GOVERNMENT OF INDIA

GUIDELINES FOR ANNUAL MAINTENANCE AND OPERATION CONTRACT (AMOC) FOR IR-DRDO BIO- TOILETS FITTED IN INDIAN RAILWAY BG COACHES

IRCAMTECH/GWL/M/Bio-Toilet/AMOC/1.0
August-2015

Indian Railways Centre for Advanced Maintenance Technology

Maharajpur, Gwalior – 474005 (MP)
Ph: 0751-2470803 & Fax: 0751-2470841
## CONTENTS

<table>
<thead>
<tr>
<th>Clause No.</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>General</td>
<td>3</td>
</tr>
<tr>
<td>2.0</td>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>3.0</td>
<td>Definitions</td>
<td>4</td>
</tr>
<tr>
<td>4.0</td>
<td>Technical</td>
<td>5</td>
</tr>
<tr>
<td>5.0</td>
<td>Scope of work</td>
<td>6</td>
</tr>
<tr>
<td>6.0</td>
<td>AMOC Charges</td>
<td>13</td>
</tr>
<tr>
<td>7.0</td>
<td>Authority for signing and operation of the contract</td>
<td>13</td>
</tr>
<tr>
<td>8.0</td>
<td>Responsibilities of parties</td>
<td>13</td>
</tr>
<tr>
<td>9.0</td>
<td>Warranty</td>
<td>15</td>
</tr>
<tr>
<td>10.0</td>
<td>Validity of contract</td>
<td>15</td>
</tr>
<tr>
<td>11.0</td>
<td>Ownership of the rejected or defective components /or part</td>
<td>15</td>
</tr>
<tr>
<td>12.0</td>
<td>Payments</td>
<td>15</td>
</tr>
<tr>
<td>13.0</td>
<td>Paying authority</td>
<td>16</td>
</tr>
<tr>
<td>14.0</td>
<td>Records to be maintained by maintenance depot</td>
<td>16</td>
</tr>
<tr>
<td>15.0</td>
<td>Security deposit</td>
<td>16</td>
</tr>
<tr>
<td>16.0</td>
<td>Performance guarantee</td>
<td>16</td>
</tr>
<tr>
<td>17.0</td>
<td>Force majeure clause</td>
<td>17</td>
</tr>
<tr>
<td>18.0</td>
<td>Arbitration</td>
<td>17</td>
</tr>
<tr>
<td>19.0</td>
<td>Laws governing the contract</td>
<td>17</td>
</tr>
<tr>
<td>20.0</td>
<td>Determination</td>
<td>17</td>
</tr>
<tr>
<td>21.0</td>
<td>Subletting and assignment</td>
<td>17</td>
</tr>
<tr>
<td>22.0</td>
<td>Other terms and conditions</td>
<td>17</td>
</tr>
<tr>
<td>23.0</td>
<td>Penalty</td>
<td>17</td>
</tr>
<tr>
<td><strong>Annexure I</strong></td>
<td>Instructions for POH of the Coaches</td>
<td>19</td>
</tr>
<tr>
<td><strong>Annexure II</strong></td>
<td>Performa for details of Coaches fitted with DRDE Type Bio-toilets</td>
<td>21</td>
</tr>
<tr>
<td><strong>Annexure III</strong></td>
<td>Preventive Maintenance Schedules of IR Coaches.</td>
<td>22</td>
</tr>
</tbody>
</table>
GUIDELINES FOR ANNUAL MAINTENANCE AND OPERATION CONTRACT (AMOC) FOR IR-DRDO BIO-TOILETS

1.0 GENERAL

1.1 The Annual Maintenance & Operation Contract (AMOC) entered between Contractor and Base Railway will be inclusive of spares and consumables required for maintenance and operation of Bio-Toilet system (Anaerobic Technology herein after termed as Bio-toilet only). The AMOC scope of work shall include supply/repair and fitment of defective components in both kinds of coaches (i.e. coaches under warranty period and coaches beyond warranty period) except supply of ball valve & its operating mechanism, bio-toilet tank for which no trend of repair/replacement is available and cost of which is very high. In case replacement is necessary, ball valve, its operating mechanism, bio-toilet tank and safety wire rope will be provided by Railways for which fitment would be done by AMOC contractor without any extra payment.

1.2 Railways may suitably modify the contract as per local conditions with the approval of concerned HOD/CME.

1.3 The AMOC will cover the maintenance (both preventive and break down) of Bio-Toilet System along with the minor problems encountered and day-to-day operation of Bio-toilet systems. It shall also cover the preventive and break down maintenance of the Bio-Toilet System within warranty period. Railways may include attention of the Bio-Toilets during periodical overhaul (POH) of the coaches in the designated workshops at an interval of 18/24 months or Workshop may invite a separate tender for POH attention as per requirement of the Railway.

1.4 Railways have to decide on the need of AMOC. The work of maintenance of IR-DRDO bio-toilets could be done departmentally or through AMOC based on the man power available with the Railways.

2.0 INTRODUCTION

2.1 This Annual Maintenance & Operation Contract (AMOC) is for trouble free operation, maintenance and cleaning of Bio-Toilets System fitted in IR coaches. The contract is comprehensive in nature wherein all the Maintenance (Preventive and Breakdown) and day-to-day operation of the Bio-Toilets fitted on IR coaches is to be done by the Contractor including supply of spares/materials required for this AMOC. Except items mentioned in Para 1.1 above.
Details of coaches fitted with IR-DRDO type Toilet system shall be provided by the concerned Division/Zonal Railway of IR on the format given in ANNEXURE-II.

A long duration contract at this juncture are not advisable due to non availability of experienced contractors and as the technology is still evolving and a lot of improvements are expected in future. Hence one year contract is practically feasible however in case of lesser population of bio-toilets in certain depot, it can be for a longer duration. Railways may decide the duration as per their requirement.

Nodal Officer - will be responsible for operating the contract. In case of breakdown of Bio-Toilets System, Nodal Officer will liaise with the firm and inform the firm immediately by telephone/telex/e-mail/SMS or any other suitable means, duly mentioning the coach numbers and location of the coaches along with the time of call, when the breakdown maintenance is to be attended to.

3.0 Definitions:

a) **Base Railway** – The Zonal Railway to whom coach is allotted.

b) **Nodal Officer** – Sr.DME/ Dy.CME of the concerned division/ Workshop or his nominated Coaching Depot/ Workshop Officer/Supervisor.

c) **Contractor** – Firm / Company on whom the order for the Annual Maintenance and Operation of the Biological Toilets in passenger coaching stock on IR has been placed.

d) **Credentials:**

   Credentials shall be submitted by the tenderer as stipulated in the revised GCC-2014 or latest.

e) **Similar nature of work:**

i) Since it would be very difficult for the tenderers to qualify minimum eligibility criteria since the work has been introduced only in past two years and also the technology is still evolving.

   The following definition of similar work is proposed:-

   “Mechanized cleaning of coaches in Indian Railways or AMOC of Bio-Toilets or supply/fitment of bio toilets in coaches of Indian Railways.

ii) **Scope of work** – As per Para 5.0 of this document.

iii) **Penalty** – As per Para 23.0 of this document.

iv) **Eligibility criteria**- As per Clause-10 of Annexure-I (Part-I) of Standard General Condition of Contract 2014 or latest.
4.0 Technical:

4.1 DESCRIPTION OF COMPLETE SYSTEM (INSTALLED IN THE COACH) UNDER THE CONTRACT:

General Outlines of the existing System:

Two variants of Bio Digester are being tried out on IR Coaches.

Option 1

1. Bio-toilet system with PLC:

The retention tank of this system has been designed keeping in view the DRDE bacteria. The faecal matter will pass through P-trap to the tank. P-trap bend towards inlet side of the tank shall be slanted to achieve double seal and will also eliminate gas emission to the toilet room. Vent hole is provided on the top of the retention tank for venting out gases (preferable in first and last chamber). One flapper valve is provided for water seal to arrest foul smell and will also act as a passage to clear foreign materials such as Bottles, polythenes etc. This will also act as a fail safe mode in case of emergency. Since this system has PLC, hence the flapper valve can be opened at predetermined cycles; say 40 cycles or so, to clear the foreign materials automatically through a chute which is open to ground.

There will be no speed sensor which is the major cause of non-operation of flapper valves fitted in toilet systems. In this system the flushing will be pressurized. A chamber having 1 litre capacity has been provided after the chlorination chamber. This chamber has two outlets; one with tap for sample collection for testing the performance of the bio-degradation (effluent discharge parameters) and other for normal discharge i.e. chlorinated discharge.

Option-2

Bio-toilet system without any pneumatics, electronics and electrical:

The retention tank of this system is same as in option-1 above. In this system also the faecal matter will pass through a P-trap to the tank. But in place of flapper valve, one Ball valve has been provided which will be operated manually from outside of the coach/by foot pedal. Alternatively, it should be operated from inside the coach by a lever also. This will also act as a water seal to arrest foul smell and will also act as a passage to clear foreign material such as Bottles, polythenes etc manually. This will also act a fail safe mode in case of emergency. If anything goes wrong this valve can be kept in open condition and the complete system will act as the conventional chute system which is open to ground. There will be no speed sensor, no pneumatics, and no electronics thus eliminating
electrical and mechanical failures. In this system the flushing will be through the gravity head only.

**In nutshell, these may be summarized as below:**

<table>
<thead>
<tr>
<th>Variant of Bio-Digester</th>
<th>Brief Description</th>
<th>Features</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option–I</strong></td>
<td>System with flapper valve</td>
<td>Pneumatics: Yes, Electrics: Yes, PLC: Yes</td>
<td>Flush: Pressurized</td>
</tr>
<tr>
<td><strong>Option-II</strong></td>
<td>System with Ball valve.</td>
<td>Pneumatics: No, Electrics: No, PLC: No</td>
<td>Flush: Gravity</td>
</tr>
</tbody>
</table>

4.2 **System Installed shall comprise of the following:**

i) Bio Digester Tank  

ii) PLC Controls – as applicable  

iii) Control Panel– as applicable  

iv) Chlorinator  

v) Ball Valve/ Flapper/Slider– as applicable  

vi) Operating mechanism with paddle- GEAR(Rake & pinion) type, Link type, clutch-wire type or any other design as applicable  

vii) Flushing Unit/Pressuriser.  

viii) Piping system  

ix) Pneumatic Valve – as applicable

5.0 **SCOPE OF WORK:**

5.1 **Scope of work at Base Depot:**

For the works to be carried out under supervision of nominated Railway staff for the Annual Maintenance and Operation Contract (AMOC) of complete Toilet System including following equipments:

i) All bio-toilets of the coach and its supporting systems like flushing arrangement, piping etc.

ii) Pan outlet piping connection upto the retention tank including TPE connector etc.

iii) Existing plumbing fittings and its control systems etc.

iv) The maintenance work of PLCs and Flapper valves/Ball valves/operating mechanism (wherever applicable).

v) Exterior cleaning of tank.
vi) If required, Interior Cleaning with evacuation of tank. Replenishment of bacteria and poly grass after internal cleaning. Bacteria may be arranged from DRDE/GWL or MIBW/NGP/SECR or by any outside source approved by DRDE Gwalior/Railways or any other nominated Govt. accredited lab.

vii) Collection and transportation of samples from retention tanks to nominated Govt. accredited lab as per the test scheme (RDSO/2010/CG/TS-10 or any applicable test scheme) issued by RDSO.

viii) Any other job related to toilet system assigned to the contractor is to be done by the contractor under the contract.

5.2 Details of Staff:

Site Supervisor:

The supervisor will organize the said operations, monitoring and maintenance in the shift during which the trains with bio-toilet are maintained in the depot. He will be reporting to nominated Railway Representative and will be entirely responsible for all the activities as mentioned. The supervisor should be acquainted with such types of jobs with satisfactory working knowledge of the system and various accessories provided.

5.3 Skilled staff:

5.3.1 Well trained staff with satisfactory working knowledge of the system and working of Railway coaching depot who can handle and maintain the Toilet system as mentioned in the scope assisting Railway staff in day to day maintenance.

5.3.2 The staff pattern is illustrative only and not exhaustive. Over and above it, the contractor is to ensure proper supervisory staff.

5.3.3 The contactor will furnish bio-data along with testimonials including competency certificate issued by contractor for staff proposed to be engaged to the nominated Railway representative at least two weeks before the proposed date of employment and he will engage such staff after screening and obtaining clearance from Nodal Officer. The clearance issued by the office will not absolve/responsibility of the contractor for misconduct of his staff members.

5.3.4 During the period of contract, nominated Railway person will have authority to ask the contractor to remove/replace any staff members in the event of any misconduct of the later. For this purpose his decision will be final.
5.4 Man Power (minimum man power to be deployed)

5.4.1 Man Power required

1. Man Power (minimum man power to be deployed) in Coaching Depot:
   
a). The contractor shall provide trained man power for the prompt and efficient maintenance (preventive as well as break down) and day to day operation of the bio toilets as under.

   The team of contract staff should consist of

   1. Supervisor: 1 per shift.
   2. Skilled technician: 1 for every 30 Bio toilets or part thereof.
   3. Semi skilled technician: 1 for every 30 Bio toilets or part thereof.

   b) A fortnightly planner for Daily and Non daily/Special trains in the following format shall be issued by CDO/SSE in-charge of the depot to the contractor to arrange the above mentioned team of contract staff for attention of Bio-Toilets. Every Bio toilet is to be checked as per the check sheet and jointly signed.

   A. Regular trains

<table>
<thead>
<tr>
<th>Date</th>
<th>Shift</th>
<th>Train No.</th>
<th>No of coaches with bio Toilets</th>
<th>No of Bio toilets</th>
<th>Arrival</th>
<th>Departure</th>
<th>Maintenance time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2nd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3rd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   B. Non daily/Special Trains

<table>
<thead>
<tr>
<th>Date</th>
<th>Shift</th>
<th>Train No.</th>
<th>No of coaches with bio Toilets</th>
<th>No of Bio toilets</th>
<th>Arrival</th>
<th>Departure</th>
<th>Maintenance time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2nd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3rd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Note: Shift Timings as prevalent in the Coaching Depot.


   Staff shall be deployed in General shift as per the following distribution during attention of POH.

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Supervisor</th>
<th>Skilled</th>
<th>Semi skilled</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>POH</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>
Note: Additional man power if required as per the workload as intimated by Coaching Depot officer and Workshop shall be arranged by the contractor for POH attention of Bio toilets so that cycle of POH activity is not delayed.

i) The manpower requirement above is for current work load and is indicative only. In case of increase in work load, the contractor shall provide additional man power as deemed fit by CDO/SSE/Incharge if required in future at the same accepted rate.

ii) Manpower is to be deployed at various depots as per the orders of Sr.DME/C&W in addition to depots mentioned in TS.

iii) The staff should be deployed as per the maintenance time of the train on washing line/nominated line. The contractor’s Supervisor shall remain in touch with the Railway representative to keep track of any change in the maintenance time and adjust his time accordingly.

iv) The bidder should provide additional man power if required in future at the same rate quoted.

v) The contractor shall submit a list of authorized persons deputed for carrying out the repairs along with their contact numbers i.e. mobile numbers to concerned CDO/SSE/In-charge(IC). The Supervisor nominated by the contractor for the repair on the station /depot shall observe all safety and security rules prevailing at the place of work. Railway shall not be responsible for any mishap resulting out of non-observation of prevailing safety and security rules.

vi) The contractor shall comply all provision of minimum wages act, 1948, Contractor labour (Regulation and Abolition) Act 1970 and rules frame there under and other labour laws affecting contract labour that may be brought in to time to time.

The availability of manpower has to be ensured in consultation with Nodal officer and can be increased or decreased as per the workload on a particular day.

5.4.2 Man Power Deployment:-

Trains equipped with Bio-toilets are maintained at Coaching Depot as per specified schedule. The staff should be deployed as per this maintenance time of the train on washing line/Nominated line. The contractor’s Supervisor shall remain in touch with the Railway representative to keep track of any changes in the maintenance time and adjust his time accordingly.

5.5 Place of work and Working hours for manpower deployed:

5.5.1 Place of work will be washing line/Sick line/Coaching depot/Terminal station/Workshops or any other maintenance point selected by the nodal officer. Bio-toilet maintenance timing will depend on No. of trains and their maintenance schedule. Contractor has to maintain the bio-toilet in the given maintenance
schedule of the respective trains. The manpower requirement can be assessed by Nodal Officer and accordingly manpower deployment may be increased or decreased.

5.5.2 It will be the responsibility of the contractor to clean the area after completion of the work. Any refuse/garbage generated during the course of work shall be disposed off by the contractor.

5.5.3 The manpower requirement above is indicative only. Bidders may suggest additional man power if required. Bidder may assess the man power required by visiting the site and familiarising themselves with the system of working and Train timings.

5.5.4 The Bidder should provide additional man power if required in future at the same rate quoted. The Contractor shall comply all provision of minimum wages act, 1948, Contract labour (Regulation and Abolition) Act 1970 and rules framed there under and other labour laws affecting contract labour that may be brought in to time to time. Details of payment calculation should be submitted with break up along with price bid. Necessary supporting documents should be submitted with the tender.

5.6 Preventative Maintenance schedule:
The preventive maintenance schedule for maintenance of coaches being followed in IR is given in ANNEXURE-III. However following work schedule is to be followed for proper maintenance of the Bio-toilet System under the contract:

5.6.1 WORK TO BE CARRIED OUT DAILY/TRIP:

a. Attending the daily routine complaints received from the users.

b. Removal of choking from toilets of on arrival rakes by nominated choke removing gadgets only.

c. Checking of all the components of Bio-toilet system for any deficiency

d. Attention to operating mechanism of Ball valve and attention to TPE connector.

e. Examination of chlorinator unit for any leakage, tilting and thread missing and charging by Chlorine/Kmno4 tablets, if required

f. Attention to PLC if fault is noticed (if applicable).

g. Exterior washing of bio-digester tank at washing line during maintenance.
5.6.2 WORK TO BE CARRIED OUT MONTHLY or “A” Schedule:

a. All works to be carried out as mentioned in daily schedule above;

b. Collection and transportation of samples from retention tanks to DRDE, Gwalior or any other nominated Govt. accredited lab as per the test scheme (RDSO/2010/CG/TS-10 or any latest applicable test scheme) issued by RDSO.

c. Visual inspection of complete Toilet system including under slung equipments and mounting arrangements of Bio-Toilet system and attend if found any deficiency.

d. Charging of Chlorine/Kmno4 tablets and examination of Chlorinator unit every 10 days or as required depending on life of the tablet.

5.6.3 WORK TO BE CARRIED OUT ON QUARTERLY BASIS or “B” Schedule:

a. All works to be carried out in Daily and Monthly schedules above;

b. Checking of following equipments/repair/replacement for proper functioning:
   a. Ball Valve/ Flapper/slider with operating mechanism
   b. Leakage in piping, flush system, pneumatics, tank etc. Valves, pressuriser, PLC, pneumatic valves (if applicable) and Ball valves etc.
   c. Charging of Bio-culture if required (based on test reports). Inoculum will be supplied by DRDE/IR(MIBW/SECR, Nagpur).

5.6.4 WORK TO BE CARRIED OUT IN IOH SCHEDULE.

a. All jobs as mentioned in the quarterly work schedule above;

b. Servicing of all PLCs if applicable.

c. Testing of complete Toilet system

d. Application of evacuation machine for removing garbage from first chamber of the bio-digester.

e. Drawing and delivering of samples as per requirement to Govt. Accredited labs as advised by Railways. The cost of test will be born by Railways.

f. Charging of Bio–culture (Inoculum) if required (based on test reports)
5.6.5 WORKS TO BE CARRIED OUT IN POH: (By Workshop contractor)

All the works to be carried out as mentioned in POH instructions in ANNEXURE-I.

Charging of Bio – culture (Inoculum) should be done after POH. It will be supplied by DRDE/GWL and MIBW/NGP or will be arranged by Workshop.

5.7 Detailed Terms and Conditions for providing Manpower

5.7.1 Contractors should provide 2 sets of uniforms of approved colour for the employees deputed in the Depot at his own cost and safety shoes one pair. Name of firm should be printed on uniform of firm’s employees.

5.7.2 In order to ensure the fulfilment of statutory obligations, contractor shall ensure that the payment of wages of the workmen of the contractor is made only through ECS facility in employee’s Bank account and submit detail to nodal officer.

5.7.3 The contractor shall issue the identity cards to his workmen on his own cost and shall duly be intimating in writing the nominated Railway person as and when there is any change.

5.7.4 The contractor shall ensure to provide an alternate qualified manpower or replace with a standby in case any of the regular staff deployed is absent or on leave.

5.7.5 The contractor shall be responsible for the safety of all the items and other fittings provided in the premises and shall be liable to make good of any loss to the same if damaged during the execution of their duties which shall be recoverable from his monthly bill or other dues payable to the contractor by the company.

5.7.6 The monthly/quarterly bills for the work done shall be submitted by the contractor in the following month.

5.7.7 The contractor shall ensure that the workmen deployed by him behave decently and do not indulge themselves in any such activities, which are unbecoming on the part of a person working in the Government Office.

5.7.8 The contractor shall be responsible for the good conduct and behaviour of his employees. If any employee of the contractor is found misbehaving with the supervisory staff or any other staff member, the contractor shall terminate the services of such employees at their own risk and responsibility on the recommendation of the Nodal Officer. The contractor shall issue necessary instruction to their employees to act upon the instructions given by the nominated Railway person at the Depot.

5.7.9 The contractor should provided masks, gloves and boots for his staff. The contractor should also provide the following tools for removal of choke from P-
Trap i.e. bottle picker, choke remover, handle for foot paddle operation and any other tools defined by Railways.

6.0 AMOC Charges: To be quoted in the tender for AMOC.

7.0 Authority for Signing and Operation of the Contract

The Nodal Officer of the concerned Division will be the authority for signing the Contract. The Nodal officer shall be responsible for overall supervision of the contractor’s work and issue of requisite certificate for performance of the contractor for maintenance and operation of the Biological Toilets.

8.0 Responsibilities of Parties:

8.1 Base Railway:

8.1.1 Base Railway shall execute an agreement with the contractor at the beginning of the contract.

8.1.2 The Nodal Officer shall permit the contractor to undertake AMOC for the IR-DRDO Bio-Toilet system.

8.1.3 The Nodal Officer shall issue the necessary identity card or authority letter to the contractor’s working staff/service engineer for their entry on the platform and other Railway premises. However, this Identity Card will not be taken as an authority to travel. Records of the persons who have been issued with valid identity cards shall be maintained by Nodal officer.

8.1.5 The Bio-Toilets shall be attended to on the platform or washing line or Sick line or coaching depot or the terminal stations/Workshop or any other maintenance point. The Nodal Officer shall provide to contractor the following facilities for AMOC:

a) Suitable room and workplace for accommodating the tanks etc. located in the proximity of maintenance activity.

b) Suitable open space at convenient location for the storage of residual waste which shall be removed and disposed of by the contractor ensuring clean and hygienic environment in the depot.

c) Air pressure at 5 bar on “as is where is” basis for maintaining the system.

d) Power Supply at 110 V DC and 220 V AC on “as is where is” basis.

e) Water supply on “as is where is” basis.

8.1.6 In case of receipt of breakdown of Bio-Toilet in any coach, the nominated nodal officer shall intimate the contractor by telephone/telex/e-mail/SMS or in person mentioning the coach numbers and location of the coaches along with the time of call. He shall maintain the register of such calls made for reference of both the parties.
8.1.7 Nodal officer shall nominate supervisor(s) for joint inspection of the Toilets maintained. Joint inspection shall be done as per scheduled maintenance.

8.1.8 The necessary records for the AMOC will be maintained with the nominated officer for reference of both the parties.

8.1.9 The Nodal Officer should ensure that no maintenance schedule of Bio-toilet system is allowed to run over due and offer the coaches accordingly to the Contractor.

8.2 Contractor

8.2.1 The Contractor shall provide trained man power for the prompt and efficient maintenance (preventive as well as Break down) and day to day operation of the Bio toilets. The Contractor shall ensure that all necessary consumables and spares required for the proper functioning and day-to-day operation and maintenance / repairs for out of course defects of the Bio toilets are available at site. The contractor shall also keep sufficient unit exchange spares for replacement within reasonable time as considered necessary by the Nodal Officer for repairing the defect.

8.2.2 The contractor shall submit a list of authorized persons deputed for carrying out the repairs along with their contact numbers i.e. mobile numbers, to Nodal Officer. The Supervisor nominated by the contractor for the repair on the station/Depot shall observe all safety and security rules prevailing at the place of work. IR shall not be responsible for any mishap resulting out of non-observation of prevailing safety and security rules.

8.2.3 The contractor shall ensure that no toilet system remains out of operation and the maintenance staff should report immediately after receipt of breakdown call from Nodal officer.

8.2.4 The Contractor shall ensure that all chemicals and bacteria essentially required for the proper functioning of the bio-toilet system are supplemented for the waste treatment. He will ensure that emptying and cleaning of the toilet tank including disposal of residual waste.

8.2.5 The contractor shall set-up the facility for servicing and bench testing with effluent treatment plant at contractor’s cost at the place provided by the Railway. The facilities will include skilled staff, tooling required for dismantling, servicing, testing and assembling of various parts of the Bio Toilets. The Contractor shall ensure that his staff does not spread filth/litter around working area and it shall be the duty of the staff to maintain cleanliness of the area. Besides, firm will keep all the testing and maintenance facilities in working order at all times. Back-up of critical machinery, tools etc. should be maintained to ensure un-interrupted attention. Break down of such items should be reported to Nodal officer immediately.
8.2.6 Contractor shall be solely responsible for the safety of all the men and equipment of the firm. Railways will not be responsible on this account in any manner.

8.2.7 Boarding & lodging facilities to staff of firm to be made available at any station shall be the responsibility of the contractor.

8.2.8 The Contractor shall ensure that there is no damage to the Railway property/material.

8.2.9 The contractor shall ensure that all employees/persons engaged/authorized by him for carrying the work, behave properly with Railway officers and staff. In the event of any misbehavior, reported by the Nodal officer, the contractor shall immediately withdraw such employee/person from the work.

8.2.10 The contractor will liaise with the Nodal officer for the AMOC and maintain necessary records for reference of both the parties.

8.2.11 In case of any problem that the staff is unable to attend, he will advise Nodal officer for urgent action to be taken.

8.2.12 In case of the coach requiring to go to a periodic repair workshop for any reason the supplier shall, during warranty as also during operation of AMOC, be responsible for evacuating and cleaning the tank before workshop repairs are undertaken and also for re-commissioning the toilet systems after the coach is attended in the workshop.

8.2.13 In case of any loss/damage to the firm/his men/machinery, the Railway shall not be responsible and all claims placed on his account will be on the contractor’s own risk and cost.

9.0 Warranty:
Warranty of Toilet system shall be as per the Purchase order.

10.0 Validity of contract: The AMOC for one year contract is practically feasible however in case of lesser population of bio-toilets in certain depot, it can be for a longer duration as requirement by Nodal officer.

11.0 Ownership of the rejected or defective components/or parts:
Ownership of the rejected or defective components/or part is that of the Contractor against the replacement made by them on the Bio-Toilet System to make it operative except in case of warranty claims of OEM agreed to by Railways.

12.0 Payments:
12.1 The payment for AMOC shall be made in installments on Monthly/Quarterly basis.

12.2 Any excess/shortfall in the work actually carried out will be adjusted at the time of 2nd installment and the last installment of the year.
12.3 The bills of the contractor for payment must accompany as under: -
   a) The Bio-Toilet tank numbers and Coach numbers.
   b) Numbers of the Bio-toilets maintained by the firm for each monthly/quarterly schedule covered under this AMOC.
   c) A certificate of the satisfactory maintenance of the bio-logical toilets as issued by Nodal Officer of Base Railway to be submitted to the Paying Authority.

13.0 Paying Authority

The payment against this contract shall be made by the concerned Account officer of the Division/workshops associated with the Depot/workshop for maintenance of the coaches.

14.0 Records to be maintained by Maintenance Depots:

   a) Depot shall maintain the coach numbers to be maintained under this AMOC along with the date of inclusion/deletion of the coaches under AMOC.
   b) The Nodal officer or Nominated officer concerned shall keep the register/records for the previous bills paid for each coach to avoid duplicity of the payments at any time.
   c) List of Plant & Machinery installed by the contractor and stock position of the spares for execution of the AMOC.
   d) In addition to the above the Nodal officer may keep records as per required for effective monitoring of AMOC.

15.0 EMD and Security Deposit:

EMD and Security Deposit shall be submitted by the contractor as specified in the contract.

16.0 Performance Guarantee – As per purchase order

   a) The contractor shall submit Performance guarantee as per Clause No. 16(4) of Standard General Conditions of Contract, July 2014 or latest.
   b) As and when an amendment is issued to the contract, the contractor shall, within 15 days of receipt of such an amendment furnish to the Nodal Officer an amendment to the Performance Guarantee Bond rendering the same valid for the contract as amended.
17.0 **Force Majeure Clause**  
This will be as per Clause 17 (Part-II) of Standard General Conditions of Contract-2014 or latest.

18.0 **Arbitration:**  
This will be as per clause 63 to 64 (Part-II) of Standard General Conditions of Contract- 2014 or latest.

19.0 **Laws Governing the Contract**  
This will be as per Clause 03.(1)(Part-II) of Standard General Conditions of Contract 2014 or latest.

20.0 **Determination:**  
This will be as per Clause 61 and 62 (Part-II) of Standard General Conditions of Contract 2014 or latest.

21.0 **Subletting and Assignment**  
This will be as per Clause 07 (Part-II) of Standard General Conditions of Contract 2014 or latest.

22.0 Other terms and conditions as per Standard General Conditions of Contract-2014 or latest will apply.

23.0 **Penalty:**  
The following penalties will be levied on contractor for bad workmanship and penalty amount will be deducted from the on account bills.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item</th>
<th>Amount of Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If the defective toilets are not attended before schedule departure time of the train,</td>
<td>The contractor shall be fined Rs.2000/- per day (Excluding the day of attention) per toilet till it is rectified.</td>
</tr>
<tr>
<td>2</td>
<td>Complaint received from inspecting officers /Passenger compliant for unsatisfactory maintenance of Bio Toilet.</td>
<td>A penalty of up to Rs.5000/- per toilet shall be imposed on contractor. However choking of bio toilets due to misuse by passengers is exempted.</td>
</tr>
<tr>
<td>3</td>
<td>In case staff not turn up for AMOC on any day,</td>
<td>A penalty of Rs 2500/- per person per day shall be imposed.</td>
</tr>
<tr>
<td>4</td>
<td>If Charging of chlorine tablet in chlorinator not done,</td>
<td>The contractor shall be fined Rs500/- per trip per toilet till it is provided.</td>
</tr>
<tr>
<td>5</td>
<td>Not carrying out sampling testing quarterly as per schedule quantity.</td>
<td>A penalty of Rs 5000/- per toilet shall be imposed.</td>
</tr>
<tr>
<td>6</td>
<td>Any other deviation of Agreement conditions</td>
<td>As decided by the Nodal officer upto maximum of Rs 2000/- per instant.</td>
</tr>
</tbody>
</table>
Note: The Railway Administration will terminate the contract if the work executed by the contractor is consistently unsatisfactory.

CONTRACTOR

NODAL OFFICER

WITNESS : 1. ____________________

__________________

2. ____________________

WITNESS : 1.

__________________

2. _______
Annexure-I

Instructions for POH of the coaches fitted with Bio toilets.

1. Place the coach at maintenance workshop’s pit line, where fork lifter can be placed under the tank.
2. Mark all the tanks with their respective coach number and lavatory number.
3. Remove all the nut bolts used for fastening of safety ropes and safety ropes provided for IR-DRDE bio toilet retention tank.
4. Dismount hose clamp provided for securing of Rubber hose at Lavatory Pan.
5. Remove all the pneumatic pipes for flapper valve if any.
6. Open all the nuts and washer with the help of suitable spanner/ wrench. Atleast one bolts should remain in the holes of each mounting brackets and tank to avoid accidental dropage of tank during placement and lifting of the tank.
7. Place the arms of fork lifter below tank and lift the tank slowly about half inch. Remove remaining bolts carefully.
8. Remove all the tank with the help of fork lifer for thorough cleaning, tank and mounting brackets should be inspected for any damage, leakages etc.
9. Complete tank evacuation and cleaning of whole tank.
10. Attention to Ball valve linkages or operating mechanism.
11. Ball valve should be overhauled and PTFE seal of Ball valve should be renewed 100% during POH.
12. Rubber connector should be renewed during POH.
13. Replacement of poly grass mat with proper securing arrangement.
14. If there is any damage or leakage in the tanks or non-confirming results of effluent discharges are being reported etc., these tanks should be drained out at designated place having proper drainage, cleaned properly and tank should be rectified for the deficiency noticed.
15. If there is no deficiency found, It should be stored after cleaning in the racks (3tier stacks as suggested by CAMTECH / Gwalior) earmarked for bio toilets. Racks should be placed in cool, safe area and without sunlight.
16. Ingress of water, chemicals or any other foreign object to the tank should be prevented during storage of the bio toilet tanks.
17. Then the coach should be sent to all regular stages of POH attention.
18. After completion of POH of the coaches, tanks marked with respective coach number and lavatory number should be taken out from storage rakes and restored in position.
19. Check the rubber hose used for joining of P-trap and Lavatory pan for any defects, remove all dirt, scaling and old sealant before fixing it again.
20. Reconnect pneumatic pipes for flapper valve if fitted with PLC version.
21. Nut, bolts and spring washers used for mounting bracket and securing of safety rope should be checked for wear, tear or corrosion etc. and should be replaced with same size material and grades if defective.

22. Check the safety rope before re-mounting for any defects.

23. Ensure all the nuts and bolts used for mounting and securing of safety rope are be properly tightened before dispatch of the coach.

24. NDT of J Brackets/Positive mounting bracket.

25. Tanks should be Re-filled with the required level of bacterial Inoculum before dispatch of the coach.

**Work to be attended by AMOC contractor during POH**

Work to be done in the scope of AMOC by the contractor during POH is mentioned in clause no. 5.6.5 of the guidelines for AMOC.
DETAILS OF COACHES FITTED WITH DRDE TYPE BIO TOILETS

<table>
<thead>
<tr>
<th>S. No.</th>
<th>COACH NO.</th>
<th>TYPE</th>
<th>BASE DEPOT</th>
<th>No. of toilets with Variant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Preventative Maintenance schedules of IR Coaches

#### A. Maintenance Schedule in Depots

<table>
<thead>
<tr>
<th>Type of Schedule</th>
<th>Periodicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Trip Schedule</td>
<td>At the end of each trip or as prescribed</td>
</tr>
<tr>
<td>(ii) Schedule ‘A’ or Monthly examination</td>
<td>1 month +/-3 days</td>
</tr>
<tr>
<td>(iii) Schedule ‘B’ or tri-Monthly examination</td>
<td>3 months +/-7 days</td>
</tr>
<tr>
<td>(iv) Special Schedule</td>
<td>As prescribed by Zonal Railways</td>
</tr>
</tbody>
</table>

#### B. Periodicity of Maintenance Schedules [IOH & POH] for ICF/RCF design Coaches.

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Coach Categories</th>
<th>IOH (Months)</th>
<th>POH (Months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New coach turned out by PU or a coach turned out by MLR</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>Rajdhani/ Shatabdi</td>
<td>09</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>Mail Express, Garib rath, Jan-Shatabdi &amp; OCVs forming part of standard rake composition of M/E trains.</td>
<td>09</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>Passenger</td>
<td>09</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
<td>Other OCVs</td>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>

**Note:**

1. Specified Scheduled Maintenance Periodicities are indicative in nature and subject to change as per Railway requirements/rules.
2. Periodicity of Maintenance schedule for LHB coaches should be followed according to CAMTECH Manual for LHB Coaches or latest instructions issued by RDSO/Railway Board.