INVITATION OF EXPRESSION OF INTEREST (EoI) FOR NDRF EQUIPMENT

NDRF is the lead federal Force in India responsible for responding to all types of natural and man-made disasters. As part of its mandate, NDRF is equipped and authorized to handle various rescue operations concerning Collapse Structure Search & Rescue (CSSR), Flood Water Rescue (FWR) & Medical First Responder (MFR).

2. NDRF now intends to procure CSSR, FWR & MFR equipment for each of its 16 Units/Academy. Accordingly, NDRF has prepared a draft technical specification for 13 Nos of CSSR, FWR & MFR equipment required to handle various rescue operations. The draft specifications are appended as **Appendix- A**.

3. In this context, NDRF invites Expressions of Interest (EoI) from eligible manufacturers, suppliers and vendors to submit their comments and suggestions. In case these specifications do not match with the available equipment in the market, the same may be highlighted and the specification of the equipment available in the market may kindly be provided with the same functionality. The purpose of the EOI document is to provide necessary information to NDRF so that genuine and generalized specifications can be framed and finalized for further procurement, and no gap exists in the specifications of the items available in the market and the specifications floated in the bid by NDRF.

4. This EOI is not an offer by NDRF or a tender document but it is an invitation to receive responses from eligible manufacturers, suppliers and vendors in the industry the draft specification framed by NDRF.

5. **Eligibility Criteria:** The minimum eligibility criteria for an entity to participate in the EOI are as follows:

i. The entity must be a manufacturer or vendor/supplier/dealer registered in India under relevant applicable Acts and Laws.
ii. The entity must have some experience in the supply of such equipment.
iii. NDRF may call manufacturers, suppliers and vendors to conduct the demonstration/field trial of such equipment if needed before finalizing the specification.

6. **Documents to be submitted:** The following documents are required to be submitted as part of the response to this EOI

i. Documents supporting Eligibility Criteria as mentioned above.
ii. List of equipment/catalogue with detailed technical specifications along with estimated cost if possible.

7. Eligible manufacturers, suppliers and vendors who have the competence and experience to carry out such work are requested to submit the EoI along with supporting documents. No hard copy of the documents is required to be submitted.

Important timelines:

Event	Timeline
Last date of submission of responses	22/03/2024

22/03/2024

(Bharat Bhushan Vaid)
Dy. Inspector General (Prov.),
HQ NDRF, New Delhi

No.I-17018/R&D/E-83285/HQ NDRF/2024 - 542 dated: 11/03/2024

Appendix-A

CSSR EQUIPMENT

1) Specifications/Qualitative Requirements for Life Detector Type II

Overview:

i. The human Life Detection System will be used by Rescuers to determine, whether anyone is trapped inside a collapsed building.
ii. The system should have the discrimination capability for detecting only living human beings and not deceased humans or living animals.
iii. The principle of working is based on the equipment's capability of detecting living human beings by detecting the distinctive electromagnetic field created by their heartbeat. It should be capable of passively detecting the presence of living humans behind thick barriers such as concrete walls and steel plates.

SL No.	Specifications criteria	Generalised Specifications	Remarks
1.	Field of view	**Horizontal plane**-At least -2 to +2 degrees. **Vertical plane:-** i. At least -60 to +60 degrees in open air. ii. At least -40 to +40 degrees in Composite structure. iii. -20 to +20 degrees on an all-metal grounded platform.	As per the letter submitted by M/S Uni Care Emergency Eqpt Pvt Ltd (Pre-bid meeting) that the Life Detector Type-II is a firm specific eqpt supplied by DKLabs as product name Life Guard, and it is not a reliable equipment. BOO, on checking found that only DK Labs is indeed supplying Life detector Type-II (copy of screenshots attached). No data/ photos of this equipment having been used for rescue work during last ten years
2.	Detection range	It should come with two Range Adjustment Devices (RADS) as follows: a. All metal RAD up to 500 meters. b. Composite RAD up to 20 meters.	
3.	Target tracking	In detection mode, once the Life detector is fixed on the target, even if it is moving, the life detector should continue tracking the target.	
4.	Temperature Range	i. The instrument should have a built-in red laser (used to show direction in dark areas) that will be eye-safe. ii. The laser should be environmentally safe. iii. Environmental parameters for optimum performance: a. Operating temperature: -10 to +50 degrees Celsius. b. Storage temperature: -20 to +55 degrees Celsius.	
5.	Water Resistant.	It should be minimum IP 68 compliant	
6.	Power	The instrument should have an internal rechargeable suitable battery for the laser. a. Operating time: At least 3 hours in continuous operation. b. Charging time: Max 05 Hrs for a full recharge c. A charging mechanism should be provided.	

SL No.	Specifications criteria	Generalised Specifications	Remarks
		d. One spare battery should also be provided.	could be found on the website. Therefore, it is suggested that before finalising the specs a feedback about its efficiency and utility may be obtained from the units presently using this eqpt.
7.	Weight	The weight of the equipment should be less than 1kg.	
8	Guarntee/warranty/ Service support	i. The bidder should be able to conduct the repairs of the tools post warranty period for minimum ten years at a place as specified in the bid ii. Bidder / OEM to provide an undertaking for the same.	
9	Training	i. 02 days base workshop level training to minimum 16 technicians on fuIl fledged running, testing, diagnostic, troublele shooting, maintenance, technieques for detection and calibration. ii. 1 day operator level training should be provided at user defined location	
10	Carry case	Injection moulded plastic or Aluminimum case with customized body	

2) Victim Locating Camera:

General:

1) Victim Locating Camera should be specifically designed to assist the rescuers to locate victims during natural disasters and emergencies.
2) With its advanced features and rugged construction, the equipment should ensure swift and accurate victim detection, enabling the rescue teams to save lives and provide effective disaster response.
3) It should enable insertion below the debris, of a telescopic probe which mounts, at its head, a sensitive articulable video camera, supported by appropriate illumination, whose images can be viewed separatly by the operator and other rescue personnel on remote display monitors.
4) The system should also integrate a two – way audio system which can pick up life sounds from the victims and also permit the passage of verbal instructions or assurances to them from the rescue team.

Breaching System is a :-

1) A heavy duty drill for making an entry hole for the probe of the victim location system through debris at the disaster site, or other overlaying material required to be breached to enable the search camera to access underlying void spaces.
2) Its coring bits, carbide & diamond tipped bits should be able to bore through wood, nails, sheet metal and roofing materials and reinforced concrete.
3) The system should have a collar for attachment of coring bits as well as for cooling water to be delivered to the spinning carbide tipped diamond studded bits when used.

SL No.	Specifications criteria	Generalised Specifications	Remarks
1	Temperature Range	i. The system should be capable of operation in a temperature range of -10º to 50º C. ii. Storage temperature - -20 º to +55 º c	
2	Thermal Imaging Capability	i. Infrared Sensor: Integrated thermal imaging sensor for detecting heat signatures ii. Thermal Resolution: should provide precise thermal imagery with a resolution of 800 x 600 pixels or better	
3	Battery	i. Should have at least 8 hours running time, with a Rechargeable lithium-ion battery . ii. Battery should have Hot-swappable feature allowing quick and seamless battery replacement during critical missions. iii. One (01) additional battery should be supplied with the equipment.	

SL No.	Specifications criteria	Generalised Specifications	Remarks
4	Display	i. Two display monitors: min. 7 inch size One at operator level & second for remote viewing at least 20 mtrs away. Wired or wireless ii. Touchscreen Display: Intuitive interface with a high-resolution LCD touchscreen for easy operation, preferably even with gloves. iii. The system should also integrate a two way audio which can pick up life sounds from the vicims and also permit the passage of verbal spoken instructions or assurances to them from the rescue team with all accessories.	
5	Language Support	Only English	
6	Video Image	**i.** Sensor: Four Megapixel to Twenty Four Mega Pixel CMOS Sensor. ii. Image Resolution: HD Quality iii. Video Resolution: should record high-definition videos at 4K resolution (3840 x 2160 pixels) or better	
7	Optical Zoom	**i. Zoom Range**: Upto 10x optical zoom ii. **Digital Zoom**: Minimum 10x or better	
8	Design/Standard /Certifiction	i. MIL-STD-810G Compliance: Designed to withstand extreme conditions, including water, dust, and shock	
9	Water resistancy	IP 68-rated	
10	Humidity	Operational range - 10 % to 90% relative	
11	Features	i. Flexible expandable gooseneck up to 4 meters or more ii. Articulating pole upto 270 Degree angle or better ii. Camera to have remote operability with 360^0 rotation.	
12	Accessories	**i.** An **additional camera** with same specs to be supplied with min. 20 mtr cable for borewell rescue operation. ii. **Carrying Harness**: Ergonomic harness for hands-free operation and comfortable transport	
	BREACHING SYSTEM		
13	Power head weight	Not more than 12 Kgs	
14	Boring speed	Minimum 7.5 Centimeters per minute for standard construction grade concrete. However deviating results are acceptable depending upon the material to be drilled.	
15	Bits	i. 5.1 Centimeters x 43.2 Centimeters diamond faced, thin kerf - close segment ii. 5.1 Centimeters x 43.2 centimeters carbide faced	
16	Cooling	Pressurized water container with minimum 7.5 litres capacity. Hose minimum 3.5 Meters with quick-connect fittings.	

SL No.	Specifications criteria	Generalised Specifications	Remarks
17	Field service kit	i. Spare fuel tank cap ii. Spare pre-wound starter recoil assembly iii. 2 piece key set for starter assembly iv. Spare spark plug v. Spare plug wrench vi. Copper washer vii. Garden hose to water collar adapter	
18	Speed	950 RPM or more	
19	Power train	Two cycle, 40 CC, 2.75 horsepower, centrifugal clutch	
20	Spindle	1-1/4" x 7 threads per 2.53 Centimeters or similar	
21	Spindle extensions	Three extensions of minimum 30 Centimeters each	
22	Dimensions	85 x 55 x 35 Centimeters +- 10%	
23	Total Weight	35 kg or below	
24	Guarntee/warranty / Service support	i. The bidder should be able to conduct the repairs of the tools post warranty period for minimum ten years at a place as specified in the bid ii. Bidder / OEM to provide an undertaking for the same.	
25	Training	ii. 02 days base workshop level training to minimum 16 technicians on fuIl fledged running, testing, diagnostic, troublele shooting, maintenance, technieques for detection and calibration. v. 1 day operator level training should be provided at user defined location	
26	Carry case	Injection moulded plastic or Aluminimum case with customized body	

3) Specification of Hand Held Thermal Imaging Camera

SL No	Particulars	Generalised Specifications	Remarks
1.	**General**	-	
a.	Ruggedness	Should be rugged for operations as per JSS-55555 or JSS-5855/ MIL Standards 810H (for high & low temperature, humidity, shock, vibration and Bump test) or IP 68 or better	
b.	Image	Should have capability to produce real time Images	
c.	Penetration	Should be able to penetrate darkness, haze and smoke	
d.	Saftey against exposure to the sun :-	Should not get damaged if faced towards Sun accidently	
e.	Saftey against glares :-.	should be immune to glare of searchlights	
f.	Should have a suitable tint to reduce eyestrain. This feature should help the observer to quickly regain his normal vision.		
g.	Weight	1.5 kg or less including Battery, with Neck/Shoulder carrying strap, hand strap, Cover and Eye guard.	
h.	Compatability with tripod	Should be able to be fixed on a Tripod.	
2.	**Technical Specification**		
a)	Detector	Microbolometer or better detector element pixel pitch 12 µm or better.	
b)	Resolution	FPA resolution 640 x 480 or better	
c)	Spectral range	8-14 µm	
d)	Field of view	Narrow: 4° x 3° (minimum) Wide : 8° x 6° (maximum) Note: Field of view should be achieved optically only.	
e)	Zooming capacity	Optical Zoom : 2x (min) Digital Zoom: 4x or better	
f)	Ready time	Less then 01 Min	
g)	Reticule	Inbuilt reticule for range estimation	
h)	Focusing	Manual or automatic	

SL No	Particulars	Generalised Specifications	Remarks
i)	NUC	Shutter-less	
j)	Polarity	Black hot and white hot should be available.	
k)	Video output Connector	It should have provision for external video output connector	
l)	Inter pupillary Distance (IPD)	Equipment Should have digital or manual IPD adjustment feature in it.	
m)	Internal display	Advance high resolution OLED display having resolution 640 x 480 or better	
3.	**Operational Featuers**		
a)	Range Human :	i. Detection : 2000 mtr (Minimum) ii. Recognition :1000 mtrs (Minimum)	
b)	Range Vehicle	i.Detection :3000 Mtr (Minimum) ii.Recognition : 1500 Mtr(Minimum) (A vehicle of maximum overall length of 4010 mm, maximum overall width of 1540mm and maximum overall height of 1875mm.) or less	
c)	Operating temp range	-10°C to +50°C	
d)	Storage temp range	-20°C to + 55°C	
4.	**Power Source**		
a)	**Source**	It should function on 110 volt to 270 v, 50 Hz AC mains through AC/DC Adapter.	
b)	**Battery**	Should have rechargeable commercially available lithium based battery or equivalent compatible batteries.	
c)	**Battery operational life**	The battery(s) should be able to run the system for 6 hours or more in operational mode on a single charge.	
d)	**Spare batteries**	02 spare batteries be provided.	

SL No	Particulars	Generalised Specifications	Remarks
e)	Battery charger	1) A smart and intelligent, universal charger for charging the battery from 110 volt to 270 volts 50Hz AC mains along with DC charging facilities from 12 volt to 48 volt DC (on entire range) should be provided. 2)It should have ‘’charge on” and ‘’charge complete” indications during the charge of battery . 3) The charger should be capable to charge the battery fully in ≤ 5 hours.	
5.	**Miscellaneous**		
a.	Manual and literatures	The following should be provided with the equipment i. User Operation Manual/technical Manual ii. Detailed operators instructions. iii. Technical literature iv. Maintenance manual, v. Inspection standards be provided with the equipment	
b.	Accessories	i. **Tripod or Mounting System:** a. A stable platform for the camera to ensure steady shots. b. Compatibility with the camera's mounting interface. c. Adjustable height and angles. ii. **Additional Lenses:** a. Interchangeable lenses for different fields of view (wide-angle, Telephoto, Macro). b. Compatibility with the camera's lens mount. c. Focus adjustment and calibration. iii. **Data Storage and Transfer:** a. High-capacity memory cards (Min 1 TB) for storing thermal images and videos. b. USB cables or memory card readers for transferring data to a computer. c. Compatibility with the camera's data transfer options (USB-C, micro USB, etc.). iv. **Lens Cleaning Kit:** a. Non-abrasive cleaning materials for maintaining the camera's lens and sensor. b. Suitable for the camera's optics and sensor surface.	
c.	Guarntee/Warranty/ Service support	i. The bidder should be able to conduct the repairs of the tools post warranty period for minimum ten years at a place as specified in the bid. ii. Bidder / OEM to provide an undertaking for the same.	

SL No	Particulars	Generalised Specifications	Remarks
d.	Training :-	i. 02 days base workshop level training to minimum 16 technicians on full fledged, running, testing, diagnostic, troubleleshooting, maintenance, technieques to ease detection and calibration set up. ii. 1 day operator level training should be provided at user defined location	
e.	Carry case	Injection moulded plastic or Aluminimum case with customized body	

4) Technical Specification of Come-A-Long 1 .5 Tons

SL No.	Specifications criteria	Generalised Specifications	Remarks
1	Genaral	i. It should consist of three major parts-Base, Mast and Boom. ii. It should be light weight without compromising the strength. iii. It should provide a secure anchor base for rescue work. iv. All adjustment should be on key plug so that system is easy to assemble and dismantle without any tools v. It should be able to lift and lower the object vertically up & down	
2	Working Principle	Principle of working for Ascending and descending device/winch should be wrap friction.	
3.	Collapsible and portable	System should be completely collapsible and portable for advantage of easy transportation	
4	Corrosion resistant	The entire system should be corrosion-resistant.	
5	load bearing capacity	Load-bearing capacity of winch system should be 0 to 250 kg	
6	Breaking load of rope	i. Breaking Load of Rope provided without end connection should be more than 30 KN ii. Breaking Load of Rope with end Connection should be more than18 KN.	
7.	Rope diameter	Rope diameter should be minimum 12mm.	
8	Rope type with winch	Should be Polyamide Braided rope	
9	Overall system height	Overall system height should be adjusted from 75 inches to 100 inches.	
10	Maximum weight of the equipment	Not more than 60 Kgs with system(Base+MAST +Boom) & Winch together.	
11	Other	i. Mast offset should be adjustable from 10 inch to 30 inch. ii. It should have fall arrester block. Dynamic Performance should be more than 100 Kg mass free fall of 600 mm with the breaking force of less than 6 kN and arrest distance should be less than 2 mtr. iii. It should be provided with wheeled robust containers for easy transportation.	
12	Type of Winch	Type of winch should be Hand Operated manual winch for ascending and Descending Operations	
13	Weight of Winch	Should not be more than 12 Kgs	
14	Static strength of Winch	Should be tested at least at 13.5 kN sustained for 3 minutes without failure.	
15	Capacity/ Capability of Winch	Winch should be capable of carrying up to 100 kg of load and height of 30 meter within 10 min (deviation (±) 10%.	
16	Winch	i. EN 1496:2017 or IS 3521: PART 7:2021 or equivalent international standard. ii. The certifications IS3521:2021 Part3, EN795:2012 Type B and EN360 may be added.	

SL No.	Specifications criteria	Generalised Specifications	Remarks
17	Ascending /descending device /winch	EN/IS 3521: PART 7:2021.	
18	Full body harness	EN 361/ 358 / IS3521:PART1:2021. Or equvilent standards	
19	Rescue stretcher	i. Emergency rescue rolable stretchers which can be used either vertically or horizontally. ii. Material of Stretcher- HDPE/Carbon fibre with required restraining straps slings, carabiner, figer eight desender & backpack for easy carrying.	
20	Rescue stretcher weight	Maximum 06 KGs	
21	Length of Rescue Stretcher	i. Open: -Minimum 02 Meter ii. Rolable width not more than 01 Meter iii. Maximum 250mm Diameter in roll condition	
22	Load carrying capacity of Rescue Stretcher	Upto 200 Kgs	
23	Guarntee/warranty/ Service support	i. The bidder should be able to conduct the repairs of the tools post warranty period for minimum ten years at a place as specified in the bid ii. Bidder / OEM to provide an undertaking for the same.	
24	Training	i. 02 days base workshop level training to minimum 16 technicians on fuIl fledged running, testing, diagnostic, troubleleshooting, maintenance, techniques to ease detection and calibration set up. ii. 01 day operator level training should be provided at user defined location	
25	Manual and literatures	The following should be provided with the equipment i. User Operation Manual/technical Manual ii. Detailed operators instructions. iii. Technical literature iv. Maintenance manual, v. Inspection standards be provided with the equipment	

5. (a) Technical Specification of Combination Cutter with Spreader (Combi-tool) Hydraulic

SL No.	Specifications criteria	Generalised Specifications	Remarks
1.	General	**Combi-tool :- (Hydraulic)** i. Combination tool is double acting hydraulic tools primarily for cutting and spreading but may be used, with suitable attachments as necessary for pushing, pulling and pressing or squeezing. ii. It is used for rescue work following vehicle, tanker or rail accidents, in factories or construction site accidents and in natural disasters particularly for collapsed shelter search and rescue. iii. The Combi -tool should have a light weight, balanced and ergonomic design with anti-slip twist grip handle and safety control. iv. The blades should be made of tempered tool steel. They should be straight, serrated, re-grindable and easily exchangeable. v. The cylinder body and housing could be made of high strength aluminum alloy or equivalent material. vi. Pigtail(s) should be fitted with anti-kink springs or some form of kink protection, have quick connect couplings and automatic locking.	
2.	Working Pressure	Not less than 630 bars.	
3.	Opening (spreading) width	Minimum 300 mm	
4.	Minimum spreading force	At 2.5cm from tip of blades should be 35 KN.	
5.	Spreading force	At 630 to 720 bars should be more than 100 KN.	
6.	Cutting force	At 630 to 720 bars should be more than 200 KN.	
7.	Pulling force	Should be more than 50 KN.	
8.	Weight	Should not be more than 20 Kgs inclusive of Hydraulic oil.	
9.	Hoses	The hoses should be of 10 m length and of different colors, if two hoses are to be used.	
10.	Operating Temperature	(-) 20 to (+) 55 degrees Celsius.	
Specification of Pump			
1.	Engine type:	Four stroke petrol engine	
2	Pump type	Two stage radial piston or alternative equivalent design with max output exceeding 2 liters per minute	

SL No.	Specifications criteria	Generalised Specifications	Remarks
3	Operating pressure	630 Bars minimum	
4	Fuel tank capacity	Adequate for minimum three hours running	
5	Oil tank Capacity	Minimum 2 liters	
6	Weight	Not more than 20 Kgs inclusive of Hydraulic Oil	
7	Operating temperature	-20 to (+) 55 degrees Celsius	
8	Sound level	Less than # 70 dB at 1 m distance	
9	Guarntee/warrant y/ Service support	i. The bidder should be able to conduct the repairs of the tools post warranty period for minimum ten years at a place as specified in the bid wherein it will be clearly laid out the possible procedure for the repairs and maintennece . ii. Bidder / OEM to provide an undertaking for the same.	
10	Training	i. 02 days base workshop level training to minimum 16 technicians at OEM premises on fuIl fledged running testing,diagnostic,troubleleshooting,maintenance,technieques to ease detection and calibration set up. ii. 01 day operator level training should be provided at user defined location	
11	Carry case	Injection moulded plastic or Aluminimum case with customized body	
12	Accessories to be Supplied	i. One set of chain with holders ii. One set of spare blades iii. Complete Tool kit for maintenance and repairs	
13	Manual and literatures	The following should be provided with the equipment i. User Operation Manual/technical Manual ii. Detailed operators instructions. iii. Technical literature iv. Maintenance manual, v. Inspection standards be provided with the equipment	

5. (b) Technical Specification of Battery Operated Hydraulic Combi Tool

SL No	Specifications criteria	Generalised Specifications	Remarks
1.	General	i. The unit shall be safer for heavy duty performance during rescue and salvage operation. ii. It shall be meeting latest standards of NFPA 1936 and certified by either TUV Germany / FM USA / EIL Delhi. iii. It should be made of anticorrosive material with the provision of carrying handles for operating the combi tool in all directions for safe and easy operation. iv. The combi tool shall be powered by an optimized high performance battery, superior blade design and perfect pulling effect. v. The combi tool shall be designed to orient itself optimally to target material. vi. The combi tool shall have blade opening and the force application perfectly matched to the relevant working range.	
2.	Working Pressure	i. The battery-operated combi tool should be driven by a self-contained hydraulic power and control system operating should not be less than 650 bar working pressure. ii. The combi tool shall not need to be connected to an external hydraulic source. It shall have its own integral pump and drive system.	
3.	Opening (spreading) width	Minimum 450 mm.	
4.	Minimum spreading force	Minimum- 1400 KN.	
5.	Cutting force	i) Minimum 80 tons . ii) Should be able to cut A-36 Hot Rolled steel round bar of minimum 35 mm. Diameter	
6.	Pulling force	Minimum 90 KN.	
7.	Weight excluding battery	Maximum 25 kg.	
8.	Operating Temperature	Should comply with the requirement of operating temperature as per the provisions of NFPA 1936.	
9.	Blades	i. Anodized for corrosion resistance. ii. Should be coated with GOCORO coating for extra corrosion resistance. iii. Any design certified by EN/NFPA for the desired level of performance.	
10	Pump	The pump and drive system shall be energized by 5.0 Ah 25V Li-Ion battery or more.	

SL No	Specifications criteria	Generalised Specifications	Remarks
11.	Battery and Charger	i. Each tool shall be provided with Three (3) numbers. rechargeable Li-Ion batteries (1 for tool and 2 as spares). ii. Battery must be having 5 Ah, 126 Wh, 25.2 V min specifications or more. iii. Two (2) nos. or more battery chargers 230V/50Hz (1 working and 1 standby / spare), iv. One (1) power supply 230V/50Hz for the alternate operation of the tool off a mains connection. v. The batteries shall have a failure code system to indicate possible malfunction of the same, so that the operator can react quickly at the working scene. vi. The batteries shall also allow to read out the number of charging cycles throughout the service life.	
12.	Other requirements of battery	i. The battery once attached to the tool should make a compact unit and have reasonable protection against the external impact. ii. It may also have lock/unlock switch/latch as a safety precaution. iii. The battery slot should be erogonomically designed so as not to obstruct the rescuer even in confined spaces.	
13	Certification/ Accredition	EN: 13204/ NFPA 1936	
14	Guarntee/ warranty/ Service support	i. The bidder should be able to conduct the repairs of the tools post warranty period for minimum ten years at a place as specified in the bid wherein it will be clearly laid out the possible procedure for the repairs and maintennece . ii. Bidder / OEM to provide an undertaking for the same.	
15	Training	i. 02 days base workshop level training to minimum 16 technicians at OEM premises on fuIl fledged running testing, diagnostic, troubleleshooting, maintenance, technieques to ease detection and calibration set up. ii. 01 day operator level training should be provided at user defined location	
16	Carry case	Injection moulded plastic or Aluminimum case with customized body	
17	Accessories to be Supplied	i. One set of chain with holders ii. One set of spare blades iii. Complete Tool kit for maintenance and repairs	
18	Manual and literatures	The following should be provided with the equipment i. User Operation Manual/technical Manual ii. Detailed operators instructions. iii. Technical literature iv. Maintenance manual, v. Inspection standards be provided with the equipment	

6. Technical Specification of Hydraulic Jack 10/20 Ton.

SL No.	Specifications criteria	Generalised Specifications	Remarks
1.	General	1) The Hydraulic Jacks are Mechanical devices used to lift heavy weight. 2) Hydraulic Jack works by compressing hydraulic fluid into the cylinder of the jack by use of a pump plunger. 3) It is used for lifting weight during rescue operations.	
2	Working Pressure	700-750 bar	
3	Lifting Height	Minimum 55 mm	
4	Insertion height	Not more than 14 mm	
5	Spreading Force	20 Ton or more	
6	Wedge angle	15^0 minimum	
7	Weight, ready for use	Not more than 15 kg	
8	Insertion height toe	Not more than 50 mm	
9	Low cap height	Minimum 12”	
10	Stroke	Minimum 250 mm	
11	Maximum lifting Force at the centre	Minimum 20 Tons	
12	Maximum lifting force On the toe	Minimum 10 Tons	
13	Temperature (Operational)	$-20^0C + 55^0$ C	
14	Hydraulic foot pump	One compatible Hydraulic foot pump along with 10 meter hose matching with Toe Jack and Wedge Jack is also required.	
15	Additional requirement	i. Wedge Jack lifting height capacity can be increased so that we can use it for tearing. (Eg. Tearing and opening door of a stuck lift so that other rescue equipment can be used). ii. Equipment Material must be Non-Corroding strong strength alloy to make it more durable and strong. iii. Base for Jack- a flat big size base plate is required so that jack should not sink in the surface.	
16	Certification	The Manufacture/Supplier must provide complete test reports for confirmation of compliance from any NABL/Govt. Accredited lab	
17	Guarntee/warranty/ Service support	i. The bidder should be able to conduct the repairs of the tools post warranty period for minimum ten years at a place as specified in the bid wherein it will be clearly laid out the possible procedure for the repairs. ii. Bidder / OEM to provide an undertaking for the same.	

SL No.	Specifications criteria	Generalised Specifications	Remarks
18	Training	i. 02 days base workshop level training to minimum 16 technicians at OEM premises on fuIl fledged running testing,diagnostic,troubleleshooting,maintenance,technieques to ease detection and calibration set up. ii. 01 day operator level training should be provided at user defined location	
19	Carry case	Injection moulded plastic or Aluminimum case with customized body	
20	Manual and literatures	The following should be provided with the equipment i. User Operation Manual/technical Manual. ii. Detailed operators instructions. iii. Technical literature. iv. Maintenance manual, v. Inspection standards be provided with the equipment	

7. Cordless Hammer Drill

SL No	Specifications criteria	Generalised Specifications	Remarks
1	Description	Cordless hammer drills are light weight handy tools, battery operated that combine high speed, high torque and hammer action to enable drilling in metal and wood.	
2	Battery voltage	Min 18 Volts	
3	Power from	18 Volts Lithium battery	
4	Motor type	Brushless motor	
5	Impact energy	Min 5 Joules	
6	Operation mode	(a) Rotary Hammering (b) Hammering (c) Rotary	
7	Two speed transmission	(a)No load speed (RPM)= 0-1000 (b) Rate of percussion under load maximum (blows per minute) = 0-5000	
8	Drilling capacity	(a) Metal = Min 13 mm (b) Wood = Min 30 mm (c) Masonry = Min 40 mm (d) Concrete = Min 26 mm	
9	Tool reception	Slotted Drive Shaft or Slotted Drive System	
10	Chuck neck diameter	Min 55 mm	
11	Weight with battery	Maximum 7.5 Kgs	
12	Other features	(a) AVS (Anti vibration system) to absorb shock (b) LED to lit up spot of application of working area	
13	Ambient operating temperature	-20ºC to 55ºC	
14	Guarntee/warranty/ Service support	The bidder should be able to conduct the repairs of the tools post warranty period for minimum ten years at a place as specified in the bid wherein it will be clearly laid out the possible procedure for the reparies. Bidder / OEM to provide an undertaking for the same.	
15	Training .	i. 02 days base workshop level training to minimum 16 technicians at OEM premises on fuIl fledged running testing,diagnostic,troubleleshooting,maintenance,techniequesto ease detection and calibration set up. ii. 01 day operator level training should be provided at user defined location	
15	Carry Case	Injection moulded plastic/ Aluminimum case with customized body	
16	Accessories to be	i. 26 mm drill bit concrete (length of bit Min 300 mm) – 02 Nos	

SL No	Specifications criteria	Generalised Specifications	Remarks
	Supplied	ii. 13 mm drill bit steel – 02 Nos iii. 32 mm drill bit wood – 02 Nos iv. 02 Nos Battery (Min 5Ah) with quick charger	
17	Manual and literatures	The following should be provided with the equipment i. User Operation Manual/technical Manual ii. Detailed operators instructions. iii. Technical literature iv. Maintenance manual, v. Inspection standards be provided with the equipment	

8. Technical Specification of Hard Toe Steel Shank Boot

SL No.	Specifications criteria	Generalised Specifications	Remarks
1	General	i. The Hard Toe steel shank boot shall be complied with CE 0321 and EN ISO 20345 or equivalent International Standards. ii. Boot should provide safety and comfort to the rescuers during hostile working environment of CSSR operation. iii. It must have loops for assisting the wearing of boots. iv. The size of the boot shall be provided at the time of supply order.	
	Technical Data		
2	Upper Rubber and sole type	Should be Vulcanized Rubber for upper and sole type of construction.	
3	Upper construction	i. It should have extra comfort with woven cotton canvas lining material. ii. Upper construction should consist of:- a) Flame retardant upper with heat insulation. b) Waterproofing c) Reinforced rubber d) High visibility through black and yellow contrast	
4	Sole/Heal	Sole and Heel should consist of:- i. Flame retardant rubber outside ii. Fuel oil resistant sole suitable for inimical environment. iii. Slip resistant vulcanized rubber outsole. iv. Excellent abrasion resistant for extra durability. v. Capable of withstanding 18 KV of live current at dry condition. vi. Heel energy absorption design to minimize heel impact.	
5	Sole/Toe cap	Sole/Toe cap should consist of:- i. Epoxy coated toe caps for anti-corrosion. ii. Metal toe-cap should provides reliable protection in cold & hot environments.	
6	Sole Toe Cap Standardisation	Should Meet EN ISO 20345 impact and compression tests	
7	Resistance	Sole & upper should have resistance towards strong acids and alkali, Meeting (EN 13832) and NFPA Standards	
8	Weather protection	It should have finishing consist of lacquer coating for all weather protection	

SL No.	Specifications criteria	Generalised Specifications	Remarks
9	Steel Midsole	Steel midsole should consist of:- i. Non corrosive stainless steel ii. Withstands pin & sharp objects	
10	Certification	Boot shall meet the requirements of the standard specified and certificate to this effect from an NABL accredited/ independent laboratory /test house of International repute shall be furnished along with the technical offer.	
11	Maximum weight	Not more than 2.5 kgs for a pair of shoes	
12	Guarantee/ warranty/ Service support	i. As it is a part of PPE, so the bidder should provide hassle free replacement warranty for a period of 5 yrs. ii. Bidder /OEM to provide an undertaking for the same.	
13	Manual and literatures	The following should be provided with the equipment i. User Operation Manual/technical Manual ii. Detailed operators instructions. iii. Technical literature iv. Maintenance manual, v. Inspection standards be provided with the equipment	

FWR EQUIPMENT

9. Under Water Torch

S. NO	CRITERIA	Generalised Specifications		Remarks
1	Role	The underwater deep diving torch capacitates a NDRF deep diver to get the desired result of SAR Ops and safe wading out from the ops site.		
2	Essential Parameters	1) The divers' underwater torch must be rugged, hard tensile, non-electrocute and light weight. 2) Its characteristics must be as under:- i. Should have a lanyard stripping handle for ease of underwater handling ii. The diver's lamp must be an aqua lumen high intensity beam torch with incredible long burn time. iii. The rugged style casing impedance to alternate current circuit . iv. Self-contained system with a rechargeable battery pack compatible with Power bank. v. Must be of surface using capabilities. vi. Design must be of pen type for easy carrying in belt vii. Must have a fool proof safety mechanism to prevent the divers from dangers viii. Cost effective		
3	Specifications of LED Scuba light	Material	Aluminum with anodizing (head), ABS (body)	
		LED Type	Cree XP-L V5	
		Lamp Life	50,000 hrs.	
		Nominal color Temperature	6000K-8000K	
		Min. nominal rate output	2000 lumens	
		Wattage	12W	
		Waterproof	Min 250 mtr	
		Max. rated depth	400' feet	

		Burn Time	i. Max 10 hrs. (100%-70%) ii. Medm 11-30 hrs. (70%-30%) iii. Low 31-50 hrs. (30%-10%)	
		Beam divergence (full angle)	12 degrees	
		Lighting Distance	100-200m	
		Diameter	40 to 45 mm	
		Battery Cell Type	Compatible	
		Overall Length (Max.)	200 mm	
		Standard power Consumption	4.5V DC	
		Support Dimmer	Single file	
4	Underwater diver special Force lamp each consisting of following items	i. Lamp with Battery ii. Battery Charger – 01 iii. Compatible bulb - 05 iv. Lens - 02		
5	Certificate	ISO 9001/BIS/EU		
6	Guarntee/warranty/ Service support	The bidder should provide warranty period for minimum three years. Bidder / OEM to provide an undertaking for the same.		
7	Training	01 day operator level training for its handling should be provided at user defined location.		
8	Carry Case	Injection moulded plastic or Aluminimum case with customized body		
9	Manual and literatures	The following should be provided with the equipment i. User Operation Manual/technical Manual ii. Detailed operators instructions. iii. Technical literature iv. Maintenance manual, v. Inspection standards be provided with the equipment		

10. Specification of Inflatable Motor Rescue Boat

SL No	Specifications criteria	Generalised Specifications	Remarks
1	SCOPE:	This specification relates to the detailed requirements for the design, construction, documentation and warranty of 12 to 16 feet Inflatable Boats, intended for NDRF.	
2	Functions	The inflatable boat shall perform the following tasks :- (a) Search & Rescue during floods. (b) Transport men and material (c) Support boat for body search and diving.	
3	Design	1) The boat shall be designed to be seaworthy/River worthy /Stationary water bodies/ Stagnated water to carry out functions listed under head function with full complement and at speeds (not less than **10** knots commensurate with a range of 25HP to 40HP OBM). 2) The craft shall be stable and should meet swamp & stability requirement as per ISO 6185-3. 3) The boat shall be designed to have good maneuverability and throttle response throughout its speed range (using 25HP/40HP OBM 4 stroke) and particularly when operating at flowing water speed of 10-15 Knots . 4) High-pressure inflatable keel for better performance and handling. 5) V-shaped hull for improved stability and handling in rough waters. 6) Minimum 5 air chambers for safety and redundancy.	
4	Features	1) Grab lines for easy boarding and disembarking. 2) D-rings for attaching equipment and accessories. 3) Self-bailing drain valve for easy water evacuation. 4) Compatible with OBM range of 25 to 40 HP	
5	Principle particulars	(a) Length exterior – 12 to 16 feet (b) Breadth exterior – Not less than 6 feet (c) Length interior - min. 10 feet (d) Breadth interior – min. 3.2 feet (e) Dia. of Buoyancy Tube -Not less than 1.5 feet (f) Carrying Capacity – 10 to 12 person (82.5 Kg per person) (g) Weight of the craft – Not more than 90 kg for boat & Not more than 40 Kg for the floor boat & accessories (Without OBM)	

SL No	Specifications criteria	Generalised Specifications	Remarks
6	Built	1) The craft shall be built of Buoyancy Tube made of Composite Fabric consisting of Hypalon (outer layers) and Neoprene (inner layers) of 1670 Dtex or equivalent, inspected by IRS as per ISO 15372. 2) The bottom floor of the boat shall be made of the same fabric as buoyancy tube. 3) Reinforcement of the boat shall be provided using rubberized strips of Hypalon (outer layer) and Neoprene fabric (inner layer). 4) The stern of the boat formed by a transom shall be made of Marine Plywood or Foam Core with fiberglass three layers on which OBM can be mounted	
7	Approval And Inspection By Inspection Authority	1) The Craft is to be constructed under the approval of Indian Register of Shipping (IRS) in accordance with ISO 6185, Part 3 (2014) and the minimum requirements specified in this specification . 2) Parameters not mentioned in this specification would be in accordance with ISO 6185, Part 3 for inflatable crafts, so as to ensure that the craft meets all functional/material requirement specified in this specification. Class approval shall cover following aspects:- (a) Design vetting (b) Drawing approval (c) Material Inspection (d) In-process Inspections (e) Tests & Trials in flowing water and rescue simulation as per committee.	
8	Certification	Indian Registrar of Shipping (IR Class) to ensure that it meets safety standards	
9	Construction Details	1) Buoyancy Tube : The material used for buoyancy tube shall be of Hypalon (outer layers) and Neoprene (inner layers) composite fabric, of 1670 Dtex or equivalent inspected by IRS as per ISO 15372. 2) The Buoyancy Tube shall be divided in to a minimum of 05 air tight compartments by means of baffles/bulk-heads. Each compartment shall be fitted with a combined inflation/deflation valve. 3) The valves shall be made of rubber moulding and plastic nylon material or alternate marine grade material approved by class. The valves should be of reputed make and approved by Classification society for use on inflatable crafts. 4) The ends of the tube shall be conical and should terminate in suitably stiffened rubber conical flat ends to take impact loads during coming alongside/lowering. 5) The two legs of the Buoyancy Tube shall be parallel and the width readings at the transom and at midship shall not differ by more than 3%. 6) The tube shall be strong enough to sustain the effects of ramming whilst coming alongside **at the speed of 05 knots.** 7) The upper layer shall be strong enough to bear the rubbing impact against rough surfaces. In addition, an emergency repair kit with quick drying adhesive and ready use repair patches shall be provided.	

SL No	Specifications criteria	Generalised Specifications	Remarks
		8) The construction of the Buoyancy Tubes should be in accordance with class approved drawings and production processes. 9) The attachment of bulkheads in the buoyancy tube shall be such that each chamber is rendered air tight under specified pressure. 10) The seams in the buoyancy chambers shall have an overlap not less than 3cm width and should be pasted with cold glue vulcanisation process or equivalent Class approved process. 11) An additional strip is to be glued at the edge of each panel junction as well as strip inside all assembled parts in order to ensure a perfect water tight preventing from any leakage. **Inflation/Deflation Valve** 1) The Inflation/Deflation valve shall combine a high pressure air connection with a deflation valve in each air tight chamber and shall be as per ISO 6185-3 (2014). 2) The valve shall be fitted proud of the buoyancy tube on inner side of the buoyancy tube to enable identification/location in darkness. 3) The material of inflation/deflation valve fitted on the buoyancy tube shall be of suitable material for marine application. 4) Alternate design/ arrangement for inflation/ deflation valves which meet the above functional requirements is acceptable subject to the approval of Classification Society. **Floor** 1) The floor shall be made of Hypalon (outer layers) and Neoprene (inner layers) composite fabric, of 1670 Dtex or equivalent inspected by IRS as per ISO 15372. 2) The floor shall be bonded to the underside of the buoyancy tube and attached by a floor retaining strip to the transom board. 3) It shall be strengthened on its underside in way of the keelson by a keelson chafing strip of minimum 100 mm wide fabric. 4) Chafing strips shall also be bonded to the underside at the after ends of the tubes. 5) Special attention shall be paid to the attachment of the floor to the buoyancy tube to ensure that the resulting joint is water tight. 6) Special care is also to be taken that the floor is perfectly taut and smooth and has no puckers, when the craft is assembled and ready for use. **Self-Bailers/Drain Valves** 1) Two self-bailers akin to NRV shall be located on the lowermost part of the transom board near the rear end fitment of the keel close to the centre line. 2) The same shall be provided with a flexible flap to overcome pressure on the NRV in following seas.	

SL No	Specifications criteria	Generalised Specifications	Remarks
		3) The self-bailers shall automatically remove water from the craft at higher speeds. 4) Additional Scupper should also be fitted to Transom**.** **Transom** 1) The transom board shall be fitted and securely bonded to the buoyancy tube and the floor so as to provide a water tight joint. 2) The Transom shall be designed for use with 25 to 40 HP OBM. 3) The transom shall be made of marine plywood **or foam core** coated with **03 layers of 6 mm** FRP/GRP of appropriate thickness and to be suitably fitted out with engine mount made of marine grade Aluminium alloy plate and chafing patch. 4) Hypalon coated fabric shall be pasted on the surface area of the transom to prevent it from damage as well as loosening from the tube body. Separate strip of suitable size shall be provided on the bottom of the transom to minimize chance of damage. 5) Details regarding craft identification No. etc. shall be engraved on a builder's plate fitted on the inner side of the transom on starboard side. Towing rings, cleat and 'U' bracket shall be provided as per approved drawing. **Floor Boards**. 1) The boat is desirable to be without floor boards. Inflatable and other designs promoting speed of /in deployment or other benefits will be welcomed. 2) However if the floor beds are to be made in that case it should be :- 1) The Floor boards shall be made of High Strength Tempered Anodised marine grade Aluminium alloy with a foam mat (non-skid) finish. 3) These boards (Four/Five pieces) shall be interconnected together to form a rigid platform. The forward/bow piece of floorboard may be made of marine plywood (IS 710) coated with FRP lamination. **Keel** 1) The boat shall be provided with inflatable keel of suitable size to provide the rigidity & stability during operation of boat. **Stowage Pockets.** 1) Minimum **two** Stowage pockets shall be attached to the buoyancy tube in the forward in board side. 2) The stowage pockets provided shall be capable of holding dynamic weight of 6 Kgs. 3) Holes are to be provided at the bottom of the pocket to drain water (Size 340mm x 280mm x 90mm). **Rubbing Strips.**. 1) Following single piece Rubbing Strips of moulded neoprene rubber of 2" width (where not mentioned) and extending along the entire length shall be attached to the buoyancy tube for the protection of the craft:- (a) Bow rubbing strip 4". (b) Outer anti chafing strip 100 mm wide on both sides.	

SL No	Specifications criteria	Generalised Specifications	Remarks
		(c) Anti-Chafing Strip under Keel of V shape. (d) Two Beaching Strips 100 mm wide under buoyancy tubes. (e) Chafing patch for coxswain's position **Carrying Handles.** 1) Minimum **seven** Carrying handles shall be provided, three on each side and one front lifting handle. 2) The handles shall be suitably reinforced to take a weight of 300 kgs all together. 3) The handles shall be of Moulded Neoprene Rubber bonded to the buoyancy tubes. **Towing Fittings and Securing Arrangements.** 1) Following Towing fittings shall be provided. Towing fittings shall consist of suitably sized D Shackle of SS AISI 316 (to pass towing rope) securely attached to fabric reinforcing patches bonded to the buoyancy tube. a Towing/ Lifting fittings, forward – One on either side of the craft, below the buoyancy tube at the beginning forward curve in the buoyancy tube. b Towing fittings, aft – One on either side on the transom, shall be used if craft is employed for towing purposes. c Load Test. The towing arrangement shall be load tested as per ISO 6185-3. **Oars & Oar Securing Assemblies.** Two nos. of oars to be provided. Oars shall be positioned parallel/30º to the vertical when secured inside the inboard side of buoyancy tubes. Adequate securing arrangement shall be provided so that the oars are intact.The buoyancy must have fittings for fixing oars. **Foot Bellow pumps** 1) Heavy duty bellow type foot pump (reputed make) of suitable design shall be provided to inflate the craft in approximately 20 minutes. 2) The housing of pump is to be made of a heavy duty yet light weight marine composite. 3) The Bellow to be made of coated reinforced fabric and all metal parts should be of stainless steel. 4) In addition, one heavy duty electric inflation pump of reputed make (12 V DC) and one pressure guage (capable of measuring pressure of tubes) of reputed make to be provided. **Fabric Fittings**:-Patches, doublers, anchorages, etc. shall be made and positioned as shown on the drawing which indicates finished size. Suitable tape/webbing reinforcement shall be used to distribute stresses adequately. **Grab line** There shall be grab line nylon braided (as per IS 4227) of dia. min. 12.0 mm all along the sides for safety to be provided.	
10	Material specifications	1) Material Specification for the various items to be used for construction of Inflatable crafts are as follows:- a. Tube Fabric: Hypalon or PVC b. Floor (not Hull) Material: Fiberglass or Aluminum, 3-piece detachable plates with single running channel on each	

SL No	Specifications criteria	Generalised Specifications	Remarks
		side or new design to be submitted if any c. Transom plate: Fiberglass with Stainless steel plates./OBM SADDLE. d. The Material Specification for buoyancy tube, inflatable keel composite fabric of 1670 Dtex or equivalent as per ISO 15372 and inspected by IRS. e. The Material Specification for floor system as per recognized national/international standard. b. The material specified shall be strictly adhered to and no deviation is permitted. Materials referred to as approved shall be so approved by the Classification Society in accordance with the requirement specified in this Rule. c. The colour of all exposed surfaces / material shall be highly visible orange color. **Adhesive** 1) The adhesive shall be Neoprene based contact adhesive of good quality and to be suitable for service in tropical environments as per specification. 2) The adhesive shall consist of a dispersion of polychloroprene in a low boiling point solvent and may have additions of resins to promote building tack. 3) The adhesive shall consist of 2 components, Part 1 and Part 2, Part 1 being the basic neoprene dispersion and part 2, the accelerator (hardener). 4) The adhesive should be approved by Classification Society for use on inflatable and meeting the minimum requirements specified in ISO 6185-3 (2014). 5) Alternate adhesive superior in properties are also acceptable subject to type approval of Classification Society as per ISO 6185-3(2014).	
11	Principal components of boat	The principal components of the complete assembly are as follows:- **Hull** 1) Buoyancy tube - Divided in minimum 05 compartments and complete with rubber conical flat ends. 2) Bulkheads –Dividing the buoyancy tube into min.4 compartments. 3) Inflation/deflation valves – one set per chamber. 4) Transom- fitted with engine mount, anti-chaff patch. 5) Floor - in proofed fabric 6) Keelson chafing strip – 1 No. 7) Aft chaffing strip – 1 No. 8) Inflatable Keel - 1 No. **Hull Fittings** 1) Bow Rubbing strip - 1 No. 2) Side Rubbing strip Aft -1 set 3) Carrying Handles(Patch rubber with handle)-7 Nos(3 on each side and 1 front)	

SL No	Specifications criteria	Generalised Specifications	Remarks
		4) Grab line - 1 set 5) SS to AISI - 316 Hook on transom -2 Nos 6) SS to AISI - 316 "D" rings - 2 Nos 7) Pockets for stowage- 1 Nos(One for wireless set & one for inflation bellow pump) 8) Oars (Shall be light weight not more than 4Kgs and positively buoyant in water) 9) Repair Kit (small) – fabric patches 05, adhesive tube (Dendrite) 500 gm, roughing tool, spanners of required sizes, yamadur (hardener) **Valises and Store bags** 1) Heavy duty storage bag for Hull – 01 No. 2) Storage bag for oars & other accessories – 01 No **Additional Spares** (i) Inflation/ Deflation Valves - 10 Nos (ii) Pressure gauge - 01 Nos (iii) Plugs for Water Drain - 04 Nos (iv) NRV for Water Drain - 10 Nos (v) Electric Inflation pump - 01 No (vi) Bellow Inflation Foot Pump - 02 Nos (vii) Patching material with adhesive to repair leak/damage in buoyancy tube. (viii) Scuppes for bailing water from Transom.	
12	Accessories	i. Inflatable foot pump ii. Repair kit iii. 06 Oars iv. Carry bag or storage cover v. Cordless Blower vi. Puncture Kit	
13	Warranty clause	1) The inflatable crafts supplied shall bear a warranty of the contractor, against defective material, workmanship and performance for a period of 24 months from the date of receipt of the consignment of the stores. 2) During this period if any of the stores supplied found defective the same shall be replaced by the contractor free of charge at the consignee place as soon as possible and in any case not later than one month from date of receipt of intimation by the contractor. 3) Delay in replacement /repair beyond one month shall invite penalty @ 0.5% per week or part thereof of the cost of goods/stores/parts/assembly in question. 4) In addition Inflatable crafts should have manufacturers /builders warranty for 05 years for the fabric used and 24	

SL No	Specifications criteria	Generalised Specifications	Remarks
		months for the adhesion at joints, under normal exploitation 5) The supplier/OEM shall also bear a service warranty and spare supports for the Boat for a minimum 10 years 6) An undertaking of the same to be furnished by the OEMs	
14	Deflation and dismantling	When deflated and dismantled the craft and components shall be stowed in heavy duty top-proofed PVC coated nylon valises fabric as defined in Para 7.3 above.	
15	Stencilling and marking	1) The following shall be marked on builder's plate fitted on inner side of the transom starboard side:- **BOAT GENERAL PURPOSE** i. INFLATABLE NO.:---------- ii. DATE OF SUPPLY:---------- iii. NAME OF MANUFACTURER :----------MAX LOAD iv. CARRYING CAPACITY (KG): ----------MAX MOTOR RATING (KW): ----------MAX NO. OF PERSONS: ---------- RECOMMENDED WORKING PRESSURE ---------- 2) The following parts shall have the identification of the craft permanently marked on them:- i. Bottom boards - Stencil marking to be made ii. Oars- -do- iii. Storage bags - -do- iv. Valises- -do- 3) The stenciling is to be in black ink, waterproof and of a quality non-injurious to the proofed fabric.	

Specification of Out Board Motor (OBM) 25 HP to 40 HP

SL No.	Specifications criteria	Generalised Specifications	Remarks
1	Engine	This specification relates to the detailed technical requirements of 25 HP/40 HP Four Stroke Outboard Motor (OBM) intended to be used on 12 to 16 feet long Inflatable Boats of NDRF. The general specifications are as under :- I. Minimum power of 25 HP to 40 HP II. 4-stroke III. water-cooled IV. Single hand Control with Forward, Neutral and Reverse gears. V. Manual/ Electric start	
2	Fuel Type	Petrol driven	
3	Fuel Capacity:	i. External fuel tank ii. Standard fuel tank with accessories as provided by OEM	
4	Design:	i. Shaft length: 20 to 25 Inches ii. Up-down tilt iii. Metal body cover	
5	Requirements	i. OBM shall be compatible (throttle response throughout its speed range, shaft length, propeller etc.) with 12 to 16 feet Inflatable Boats of NDRF and can be quickly attached to boat whenever required. The Outboard motor shall be of four strokes, three cylinders in-line gasoline engine with suitable propeller. ii. The OBM should be capable of developing its maximum power(25HP to 40 HP). iii. The OBM shall have electronic fuel injection system. iv. The engine cooling system shall be water cooled with thermostat. v. The OBM shall be provided with tiller handle for steering. vi. The OBM shall be provided with manual trim & tilt. vii. The exhaust shall be through propeller. viii. The lubrication system shall be wet sump. ix. The OBM shall be ultra-low emission ratings. x. The length of the shaft of OBM shall be compatible with transom height of 12 to 16 feet Inflatable Boats of NDRF (Long shaft of 20 inches xi. The engine and drive line shall be fitted in enclosed housing to protect from water. xii. OBM shall be manual starting capability. xiii. OBM shall have Single hand drive **for** forward, neutral & reverse gear shifting arrangement Gear lever must be either on the control handle or the side of OBM.	

SL No.	Specifications criteria	Generalised Specifications	Remarks
		xiv. The OBM shall be provided with OEM supplied standard fuel tank along with suitable accessories such as connecting fuel hoses, male & female adopter. xv. OBM shall be provided with owner's manual & service manual. OEM recommended standard spares are to be provided. <u>On-board spares (OBS)</u> a. Engine oil filter- 03 nos. b. Fuel Filter- 06 nos. c. Air Filter-02 nos. d. Fuel line with priming valve and connectors – 01 No. e. Propeller- 01 No. f. Spark plug -03 Nos. g. Spark plug wrench -01 No. h. Water pump repair kit –01 set i. Water pump impeller – 01 No. j. Gear oil drawn screw washer –06 nos. k. Lubrication oil drain plug washer – 02 nos. l. Fuses of all system complete -02 set m. It Shall be provided with suitable wheeled storage stand. n. Dry weight of the OBM shall not be more than 85 Kgs.	
6	Other	1) Safety: auto-cut off feature upon disengagement of the pilot by a leanyard wih a kill switch wrist strap. 2) 12 V DC output for one Boat navigation lights.	

11 (a). Technical Specification of Synthetic Life Jackets for Rescuers

SL No.	Specifications criteria	Generalised Specifications	Remarks
1	Approval	i. It should be IRS/SOLAS /ISO/CE/BIS approved and stamped. ii. It should have Retro-reflective tape SOLAS approved. iii. Buoyancy factor should be checked at a Govt, accredited/certified lab.	
2	Colour	should be High-Visibility orange colour fabric cover	
3	Adjustable buckle	It should have Adjustable 3-buckle for tightening and specially designed with Velcro fitment for easy/quick donning in an emergency.	
4	Resistant	It should be chemically resistant to sea water and petroleum products.	
5	construction	It should have Special construction of the jacket allows the wearer quick turning in case of being knocked unconscious in water, confirming to 150N ISO-12402-(all parts) of latest version which deals with PFDs	
6	Floatability	It should have Floatability approx. 15 Kg + EN 396 or 150N ISO 12402-3 or CE equilant.	
7	Inner foam	It should have made of Soft Polyethylene (made from durable & water-resistant materials such as nylon,polyester,neoprene,PVC or 500-denier Cardura.	
8	Size	It should be of universal adult size.	
9	Weight	It should not more than 2 kg	
10	Accessory	It should have whistle & reflective elements.	
11	Buoyancy	It should be designed to provide buoyancy for 150 kg of weight for 72 hours.	
12	Shelf life	It should have Shelf life of 05 years.	
13	Additional Features	i. It is desirable to have large front pockets stretch to hold carabiners, web, a GPS, or a radio set. ii. Life jacket should not move towards neck during jumping into water from a height 10 to 15 feet and strap should remain intact. iii. It should have shoulder and side adjustments which allows a one-size-fits-all jacket to accommodate different body types of rescuers. iv. It must have an emergency release tether for swift water rescue. v. Roomy arm holes, adjustable side tabs, marine mesh inner lining and 3M reflective material, SOLAS grade reqd for the rescuer.	

11 (b). Technical Specification of Synthetic Life Jackets for Survivor

SL No.	Specifications criteria	Generalised Specifications	Remarks
1	Approval	i. It should be IRS/SOLAS/ISO/CE/BIS approved and stamped. ii. It should have Retro-reflective tape SOLAS approved. iii. Buoyancy factor should bechecked at a Govt accredited/certified lab.	
2	Colour	It should be High- Visibility Orange colour fabric cover	
3	Adjustable buckle	It should have Adjustable 3- buckle for tightening and specially designed with Velcro fitment for easy/quick donning in an emergency.	
4	Resistant	It should be chemically resistant to sea waterand petroleum products.	
5	Construction	It should have Special construction of the jacket allows the wearer quick turning in case of being knocked unconscious in water, confirming to 150N ISO-12402-(all parts) of latest version which deals with PFDs.	
6	Floatability	It should have Floatability approx. 15 Kg + EN 396 or 150N ISO 12402-3 or CE equilant.	
7	Inner foam	It should have made of Soft Polyethylene (made from durable and water- resistant materials such as nylon, polyester, neoprene, or PVC) or 500- denier Cardura.	
8	Size	It should be of universal fit to all size.	
9	Weight	It should not be more than 1.5 kg	
10	Accessory	It should have Whistle and reflective elements.	
11	Buoyancy	It should be designed to provide buoyancy for 150 kg of weight for 72 hours.	
12	Shelf life	It should have Shelf life of 05 years.	
13	Additional Features	i. Life jacket should not move towards neck during jumping into water from a height 10 to 15 feet and strap should remain intact.	

MFR EQUIPMENT

12. Technical Specification of Multi Paramonitor

SL No.	Specifications criteria	Generalised Specifications	Remarks
1	General	The Multipara monitor suitable for adult and neonatal patient categories. 1. screen size- upto 6'' 2. Weight - ≤ 400 gms 3. App enabled software with Qr code. 4. Touchscreen 5.Connectivity to mobile application. 6 Centralize Monitoring System enabled for ease of access. 7 Intelligent system which can be used to save data and retrieve using server. 8 Flexibility to use parameter modules and accessories provided with the device.	
2	Configuration	Standard Configuration- 1. 5 lead ECG (multiple leads through placement change of V lead) 2. Non evsive blood pressure measurement 3 SpO2 through specific Oximeter attachment. 4 Pulse Oximeter plethysmograph. 5 Respiratory rate analysis and graph. 6. Continuous body temperature measurement.	
3	Features	i. **Optional Parameters & Configuration**-2-IBP, ETCO2 (Main Stream/Side Stream), 12 Lead ECG and Thermal Recorder	
		ii. **Connectivity** - IOT enabled system for access of monitored data	
		iii. Intelligent Alarms- 1. Multiple waveforms to view all required parameter waveforms simultaneously. 2. Continuous communication and Automatic alarm to review remote patient monitoring data.	
		iv Should have to attach thermal printer.	
		v. Comprehensive Data Storage- 1. Storage of 3 hours with all waveform and data, Last 20 waveforms and data recorded within device. 2. Atrial alarms for A-Fib, Missing beat, Pause, Irregular, SV Tachy.	

SL No.	Specifications criteria	Generalised Specifications	Remarks
		3. Ability to freeze screen when required. 4. General alarms for Respiratory Rate High/Low, Temperature High/Low, SPO2 High/Low, Blood pressure High/Low, parameter modules disconnected.	
		vi High performance Li-ion Battery-With low power consumption, the battery back-up time is 2 hrs. (4 hrs. back-up can be provide as on option)	
		ix MIIcertificate/undertaking/ ISO.	
4	Accessories	i. ECG Cable 5 leads- 01 No ii. Reusable Adult SpO2 finger sensor -03 No iii. Reusable SPO2 Y Sensor -03 No iv. NIBP Cuff for adult, pedia & Neonatal- 1 No each v. Temperature robe-01 No	

13. Technical Specification of Spine Board with Accessories

SL No.	Specifications criteria	Generalised Specificationss	Remarks
1	Dimensions	Integrated spine board dimensions Adult size: 182 X 45 X 5cm (approx.) Child size:120 X 30 X 5cm (approx.)	
2	Weight	The weight of the spine board should not be more than 12 Kgs.	
3	Capacity	The load capacity of the spine board should be a minimum of 150 Kg.	
4	Thickness	Thickness (maximum) 55 mm	
5	Compatible with	CT/MRI compatible and radio lucent	
6	Material	1. sturdy one-piece HDPE plastic construction. 2. Made of high-density polyethylene with firm surface for CPR & immobilization. 3. Adult Spine Plate Due to its X-ray compatibility and four-sided grip, the adult plate allows for proper fixation and easy transportation. 4. It should have a fine textured surface also to prevent slippage and is easy to disinfect and clean. 5. Head Immobilizer - It should have 2 anatomically shaped polyethylene blocks and a base for effective head immobilization with 2 belts for fixation with spine board and 2 for head/chin support.	
7	Features	1. Spine board which is (two in One for Adult and Child) is always ready to collaborate and reinforce each other. 2.It can rescue an adult and a child or an infant at the same time. 3. Hold the head immobilizer. 4. Minimum of 12 holes for straps to immobilize the patient & minimum 8 holes for lifting patients. 5. Provision to fix adult & pediatric straps, and head immobilizers. 6. Space underside to move fingers and to lift patient easily. 7. Should be supplied with 3 straps which are adjustable in length. 8. should have a quick release button design, the pediatric spine board can be released in 30 seconds, for convenient use. 9. The larger one can be used to transport adults, the smaller one can be used as a pediatric spine board.	
8	Certification	1. CE marked and manufactured in an ISO 9001:2008 certified facility. 2. Supplied by an ISO 13485 NABCB certified supplier. 3. The Spine Board supplier should have CDSCO compliance as per government compliances.	