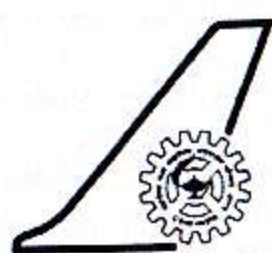


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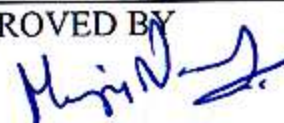
# **Division Quality Manual for Independent Safety Assessment**

**By**

**CSIR - NAL**



**CSIR-NATIONAL AEROSPACE LABORATORIES,  
BANGALORE 560017  
INDIA**

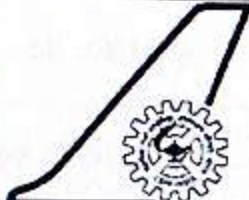
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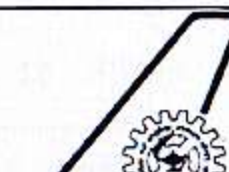
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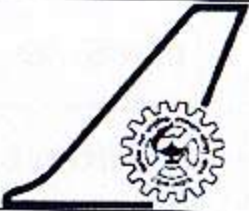
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### Record of Revisions

| Revision No. | Page number | Details of change                                                                                                                              | Date       |
|--------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1            | ----        | Initial version                                                                                                                                | 21-04-2025 |
| 2            | 7 to 11     | Updated based on the review checklist points in CRM provided by NABCB and internal auditor feedback points<br>Section 3.3.2, 3.3 Table 2 added | 06-02-2026 |
| 3            | 8 to 15     | Updated Section 3.3 Organisation Chart and Roles and responsibilities                                                                          | 17-03-2026 |
| 4            | 7           | Updated Section 3.2 as per internal audit observation                                                                                          | 24-07-2026 |

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# 1 ABOUT QUALITY DOCUMENT

## 1.1 Scope

This document is prepared to describe the Quality systems of Independent Safety Assessment, ALD, CSIR-NAL, Bangalore, to comply with the requirements of the International Standard ISO/IEC - 17065:2012 and CENELEC standards EN 50126, 50128 and 50129.

This document contains safety assessment related process / procedure.

- The objectives of the Independent Safety Assessment shall be consistent with the CENELAC Standards which shall include:
- Correct identification and management of system requirements, including safety requirements.
- Confirming that the system meets the safety requirements through verification and validation activities.

Ascertain if the system safety requirements have been demonstrated in accordance with the applicable regulations.

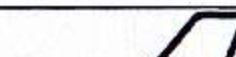
The 6-step certification process includes:

- Receipt of Application
- Review of Application
- ISA Evaluation & Review of Evaluation Reports independently
- Grant of Certificate
- Periodic Surveillance (if applicable)
- Renewal of Certificate (if applicable)

## 1.2 Purpose

To lay down the policies and procedures to define, implement and maintain the Quality System for the activities of Independent Safety Assessment (ISA) of ALD Division, CSIR-NAL.

|                                                                                                                                  |                                                                                                        |                                  |                                 |                                                                                                                                                |
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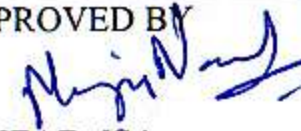
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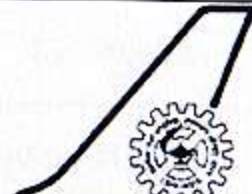
### 1.3 Reference

ISO/IEC 17065:2012 Standard document contain provisions, which have been referenced and used in the Quality System for NABCB Accreditation of Independent Safety Assessment, ALD, CSIR-NAL.

## 2 ABBREVIATIONS

| SL. NO. | ABBREVIATIONS | EXPANDED FORM                                            |
|---------|---------------|----------------------------------------------------------|
| 1.      | ALD           | Aerospace Electronics & Systems Division                 |
| 2.      | CENELEC       | European Committee for Electro technical Standardization |
| 3.      | CM            | Configuration Management                                 |
| 4.      | CSIR          | Council of Scientific and Industrial Research            |
| 5.      | DQM           | Division Quality Manual                                  |
| 6.      | IDD           | Interface Design Document                                |
| 7.      | IEC           | International Electro technical Commission               |
| 8.      | ISA           | Independent Safety Assessment                            |
| 9.      | ISO           | International Organisation for Standardization           |
| 10.     | NABCB         | National Accreditation Board for Certification Bodies    |
| 11.     | NAL           | National Aerospace Laboratories                          |
| 12.     | OEM           | Original Equipment Manufacturer                          |
| 13.     | QA            | Quality Assurance                                        |
| 14.     | R&D           | Research and Development                                 |
| 15.     | RDSO          | Research Design and Standards Organization               |
| 16.     | RTCA          | Radio Technical Commission for Aeronautics               |
| 17.     | SAD           | Software Architecture Description                        |

|                                                                                                                          |                                                                                                        |                                  |                                 |                                                                                                                                        |
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| 18. | SIL | Safety Integrity Level           |
| 19. | SRS | System Requirement Specification |
| 20. | V&V | Verification and Validation      |

Table 1: Abbreviations

### 3 ORGANIZATION PROFILE

#### 3.1. CSIR-NAL

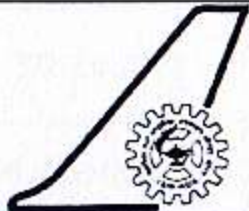
National Aerospace Laboratories (NAL), a constituent of the Council of Scientific and Industrial Research (CSIR), India, established in 1959-60 is the only Civilian Aerospace R&D Laboratory in India. CSIR-NAL is a high technology-oriented institution focusing on advanced topics in aerospace and related disciplines and has a mandate to develop aerospace technologies with strong science content, design and build small and medium-size civil aircraft and support all national aerospace programs.

CSIR-NAL has many advanced test facilities, (many of them recognized as National Facilities) which are the best in the country and comparable to those outside. Along with these facilities, its globally recognized competence has enabled CSIR-NAL to achieve notable R&D successes, innovative technology developments and advanced testing capabilities. CSIR-NAL has also provided value added inputs to all national aerospace programs. Its contributions over the last five decades have enabled it to create a niche for itself in the areas of advanced aerospace research and technology development.

#### 3.2. ISA-ALD

Independent Safety Assessment (ISA) Group with the mission of the Safety Critical Software Engineering is to conduct focus-based research in software engineering, Independent Safety Assessment for Indian railways, systems engineering, and many other areas of computing, in order to introduce innovations into projects. The group performs

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reviews, audits and certifies the products/systems. CSIR-NAL is the only government agency performing ISA activities for Generic signaling products and systems for Indian Railways. The ISA activities carried out by CSIR-NAL shall remain independent and impartial, and the activities of other divisions or related organizations of CSIR-NAL shall not influence the ISA activities.

### 3.3. Organization Structure

The Figure presents an organizational hierarchy chart, showing a structured chain of command from the Organization Head at the top to the ISA Head, Field Assessors, Evaluator & Internal Auditors. The Organization Head oversees the entire organization, delegating responsibilities to the ISA Head (Responsible for Independent Safety Assessment) who leads the ISA team. the Field Assessors, evaluators & Internal Auditors execute operational tasks. This hierarchy ensures clear delegation of responsibilities, accountability, and efficient workflow within the organization.

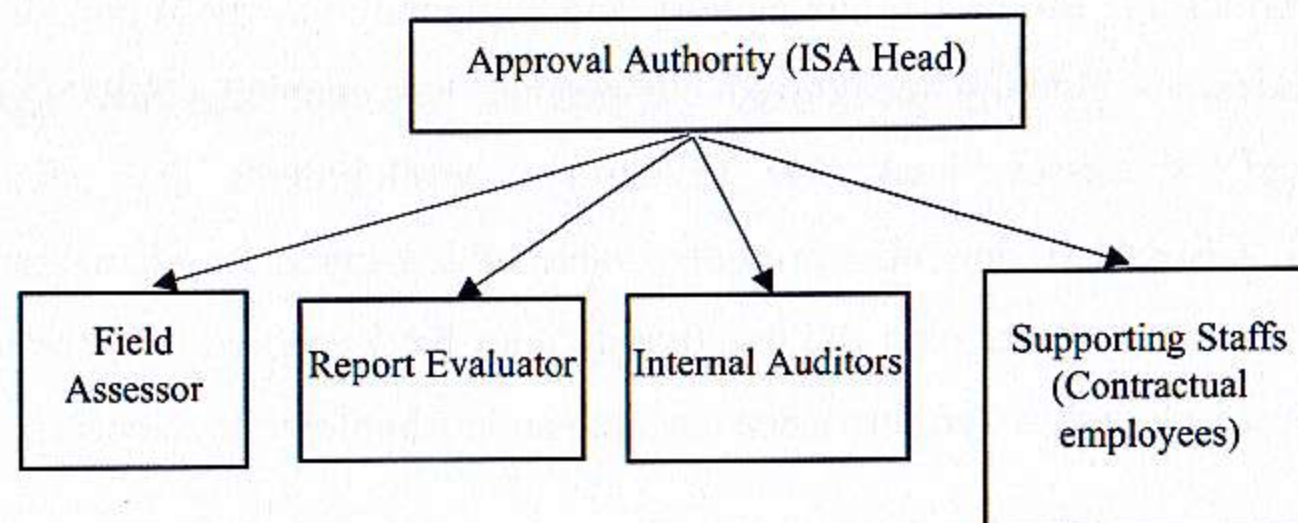
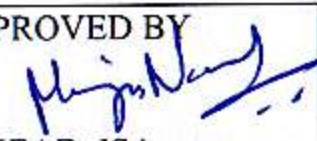


Figure 1: ISA Organization Structure

|                                                                                                                          |                                                                                                        |                                  |                                 |                                                                                                                                        |
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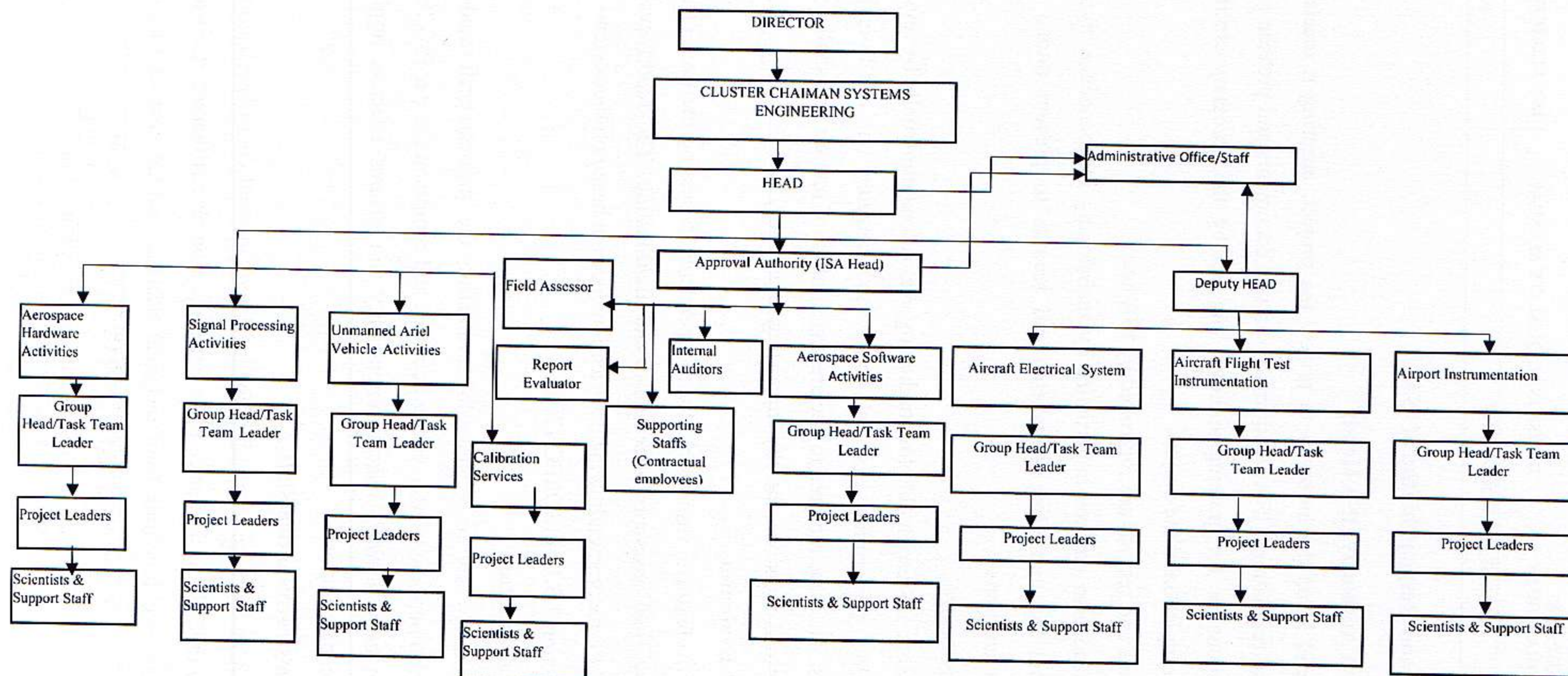
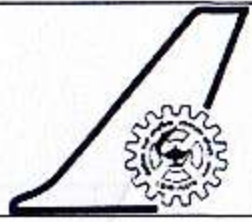


Figure 2: NAL Organization Structure

|                                                                                   |                                            |                                                                |                |              |
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### 3.3.1 Roles and Responsibilities of ISA

#### ➤ Approval Authority (ISA Head)

The ISA Head holds the authority to review the project, ensuring it meets all required standards and regulations. ISA Head review project documents and provide feedback. ISA Head is responsible for granting approval and issuing the necessary certification upon successful completion of the project.

All documents and records are controlled by ISA head.

The ISA Head also ensures impartiality by maintaining independence from assessment activities and by controlling documents and records to prevent undue influence on certification decisions.

#### ➤ Field Assessor

Field Assessors are responsible for conducting evaluations impartially by reviewing project documentation, performing lab-level audits, and carrying out end-to-end field-testing without bias. They are required to declare any conflict of interest and shall not be involved in final approval decisions, thereby supporting impartiality.

#### ➤ Report Evaluator

The report evaluator is responsible for independently assessing the final evaluation report prepared by field assessors after end-to-end field-testing. The report evaluator is also responsible for recommending the certification decision based on the review, and document it as per Section 7.5.1 of ISO/IEC 17065

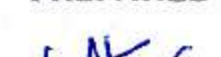
#### ➤ Internal Auditors

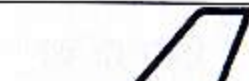
Internal Auditors are responsible for evaluating the process performed by assessors impartially on periodic basis to ensure accuracy and compliance as per ISO/IEC 17065.

Their audit helps identify risks to impartiality and ensures effective implementation of certification procedures.

#### ➤ Administrative office/Staff

Administrative Staff are responsible for legal and financial controls related to certification activities and shall not influence technical evaluation or certification decisions. Separation of administrative functions from technical decision-making ensures that commercial or

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financial considerations do not compromise impartiality.

#### ➤ Supporting Staffs (Contractual)

Contractual staff will assist in document review & update activities under the supervision and control of the Certification Body. They shall operate within defined roles, declare conflicts of interest, and shall not participate in certification decisions, ensuring that impartiality is maintained.

### 3.3.2 Qualification

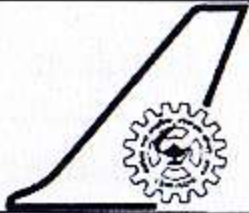
#### 1. Appointment of Committee Members and Key Personnel

- The Competent Authority (CSIR-NAL) shall appoint the ISA Head (Nodal Head) based on demonstrated experience and competence in safety-critical systems.
- Field Assessors shall be appointed only if they possess a minimum of three (3) years of relevant experience in safety-critical systems.
- Report Evaluator shall be appointed only if they possess a minimum of three (3) years of relevant experience in product development and safety-critical standards such as AS9100.
- Internal Auditors shall be appointed based on successful completion of formal training in ISO/IEC 17065 or equivalent safety-critical standards such as AS9100.
- Supporting Staff shall possess a Bachelor's degree in Engineering and shall be appointed based on project-specific requirements.
- ISA Team member does not initially possess adequate knowledge or competence for assigned ISA activities, the certification body shall ensure that appropriate training is provided in accordance with applicable international standards prior to participation in certification activities.

#### 2. Terms of Reference and Operation

- All committees and personnel involved in the certification process shall operate in accordance with documented procedures, defined roles, and assigned responsibilities.
- Committee members and personnel shall act independently, objectively, and

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impartially, and shall not be subject to any commercial, financial, or other pressures that could influence certification outcomes.

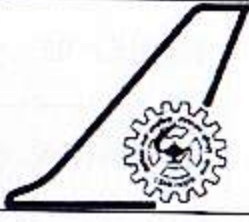
- All members shall be required to declare conflicts of interest, and appropriate actions shall be taken to eliminate or manage such conflicts.

### 3. Authority of the Certification Body

- The certification body shall retain full authority to appoint, monitor, and withdraw members of committees or personnel involved in the certification process.
- Withdrawal of appointment may occur in cases of non-compliance, conflict of interest, inadequate performance, or loss of competence.

|                                    |                                                                                                                                                                                                                                                                                                                         |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISA Team                           | Has overall authority for development of certification policies, certification activities, certification requirements, and delegation of authority within the certification body.                                                                                                                                       |
| ISA Head                           | Has overall authority for implementation of risk , certification decisions, resource provision, contractual matters, complaints and appeals, personnel competence approval, and management system effectiveness.                                                                                                        |
| Field Assessors & Supporting Staff | Are responsible for conducting and supporting evaluation activities in accordance with approved procedures and certification requirements.                                                                                                                                                                              |
| Report Evaluator                   | The report evaluator is responsible for independently assessing the final evaluation report prepared by field assessors after end-to-end field-testing. The report evaluator is also responsible for recommending the certification decision based on the review, and document it as per Section 7.5.1 of ISO/IEC 17065 |
| Internal Auditor                   | Is responsible for reviewing evaluation results to ensure conformity, consistency, and impartiality prior to                                                                                                                                                                                                            |

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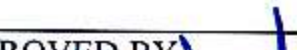
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|                                                                                                                                            | certification decisions.                                                                                       |
| Administrative<br>Office / Staff                                                                                                           | Is responsible for managing and supervising financial and administrative activities of the certification body. |
| All the employees involved in the certification activities are on roll of the ISA Project and their roles and responsibilities are defined |                                                                                                                |

Table 2: Roles & Responsibilities

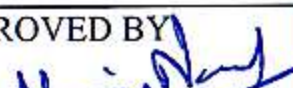
### 3.3.3 ISA Staffs details

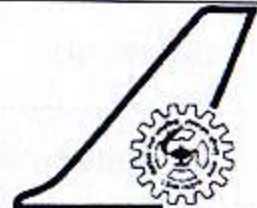
| Sl.No | Name                  | Designation         | Qualification                                        | Experience                                                              | Address      |
|-------|-----------------------|---------------------|------------------------------------------------------|-------------------------------------------------------------------------|--------------|
| 1.    | Dr. Manju<br>Nanda    | ISA Head            | PhD in<br>Software<br>Engineering                    | 28+ years of<br>experience in<br>Safety critical<br>embedded<br>Systems | CSIR-<br>NAL |
| 2.    | Mr. Neelakanta<br>E   | Field<br>Assessor   | M.Tech in<br>Computer<br>Networking                  | 14+ years of<br>experience in<br>Safety critical<br>embedded<br>Systems | CSIR-<br>NAL |
| 3.    | Dr. S Anup<br>Chander | Field<br>Assessor   | PhD in<br>Robotics                                   | 10+ years of<br>experience in<br>Safety critical<br>embedded<br>Systems | CSIR-<br>NAL |
| 4.    | Ms. Navaneetha<br>S   | Report<br>Evaluator | Diploma in<br>Computer<br>science and<br>engineering | 24+ years of<br>experience in<br>aerospace<br>engineering               | CSIR-<br>NAL |

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|    |                                 |                  |                                        | including 8 years in aerospace activities and 4 years experience in AS 9100D.                                                |          |
| 5. | Dr. De Manabendra Manindrakumar | Report Evaluator | PhD in Applied Mechanics (Applied CFD) | 20+ years of experience in Product Development; 4+ years experience in Systems Engineering; 3+ years experience in AS 9100D. | CSIR-NAL |
| 6. | Mr. Shamsundar Dhage            | Internal Auditor | MS in Software design engineering      | 30+ years of experience in Software domain                                                                                   | CSIR-NAL |
| 7. | Ms. Shrilatha Acharya           | Internal Auditor | MSc. in E-Commerce                     | 25+ years of experience in Software domain                                                                                   | CSIR-NAL |
| 8. | Ms. Meghna Sudharman            | Supporting Staff | M.Tech in Embedded System              | 2+ years of experience in Safety Critical                                                                                    | CSIR-NAL |

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|     |                       |                     |                                           | domain                                                    |              |
|-----|-----------------------|---------------------|-------------------------------------------|-----------------------------------------------------------|--------------|
| 9.  | Mr. Arun<br>Prakash S | Supporting<br>Staff | BE in<br>Electronics and<br>Communication | 2+ years of<br>experience in<br>Safety Critical<br>domain | CSIR-<br>NAL |
| 10. | Mr. Jayanth R         | Supporting<br>Staff | BE in<br>Electronics and<br>Communication | 1 year of<br>Experience in<br>Safety critical<br>domain   | CSIR-<br>NAL |

Table 3: ISA Staff Details

### 3.4. Main Function

ISA activities for Generic signaling products and systems for Indian railways

## 4 ISA STANDARDS

CENELEC Standards (Specific Reference: EN 50126-1&2, EN 50128, EN 50129):

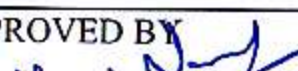
Addresses safety, reliability, availability, and maintainability (RAMS) requirements for safety-critical systems. Guides the risk assessment and hazard identification process for railway applications, safety-critical software, and control systems.

### ✓ EN 50126 Standard

EN 50126, titled "**Railway Applications – The Specification and Demonstration of Reliability, Availability, Maintainability, and Safety (RAMS)**", provides a structured framework for managing the lifecycle of railway systems with a focus on safety and reliability. It is part of the CENELEC standards specifically tailored for the railway industry.

#### Features:

**Lifecycle Coverage:** EN 50126 addresses all phases of a system's lifecycle, including

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concept, design, development, operation, maintenance, and decommissioning.

#### RAMS Principles:

- **Reliability:** Ensuring systems perform their intended functions consistently.
- **Availability:** Maximizing system readiness and uptime.
- **Maintainability:** Ensuring systems are easy to repair and maintain.
- **Safety:** Managing risks to minimize hazards and ensure operational safety.

**Risk Management:** The standard emphasizes identifying, assessing, and mitigating risks to ensure safety and compliance.

**Systematic Approach:** It uses a systematic and iterative process to verify and validate that RAMS requirements are met through design, testing, and operational monitoring.

#### ✓ EN 50128 Standard

EN 50128, titled "**Railway Applications – Communication, Signaling, and Processing Systems – Software for Railway Control and Protection Systems,**" specifies requirements for developing and maintaining software used in safety-critical railway applications. It is part of the CENELEC standards for ensuring software safety in railway systems.

#### Features:

##### Safety Integrity Levels (SILs):

- Defines Safety Integrity Levels (SIL 0 to SIL 4) to classify the criticality of software, with SIL 4 being the most critical.
- The rigor of the development process increases with the SIL level.

##### Development Lifecycle:

- Outlines a structured software development process, including specification, design, implementation, testing, validation, and maintenance.
- Requires traceability throughout the lifecycle to ensure all safety requirements are met.

#### Risk Management:

- Emphasizes hazard identification and risk mitigation for software failures.

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- Includes measures like fail-safe design and robust error handling.

#### Verification and Validation (V&V):

- Mandates thorough testing and review at each development stage to ensure compliance with safety requirements.
- Independent assessment is required for higher SIL levels.

#### ✓ EN 50129 Standard

EN 50129, titled "**Railway Applications – Communication, Signaling, and Processing Systems – Safety-Related Electronic Systems for Signaling,**" specifies the safety requirements for electronic systems used in railway signaling. It is part of the CENELEC standards designed for safety-critical railway systems.

#### Features:

##### Safety Integrity Levels (SILs):

- Defines SIL levels (SIL 0 to SIL 4) to classify the safety-criticality of electronic systems, with SIL 4 being the highest.
- Higher SIL levels require more rigorous safety assessments and validations.

##### Safety Case Development:

- Requires the creation of a Safety Case, a structured document providing evidence that the system meets safety requirements.
- The Safety Case includes:
  - Risk assessments.
  - System architecture and design.
  - Validation and verification results.
  - Maintenance and operational procedures.

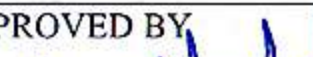
#### Hazard Management:

Focuses on identifying, analyzing, and mitigating hazards throughout the system's lifecycle.

Ensures that residual risks are acceptable.

#### Lifecycle Focus:

Addresses safety at all stages, from concept and design to operation and decommissioning.

|                                                                                                                              |                                                                                                        |                                  |                                 |                                                                                                                                            |
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### Independent Assessment:

Requires external safety audits to validate compliance, particularly for higher SIL levels.

## 5 CORE ACTIVITIES

### 5.1 ISA Activities

- Requirement and design review and provide feedback
- Review the V&V activities and provide feedback
- Review the QA activities and provide feedback
- Review the CM activities and provide feedback
- Software validation and report generation
- Hardware validation and report generation
- System validation and report generation
- Audit of End-to-End field testing
- Generation of Evaluation report, independent report evaluation, and issue an ISA certificate

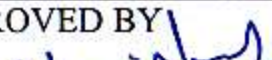
The client has to address the feedback provided by the ISA/Certification body.

## 6 PROCEDURE CARRIED OUT FOR ISA

The applicant must specify the certification for which the product or system is being submitted. The prospective stakeholder is required to provide complete and accurate information in the application form to enable preparation of a quotation.

CSIR-NAL will review the application to determine whether it meets the defined eligibility criteria. Only applications that are fully completed and include all necessary supporting documents will be considered. If the criteria are met, CSIR-NAL will prepare and send a proposal to the stakeholder for the requested certification. If the criteria are not fulfilled, or if CSIR-NAL lacks prior experience with the stakeholder 's specific requirements, the stakeholder will be informed, and the request will be declined for further evaluation.

The proposal will be formulated based on the information provided by the stakeholder, in

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accordance with CSIR-NAL's procedures and applicable regulations.

CSIR-NAL reserves the right to modify the proposal if discrepancies are found between the submitted and actual information.

The proposal will be accompanied by the applicable terms and conditions and a draft contract. Upon acceptance of the proposal, a formal contract shall be signed by both parties: CSIR-NAL and the stakeholder. The contract will define the terms and conditions for the use of the certification logo and the certificate.

➤ **Preparation of Software Safety Assessment Plan**

The scope of this Assessment Plan is to provide activities that will be carried out for the assessment activities addressed in Sec 5.1.

➤ **Preparation of Initial Contractor Plan**

The scope of this Contractor Plan is to Review and provide feedback for Plan documents like Safety, RAM plan etc.

➤ **Preparation of Design Assessment**

The scope of this Design Assessment is to Review and provide feedback for Design & Specification documents like SRS, SAD, IDD etc.

➤ **Preparation of Test Assessment**

The scope of this Test Assessment is to Review and provide feedback for Test Reports like Application test report, System Acceptance Test Report etc.

➤ **Preparation of Evaluation Report**

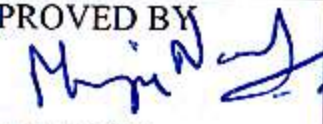
The scope of this Evaluation Report is to present the final assessment of the ISA project, covering all ISA activities conducted throughout the process.

➤ **Report Evaluation**

The scope of the report evaluation is to independently check whether all the aspects of evaluation of the applicant have been correctly carried out by the field assessor(s).

➤ **ISA Certificate**

The purpose of the certificate is to assure customers that the system complies with all

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specified requirements, providing both evidence and confidence in its reliability.

## 7 SCOPE OF CERTIFICATION

Review of formal proofs of safety

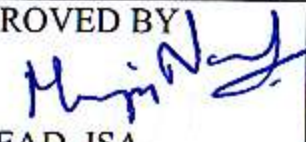
- RAMS analyses
- FTA
- FMEA/FMECA
- PHA
- Hazard Log
- Safety management audits
- Auditing of the software development processes
- RAMS Plan
- Safety V & V Plan
- V & V Reports
- Design Safety Studies & Report
- Safety Case / Reports/ Evaluation of the report
- Certification of Generic Signaling Products and Systems for Indian Railways.

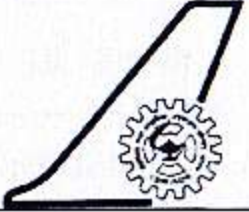
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## 8 ISA ACTIVITIES

| Phase                    | Stages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ISA Activities                                                                                                                                                                                                                     |
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| <b>Planning phase</b>    | <b>Initial contractor plan</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1. Assessment of the initial plans<br>2. Plan assessment report                                                                                                                                                                    |
|                          | <ul style="list-style-type: none"> <li>➤ Quality Assurance Plan</li> <li>➤ Configuration Management Plan</li> <li>➤ Verification Plan</li> <li>➤ Validation Plan</li> <li>➤ Maintenance Plan</li> <li>➤ System Safety Plan</li> <li>➤ Organization Chart</li> <li>➤ SIL Competence Development and Training Plan</li> <li>➤ SIL Allocation Approach paper</li> <li>➤ Application Preparation Plan</li> <li>➤ RAM Plan</li> <li>➤ RAM Validation Plan</li> </ul>                                      |                                                                                                                                                                                                                                    |
| <b>Development Phase</b> | <b>Design Assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1. This assessment report shall be based on assessment activities on completion of detailed design phase for each stage of the project compiled in Detailed Design Specific Application Safety case<br>2. Design Assessment Report |
|                          | <ul style="list-style-type: none"> <li>➤ Design Specification</li> <li>➤ Application Requirements Specification</li> <li>➤ System Requirements Specification</li> <li>➤ System Integration Test Specification</li> <li>➤ System Component Test Specification</li> <li>➤ System Design Specification</li> <li>➤ Interface Design Document</li> <li>➤ System Architecture and Requirement Allocation</li> </ul>                                                                                        |                                                                                                                                                                                                                                    |
| <b>Testing Phase</b>     | <b>Test Assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1. ISA shall perform Audit as well as Testing at site location and supply audit report based on the findings.<br>2. Testing and Hazards                                                                                            |
|                          | <ul style="list-style-type: none"> <li>➤ Software/Hardware Integration Test Report</li> <li>➤ System Maintenance Verification Records/Record</li> <li>➤ Deployment Verification Report</li> <li>➤ System Integration Test Report</li> <li>➤ System Component Test Report</li> <li>➤ System Acceptance Test Report</li> <li>➤ Application Test Report</li> <li>➤ System Deployment Manual</li> <li>➤ Application Preparation Verification Report</li> <li>➤ Quality Assurance Verification</li> </ul> |                                                                                                                                                                                                                                    |

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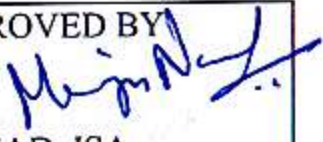
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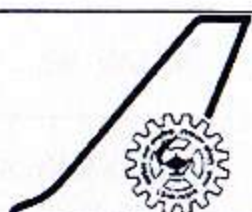
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|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                            | Report<br>➤ System Requirements Verification Report<br>➤ System Architecture Design Verification Report<br>➤ Overall System Test Report<br>➤ System Validation Report<br>➤ Tools Validation Report<br>➤ SRD Verification Report<br>➤ Safety Case | closeout process report                                                                                                                                                                                                                                                                                               |
| <b>Safety Case &amp; Certificate Phase</b> | Progress Report, Evaluation Report, independent check of the evaluation report, & ISA Certificate                                                                                                                                                | 1. Assessment of Client identified hazards and its mitigation.<br>2. Physical implementation safety case assessment report for each stage.<br>3. Preparation of Evaluation report.<br>4. Independent check of the evaluation report and documenting the recommendation.<br>5. ISA Certificate with Evaluation Report. |

Table 4: ISA Activities

## 8.1 Stakeholder Details

| Sl. No | Stakeholder                                      | Roles                                  |
|--------|--------------------------------------------------|----------------------------------------|
| 1.     | Gas Turbine Research Establishment (GTRE)        | Customer                               |
| 2.     | Central Electronics Limited (CEL)                | Customer                               |
| 3.     | Bharat Heavy Electricals Limited (BHEL)          | Customer                               |
| 4.     | Bharat Electricals Limited (BEL)                 | Customer                               |
| 5.     | Indian Institute of Technology, Madras           | Customer                               |
| 6.     | South Western Railway                            | Customer                               |
| 7.     | TUV                                              | CENELEC certification training academy |
| 8.     | Punyam Academy                                   | IEC/ISO certification training academy |
| 9.     | Research Design and Standard Organization (RDSO) | Regulatory Body                        |
| 10.    | Delhi Metro Rail Corporation (DMRC)              | Regulatory Body                        |
| 11.    | RCMA-CEMILAC                                     | Regulatory Body                        |

|                                                                                                                          |                                                                                                                                           |                                                                                                                                                                           |
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|     |                                    |                |
|-----|------------------------------------|----------------|
| 12. | IIT, Delhi                         | Sub-Contractor |
| 13. | Humming Bird                       | Sub-Contractor |
| 14. | Hewlett-Packed Global Soft Limited | Sub-Contractor |

Table 5 : Stakeholder Details

| Sl.No | Project Name               | OEM           | Customer        | V&V                                | ISA      | Approving Authority |
|-------|----------------------------|---------------|-----------------|------------------------------------|----------|---------------------|
| 1.    | MSDAC                      | CEL           | Indian Railways | Hewlett-Packed Global Soft Limited | CSIR-NAL | RDSO                |
| 2.    | DMI                        | BEL, Kotdwara | DMRC            | BEL, Ghaziabad                     | CSIR-NAL | DMRC                |
| 3.    | ngSSDAC                    | CEL           | Indian Railways | IIT-Delhi                          | CSIR-NAL | RDSO                |
| 4.    | ngHASSDAC                  | CEL           | Indian Railways | IIT-Delhi                          | CSIR-NAL | RDSO                |
| 5     | nMSDAC                     | CEL           | Indian Railways | IIT-Delhi                          | CSIR-NAL | RDSO                |
| 6     | MSDAC with S002 Field unit | CEL           | Indian Railways | Humming Bird                       | CSIR-NAL | RDSO                |

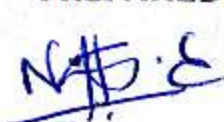
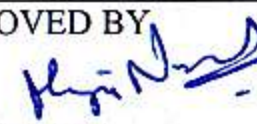
Table 6: Project Details

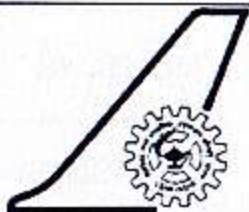
## 8.2 QA Records

- Safety Assessment Plan
- Document Track log
- Initial Contractor Plan
- Design Assessment
- Test Assessment
- Evaluation Report
- Reviewer Report of the Evaluation by the Field Assessor(s)
- ISA Certificate

## 8.3 Expert Consultancy for Independent Safety Assessment.

### 1. Cross Reference

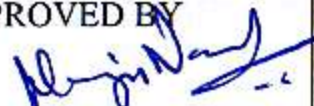
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CRM: Cross Reference Matrix (BCB F 010A)

## 2. Procedure to initiate the ISA project

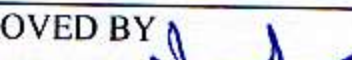
- Request from the user.
- Preparation of Project Proposal and approval from the organization.
- Letter of project Approval.
- Process establishment / ISA records.
- Generate the Milestone Report with respect to the Letter of Approval.
- Project Closure Report with consolidated Milestone Reports.
- Document the Customer Feedback Report.

|                                                                                                                          |                                                                                                        |                                  |                                 |                                                                                                                                        |
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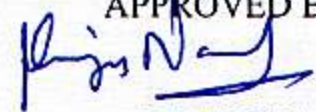
## 9 GENERIC SIGNALLING PRODUCTS AND SYSTEMS (PRODUCT DETAILS)

| Sl. No | Name of the project                                                                                                                                           | Details of Safety assessment activities                                                                                                                       | Length of the Projects (KM)<br>(Duration mentioned) | Commencement and Completion dates | Systems details                                                                   | Type of work and its SIL level                                                                      |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1      | Expert Consultancy for Establishment of DO178B process for Development of CAPS software for AFADEC system of Kaveri Engine for GHATAK (GTRE) – M/s. GTRE-DRDO | Guiding in establishing SDLC processes as per DO178B Level-A standard guidelines                                                                              | 4 years                                             | 01/11/2016<br>To<br>31/12/2020    | Development of CAPS software for AFADEC system of Kaveri Engine for GHATAK (GTRE) | Guidance provided for Establishing DO 178B process for AFADEC system<br><br>Level A, which is SIL 4 |
| 2      | Independent Safety Assessment of modified system of Multi Section Digital Axle Counter (MSDAC) for M/s. CEL, Sahibabad                                        | The objective of this consultancy is to establish the CENELEC SIL-4 adhering to EN50126, EN50128 and EN50129 standards at CEL for their modified MSDAC design | 2 months                                            | 05-MAR-2022<br>To<br>30-APR-2022  | MSDAC digital Axle counter                                                        | Independent Safety Assessment<br><br>SIL – 4 Level                                                  |

|                                                                                                                          |            |                                  |                                 |                                                                                                                                        |
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|   |                                                                                                                                          |                                                                                                                                                               |          |                                  |                                                          |                                                    |
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| 3 | Independent Safety Assessment of New generation Single Section Digital Axle Counter(ngSSDAC) for M/s. CEL, Sahibabad                     | The objective of this consultancy is to establish the CENELEC SIL-4 adhering to EN50126, EN50128 and EN50129 standards at CEL for their modified MSDAC design | 3 months | 20-Jan-2023<br>To<br>20-Apr-2023 | ngSSDAC digital Axle counter                             | Independent Safety Assessment<br><br>SIL – 4 Level |
| 4 | Independent Safety Assessment of New generation High Availability Single Section Digital Axle Counter(ngHASSDAC) for M/s. CEL, Sahibabad | The objective of this consultancy is to establish the CENELEC SIL-4 adhering to EN50126, EN50128 and EN50129 standards at CEL for their modified MSDAC design | 3 months | 20-Jan-2023<br>To<br>20-Apr-2023 | ngHASSDAC digital Axle counter                           | Independent Safety Assessment<br><br>SIL – 4 Level |
| 5 | Independent Safety Assessment of new Multi Section Digital Axle Counter (nMSDAC) for M/s. CEL, Sahibabad                                 | The objective of this consultancy is to establish the CENELEC SIL-4 adhering to EN50126, EN50128 and EN50129 standards at CEL for their modified MSDAC design | 3 months | 20-Jan-2023<br>To<br>20-Apr-2023 | nMSDAC digital Axle counter                              | Independent Safety Assessment<br><br>SIL – 4 Level |
| 6 | Multi Section Digital Axle Counter (MSDAC) with S002 field unit software for M/s. CEL, Sahibabad                                         | The objective of this consultancy is to establish the CENELEC SIL-4 adhering to EN50126,                                                                      | 1 month  | 01-Nov-2024<br>To<br>30-Nov-2024 | MSDAC digital Axle counter with S002 field unit software | Independent Safety Assessment                      |

|                                                                                                                              |            |                                                                                                                                            |                                 |                                                                                                                                        |
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|   |                                                                                                                 |                                                                                                                                               |          |                                  |                                        |                                                    |
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|   |                                                                                                                 | EN50128 and EN50129 standards at CEL for their modified software for MSDAC design                                                             |          |                                  |                                        | SIL – 4 Level                                      |
| 7 | Independent Safety Assessment of Generic Driver Machine Interface (DMI) for M/s. BEL, Kotdwar                   | The objective of this consultancy is to establish the CENELEC SIL-2 adhering to EN50126, EN50128 and EN50129 standards at BEL for Generic DMI | 3 months | 08-Nov-2024<br>To<br>08-Feb-2025 | Generic Driver Machine Interface (DMI) | Independent Safety Assessment<br><br>SIL – 2 Level |
| 8 | Fully automated level crossing gate operation system for South Western Railway in collaboration with IIT Madras | Kick off meeting started in the month of February 2023<br>- MOU has been signed between IIT-Madras and SWR in the month of August 2023        | 2 Years  | April 2024 to March 2026         | AI based Automatic LC Control          | Independent Safety Assessment<br><br>SIL – 4 Level |

Table 7: ISA Project Details

|                                                                                                                          |            |                                                                                                      |                                 |                                                                                                                                        |
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## 10 ANNEXURE

### 10.1 User Certificate



TO WHOMSOEVER IT MAY CONCERN

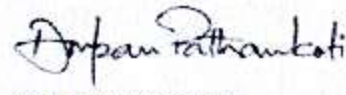
09.07.2024

This is to certify that M/s. CENTRAL ELECTRONICS LIMITED, Sahibabad, have successfully obtained the ISA certification for safety integrity level SIL-4 of CENELAC standard prEN50126 from M/s. CSIR-NATIONAL AEROSPACE LABORATORIES, Bangalore for the following axle counter systems used in Indian Railways:

1. Modified Multi Section Digital Axle Counter system for fail safe axle detector.
2. New generation Single Section Digital Axle Counters (ngSSDAC)
3. New generation High Availability Single Section Digital Axle Counter (ngHASSDAC)
4. New Multi Section Digital Axle Counter(New MSDAC)

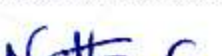
**Usage and current status of the products:**

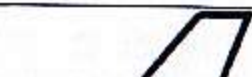
- The Modified Multi Section Digital Axle Counter system for fail safe axle detector has been approved by RDSO in Year 2022 and currently used in Indian Railways.
- The ngSSDAC, ngHASSDAC received their ISA certificates in March 2023, have completed field trials, and are currently under RDSO approval.
- New MSDAC received ISA certificate in March 2023 and currently under RDSO approval.



(Darpan Rathankoti)  
General Manager (P, R&D)

निगमित कार्यालय एवं पत्राचार का पता : 4, औद्योगिक क्षेत्र, साहिबाबाद-201010 (उ.प्र.) भारत  
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## 10.2 Memorandum Article of Association

### MEMORANDUM OF ASSOCIATION

### RULES & REGULATIONS AND BYE-LAWS

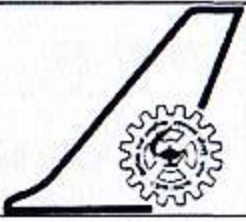
COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH, NEW DELHI

2005

*Hindi version of the CSIR Rules & Regulations and Bye-laws is based on the original in English. In case of any doubt, the English version will be treated as authentic.*

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|                                                                                                                          |            |                                  |                                 |                                                                                                                                        |
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**Certificate of Registration of Societies**

**Act XXI of 1860**

**No. X of 1941-1942**

Hereby certify that *The Council of Scientific and Industrial Research* has this day  
been registered under the Societies Registration Act XXI of 1860.

Given under my hand at Delhi this twelfth day of March One Thousand Nine  
Hundred and Forty Two.

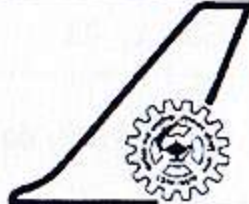
Fee Rs.50/- paid

Sd/-

Registrar of Joint Stock Companies  
Delhi

‘Seal’

|                                                                                                                          |            |                   |                                 |                                                                                                                                        |
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### 10.3 Declaration of Shareholders

D-13023/3/2025-Sr.CoA

03<sup>rd</sup> June, 2025

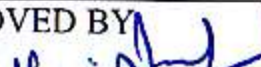
#### TO WHOMSOEVER IT MAY CONCERN

Sub.: Empanelment of ISA for Generic Signalling Projects/Systmes/Product  
No.RDSO-SIGOMISC(ISA)/1/2020 dated 20-03-2023

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Council of Scientific and Industrial Research (CSIR) is an autonomous body under Govt. of India with the Hon'ble Prime Minister of India as its President.

  
 [ विक्रम सिंह Vikram Singh ]  
 वरिष्ठ प्रशासन नियंत्रक Senior Controller of Administration  
 वरिष्ठ प्रशासन नियंत्रक / Senior Controller of Administration  
 सी एस आई लैब - राष्ट्रीय वातावरण प्रयोगशालाएं  
 CSIR-National Aerospace Laboratories  
 P.B. NO. 1779 - बेंगलूरु / Bengaluru - 560017

|                                                                                                                          |            |                                  |                                 |                                                                                                                                        |
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| PREPARED BY<br><br>(Mr. Neelakanta E) | Rev No: 04 | COPY STATUS<br><b>CONTROLLED</b> | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
| CSIR – NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU – 560017.                   |            |                                  |                                 |                                                                                                                                        |

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## 10.4 Business Liability Insurance

D-13023/3/2025-Sr.CoA

29<sup>th</sup> May, 2025

### TO WHOMSOEVER IT MAY CONCERN

CSIR – National Aerospace Laboratories, Bengaluru 560 017, is a constituent Laboratory of Council of Scientific and Industrial Research (CSIR), an autonomous body under the Administrative Control of Department of Scientific and Industrial Research, Ministry of Science and Technology, Govt. of India located at HAL Airport Road, Bengaluru.

CSIR – NAL is solely and vicariously liable for all the acts done in pursuance of all mandated R & D activities and the same is met entirely by CSIR – NAL and on case to case basis CSIR – NAL also insures its assets/activities with the requisite insurance providers.

  
29/5/25

[विक्रम सिंह/Vikram Singh]

वरिष्ठ प्रशासन नियंत्रक/Sr. Controller of Administration

वरिष्ठ प्रशासन नियंत्रक/Senior Controller of Administration  
सी एस आई आर - राष्ट्रीय वायुनौतिक प्रयोगशालाएं  
CSIR-National Aerospace Laboratories  
P.B. NO. 1779 - बेंगलूरु / Bengaluru - 560017

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| PREPARED BY<br><br><br>(Mr. Neelakanta E) | Rev No: 04                                                                                             | <b>CONTROLLED</b> | COPY STATUS | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
|                                                                                                                              | CSIR – NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU – 560017. |                   |             |                                 |                                                                                                                                        |

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| QUALITY DOCUMENT                                                                  |                                            |                                                                | Page 33 of 44  |              |

## 10.5 Letter of Authorization

D-13023/3/2025-Sr.CoA

02<sup>nd</sup> June, 2025

### TO WHOMSOEVER IT MAY CONCERN

Sub.: Empanelment of ISA for Generic Signalling Projects/Systmes/Product  
No.RDSO-SIG0MISC(ISA)/1/2020 dated 20-03-2023

CSIR – National Aerospace Laboratories, Bengaluru 560 017 is a Constituent Laboratory of Council of Scientific and Industrial Research (CSIR), an autonomous body under the Administrative Control of Department of Scientific and Industrial Research, Ministry of Science and Technology, Govt. of India, located at HAL Airport Road, Bengaluru.

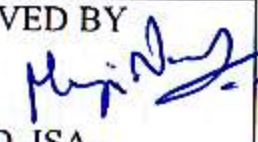
As per RDSO guidelines dated 20-03-2023 (Table C – ISA Panel for Generic Signalling Products / Systems SIG0MISC(ISA)/1/2020, CSIR – NAL, Bengaluru is applying for ISO/IEC 17065 Accreditation and Dr. (Smt.) Manju Nanda, Chief Scientist of our laboratory is authorised as the Nodal Officer for carrying out the ISA activities for ISO / IEC 17065.

  
2/6/25

[ विक्रम सिंह Vikram Singh ]

वरिष्ठ प्रशासन नियंत्रक Senior Controller of Administration

वरिष्ठ प्रशासन नियंत्रक / Senior Controller of Administration  
सी एस आई मार - राष्ट्रीय वांछित प्रयोगशालाएं  
CSIR-National Aerospace Laboratories  
P.B. NO. 1779 - बेंगलूरु / Bengaluru - 560017

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| PREPARED BY<br><br>(Mr. Neelakanta E) | Rev No: 04                                                                                             | COPY STATUS<br> | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
|                                                                                                                          | CSIR – NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU – 560017. |                                                                                                     |                                 |                                                                                                                                        |

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| QUALITY DOCUMENT                                                                  |                                            |                                                                | Page 34 of 44                       |              |

## 10.6 Financial Statement

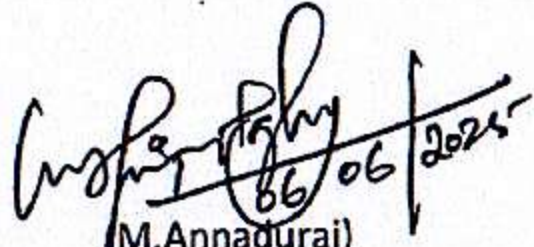
### TO WHOMSOEVER IT MAY CONCERN

CSIR-National Aerospace Laboratories (NAL), Bengaluru is a premier R&D Organisation under the aegis of Council of Scientific & Industrial Research (CSIR), New Delhi DSIR, Ministry of Science & Technology (DSIR).

The source of funding for R&D activities is from grants released by Govt. of India, financial year wise through DSIR.

Since CSIR and its constituent laboratories including CSIR-NAL are functioning as autonomous body through the Societies Registration Act, 1860, there is no concept of turnover.

It is further stated that there is an Excess of Expenditure Over Income for the financial year 2024-25, to the tune of Rs. (-) 180.500 Crore. (copy of Income of Expenditure enclosed)

  
(M. Annadurai)

Controller of Finance & Accounts  
एम. अण्णादुरै / M. ANNADURAI  
वित्त एवं लेखा नियंत्रक  
Controller of Finance & Accounts  
सीएसआईआर-राष्ट्रीय वायुयान प्रयोगशालाएं  
CSIR-National Aerospace Laboratories  
बंगलूरु/Bengaluru-560 017

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| PREPARED BY<br><br>(Mr. Neelakanta E) | Rev No: 04                                                                                             | COPY STATUS | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
|                                                                                                                          | CSIR – NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU – 560017. |             |                                 |                                                                                                                                        |

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## 10.7 PAN

Phone : 3710407  
Fax : 3710500



Council of Scientific & Industrial Research

Anusandhan Bhavan, Rafi Ahmed Kidwai Marg,  
New Delhi - 110 001

F.No. 1(5)/2002-Finance  
Dated the 29<sup>th</sup> July, 2002.

The Directors/Heads of all National Labs./Instts.

Subj: Permanent Account Number (PAN) - AAATC2716R.

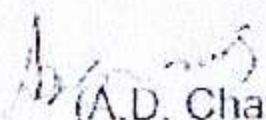
Sir,

As you are aware that CSIR is exempt from payment of Income Tax under section 35(I) (ii) of the Income Tax Act and an exemption certificate is issued by Govt. of India, Ministry of Finance, Deptt. of Revenue, CBDT periodically on regular intervals. Last such certificate was issued vide Notification No. 11433(F.No. 203/85)2000-IT-II) dated 7.7.2000 for the period from 1.4.2000 to 31.3.2003 which was circulated vide letter No. 1(5)/92-Finance dated 11.7.2000.

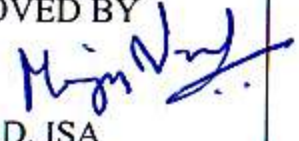
2. It has been brought to our notice that at times some of the parties inadvertently or otherwise recover Income Tax at source where no tax is recoverable in respect of transactions covered under section 35(I)(II) or any other relevant section of the Act requiring filing of refund claim by laboratories/institutes for which PAN Number is required to be mentioned in the refund claim.

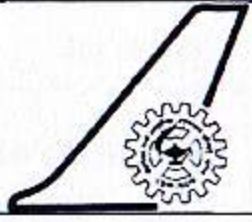
3. CSIR has therefore, obtained PAN Number from Income Tax authorities. A copy of PAN Card bearing Number AAATC2716R is forwarded herewith for your information and record.

Yours faithfully,

  
(A.D. Chawla)  
Sr. Dy. Financial Adviser

Encl. as above

|                                                                                                                          |            |             |                                 |                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------|------------|-------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| PREPARED BY<br><br>(Mr. Neelakanta E) | Rev No: 04 | COPY STATUS | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
| CSIR - NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU - 560017.                   |            |             |                                 |                                                                                                                                        |

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PERMANENT ACCOUNT NUMBER  
AAATC271CR



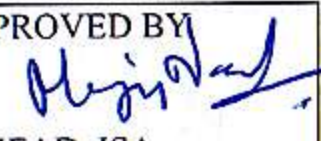
FOR GRANT

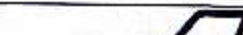
COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

DATE OF INCORPORATION  
12-03-1942

*[Signature]*

*[Faint text, possibly a stamp or signature]*

|                                                                                                                              |                                                                                                        |                                  |                                 |                                                                                                                                        |
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| PREPARED BY<br><br><br>(Mr. Neelakanta E) | Rev No: 04                                                                                             | COPY STATUS<br><b>CONTROLLED</b> | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
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| QUALITY DOCUMENT                                                                  |                                            |                                                                | Page 37 of 44  |              |

10.8 TAN



**TDS**

Centralized Processing Cell

**TRACES**

TDS Reconciliation Analysis and Correction Enabling System

Dashboard

Statements / Payments

Defaults

Communications

For

Welcome CSIR - NATIONAL AEROSPACE LABORATORIES ( BLRN00113B )

Status of Statement Filed

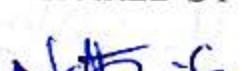
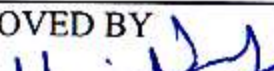
Please select one of the below Search Options

☒ Statement
 ☐ Token Number
 ☐ Statement Status
 ☐ During Last 3 Months

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| Financial Year* | 2024-25 | Quarter* | Q4 | Form Type* | 24Q | <a href="#">View Stater</a> |
|-----------------|---------|----------|----|------------|-----|-----------------------------|

Status for Q4 of FY 2024-25 for Form 24Q

| Token Number   | Statement Type | Financial Year | Quarter | Form Type | Date of Filing | Status                |
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| 7700XXXXXX8613 | Regular        | 2024-25        | Q4      | 24Q       | 16-Apr-2025    | Processed Without Del |
| Page 1 of 1    |                |                |         |           |                |                       |

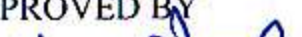
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| PREPARED BY<br><br><br>(Mr. Neelakanta E) | Rev No: 04                                                                                             | <b>CONTROLLED</b> | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
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## 10.9 GST

Registration Number :29AAATC2716R1ZB

|                                                                                                                              |                                        |                                                                                                                                                                        |                                                                                                                 |                   |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------|
| 1.                                                                                                                           | Legal Name                             | COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH                                                                                                                          |                                                                                                                 |                   |
| 2.                                                                                                                           | Trade Name, if any                     | NATIONAL AEROSPACE LABORATORIES                                                                                                                                        |                                                                                                                 |                   |
| 3.                                                                                                                           | Additional trade names, if any         |                                                                                                                                                                        |                                                                                                                 |                   |
| 4.                                                                                                                           | Constitution of Business               | Others                                                                                                                                                                 |                                                                                                                 |                   |
| 5.                                                                                                                           | Address of Principal Place of Business | CSIR NATIONAL AEROSPACE LABORATORIES, PB NO 1779, VIMANAPURA POST OFFICE, HAL AIRPORT ROAD, Bengaluru Urban, Karnataka, 560017                                         |                                                                                                                 |                   |
| 6.                                                                                                                           | Date of Liability                      | 01/07/2017                                                                                                                                                             |                                                                                                                 |                   |
| 7.                                                                                                                           | Date of Validity                       | From                                                                                                                                                                   | 01/07/2017                                                                                                      | To Not Applicable |
| 8.                                                                                                                           | Type of Registration                   | Regular                                                                                                                                                                | <br>Signature Not Verified |                   |
| 9.                                                                                                                           | Particulars of Approving Authority     | Digitally signed by SAIPRASAD BEJGAM, Assistant Commissioner, LGSTO 046 - Bengaluru, on 16/01/2023 19:18:35 IST.<br>Goods and Services Tax Act, 2017<br>TAX NETWORK 07 |                                                                                                                 |                   |
| Signature                                                                                                                    |                                        |                                                                                                                                                                        |                                                                                                                 |                   |
| Name                                                                                                                         |                                        | SAIPRASAD BEJGAM                                                                                                                                                       |                                                                                                                 |                   |
| Designation                                                                                                                  |                                        | Assistant Commissioner                                                                                                                                                 |                                                                                                                 |                   |
| Jurisdictional Office                                                                                                        |                                        | LGSTO 046 - Bengaluru                                                                                                                                                  |                                                                                                                 |                   |
| 9. Date of issue of Certificate                                                                                              |                                        | 16/01/2023                                                                                                                                                             |                                                                                                                 |                   |
| Note: The registration certificate is required to be prominently displayed at all places of Business/Office(s) in the State. |                                        |                                                                                                                                                                        |                                                                                                                 |                   |

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|                                                                                                                          | CSIR – NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU – 560017. |             |                                 |                                                                                                                                        |

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| QUALITY DOCUMENT                                                                  |                                            |                                                                | Page 39 of 44  |              |

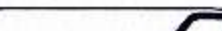


**GSTIN** 29AAATC2716R1ZB  
**Legal Name** COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH  
**Trade Name, if any** NATIONAL AEROSPACE LABORATORIES  
**Additional trade names, if any**

**Details of Person in Charge**

|                                                                                       |                           |                       |
|---------------------------------------------------------------------------------------|---------------------------|-----------------------|
| 1  | <b>Name</b>               | ABHAY ANANT PASHILKAR |
|                                                                                       | <b>Designation/Status</b> | Director              |
|                                                                                       | <b>Resident of State</b>  | Karnataka             |

|                                                                                                                          |                                                                                                        |                                                                                                     |                                 |                                                                                                                                        |
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| PREPARED BY<br><br>(Mr. Neelakanta E) | Rev No: 04                                                                                             | COPY STATUS<br> | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
|                                                                                                                          | CSIR – NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU – 560017. |                                                                                                     |                                 |                                                                                                                                        |

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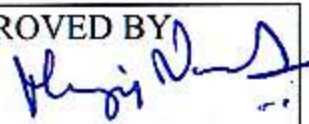
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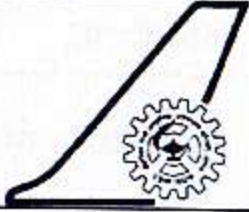
TO WHOMSOEVER IT MAY CONCERN

MARK is not Applicable. ISA Certificate will  
be issued with Signature and Seal.

*Manju Nanda*

डॉ. मंजु नंदा / Dr. MANJU NANDA  
स्वातंत्र्य सुरक्षा निर्याकर, आरबीएसओ  
Independent Safety Assessor, RDSO  
सीएसआर-राष्ट्रीय वायुयान प्रयोगशालाएं  
CSIR-National Aerospace Laboratories  
बंगलूरु/Bengaluru-560 017

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| PREPARED BY<br><br><br>(Mr. Neelakanta E) | Rev No: 04                                                                                             | COPY STATUS<br><b>CONTROLLED</b> | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
|                                                                                                                              | CSIR – NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU – 560017. |                                  |                                 |                                                                                                                                        |

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|  | <b>CSIR-NATIONAL<br/>AEROSPACE<br/>LABORATORIES</b> | <b>INDEPENDENT SAFETY ASSESSMENT<br/>DIVISIONAL QUALITY MANUAL</b> | Document No.:  | ISSUE: 02    |
|                                                                                   |                                                     |                                                                    | ISA/ALD/DQM/01 | REVISION: 04 |
| QUALITY DOCUMENT                                                                  |                                                     |                                                                    | Page 41 of 44  |              |

## 10.11 Purchase Order

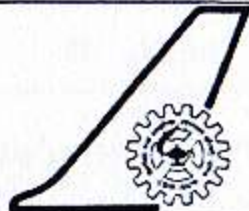
PO: 4800082805 / 19.09.2024

### SERVICE ORDER

PAGE: 1 / 7

|                                                                                                                 |                             |                                                                                                                                                                            |              |               |          |                                                                                                                                                                                                                                                                      |                 |    |              |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|--------------|
| <b>VENDOR DETAILS :-</b>                                                                                        |                             | <b>NA0459</b>                                                                                                                                                              |              |               |          | <br><b>BHARAT ELECTRONICS</b><br>(A GOVT. OF INDIA ENTERPRISE)<br>DIST. PAORI GARHWAL, KOTDWARA - 246 149, UTTARAKHAND<br>TEL : 01382-231124<br>Website : http://www.bel-india.in |                 |    |              |
| NATIONAL AEROSPACE LABORATORIES<br>AIRPORT ROAD,<br>POST BAG NO. 1779<br>BANGALORE<br>Karnataka<br>India 560017 |                             | FAX: 080-25086009<br>Vendor's GST Number: 29AAATCZ716R129<br>ECC Code:<br>PAN No:<br>TIN No:<br>Phone No: 090-25086147<br>Email Id: mathur@nal.res.in<br>mathur@nal.res.in |              |               |          |                                                                                                                                                                                                                                                                      |                 |    |              |
| PO No: 4800082805                                                                                               | 1500                        | BEPO                                                                                                                                                                       | KT2          | Our Enq Ref   |          | UNIT: BEL - KOTDWARA / KOT - UNIT                                                                                                                                                                                                                                    |                 |    |              |
| Original PO Date                                                                                                | 19.09.2024                  | INR                                                                                                                                                                        |              | Manual        | TAN      | Plant's GSTN                                                                                                                                                                                                                                                         | 05AAACB5985C12V |    |              |
| Latest Amendment Ver No.                                                                                        | 0                           | 19.09.2024                                                                                                                                                                 | Your Qtn Ref |               | PAN      | TIN                                                                                                                                                                                                                                                                  |                 |    |              |
| Please supply the following materials in accordance with the instruction given below:                           |                             |                                                                                                                                                                            |              | Phone No      |          | 01382-231124                                                                                                                                                                                                                                                         |                 |    |              |
| 1. The order shall be governed by our terms and conditions and instructions attached                            |                             |                                                                                                                                                                            |              | Fax           |          | 01-1382-231132                                                                                                                                                                                                                                                       |                 |    |              |
|                                                                                                                 |                             |                                                                                                                                                                            |              | Email         |          | mmkotpo@bel.co.in                                                                                                                                                                                                                                                    |                 |    |              |
|                                                                                                                 |                             |                                                                                                                                                                            |              | Range         |          |                                                                                                                                                                                                                                                                      |                 |    |              |
|                                                                                                                 |                             |                                                                                                                                                                            |              | Division      |          |                                                                                                                                                                                                                                                                      |                 |    |              |
| Sl No                                                                                                           | Services                    | Tax Code                                                                                                                                                                   | Qty Ind      | Delivery Date | Quantity | UOM                                                                                                                                                                                                                                                                  | Unit Rate (INR) | RN | Value (INR)  |
| 1                                                                                                               | ISA Certification of DMI    | G3                                                                                                                                                                         | E            | 13.12.2024    | 1        | AU                                                                                                                                                                                                                                                                   | 2,526,800.00    | 1  | 2,526,800.00 |
| 10                                                                                                              | Payment Against Milestone-1 |                                                                                                                                                                            |              |               | 1        | NO                                                                                                                                                                                                                                                                   | 505,360.00      | 1  | 505,360.00   |
| 20                                                                                                              | Payment Against Milestone-2 |                                                                                                                                                                            |              |               | 1        | NO                                                                                                                                                                                                                                                                   | 1,516,080.00    | 1  | 1,516,080.00 |
| 30                                                                                                              | Payment Against Milestone-3 |                                                                                                                                                                            |              |               | 1        | NO                                                                                                                                                                                                                                                                   | 505,360.00      | 1  | 505,360.00   |
| Total Value                                                                                                     |                             |                                                                                                                                                                            |              |               |          |                                                                                                                                                                                                                                                                      |                 |    | 2,526,800.00 |
| Discount                                                                                                        |                             |                                                                                                                                                                            |              |               |          |                                                                                                                                                                                                                                                                      |                 |    | 0.00         |
| Other Charges                                                                                                   |                             |                                                                                                                                                                            |              |               |          |                                                                                                                                                                                                                                                                      |                 |    | 0.00         |
| Net Value                                                                                                       |                             |                                                                                                                                                                            |              |               |          |                                                                                                                                                                                                                                                                      |                 |    | 2,526,800.00 |
| AMOUNT IN WORDS : RUPEES TWO MILLION FIVE HUNDRED TWENTY-SIX THOUSAND EIGHT HUNDRED ONLY                        |                             |                                                                                                                                                                            |              |               |          |                                                                                                                                                                                                                                                                      |                 |    |              |

|                                                                                                                          |                  |                                                                                                            |              |                                                                                                                                        |
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| PREPARED BY<br><br>(Mr. Neelakanta E) | Rev No: 04       | <b>COPY STATUS</b><br> | Issue No: 02 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
|                                                                                                                          | Date: 24/07/2026 |                                                                                                            |              |                                                                                                                                        |
| CSIR - NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU - 560017.                   |                  |                                                                                                            |              |                                                                                                                                        |

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|  | CSIR-NATIONAL<br>AEROSPACE<br>LABORATORIES | INDEPENDENT SAFETY ASSESSMENT<br><br>DIVISIONAL QUALITY MANUAL | Document No.:  | ISSUE: 02    |
|                                                                                   |                                            |                                                                | ISA/ALD/DQM/01 | REVISION: 04 |
| QUALITY DOCUMENT                                                                  |                                            |                                                                | Page 42 of 44  |              |

## 10.12 Panel of ISA by RDSO

V70879/2025

File No.RDSO-SIGOMISC(ISA)/1/2020-O/o ED/Signal/RDSO

4855

|                                                                           |                                                                                    |                                                                                                                                                                                            |                                                                                     |
|---------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Fax: +91-522-2452332<br>E-mail: triambak.tiwari@gov.in<br>Mob: 9794863310 |  | भारत सरकार, रेलमंत्रालय,<br>Government of India - Ministry of Railways<br>Research Designs & Standards Organisation<br>अनुसंधान, अभिकल्प और मानक संगठन,<br>लखनऊ-226011<br>LUCKNOW - 226011 |  |
|---------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|

No: RDSO-SIGOMISC (ISA)/1/2020

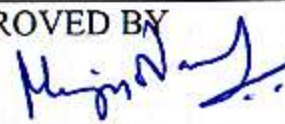
(Through email)  
Date: 14.01.2025

**Sub: Revised Panel of Independent Safety Assessors (ISAs) for Signalling Projects and Products.**

**Ref:** (i) This office letter of even no. dated 23.01.2023, 20.03.2023, 19.12.2023 and 22.01.2024.  
 (ii) M/s. Jodova Technologies Pvt. Ltd., Bangalore's letter no. Nil, Dated 26.08.2024.  
 (iii) M/s. DNV Business Assurance India Pvt. Ltd., Mumbai's letter no. DNV/RDSO/ISA/001/R1, Dated 13.12.2024 & 26.08.2024.

Based on the documents submitted by the firm in above referred applications (ii) and (iii), competent authority has given provisional approval to M/s. Jodova Technologies Pvt. Ltd., Bangalore and M/s. DNV Business Assurance India Pvt. Ltd., Mumbai for doing assessment and certification work in signalling and train control scope for maximum four projects/ products each in ISA-Metro, ISA-Mainline Railway and ISA-Generic Product categories. Accordingly, name of M/s. Jodova Technologies Pvt. Ltd. and M/s. DNV Business Assurance India Pvt. Ltd. has been included in the existing ISA panel as a provisionally approved firm. Terms and conditions of the existing ISA panel, issued vide this office letter referred above at ref-(i), shall be applicable for these firms along with terms and conditions for provisional approval as specified in RDSO's "Method for shortlisting ISA".

The validity of panel will remain as it is i.e. up to 22.01.2026 (three years from the original date of issue).

|                                                                                                                          |                                                                                                                                                                                                                                                         |                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| PREPARED BY<br><br>(Mr. Neelakanta E) | Rev No: 04<br><div style="text-align: center; color: red; font-weight: bold;">CONTROLLED</div> COPY STATUS<br>Issue No:02<br>Date: 24/07/2026<br>CSIR - NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU - 560017. | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
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|  | CSIR-NATIONAL<br>AEROSPACE<br>LABORATORIES | INDEPENDENT SAFETY ASSESSMENT<br><br>DIVISIONAL QUALITY MANUAL | Document No.:  | ISSUE: 02    |
|                                                                                   |                                            |                                                                | ISA/ALD/DQM/01 | REVISION: 04 |
| QUALITY DOCUMENT                                                                  |                                            |                                                                | Page 43 of 44  |              |

M/s BUREAU VERITAS INSPECCION Y TESTING, S.L.  
Unipersonal C/Valportillo Primera 22-24. Poligono Industrial La  
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CSIR-National Aerospace laboratories  
P.B. No. 1779, HAL airport road, kodihalli, Bengaluru-  
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Email:(i) manjun@nal.res.in (ii) neelakanta@nal.res.in  
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TUV India Private Limited  
801, Raheja Plaza-1, L.B.S. Marg, Ghatkopar (W),  
Mumbai-400086 Tele: 022-66477000, 080-  
46023416, FAX: 022-66477009  
Email: viswanathan@tuv-nord.com

Jodova Technologies Private Limited  
L-78, 15 th Cross 5 th Main HSR Layout 6<sup>th</sup> Sector Bangalore -  
560102

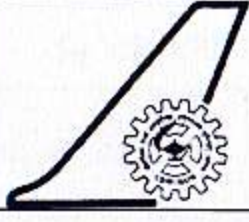
Tele:++91 9945652525 (M), +91 9000518800 (M)

Email: (i) ram@jodova.com (ii) saurabh@jodova.com

DNV Business Assurance India Private Limited  
Roma No. 10, GST Road, Near Kathipara Flyover, Chennai-600016  
Tele:++91 9821087807 (M), +91 95501110080(M),  
+91 9727712565(M)

Email: (i) joher.jerwalla@dnv.com  
(ii) Venkatesh.naik@dnv.com  
(iii) jayesh.patel@dnv.com

|                                                                                                                              |                                                                                                        |             |                                 |                                                                                                                                            |
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| PREPARED BY<br><br><br>(Mr. Neelakanta E) | Rev No: 04                                                                                             | COPY STATUS | Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
|                                                                                                                              | CSIR – NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU – 560017. |             |                                 |                                                                                                                                            |

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|  | CSIR-NATIONAL<br>AEROSPACE<br>LABORATORIES | INDEPENDENT SAFETY ASSESSMENT<br><br>DIVISIONAL QUALITY MANUAL | Document No.:  | ISSUE: 02    |
|                                                                                   |                                            |                                                                | ISA/ALD/DQM/01 | REVISION: 04 |
| QUALITY DOCUMENT                                                                  |                                            |                                                                | Page 44 of 44  |              |

### 10.13 ISO/IEC 17065 Internal Auditor training Certificate



### 10.14 Interview Brochure for Supporting Staff



ಸಿಎಸ್‌ಐಆರ್ - ರಾಷ್ಟ್ರೀಯ ವೈಮಾಂಶಶಿಕ್ಷಣ ಪ್ರಯೋಗಾಲಯಗಳು  
 ಸಿಎಸ್‌ಐಆರ್ - ರಾಷ್ಟ್ರೀಯ ವಾಣಿಜ್ಯ ಪ್ರಯೋಗಾಲಯ, ಬೆಂಗಳೂರು - 560017, ಭಾರತ  
 CSIR - NATIONAL AEROSPACE LABORATORIES  
 (Council of Scientific & Industrial Research)  
 Bengaluru - 560017, INDIA

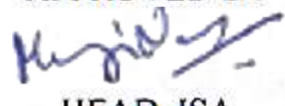
Date of Publication: 05/12/2025

ADVT. No. 14/2025

#### WALK-IN-INTERVIEW FOR PROJECT STAFF

CSIR-NAL is a unit under the Council of Scientific and Industrial Research (CSIR), an autonomous body under the Ministry of Science and Technology, Govt. of India. Applications are invited from qualified candidates (Indian nationals) who meet the necessary educational and work experience for engagement of Project Staff to work in various projects at CSIR-NAL. The engagement of Project Staff is purely on temporary and contract basis under the CSIR/Externally funded/Other projects undertaken by CSIR-NAL. The engagement shall be for short period and co-terminus with the project.

Candidates who fulfil the under-mentioned educational qualifications and experience etc. may attend the Walk-in-Interview during 15/12/2025 to 22/12/2025 along with the application, in the prescribed format enclosed.

|                                                                                                                          |                                                                                                                                           |                                                |                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| PREPARED BY<br><br>(Mr. Neelakanta E) | Rev No: 04<br><b>CONTROLLED</b><br>CSIR - NATIONAL AEROSPACE LABORATORIES<br>PB 1779, HAL AIRPORT ROAD, KODIHALLI,<br>BENGALURU - 560017. | COPY STATUS<br>Issue No:02<br>Date: 24/07/2026 | APPROVED BY<br><br>HEAD, ISA<br>(Dr. Manju Nanda) |
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