An ISO 9001 Company

Bharat Heavy Electricals Limited
(High Pressure Boiler Plant**)**
Tiruchirapalli – 620014, TAMIL NADU, INDIA
Business Development Group/ATP

ENQUIRY NOTICE INVITING EOI	Phone: +91 431 257 5271 Fax : +91 431 257 6804 Email : ckv@bheltry.co.in, Web : www.bhel.com

Single Part BID	**Enquiry Number:** BHEL-T/BDG/ARV-14 , Rev-0	**Enquiry Date:** 16 April 2014	**Due date for submission of quotation** 16 June 2014

You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a expression of interest and not an order.

Please note that under any circumstances both delayed offer and late offers will not be considered.

Item No.	Item Description
10	**INVITES EXPRESSION OF INTEREST FOR TECHNICAL COLLABORATION FOR ARMOURED RECOVERY VEHICLES FROM OEMs**

Important Points to be taken care during the submission of offer:-

1. Bidder's Response Column in technical specification sheet to be duly filled in without fail. Additional details provided in the offer may be supported with documentary evidence.
2. Check list to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.

BHEL's General guidelines /instructions including bank guarantee formats and list of consortium banks, commercial terms checklist can be downloaded from BHEL web site http://www.bhel.com or from the government tender website http://tenders.gov.in (public sector units > Bharat Heavy Electricals Limited page)

EOI should reach us before 14:00 hours on the due date EOI will be opened at 14:30 hours on the due date.	Yours faithfully, For BHARAT HEAVY ELECTRICALS LIMITED Engineer / ATP

NOTICE INVITING EXPRESSION OF INTEREST FOR TECHNICAL COLLABORATION IN THE AREA OF ARMOURED RECOVERY VEHICLE (ARV)

EOI REFERENCE NUMBER BHEL-T/BDG/ARV-14

BHARAT HEAVY ELECTRICALS LIMITED,
HIGH PRESSURE BOILER PLANT-Trichy

DISCLAIMER

The information contained in this Expression of Interest document (the "EOI") or subsequently provided to Applicant(s), whether verbally or in documentary or any other form, by or on behalf of BHEL or any of its employees or advisors, is provided to Applicant(s) on the terms and conditions set out in this EOI and such other terms and conditions subject to which such information is provided.

This EOI is not an agreement and is neither an offer nor invitation by BHEL to the prospective Applicants or any other person. The purpose of this EOI is to provide interested parties with information that may be useful to them in the formulation of their application for qualification pursuant to this EOI.

BHEL also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Applicant upon the statements contained in this EOI.

The issue of this EOI does not imply that BHEL is bound to select and shortlist Applicants for next stage or to enter into any technology tie-up agreements with shortlisted Applicants for the Project.

The bidder shall bear all costs associated with the preparation, technical discussion/presentation and submission of bid, the Purchaser/Consultant shall in no case be responsible or liable for these costs regardless of the conduct or outcome of the bidding process.

Canvassing in any form by the Bidder or by any other agency on their behalf may lead to disqualification of their bid.

BHARAT HEAVY ELECTRICALS LIMITED (BHEL), HIGH PRESSURE BOILER PLANT (HPBP), Trichy, India INVITES EXPRESSION OF INTEREST FOR TECHNICAL COLLABORATION FOR ARMOURED RECOVERY VEHICLES FROM OEMs

Schedule of Events

Last date for receipt of queries/clarifications: 15 May 2014

Consolidated Reply to all queries/clarifications by BHEL-TRICHY: 30 May 2014.

Receipt of final consolidated EOI at BHEL-Trichy: 16 June 2014 14.00 hours.

Date of Opening of Bids: 16 June 2014 14.30 hours.

Mode of Submission of Documents

In sealed cover to the contact person / mail to the e-mail ID so as to reach on or before the date mentioned above. The cover shall be super-scribed with Reference number and the words "Expression of Interest – ARV". In case of offer by e-mail, the words "Expression of Interest – ARV" shall be in the Subject field of e-mail. The documents as above should be submitted in a sealed envelope and should bear the name, address and telephone number of the respondent. The envelope should be addressed to "**Additional General Manager (Mktg., KM & BDG) / ATP, High Pressure Boiler Plant, Trichy, Tamil Nadu , India, 620014"**. In case of submission of EOI through e-mail, hard copy along with printout of e-mail shall be sent by post or courier to the contact person so as to reach him on or before 15 June 2014.

CONTACT PERSON

Mr C Kathirvelu
Additional General Manager (Mktg., KM & BDG)/ATP
High Pressure Boiler Plant.
Trichy
Tamil Nadu , India
620014
Phone : +0431-2575271
E-mail : ckv@bheltry.co.in

EXPRESSION OF INTEREST FOR TRANSFER OF TECHNOLOGY IN PHASED MANNER FOR DESIGN, MANUFACTURE, TEST, SUPPLY, MAINTAIN AND OVER-HAUL OF ARMOURED RECOVERY VEHICLE

TABLE OF CONTENTS

SECTION - 1

EXPRESSION OF INTEREST

1.1 ABOUT BHEL

BHEL is a leading Government of India owned Public Sector Undertaking. BHEL is an integrated power plant equipment manufacturer and one of the largest engineering and manufacturing organizations in India. We are engaged in the design, engineering, manufacture, construction, testing, commissioning and servicing of a wide range of products and services for the core sectors of the economy, viz. Power, Transmission, Industry, Transportation (Railway), Renewable Energy, Oil & Gas and Defence. The Power sector covers generation, transmission and distribution equipment for hydro, fossil, and gas fuels. BHEL has been in this business for nearly 50 years and BHEL supplied equipment account for 61 % of the total thermal generating capacity in India. Nearly 68% of the equity is owned by the Government of India. The company has 17 manufacturing units, 4 power sector regions, 8 service centers, 10 overseas offices and 15 regional offices, besides host of project sites spread all over India and abroad. The annual turnover of BHEL for the year 2012-13 was US $ 9.22 Billion*, with profit before tax of US $ 1.73 Billion*. BHEL's highly skilled and committed manpower of approximately 49390 employees, the best of manufacturing facilities and practices together with the latest technologies, has helped BHEL to deliver a consistent track record of performance. With the current order book exceeding US $ 18.81 Billion*, BHEL is poised for excellent future growth. More details about the entire range of BHEL's products and operations can be obtained by visiting our web site www.bhel.com.

* 1 US $=Rs 54.39 as on 31st March 2013

1.2 ABOUT HPBP, BHEL Trichy

High Pressure Boiler Plant (HPBP) is one of the major units of BHEL. The HPBP was formed in 1965 mainly to establish a strong base in the areas of power generating equipment's manufacturing to supplement the Company's pioneering efforts in the above areas. We also have a good international reference by way of our exports to Europe, Middle-East and South-East Asian markets. BHEL has been accredited with

ISO 9001, ISO14001, OHSAS18001 and ISO 27001 standard certifications. BHEL has supplied ARVs to Indian Army with technology backup from a reputed OEM.

1.2.1 ARV Business: Ministry of Defence (MoD), Government of India (GoI) through its "Defence Procurement Procedure 2013(DPP 2013)" has laid emphasis on indigenization to promote Defence related manufacturing in India. BHEL views this as a great opportunity. BHEL is already engaged in manufacturing and supplying various defence related products. MoD has projected a requirement of around 500 ARVs over next 10 years.

1.3 EXPRESSION OF INTEREST (EOI)

BHEL-Trichy proposes to design, manufacture, test, supply,maintain and over-haul Armoured Recovery Vehicle. This EOI is published for seeking response from Original Equipment Manufacturers (OEMs) who are willing to be associated with BHEL-Trichy for the above requirement. This association and partnership will be based on Transfer of Technology under **"Buy & Make (Indian)"** route of "Defence Procurement Procedure 2013". Under this route, a minimum 50% indigenous content on cost basis is mandated. Respondents are requested to study DPP 2013 (Link- https://mod.nic.in/writereaddata/DPP2013.pdf) for better understanding of expectations of MoD, the end customer.

1.4 A COLLABORATIVE APPROACH

BHEL-Trichy intends to have a long term understanding with the prospective partner/collaborator to enable BHEL-Trichy to bid for, design, manufacture, test, supply, maintain and over-haul ARV.

1.5 TECHNICAL SPECIFICATIONS

Indicative Technical Specifications of Armoured Recovery Vehicle is covered in Annexure-1, as an example.

1.6 METHODOLOGY OF BUSINESS ARRANGEMENT BETWEEN BHEL-TRICHY AND PROSPECTIVE PARTNER

1.6.1 Typical Arrangement

The respondent shall be the Technology leader and shall indicate in their response to this EOI the typical arrangement for transfer of technology to BHEL-Trichy along with the milestones and time frame.

This shall however be mutually agreed considering the long term support implications at the time of entering into a final agreement.

1.6.2 Information Sharing

In response to the EOI, the prospective partner shall clearly state his willingness to share the following with BHEL-TRICHY.

a. Engineering information and selection criteria of all bought-out components.

b. Technical documentation for manufacture of various sub-assemblies including processes employed, testing methods, source code and software.

c. Details of special purpose equipment for manufacture and testing.

d. Training and assistance in system design, manufacturing and testing of the equipment.

e. Support for commissioning and training of BHEL-TRICHY engineers for handling the equipment at site.

f. Technology upgrades.

g. A commitment has to be given by the respondent for long-term association with BHEL-TRICHY to address issues of obsolescence and availability of spares. The respondent to forward details regarding methodology and duration for which they can provide long term **product support**.

h. Exclusive rights to be given to BHEL to use the information after expiry of agreement.

1.7 BUSINESS MODEL

BHEL-TRICHY proposes to have an understanding with OEMs with reference to technology transfer in a phased manner in the areas of ARV for Defence Applications.

In Transfer of Technology model, the respondent should be willing to transfer the technology to BHEL-TRICHY in phased manner for design, manufacture, inspection, testing, commissioning, trouble shooting, servicing/maintenance, quality assurance methods, etc., for the ARV to meet the market requirement.

1.8 RESPONSE TO THE "EXPRESSION OF INTEREST" – (EOI)

BHEL-TRICHY will analyze the responses received towards this EOI to shortlist prospective respondents/collaborators. Respondents will have to make a presentation to BHEL, if required.

A separate Request for Quotation (RFQ) along with detailed Technical and Commercial Specifications will be issued to these shortlisted respondents/collaborators for submitting detailed offers.

1.8.1 Qualifying Requirements

Only OEMs meeting the Qualifying Requirements (QR) as described in Section-2 may respond to this Expression of Interest and will be considered for further evaluation.

1.8.2 Checklist of Documents

The information required to be submitted along with the EOI by the interested OEMs are given in Section–4.

SECTION - 2

QUALIFYING REQUIREMENTS

2.1 Technical Capability

The respondent shall be an OEM who should have designed ARV for various defence applications, manufactured, supplied and commissioned to any of Army/Navy/Air Force in the world. Respondent to indicate the Type & Quantity of ARV supplied to any of Army/Navy/Air Force in the world and the equipment supplied should be working satisfactorily. This data may be furnished as per the format below:

PROFORMA FOR RESPONDENT'S QUALIFYING EXPERIENCE

SL. NO.	CUSTOMER NAME, ORDER REFERENCE & DATE	ITEM DESCRIPTION	QTY	CUSTOMER'S CONTACT DETAILS • NAME • DESIGNATION • PHONE NO. • FAX NO. • EMAIL ID	DATE OF SUPPLY/ COMMISSIONING	PERFORMANCE CERTIFICATE FROM CUSTOMER REGARDING SATISFACTORY PERFORMANCE

2.2 Information Transfer

Respondent should be willing to transfer the information to BHEL-TRICHY for design, manufacture, inspection, testing, commissioning, trouble shooting, servicing/maintenance, quality assurance methods etc., for the ARV. Specific confirmation on the points listed in Section–1, Cl. 1.6 is to be furnished. This is expected to facilitate indigenization of ARV to ensure cost reduction and long-term sustenance of the equipment in India.

SECTION – 3

COMPANY PROFILE

3.1	**GENERAL INFORMATION:**
3.1.1	NAME OF COMPANY:
3.1.2	DETAILS OF HEAD OFFICE: ADDRESS: TELEPHONE: FAX: E-MAIL: WEB SITE:
3.1.3	DETAILS OF FACTORY / WORKS: ADDRESS: TELEPHONE: FAX: E-MAIL:
3.1.4	DETAILS OF MARKETING AGENT (OUTSIDE INDIA, IF ANY): ADDRESS: TELEPHONE: FAX: E-MAIL:
3.1.5	DETAILS OF INDIAN AGENT, IF ANY: ADDRESS: TELEPHONE: FAX: E-MAIL:
3.1.6	CHIEF EXECUTIVE:

<table>
<tr><td>3.1.7</td><td>CONTACT PERSON(S) FOR PRODUCT OFFERED:
NAME(S):
DESIGNATION:
ADDRESS:
TELEPHONE:
FAX:
E-MAIL:</td></tr>
<tr><td>3.1.8</td><td>YEAR OF ESTABLISHMENT:</td></tr>
<tr><td>3.1.9</td><td>PRODUCTION CAPACITY PER ANNUM FOR ARV:</td></tr>
<tr><td>3.1.10</td><td>PARTICULARS OF PRODUCT INCLUDING SPECIFICATION AND RANGE: (ATTACH BROCHURES AND CATALOGUES)</td></tr>
<tr><td>3.2</td><td>COUNTRY OF ORIGIN FOR OFFERED PRODUCTS AND TECHNOLOGY</td></tr>
<tr><td>3.3</td><td>FINANCIAL INFORMATION:</td></tr>
<tr><td>3.3.1</td><td>ANNUAL TURN OVER AND PROFIT AFTER TAX FOR LAST 3 YEARS: (attach copies of audited Balance Sheet and P&L Account)
YEAR – 2010-11:
YEAR – 2011-12:
YEAR – 2012-13:
YEAR – 2013-14:
YEAR – 2014-15 (Anticipated) :</td></tr>
<tr><td>3.3.2</td><td>DUN AND BRADSTREET REPORT FOR THE COMPANY</td></tr>
<tr><td>3.4</td><td>QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEM:</td></tr>
<tr><td>3.4.1</td><td>Certification by Quality Assurance Organisation (If applicable).
<table>
<tr><th>Name of Agency</th><th>Certificate</th><th>Applicable from (Date & Year)</th><th>Valid till (Date & Year)</th></tr>
<tr><td></td><td></td><td></td><td></td></tr>
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3.5	**LIST OF ITEMS SUPPLIED SIMILAR TO ARV**
3.6	**IF WILLING TO GIVE A PRESENTATION IN INDIA- KINDLY INTIMATE THE PROBABLE DATE**
3.7	**ANY OTHER INFORMATION**

SECTION – 4

CHECKLIST OF DOCUMENTS TO BE SUBMITTED AS RESPONSE TO EOI

Information/documents to be provided along with response to Expression of Interest:

Sl. No.	Information / Document	Compliance
1	Covering Letter signed by an Authorized Signatory on Company letterhead, listing clearly the Enclosures.	Yes / No
2	Catalogue of ARV for various Defence Applications	Yes / No
3	Technical Write-up describing features for ARV	Yes / No
4	Reference list of ARV supplied/	Yes / No
5	Acceptance for Transfer of Technology	Yes / No
6	Organization Chart	Yes / No
7	Details required in Section–1 – Clause 1.6.1- enclosed	Yes / No
8	Details required in Section–1 – Clause 1.6.2 – a to h - enclosed	Yes / No
9	Confirmation / Deviation to Technical Specifications – Annexure-1	Yes / No
10	Filled-up Qualifying Criteria Format – Section–2	Yes / No
11	Filled-up Company Profile – Section–3	Yes / No

Annexure-1

Technical Specification

Specification for a typical ARV as published in a recent Request for Information by MoD, GoI is reproduced below for reference only.

S NO.	QUESTION	REPLY	
		YES/NO	REMARKS
TECHNICAL PARAMETERS			
1.	Does the ARV confirm to the following specifications:-		
	(a)**Weight**-48 tons (Maximum with full combat load)		
	(b) **Dimensions** (i) Length- 8500mm (Maximum) (ii) Width- 3500 mm (Maximum) (Over Tracks)3700 mm (Maximum) (Any Point) (iii) Height- 2700 mm (Maximum with machine gun)		
	(c) **Range of Operation** (i) Road/Highway - 550 Kms (Minimum) (ii) Cross country/- 350 Kms (Minimum)		
	(d) **Speed** (i) Road/highway ≥50 Km/hr (ii) Cross country/ ≥35 Km/hr		
	(e) **Obstacle Negotiation** (i) Fording depth - 1.2 Mtr (Min) (without preparation) (ii) Deep fording depth - 1.8 Mtr (Min) (preparation with underwater stream crossing equipment (USCE) to be supplied with the ARV) (iii) Ground Clearance- 395 mm (Min) (iv) Max ascending angle- 200 (Min) (v) Max lateral inclination/tilt- 250 (Min) (vi) Vertical obstacle- 0.85 mtr (Min) Negotiation (vii) Ground Pressure-0.96Kg/cm2(Max) (viii) Trench crossing- 2.6 Mtr (Min)		

2.	Crew capacity		
3.	Is the vehicle capable of performing at all altitudes upto 5000 m above sea level and capable of operating in the ambient temp ranges available throughout the Indian sub continent.		
4.	Does the vehicle have the capability to be transportable by 'In Service' trailer : Trailer 50 Ton 12 Twine Wheeled Heavy Duty Tank Transporter JSS 2330-07 : 2011 (Revision No 1).		
5.	Does the vehicle have a life span (minimum 10,000 Kms or 40 Yrs)?		
6.	Which are the attachments/ additionalaties with the vehicle?		
7.	Which type of camouflage net would be provided with the vehicle?		
8.	What is the special protection for the hull of the ARV?		
9.	What is the NBC protection with the vehicle for providing protection to the crew against Nuclear, Biological and Chemical hazards?		
10.	Does the ARV conform to the following specifications:-		
	(a) One front hull mounted machine gun of 7.62mm caliber in service.		
	(b) One Air Defence/Anti Aircraft Machine Gun 12.7mm in service with mechenised formations and with the following specification :- (i) Traverse – 3600 mm (ii) Elevation - 750 mm (iii) Depression – -50 mm		
	(c) A minimum of 700 rounds storage capacity for each machine gun should be provided. The arms and ammunition should be similar to that provided in the Tank T-72, T-90 and ICV BMP held with the Indian Army.		
	(d) Ability to lay smoke screens (fuel generated exhaust smoke) for concealing its activity by preventing enemy's observation. Smoke screen device like smoke grenade discharger (SGD) should be additionally provided.		
	(e) One flare pistol of 13mm caliber as existing in the Indian Army.		
	(f) The Commander and Driver should have day sights for observation and operation. Central and side periscope should be provided for day observation.		
	(g) Radio set CNR 5W and 50W (AFV version) developed by DRDO to be fitted.		

	(h) The crew should be able to communicate through the In Service RS VPS MK-III while operating outside the ARV during repair and recovery operations.		
11.	**ENGINE.** Type - Please specify. Model - Please specify. Power of Engine - 1000 HP (Minimum) Power to Weight Ratio - 22 HP/Ton(Minimum)		
12.	**Transmission** Please specify the following:-		
	(a) Type of transmission system.		
	(b) Type of steering.		
	(c) Provision of co-axial final drive.		
	(d) Provision of epicyclic gear train.		
	(e) Number of forward and reverse gears.		
	(f) Provision of independent gear boxes for left and right tracks.		
13.	**Suspension and Tracks.**		
	(a) What is type of suspension system?		
	(b) Does the vehicle have hydro pneumatic or hydraulic suspension?		
	(c) Does the vehicle have locking device? Please specify the type of locking device.		
	(d) Are the hydraulic shock absorbers capable of being operated from within the driver compartment?		
	(e) Does the vehicle have twin disk road wheels with rubberized rims running on the tracks comprising of metal, rubber bushed parallel pin- jointed and cog meshed?		
14.	**Fire Fighting Device.** Does the vehicle have fire fighting device (IFDSS)? Please specify the fire detection and firefighting equipment activation time.		
15.	**Navigation Aid.** Does the ARV conform to the following Navigational Aids:-		
	(a) A mounted version of Global Positioning System (GPS) should also be provided along with a Gyroscopic Direction Indicator (GDI).		
	(b) ALNS for navigation be provided.		

16.	**Crane.** Does the ARV have the following :-		
	(a) Is the crane able to access the loading platform?		
	(b) What is the crane boom length in fully retracted and		
	(c) Is the lifting capacity of crane ≥ 15 Ton at working radius. Please specify lifting capacity.		
	(d) Is the lifting capacity of crane 10 Ton at working radius achievable at a safe crane elevation angle.		
	(e) Is the crane hydraulically operable telescopic type? Please specify mode of operation.		
	(f) Does the crane have a provision for emergency operation of the crane in case of hydraulic failure?		
	(g) Does the crane have the facility to lock in the position to avoid collateral damage?		
	(h) Can the crane be operated through an external portable console?		
	(j) What is slewing angle so as to facilitate easy removal/fitment of powerpack, turret and other MUAs. This would also facilitate loading/unloading of mine plough/ trawls from the loading platform of the ARV or from other Heavy Mobility vehicles (HMVs).		
	(k) Does the crane have a provision for protection against over-loads? Please specify details of audio cum visual warning devices to prevent the overloading of the crane.		
	(l) Is auto lubrication of the winch ropes and the crane ropes catered for?		
17.	What are the protections to avoid bending of crane boom/jib in the event of inadvertent overload/impact loading of ARV?		
18.	What is the protection features/measures to avoid damage to crane jib inclination cylinder?		
19.	What are the provisions to avoid jerking during Crane slewing?		
20.	What are the protections to avoid damages in Crane pump Engagement Drive?		
21.	What are the provisions to avoid damages in Crane Winch Equipment?		

22.	**Hydraulic Oil Tank** Does the ARV conform the following parameters in Hydraulic Oil Tank?		
	(a) Does the hydraulic oil tank have oil level indication and adequate oil filtration arrangements? The inlet filter elements replacement should not involve the requirement of draining the hydraulic oil from oil tank.		
	(b) Is it provided with safety device to correct layering of rope during winding over crane winch rope drum (to avoid overlapping).		
23.	**Main Winch** Does the main winch of the ARV have the following facilities?		
	(a) A winch with a direct pull capacity of minimum 30 tons and maximum 90 tons with a tackle layout from the existing recovery equipment provided with the ARV. The useable length of the rope should be minimum 200 meters.		
	(b) A system to prevent rope over loading. In addition an audio and visual warning device to prevent the overloading of the winch is also required.		
	(c) The main winch capable of self locking in case of any mechanical power/hydraulic failure.		
	(d) Portable control in addition to fixed controls.		
	(e) A system in the main/aux winch drum for easy winding/unwinding of the rope to avoid entangling and breakage.		
	(f) Facility for auto cleaning of main winch rope while winding, to avoid dirt being carried into the winch drums.		
	(g) Facility for auto lubrication of the winch ropes and the crane ropes.		
	(h) Indication on control panel to indicate end of main winch rope (during un-winding) with a audio visual warning signal.		
	(j) Easily maintainable main winch drive shall be with minimum effort.		
	(k) Provision on the main winch equipment for independent Hours Meter, which shall switch 'ON' automatically as soon as the Main winch is engaged.		
	(l) Provision of rope winding in/unwinding with variable		

23.	(m) Provision on the main winch for mechanical overload, protection to bring the winding of rope to a halt in case of overloading.		
	(n) Provision of interlock device on the main winch to avoid rope being completely wound inside storage drum due to faults like automatic rope winding in without any signal.		
	(o) Safety provision to prevent unwanted wear and tear of components while changing the directions of winch rope (ie from winding to unwinding and vice versa). The drum should come to a static state automatically, before the change of direction of rope.		
	(p) If the main winch assemblies required to be used only within a bound of particular engine RPM, then an interlock device shall be used to prevent shifting of levers for main winch rope winding from Neutral position when the engine RPM is lower than the required 'Minimum RPM).		
	(q) If the lever is already selected for rope winding operation and the Engine RPM lowered than the minimum RPM, then there should be a provision for shifting the lever of Rope winding to Neutral position, automatically through the safety mechanisms.		
	(r) Provision to unwind the main winch rope without the requirement of engaging the main winch drive (i.e free unwinding) should exist.		
	(s) The main winch also should have hydraulic oil pressure gauge indicator with low & high pressure warning.		
24.	**Auxiliary Winch** Does the ARV conform the following parameters in Auxiliary Winch?		
	(a) Should have an appropriate auxiliary winch so as to pull out the main winch rope towards the casualty. (b) The usable length of the rope should be minimum 400 meters.		
	(c) The auxiliary winch should have a minimum capacity of 2 tons.		
	(d) A system to be provided in the main/aux winch drum for easy winding/unwinding of the rope to avoid entangling and breakage. End of main auxiliary winch rope (during unwinding), is to be indicated by providing an audio visual warning signal.		

24.	(e) Auto cleaning of aux winch rope to be incorporated while winding to avoid dirt being carried into the winch drums.		
25.	Does the ARV have minimum one set each of electric arc and gas welding plant?		
26.	**Electric Arc Welding Equipment.** Does the welding equipment of the ARV have the following facilities:-		
	(a) The electric arc welding plant capable of using electrodes up to 6.3mm.		
	(b) The electric cable (positive and negative) length		
	(c) State of art photo-chromatic welding helmet to undertake electric arc welding/cutting.		
	(d) Variable welding current using a control resistance.		
	(e) Maximum welding current of over 300A.		
	(f) Capable of carrying out uninterrupted welding.		
27.	**Gas Welding Equipment.** Does the Gas Welding Equipment of the ARV conform the following parameters in gas welding equipment?		
	(a) The Oxy-acetylene-plant consisting of one acetylene and two oxygen cylinders. Suitable space for carrying the gas cylinders.		
	(b) The cylinders capable of being refilled through gas charging nozzles as available in India.		
	(c) Minimum 20m length of each hose.		
	(d) Gas cutting torch provided alongwith.		
	(e) Acetylene and Oxygen cylinder capacity of minimum 40 ltr each.		
28.	**Alternating Current Supply.** Does the ARV conform the following parameters in alternating current supply?		
	(a) Provision of an inverter to convert input of 24V DC supply from the main power of vehicle to 230V+5V, -10%, 800VA, 50Hz.		
	(b) The output from the inverter to be capable of operating electric power tools and a charger capable of charging batteries of hand held radio sets equipped in the vehicle.		

28.	(c) Provision of adequate No of sockets for taking Power for any external lighting during repair/recovery operation, with cable of length 50 meters.		
	(d) Provision of in built protection again excess drawl of current.		
	(e) Provision of Electric Power Tools.		
29.	**Electric Power Tools.** Does the ARV have the following power tools operable with 220V, 50 Hz AC power supply?		
	(a) Machine drilling heavy –duty up to 19mm.		
	(b) Portable drilling machine up to 13mm.		
	(c) Angle grinder up to 230 mm.		
30.	**Loading Platform and Stowage.** Does the ARV have the following parameters in loading platform and stowage?		
	(a) A loading platform to accommodate one engine along with few MUAs and other miscellaneous items of in-service AFVs(Armoured Fighting Vehicle).		
	(b) The loading platform capable to accommodate a load of minimum two tons.		
	(c) Provision in the form of proper bins/boxes should be made available in the ARV to carry essential repair and recovery equipment.		
	(d) Provision of flexible ropes onboard for securing load on loading platform. The rope should be provided with eye ends.		
	(e) Adjusting facility for shortening and lengthening the rope should be provided.		
	(f) Provision of repair Shelter and Bench.		
31.	**Repair Shelter and Bench.** Does the ARV have the following in repair shelter and bench?		
	(a) A repair shelter of appropriate size to accommodate five tradesmen which could be erected by taking support of the ARV.		
	(b) A folding type fitter bench with two suitable vices at one side of the vehicle for working by various tradesmen inside repair shelter.		
	(c) Easily removable Vice and table capable of being stowed inside/outside duly secured.		

32.	Does the vehicle have suitable SMTs/STEs for providing repair to Tank T-72, T-90, ICV BMP along with the ARV?		
33.	Does the vehicle have recovery tools and accessories required for anchoring, lifting, pulling and other recovery tasks?		
34.	Is the vehicle be able to operate in the ambient temperature range available throughout the Indian sub continent (-20^0 C to 55^0 C) ?		
35.	**Misc**		
	(a) Environment Control System (ECS) should maintain temperature in the crew compartment at 250 C +50 throughout the operating temperature range of the ARV (i.e, -20^0 C to 55^0 C).		
	(b) Is the vehicle provided with a socket for slave starting (electrically) other AFVs in case of an emergency?		
	(c) Does the vehicle have adequate stowage arrangements for carrying its own consolidated complete equipment schedule (CCES)/Table of Tools and equipment (TOTE) items and special maintenance tools (SMTs)/Special Test Equipment (STEs)?		
	(d) Does the vehicle have space for additional recovery equipment and administrative stores (Cooking utensils, drinking water tanks, electric heater, electric kettle, sleeping bags, stretcher (for casualty evacuation), first aid box etc)?		
	(e) Provisioning of clamps on hull for carrying torsion bar, night sight for driver and commander, IFF light and additional qty 02 air bottles?		
	(f) Provision of 400 Ltr of drinking water on the ARV.		
	(g) In addition two fuel barrels (200 ltrs each) should also be provided with proper securing facilities.		
Product Support			
36.	When was the product developed?		
37.	How many upgrades has the product undergone?		
38.	For how many years product support/production has been planned/can be provided? Is the ARV presently in service anywhere in the world?		
39.	How spares are provisioned including outsourced spares and maintenance essential? Is overhaul carried out?		
40.	How many sub vendors? Give details of Indian and Foreign sub vendors.		

Annual Production Rate			
41.	What is the current production rate and maximum production capacity?		
Upgrade Schedule			
42.	Has the equipment undergone any modernization/upgrades and if so, when?		
43.	Upgrades planned/under execution along with details and likely completion/planned date-give details to include the info on the nature of upgrades.		
44.	Proposed time frame for periodic upgrades.		
45.	Does the vendor propose any modification in the equipment to make it suitable to operate in specific type of terrain and climatic conditions operating in India?		
Model			
46.	What are the various models (Prototype, 1^{st} /2^{nd} /3^{rd} /4^{th} /5^{th} production) and their upgraded version?		
Availability of Simulators			
47.	Is any simulator/simulators available for training of drivers and operators for the equipment likely to be offered. What will be the cost of one simulator (as% cost of main equipment). Cost be provided for each type of simulator if more than one type is available.		
Maintenance Philosophy and Maintainence ToT(MToT) Related Inputs			
48.	What is the exploitation pattern of the equipment so far- in terms of years/months/hours including		
49.	Does the vendors have a maintenance philosophy and if so, are based on predictive, reliability centric, condition based, past experience/data or periodic preventive maintenance philosophy.		
50.	Existing Mean Time Before Failure (MTBF) and Mean Time Taken to Repair (MTTR) based on current level of experience in exploitation of equipment (for major critical sub systems including engines).		
51.	**Maintainability of Equipment: -** (a)Which assemblies/sub-assemblies need frequent maintenance? List the major assembly with their MTTR and MTBF.		
	(b) Is mid life intervention in terms of OH recommended? If so, at what intervals?		
	(c) Is there a BOM existing with the vendor for assisting OH of the equipment?		

	(d) Details of infrastructure (including space, buildings, plant, machineries, jigs, fixtures, manpower and training period) required for total (Base) repair and overhaul of the equipment along with the capacity (as % cost of total equipment)?		
51.	(e) Is the vendor ready to establish repair infrastructure facility in India and the likely timeframe for the same?		
	(f) Any special lubricant/oils and other expendables needed for sustainment. Give details of system/sub system as applicable along with periodicity recommended.		
	(g) Are the equivalent of the lubricants and oils, used in the vehicle, already in use by IA? If so give details of equivalent lubricants and oils.		
	(h) Will the manufacturer provide training on maintenance, repair and overhaul out in terms of the following: - (i) Proposed strength of personnel and time frame of training for repair & maintenance and overhauls at separate levels (operational, field and base). (ii) Location of the training in terms of OEM premises or at locations in India as proposed by the buyer. (iii) Is all technical literature available in English/ bi-lingual (English and Hindi). Are training aids available in the form of Interactive Electronic Technical Manual (ETM) for repairs to be carried out upto component level? (iv) Are the training aids for repairs of assemblies/sub-assemblies / component level including sectionised and shop replaceable units available with the OEM? Please specify approx cost for each level of training aids (as % of cost of main equipment). (v) What will be the approx cost of training? Please specify coast for each level of training (as separate % of cost of main equipment).		

	(j) Can the equipment be maintained by the vendor under Annual Maintenance contract in operational locations along with 100% spares responsibility? If yes, what percentage of equipment cost per year will be charged for such contract? The vendor should cite the number of years that he will be able to maintain the equipment under AMC terms and the cost difference if any as per the vintage of equipment.		
51.	(k) Is the vendor willing to give MToT? What will be the cost of MToT upto component level repairs if sought for (as % of cost of main equipment)?		
	(l) What percentage of spares is recommended to be manufactured? Will MToT including technology transfer for manufacture of fast moving spares?		
	(m) Are the details of drawings, specification including test standards available? Can the manufacturer provide price list of complete list of spares (major assemblies, sub assemblies upto component level), accessories, fitment items and expendables including those items outsourced by the OEM available.		
	(n) What will be the cost (as % cost of main equipment) of the special maintenance tools recommended to be procured with the equipment? What is the scale recommended by the OEM?		
	(o) What will be the cost (as % cost of main equipment) of the special test equipments recommended for various levels of repairs by the OEM? What is the scale recommended by the OEM for procurement level of repair (field level and base repair)?		
	(p) Please provide the costs separately (as % cost of main equipment) of Manufacturer's Recommended list of Spares for the maintenance of the equipment for a period of two yrs and four yrs post warranty period of initial two years.		
	(q) Please provide the list of authorised dealers/outlets of the OEM available in all parts of India. Please indicate clearly regions within India where auth dealer/outlets are available. Confirm whether the authorised vendors would accept payments through government accounts for subsequent piecemeal purchase of spares by Army.		

52.	**ToT Related Issues** (a) Is the vendor ready to transfer 100% technology along with design blue prints for main equipment and its constituents (to include the outsourced components and spares if any), and if not, clearly specify the details of the restrictions. What is the likely percentage of these technologies in terms of both content and cost of the equipment?		
	(b) Likely timeframe for transfer of technology and establishment of necessary facilities for production. What will be the cost (as % of main equipment) for the same.		
52.	(c) Third party expenditure restrictions, if any.		
	(d) Quantity ceiling if any in terms of the license.		
	(e) Will the vendor be ready to share the product upgrades periodically or when asked?		
	(f) Training requirements for Indigenizing the production to include :- (i) Number of personnel and categories (in terms of various production, quality assurance, testing installation aspects etc) proposed to be trained. (ii) Proposed period of training. (iii) Whether whole training can be carried out in India. If not what is proposal for location, duration and strength and type of training for training at OEM location and the locations suggested by the buyer.		
	(g) Likely continued dependency for critical or other spares on the OEM after absorption of ToT (in terms of both content and cost of equipment).		