ANNEXURE V- TECHNICAL SCOPE/ SPECIFICATION/ SLAs

Bharat Petroleum Corporation Ltd (BPCL) invite an on-line electronic bids under two-bid system (Technical and Price) from eligible tenderers/bidders for the work to be done across India as per the details given below:

1	**BPC Tender Ref. No.**	**1000359962 (e-tender no. 78366)**
2	Name of work	Services for providing end-to-end solution for providing new GPS/GSM Module (GPRS Mode) based Vehicle Tracking System (VTS) and shall include – De-installation of about 13,250 Vehicle Tracking devices installed on tank lorries, and installation, commissioning, testing and integration of new Vehicle Mounted Unit (VMU) and Voice Box (VB) for voice announcement in two languages (configurable), on existing 13,250 tank lorries plus 2,500 new tank lorries to be inducted during next five years, providing hardware/software, Servers, Software application, arrangement with Mobile Network service provider with procurement of SIM card, Web hosting services, integration of system with BPC existing ERP (SAP) system, Depot Automation System, EM Lock Systems, Analytics Center of Excellence and Command & Control Center, real time tracking, providing and analyzing customized exceptions / violation reports thru 24x7 Web support, operating and maintenance of system, positioning of qualified technicians at 91 existing locations all over India for day-to-day maintenance and operations, online training to staff once in two years at 91 locations, route mapping (electronic) of existing/new Retail Outlets (including geo-fencing of Depot/Installation & Retail Outlets) and mapping/digitalizing important land marks, providing VTS system access through login ID and password to 25,000+ existing users and 4,000 new users to be inducted during next five years, providing system generated monthly uptime / visibility reports for payments, and all allied activities/services required for management of VTS on the above mentioned number of Tank Lorry fleet based at various Retail Supply Locations situated all over India.

ADDITIONAL TERMS & CONDITIONS

Following are the Commercial Terms and Conditions that each tenderer must abide by before submitting their bids:

2.4 Price Bid

(a) BPC has about 13,250 existing tank lorries operating at present and around 2,500 tank lorries shall be inducted during next five years. New VMU/Voice arrangement are to be installed with allied activities on these tank lorries and Vehicle Tracking System to be operated and maintained during the entire contract period of 5 years. For details of scope of work, kindly refer the Conditions of Tenders in this tender document.

(b) The tenderer shall quote **only one single and composite rate per tank lorry per month**, for end-to-end solution for all the services and allied services/activities required for Vehicle Tracking System as mentioned in the scope of work and terms and conditions mentioned in the tender document. The tenderer should quote firm price/rate inclusive of all Taxes, Duties, Levies, Personal Tax, Corporate Tax, Toll Tax, Octroi, Cess, packing and forwarding charges, freight, transportation charges, Transit/Storage Insurance etc.

GST % should be quoted in the GST column mentioned in the Price bid.

(c) No escalation in the quoted/accepted rate shall be allowed on any account during the contract period.

(d) Once the offer is accepted and agreement executed by the successful tenderer, the rates shall be valid till the completion of contract period in all respects and no escalation, whatsoever, will be entertained on any ground.

(e) There is no firm commitment from BPC and it reserves its right to reduce or increase the quantities indicated during the contract period. The successful tenderer shall not be permitted to revise the rates quoted for such increase or decrease in the quantity. BPC shall not be liable to pay damages/compensation for such increase/decrease. BPC reserves the right to increase/decrease the work order quantity at the time of confirmation of order.

(f) It is in the clear understanding of the Tenderer that the complete scope as defined or as may be required for the intended objective of this tender, is included in the price quoted in price bid. No extra payment, apart from the quoted price, will be made in order to achieve the intended objectives. Reasons like, Tenderer having not envisaged/considered a particular activity or element of cost required to be carried out for achieving the intended objective or some activity not specifically mentioned in the tender enquiry/tender but required to be carried out for achieving the intended objective, will not form basis for considering extra payment.

(g) Any other instrument/equipment/service, which is not explicitly mentioned above or in the scope of work but deemed necessary for the successful operation of the system, complete in all respects, shall be in tenderer's scope.

(h) No extra payments will be made for working on extended hours/Saturdays/Sundays/Holidays to meet the committed/required time schedules and services.

2.5 The Price quoted should include the following :

(a) The Price to be quoted for end-to-end solution for Vehicle Tracking System (VTS) and related services/activities as per scope of work given in the following pages of this tender, should be on the basis of landed cost and inclusive of cost of equipments, de-installation/installation charges including fittings (with wiring), commissioning, all transportation cost, all taxes, training, route mapping/geo-fencing of new Retail Outlets, manpower etc. Any re-installation as required due to maintenance/replacement or otherwise should be included in above. The cost of VMU/Voice arrangements includes the warranty for a period of 5 years from the date of commissioning.

(b) All service charges i.e. GPS/mobile charges if any/web support charges/service engineer charges/maintenance charges for hardware and software/generation& transmission of all reports/SMS alerts / e-mail message for auto generated letters / web access charges would be paid on a consolidated basis as monthly service charges per tank lorry/VMU. Reconfiguration in case of change of ownership of tank lorries is deemed as included in above.

(c) Route mapping of existing and new Retail outlets/consumers shall be mapped electronically by vendor using GIS high accuracy maps. En-route landmarks like temple, school, hospitals, Octroi/toll points etc. shall be indicated with its correct latitude/longitude. BPC Supply points and all Retail outlets/consumers geo fence areas shall be mapped in VTS system as per BPCL requirements.

(d) There would be no other charges payable other than that covered above. Therefore for proper functioning of VMU, if any process or activities/services not mentioned above but would be required will be considered as included by the tenderer in their rate.

(e) Providing access to all users (approx. existing 25,000+ & 4,000 new users) by creating Log-in IDs.

(f) Providing adequate field technicians to cater to all BPC supply locations VTS requirement (at present 91)

(g) Providing e-training through online workshops to all users (½ day sessions once in two years at each location i.e. minimum 200 sessions).

(h) For details of operating and maintenance of VTS system, the tenderer has to refer the detailed scope of services/activities, technical/software requirements etc. provided in this tender document.

2.7 Price Bid

(a) The price to be quoted in Indian rupee currency (INR). Bids quoted in any other currency shall be summarily rejected.

(b) The rates shall be inclusive of all taxes, duties, packing & forwarding charges, octroi, freight, transportation charges, transit/storage insurance, installation etc. No additional payment on any other account will be entertained.

(c) Taxes as applicable (i.e GST etc.),shall be paid by BPC and same should be indicated in the Price bid while quoting.

(d) No concessional tax rate forms will be issued by BPC.

(e) Once the offer is accepted and agreement executed, the rates shall be valid till the completion of works during the entire contract period in all respects and no escalation whatsoever will be entertained on any grounds.

(f) The VTS would be implemented at all the Retail Supply Locations of BPC. The rates quoted for the total scope of job, should be submitted by the Tenderer considering that all the expenses including travel, lodging, boarding, local travel and other expenses related to VTS are to tenderer's account. No extra claims on this account will be entertained.

(g) Rates shall include cost towards documentation for the entire system including detailed drawings, if required etc. No separate payment will be made for the same.

(h) The quantity/job mentioned above is indicative only and can vary. No adjustment in the rate will be admissible for above variations.

(i) Rate towards online ½ day training (total 200 sessions) to BPC personnel / Transporters / Retail Outlet Dealers/Consumers/Officers at supply locations of BPC shall be included in the price and no separate payment will be made for the same.

(j) It is in the clear understanding of the tenderer that the complete scope as defined or as may be required for the intended objective of this tender is included in the quoted price. No extra payment apart from the quoted price will be made in order to achieve the intended objectives. Reasons like, tenderer having not envisaged / considered a particular activity or element of cost required to be carried out for achieving the intended objective or some activity not specifically mentioned in the tender enquiry / tender but required to be carried out for achieving the intended objective, will not form basis for considering extra payments.

(k) No extra payments will be made for working on extended hours / Saturdays / Sundays / Holidays to meet the committed / required time schedules.

(l) After finalizations of tender, BPC reserves the right to increase / decrease the work order quantity at the time of confirmation of order.

(m) Any other instrument / equipment / service, which is not explicitly mentioned above or in the price bid or in scope of work, but deemed necessary for the successful operation of the system complete in all respects, shall be in tenderer's scope.

(n) Any benefit arising out of set off / refund / input credit of VAT/ST to BPC, will not be the basis of any price adjustment in quoted rates for price comparison between the tenderers.

(o) The position of lowest tender will be determined on the quoted price by the tenderer. The successful tenderer will have to submit the invoice to BPEC.

2.8 Payment Terms

(a) All payments will be made only in INR (Indian Rupee) currency only.

(b) All payments will be made by the respective Regional offices of BPCL for the works carried out at supply locations of BPC and as decided by BPCL within 30 days after the receipt of bill raised by the tenderer duly certified by BPCL. Bills shall be submitted in maximum lot size to optimize documentation. However, this shall be subject to BPCL's discretion.

(c) Payment to the successful tenderer through Electronic Clearing System (ECS) can be made, subject to agreement by representative banks of BPC and successful tenderer as per the existing system.

(d) No advances will be paid to the successful tenderer by BPC.

(e) The basis for monthly payments to Vendor shall be location wise VTS uptime and VTS Visibility % achieved for that particular month. The VTS uptime and Visibility shall be system calculated by the VTS system – tank lorry wise and supply location wise, duly acknowledged by the respective BPC Supply Locations. The monthly payment shall commence from the month of installation/commissioning of VMU/VB after obtaining installation certificate from BPC Supply Location, duly signed by BPC Officer, representative of Transporter and tenderer.

(f) The successful tenderer shall submit monthly bill to respective BPC Regional Offices (Mumbai/Delhi/Kolkata/Chennai) or as advised by BPCL along with copy of jointly signed installation certificate (as a proof of installation of VMU/VB) and location wise monthly system generated VTS uptime report.

(g) The monthly payment due to the successful tenderer shall be made within 30 days from the date of receipt of bills, complete in all respect.

(h) The rate of monthly service charges per tank lorry/device, shall be paid to the successful tenderer on the basis of location wise Up-time and Visibility % as under :

PAYMENT FOR UP-TIME

>95 % and above VTS uptime	: 100% payment
>90 % to <= 95 % VTS uptime	: 80% payment
>85 % to <=90 % VTS uptime	: 50% payment
<= 85 % VTS uptime	: 'NIL' payment

PAYMENT FOR VISIBILITY

>95 % and above VTS visibility : 100% payment
>90 % to <= 95 % VTS visibility : 80% payment
<=90 % VTS visibility : NIL payment

The monthly bill of the location (as per the tender quoted rates) shall be multiplied by the Uptime Percentage and the Visibility Percentage to arrive at the payment due.

(i) The details of sample monthly calculation of VTS uptime of devices has been provided in this tender document.

2.9 Taxes & Duties

The tenderers should quote the unit rate inclusive of all applicable levies, duties etc., but excluding applicable GST should be indicated in the Price bid while quoting the rate. GST % is given separately in Price bid wherein GST % should be quoted by the bidder.

2.10 Mobilization advance

No mobilization advance will be given for the tendered work.

2.11 Deviations in BPCL Tender Terms & Conditions as per Tenderer

Generally, in tender document deviation are not acceptable. However, in case tenderer desire to bring out the same, the details may be furnished in the draft provided in this tender document in the Deviation Annexure only **.**

4.0 Nature and Scope of Work /Specifications:

BPC has already implemented Vehicle Tracking System (VTS) on about 13,250 MS/HSD tank lorries, as on date operating under their Transportation Contracts all over India.

Now, BPCL, invites bids from technically and commercially competent and experienced tenderers for supply, installation, testing, commissioning, route mapping, operation, maintenance of new vehicle tracking system and providing analysis of customized exception reports for an end-to-end solution as per the scope of the work given below :

(a) Providing end-to-end solution for GPS/GSM Module (GPRS Mode) based VTS on existing about 13,250 tank lorries plus around 2,500 No. of tank lorries to be inducted during next five years.

These tank lorries (BPC owned, Retail Outlet Dealers owned and Private Transporters owned) are based at various BPC Retail Supply Locations situated all over India and are engaged in transportation of MS (Petrol), HSD (Diesel) and other products from various BPC Depots/Installations/Plants to BPC Retail Outlets/Direct Customers/Depots throughout India. BPC also may extend the VTS services to cover tank lorries carrying other products such as SKO/ATF/Lubricants etc.

(b) De-installation of existing Vehicle Mounted Unit (VMU) from the above mentioned number of existing tank lorries and seamless transition to the new system.

(c) Supply, installation, testing and commissioning of new Vehicle Mounted Unit (VMU) conforming to IP-67 (Ingress Protection), which includes internal GPS Antenna, GSM Modem, Microprocessor, Back up internal battery etc., on the number of tank lorries mentioned above.

(d) Supply, installation, testing and commissioning on board Voice Box (VB) i.e. voice announcement (safety related alerts/messages) system in two languages (out of total 20 language provision) and integrated with VMU on the number of tank lorries mentioned above.

(e) Providing hardware/software, servers etc require for smooth working of VTS.

(f) Integration of VTS with BPC existing ERP (SAP) system and/or Supply Location Automation System (TAS), EM Lock third party systems (one or more), BPC Analytics Center of Excelelnce and CCC (Command and Control Center)

(g) Providing software development, web application and web hosting for Vehicle Tracking System.

(h) Providing real time alerts through SMS/e-mail/ system generated letters/ Notifications to users.

(i) Providing 3 axis movement detection of tanklorries e.g. harsh braking/maneuvering, continuous driving, night driving, accidents etc, and transmitting the same to the concerned users.

(j) Providing violations of over speed, route deviation, unauthorized stoppages, power disconnection/tampering of VMU/VB etc. with provision for combination of violations as per requirement.

(k) Arrangement with Mobile Network service providers with procurement of SIM cards.

(l) Providing mobile application for VTS system for all internal and external users (Android & IOS)

(m) Providing web hosting uninterrupted services on 24x7x365 days basis.

(n) Providing real time tracking of number of tank lorries mentioned above.

(o) Providing customized exceptions report and transmitting reports/alerts through E-mail & SMS / Notifications to all concerned users.

(p) Operating and maintenance of vehicle tracking system.

(q) Providing access of VTS to existing about 25,000 and 4500 approximately users to be added during next five years (BPC staff, Transporters, Retail Outlet Dealers and Consumers)

(r) Positioning of qualified technicians to cater to all BPC Supply Locations (91 at present) all over India for day-to-day maintenance of VTS. Any new location commissioned during the tender period shall also be catered to.

(s) Providing location wise 2 No of VTS Online training (thru VC) of a half day duration to all BPC staff/Transporters/Dealers at 91 supply locations (at present) during the entire contract period.

(t) Providing system generated monthly uptime and visibility reports for payments.

(u) Digital Mapping of routes for all existing and new dealers /customers in VTS system with important en-route land marks such as hotel, school, temple, other Oil Companies Petrol Pumps, Octroi/Toll Tax points and digitalizing the same with co-ordinates, geo-fencing of Depots/Installations and Retail Outlets in Vehicle Tracking System.

(v) Liaisioning with BPCL Depots/Installations, Regional Offices and Head Quarter Offices of Retail Business Unit.

(w) Any other allied activities/services required for management of Vehicle Tracking System.

5.0 Requirement of Vehicle Tracking System

1. Providing Geo-Information System (GIS) based mapping, Global Positioning System (GPS) / GPRS (Global Packet Radio Service) based Tracking, Operating and Maintenance service of VTS for tank lorries on real time basis.
2. The system comprising a Tamper Proof Vehicle Mounted Unit (VMU) which includes GPS Antenna, GSM Modem, Microprocessor, internal backup battery mounted on tank lorries with a Voice Box for Voice Announcement / Alerts
3. Supply and maintenance of licensed software (provided by the Vendor) and hosting on cloud / servers at vendor premises for running VTS application for existing approx. 13,250 TLs plus additional 2,500 number of TLs to be inducted in the next 5 Years (Actual Total No's may vary by +/-20%). Minimum 90 days' live data logs data to be maintained in cloud / servers at vendor premises. 3 years backup / archive data should be stored by vendor and to be provided as and when sought by BPCL.
4. The performance of the web based system deployed as above shall be such that when user moves from one page to another page, it should be as below:
    - **a)** Login and display of Dashboard – 5 sec
    - **b)** Subsequent Pages – 2 secs
    - **c)** All Reports (1 month period) – less than 5 sec
    - **d)** The system shall also adhere to the general system requirement as per provided in below tender document.
5. Tracking and tracing of a vehicle (truck / tank truck) on Real Time basis. The update generated by the device should be updated at server within 60 secs.

Report shall be available device wise to identify the delayed update by the device / server.

6. The vendor shall take all necessary steps like change of device / service provider, change of internal parts of device etc. to ensure that the updates are registered in the server within 60 secs of generation in the normal circumstances. However, the no. of delayed update/data packets received from the devices will not be considered in the actual no. of received data packets for the calculation of uptime as per Annexure- 2(The data packet received with delay of more than 10 mins will be considered as delayed update). Any delayed packet in extreme cases of exigencies (Like Natural calamity, Govt. restriction etc.) shall not be considered for penalty to the vendor, if the vendor is able to establish that the same were due to reasons beyond his control. The onus of proving that delayed packet is not attributing to vendor, shall be in vendor's scope.
7. The location information of the vehicle to be obtained with high accuracy (min. 10 mtrs).
8. The system should be able to work on a mobile internet network, with option to fall back upon SMS messages wherever mobile internet network is not available. Configurable option for selecting SMS or GPRS should be available on the VMU or software.
9. Location of a vehicle to be displayed on a Digitized GIS Map.
10. Animated icons in different colors to represent vehicles. Loaded vehicles in motion to be shown in 'Green' & Loaded vehicle stopped in "Red". Empty vehicle in motion in "Yellow" and empty vehicle stopped in "Blue".
11. The system shall have the option of plotting the tracking of the tank truck for loaded and the return trip also. The plotting of the return trip shall be displayed with different color points. The direction of movement of the vehicle with arrow symbol shall also be displayed along with the data point for both To & Fro trips. All the violations shall also be recorded in the return trip also but shall be identified differently in reports.
12. VMS shall display vehicle registration no. and other details like consignee, invoice no., date, qty., speed, Lat-Long etc. on click of mouse over the vehicle icon and data packet point.
13. The system should facilitate sending and receiving messages to the Vehicle Mounted Unit for Health check of the devices. System generated report shall be available for the same.
14. SIMs procured for the VTS Project by the vendor should be capable of performing in typical Indian operating conditions which includes temperature variations, humidity etc. and SIM used shall not have any voice call facility.
15. The device shall have the voice Box which shall give real time audio alert to the driver for any deviations detected during the trip. The voice box can be integral part of the VTS device or can be separately integrated with VMU device. Specification of Voice Box is to be provided by the vendor basis given IP rating (IP 54 or above) and power supply range being 9 to 24 V DC.
16. The Voice box (including enclosure) shall be IP54 or above compliant and the vendor shall provide the necessary certificate to confirm the compliance.
17. The system shall be able to analyze the deviations done by the truck /tank truck/ TT driver and develop the risk profile of the TT/TT driver so that focused intervention / training by BPCL can be administered.
18. The system shall have provision for broadcasting specific pre-recorded/defined audio message through the voice box to the TT crews attached to a particular location in different languages. The voice box shall be able to broadcast in Hindi, English and Regional languages (up to 20) out if which upto two will be selected for a particular device depending on the Location where the Truck is based. BPCL shall provide the set of

languages to be configured in particular Truck's voice box to the successful vendor.

19. The system shall have provision to give alerts of an upcoming authorized stoppage point and accident prone zone to the driver of the tank truck thru the voice box. Real time alerts of Un-authorized stoppage, route deviation , speed violation, harsh breaking, night driving, continuous driving, etc. shall also be broadcasted to the driver of tank truck through the voice box and also on the Mobile Application with configurable settings.
20. The devices would transmit data to the servers using any of 2G/3G/4G wireless connectivity (with SMS fall back) as per the protocol provided in respective sections of AIS-140.
21. The vendor shall ensure data connectivity during the entire duration of the tender using any of the mobile network frequency bands as per GOI regulations in force.
22. Vendor shall have the option to select service provider for the SIM Card(s) for region/city wise mobile network connectivity. However, the network service provider should have maximum connectivity, even in the remote location/on roads/ highways/ hilly areas, so as to ensure that flow of data is on real time basis.
23. Adequate security measures should be built into the database / application to prevent unauthorized access and data tampering. Audit trail for any change / deletion of master data should be available with user id and time stamp.
24. Hardware protocol and its data field to be made available to BPCL for ensuring compatibility with other suppliers if the same need to be used for contracts by any other tenderer on expiry of the contract.
25. The vendor shall expose the tables of processed data used for generating any of the reports in the software to BPCL as and when required, for enabling BPCL to utilize such data for any integration with other BPCL application. BPCL shall pay no extra cost for utilizing this processed data and vendor shall extend all necessary assistance for utilizing the data.
26. The GIS / Google Maps layer of the application shall have Digitized Road maps covering the entire delivery area pertaining to each depot /terminal with retail outlets of BPCL and other prominent landmarks plotted. GIS / Google maps co-ordinates of loading locations and delivery points shall be provided by BPCL. However plotting of landmarks/ modifications if required, to be carried out by the vendor. The map shall contain the information of nearby police stations, Hospitals, Authorized Service centers, OMC installation etc. to contact for help in case of emergency.
27. There shall be provision to mark certain geo-fence as accident prone area/ sensitive area etc. and application shall be able to generate alerts thru Voice Box and exception report (Configurable speed/Stoppage limit violation) for that geo-fence area.
28. The system shall have provision to mark multiple location along the route as authorized stoppage based on the Lat-long and Geo-fence radius / Polygon and the system shall have capability to exclude these regions from deviation reports.
29. The system shall have provision to mark multiple stretch of a particular route as accident prone / sensitive zone through Lat-long and geo-fence radius/ polygon mapping and speed limit in such area can be separately configured.
30. The system shall have provision to mark toll tax plaza (marking of plaza will be done by Vendor) on the route and the system shall generate alert when the TT pass through the marked Toll plaza. Report for no. of crossings, time elapsed between two consecutive

crossings of same toll plaza etc. shall be available in the system.

31. The system shall have provision of configuring location wise speed limit.
32. The VTS device shall have provision to give voice box alerts for sudden acceleration/ Sudden braking / Sudden turning of the tank truck based on the logics defined and reports / alerts shall be generated for the same.
33. The application should have provision to generate exception reports & alert(e- mail & SMS/PUSH notification on Mobile application and Voice Box Alerts as per BPCL requirement) in the following logical events :
    a) TT deviation beyond 50 meters (Shall be configurable) from the geo fenced route. Real time voice alerts shall also be given through voice box in case of route deviation.
    b) Stoppage beyond a stipulated time period. The application shall have provision for generating voice box alerts / reports (excluding stoppages at Authorized stoppage points).
    c) In the event of simultaneous occurrence of both (i) and (ii) above
    d) The application shall provide location based stoppage / route deviation report i.e. the instances of route/stoppage deviation within the certain radius of a particular location/Lat-Long in the given period shall be populated.
    e) Trip time exceeding standard Trip Time which will be given by BPCL or Average Trip time of last 15 trips.
    f) Over speeding above a configurable speed limit. The system shall have provision to generate report on speed violation at particular accident prone / sensitive zone.
    g) Night driving report for a specified time within customizable zone wise specified time limits.
    h) Sudden breaking / Sudden Acceleration / Sudden Turning of tank truck.
    i) Removal or tampering of device.
    j) Power source removal and Battery Drain Alert (Low Battery)
    k) Application should check geo-fence of TT's at dispatch and receiving locations and should log events of tank truck entry and exit to these locations with the geo-coordinates
    l) The system shall be able to generate report for destination wise monthly/weekly average distance travelled per Trip and its comparison with actual planned distance, min. and max. distance for a particular period. Planned distance shall be taken from BPCL SAP system.
34. Report with details of Open Onward Trips (where the TL has not reached the consignee) shall be made available on real time basis. Provision for extracting the report at the end of each quarter end shall also be made available for previous periods.
35. The vendor shall be liable to customize and provide 30 No of additional reports as per the requirement of BPCL during the contract without any additional cost. Modification in existing reports will be in the scope of the vendor and it will not be considered as an additional report.

36. Geo fencing of retail outlets / customers to be done within a radius of 500 meters (Shall be configurable location wise from HQ level).The Lat-Long of the Supply location & receiving location will be provided by BPCL. The provision shall be available to update the Lat-long and Geo-Radius of the supply point / destination point from the VTS system user interface through authorized users.

37. The system shall display on map the clusters of TT approaching the terminal in return trip. Also shall provide ETA based on the average speed of the TT and distance. The same data shall be available in a report / table format in the user interface with ETA time slots and count of vehicle
38. Geo fencing of the routes to be done with a radius of 50 meters from the center of the road on either side.
39. BPCL shall provide the Geo fenced routes data (soft copy) which needs to be integrated into the VTS software application. The tenderer has to integrate existing details of routes in his application.
40. The software shall have a provision to provide multiple authorized route forthe same destination and deviations to be calculated accordingly.
41. The system shall be able to plot the delayed updates (Update delayed upto 7 days) received from the device in the closed trip and thus modify the deviations alerts / reports accordingly on retrospective basis.
42. The Geo fenced route is to be shown in 'Green' trace. The movement of the vehicle from supply locations to retail outlet/customers is to be shown in 'Red' trace while the movement of the vehicle returning empty from retail outlet/customers back to the supply locations is to be shown in 'Blue' trace. In case the path travelled by a TT is identical to the geo-fenced route, application should show parallel lines distinctly.
43. The system shall provide online access based on authorization through portal /Mobile application to the owners / authorized representatives of transporter / dealer trucks and destination customer to monitor the relevant truck and trip data and generate reports. The provision of tracking previous trips (for Configurable durations) shall also be available for transporter / dealer trucks & Customers for their trips.
44. The system shall provide log of individual user logins / duration with date and time stamps etc.
45. The software shall have tracking provision to track and map routes for multiple delivery point consignments.
46. User (administrator) interface to add, modify, delete master data in the system. Application shall have role based menu for different users. The roles and level of access shall be provided by BPCL.
47. The system shall have device wise report showing the entire life cycle since inception to expulsion with details of dates, user and action.
48. The system shall have the provision of sending the link of the planned route through the SMS link /Push notification to the Transporter/TT crew mobile for the trip allotted to them on their registered mobile no. mapped on VTS Portal. The link shall be such that on clicking it, the mobile device shall automatically directed to the GIS / Google Maps application/ VTS Mobile app and the TT crew / Transporter can track their tank truck movement on the GIS / Google Map. The details of Trips like destination, standard trip time, allowed stoppage and authorized stoppages enroute shall also be displayed. The application will then provide en-route guidance to the driver by showing the authorized route (with Live Location and ETA) to the destination along with the standard trip time, accident prone zones and Authorized stoppages falling in the way. The driver / transporter shall be alerted in case of any deviations en-route thru the Mobile App / Voice Box. The mobile application shall provide a summary through SMS application/Mobile App push notification of the Trip Time along with the number of deviations when the trip completes / tank lorry reports back to the loading location after completion of a trip.

49. System generated Exception Reports for en-route VTS deviations & any other events as mentioned in above points to be sent to the location in-charges on a Daily/Weekly/Fortnightly/Monthly basis as decided by BPCL thru' e-mail. System should be able to provide MIS on trip times to each destination having details of minimum, maximum and average trip times, distance travelled etc. based on the data available in the system. The system shall also have provision for sending the alerts/MIS to the dealers/transporters/Customers thru E-mail & SMS/Push Notifications etc.

50. Vendor shall develop a mobile application with all the features described in the tender (compatible to both Android & IOS operating system). The application shall have necessary validation for access and provision for integration with BPCL Mobile Application.

51. The bidders should have ARAI (Automobile Research Association of India) certification for the hardware for Electro Magnetic Interference (EMI) / Electro Magnetic Compliance (EMC) and submit the certificates. The bidder shall also obtain any other testing or approval at a later date during the contract period at its own cost if required by Central Government or any of the State Government as an additional requirement for running the TT under their region. BPCL shall not pay any additional charges for the same.
52. The Bidders should have approval / no objection / exception from PESO for VMU to be installed on the TTs plying in the hazardous areas. Copy of the same to submitted along with the bid.
53. System should auto generate monthly uptime percentage of devices as per our requirement (as per SLA for uptime & visibility given in the Annexure-2). It should be interactive to facilitate necessary comments by the Location Incharge / Officers.
54. The system shall auto generate monthly average of the daily visibility percentage of the location (as per SLA for visibilty given in the annexure). It should be interactive to facilitate necessary comments by the Location Incharge
    / Officer on daily basis. The visibility for a day shall be calculated as the percentage of devices given update that day by the no. of tank truck with VTS fitted loaded that particular day.
55. The monthly service charge payable needs to be integrated with our SAP system for auto generation of payment vouchers for the VTS services after factoring the up-time and visibility percentage.
56. The VTS system shall also be integrated with the SAP system for auto generation of monthly deductions from the transporter bills. Monthly report on rejected transaction shall be available.
57. The VTS software should be able to populate the list of active no of VTS devices on any particular day.
58. Monthly / Quarterly report shall be available for the devices which have not got any trips and also of devices which are not able to meet the uptime requirement.
59. Provision of categorization of Trucks such as Dealer owned Trucks, Transporter owned trucks etc. to ensure that alerts specific to a category can be generated
60. Provision of categorization of Consignees such as Retail Outlet, Consumer, Depots etc. to ensure that alerts specific to a category can be generated
61. System shall calculate trucks idling after Loading / Unloading and loading / Unloading time taken by a Distributor/ Destination.

62. The vendor shall provide / Share the data populated by the VTS system/device in the format provided by BPCL IS team so as to integrate to various other system developed / used by BPCL.

63. **Complaint Logging, Monitoring, Servicing and Escalation**

a) The tenderer shall provide, round the clock Web Support on 24 x 7 basis (including all Sundays / Holidays) in order to register and acknowledge and initiate action (back end troubleshooting) on all complaints / service requests within 1 hour of receiving the complaint. This would include all matters for VTS device not communicating, supply, installation (replacement), maintenance, change of spare parts/SIM, all type of reports and alerts for resolution of all issues **within the period of 48 hours** of availability of the TL at supply location (excluding location specific closed days). For new installation of VMU the tendered shall ensure fitment within 7 days of raising the service request. All software / reports / exception complaints need to be addressed satisfactorily within 48 hrs of logging the complaint. All the VTS daily exception reports / violations (Force Close Trips, Exception Trips, SAP Vs VTS RTKM mismatch, Route Violation etc) shall be analyzed by the round the clock Web Support team and the root cause / corrective action shall be intimated.

b) If any service request is not resolved within 48 hrs (as defined above) in which Vendor is responsible to provide solution whether hardware repair/replacement / software issues, penal charges of Rs.500 per day from the 3rd day (Max. deduction shall be limited to Rs.5000 per service request) will be deducted from the monthly bill of the location for which the issue is not resolved. The system shall auto-calculate such instances and populate during the billing validation. Reasons not attributed to the vendor will be exempted basis certification from BPCL concerned.

c) Automatic Logging of Complaints – If a VMU fails to communicate with the Server (within a mutually agreed time interval), alerts regarding such devices should be generated at the server and reactive action, such as sending a reboot signal OTA, to re-establish the communication between the VMU & the central server. Visibility / Logs of such events shall be shared on the VTS Portal. Complaints shall be automatically logged in VTS Portal in the following events (if the above action does not restore the communication between VMU and Server within 10 mins):

- GPS Data not received for 10 consecutive minutes for onward trip when not in sleep mode. In sleep mode the complaint will be logged if GPS Data is not received for 30 mins (configurable)
- GPS Data not received for 30 consecutive minutes for return trip
- VTS offline and VTS failure exception events in EM Lock (presently Sterna Application) – Necessary communication protocol to be established with EM lock. The above complaints will get auto-closed as and when the device sends a live GPS time stamp on VTS Server.
- Battery Replacement - Battery back-up less than 12 hrs (to be calculated using Battery Low and Power Disconnect Alert)

d) The system shall have the service request portal in which all the issues can be reported and tracked thru Mobile Application. The detailed tracking of the service request along with report of time analysis of resolution shall be available. Escalation matrix shall also be implemented with the service request portal.

e) Every auto-complaint as well as manually registered complaints shall be given a reference number with time stamp. Vendor shall acknowledge the complaint via e-

mail within 30 minutes of logging the complaint. Vendor can assign their representative according to the type of issue (hardware / software).

f) In case of hardware issue, Vendor shall ask for physical availability of Tank Lorry, which Transporter / Location admin can mark in VTS web portal as well as mobile application. Marking availability of tank lorry will not be applicable for manually registered complaints. Once availability is marked, the complaint shall be resolved within **48 hrs** of availability of the TL at supply location (excluding location specific closed days).

g) Un-resolved complaints shall be automatic escalated to the next level.

h) Auto generated complaints shall be closed if live GPS data is received. Manually registered complaints shall be closed by the transporter or Location Admin after the receipt of live GPS data. Closure of complaint shall be recorded with date and time stamp. Vendor shall send an email to the Transporter and Location Admin. If a complaint is registered in particular Tank Lorry, no other complaint can be registered for the same tank lorry, until the earlier one is closed.

i) The VMU Unit of all the tank lorries shall be inspected / checked at least once in a quarter. Vendor shall submit an inspection report after inspection, which has to be jointly acknowledged in Mobile Application by the Vendor's representative, Transporter's representative and Location admin. Field service engineer of Vendor shall provide the list of Tank Lorries that he has attended / complaints resolved on monthly basis to Location Admin.

j) Vendor shall provide an option for installation and de-installation service requests in their web portal and mobile application. Location admin can log installation/de-installation service requests. Vendor shall assign service engineer for installation/de-installation of VMU units from the tank lorry. Vendor's Service Engineer shall submit installation/de-installation certificate jointly signed by them and Transporter's representative to Location Admin

64. Presence of services of the tenderer across the length and breadth of States/UTs on Pan India is required. Franchise and dealers or any individuals operating on behalf of tenderer shall not be considered as offices.

65. Vendor will provide facility on mobile app (separate / integrated with existing BPCL APP) and web portal to view the live comparison of actual route vs approved route against inputs of TT No / Load No / Customer No. App will also provide continuous plotting of actual route against approved route when a TT starts from BPCL location for Driver to know if he is following the correct route.

66. User should be able to query any particular TL on the Mobile Application and Portal (using the numerical of the registration number) to populate the complete details of the TL i.e. Loaded / Unloaded, Latitude and Longitude and Location Name (Plotted on Map), Current Speed, On Route / Off Route, Trip/ Invoice Details, Transporter Details, Base Location etc.

67. The system shall also have provision for end to end Device management system of the devices.

68. The bidder shall provide at least 5% of the total device installed at location as spare device for immediate replacement of faulty devices which are taken for repair at no extra cost to BPCL. BPCL will provide space for storage of 5% spare of the particular location. Complete spare management module for the devices to be maintained in the VTS system by the vendor.

69. The tenderer has to peacefully hand over all BPC related data to BPC at the end of contract period in usable format.

70. Hardware protocol and its data stream, with other details ROs/Routes etc. to be made available to BPC for ensuring compatibility with other suppliers if the same need to be used for contracts by any other vendors on expiry of the contract, finalized with the selected vendor.

71. Non-Disclosure Agreement (NDA). The tenderer shall sign NDA with BPC for maintaining the confidentially of BPC data available with them and not sharing with the same with anybody

72. Performance Monitoring Reports of trucks/Device wise on the following parameters shall be made available in the VTS system for Individual Truck / Location / Territory / State /Region / All India:

- No. of Trips
- No. of Deliveries
- Quantity Delivered (KL)
- Distance Covered (KM)
- No. of Work days etc.
- Average distance (KM) per trip
- Average Delivery time
- Average Trip Time
- Total Deliveries
- Total Distance Travelled
- Total No. of Trips
- Daily Deliveries
- Cumulative Deliveries
- Route Report
- Speed Violation report
- Route Violation report
- Sudden Braking/Turning of tank truck.
- Night Driving Report
- Provision for search of truck without going thru lot.
- Uptime of the devices – day wise/month wise/location wise
- Any other parameter added at a later date.

73. System shall have provision for Auto generated letters for exception alerts in the format provided by BPCL and shall have provision to send these auto generated letters to Dealers/Transporters on their e-mail ID / Mobile Application.

74. Following trip data shall be picked up from BPCL ERP / TAS system & incorporated in the VTS application

- TL No
- Destination (Multiple destinations can be taken)
- Product
- Quantity of each product
- Trip Start Date & Time

- Invoice No & Date
- RTKM (SAP)
- Any other field

75. BPCL Master Data from SAP (Tank Lorry, Dealer / Consumer, Transporter, Distance, Crew, Plant, Product etc.) shall be cloned on VTS Server by pushing data on a daily basis. VTS Masters shall integrate this data and populate it on the VTS Portal separately for Active and In-active TLs / Dealers / Consumers.

76. **Action taken on violations:**

The system will send real time notifications (on Transporters Mobile App) and Voice Box alerts for all violations (configurable).

The system will send consolidated details of the en-route violations to the transporter for each trip (for both on-ward and return trip separately) thru Mobile Notification with provision for the Transporter to acknowledge. Provision for preventing Auto-Reporting of TLs (thru VTS in SAP) for TLs with pending violation acknowledgments.

The system shall have provision of sending system generated violation letters / App Notifications to Transporters in the standard format for repetitive violations as per ITDG or as defined by BPCL. Provision for locations to send system generated (digitally signed by officer) violation letters for individual / all violations with period selection option i.e. Daily / Weekly / Fortnightly / Monthly etc. Digitally signed Violation Letters for Fortnightly Repetitive violations (as per ITDG / Logic defined by BPCL) should also be enabled in location officer / In-Charge ID.

The system shall have provision of triggering flag for the action taken that can be integrated with BPCL ERP / Command and Control Center for further action.

77. The following are clarified:

a. The payment of subscription charges to network/ SIM service provider (BSNL etc.) at the time of installation of device to a tank truck for the first time and its routine renewal during contract period as necessary to run the VTS system as per BPCL requirement shall be borne by the Bidder.

b. In case a Transporter requires e-Receipt for the purpose of RTO related licenses / permits etc. pertaining to a later date after installation and commissioning of device, in connection with its submission on VAHAN portal etc. for his/ her licensing purpose for which fresh/ additionalpayment to BSNL etc. is needed, and without such additional/ fresh payment also the VTS would have performed as per BPCL requirement providing all data/ reports etc., then such additional/ fresh charges to network service provider (BSNL etc.) or to other agencies shall be borne by the concerned Transporter for which he/she will directly coordinate with the Bidder.

c. In case the device is lost /Damaged beyond repair/Device not returned and new device is to be installed in the same TT in order to run the VTS in the TT as per BPCL requirement, all the applicable network subscription charges (to BSNL etc.) for the new device shall be borne by the transporter. BPCL shall facilitate the vendor in getting the subscription charges from Transporter in such case.

d. This is further clarified that the bidders must consider the following payments from their end during the contract period and include in their quoted price:

i. 5 year (2 year at a time as per the prevailing norm) eSIM (embedded SIM) Subscription charges for each device.
ii. 5 year (2 year at a time as per the prevailing norms) Common Layer platform fee to BSNL/ other Authorized agency as per Govt. guidelines for each device
iii. Any other cost necessary to run the VTS as per BPCL requirement for generating the requisite data/ reports/ integration for each device

78. The devices installed in all TTs shall be configured in such a way that they send PVT Data at each instance of vehicle engine ignition ON and OFF. Also, in case of Ignition OFF and Velocity zero, device shall send minimum 3 PVT data (at normal frequency as applicable while the vehicle is running), before initiating Sleep Mode.

79. **OBLIGATIONS OF BPCL**

(a) BPC shall arrange to provide the Tank Lorries at BPC Supply Locations for installing VMUs/VBs.

(b) BPCL shall provide details of existing tank lorries (Approx. 13,250) for mapping in the VTS system.

(c) BPCL shall provide routes of existing Retail Outlets (about 13,250) with geo-coordinates/landmarks, geo-fencing details of Depots/Retail Outlets for route mapping to the successful tenderer.

(d) BPC shall provide, space for keeping VMU inventory at BPC Supply Locations, wherever possible.

80. **Vehicle Mounted Unit**

a) The vendor shall supply VMU devices conforming to Latest AIS -140 Standard.
b) VMU device shall be suitable to be fitted into the driver's cabin, particularly on the dashboard area of the vehicle.
c) The device must have a rugged enclosure suitable to Indian conditions. The VMU box shall be enclosed in a tamper proof cover which is water and dust resistant, conforming to IP 67 or better. The device shall have alert system for the device tampering and power disconnection. The sensors shall be such that it does not generate false alarms due to movement of TT.

d) The VMU/VB to be supplied by the tenderer shall have minimum 5 years of life expectancy from the date of Installations with 5 years warranty. During the pendency of the contract, in case of any failure of the VMU, the same shall be replaced by the tenderer at their cost.

e) VMU should conform to IP-67 (Ingress Protection) casing for environment protection from dust, water and casing should be closed with tamperproof uncommon screws.

f) VMU/VB to be fitted with tamperproof high quality screws/glue which should not be easily taken out.

g) The VMU/VB should have power surge protection device e.g. fuses of the highest standard to take care of excess power generation

h) The device shall operate with the 12V / 24V battery of the Vehicle. Additional auxiliary internal battery backup shall be provided with the device using rechargeable batteries and capable of providing back up of minimum 24 hrs. Change over from vehicle battery to device internal battery in case of disconnection from Vehicle battery and vice versa should be seamless without re-booting of VMU and without any time delay.

i) Vendor shall arrange replacement of VMU batteries not having min. 12 hours backup as and when it is noticed or reported at his own cost. Device battery health report shall be made available to identify and take proactive action for replacement of battery which are not having sufficient backup capability. Battery backup shall be calculated and populated using the timing of the battery low alert and the last Power DC alert and replaced accordingly.

j) Device shall facilitate GPRS data communication (e.g. every 1 minute and configurable) between VMU and web server. In case of non-availability of GPRS connectivity, data transfer will be through SMS in every 5 minutes (configurable).

k) The device shall have capability to detect sudden braking / sudden acceleration / Sudden turning based on the logics defined and communicate the instances immediately to the server & Voice Box alerts and real time alerts on mobile application .

l) The GPS and GSM / GPRS antenna modules shall be inbuilt, tamper proof & protected in weather proof enclosures, and be detachable for easy maintenance.

m) The device shall have provision to connect with the voice box for giving real time audio alert of deviation etc. to the driver.

n) Over the Air Programmable Positional Data Acquisition and data transfer shall be possible in the device for remotely upgrading firmware etc.

o)

p) Periodic health packets transmission from the devices shall be available.

q) Vehicle ID shall be Configurable through VTS Application.

r) Automotive grade tamper proof device installation for electrical wiring shall be ensured (fuses, right method of wire connections, gluing joint installations, etc.). Only fire resistant cables shall be used for installation.

s) Device shall have provision to store positional data during GSM Dark zones for future transmission of this data once the vehicle enters a GSM coverage Area. (Min. storage for 3 days).

t) The VMU device shall have a panic button (one number only) for sending a predefined

SMS to predefined numbers for sending SOS alert.

u) The VMU device shall have one spare serial port for any future use.
v) Device shall be compatible to12V as well as 24 V DC power supply from Vehicle.
w) VMU Device shall have minimum three Digital inputs and one analogue input.
x) VMU Controller shall be in power saving mode during Vehicle is in idling position (configurable time).
y) Device shall have configurable upload frequency from 60 sec to 300 sec for GPRS.
z) Device shall have interface for GPS, GSM, PC, Message switches & Status indicators.
aa) Suitable alert shall be provided if the device is removed from its installed position of the Tank Truck or tampered. Vendor shall use any suitable fail safe technology for the same.

81. **Software Functional Requirement**

A. Setting up the system

The following masters shall be defined in the system before deploying

- Master Details (HQ/ Region/State/Territory/Depot/ /Retail Outlet/ Customer/ Transporter/Dealers)
- Vehicle / Transporter Details
- Device assignment to the vehicle
- Device configuration (IP/Port/Data Upload Time)
- Detail of the transporters and TT crew.
- List of Users
- List of Roles
- Rights for the Roles
- Users assigned to the Roles
- SMS Configuration
- Products details
    - Diesel
    - Petrol
    - Kerosene/ATF
    - Black Oil
    - ATF
    - Lube
    - Any other BPCL Product

VTS System shall have a provision of cloning select masters from BPCL ERP system on a daily basis.

B. Validating & Maintaining a Route: The system shall be interfaced with GIS / Google Maps for integrating the geo fenced routes. The system would have a report in which the user can view each of the routes created and stored in the system. This would be shown on the corresponding map. The actual route taken by the TT would be stored in the application which can be used for determining the geo fenced route in case if the same is already not available. The software shall also have a provision to provide multiple authorized route for the same destination and deviations to be calculated accordingly.

C. Start of an Onward trip: The Start of the Trip is considered when the vehicle leaves for the trip after loading at the depot/terminal. Location wise suitable geo-fence radius will be defined

to cover all the points of movement of the tank truck with in location.

D. End of an Onward trip: The Trip is considered to be ended when the vehicle enters and is inside the Geo code of the last destination Retail Outlet / Consignee as per Invoice for a predefined duration (configurable).

E. Start of a Return trip: The Start of the return Trip is considered when the vehicle leaves the geo-fence radius of the destination. Suitable geo-fence radius (shall be configurable) will be defined to cover all the points of movement of the tank truck within destination premise

F. End of a Return trip: The Trip is considered to be ended when the vehicle enters the Geo fence of any of the BPCL loading locations.

G. Geo fencing: If the vehicle on a predefined trip along a route as defined above violates the route at any point by more than 50 meters (distance shall be configurable), a Push notification in mobile application would be sent by the system. When the vehicle returns back to the authorized route, the system would again send a Push notification in mobile application / Voice Box alert that the TT it is back on the route. The reports for all such instances and notification shall be available in the system.

H. Monitoring a Trip

During monitoring a trip, following would be available

- Live Tracking on a map with PVT Data
- List of instant SMS/Push notification given below
- List of alerts generated and available as a report
- The landmarks of nearest police station, Hospitals, garages, OMC outlets etc. shall be shown on map.

List of instant Email & SMS/Push Notification alerts: Application shouldbe capable of giving instant email & SMS/Push notification, Voice Box alerts upon following events. System shall have provision to start/stop alerts based on Hierarchy authorization.

- When vehicle deviates from its predefined route.
- When the trip starts / ends
- In case of Power Disconnect to VMU outside the Supply Location / Consignee
- VMU Battery Low
- When the driver presses the panic button
- In case of stoppage more than the predefined duration.
- In case of stoppage in violated route.
- When the tank truck reaches the loading location geo-fence and consignee geo-fence.
- In case of sudden acceleration/Sudden Breaking /other violation.
- Other alerts which are captured by VTS system can also be included on later date based on BPCL requirement.
- Software should be capable of specifying a different set of mobile numbers for each type of alerts & sending alert to different mobile numbers based on type of alerts.
- Any other alerts for the events captured by VTS system /functionality described in tender

document

- The above alerts shall also be viewed in reports

List of alerts generated and saved as a report

- Alert when Vehicle battery supply is disconnected
- Alert when Battery is discharged / battery is low.
- Alert when Driver presses panic button
- Vehicle Over speeding
- When the device is removed from its place.
- When the device is tampered.
- Voice Box Tampering
- Sudden Breaking/Turning of tank truck
- Night driving
- Any other alerts for the events captured by VTS system /functionality described in tender document

I. Reports

The system shall have a provision to generate Business unit (Retail, Lubes, Aviation etc) wise reports in the VTS system. The business unit of the tank truck shall be captured during the induction of TT in the VTS system. Reports are of two types:

- General (Listings/Print-Outs of the Masters in the system)
- Advanced

  These reports are used in the VTS system for tracking. They are as follows:

  - Vehicle Tracking
    - **<u>Live Tracking on map</u>**

      This report should display all the vehicles with their current movement status. The vehicle i.e. currently in transit can be tracked on the map. The zoom feature should be available up to 10 levels **(5 mtr scale in GIS/Google Map)** . The original path along with its geo-fence and actual path with direction arrow to be displayed. The application shall show the density wise clusters of vehicle at location. And shall have the provision for zoom In-Out. Quick search option for individual vehicle shall also be available.

      The application shall also display the returning TT moving toward the loading locations along with the clusters of ETA, which can be further drilled down to individual vehicle.

      The system shall also show the tracking of the returning tank truck with different colour and direction arrow of movement.

    - **<u>Replay Tracking</u>**

      Any trip upto a 90 days old, to be replayed in this report. Options to be available like Full Trace, fast, medium, slow, very slow etc. The original path along with its geo-fence and actual path taken by the vehicle will be displayed. Replay tracking window to also display Start time, End time, Max. Speed, Avg. Speed, Distance travelled, Total time, direction

of movement by arrow. The trail of the TT shall also be available in the replay tracking.

- Vehicle Movement
  - Vehicle Current performance
    This report to display average speed of total trips, maximum speed, avg. distance covered per trip, avg. stoppage per trip etc. by the vehicle for a date range.
  - Transit and Stop report
    This report to display the start time, stop time, intransit stoppage Lat/long and duration, Stoppage at Authorized stoppages , stoppages at a defined geo-fence etc.
  - Trip Summary
    This report gives the summary of the trips made by the vehicle in a date range displaying all the parameters captured during the trip for the truck . Eg-Distance plotted , distance travelled, unauthorized , route deviation, speed violations, trip time etc
  - Vehicle Trip Report
    This report gives the location of the vehicle on the map at the specified time given by the user. Can be used to locate the vehicle during any particular date/time
  - No. of Trips
    This gives the total number of trips taken by the vehicle in the specified time
  - Date wise vehicle Deviation reports
  - Vehicle wise Deviation reports
  - Event wise vehicle Deviation report
  - Vehicle deviation report wrt. particular geo location.

The system should be capable to populate the following reports / fields with drag and drop functionality (using Business Intelligence Tools) at different hierarchies of Plant, Territory, State, Region and HQ for a period of 3 Years. Transmission of select reports to the respective stakeholders as per the frequency defined by BPCL shall be ensured.

Trip Distance / Time, All Violations, TL Reporting, Toll Tax Points, Un-tracked TLs, Non-Reporting TLs, Filled TLs, Empty TL availability at Depots, VMU Spare Inventory, VMU Maintenance Record, Field Technician Attendance, Installation / Replacement / Repair of VMU, Route Mapping, VTS Up-time, Payment of Service Charges, Violation Action Taken, TL Performance, Complaint Management or any other Report that adds value to the effective working / monitoring of the VTS system.

After implementation and roll out, BPCL may ask for additional reports over & above the reports made available in the software & listed here as a part of our requirement. Vendor shall develop additional reports to the satisfaction of BPCL without any extra cost. Number of additional reports

to be developed will be limited to maximum 30 reports during the tender period. Modification in existing reports will be in the scope of the vendor and shall not be considered as an additional report.

The software and hardware of VMU/VB and VMU/VB so designed should be capable of giving the printed data on entry/exit time, halts, speed violations, route deviations, un-authorised stoppages, toll tax points/land marks enroute, time taken for the trip from the loading Supply Locations of BPCL to Retail Outlet Dealer/Direct Customer/Depot premises.

J. System Interfaces

The system interacts with the GPS device installed in the vehicle that sends the location details in the form as latitude/longitude data, while the vehicle is moving via the GPRS or GSM network. This information is received and stored in the cloud / servers at vendor premises.

The VTS system should be designed to communicate / integrate with BPCL SAP System, BPCL Terminal Automation System and Third party Applications – EM Lock Vendors and Command and Control Center in line with BPCL's IS policy in vogue.

- Currently the VTS Service Provider is pushing VTS data to EM lock Server at every 5 minutes interval. VTS device should be able to share / send data with EM Lock Servers and TAS / SAP at every one minute interval only when it is inside a particular geo-fence e.g. inside the supply location (configurable).

VTS Vendor may have to share real time data with more than one EM Lock vendor. Provision for segregation of VTS devices for sharing data with each vendor needs to be there in the software

K. User Interfaces

Login

The software gives a GUI (Graphical User Interface) to ease the complexity of the software and thus allow easy understandable access to the user. This allows the user to enter the VTS website and get access to all the resources provided by the software. Here the BPCL authorized user enters the user name and password and on authentication based on his Login Type, the system allows the user to enter the software system

In case of Admin users, the user shall be able to select the Business unit (Retail / Aviation / Lubes etc.) in the welcome screen for accessing. For other users the access will be limited to their specific Business unit only.

Retail Outlets/Customer/Transporter

- The access to Retail Outlets/Customer/Transporter will be based on BPCL Master which will be provided by BPCL.
- Will be able to view Vehicle details registered under his name
- Will be able to track vehicle during journey
- Will be able to view reports
- Will be able to respond for queries regarding the position of TTs on live basis over a mobile application

L. Menu

The user gets access to a simple menu, which gives him/her, an access to various modules and programs, provided by the software.

M. Report layouts

The user can generate reports various reports as well export them in Excel, Word, Pdf or HTML format. These reports shall be parameterized.

N. Tracking

This gives the user the live movement of the vehicle on maps. These maps show the exact location of the vehicle during its journey thus showing the route of the vehicle on the map.

O. Reliability, Availability, maintainability:

The system (Server , Software) shall work 24 X 7 without any malfunctioning with 99.99% uptime. Availability of server shall be monitored and alert shall be generated in case of any downtime.

P. User Documentation:
Vendor shall supply system operation and maintenance manual in English & Hindi in Editable format (MS word & Pdf). For Version Control, only the .Pdf file will be referred to

Q. Default Page (Dashboard):

The following information should be available in a graphical form on the default page and with the provision to further drill down and download as per user role:

- The system shall allow to select the respective SBU (Retail/ /AVAITION/ Lubes) immediately after login and then the system shall direct to main page containing details as below of selected SBU tank trucks.
- Total no of TTs fitted with VTS Total no of TTs giving live update on at user level on any given day.
- Total no of TTs loaded on any given day.
- Average deviation in speed / stoppage / route & total deviation per trip.
- Age analysis of no. of non-reporting Devices.
- Average uptime as per the calculation provided.
- Average Visibility as per the calculation provided.
- No. of TT within configurable distance of destination.
- No. of returning TT within configurable distance of location.
- The view may be further changed depending upon any specific requirement of BPCL.

The dashboard modification as per BPCL requirement from time to time shall be in the scope of the tenderer. No extra cost shall be paid for this modification.

R. Calculation of SLA :

- The uptime & Visibility calculation shall be auto generated by the system based on logic provided in this tender document.
- The application should have interactive mode for enabling the locations to select the reasons for non-visibility of T/T on any given day.
- The system should provide the inputs to ERP for monthly deduction based on the uptime & Visibility and accordingly generate flags & information for monthly payment voucher to the vendor.

Bidders Eligibility / Certificates & Declarations:

S.No.	Certificates / Declarations	Requirement
1	Certificate of registration as "Other Service Provider" with DOT	The certificate shall be issued by Department of Telecommunication, GOI before the due date of tender.
~~2~~	Vendor should have at least one Service Centre in India	Declaration regarding service centre in India to be provided with relevant document. (Annexure).
3	No Objection / Exemption Certificate by PESO for VMU device to be installed (may be submitted post bid)	Approval/ No Objection / Exemption Certificate by PESO for VMU device offered is to be provided before Proof of Concept.
4	ARAI Certificate for Electro Magnetic Interference (EMI) / Electro Magnetic Compliance (EMC)	Certificate from NABL or any other Govt. approved lab to be provided
5	Type approval of device as per AIS:140 latest edition	Certificate from ARAI / ICAT or any other testing agency approved by MoRTH.
6	Ingress Protection rating certificate for VMU device (IP 67 or above)	Certificate from NABL / CPRI or any other Govt. approved lab to be provided
7	Ingress Protection rating certificate for Voice Box (IP 54 or above)	Certificate from NABL / CPRI or any other Govt. approved lab to be provided
8	VMU device should be certified as Intrinsically Safe for Zone-1 Classification (may be submitted post bid)	Certificate from NABL / CMRI or any other Govt. approved lab to be provided before Proof of Concept.
9	Software security certificate	CERT certificate issued by Govt. approved authority for the software offered shall be provided
10	Declaration for using GIS / Google maps application	GIS / Google map licensee to be taken in the name of BPCL or alternately vendor to provide undertaking that "the vendor has all necessary permission in the map license to use it for BPCL as per subject Tender document & BPCL shall not be held responsible for any legal disputes in

		future for use of the map. Format provided in Annexure-
12	Parent company Guarantee	Guarantee shall be provided by a bidder which is a foreign company clearly stating that in case of failure of any supply or performance of the equipment, machinery, material, plant or in completion of the work the foreign company shall assume all obligations
		under the contract for warranties/ guarantees that may have been given by subsidiary company.
13	Technical Deviation sought in tender	No technical deviation shall be sought in the bid.

TECHNICAL SPECIFICATIONS:

VENDORS TO SPECIFY AGAINST EACH OF THE FOLLOWING SPECIFICATIONS WHEREIN BPCL'S REQUIREMENTS ARE GIVEN BELOW

The device supplied shall conform to latest AIS-140 standard.

- In case of non-applicability of any particular specification mentioned herein below w.r.t latest AIS-140 standard, the specification as per latest AIS-140 standard shall prevail.
- In case of mismatch in any specifications mentioned herein below & those specified in latest AIS-140 standard, the device meeting the min. specification as per AIS-140 standard shall be offered by the bidder

A. **GSM / GPRS (General Packet Radio Service) Module: Specifications :**

Make	Vendor to specify
GSM Frequency Bands	Quad Band 850/900/1800/1900MHz or VoLTE Compliant to GSM Phase 2/2+

GPRS Mobile Station	Multi slot Class 10, Mobile station Class B
Antenna	Built in antenna
SIMCARD Interface	3.0 V/ 1.8 V / STK 3.1

B. **GPS RECEIVER :** Specifications :

Make & Model No	Vendor to specify
Chipset	SiRF star III or better
Frequency	Vendor to specify
C/A Code	Vendor to specify
Channels	16 Channel all in view tracking
Sensitivity	-160dbm

Accuracy :

Position	6 mts 2D RMS WAAS enabled
Velocity	1 m/s
Time	1 user synchronized to GPS time

Acquisition Time :

Reacquisition	03 sec max
Hot Start	03 sec max
Warm Start	40 sec max
Cold Start	45 sec max

Dynamic Condition :

Altitude	5000 mts max
Velocity	120 km/hr max
Acceleration	4G max
Jerk	20m/s^3 max
Positive update rate	Lat Long logging every 1 sec

GPS Antenna Specification (collecting latitude / longitude from satellite)

Antenna	Active internal Antenna
Axial Ratio	< 5 dB max
O/P Impedance	50 Ohm
Amplifier	Low noise
O/P VSWR	2.5 max
Noise Figure	2.0 dB max

C. Vehicle Monitoring Unit Specification requirement

Functional Characteristics

Description	
Approval / NOC	Conforming to Latest AIS-140 standard / PESO and Intrinsically Safe Certification
Make & Model	Vendor to specify
Size L X B X H mm	Size of device shall be such that it fits into a Cuboid whose edges L/B/H are meeting the condition that L + B + H shall not exceed 600 mm.
Type of tracking	Real Time
Data transmission	GPRS/SMS
Hardware Configuration	Over the Air configurable
Data Management	Real time monitoring of data online
Server to device communication	If a VMU fails to send 10 consecutive packets to server, or no communication is established within a mutually agreed time interval, alerts regarding such devices should be generated at the server and reactive action, such as sending a reboot signal OTA, to re-establish the communication between the VMU & the central server
GPS & GSM Antenna Location	Inside tamper proof casing
Cabinet	IP 67 or above Compliant. Tamper proof.

Environmental Characteristic*s*

Description	**Rating**
Operating Temperature	-20 to +65 Deg C (Ambient Temperature)
Storage Temperature	-20 to +55 Deg C (Ambient Temperature)
Humidity	5 to 100% @ +40 Deg C

Electrical Characteristics:

Description	Rating
Power Supply	9 - 32 V DC
Reverse Polarity Protection	Reverse Polarity protection is required to protect VMU from a reversed battery connections.
Short Circuit Protection	Yes up to 3 A

Alerts:

Over-speed	Configurable over-speed alert
Power ON / OFF	Power ON / OFF (on secondary battery) alert

Low Battery	Low secondary battery alert
Geo Fence	Geo fence violation alerts
Tampering	Device opening alert
Sudden acceleration/de-acceleration /Breaking / Turning	Sudden acceleration/de-acceleration /Breaking / Turning alerts

Interfaces:

Serial	At least one RS 232
Digital I/O	Minimum 4 digital I/O ports, 2 IN & 2 OUT
Analog Input	Vendor to specify
Interconnection	Wherever required, vendor should facilitate interconnections to other vehicle mounted devices thru interface ports to enable other devices communicate over GSM / GPRS to central site and to receive data, such as GPS coordinates, from VMU.

D. Diagnostic LEDs:

Power	Different color for indicating Main Vehicle battery / Auxiliary battery operation
GPS	GPS signal indication
GPRS	GPRS communication indication

E. Auxiliary Battery with Charger : Vendor to specify

Type	Lithium
mA/h Rating	Vendor to specify
Dimensions	Vendor to specify
Back up time	Minimum 24 hours
Preferred makes	Vendor to specify
Cabinet	Both battery and charger shall be packed in sealed case. The battery shall be suitable to be installed inside VMU box with tamper proof wiring connection with VMU. Detailed circuitry of the auxiliary battery / vehicle main battery / VMU shall be discussed and decided with the successful vendor.

82. **TESTS & INSPECTION**

(a) Acceptance of all material/services shall be subject to inspection at tenderer's works by BPC. Manufacturer's test certificate shall have to be provided for all components of the system.

(b) All the tests, either on the field or at approved test house / outside laboratories concerning the execution of the work and supply of materials by the contractor shall be carried out by the tenderer at his/her own cost, if any.

(c) The work is subject to inspection at all times by the officials of BPC and/or by a Third Party Inspection agency nominated by BPC and inspection and acceptance of the work by BPC or Third Party Inspection Agency shall not relieve the contractor from any of his responsibilities under this tender/contract.

(d) Providing and operating measuring and testing devices (including all consumables) shall be at tenderer's costs. No separate payment for testing shall be made which are required to ensure achievement of specified quality.

83. **SOFTWARE REQUIREMENT :**

(a) The tenderer should ensure high availability of Software applications and data base with automatic fall over, using clustering or equivalent options.

(b) VTS should be a web based application for remote real time tracking.

(c) VTS should have the flexibility to work with any digital map, if needed.

(d) BPC's ERP (SAP) system and/or BPC Supply Location Automation System will be sending consignment details, electronically, (location/tank lorry No./Product/Consignment No./Date, Time & Quantity and other require details) on real time basis, as and when the tank lorry leaves the Supply Locations of BPC. The VTS should be capable to receive such information and integrate the tank lorry location (GPS data)/VTS system.

(e) The software and hardware of VMU/VB and VMU/VB so designed should be capable of giving the printed data on entry/exit time, halts, speed violations, route deviations, un-authorized stoppages, toll tax points/land marks en-route, time taken for the trip from the loading Supply Locations of BPCL to Retail Outlet Dealer/Direct Customer/Depot premises.

(f) The software should be capable of generating visual display of the tank lorry on its route on real time basis and real location print out of such display should be possible.

(g) The important land marks with KMs would be identified on each route from Depot to Retail Outlet/Direct Customer and software should generate real time basis position of the Tank Lorry. In case of route deviation, exceeding speed limit, un-authorized stoppages etc., reports/alerts should be sent through e-mail or by SMS to the officials of BPC/Transporters.

(h) For route mapping of new Retail Outlets, the important land marks enroute from Depot to Retail Outlets/Direct Customers, as mutually agreed need to be incorporated into the electronic mapping which falls on the route of tank lorry and should have defined land marks for loading Supply locations as well as Retail Outlets/Direct Customers/Depots.

(i) Provision for procurement of digital maps and conducting physical route surveys and geo-fencing for new Depot / Retail Outlet Dealerships / Direct Customer …

(j) Provision for dual route mapping from primary and alternate supply sources .This can be done on activation by the location.

(k) Provision for amendment of the routes already mapped with system logs and time stamp.

(l) Creation of Log-in IDs for officials of BPCL, Transporters and Retail Outlet Dealers/Direct Customers.

84. **SOFTWARE TECHNICAL REQUIREMENT :**

The proposed VTS server to be deployed by the tenderer will be hosted on either Tenderer's cloud or on Servers at Vendor Premises. In case the application is hosted on the cloud by the vendor it should be meeting the **Cyber Security Guidelines for Cloud Service. (i.e.The vendor shall host the proposed solution in the MeitY certified CLOUD within India).**

1. Application Development Platforms

1.1. VTS should have a centralized web based architecture, where all hardware & software components will be hosted at third party cloud arrangement / server at vendor premises and users will be accessing the application from their Laptops / Desktops / Thin-clients/ Mobile hand sets/TABs. No client-end software should be required other than a standard web browser.

1.2. The application should be equally compatible with latest two versions of popular browsers like Internet Explorer, Microsoft Edge, Mozilla Firefox & Google Chrome etc.

1.3. All custom built software components must conform to MVC architecture.

2. Application Performance

2.1. Time taken for Login and display of starting page of the application, should be less than 5 seconds. All subsequent Pages should load in less than 2 Seconds.

2.2. Any query / report response times exceeding performance timelines as suggested, above should be clearly indicated to the end user with a Progress Bar / animated image to avoid re-submit.

2.3. In case the response exceeds the expected response time, Time Out Message should be displayed for the end user and a qualified log entry should be created for administrator.

2.4. Time out refresh button shall pop-out before the time out and log off of the application for the user to acknowledge. On acknowledging the time shall again start and the application shall not log out.

3. Authentication Authorization

3.1. Applications should do cascaded user authentication using database of BPCL and any other database as specified.

3.2. The application should Call the Generic Web service for User Authentication.

4. Coding / customization

4.1. All references to other objects within a page / procedure should have only relative path to ensure application portability.

4.2. All DB Connections should be defined in a single configurable file (may be class file or xml) and should never be defined as part of the code.

4.3. Code should not have any values hard-coded. Any such data should be configurable through properties / configuration files.

4.4. Audit trail of information like Visitor's IP address, Internal and External (thru reverse proxy), Date, Time, user-id, Transaction details should be captured in the Application and made available thru front-end queries and reports. **This shall be limited to access by BPCL employee only.**

4.5. All customization of VTS application should be compatible with all future upgrades / updates to the VTS application.

5. **Cloud Service Provider (CSP)** must comply with all the below technical requirements if the application is hosted on Cloud.

a) The CSP should offer pre-configured, template images to get new VMs / instances launched or create an image containing customer applications, libraries, data, and associated configuration settings.
b) The CSP should provide both on-demand (i.e. pay-per-hour) and long term committed virtual machines / instances
c) The CSP should offer self-service provisioning of virtual machines and other services as a native service either through a programmatic interface (API/CLI) or through a management console.
d) The CSP should support automatic launching or termination of VMs / instances based on the parameters such as CPU utilization defined by users. The CSP should support auto scaling using custom metrics.
e) The CSP should offer encryption of data on volumes, disk I/O, and snapshots using industry standard AES-256 cryptographic algorithm
f) The CSP should be able to extend customer's datacentre to the cloud and enable communication with their own network over an IPsec VPN tunnel.

6. **Databases**

Applications must be based on any of the databases specified here and should be compatible with latest two releases of the listed databases. **Allowed databases are Oracle & SQL Enterprise only**. In case of any non-routine requirement of specific data for investigative purpose etc. , which is captured in the system but not available in the report form, the same shall be provided by the vendor without any extra cost in .xls / .csv / .doc formats etc. from the DB directly.

7. **Application look and feel**

Resolution should be made dynamic so that the application is properly visible in different screen size/ resolutions.

8. **Application Operating Environment**

VTS application should run BPCL has standardized on Windows, Linux, IIS, Tomcat, WAS (valid combinations) environment for its applications. VTS application should run in a similar environment.

9. **Backup, Archival & Purging**

Backup and restoration procedures, full or part, must be provided. Application should also have facility to Archive, restore and purge past data for any specified period, to facilitate purging of old data.

10. Application Monitoring & Diagnostics

Proper monitoring mechanism, such as dashboards with important application parameters, should be provided with the System with critical event alerts using eMail / SMS etc. Proper process has to be documented for trouble shooting / Fault handling.

11. Scalability

The solution architecture provided for VTS application should be scalable to meet the increasing load to 20% on the application (with further variance of another +/-20%) as specified in the tender.

12. Multi-Environment Setup

Applications will generally be hosted in different environments namely UAT , Production, HA and DR. After completion of successful UAT and certification of the same by BPCL, the application will be promoted to production environments.

13. Application Logging

The logs should be captured with adequate level of detail required for later analysis, while balancing the need to not adversely affect performance.

13.1. All user account management activity should be logged.

13.2. Every access control related events should be logged.

13.3. Changes to application configuration settings should be tracked.

13.4. Access attempts to application and underlying system resources should be logged. Application should save the logs to a different system. Else, once a systemis compromised, the logs themselves might be untrustworthy.

13.5. The security logs should be archived periodically.

13.6. Logs should be generated in standard formats so that the same can be analysed using popular log analyser tools.

13.7. The application should provide a log analysis console to view the logs and analyse them.

14. Application Security

14.1. OWASP (Open Web Application Security Project) standards should be followed in all the Programs in the Application and the Application should be free from all applicable risks of OWASP top 10 risks.

14.2. Application Servers should not redirect the Error Page Directly (404)

14.3. No Internal Server Error with the Server Configuration to be displayed on Error case (505)

14.4. Folder Access should be restricted.

14.5. Default Server Documentation examples should be removed

14.6. Static Files like Images / PDFs should have Authentication if applicable.

15. Security

15.1. Before deploying in production, a penetration testing & certification of the application

should be done by a CERT-In empaneled party.

15.2. A code review should be carried out by a third party and a certificate obtained that the software does not contain any malicious code. The said third party should be approved by BPCL.

16. Data exchange and interfaces

16.1. Any Interfacing with BPCL existing Systems will be provided thru ODBC or Web-Service. Method of providing data is BPCL's prerogative. In case BPCL is unable to provide interfaces as above, the required data will made available thru csv / text files.

16.2. All master information required in the application should be picked up from relevant BPCL applications on an on-going basis. Some of the relevant masters for VTS application could be Employee Master, Customer master, location master, Tank Truck master etc. In case application needs any other master information, vendor should coordinate with BPCL HQ team for getting master data or seek permission to maintain standalone master within the application.

17. Software & Software licensing

Software provided shall be 64-bit based application. Software shall be based on an operating system as defined herein.

- In case of Windows server minimum version of OS should be Windows server 2016, preferred version is Windows Server 2019.
- Application shall be on Windows 64-bit platform and support Windows 10 or above to meet requirement of operator work station. All involved software (like OS, Databases) should have proper support agreement with the OEM.
- The vendor shall deliver all required system and application software for a fully functioning system. Each shall be identified by the generic, off-the shelf name. The software provided by the vendor to operate the system shall be delivered in a ready to-run form, including all necessary utility programs and documentation.
- The system control at the central computer location shall be under a single software program control, shall provide full integration of all components, and shall be alterable at any time, depending upon the facility requirements. Reconfiguration shall be accomplished online through system programming, without hardware changes.
- The system shall use industry standard application development software and APIs.
- All software licenses shall be provided as per the requirement. Renewable or subscription licenses shall not be used.
- All software required shall be supplied by the vendor along with valid license issued in the name of the owner by the original manufacturer without an exception. Vendor shall not be legally permitted to hide any information or provide any undisclosed software/ hardware locks or provide any hidden password.
- The vendor shall ensure that updates and upgrades to the application software are provided and applied without any cost implication including those upgrades that are compatible to the customization of VTS including interfaces.
- The VTS Software shall be a highly scalable enterprise level software solution, capable of integrating with the BPCL ERP, TAS, TTLS and other BPCL applications.
- The VTS application shall maintain a full audit log of every change made to the VTS database, including all programmed and operator requested transaction history.

- The system shall provide an audit trail function that is intended to record all permanent changes in data configured by system operators. The audit trail shall record permanent changes made to the configuration database by manual operator data entry, import/export or other system controlled devices, such as portable data entry devices. Temporary changes, such as running a report, and querying the cardholder database need not be recorded by the audit trail function.
- All Audit Trail shall be date & time stamp along with User details.
- The Vendor shall provide the source code of all customizations, reports, applications, Database & table structures and interfaces to ERP, TAS, Command & Control Centre etc. and any other application to BPCL.
- The vendor shall conduct knowledge transfer sessions / training programs for BPCL, with the perspective of system administration and application management.
- All changes made in the application, data base or at any other place in the System shall be logged and shall be part of audit trail
- The database of application hosted should be in a different segment than the application.
- Direct administrative access should not be allowed to Databases.
- The application server/ database servers should be regularly updated/patched.
- The application server/ database servers should have an up to date antivirus software.
- The default credentials should not be used and the passwords used should follow BPCL IS policy .
- There should be mechanism to monitor the security/policy violations and application/ networked services availability.
- The logs generated viz. system, application, security etc. should be kept and backed up as per BPCL IS Policy for Backup.
- There should be mechanism to securely store information entrusted by BPCL
- System shall allow Operator to log in for specified time periods & the password shall be valid for limited time period

Software Licensing: All software components of the solution including VTS Application and any third party software components of the solution like Database, OS etc. should have appropriate licenses. Licenses for all the servers for UAT, Production, HA and DR site should be included in the solution and appropriate support subscription should be there for the entire service contract period. For any third party Software Components like GIS / Google Maps etc forming part of the solution, vendor is required to confirm the following:

a. Clearly identify list of all such components in response to the tender
b. Bidder to submit certificates that they are authorized to supply and distribute such components

18. Source Code Ownership

18.1. All source code pertaining to customization ofVTS application to meet BPCL's business functionality and to interface the application to BPCL's other business applications, will be property of BPCL and BPCL will have full copyright on the source code.

18.2. Vendor will pass on the required number of copies of such customization source code to BPCL on the designated media on commissioning of the project. Vendor will also provide the updated / modified versions of the customization source code after any changes, due to process changes or debugging, during warranty / AMC period. Vendor will not use the software code in full or part, as an application or as a module in any other application, for any other customer without written permission from BPCL.

19. Documentation and training

19.1. Vendor must provide role based training and hand-holding to Users/System Administrators/ Application Administrator for –

a) Handing over application versions to BPCL Administrators
b) Installation / updation into UAT environment
c) Promotion procedure to Production environment
d) Day to day operations

19.2. Vendor must provide training aids like manuals, presentations, exercises specific to each of the above groups and provide softcopy of the above. List of documents to be provided are -

Detailed Functional Requirements Document
Detailed Functional Testing Document
System Design Document (As built)
Role based end user Manual
Application Administration Manual
System Administration Manual
Installation Guide
Trouble Shooting Guide.

20. **Support for Software** – During the entire contract period vendor shall provide all the upgrades that will be available for enhancement of the application feature / performance without additional cost to BPCL.

21. Patent & Copyright Protection

21.1. If any third party claims that a Solution component supplied here under infringes a patent or copyright, the vendor will defend BPCL against that claim at vendor's expense and pay all costs, damages, and attorney's fees that a Court finally awards.

21.2. If such a claim is made, vendor to enable BPCL to continue to use, or to modify or replace the Product. If it is determined that none of these alternatives are reasonably available, vendor will then give BPCL a credit for such Product for the value of the order.

22. Additional IS Requirement

System Description

VTS shall have a centralized architecture with a centralized / cloud based third party hosted server system. It shall deploy a very high level of encryption technology, minimal points of failures, scalability & industry standard redundant architecture and an extremely essential

conformance to a well-documented failure-to-safety policy- framework. Vendor shall provide a robust Production server, a High availability Server, Disaster recovery Server and UAT server. Database server shall be provided with the latest version of MSSQ (enterprise 2014 or better)/Oracle. OS should be Windows 2016 Server Standard Edition as minimum and preferably Windows 2019 Server with latest Service pack. In case vendors comes with Non-Microsoft Technologies, OS / Database: Should be Latest-1 or Latest version Enterprise Edition. & appropriate support subscription should be there for the Service contract period. The System shall be scalable & modular and capable of handling at least 18,400 number of TTs (considering 20% variance in No of TLs). The System shall be load tested during the Factory acceptance test for the same.

System Integration

The system should be capable of interchanging data from and to the ERP system of BPCL to ensure that operational data are reflected both ways.

The System shall also have real time interface with the existing EM Locking System, BPCL Command and Control Center, Terminal Automation System, GIS /Google Map API, BPCL e-mail relay server & SMS service to fulfil the business logic. Bidder may use their own SMS service for sending SMSs as per requirement.

It will be under Bidder's scope to modify the internal (ERP, TAS, CCC) and external (EM Lock) interfaces if required in case of any change in system without any cost to BPCL during the contract period.

OWNERSHIP

a) The ownership of Hardware and Software shall be with the vendor. Vendor shall provide the source code for customization of the integration points as per BPC requirement. The Ownership of Hardware imply that the vendor is expected to ensure and maintain hardware adequacy to fulfil obligations under the tender and take the Hardware only without Data, at the end of the contract. Software Ownership imply that no liability to BPCL arises out of usage of any Software in the solution. i.e. The vendor must satisfy and Produced relevant documents to BPC that no violation of license of any software forming part of solution implemented.

b) It shall be obligatory on the part of vendor to handover all the customizations developed to meet their obligations under this tender etc. which cannot otherwise be met natively by non-customized solution's feature, capability etc.

c) In the case of this tender, BPCL will not take ownership of the customized code, but a right to keep and use such code without restrictions, because it is developed for us. Vendor will be free to integrate features/capabilities thus developed back into the parent product.

d) Handing over of source code does not absolve the vendor from the responsibility of delivering all functionalities expected as per tender – including reporting, management, integration etc, fulfilling BPCL's confidentiality, integrity and availability considerations, in a timely manner.

e) BPCLs shall not provide any Operating System level access to any of BPCL's systems.

f) VTS shall have a centralized architecture with a centralized cloud / server based third party hosted server system managing the Tracking the Trucks at various locations.

g) **Security Policy** For this tender scope, requirements to be satisfactorily fulfilled as per

BPCL IS security policy in vogue from time to time.

h) Software/Data Backup Policy

- All capacities, capabilities and consumables for backup, restoration & archival for the solution is to be planned and Included in the costing by the vendor.
- Backup must happen in a scheduled, unattended manner but adequately Monitored for success.
- Size of data which will impact the backup/archival solution choice, will be known to the vendor.
- RTO required by BPCL for this solution will be 15 Mins (max).
- Retention requirement operation logs will be one year.
- Production data be considered as two billing cycle's data, beyond which data may be archived.
- Periodic testing of backup efficacy and providing evidence to BPCL on demand is a deliverable.
- Unauthorized restorations should be prevented.
- Backup: is copy of such persistent data which, if unavailable or corrupted will challenge integrity of availability of critical Computing systems. Backup involves potentially slowly changing data having limited long term value.
- Archive: is copy of such data which are to be maintained off line and to be made available, if business needs it. They may fulfil statutory and business obligations. These involve non changing data which if maintained on their normal systems of persistence will result in safety, performance, capacity or confidentiality challenges. Off-site backup will be backup of replicated persistent data taken and maintained at alternate site.

The following is a non-exclusive set:

✓ Vendor will have to satisfy BPCL, as and when demanded, about not violating any software licenses forming part of the solution.

✓ Any changed / additional reporting and integration requirement demanded by BPCL be fulfilled within one month.

✓ Any security issue impacting confidentiality, integrity or availability of the solution be resolved in one month.

GENERAL SYSTEM REQUIREMENTS

- The system shall be capable of handling min 20% additional TTs over & above the number of TTs mentioned in the tender i.e. 15,750 No's. It shall also provide future system expansion capability, through the use of scalable hardware and software solutions and with the provision of non-proprietary external interface integration points for the database and application functions.

- Complete System design including hardware shall be in the scope of the Vendor. Vendor should provide all the necessary hardware/software/Cloud arrangements that shall include Production server, High Availability (HA) server, Disaster Recovery (DR)

server and User Acceptance Testing (UAT) server. The replication of data between Production Server and HA Server & DR Server will be the responsibility of the Vendor. All appropriate Licenses to be provided for UAT, Production, High Availability & DR. Centralized software component of the solution should run multiple concurrent instances without conflicts. At least one of such instance will be running at the DR Site.

- In case of OEM application / software does not support concurrent instance in Production – HA – DR architecture, it will be the responsibility of Vendor to provide alternate method of switching over from Production to HA or DR Server without any disruption in the services on 24X7 basis.

- Vendor is expected to ensure install adequate hardware to fulfil obligations under the tender and take the hardware back without any data at the end of the contract.

- All communication between Systems hosted in Primary Site and DR Site / Alternate site should be over TCP/UDP Ports over IPV4 and should not require dynamic ports or full network access.

- I/O response time of the Server through the entire Service contract term should be less than 1 mili-second. In case of Windows server, minimum version of OS should be Windows server 2016, preferred version is Windows Server 2019. Vendor is liable for all timely security updates and regular patch management. All servers should be running the anti-virus software with proper license proofs to be handed over to BPCL. All these servers should be compliant with BPCL IS Security Policies that may include regular VAPT (Vulnerability Assessment and Penetration Testing) of application code, critical patches released for viruses etc. **The System designed shall be robust & uptime of the system hardware should be at least 99.99%.**

- Time Taken for login and display of starting page of application should be less than 5 sec. All subsequent pages shall load in less than 2 sec. In case the response exceeds the expected timelines, Time out message should be displayed for the end user with a qualified log entry should be created for administrator.

- Vendor has to submit all the valid License proofs for hardware and software involved/used by the application, clearly mentioning the full support on any of the Hardware and software components. Any upgrade to the software license, Operating System, application or server will be in the scope of the Vendor during the Service contract period.

- The system shall have flexibility for up-gradation and expansion in all respects depending on future requirements with standard modules.
- If the System is having multiple applications the same shall be tightly integrated and shall have single access points

- All equipment's involved in the project has to use FQDN (fully qualified domain names) and not the IP Addresses for any communication or data transfers.

- Firmware upgrades to TT units / locks should happen via centralized application.

- All involved software (like OS, Databases) should have proper support agreement with the OEM.

- Users shall be accessing the application from their laptops/Desktops/Thinclients /Mobile / TABs by using any internet enabled web browser. No client end software shall be required other than standard web browser. The application shall be equally compatible with latest two versions of popular browsers like Internet explorer,Microsoft Edge, Mozilla Firefox & Google Chrome.

- User interface shall be interactive, aesthetic and shall be finalized in discussion with BPCL

- No value in VTS shall be hard coded. Any such data shall be configurable through properties/ configuration files

- Event & Alarm logging, Alarm filtering shall be available.

- Real time & historical trending shall be available. Historical trend should support possibility of comparing information of two different time intervals for graphical analysis

- Any customization of software done by the Vendor to meet their obligation under this tender, BPCL will have the right to keep and use such code without any restrictions.

- Vendor will provide adequate training and hand holding to BPCL team in understanding / interpreting data and its Structures generated by the system.

- Vendor will have to satisfy BPCL about not violating any software licenses forming part of the solution as and when demanded.

- Any changed / additional reporting and integration requirement demanded by BPCL will be fulfilled by the Vendor within one month.

- Any security issues impacting Confidentiality, integrity or availability of the solution to be resolved with one month.

System Architecture

- The system shall adhere to a centralized architecture, with centrally located application and database servers, connected to web-clients at remote locations.
- Network connectivity shall be via BPCL domain as allowed as per BPCL IS policy. Network communications shall utilize TCP/IP network communications protocol.
- Sufficient resilience / redundancy and logic shall be provided to assure that the availability objectives can be met without manual intervention. The hardware shall be designed so that there is **no single point of failure that can cause operations to be disrupted**. Failure Mode analysis shall be submitted by the Vendor along with System architecture in the technical bid.
- Two major components which affect performance are

  Database Server
  Communication server which pushes the GPS data coming from TTs to Database

  In both cases, Vendor may provide multiple database / communication servers each for different SBUs / Zones. Advantage with this architecture is performance degradation of one of the server pertaining to a particular SBU / Zone may not impact the other SBU/Zone.

- System components shall be independent and capable of co-existing on the system to allow for an increased level of capacity. Modular design and flexibility shall be provided for easy expansion of the system to the extent specified without degradation of the system's performance.

Application Security

- Relevant standards should be followed (preferably OWASP -Open Web Application Security Project) in all the Programs in the Application and the Application should be free from all applicable risks.
- Application Servers should not redirect the Error Page Directly
- No Internal Server Error with the Server Configuration to be displayed on Error case
- Default Server Documentation examples should be removed
- Static Files like Images / PDFs should have Authentication if applicable.
- Before deploying in production, a penetration testing & certification of the application should be done by an empanelled party.

Interface Requirements

- The VTS software shall be seamlessly integrated with BPCL's ERP system, Terminal Automation System, EM Locking, Command and Control Center and Analytics Center of Excellence (BPC) to satisfy the business logic. The design and development of an adaptor for such interface shall be carried out by the vendor.
- The vendor will manage the integration effort for systems interfacing including the following:

- Manage the design & development of all interfaces, including the development of Interface Control Documents (ICDs). The vendor will manage and control all ICD until sign off by all interfacing parties.
- Coordinate and manage online meetings/workshops thru VCs, to ensure all parties have a clear understanding of the interfacing requirements and the information to be provided from each party.
- Be responsible for developing and managing all interface test procedures until full integration is satisfactorily signed off.
- The integration work will include the provision of all necessary hardware and software, operational/production licenses, software development kits and any additional license required for the implementation, in order to undertake full integration.

The vendor shall be responsible for:

- Ensuring all operating systems and software purchased under their contract shall be compatible with and capable of implementation with the Integration Architecture.
- Attending all workshop meetings and contributing to the development of the ICD and provide any other information required for the system integration.
- Installing any additional interfacing software required for successful integration with the ERP, TAS etc. The vendor shall be responsible for the procurement and installation and commissioning of such software.
- Providing equipment and system software for testing during Factory Acceptance Test.
- Providing all necessary support and attendance for interface testing at Factory, on site testing and commissioning and service contract period.
- It is required that any error visible to the end user be friendly & useful for them in getting prompt resolution so that they'd be able to carry on with their activities related to the solution without any serious disruption.
- In many cases application / framework related errors and/or debug information get dumped on the user interface. Apart from the inconvenience to user, such messages sometimes reveal too much information about the system/data/metadata to extend of creating CIA challenges. It is desired that Unique error code be included in error pages should help developer as well as administrator to pin point the underlying situation/code for prompt resolution of issues.

SECURE APPLICATION DEVELOPMENT

Information security should be an essential part of the application systems development life cycle from the start. The secure development approach described here provides measures to incorporate security during various application development phases:

Secure Application Design considerations pertaining to access control and privileges, data encryption (in transit and local storage), and strong password and account-lockout policies should be included.

Multifactor authentication schemes.
Multifactor authentication schemes address the shortcomings of schemes based on traditional passwords, personal identification numbers, and secret questions which can be susceptible to guessing, dictionary, and brute-force attacks. They employ two or more independent factors as part of the user credentials and add another layer of security over the existing authentication process, thus increasing their strength. Therefore, controls such as onetime passwords, grid-based authentication, and digital certificate-based authentication schemes can to be considered to augment existing security controls in the application.

Transport-layer and data encryption.
Data encryption is a critical requirement for sensitive data at rest and in transit. Applications will encrypt sensitive data in transit end-to-end via SSL/TLS encryption mechanisms. On mobile device front, they must be able to support file and device level encryption. Mobile operating systems must provide encryption libraries which can encrypt data at rest.

Secure Coding Guidelines
Developer training and awareness of secure coding guidelines are vital to secure application development. Training must be conducted before the initial coding phase and should cover common Programming errors that introduce vulnerabilities. Developers should be following below mentioned security guidelines:

Perform secure logging and error handling.
Logging to the global log, logging commented code for debugging purposes, and performing poor exception handling can disclose sensitive information in applications.

Follow the principle of least privilege.
Correctly implementing the permission model provided by OS and following the principle of least privilege ensures sandboxing and isolation.

Validate input data.
It's paramount to implement input validations correctly and duplicate client side validations on the server side as well. It's also important to implement security controls for input validations.

Implement secure data storage.

Avoid storing sensitive data on client devices unless absolutely necessary and use standard encryption algorithms with strong key values instead of home- grown ones to encrypt sensitive data residing on devices or at the server backend.

Avoid insecure mobile OS features.
Insecure features such as "cut-copy-paste" and "auto completion" provided by mobile OSs can be exploited to extract sensitive data. Such features should be turned off in the application.

Security Assessments of the Applications

- All applications must undergo a thorough security assessment before being released into production to confirm that attack surfaces discovered during threat modelling have been addressed.
- Security assessment can also expose security gaps between project designs and approved corporate policies, which might have evolved during development, or problems resulting from the integration of different modules. A good approach would be to combine static (secure-code) reviews and dynamic analysis (also known as black box/grey box security assessments) of applications before they go live.

The system architecture deployed should be such that the entire VTS system works seamlessly with minimal response time (as defined in the scope of work) and Server Up-time and Application Availability of 99.99%.

Server and data base maintenance backup/restoration requires a detailed server administration in place. Smooth operations of the Server / Server maintenance and to ensure 99.99% up time is the responsibility of the tenderer. The server should be capable of taking the load for 5 years for approx. 18,000 tank lorries.

85. CYBER SECURITY GUIDELINES FOR HOSTING ON CLOUD SERVICE

a) The successful bidder should sign the **Non-Disclosure Agreement (NDA)** on Rs.100/- stamp paper (Non Judicial) from their competent authority as a compliance with BPCL's Information Security Policy.

b) The Vendor shall host the proposed solution in the MeitY certified Cloud within India.

c) The Vendor shall ensure that the Cloud should comply with security standards such as:

- **ISO/IEC 27001** (Information Security Management) OR **SOC 2** (Service Organization Controls standards for operational security)
- **ISO/IEC 27017:2015** (Code of practice for information security controls for cloud services)

d) The Vendor shall ensure that :

i. The access to the proposed solution shall primarily be restricted to **India Region** only.

ii. Network/ perimeter of the proposed solution shall be protected through **Firewall** and **Intrusion Detection & Prevention system (IDS/ IPS).**

iii. Cloud services shall be logically separated (of servers, storage, network and security infrastructure) to protect data, applications and servers and provide robust virtual isolation.

iv. All components, including Operating System (OS), Database server, Web server, application server, Network & Security devices etc., shall be hardened before deployment of the solution.

v. **Patching of all components** shall be done on periodic basis.

vi. Servers shall be protected through a leading **Anti-virus/ Anti-malware solution.**

vii. Data in transit shall be encrypted using **TLS** latest version and data at rest shall be encrypted in case of confidential data.

viii. The default Local Administrator accounts shall be changed. Also unused accounts shall be deleted/ disabled.

ix. Complex passwords shall be set for admin accounts (for all components) and should be changed periodically.

x. Vulnerability Assessment Penetration Testing (**VAPT**) and Web Application Penetration Testing (**WAPT**) shall be carried out at least once in a year by **CERT-In empaneled security auditing firms** and all Critical vulnerabilities should be closed within 3 days and High vulnerabilities within 7 days. VAPT should cover all components of the proposed solutions.

VAPT/ WAPT should also be repeated before roll-out of a major upgrade.

xi. Unused published web services/ APIs shall be taken down.

xii. Only specific service/ports shall be open for whitelisted IP addresses.

xiii. All outgoing access to public Internet from servers shall be restricted to limited IP addresses or URLs only as per the business requirement.

xiv. All types of clear-text protocols such as TELNET, FTP, etc. shall be disabled.

xv. Software with valid licenses & support shall be deployed.

xvi. If the proposed solution is Internet-facing, then it shall be protected through Web Application Firewall (WAF).

xvii. Backups shall be taken periodically.

xviii. Logging at all layers of devices shall be enabled and logs shall be provided for auditing/ forensic investigations as and when requested by BPCL.

e) Vendor shall ensure that necessary support is extended for incident analysis/ forensics in case of any cyber security incident.

f) Vendor shall make the audit reports and certifications available for scrutiny.

g) Vendor shall notify BPCL immediately on change or variations, if any in the above security conditions.

86. **OTHER REQUIREMENT**

A. **Functional Design Specification:** The successful vendor shall submit a comprehensive Functional Design Specification (FDS) after taking into account the complete functional requirement. Software development / customization work and installation shall start only after approval of the FDS by BPCL.

Vendor shall submit the Functional Design Specification which shall comprise of hardware design details, System Architecture, Business Logic, Workflow applications, User privileges, GUI, Dashboard Design, Reports format, System configuration, Data

acquisitions & transfer, ERP interface, TAS interface, TTLS interface, BPCL applications like e-mail & SMS Gateway, GIS/ Google MAP API etc. complete philosophy. **FDS shall be common for all Locations with exception scenario mentioned for any location as applicable**

B. **Factory Acceptance Test:** Software shall be tested at the factory on simulation for full load and shall be dispatched after clearance from BPCL. Vendor shall submit the test procedure at least 7 days prior to the acceptance test to BPCL for review and approval. Vendor shall resubmit the procedure incorporating the revisions, if any, for approval by BPCL. Factory test shall be conducted at Vendor's factory/Office. Duration of FAT shall be minimum 2 days. All approved screens, Business Logics, Workflow applications, Report Formats, Dashboard Overview, SLA logic, Data capturing from random TTs (approx. 5 Nos.) etc. shall be demonstrated in FAT as minimum.

2.27 TERMINATION AND OTHER APPLICABLE CLAUSES:

1. Title, Property, Damages, Losses:

At all times, all the Devices shall remain the property of the vendor and no right, lien or encumbrance shall accrue to the benefit of Transporter or BPCL. Transporter shall bear the risk of accidental loss, theft and physical damage of any kind to the Devices. In the event a Device is lost, destroyed or damaged beyond repair which warrants replacement, BPCL shall be liable to pay the vendor a Device Fee (and BPCL may recover the same from Transporter). The Device Fee in such case shall be considered as a Fixed Charge of Rs. 2000 + 50% of the monthly Subscription Fees multiplied by the outstanding Subscription Term (Subscription Term in this case will be considered as 30 months) . Vendor will provide a new Device within one week of payment of device fee & original subscription will continue.

2. Term and Termination.

2.1 This Agreement shall come into force on the date of execution mentioned hereinabove and unless earlier terminated shall remain in force for a period of 5 years.

2.2 Each Party may terminate this Agreement:

In the event the other party materially breaches its obligations under this Agreement. If such breach is curable, the termination shall become effective if breaching party fails to cure such breach within thirty (30) days from the date the breaching party receives written notice of its breach from the non-breaching party; and if such breach is not curable, with immediate effect upon written notice. It is understood that it is considered a material breach of the Agreement entitling the vendor to terminate the Agreement, subject to the preceding sentence and with the consequences set forth in Section 2.4 below if BPCL fails to make payments (except to the extent disputed) and the amount in arrears exceeds three months' aggregate Subscription Fees for all of BPCL's Subscriptions.

Immediately upon written notice by a party, in the event that any order of bankruptcy or like order is passed against the other party under any applicable bankruptcy or insolvency laws, or in the event that other party makes an assignment for the benefit of creditors, or

in the event that a trustee or receiver is appointed to administer the business or assets of said other party.

If BPCL terminates the contract without assigning any reason, it shall be liable to pay a Termination Fee as defined below:

a) In the event that the Device is not returned to the vendor, the Termination Fee shall be Rs. 2000 + 50% of the monthly Subscription Fee payable for such Subscription, multiplied by the number of months remaining in the Subscription Term (Subscription term to be considered as 30 months in such case).
b) If the Device is returned to the vendor, no Termination fee shall be payable.

The same shall also be applicable if any Tank Lorry ceases to operate in BPCL transport contract.

2.3 Termination for breach of Service Levels:

BPCL may terminate the Agreement forthwith and without any liability, if for any reason whatsoever the Uptime falls below the 90% threshold on a Project Level for any three (3) months within a six (6) month period.

In case of any Termination for breach of any Service Level, then HPCL shall not be liable to pay any Termination fee.

2.4 Device Recovery

If the Agreement is concluded / terminated, BPCL will return all Devices to the vendor taking due care to not damage or destroy them. Alternatively, BPCL may make the vehicles with Devices available to the vendor for de-installation of the Devices. Such de-installation shall be free-of-charge in the case of termination by BPCL pursuant to any Clause The Subscription Fee shall stop from the date of termination / conclusion, except for the liability to pay a percentage of the Subscription Fee for the balance unused term, as already specified in 2.3 above in case the device is not returned to the vendor.

SPECIAL TERMS AND CONDITIONS

Vendor to note that clauses mentioned in this Section shall prevail over similar clauses if any mentioned elsewhere in the tender documents.

A. Compensation / Penalty for delay in completion

In case, there is a delay in making VTS operational, within the above mentioned schedule completion time period, penalty as mentioned below shall be charged and recovered from the tenderer, LOI is liable to be cancelled and placed on an alternate tenderer at the risk and cost of the original tenderer, unless such failure is due to Force Majeure as defined or due to BPCL defaults.

For non-compliance of Service Level Agreement (SLA), the following penalty shall be levied and recovered from the successful tenderer's monthly service charges due to him/her or Security Deposit. For the purpose of penalty, the certification of BPCL official shall be final and binding.

Sr. No.	Details of Compensation/Penalty	Rate of Penalty
1.	Compensation for delay in completion/ commissioning of VTS system, in all respects on minimum 95% of the total tank lorries beyond 14 weeks from the date of acceptance of LOI.	Rs. 1 lakh per week beyond 14 to 20 weeks. Rs.5 lakh per week, beyond 20 weeks.
2.	Providing faulty/substandard VMU/Voice Box/Power Cables and its improper installation leading to dangerous occurrence/incident.	First Instance - Rs 10 lakhs (Ten Lakhs) Second Instance – Rs. 50 lakhs (Fifty Lakhs) Third Instance – Termination of contract.
3.	Non-availability of 24X7 web support system/service for more than 4 (four) hours continuously at any point of time, till the time it is restored.	Rs 5000/- (five thousand) per hour.
4.	Non-availability of web server beyond 6 (six) hours for whatsoever reason, till the time services are restored.	Rs 25,000/- (twenty five thousand) per hour.
5.	Breach of safety during execution of works within the premises of BPC/Retail Outlets/Direct Customers.	Rs. 10,000/- (ten thousand) per occasion for each violation.
6.	Delay in repair of VMU/VB beyond 48 hrs of logging of the complaint (subject to availability of TL) till the day of repaired VMU/VB is re-installed (excluding closed days of the location)	Rs. 500/- per day, per unit.
7.	Not maintaining min. 95% of VTS monthly uptime or visibility All India for a quarter	Rs. 5 lakh (five lakh) per quarter instance

	(applicable after 20 weeks after from the date of acceptance of LOI)	
8.	Non-installation of new VMU for additional TL and making it tracked beyond 10 days of providing indent for the same (applicable after 20 weeks from acceptance date of LOI).	Rs. 1000/- per day per TL
9.	Non-completion of online VTS trainings to the Location/PCVO/Dealers etc. on request from location on mutually agreed date.	Rs. 5000/- per location.
10.	Non-maintenance of minimum 5% inventory of VMU at Location (applicable after 20 weeks from acceptance date of LOI)	Rs. 1000/- per day per location.
11.	Erroneous system generated exception/performance reports, Established Wrong reporting / Non Reporting of VTS Alerts	Rs. 1000/- per instance.
12.	Non-returning of system protocol/other data to BPC after termination of contract.	5% of total contract value.
13.	Non-addressing all complaints registered (system generated and manual) within 48 hrs satisfactorily	Rs. 500/- per day per complaint
14.	Non-Analysis and reporting findings of system generated daily exception reports i.e. Force Close, SAP vs VTS RTKM mismatch, Route Violation, Exception trips etc.	Rs. 1,000 per day
15.	Non-Inspection of VMU / VB once in a quarter. Details of TLs not reporting shall be provided by vendor to BPCL.	Rs. 1,000 per device per quarter.
16.	Delay in sharing VTS data with EM Lock, TAS / SAP (beyond 5 mins) OR Sharing of wrong VTS Data with EM Lock, TAS / SAP which effects TL operations at either Supply Location or Retail Outlet / Consumer.	Rs. 1,000 per instance.

All sums payable by way of compensation/penalty shall be considered as reasonable compensation without reference to the actual loss or damage, which shall have been sustained

B. The contract will be valid for a period of 5 years from 01.04.2021 or from the actual date of rollout / implementation of VTS in the designated Tank Lorries. The contract shall be completely on OPEX model.

C. Vendor has to provide end to end solution for VTS application where Vendor will be responsible for maintaining uptime of the devices/application/server etc. & visibility of location at the required level basis which the payments shall be released.

D. The responsibility of the Vendor shall include

- Supply & installation of the devices on all the TTs plying at various locations
- Maintenance of the devices on regular basis. Repair/replacement ofthe same whenever required
- Procurement and management of SIMs
- Integration of routes provided by BPCL with the VTS, Geo fencing of routes and marking of additional way points wherever required.
- Providing application software, customization and maintenance of the same.
- Web hosting on Cloud / Servers at Vendor premises including Disaster Recovery (DR) site.
- Data Management and Liaising with the location in charges for analysis and management of Exception reports.
- Providing technical literature / brochure of all the components of the proposed solution along with the Unpriced Bid.
- Training for locations / offices as required & as mentioned in the tender
- Providing & maintaining service request portal and providing resolution of issues asap.

E. Whenever power and space are available in BPCLs premises, the same shall be provided, otherwise, the vendor shall make his own arrangements for generator and space for working outside the depot / terminal premises.

F. Whenever space is available, BPCL may permit the vendor to store their material

G. Vendor may procure SIMs from different network service providers fordifferent locations at their own discretion. However, SIMs are to be procured in the name of the vendor.

H. The successful vendor shall conduct a System Requirement Study (SRS) and submit the FDS (Functional Design Specification) document to BPCL. Software development / customization work and installation shall start only after approval of the FDS document by BPCL. The vendor shall also provide hardware design details in the FDS document.

I. There would be no other charges payable over and above those claimable under the line item in the Purchase order. Therefore, if any process or activities in addition to those mentioned in the tender document is required for functioning of VTS system as per tender requirement shall be considered as included by the vendor.

J. Creation of Login IDs and access control as described in the tender document for all stake holders.

K. SPECIAL PAYMENT TERMS

No advance payments shall be made to the vendor.

Payment of Opex cost of VTS : The total cost of the end to end VTS system shall be apportioned over a period of 5 years (60 months) as well as device wise and monthly payments shall be released location wise. Basis for full monthly payments shall be uptime of the devices & Visibility of location as described in Annexure 2.

System shall calculate & generate report on the uptime of the device & daily visibility of location. Based on the uptime of the devices for the month & average of daily visibility of location for a month, payments shall be released. The onward trips closed as per the logic defined in the tender between the first date of the month (Time 00:00:01Hrs) to the last date of the month (00:00:00 Hrs) shall be considered in the particular month for payment.

Calculation for determining uptime of the devices & Daily visibility of Location is as per Annexure-2.

L. ADMINISTRATION OF PAYMENTS

All SLA based payments to the VTS vendor and debit to transporters shall be done automatically by interfacing VTS application to BPCL ERP.

The monthly payments to the vendor by the Regional Offices will be done within 30 days from the date of receipt of bills depending on the SLA based system generated uptime of the devices & visibility of location.

Vendors shall submit the bills to the concerned regions for all the locations falling under the respective regions based on the number of TTs on which VTS & Voice box had been installed and depending upon the uptime of the devices & visibility of location.

M. **COMPLETION PERIOD :** Following are the major milestone envisaged in this project execution after the placement of PO :

Kick off meeting – Within 1 week of LOI /PO whichever is earlier.

Data Sheet approval / any other approval – 1week from the date of Kick off meeting

Functional Design Specification (FDS)– 1week from the date of Kick off meeting

Factory Acceptance Test (FAT) – 2 weeks from the date of approval of FDS.

Installation of VMU Device & Voice Box on 50% of Total offered TT

-Within 8 weeks of successful FAT / Intimation of BPCL whichever is earlier.

Installation of VTS Device & Voice Box on 95 % of Total offered TT

-Within 14 weeks of receipt of LOI.

N. Vendor should have at least 1 Service Centre in India.

O. **TRAINING**: The successful vendor shall conduct minimum half -day user training for BPCL Officers/Dealers/Transporters/Consumers through online platform for each location after installation and commissioning twice in a contract period.

P. **LIST OF LOCATIONS STATEWISE ALONGWITH INDICATIVE NUMBER OF TTs**: Refer Annexure-III

Q. **INTEGRATION OF VTS DEVICE WITH GOVT. AGENCIES**: The vendor shall do necessary coordination and Liaisioning with Govt./ Administration for licensing work w.r.t. AIS 140 certification as well as for development of integration with Govt. web-sites/ servers if necessitated in future. No extra cost for the same shall be claimable by the Vendor from BPCL.

R. **Proof of Concept (POC)**: The vendor who are qualified in the Pre-Qualification Criteria will be called for display of proof of concept of the system proposed by the vendor as a part of technical evaluation. The list of parameters / features which are to be demonstrated by the vendor in the POC is provided in Annexure-IV and only if the Vendor system demonstration is as per the tender requirement the vendor will qualify for price bid opening. The vendor shall be ready for the POC within 2 weeks from date of intimation from BPCL for the POC.

S. **Functional Design Specification:** The successful vendor shall submit a comprehensive Functional Design Specification (FDS) after taking into account the complete functional requirement. Software development / customization work and installation shall start only after approval of the FDS by BPCL. Vendor shall submit the Functional Design Specification which shall comprise hardware design details, System Architecture, Business Logic, Workflow applications, User privileges, GUI, Dashboard Design, Reports format, System configuration, Data acquisitions & transfer, ERP interface, TAS interface, EM Lock Interface, Command and Control Center Interface and BPCL applications, GIS MAP API etc. complete philosophy. FDS shall be common for all Locations with exception scenario mentioned for any location as applicable.

T. **Factory Acceptance Test**: Hardware / Software shall be tested at the factory on simulation for full load and shall be dispatched after clearance from BPCL. Vendor shall submit the test procedure at least 7 days prior to the acceptance test to BPCL for review and approval. Vendor shall resubmit the procedure incorporating the revisions, if any, for approval by BPCL.

Factory test shall be conducted at Vendor's factory/Office. All approved screens, Business Logics, Workflow applications, Report Formats, Dashboard Overview, SLA logic, Data capturing from random TTs (approx. 5 Nos.) etc. shall be demonstrated in FAT as minimum. FAT shall be common for all the Location

U. Service Level Agreement

Vendor shall provide the following to BPCL for the term of the Agreement:

A. Service and Device

A turnkey solution in a fully outsourced software as a service model to meet BPCL needs, including delivery of Devices, hardware and software service interface, reporting, wireless data, map support and proactive Customer support for using the Service during the entire contract period. The Service aims to provide visibility of the vehicles in which the Devices are fixed and to provide carrier productivity enhancement tools to the BPCL. Any software, hardware, operation, network or service component that is required for the development, implementation, operation and sustenance of the Service will be part of the scope of work

Device: The Device integrates a GSM/GPRS modem, a GPS receiver, internal antennas, battery backup and an array of peripheral interfaces, in a robust IP67 outer casing package.

B. **Service Level:** The Services are provided to BPCL as well as to those transporters who have entered into a contract with BPCL to provide transportation services. BPCL and the vendor have agreed that 15,750 Devices (+/-20 % variation) will be installed on the fleets of various transporters of BPCL. The Service Levels will be determined taking into consideration all Services provided under this Agreement with BPCL.

i. Vendor shall provide an Uptime (as defined in a separate Annexure) of at least 95% for all Devices installed at BPCL. The monthly uptime to be provided for the devices is also set out in the said Annexure.

ii. Uptime formula is based on one (1) data packet from the Device: Uptime calculation shall not include the following (and packets lost due to these events shall be added to the packets actually received):

a. Engine off (vehicle idle time information will be available from the standard idle time reports),
b. Vehicle in maintenance,
c. Device Installation/De-installation as required by BPCL,
d. Decommissioning of a vehicle,
e. Message count losses due to Device theft from the vehicle or accident of the vehicle, and
f. Damage caused by force of nature, external causes, or act of any third party.

iii. Deviations of downtime calculation: Downtime due to device damage shall be counted against the Uptime. However if the vendor can show that these downtime are attributed to Transporter, price adjustment shall be suspended until a resolution has been reached

between the parties.

iv. Vendor shall provide a monthly report on Uptime computation based on definition in item (ii) above, i.e. for all Devices installed. Furthermore and for information purposes, vendor will provide a report for all Devices installed for BPCL. Should a particular Transporter experience uptimes of 90% or less for a particular T/T, vendor shall deliver a detailed report within 21 days detailing all causes. Any issues related to the performance of the Devices shall be rectified during the course of the month by the vendor.

v. The monthly uptime details will be made be electronically available to BPCL. BPCL may audit or have audited Vendor's Uptime calculation, at their cost, within 90 days after the date Vendor submits the corresponding report.

vi. The tracking history and reports will be available for 1 year (online) and beyond 1 year in servers which shall be made available by vendor on request of BPCL.

vii. Vendor shall provide daily visibility (as defined in Annexure-2) of at least 95% at location level for all the device installed and operational on the particular day for the location. The average of the daily visibility shall be considered as the qualifying criteria for the monthly payment and if the monthly average of daily visibility for the month is below 90% for the location then the payment for that month shall be not done for that particular location.

viii The vendor shall provide, round the clock Web Support on 24 x 7 basis (including all Sundays / Holidays) in order to register and acknowledge and initiate action (back end troubleshooting) on all complaints / service requests within 1 hour of receiving the complaint. This would include all matters for VTS device not communicating, supply, installation (replacement), maintenance, change of spare parts/SIM, all type of reports and alerts for resolution of all issues **within the period of 48 hours** of availability of the TL at supply location (excluding location specific closed days). For new installation of VMU the tendered shall ensure fitment within 7 days of raising the service request. Any issue logged by the Transporter / Dealer / Company, including reliability issues with reports and data, should be promptly resolved by the vendor within 48 hrs.

I. Pricing

For each Subscription, BPCL shall pay to the vendor, the monthly Subscription Fee of Indian Rupees as finalized through Tender Process & as spelt out in Tender Terms & Conditions

J. Clarifications:

Prospective bidders/ vendors are encouraged to seek clarifications before bidding/ tendering so that there is a proper understanding of the contract, the Services which are to be provided and is expected from the Vendor and in order to address any issues which are not covered adequately under the tender terms.

A failure to properly understand the scope of work may entail substantial losses and risks to the prospective tenderers and they are advised to take particular note of the same.

K. Liabilities:

Neither party shall be to the other or to any third party for any consequential, punitive, indirect, special or exemplary damages or losses, howsoever caused and whether under the

principles of strict liability, equity or any otherprinciple of law. The maximum liability of either party under this Contract under a claim for damages shall not exceed the total value of the Subscription Fees for six months for all Devices fixed and installed by the Vendor on the vehicles of BPCL or its transporters.

L. Modifications : If after placement of Purchase Order and /or during the course of contract , certain issues arise which were not contemplated by the parties (for resolution) then both parties shall mutually discuss the said issues in good faith with a view to resolve the same

Duplication of Clause: Whenever there is duplication of clause either in the terms and conditions or in the Annexures in the entire tender document, the clause, which is beneficial to BPCL, will be considered applicable at the time of any dispute.

Annexure

VTS DEFINITIONS / TERMINOLOGY

VTS Tracking	It is the availability of "time, location, speed, ignition status, movement status" data of VMU/device installed on tank lorry (at given place and period of time).
Route	It is a set of latitude/longitude with defined important land marks from source to destination i.e. from BPCL depot/Installation to Retail Outlet (RO)/Direct Customers/ Other BPCL Depots.
Route deviation	Diversion of the Tank Lorry beyond the route geo-fence will be considered as route deviation
Halt/Stoppage	It is an exception generated by Tank Lorry when it stops at an unauthorized place during the trip.
Onward Trip Start / Trip Start Time	Trip start is considered when tank lorry leaves exit gate of BPC Supply Location.
Onward Trip / Consignment End	It is the time when tank lorry is inside RO/Direct Customer (destination) lat/long for a specified duration (configurable)
Return Trip Start	Return Trip starts when tank lorry leaves the geo-fence of the consignee on completion of Onward Trip.
Return Trip End	It is the time when tank lorry reaches back to any of the BPCL Supply Location geo-fence.
Onward / Return Trip Time	Time taken for Onward / Return Trip Completion
Authorized Halt Time	It is an allowable stoppage duration for Tank Lorry to take halt in a particular trip. Following are the authorized stoppage time durations with respect to scheduled distance for a trip (configurable) : Continuous Driving of 3 hours : 30 minutes.
Time Interval for Data Transfer	Positional Data (PD) at 60 seconds interval will be accumulated in one data packet and sent to server by GPRS mode in 1 minute intervals.
Geo-Fence	A Geo-fence is a geographical region that is defined and used to trigger an event when a user enters the region. Geo-fence is an imaginary electronic boundary around an area of interest so that alerts are available when a vehicle enters/leaves this area. Supply location, destination and authorized routes are inside a geo-fence.
Geo-fencing of Route	It is the virtual corridor within which the tank lorry is authorized to travel from supply location to destination (RO/Direct Customer). Presently, this is 50 meter wide (25 meter on either side of the route).

Supply Location (Depot) Geo-fence	This is the virtual circular area (400 meter dia approx. – to be configurable) around supply location. The centre of this circular area shall be the Lat/Long of the Tank lorry filling shed at location. This needs to be captured during route survey.
Destination Geo-fence	This is the virtual circular area (200 mtr dia approx. – to be configurable) around the RO/Direct Customer. The centre of this area shall be the lat/long of decantation of Tank Lorry area at the RO/Direct Customer. This needs to be captured during the route survey.
Scheduled Trip Time	Travel time (i.e. distance/avg. speed + authorized stoppage duration). Night Driving time to be excluded (configurable)
Online Tracking and Dynamic Status	Will give information at current instant place, date and time. Route and over speed exceptions once occurred will remain displayed in dynamic status report throughout the trip, till trip is closed.
Onward Trip Closure Auto Closure	Tank Lorry reaches Geo-fence of destination (PD of Geo-fence of destination received) and stays in the Geo-fence for more than 20 minutes (meaning non-receipt of PD from anywhere outside the Geo-fence of the destination).
Force Closure	Non-occurrence of auto-closure and Tank Lorry reaches the loading location again and a new invoice is generated for the Tank Lorry. Data of such aborted trips to be moved to a suitable table for analysis by Vendor.
Open Trip	Non-occurrence of auto or forced closure.
Replay of Trips	Will be only for closed trips.
Invoice Data	SAP data that is kept at a designated address for VTS of vendor to pick up. This data will be read only and is not posted, as multiple users require this data. So it is maintained at the designated address for pick up. Tenderer's servers will be authorized by BPCL for access of this data.
Online Tracking Screen Refresh Rate	1 minute.

Annexure

LIST OF BPC SUPPLY LOCATION (DEPOTS/INSTALLATIONS) WITH NO. OF TANK LORRIES (TLs) TO BE FITTED WITH VTS

REGION	STATE	BPCL SUPPLY LOCATION	NO OF VEHICLES (AS ON 01.09.2020)
EAST	ASSAM	NUMALIGRAH	551
EAST	BIHAR	BARAUNI	191
EAST	BIHAR	MUZZAFARPUR	202
EAST	BIHAR	PATNA	225
EAST	JHARKHAND	TATANAGAR	104
EAST	JHARKHAND	DHANBAD	120
EAST	JHARKHAND	RANCHI	153
EAST	ORISSA	BALASORE	114
EAST	ORISSA	BERHAMPUR	65
EAST	ORISSA	PARADEEP	320
EAST	ORISSA	SAMBALPUR	139
EAST	WEST BANGAL	RAJBANDH	145
EAST	WEST BANGAL	BUDGE BUDGE	177
EAST	WEST BANGAL	HALDIA	227
EAST	WEST BANGAL	HALDIA DISPATCH UNIT	29
EAST	WEST BANGAL	MALDA	48
EAST	WEST BANGAL	NJP	23
EAST	WEST BANGAL	RANGAPANI	235
EAST	WEST BANGAL	RONGPOO	42
NORTH	HARYANA	PANIPAT	144
NORTH	HARYANA	PIYALA	143
NORTH	HARYANA	REWARI	67
NORTH	JAMMU & KASHMIR	JAMMU	344
NORTH	JAMMU & KASHMIR	SRINAGAR	89
NORTH	NEW DELHI	BIJWASAN	94
NORTH	PUNJAB	BHATINDA	139
NORTH	PUNJAB	JALLANDHAR	83
NORTH	PUNJAB	LALRU	149
NORTH	PUNJAB	SANGRUR	113
NORTH	RAJASTHAN	JOBNER DEPOT	236
NORTH	RAJASTHAN	SALAWAS	191
NORTH	RAJASTHAN	BHARATPUR	32
NORTH	RAJASTHAN	KOTA	279
NORTH	UTTAR PRADESH	AONLA	65
NORTH	UTTAR PRADESH	BANTHRA (SAHAJANPUR)	67
NORTH	UTTAR PRADESH	BAITALPUR	97
NORTH	UTTAR PRADESH	GONDA	47

NORTH	UTTAR PRADESH	KANPUR	160
NORTH	UTTAR PRADESH	KARARI	74
NORTH	UTTAR PRADESH	MATHURA	300
NORTH	UTTAR PRADESH	NAJIBABAD	87
NORTH	UTTAR PRADESH	MUGHALSARAI	304
REGION	STATE	BPCL SUPPLY LOCATION	NO OF VEHICLES (AS ON 01.09.2020)
NORTH	UTTARAKHAND	KATHGODAM	112
NORTH	UTTARAKHAND	Haridwar	59
SOUTH	ANDHRA PRADESH	CHERLAPALLI	351
SOUTH	ANDHRA PRADESH	GOOTY	92
SOUTH	ANDHRA PRADESH	TADA	55
SOUTH	ANDHRA PRADESH	KONDAPALLI	95
SOUTH	ANDHRA PRADESH	ONGOLE	34
SOUTH	ANDHRA PRADESH	KAKINADA	21
SOUTH	ANDHRA PRADESH	VIZAG	239
SOUTH	ANDHRA PRADESH	WARANGAL	147
SOUTH	KARNATAKA	DEVANGONTHI	220
SOUTH	KARNATAKA	MYSORE	70
SOUTH	KARNATAKA	DESUR	176
SOUTH	KARNATAKA	GULBERGA	24
SOUTH	KARNATAKA	RAICHUR	81
SOUTH	KARNATAKA	HASAN	141
SOUTH	KARNATAKA	MANGLORE	198
SOUTH	KERALA	IRIMPANAM	405
SOUTH	KERALA	KOCHI REFINERY	54
SOUTH	KERALA	CANNANORE	54
SOUTH	TAMILNADU	ENNORE ETTPL	150
SOUTH	TAMILNADU	NEW ENNORE COSTAL	119
SOUTH	TAMILNADU	TONDIARPET	36
SOUTH	TAMILNADU	IRUGUR	125
SOUTH	TAMILNADU	KARUR	493
SOUTH	TAMILNADU	SANKARI	87
SOUTH	TAMILNADU	TIRUNELVELLI	92
WEST	CHATTISGARH	RAIPUR CUT	282
WEST	GOA	VASCO (ZOITL)	54
WEST	GUJARAT	NAVEGAON	129
WEST	GUJARAT	SIDHPUR	56
WEST	GUJARAT	KOYALI	107
WEST	GUJARAT	JAMNAGAR (VADINAR)	112
WEST	GUJARAT	KANDLA	133
WEST	GUJARAT	HAZIRA	106

WEST	MADHYA PRADESH	BAKANIA	81
WEST	MADHYA PRADESH	BINA	137
WEST	MADHYA PRADESH	RAIRU	62
WEST	MADHYA PRADESH	MANGLIA	195
WEST	MADHYA PRADESH	BHITONI	225
WEST	MAHARASHTRA	AKOLNER	76
WEST	MAHARASHTRA	MIRAJ	172
WEST	MAHARASHTRA	GAIGAON	135
WEST	MAHARASHTRA	MANMAD	361
WEST	MAHARASHTRA	SEWREE	172
REGION	STATE	BPCL SUPPLY LOCATION	NO OF VEHICLES (AS ON 01.09.2020)
WEST	MAHARASHTRA	BORKHEDI	169
WEST	MAHARASHTRA	LONI	197
WEST	MAHARASHTRA	PAKNI	143
		TOTAL	**13248**

Note:

- Some of the above locations may be subsequently closed at which time the TTs operating under such of those locations shall be transferred to new / existing locations.
- Some new locations may be added in future.
- Total no of TTs currently plying at these locations are given above which is only directional. Total no of devices requirement is approx. 13,250 (existing active) + 2,500 nos (additional in next 5 years). The Total No's may vary by +/- 20.0%.

Annexure-2

MONTHLY UPTIME OF DEVICES:

1. **Definition**: The uptime is defined as availability of "time, location, speed, ignition status, movement status" data.

2. Payment shall be released as per the below slab system

Uptime of devices	Payment
>95%	100%
>90 <=95%	80%
>85 <=90%	50%
<=85%	NIL

3. For calculation, above will be rounded off to two digits after decimal point.

Uptime of devices shall be calculated is given by the formula "X/Y"

'X' is the actual number of monthly prompts of the device as defined in point 4 below

'Y' is the total number of prompts of the device which should be generated throughout the month as defined in point 5 below

Following Data is considered for calculating the uptime:

- Data sampling & uptime will be done at 1 minute interval. Data refreshment is

done automatically at 1 minute interval.

- Sleep mode is activated after nil movement for minimum 30 minutes.
- Health check of devices done at every 30 minutes interval during sleep mode.

4. Actual number of prompts of a device is defined as total number of instances in a month when the information given in clause no 1 of annexure-I is received from the device. Prompts received only during the active trip time (loaded vehicle moving from supply location to destination) will be taken into consideration. The no. of delayed data packets received from the devices will not be considered in the actual no. of received data packets for the calculation of uptime. The data packet received with delay of more than 10 mins. will be considered as delayed update.

5. The total number of prompts during a trip is calculated based on the number of prompts which should be ideally generated considering data updation at an interval of three minutes. Since sleep mode is activated in the device after 30 minutes of idling, no prompts will be received if vehicle does not show any movement beyond that time ,except health packet . System will add number of prompt receivable during sleep time automatically to the Actual no of prompts received ,while calculating uptime ratio.

6. Exclusions for calculation of 'X'
   (a) Damage of the device due to Transporter's fault (to be proved by the Vendor as per point no 8 below) & Device missing / theft , will not be considered as vendor's liability and hence credit will be given to the vendor for the same.
   (b) Other causes like vehicles meeting with accidents, Police cases, Suspension/Blacklisting, will not be considered as vendor's liability.
   (c) Credit will be given to the vendor for any day the Truck is idling or not loaded ,provided the particular device is in working condition that day.

7. Administration of finalizing the percentage uptime : System to have online module for certifying the cause of uptime loss. If a particular Truck is not visible (uptime of 10% or below will be considered as no visibility) in spite of being loaded on any given day , Location In-Charge will be certifying the following causes:

   (a) Accidents if any
   (b) Police case / seizure

   Location In-Charge will also be certifying any suspension / blacklisting of a Truck / Tank Truck and will certify whether the subscription is to be continued.

8. Implications of clause no 6 & 7 above :

In case clause no 7(a) is selected, the vendor will be given full credit for the day & further till the day Truck is again loaded / subscription is valid.

For clause no 7(b) : Vendor will be given full credit for the day & also till such time Truck is again loaded / subscription is valid.

For cases of suspension / Blacklisting of a Truck, vendor will be given full credit till the time subscription is valid.

For cases of Device missing or damaged, vendor will not be given credit unless he conclusively proves the same within 21 days. In such cases a Joint report by the Vendor and BPCL Location Officer/s will have to be submitted to BPCL Location-in-Charge establishing that the device is missing/ damaged on account of Transporter/ customer/ BPCL/ Others and not the Vendor, for the Vendor to be eligible for credit against the same.

9. In case of damage / non-working of device, the same needs to be rectified / replaced within 7 working days subject to the availability of the vehicles , failing which the credit for uptime of the devices shall not be passed on to the vendor. The date of taking the device for repair shall be recorded in the system and the billing calculation shall stop till the device is reinstalled on the tank truck.

10. Example

    Uptime = X / Y

    Billing Duration: 30 Days

    Total Trip Duration : 90 Hours

    Running Time : 60 Hours

    Idle Time : 30 Hours

    Device Reporting Time: 90 Hours

    Expected Packet Count Y: 60 x 60 + 30 x 2 = 3660

    Total no. of Received Packets: 3500

    No. of Delayed packet received: 20

    No. of packets received (X): 3500-20 =3480

    Uptime X/Y : 3480/3660 = **95.08%**
    Thus qualifies for 100% payment

AVERAGE DAILY VISIBILITY OF LOCATION

1. Definition: The visibility is defined as the ratio of no. of device giving update on a particular date to the total no. of device at location (only the device provided with trips will be considered for total no. of device for a particular day)
2. Payment shall be released as per the below slab system

Visibility of Location	Payment (Percentage of total location monthly bill)
>=95%	100%
>=90 <=95%	80%
<90%	NIL

For calculation, above will be rounded off to two digits after decimal point.

3. Average visibility of location shall be calculated is given by the formula "X/Y" 'X' is

the number of device given update on the date
'Y' is the total number of the device provided trips on the date Following

Data is considered for calculating the uptime:

1. The device update shall be on the date considered. The day shall be considered as 00:00 hrs to 23:59 hrs.
2. The trip allotment data of tank truck which shall be taken from the BPCL SAP.

3. In case the monthly average daily visibility of the location is below 90% the payment for that location for the particular month shall not be payable. System shall automatically calculate the daily visibility of the location and then take its average as the billing qualification criteria. The report shall be available for the same.

4. Exclusions for calculation of 'X' - Damage of the device due to Transporter's fault (to be proved by the Vendor as per point below) & Device missing / theft , will not be considered as vendor's liability and hence credit will be given to the vendor for the same. For cases of Device missing or damaged, vendor will not be given credit unless he conclusively proves the same within 21 days. In this case onus will be on vendor to prove the same. In case the device is taken for repair the status of the device to be changed to "Repair" by the field technician (after Location approval) in the system ,then the same device/TT will not be taken in "X" calculation for the day.

5. Example
Visibility (Daily) = X / Y

Total No. of TT at location: 100

X= No. of Device / TT given update on the date – 90

Y= No. of TT/ Device provided Trips: 95

Visibility (Daily) = 90/95 = 94.73 %

Billing Duration: 30 Days

Total monthly billing: Rs. 10000.0 Case 1-
Average daily Visibility: 96%

Thus qualifies for 100% payment i.e. Rs.10000.0

Case 2- Average daily Visibility: 92%

Thus qualifies for 80% payment i.e. Rs.8000.0

Annexure

PROOF OF CONCEPT (POC) - Deliverables by the Tenderers during Trials

Sr. No.	Key Performance Indicators	Deliverables by Tenderers
GENERAL		
1	Installation of VMU/Voice Box	Within 3 days from the date of advice from BPC.
2	Quality of installation	Minimum 5 units of VMU/Voice Unit to be installed. Built in GPS / GSM antenna inside. Meeting IP 67 Tamper proof casing (IP 54 for Voice Box). Sealed wire connections etc. to be shown.
3	POC Trial Period	3 days after installation
HARDWARE		
4	Alert for removal of devices	One device to be removed after de-installation. Alert to be generated in the system.
5	Storage / transmission of data in case of no GSM coverage areas	To be demonstrated by covering the device for 20 minutes and show all stored data in the device is transferred to the server and transmitted through SMS
6	Auto latching of devices in case of	To be demonstrated

	Sr.No. 5 above	
7	Alert for power disconnection	Both for switch over from main battery to back up battery as well as dry out of back up battery to be demonstrated
8	Smooth switch over from main battery to back up battery without rebooting and vice versa	To be demonstrated
9	Over the air programmable	To be demonstrated for change in vehicle no, data updation interval, device rebooting etc.
10	Real time device update & switching to SMS data sending	To demonstrate the real time data (1 mins) updation in servers and switching to SMS when delay in update.
11	Device shut down mode in Geo-fence	To be demonstrated
12	Panic Button functioning	To be demonstrated
APPLICATION / SOFTWARE		The software architecture shall be MVC type , To be demonstrated
10	Data updation	Every 1-5 minutes interval (configurable), Vendor to show by remote configuring
11	Geo- fenced routes	Vendor to integrate the routes developed by BPCL thru GIS application (BPCL will provide LAT-LONG for 2-3 locations)
12	Fleet Management module for Transporters i.e. Over speed, Idle Halt, Distance travelled, sudden acceleration/braking/turning/ Continuous driving/ driver risk profiling based on violations etc.	To be demonstrated
13	Alerts for Route deviation	To be demonstrated - by e-mail & SMS/Push Notification
14	Alert on accident/harsh brake-driving or maneuvering/tilting of tank lorry	To be demonstrated - by e-mail & SMS/Push Notification
15	Alerts for stoppages on deviated route.	To be demonstrated - by e-mail & SMS/Push Notification
16	Alerts on over speeding	To be demonstrated - by e-mail & SMS/Push Notification
17	Alerts for simultaneous route deviation and stoppage.	To be demonstrated - by e-mail & SMS/Push Notification
18	Real time trip status, trip route compliance & trip closure information.	To be demonstrated - by e-mail / Push Notification
19	Health check up of VMU	Every 30 minutes during idling (to be demonstrated)
20	Response time for application	For default page max 5 secs and subsequent

		pages max 2 secs
21	Auto refreshing of pages	At pre-defined intervals
22	Query based location information	As per query (SMS / Notification based)
23	Replay tracking	For 7 days to be demonstrated.
24	Colour coding of vehicles depending upon motion status.	Moving and Stationary vehicles to be identified with different colours
25	Details to be available on clicking of vehicle icon	Vehicle registration no, date & consignee, speed, place Etc
26	Deviation from Geo fenced route.	Accuracy of minimum 6 m deviation to be demonstrated
27	Colour coding of vehicles depending upon trip status	Active trip (Loaded vehicles) & Non active trip (Empty vehicles) to be shown with different Colours – to demonstrated.
28	Return trip tracking	The tracking trail of return trip also plotted with different colour.
29	Interactive nature of the application	Provision for keying in comments by the user
30	Zooming of display of vehicles	Minimum 10 levels zooming to be demonstrated (5m scale in GIS/Maps)
31	Authorized stoppage / Accident prone zones / Suspected Stoppage Points	Voice Box Alert / Notification shall be generated in the geo-fenced area , to be demonstrated
30	On-board Voice Box announcement & Real Time Alerts	To be demonstrated - a) Entering pre-defined accident prone zones b) Over Speeding (> 60 kms.) c) Sudden & Harsh Acceleration d) Harsh Braking & maneuvering e) Continuous driving (without break of 30 minutes after 3 hours of continuous driving) f) Night Driving (Black out period : 11 PM to 5 AM). g) Un-authorised / Suspected Stoppage h) Route Violations i) Power DC Alert j) Low Battery Alert
31	Mobile application	Mobile app compatible to Android / IOS with real time alerts of deviation to be demonstrated