

KARI PROPRIETARY

Request For Proposal
For
Hydraulic Supply System for Pad-Bearing
and Technical Support



November 2016

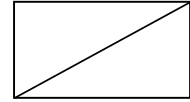
Space Test Division
Korea Aerospace Research Institute

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for
Hydraulic Supply System
for Pad-Bearing and Technical Support



IMPORTANT

1. This RFP should be kept in confidentiality and should neither be copied nor distributed to the third parties.
2. The questions and opinions on this RFP can be asked or suggested to Korea Aerospace Research Institute before submission of the proposal.
3. This RFP shall be legal bind after the contract is awarded unless the bidder explicitly expresses the differences from the RFP in the compliance sheet.

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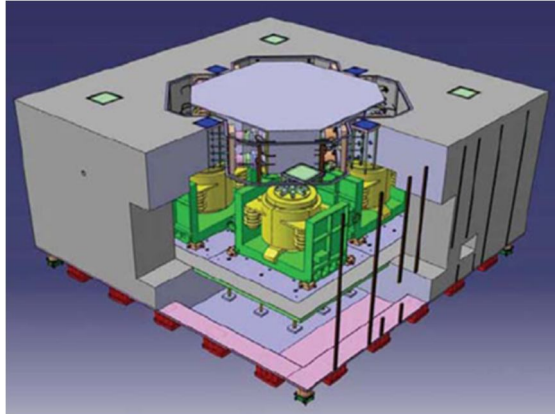
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I. OVERVIEW

1. Overview of the project

- 1.1 To increase the vibration shaker capability and improve the accessibility to satellite for the safe environmental testing, new QUAD vibration system is built.



- 1.2 KARI acknowledge the necessity of hydraulic supply system for pad bearings and technical support for head expander manufacturing in KARI QUAD vibration system and KARI wants to procure hydraulic supply system and related technical support
- 1.3 The purposes of this project are ;
- 1.3.1 To supply the hydraulic supply system for pad bearing
 - 1.3.2 To supply the wood shims
 - 1.3.3 To supply technical support for magnesium head expander manufacturing
- 1.4 The supplier should submit the proposal to KARI.
- 1.5 All the descriptions in this RFP are minimum requirements and the supplier can suggest a better one to improve the overall performance and cost. But in this case, the proposal should clearly indicate the improvements from KARI's requirements.

2. Requisites of participants

- 2.1 The participants shall also have experience in manufacturing and delivery of a 3m vibration system

3. Deliverables

The hardware deliveries & technical support shall include, as a minimum, the following:

Description (set)	
Hardware supply	Hydraulic supply system
	Wood shims <ul style="list-style-type: none"> - Shim 1 (4ea) 520 x 500 (T) 280 - Shim 2 (4ea) 520 x 500 (T) 253 - Shim 3 (32ea) 520 x 500 (T) 230
Technical Support Services	1. First visit: Report for support for Mg. welding & heat treatment 2. Second visit: Report for inspection of guiding box in H/E 3. Third visit: Report for support on the machining process

4. Warranty

- 5.1 The system shall be warranted for a duration of 1 year from the completion date of Inspection and Site Acceptance to KARI.
- 5.2 The warranty covers the replacement of faulty parts, the labor required for repair, traveling cost, living fees and all associated necessary costs.
- 5.3 The contractor or A/S teams shall submit the written plan for repair within 48 hours after the reception of the notification of fault. The contractor or A/S teams shall completely finish the repair within 30 days after the reception of the notification of fault.

5. Product Supply Schedule

The contractor shall meet the key points schedule as below;

Items	Key Points Schedule
Hydraulic Supply System	- Factory Acceptance Test at Contractor site : February 2017

6. Payment Schedule

The KARI will pay to Contractor the Contract Price in accordance with the following schedule:

(a) Hardware supply

No.	Payment milestone (in Month)	Payment due date	Percentage of Contract Price (%)
1	EDC	EDC+ 1M	30

2	FAR (EDC+ 2M)	EDC+ 3M	60
3	Inspection of Hydraulic Supply System (EDC+ 4M)	EDC+ 5M	10
Total			100 %

* "EDC" means the Effective Date of this Contract.

* "FAR" means the Factory Acceptance Review at Contractor site.

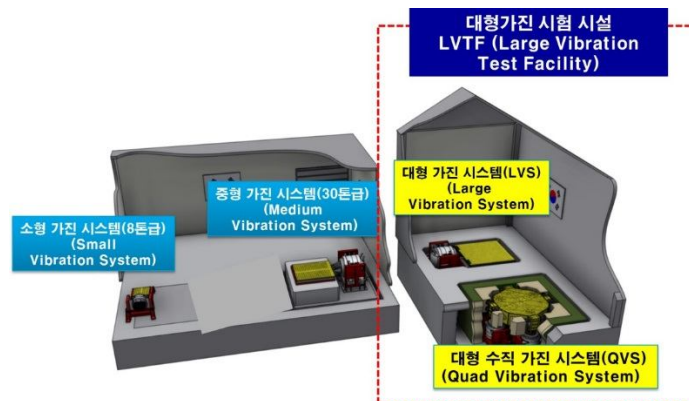
(b) Technical Support Services

No.	Payment milestone (in Month)	Payment due date	Percentage of Contract Price (%)
1	EDC	EDC+ 1M	40
2	Delivery of report (EDC+ 3M)	EDC+ 4M	60
Total			100 %

II. Statement of Work

1. Total System Configuration

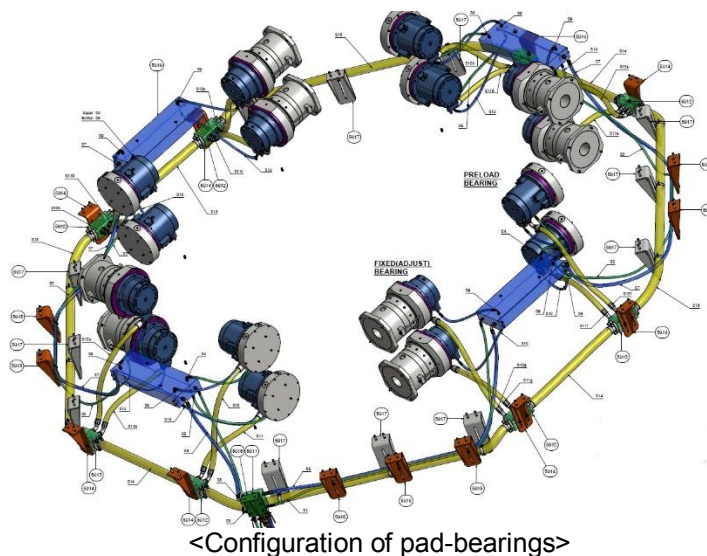
This document covers the technical requirements applicable to the oil supply system for pad bearing and technical support in KARI QUAD vibration system.



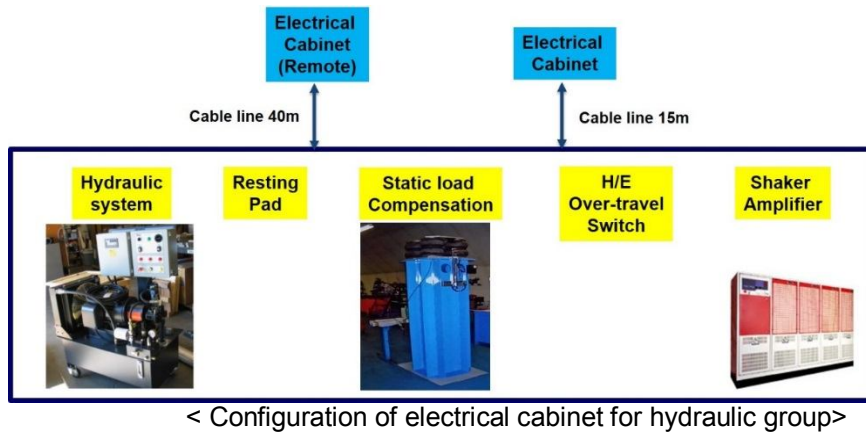
To control the overturning moment during the vertical vibration testing, 16 pad-bearings are installed which was designed so that a compression status between the bearings and slide plates is always maintained (minimum compression force of 90kN at each bearing).

The configuration of 16 pad bearings are shown in below.

The roles of pad bearing oil supply system (oil supply system for abbreviation) are to supply hydraulic oil for pad bearing operation, to monitor oil flow and to control the safety operation of bearings including other components of shaker system.



<Configuration of pad-bearings>



2. Technical Requirements of hydraulic supply system for pad-bearing

During this work package the following tasks shall be performed:

2.1.1 Design

The design of the hydraulic supply system shall be carried out to manage KARI existing pad bearing and potential future bearings.

The design of oil flow monitoring unit shall be carried out to monitor the oil flow from oil supply to pad bearings. Four oil flow sensor shall be applied as a minimum.

2.1.2 Manufacturing

The system hardware shall be manufactured according to the design. All manufacturing operations shall be planned in co-ordination with inspections and tests. This planning shall be documented in a concise Manufacturing and Inspection Plan.

2.1.3 Factory acceptance

The Factory Acceptance objective is to verify that the requirements detailed in technical requirements are fulfilled.

The factory acceptance tests and inspections shall be performed according to a Factory Acceptance Plan, which shall identify all the activities to be performed and the requirements intended to be verified. The Factory Acceptance Review meeting in order to review the results of the implementation of the Factory Acceptance plan shall be organised.

2.1.4 Installation

N/A.

2.1.5 Support on test of functionalities

Based on the knowledge of all the functions required for the safety logic diagram (including hydraulic groups, H/E over travel, resting pads, air supply), Contractors shall supply test plan and procedures to be carried out on the electrical cabinet (including PLC system) which is designed and manufactured by KARI sub-contractor

During the warranty period, attendance of engineer shall be performed to support operation and to check the functionalities of whole vertical shaker system including safety logic.

As a minimum, two weeks of period, engineer supervises the all functional test for QUAD vibration shaker system at KARI site

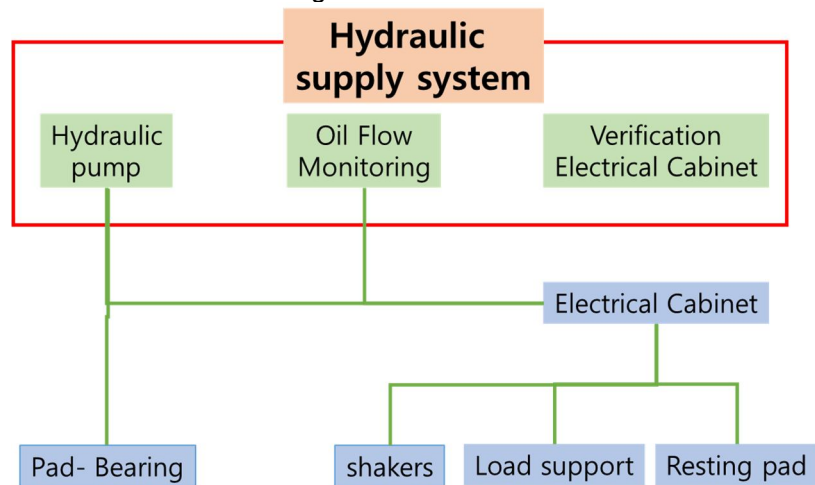
During this period, the contractor should supply the engineering support to solve the problem related with QUAD system

In this proposal, hydraulic supply system shall meet the requirements described below.

[Req_1] Design Requirement

■ Req_1.1: Hydraulic supply system shall be comprise hydraulic group(or pump) and oil flow monitoring unit.

- Req_1.2: The design of system shall be compatible with the use of two types of TEAM corporation pad bearing system such as 410-10 bearings and 410-12 bearings, which compatible with KARI supplied hydraulic hose and manifold design.



<Specification of bearing 410-10>

410-10XAP (Self preload configuration)

Preload piston area = 28.27 inch²

Maximum force (at 3000 psi) = 28.27*3000 = 84,800 lbs.

Spherical bearing angular travel: ± 1.0 Degree

410-10XA Pad Bearing

Static load capacity (with 3000 psi supply) = 100,000 lbs.

Dynamic load capacity (above 5 Hz) = 180,000 lbs.

Spherical bearing angular travel: ± 1.0 Degree

Dynamic stiffness: 70E6 lbs/inch

[Req_2] Hydraulic Group

The hydraulic group shall have the following requirement as minimum:

- Req_2.1: One supply pump system comprises electrical motor and variable volume pump to supply the existing pad bearings and potential pad bearings including hydraulic lines and manifolds.
 - ✓ Flow : 50 liters/ min for minimum
 - ✓ Pressure : 210 bars minimum
- Req_2.2: One cooling & filtration group comprise:
 - ✓ Pump driven by electrical motor (50 liters/min)
 - ✓ Heat exchanger chilled water
 - ✓ Interface for filling the oil group
 - ✓ Filter - 3µm with electrical clogging indicator
- Req_2.3: A tank (300 liters) including:
 - ✓ Electrical oil level indicator (two levels)
 - ✓ Air filter
 - ✓ Temperature probe
 - ✓ Oil retention tray
- Req_2.4: Mounting plate fitted with:

- ✓ Oil supply electro-valve
- ✓ Bypass electro-valve
- ✓ Pressure regulator
- ✓ Filtering element - 3µm with electrical clogging indicator
- ✓ Pressure probe

■ Req_2.5: Scavenge pump

[Req_3] Oil Flow Monitoring unit

■ Req_3.1: Oil flow monitoring unit consists in oil flow meters to be installed on the pressure manifolds of the hydraulic system.

■ Req_3.2: To check the operation status of hydraulic group and pad bearings, the design of installation of the flow meters shall be performed such as flow meter selection and definition of hydraulic adapters and manifolds.

■ Req_3.3: The oil flow monitoring unit shall monitor all bearings status by four positions of oil flow sensors as minimum.

[Req_4] Control Panel

Control panel (electrical panel) shall have the following requirements as minimum:

■ Req_4.1: KARI subcontract will supply the control panel component such as PLC hardware & operation programming

■ Req_4.3: Control panel shall operate all the functions for the safety logical diagram, which is supplied by KARI, including hydraulic group, HE over travel, resting pads defaults and air supply defaults

■ Req_4.4: Contract shall supply test plan describing all the tests that must be done to verify the PLC and describing the expected results of the system

■ Req_4.5: Contractor shall supervise the overall function test in the KARI site.

■ Req_4.6: During the maintenance period, KARI will test the all functionalities of electrical cabinet including PLC and send a report to Contractor. Contractor shall review the test report.

< Functions fulfilled by control panel >

Defaults	Effect on vibration system
Oil temperature	
High	Warning lamp flashing
Too high	Alarm lamp lighting
	Horn ringing
	Oil pump off With pressure ramp down
	B&K interlock 2 open B&K interlock 1 open after 5s
Restart the system	Default displayed on PLC
	Reset the system from local console
	Start the hydraulic system
Oil level in the reservoir	
Low	Warning lamp flashing
Too low	Alarm lamp lighting
	Horn ringing
	Oil pump off With pressure ramp down
	B&K interlock 2 open B&K interlock 1 open after 5s
Restart the system	Default displayed on PLC

	Reset the system from local console
	Start the hydraulic system
Filter clogging on HP line	
High	Warning lamp flashing
Too high	Alarm lamp lighting
	Horn ringing
	Oil pump off With pressure ramp down
	B&K interlock 2 open B&K interlock 1 open after 5s
Restart the system	Default displayed on PLC
	Reset the system from local console
	Start the hydraulic system
Filter clogging on Circulation Line	
High	Warning lamp flashing
Too high	Alarm lamp lighting
	Horn ringing
	Oil pump off With pressure ramp down
	B&K interlock 2 open B&K interlock 1 open after 5s
Restart the system	Default displayed on PLC
	Reset the system from local console
	Start the hydraulic system

Defaults	Effect on vibration system
Main air pressure supply	
Pressure off	Alarm lamp lighting
	Horn ringing
	Oil pump on
	B&K interlock 2 open B&K interlock 1 open after 5s
Restart the system	Remove the default
	Reset the system from local console
	Start the hydraulic system
HP oil flow (overall)	
Min or max warning	Warning lamp flashing
Min or max Alarm	Alarm lamp lighting
	Horn ringing
	Oil pump off With pressure ramp down
	B&K interlock 2 open B&K interlock 1 open after 5s
Restart the system	Default displayed on PLC
	Reset the system from local console
	Start the hydraulic system
HP oil flow (for each group of 4 bearings)	
min or max warning	Warning lamp flashing
Min or max Alarm	Alarm lamp lighting
	Horn ringing
	Oil pump off

		With pressure ramp down
		B&K interlock 2 open
		B&K interlock 1 open after 5s
Restart the system		Default displayed on PLC
		Reset the system from local console
		Start the hydraulic system
HP oil pressure		
Low		Warning lamp flashing
Too low		Alarm lamp lighting
		Horn ringing
		Oil pump off
		With pressure ramp down
		B&K interlock 2 open
		B&K interlock 1 open after 5s
Restart the system		Default displayed on PLC
		Reset the system from local console
		Start the hydraulic system
HE over travel		
up	1 of the 2 contacts on	Alarm lamp lighting
down		B&K interlock 1 open
		B&K interlock 2 open after 5s
Restart the system		Default displayed on PLC
		Reset the system from local console
		Oil pump on

Defaults		Effect on vibration system
Resting pad default when vibration ready		
Default		Alarm lamp lighting
		B&K interlock 1 open
		B&K interlock 2 open after 5s
Restart the system		Default displayed on PLC
		Reset the system from local console
		Oil pump on
Resting pad default when operating them		
Default		Alarm lamp lighting
Restart the system		Default displayed on PLC
		Reset the system from local console
		Oil pump on
Resting pad/static load compensation air supply default		
Air supply default		Alarm lamp lighting
		B&K interlock 1 open
		B&K interlock 2 open after 5s
Restart the system		Default displayed on PLC
		Reset the system from local console
		Oil pump on
Emergency stop		
Emergency stop on		Everything stops
		Air pressure supply to static weight compensation and

	shaker PIC drop down to zero bar
	Re-Start

[Req_5] Support on test

Engineering support shall have the following requirements as minimum:

- Req_5.1: Contractor shall supply hydraulic group handling
- Req_5.2: Contractor shall supply supervision of hydraulic group installation
- Req_5.3: Contractor shall supply supervision of piping work& hose installation
- Req_5.4: Contractor shall support operation and check the functionalities of whole vertical shaker system including safety logic.
- Req_5.5: During this period, the contractor should supply the engineering support to solve the problem related with QUAD system

3. Technical Requirements of wood shims**[Req_6] Wood shims**

- Req_6.1: Supplied wood shim shall have the characteristics that the perpendicular compressive strength shall be better than 5 MPa to support the mass.
- Req_6.2: Contractor should supervise lifting activity of the seismic mass. Mass of seismic is about 300 tons and required lifting height is 1m.

4. Technical Requirements of technical support

Contract shall supply assistance for the manufacturing of the magnesium head expander and related work. Three times of visit should be performed as minimum. The schedule of visit and detailed contents can be changed according to the progress of head expander manufacturing.

[Req_7] Technical Support

- Req_7.1: During this first visit, Contractor shall will review together the other participants the preparation work (procedures, preliminary tests, chamfering of the plates) and inspect the very first welds (welding of the central cross on the top plate). A review of the characteristics of the heat furnace (for heat treatment) shall also be performed.
 - Req_7.2: A second visit would be to inspect the guiding boxes before they are welded on the top plate. The same persons as for the first visit must be present
 - Req_7.3: A last visit would be after the heat treatment and the dimensional measurement after the heat treatment. KARI will supply the dimensional measurement report (in English) before the visit. The main objective of this meeting is to advise on the way to do the machining taking into account flatness of the HE

III. Format of Proposal

The proposal shall consist of 6 section(S).

- S 1 : Bidder's Qualification Document
- S 2 : Executive Summary (Overview)
- S 3 : Technical Proposal
- S 4 : Warranty Proposal
- S 5 : Bidder's Confirmation Document for Fully Understanding of the RFP
- S 6 : Price Proposal

The bidder shall present 6 copies of the proposal. A4 or letter size paper shall be used. **The bidder is requested to strictly follow the following illustrated format (tabular form)**. This is very important to compare and evaluate different bidders' proposal. Consequently, disregard for this rule may end up with disqualification. Also, well-prepared and well-organized proposal will be highly appreciated and evaluated. The landscape orientation will be acceptable for tables. The suggested contents in each WP are minimum requirements and works for reminiscences. Ambiguous expression will act adversely to the bidder.

S 1 : Bidder's Qualification Document

(*) Bidder's Qualification : The followings shall be included in WP1.

The participants shall also have experience in manufacturing and delivery of a 3m vibration system

The followings shall be included in this Section.

- (a) Bidder's experiences on the prescribed system in this "Request for Proposal" including :
 - (1) design
 - (2) manufacturing
 - (3) installation (specifications, performance, purchaser, supplied year)
 - (4) training (operation and maintenance) of the facility
- (b) The installation information (including personnel's information in charge of the facility, address, FAX number, etc.) from the well known institutes or companies which are using the facilities installed by the bidder and/or subcontractor.
- (c) Other information
 - 1. Total Employees
 - Total number of Employees (Engineer / Technician)
 - Number of Employees for the directly related area
 - 2. Plant Scale
 - Total area of space
 - Factory & Building area
 - 3. General brochure
 - 4. Any documents with which the bidder can show his/her financial and technical abilities (e.g. technical awards, bank balance, etc.)
- (d) **Bidder's Qualification Evidence Documents.**

S 2 : Executive Summary (Overview)

This WP shall include the summary of the all section. The tabular form is recommended.

S 3 : Technical Proposal

This WP (Technical Proposal) shall be written in English. Concise and clear expression is required. A long sentence should be broken down into several sentences. Detailed block diagrams, figures and

photos are recommended for clear illustration.

All the descriptions in this RFP is minimum requirements and the bidders can suggest the better one to improve the overall performance and cost. But in this case, the proposal should clearly indicate the improvements on the KARI's requirements with their detail drawings and explicit calculation results.

The contents of proposal will be the measurement of the bidder's technical capabilities. Bidder's proposal will be reviewed by a number of experts at KARI and other institutes.

The bidder shall prepare tables for the check list to show the bidder's compliance with the "Request for Proposal". This table shall be located in front of the Technical Proposal part. The articles in the "Work description" and "Technical Requirements" of the RFP shall be completely enumerated in the table. The table format is as follows:

Check Lists for "Part I Overview work description" and "Part II Technical Requirements

ANR : Article Number in the "Part II & III Technical Requirements" in the RFP.

Y/N : Compliance (Yes or No.)

CAP : Corresponding Article number in the bidder's Proposal to ANR

AAM : Article number of Added Material in the bidder's proposal which is not mentioned in the RFP.

	ANR	Y/N	CAP	Remark	AAM	Remark
Part I Or Part II	1)	yes	1)	ditto		
	2)	yes	2)	ditto		
	3)	yes	3)	ditto		
	4)	yes	4)	The specifications look old. We updated them.		
	N/A	N/A	N/A	N/A	5)	We currently developed a new method.
	5)	yes	6)	ditto		
	6)	no	7)	The resolution is high above the necessity. The current technology for the system		
	7)	yes	8)	ditto		
	8)	no	9)	This specification is not compatible with 8) in the proposal. We suggest other approach.		
9)	yes	10)	ditto			

ditto : The same as stated above or before

S 4 : Warranty Proposal

4.1 Baseline warranty (1 years)

- plan for the prompt repair
- information on A/S team

S 5 : Bidder's Confirmation Document for Fully Understanding of the RFP

This document shall confirm that the bidder has completely understood the whole RFP, which was written in English.

S 6 : Price Proposal

Price proposal in Euro

IV. INSTRUCTION TO BIDDERS

1.1. Qualification of Bidders

- (1) Bidder shall also have experience in manufacturing and delivery of a 3m vibration system.

1.2. Submittal of Proposal

The proposal shall be hand-carried or sent via appropriate express courier to KARI personnel or his designee within the Bid Closing Date and Time. A deputy shall submit the power of attorney and a copy of his identification.

1.2.1. Number of copies

The Proposal should be made in six (6) copies in English. In case of any discrepancies between the Proposals, the original hardcopy shall prevail.

1.2.2. Bid closing date

The closing for the Proposal is specified in Bid summary. If any part of the Proposal as required under this RFP is submitted after the stipulated closing time, the entire Proposal will not be accepted.

1.2.3. Point of contact

Besides the Proposal submission, the point of contact for all communications for technical matters shall be

Dr. Jong-Min Lim
Space Test Division
Korea Aerospace Research Institute (KARI)
169-84 Gwahak-ro, Yuseong-Gu
Daejeon, 34133, Korea
Tel : +82-42-860-2562
Fax: +82-42-860-2234
E-mail : acoust@kari.re.kr

The communication between KARI and prospective Bidders for contractual matters (Terms and Conditions) shall be controlled through the following designee:

Mr. Jung-Nam CHO
Senior Administrator of Procurement Team
Korea Aerospace Research Institute (KARI)
169-84 Gwahak-ro, Yuseong-Gu
Daejeon, 34133, Korea
Tel : +82-42-860-2613
Fax: +82-42-860-2666
E-mail : jncho@kari.re.kr

Bidder's information on the points of contact shall include the name, title/position, telephone number, E-mail address, and facsimile number.

1.2.4. Information on the evaluation

The evaluation of the Proposals will be performed by the evaluation committee in KARI. The following evaluation guidelines are for information only, and the evaluation committee reserves the right to modify the guidelines without any prior notification to Bidders.

Principles of evaluation are as follows;

- (1) Subject to an initial review of the Proposal, KARI may send to Bidders a set of questions for clarification and supplementation to the Proposal, and the evaluation will be made based on the Proposal and the answers received from Bidders.
- (2) First, the evaluation will be performed for the technical part of the proposal and the Qualified Bidders will be selected as a result of technical evaluation. Second, the lowest price proposal among the Qualified Bidders will be selected as Successful Bidder.
- (3) The evaluation will be based on the baseline work scope. Any optional propositions will be evaluated separately.

- (4) The result of the evaluation is at the proposal evaluation committee's discretion based on the evaluation process and any Bidders shall not raise any objection regarding proposal evaluation committee's decision thereupon.

1.3. Bidding Schedule

The following schedule is a tentative milestone for the eventual Contract and may be changed at KARI's sole discretion:

- [1] RFP Release: T0
- [2] Proposal Closing Date: T1 = T0 + 10 days
- [3] Review of Proposal: T1 + 7 days
- [4] Question and Answer: T1 + 7 days

1.4. Validity of Proposal

Proposal shall be valid for three (3) months from the Bid closing date and upon KARI's request, shall be extended for another three (3) months.

1.5. Bid Bond

1.5.1. Amount of Bid Bond

Bidder shall establish a bid bond in favor of KARI not later than the Bid Closing Date and submit the certificate to KARI along with this Proposal. The total amount of the bid bond shall be at least five (5) percent of the total bidding price. The bid bond shall remain valid for three (3) months, and if the Bid validity is extended as per Section 1.4, the bid bond shall also be extended accordingly.

1.5.2. Bid Bond Establishment Method

The bid bond in Section 1.5.1 hereinabove shall be issued by first class international bank in the form of an irrevocable letter of credit and advised through "Woori Bank" (Daejeon Branch at 29 Munye-ro, Seo-gu, Daejeon, 35241 Korea, Tel: +82-42-488-9704, Ext. 312 / Fax: +82-505-003-0759). The bond shall be available by KARI's draft at sight drawn on the Bank, accompanied by the statement of KARI stating that Bidder has refused to enter into a Contract with the terms and conditions in the RFP as amended, if any, that Bidder has hindered the fair bidding by fraud or misrepresentation, or that Bidder has withdrawn its Proposal after the Bid Closing Date. The bid bond shall contain the substantial part of the terms and conditions of the bond, date of establishment, account, amount, payment terms, and date of expiry, etc.

1.5.3. Bid Bond Return

The bid bonds except for those of the Successful Bidder and the other Qualified Bidders will be released upon the instructions of KARI to the Non-Qualified Bidders, without interest, promptly after KARI's selection of the Successful Bidder. The bid bond of the Successful Bidder and the other Qualified Bidders shall be likewise released to the corresponding Bidder with whom KARI decides not to enter into a Contract.

1.5.4. Contractor's Bid Bond

When the Contract is executed, the bid bond shall be released upon the instructions of KARI to the Contractor, without interest, promptly after the Contractor shall establish a performance bond or amend a bid bond in favor of KARI.

1.6. Questions and Modifications

Any questions as to the intent and clarity of the RFP may be asked to KARI's point of contact as specified in Section 1.2.3 by E-mail, fax or letter no later than three (3) days before the Bid Closing Date.

After the Bid Closing Date, Bidders shall not amend, modify, or supplement the Proposal, or submit any other documents to KARI, except with KARI's written request.

KARI may ask, in writing, questions as to the intent and clarity of the Proposal to Bidders or request the Bidders to provide supplementary information or data.

1.7. No Contractual Obligation

This RFP shall not be interpreted as an offer for a Contract or any type of guarantee by KARI. It is KARI's sole

discretion whether or not to allow the Contract award to any Bidder. KARI owes no responsibility or obligation to select the Contractor among Bidders.

This solicitation for the Proposal shall neither be construed to create an obligation on KARI to enter into a contractual instrument, nor shall it serve as a basis for any claim for reimbursement of costs for the effort to prepare, submit, amend, revise or supplement the Proposal, and other related documents expended by Bidder regardless of whether or not Bidder is successful in receiving an award as a result of the solicitation.

1.8. Acceptance/Rejection of Bids

KARI reserves the right to accept or reject any Bidding, and to amend the Bidding process and reject all Biddings at any time prior to the award of the Contract without thereby incurring any liability to the affected Bidder(s), and KARI is not under any obligation to inform the affected Bidder(s) of the ground for its action.

1.9. Selection of Successful Bidder

First, the evaluation will be performed for the technical part of the proposal, and the Qualified Bidders will be selected as a result of technical evaluation. Second, the lowest price proposal among the Qualified Bidders will be selected as Successful Bidder.

1.10. Contract

The Terms and Conditions as presented in Chapter V. of this RFP is the baseline requirement for the Contract negotiation, and will be the basis of the Contract.

1.11. Language and Measurement Unit

The Proposal and any documents submitted to KARI under this RFP and communication and the Contract language shall be in English or Korean.

"Système Internationale" (SI, hereafter) units shall be used for measurements and quantities in the Proposal and all the accompanying documents.

1.12. Pricing Requirements

Any price or rate proposed by Bidder shall be firm and fixed, not subject to change for a price escalation for the entire period of the Contract.

Any kinds of taxes and duties arising in connection with Bidder's work under this RFP and under the eventual Contract shall be Bidder's responsibility, except for the customs duties levied in Korea.

The price shall be inclusive of any cost or charge incurred due to delivery of any equipment, hardware, software or documentation to KARI or its designated point of delivery.

1.13. Certificate and Government Approvals

Bidders shall receive the government approval and certificates (e.g. E/L) in relevant countries, necessary for Bidder's work for this Proposal. Bidder's ability and plan to get such approval and certificates shall be submitted to KARI, together with any appropriate assurance letters from the relevant governments, in the proposal.

1.14. Confidentiality

There shall be no news releases, public announcements, denials or confirmation in connection with this RFP or Contract award without the prior written approval of KARI.

All documentation submitted in response to this RFP shall be marked "COMMERCIALS-IN-CONFIDENCE" on the first page of each document. All elements of the RFP shall be kept confidential, and shall not be intentionally disclosed by Bidder to the third parties.

1.15. Withdrawal of Proposal

Bidder may withdraw its Proposal at any time before the Bid Closing Date. Withdrawal shall be made in writing, and shall be received by KARI before the Bid Closing Date.

1.16. Property of Proposal

All documents submitted in response to this RFP shall become the property of KARI and will be retained by

KARI.

1.17. Expenses

Expenses incurred by Bidders in connection with the preparation, submittal, and any subsequent clarification or negotiation activities are for their own account and will not be reimbursed by KARI.

1.18. Governing Law

This RFP and the Contract shall be construed in accordance with and governed by the laws of the Republic of Korea.

1.19. Arbitration

Any disputes in relation to, and under the RFP and the Contract shall be resolved through arbitration in Seoul, Korea, under the Rules of the Korean Commercial Arbitration Board.

V. GENERAL TERMS AND CONDITION

Article 1. Definition

In this Contract, the following words and phrases shall have the meanings as indicated below, unless the context wherein they are used clearly indicates another meaning:

- 1.1 **Associates** mean all individual or legal entities organized under public or private law, who shall act, directly or indirectly, on behalf of KARI or Contractor, or at the direction of either Party to this Contract to fulfill the obligations undertaken by such Party in this Contract, including, without limitation, the employees of each Party, their suppliers and Subcontractors.
- 1.2 **Contract** means this Contract for the Hydraulic supply system for pad bearing and the technical support for manufacturing of the magnesium head expander, including Appendices as attached hereto, and all amendments that may be subsequently agreed to by the Parties in accordance with the terms and conditions of this Contract.
- 1.3 **Contractor** means TBD.
- 1.4 **Contract Price** means the amount of Contract. If there is any change in Contract Price due to any reason, then the Contract Price means current total amount of Contract.
- 1.5 **Deliverable Data** means any technical data as enlisted in Appendix B-1 "Statement of Work" that Contractor shall deliver to KARI and any related data thereof under this Contract.
- 1.6 **Deliverable (Delivery) Item(s)** means hydraulic supply system and deliverable data as enlisted in Appendix B-1 "Statement of Work" that Contractor shall deliver to KARI.
- 1.7 **EDC** means the Effective Date of this Contract.
- 1.8 **Event(s) of Force Majeure** means any act of God, war, whether or not declared, act or failure to act of any government in its sovereign capacity, fire, earthquake, flood, epidemic, quarantine, nuclear incident, or any other act beyond the reasonable control and without the fault of either Party or its Subcontractors.
- 1.9 **Factory Acceptance** means KARI's pre-shipment inspection or audit including the testing activities for Deliverable Item at Subcontractor's facility.
- 1.10 **Hydraulic Group** means the supplying and collecting part for oil of pad bearing. It includes supply pump, tank, scavenge pump and related valve as minimum.
- 1.11 **Hydraulic Supply System** means equipment to supply and monitor the hydraulic oil to pad bearings of vertical vibration system. It includes hydraulic group and oil flow monitoring unit as minimum.
- 1.12 **KARI** means Korea Aerospace Research Institute.
- 1.13 **Magnesium Head Expander** means structure that supplies interfaces to pad-bearing. It is made of many magnesium plates by welding method, heat treatment and machining.
- 1.14 **Oil Flow Monitoring Unit** means the system that consists in oil flow meters to be installed on the pressure manifolds of the hydraulic system. It consists of 4 flow meters and manifolds.
- 1.15 **Party or Parties** means KARI or Contractor, or both, according to the context.
- 1.16 **QUAD vibration system** means vertical vibration system composed of 4 shakers.
- 1.17 **Subcontract** means any subcontract, including purchase orders and all similar forms of agreements at any tier under this Contract.

- 1.18 **Subcontractor** means a contractor under any Subcontract including suppliers and vendor.
- 1.19 **Technical support** means activity to review and give solution for the manufacturing of the magnesium head and related with hydraulic supply system
- 1.20 **Third Party(ies)** means any individual or legal entity other than the Associates and the Parties.
- 1.21 **Wood shims** means part for reaction mass lifting of 300 tons
- 1.22 **Work(s)** means whole or any part of the work, but not limited to review meeting, delivery, installation, test, training, warranty and maintenance, to be executed by a Contractor in accordance with this Contract.

Article 2. Objective

- 2.1 The objective of this Contract is to procure the hydraulic supply system, wood shims and technical support for QUAD vibration system through the effort of the Contractor. To accomplish this objective, Contractor shall perform all the Works under this Contract required for design, manufacture, test, installation, warranty and technical support as well as the delivery of Deliverable Item to meet the requirements and specification of this Contract.

Article 3. Contract Documents

- 3.1 This Contract shall comprise the following documents, as amended from time to time by written agreement by and between both Parties:
- [A] Terms and Conditions
 - [B] Appendices
 - B-1. Statement of Work
 - B-2. Contractor's proposal
- 3.2 In the event of any inconsistency or discrepancy between or among the Contract documents as listed in Article 3.1 above, the Contract documents shall be applied in the decreasing order of precedence.
- 3.3 In the event of any dispute or difference between the Parties in the interpretation of this Contract as a result of the application of the Appendices as specified in Article 3.1, Contractor's Proposal dated submitted to KARI in anticipation of this Contract in response to KARI's Request for Proposal dated shall be used as a reference document to identify and clarify the intention and understanding of the Parties as contemplated in this Contract, and both Parties shall in good faith seek an agreement or a compromise acceptable to both Parties without modification or amendment to this Contract.

Article 4. Responsibilities of the Parties

4.1 Responsibilities of KARI

- 4.1.1 KARI shall make a payment to Contractor in accordance with Article 6 “Terms of Payment”.
- 4.1.2 In accordance with Appendix B-1 “Statement of Work”, KARI shall provide any reasonable support including facilities, equipment and information in order for Contractor to fulfill the technical support at KARI site.
- 4.1.3 KARI shall provide reasonable cooperation and support in order for Contractor to obtain any government approval.
- 4.1.4 KARI shall have the right to monitor and access the work in progress at Contractor’s and its Subcontractor’s facilities.

4.2 Responsibilities of Contractor

- 4.2.1 Contractor shall have all responsibilities for the delivery of hydraulic supply system for pad bearing to KARI in a timely manner as required and defined under this Contract without any charges to KARI.
- 4.2.2 Contractor shall provide all Work including the installation, training, warranty and technical support required and stated under this Contract to KARI.
- 4.2.3 Contractor shall provide as sufficient as engineering manpower for the timely completion of the tasks as set forth in Appendix B-1. “Statement of Work”. If the tasks are not completed with manpower foreseen due to Contractor’s fault, Contractor shall provide any additional manpower to accomplish its scope of work without any additional cost to KARI.
- 4.2.4 Contractor shall provide any technical information or assistance as may be needed for KARI to understand Technical Data or output of Contractor’s work hereunder, without any additional charge to KARI.

4.3 Types of Technical Support Services

- 4.3.1 Contractor’s Services under this Contract shall be performed in the following types:
 - (a) Report for support for Mg. welding & heat treatment
 - (b) Report for inspection of guiding box in H/E
 - (c) Report for support on the machining process

Article 5. Contract Price

- 5.1 For the full, satisfactory and timely performance of the Work by the Contractor in accordance with the provisions of the Contract, KARI hereby agrees to pay to the Contractor _____ U.S dollars/EUROs (US \$/€ _____), in accordance with the terms of payment as stipulated in Article 6 “Terms of Payment”.
- 5.2 The Contract Price as specified in Article 5.1 above shall be firm and fixed price that is not subject to any escalation or to any adjustment or revision by reason of the increase of actual costs incurred by Contractor in the performance of the Work under this Contract, unless otherwise agreed to by both Parties under Article 23 “Changes”.
- 5.3 The Contract Price as specified in Article 5.1 above shall be comprised of the following items.

Description (set)		Price (US \$/€)
Hardware supply	Hydraulic supply system	
	Wood shims - Shim 1 (4ea) 520 x 500 (T) 280 - Shim 2 (4ea) 520 x 500 (T) 253 - Shim 3 (32ea) 520 x 500 (T) 230	
Technical Support Services	1. First visit: Report for support for Mg. welding & heat treatment	
	2. Second visit: Report for inspection of guiding box in H/E	
	3. Third visit: Report for support on the machining process	
Total		

- 5.4 All banking charges incurred in Korea shall be borne by KARI and those charges incurred outside Korea shall be borne by Contractor.

Article 6. Terms of Payment

6.1 Payment Schedule

6.1.1 Payment shall be executed after the establishment of performance bond in accordance with Article 7 “Performance Bond”.

6.1.2 KARI shall pay to Contractor the Contract Price as stipulated in Article 5.1 in accordance with the following schedule:

(c) Hardware supply

No.	Payment milestone (in Month)	Payment due date	Payment (US \$ / €)	Percentage of Contract Price (%)
1	EDC	EDC+ 1M		30
2	FAR (EDC+ 2M)	EDC+ 3M		60
3	Inspection of Hydraulic Supply System (EDC+ 4M)	EDC+ 5M		10
Total				100 %

* “EDC” means the Effective Date of this Contract in accordance with Article 22 “Effective Date of Contract”.

* “FAR” means the Factory Acceptance Review at Contractor site.

* “Inspection” means the incoming inspection of the Deliverable Item in accordance with Article 13.

(d) Technical Support Services

No.	Payment milestone (in Month)	Payment due date	Payment (US \$ / €)	Percentage of Contract Price (%)
1	EDC	EDC+ 1M		40
2	Delivery of report (EDC+ 3M)	EDC+ 4M		60
Total				100 %

* “EDC” means the Effective Date of this Contract in accordance with Article 22 “Effective Date of Contract”.

6.2 Billing Procedure

6.2.1 All invoices Contractor submits for payment shall be in duplicate signed by an authorized company official and received by KARI at least thirty (30) days before the payment due dates as specified in Article 6.1.

6.2.2 All payments shall be made in U.S dollars/EUROs by telegraphic transfer to the bank account as designated by Contractor in its invoices, by the payment due dates as stipulated in Article 6.1, but or not later than thirty (30) days after KARI's receipt of Contractor's invoices whichever comes later.

6.3 Suspension of Payment

6.3.1 Notwithstanding any provisions of this Contract, if any payment milestone as set forth in Article 6.1.2 has not been accomplished for any reasons attributable to Contractor, KARI may, with an advance notice, suspend all payments due until KARI and Contractor agree that the delayed payment milestone has been accomplished.

6.3.2 In the event of KARI's suspension of payment under Article 6.3, Contractor shall nevertheless continue to perform its obligations under this Contract regardless of whether KARI is entitled to suspend the

payment.

6.4 Deduction of Payment

- 6.4.1 All losses, costs, charges, damages and expenses which KARI incurs or sustains by reason of any act, default or omission of the Contractor in the performance of the Contract and any other amounts which KARI is entitled to receive from the Contractor may be deducted from any payment that may be or become due to the Contractor from KARI or may request for those amount to Contractor.
- 6.4.2 A prior written notice given by KARI accompanied with documents stating the amount due to KARI referred to in Article 6.4.1 and the reason of deduction shall be prima facie evidence of the matters stated herein.

Article 7. Performance Bond

- 7.1 Contractor shall establish a performance bond or deposit cash within three (3) weeks after EDC in favor of KARI in the value of ten percent (10 %) of the Contract Price, in the form of an irrevocable and unconditional standby letter of credit available by KARI's draft at sight.
- 7.2 The entire amount covered by the performance bond shall be payable to KARI on demand together with KARI's written statement to the effect:
- (a) that there was a default of the Contractor in the performance of the Contract (including Subcontractor's default under the Subcontract), or
 - (b) that any amount KARI is entitled to receive from Contractor has not been paid by Contractor to KARI through any other means, or
 - (c) that the performance of the Delivery Item accepted by KARI pursuant to the Article 13 "Inspection and Site Acceptance" falls below the warranted level specified by the Contract and as far as no remedy is brought by Contractor, or
 - (d) that this Contract was terminated by Contractor's breach as specified in Article 19.2.

Whenever any amount has been withdrawn by KARI due to such cases of (a), (b) or (c) as above, performance bond shall be replenished.

- 7.3 The letter of credit shall be issued by first class international bank acceptable to KARI. The letter of credit shall be drawn in favor of KARI and advised through the Woori Bank (Daejeon Branch at 29 Munye-ro, Seo-gu, Daejeon, 35241 Korea, Tel: +82-42-488-9704, (Ext. 312)/ Fax: +82-505-003-0759) and the letter of credit or cash deposit shall remain valid until the end of warranty expiration. The letter of credit shall not be amended, modified or canceled without KARI's prior written consent.
- 7.4 It is hereby agreed between the Parties that payment from the Performance Bond under this Article 7 shall not affect any other KARI's rights, privileges, interests or remedies under this Contract or the applicable law.

Article 8. Deliveries

8.1 General

- 8.1.1 Contractor shall deliver Deliverable Item in accordance with the defined schedule and method as set forth in Appendix B-1 "Statement of Work".
- 8.1.2 Contractor shall bear any charges or costs of whatsoever nature that are incurred in relation to such delivery or provision until such delivery or provision is duly made under this Contract without any non-conformity and accepted in accordance with Article 13 "Inspection and Site Acceptance" hereof, and shall keep KARI free from any such charges and costs.
- 8.1.3 Contractor agrees that delivery or provision of time and place under this Contract, whether specifically provided for or not, or in subsequent amendments thereto, are of the essence of this Contract.
- 8.1.4 Contractor shall be responsible for all applicable taxes imposed outside Korea including any customs duties and charges of any nature levied on Deliverable Item, spare parts, spare materials, tools, consumables and ancillary equipment as well as any charges associated with the transportation.

8.2 Delivery to KARI

- 8.2.1 Contractor shall deliver Deliverable Item under the rule of FCA France airport (Free Carrier with the Incoterms 2010) for Hydraulic supply system and the rule of FOB France seaport (Free on Board with the Incoterms 2010) for Wood shims in accordance with the delivery schedule of this Contract.
- 8.2.2 Unless otherwise mutually agreed, Contractor shall make the deliverable items ready for shipment and shall hand over to the KARI's Carrier or Forwarding Agent (Cargo King B.V :Tel: +31 20 405 3230, Attn: Mr. Willis Shin, willis.shin@cargoking.eu) in accordance with the delivery schedule of this Contract.
- 8.2.3 To obtain import certification, Contractor shall notify KARI by e-mail (address is "acoust@kari.re.kr" for Mr. Jong-Min IM and "jncho@kari.re.kr" for Mr. Jung-Nam CHO) fourteen (14) calendar days prior to each shipment with one set of proforma invoice and packing list specifying the number of boxes, name of Items, unit price, and size and volume of each container or box to be shipped. As soon as each shipment as provided for in this Article is made, Contractor shall send one (1) copy of the following shipping documents to KARI by e-mail;
 - (a) Clean on board vessel bill of lading/or airway bill of lading,
 - (b) Commercial invoice,
 - (c) Packing list,
 - (d) Weight and measurement list,
 - (e) Manufacturer's Inspection Report,
 - (f) Certificate of Origin issued by Contractor, and
 - (g) Export License (if possible).

Article 9. Delay

9.1 Excusable Delay

- 9.1.1 Neither Party shall be responsible to the other Party for any delay in performing its obligations under this Contract due to any Events of Force Majeure.
- 9.1.2 The Party whose performance of obligations hereunder has been affected by any Events of Force Majeure shall notify the other Party within ten (10) days thereafter by sending a detailed statement and sufficient evidence with respect thereto, and promptly of any subsequent change in the circumstances, if any. The affected Party shall exercise its best efforts under the circumstances to remove or remedy the Events of Force Majeure and the effects thereof and resume full performance hereof as soon as possible.
- 9.1.3 Notwithstanding Article 9.1.1 hereof, any such delay that has not been notified to the other Party or any delay of performance of the affected Party falling due after delay, failure or incompleteness in exercising the pertinent best efforts to remove or remedy the pertinent Events of Force Majeure or the effects thereof pursuant to Article 9.1.2 hereof shall not be excused for any reason whatsoever.
- 9.1.4 The Party who has received or is entitled to duly receive the notice of Events of Force Majeure under Article 9.1.2 hereof may suspend performance of its obligations which shall be due subsequent to such Events of Force Majeure, until the other Party has effected such delayed performance to the full extent after and in view of such Events of Force Majeure.

9.2 Non-Excusable Delay

- 9.2.1 In the event that, unless otherwise excused by virtue of this Contract, any reason attributable to KARI or the governing or applicable law, Contactor delays the provision or delivery of Deliverable Items as stipulated under this Contract, Contactor shall pay for damages as defined in the Article 9.2.2 to KARI as a result of such delay.
- 9.2.2 Contactor acknowledges and agrees that the timely provision or delivery of the Deliverable Item as stipulated under this Contract or its performance of other obligations under this Contract is essential to KARI, and that such delay as provided for in Article 9.2.1 hereof may cause substantial financial loss or damage to KARI's rights, interests, privileges and benefits, which may not be assessable or recoverable. Both Parties therefore specifically agree that in the event of such loss or damage caused by delay attributable to Contactor, its Subcontractor or any of its agents, Contactor shall pay KARI as liquidated damages zero point one five percent (0.15%) of Contract Price per day of such delay. In no case, however, shall the aggregated liquidated damages exceed ten percent (10%) of Contract Price. It is also agreed by both Parties that KARI shall be entitled to terminate this Contract for Contactor's breach, only if the aggregated liquidated damages under this Article, excluding those days of delay excused by KARI in writing, exceeds ten percent (10%) of the Contract Price.
- 9.2.3 This Article shall not affect other remedies, rights, privileges, interests, benefits of KARI under this Contract or the governing or applicable law.
- 9.2.4 For the purpose of this Article, any action or omission of Contactor's Subcontractor, agent, or servant, de facto or de jure, shall be deemed to be Contactor's own.

Article 10. Taxes and Duties

- 10.1 In the event taxes are charged in Korea, KARI shall be fully responsible for payment of such taxes. Contractor shall be fully responsible for the payment of all applicable taxes imposed outside Korea including any customs duties and charges.
- 10.2 If Korean corporation tax is required to be withheld from amounts paid or payable to Contractor under this Contract (herein referred to as 'Applicable Tax'), KARI shall withhold the Applicable Tax and pay on behalf of Contractor the relevant Korean taxing authority in accordance with applicable Korean law and international tax treaty between Korea and Germany.
- 10.3 In case KARI pay the Applicable Tax on behalf of Contractor, KARI shall forward proof of the withheld Applicable Tax to the Contractor within ninety (90) days of payment.
- 10.4 Neither Party shall be responsible for paying the customs duties, and related taxes, fees, or charges for the personnel and the personal belongings of the other Party.
- 10.5 The Contractor shall further comply with instructions KARI may issue from time to time in order to facilitate any exemptions or reductions from customs duties and other taxes that might be levied on KARI and shall impose the same obligations on its Subcontractors.

Article 11. Intellectual Property

- 11.1 KARI shall own and have a right to use, without any obligation, Deliverable Items provided by Contractor in its performing this Contract. Contractor shall take all necessary precautions so that all the Deliverable Items supplied hereunder shall be free from infringement of any patent, design patent, trademark, utility model or any other industrial property right, copyright, license or any other right thereunder of any Third Party.
- 11.2 In the event that any Party other than Contractor claims or threatens to claim infringement by KARI with respect to such use of the Deliverable Items, Contractor shall defend, hold harmless, and indemnify KARI from such infringement claims.
- 11.3 This Article will survive the completion of the Contract, any termination, cancellation or expiration of the Contract in any manner whatsoever.

Article 12. Factory Acceptance

- 12.1 The Factory Acceptance of Hydraulic Supply System shall occur only after:
- (a) all specified tests to be performed by the Contractor under the Contract for the Hydraulic Supply System have been completed in accordance with the Contract; and
 - (b) the Contractor has demonstrated to KARI that the Hydraulic Supply System meet the specifications and requirements in this Contract; and
 - (c) all Works and conditions under the Contract to be fulfilled by the Contractor prior to the shipment of Hydraulic Supply System have been met,
- in which case KARI shall accept, in writing, the Hydraulic Supply System subject to the provisions set forth below.
- 12.2 Subject to the conditions as set forth in Article 12.1 above, a Factory Acceptance of Hydraulic Supply System shall be occurred in accordance with Appendix B-1 "Statement of Work". After the FAR, KARI's authorized representative shall notify the result of FAR in writing. If KARI determines that Hydraulic Supply System is unacceptable, it shall notify the Contractor, in writing, the reasons therefore.
- 12.3 If Hydraulic Supply System is determined to be unacceptable, Contractor shall, at its expense, promptly repair or replace Hydraulic Supply System so that it shall comply with the Contract specifications and requirements, and Contractor shall hold the additional FAR of such repaired or replaced Hydraulic Supply System for KARI's confirmation. The Contractor shall present to KARI the root cause and the result of such repair or replacement on the additional FAR. Such repaired or replaced Hydraulic Supply System shall be accepted in accordance with the requirements of Article 12.1.
- 12.4 For the FAR, KARI, at all times during the performance of this Contract, shall have the right to do the following activities at the Contractor's facilities or other relevant facilities under this Contract;
- (a) Access the Items, testing activities and data, related to, used for, prepared or generated in connection with this Contract, and
 - (b) Witness all qualification and acceptance testing of the Deliverable Items to be delivered or provided under this Contract including all tests used for demonstrating qualification.
- 12.5 Contractor shall make such data and documentation, equipment and facilities available to KARI upon KARI's request and KARI's selection for such purposes. Contractor shall deliver copies of design and test data and other technical data, excluding financial data, required to evaluate technical problems or non-performance that may occur during the performance of this Contract. Such documentation and data shall also be available for KARI to make copies thereof.

Article 13. Inspection and Site Acceptance

- 13.1 Notwithstanding the successful FAR, KARI shall carry out incoming inspection of the Deliverable Item after delivery within one (1) week after delivery. In the event that KARI discovers that any Deliverable Item provided or delivered pursuant to Article 8 “Deliveries” are defective or non-conformity during the incoming inspection, KARI shall promptly notify Contractor thereof and provided that such defect or non-conformity is not attributable to KARI, Contractor shall promptly remedy such defect or non-conformity and retest. In addition, if remedying such defect or non-conformity would substantially delay as compared to the period required to complete such substitution, Contractor shall promptly provide substitute Items. Upon the remedy of such defect or non-conformity that the requirements of this Contract are satisfied in all respects or upon the provision of substitute Items, Contractor shall notify KARI of the details of the remedy undertaken by Contractor.
- 13.2 If Hydraulic Supply System is determined to be unacceptable, both Parties shall jointly investigate the root cause and if the root cause is attributable to the Deliverable Item, then it shall be considered as non-delivery and Contractor shall, at its expense, promptly repair or replace Hydraulic Supply System so that it shall comply with the Contract specifications and requirements. Such repaired or replaced Item shall be accepted in accordance with the requirements of Article 13.1.
- 13.3 The Parties agree that the acceptance of the Deliverable Item under this Article shall not be interpreted or construed to mean that such Item is free of all defects and conform in all respects with the requirements of this Contract, and Contractor shall not be entitled to any additional costs incurred or to recover any damages suffered due to defects in the Item or KARI’s rejection of the Item.

Article 14. Monitoring and Access

- 14.1 KARI, at all times during the performance of this Contract, shall have the right to do the following activities at the Contractor's facilities, Subcontractor's facilities, supplier's facilities, or other relevant facilities under this Contract;
- (a) Monitor the Contract performance of Contractor, and
 - (b) Access the Items in progress, and any design, manufacturing, and testing activities and data, including development and engineering model testing, related to, used for, prepared or generated in connection with this Contract, and
 - (c) Witness all qualification, protoflight, and acceptance testing of all Items to be delivered or provided under this Contract including all tests used for the purpose of demonstrating qualification.
- 14.2 Contractor shall make such data and documentation, equipment and facilities available to KARI upon KARI's request and KARI's selection for such purposes. Contractor shall deliver copies of design and test data and other Technical Data, excluding financial data, required to evaluate technical problems or non-performance that may occur during the performance of this Contract. Such documentation and data shall also be available for KARI to make copies thereof.
- 14.3 Contractor shall obtain from any of its Associates access by KARI, upon reasonable advance notice to Contractor, to any pertinent facilities, Work in progress and Technical Data of any of Contractor's Associates to inspect Work in progress under this Contract. Contractor shall dispatch its representative or a technical manager authorized to act on behalf of its representative to accompany KARI's access hereunder.
- 14.4 KARI shall have access to all Technical Data in the Contractor's control that are required for the development of the hydraulic supply system and technical support under this Contract.
- 14.5 If, during the performance of this Contract, the KARI representative or any person designated by KARI reasonably determines that any of the provisions or delivery of any Items or Contractor's performance of its other obligations under this Contract does not conform to the requirements of this Contract, the KARI representative shall promptly notify the Contractor, and confirm such notification in writing within ten (10) days, of the particulars in which such provision, delivery or performance does not meet the requirements of the Contract. The Contractor, upon receipt of such notice, shall promptly make the corrections of such non-conformity and notify KARI of the result of such corrections, or, if such prompt corrections are not possible, notify KARI of the reason why such prompt corrections are not possible and the period required for the corrections.

Article 15. Indemnification

- 15.1 Contractor shall indemnify and hold KARI, its officers, agents, servants, employees, subsidiaries, successors, and assignees, or any of them, harmless from any and all loss, damage, liability or expense resulting from damage to all tangible property and injuries including death, to all persons, in the circumstances caused by its act or omission in the performance of the Work, and shall pay all expenses, including reasonable attorneys' fees, and satisfy all judgments as may be incurred by or rendered against them, or any of them.

Article 16. Licenses, Clearances and Permits

- 16.1 Unless otherwise specified in this Contract, each Party is responsible for obtaining all government approvals from any government authority which has jurisdiction and authority to require such approvals, including, but not limited to, licenses, visas, and permits necessary to carry out such Party's obligations in accordance with this Contract. KARI is responsible for obtaining any necessary Korean government approvals, and Contractor is responsible for all other government approvals.
- 16.2 The Parties shall cooperate and provide each other, upon request of and without cost to the other Party, all reasonable and necessary support in obtaining any and all governmental approvals, which they respectively are required to obtain pursuant to this Contract.
- 16.3 Each Party shall be solely responsible for any expenses incurred in obtaining the approvals, which are required under this Article. The Parties shall provide to each other, upon request of and without cost to the other Party, suitable documents or other reasonable evidence to show that they have obtained any and all governmental approvals, which they respectively are required to obtain pursuant to this Contract.
- 16.4 Contractor shall obtain the export license for the export and/or re-export of all Deliverable Items to Korea, from Contractor's government and all other governments other than Korean government, and for the re-export to Launch site for the transportation of Deliverable Items based upon KARI's information. In the event that Contractor fails to obtain the above export licenses, within six (6) months from the EDC, KARI has the right to terminate this Contract in accordance with Article 19.2. In the event that Contractor obtains the above export licenses conditionally within six (6) months from EDC, if KARI determines that such conditions imposed on the export licenses significantly affects the Launch of KPLO, Article 19.2 shall be applied to as a same manner.

Article 17. Confidentiality

- 17.1 Each Party shall confidentially treat all documents, data, materials and information supplied by one to the other, and shall not disclose the above to any Third Party, and shall not use the above for any other purpose than for the performance of this Contract without prior written consent from the other Party. However, this Confidentiality obligation shall not be apply to the information which is made available to the general public.

Article 18. Warranty

- 18.1 Any patent, utility, design, copyright, technical know-how and any other type of intellectual property used by Contractor, its Subcontractors, servants, or agents, or delivered or provided to KARI directly or indirectly in connection with this Contract shall be free of any infringement actions by any Third Party claiming its rights or interests with regard thereto in disposing with in accordance with this Contract.
- 18.2 The Deliverable Item and its installation supplied and performed by Contractor or its Subcontractors hereunder shall be in good working order and free from all defects in workmanship and materials and shall comply with the requirements of this Contract. Warranty period for the Deliverable Item shall be one (1) year from the completion date of Inspection and Site Acceptance to KARI.
- 18.3 Upon the receipt of written notification from KARI that the Deliverable Item delivered by Contractor or its Subcontractors is defective or non-confirming, the Contractor shall repair or replace, at Contractor's option and its own expense, such Deliverable Item so as to comply with the above warranties.
- 18.4 The Contractor shall not be entitled to any additional costs (for instance, the cost for the repair or replacement of faulty parts at its option, the labor cost required for repair, traveling cost, per diem and all associated necessary costs) incurred or to recover any damages suffered due to defect in the Deliverable Item or rejection of the Deliverable Item by KARI.
- 18.5 Contractor shall submit the written plan for repair within forty eight (48) hours after the reception of KARI's notification of fault and shall completely finish the repair within the agreed time period after the receipt of KARI's written notification of fault.
- 18.6 For an urgent service during any important test period using the Hydraulic Supply System, The remedy of warranty is five (5) days from the receipt of KARI's written notification of service. To meet the deadline of the urgent service, KARI will notify Contractor of the test start date and the period two (2) weeks prior to the test start date. Contractor shall stand by the A/S crews at Contractor's convenient place during the test period (up to four (4) weeks). Contractor shall include a plan for these requirements.
- 18.7 Both Parties acknowledge that the breach of a warranty may result in serious damages to KARI's right, interests, privileges, and benefits, de facto or de jure, or loss of KARI's profits. If a breach of warranty has not been cured within thirty (30) days from the date of KARI's written notification to Contractor of such breach, Contractor shall pay all the damages to KARI due to the breach of any warranty or KARI shall have the right to terminate this Contract in accordance with Article 19.2.
- 18.8 The right and remedies provided under this Article 18 are in addition to any other rights or remedies available to KARI under the Contract or applicable laws.

Article 19. Termination

19.1 Termination for Events of Force Majeure

- 19.1.1 In the event that the excusable delay under Article 9 “Delay” exceeds three (3) months for any single Events of Force Majeure or six (6) months in the aggregate for all Events of Force Majeure, KARI, at its sole discretion, may declare frustration of this Contract, and terminate the whole or any part of this Contract by sending a three (3) days prior notice to the Contractor.
- 19.1.2 In the event this Contract is terminated by Article 19.1.1 above, each Party shall effect the restitution to the other Party of whatever is provided, delivered, or paid to it in the same manner and types as such provision, delivery or payment was made.

19.2 Termination for Breach

- 19.2.1 KARI may, by written notice to the Contractor, terminate the whole or any part of the Contract, if any of the following circumstances occurs;
- (a) Contractor fails to deliver any Deliverable Item under Contract in accordance with the delivery schedule; or
 - (b) Contractor fails to perform any Work under this Contract or fails to progress with the Work in a manner which satisfies KARI that Contractor will perform the Contract within the time specified and in accordance with the terms of the Contract; or
 - (c) Contractor fails to remedy any or all defects and non-conformity on the Deliverable Item in accordance with Article 13.
- 19.2.2 In the event of the circumstances in Article 19.2.1, KARI may notify the Contractor and may suspend any further performance of its obligation under this Contract. If the Contractor fails, within ten (10) days from the dispatch of the notice, to produce and notify KARI of reasonable evidence of its intent and ability to effect due performance of the obligation in breach within thirty (30) days from due dispatch of written notice, then KARI may terminate this Contract with three (3) days’ prior notice of termination.
- 19.2.3 In the event this Contract is terminated for Contractor’s breach, the Contractor shall return all the amounts paid by KARI under the Contract and also pay the termination charge of ten percent (10%) of the total Contract Price. KARI shall return the Deliverable Item to Contractor, if any.

19.3 Termination for Special Circumstances

- 19.3.1 Either Party may terminate this Contract anytime upon or after due dispatch of notice of such effect, without any other conditions, in the event that the other Party falls within any of the following categories:
- (a) the other Party has fallen bankrupt or insolvent;
 - (b) the other Party passed a resolution for its reorganization (bankruptcy related), dissolution, liquidation or winding-up; or
 - (c) a court order for proceedings for the bankruptcy, reorganization (bankruptcy related), dissolution or winding-up of the other Party has been applied for by any person and such application has not been dismissed within sixty (60) days.
- 19.3.2 In the event this Contract is terminated by Article 19.3.1 above, each Party shall effect the restitution to the other Party of whatever is provided, delivered, or paid to it in the same manner and types as such provision, delivery or payment was made.

19.4 Termination for Convenience

- 19.4.1 KARI may terminate this Contract, in whole or in part, for its convenience, with thirty (30) days’ prior written notice to Contractor. In case of such termination for convenience, Contractor is entitled to receive payment due which Contractor has already done in accordance with Article 6.1.2 within thirty (30) days from the date of termination and KARI shall release performance bond at the same time.

Article 20. Resolution of Disputes and Governing Law

- 20.1 In cases any controversy or claim arises out of or in relation to this Contract or with respect to a breach hereof, the Parties shall seek to resolve the matter amicably through discussions between themselves. In the event of any disagreement between KARI and Contractor about the interpretation of the provisions or definitions used in this Contract, the interpretation of KARI shall govern until and unless otherwise decided by arbitration conducted pursuant to the following provisions.
- 20.2 If the Parties cannot resolve such controversy or claim in accordance with Article 20.1 above, it shall be finally settled by arbitration in Seoul, Korea, before the Korean Commercial Arbitration Board in accordance with its rules. The proceedings shall be conducted in English. The award rendered by the board shall be final and binding on the Parties and may be entered in any court of competent jurisdiction for execution.
- 20.3 The validity, performance, construction, and effect of this Contract shall be governed by the laws of Korea.

Article 21. Language and Units

- 21.1 This Contract shall be executed in English.
- 21.2 All documents, drawings, plans and other writings as well as communications between both Parties shall be in English.
- 21.3 Measurements and quantities for deliverable documentation shall be recorded in units of Système Internationale.

Article 22. Effective Date of Contract

22.1 The effective date of this Contract ("EDC") is the date when the duly authorized representatives of both Parties have signed this Contract.

22.2 Any amendment to this Contract shall be effective upon signature by the authorized representatives of both Parties and the approval of such amendment by the government of both Parties, if required.

Article 23. Changes

23.1 Changes Requested by KARI

23.1.1 Any changes requested by KARI during the performance of this Contract, within the general scope of this Contract, which would add or delete Work, affect the design of Work, change the method of shipment or packing, place or time of delivery, duration of Contract, or would affect any other requirement of this Contract, shall be submitted in writing to Contractor. Contractor shall respond to any changes KARI requested in writing within thirty (30) days after receipt of such request. If such change requested by KARI causes an increase or decrease in the Contract Price and/or an impact of schedule, Contractor shall submit to KARI at the time the response to the requested change is submitted, the details of such increase or decrease.

23.1.2 KARI shall notify Contractor in writing, within thirty (30) days after receipt of Contractor's response, whether it agrees with and accepts Contractor's response. If KARI agrees with and accepts Contractor's response, an amendment to the Contract reflecting such change, Contract Price and/or schedule adjustment, if any, shall be issued, and Contractor shall proceed with the performance of the Contract as changed. Contractor shall provide updated information that reflects the final agreed price of the change, if KARI requests. In the event the Parties are unable to agree on a change requested by KARI or price adjustment, if any, or both, Contractor shall proceed with the performance of the Contract as unchanged.

23.2 Changes Requested by Contractor

23.2.1 Any changes requested by Contractor during the performance of this Contract, within the general scope of this Contract, that would add or delete Work, affect the design of Work, change the method of shipment or packing, place or time of delivery, duration of Contract, or would affect any other requirement of this Contract, shall be submitted in writing to KARI thirty (30) days prior to the proposed date of the change. If such change requested by Contractor causes an increase or decrease in the Contract Price, Contractor shall submit to KARI at the time the requested change is submitted, the details of such increase or decrease.

23.2.2 KARI shall notify Contractor in writing within thirty (30) days after receipt of the requested change and Contract Price adjustment, if any, whether or not it agrees with and accepts such change. If KARI agrees with and accepts change requested by Contractor, an amendment to the Contract reflecting such change, and Contract Price adjustment, if any, shall be issued,

and Contractor shall proceed with the performance of the Contract as changed. Contractor shall provide updated information which reflects the final agreed price of the change, if KARI requests. In the event the Parties are unable to reach an agreement on a change requested by Contractor, or Contract Price adjustment, if any, or both, Contractor shall proceed with the performance of the Contract as unchanged.

Article 24. Notices

24.1 All notices, requests, demands, approvals, reports, invoices, and other correspondence to be provided pursuant to this Contract shall be in writing and shall be deemed to have been duly given to the Party to be notified: (i) on the date of delivery if delivered in person, (ii) on the date of dispatch if by facsimile, telex or e-mail, or (iii) on the date of receipt if by registered airmail or overnight courier.

All notices shall be addressed to the appropriate Party at its address as follows:

For KARI: **Korea Aerospace Research Institute**

169-84 Gwahakro, Yuseong-gu, Daejeon 34133, Korea

Commercial matters

Mr. Jung-Nam CHO

Tel: +82-42-860-2613

Fax: +82-42-860-2666

E-mail: jncho@kari.re.kr

Technical matters

Mr. Jong-Min IM

Tel: +82-42-860-2562

Fax: +82-42-860-2234

E-mail: acoust@kari.re.kr

For Contractor: **Contractor**

address

Commercial matters

Mr. TBD

Tel: +TBD

Fax: +TBD

E-mail: TBD

Technical matters

Mr. TBD

Tel: +TBD

Fax: +TBD

E-mail: TBD

24.2 Each Party may change its address for notice by notice given to the other Party in the manner set forth above. And any notices given as provided herein shall be considered effective seven (7) days after the registered postage pre-paid airmailing thereof or the day of actual receipt thereof, whichever occurs first, or on the day of personal delivery, or the day of sending if by facsimile, telex or e-mail.

Article 25. Miscellaneous

25.1 Effective Date of the Contract

The effective date of this Contract ("EDC") is the date on which the duly authorized representatives of both Parties have signed this Contract, and any amendment to this Contract shall be effective only upon signature by the authorized representatives of both Parties.

25.2 Entire Agreement

This Contract embodies the entire agreements of the Parties with respect to the subject matter hereof and supersedes and cancels any and all prior understandings or agreements, oral or written, in relation hereto, which may exist between the Parties. No oral explanation or oral information by any of the Parties shall alter the meaning or interpretation of this Contract.

25.3 Assignability

This Contract and each and every covenant, term and condition hereof shall be binding upon and inure to the benefit of the Parties and their respective successors, and neither this Contract nor any rights and obligations hereunder shall be assignable or delegable directly or indirectly by either Party without the prior written consent of the other Party.

25.4 Unenforceable Terms

If any term or provision of this Contract shall for any reason be invalid, illegal or unenforceable in any respect, this Contract shall be interpreted and construed as if such term or provision had never been included herein.

25.5 Non-waiver

The failure or delay of any Party to require performance by the other Party of any provision of, or of any right or obligation under this Contract, shall not constitute a waiver thereof, nor shall such affect that Party's right to thereafter require performance of such or any other provision, right or obligation.

25.6 Disclaimer of Agency

This Contract shall not be deemed to constitute any Party to become the agent of the other Party.

25.7 Headings

The headings in this Contract have been inserted for convenience of reference only and are not to be used in consulting or interpreting this Contract.

25.8 Language and Unit

All documents, drawings, plans and other writings as well as communications between both Parties under this Contract shall be in English and measurements and quantities for Deliverable Data shall be recorded in units of *Système Internationale*.

25.9 Time Limits

Unless otherwise indicated, any time limits to which this Contract binds Contractor or KARI shall be counted in calendar days from the day following that of the event marking the start of the time limit, and shall end on the last day of the period specified. When the last day of a time limit is a Saturday or Sunday, or a legal holiday in the country in which the particular contractual performance is required, such time limit shall be extended to the first working day following.

25.10 Subcontractors

Each Party shall be fully responsible for the work of its Subcontractors under this Contract, and such subcontracting shall not relieve that Party of its obligation under this Contract.