

**PROCEEDINGS OF THE PRE-BID CONFERENCE HELD 2<sup>nd</sup> Feb 2023 THROUGH WEBEX, TOWARDS DETAIL DESIGN AND ENGINEERING OF NACELLE WITH ENGINE MOUNT STRUCTURE FOR SARAS MK-II AIRCRAFT.**

The Pre-bid Conference was held and the following T&PC members attended the meeting: -


Sl. No.	Name & Designation		Role
1	Dr. M. Manjuprasad	Chief Scientist, STTD	Chairman (T&PC)
2	Mr. Gaddikeri Kotresh	Chief Scientist/ ACD	Specialist Member
3	Mr.C.A. Vinay	Principal Scientist/RNC	Specialist Member
4	Mr Vineet Kumar	Chief Scientist/RNC	PD -SARAS
5	Mr. Ramaswamy Setty J	Chief Scientist/ACD	Member
6	Mr. Dilip Kumar Sahu,	Sr.Technical Officer-3/RNC	Member
7	Smt. Akshatha H. T	Sr.Principal Scientist/RNC	Member-Convener

The list of Prospective bidders who attended the Pre-bid Conference is as per Annexure-I.


At the outset, the Chairman welcomed all the Members and the representatives of the Bidders and briefed in general the scope of the Project. The Indenting Officer read out the clarification sought by the bidders and replied as detailed in Annexure-II (Part A: Technical Clarification and Part B: Commercial Clarification, if any).


The representatives present were satisfied with the replies given and it was informed that the corrections/additions / clarifications given, as discussed during the Pre-Bid Conference would be hosted on the website of CSIR-NAL and all prospective bidders are required to take cognizance of the proceedings of the Pre-Bid Conference before formulating and submitting their bids as stipulated in bidding Documents.

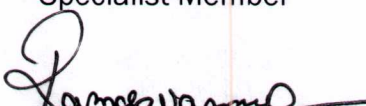
The meeting ended with a vote of thanks to the Chair.


  
Gaddikeri Kotresh  
Specialist Member


  
C. A. Vinay  
Specialist Member

  
Vineet Kumar  
PD -SARAS

  
Dilip Kumar Sahu,  
Member

  
Ramaswamy Setty, J  
Member

  
Akshatha H. T  
Convener (TSC)

  
Dr. M. Manjuprasad  
Chairman-T&PC

**CSIR-NATIONAL AEROSPACE LABORATORIES  
BENGALURU - 560 017**

ANNEXURE - I

TENDER NO.: NAL/PUR/CAD/063/22-Z  
DATE & TIME : 2-Feb-2023 @ 11.00 AM  
VENUE: THROUGH WEBEX/in person

Pre-Bid Conference for Details Design And Engineering Of Nacelle With Engine Mount Structure For SARAS Mk-II Aircraft.

**ATTENDANCE SHEET - T&PC MEMBERS**

Sr. No.	Name			Signature
1	Dr. Manjuprasad, M	Chief Scientist, ACD	Chairman	
2	Mr. Gaddikeri Kotresh	Chief Scientist/ ACD	Specialist Member	
3	Mr.C. A. Vinay	Principal Scientist/CAD	Specialist Member	
4	Mr. Vineet Kumar	Chief Scientist/ CAD	PD - SARAS	
5	Mr. Ramaswamy Setty, J	Chief Scientist/ACD	Member	
6	Mr. Dilip Kumar Sahu,	Sr.Technical Officer-3/CAD	Member	
7	Smt. Akshatha H. T	Sr.Principal Scientist/RNC	Convener (TSC)	

Invitees

	Name	designation	e-mail Id	Signature
1	Prashantha Banatkar	Principal Scientist	pbanatka@nal.res.in	
2	Byji Vamshere	Chief Scientist	byji@nal.res.in	
3	NARENDRA M	Sr. PR. SCIENTIST	nal.res.in msnarendram	
4	SANDHYA R	PRINCIPAL SCIENTIST	sandhya@nal.res.in	
5	Kotresh Gaddikeri	Chief Scientist	kotresh@nal.res.in	
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**CSIR-NATIONAL AEROSPACE LABORATORIES  
BENGALURU**

**TECHNICAL QUERIES & CLARIFICATION  
Annexure II - PART A**

Tender No. : NAL/PUR/CAD/063/22Z  
Item Description : Detail Design and engineering of Nacelle with Engine mount structure for SARAS MK II Aircraft

Sr.No.	Query / Clarification Sought	Clarification/Amendment
1.	Have all critical engine cases identified?	Clarification: The engine critical load cases have been identified in discussion with Engine OEM.
2.	Can the Load Case envelope approach be advised by NAL, is it acceptable to envelope temperature, inertia with all possible combination of Max-Max, Max-Min combination?	Clarification: Load Case consistent nacelle zone and bay temperature will be given as mentioned in section 4.2.3.4
3.	Can the down selection criteria for load cases be shared with bidder?	Clarification: Load cases are derived as per FAR 23 regulations which includes maneuver, landing, ground handling and emergency landing conditions
4.	What are the failure conditions identified for the current WP?	Clarification: Failure conditions can be referred from table 3 of section 4.2.3.5.1 of Tender document
5.	Were thermal effects at the composite to metal interface considered in the PDP design process? Material compatibility checked and finalized?	Clarification: Yes. The thermal effects have been considered and material compatibility has been checked
6.	Material/weight Optimization is covered? Was the weight target achieved at PDP phase?	Clarification: Weight target will be provided by CSIR-NAL to the successful bidder. Refer section 4.2.3.4 of tender
7.	Material spec, standard parts spec, consumable spec will be NAL responsibility and will be provided by NAL	Clarification: Inputs will be provided as per section 4.2.3.4 of Tender document. However, selection of items mentioned in section 4.2.3.5.1.c of Tender document is ESP's responsibility.
8.	Are LRU drawings, mounting details, Mass & C of G's and locations finalized and will be provided by NAL?	Clarification: All LRU details and their location details will be provided by CSIR-NAL. The mounting details needs to be worked out primarily by ESP in consultation with CSIR-NAL team.

*H. T. Akhetha*

Sr.No.	Query / Clarification Sought	Clarification/Amendment
9.	All system lines, routing for electrical, hydraulic, fuel pipelines, ice protection etc Will be NAL responsibility?	Clarification: All the system routings will be provided to successful bidder by CSIR-NAL. Their structural accommodation, resolving clashes between structure and system, if any, is the responsibility of primarily by ESP in consultation with CSIR-NAL.
10.	Is wing nacelle interface details finalized? Can it be provided by NAL?	Clarification: Nacelle to wing interface details are part of CSIR-NAL's input. Refer figure 3 and 5 of Tender.
11.	Engine vibration absorber details Finalized? Will be provided by NAL?	Clarification: Vibration isolator geometric details and model will be supplied by CSIR-NAL.
12.	Temp, pressure mapping along the surrounding structure of the engine available?	Clarification: Temperature gradient from CFD analysis and relevant input from engine manual will be provided as part of CSIR-NAL input. Refer section: 4.2.3.4
13.	Is whirl flutter analysis out of scope?	Clarification: Yes. Whirl Flutter analysis is out of scope of this tender.
14.	Is noise analysis/Isolation requirements out of scope	Clarification: Yes. Noise analysis/isolation is out of scope of this tender
15.	Nacelle OML is finalized?	Clarification: Bidder clarified that OML refers to Numerical Master Geometry(NMG). CSIR-NAL clarified that Nacelle NMG is finalised
16.	NMG for air intake ,oil cooling ,exhaust ducts to be provided by NAL	Clarification: Yes. NMG for air intake, oil cooling, exhaust ducts will be provided by CSIR-NAL.
17.	Alternate tools for design and validation acceptable?	Clarification: No. The tools mentioned in 4.2.3.12 to be strictly adhered to by ESP except as amended in sl no 21.
18.	What type of support bidder can expect from NAL engineering team during execution stage	Clarification: Input will be provided by CSIR-NAL as per tender document
19.	Are the structural ventilation requirements know and can be specified in terms of cross sectional area required, eg. Louvre ventilation area, ventilation holes in frames required?	Clarification: Zero thickness model will have Bay ventilation scoops and louvres details. Refer figures 13, 16, 17, 29, 30 of Tender document for details
20.	Is there any legacy document/drawings /templates / Calculation sheets for current WP? Can these be provided to bidder for reference	Clarification: PDR document will be shared with successful bidder as an input.
21.	Is there any NAL specific design/analysis/optimization tool?	Amendment: In addition to the software tools specified in Table 11.

H.T. Akheta

Sr.No.	Query / Clarification Sought	Clarification/Amendment
		<p>FRANC 3D Ver 7.5.1/MSC MARC 2021 is preferable for DT analysis</p> <p>is amended to</p> <p>FRANC 3D Ver 7.5.1/MSC MARC 2021/NASGRO is preferable for DT analysis.</p>
22.	<p>Will it be a joint responsibility between bidder and NAL or bidder will be totally responsible for complete deliverables? In second case what will be NAL's role?</p>	<p>Clarification: Deliverables is completely ESP's responsibility.</p>
23.	<p>Is there any automation possibility identified? Is there any NAL specific automation tool?</p>	<p>Clarification: ESP may deploy suitable automation as per their expertise. The automation tools developed in this tender is considered as the deliverable to CSIR-NAL as per D2 of table 8.</p>
24.	<p>Will composite allowables be made available at programme commencement, these need to cover A &amp; B Basis materila properties and all associated knock down factors, including environmental, derived from a test programme for the appropriate lay-up and design space (ncludind appropriate fasteners in lap joint testing). It is assumed they will cover all design space from PDP phase definition and any potential variation identited at PDP exit actions.</p>	<p>Clarification: Yes.</p>
25.	<p>Thermal analysis and Bird Impact analysis - not supplier scope of work</p>	<p>Clarification: Yes. Thermal analysis and Bird Impact analysis are not supplier scope of work</p>
26.	<p>Aero loads, thermal maping and thermal gradients (see 36 below) to be applied to GFEM will be NAL supplied data?</p>	<p>Clarification: All input regarding the aero loads, thermal mapping and thermal gradients to be applied on GFEM will be provided by CSIR-NAL.</p>
27.	<p>Operational and survival temperatures availability</p>	<p>Clarification: Yes. The data will be made available to ESP during the execution stage.</p>
28.	<p>Vibration, crash, CFD, thermal analyses results availability status? Also not supplier responsibility</p>	<p>Clarification: Vibration, crash, CFD, thermal analyses is not in the scope of this tender.</p>
29.	<p>Are thermal gradients available through the cross section of the structure</p>	<p>Clarification: Zone and bay temperature will be given as mentioned in section 4.2.3.4</p>

H. S. Abhetter

Sr.No.	Query / Clarification Sought	Clarification/Amendment
	available, i.e. from internal metallic free flange to composite external skin? NAL responsibility to be assumed?	
30.	Will PDP review meeting minutes and actions shared with bidder?	Clarification: No.
31.	Can friction factor co-efficients (or proprietary bearing data) be supplied for the relevant components/materials selected for the mechanism/actuator sizing calculations.	Clarification: Bearing Selection is done by NAL and required details for detail design and dwgs generation will be shared.
32.	Has the Actuator size and specification been selected, or is that to be selected as part of this package of work?	Clarification: Actuator size and specification will be provided by CSIR-NAL.
33.	Was any F&DT and failsafe analysis carried out at PDP phase, not evident in Section 4.2.3.4. Can example F&DT reports be supplied as a template?	Clarification: F & DT analysis is ESP's responsibility.
34.	Can the bidder qualification criteria mentioned in section 6.2 can be relaxed?	Clarification: Scope of tender requires technical expertise in the areas associated with functional and regulatory requirements of Nacelle, Engine mount, firewall and Nacelle integration with Wing. In view of the above section 6.2 is retained as it is.
35.	Can CSIR-NAL come up with input data handing over schedule in the form of a document.	Clarification: The input data schedule will be provided to successful bidder.
36.	Who is responsible for Airworthiness Certification and final acceptance of the Nacelle Design	Clarification: CSIR-NAL is responsible for certification related aspects and liaisoning with certifying agencies.

*Gaddikeri Kotresh*  
Shri. Gaddikeri Kotresh  
Project Leader

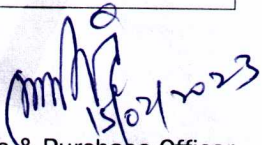
*H.T. Akshatha*  
9/2/23  
Smt. Akshatha H. T  
Indenting Officer

**CSIR-NATIONAL AEROSPACE LABORATORIES  
BENGALURU**

**COMMERCIAL QUERIES & CLARIFICATION**

**Tender No.** : NAL/PUR/CAD/063/22-Z  
**Item Description** : Details Design and Engineering of Nacelle with Engine Mount Structure for SARAS Mk-II aircraft.

Sr. No.	Query / Clarification Sought	Clarification/Amendment
— NIL —		

  
Stores & Purchase Officer  
For and on behalf of CSIR-NAL

