

AMC**General condition**

- ❖ AMC of electronic and/or software embedded equipment shall be undertaken by OEM or its authorized vendors only.
- ❖ The AMC shall be comprehensive wherein preventive as well as breakdown maintenance of hardware, software and peripheral Equipments of EI including its power supply equipments, Maintenance Terminal & its software, VDUs, Monitor & its CPU, UPS, PPM, Network switches, FRC & OFC with connectors, FDMS shall be carried out. This shall include arrangement of spares, tools, consumables, technical expertise, man power and replacement of defective cards etc.
- ❖ AMC will not cover the EI failures due to circumstances such as fire, earthquake, flood etc. However, the damages due to High Voltage/Lightening shall be covered under AMC and attended by contractor at his own cost except where issues related Lightening & SPD has been pointed out by the OEM during the periodical maintenance and same has not been set right by the railways.
- ❖ Damages occurred in case of unforeseen circumstances such as flood, earthquake, lightening etc. in such cases, the damaged cards, modules / subsystems are to be sent by the firm to the repair centre and based on quantum of damage the repairing cost will be paid by Railway separately on case to case basis in running bill or separate work order based on mutually accepted rates.
(The above amount shall be payable only when the issues related to lightening have been pointed out by OEM in periodical visits.)
OR the damaged cards shall be arranged by railways and OEM should install at free of cost.
- ❖ Contractor will deploy Technically Competent Service Engineer/s, Well Conversant with Equipment/System, expert in restoration during breakdown and fully equipped to attend failures independently with optimum utilization of time and minimizing the duration of failure. The competency of Service Engineer should be certified by the OEM/RDSO approved firms.

- ❖ Annual performance report will be submitted by OEM to RDSO (copy to Division) regarding performance of the system as well as service for future course of action.
- ❖ Payment shall be cleared at the end of every quarter after deducting the penalty as accrued during the period. Before payment firm authorized engineer shall submit monthly maintenance record in proper format as per guide lines for electronic interlocking system, one copy of same shall be kept at site.

COMMUNICATION

- ❖ Contractor shall provide details of the Escalation matrix of service personnel, with their name, phone number/mobile number with social media number and their address.
- ❖ The Service Engineers will contact with the SSE/Control in the division every day and give their movement.
- ❖ The contractor shall have a 24 X 7 Single Point of Contact (SPOC) in the form of call centre or service engg which shall be called in case of failure. The SPOC will provide a docket number whenever a complaint is lodged with them. It will be responsibility of the firm's SPOC to move to site or send his representative (Service Engineer) to site of failure for rectification of failure in such a way that service engineer shall reach at the site of failure within stipulated time. SPOC will communicate the daily movement of his representative (service engineer) to Divisional control over phone & WhatsApp also.

PERIODICAL MAINTAINANCE

- ❖ Periodical visit for maintenance shall be at least once in a month for EI. Parameter of items test/maintenance shall be recorded against standard/nominal values/range. Record of periodical maintenance shall be available at the station concerned.
- ❖ AMC engineer will visit the station for scheduled periodical maintenance to clean, check, test, adjust all components of the system (hardware and software), to record all parameters for proper functioning of modules, part & complete system.

- ❖ He has to do a complete technical audit of the system as per Pre-commissioning check list jointly with the Railway representative every quarterly.
- ❖ All the maintenance activities and measurements of parameters/check list must be recorded and will be kept at stations. Summary of defects to be made and action to be taken to comply by contractor or railway as per the nature of defect.
- ❖ OEM shall also be responsible for upgradation of the system/installation as per latest TANS/guidelines issued by RDSO. The material for this will be supplied by Railways.
- ❖ In case of any logic deficiency noticed during train operation, it will be conveyed to OEM and OEM should attend it within 1 month.

Failure Rectification

- ❖ The contractor shall attend the breakdown or failure site within stipulated time after communication of failure otherwise a penalty will be imposed.
- ❖ While on the way for attending the breakdown, he should also be available continuously on phone/video call to guide the Railway staff at site for rectification of failure.
- ❖ The service Engineer shall convey the nature of failure and expected time of rectification to the Railway as well as the in-charge head of his own company.
- ❖ The firm will take error log of each of the failures and analyze the cause of failure. The analysis of the reason for failure should be shared with Railways within 10 days of the failure. If a firm fails to do so, penalty of Rs 10,000/- will be imposed.

Classification of failures:

- i). **‘Major Failures’, Failures affecting train operation :** The failures of EI which directly affect the train operation Viz. VDU inoperative/Blank, No operation of Signalling gears controlled by EI, Signal not being taken off etc.
- ii). **‘Minor Failures’ Failures not affecting train operation :** The EI failures/Alarms/Errors which may not be affecting the train operation but later on may result in such failures.

Classification of Stations

- i). **Minor EI:** EI installed on D, D spl and E routes.
- ii). **Major/Critical EI:** EI on The Stations with more than 100 Routes or Major Junction Station and/or Stations on HDN Route as decided by Railways.

Stipulated Time for Reaching the Site:

Nature of Failure	Minor EI	Major EI
Failure affecting train operation	2 Hours	1 Hours
Failure not affecting train operation	10 Hours	10 Hours

PENALTY

Reason for Penalty	PENALTIES TO BE RECOVERED	
	Minor EI	Major/Critical EI
Penalty for late arrival at Major failure site: If Service Engineer fails to attend the failure site within stipulated time, a penalty will be imposed as mentioned on the monthly AMC charges of equipment.	<p>After Stipulated time:</p> <p>0-30 Min Late: 15% of monthly AMC Charges of the station.</p> <p>30 Min-1 Hrs Late: 50% of monthly AMC Charges of the station</p> <p>1-1.5 Hrs Late: 75% of Monthly AMC Charges</p> <p>>1.5 Hrs Late: 100% of monthly AMC Charges of the station</p>	<p>After Stipulated time:</p> <p>0-30 Min Late: 15% of monthly AMC Charges of the station.</p> <p>30 Min-1 Hrs Late: 50% of monthly AMC Charges of the station</p> <p>>1 Hrs Late: 100% of monthly AMC Charges of the station</p>
Penalty for unreasonable time consumed in rectification of Major failures after getting the intimation:	<p>0-2 Hrs: Grace Period</p> <p>2-3 Hrs: 25% of monthly AMC Charges of the station.</p> <p>3-4 Hrs: 50% of monthly AMC Charges of the station</p> <p>>4 Hrs: 100% of monthly AMC Charges of the station</p>	<p>0-1 Hrs: Grace Period</p> <p>1-2 Hrs: 25% of monthly AMC Charges of the station.</p> <p>2-3 Hrs: 50% of monthly AMC Charges of the station</p> <p>>3 Hrs: 100% of monthly AMC Charges of the station</p>

Penalty for missing the periodical schedule of maintenance/ Technical auditing of equipment	5 % of the per day AMC charges of the station for per day delay after 7 th day of scheduled date of that equipment. In case equipment fails leading to failure of the system, then 100% per day AMC charges should be imposed as penalty including for extended 7 days also. (Not more than 7 days and for 2 times only in a year for each system)
Failure not affecting train operation	<p>Once Engg reaches at site he should analyse the failure and rectify it within 10 hours on getting permitted by railway so that train operation is regulated least unless essential otherwise penalty of Rs 2000 per unit per day will be levied till the date of failure rectification.</p> <p>In case such failure require software alteration same should be planned with permission of Railway as per urgency and date fixed otherwise penalty of Rs 2000 per unit per day will be levied till the date of failure rectification.</p>

Spares Management

- ❖ Contractor shall maintain sufficient number of Buffer stock for each Module/PCB/Cards/sub systems/ parts/components or any other item like Modem etc. (subject to minimum two) available with Service Engineer to attend the failure. Joint checking by Rly supervisor with AMC engg should be done quarterly. Deficient material to be recouped within 7 days. Failing which penalty of Rs 500/- will be imposed on daily basis and if due to shortage of material failure prolongs than the penalty of 100% AMC charge of the station will be imposed.
- ❖ The Contractor shall ensure that replacement of cards/modules with RDSO approved card/modules only. If RDSO specification and approved source is not available, the component shall have "Guarantee cum Test/Inspection Certificate of OEM".
- ❖ In case of urgency, if spares are taken by firm from Railways, these will be issued by Railway as per availability in the interest of safe and punctual running of trains, but with imposition of Lumsum

penalty of Rs 2000 per unit per day till the date of return irrespective of the cost of the spare.

- ❖ The contractor shall return repaired cards to Railways within 45 days from the receipt of cards. The Contractor/firm shall maintain a History Sheet of all cards and modules existing or replaced for each equipments at stations. Whenever cards/modules are replaced/ repaired, the same shall be updated in the History Sheet of the equipment under AMC.

Proper log to be maintained for analyzing system generated error logs and corrective action taken

- ❖ AMC personnel shall download the system generated error logs. Arrangements should be made to upload & save logs in secure clouds/servers for future reference.
- ❖ OEM/Firm shall submit requisite report detailed analysis within 10 days and rectification/ remedial action should be taken within next 7 days.

Use of IT in maintenance

- ❖ MT inputs should be connected to network or available at data logger to be centrally transferred at divisional HQ wherever such facility is available.
- ❖ EI hardware health status should be available on MT and thus subsequently to data logger for maintenance in case feasible.
- ❖ Online support channel by OEM should be established for assisted diagnosis/rectification at the time of failures.
- ❖ Online training /diagnostic videos should be made available on free platforms like YouTube etc

Record keeping:

- ❖ Each site shall have a register for :
 1. Recording the maintenance done either on call or preventive maintenance (in monthly/quarterly checklist format).
 2. List of all faulty cards/ equipments replaced. (Station/ date with S.No. & name of Cards).
- Signature of the railway representative shall also be taken on every record mentioned above.

Check list before passing bill

S.N	Checklist	Yes/No/NA				
A. General conditions						
1	Competency of service engineer is certified by OEM.					
2	Damages occurred in case of unforeseen circumstances such as flood, earthquake, lightening etc. in such cases, the damaged cards, modules / subsystems are to be sent by the firm to the repair centre and based on quantum of damage the repairing cost will be paid by Railway separately on case to case basis in running bill or separate work order based on mutually accepted rates.					
3	Check whether annual performance report is prepared and submitted to RDSO regarding performance of the system as well as service for future course of action.					
B. Communication						
1	Contractor has provided details of service personnel like Name, phone number/mobile number, social media number and address.					
2.	System of taking movement of AMC engg. is in place at control.					
3.	24x7 Single Point of Contract (SPOC) number with use of docket no. provided by contractor.					
C. Periodic maintenance						
1	Periodic maintenance is carried out monthly (i.e. 30 days interval)					
2	Complete technical audit of the system as per Pre-commissioning check list jointly with the Railway representative is being done quarterly.					
3	Based on filled checklist, summary of deficiencies is made & deficiencies are being rectified.					
D. Penalty						
1	Penalty for late arrival imposed: <table><tr><th>Minor EI</th><th>Major/Critical EI</th></tr><tr><td>After Stipulated time: 0-30 Min Late: 15% of monthly AMC Charges.</td><td>After Stipulated time: 0-30 Min Late: 15% of monthly AMC Charges.</td></tr></table>	Minor EI	Major/Critical EI	After Stipulated time: 0-30 Min Late: 15% of monthly AMC Charges.	After Stipulated time: 0-30 Min Late: 15% of monthly AMC Charges.	
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2	Penalty for late rectification imposed as per following clause:- <table><tr><th>Minor EI</th><th>Major/Critical EI</th></tr><tr><td>0-2 Hrs: Grace Period 2-3 Hrs: 25% of monthly AMC Charges. 3-4 Hrs: 50% of monthly AMC Charges >4 Hrs: 100% of monthly AMC Charges</td><td>0-1 Hrs: Grace Period 1-2 Hrs: 25% of monthly AMC Charges. 2-3 Hrs: 50% of monthly AMC Charges >3 Hrs: 100% of monthly AMC Charges</td></tr></table>		Minor EI	Major/Critical EI	0-2 Hrs: Grace Period 2-3 Hrs: 25% of monthly AMC Charges. 3-4 Hrs: 50% of monthly AMC Charges >4 Hrs: 100% of monthly AMC Charges	0-1 Hrs: Grace Period 1-2 Hrs: 25% of monthly AMC Charges. 2-3 Hrs: 50% of monthly AMC Charges >3 Hrs: 100% of monthly AMC Charges
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3	Penalty for missing the periodical schedule of maintenance imposed as per following clause:- 5 % of the per day AMC charges of the station for per day delay after 7 th day of scheduled date of that equipment. In case equipment fails leading to failure of the system, then 100% per day AMC charges should be imposed as penalty including for extended 7 days also. (Not more than 7 days and for 2 times only in a year for each system).					
4	In case failure analysis report is not submitted within 10 days a penalty of Rs. 10,000/- (Ten thousand rupees only) is imposed.					
5	Failure not affecting train operation: Once Engg reaches at site he should analyse the failure and rectify it within 10 hours on getting permitted by railway so that train operation is regulated least unless essential otherwise penalty of Rs 2000 per unit per day will be levied till the date of failure rectification. In case such failure require software alteration same should be planned with permission of Railway as per urgency and date fixed otherwise penalty of Rs 2000 per unit per day will be levied till the date of failure rectification.					
E. Spares management						
1	Store of AMC engg is jointly checked quarterly.					

2	<p>Deficient material is recouped within one week. Failing which penalty of Rs 500/- will be imposed on daily basis and if due to shortage of material failure prolongs than the penalty of 100% AMC charge of the station will be imposed.</p> <p>(Contractor shall maintain sufficient number of Buffer stock for each Module/PCB/Cards/sub systems/ parts/components or any other item like Modem etc. (subject to minimum two) available with Service Engineer to attend the failure. Joint checking by Rly supervisor with AMC engg should be done quarterly. Deficient material to be recouped within 7 days.)</p>	
3	Replacement of cards/modules with RDSO approved card/modules only. If RDSO specification and approved source is not available, the component shall have "Guarantee cum Test/Inspection Certificate of OEM".	
4	In case of urgency, if spares are taken by firm from Railways, these will be issued by Railway as per availability in the interest of safe and punctual running of trains, but with imposition of Lumsum penalty of Rs 2000 per unit per day till the date of return irrespective of the cost of the spare is recovered.	
5	History sheet of all cards & modules existing or replaced for each equipments at stations. Whenever cards/modules are replaced/ repaired, the same shall be updated in the History Sheet of the equipment under AMC, is prepared.	
<u>F. Generated error logs and corrective action taken</u>		
1	Error logs are analysed & log are saved on clouds/server.	
2	Firm has submitted requisite report detailed analysis within 10 days and rectification/ remedial action should be taken within next 7 days.	

G. Reports/ check list etc		
1	Check whether All Failure Report letter, Analysis details & dates are available with the bill.	
2	Check whether List of all faulty cards/equipments replaced attached in file. (Station/date with S.No. of Cards).	
3	Check whether List of all faulty cards/equipments replaced are attached in file. (Station/date with S.No. of Cards).	
4	Check whether All checklist/Reports of AMC visits (Monthly and Quarterly checklist) with AMC register copy attached.	
5	All the recoveries mentioned in various paras made from the bill, if any.	