

**The European Union's Tacis Traceca Programme
For Azerbaijan, Kazakhstan and Turkmenistan**

**Supervision and Training of Navigation Aid
Equipments – Azerbaijan, Kazakhstan and
Turkmenistan**

Partner Countries: Azerbaijan, Kazakhstan, Turkmenistan

*Final Report
August 2005*



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The European Union*



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Form 1.2. Report Cover Page

Project Title	Supervision and Training of Navigation Aids Equipment – Azerbaijan, Kazakhstan and Turkmenistan		
Project Number	EUROPEAID/112971/C/SV/Multi		
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1 Project Synopsis

Project Title:	Supervision and Training of Navigation Aids Equipment – Azerbaijan, Kazakhstan and Turkmenistan
Project Number:	EUROPEAID/112971/C/SV/Multi Contract No: 30552
Countries:	Azerbaijan, Kazakhstan and Turkmenistan
Project Starting Date:	29 January 2003
Project Duration	31 months (from the effective date of contract)

Wider Objectives

Technical supervision and appropriate training measures for the project "Supply of Aids to navigation Equipment to the Ports of Aktau (Kazakhstan), Baku (Azerbaijan) and Turkmenbashi (Turkmenistan)" and TA to the Port of Aktau for leasing of tug boat are carried out

Specific Project Objectives

Supervision

The timely supply of Aids to Navigation and nautical equipment in compliance with the respective technical specifications and contracts is ensured.

The co-ordinated technical and operational execution of the contracts is ensured

Training

Supply + installation of AtoN and equipment is supported by execution of appropriate training measures

Leasing of Tug Boats

Port of Aktau is supported in tendering procedures

The timely supply of Tug Boats under the frame of a leasing contract in compliance with the respective technical specifications and contracts is ensured

Planned Outputs

Results – Technical Supervision

1. Assistance to the suppliers and Beneficiaries in structuring the project is given
2. Time schedules are monitored
3. All pre-delivery, take-over, periodic and end-of-warranty inspections are carried out
4. Certificates according to contract stipulations are issued
5. Project performance is monitored
6. Compliance with quality requirements are ensured
7. All necessary reports are prepared

Training

1. Profiles for participants are elaborated and suitable candidates for training are identified
2. Training interventions on location and in Europe are conceptualised and conducted
3. Training interventions are assessed
4. All arrangements associated with training in Europe are managed

Tug Boat assistance

1. Technical specifications are identified
2. Assistance in the tendering process is given to the Port of Aktau
3. Inspections of Tug Boats are carried out

Project Activities

Project Execution + Supervision

- 1 Set-up an overall project schedule
- 2 Ensure the execution of the preparatory works of the Beneficiaries before delivery of equipment
- 3 Monitor time schedules and check milestones



- 4 Arrange problem solving meetings between suppliers, Beneficiaries and other parties involved
- 5 Monitor suppliers' compliance with contract obligations and technical specifications
- 6 Co-ordinate all activities with the EU, the suppliers and the Beneficiaries and assist the task manager
- 7 Monitor project performance progress and compliance with time schedules
- 8 Carry out all pre-delivery, take-over, periodic and end-of-warranty inspections
- 9 Issue certificates of pre-shipment inspections, certificates of preliminary acceptance, certificates of final acceptance
- 10 Monitor the environmental impact of the project and the compliance with European standards

Expert Assistance to Beneficiaries

1. Assist in installing and using of new aids to navigation equipment
2. Assist in determining the right place for installation of the equipment
3. Ensure the validity of warranty demands by advising in properly installing the aids to navigation equipment
4. Assist in checking the installation and functionality of the equipment
5. Obtain additional information from suppliers in case of necessity
6. Advise on the proper use of radar and ARPA
7. Provide training on location for the personnel handling the radar and ARPA
8. Advise on correct application of relevant international rules and regulations
9. Assist in elaboration of maintenance schedules for the new equipment

Financial Documents

1. Collect all documents required by the Tacis Contract Procedures according to the payment schedules
2. Compile payment dossiers with these documents
3. Send the payment dossiers to EC in due time

Reporting

1. Report to EC on pre-shipment inspections, handing-over and final acceptance inspections
2. Prepare two-monthly reports on project execution and a final report
3. Prepare quarterly reports on project progress according to Tacis reporting requirements
4. Co-ordinate all activities with the EU, the suppliers and the Beneficiary and assist the task manager

Training

1. Develop profiles of participants of the training
2. Assist in identifying suitable candidates for training
3. Conceptualise and conduct training interventions on location and in Europe
4. Prepare and conduct assessments of training interventions and of participants' benefit from attending the training courses
5. Manage all travel and other arrangements associated with training in Europe

TA for leasing of Tug Boats

1. Carry out fact finding mission to Aktau to specify technical requirements in detail and discuss financial aspects and tender procedures
2. Advise the Port of Aktau in identifying technical specifications for the tug boat(s) and elaborate tender documents in co-operation with the port
3. Assist the Port of Aktau in the tendering procedures and evaluate bids and prepare an evaluation report
4. Advise the port during negotiations with the supplier
5. Carry out construction inspection of the offered tug boat(s)
6. Take part in operations testing
7. Assist in commissioning

Project starting date: 29 January 2003

Project duration: 31 months



2 Summary of Project Progress since the Start

2.1 Relevant Project Context

The overall objective of the EU assistance in Tacis-Traceca projects is to promote the full use the corridor for multimodal transport and its interlinkage by supplying and improving multimodal cargo handling facilities and to improve transport safety of the corridor. The EU has decided to supply Aids to Navigation equipment and materials to the ports of Aktau, Baku and Turmenbashi and assist them in making the approaches to their ports safer for commercial shipping.

The specific objective of the project is the improvement of navigational safety and the facilitation of safe shipping the approaches of the three ports and the traffic area between them.

The objective of this project is to ensure the timely supply of Aids to Navigation and nautical equipment in compliance with the respective technical specifications and contracts as well as to carry out training measures for the proper use of the equipment. Further, advise in the procurement of a tug boat for the port of Aktau will be given within the project.

The supervisor co-ordinates the co-operation between the individual project partners in Azerbaijan, Kazakhstan and Turkmenistan, the suppliers and the task manager in Brussels.

2.2 Summary of Project Progress

2.2.1 Supervision

The objective of this task is to ensure adequate and timely supply of Aids to Navigation and other Nautical Equipment and Materials and to guarantee its compliance with the technical specifications and contractual obligations as set forth in the a.m. supply project and subsequent contracts signed between the European Commission and the successful bidders. A further objective is to ensure a co-ordinated technical and operational execution for the contracts.

The entire project tasks were completed by end of 2004 and reported upon in progress report 2, dated December 2004.

2.2.2 Training

The objective of this task is to support by appropriate training measures the supply and installation of the Aids to Navigation and other Nautical Equipment and Materials that the EC is proposing to grant under the a.m. supply project and subsequent contracts signed between the European Commission and the successful bidders.

The entire project activities were completed in 2003 and were reported upon in detail in progress report 1.



3 Technical Assistance for the Purchase of a Tug Boat

The objective of this task is to support Aktau port in all aspects of the tendering procedures for the purchase of a tug boat, to ensure adequate and timely supply of the tug boat under the frame of a purchase contract and to guarantee the compliance with the technical specifications and the contractual obligations as set forth in the relevant contract.

3.1 Assistance during the construction of the tug boat

During the current reporting period inspections of the construction of the tug boat were continued. It became apparent that the demand for supervision of construction was much higher than anticipated. The quality of the work of the shipyard in Galati, Romania, where the construction took place, was partly not up to European standard and required more or less permanent attendance of the work.

Details of the construction supervision of the tug boat are described below.

3.2 Activities

3.2.1 Summary of Activities

Date	Activity	Remarks
Apr 3 rd – 9 th , 2005	Seventh inspection visit to Damen Shipyard Galati, Romania	Construction work is partly behind schedule, but delivery time is said to be unchanged. Quality of work gives reason for some concern. Some necessary minor changes to the design have been reported to DAMEN Shipyard.
Apr 24 th – 31 st , 2005	Eighth inspection visit to Damen Shipyard Galati, Romania	Coordinated visit with DAMEN project manager. Adjustment of design has been discussed. DAMEN will comply. The hull is almost completed, construction work is according to schedule, quality of work is not up to standard. Electrical installation is three weeks behind schedule. Delivery time had to be postponed for two weeks until beginning of July.
May 12 th – 13 th , 2005	Inspection visit to Galati, Romania	Inspection of main switchboard at supplier.



Jun 6 th – 11 th , 2005	Nineth inspection visit to Damen Shipyard Galati, Romania	Experts of LR did not show. Check of progress on hull, engine and accommodation. Progress seems to be two weeks behind schedule. DAMEN postpones completion date to July. Quality still gives reason for concern and it shows that the work should be <i>permanently</i> supervised.
Jun 15 th – Jul 2 nd , 2005	Tenth inspection visit to Damen Shipyard Galati, Romania	Delivery had to be postponed until August.

3.2.2 Seventh inspection visit to Galati, Romania

The inspection visit took place 3 – 9 April 2005. The current status-quo of works is in some areas (e.g. switchboard, fire fighting system) about two weeks behind the production schedule dated 11 March 2005. The revised production schedule dated 7 April 2005 takes these delays into account but leaves the delivery date (i.e. departure from Galati) unchanged on June 24, 2005.

During the inspection visit the following has been noted:

Hull construction

- All tanks except for tank #1 (void space) and tank #2 (freshwater) have been tested and accepted by LR.
- The chain locker is completed.
- Grinding/cleaning of the outside shell plating is still ongoing with about 70% completed.
- Stern tube brackets are welded in place; starboard was completed on 8 April, portside is to be completed on 10 April 2005.
- Mounting and welding of both nozzles is completed.

Deck aft

- The crane foundation is in place but welding not yet completed.
- The chain clamp (portside, for buoy handling) and the bulwark doors (portside, for buoy handling) are fitted.
- The foundation plates for an aft optional towing winch have been fitted.
- Stairs to navigation deck have been fitted.

Deck forward

- The towing bitt and the chain stoppers have been fitted.

Wheelhouse deck



- Cable installation is ongoing. Windows were adjusted and prepared for welding.
- The first coat of paint has been applied inside and the floor is partly put in place.

Top deck

- Railing, battery box and piping for fire fighting has been installed. Foundations for the mast and the fire fighting monitors are in place.
- Accommodation on main and below deck is in place
- All cables have been fitted and the first coat of paint has been applied.
- Most piping installation is completed.

Engine room

- About 60% of the piping is installed, another 20% is ready for installation.
- The hydraulic unit for the crane, the sewage pump and the oily bilge water separator are installed.
- Most electric cables are fitted but not yet connected.
- Fabrication of the main switchboard has started in Galati.
- The 1st coat of paint has been applied to the side walls and the ceiling.
- Main engines, transmissions, propeller shafts with propellers, generator sets and the fire fighting pump set are ready for installation, awaiting completion of the fitting of the stern tubes.

Pictures documenting the progress during the seventh site visit are attached in the Annex.

3.2.3 Eighth inspection visit to Galati, Romania

The inspection visit took place 24 – 30 April 2005. During the inspection visit the consultant noted the following:

- The shipyard has misaligned both stern tubes and thus had to cut out both A-brackets of the portside stern tube and the inner A-bracket of the starboard side stern tube. Moreover, all welding of the stern tubes inside the engine room and at the passage through the hull need to be redone. The alignment after welding was checked by the surveyor of Lloyds' Register and accepted.
- The crane foundation and the chain stopper for the buoy handling operation were put in place and the bulwark doors on portside were fitted.
- The A/C-unit was moved from the engine room into the A/C-room.
- Foundation blocks for the reverse reduction gears were in place.
- Foundation for the fire fighting engine was prepared and the fire fighting pump set was moved into the engine room
- The bilge water separator was in place but not mounted and the piping was not yet connected.
- Various modification requirements submitted to the yard such as removable step in the stair down to the accommodation for access to the hydrofor unit and others were carried out.
- The hull preparation for the first anticorrosion coat was under way for the whole week and the



first coat was applied to the shell plating and the bulwark.

- The electrical installation is far behind the production schedule. So far cables have been fitted only in the accommodation area and the wheelhouse and all cables were rolled up in bundles in the engine room close to the position of the main switchboard. Assembly of the main switchboard had not yet started and is three weeks behind schedule. In the engine room no cables were fitted at the time of the inspection.
- Insulation in the cabins below and on main deck is complete and the carpenters have started with the installation of wall and ceiling panels.

The misalignment of the stern tube has forced DAMEN to prepare a new production schedule after their in-house inspection in week 19. The consultant expects that the delivery will be postponed to week 27, i.e. 8 July 2005.

The engine supplier Caterpillar will organise in cooperation with their Russian dealer user training for Aktau personnel in CW 24 in Papendrecht, Netherlands. The Aktau port management has been informed accordingly to apply for passports and visa for designated participants.

Pictures documenting the progress during the eighth site visit are attached in the Annex.

3.2.4 General remarks and results of ninth and tenth inspection visits

Already in April 2005 it became evident that the originally planned delivery date by the end of week 24 could not be achieved. In spite of the efforts made by DAMEN Gorinchem, the yard was unable to meet the set deadline due to lack of sufficient experienced personnel on the vessel and too many jobs which were subcontracted to local firms outside the yard. This concerns especially the paint work and the electrical installations including the fabrication of the main switchboard and various electrical panels which were only completed four weeks behind schedule.

Because of this foreseeable development the Consultant requested at an early stage additional 15 days from the Port of Aktau in order to continue the supervision until the delivery. The available days were already stretched to the maximum with long intermediate periods without supervision when in fact a permanent supervision was necessary. That is the reason why the supervision had to be terminated in July 2005 at a point when only a part of the vessels equipment was commissioned and yard and sea trials were outstanding.

The Port of Aktau and the shipyard were aware of this situation but the additional 15 days were not provided due to very restrictive regulations of the law in Kazakhstan concerning the procurement of services for state-owned entities.

A copy of the list of outstanding/incomplete work and necessary changes as well as the list of remarks by the Classification Society Lloyds Register, dated 29.06.2005 was provided.

The vessel was to be reclassified by Russian Maritime Register of Shipping after successful sea trials and before the towage to the Port of Aktau. Unfortunately, no information was received on the reclassification with the Russian Register.

3.2.5 Quality of the construction work / weak points



The yard has not enough experienced ship yard managers available to coordinate and keep a tight control on the various groups of suppliers' people on board. Especially the work of the painters was badly planned. On several occasions paint work was going on where welding was not yet completed. This caused a lot of unnecessary repair work. In some areas the wrong colours were applied and the material concerned had to be painted again.

A number of problems originating from the design the shipyard received from Holland came to light during the construction.

- There was no access to the electric motor of the hydrofor set and an additional access hatch was requested and fitted into the stairs to the below deck accommodation.
- The exhaust fan from the below deck sanitary space was hidden behind the panelling on SB and not accessible. A large hatch was provided in the vertical wall panel in the C/E cabin.
- The access hatch to the bilge in the forward below deck accommodation became completely inaccessible due to the mounting of two wardrobes right on top of the hatch in spite of the repeated warnings of the Consultant about that problem to the carpenters.
- A number of modifications was required and carried out on the installation of the A/C-unit to provide easy access to solenoid valves, suction pressure regulators and other armatures in the refrigerant system. The soft starter panel for the compressor motor was still not installed when the Consultant left. The responsible supervisor was of the opinion that the soft starter panel is not required. (This applies only when the compressor is started with shore supply but not by power from the ship's own gensets).
- The suction pipes from the chain locker and the forepeak with the relevant valves were completely built in under the lower PS bunk in the forward below deck crew cabin. The carpentry had to be removed and rebuilt in a way that without destruction of the bunk's support the two suction valves and the common suction pipe can be removed if necessary.
- In spite of the big fuss which was made by DAMEN in regard to the requirement of having electronically controlled main engines instead of mechanically controlled engines installed in the vessel, the diesel generator sets are equipped with CAT D3304 NA engines which do not comply with the latest IMO regulation in regard to NOx emissions. Both engines carried labels "For Export only", indicating that these engines would not have been acceptable any more in the USA.
- As could be expected, there was already a problem with the electronically controlled SB main engine CAT D3512 B TA E. One of the ECM (Electronic Control Module) units did not work and the problem could not be solved by the CAT Service Engineer. In order to continue with the commissioning one such unit was taken from another engine of the same type installed in another vessel.
- The battery panel in the engine room had to be relocated away from the SB ship side more to the centreline because of the overboard valve from the heat exchanger of the fire fighting engine sitting right behind the panel and being inaccessible. The side shell penetration was made at a wrong frame during the hull construction.
- Anodes were fitted to the rudders without doubler plates and without ice protection. The Consultant insisted to remove the anodes and refit them on doubler plates with ice protection.



- A major mistake occurred during the alignment and welding of the two stern tubes into the hull. There was a misalignment that was not acceptable and required to cut off and replace three of the four struts of the two A-brackets. The hull penetration and the forward end of the two stern tubes in the engine room had to be cut free and re-welded. This mistake alone caused a delay of at least one week.

The vessel was built inside a steel frame structure covered by a tarpaulin to provide a dry environment. Launching is being done by lifting the vessel on four huge lifting eyes PS and SB, welded to the side of the shell plating. These lifting eyes need to be cut after the launching which causes considerable damage to the paint around the cut-off lifting eyes. Launching on a slipway or a synchro lift would be much better and less time consuming.

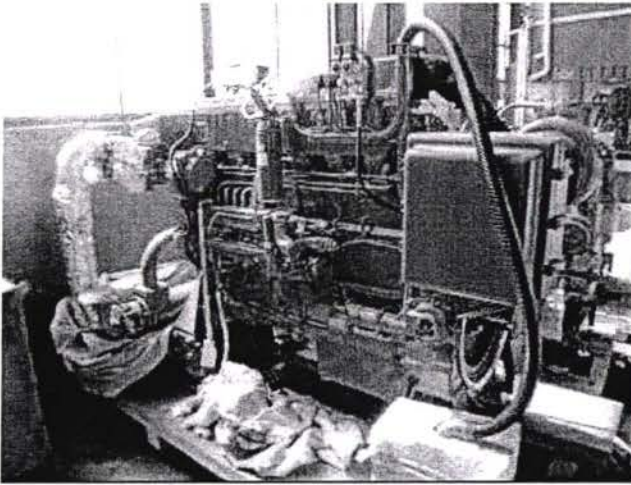
Despite the supervisor's repeated early demand and regular reminders to send the vessel's documentation and spare parts at least four weeks before completion to Galatz so that the supervisor could check everything, Damen Gorinchem delivered parts and documentation only in July so that there was no chance to check anything.

3.2.6 Conclusion

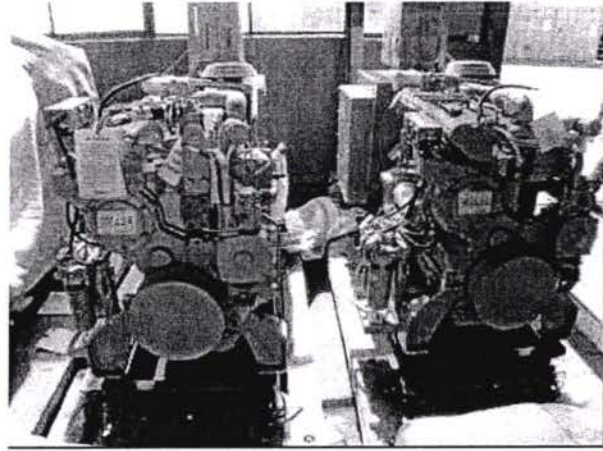
Since the result of the sea trial and the number and type of rest points is unknown to the Consultant, one can only hope, that all outstanding work and necessary modifications as well all Classification requirements have been successfully dealt with. The tug is a technically advanced vessel which is completely different from the technology the local crews are used to. It will therefore be a big advantage that DAMEN places a guarantee engineer on board for a period of at least two months from the date of arrival in the Port of Aktau. This will not only prevent damage to the machinery due to mishandling but will also help to familiarize the crew of the vessel with the new equipment.



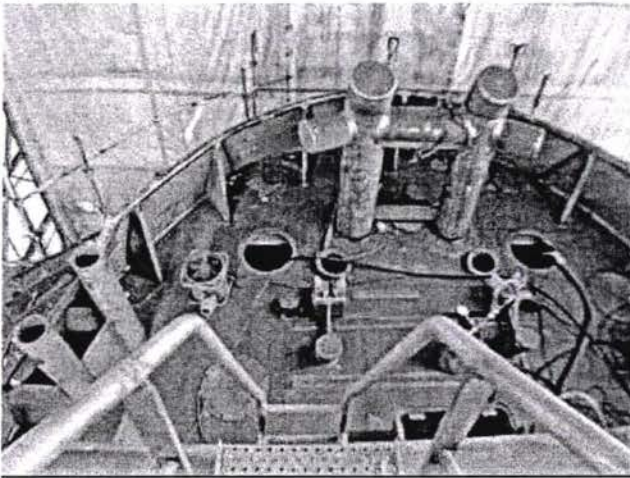
Annex 1: Documentation of seventh inspection visit to Damen Shipyard in Galati



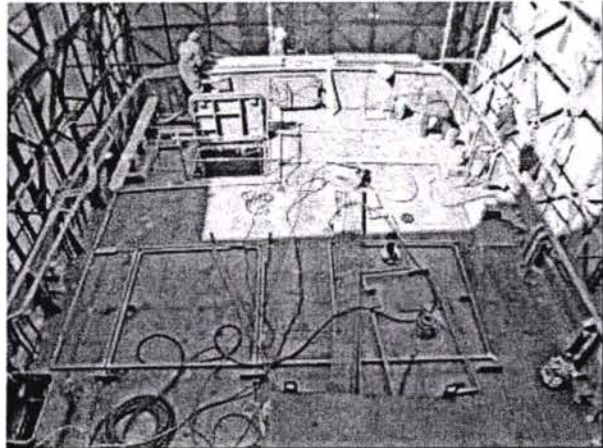
Picture 1: Fire fighting set with incorrectly insulated piping



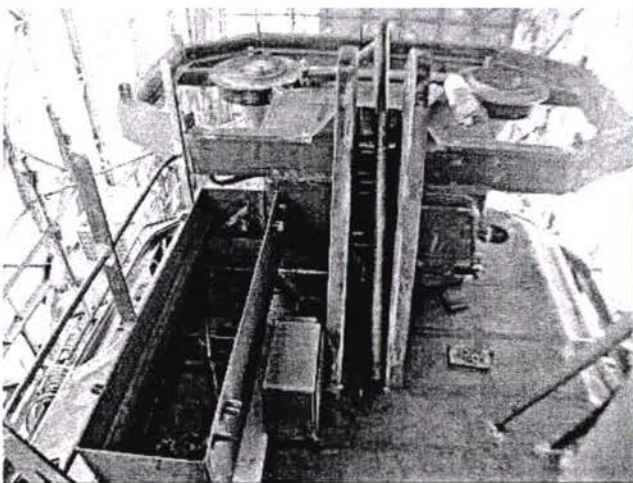
Picture 2: Generator sets waiting for installation



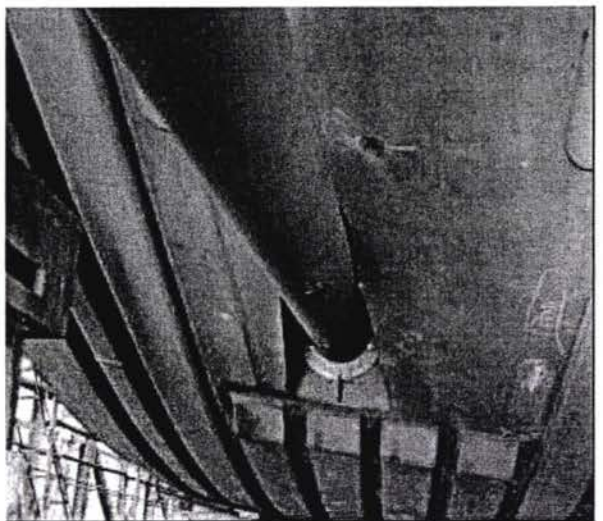
Picture 3: Main deck forward



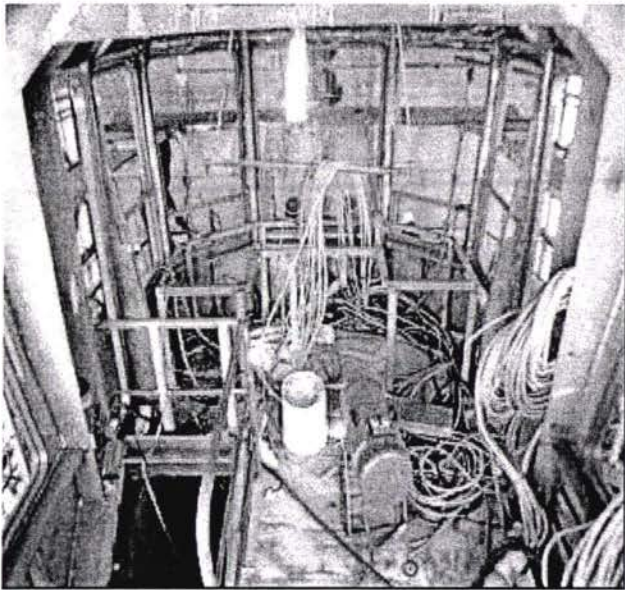
Picture 4: Main deck aft



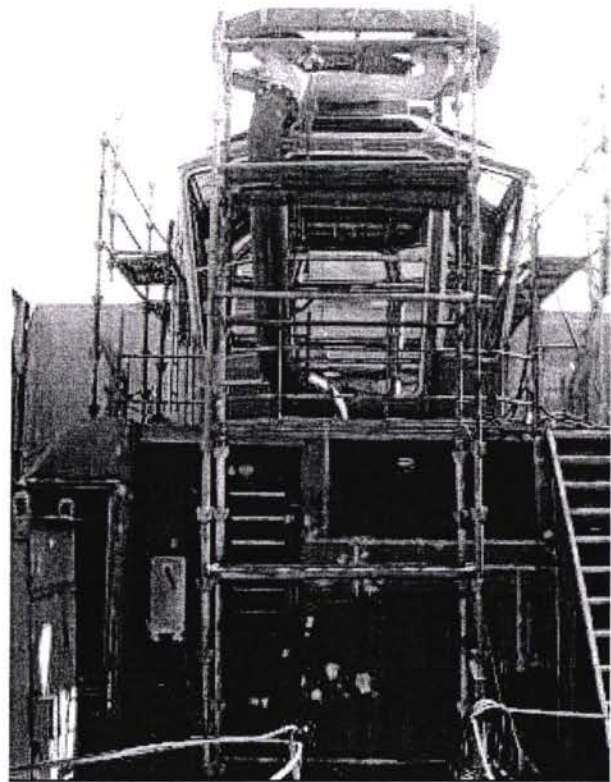
Picture 5: Top deck



Picture 6: Stern tube



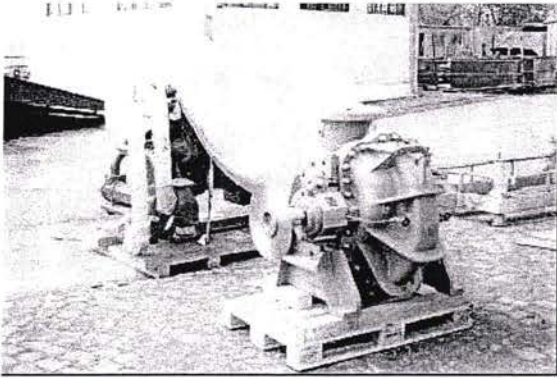
Picture 7: Wheelhouse



Picture 8: Fire fighting piping to wheelhouse deck



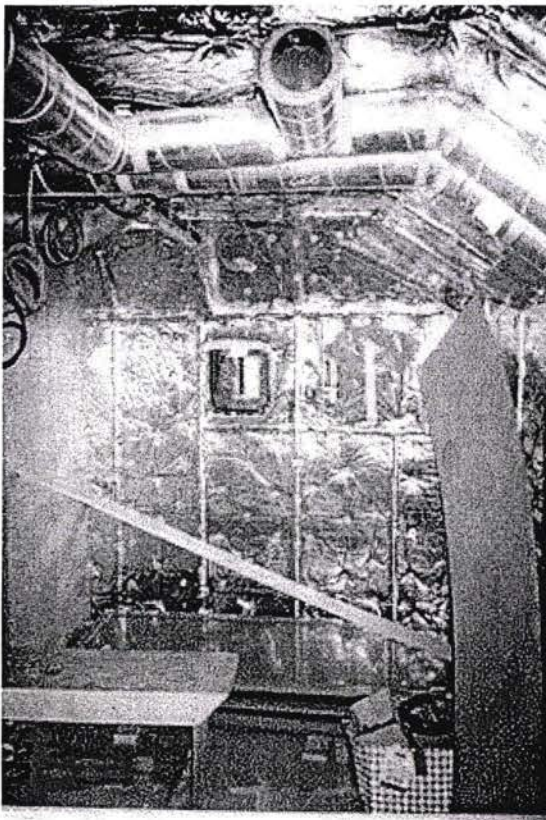
Annex 2: Documentation of eighth inspection visit to Damen Shipyard in Galati



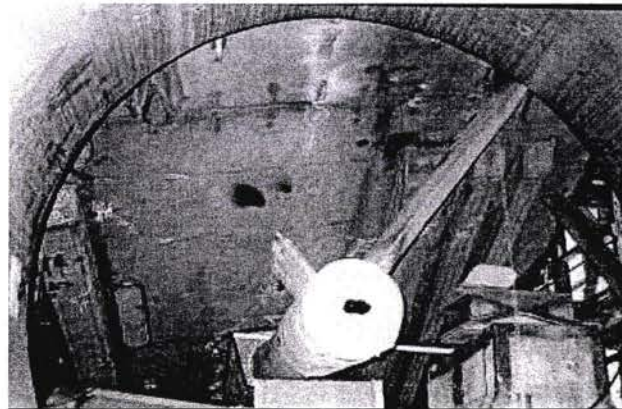
Fire fighting pump and diesel engine waiting for on-board installation



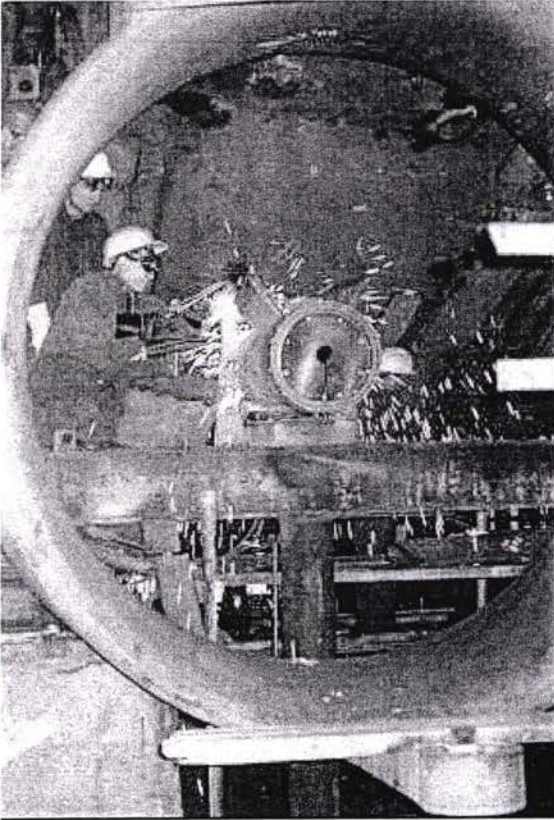
Engine room



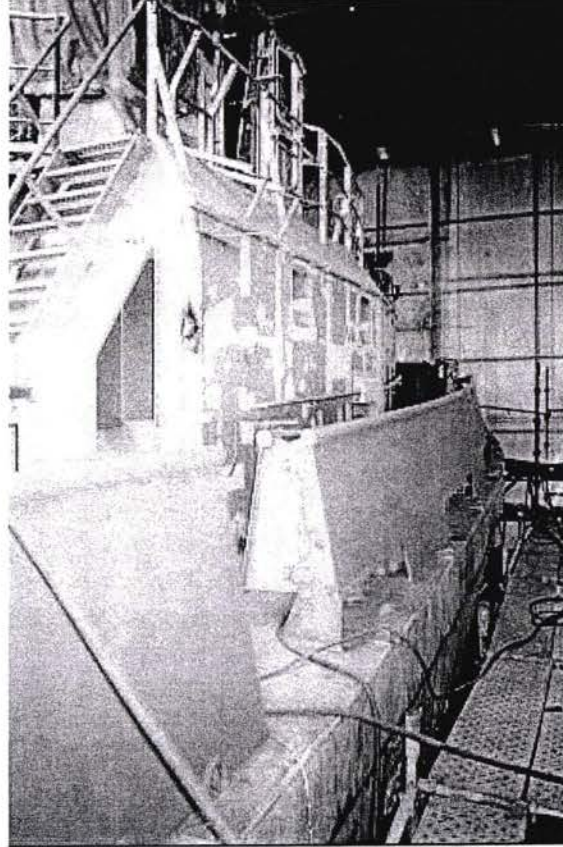
Mess room



Repair and reinstallation of misaligned stern tube (1)



Repair and reinstallation of misaligned stern tube (2)



Main deck starboard, first coating

The contents of this report is the sole responsibility of the HPTI – HPC – Uniconsult Consortium and can in no way be taken to reflect the views of the European Union