary,
Harbours Association of New Zealand,
P.O. Box 1765,
WELLINGTON.

Dear Sir,

OIL POLLUTION

In order that your circular letter of 7 March 1972 can be answered further information is necessary.

Is it intended that the 7,500 gallons of dispersant referred to would be delivered in drums or in bulk?

The copies of correspondence forwarded with your memorandum of 13 August 1971 refer to the equipment spraying 22 gallons per minute and the booklet on W.S.L. Dispersant Spraying forwarded with your letter of 19 October 1971 refers to changing over to a full barrel every two minutes. If delivered in 44 gallon drums we would have to examine the possibility of providing storage for some 170 drums, and if regard is had to the booklet on the equipment the need to investigate provision of 'ready' tanks on tugs seems unnecessary.

On the other hand if the Marine Department is seriously considering bulk storage then any proposals for storage in oil companies' bulk tankage should be a matter for investigation by the Department. The investigation should not only have regard to the availability of such storage but also to the method of delivery from the bulk storage to the dispersal craft.

When these matters have been resolved by the Marine Department and the Board informed we will be able to comment as requested.

Yours faithfully,

R.T. Lorimer

R.T. Lorimer
GENERAL MANAGER

Auckland Harbour Board

MEMORANDUM 9 March 1972

FROM THE GENERAL MANAGER

TO THE HARBOURMASTER
THE CHIEF ENGINEER

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R.T. Lorimer.
R.T. Lorimer
GENERAL MANAGER
per

AUCKLAND HARBOUR BOARD
HARBOUR DEPT.
RECD. - 9 MAR 1972
ACKD.
ANSD.

HM
20/3/72

THE HARBOURS ASSOCIATION OF NEW ZEALAND

GENERAL BUILDINGS (Sixth Floor) . 38/42 WARING TAYLOR STREET
WELLINGTON, 1.

Telegraphic Address:
"HARUNION"
WELLINGTON

TELEPHONE 46-739

All Correspondence to be Addressed to:
G.P.O. BOX 1765
WELLINGTON, 1

26/2/2

MEMORANDUM for Auckland, Lyttelton, Otago and Wellington Harbour Boards.

7th March 1972.

Oil Pollution

Following discussion of the need to provide more adequate supplies of dispersants for the disposal and clearing up of oil slicks, it was agreed that in addition to provision of a quantity of 7,500 gallons at Whangarei, arrangements should also be made for 7,500 gallons to be available at Auckland and 5,000 gallons each at Wellington, Lyttelton and Port Chalmers.

(1)

I was asked to enquire if the Boards concerned could make arrangements for the storage of such quantities of dispersant and for an estimate of the costs involved.

(2)

It has been suggested that Harbour Boards could make arrangements with oil companies for suitable storage tanks to be made available in tank farms and for appropriate arrangements for transferring dispersant to tugs when required.

(3)

I was also asked to enquire whether there was any possibility of providing more permanent tank space in tugs for ready use of dispersant, although it is appreciated that in some cases this may not be possible on account of confined space in tugs and the amount of other equipment which has to be carried.

(4)

I should appreciate your comments.

R.E. Dawson

Secretary.

GM.

THE HARBOURS ASSOCIATION OF NEW ZEALAND

GENERAL BUILDINGS (Sixth Floor) . 38/42 WARING TAYLOR STREET
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R.E. Dawson

Secretary.

G.H.

Auckland Harbour Board

MEMORANDUM

FROM | **TO**

c.c. HARBOURMASTER

9 March 1972

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Harbours Association of New Zealand,
P.O. Box 1765,
WELLINGTON.

Dear Sir,

OIL POLLUTION

In order that your circular letter of 7 March 1972 can be answered further information is necessary.

Is it intended that the 7,500 gallons of dispersant referred to would be delivered in drums or in bulk?

The copies of correspondence forwarded with your memorandum of 13 August 1971 refer to the equipment spraying 22 gallons per minute and the booklet on W.S.L. Dispersant Spraying forwarded with your letter of 19 October 1971 refers to changing over to a full barrel every two minutes. If delivered in 44 gallon drums we would have to examine the possibility of providing storage for some 170 drums, and if regard is had to the booklet on the equipment the need to investigate provision of ready tanks on tugs seems unnecessary.

On the other hand if the Marine Department is seriously considering bulk storage then any proposals for storage in oil companies' bulk tankage should be a matter for investigation by the Department. The investigation should not only have regard to the availability of such storage but also to the method of delivery from the bulk storage to the dispersal craft.

When these matters have been resolved by the Marine Department and the Board informed we will be able to comment as requested.

Yours faithfully,

R.T. Lorimer.

R.T. Lorimer
GENERAL MANAGER

Auckland Harbour Board

MEMORANDUM 22 February 1972

FROM THE GENERAL MANAGER | **TO** THE CHIEF ENGINEER
THE HARBOURMASTER

WYNYARD WHARF OIL BOOM

Forwarded herewith is a copy of my reply to the Auckland Metropolitan Fire Board following receipt of their letter referring to the explosion at a V.A.M. tank in the Atlantic Oil Company's installation on 28 October 1971. In this letter the Fire Board requested that the Board give immediate effect to its earlier arrangement to provide a boom at Wynyard Wharf.

Although I am not seeking a hurried decision because of the Fire Board's letter, we do have an undertaking given in April 1966 to provide an oil boom and we have been in possession for some four years of a boom bought for the purpose, during which period we have apparently not been able to evolve a practical way of using it. This is an unsatisfactory state of affairs and one which must be put right for if a sizeable spill was to occur the Board might be made to look irresponsible and rather foolish in the present circumstance.

The problem appears to be a twofold one. To find an effective boom for the purpose envisaged, and to resolve a practical method of storing, streaming and anchoring such a boom outside tankers berthed at Wynyard Wharf. Then there is a different but related problem, the matter of oil dispersal with the need to examine the possibility of using the present boom to contain spills during dispersal operations and to bring forward recommendations on equipment suitable for recovering oil spilled on harbour waters.

It is important that this work be taken up and progressed steadily as from now, and I was pleased to note from the Deputy Chief Engineer's memorandum to the Design Engineer of 16 February that the Engineer's Department has taken the initiative.

The purpose of this memorandum is to emphasise the need for the resources of both the Engineer's Department and the Harbour Department to be directed towards the problem, the solution of which must involve not only design techniques but also the application of practical seamanship.

R.T. Lorimer.

R. T. Lorimer
GENERAL MANAGER
per fax.

Lieut. Seager RN.

ENCL.

Mr Park. - Any reaction from Harbour Department yet?

Auckland Harbour Board

MEMORANDUM

FROM | **TO**

c.c. CHIEF ENGINEER

16 February 1972

The Secretary,
Auckland Metropolitan Fire Board,
Fire Brigade Headquarters,
Pitt Street,
AUCKLAND, 1.

Dear Sir,

OIL SPILLAGE - FLOATING BOOM

Your Board's concern over the position with regard to the present non availability of the floating boom to restrict oil spillage on the harbour, as expressed in your letter of 22 December 1971, is shared equally by my Board.

The failure of certain material used in construction has resulted in the boom becoming unserviceable and problems have been encountered in reinstating the existing unit. However at no stage has the matter been allowed to lapse. My Board has already incurred a considerable expenditure on the project and has no intention of abandoning it. Rather it is determined that an answer be found and a satisfactory unit provided both because of its undertaking to play its part in lessening the likely fire hazard that could arise from a major spillage and because of its awareness of the need to take all possible precautions against pollution of harbour waters.

The problem on which we are at present working is to find a material for the spillage retaining skirt that is non-absorbent to oil, capable of withstanding prolonged immersion in seawater, and the rigors of bad weather. It was originally intended that the boom be lifted out of the water when not required, but following its delivery in late 1957 unforeseen difficulties in its handling and storing were encountered. To overcome these it was decided to store the unit afloat underneath Wynyard Wharf. Extensive alterations to the wharf were necessary to allow this. Further difficulties were encountered when it was found that with heavy wave action from the east the flotation material was subject to crushing. Experimentation to correct this followed and then it was found that the skirt material, selected for its non-oil absorbent qualities, was failing as a result of continued immersion in seawater.

... ...

Auckland Metropolitan Fire Board 16 February 1972

The Board in conveying this explanation to you does not want to give the impression that it is not going to honour its arrangements concerning improved fire prevention methods agreed for this particular area. Nonetheless we are not prepared to operate a somewhat costly facility that we have no confidence in and until we have found a more effective appliance than that presently held we cannot put into effect this facility which was a part of the scheme for general fire prevention.

As soon as some more definite information on timings is available I will see that this is passed on to you for your further consideration.

Yours faithfully,

R T Lorimer

R. T. Lorimer
GENERAL MANAGER

per

Auckland Harbour Board

MEMORANDUM 15 February 1972

FROM THE GENERAL MANAGER | TO THE HARBOURMASTER

OIL BOOMS

Attached hereto is a letter from Commodore Auckland advising of the availability of a 2000ft. hessian boom for emergency use in the event of a local major oil spillage.

We should arrange with Navy for opportunity for inspection of the boom by your Officers concerned and a representative from the Engineer's Department to evaluate the suitability of this type of boom for the control of spills of the nature usually encountered in harbour waters.

Opportunity should also be taken to ascertain handling and transport requirements for the boom in order that in the event of the Board being called upon to assist in the work of controlling a major spill in local waters we know what could be needed of us.

R.T. Lorimer
R.T. Lorimer
GENERAL MANAGER
per [illegible]

Jm Hamilton Staff 29/2/72
This would not replace our own permanent boom, but is related.

c.c. CHIEF ENGINEER

Mr Pask.
Hold this and await approach from H/Mr
[illegible] 2/3/72

Lieut. Teague

Inspected with Capt. McKenzie Mr J. Bray on 17/3/72. — Staff 20/3/72

Telegraphic Address:
Navycharge, Devonport
Telephone 454 000
Extension

ROYAL NEW ZEALAND NAVY

Please quote: NC 121/1A
Correspondence to be addressed to:
COMMODORE AUCKLAND
HMNZ NAVAL BASE
DEVONPORT
AUCKLAND

11 FEB 1972

AUCKLAND HARBOUR BOARD
RECD. 14 FEB 1972
ACKD
ANSD.

The General Manager,
Auckland Harbour Board,
Princes Court,
Princes Street,
AUCKLAND 1.

INVESTIGATION INTO LOCAL RESOURCES TO COMBAT OIL SPILLAGE

A 2000 ft Hessian Boom has recently been manufactured by HMNZ Dockyard and is available for emergency use to combat any local major oil spillage.

I Richard T. Hale

(Richard T. Hale)
COMMODORE

I Chas Munro.
9.15 AM

DCP. GM

Auckland Harbour Board

MEMORANDUM

FROM

TO

c. c. HARBOURMASTER

15 February 1972

The Commodore, Auckland,
H. M. N. Z. Naval Base,
DEVONPORT, 10.

Dear Sir,

OIL BOOM

Thank you for your advice of 11 February 1972.

I have asked the Harbourmaster to arrange permission for his Officers concerned, together with one of the Board's Engineers, to inspect the boom with a view to

1. Evaluating the suitability of booms of this type in the control of oil spills of the nature usually encountered in the harbour.
2. Ascertaining handling means and transport necessary so that in the event of the Board being called upon to assist at a major oil spill in local waters we will be familiar with equipment that we might be called upon to move into place.

I trust that this will be satisfactory and that a suitable arrangement for the proposed inspection will be possible.

Yours faithfully,

R. T. Lorimer

R. T. Lorimer
GENERAL MANAGER

MITSUBISHI NEW ZEALAND LTD.

P.O. BOX 5248

TELEGRAPHIC ADDRESS:
"MITSUBISHI AUCKLAND"
TELEX N.Z 2435
TELEPHONE 379-722
5 LINES

9TH FLOOR, A.S.B. BUILDING
CNR. QUEEN & WELLESLEY STS., AUCKLAND, 1.
NEW ZEALAND

WELLINGTON OFFICE
P.O. BOX 3245
WELLINGTON
TELEPHONE 42-212
WELLINGTON

OUR REF. AKL-G109 DATE 28 February, 1972.

Auckland Harbour Board,
P.O. Box 1259,
AUCKLAND.

Attention: Mr. P. Manser

Dear Sir,

Re: Pollution Control - Rubber Skirt

As promised in my advice of October, 1971, we are pleased to enclose herewith the new English brochure illustrating the captioned equipment.

Yours faithfully,
MITSUBISHI NEW ZEALAND LTD.

M. Miyake
Managing Director

Mrs. Hamilton

Mrs. Pask
There is one that can be raised and submerged.

NR/RH
Encl.

Auckland Harbour Board

Mr. Pemberton

I doubt if we are involved in this enterprise

Please consider, discuss with George Hutchinson regarding City Council reaction & see me.

[signature] 24.1.72.

25 Jan 72
GH has not seen yet.
He will let me know if he does Not get a copy & I will arrange to provide one for him.
Doubts if Council will be interested (not their problem) but ARA (Clay) may be.
Clay says it hasn't come to him yet.

362760

16 Feb
GH has heard nothing further of this
Can't raise Warwick Clay to find whether Cauley wrote to him ∴ Sent a copy. RCP

Mr.G.Hutchinson,
Designing Engineer,
Auckland City Council,
Private Bag,
AUCKLAND

Mr.W.Clay,
Design Engineer,
Auckland Regional Authority,
Private Bag,
AUCKLAND

22
16 February, 1972

Dear Sir,

DISPOSAL OF WASTE OIL

Reference discussion with you by Mr. Pemberton, I forward herewith a copy of a letter and attached information sent to me by Dr.J.S.Ward, Reader in Botany, University of Canterbury.

You may be interested in this research project.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD.

RCP:JARP

Enc : Photo copy of letter 20.1.72
and 5 page paper.

University of Canterbury Christchurch 1 New Zealand

BOTANY DEPARTMENT

20th January, 1972.

Telephone 71-649
Extension 522
Home 583-293

The Chief Engineer,
Auckland Harbour Board,
P.O. Box 1259,
AUCKLAND

Dear Sir,

DISPOSAL OF WASTE OIL

I enclose a description of a research programme we are about to undertake on a system, which may prove to be a cheap and effective way to dispose of waste oil and other organic residues.

As you will see, the Christchurch City Council has agreed to support this project with finance and facilities. I am, therefore, writing to ask if your organization would give financial and other support to this enterprise.

I would be very pleased to answer any questions you may wish to ask about this project.

Yours sincerely,

J.S. Waid

.....

J.S. WAID,
Reader in Botany.

Encl.

Ref. Lemberton

UNIVERSITY OF CANTERBURY BOTANY DEPARTMENT

DISPOSAL OF WASTE OIL BY LAND SPREADING

The use of petroleum products in New Zealand will undoubtably increase, and satisfactory methods to dispose of oily wastes that cannot be refined economically, will have to be developed and evaluated. The treatment and disposal of waste oils from various types of industry presents serious problems, such as careless treatment resulting in pollution of fresh water. In the United States,several oil companies claim that they can successfully dispose of oily wastes by land spreading operations. The purpose of this proposed research project is to evaluate the feasibility of such a system under New Zealand conditions,as an effective and cheap method of disposing oily wastes. Such a system might well be adapted to disposal of other types of organic wastes from the timber, food and manufacturing industries.

LAND SPREADING

Basically, the land disposal system involves an area of land on which waste oil is spread,and then mixed with the topsoil. Mixing is repeated at intervals until the hydrocarbons are decomposed by the bacteria in the soil,when the land can be used again for oil disposal.

OXIDATION OF HYDROCARBONS BY SOIL MICROORGANISMS

The soil contains many organisms able to oxidise or use hydrocarbons for their growth, and to convert the hydrocarbons to carbon dioxide and organic matter. The first time a hydrocarbon is added to soil,it may take some time for the soil bacteria to adapt themselves to decompose the hydrocarbon, but subsequent additions of the same hydrocarbon should be decomposed rapidly.

The rate at which the hydrocarbons decompose in soil would be influenced by factors that cannot be controlled, such as temperature and soil texture. Waterlogging of the soil should be avoided as it would delay decay of hydrocarbons.

Hydrocarbon-oxidizing microorganisms flourish best in well-aerated soils, and the hydrocarbons are more readily attacked if they are dispersed within the soil fabric because more surface is exposed for attack. Therefore, the rate at which waste oils decompose in soil,is accelerated by frequent mechanical mixing of the soil,by procedures that leave the soil loose and open and avoid compaction, i.e. mixing with a bulldozer blade.

In many soils a fertilizer (nitrogen and phosphorus) dressing may be necessary to meet the nutrient demand of the microflora decomposing a large volume of organic waste. Further dressings would probably be unnecessary,as the nutrients would be recycled in the soil system. Lime may have to be added to acid soils.

LAND DISPOSAL PROCEDURES

The following summarises available information on land disposal procedures that are used in the U.S.A. to treat sludges, sewer and ballast waters that are laden with oil.

LAND AREA

Sections of land, about 1 to 2 acres, are graded with a slight slope to facilitate surface run off. At the lowest point on the site a drainage ditch collects run-off and sub-soil water which is then led into an oil trap. Any oil that accumulates in the trap is returned to the land disposal system. Ground water pollution should not occur, unless waste oil is applied in large amounts to badly-sited areas with coarse, porous or shallow soils.

Several sections are used in rotation.

SOIL PREPARATION

The soil is graded and subdivided with terrace ridges about 20 inches high to retain the oil wastes in small enclosures. In soils of low fertility, a fertilizer application (nitrogen and phosphorus) may be required, and acid soils may require liming.

OIL DECOMPOSITION

Oily wastes are delivered by vacuum truck, and spread in a shallow layer (6 in.) over the soil within the terraced enclosures. When the water has drained away, the sludge is mixed with the top-soil (6 in.) using a bulldozer blade. The soil is bulldozed 2 to 4 times a month until the hydrocarbons have decomposed.

RATE OF OIL CONSUMPTION

Factors influencing the rate of disappearance of oil in reasonably-fertile soils would be soil temperature, soil moisture content and type and volume of hydrocarbon.

Decomposition is delayed in wet or cold soils. Waxes and lumps of oil decompose slowly until they are dispersed by mechanical treatment of the soil.

At Houston, Texas, oil slurries (20% hydrocarbons) spread to 4-5 inches depth, drained of water and then mixed with 6 inches of soil take 3 to 9 months to decompose (100 tons hydrocarbon/acre). In small-plot trials it was found that rates of hydrocarbon disappearance vary from 5 to 60 pounds of oil/cubic foot of soil/month. Decomposition proceeds even when the weight of hydrocarbon is as high as 23% on a dry soil basis.

POLLUTION

Ground water pollution should not occur if deep fine-textured (clay or organic) soils are used for disposal sites and they are not overloaded by indiscriminate application of waste oils. Oil would be adsorbed by clay or humus and there would be little downward movement of oil in such horizons.

Ground water pollution could occur if large amounts of oil are added to coarse, porous or shallow soils.

Loss of oil from a surface or sub-soil drainage system on the disposal site would be checked by an oil trap placed on the lowest point of the drainage system on a site.

Flooding and washing-out of a disposal area is a possibility that must be borne in mind, and depending upon the site, precautionary measures such as an enclosing earth wall or dike should be considered.

EFFECT OF REPEATED OIL DISPOSAL UPON SOIL

Reports from the U.S.A. on disposal of waste oil by land spreading, indicate that several beneficial changes can take place in treated soil. The addition of hydrocarbons promotes microbial growth, and the cells of the dead microorganisms add organic matter to the soil. The hydrocarbons also support the growth of certain nitrogen-fixing bacteria (Azotobacter) so that the nitrogen content of the soil increases.

Some breakdown in soil structure can occur because of deflocculation of the soil particles caused by the oil, and because of tillage, but as the organic matter content of the soil increases as the hydrocarbons disappear, a general improvement of soil structure and tilth occurs. The addition of oily wastes to soil can make it temporarily toxic to plants, because of the toxic nature of the hydrocarbons, and a lack of oxygen during hydrocarbon decay. Once the hydrocarbons have decomposed, the fertility of the soil should not be less than untreated soil, and generally some improvement in structure has been observed.

OTHER POSSIBLE APPLICATIONS OF A LAND-DISPOSAL SYSTEM

The land-disposal system is an aerobic process which leads to complete or nearly complete decomposition of organic residues.* Where the organic wastes consist predominantly of carbon and hydrogen, such as hydrocarbons, phenolics, tars, cellulose and lignin, the end-products of the decomposition are carbon dioxide and organic matter (humus). Such end-products do not present pollution problems and the same site could be used for many years provided it was not overloaded with waste materials.

Possible pollution problems arise where other types of organic residue are considered. The land-disposal system should be an effective way to decompose animal and vegetable wastes, such as pig-house manures, chicken feathers, vegetable peelings, offal, milk-factory wastes and so on, once they had been partially dewatered. The method should be rapid, and because it is aerobic, there should be no obnoxious or odoriferous products, such as sulphides or mercaptans, provided the residues are well mixed with soil. The problem with such residues is that, in addition to carbon dioxide and humus, the end-products of decomposition would also contain nitrates, sulphates and phosphates. Nitrates and sulphates because they are readily leached (washed out) from soils could contaminate ground water if the one site was in operation over a long period. Phosphates should present few problems as they are readily retained in soils.

Procedures to reduce pollution by nitrates and sulphates would have to be worked out. One possible approach would be to use soil sites for short periods within a land rotation system, and great care taken to avoid overloading the soils with organic residues. The drainage water from such sites would be retained in ponds, where nitrates would be reduced to gaseous nitrogen by denitrification. Sulphates could be recycled by using the pond water for irrigation, but as the sulphur content of organic residues is generally a fraction of the nitrogen content, they present a less serious pollution problem than nitrates. On certain sites it may be possible to use drainage waters from land-disposal sites, abnormally rich in leachable nutrients, for irrigation of afforested land - a system used with success in trials in the U.S.A..

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*Man-made organics, such as plastics and DDT are excluded.

PROPOSED EXPERIMENTAL PROGRAMME

1. Determination of decomposition rates of oil.

Oil wastes will be applied to small plots (say 1/20 acre) in the study area and the rate of hydrocarbon decomposition determined. Treatments will be replicated.

The influence of the following factors will be evaluated:

1. Season (soil temperature, rainfall)
2. Tillage (depth and frequency)
3. Nutrients and liming
4. Type of oil waste
5. Rate of oil application
6. Soil type

Rate of hydrocarbon decomposition will be measured in soil samples analysed for total hydrocarbon content (solvent extraction).

The drainage water from the disposal site,and the water table beneath the site,and adjacent areas,will be sampled for oil contamination.

2. Efficiency and economics.

Experiments using larger plots (say 1/4 acre) will be set up to determine the effectiveness of land disposal and to estimate the cost of the process.

These experiments will begin at the same time as the small-plot experiments,but the number of experimental variables will be limited. The procedures employed will be varied on the basis of results gained from the small-plot experiments,so as to obtain maximum rates of decomposition.

3. Laboratory studies.

Concurrent with field trials, laboratory studies, simulating conditions such as soil type, moisture content, temperature and oil type,will be undertaken to investigate hydrocarbon breakdown under a range of conditions found in New Zealand.

Oil will be mixed mechanically with the top four inches of soil contained in deep pots, and total breakdown measured.

Soil treatments that promote rapid breakdown of hydrocarbons will be investigated in trials where the rate of application of oil, nutrients, mixing depth and time of mixing, aeration and so on, will be varied.

More precise experiments would also be undertaken using soil perfusion apparatus,and would be ideal to study the decomposition of individual hydrocarbon compounds.

4. Ancillary studies.

(a) The effects of hydrocarbons on the soil will be studied by investigating factors such as:

i. Soil toxicity (plant bioassay)
ii. Soil structure
iii. Soil organic matter
iv. Soil nitrogen.

(b) The possibility of oil waste being used as conditioner to reclaim or stabilise soils could be examined in situations, such as wind-eroded soils,e.g. sand-dunes, where the addition of organic residues might lead to an improvement of soil physical structure.

RESEARCH PROPOSAL

The project will be carried out at the Department of Botany, University of Canterbury, Ilam Site, Christchurch.

Personnel: Mr B.R.Maunder,who gained an Hons. B.Sc. (2nd Class, Division One) in Botany in 1971,will work on this project as a Ph.D. topic for a three-year period (January 1972 to December 1974). Mr Maunder, besides Botany, studied Geology and Chemistry at University.

Dr J.S. Waid, Reader in Botany, will supervise the project. His research interest is soil microbiology and he edits Soil Biology and Biochemistry - an international journal.

Duration of Project: January 1972 to December 1974.

The possible application of the land disposal system to other types of organic wastes may lead to extension and diversification of the work.

Facilities: There are appropriate facilities at the University to undertake laboratory research on this problem,and advice and help can be obtained from specialists within the University.

The City Engineer, Christchurch City Council, has offered to give support to this project in terms of an experimental area of land.

It is hoped that additional facilities will be offered in terms of experimental sites, samples of soil and waste oils, by interested organizations.

FINANCIAL SUPPORT

In reply to an application by Mr B.R. Maunder,the Corporation of the City of Christchurch has agreed to contribute up to $2,000-00 for financial support to investigate the possibilities of disposing of waste oil by a controlled land disposal system. This offer is subject to other Councils and the Government being approached with a view to spread the total cost.

	ESTIMATED EXPENDITURE 1972		$
	Salary		2250
	Field Equipment: Bulldozer hire		500
	Markers, fertilizers, recording apparatus, sample tins, core sampler, etc.		200
	Travel:		
	local	$ 150	
Note 1.	other sites	" 200	350
	Laboratory apparatus:		
	glassware	$ 250	
	chemicals	" 200	
Note 2.	Soxhlet apparatus	" 300	
Note 2.	gas-chromatography-column	" 350	
	gas cylinders, etc.	" 100	1200
	Photography	$ 20	
	Photocopying	" 30	
	Literature	" 120	170
		TOTAL:	4670

Note 1.: Organizations might consider offering special support for travel to inspect, advise or work upon their local sites and problems.

Note 2.: Non-recurrent items.

J.S. WAID
Reader in Botany.
20th December, 1971.

22 February, 1972

Dr.J.S.Waid,
Botany Department,
University of Canterbury,
CHRISTCHURCH 1.

Dear Sir,

DISPOSAL OF WASTE OIL

I acknowledge your letter with attached information concerning research on disposal of waste oil by land spreading.

Although vitally interested in methods of disposal of oil floating on the sea, my Board has no responsibility for disposal of oil products on land except perhaps where reclamations are affected within the Board's endowment. The Board is therefore unlikely to offer the project any assistance.

As an individual, however I am interested in this research and are sending copies of your letter and attached literature to the Designing Engineers of the Auckland City Council and the Auckland Regional Authority for their information.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD.

RCP:JARP

16 February, 1972

DEPUTY CHIEF ENGINEER — THE DESIGN ENGINEER

TANKER.

WYNYARD WHARF - TIMBER BERTHS

OIL BOOM

1. References - Eng. File 283/1.
   Folder of Oil Booms and Equipment.

2. Situation - Having regard to the need to take steps to minimise contamination of harbour water from oil spillage and the requirement from the Fire Board that there is containment of petroleum products from accidental discharge from tankers with consequential fire risk, there is a need to review the question of oil boom facilities.

3. Oil Boom 1969 - The report C/E - G/M 9 December 1969, sets out the situation resulting from the boom equipment developed. In short, this was not successful.

4. Review - It is required that the provision of oil boom equipment be reviewed and considerations provided on the practicabilities and possible forms for a suitable all-weather system and operations. In addition, it is apparent that with effective boom system, suitable means of recovering of black oil spillage is a complementary factor to be taken into account.

5. Further to the discussions with Mr. Seagar would you please proceed with this exercise co-opting Captain R.MacKenzie from Harbour Department and a nominee from the Mechanical Engineer as necessary on oil recovery.

6. In addition, the present boom at Shed 40, Wynyard Wharf should be inspected and a consideration taken as to its further use for rapid measures of containment of spills that may occur in the port area.

DEPUTY CHIEF ENGINEER

NS:JARP

Copies to: HARBOURMASTER
MECHANICAL ENGINEER
DEPUTY GENERAL MANAGER

Auckland Harbour Board

MEMORANDUM

AUCKLAND HARBOUR BOARD
MECHANICAL SECTION
RECEIVED 26 NOV 1971

1 November 1971

FROM GENERAL MANAGER

TO CHIEF ENGINEER

RECEIVED
- 2 NOV 1971
ENGINEERS DEPT.

OIL POLLUTION AT SEA -
W.S.L. DISPERSANT SPRAYING EQUIPMENT

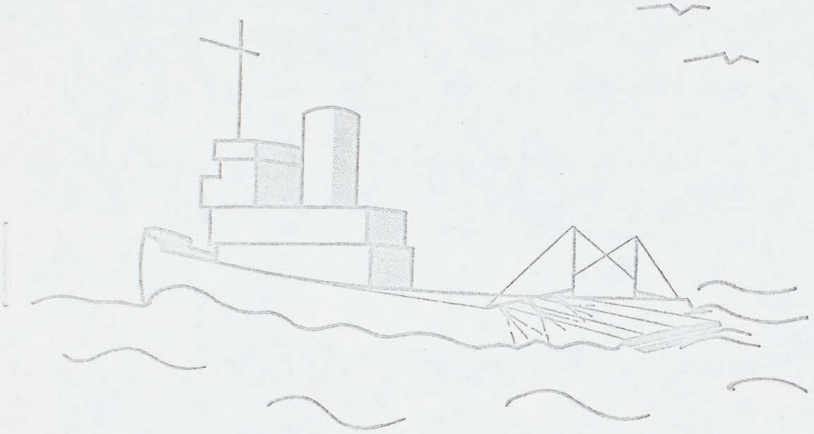
Eng's file 3/1.

I refer to my memorandum of 27th August 1971 on the above subject, and now forward for your information a copy of my 30th September letter to the Harbours Association together with a copy of a booklet, which has been received, containing further information regarding the W.S.L. Dispersant Spraying Equipment.

6/12/71

R.T. Lorimer
GENERAL MANAGER

INSTRUCTIONS
for using the
WSL DISPERSANT SPRAYING EQUIPMENT



DEPARTMENT OF TRADE AND INDUSTRY

WARREN SPRING LABORATORY

All enquiries should be addressed to:

The Director,
Warren Spring Laboratory,
Gunnels Wood Road,
Stevenage,
Hertfordshire.
Telephone: Stevenage 3388
Telex: 82250

SBN 900790 53 9

June 1970

Reprinted
(with minor amendments)
Dec. 1970

INTRODUCTION

The best way, known at present, of dealing with an oil slick at sea is to disperse it. More effective and less toxic to marine life than the earlier 'detergents', dispersant chemicals offer a practical way of reducing the damage done by oil pollution.

To cover the large area which might be expected in a major oil spill, a fast sea-worthy craft, which can carry a reasonable amount of dispersant, is required. These characteristics are only found in ocean-going tugs and the larger fishing boats.

The task consists of two operations. First, to apply the dispersant uniformly to the floating oil: second, to mix the treated oil with the upper few inches of the sea water with sufficient force to break the oil slicks up into droplets.

The Warren Spring Laboratory dispersant spraying equipment is designed to spray and mix dispersant on oil at sea, and can be fitted to any standard tug without welding, fitting, or other skilled labour. It may be assembled at sea.

These instructions for fitting and using the equipment on a tug are presented in three distinct parts: INSTALLATION, OPERATION and SPECIFICATION.

INSTALLATION

(1) Clasp a mast foot adapter on the side and at the foot of a bulwark frame (Fig. 1), approximately 20ft forward of the stern.

(2) Clamp an anchor plate to the bulwark rail (Fig. 2) with the mast fitting forward and with the slot for the mast directly above the mast foot adapter.

FIG. 1

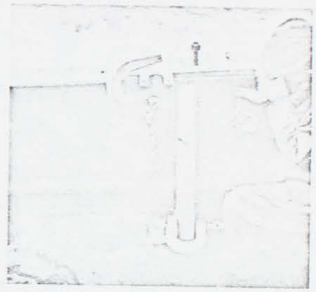


FIG. 2

(3) Bolt a gimbal on to the anchor plate (Fig. 3).

FIG. 3

(4) Shackle the thimble of a 20ft wire rope to the top end lug of a mast on the opposite side to the cleat hook, and shackle one end of a 40ft length of sisal rope to the top inboard lug; then erect the mast (Fig. 4).

(5) Repeat the operation on the opposite side of the tug and cross-brace the two masts together with the sisal ropes (Fig. 5).

FIG. 4

FIG. 5

(6) Fit the spray jet extension pipes to the booms, with the shortest ones on the outer end and with the 30° pipe ends pointed aft (Fig. 6). Screw a nozzle and adapter on to each of these pipes, ensuring that the axis of each nozzle is parallel to the boom (Fig. 7).

(7) Insert a boom into a gimbal from the forward side and screw one end of a length of double-female hose to it (Fig. 8).

FIG. 6

FIG. 7

(8) Attach the loose end of the 20ft wire topping lift to the outer topside lug on the boom with a thimble and shackle, then adjust the length of the wire to maintain the boom in a horizontal working position (approx. 15ft 7in). If the tug is likely to roll because of the state of the sea, raise the outer end of the boom above the horizontal accordingly. Clamp the wire at the correct length with three $\frac{1}{4}$in wire clips (Fig. 9).

FIG. 8

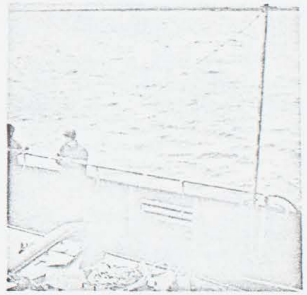


FIG. 9

(9) Shackle one $\frac{3}{8}$in dia. wire rope to the outer forward lug on the boom and another $\frac{3}{8}$in dia. wire rope to the centre forward lug. Pass spare wire rope forward along the deck.

(10) Shackle four 30ft $\frac{1}{4}$in dia. hauling wires to the four aft lugs on the boom, passing the spare ropes aft around the outside of the mast and back on to the deck.

FIG. 10

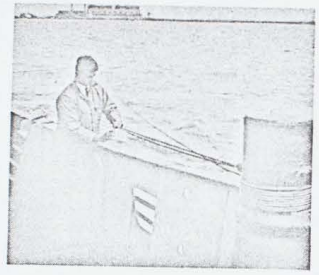


FIG. 11

(11) Tie 40ft of sisal rope to the shackle on the outer topside lug on the boom and pass the other end aft behind the mast. Lift the boom over the bulwark rail and haul in this sisal rope while paying out the outer $\frac{3}{8}$in dia. wire rope, thereby swinging the boom out until it is at right angles to the centre line of the tug. This can easily be done by lining it up with the cross-bracing ropes on the masts (Fig. 10). Loop the $\frac{3}{8}$in wire rope around a Samson post (or other convenient position well forward) and fit three $\frac{3}{8}$in wire grips; then fit the other $\frac{3}{8}$in wire rope in a similar manner so that the hauling strain on the boom will be shared by the two $\frac{3}{8}$in ropes. Make fast the 40ft sisal rope inboard at the stern, to hold the boom firmly against the drag of the $\frac{3}{8}$in wire ropes (Fig. 11).

(12) Repeat these operations on the opposite side of the tug.

(13) Bolt the surface-breaker coupling bars to the surface-breaker boards with the bar on the same side as, and next to, the wedge-shaped leading edge; use the 4in x 2in washers on the other side of the timber.

(14) Lay out three surface-breakers aft of the mast and athwart ship with the leading wedge ends facing downwards and looking forward. Join together with $\frac{1}{2}$in bow shackles (with $\frac{3}{8}$in pins) then fit a snaplink to each of these shackles and to each outer position. Clip the free end of each of the hauling wires in their correct order into each snaplink (Fig. 12).

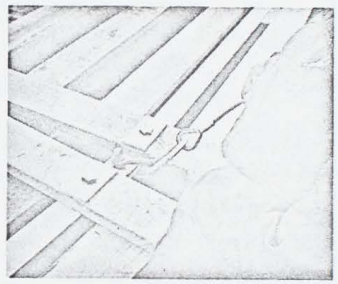


FIG. 12

FIG. 13

(15) Knot 5ft 6in of sisal rope to form a loop around the inner trailing edges of the middle and outer surface-breakers. Repeat for the middle and inner surface-breakers (Fig. 13).

(16) Tie 35ft of sisal rope to the innermost snaplink and tie the other end to the gimbal.

(17) Tie two double-eyed floats to the top side of the outer and inner surface-breaker coupling strips.

(18) With the tug making minimum headway, push the starboard surface-breakers endwise over the bulwark rail (Fig. 14) with the slack of the hauling wires laying on top. As the surface-breakers are pushed over the side the master should go to starboard to prevent the boards floating under the quarter. When the surface-breakers are trailing properly, readjust the 35ft sisal rope so that it is just slack enough to ensure that no load will be taken by it.

(19) Repeat the operation on the port side of the tug.

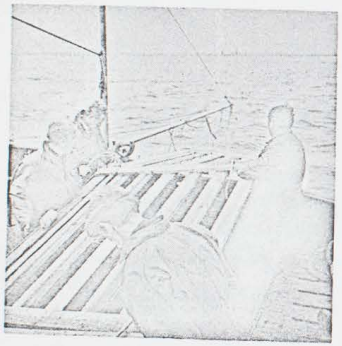


FIG. 14

FIG. 15

(20) Site the engine and pump unit aft where convenient and screw the Y-piece, with its valves, into the pump delivery (horizontal) connection. Couple to it the hoses from the booms, using the 1½in nipples provided (Fig. 15). Couple the M and F hose and the remaining double-female hose together and connect one end to the pump suction and the other end to the barrel suction pipe.

(21) The tug may now make headway, at between 4 and 10 knots as dictated by prevailing conditions and the thickness of the oil layer - the thinner the layer, the higher the speed (Fig. 16).

(22) When it becomes necessary to remove the surface-breakers and booms to come alongside, heave-to and haul in the surface-breakers by the 35ft sisal rope (Fig. 17). When the boards are close enough, haul them in over the bulwark rail, starting with the one to which the sisal rope is tied.

Note: A piece of tarpaulin 6yds x 3yds is useful to spread on the deck if the boards are heavily oiled, as they certainly will be after dispersing heavy fuel oil.

FIG. 16

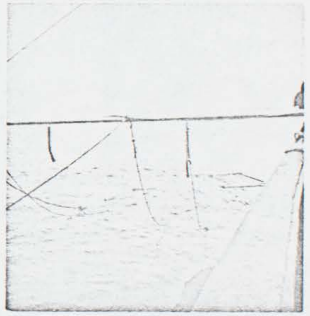


FIG. 17

(23) The sisal ropes aft, holding the booms against the drag of the ⅜in wire ropes, may now be paid out to allow the booms to swing forward and be brought inboard, together with the slack of the ⅜in wire ropes.

OPERATION

The engine should be checked over, in accordance with the makers' Instruction Book, before being taken aboard the tug.

Assuming that the dispersant equipment has been installed and rigged on board ready for use, proceed as follows:

Fill the engine supply tank with diesel oil. Following the makers' Starting Instructions (which will be found on the engine), start the engine with the rope provided. Note that the operating lever MUST be in the RUN position for the engine to start.

When the engine is running steadily, insert the suction pipe into the first barrel of dispersant. Change over to a full barrel every two minutes, or when the spray nozzles lose pressure. The pump is, of course, self-priming.

When spraying is not required, e.g. when going about or when travelling between oil patches, simply withdraw the suction pipe from the barrel for as long as is necessary.

If the oil slick is large enough, spray continuously around its outer edge, working towards its centre. If the oil is near to land, spray along its landward side and parallel to the land. As each pass clears a strip (approximately) 20 yds wide, small slicks may be dispersed by making a few passes through them.

The equipment has been chosen to ensure as far as possible that the composition of the dispersant as supplied in the barrels by the manufacturers is not altered by pumping and spraying. It is therefore most important that the speed of the engine is not altered and that the 1½in valves on the pump outlet are not partially closed. The pumping rate is matched to the nozzles, therefore the size of the nozzles must not be altered

When heavy fuel oil is to be dispersed, especially in cold weather, close one of the 1½in valves on the pump outlet which then allows a double rate of dispersant on one side only. Under these conditions, especially if the oil is matted with seaweed or other flotsam, adjust the speed of the tug to give optimum mixing. Slower than 5 knots is likely to be inadequate, and higher than 9 or 10 knots will result in the mixing boards planing over the surface of the oil.

When barrels of dispersant are being stowed on deck ensure that all the bungs are uppermost.

If the 'booms' are correctly set at right angles to the centre line of the tug the helm can be put hard over, without reducing speed, and the mixing boards will maintain their correct positions.

It is an advantage to keep the deck of the dispersant storage area flushed with sea water while spraying is in progress.

SPECIFICATION

FOR WSL TUG-MOUNTED DISPERSANT-SPRAYING EQUIPMENT

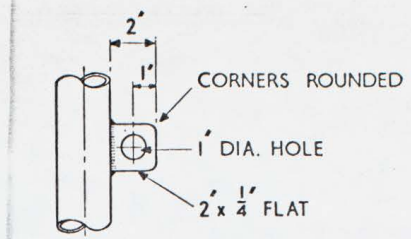
No. PER SET	ITEM
1	Pump unit, consisting of a Petter AA1 air-cooled, single cylinder, vertical diesel engine*, to run at a fixed speed of 1500 r.p.m. with half speed shaft drive, rope start at fly-wheel end, drive from camshaft extension shaft gear end, coupled to a Jobson and Beckwith 'Rotan' rotary positive displacement pump, 1½in BSP TYPE RT 32 BRM, in bronze with stainless steel idler pin and shaft, with bearings and mechanical shaft seal suitable for aromatic solvents, and with relief valve fitted to face plate (rotation clockwise from face plate end) set at 30 p.s.i. The pump and engine to be mounted on a common baseplate and coupled with a 'Picador Fig. 71 star pattern ¾in-bore' coupling. The unit to be fitted with a tubular carrying frame 3ft 6in long and shaped to protect the engine and pump from damage by dispersant drums.
4	25ft lengths of 1½in I.D. wire-wound suction and delivery hoses with wire-whipped ends on to lug-type connections. Each hose to be fitted with a separate bonding wire and tested for electrical continuity. The hoses and washers must be suitable for aromatic solvents. Three hoses to have both ends female and one to have male and female ends.

* Engine: diesel 1.5 H.P., output 750 rpm

/ Pump: positive displacement 20 gpm at 750 rpm

2	Dispersant spray booms (Fig. 19).
2	Spray boom support masts (Fig. 20).
2	Foot adapters for spray boom support masts (Fig. 20).
2	Anchor plates (1 L/Hand, 1 R/Hand) (Fig. 21).
6	Spray jet extension pipes (Fig. 22).
6	Spray nozzles and adapters, type FUM 38/90°, by Kershaw Hughes and Partners.
2	Gimbals for mounting spray booms (Fig. 23).
1	Suction pipe with bend (Fig. 24).
6	Surface-breaker boards (Fig. 25).
6	Coupling strips for surface-breaker boards (Fig. 26).
12	4in x 2in x ¼in washers for above (Fig. 26).
12	2½in x ⅝in bolts with shakeproof nuts.
4	60ft long x ⅜in dia. galv. steel wire ropes, with thimble one end and ferrule the other end.
2	20ft x ¼in dia. galv. steel wire ropes, with thimble one end and ferrule the other end.

8	30ft long x $\frac{1}{4}$in dia. galv. steel wire ropes, with thimbles both ends (Note: 30ft is the effective working length and should be accurate to $\pm \frac{1}{2}$in).
12	Galv. wire rope grips for $\frac{3}{8}$in dia. wire rope.
6	Galv. wire rope grips for $\frac{1}{4}$in dia. wire rope.
2	Galv. thimbles for $\frac{1}{4}$in dia. wire rope.
4	$\frac{1}{2}$in galv. large bow shackles, BS 825 (Table 3), ($\frac{3}{8}$in pin).
20	$\frac{3}{8}$in galv. small 'D' shackles, BS 3032 (Table 1), ($\frac{1}{2}$in pin).
250ft	$1\frac{1}{4}$in circ. sisal (or other natural fibre) rope.
8	'Salewa' snaplinks.
6	Boiler clamps (C pattern), 4in gap, $5\frac{1}{2}$in throat, $\frac{7}{8}$in dia. screw to close to zero.
1	$1\frac{1}{2}$in BSP short 'Y' piece threaded on each end (Fig. 24).
2	$1\frac{1}{2}$in BSP bronze gate valves.
3	$1\frac{1}{2}$in BSP nipples
8	17in x 4in dia. double-eyed floats.



DETAIL OF WELDED-ON LUG

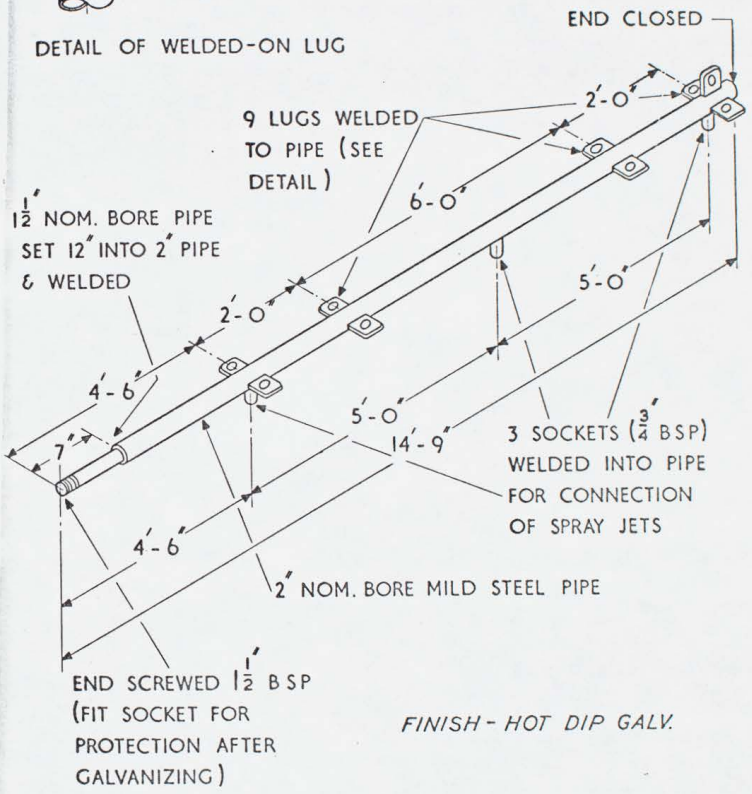


FIG. 18 DETAILS OF SPRAY BOOM

2598

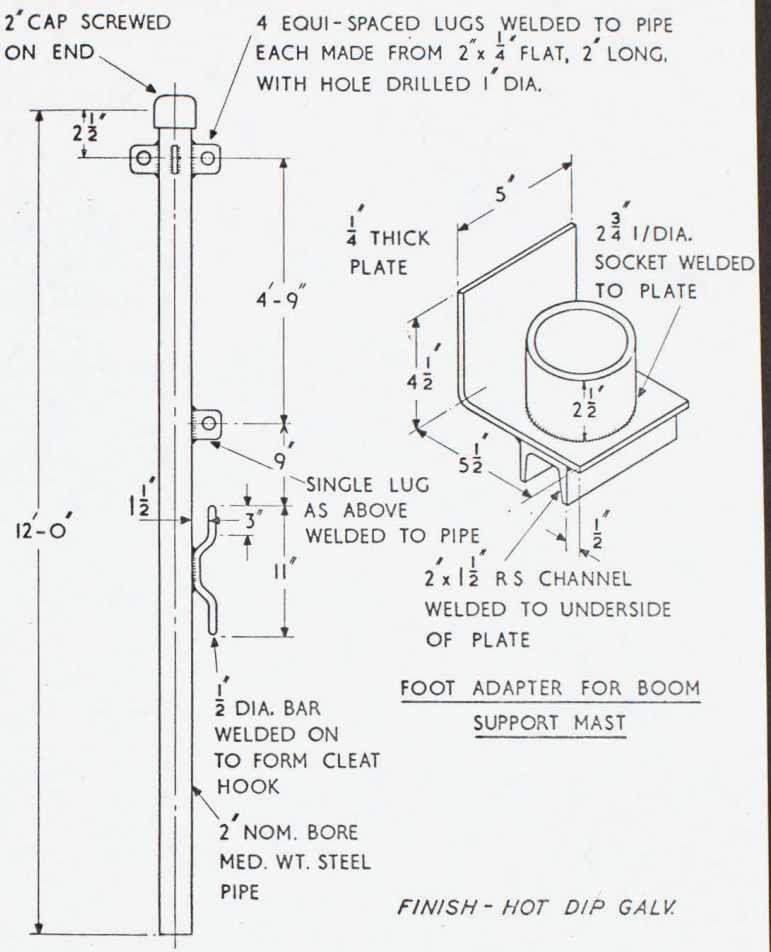
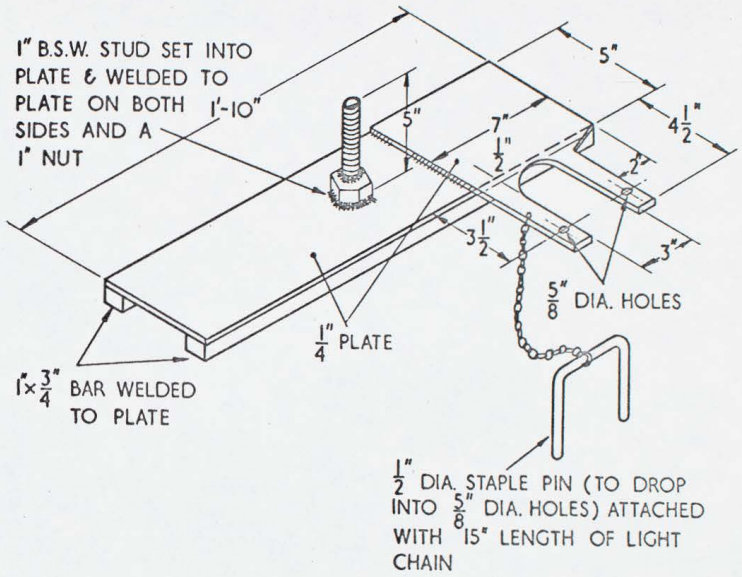


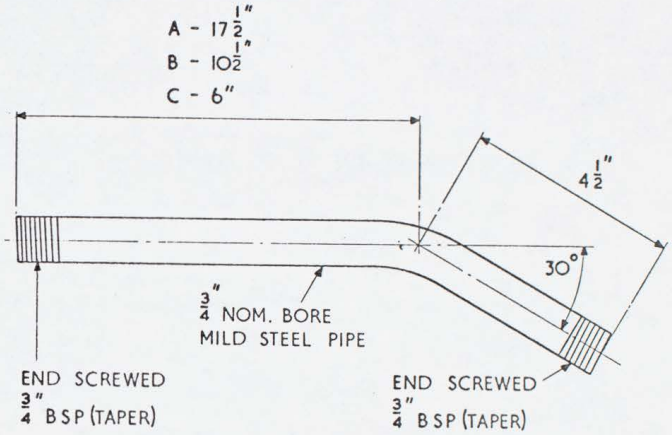
FIG. 19 SPRAY BOOM SUPPORT

2599



2 PER SET: 1 OFF AS SHOWN
& ONE OFF OPPOSITE HAND.
FINISH: HOT DIP GALV.

FIG. 20 DETAIL OF ANCHOR PLATE



FINISH - HOT DIP GALV.

FIG. 21 SPRAY JET EXTENSION PIPES

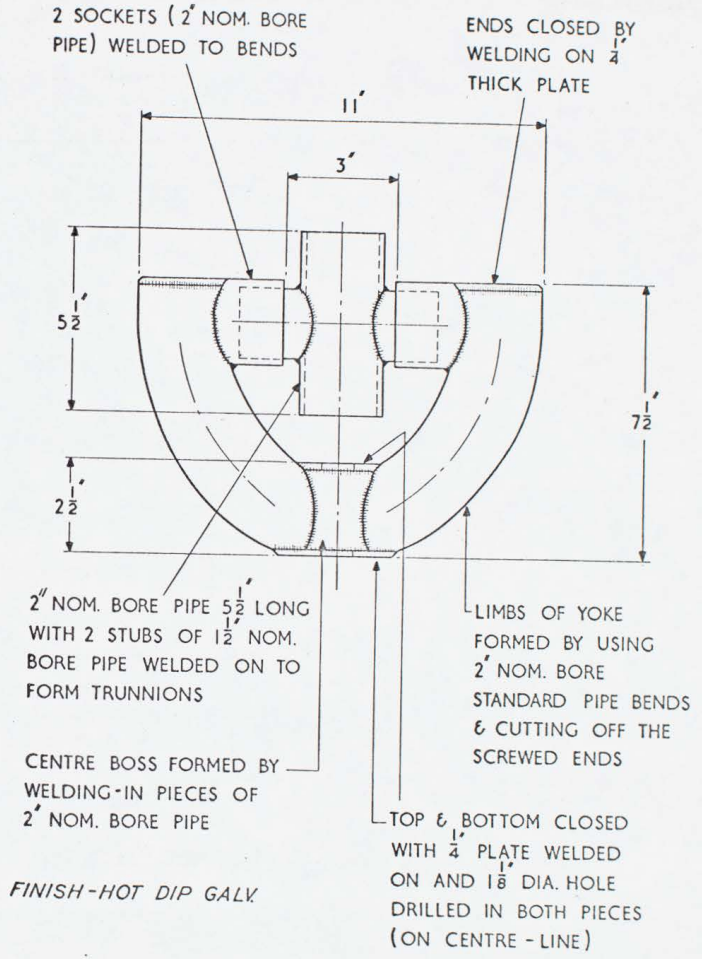


FIG. 22 GIMBAL FOR MOUNTING SPRAY BOOM

2602

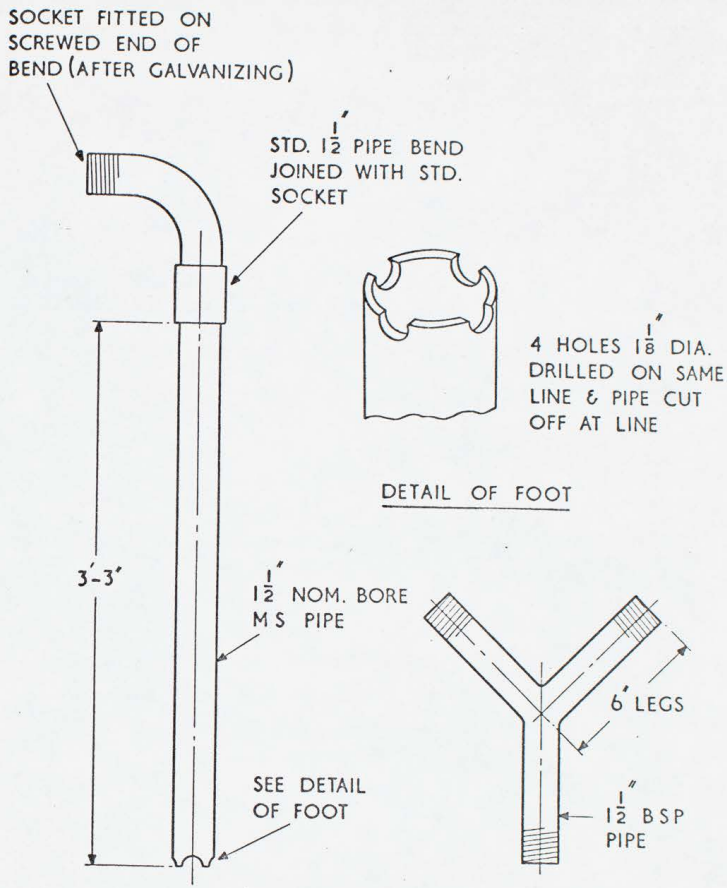


FIG. 23 SUCTION PIPE

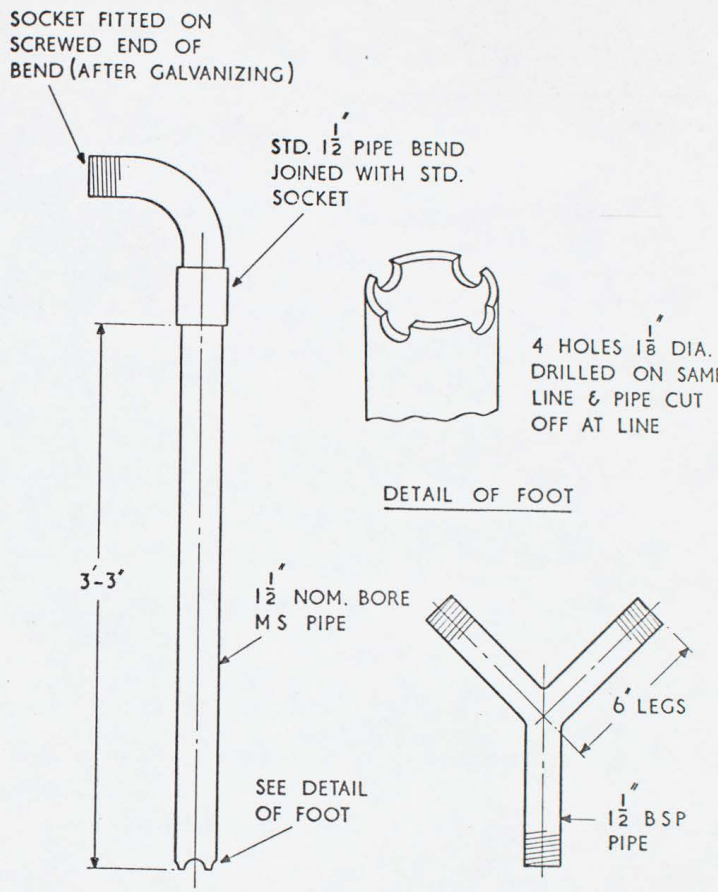
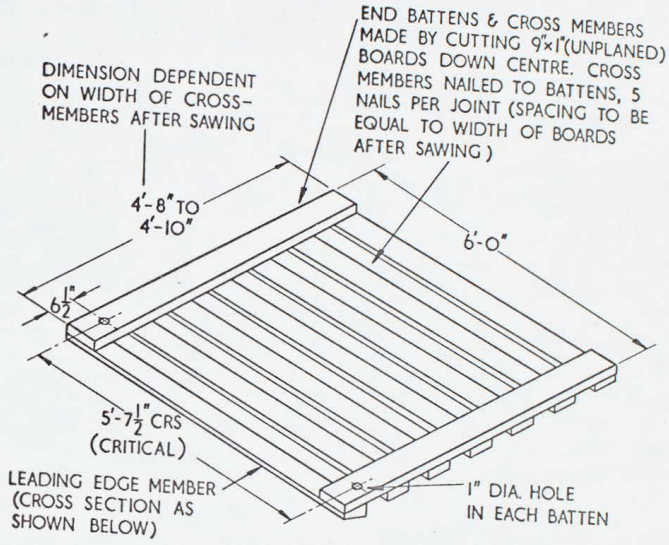
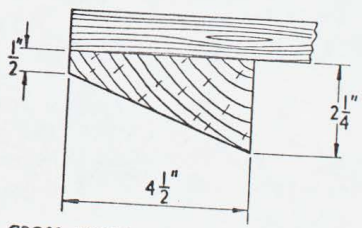


FIG. 23 SUCTION PIPE



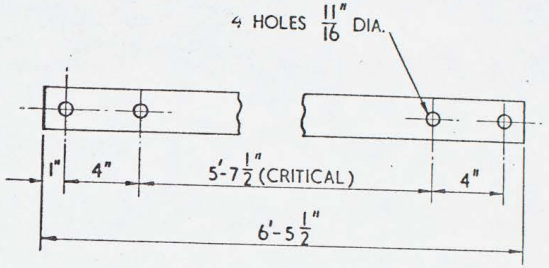


CROSS SECTION OF LEADING EDGE MEMBER

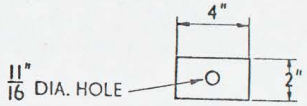
NOTE: POINTS OF ALL NAILS TO PROJECT AT LEAST 1" WHEN DRIVEN HOME. POINTS TO BE HOOKED OVER (ACROSS GRAIN) & HAMMERED IN.

FINISH-PAINT WITH CUPRINOL

FIG. 24 DETAIL OF SURFACE-BREAKER



COUPLING STRIP - 6 OFF



WASHER - 12 OFF

MATERIAL - 2" × 1/4" MILD STEEL FLAT BAR
FINISH - HOT DIP GALV.

FIG. 25 SURFACE-BREAKER COUPLING STRIP

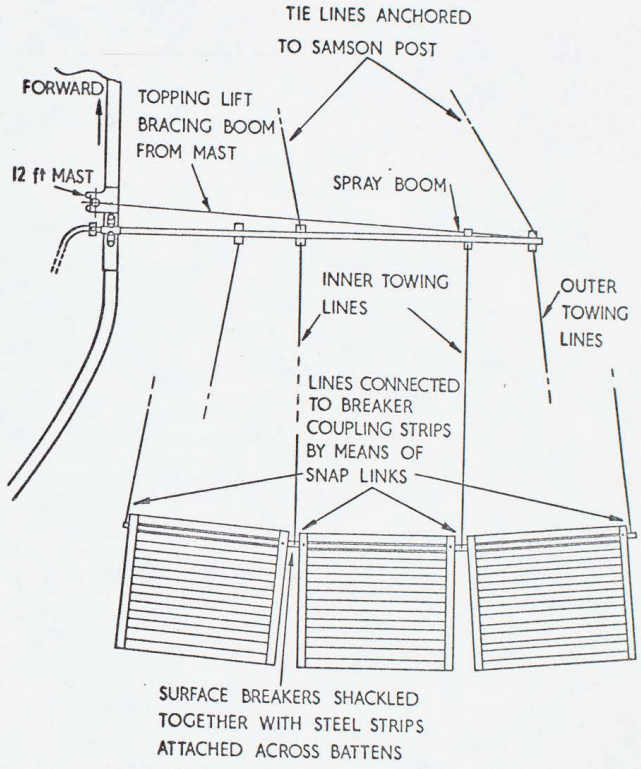


FIG. 26 ARRANGEMENT OF SPRAY BOOM AND SURFACE BREAKERS (SHOWN WITH BOOM FITTED ON STARBOARD SIDE)

26/2/2

30 September 1971

The Secretary,
Harbours Association of New Zealand,
P.O. Box 1765,
WELLINGTON.

Dear Sir,

OIL POLLUTION AT SEA - W.S.L. DISPERSANT SPRAYING EQUIPMENT

Consideration has been given to the letter from the Secretary for Marine dated 11 August 1971 forwarded under cover of your circular of 13 August, and the following comment is offered.

The preparation and execution of plans for treating oil slicks likely to threaten serious pollution of the New Zealand coastline must be a national responsibility. It would be appropriate for the Marine Department as the national authority on nautical matters to be the body responsible.

It is envisaged that the Department would appoint the Nautical Advisor or an officer under the Nautical Advisor who would in the first place, in consultation with Navy, Shipping Companies, Fishermen and Harbour Boards, compile a register of craft suitable for dispersal work, their base ports, zones of operation and type of spray equipment that could be operated from the craft. This section of the proposed scheme could possibly be integrated with similar aspects of the Marine Search and Rescue Organisation on which the Department is involved.

Major stocks of dispersant would be best controlled by the Department for as the Secretary for Marine states in his letter a large quantity is likely to be required for effective treatment of a really big oil slick. This major stock would be best located in some suitable central position from which it could be flown to the port(s) on which any major dispersal operation was based.

... ...

For local operations on spills within harbour limits it is our experience that 160 gallons of dispersal agent is a sufficient emergency stock as back-up supplies are readily obtainable from the manufacturer and there would be no occasion for this Board to hold any larger stock. Furthermore should the spillage occur off East Cape for example, national emergency supplies held in a harbour board store in Auckland would not be as advantageously placed as a stock held at a point from whence it could be readily air transported to the centre of operations.

In the event of a spillage of major proportions it would seem appropriate for the Marine Department Officer to co-ordinate the assembly of craft and equipment and to direct the dispersal operation. This Board would assist by making craft available as agreed with the controller of the dispersal operation who would have knowledge of the capabilities and range of the Board's fleet and who would also be aware of the operational needs of the ports from which he was drawing the vessels for dispersal work.

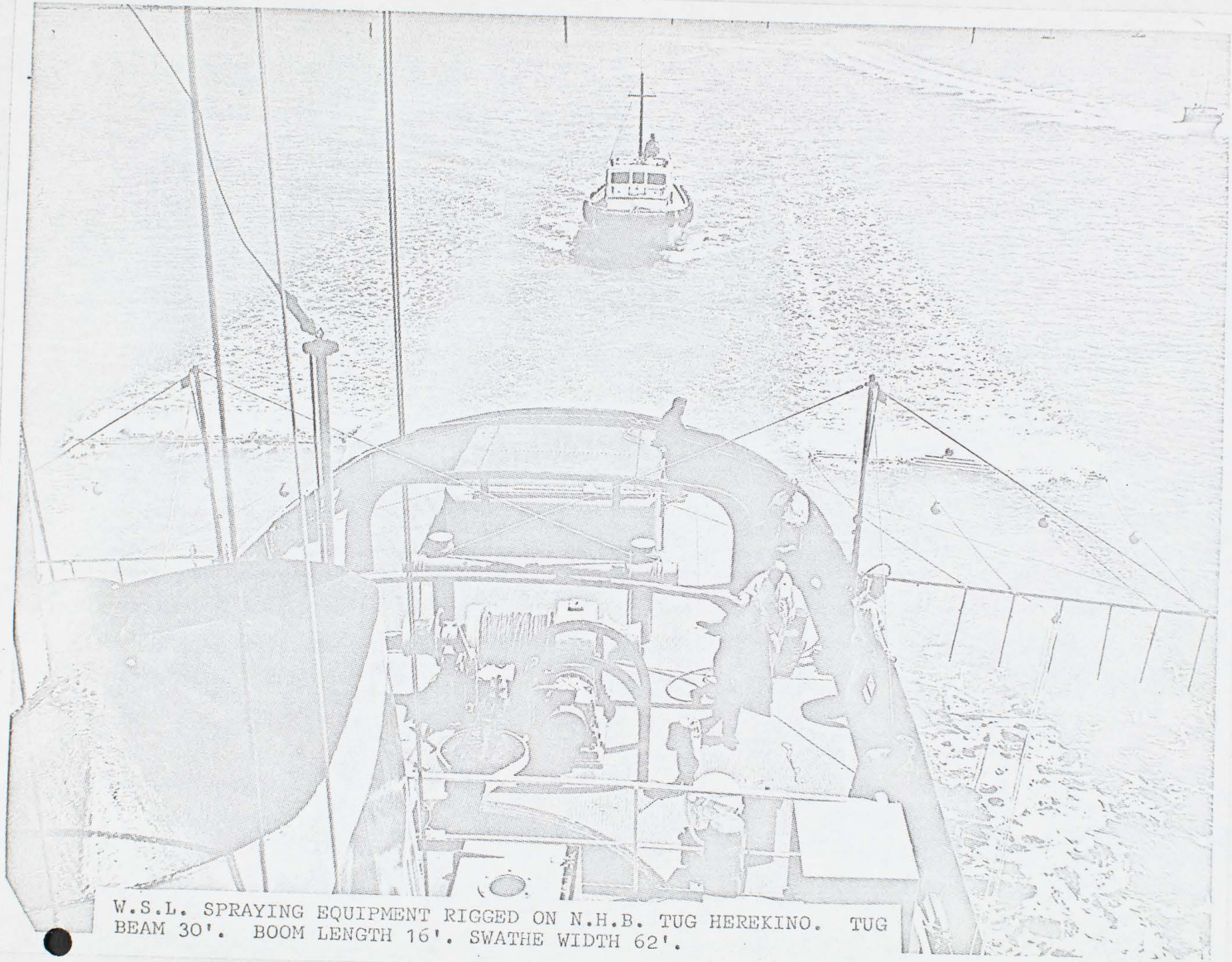
As we have not seen the description and specifications of the W.S.L. dispersant spraying equipment referred to in the letter from the Secretary for Marine, it is not possible to comment on the suitability or otherwise of the Board's tugs and other craft for operating the device. For oil dispersal work in the harbour it has been our experience that the major need is for plant that can be operated close alongside the wharves and if necessary underneath the wharves. However the Board would be prepared to consider some agreement under which it held, and maintained if required, on behalf of Government such W.S.L. spraying equipment for suitable craft in its fleet as necessary in the overall scheme.

In summary it is our opinion that there should be a national plan for dealing with major oil spills in coastal waters and that Government, through the agency of the Marine Department, should be responsible for the plan and its execution. Under this plan there would be a register of craft suitable for dispersal work in coastal waters and the Marine Department would hire and direct the use of these vessels. This Board would co-operate by making craft available as agreed and would be prepared to enter into an agreement with Government to hold and maintain ready for use dispersal spraying equipment extra to its own requirements for use within harbour limits should it be considered necessary to permanently locate such equipment at particular ports. Stocks of dispersal agent would be held by the Department at strategic points for distribution as required in the event of a spillage of major proportions in coastal waters.

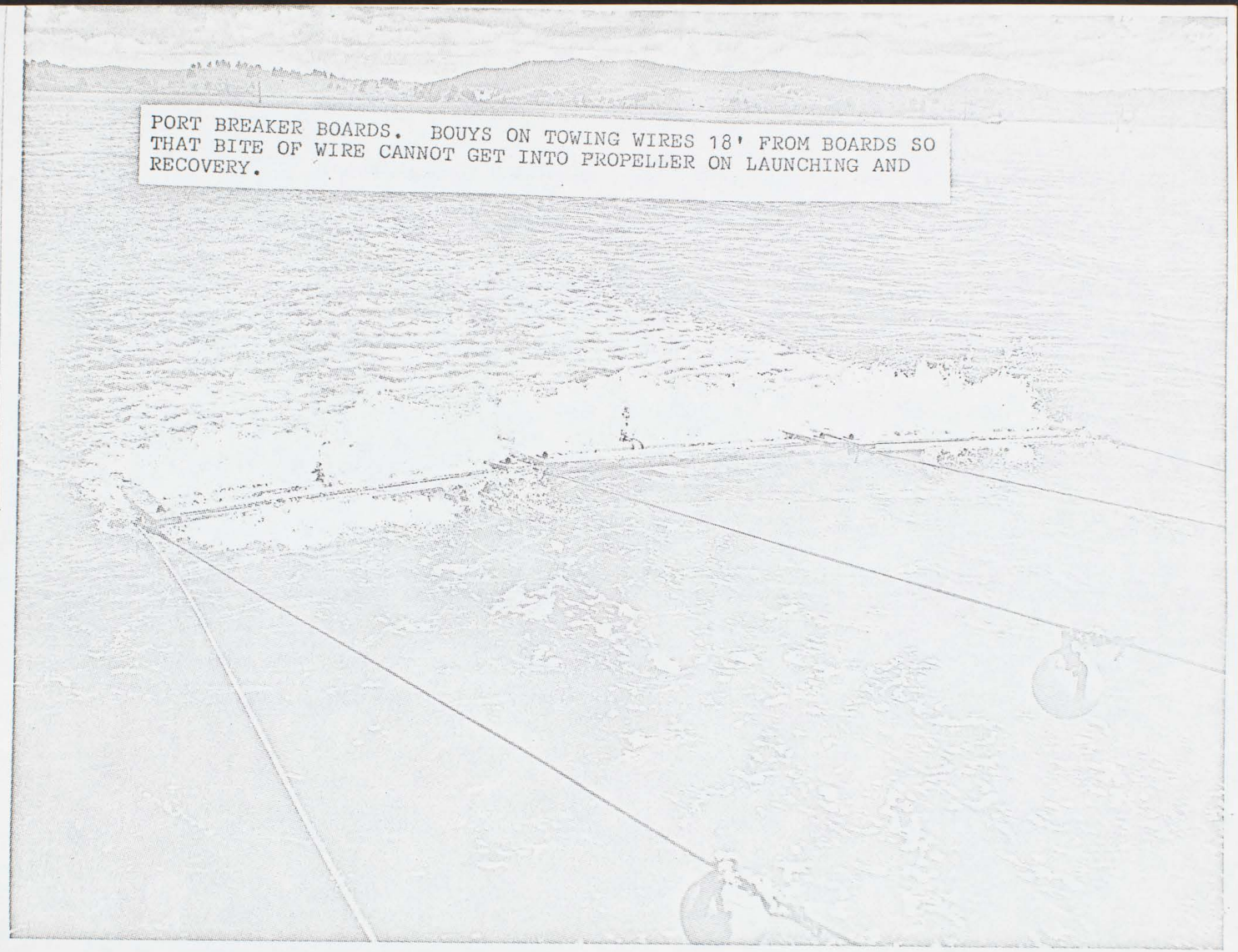
Yours faithfully,

R.T. Lorimer
GENERAL MANAGER

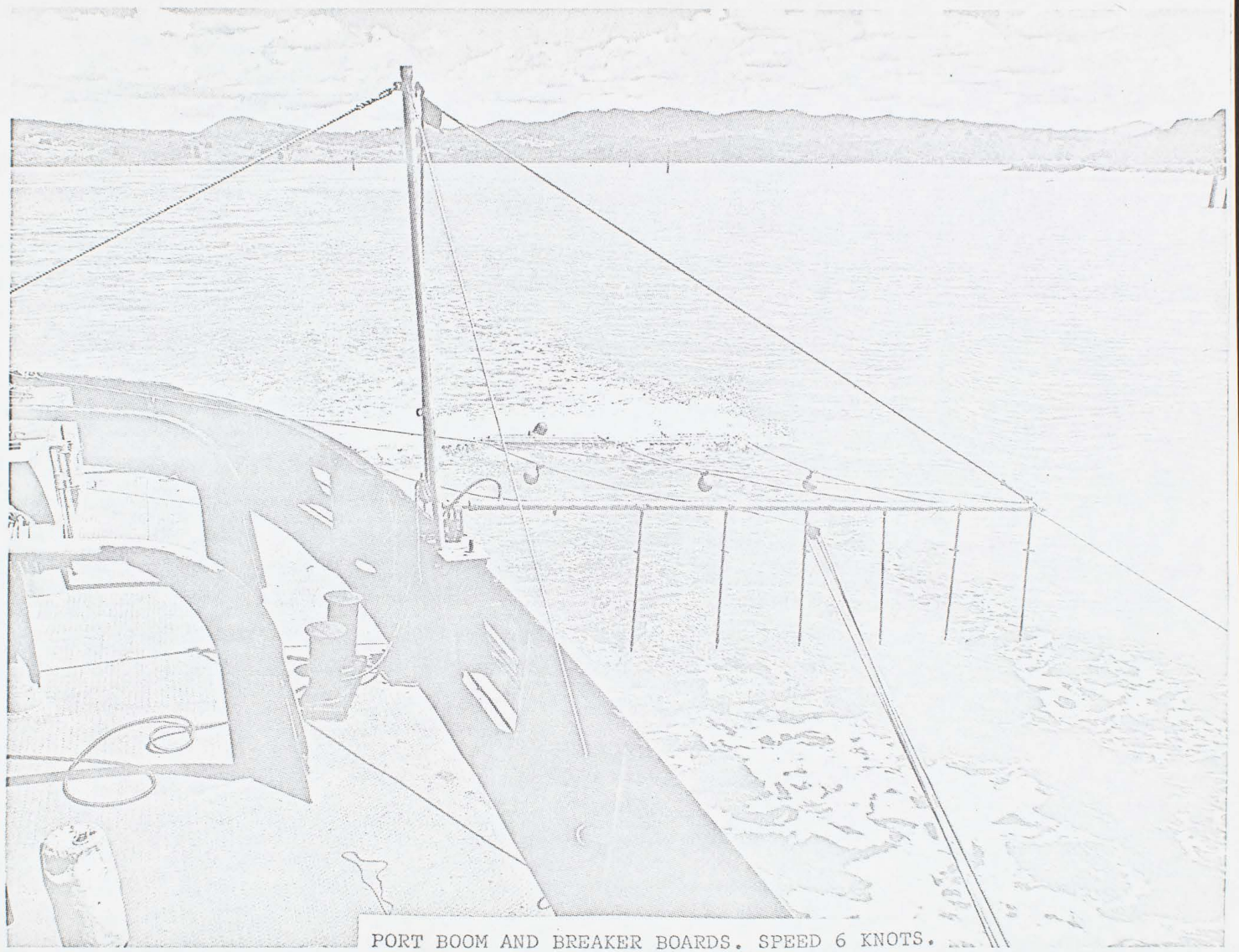
DNM.JB



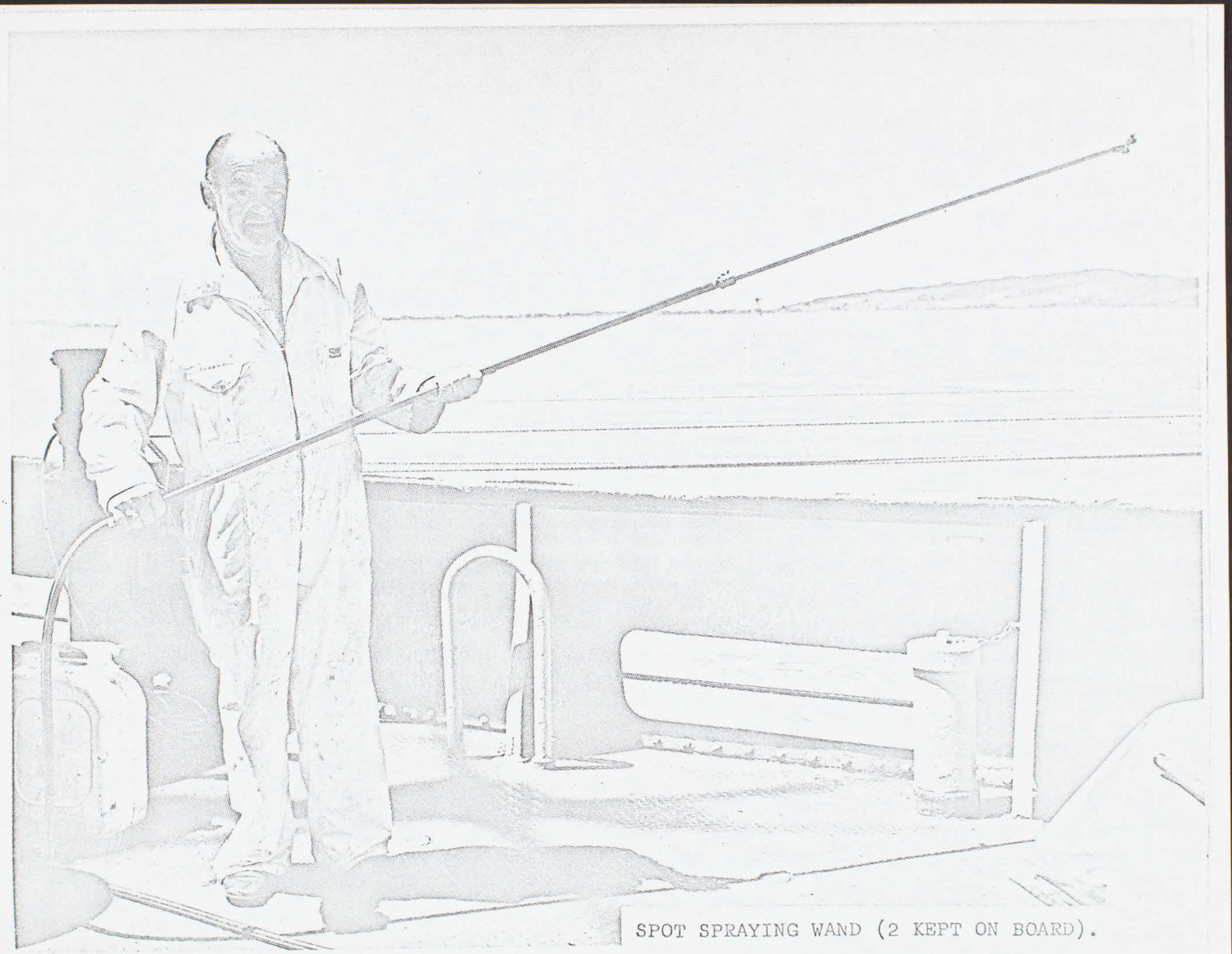
W.S.L. SPRAYING EQUIPMENT RIGGED ON N.H.B. TUG HEREKINO. TUG BEAM 30'. BOOM LENGTH 16'. SWATHE WIDTH 62'.



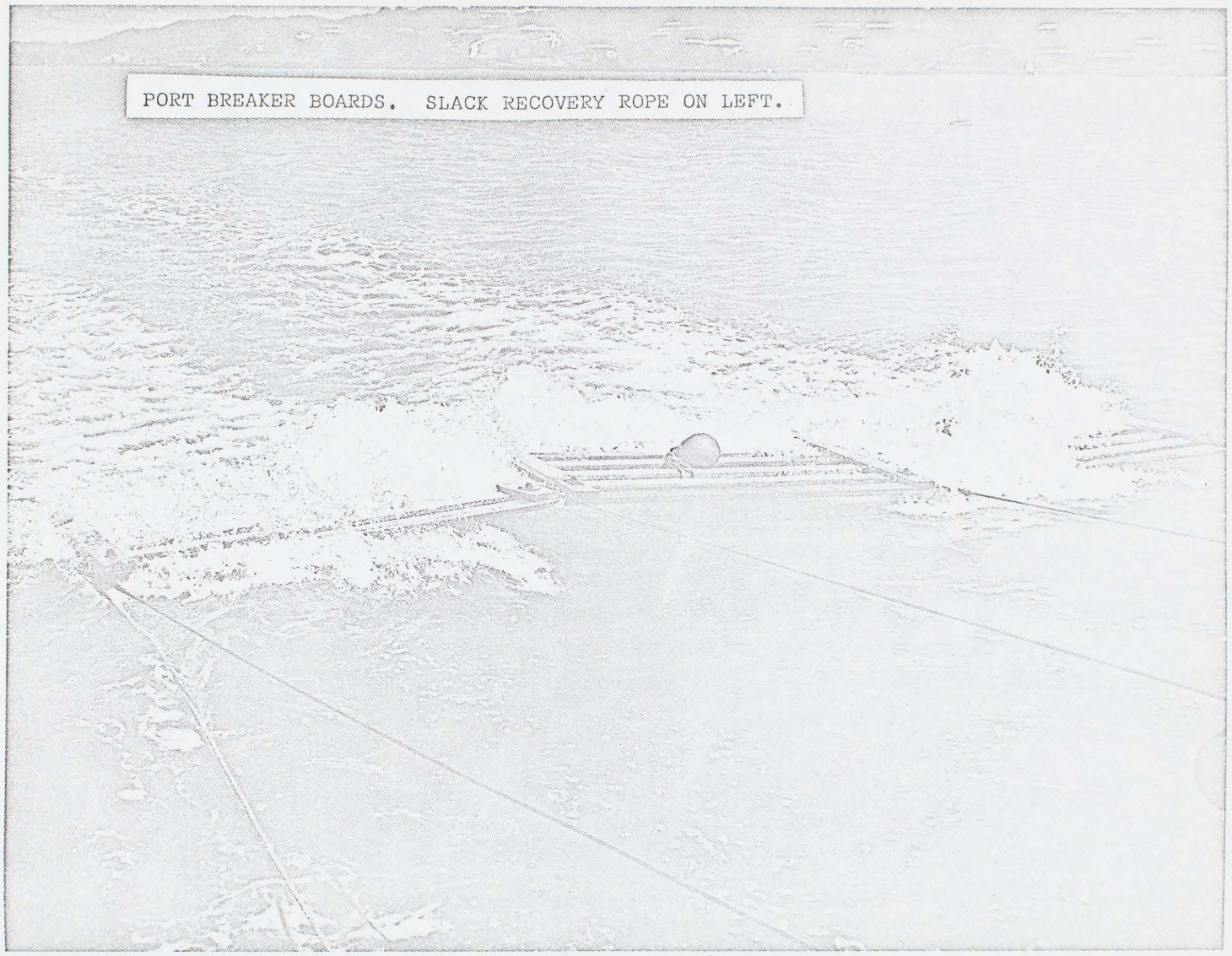
PORT BREAKER BOARDS. BOUYS ON TOWING WIRES 18' FROM BOARDS SO THAT BITE OF WIRE CANNOT GET INTO PROPELLER ON LAUNCHING AND RECOVERY.



PORT BOOM AND BREAKER BOARDS. SPEED 6 KNOTS.

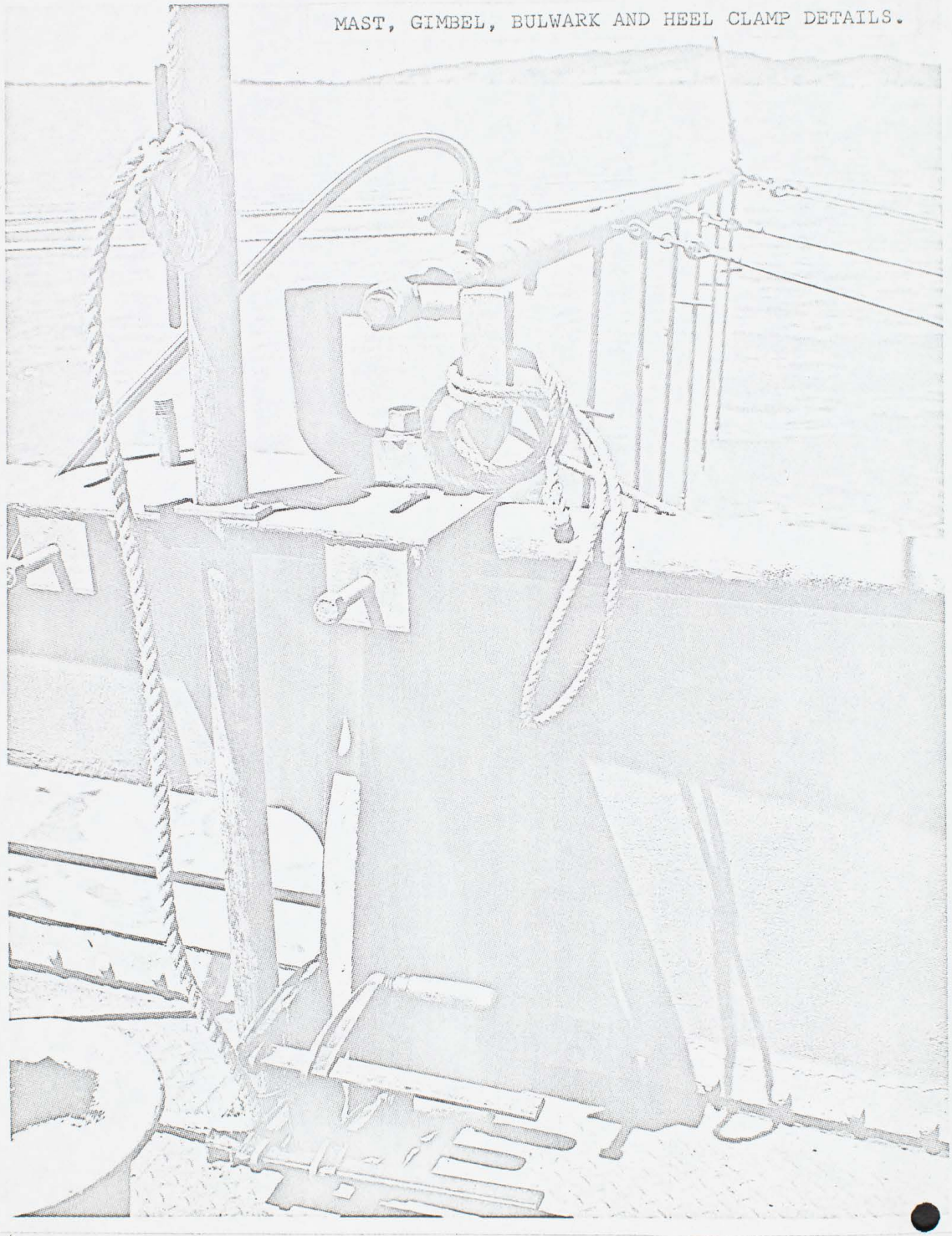


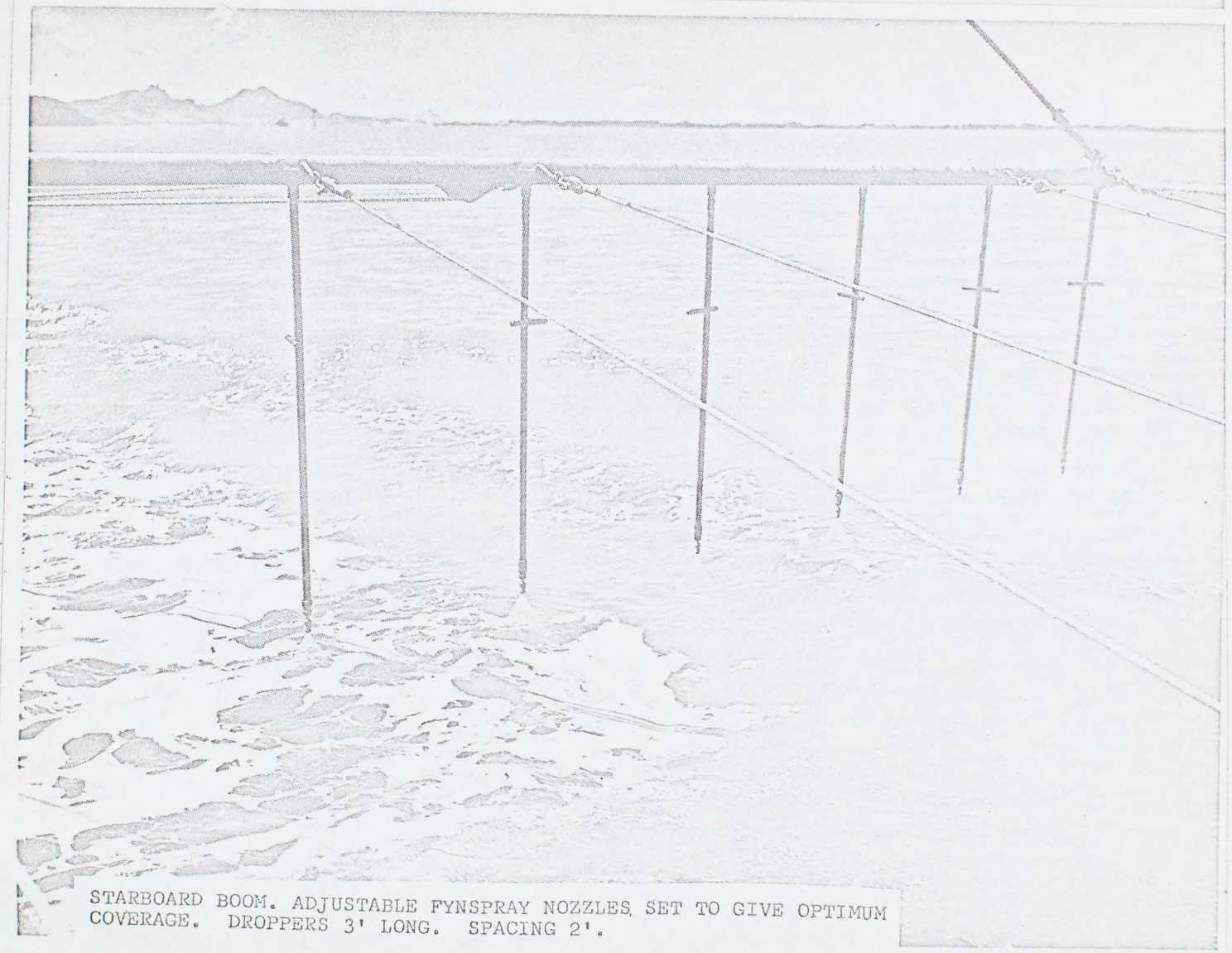
SPOT SPRAYING WAND (2 KEPT ON BOARD).



PORT BREAKER BOARDS. SLACK RECOVERY ROPE ON LEFT.

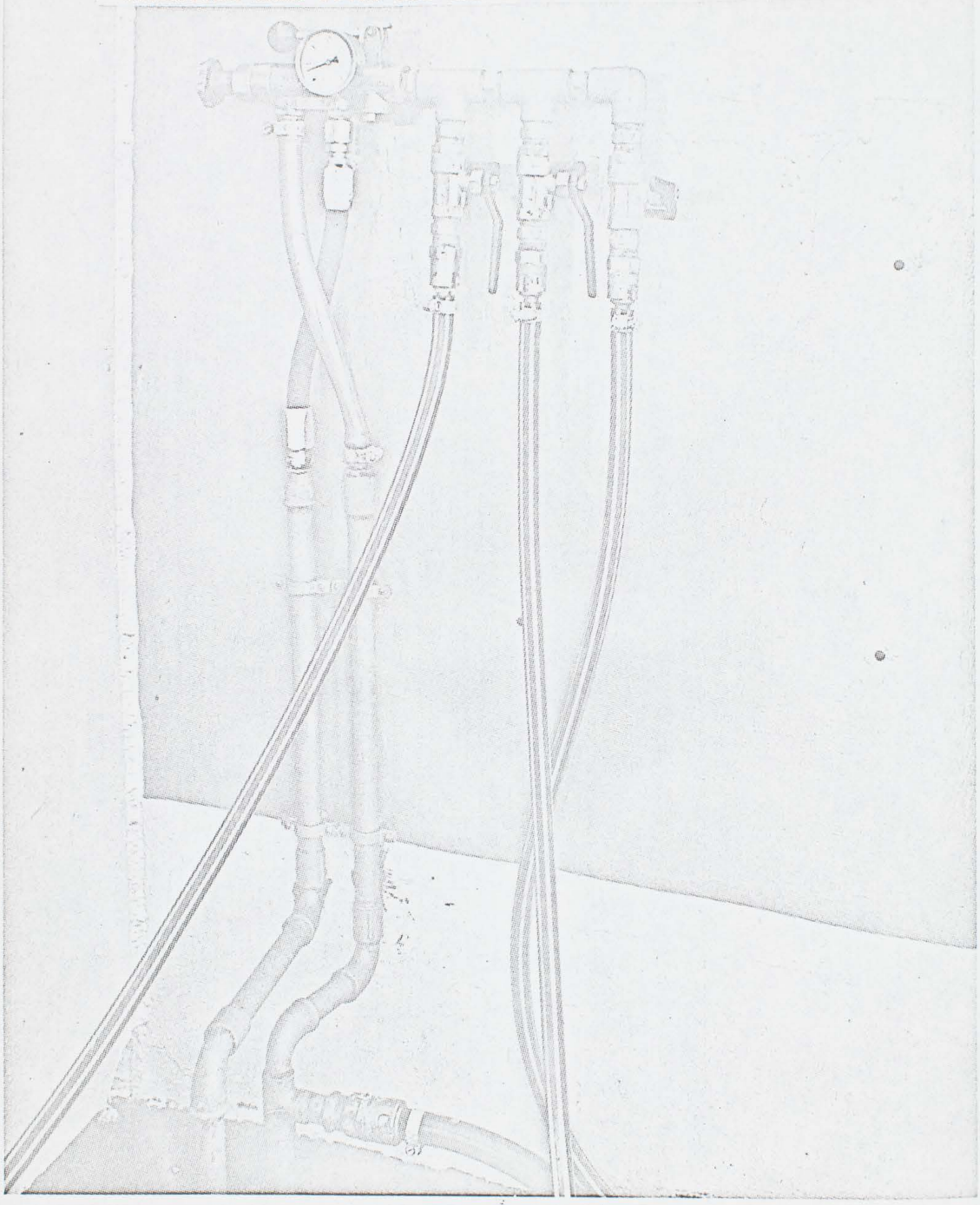
MAST, GIMBEL, BULWARK AND HEEL CLAMP DETAILS.

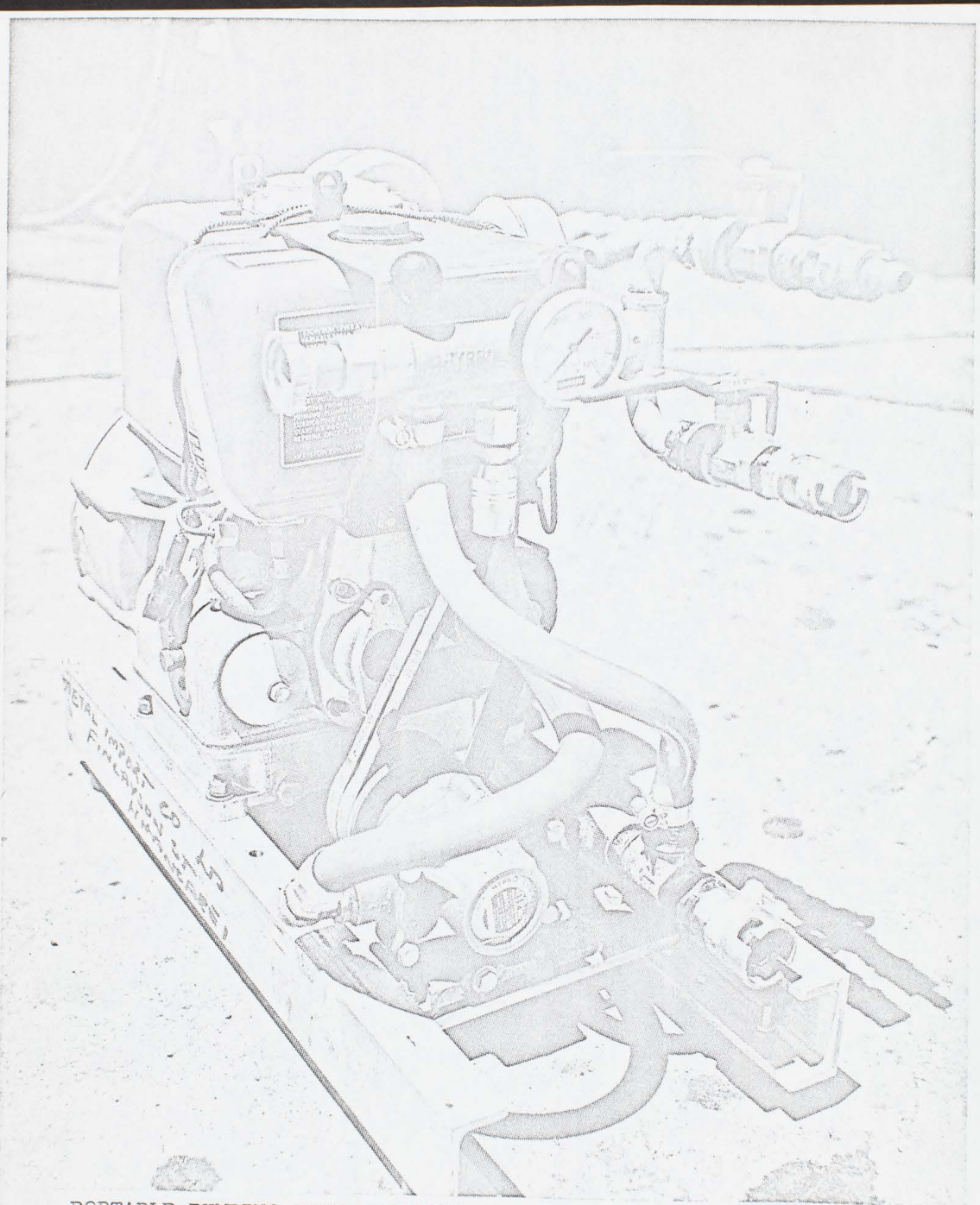




STARBOARD BOOM. ADJUSTABLE FYNSPRAY NOZZLES SET TO GIVE OPTIMUM COVERAGE. DROPPERS 3' LONG. SPACING 2'.

DECK CONTROL FITTINGS. "HYPRO" PRESSURE REGULATOR. SUCTION AND BY-PASS CONNECTION AT BOTTOM OF PHOTO. OUTLETS CONSIST OF WORCESTER BALL COCKS AND HANSEN BAYONET COUPLINGS.





PORTABLE PUMPING UNIT. ENGINE IS AA1 PETTER OF 3.5 HORE POWER AT 3,600 R.P.M. DRIVING A HYPRO 7,500 MODEL PUMP AT 1,200 R.P.M. DRIVE IS FROM ENGINE CAMSHAFT. APPROX. COST $450.

1 October, 1971

Mr.J.Penman,
C/O Beatson Rix-Trott Carter & Co.,
P.O. Box 6245,
AUCKLAND 1.

Dear Jim,

Thank you for the newspaper cutting on the Canadian "slick-licker".

It sounds a good machine and if the manufacturer is selling ten machines a week it must at least be capable of doing some good.

We will have a think about it.

Regards

CHIEF ENGINEER TO THE BOARD.

RAJS:JARP

BEATSON RIX-TROTT CARTER & CO.

ARCHITECTS & ENGINEERS

NORWICH UNION BUILDING, QUEEN ST, AUCKLAND, 1. P.O. BOX 6245. TELEPHONE 34-514

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J. G. PATTERSON	B.A., B.ARCH., A.N.Z.I.A.
S. J. PENMAN	B.E., (HONS.), M.N.Z.I.E.
R. S. READ	A.R.I.B.A., A.N.Z.I.A.
N. M. WILLIAMS	A.R.I.B.A., A.N.Z.I.A.

CONSULTANTS:

R. G. S. BEATSON	B.ARCH., F.N.Z.I.A
G. A. RIX-TROTT	DIP.ARCH., F.N.Z.I.A.

ASSOCIATES:

R. I. TAYLOR	A.N.Z.I.A.
GEOFFREY H. CARTER	B.ARCH., A.N.Z.I.A.

SJP/YM

30 September 1971

The Chief Engineer,
Auckland Harbour Board,
P.O. Box 1259,
AUCKLAND

Dear Arthur,

Enclosed is the cutting relating to the "slick-licker" which we discussed briefly in our chat in Queen Street yesterday.

When I was in Canada this month I noticed this article in the Vancouver paper and cut it out thinking that it might have some relevance to problems which you might encounter in Auckland and that the quoted cost didn't seem too absurd.

Yours sincerely,

Jim Penman

BEATSON RIX-TROTT CARTER & CO.

Encl/cutting

Mr. Seagar

Slick way to make a living

Financial Times

A Canadian invention that cleans up ocean oil spills is finding world-wide acceptance, just one year after its first big test.

The device is called the slick-licker, and it is the brainchild of Richard Sewell of Victoria, B.C.

Last summer, the slick-licker did yeoman service in helping to clean up after the oil tanker Arrow leaked its cargo of bunker fuel oil into Nova Scotia's Chedabucto Bay.

45 COUNTRIES

Since then, production and distribution agreements have been signed or are in the works in 45 countries.

The device is made by R. B. H. Cybernetics, Patents and Processes Ltd., a company set up by Sewell and his brother in Victoria. Dominion Welding Engineering of Toronto is producing models for the eastern Canadian market.

A manufacturing agreement has been signed with a company in Singapore. Others are expected soon in Britain, France and Australia.

WORLD CONCERN

The international success of the invention is a reflection of two things: Growing world concern about oil leaks at sea, and the relative low cost, effectiveness and simplicity of the Sewell device.

The machine works like this:

A craft is equipped with a conveyor belt of absorbent material which is soaked in oil so that it will not pick up any water.

This belt, on a boom, is dipped into the oil slick, and kept turning with a small engine. It picks up the oil on the water, and the oil is then squeezed out with a wringer device

FAST WORKER

It can pick up about 45 gallons of oil a minute.

The cost is about $7,500. To date, the federal government has bought five units, and three large Canadian oil companies have also bought units.

There have been no sales to date in the U.S., although oil spills have been fairly frequent there. But Sewell says several U.S. companies have enquired about distribution rights, and he expects to close a deal shortly.

TWO PLANTS

The company's present production capacity is about 10 machines a week, split between its plants in Victoria and Toronto.

Plans are to make a public stock offering, which would give the firm more working capital — to date the Sewell brothers have put up the money themselves — and provide funds for research into more pollution control products.

13 September, 1971

Mr. H.H. Godfrey,
18 Neal Ave.,
Glenfield,
AUCKLAND 10.

Dear Mr. Godfrey,

OIL BOOM AND COLLECTOR

I have examined the sketches which you brought in and discussed the matter of clearance of spillages with our Harbour Department, and it appears that the matter is much as I suggested when I talked to you. Most of spillages that have occurred to date have been dealt with quite satisfactorily by existing methods provided the oil slick is in accessible water. The problem that is most common however is with oil trapped under the wharves, between wharves and ships, and in other confined spaces where the boat carrying spray equipment cannot reach. You will quickly appreciate that the type of collector you are proposing would be much less able to work in confined spaces than the gear now used.

Further, it appears that the very heavy oils being used or carried by some ships are so viscous as to be incapable of being pumped at ordinary temperatures and although detergents have limitations for settling such oils, skimmers and pumps would equally be ineffective.

In this situation there is nothing to be gained in pursuing your suggestions further with the Board. The immediate problem in the Auckland Harbour is under control, and for the possibility of major spillages of heavy oil either in the harbour or off the coast, if this becomes the responsibility of this Board, we would prefer first to study closely the methods which have actually been tried in other places and to seek ready made equipment from overseas before entering into the design of special equipment ourselves. The possibilities in this equipment are outlined in the letter from the Shell Company to you.

Your trouble in bringing in your ideas and offering to demonstrate them further is appreciated but it would be misleading to encourage you to proceed further with them on the Board's behalf.

Your sketches and letters are returned herewith.

Yours faithfully,

Enc : Sketches and letters.

CLP:JARP

DESIGN ENGINEER

8 June 1971

Mr L. George,
Hycel Products Ltd.,
Porana Road,
Takapuna,
AUCKLAND 10

Dear Sir,

OIL BOOM

With reference to your enquiries regarding the purchase by the Board of a 100 foot length of plastic oil boom manufactured by Joint Industries Ltd. prior to May 1968.

The matter has been given full consideration. Firstly we do not consider that the Board has any obligation to purchase this item. If you refer to letters dated 15 and 23 May 1968 from Joint Industries Ltd. under Mr Cosgrove's signature it will be noted that it states "should the Board be interested". It would be confirmed that it is believed that Joint Industries took the full initiative to make this boom section and with the intention of marketing the product.

We have looked for a possible use for the section in harbour operations, but there is not solution.

Under the circumstances I am not able to obtain authority from Management to acquire this item at your verbal figure of $100.

Yours faithfully,

CHIEF ENGINEER TO THE BOARD

NS:GJG

Re attached:

On 4th June 1971. Chief Engineer and Deputy Gen. Ass. C.L. after his perusal of these documents. His opinion was that there was no evidence to show that the Board had any commitment to acquire and that as no use could be seen for this section of boom, he could not support a request to purchase.

George to be advised accordingly.

MESSAGE

To: MR ~~GOOC~~ SMITH

Date: 25/5/71 Time: 10.20 a.m. p.m.

Mr George.

of

Phone: 688216.

£150

	TELEPHONED		CALLED
	No message		No message
	Will phone you later		Will call again
☑	Please phone him on your return		Please phone him on your return
	Left message as below		Left message as below

Message:

Mr George rang me -

I informed him I would remind

you to ring

DB

G 22

Signature: George

28/3/71

Chief Engineer

I have no requirement for this additional length of oil boom

H.M

MESSAGE

To: Mr Smith

Date: 24.5.71 **Time:** 9.45 a.m. p.m.

Mr George.

~~of~~ Assessor & Adjuster

Phone: 688 216

TELEPHONED		CALLED	
	No message		No message
	Will phone you later		Will call again
✓	Please phone him on your return		Please phone him on your return
	Left message as below		Left message as below

Message:

This man says this is urgent.

G 22

Signature: Jeanette

C/L.

Oil Boom - Wynyard Wharf.

Saint Industries Ltd the concern who manufactured the original oil boom for Wynyard subsequently made a further section (100') of boom with modified flotation systems. This work was undertaken some time in April-May 1968 and as far as I know was undertaken by the Company solely on its own initiative. I do know that Roberts worked to some degree with Cosgrove the Director-Manager, but there was never any indication that the Board had an involvement to purchase. I think in fact that if it was satisfactory the Company would hope to interest other people in a locally produced article.

However on completion of this section of Boom by letter of the 15th May 1968 the Board was offered the section if it was interested for $500-00. Subsequently by letter of 27th May 1968 this was reduced to $325-00.

As our own oil boom had not been satisfactory in several respects, materials did not have the durability, [illegible] could not resolve how to handle etc., there was no point in acquiring a further section.

The matter remained in abeyance until September 1970 when a Mr. Lloyd George communicated with the Board advising that Saint Industries Ltd had been acquired by Union Carbide Ltd and with a re-disposition of manufacturing responsibilities. Mr Cosgrove had departed and that 100' of oil

which can be disposed of. Would the Board consider the purchase of this length of boom. Seager saw George at his works in Takapuna and discussed the past history. George maintained that Cosgrave would not have built the spare section unless he had a sale and that the Board had some obligation to purchase. However he would be prepared to let it go for $150. Subsequently he advised that if he cannot get $100 for it as salvage cost of the materials he would be satisfied. George is requesting a firm answer to this last offer.

Summary.

1. I am not clear to what extent Roberts may have involved the Board in the manufacture of this spare section. I must assume that as there is no written arrangement Cosgrave pursued this matter on his own initiative, and the Board has no obligation to purchase.

2. Could we use 100 ft of boom on its own to assist in particular problems attached to oil spills in the harbour. Where would we keep it. Harbourmaster or T.O.W.S. to operate when suitable.

3. If Q.2. is answered and a suitable solution found then for $100 we could recommend purchase.

4. If Q.2. is not resolved, I can only see George being advised that we do not have any use for it or any obligation to acquire it.

HG.

18.7.68

OIL BOOM AT WYNYARD WHARF

DAMAGE REPORT

The oil boom is now stowed in Shed 40 at Wynyard Wharf having been lifted from the flotation bay. The boom was floated in the bay on May 2nd and lifted out on July 11th. During this period of approximately two months heavy wave action in the bay due to Easterly winds was observed to be causing chafing damage to the floats that were in contact with the wood fenders.

It was also noted that, although the boom was secured to the fenders at each end of the bay, the unattached bights in between, looped over the fenders due to non synchromous movement in wave action. This may have caused crushing between fenders and concrete piles or transverse waling.

The boom has been inspected in the shed but damage to floats cannot yet be assessed until space is provided to flake it out full length. However, the glass fibre reinforced P.V.C. skirt has failed to stand up to the combination of immersion in sea water and movement. The P.V.C. has become brittle and flakes off the fibre glass. The manufacture process was probably a combination of heat and pressure to sandwich the fibre glass into the P.V.C. (Lighter tarpaulins in P.V.C. have also been unsatisfactory).

An alternative skirt material suitable to the form of the boom will now have to be found, and there is reason to believe that treated canvas or fibre glass material could be more satisfactory. The actual number of floats that cannot be repaired or used again will not be known until the boom is dismantled as will be necessary to incorporate new skirt material.

BJR:CMc

Joint Industries Limited
Factory: Porana Road, Takapuna
P.O. Box 3264, Auckland, New Zealand
Telephone: 299-263, Auckland

15th May, 1968.

The Chief Engineer,
The Auckland Harbour Board,
P.O. Box 1259,
AUCKLAND.

Dear Sir,

We have in stock, made up, one spare section of Floating Oil Boom made to Auckland Harbour Board specifications and including subsequent modifications to the original design.

This spare section is available for sale ex our factory in Porana Road, Takapuna, at Five Hundred Dollars ($500.00) should the Board be interested.

We look forward to hearing from you in due course.

Very truly yours,

M. Cosgrave,
Director,
JOINT INDUSTRIES LIMITED.

Joint Industries Limited
Factory: Porana Road, Takapuna
P.O. Box 3264, Auckland, New Zealand
Telephone: 299-263, Auckland

27th May, 1968.

The Chief Engineer,
The Auckland Harbour Board,
P.O. Box 1259,
AUCKLAND.

Dear Sir,

We have in stock, made up, one spare section of Floating Oil Boom made to Auckland Harbour Board specifications and including subsequent modifications to the original design.

This spare section is available for sale ex our factory in Porana Road, Takapuna, at Three Hundred & Twenty Five Dollars ($325.00) should the Board be interested.

We look forward to hearing from you in due course.

Very truly yours,

M. Cosgrave,
Director,
JOINT INDUSTRIES LIMITED.

Maya George.

Solar Weaving Industries
46 St Leonards Road
Nr Eden

was

Caribbean Plastics Ltd

↓

South Industries

↓ ↘

Solar Industries

Union Carbide

7th April, 1971.

C.J. OLLIVER
MECHANICAL ENGINEER'S OFFICE

THE HARBOUR MASTER.

INFORMATION RECEIVED BY BOARD'S SOLICITORS RE OILY WATER SEPARATOR IN "CALEDONIA STAR".

The oil spill from this vessel occurred whilst engine room bilges were being pumped overboard through their oily water Separator. The problem is that even with the greatest care being taken in operation of this design of separator, spills can occur. For this reason it is normal procedure for a ship when in port to pump engine room bilges into an empty fuel tank and then dispose off this at sea in the normal manner for discharging ballast.

This cannot be done on the "Caledonia Star" at present as the ballast line has a sea connection only and is not connected to the bilge system.

A simple modification to the bilge and ballast system would allow pumping of E.R. bilges into a ballast tank and thus obviate the possibility of further oil spills in the harbour.

I would recommend that the engineer superintendent of the Shipping Company have discussions with the Board's Marine Engineers' as to the simplest and cheapest means of modifying the systems as above.

CJO.

C.J. OLLIVER
MECHANICAL ENGINEER'S OFFICE.

Copy to:
Chief Engineer
for Information.

CJO:AF.

15th March 1971.

THE CHIEF ENGINEER

THE GENERAL MANAGER.

OIL POLLUTION - CLEAN UP.
CANADIAN DEVELOPED "SLICK - LICKER".

The information received from the Canadian Government Trade Commissioner, with regard the 'Slick;Licker' has been studied and I would like to make the following comments:-

(a) Although this type of oil separator is of Canadian design and patent, several other countries have produced aparatus of a similar nature.

(b) The method of oil disposal now used by the Board is by breaking up the oil with detergent and sinking to the bottom of the harbour. This is not completely satisfactory and should be only used on small spills.

It would be an advantage to have a machine i.e. a 'Slick-Licker', that could remove oil from the harbour for disposal ashore, but in our size of port operation the capital cost would have to be an important consideration.

(c) If we could obtain the approximate cost and a general arrangement drawing and details of the 'Slick-Licker' only, we could look into the design of a simple pontoon, or use existing plant, the propulsion being supplied by one of our launches.

Copy to:
Mechanical Engineer
for Information.

CHIEF ENGINEER TO THE BOARD.

JMB:AF.

Auckland Harbour Board

Ref.73/1/1

MEMORANDUM 2nd March 1971.

FROM The Secretary **TO** The Chief Engineer.

RECEIVED - 3 MAR 1971 ENGINEERS DEPT.

NEW ZEALAND STEEL LIMITED -
OIL PROSECUTION.

In a recent letter received from Russell, McVeagh, McKenzie, Bartleet & Co., advising of the successful result of the prosecution taken against New Zealand Steel Ltd. in the Magistrate's Court on the 18th February, Mr.Williams, who took the prosecution, expressed his appreciation of the excellent assistance rendered by Mr.Oliver of your Mechanical Engineer's Office.

Will you please convey to Mr.Oliver the sentiments expressed by the Board's Solicitor.

SECRETARY.

JES:WMP

Mr. Olliver

Please note & return.

3.3.71

Noted go

2nd. March, 1971.

THE CHIEF ENGINEER

THE GENERAL MANAGER.

INTERNATIONAL CONVENTION FOR THE PREVENTION OF THE POLUTION OF THE SEA BY OIL.

The amended draft regulations attached to your memorandum have been studied with regard to my previous comments, refer my memorandum dated 12th March, 1970, and I comment where appropiate as follows:-

(Exceptions) Regulations:-

Section (5) Sub-section (c) - To my knowledge only Marsden Point have facilities to receive oil residues, therefore this section could possibly be a 'let out' for ships, fitted with means of separating oil.

I therefore consider this section should be deleted.

Records, Transfer and Enforcement of Convention:

As remarked in my memorandum the Board's "Hikinui", "Kerinui", "Aucklander" and "William C.Daldy" will require to keep records as per the schedules.

It is required that these records be kept in the 'Official Log Book'. To my knowledge these vessels do not keep Standard Ship Log Books but the matter can be attended to.

(Ships' Equipment) Regulations 1971:

My comments of the 12th March, 1970, still stand.

Copy to:

Mechanical Engineer
for Information.

CHIEF ENGINEER TO THE BOARD.

JMB:AF.

Auckland Harbour Board.

Mr. Swales.

Please have Mr. Gray prepare comments on the draft. Let me have by 5/3/71.

File 283/1 attached

JB 2/3/71

1/3/71.

Auckland Harbour Board

MEMORANDUM 26 February 1971

FROM THE GENERAL MANAGER

TO THE CHIEF ENGINEER
THE HARBOURMASTER

INTERNATIONAL CONVENTION FOR THE PREVENTION OF THE POLUTION OF THE SEA BY OIL

On 5 March 1970 I forwarded draft regulations for your comment, refer your memorandum dated 12 March 1970.

Amended draft regulations now received are attached for your study, and I will appreciate having your comments NOT LATER THAN FRIDAY 5 MARCH 1971.

The regulations have been perused in my office and to assist you in commenting further as required when comparing the amended copy with the original draft, alterations referring to the Oil in Navigable Waters Act 1965, tonnage figures, and wording in the text of the clauses, etc., have been underlined in the attached copies.

It is to be noted that The Oil in Navigable Waters (Heavy Diesel Oil) Regulations 1971, and The Oil in Navigable Waters (Prohibited Sea Areas) Regulations 1971, are new draft regulations promulgated for comment.

To Mech. Engr. JB 2/3/71

R.T. Lorimer
GENERAL MANAGER

THE HARBOURS ASSOCIATION OF NEW ZEALAND
GENERAL BUILDINGS (Sixth Floor) . 38/42 WARING TAYLOR STREET
WELLINGTON, 1.

Telegraphic Address:
"HARUNION"
WELLINGTON

TELEPHONE 46-739

All Correspondence to be
Addressed to:
G.P.O. BOX 1765
WELLINGTON, 1

26/2/2

The General Manager,
Auckland Harbour Board,
P.O. Box 1259,
Auckland.

AUCKLAND HARBOUR BOARD
RECD. 24FEB1971
ACKD.
ANSD.

23rd February 1971.

Dear Sir,

International Convention for the Prevention
of the Pollution of the Sea by Oil

The Marine Department has supplied me with the enclosed draft regulations in respect of the acceptance of the International Convention and has asked that I let them have by the 15th March any comments, otherwise they will assume the draft Regulations meet with the approval of the Association.

It would be appreciated if you could let me have any comments you wish to make before that date and also an indication whether you think the Regulations should proceed.

Kindly return the draft with your reply.

Yours faithfully,

R.B. Dawson

Secretary.

Encl.

G.M.

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (EXEMPTION) NOTICE 1971

NOTICE

1. Title and commencement - (1) This Notice may be cited as the Oil in Navigable Waters (Exemption) Notice 1971.

(2) This Notice shall come into force on the day of 1972, being the prescribed date for the purposes of the Oil in Navigable Waters Act 1965.

2. Exemption - Every ship of less than 250 tons gross tonnage, whether registered or not and of whatever nationality, is hereby exempted from the provisions of subsection (1) of section 6 of the Oil in Navigable Waters Act 1965 (which prohibits the discharge of oil into New Zealand waters) in respect of the discharge from its bilges of a mixture containing oil where the only oil in the mixture is lubricating oil which is drained or leaked from machinery space.

Dated at Wellington this day of 1971.

① Does any ship of any size is not exempt when pumping oil or bilges containing oil into the sea

② "Oil" being fuel or diesel oil.

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (EXCEPTIONS) REGULATIONS 1971

ORDER IN COUNCIL

REGULATIONS

1. Title and commencement - (1) These regulations may be cited as the Oil in Navigable Waters (Exceptions) Regulations 1971.

(a) These regulations shall come into force on the day of 1971, being the prescribed date for the purposes of the Oil in Navigable Waters Act 1965.

2. Interpretation - In these regulations, unless the context otherwise requires, expressions defined in the Oil in Navigable Waters Act 1965, shall have the meanings so defined.

3. Exception from section 3(2) of Oil in Navigable Waters Act 1965 in respect of discharge of oily mixtures from bilges - Subsection (2) of section 3 of the Oil in Navigable Waters Act 1965 shall not apply to any New Zealand ship (not being a tanker) in respect of the discharge from its bilges of oil or oily mixture to which that section applies until *.....

4. Further exception from section 3(2) in respect of certain tankers - Every New Zealand ship being a tanker of under 150 tons gross tonnage or a tanker for the time being engaged in the whaling industry when actually employed on whaling operations, is hereby excepted from the operation of subsection (2) of section 3 of the Oil in Navigable Waters Act 1965 in respect of the discharge of oil or of a mixture containing oil into an area of the sea which

is a prohibited sea area, being a prohibited sea area specified by regulations made under section 5 of that Act.

5. Further exceptions from section 3(2) in respect of certain other ships - (1) Subject to the condition that the discharge shall be made as far away from land as is practicable and in any case not to landward of the outer limits of the territorial sea of New Zealand every New Zealand ship (not being a tanker) which uses bunker fuel tanks for the carriage of ballast water, being either -

(a) a ship of under 250 tons gross tonnage; or

(b) a ship which is not fitted with an effective means of separating oil from water; or

(c) a ship which is fitted with an effective means of separating oil from the water, but is proceeding to a New Zealand port which has no adequate facilities to receive oil residues -

is hereby excepted from the operation of subsection (2) of section 3 of the Oil in Navigable Waters Act 1965 in respect of a discharge of a mixture containing oil where the mixture consists only of oil from bunker fuel tanks and ballast water:

Provided that, in the case of a ship referred to in paragraph (b) of this subclause, not being a ship of under 250 tons gross tonnage, or a ship which is for the time being exempt from the provisions of the Oil in Navigable Waters (Ships' Equipment) Regulations 1971, by virtue of an exemption granted by the Minister under section 23 of the Act, the exception under this subclause shall not have effect after **.....

(2) Subject to and without prejudice to the provisions of subclause (1) of this regulation, every New Zealand ship (not being a tanker) being a ship under 250 tons gross tonnage or for the time being engaged in the whaling industry when actually employed on whaling operations is hereby excepted from the operation of subsection (2) of section 3 of the Oil in Navigable Waters Act 1965 in respect of any discharge of oil or of a mixture containing oil into a prohibited sea area, being a prohibited sea area specified in regulations made under section 5 of that Act.

*A date 12 months after date of entry into force of the Convention for New Zealand.

**A date 3 years after date of entry into force of the Convention for New Zealand.

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (RECORDS, TRANSFER, AND ENFORCEMENT OF CONVENTION) REGULATIONS 1971

REGULATIONS

1. Title and commencement - (1) These regulations may be cited as the Oil in Navigable Waters (Records, Transfer and Enforcement of Convention) Regulations 1971.

(2) These regulations shall come into force on the day of 1971 being the prescribed date for the purpose of the Oil in Navigable Waters Act 1965.

2. Interpretation - In these regulations unless the context otherwise requires

"Convention" means the International Convention for the Prevention of Pollution of the Sea by Oil 1954 as amended in 1962 or any subsequent Convention:

"Ship" has the same meaning as in the Shipping and Seamen Act 1952.

"Surveyor of Ships" means a surveyor of ships appointed or recognised as such under section 13 of the Shipping and Seamen Act 1952:

Other expressions defined in the Oil in Navigable Waters Act 1965 shall have the meaning so defined.

3. Duty to maintain records - (1) Subject to the provisions of subclauses (2) and (3) of this regulation records shall be kept by the Master of every New Zealand ship in the official log book in respect of the following matters:

See - Oil in Navigable Waters Act 1965, Section 12, Sub-section (1)

Note Clause (d) has been excluded.

(a) Of any occasion on which oil or a mixture containing oil is discharged from any such ship for the purpose of securing the safety of any ship, or of preventing damage to any ship or cargo or of saving life;

(b) Of any occasion on which oil or a mixture containing oil is found to be escaping, or to have escaped, from any such ship in consequence of damage to the ship or by reason of leakage;

(c) Of the carrying out, on board or in connection with any such ship, of such operations as may be prescribed, being operations relating to -

(i) The ballasting of oil tanks (whether cargo or bunker fuel tanks) and the discharge of ballast from, and the cleaning of, such tanks; or

(ii) The separation of oil from water, or from other substances, in any mixture containing oil; or

(iii) The disposal of any oil or water, or any other substance, arising from operations relating to any of the matters specified in sub-paragraphs (i) and (ii) of this paragraph; or

(iv) The disposal of any other oil residues or sediments.

(2) The master of every New Zealand ship (not being a tanker) of 250 tons gross tonnage or over shall keep a record in the official log book, in the form set out in the First Schedule to these regulations of the matters specified in paragraphs (a) and (b) of sub-clause (1) of this regulation, and in the form set out in the Second Schedule to these regulations of the matters specified in paragraph (c) of that sub-clause.

(3) The master of every New Zealand ship, being a tanker, shall keep a record in the official log book, in the form set out in the First Schedule to these regulations of the matters specified in paragraphs (a) and (b) of sub-clause (1) of this regulation and the form set out in the Third Schedule to these regulations of the matters specified in paragraph (c) of that sub-clause.

4. Transfer records - (1) Subject to the provisions of sub-clause (2) of this regulation, the master of every ship of 250 tons gross tonnage or over and of every tanker, whether registered or not and of whatever nationality, shall keep in the official log book a record of the particulars specified in regulation 5 hereto relating to the transfer of oil to and from the vessel while it is within the territorial sea or internal waters of New Zealand.

(2) In the case of the transfer of oil to a barge, the records shall be kept by the persons supplying the oil and in the case of the transfer of oil from the barge the records shall be kept by the person to whom the oil is delivered.

5. Particulars to be shown in transfer records - (1) The record which, by regulation 4 of these regulations, is required to be kept shall show clearly the following particulars:

(a) The name and port of registry (if any) of the ship or barge:

(b) The date and time of transfer:

(c) The place of transfer:

(d) The amount and description of oil transferred:

(e) From what ship, barge or place on land and to what ship, barge, or place, the oil was transferred.

(2) The record of each operation shall be separately signed and dated by the master or person who is required by regulation 4 hereof to sign it.

6. Duty to retain records - The records required to be kept in accordance with regulation 3 of these regulations shall be retained in the ship for a period of two years after the date on which the last entry was made.

Provided that in the case of a ship which is unmanned or under tow the records shall be kept at the principal office in New Zealand of the owners of the ship.

7. Production of records - (1) Without prejudice to any powers exercisable by surveyors of ships otherwise than by virtue of these regulations, every surveyor of ships is hereby designated as a person empowered to go on board any ship to which the Convention applies, while the ship is within a harbour in New Zealand, and to require production of any records required to be kept in accordance with the Convention and in accordance with these regulations.

(2) The provisions of the Act specified in the first column of the Fourth Schedule to these regulations shall apply for the purposes of these regulations as if they were modified so as to read as specified in the second column of that Schedule.

8. The Convention countries - For the purposes of sub-section (3) of section 25 of the Oil in Navigable Waters Act 1965 it is hereby declared that the countries specified in the Fifth Schedule to these regulations have accepted the International Convention for the Prevention of Pollution of the Sea by Oil 1954 as amended in 1962.

(7) Above Section 17 (7) shall applies.

FIRST SCHEDULE

Reg. 3(2), (3)

Record of Accidental and Other Exceptional Discharges and Escapes of Oil from Certain New Zealand Ships

1. Date and time of occurrence	.....
2. Place or position of ship at time of occurrence	.....
3. Approximate quantity and type of oil	.....
4. Circumstances of discharge or escape and general remarks	....
Signature of officer or officers in charge of the operations concerned and date of entry	.....
Signature of Master and date of entry ...	.....

SECOND SCHEDULE

Reg. 3(2)

Records Regarding Bunker Fuel Tanks and Oily Residues in Respect of Ships Other than Tankers

(a) Ballasting, or cleaning during voyage, of bunker fuel tanks

1. Identity number(s) of tank(s) concerned ... .
2. Type of oil previously contained in tank(s) ... .
3. Date and place of ballasting ... .

Signature of officer or officers in charge of the operations concerned and date of entry .....

Signature of Master and date of entry ... .

4. Date and time of discharge of ballast or washing water ... .
5. Place or position of ship at time of disposal ... .
6. Whether separator used; if so, give period of use ... .
7. Disposal of oily residue retained on board .....

Signature of officer or officers in charge of the operations concerned and date of entry .....

Signature of Master and date of entry ... .

(b) Disposal of oily residues from bunker fuel tanks and other sources

8. Date and method of disposal ... .
9. Place or position of ship at time of disposal ... .
10. Sources and approximate quantities ... .

Signature of officer or officers in charge of the operations concerned and date of entry .....

Signature of Master and date of entry ... .

THIRD SCHEDULE

Reg. 3(3)

Tankers' Records in respect of Cargo and Slop Tanks and Oily Residues

(a) Ballasting of and discharge of ballast from cargo tanks.	
1. Identity number(s) and tank(s) concerned	.....
2. Type of oil previously contained in tank(s) ...	.....
3. Date and place of ballasting ...	.....
4. Date and time of discharge of ballast water ...	.....
5. Place or position of ship at time of discharge ...	.....
6. Approximate amount of oil-contaminated water transferred to slop tank(s) ...	.....
7. Identity number(s) of slop tank(s) ...	.....
Signature of officer or officers in charge of the operations concerned and date of entry	.....
Signature of Master and date of entry ...	.....
(b) Cleaning of cargo tanks	
8. Identity number(s) of tank(s) cleaned	.....
9. Type of oil previously contained in tank(s)	.....
10. Identity number(s) of slop tank(s) to which washings transferred ...	.....
11. Dates and times of cleaning ...	.....
Signature of officer or officers in charge of the operations concerned and date of entry	.....
Signature of Master and date of entry ...	.....
(c) Settling in slop tank(s) and discharge of water	
12. Identity number(s) of slop tank(s) ...	.....
13. Period of settling (in hours) ...	.....
14. Date and time of discharge of water ...	.....
15. Place or position of ship ...	.....
16. Approximate quantities of residue ...	.....
17. Approximate quantities of water discharged	.....
Signature of officer or officers in charge of the operations concerned and date of entry	.....
Signature of Master and date of entry ...	.....

(d) Disposal of oily residues from slop tank(s) and other sources.

18.	Date and method of disposal ...	.....
19.	Place or position of ship at time of disposal ...	.....
20.	Sources and approximate quantities	.....
	Signature of officer or officers in charge of the operations concerned and date of entry. ...	.....
	Signature of Master and date of entry	.....

FOURTH SCHEDULE Reg. 7(2)

Provisions of Oil in Navigable Waters Act 1965, Applied

Provisions of Act	Text as Modified
Subsection (7) of section 12	In any proceedings under this Act - (a) Any record kept in pursuance of the International Convention for the Prevention of Pollution of the Sea by Oil 1954, as amended in 1962 or any subsequent Convention, shall be admissible as evidence of the facts stated in those records: (b) Any copy of an entry in any such records, which is certified by the master of the ship to be a true copy of the entry, shall be admissible as evidence of the facts stated in the entry: (c) Any documents purporting to be a record kept in pursuance of the International Convention for the Prevention of the Pollution of the Sea by Oil 1954 as amended in 1962, or any subsequent Convention, or purporting to be such a certified copy as is mentioned in paragraph (b) of this subsection, shall, unless the contrary is proved, be presumed to be such a record or such a certified copy, as the case may be.
Subsection (6) of section 17	Any power conferred upon a surveyor of ships by regulations made under section 25 of this Act to require production of any records required to be kept in accordance with the International Convention for the Prevention of the Pollution of the Sea by Oil 1954 as amended in 1962, or any subsequent Convention, shall include power to copy any entry in those records and require the master of the ship to certify the copy as a true copy of the entry.
Subsection (8) of section 17	Any person who fails to comply with any requirement duly made in pursuance of any power conferred by regulations made under section 25 of this Act or by any provision of this Act as applied for the purpose of any such regulations is liable on summary conviction to a fine not exceeding $20.
Subsection (9) of section 17	Any person who wilfully obstructs a person acting in the exercise of any power so conferred is liable on summary conviction to a fine not exceeding $200.

FIFTH SCHEDULE

Belgium
Denmark
Finland
Germany (West)
Greece
Italy
Liberia
Norway
Sweden
United Kingdom
Canada
Netherlands
Ireland
Mexico
Japan
France
Poland
United States of America
Kuwait
Iceland
Ghana
Australia
United Arab Republic
Jordan
Dominican Republic
Panama
Philippines
Venezuala
Algeria
Spain
Israel
Switzerland
Ivory Coast
Portugal
Lebanon
Nigeria
Morocco
Monaco
Malagasy Republic

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (SHIPS' EQUIPMENT) REGULATIONS 1971

REGULATIONS

1. Title and commencement - (1) These regulations may be cited as the Oil in Navigable Waters (Ships' Equipment) Regulations 1971.

(2) These regulations shall come into force on the day of 1972 being the prescribed date for the purposes of the Oil in Navigable Waters Act 1965.

2. Interpretation - In these regulations unless the context otherwise requires expressions defined in the Oil in Navigable Waters Act 1965 shall have the meanings so defined.

3. New Zealand ships to be fitted to prevent escape of fuel oil into bilges - (1) Every New Zealand ship which uses oil as fuel for propulsion or for any other purpose shall be fitted with such equipment as will prevent the escape of fuel oil into the bilges of the ship unless effective means are provided to prevent the contents of the bilges being discharged in contravention of the Oil in Navigable Waters Act 1965.

(2) Effective means for the purpose of this regulation refers to an approved process of separating oil from the contents of the bilges.

4. Requirements where bunker fuel tanks used for ballast water - (1) Subject to the provisions of regulation 5 hereto, every New Zealand ship, not being a tanker, which has a gross tonnage of 250 tons or more and which uses its bunker fuel tanks for ballast water shall be properly fitted with equipment for

the purpose of preventing discharges of oil and mixtures containing oil into the sea, in contravention of the Oil in Navigable Waters Act.

(2) Such equipment shall comply with the requirements specified in regulation 5 of these regulations.

5. Existing ships - Where at the date of coming into force of these regulations a ship to which regulation 4 hereof applies, is already fitted with equipment for the purpose mentioned in the said regulation 4, it shall be sufficient for the purpose of these regulations if the equipment complies with the requirements specified in paragraphs (a), (b), (c) and (d) of the Schedule to these regulations:

Provided that if at any time after the said date any ship that was so fitted with new equipment for the purpose of preventing discharges of oil and mixtures containing oil into the sea, whether the new equipment is in substitution for or in addition to the equipment already so fitted in the ship, the said new equipment shall comply with all the requirements specified in paragraphs (a), (b), (c), (e), (f), (g), (h), (i), and (j) of the said schedule.

SCHEDULE

Requirements in Respect of Ships' Equipment

The equipment shall be an oily water separator which complies with the following requirements:

(a) It shall be of such design, construction, and with the capacity as to be adequate for the purpose of separating oil from a mixture of oil and ballast water from the bunker fuel tanks of the ship:

(b) Its strength shall be adequate for the pressure at which it will be required to work and suitable provision shall be made to prevent over pressure:

(c) It shall be connected to a pump capable of delivering the mixture to it at such a rate that the capacity for which the separator is designed, measured in tons per hour, is not exceeded:

(d) It shall be of a type which will separate mixtures of residual fuel oil of specific gravity of not less than .95 (at 60°F) and fresh water, so that the oil content of the water after treatment in the separator does not exceed 100 parts per million:

(e) It shall be of a type which will separate mixtures of residual fuel oil of specific gravity of not less than .95 (at 60°F) and fresh water so that the oil content of the water does not exceed 50 parts per million:

(f) It shall be so designed that it can be inspected and cleaned internally:

(g) It shall be fitted with a pressure gauge:

(h) A cock or valve shall be provided for draining when desired:

(i) A non-return valve shall be fitted at the mixture inlet to prevent flow back:

(j) Means shall be provided for taking samples of the mixture entering the separator and of the separator water leaving the separator:

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (HEAVY DIESEL OIL) REGULATIONS 1971

. REGULATIONS

1. Title and commencement - (1) These Regulations may be cited as the Oil in Navigable Waters (Heavy Diesel Oil) Regulations 1971.

(2) These Regulations shall come into force on the day of 1971, being the prescribed date for the purposes of the Oil in Navigable Waters Act 1965.

2. Definition of heavy diesel oil - For the purpose of Section 2 of the Oil in Navigable Waters Act 1965, heavy diesel oil shall mean diesel oil, other than those distillates of which more than 50 per cent by volume distils at a temperature not exceeding 340°C when tested by the A.S.T.M. (American Society for Testing Materials) Standard Method D 86/59.

1

D 86/67

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (PROHIBITED SEA AREAS) REGULATIONS 1971

REGULATIONS

1. Title and commencement - (1) These regulations may be cited as the Oil in Navigable Waters (Prohibited Sea Areas) Regulations 1971.

(2) These regulations shall come into force on the day of 1971, being the prescribed date for the purposes of the Oil in Navigable Waters Act 1965.

2. Prohibited sea areas - For the purposes of Section 5 of the Oil in Navigable Waters Act 1965 and for the purposes of the International Convention for the Prevention of Pollution of the Sea by Oil 1954 as amended in 1962, the prohibited sea areas shall be the areas specified as prohibited zones in the Schedule to these regulations.

Provided that for ships having a gross tonnage of 250 tons or more, not being tankers, these regulations shall not come into force until the day of 1974.

SCHEDULE

Prohibited Zones

(1) All sea areas within 50 miles from the nearest land shall be prohibited zones; (note that for the purpose of these regulations the term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with the Geneva Convention on the Territorial Sea and the Contiguous Zone 1958.)

(2) The following sea areas, insofar as they extend more than 50 miles from the nearest land, shall also be prohibited zones:

(a) Pacific Ocean

The Canadian Western Zone

The Canadian Western Zone shall extend for a distance of 100 miles from the nearest land along the west coast of Canada.

(b) North Atlantic Ocean, North Sea and Baltic Sea

(i) The Northwest Atlantic Zone

The Northwest Atlantic Zone shall comprise the sea areas within a line drawn from latitude 38°47' north, longitude 73°43' west to latitude 39°58' north, longitude 68°34' west thence to latitude 42°05' north, longitude 64°37' west thence along the east coast of Canada at a distance of 100 miles from the nearest land.

(ii) The Icelandic Zone

The Icelandic Zone shall extend for a distance of 100 miles from the nearest land along the coast of Iceland.

(iii) The Norwegian, North Sea and Baltic Sea Zone

The Norwegian, North Sea and Baltic Sea Zone shall extend for a distance of 100 miles from the nearest land along the coast of Norway and shall include the whole of the North Sea and of the Baltic Sea and its Gulfs.

(iv) The Northeast Atlantic Zone

The Northeast Atlantic Zone shall include the sea areas within a line drawn between the following positions:

Latitude	Longitude
62° north	2° east
64° north	00°,
64° north	10° west
60° north	14° west
54°30' north	30° west
53° north	40° west
44°20' north	40° west
44°20' north	30° west
46° north	20° west

thence towards Cape Finisterre at the intersection of the 50 mile limit.

(v) The Spanish Zone

The Spanish Zone shall comprise the areas of the Atlantic Ocean within a distance of 100 miles from the nearest land along the coast of Spain.

(vi) The Portuguese Zone

The Portuguese Zone shall comprise the area of the Atlantic Ocean within a distance of 100 miles from the nearest land along the coast of Portugal.

(c) Mediterranean and Adriatic Seas

The Mediterranean and Adriatic Zone

The Mediterranean and Adriatic Zone shall comprise the sea areas within a distance of 100 miles from the nearest land along the coasts of each of the

territories bordering the Mediterranean Adriatic Seas and shall come into operation in respect of each territory on the date on which the present Convention shall have come into force in respect of that territory.

(d) Black Sea and Sea of Azov

The Black Sea and Sea of Azov Zone

The Black Sea and Sea of Azov Zone shall comprise the sea areas within a distance of 100 miles from the nearest land along the coasts of each of the territories bordering the Black Sea and Sea of Azov and shall come into operation in respect of each territory on the date on which the present Convention shall have come into force in respect of that territory, provided that the whole of the Black Sea and the Sea of Azov shall become a prohibited zone on the date on which the present Convention shall have come into force in respect of Roumania and the Union of Soviet Socialist Republics.

(e) Red Sea

The Red Sea Zone

The Red Sea Zone shall comprise the sea areas within a distance of 100 miles from the nearest land along the coasts of each of the territories bordering the Red Sea and shall come into operation in respect of each territory on the date on which the present Convention shall have come into force in respect of that territory.

(f) Persian Gulf

(i) The Kuwait Zone

The Kuwait Zone shall comprise the sea area within a distance of 100 miles from the nearest land

along the coast of Kuwait.

(ii) The Saudi Arabian Zone

The Saudi Arabian Zone shall comprise the sea area within a distance of 100 miles from the nearest land along the coast of Saudi Arabia and shall come into operation on the date on which the present Convention shall have come into force in respect of Saudi Arabia.

(g) Arabian Sea, Bay of Bengal and Indian Ocean

(i) The Arabian Sea Zone

The Arabian Sea Zone shall comprise the sea areas within a line drawn between the following positions:

Latitude	Longitude
23°33' north	68°20' east
23°33' north	67°30' east
22° north	68° east
20° north	70° east
18°55' north	72° east
15°40' north	72°42' east
8°30' north	75°48' east
7°10' north	76°50' east
7°10' north	78°14' east
9°06' north	79°32' east

and shall come into operation on the date on which the present Convention shall have come into force in respect of India.

(ii) The Bay of Bengal Coastal Zone

The Bay of Bengal Coastal Zone shall comprise the sea areas between the nearest land and a line drawn between the following positions:

Latitude	Longitude
10°15' north	80°50' east
14°30' north	81°38' east
20°20' north	88°10' east
20°20' north	89° east

and shall come into operation on the date on which the present Convention shall have come into force in respect of India.

(iii) The Malagasy Zone

The Malagasy Zone shall comprise the sea area within a distance of 100 miles from the nearest land along the coast of Madagascar west of the meridians of Cape d'Ambre in the north and of Cape Ste. Marie in the south and within a distance of 150 miles from the nearest land along the coast of Madagascar east of these meridians, and shall come into operation when the present Convention shall have come into force in respect of Madagascar.

(h) Australia

The Australian Zones

The Australian Zone shall comprise the sea area within a distance of 150 miles from the nearest land along the coasts of Australia, except off the north and west coasts of the Australian mainland between the point opposite Thursday Island and the point on the west coast at 20° south latitude.

1 October, 1970

THE CHIEF ENGINEER — THE HARBOURMASTER

PORTABLE OIL DISPERSAL PUMPS

(Refer Harbourmasters Memo dated 25 Sept. 1970.)

I note your remarks with regard to the reliability of the portable pump now used by your department, and I would like to make the following comments :-

(a) The only fault in the pump held at the loft at the time of the oil spill was a broken starter cord. The breaking of starter cords rarely occurs on the pumps held by Gear and Tools but appears to be a common failing on pumps used for oil dispersal. This cord it seems is subjected to unnecessary stress during starting, i.e. not letting the cord fully return and thus trying to start the unit with a portion of the cord already expended.

(b) The pump drawn from gear and tools and later brought back to be serviced was found faultless, It readily started and pumped water and this was witnessed by your loft personnel.

The only reason this pump failed to pump appeared to be that the priming cap had not been tightened.

(c) On the following day when your original pump was returned the second pump was rechecked by the Diesel Shop Foreman and found in working order.

(d) It would still appear that incorrect starting procedures are being observed. A fitter from the diesel section can be made available to instruct the men concerned on the correct operation of these pumps, and it is my request that you should arrange a time when all the men concerned can be so instructed.

(e) The 'Honda' pumps have proved very satisfactory in all other applications.

If these pumps like all portables of this type, are regularly test run, washed out after use in salt water and the correct starting procedure adopted, they should be satisfactory for the oil dispersal application.

CHIEF ENGINEER TO THE BOARD.

Copy to : MECHANICAL ENGINEER

Auckland Harbour Board

MEMORANDUM

25th September 1970

FROM THE HARBOURMASTER | **TO** THE CHIEF ENGINEER

PORTABLE OIL DISPERSAL PUMPS

On 23rd September 1970, an oil spill occurred in the harbour at about 1600 hours.

As the portable pump held in my loft was found to be faulty, it was sent to the Workshops and another pump drawn from Gear and Tools Section.

On arriving at the scene of the spill this pump was also found to be unserviceable and returned to the Workshops where it was repaired and re-issued.

When the launch returned to the spill the pump once again refused to function for half an hour.

As a result of all this delay it was not until 1810 hours that the first detergent could be used and oil had spread as far as the entrance to the Tamaki River.

Although the portable pumps are tested every Friday, we frequently have trouble with them when a spillage occurs. This, of course, causes loss of time, greater likelihood of damage, increased difficulty in dispersing oil and therefore greater cost.

→ Can something be done to ensure the reliability so necessary in pumps used for this purpose.

→ Alternatively I suggest that consideration be given to the purchase of a different type of pump.

D H Carter

HARBOURMASTER

Mech. Eng. please advise

JB 30/9/70

10th September 1970

THE HARBOURMASTER THE GENERAL MANAGER

OIL SPILL WAIUKU ESTUARY SATURDAY 5.9.70

At 1600 on Saturday, 5th September, Mr. Morgan, Assistant General Manager, rang to inform me that a Mr. Ashby, Registered Fisherman (AK 424) had reported heavy oil over an area of the Waiuku Estuary near the Glenbrook Steel Mill. Later I was able to contact Mr. Ashby to gain further information and more particulars of the location of the alleged oil slick and in doing so promised to investigate after daylight the following morning.

At about 2200 Saturday night, Mr. Biglin, Officer in Charge of sewage disposal and stormwater reticulation rang and informed me that the oil had somehow got into the stormwater outfall and consequently the oil spillage could be attributed to the Mill. It was then that I decided to call on the Glenbrook Steel Mill at 1000 on Sunday morning, and meet the Engineers and other responsible personnel.

I took with me Mr. F. Clapcott, my administration officer, to assist in the investigation. We met Mr. Dimbleby, Works Mechanical Engineer, Mr. Wilks, his assistant, and Mr. Biglin, who willingly showed us the oil tank and bund area where the traps and the release cocks were situated and explained what they thought had been the cause of the oil escape. Later we viewed stormwater outfall where it was abundantly obvious where the oil had leaked into the harbour and further where it had polluted the water and fetched up along the foreshore of the Bay beneath the Mill site.

The amount of oil released into the harbour was difficult to estimate, nevertheless, we were sure it was considerable. After leaving the Mill we inspected a number of beaches and accessible areas where oil pollution could be expected. The evidence was far less than at first expected though it must be stated that a lot of this area is inaccessible from the shore and even from the sea except in the shallowest of boats, and then only at high tide.

Unfortunately by Sunday it was obvious that it was impossible to treat the remaining oil spill on the water or shore line but the Mill Company were instructed to treat the oil still remaining in the stormwater pipeline and in the outfall area in order that at least some of the remaining affected area could be cleaned up.

On Monday I requested that a mechanical engineer investigate the Mill site and report. Mr. Cliff Olliver paid a call to the Mill on Tuesday and his report is attached.

In conclusion I am of the opinion that some laxity in the control of oil overflow and stormwater outlets has been allowed and therefore I am placing the case in the hands of the solicitor for further action.

The Chief Engineer

For your information.

Harbourmaster

HARBOURMASTER

RHC/HG

Mech. Eng. File you

Auckland Harbour Board

MEMORANDUM 21st. September, 1970

FROM C.J. OLLIVER
MECHANICAL ENGINEER'S OFFICE.

TO THE HARBOURMASTER.

OIL SPILL - NEW ZEALAND STEEL LIMITED.

Report on inspection of N.Z. Steel Limited works at Glenbrook on Tuesday 8th September, 1970 in respect of an oil spill into the Manukau Harbour stated to have occurred the previous week as a result of the overflow of a fuel oil service tank.

Mr. D. Wilkes, the Steel Mill's Service Engineer was interviewed and the inspection made accompanied by him. The spill had come from the rotary kiln oil firing system. This system is only in use when the kiln is being brought into service to ignite the coal-pellet ixture, an operation which under normal conditions occurs only once a year, but, with the commissioning problems encountered at the mill, had been in much more frequent use to date.

Two electrically driven pumps set at 55 gals./hours draw 200 second fuel oil from the bulk storage tank and deliver it to a 750 gallon service tank in which the oil is heated by an electric element, and feeds the kiln oil fired unit at a rate varying from 400 to 2400 lbs/hours. The pumps are connected so that one is in use and the other is standby. Control of the pumps is by high and low level switches fitted on the service tank at the 500 and 200 gallon marks respectively. The tank has a goose-neck overflow pipe which discharges from the top of the tank into a concrete bund surrounding the tank which is capable of containing the contents of the service tank. This bund is fitted with a drain valve which leads into an interceptor trap that discharges into a drainage system which also carries storm water and cooling water discharges to an outlet on the banks of the Waiuku estuary.

The oil spill into the harbour took place as a result of failure of the high level switch to shut off the pumps allowing the tank to fill right up and overflow into the bund, thence through the open drain valve into the interceptor trap. Once the interceptor trap had filled with oil it ceased to function and a continuous discharge of oil then occurred into the harbour via the drainage system.

It was established that the kiln firing unit had been in use on the night of Wednesday 2nd. September until 9 p.m. when the kiln changed on to coal firing only. The service tank high level control failed to shut the pump off and overflow would have commenced later that night. The overflow continued until Friday afternoon at 2 p.m. when it was sighted by Mr. Wilkes who immediately went to the pumphouse and stopped the pump manually. During this period the pump would have delivered approximately 2,250 gallons which, allowing for the 250 gallons needed to fill the tank, means that approximately 2,000 gallons was discharged into the harbour.

CONCLUSIONS:

1) The overflow from the service tank was caused by failure of the high level cutout switch.

2) As there is no alarm system fitted, and due to a lack of liaison between departments, this overflow was allowed to

HM DH.

continue over a period of nearly two days.

3) Failure to keep the bund drain valve closed was the cause of the oil escaping into the harbour, instead of being contained on N.Z. Steel Limited's property.

C.J. OLLIVER

MECHANICAL ENGINEER'S OFFICE.

CJO:AF.

Copy to:
Chief Engineer

21st. September, 1970

C.J. OLLIVER
MECHANICAL ENGINEER'S OFFICE.

THE HARBOURMASTER.

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C.J. OLLIVER

MECHANICAL ENGINEER'S OFFICE.

CJO:AF.

Copy to:
Chief Engineer
for Information.

GSC:RFB

[redacted]ABLE ADDRESS: "HARBORD WELLINGTON"
[redacted]ODES U[redacted]D: BENTLEY'S
A.B.C. 5th EDITION.

Eng. Ref. 17/1

WELLINGTON HARBOUR BOARD
CHIEF ENGINEER'S OFFICE

BOX 893. C.P.O.
WELLINGTON, N.Z.

12th August, 1970.

RECEIVED
14 AUG
ENGINEERS DEPT.

Mr. R.A.J. Smith,
Chief Engineer,
Auckland Harbour Board,
C.P.O. Box 1259,
AUCKLAND.

Dear Arthur,

OIL SPILL ANALYSIS.

Many thanks for your letter of 4th August giving details of your procedures for the collection and sampling of oil spills. This seems to be quite an involved process and it will be interesting to see whether the methods used by G. Cryer & Associates, which I think are rather simpler, will satisfy the Courts in Wellington.

We shall probably have a test case before long and meanwhile the information you have supplied will provide a very useful reference in the event that we have to adopt similar measures here.

Once again thank you for your help.

Yours sincerely,

A.J.H. HUTCHISON
CHief Engineer.

P.S.
You may be interested to know that this Board has taken several cases a year for many years and always obtained a prosecution without any analysis at all.

Ker. Perusal for to see please.

Mr Boag

4 August, 1970.

Mr. A.J. Hutchinson,
Chief Engineer,
Wellington Harbour Board,
P.O. Box 893,
WELLINGTON.

Dear Sir,

OIL SPILL ANALYSIS

In reply to your letter of 22nd. July, I have discussed the matter with our Harbourmaster who is responsible for any action on this problem and the following information is provided :-

In conjunction with T.J. Sprott & Associates we have spent some three years evolving a system of oil sampling and chemical identification which is accepted by the Courts as proof beyond any reasonable doubt that floating oil originated from a particular vessel. Accordingly a brief outline of this system may be of interest to the Wellington Harbour Board in view of its proposal to take a test case based on infra red analysis.

Sampling

All samples are taken, labelled and sealed in the presence of a witness. In the case of a ship the Engineer Officer on duty.

Engine-room Samples

Engine-room and log books are inspected by one of the Mechanical Department Marine Engineers and samples taken from bilges and day service tanks. Additional samples are taken, if the inspection reveals that internal oil transfers were taking place at the time of the spill. These Marine Engineers can be used as witnesses on technical aspects related to the ship's operations.

Harbour Samples

Oil must not be collected on scrim or any other material containing oil within its make-up, nor must it be taken from floating debris. If the spill is not continuous individual samples must be taken from each patch of oil and labelled accordingly.

The obtaining of uncontaminated oil from harbour waters in sufficient quantity for analysis purposes presents difficulties but we have found excellent results are obtained by using an isolating funnel. Samples should be kept under lock and key until delivered to the analyst.

Analyses are carried out by T.J. Sprott and Associates and the following tests applied -

1. Gas chromatology.
2. Specific gravity.
3. Refractive index.
4. Ultra violet fluorescence.
5. Viscosity (if sufficient oil is available for this test).
6. Determination of sulphur content.
7. Determination of colour.

... ...

We have found that these tests are essential when taking prosecutions based on chemical identification. It is not simply a matter of determining which oil from a set of samples corresponds with harbour oil. The onus of proof goes far beyond this for it is necessary to demonstrate to the satisfaction of the Court that the harbour oil came from the suspect ship and no other.

A point of interest has recently arisen in a pending oil prosecution in that the Company concerned took duplicate engine-room samples and at its request was handed a sample of oil recovered from the harbour presumably for the purpose of carrying out its own analysis. This cannot be confirmed until the case is heard.

We are unable to comment on infra-red analysis, as this method has not been used by the Board.

There is no fixed charge by Dr. Sprott. The cost is determined by the extent of analysis required. The Board's policy is to prosecute notwithstanding, and if analysis costs can be recovered by an award of costs by the Court, which procedure is becoming more acceptable, then efficient and acceptable identification is the desirable requirement, not the costs.

Yours sincerely,

CHIEF ENGINEER TO THE BOARD.

ENCL : Sample Label.
Adequate information on the collection of Samples, identification, dates of receipt for and completion of analysis providing a good record for the Court is most necessary.

RAS:NKR

GSC;RFB

Eng. Ref. 17/1

CABLE ADDRESS: "HARBORD WELLINGTON"
CODES USED: BENTLEY'S
A.B.C. 5th. EDITION.

WELLINGTON HARBOUR BOARD
CHIEF ENGINEER'S OFFICE

BOX 893. C.P.O.
WELLINGTON, N.Z.

22nd July, 1970.

Mr. R.A.J. Smith,
Chief Engineer,
Auckland Harbour Board,
P.O. Box 1259,
AUCKLAND.

Dear Arthur,

OIL SPILL ANALYSIS.

We have recently been approached by T.J. Sprott and Associates of Auckland with an offer to analyse oil spill samples taken from the harbour, as a positive method of identification of ships in cases brought before the Courts for prosecution. Mr. Sprott uses the method known as "gas chromatography" which he claims to be infallible and superior to the "infra-red spectroscopy" method used by others.

He also states that his techniques have been accepted as prima facie evidence in the Courts in Whangarei, Auckland and Tauranga.

We replied to Mr. Sprott telling him that a Wellington firm G. Cryer & Associates were offering a similar service and we were arranging a test case to put before the Courts.

Mr. Cryer uses the infra-red spectroscopy method and we recently arranged for him to test a number of samples as a check on accuracy of identification. The results proved to be one hundred per cent accurate, and it has been agreed that on the next occasion when the Board is conducting a prosecution, oil samples will be submitted to Mr. Cryer and he will be called as an expert witness to ascertain whether the Courts will accept his identification as conclusive.

Meanwhile we have had another letter from Mr. Sprott criticising Mr. Cryer's methods and inferring that they are cheap short-cuts throwing doubt on chemical methods generally. Mr. Cryer on the other hand says his method is not dependent on distilling or vaporising the sample and claims it is superior to gas chromatography. He quotes a charge of $10 per sample analysed plus time involved in collecting samples and appearing in Court. We have no quotation from Mr. Sprott.

Naturally the Board does not intend to become involved in technical arguments between competing consultants and as far as we are concerned if Mr. Cryer's evidence is accepted by the Courts we will employ the local consultant.

However it would be interesting to have your views on the subject if you have experience of both methods of analysis, and I would be most grateful for your opinions in due course and any information you may have on charges for the service offered by Mr. Sprott.

With kind regards,

yours sincerely,

A.J.H. HUTCHISON
Chief Engineer.

PS reply prepared in conjunction with Mr. Bray.

25th May 1970

C.J. OLLIVER
MECHANICAL ENGINEER'S OFFICE.

THE HARBOURMASTER.

OIL SPILL IN PRINCES - QUEENS BASIN ON 21st MAY 1970
S.S. "NORTHERN STAR".

Report on inspection with regard to an oil spill in the above area.

In company with Captain B.Jones I interviewed the Chief Engineer T.Fulton and Staff Chief Engineer T.Drugen. They stated that they had been pumping bilges that morning and established from their staff that pumping had commenced at approximately 10.15 a.m. and continued until 10.45 approximately, when, hearing that there was an oil spill, they had ordered pumping to be stopped.

Accompanied by Mr. Drugen we proceeded to the engine room and established that the tunnel well was being pumped out with the engine room bilge pump, and that the refrigerating machinery flat was being pumped out simultaneously using the turbo alternator room bilge pump, both pumps discharging to the oily water separator and thence overboard. The two bilge areas were inspected and found to be clean, with a very slight oil scum on the tunnel well water. The oily water separator was inspected and the test cocks operated, water showing on the low and middle cocks, and oil on the top cock and a sample was taken from this latter cock. The Engineers confirmed that they had primed the separator prior to commencing pumping of the bilges. Samples were also taken from the Boiler Oil Settling Tank and the Diesel Oil Daily Use Tank. The ship's staff acting upon instruction from their London Office took duplicate samples and requested that they be provided with a sample of the oil in the harbour.

The ships side outlet of the oily water separator was forward of midships on the port side, and the two bilge pumps overboard discharges were right aft on the port side. Inspection of the vessel showed oil clinging to the hull at the waterline on the port side from the bow to just aft of midships, the rest of the hull being quite clean. The Chief Engineers stated that they were unaware of the spill until informed about it from ashore and confirmed that no overboard lookout had been posted during the bilge pumping operation.

I therefore conclude that although the vessel was equipped with adequate facilities for coping with oily bilges i.e. a separator of 80 tons capacity, correct procedure was not carried out in the bilge pumping operation as detailed below:-

1) Two large capacity pumps were put into use simultaneously, instead of one pump running at low output to allow the separator to function correctly.

2) The separator was not operated correctly as the oil should have been detected with the test cocks and action taken to prevent the oil from discharging overboard.

3) No overboard lookout was kept, which even with 1) and 2) occurring, would have kept the spill to a minimum by giving the alarm immediately.

C.J. OLLIVER,
MECHANICAL ENGINEER'S OFFICE.

25.5.70

CJO:AF.

THE CHIEF ENGINEER THE C

ACCEPTANCE OF THE INTERNATI
FOR THE PREVENTION OF THE P
SEA BY OIL 1954 and 1962 A

The draft regulations and Secretary for Marine letter dated the 26th February, 1970 have been studied to determine what effect, both technically and operationally, they will have on the Board's floating plant.

My comments on the proposed regulations, where applicable, are set out as follows:-

(a) RECORDS REGULATIONS 1970 - The new regulations will require the Board's dredges, floating crane and tugs to keep records as per the schedule. These records will cover accidental discharges, ballasting oil tanks, cleaning oil tanks, disposal of oily residues and transfer of fuel.

(b) SHIP'S EQUIPMENT 1970 - These regulations will require all New Zealand ships that use fuel oil to be fitted so as to prevent oil fuel from leaking or draining into the bilges, unless the vessels are fitted with effective means of separating the oil before the contents are pumped into the sea.

As the Board's larger vessels (over 250 gross tons) are already fitted with means of separating oily water mixture these new regulations may mean that some minor alterations may be necessary to the towboats and launch "Manukau" only.

(c) GENERAL COMMENTS: The Secretary for Marine lists in his letter of the 26th February, 1970 the regulations which need to be made to give full effect to the 1954 Convention.

In previous correspondence on the subject of ratification of the Convention by New Zealand, the then Secretary for Marine stated in a letter to the Overseas Shipowners' Committee and the New Zealand Shipowners' Federation dated the 13th August 1964 that, I quote:-

"In considering what points need to be taken into account for New Zealand to become a party to the Convention, the question of shore based oily water ballast reception facilities appears to be one of the main issues. At the 1962 Oil Pollution Conference some amendments were made to Article VIII which deals with reception facilities ashore. Whereas previously it was mandatory that three years after the Convention came into force in a Contracting Country, shore facilities were required to be provided in such ports as were determined by that Contracting Country such as would not cause undue delay to shipping, now, each Contracting Government is merely required to take all appropriate steps to promote facilities.

Article VIII now reads:

(1) Each Contracting Government shall take all appropriate steps to promote the provision of facilities as follows:

... ...

12th March 1970

THE CHIEF ENGINEER

THE GENERAL MANAGER.

ACCEPTANCE OF THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF THE POLLUTION OF THE SEA BY OIL 1954 and 1962 AMENDMENTS.

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Article VIII now reads:

(1) Each Contracting Government shall take all appropriate steps to promote the provision of facilities as follows:

... ...

(a) according to the needs of ships using them, ports shall be provided with facilities adequate for the reception, without causing undue delay to ships, of such residues and oily mixtures as would remain for disposal from ships other than tankers if the bulk of the water had been separated from the mixture;

(b) oil loading terminals shall be provided with facilities adequate for the reception of such residues and oily mixtures as would similarly remain for disposal by tankers;

(c) ship repair ports shall be provided with facilities adequate for the reception of such residues and oily mixtures as would similarly remain for disposal by all ships entering for repairs.

(2) Each Contracting Government shall determine which are the ports and oil loading terminals in its territories suitable for the purposes of sub-paragraphs (a), (b) and (c) of paragraph (1) of this Article.

(3) As regards paragraph (1) of this Article, each Contracting Government shall report to the Organisation, for transmission to the Contracting Government concerned, all cases where the facilities are alleged to be inadequate.

From this it can be seen that should New Zealand become a party to the Convention we will require to determine which are the ports and oil loading terminals in the country which must instal shore reception facilities."

It is to be noted that this most important article of the Convention is not covered in the draft regulations now submitted for consideration.

Although I may not have the full information on the latest requirements under Article VIII, I consider that this is a most important aspect and enquiries should be made to determine whether the present regulations (Oil in Navigable Waters Act 1965) covering shore based oily waste reception facilities are going to be altered.

Please note that in the draft "Oil in Navigable Waters" (Exceptions) Regulations 1970, section 5 (c) shore based facilities are mentioned, I quote:-

" (c) A ship which is fitted with an effective means of separating oil from water, but is proceeding to a New Zealand port which has not adequate facilities to receive oil residues."

CONCLUSIONS:

(1) The draft regulations as submitted should not incur the Board in any major cost or operational inconvenience.

(2) The Marine Department should be asked if any further regulations covering shore based facilities are being considered.

CHIEF ENGINEER TO THE BOARD.

JMB/AF.

26/2/2

Auckland Harbour Board

MEMORANDUM 5 March 1970

FROM THE GENERAL MANAGER

TO THE CHIEF ENGINEER
THE HARBOURMASTER

Acceptance of the International Convention for the Prevention of the Pollution of the Sea by Oil 1954 and 1962 Amendments

Please study the attached draft regulations and let me have your comments NOT LATER THAN MONDAY 23 MARCH 1970 .

R.T. Lorimer
GENERAL MANAGER

12/3/70.

Auckland Harbour Board.

Mr. Swales

Please have her copy prepare comments on the memorandum forwarded by Harbours Assn.

Refer our file 283/1.

12/3/70

THE HARBOURS ASSOCIATION OF NEW ZEALAN

GENERAL BUILDINGS (Sixth Floor) . 38/42 WARING TAYLOR STREET
WELLINGTON, C.1

Telegraphic Address:
"HARUNION"
WELLINGTON

TELEPHONE 46-739

All Correspondence to be Addressed to:
G.P.O. BOX 1765
WELLINGTON, C.1

MEMORANDUM for the General Manager,
Auckland Harbour Board;
the General Manager,
Northland Harbour Board;
the Secretary Manager,
Taranaki Harbours Board;
and the General Manager,
Wellington Harbour Board.

2nd March 1970.

CONFIDENTIAL

Acceptance of the International Convention for the Prevention of the Pollution of the Sea by Oil 1954 and 1962 Amendments

Enclosed for your consideration is a copy of a letter dated 26th February 1970 from the Secretary for Marine, together with copies of the draft Regulations referred to therein.

Would you please forward your comments on these Regulations to reach this office not later than 24th March 1970.

You will note that they are to be treated as confidential.

R.E. Dawson

Secretary.

Encl.

EXTRACT FROM MINUTES
GENERAL PURPOSES COMMITTEE
17 FEB 1970

8. OIL POLLUTION OF HARBOUR WATERS

Consideration was given to the report of the General Manager in which he stated that spillage of oil into the harbour was a matter of continuing concern not only because of the possible danger from fire but also of the risk of pollution to the harbour waters and beaches with resultant damage to other craft, and the discomfort to bathers and other users of the foreshores. The report referred to the following matters:

1. Incidence of mishaps.
2. Routine procedure followed by Departments concerned in the event of an oil spill.
3. Prosecutions.
4. Precautions against spillage.
5. Means to reduce the incidence of oil spills.
6. Oil Boom.

In order to impress upon the owners and masters of vessels the attitude of the Board towards oil spill offences and with the object of reducing spills in harbour waters, where there is sufficient evidence legal action is taken against all offenders irrespective of the degree or circumstances of the spillage and the General Manager considered this policy should be rigorously adhered to. The report concluded with recommendations to continue legal action against offenders and to provide means of avoiding spills of this nature wherever possible.

Recommended -
That the report be adopted.

ADOPTED BY BOARD
24 FEB 1970

M. 2600

PLEASE QUOTE
M44/0/11

MARINE DEPARTMENT
AURORA HOUSE, THE TERRACE, WELLINGTON C. 1, N.Z.

TELEGRAMS AND CABLES: "SECYMARINE" TELEPHONE: 71 759

26 FEB 1970

Dear Sir,

ACCEPTANCE OF THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF THE POLLUTION OF THE SEA BY OIL 1954 AND 1962 AMENDMENTS

1. You are no doubt aware that the passage of the Oil in Navigable Waters Act 1965 which came into force on 1 April 1966 enables New Zealand to accept both the International Convention for the Prevention of the Pollution of the Sea by Oil 1954 and the 1962 Amendments to that Convention. Before the 1954 Convention can be accepted certain regulations and exemptions need to be made to give full effect to the Convention of New Zealand Law.

2. In terms of Article XV of the Convention it will enter into force for New Zealand three (3) months after the date of deposit of the N.Z. instrument of acceptance with IMCO.

3. The regulations which need to be made so as to give full effect to the Convention of New Zealand Law are as follows:-

(a) Exemption Notice
(b) Exceptions Regulations
(c) Enforcement of Convention Regulations
(d) Ships' Equipment Regulations
(e) Transfer Regulations
(f) Records Regulations

4. I enclose herewith a copy of each of the above draft regulations for your consideration and comment. You will appreciate that the draft regulations are still under consideration by Government and I would therefore request that at this stage they be treated strictly on a very confidential basis.

5. If I do not hear from you by 31 March 1970 I shall assume that the draft regulations meet with your approval and I will then proceed to process them without further reference to you.

Yours faithfully,

R.N. KERR
Secretary for Marine

per: K.C. Gajadhar

(K.C. Gajadhar)

The Secretary,
Harbours Association of N.Z.,
General Building,
Waring Taylor Street,
WELLINGTON. 1

L.D.O. 1316/1

Drafted by Mr Hamilton

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (EXEMPTION) NOTICE 1970

PURSUANT to the Oil in Navigable Waters Act 1965, the Minister of Marine hereby gives the following notice.

NOTICE

1. Title and commencement—(1) This notice may be cited as the Oil in Navigable Waters (Exemption) Notice 1970.

(2) This notice shall come into force on the day of 1970.

2. Exemption—Every ship of less than 500 tons gross tonnage, whether registered or not and of whatever nationality, is hereby exempted from the provisions of subsection (1) of section 6 of the Oil in Navigable Waters Act 1965 (which prohibits the discharge of oil into New Zealand waters) in respect of the discharge from its bilges of a mixture containing oil where the only oil in the mixture is lubricating oil which has drained or leaked from machinery spaces.

Dated at Wellington this day of 1970.

Minister of Marine.

EXPLANATORY NOTE

This note is not part of the notice, but is intended to indicate its general effect.

This notice exempts ships of less than 500 tons gross register from section 6 (1) of the Oil in Navigable Waters Act 1965 to the extent specified.

L.D.O. 1317/1

Drafted by Mr Hamilton

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (EXCEPTIONS) REGULATIONS 1970

Governor-General

ORDER IN COUNCIL

At the Government House at Wellington this day of 1970

Present:

IN COUNCIL

PURSUANT to the Oil in Navigable Waters Act 1965, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following regulations.

REGULATIONS

1. Title and commencement—(1) These regulations may be cited as the Oil in Navigable Waters (Exceptions) Regulations 1970.

(2) These regulations shall come into force on the day of 1970.

2. Interpretation—In these regulations, unless the context otherwise requires, expressions defined in the Oil in Navigable Waters Act 1965 shall have the meanings so defined.

3. Exception from section 3 (1) of Oil in Navigable Waters Act 1965 in respect of lubrication oil—(1) Every New Zealand ship is hereby excepted from the operation of subsection (1) of section 3 of the Oil in Navigable Waters Act 1965 in respect of the discharge from its bilges into an area of the sea which in relation to that ship is a prohibited sea area of a mixture containing lubricating oil which has drained or leaked from machinery spaces, but no other oil to which that section applies.

(2) The provisions of this regulation shall, until , have effect as though the reference to lubricating oil included a reference to oil fuel.

4. Further exception from section 3 (1) in respect of tankers—(1) Subject to the conditions and in the circumstances prescribed in subclause (2) of this regulation, every New Zealand ship, being a tanker, is hereby excepted from the operation of subsection (1) of section 3 of the Oil in Navigable Waters Act 1965 in respect of the discharge into a prohibited sea area, being a prohibited sea area specified in Part I of the First Schedule to that Act as a prohibited sea area in relation to tankers, of a mixture containing oil where the mixture consists only of oil and ballast water or water which has been used for cleaning cargo tanks.

(2) The conditions and circumstances referred to in subclause (1) of this regulation are as follows:

(a) At the time of the discharge, the ship is proceeding from a New Zealand port to another New Zealand port for the purpose either of loading oil or of undergoing repairs:

(b) The port to which the ship is proceeding has not facilities adequate to receive the mixture or the oil residue therefrom without causing undue delay to the ship:

(c) The discharge is made more than 50 miles from the coast of New Zealand.

(3) Every New Zealand ship, being a tanker of under 150 tons gross tonnage or a tanker for the time being engaged in the whaling industry, is hereby excepted from the operation of subsection (1) of section 3 of the Oil in Navigable Waters Act 1965 in respect of the discharge of oil or of a mixture containing oil into an area of the sea which in relation to that ship is a prohibited sea area, being a prohibited sea area specified in Part I of the First Schedule to that Act or designated by regulations made under subsection (3) of section 4 of that Act.

5. Further exceptions from section 3 (1) in respect of certain other ships—(1) Subject to the condition that the discharge shall be made as far away from land as is practicable and in any case not to landward of the outer limits of the territorial sea of New Zealand, every New Zealand ship (not being a tanker) which uses bunker fuel tanks for the carriage of ballast water, being either—

(a) A ship of under 500 tons gross tonnage; or

(b) A ship which is not fitted with an effective means of separating oil from water; or

(c) A ship which is fitted with an effective means of separating oil from water, but is proceeding to a New Zealand port which has not adequate facilities to receive oil residues—

is hereby excepted from the operation of subsection (1) of section 3 of the Oil in Navigable Waters Act 1965 in respect of a discharge of a mixture containing oil where the mixture consists only of oil from bunker fuel tanks and ballast water:

Provided that, in the case of a ship referred to in paragraph (b) of this subclause, not being a ship of under 500 tons gross tonnage, or a ship which is for the time being exempt from the provisions of the Oil in Navigable Waters (Ships' Equipment) Regulations 1970, by virtue of an exemption granted by the Minister under section 23 of that Act, the exception under this subclause shall not have effect after

(2) Subject to and without prejudice to the provisions of subclause (1) of this regulation, every New Zealand ship (not being a tanker) being a ship of under 500 tons gross tonnage or for the time being engaged in the whaling industry is hereby excepted from the operation of subsection (1) of section 3 of the Oil in Navigable Waters Act 1965 in respect of any discharge of oil or of a mixture containing oil into a prohibited sea area, being a prohibited sea area specified in Part II of the First Schedule to that Act.

Clerk of the Executive Council.

EXPLANATORY NOTE

This note is not part of the regulations, but is intended to indicate their general effect.

Regulations 3 to 5 of these regulations make exceptions from the operation of section 3 (1) of the Oil in Navigable Waters Act 1965 (which prohibits the discharge of certain oils into prohibited sea areas).

Regulation 3 applies to all New Zealand ships, and permits, in certain circumstances, the discharge from bilges into a prohibited sea area of a mixture containing oil of particular descriptions. Regulation 4 applies to New Zealand ships being tankers, and permits, subject to prescribed conditions and in prescribed circumstances, the discharge of oil-contaminated ballast or tank cleaning water into a prohibited sea area.

Regulation 5 applies to certain New Zealand ships (not being tankers), and permits, in prescribed circumstances, the discharge of oil-contaminated ballast water into a prohibited sea area.

Provision is also made in regulations 4 and 5 for the exception from the operation of subsection (1) of section 3 of the Act of ships for the time being engaged in the whaling industry in respect of discharges of oil or of mixtures containing oil into prohibited sea areas.

L.D.O. 1318/1

Drafted by Mr Hamilton

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (ENFORCEMENT OF CONVENTION) REGULATIONS 1970

Governor-General

ORDER IN COUNCIL

At the Government at Wellington this day of 1970

Present:

IN COUNCIL

PURSUANT to the Oil in Navigable Waters Act 1965, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following regulations.

REGULATIONS

1. Title and commencement—(1) These regulations may be cited as the Oil in Navigable Waters (Enforcement of Convention) Regulations 1970.

(2) These regulations shall come into force on the day of 1970.

2. Interpretation—In these regulations, unless the context otherwise requires—

"Convention" means The International Convention for the Prevention of Pollution of the Sea by Oil 1954 as amended in 1962:

"Surveyor of ships" means a surveyor of ships appointed or recognised as such under section 13 of the Shipping and Seamen Act 1952:

Other expressions defined in the Oil in Navigable Waters Act 1965 shall have the meanings so defined.

3. Production of records—Without prejudice to any powers exercisable by surveyors of ships otherwise than by virtue of these regulations, every surveyor of ships is hereby designated as a person empowered to go on board any ship to which the Convention applies, while the ship is within a harbour in New Zealand, and to require production of any records required to be kept in accordance with the Convention.

4. The provisions of the Act specified in the first column of the Schedule to these regulations shall apply for the purposes of these regulations as if they were modified so as to read as specified in the second column of that Schedule.

SCHEDULE

PROVISIONS OF OIL IN NAVIGABLE WATERS ACT 1965 APPLIED

Provisions of Act	Text as Modified
Subsection (7) of section 12	In any proceedings under this Act— (a) Any records kept in pursuance of the International Convention for the Prevention of the Pollution of the Sea by Oil 1954, or any subsequent Convention, shall be admissible as evidence of the facts stated in those records: (b) Any copy of an entry in any such records, which is certified by the master of the ship to be a true copy of the entry, shall be admissible as evidence of the facts stated in the entry: (c) Any document purporting to be records kept in pursuance of the International Convention for the Prevention of the Pollution of the Sea by Oil 1954, or any subsequent Convention, or purporting to be such a certified copy as is mentioned in paragraph (b) of this subsection, shall, unless the contrary is proved, be presumed to be such records or such a certified copy, as the case may be.
Subsection (6) of section 17	Any power conferred upon a surveyor of ships by regulations made under section 25 of this Act to require production of any records required to be kept in accordance with the International Convention for the Prevention of the Pollution of the Sea by Oil 1954, or any subsequent Convention, shall include power to copy any entry in those records and require the master of the ship to certify the copy as a true copy of the entry.
Subsection (8) of section 17	Any person who fails to comply with any requirement duly made in pursuance of any power conferred by regulations made under section 25 of this Act or by any provision of this Act as applied for the purpose of any such regulations is liable on summary conviction to a fine not exceeding $20.
Subsection (9) of section 17	Any person who wilfully obstructs a person acting in the exercise of any power so conferred is liable on summary conviction to a fine not exceeding $200.

Clerk of the Executive Council.

EXPLANATORY NOTE

This note is not part of the regulations, but is intended to indicate their general effect.

These regulations—

(a) Empower surveyors of ships to go on board any ship to which the International Convention for the Prevention of Pollution of the Sea by Oil 1954 as amended in 1962 applies, while the ship is within a harbour in New Zealand, and to require production of any records required to be kept in accordance with the Convention:

(b) Apply, for the purposes of the regulations and with modifications, certain provisions of the Oil in Navigable Waters Act 1965 relating to the taking of copies of entries in such records, and their certification as true copies, and to the admissibility in evidence of such records and copies:

(c) Provide for penalties for failure to comply with requirements duly made under the regulations or under the provisions of the Act applied by the regulations, and for wilfully obstructing a person acting in the exercise of any power conferred by the regulations or by any provisions of the Act so applied.

L.D.O. 1319/1

Drafted by Mr Hamilton

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (SHIPS' EQUIPMENT) REGULATIONS 1970

Governor-General

ORDER IN COUNCIL

At the Government at Wellington this day of 1970

Present:

IN COUNCIL

PURSUANT to the Oil in Navigable Waters Act 1965, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following regulations.

REGULATIONS

1. Title and commencement—(1) These regulations may be cited as the Oil in Navigable Waters (Ships' Equipment) Regulations 1970.

(2) These regulations shall come into force on the day of 1970.

2. Interpretation—In these regulations, unless the context otherwise requires, expressions defined in the Oil in Navigable Waters Act 1965 shall have the meanings so defined.

3. New Zealand ships to be fitted to prevent escape of oil fuel into bilges—Every New Zealand ship which uses oil as fuel for either engines or boilers shall be fitted so as effectively to prevent oil fuel from leaking or draining from machinery spaces into bilges, unless the contents of the bilges are subjected to an effective means of separating the oil therefrom before the contents are pumped into the sea.

4. Requirements where bunker fuel tanks used for ballast water—Subject to the provisions of regulation 5 hereof, every New Zealand ship, not being a tanker, which has a gross tonnage of 500 tons or more and which uses its bunker fuel tanks for ballast water shall be properly fitted with equipment for the purpose of preventing or reducing discharges of oil and mixtures containing oil into the sea, and all such equipment shall comply with the requirements specified in the Schedule to these regulations.

5. Existing ships—Where at the date of coming into force of these regulations a ship to which regulation 4 hereof applies is already fitted with equipment for the purpose mentioned in the said regulation 4, it shall be sufficient for the purpose of these regulations if the equipment complies with the requirements specified in paragraphs (a), (b), and (c) of the Schedule to these regulations:

Provided that if at any time after the said date any ship that was so fitted at the said date is fitted with new equipment for the purpose of preventing or reducing discharges of oil and mixtures containing oil into the sea, whether the new equipment is in substitution for or in addition to the equipment already so fitted in the ship, the said new equipment shall comply with all the requirements specified in the said Schedule.

SCHEDULE

Reg. 4.

REQUIREMENTS IN RESPECT OF SHIPS' EQUIPMENT

The equipment shall be an oily-water separator which complies with the following requirements:

(a) It shall be of such design, construction, and capacity as to be adequate for the purpose of separating oil from a mixture of oil and ballast water from the bunker fuel tanks of the ship:

(b) Its strength shall be adequate for the pressure at which it will be required to work and suitable provision shall be made to prevent over pressure:

(c) It shall be connected to a pump capable of delivering the mixture to it at such a rate that the capacity for which the separator is designed, measured in tons per hour, is not exceeded:

(d) It shall be of a type which will separate mixtures of residual fuel oil of specific gravity of not less than .95 (at 60°F) and fresh water, so that the oil content of the water after treatment in the separator does not exceed 50 parts per million:

(e) It shall be so designed that it can be inspected and cleaned internally:

(f) It shall be fitted with a pressure gauge:

(g) A cock or valve shall be provided for draining when desired:

(h) A non-return valve shall be fitted at the mixture inlet to prevent flow back:

(i) Means shall be provided for taking samples of the mixture entering the separator and of the separated water leaving the separator.

Clerk of the Executive Council.

EXPLANATORY NOTE

This note is not part of the regulations, but is intended to indicate their general effect.

These regulations require New Zealand ships which use oil as fuel for either engines or boilers to be so fitted as to prevent oil fuel from leaking or draining from machinery spaces into bilges. The regulations also require all New Zealand ships, not being tankers which have a gross tonnage of 500 tons or more and which use their bunker fuel tanks for ballast water, to be fitted with an oily-water separator. The requirements with which separators must comply are specified.

L.D.O. 1320/1

Drafted by Mr Hamilton

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (TRANSFER) REGULATIONS 1970

Governor-General

ORDER IN COUNCIL

At the Government at Wellington this day of 1970

Present:

IN COUNCIL

PURSUANT to the Oil in Navigable Waters Act 1965, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following regulations.

REGULATIONS

1. Title and commencement—(1) These regulations may be cited as the Oil in Navigable Waters (Transfer) Regulations 1970.

(2) These regulations shall come into force on the day of 1970.

2. Interpretation—In these regulations, unless the context otherwise requires, expressions defined in the Oil in Navigable Waters Act 1965 shall have the meanings so defined.

3. Ships to which regulations apply—These regulations shall apply to every ship, whether registered or not, and of whatever nationality, which is capable of carrying in bulk, whether for cargo or for bunker purposes, more than 25 tons of oil, or which, though not so capable, is constructed or fitted to carry in bulk as aforesaid more than 5 tons of oil in any one space or container.

4. Transfer records—(1) Subject to the provisions of subclause (2) of this regulation, there shall be kept by the master of every ship to which these regulations apply a record of the particulars specified in regulation 5 hereof relating to the transfer of oil to and from the vessel while it is within the territorial sea or internal waters of New Zealand.

(2) In the case of the transfer of oil to a barge, the records shall be kept by the person supplying the oil and in the case of the transfer of oil from the barge the record shall be kept by the person to whom the oil is delivered.

5. Particulars to be shown in records—(1) The record which, by regulation 4 of these regulations, is required to be kept shall show clearly the following particulars:

(a) The name and port of registry (if any) of the ship or barge:

(b) The date and time of transfer:

(c) The place of transfer:

(d) The amount and description of oil transferred:

(e) From what ship, barge, or place on land, and to what ship, barge, or place, the oil was transferred.

(2) The record of each operation shall be separately signed and dated by the master or the person who is required by regulation 4 hereof to sign it.

(3) If the record is kept in the Official Log of the ship it shall not be necessary separately to state the name and port of registry (if any) of the ship.

Clerk of the Executive Council.

EXPLANATORY NOTE

This note is not part of the regulations, but is intended to indicate their general effect.

These regulations apply to ships of the class specified in regulation 3 of whatever nationality, and require records to be kept of transfers of oil to and from such a ship while it is within the territorial sea or internal waters of New Zealand.

L.D.O. 1613/1

Drafted by Mr Hamilton

CONFIDENTIAL

THE OIL IN NAVIGABLE WATERS (RECORDS) REGULATIONS 1970

Governor-General

ORDER IN COUNCIL

At the Government at Wellington this day of 1970

Present:

IN COUNCIL

PURSUANT to the Oil in Navigable Waters Act 1965, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following regulations.

REGULATIONS

1. Title and commencement—(1) These regulations may be cited as the Oil in Navigable Waters (Records) Regulations 1970.

(2) These regulations shall come into force on the day of 1970.

2. Interpretation—In these regulations, unless the context otherwise requires, expressions defined in the Oil in Navigable Waters Act 1965 shall have the meanings so defined.

3. Duty to maintain record—(1) The master of every New Zealand ship (not being a tanker) of 80 tons gross tonnage or over shall maintain a record in the form set out in the First Schedule to these regulations of the matters specified in paragraphs (a) and (b) of subsection (1) of section 12 of the Oil in Navigable Waters Act 1965 and in the form set out in the Second Schedule to these regulations of the matters specified in paragraph (c) of that subsection.

(2) The master of every New Zealand ship, being a tanker, shall maintain a record in the form set out in the First Schedule to these regulations of the matters specified in paragraphs (a) and (b) of subsection (1) of section 12 of the Oil in Navigable Waters Act 1965 and in the form set out in the Third Schedule to these regulations of the matters specified in paragraph (c) of that subsection.

4. Duty to retain records—The records required to be maintained in accordance with regulation 3 of these regulations shall be retained for a period of 2 years, during which period they shall be retained on the ship to which they relate except while the ship is unmanned or under tow when they shall be maintained at the principal office in New Zealand of the owners of the ship.

SCHEDULES

FIRST SCHEDULE

Reg. 3 (1), (2)

RECORD OF ACCIDENTAL AND OTHER EXCEPTIONAL DISCHARGES AND ESCAPES OF OIL FROM CERTAIN NEW ZEALAND SHIPS

1. Date and time of occurrence				
2. Place or position of ship at time of occurrence				
3. Approximate quantity and type of oil				
4. Circumstances of discharge or escape and general remarks				
Signature of officer or officers in charge of the operations concerned and date of entry				
Signature of Master and date of entry				

SECOND SCHEDULE

Reg. 3 (1)

RECORDS REGARDING BUNKER FUEL TANKS AND OILY RESIDUES IN RESPECT OF SHIPS OTHER THAN TANKERS

(a) *Ballasting, or cleaning during voyage, of bunker fuel tanks*				
1. Identity number(s) of tank(s) concerned				
2. Type of oil previously contained in tank(s)				
3. Date and place of ballasting				
Signature of officer or officers in charge of the operations concerned and date of entry				
Signature of Master and date of entry				
4. Date and time of discharge of ballast or washing water				
5. Place or position of ship at time of disposal				
6. Whether separator used; if so, give period of use				
7. Disposal of oily residue retained on board				
Signature of officer or officers in charge of the operations concerned and date of entry				
Signature of Master and date of entry				

(b) *Disposal of oily residues from bunker fuel tanks and other sources*				
8. Date and method of disposal				
9. Place or position of ship at time of disposal				
10. Sources and approximate quantities				
Signature of officer or officers in charge of the operations concerned and date of entry				
Signature of Master and date of entry				

THIRD SCHEDULE

Reg. 3 (2)

TANKERS' RECORDS IN RESPECT OF CARGO AND SLOP TANKS AND OILY RESIDUES

(a) *Ballasting of and discharge of ballast from cargo tanks*

1. Identity number(s) of tank(s) concerned				
2. Type of oil previously contained in tank(s)				
3. Date and place of ballasting				
4. Date and time of discharge of ballast water				
5. Place or position of ship at time of discharge				
6. Approximate amount of oil-contaminated water transferred to slop tank(s)				
7. Identity number(s) of slop tank(s)				
Signature of officer or officers in charge of the operations concerned and date of entry				
Signature of Master and date of entry				

(b) *Cleaning of cargo tanks*

8. Identity number(s) of tank(s) cleaned				
9. Type of oil previously contained in tank(s)				
10. Identity numbers of slop tanks to which washings transferred				
11. Dates and times of cleaning				
Signature of officer or officers in charge of the operations concerned and date of entry				
Signature of Master and date of entry				

(q) *Settling in slop tank(s) and discharge of water*					
12. Identity number(s) of slop tank(s)					
13. Period of settling (in hours)					
14. Date and time of discharge of water					
15. Place or position of ship					
16. Approximate quantities of residue					
17. Approximate quantities of water discharged					
Signature of officer or officers in charge of the operations concerned and date of entry					
Signature of Master and date of entry					
(d) *Disposal of oily residues from slop tank(s) and other sources*					
18. Date and method of disposal					
19. Place or position of ship at time of disposal					
20. Sources and approximate quantities					
Signature of officer or officers in charge of the operations concerned and date of entry					
Signature of Master and date of entry					

Clerk of the Executive Council.

EXPLANATORY NOTE

This note is not part of the regulations, but is intended to indicate their general effect.

These regulations apply to certain classes of New Zealand ships and require records to be kept of the matters relating to oil specified in section 12 (1) of the Oil in Navigable Waters Act 1965.

OIL DISPERSAL

Esso Chemicals (Local Rep. Mr Hutchings, phone 379-223) have a film "Clean Seas Ahead" dealing with the operations and material for dispersal of oil slicks using "Corexit 7664". This film will be shown at the AIDL Cinema Room, Smith and Smith Buildings, Albert Street 23rd February 1970 2.15 p.m. Film time 25 mins.

Attendance:-

Harbour Dept.	4 - 6
Mechanical Engr.	3
P.O.W.	2
D.C.E. others	3

SHIP PROTECTIVE TREATMENT

Esso Chemical manufacture Rust-ban 191 which is used solely on the whole of the Esso Tanker Fleet. This zinc based paint is to be made in Australia and an American expert will be in Auckland in say 6 weeks for consultation.

Mechanical Engineer please contact Mr Hutchings at the film on this matter.

....

Seagar ✓
Pemberton RCP
Pask. BP.

Sinclair
Halbert will go.

9 December, 1969

THE CHIEF ENGINEER

THE GENERAL MANAGER.

WYNYARD WHARF - OIL BOOM

The provision of an oil boom at Wynyard Wharf Tanker Berths was the subject of a report dated 11th May 1966.

The conclusions of this report as adopted by the Board were :-

1. The proposal for booming using a plastic boom of local manufacture is feasible.

2. The operating factors and capabilities of laying out a full boom as required can only be established by trial.

3. If required to proceed it is recommended that $4,000 be spent on the boom and moorings for one berth, the remaining expenditure to follow after trials are completed.

4. A report will be submitted on the recommended equipment for recovery or dispersal of spillages within the boom area.

Operating Requirements

(a) A boom of 1200 feet length which would totally surround a tanker and pass under the wharf, with cut out walls and total seal to the Brigham Street wall.

(b) A boom which could preferably be left in the water and drawn out as required rather than removed and stowed on the wharf.

(c) Light weight anchors and lights for mooring and navigation purposes.

This was the initial requirement to meet the first stage of trial operations.

Provision of Equipment

1. May 1967 - The boom comprising 12 x 100 feet lengths which was made in Auckland was delivered. A random length was tested afloat and considered satisfactory. However during the supply period some concern was apparent on the suitability of the plastic skirt material. License restrictions and other factors resulted in selection of a P.V.C. - Fibre Glass Material which was offered as suitable but its true performance and life could only be ascertained by use.

2. June - August 1967 - Harbourmaster undertook trial operations. Confirmed that floating stowage under the wharf was best. This required the waling to be removed from a bay in the wharf and floating timbers installed to protect the boom from the piled structure and provide the space to reeve the boom into and store.

... ...

3. The above works were completed and after further trials the boom was floated and stored in the water on the 2nd May 1968.

4. The boom was left in this position for two months and its functions watched. During this period with heavy wave action from the east it was found that the boom suffered damage from crushing of the float material also there was failure of the skirt material from immersion and movement. Sufficient to say that the materials have not been suitable to the rigors of the situation required of them.

5. At this stage the boom is stored in Shed 40. It will require a new skirt for which suitable material is not yet established. Several floats are damaged and when dismantled further inspection will ascertain the rectification needed.

Operational Problems

(a) 1200 feet of boom is a difficult operation to withdraw and launch from the wharf, bring under the wharf reeve up and store in the water.

(b) The problems of running the boom are not great in good conditions, but in poor easterly weather which is no problem for a tanker to berth and pump this is a major exercise. Again in bad weather there is severe working of the boom and its efficacy as a retaining structure under these conditions is of no value.

(c) Our experience to date confirms overseas problems of light weight booms in exposed conditions, and the consensus of opinion is that they are not a recommended use unless they are in still water basins.

Conclusions

1. Our particular exercise to establish a workable oil boom has not been a success.

2. Should we find suitable skirt material and bring the boom to a state where we are satisfied that it will withstand the rigors of continuous immersion or lifting in and out without a considerable maintenance and operating cost, there will be many occasions where it will not be practicable to set it up. Indeed having regard to all factors it is doubtful it the proposition is practical at this site.

3. Pending the development of a really satisfactory boom, there is no alternative but to rely on increased vigilance and strict compliance with Harbourmaster's operating instructions.

CHIEF ENGINEER TO THE BOARD.

NS:NKR

Copy sent to H.M.

9 December, 1969

THE CHIEF ENGINEER — THE GENERAL MANAGER.

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3. Pending the development of a really satisfactory boom, there is no alternative but to rely on increased vigilance and strict compliance with Harbourmaster's operating instructions.

CHIEF ENGINEER TO THE BOARD.

NS:MKR

4th September 1969

J.M.BRAY
MECHANICAL ENGINEER'S OFFICE

THE HARBOURMASTER.

Re: TSMV "ARANDA" AND "TAVEUNI".

Report on an oil spill at the Captain Cook Wharf area on the 3rd. September 1969.

- -

The above vessels were berthed at Captain Cook Wharf on the 3rd. September 1969, the "Aranda" at CB berth and the "Taveuni" at CE. An inspection of both vessels was carried out between 1130 and 1430 hours on the 3rd. September.

TSMV "Aranda": This vessel was inspected at 1130 hours, the ship lying port side to the wharf. The port side of the ship was inspected and it was noted, an oil scum was lying alongside the ship and extending under the wharf.

Captain Hammond was interviewed and he stated that he had no knowledge of an oil spill and at my request arranged with the Chief Engineer Mr. Sheppard for my inspection of the ship's engine room.

Mr. Sheppard was asked if bilges had been pumped since the ship arrived in port, to this question he said no but in any case the usual practice was to transfer the bilge water to a holding tank for disposal at sea.

The Senior 2nd. Engineer, Mr. J. Turnbull went with me to the engine room. It was found that the bilge pump and overboard discharge are on the port side approximately 30 feet from the after bulkhead. The holding tank, No. 8 port double bottom, was dipped and was found empty and the engine room bilge were comparatively empty.

Oil samples were taken from the port bilge and the oil fuel daily service tank.

Mr. Turnbull stated, when questioned, that to his knowledge the bilges had not been pumped.

TSMV "TAVEUNI". The Chief Engineer was not available and I went straight to the engine room and interviewed the 2nd. Engineer, Mr. Goff with regard the pumping of bilges during the past 24 hours.

It was found that, as on a previous visit, 3rd. April 1969, the oily bilges are pumped to a centre deep tank via a portable pump and hose.

A sample of fuel oil was taken from the bilge and daily service tank.

CONCLUSIONS:

1) The oil was found on the water, under the wharf between the two vessels. The oil being a heavy boiler oil.
2) The "Taveuni" uses marine diesel oil, where as the "Aranda" operated on heavy boiler oil.
3) Although the personnel on the "Aranda" state that the bilges were not pumped, their bilges were comparatively empty and the holding tank was also empty.
4) Therefore, due to the above conclusions, it could be reasonable assumed that the oil originated from the "Aranda".

for MECHANICAL ENGINEER.

JMB/AF.

Copy to Chief Engineer.

Auckland Harbour Board.

Re your memorandum
I have checked with
Mr Claycroft of the HM
Department who informs
me that they have already
requisitioned for the
equipment.

J Bary

18/8/69

OK Please file KH

Auckland Harbour Board.

E.W. Pemberton

Please arrange.

14 Aug 69

Mechanical Engineer

Please arrange for components to be purchased material etc to be supplied – Expenditure before 30th Sept.

Please liaise with H.M. G.T etc, have the whole job done and report completion to me.

Return file etc of memo to file pdf

13/1

Auckland Harbour Board

MEMORANDUM 24th July 1969

FROM THE HARBOURMASTER | TO THE GENERAL MANAGER

OIL DISPERSAL EQUIPMENT.

As previously reported, a case of oil pollution recently occurred at Onehunga necessitating dispersal by my Queens Wharf staff and plant.

This was not only time consuming but also, time was lost in commencing dispersal operations. Such time losses could be avoided by providing dispersal equipment and material at Onehunga.

Of the two foam making nozzles held at my Queens Wharf Office, one is in reasonable condition whilst the other, through age and electrolytic action cannot be repaired again and requires replacement.

In view of the fact that oil spills occur only rarely at Onehunga, I suggest that the usable nozzle at Queens Wharf be transferred to Onehunga and two replacement nozzles be provided for use at Auckland. In addition it will be necessary to obtain a stock of detergent and plastic containers for use at Onehunga.

I recommend therefore that :-

(a) Two "Pyrene" lightweight foam making branch pipes, pattern No. FB5X, complete with venturi pipes be obtained for use at Auckland. Total cost is estimated at $200. 300/044/30-39

(b) The existing usable branch pipe of the same pattern be transferred to Onehunga.

(c) That plastic containers of suitable size capable of holding a total of 20 gallons of detergent be obtained for storage and ready use purposes at Onehunga. Cost is estimated at $20.00. 922/044/30-39

(d) Stocks of detergent be obtained in the normal manner as required.

The General Manager,
The estimated cost of $220 for this equipment can be met from the 1968/69 Contingency Sum. The old nozzle which is beyond repair will be passed to Board of Survey for disposal to best advantage. [signature] 11.8.69

[signature]
HARBOURMASTER

APPROVED

[signature]
General Manager.
5. 8. 69.

To Note. [signature] 11.8.69
1. Audit
2. H/M
3. C/E. Copy for information [signature]
4. P&S.O.

Mech Engr. Please arrange as on attached sticker, report completion, & return the copy to Engrs file. RCP 14 Aug 69

[initials] 18/8/69

Lieut. Eng

Please arrange as requested.

Travel arrangements should be made through Secretary.

7.8.69

Mr. Bray

12/8/69 12-10 PM.

JB Phone message from Mr. Morgan meeting cancelled the Association have decided that oil disposal facilities in the Ports mentioned are not required JB

THE HARBOURS ASSOCIATION OF NEW ZEALAND

26/2/2

GENERAL BUILDINGS (Sixth Floor) . 38/42 WARING TAYLOR STREET
WELLINGTON, C.1

Telegraphic Address:
"HARUNION"
WELLINGTON

TELEPHONE 46-739

All Correspondence to be Addressed to:
G.P.O. BOX 1765
WELLINGTON, C.1

MEMORANDUM for Auckland, Napier, Southland, Timaru and Wellington Harbour Boards.

4th August 1969.

Oil Sludge

I refer to my letter of 8th July 1969 following on Circular 69/115.

Arrangements have been made to meet the representatives of the New Zealand European Shipping Association in the Committee Room of the Wellington Harbour Board at 2.30 p.m. on Thursday 14th August 1969.

I set out hereunder the names of those who will represent the Association and would request that you make arrangements for your representative to attend.

Mr. J.M. Bray	Auckland
Mr. N.deV. Lawrence	Napier
Mr. J.E. Beaton	Southland
Mr. B.E. Strathern	Timaru
Captain D.W. Galloway and Mr. J.F. Stewart	Wellington

Secretary.

The C/E, Could you make arrangements for Mr Bray to attend please

R.T.V. 6/8/69.

G.M.

26/2/2

THE HARBOURS ASSOCIATION OF NEW ZEALAND

GENERAL BUILDINGS (Sixth Floor) . 38/42 WARING TAYLOR STREET
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G.P.O. BOX 1765
WELLINGTON, C.1

The General Manager,
Auckland Harbour Board,
P.O. Box 1259,
Auckland.

2nd July 1969.

Dear Sir,

Oil Sludge

Thank you for your letter of 27th June 1969, your reference 26/2/2. I agree with your interpretation of subsection (6) of section 13 of the Oil in Navigable Waters Act 1965.

This is the reason why I have asked the Conference Lines whether all of their ships are fitted with oily water separators. The matter is being followed up.

Yours faithfully,

R.E. Dawson

Secretary.

G.M. /m

26/2/2

17th June, 1969.

THE ASSISTANT GENERAL MANAGER

OIL SLUDGE

Reference : Harbours Association of New Zealand circular letter 69/95 of 30th May 1969.

The only correspondence I can find dealing with the subject goes back to the latter part of 1964, and copies are attached hereto for your information. At that time the correspondence between the Marine Department and the N.Z. Shipowners' Federation and Harbours Association, referred to the possibility of New Zealand becoming a party to the International Convention for the Prevention of Pollution of the Sea by Oil (Brussels Convention of 1952) and what New Zealand's responsibilities would be in the provision of adequate shore based oily ballast water reception facilities. In this regard a number of relevant passages in the attached copies have been "para" marked.

It would appear that one of the main factors influencing the Government from becoming a party to the Convention has been the cost of installing shore facilities for reception of ships' oily ballast water and the provision of oily water separators on ships as required by the Convention - Fremantle Harbour Trust in 1964 estimated that their proposed barge fitted with oily water separators would cost approximately £10,000.

In regard to our own Board the 1968/69 Revised Programme of Works includes a financial provision of $40,000 (Revised Priority 3) for an Oil Collector at Wynyard Wharf.

In 1964 the Overseas Shipowners' Committee indicated that at Auckland a facility capable of handling a volume of between 200 and 400 tons of oily ballast would be required (the given period over which this volume would be handled could not be accurately assessed).

Legal Provisions

Oil in Navigable Waters Act 1965 - Section 13

Sub-section (1) - Gives power to Harbour Boards to provide facilities for enabling ships using the harbour to discharge or deposit oil residues.

Sub-section (2) - Gives power to a Harbour Board to join with any other person in providing oil reception facilities, or alternatively to arrange for the provision of such facilities by any other person.

Sub-section (3) - Authorises the making of reasonable charges and imposing of reasonable conditions in respect of the use of such facilities.

Please note the wording underlined in the following two Sub-sections of the Act, which I consider could have an important bearing on the question put forward by the N.Z.E.S.A. in their letter of 28th May.

Sub-section (5) reads -

"Where in the case of any harbour in New Zealand it appears to the Minister, after consultation with the Harbour Board and with any organisation appearing to him to be representative of owners of New Zealand ships --------- the Minister may direct the Harbour Board to provide, or arrange for the provisions of such oil reception facilities as may be specified in the directions."

Sub-section (6) reads -

"Nothing in this section shall be construed as requiring a Harbour Board to allow untreated ballast water (that is to say, ballast water which contains oil and has not been subjected to an effective process for separating the oil from the water) to be discharged into any oil reception facilities provided by, or by arrangement with the Harbour Board; and the Minister shall exercise his powers under Sub-section (5) of this section accordingly."

Comments

Reverting to the reference to New Zealand's ships in sub-section (5), the interpretation in the Act states that a "New Zealand Ship" has the same meaning as in the Shipping and Seamen Act 1952 (reprinted 1966). The latter Act says a "New Zealand Ship" means -

(a) A ship which is registered in New Zealand under this Act

(b) & (c) refer to a New Zealand coastal trade ship not exceeding fifteen register tons or a New Zealand fishing boat.

In view of the wording and interpretation of these two Acts I do not think that the N.Z.E.S.A. could legally put pressure to bear on the Minister as an organisation representative of owners of New Zealand ships, to make Harbour Boards provide oil reception facilities for oily bilge ballast water.

I now refer to the interpretation of oil reception facilities as stated in the Oil in Navigable Waters Act. "Oil reception facilities", in relation to any harbour, means facilities for enabling ships using the harbour to discharge or deposit oil residues, and "oil residues" is interpreted as meaning any waste material consisting of, or arising from, oil or a mixture containing oil. (Mixture containing oil is construed as to referring to any mixture of oil with water or with any other substance). Subsection (6) to which I have previously referred provides that nothing in Section 13 shall be construed as requiring a Harbour Board to allow untreated ballast water to be discharged into any oil reception facilities provided by, or by arrangement with the Harbour Board. If my interpretation of subsection (6) is correct it would appear that the N.Z.E.S.A. is somewhat 'offside' in their approach to the Harbours Association if their concern is specifically in regard to accumulations of oily bilge ballast water. In the final paragraph of their letter, the Association refers to the installing of facilities for the reception of oil pregnated ballast or bilge water which infers

that their vessels do not propose to separate the oil from the water prior to the transfer of this type of waste material to the reception facility.

To summarize, the two main points in relation to the wording of the Act are -

(a) Can the New Zealand European Shipping Association be said to be an organisation representing owners of New Zealand ships who can be consulted by the Minister ?

(b) A Harbour Board is not legally bound to provide a facility for the reception of untreated ballast water, therefore any oil reception facility so provided would be for the receipt of oil residues other than oil pregnated ballast water.

ADMINISTRATION OFFICER

THE HARBOURS ASSOCIATION OF NEW ZEALAND

P.O. Box 1765,
WELLINGTON.

2nd February, 1965.

MEMORANDUM for: All Members of the Executive
and their Executive Officers

INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION OF THE SEA BY OIL

Appended hereunder is a copy of a letter dated 29 January 1965 from the Secretary for Marine. Would you please let me have your comments in the light of the discussion which took place at the Executive Meeting held last Friday.

R.B. Dawson
Secretary.

From: MARINE DEPARTMENT, WELLINGTON.

To: The Secretary, HARBOURS ASSOCIATION OF N.Z.

29 January 1965.

Dear Sir,

I refer to my letter of 13 August regarding the possibility of New Zealand becoming a party to the International Convention for the Prevention of Pollution of the Sea by Oil and what New Zealand's responsibilities would be in the provision of adequate shore based oily ballast water reception facilities.

Replies have been received from the Overseas Shipowners Committee and the New Zealand Shipowners' Federation indicating their views on what provision should be made. It appears that for the immediate future the provision of facilities to take between 100 and 500 tons at both main and major secondary ports would suffice for the purposes of the Convention bearing in mind that Oil Companies have provided facilities already at Marsden Point and that at Port Taranaki consideration is being given to the provision of facilities to cope with larger quantities of oily ballast water.

The N.Z. Shipowners' Federation advises that there are no Federation vessels which use tanks alternatively for fuel oil and ballast. The oily residues to be disposed of are principally as described in paragraphs (a) and (b) of page 3 of my letter of 13 August, that is, those which accumulate in the bilges.

The Overseas Shipowners' Committee advise that under present programming arrangements all vessels do not call at the main ports of say Auckland, Wellington, Lyttelton and Dunedin and can and do load at a combination of the secondary ports without touching a main port. Apparently there are no records available in New Zealand from which any accurate assessment can be made of the volume of oily ballast that Harbour Boards would be required to accept over a given period but it is considered by the Marine Superintendents, in light of the information available to them at this stage, facilities for 100 tons of oily ballast/sludge would be required at the secondary ports but at the main ports of Wellington, Lyttelton and Dunedin a facility of say 200 tons and at Auckland between 200 and 400 tons.

A point is made regarding the possible demands which may arise at the main ports due to survey or repair work. It has apparently been found from experience that where tanks are known beforehand to require repair or survey, arrangements have been made to have the tank(s) clear of most oil residues prior to arrival in port but if the present prohibited limits are extended this could well prevent this from being achieved and would necessitate a further review of the position.

I should be glad if the Executive Committee would consider the points raised in my letter of 13 August and the information indicated above then a committee could be set up of interested parties to work towards bringing down a joint recommendation to Government in respect of legislative action to enable New Zealand to join the Convention.

Yours faithfully,

(sgd.) for G.L. O'HALLORAN,
Secretary for Marine.

26/11/2

THE HARBOURS ASSOCIATION OF NEW ZEALAND

P.O. Box 1765,
WELLINGTON.

10th December, 1964.

MEMORANDUM for: All Members of the Executive
and the Management Committee
and their Executive Officers.

NATIONAL CONVENTION ON PREVENTION OF POLLUTION OF THE SEA BY OIL

I have still not received any indication from the New Zealand Shipowners' Federation regarding the extent to which coastal vessels are likely to require facilities for the disposal of oily wastes. However, I have been in touch with the Permanent Committee of the Australian Port Authorities' Association to ascertain what action has been taken there. It is understood that Australia became a party to the International Convention in October 1962. The following is a summary of the information supplied by various Australian Port Authorities setting out the nature and extent of the facilities which they have been required to provide to date:-

Marine Board of Hobart:
"As yet, no such facilities have been provided at this Port."

Portland Harbor Trust Commissioners:
".. no facilities are provided at this port for the reception of oily ballast nor at this stage of the port's development are they required."

Bunbury Harbour Board:
".. no reception facilities are provided at Bunbury for oily ballast as the need does not exist."

Fremantle Harbour Trust:
"(a) At the Oil Refinery Jetties in the Outer Harbour, separators are available for use by tankers. This facility is not normally available to commercial shipping.
(b) To date there has been very little demand for such a service in the Inner Harbour, however, this Trust has plans to provide a barge, for the reception and separation of oily water, in the near future.
(c) It is estimated that the proposed barge fitted with oily water separators will cost approximately £10,000."

Harbour and Light Department (Western Australia):
"..there are no facilities provided for the reception of oily ballast at any of the ports controlled by this Department. There are no oil loading terminals and no major repairs are carried out at any of our ports and there is no need for facilities of this nature at the present time."

Mackay Harbour Board:
"There are no facilities for the reception of oily ballast at Mackay and it is not proposed to provide same, as there is no demand for them at present."

Rockhampton Harbour Board:
"(1) No Oil loading terminal at Rockhampton.
(2) ditto - Major ship repairs at Rockhampton.
(3) Discharge of polluted ballast water strictly prohibited in the tidal waters of Port Alma. Controlling body - Department of Harbours and Marine."

Gladstone Harbour Board:
"There are no facilities at the Port of Gladstone for this purpose, nor is there need to provide such facilities."

This only seems to cloud the issue. What legal obligations will ratification of the convention involve?... What is the situation in the event of shortage of no facilities are provided by the Port Authority in the case of commercial shipping? MDC

See letter 13/8/65

26/2/2

THE HARBOURS ASSOCIATION OF NEW ZEALAND

P.O. Box 1765,
WELLINGTON.

8th September 1964.

MEMORANDUM for :

All Members of the Executive
and their Executive Officers.

INTERNATIONAL CONVENTION ON PREVENTION OF POLLUTION OF THE SEA BY OIL

Appended hereunder for your information is a copy of a letter dated 13th August 1964 which the Secretary of Marine has sent to the Overseas Shipowners' Committee and the New Zealand Shipowners' Federation.

R. E. Davidson

Secretary pro tem.

MARINE DEPARTMENT, WELLINGTON.
13 August 1964.

"Dear Sir,

You will recall that last year I raised with you the question of increasing the allowable penalties provided in the Oil in Territorial Waters Act 1926. No action was taken at the time as further consideration was also being given to New Zealand joining the Brussels Convention of 1952 on the Prevention of Pollution of the Sea by Oil. Ratification of the Convention by New Zealand would necessitate wholesale changes to the Act and it was considered advisable in the circumstances not to make any piecemeal amendments.

New Zealand has not hitherto become a party to the Convention because we had no real oil pollution problem, and it was considered the Oil in Territorial Waters Act 1926 sufficed for our purposes. Another of the main factors influencing us against acceptance has been the cost of installing shore facilities for reception of ships' oily ballast water and the provision of oily water separators on ships as required by the Convention. However the refinery at Whangarei and the shipping of oil condensates from Taranaki both raise the possibility of future oil pollution problems in waters round our coasts.

In giving consideration to the legal remedies to prevent pollution of the sea by oil the question of the need for some protection in this matter outside territorial waters has arisen. At Whangarei one overseas tanker of up to 85,000 tons will be arriving and departing once every five days, and one coastal tanker every two days. These shipping movements are likely to increase with the increased production of the refinery. Shipments of crude oil amounting to 2,500,000 tons will be carried by sea to New Zealand. This is a persistent oil which causes most of the pollution around the coasts of overseas countries. Such oil, if discharged into the sea, will persist and drift indefinitely, and no matter where it escapes it could eventually drift ashore and cause pollution.

It appears clear therefore, that no matter how pollution is legislated for and policed within territorial waters, a full measure of success in safeguarding the coastal waters of New Zealand from oil pollution cannot be achieved without international cooperation.

It is considered that the discharge of oily water and sludge from tankers outside territorial waters could possibly endanger more than just our Northland beaches. Part of the journey of coastal tankers from Marsden Point to major ports in New Zealand will no doubt be over sea routes outside the three mile limit. Discharges of oil sludge or oil tank washings, or ballast from these tankers, can endanger all New Zealand beaches and could be a distinct danger to our bird life.

Australia, by virtue of its membership of the Convention, is protected from oil pollution from tankers in the area of sea which lies within 150 miles of most of the Australian mainland and Tasmania and possibly New Zealand, too, could expect a similar prohibited area when it becomes a party to the Convention.

... ...

In considering what points need to be taken into account for New Zealand to become a party to the Convention, the question of shore based oily water ballast reception facilities appears to be one of the main issues. At the 1962 Oil Pollution Conference some amendments were made to Article VIII which deals with reception facilities ashore. Whereas previously it was mandatory that three years after the Convention came into force in a Contracting Country, shore facilities were required to be provided in such ports as were determined by that Contracting Country such as would not cause undue delay to shipping, now, each Contracting Government is merely required to take all appropriate steps to promote facilities.

Article VIII now reads:

(1) Each Contracting Government shall take all appropriate steps to promote the provision of facilities as follows:

(a) according to the needs of ships using them, ports shall be provided with facilities adequate for the reception, without causing undue delay to ships, of such residues and oily mixtures as would remain for disposal from ships other than tankers if the bulk of the water had been separated from the mixture;

(b) oil loading terminals shall be provided with facilities adequate for the reception of such residues and oily mixtures as would similarly remain for disposal by tankers;

(c) ship repair ports shall be provided with facilities adequate for the reception of such residues and oily mixtures as would similarly remain for disposal by all ships entering for repairs.

(2) Each Contracting Government shall determine which are the ports and oil loading terminals in its territories suitable for the purposes of sub-paragraphs (a), (b) and (c) of paragraph (1) of this Article.

(3) As regards paragraph (1) of this Article, each Contracting Government shall report to the Organisation, for transmission to the Contracting Government concerned, all cases where the facilities are alleged to be inadequate.

From this it can be seen that should New Zealand become a party to the Convention we will require to determine which are the ports and oil loading terminals in the country which must instal shore reception facilities.

In order to give this matter full consideration, it will be necessary to know what demands would be likely to be made for the provision of facilities, particularly in respect of dry cargo ships.

I should be glad if you would give this matter some thought and advise me of the possible demands which would be likely to be made at various ports in this country by ships operated by lines associated with your Federation. As a guide, the following information is supplied:

Oily residues normally encountered in modern marine practice may be considered under three main headings:

(a) Those due to normal leakage and spillage in and around the vessel's machinery spaces. Quantities involved in this case are small and accumulate in engineroom and stokehold bilges, from whence, normally after treatment with dissolvents, they are pumped overboard when the vessel is again at sea.

(b) Those remaining after treatment of the vessel's fuel and lubricating oils in centrifugal type separators and settling tanks. These residues are of two types, one a viscous sludge which can be pumped, and the other virtually a solid. The solids are not buoyant and are easily disposed of by dumping at sea, while the sludge is normally run into an oily bilge or a sludge tank and disposed of as in (a) above. As a basis

... ...

for evaluation of the quantity of these residues, a vessel of the general size of m.v. WANGANELLA, burning some 20-25 tons per day (at sea) of heavy fuel in diesel engines, could expect some 30-50 pounds per day of solid residues after treatment of the fuel used, and

(c) Those due to the alternate use of tanks for fuel and ballast, or remaining after a tank is cleaned for survey. It is difficult to estimate the quantities of residuals in these circumstances, for depending on the efficiency of the separator used, the degree and type of contamination and the vessel's pumping arrangements, much of the separated oil could be returned to service. It is felt, however, that a figure in the order of 4-5 tons of waste products could be adopted as a working basis in the first instance.

It is felt that possibly a large percentage of the residues to be handled could be cleared ex vessel in drums or containers, as not all vessels are equipped for the back discharge of waste products via deck fittings to facilities ashore, and some reluctance may be felt to use fuel oil bunkering lines for this purpose.

X When the possible demand for shore facilities is known, discussions can then be held with the Harbours Association of New Zealand, and later, a committee set up of interested parties to work towards bringing down a joint recommendation to Government to take the appropriate legislative action to join the Convention.

Yours faithfully,
(Sgd.) G.L. O'HALLORAN,
Secretary for Marine. "

(Shaken also represented by Shipowners Federation)

X agreed 16/9.

28th July 1969

THE CHIEF ENGINEER THE GENERAL MANAGER.

DISPOSAL OF OILY WATER FROM VESSELS
IN THE PORT OF AUCKLAND.

(Refer your memorandum dated the 14th July 1969)

The problem of the disposal of large quantities of oily waste products from ships in the Port of Auckland has been raised several times in the past.

As early as 1949 my records show that the Overseas Shipowner's organisation requested that New Zealand Harbour Boards provide facilities for the disposal of oily bilge water. At this particular time they were told that the Board would investigate the problem and it was then estimated that a modern facility would cost about $40,000.

In the past fifteen months during which time my Mechanical Engineer's Staff have become involved in investigations into the discharge of oil into the harbour, the following results have been noted:-

(a) During this period over 2900 vessels used the Port of Auckland but only nine of these ships were involved in the discharge of oil into the harbour.

(b) Of these nine occasions, two were caused by human error during bunkering and the transfer of fuel oil, three were caused by valves not being opened when bilges were being transferred to a holding tank and the remaining four spills were caused by vessels either not using their oily water separators (or not having this equipment) and not keeping an adequate watch over the side at the discharge outlet when bilges were being pumped.

If such a facility could be justified at the Port of Auckland to handle at one time say 300 tons of oil contaminated bilge water, two alternative schemes could be considered, as described below:-

(a) Floating Oil Disposal Plant:

Such plant could consist of a non-propelled barge equipped with holding tanks to take 300 tons of bilge water, another tank to take separated oil of say 50 tons capacity, oily water separator and the associated pumps, hoses etc.

The general principal of this arrangement would be that the barge would be taken to the ship and would put on board a hose to the engineroom and pump the contaminated bilges to its holding tanks. The bilge water would then be pumped through the separator, the oil being stored in the 50 ton tank and the water being discharged into the harbour.

The estimated cost of this equipment is in the vicinity of $50,000.

(b) Land Based Plant:

This plant would comprise a mobile road tanker of say 2,000 gallons capacity equipped with high lift suction pump and hoses, also a holding tank situated near the wharves of capacity of about 500 tons. An oily water separator and pumps etc. would be required to separate the oil and pump the water away. The oil would be discharged straight from the holding tank to the road tanker for disposal.

This scheme envisages that the road tanker would take on bilge water from ships, which require its services, the tanker would then transport it to the large holding tank where it would be naturally separated by gravity and the water drawn off the tank via a cascade filter arrangement. The oil would be drawn off from the tank back to the road tanker for disposal.

Estimated cost of this scheme is in the vicinity of $38,000.

Both these alternative schemes would be of high capital cost and would incur substantial running costs. If they could be justified, either scheme would present a major problem in the disposal of the separated oil. To date this has not been resolved but I cannot see any other alternative than to burn it. This in itself would also present difficulties.

Conclusions:-

(a) The number of ships prosecuted in Auckland per year for the discharge of oil into the harbour can be said to be insignificant when considering the number of ships that use the Port.

(b) I would estimate that in both schemes as outlined in this report, that if the shipowners are to bear the full costs of providing this facility, the cost per ton for the disposal of contaminated water would be approximately $8 in scheme (a) and $6 in scheme (b).

The above estimates are based on a total of 1000 tons being discharged per year.

I therefore cannot see a shipowner using the Board's equipment unless the costs were heavily subsidised or operated as a free service in the Port.

(c) It is also contended that the large majority of ships using the Port have facilities for holding contaminated bilge or ballast water for later separation and discharge at sea.

(d) As previously stated four out of the nine prosecutions over the past fifteen months were due to the ships personnel pumping bilges directly overboard without due care and attention. The remaining spills being caused by errors in operation of equipment when transferring bilges to a holding tank or when fuel oil was being transferred or bunkered.

It is therefore suggested that there is very little justification for the Board providing a facility in the Port of Auckland for the disposal from ships of oil contaminated bilge and ballast water.

JMB/AF

CHIEF ENGINEER TO THE BOARD.

203/1.

24 July, 1969

THE CHIEF ENGINEER — THE GENERAL MANAGER.

DISPOSAL OF OILY WATER FROM VESSELS
IN THE PORT OF AUCKLAND

(Refer your memorandum dated the 14th. July 1969)

The problem of the disposal of large quantities of oily waste products from ships in the Port of Auckland has been raised several times in the past.

As early as 1949 my records show that the Overseas Shipowner's organisation requested that New Zealand Harbour Boards provide facilities for the disposal of oily bilge water. At this particular time they were told that the Board would investigate the problem and it was then estimated that a modern facility would cost about $40,000.

In the past fifteen months during which time my Mechanical Engineer's Staff have become involved in investigations into the discharge of oil into the harbour, the following results have been noted :-

(a) During this period nearly 2900 vessels used the Port of Auckland but only nine of these ships were involved in the discharge of oil into the harbour.

(b) Of these nine occasions, two were caused by human error during bunkering and the transfer of fuel oil, three were caused by valves not being opened when bilges were being transferred to a holding tank and the remaining four spills were caused by vessels either not using their oily water separators (or not having this equipment) and not keeping an adequate watch over the side at the discharge outlet when bilges were being pumped.

If such a facility could be justified at the Port of Auckland to handle at one time say 300 tons of oil contaminated bilge water, two alternative schemes could be considered, as described below :-

(a) Floating Oil Disposal Plant :

Such plant could consist of a non-propelled barge equipped with holding tanks to take 300 tons of bilge water, another tank to take separated oil of say 50 tons capacity, oily water separator and the associated pumps, hoses etc.

The general principal of this arrangement would be that the barge would be taken to the ship and would put on board a hose to the engineroom and pump the contaminated bilges to its holding tanks. The bilge water would then be pumped through the separator, the oil being stored in the 50 ton tank and the water being discharged into the harbour.

The estimated cost of this equipment is in the vicinity of $50,000.

... ...

(b) Land Based Plant :

This plant would comprise a mobile road tanker of say 2,000 gallons capacity equipped with high lift suction pump and hoses, also a holding tank situated near the wharves of capacity of about 500 tons. An oily water separator and pumps etc. would be required to separate the oil and pump the water away. The oil would be discharged straight from the holding tank to the road tanker for disposal.

This scheme envisages that the road tanker would take on bilge water from ships, which require its services, the tanker would then transport it to the large holding tank where it would be naturally separated by gravity and the water drawn off the tank via a cascade filter arrangement. The oil would be drawn off from the tank back to the road tanker for disposal.

Estimated cost of this scheme is in the vicinity of $38,000.

Both these alternative schemes would be of high capital cost and would incur substantial running costs. If they could be justified, either scheme would present a major problem in the disposal of the separated oil. To date this has not been resolved but I cannot see any other alternative than to burn it. This in itself would also present difficulties.

Conclusions :-

(a) The number of ships prosecuted in Auckland per year for the discharge of oil into the harbour can be said to be insignificant when considering the number of ships that use the Port.

(b) I would estimate that in scheme (a) as outlined in this report the Board would have to charge the ship owner approximately $8 a ton for the disposal of their ships bilge water and about $6 a ton in scheme (b).

These estimated charges are based on a total of 1000 tons being discharged per year and represent the user paying the full operating costs of the facility.

I therefore cannot see a shipowner using the Board's equipment unless the costs were heavily subsidised or operated as a free service in the Port.

(c) It is also contended that the large majority of ships using the Port have facilities for holding contaminated bilge or ballast water for later separation and discharge at sea.

(d) As previously stated four our of the nine prosecutions over the past fifteen months were due to the ships personnel pumping bilges directly overboard without due care and attention. The remaining spills being caused by errors in operation of equipment when transferring bilges to a holding tank or when fuel oil was being transferred or bunkered.

It is therefore my opinion that there is no justification for the Board having a facility for the disposal of oil contaminated bilge and ballast water for ships in the Port of Auckland.

CHIEF ENGINEER TO THE BOARD.

2 copies to : MECHANICAL ENGINEER.

JB:NKR

Auckland Harbour Board.

Mr. Pemberton

Please contact Jack Gray & get this rather disorganised enquiry under control.

23/7/69

17.7.69

Mr J M Gray — Please see Mr. Segar

16-7-69

Auckland Harbour Board

MEMORANDUM 14 July 1969

FROM THE GENERAL MANAGER **TO** THE CHIEF ENGINEER

OIL SLUDGE

With reference to copies of correspondence recently forwarded to you concerning the question of provision of facilities for the reception of oily wastes, and the proposal to arrange for a meeting between representatives of various Ports and the New Zealand European Shipping Association, I have notified the Harbours Association that Mr. J.M. Bray of your Department will be attending on our behalf.

The date of the proposed meeting will be conveyed to you when I have received this information, but in the meantime I would suggest that you discuss this matter with Mr. Bray and make available the copies of the relevant correspondence for him to study.

Will you please let me have your report on the implications which would include the important question of methods of disposing of large quantities of oil wastes, the necessity and requirements, and the cost estimate of providing an oil residue facility at Auckland, so that I can decide on what policy we should adopt at the meeting with the Shipowners' representatives.

Your early advice on these matters will be appreciated.

R.T. Lorimer
GENERAL MANAGER

AUCKLAND HARBOUR BOARD

9th July 1969

TO The Chief Engineer.

PLEASE ACKNOWLEDGE	
PLEASE REPLY DIRECT SUBMITTING COPY TO HEAD OFFICE	
PLEASE REPORT	
FOR YOUR INFORMATION ~~AND RETURN PLEASE~~	Please let me have early report on the feasibility, cost & type of facility that we should provide.
and ~~FOR~~ NECESSARY ACTION PLEASE	

R. T. Kerrimer
GENERAL MANAGER
~~SECRETARY~~

HO 38

26/2/2

THE HARBOURS ASSOCIATION OF NEW ZEALAND 69/115

P.O. Box 1765,
Wellington.

4th July 1969.

MEMORANDUM for All Members and All Members of the Executive.

Oil Sludge

Appended hereunder for your information is a copy of a further letter dated 1st July 1969 from the New Zealand European Shipping Association dealing with the question of provision of shore facilities for the reception of oily wastes.

I am advising the Secretary of the New Zealand European Shipping Association that I propose to arrange for a meeting of representatives of the Ports of Auckland, Napier, Wellington and Southland with representatives of his Association.

At the same time his attention is being drawn to the provisions of Sub-section (6) of Section 13 of the Oil in Navigable Waters Act which indicates that a Harbour Board cannot be required to provide facilities for the reception of ballast water which contains oil and has not been subjected to an effective separating process.

R & D Dawson.
Secretary.

NEW ZEALAND EUROPEAN SHIPPING ASSOCIATION

P.O. Box 1015,
Wellington.

1st July 1969.

The Secretary,
The Harbours Association of New Zealand,
G.P.O. Box 1765,
Wellington.

Dear Sir,

Oil Sludge

With reference to your letter of 12/6/69 we would advise that the Lines have had further discussions on the matter of shore facilities for the reception of oily bilge water and would suggest that the ports designated for this purpose should be:- Auckland, Napier, Wellington and Bluff.

As you can appreciate, the Lines at this stage can only give a rough estimate as to the volume of waste which the various Harbour Boards will be required to accept for disposal over a given period, as no records are available from which we can obtain accurate figures. It is felt however that at the ports of Napier and Bluff, facilities capable of receiving say, 100 tons of oily water ballast/sludge would be required, whereas at the main ports like Wellington and Auckland, a capacity of between 200 and 400 tons would be required.

We would also advise that although all vessels are fitted with separators some are more efficient than others, and accordingly it is not accepted practice to discharge by this medium in or adjacent to harbours.

G.M.

As there are no doubt other aspects of this problem to be considered, we feel the matter could best be progressed by a meeting between representatives of your Association and the Lines Superintendents.

If this is acceptable, we would suggest you contact Mr. Vital of this office in order to arrange a suitable date and time.

Yours faithfully,

L.A. Riley
Secretary.

26/2/2

26/2/2

27 June 1969

The Secretary,
Harbours Association of New Zealand,
P.O. Box 1765,
WELLINGTON.

Dear Sir,

OIL SLUDGE

Referring to your memorandum 69/96 of 30 May concerning information requested by the New Zealand European Shipping Association on the action, if any, taken by Harbour Boards to instal facilities for the reception of oil pregnated ballast or bilge water, I would advise that the feasibility and cost of providing an oil residue facility at Auckland is at present under examination by the Board's Officers.

When discussing this matter at the recent meeting of the Harbours Association it was mentioned that the Shipping Association had been asked to let you have an up-to-date assessment of the volume of oily ballast that various Harbour Boards would need to cater for over a given period. When this information is to hand I would appreciate receiving your advice of the Shipowners' estimate of capacity requirements and possible demands which would be likely to be made at various New Zealand ports by Lines associated with their organisation, and in particular the capacity of an oil reception facility the Association considers would be necessary at Auckland.

There is one point I would like to bring to your attention regarding Section 13 of the Oil in Navigable Waters Act 1965. The Shipping Association in its letter of 28 May has quoted what action the Minister may take for the provision of oil reception facilities, but it has been careful to avoid any reference to subsection (6) of Section 13 which reads -

... ...

"Nothing in this section shall be construed as requiring a Harbour Board to allow untreated ballast water (that is to say, ballast water which contains oil and has not been subjected to an effective process for separating the oil from water) to be discharged into any oil reception facilities provided by, or by arrangement with the Harbour Board; and the Minister shall exercise his powers under subsection (5) of this section accordingly."

If my interpretation of subsection (6) is correct it is apparent that Harbour Boards are not legally bound to provide facilities for the reception of oil pregnated ballast or bilge water. As it is also apparent that the Shipowners' specific concern refers to accumulations of this particular type of oil residue in certain of their vessels, it would appear that these vessels would need to provide an effective process to separate the oil from the water prior to depositing the oil residue in an oil reception facility in a New Zealand port.

Will you please give some thought to this matter and let me have your views as the provisions of subsection (6) could have considerable importance when dealing with the enquiry of the New Zealand European Shipping Association.

Yours faithfully,

R.T. Lorimer
GENERAL MANAGER

JES.JB

26/2/2

THE HARBOURS ASSOCIATION OF NEW ZEALAND 69/95

P.O. Box 1765,
Wellington.

30th May 1969.

MEMORANDUM for All Members and All Members of the Executive.

Oil Sludge

The letter quoted hereunder has been received from the Secretary of the New Zealand European Shipping Association. Would Boards please advise me whether or not any of them are taking steps to install the facilities mentioned by the Association.

R. E. Dawson
Secretary.

NEW ZEALAND EUROPEAN SHIPPING ASSOCIATION

P.O. Box 1015,
Wellington.

The Secretary,
The Harbour Association of New Zealand,
P.O. Box 1765,
Wellington.

28th May 1969.

Dear Sir,

Oil Sludge

Since the enactment of the "Oil in Navigable Waters Act - 1965", difficulty has been experienced by many of the Lines vessels in holding accumulations of oily bilge ballast water whilst they are in New Zealand ports.

Prior to this Act and the greater rationalisation of discharge and loading ports, opportunity was taken to discharge excessive accumulations outside prohibited areas during coastal passages, but the lesser number of ports being worked under present programming has now imposed a greater burden on the ships storage tanks.

The rigid enforcement of the Act with regard to accidental discharges into harbours together with the increasing number of prosecutions, has also led to a position whereby the provision of shore facilities for disposal at, say Auckland and Wellington besides other Ports, is becoming a matter of urgency. As you will note from Section 13, Paragraph 5 of the Act, the Minister, after consultation with the Authorities, may take appropriate action to ensure that such facilities are available at those ports where required.

We would be pleased therefore to receive your advice whether or not any of the Harbour Boards are taking steps to install facilities for the reception of oil pregnated ballast or bilge water.

Yours faithfully,
F. Riley
Secretary.

H/M to confer with C/E and to report on [i]mplications, requirement; [c]ost etc.

C/E to action report vide H/M 16th June 1969.

Auckland Harbour Board.

Mr. Pemberton

Please study this & see me.

G.M. says it is urgent.

I think a talk with Mr Carter would be helpful.

10.7.69.

Auckland Harbour Board.

Who is dealing with this?

Mr Jack Bray.

Mech Engr

Attention Mr J M Bray.

KdP

16th June 1969

THE HARBOURMASTER THE GENERAL MANAGER

OIL SLUDGE

I would think the port is big enough to require an oil sludge barge of this nature.

Auckland is used as a Survey port for a number of oversea ships and Inter-Australian N.Z. (U.S.S.Co) Carriers.

The Engineer's Department is going into the feasibility and cost of providing an ex lighter for this purpose.

HARBOURMASTER

RHC/HG

The Chief Engineer

For yourinformation.

Harbourmaster