

Emergency offloading of disabled and sunken vessels

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We tend to have a too defensive attitude
when we fight an oil pollution

- One m^3 of oil discharged from a damaged tank cost 1/10 of one m^3 of oil recovered from sea surface
- More oil could in many situations be saved from sea pollution if we were organized and trained in the task

What does the law say

- OPRC convention is ratified by at least 15 country members and has come into force
- Article 6
 1. System for responding promptly
 2. Minimum level of prepositioned oil spill combating equipment
Program of exercises and training

INTERNATIONAL MARITIME ORGANIZATION

OPRC CONVENTION

**INTERNATIONAL CONVENTION ON
OIL POLLUTION PREPAREDNESS,
RESPONSE AND CO-OPERATION, 1990**



IMO

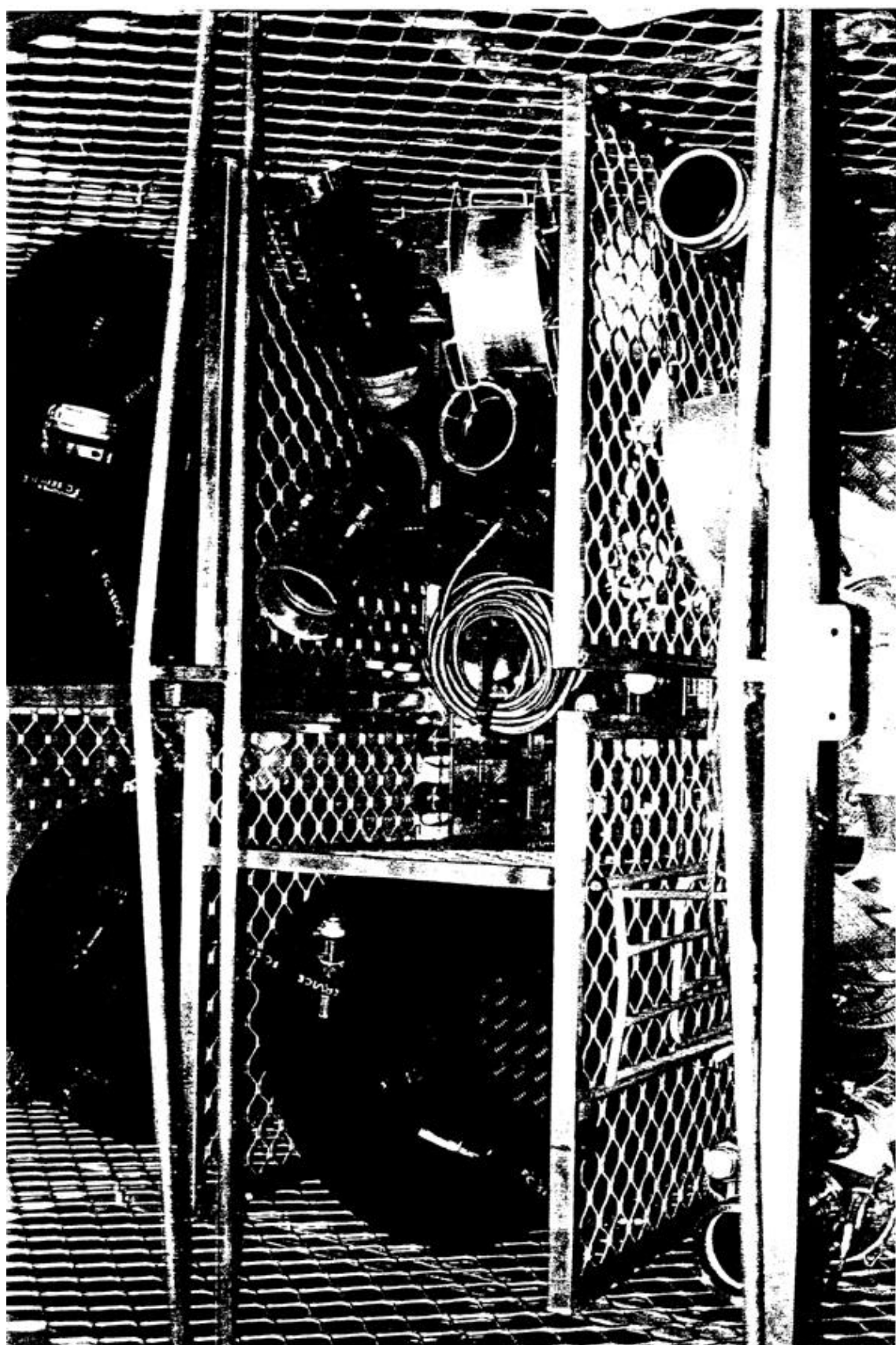
How do we reduce pollution potential

- Good vessels with known owners
- Traffic control system for coastal water
- Support system like ocean going tugs
- Emergency discharging system
- Oil booms and oil skimmers
- Beach cleaning

Training - training - training

Emergency offloading equipment is available

- Hydraulic driven Pumps
- Booster Pumps
- Hoses
- Hydraulic Power Packs
- Emergency Lights (Ex)
- Compressors
- Inertgas Generators
- Steam Generator (heating)
- Receiving facilities (Tanks / oil bags)



Example of a normal discharging including safety precautions

- Safety of personnel is to be primary consideration at all times.
- On a disabled ship all spaces should be considered to be dangerous and not to be entered without BA and permission of ship's officer;
Prior to this, spaces must be checked with explosion monitors and O2-equipment.
- Diesel hydraulic powerpack should be placed (if possible) on AFT ship or at the side preferably not close not close to an open hole or tank butterworth hatch (3 mtrs.minimal).

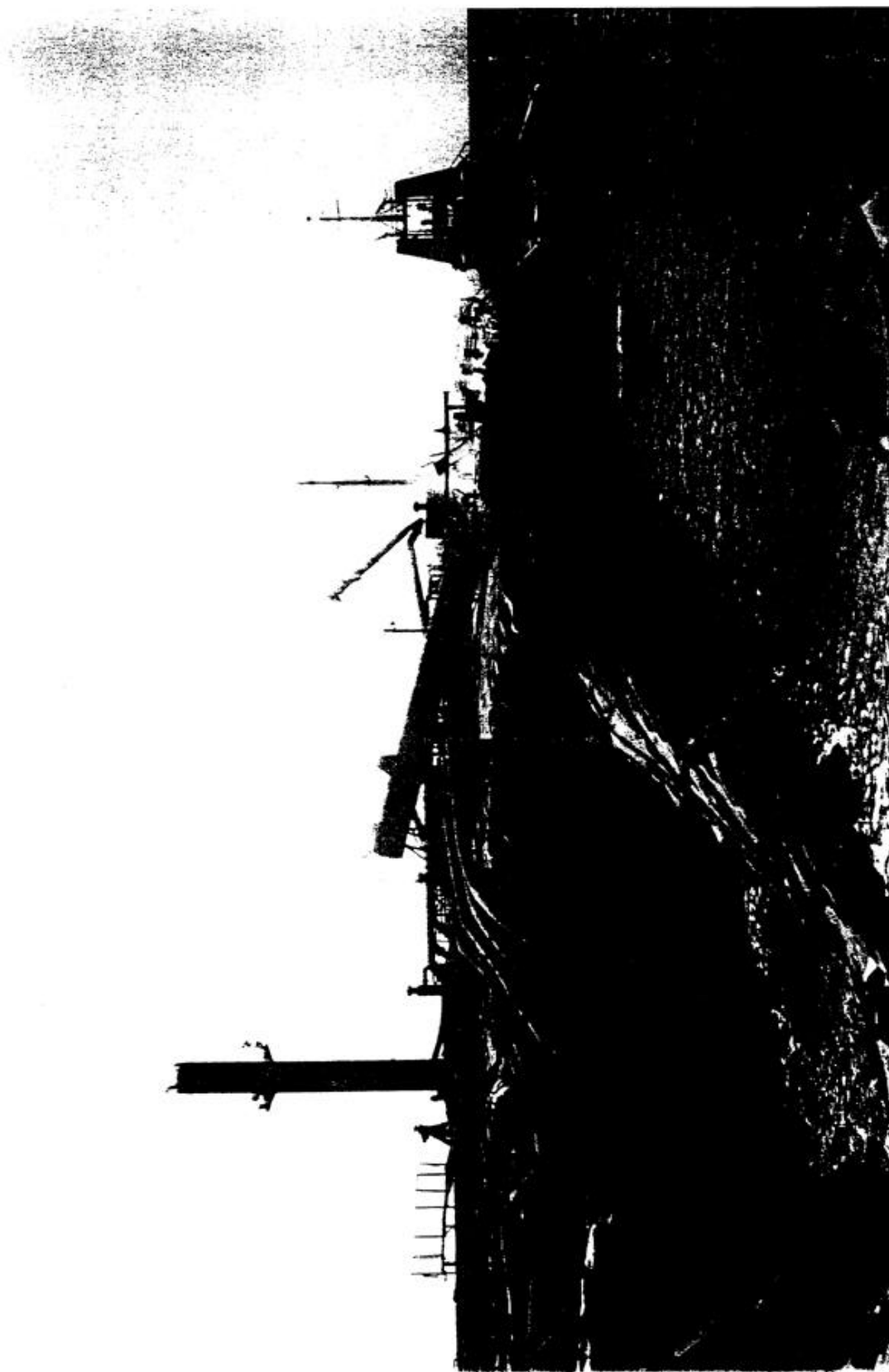
Example of a normal discharging including safety precautions

- Equipment has to be earthened, when ~~but~~ ^{but} worthwhile.
- Check O₂ content of the cargo tank. If higher than 8% supply I.G.
- Make a discharge plan with ship's officer (stress, ~~list, trim,~~ etc.)
- Check ullage and O₂ content of all cargo tanks every shift
- In cases, except for in some chemicals, we lower the pump completely to the tank bottom

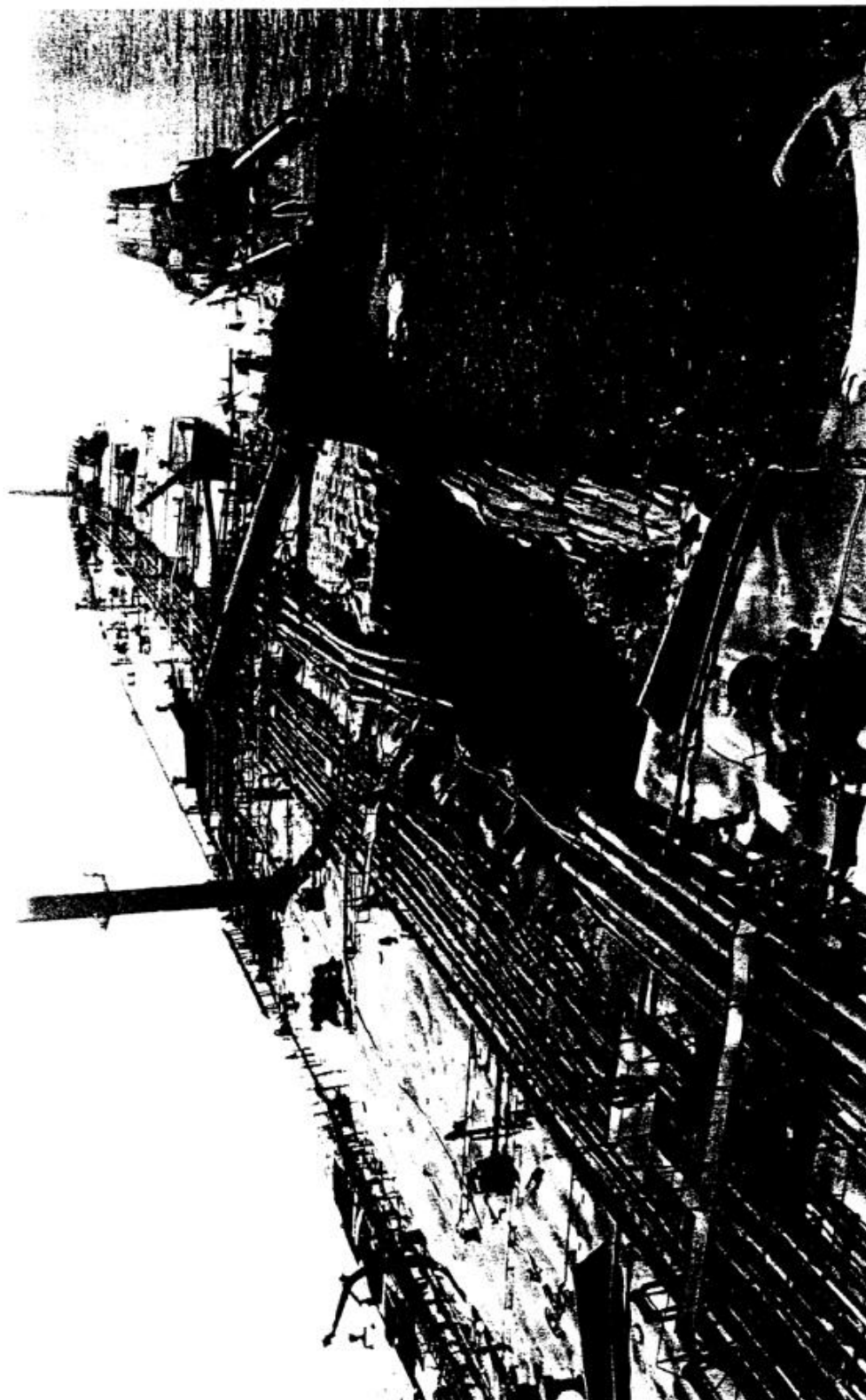
Frank Mohn Nederland B.V. Henk Heuker

Difficulties in Mid East Operation

- Large quantities (17mill tons transferred)
- Difficult logistics
- Live crude, easy but dangerous

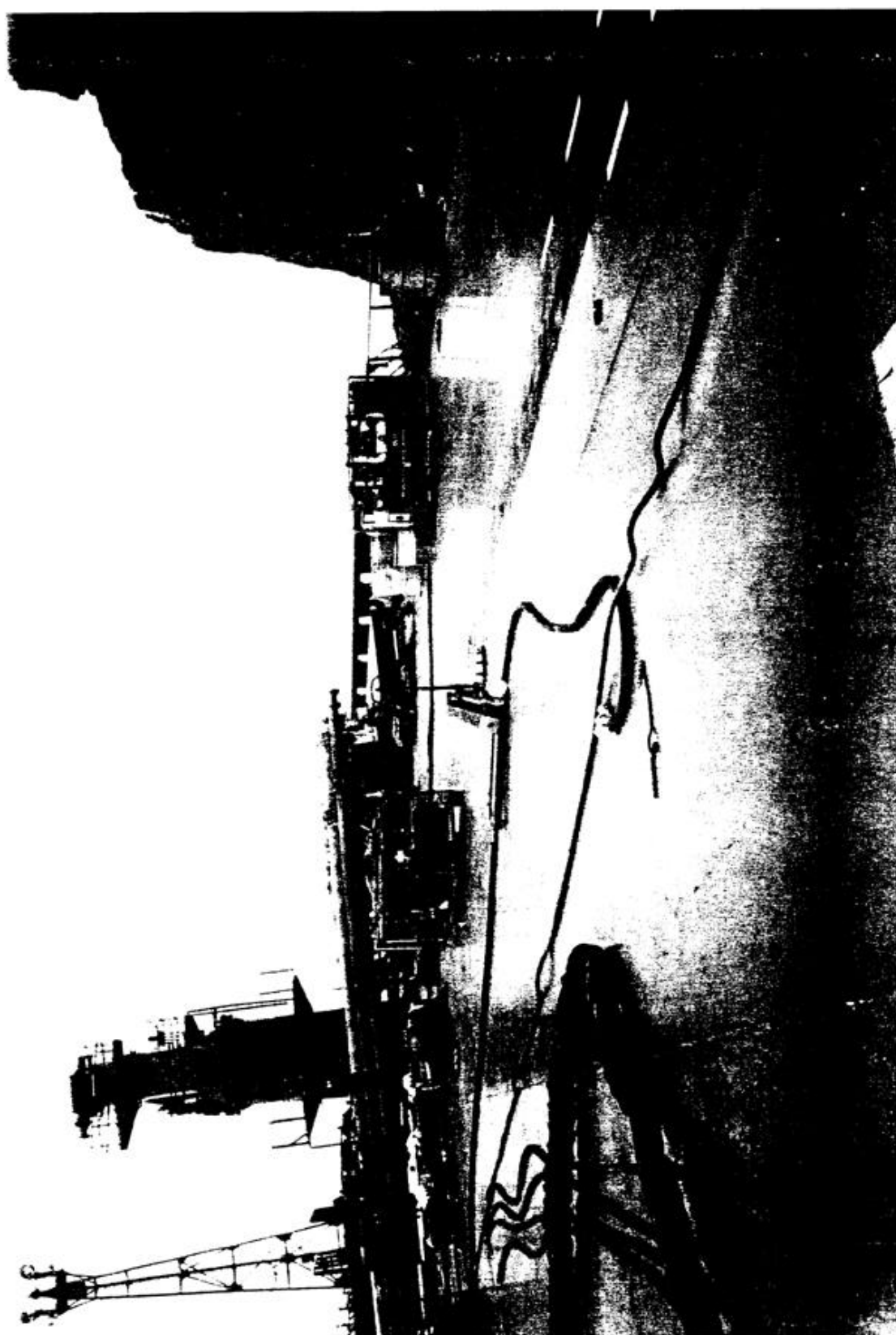






Difficulties with Cristos Bitas

- Vessel was fully open in bottom
- Complicated operation sequence pumping and compressing the tanks
- No power on vessel
- 14 days operation

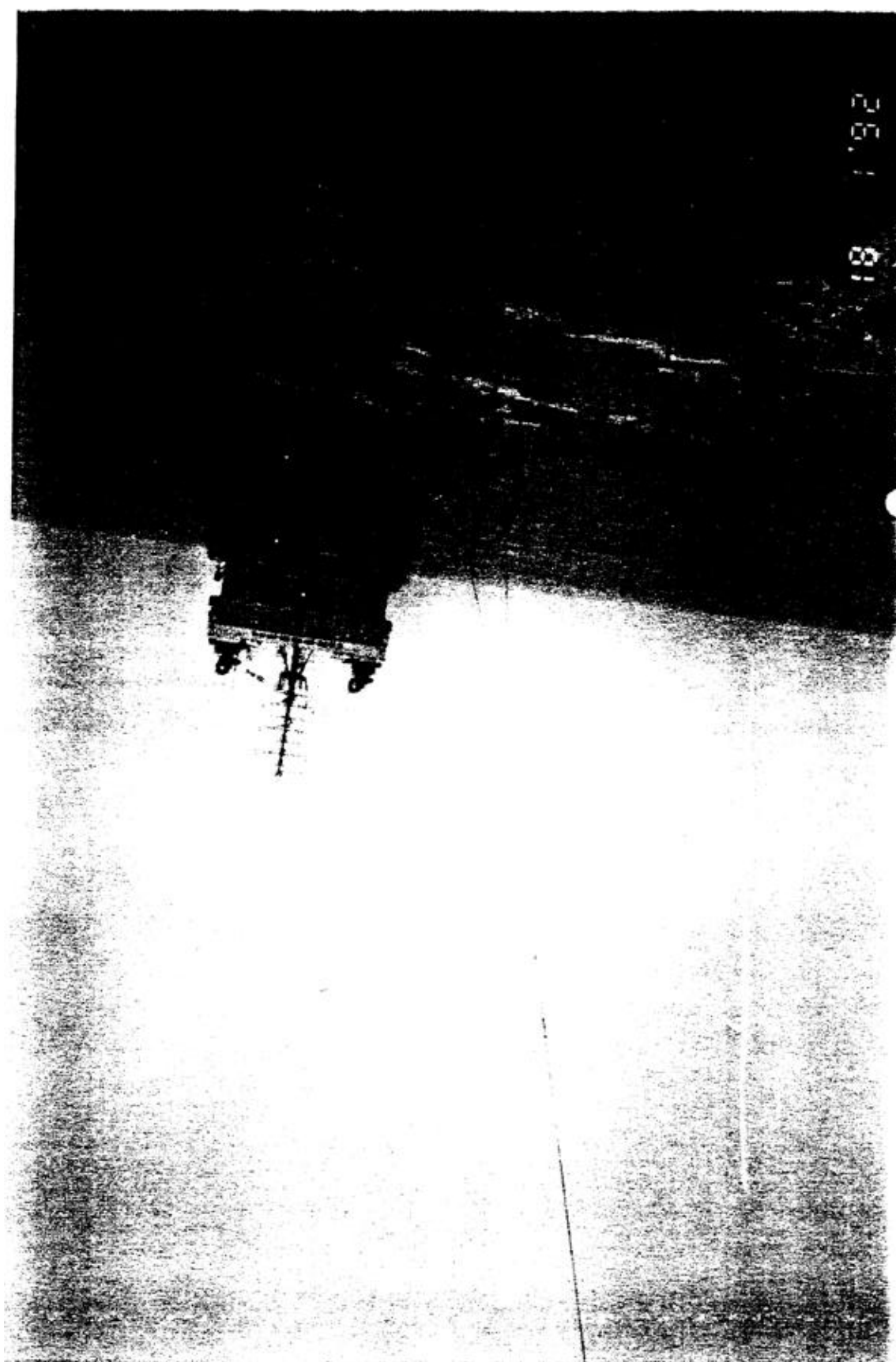


Difficulties with the Arisan case

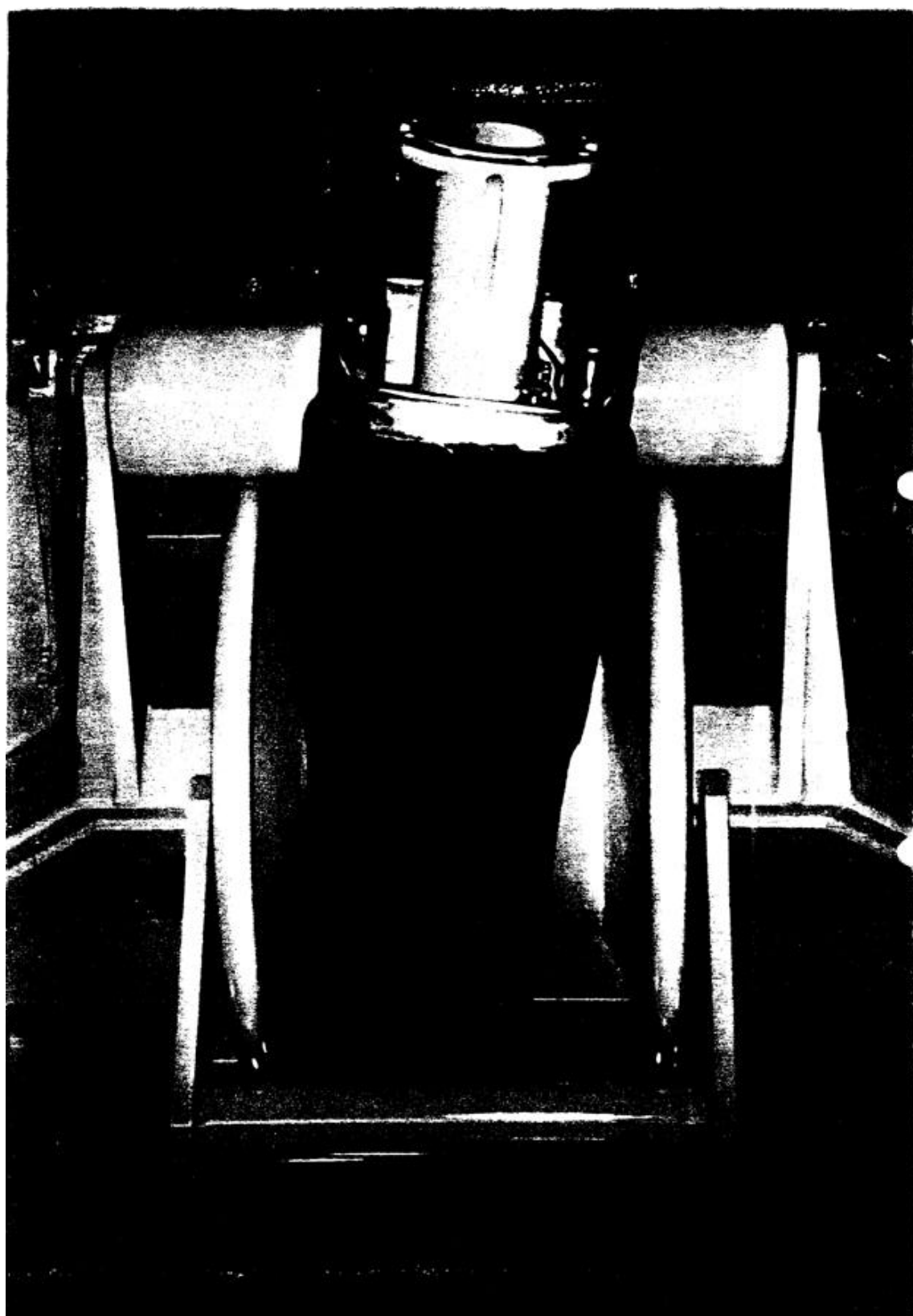
- The vessel were on the reef
- Difficult to come close to the vessel
- Solved by dynamic positioned supply vessel and the use of the Transrec system
- Cold (+5°C) bunker C
- Solved by deluting bunker with Diesel Oil

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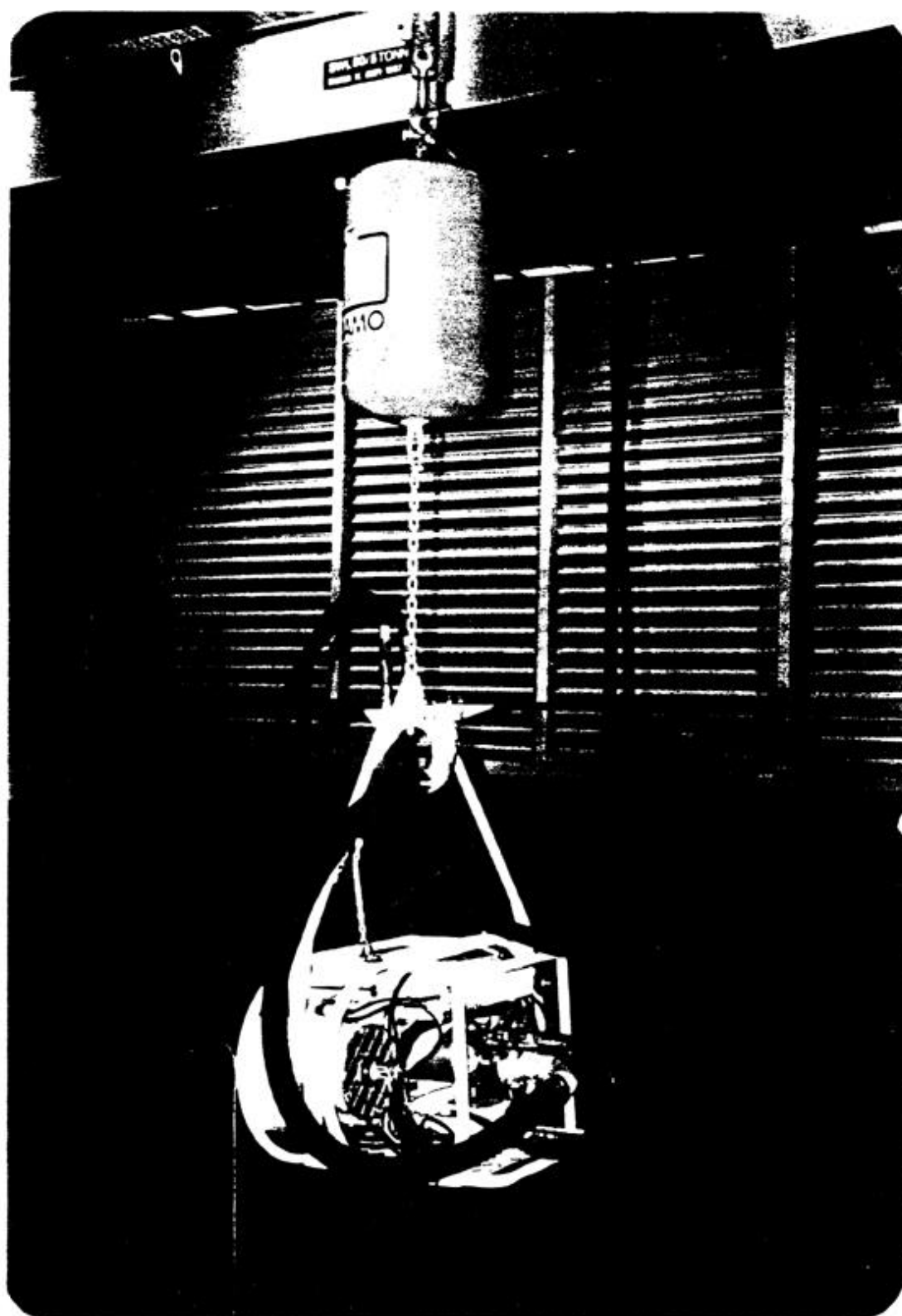




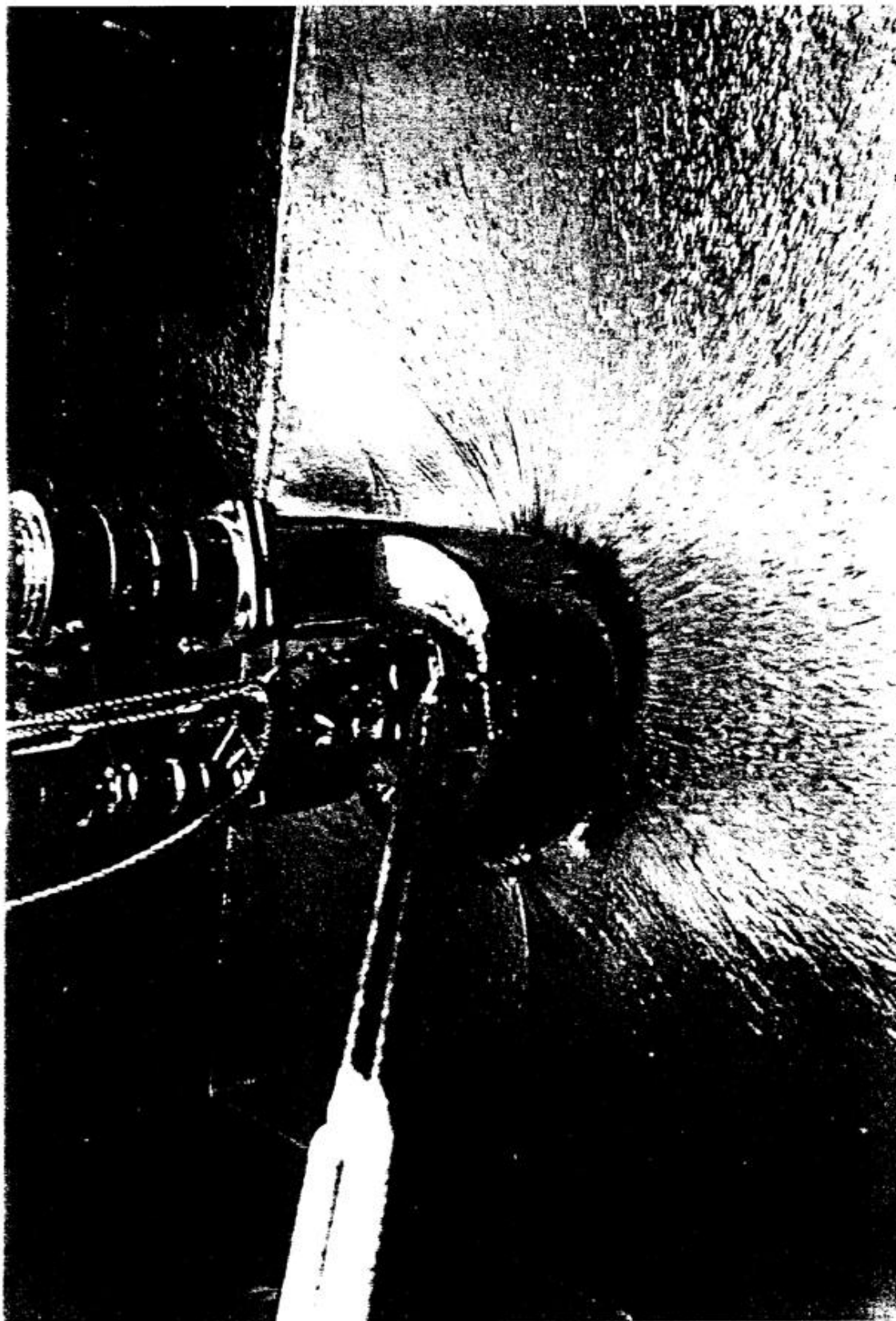


The discharge of bunker oil from Norward

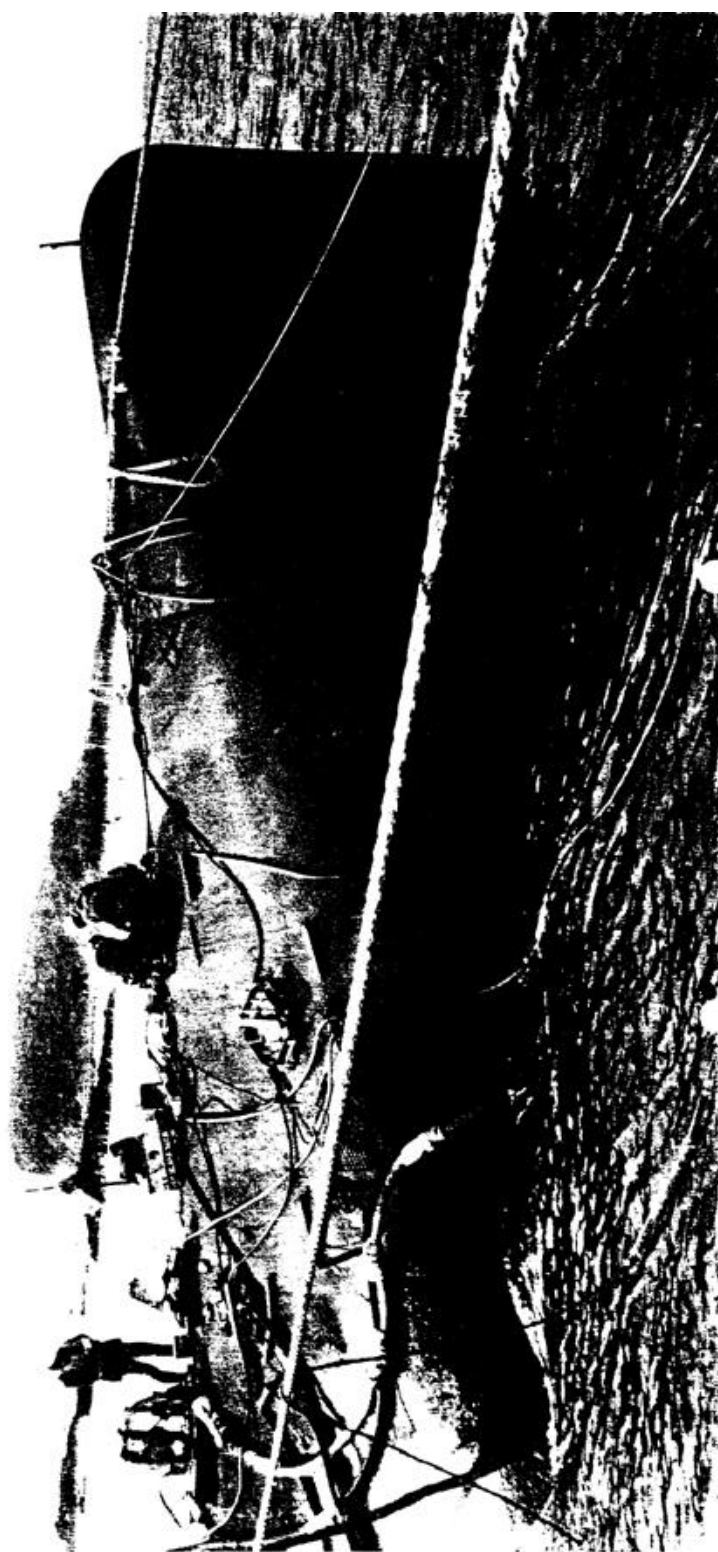
- For the first time fuel tanks where emptied under water - diverless
- Cost effective solution
- Safe solution
- Same technology used on Estonia
- Emptied also double bottom tanks with special tool for hull penetration.











What have we learned

- If these emergency offloading jobs have not been successfully a lot more oil had to be removed from sea surface and from beaches
- Emergency offloading is always a new challenge each time
- In order to improve, we have to systematically train and further develop this equipment (not only pumping equipment)
- And train

Where do we go in the future Where can we see the needs

- Statoil develops a lightering concept using a 120 kton dw shuttle tanker and a supply vessel both with dynamic positioning equipment.
- New Remote Off Loading System (ROLS) for subsea emergency discharge is developed and operate complete as a ROV including penetration and pumping equipment.

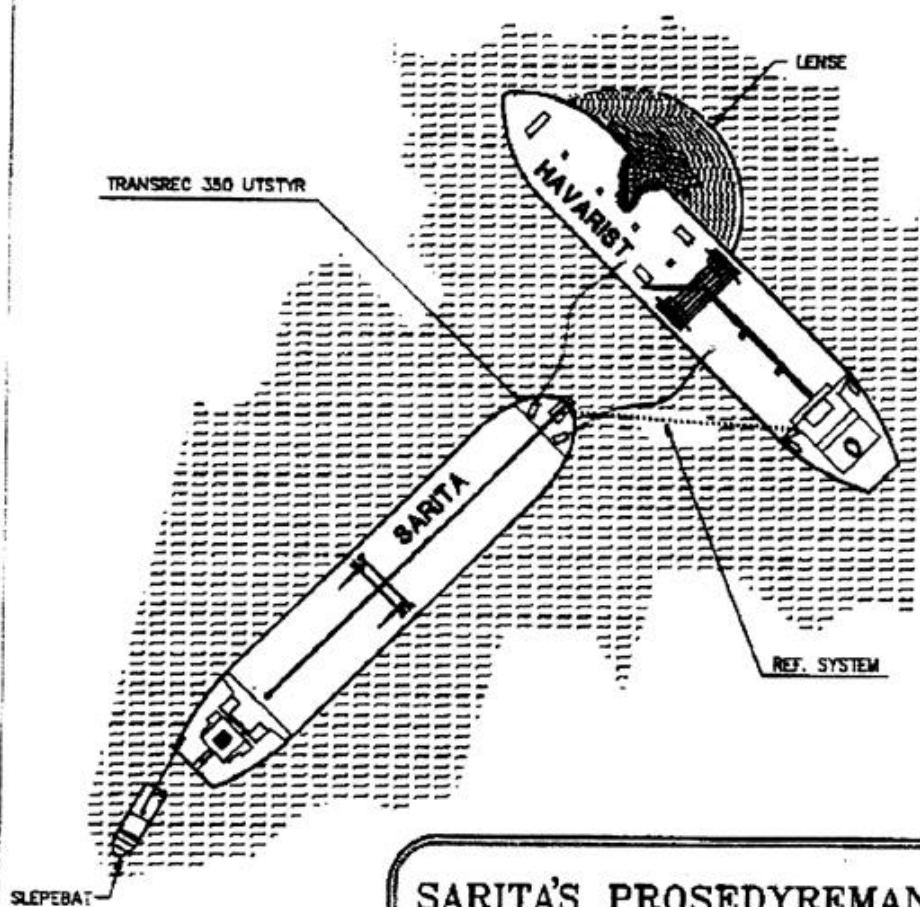
STATOIL

Emergency Offloading



UTTERBOM

ENVIRONMENT SALVAGE TANKER (EST)



SARITA'S PROSEDYREMANUAL

FORELØPIG UTGAVE

Inquiry ANS 020910

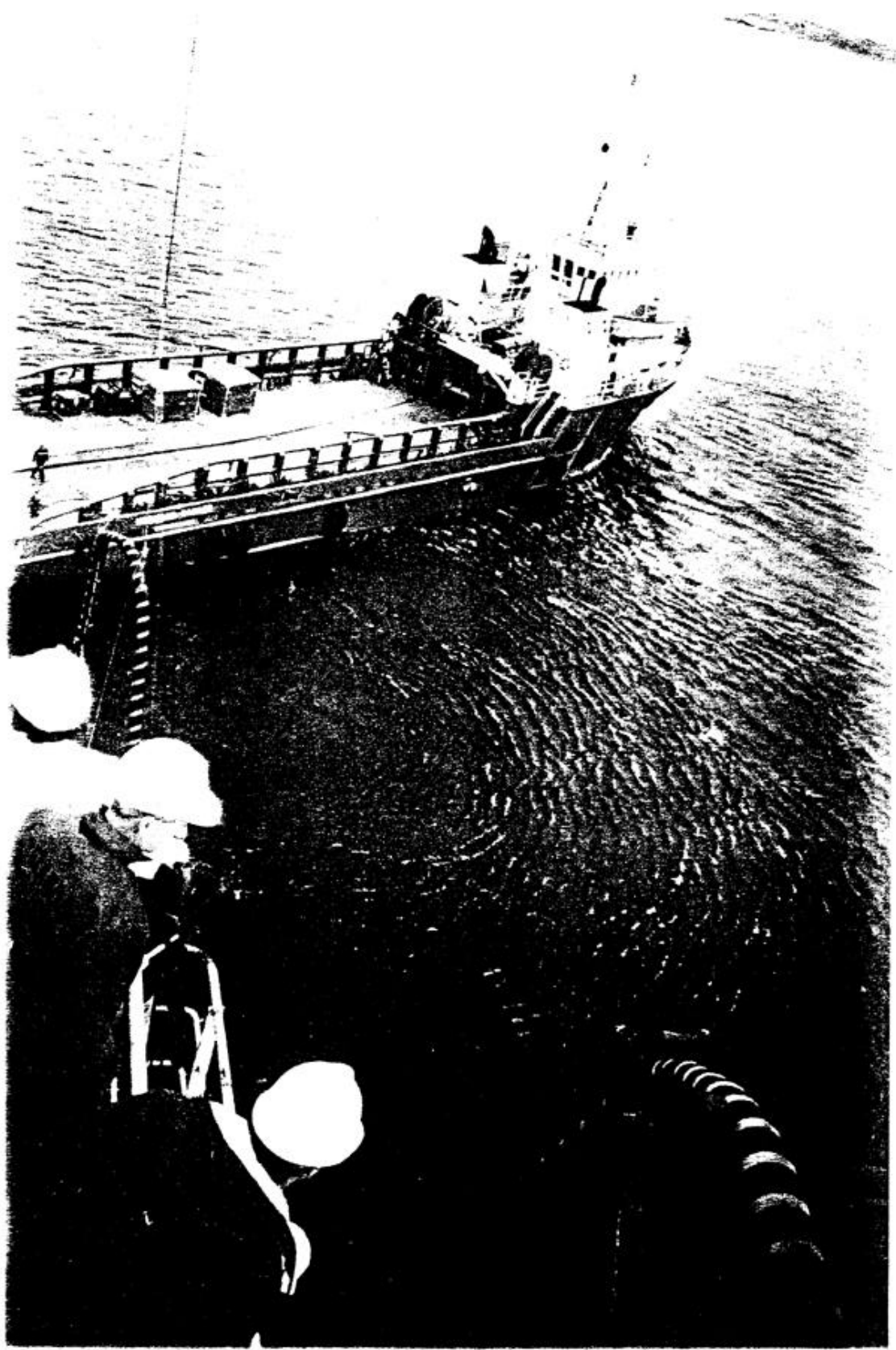


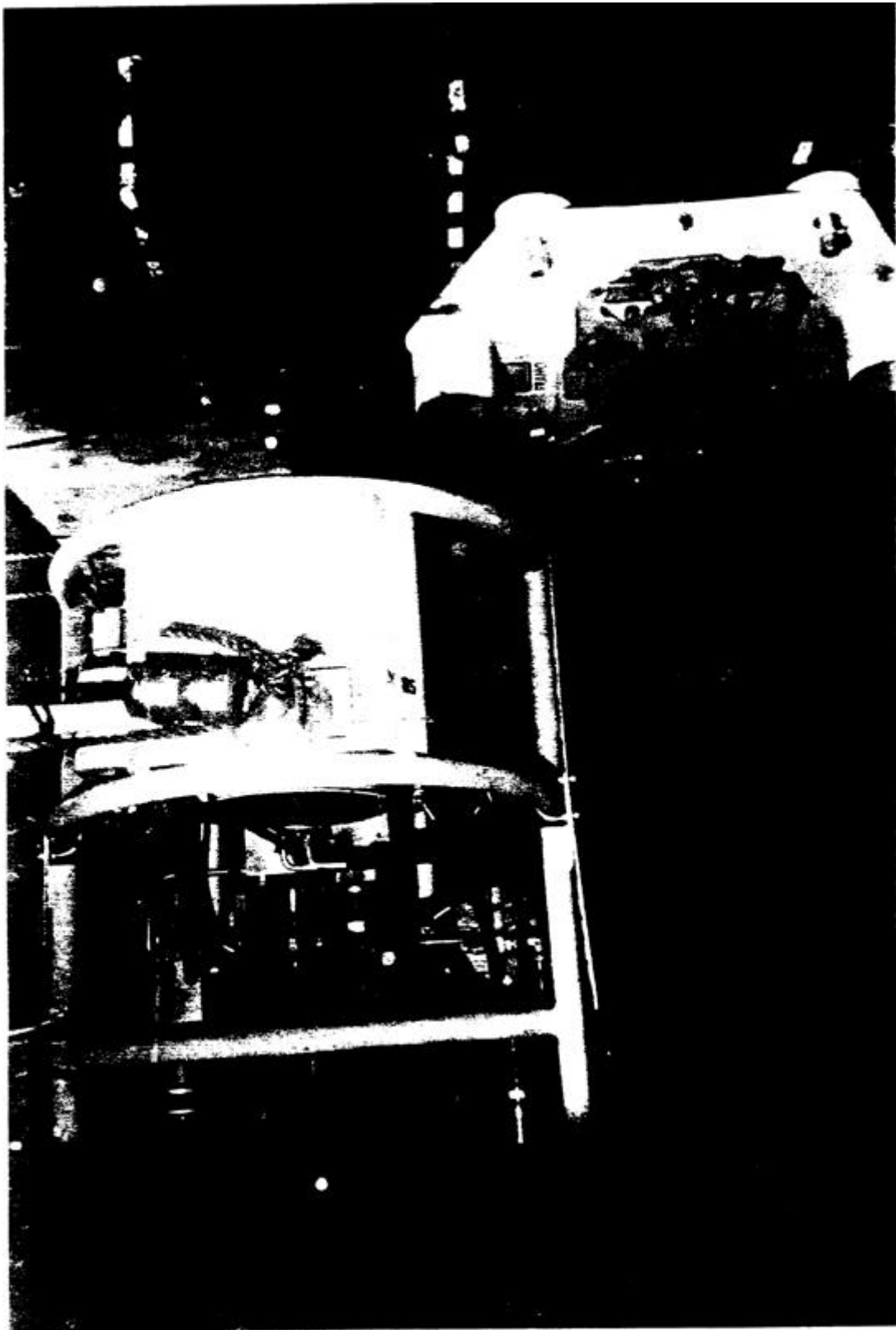
Uglandgruppen



STATOIL





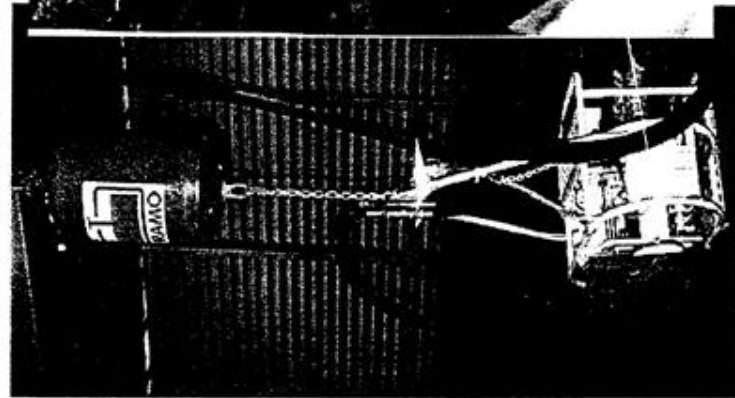




FRAMM FÖR FÄRD

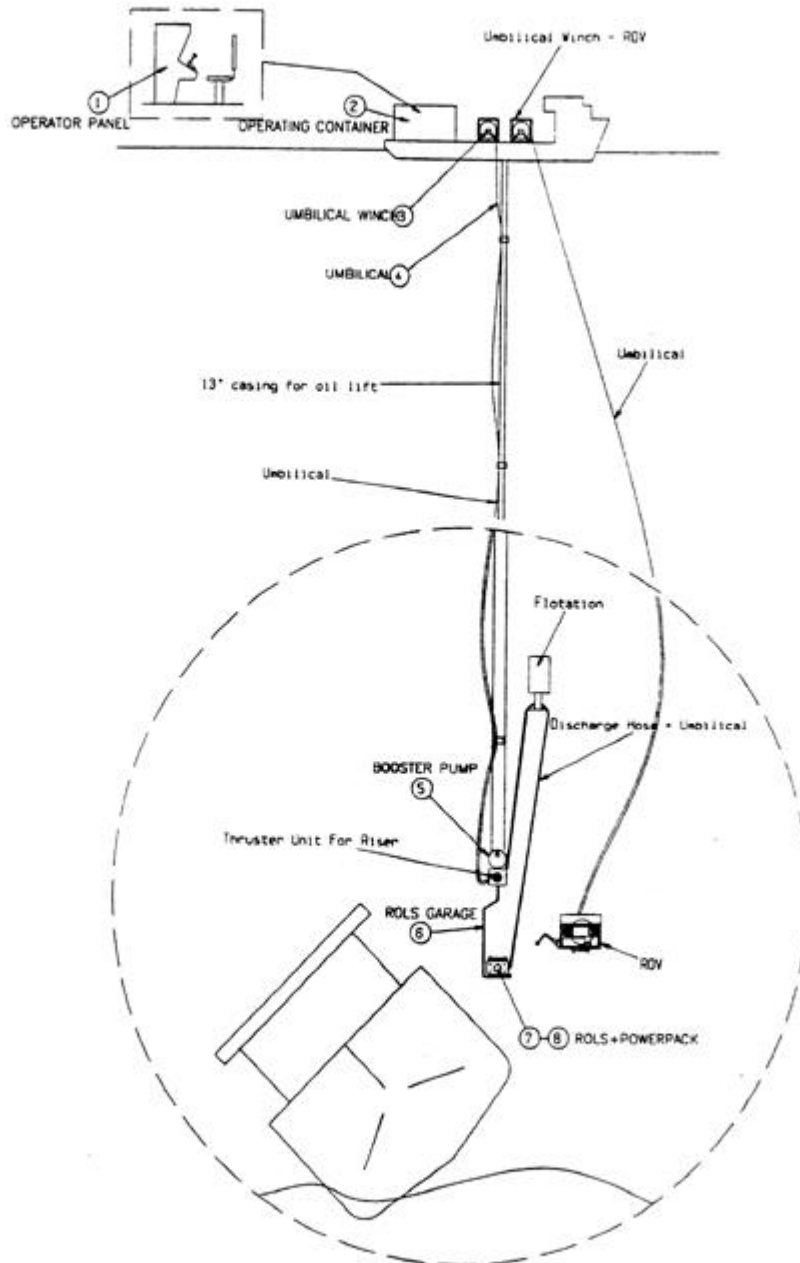
ROLS

- LAUNCHING THE ROLS



FRAMO ROLS SYSTEM

GENERAL ARRANGEMENT FOR ROLS OPERATION
2500M DEPTH IN SEA WATER



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CONCLUSION

- Emergency offloading is a cost effective solution to remove oil pollution potential.
- More attention should be given to this technology
- Training should be performed systematically to achieve better results.

BEHAVIOUR

- We must not leave the environment polluted
- It is possible to clean up after our mistakes
- Technology is available
- We need a budget
- We need an organization