

Date: 14.09.2023

**DIRECTORATE GENERAL OF LIGHTHOUSES & LIGHTSHIPS
TECHNOCOMMERCIAL PROPOSAL**

REQUEST FOR TECHNOCOMMERCIAL PROPOSAL FROM PROSPECTIVE BIDDERS FOR “Supply, Installation, Integration, Testing and Commissioning of NavIC based Monitoring system for deep sea Buoys deployed by DGLL in the Indian Ocean Region under Atmanirbhar Bharat, Make in India Initiative.” .

(This Notice is issued only to elicit Techno-commercial proposal from the prospective bidders interested in the “Supply, Installation, Integration, Testing and Commissioning of NavIC based Monitoring system for deep sea Buoys deployed by DGLL in the Indian Ocean Region under Atmanirbhar Bharat, Make in India Initiative.” And does not constitute any binding commitment from the Directorate General of Lighthouses & Lightships to proceed with the project or invite any or all the parties in the subsequent bidding process)

SECTION I

Introduction:

1.1 Directorate General of Lighthouses and Lightships (DGLL)

In accordance with the Lighthouse Act 1927, The Directorate General of Lighthouses and Lightships (DGLL) is the principal authority of the Government of India in the field of Aids to Marine Navigation. The services provided by the DGLL enables mariners to know the position with respect to a fixed point on the land with the help of Visual Aids to Navigation such as lighthouses (203), Lightships(01), Lighthouse tender vessels(02), Deep Sea Channel Marking Buoys(21) and Radio Aids to Navigation like Differential Global Positioning System (DGPS-23), Radar Beacons (Racons-64), Network of Automatic Identification System (AIS) consisting of 87 base stations. DGLL has also established and maintaining Vessel Traffic Service for the Gulf of Kutch, Gujarat. For the purpose of effective superintendence of Lighthouse and other Aids to Marine navigation, the Indian coast is divided into regional Directorates known as Lighthouse Districts with their headquarters at Jamnagar, Mumbai, Goa, Cochin, Chennai, Visakhapatnam, Kolkata, Port Blair and VTS Directorate at Gandhidham (Gujarat).

- 1.2 A lighthouse is a tower, building, or another type of structure designed to emit light from a system of lamps and lenses and to serve as a navigational aid for maritime pilots at sea or on inland waterways. Lighthouses mark dangerous coastlines, hazardous shoals, reefs, rocks, and safe entries to harbors; they also assist in aerial navigation. Once widely used, the number of operational lighthouses has declined due to the expense of maintenance and has become uneconomical since the advent of cheaper and often much more effective electronic navigational systems.

To help mariners with safe navigation in Indian waters, DGLL has deployed 21 nos of Deep-Sea Channel marking Buoys in Gujarat Coast, out of which 11 Buoys are in the Gulf of Kutch (Salaya Channel) and 10 Buoys are in Gulf Of Khambat (Narmada Channel). One Buoy is also laid near invisible bank in A&N Island. **The buoys deployed by DGLL are beyond the Mobile/VHF range and hence cannot be traced with the existing terrestrial, cellular technology. Thus, presently we do not have real time tracking mechanism to ascertain health and position of deployed buoys. Real time tracking of Buoy t is essential, since Buoy drifted from its charted position can act as hazard to navigation rather than acting as AtoN.**

The details of Buoy deployed by DGLL are as below:

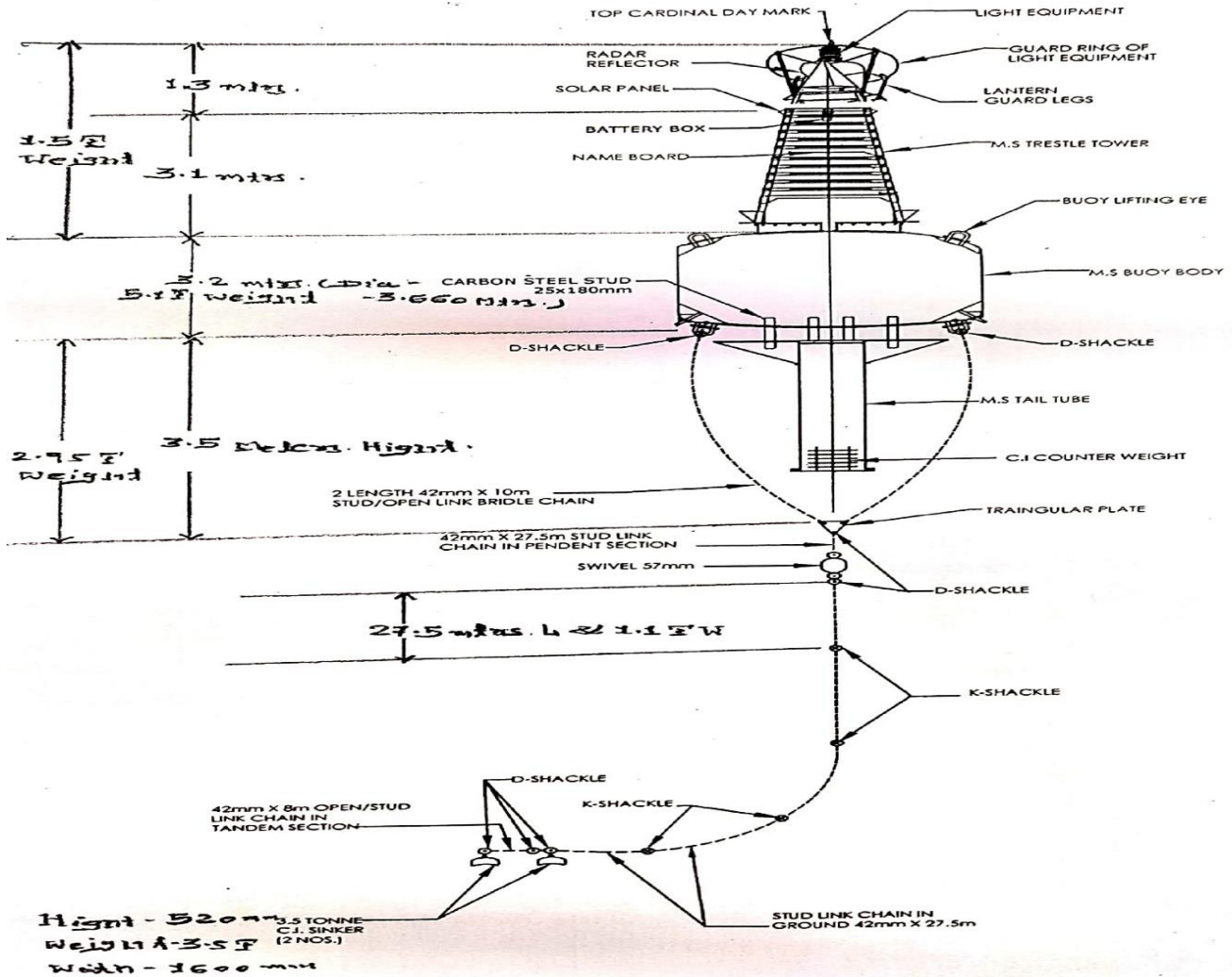
Buoy Type: BS-58 Mild Steel Buoys.

Buoy Diameter: 3.6 Meters

Buoy Height above sea water level: 6 Meters

Power Supply: 12V/100AH SMF Battery, 40 W Solar Panels-02 Nos.

LED Lantern : SL 125 tier1.



Buoy Positions: Gulf of Kutch (Salaya Channel)

Buoy Name	CHARTED POSITION
MITHAPUR	22°25.040'N, 068°51.950'E
GURUR	22°35.400'N, 068°57.800'E
CHANDRI	22°37.150'N, 069°07.500'E
KACHCHH	22°38.000'N, 069°12.800'E

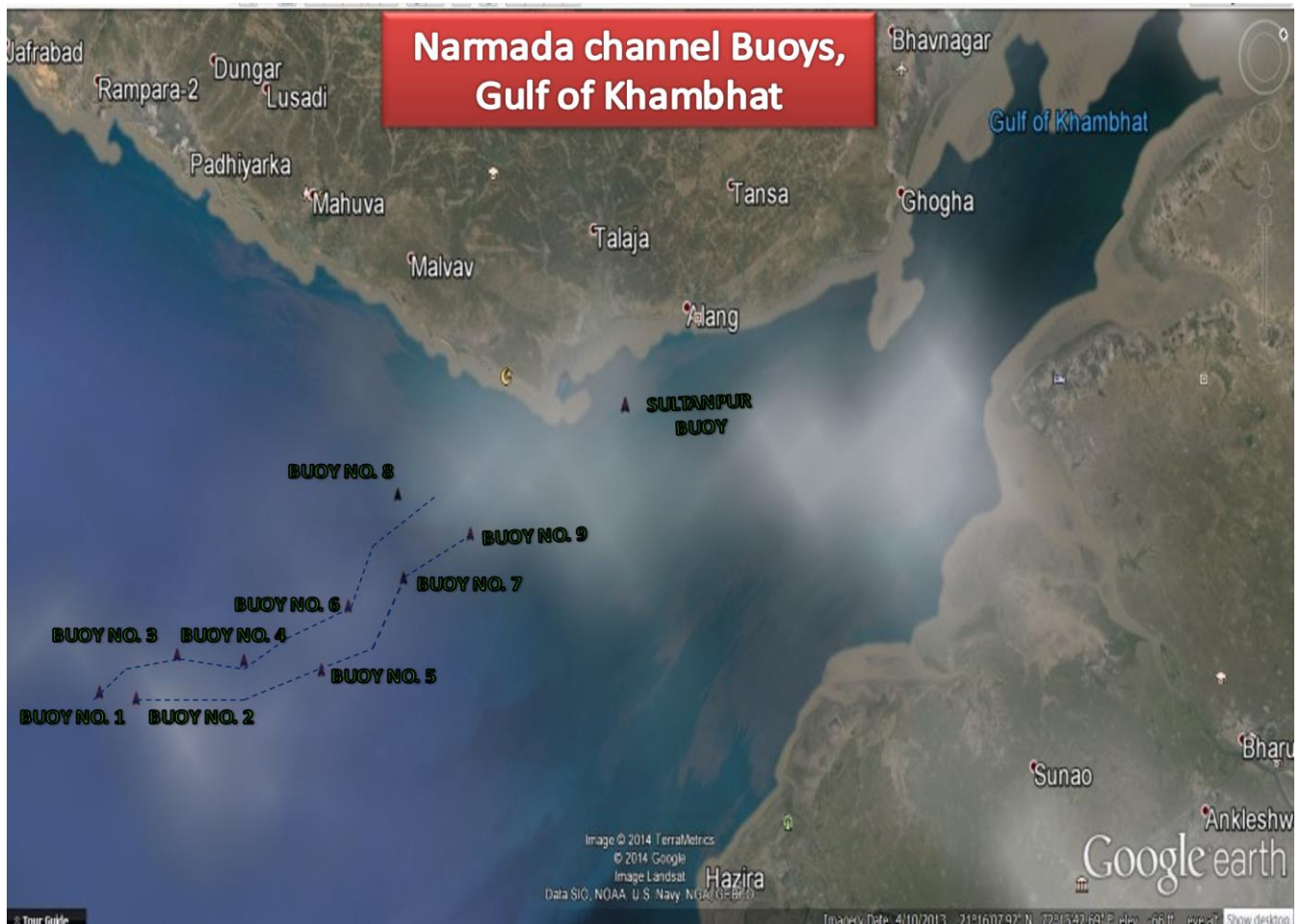
PAGA	22°35.400'N, 069°14.600'E
VLCC	22°36.200'N, 069°16.600'E
NEW NORTH CARDINAL	22°34.100'N, 069°18.350'E
DHANI	22°36.800'N, 069°27.500'E
TILBURN	22°37.200'N, 069°32.000'E
NARARA	22°35.910'N, 069°36.120'E
RANWARA	22°39.200'N, 069°19.800'E



Gulf Of Khambat (Narmada Channel)

Buoy Name	CHARTED POSITION
1	20°35.600'N, 071°56.300'E
2	20°36.600'N, 071°58.450'E

3	20°40.600'N, 071°59.000'E
4	20°45.500'N, 072°03.000'E
5	20°47.900'N, 072°07.350'E
6	20°52.409'N, 072°05.749'E
7	20°56.000'N, 072°09.400'E
8	20°59.500'N, 072°06.700'E
9	21°02.500'N, 072°09.800'E
Sultanpur	21°16.200'N, 072°11.650'E



Satellite Communication Solutions will comprise of these following units:

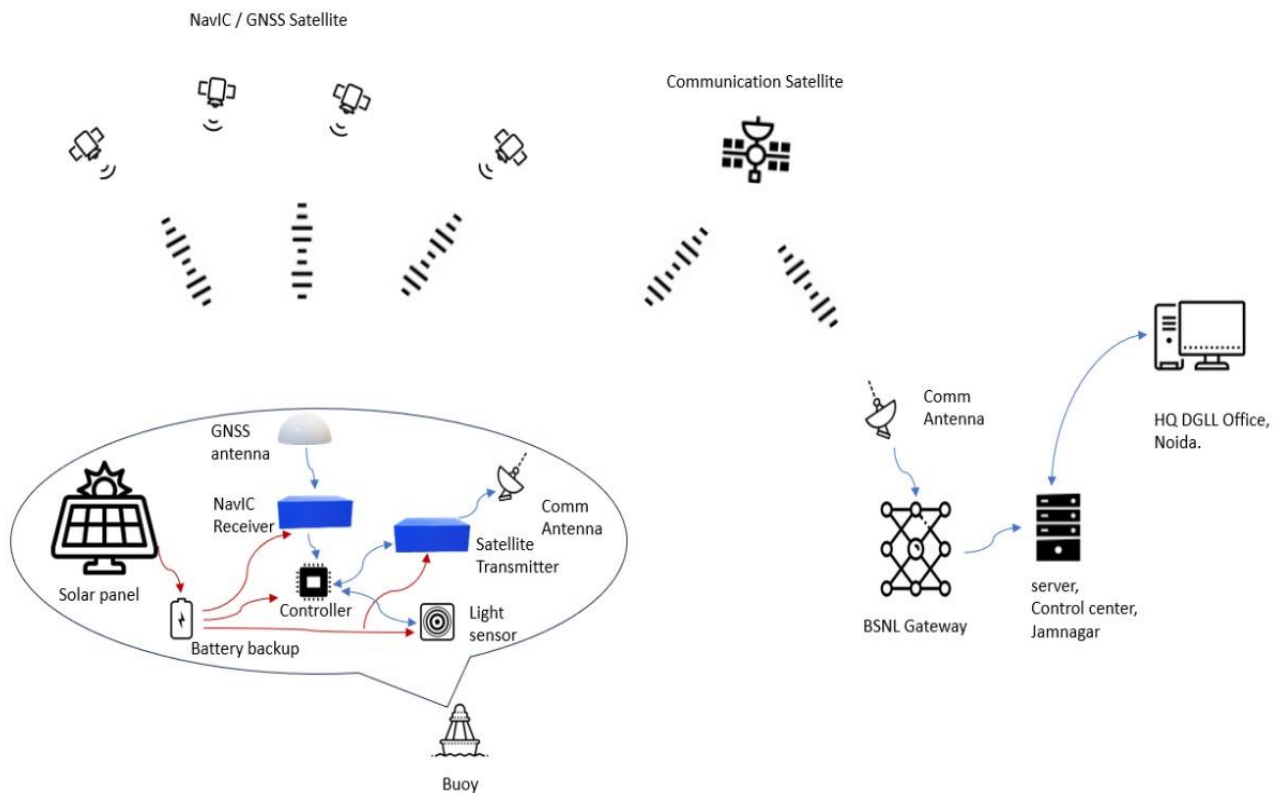
1. An interface unit: This unit fitted on buoy will receive the position and health of LED equipment, Battery etc. and transmit it to satellites through the satellite terminal unit. The interface unit is a small, very high precision, low power consuming custom-built hardware unit having different sensors, position receivers and **it is powered by the SMF battery already available on buoy.** This interface unit is independent of the different satellite communication solution proposed ahead.

2. Satellite Terminal Unit: This will transmit the data received from interface unit to satellite constellation. The satellite terminal unit is dependent on the satellite communication solution adopted for the work.

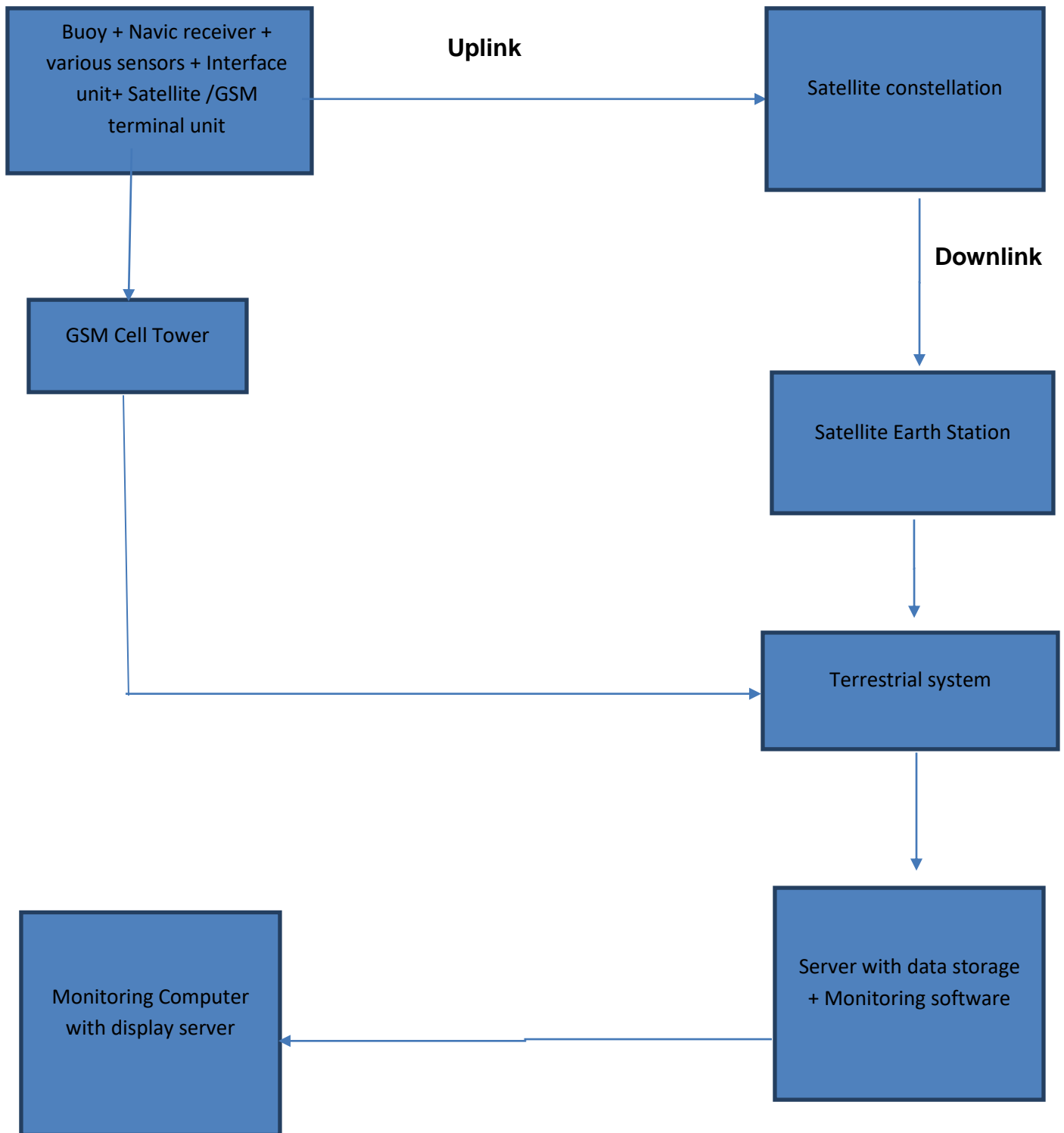
3. Satellite Constellation: The transponders on board the satellite will receive the data from mobile Earth Station (Buoy) and relay it to the Land Earth Station/Ground Satellite Station. The satellite constellation and the satellite terminal unit are compatible and is dependent on the satellite communication adopted for the work.

4. Land Earth Station/ Ground Satellite Station: This is based on Earth surface and it collects and sends all the data relayed by satellites to a server running a special application.

5. Server and custom-built application/ GUI: The server will be accessed using the web browser and this server running special application will display live position



of buoy on a chart, record all data for upto one year, generate alert in case buoy drifts beyond a user defined circle, send daily report as email to predefined address.



Director General

Section II

2.1 Technical Aspect:

The sample product shall be ready in all respect before 10.10.2023 so that it can be demonstrated in DGLL stall @ Maritime India Summit- 2023.

The bidder shall install a monitoring equipment on each of the designated Buoys and install a central monitoring station at the office of The Director, Directorate of Lighthouses and Lightships, Jamnagar or at a location designated by DGLL. The monitoring equipment shall include the wireless transmitter which can be through satellite or land based mobile system. The monitoring centre should be manned by the personal of the company for the entire duration of the contract. The system will carry 05 Years warranty. The bidder shall train at least 06 employees for 02 days in operation of product preferably at Delhi. The bidder shall transfer the entire hardware, software, and associated tools to the buyer.

Scope of the Work:

- Supply, installation, integration, testing, commissioning, and verification of hardware of the monitoring system on each Buoy of DGLL.
- Development installation, integration, testing, commissioning, and verification of Monitoring center at the office of DGLL, Noida or at a location designated by them.
- Providing warranty for 05 years.
- The entire system shall be of latest technology including NavIC.
- The developed system shall have capability to adopt the latest standards of upcoming different shore-based e-Navigation architecture being developed by IMO/IALA/RTCM and to receive future up-gradations.
- Bidder have to quarterly inspect the system during the warranty period. Any defect rectification during warranty period shall be at the cost of the bidder.
- To replace defective the system with good one, within 07 days of defect.
- The programming of system as and when needed is the responsibility of the bidder.
- The bidder shall have service center/ maintenance office at minimum two locations for supporting the systems.
- The offered system shall conform to all the latest international standards including performance and monitoring standards.

Configuration

- The offered system should be modular so as to be fitted on the existing buoy and to use the existing power source.
- The system should log all data and be able to generate periodic reports as defined by the user.
- Successful bidder shall train the DGLL staff for installation of the system on board the buoy.
- Train 06 staff for at least 02 days.
- The bidder is also required to give an undertaking for satisfactory back up in respect of supply of spares, repairs/maintenance of PCB's, units, subunits etc. for a period of at least 5 years after system acceptance.

Technical specifications:

GNSS based Receiver

- Constellations: IRNSS / NavIC, GPS, GLONASS.
- Channels: 200+
- Frequency: Bands for GPS, GLONASS, IRNSS
- Modes.
 - a. Normal – should be able to send data four times daily.
 - b. Emergency – should be able to send an emergency message as and when certain emergency is noted.
 - c. Instant - should be able to send messages as and when the user determines.
- Should be hardened for Marine environment.
- Power: Should be able to use the same power on board the Buoy.
- Tracking should be continuous.

Messages

- The message transmitted should enable monitoring of the following: -
 - a. Live location of buoys is shown on chart.
 - b. State of light on board the buoy.
 - c. State of battery power.
 - d. Tsunami alert by quick change of height.
 - e. Alert if buoys move beyond a radius
 - f. Disturbance alert when the buoy is being intercepted by humans.

Monitoring Center

- **Hardware.** Monitoring center should have the following hardware: -
 - a. Server to store all data.

- b. Computer for accessing data.
- c. View screen with minimum 36 inch view area.
- d. Standby by power for 30 minutes through UPS.
- e. A Rack for housing Server and connections.

- **Software.** The software should have the following

- a. Be able to show the live location of the buoys as per last received monitoring data.
- b. Should be able to show the movement of buoy over the time domain.
- c. Should be able to zoom into any Buoy and see the current statistics.
- d. Should give out alarm if any emergency message is received.
- e. The server is accessed using a web browser.

- **Environment**

- a. The indoor equipment shall, be capable of functioning in ambient temperatures ranging from 0° C to 55° C and humidity up to 95%.
- b. The outdoor equipment shall perform within the specification limits with wind speed up to 100 km/hour, humidity up to 100% and with temperatures between 0°C and 55°C.
- c. The equipment shall not be damaged during wind speeds up to 100 km/hour.
- d. The equipment shall be capable of functioning with long-time deviations of voltage of up to + 20% of the nominal value, and long deviations of frequency of up to + 5% of the nominal value. Fluctuations of voltage of $\pm 50\%$ for maximum 1 second shall not damage the equipment.

- **Support**

During the initial period of system stabilization after delivery and acceptance, the Employer may need support. The Contractor shall make a reasonable assessment of the amount of support that shall be required and shall include this in his offer. He shall specify clearly on what maintenance strategy this package shall be based. Sufficiently qualified and experienced personnel shall give this support. The Contractor shall, bring out clearly in his proposal, the number of qualified and experienced personnel earmarked for such support.

- **Training**

The bidder shall organize training to 06 Departmental Engineers for a duration of 02 days. The training shall be comprehensive covering theoretical and practical sessions to make the trainees competent to analyses and rectify faults independently and also carry out periodic maintenance of the system.

- **Equipment Details with Technical Specifications:**

- a. Hardware to be fitted on the buoy to support the monitoring systems – 22 Nos.
- b. Establishment of Monitoring center with all necessary hardware and software at the location designated by the buyer – 01 Set.

2.2 Submission of the Techno-commercial proposal

Prospective bidders of repute, having exposure on the subject work are hereby invited to submit their “Techno commercial proposal” for participating in competition for **“Supply, Installation, Integration, Testing and Commissioning of NavIC based Monitoring system for deep sea Buoys deployed by DGLL in the Indian Ocean Region under Atmanirbhar Bharat, Make in India Initiative”**. Interested bidders in the project are required to submit their Techno commercial proposal in writing. It has also requested, to submit the budgetary offer as per the format attached.

Only those bidders who submit the Expression of Interest for this work shall be allowed to participate in the bid that will be floated in GeM portal. The bidder who do not submit the EOI , will not be allowed to participate in the bid process in GeM for this work.

Parties interested are required to submit their Expression of Interest in writing before 1000 hours on or before **18.09.2023** to Directorate General of Lighthouses & Lightships, A-13, Deep Bhavan, Sector-24, Noida – 201301. India. Tel:91-120-24112508 / Fax: 91-120- 2411345 Email: noida-dgll@nic.in

Director General

Section – III

LETTER OF TRANSMITTAL

(to be typed in Firm's Letterhead)

From : M/s _____

To _____

The Director General of Lighthouses & Lightships,
A-13, Deep Bhavan, Sector-24,
Noida – 201301. India.
Tel:91-120-24112508 / Fax: 91-120- 2411345
INDIA, Email: noida-dgll@nic.in

Sub: Submission of Techno-commercial proposal for “Supply, Installation, Integration, Testing and Commissioning of NavIC based Monitoring system for deep sea Buoys deployed by DGLL in the Indian Ocean Region under Atmanirbhar Bharat, Make in India Initiative.”.

Sir,

Having examined the details given in **Techno-commercial** Notice and **Techno-commercial** document for the above project, I/we hereby submit our Expression of Interest and the relevant information.

1. I/We hereby certify that all the statements made and information supplied in the enclosed form and accompanying statements are true and correct.
2. I/We have furnished all information and details necessary for **Techno-commercial** and have no further pertinent information to supply.
3. I/We also authorize DGLL or his authorized representatives to approach individuals, employers and firms to verify our competence and general reputation.
4. I/We submit the following certificates in support of our suitability, technical know-how and capability for having successfully installed and commissioned Realtime NavIC based **buoy monitoring System** along with prescribed format.
5. We understand that DGLL will be at liberty to finalize the NavIC based **buoy monitoring System** parameters.

Signature(s) of Applicant(s)

Appendix – 1

Name of firms /Applicants

(Organizational Structure)

1.	Name & Address of the applicant with Telephone No./Fax No	
2.	a) Year of Establishment b) Date & Year of commencement	
3.	Legal status of the applicant (attach copies of original document defining the legal status)	
	a) A proprietary firm	
	b) A firm in partnership	
	c) A limited company or Corporation / Joint venture /Consortia	
	d) State owned	
4.	Any other information considered necessary but not included above	

Authorized Signatory

Appendix – 2

Details of WORK executed in last seven years

Name and location where equipment's were supplied, installed/operated or maintained.	
Brief Description of the works carried out	
Total Value of the work	
Annual Turnover of the firm in last three years in Indian Rupees	

Signature

Note: Please enclose separate sheet for each Project

Budgetary Quote to be submitted by Bidder

Ser No	Product	Unit Cost	Nos	Total Cost
1	Marine NavIC Receiver for buoy		22	
2	Light Sensor along with integration board for 02 digital and 02 analog in and , 02 digital and 02 analog out.		22	
3	Marine Satellite Trans Receiver		22	
4	Cables, marine shields, IP68 connectors		22	
5	Server with data storage		1	
6	Monitoring computer with view screen		2	
7	Monitoring Software		1	
8	System Installation, cables, wiring		2	
9	Data Charges for 60 months		60	
10	Warranty, AMC for 05 Years		1	
11	Spare, 01 set for each of the gulfs		2	
12	Training for four days		6	

- a. All Cost should be inclusive of GST, Customs duty if any, Cost of freight etc. Of all hardware and software. Cost should be as per delivery at the locations designated by DGLL.
- b. The warranty of whole system is 05 years.
- c. Any other additional item required may be indicated on a separate sheet with details (technical and cost)