

STANDARD OPERATING PROCEDURES (SOP) FOR REPAIR OF VESSELS:

Inland waterways Authority of India is having a total fleet of 162 vessels which consist of dredgers, tugs/workboats, survey vessels, accommodation boats, Cargo vessels, pontoon & crew and motor launch, Patrol Boats etc. The details of all these vessels are indicated at Annex- 1.

In order to maintain these vessels in operational condition, it is essential to undertake their maintenance and repairs. All these vessels are repaired as running repair, break down repairs, planned maintenance by way of annual afloat Repairs and also statutory dry-docking repair, once in every four years for renewal of statutory survey certificate under the provision of inland vessels Act, 1917

Planned Repairs:

1. Drydock repairs
2. Annual afloat repairs

Unplanned Repairs:

1. Running repairs
 2. Breakdown/Emergency repairs
- 1.) **Dry-Dock Repairs** – Dry-docking is a term used for repairs or when a ship is taken to the service yard specifically for underwater. During dry docking, the whole ship is brought to a dry land so that the submerged portions of the hull can be cleaned, inspected and repaired. The drydock repairs is to be held in 3-4 years period for every vessel. The survey certificate issued after the drydock repair is valid for a period of next 1 year.
 - 2.) **Annual afloat repairs** – Annual Afloat repairs refers to repair works onboard a vessel while at water/river, at anchorage or at berth which may not require drydocking/beaching service. These repairs are to be done in order to maintain annual services of vessel and its major machineries like Main Engine, Genset, Dredge Pumps etc. once in a year. The survey certificate is renewed after annual afloat repair with a validity of 1 year.
 - 3.) **Running Repair** – Running repairs are the minor or temporary repairs carried out onboard a vessel while in use during their deployment. These repairs cover mostly replacement/repair of consumable parts/spares in machineries like seals, gaskets, bushes, plugs, filters etc. Running repairs do not have any fixed time schedule and are carried out as and when required onboard by the vessel crew/local technician.

- 4.) Emergency /Breakdown repairs - Emergency repairs are repairs to a vessel that must be performed immediately when the necessity arises to safeguard life or property or maintain continued operation of the vessel. These repairs have been kept as unplanned ones as the occurrence of such sudden event causing intense damage to the vessel and thus creating a need for emergent repair in order to keep the vessel operational for safety of crew, vessel, cargo and surroundings.

Procedures for Annual Repair:

- 1.) For conducting an annual repair of a vessel, an initial defect/flaws list is to be prepared by the vessels crew.
 - i. The deck side defect list is to be prepared by the Master covering all the deck machineries/equipment, Wheel house and superstructure for good working condition.
 - ii. The engine side defect list is to be made by the driver covering all machineries/equipment of engine room, pump room, compressor compartment, cooler compartment etc.
- 2.) The defect list which shall be prepared by the vessel crew, will be examined and verified onboard the vessel by T.A/A.D. (Marine) and will be sent to surveyor for listing the main repairs to be carried out.
- 3.) On finalization of the defect list and after incorporating the suggestions of surveyor, a BoQ shall be prepared by T.A/A.D. (Marine).
- 4.) Thereafter, a tender for the repair shall be floated for execution of repair works as per approved repair scheme.

Duties/responsibility during repair:

As soon as the repair work starts, following steps to be taken by the Vessel in-charge/in-charge:

1. Prior to the start of repair works by repairer, all loose items (tools, tackles, consumables etc.) belongs to vessel must be cleared from the repair space and shall be stored carefully by the concerned Vessel in-charge.
2. Defect list as per the work order of the contract shall be made available with the Master (deck side repairs) and Driver (engine side repairs).
3. During the ongoing repairs vessel crew shall introduce the defects to the repairer for the particular item mentioned in the defect list.
4. The Vessel in-charge must ensure that the repairer shall involve surveyor during the ongoing critical repair works.
5. The Vessel in-charge shall take care of all the loose items/spares of machineries dealt up by the repairer.

6. For all machineries that undergo repair a daily record to be maintain by the Vessel in-charge for spares/parts replaced and old spares collected.
7. Daily work carried out shall be recorded by T.A/A.D(M) in MB.
8. The Vessel in-charge to check and collect the challans for every spare received onboard during the repair.
9. The Vessel in-charge shall facilitate the repairer in providing onboard assistant such as deck cranes, current supply as mentioned in the scope of the repair contract.
10. The Vessel in-charge shall keep a check over the supplied spares for its genuineness and may also inform to the EIC if found not in line.

Duties/responsibilities after repair:

With the completion of the repair works the Vessel in-charge shall inspect the jobs containing defects as per the defect list.

1. The Vessel in-charge shall check the completion of all repair works as per the work order.
2. The Vessel in-charge shall check and verify the new spares replaced or added and collect the old spares and record the same onboard.
3. The Vessel in-charge shall check proper & flawless operation of repair works undertaken by the repairer.
4. EIC or its representative T.A/A.D. (Marine) may also need to check and verify the work completion and equipment performance up to his satisfaction.
5. The repairer shall arrange surveyor for post repair inspection.
6. Based on the inspection report and recommendation of surveyors, the repairer shall have to correct the defects, if any and the same shall be checked and verified by the EIC.
7. The Vessel in-charge initially shall not operate the repaired equipment at full load to avoid any damage to the equipment till the new spares gets lap-up.
8. Any new item supplied by the repairer as spare must be recorded in the log of onboard store.
9. The Vessel in-charge shall assist in recording the Measurement Book and submit all the evidences/challans of received spares/consumables supplied by the repairer to EIC or its representative
10. The EIC representative upon satisfactorily completion of repair works shall issue a work completion certificate to the repairer.

Procedures for dry dock Repair:

1. The drydock repair are to be conducted in a time period of every 3-4 years.

2. The vessel crew has to prepare a detailed defects list in vessel for both deck side and engine side which includes repair of defects throughout the vessel.
3. Any imported item/spare that require long lead time for supply needs to be recorded and informed well in advance to vessel in-charge on priority basis.
4. The deck side defect list is to be submitted by the Master covering all the damages deck plates, machineries/equipment to be overhauled, Anchor and chain cable inspection/renew, Dredge spuds and tray, deck cranes, deck mounted propulsion systems etc. for good working condition.
5. The engine side defect list is to be made by the driver covering all machineries/equipment of engine room, propeller, rudder, stern tube seals, Sea chest, bilge lines etc.
- 5.) The defect list which shall be prepared by the vessel crew will be checked and verified onboard the vessel by T.A/A.D. (Marine) and will be sent to surveyor for listing the main repairs to be carried out.
6. The defect list prepared must be checked and verified by the IRS surveyor and IWT Surveyor for listing the repairs required.
7. On finalization of the defect list and after incorporating the suggestions of surveyors, a BoQ will be prepared by T.A/A.D. (Marine).
8. A tender for the drydock repair shall be floated for execution of repair works.

Duties/responsibility during repair:

As soon as the repair works start following steps to be taken by the Vessel in-charge/in-charge:

1. Prior to the start of repair works, all loose items (tools, tackles, consumables etc.) belongs to vessel must be cleared from the repair space and shall be stored carefully by the concerned Vessel in-charge.
2. The Vessel in-charge to ensure the positioning of vessel as per the vessel docking plan for safety of the vessel.
3. The cargo hold/tanks of vessel must be empty before docking the vessel.
4. Defect list as per the work order of the contract shall be made available with the Master (deck side repairs) and Driver (engine side repairs).
5. During the ongoing repairs vessel crew shall introduce the defects to the repairer for the particular item mentioned in the defect list.
6. The Vessel in-charge must ensure that the repairer shall involve surveyor during the ongoing critical repair works.
7. The vessel crew shall plan the repair works and guide the repairer to attempt long lead/urgent repair works on priority basis.

8. The Vessel in-charge shall take care of all the loose items/spares of machineries dealt up by the repairer.
9. While conducting hot works, the vessel crew shall inspect the surroundings of the job and shall ensure all safety measures to prevent any damage to the vessel.
11. Daily work carried out shall be recorded by T.A/A.D (M) in MB.
10. The Vessel in-charge to check and collect the challans for every spare received onboard during the repair.
11. The Vessel in-charge shall facilitate the repairer in providing onboard assistant such as deck cranes, current supply as mentioned in the scope of the repair contract.
12. The Vessel in-charge shall keep a check over the supplied spares for its genuineness and may also inform to the EIC if found not in line.

Duties/responsibilities after repair:

With the completion of the repair works the Vessel in-charge shall inspect the jobs containing defects as per the defect list.

1. The vessel I/C shall check the completion of all repair works as per the work order.
2. The Vessel in-charge shall check and verify the new spares replaced or added and collect the old spares.
3. The repairs attended by the repairer shall be checked for proper and flawless operation by the Vessel in-charge.
4. EIC or its representative may also need to check and verify the work completion and equipment performance up to their satisfaction.
5. The repairer shall arrange surveyor for post repair inspection.
6. Based on the inspection report and recommendation of surveyors the repairer shall have to correct the defects, if any and the same shall be checked and verified by the EIC.
7. The Vessel in-charge initially shall not operate the repaired equipment at full load to avoid any damage to the equipment till the new spares gets lap-up.
8. Any new item supplied by the repairer as spare must be recorded in the log of onboard store.
9. After completion of repair works, repairer shall conduct a sea-trial for the repairs carried out in all loading conditions in the presence of vessel in-charge/EIC.

10. The Vessel in-charge shall assist in recording the Measurement Book and submit all the evidences/challans of received spares/consumables supplied by the repairer to EIC or its representative
11. The EIC upon satisfactory completion of repair works shall issue a work completion certificate to the repairer.

Procedures for Running and Emergency Repairs:

Running repairs of a vessel are to be conducted during the vessel is in operational condition by the vessels crew or by some local technicians, if required.

- 1.) The deck side repairs such as painting, chipping, deck washing and routine servicing of deck equipment etc. are to be taken care off by the Master covering all the deck machineries/equipment, Dredge discharge nozzle, LSA, FFA etc. for good working conditions.
- 2.) The engine side minor machining repairs such as carbon brush, spare, filters, gaskets, seals etc. are to be replaced by the driver covering all machineries/equipment of engine room, pump room, compressor compartment, cooler compartment, electrical defects etc.
- 3.) Any repair work that needs workshop assistance or shore assistance must be informed to T.A/AD Marine by the vessel staff in advance. All such repair works shall be listed out by the vessel staff for getting timely repair. The repair works that are listed by the vessel crew will be checked and verified onboard the vessel by T.A/A.D. (Marine).
- 4.) The repair work will be awarded as per the standard procedure for execution of the work. The vessel staff shall be informed about the work execution schedule and other repair works must be planned accordingly.

Duties/responsibility during repair:

As soon as the repair works start, following steps to be taken by the Vessel in-charge:

1. Prior to the start of repair works, all loose items (tools, tackles, consumables etc.) belongs to vessel must be cleared from the repair space and shall be stored carefully by the concerned Vessel in-charge.
2. Defect list as per the LOA of the contractor shall be kept ready with the Master (deck side repairs) and Driver (engine side repairs).
3. The vessel staff must ensure safety of vessel and personnel onboard during ongoing repairs.
4. During the ongoing repairs vessel crew shall introduce the defects to the repairer for the particular item mentioned in the defect list.

5. The Vessel in-charge shall take care of all the loose items/spares of machineries dealt up by the repairer.
6. For all machineries that undergo repair a daily record to be maintain by the Vessel in-charge for spares/parts replaced and old spares collected.
7. The Vessel in-charge to check and collect the challans for every spare received onboard during the repair.
8. The Vessel in-charge shall facilitate the repairer in providing onboard assistant such as deck cranes, current supply as mentioned in the scope of the repair contract.

Duties/responsibilities after repair:

With the completion of the repair works the Vessel in-charge shall inspect the jobs containing defects as per the defect list.

1. The Vessel in-charge shall check the completion of all repair works as per the LOA.
2. The Vessel in-charge shall check and verify the new spares replaced/added and collect the old spares.
3. The repairs undertaken by the repairer shall be checked for proper and flawless operation by the Vessel in-charge.
4. EIC or its representative T.A/A.D. (Marine) may also need to check and verify the work completion and equipment performance up to the level of their satisfaction.
5. T.A/AD Marine after completion of repair works and inspection by IWAI staff shall call upon the Surveyor for any repairs related to statutory requirements
6. Based on the inspection report and recommendation of surveyors the repairer shall have to correct the defects, if any and the same shall be checked and verified by the Vessel in-charge.
7. After repairer correcting the job as recommended by the surveyors the Vessel in-charge initially shall not operate the repaired equipment at full load to avoid any damage to the equipment till the new spares gets lap-up with the old fixtures.
8. Any new item supplied by the repairer as spare must be recorded in the log of onboard store.
9. The Vessel in-charge shall assist in recording the Measurement Book and submit all the evidences/challans of received spares/consumables supplied by the repairer to EIC or its representative

Type of vessel	Total	RO PATNA	RO KOLKATA	RO GUWAHATI	RO KOCHI
Cutter Suction Dredgers	13	8	2	2	1
Hydraulic Surface Dredgers	3	1	1	1	0
Amphibian Dredger	3	0	2	0	1
Work Boats and Tugs (13+11)	24	9	10	4	2
Accommodation boats/House boats	14	7	4	3	0
Survey vessels	20	7	6	6	1
Cargo vessels	24	4	11	7	2
Patrol Boats, Crew and Motor launch (3+1+1)	5	1	2	1	1
Floating Pontoon	34	4	20	10	0
Anchor Pontoon	12	4	3	3	2
Crane Pontoons	10	3	2	5	0
Total	162				