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भारत सरकार, रेल मंत्रालय  
GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS



**Guidelines for  
Drone based Inspection of Overhead Equipment in Indian  
Railways**

**INSTRUCTION NO. TI/IN/0060  
March- 2026**

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## Guidelines for Drone based Inspection of Overhead Equipments in Indian Railways

### 1.0 Abbreviations

UIN	: Unique Identification Number
GCP	: Ground Control Points
DGCA	: Directorate General of Civil Aviation
NPNT	: No Permission No Takeoff
CAPI	: Critical Areas of Particular Interest
OHE	: Overhead Equipments

### 2.0 Introduction

- 2.1** The visual inspection of every part of the OHE (including feeder line) is very important activity of the preventive maintenance of the OHE. Presently this activity is being done by deputing OHE linemen who patrols the section on foot by day, so as to cover every part of the section including yards once a fortnight and suburban sections once a week and any defects and abnormalities noticed by him is recorded and reported to the maintenance gangs for attention. However, the effectiveness of this system depends on the skill and attention of the linemen patrolling the section which is also limited by the visibility of the defects of overhead equipment from the ground near the running track. Considering the limitation of existing system of foot patrolling inspection, a drone based patrolling system has been envisaged.
- 2.2** Drone is considered as an efficient tool for monitoring/inspection of OHE. Drone equipped with high-definition photo and video cameras can simplify OHE inspection in terms of quality and efficiency even for various OHE components in challenging locations.

### 3.0 Advantages of Drone

- Drone can be used for OHE inspections near the running tracks safely.
- Defects can be identified and viewed with a level of detail equivalent to a close-up photo.
- Drone can provide a cost-effective way to obtain detailed information that may not normally be obtained during routine foot patrol inspections.

### 4.0 Limitations

Drone survey can be used as guidance for conducting manual survey or general survey of OHE but cannot be used in totality for complete/overall safety inspection of OHE. It can be utilized as technological upgradation for aiding the effective inspection of non-approachable /inaccessible locations of OHE component for future study and analysis etc.

### 5.0 Objective

The Drone based system shall be supplied on service basis. The system shall be operated and maintained by the supplier. Executing agency i.e Railway will not be liable for any damage to system during operation or maintenance.

On need basis drone service providers can be entrusted with initial OHE defect identification

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through drone image/video mapping, subject to verification by the TRD supervisor.

The system shall be capable to meet following mentioned requirement:

- a) To capturing of the high-resolution photos and videos for detailed inspection of entire OHE, including inaccessible areas in a section through drone based fully stabilized (horizontal and vertical compensation) camera and generate High quality inspection data as per requirement. The gathered data should be geo- referenced so that inspection results can be related to locations on the structures. The system should have in built advanced navigation and semi-autonomous inspection flight system
- b) To identify various OHE defects and generate a report on defects in the OHE enabling timely corrective actions to prevent unusual incidents, enhance system reliability, and ensure uninterrupted OHE power supply for safe and smooth train operations.
- c) To identify defects (in all OHE connectors (PG clamps, suspension clamp, catenary & contact wire splices etc) provided in Contact wire, catenary wire, Feeders, Negative Feeders, all type of jumpers etc) using Thermo-vision Camera.

The Drone based monitoring system is used of detecting the following deficiencies in the Overhead Equipment (OHE) for monitoring and accurate assessment of OHE health.

**i. Critical defects:**

**a) Foreign material.**

- Tree branches near OHE
- Birds nest and pieces of stray wires on OHE structures
- Cloth hanging on OHE
- Tarpulin/Kite threads/foreign object hanging on OHE.
- Misaligned or protruded platform sheds coming near OHE.

**b) Bracket Assembly**

- Bracket/Stay insulator damaged/flashed
- Bent/hanging steady arm/bracket/stay tube
- Rusting of cantilever parts
- Missing nut bolts or split pins
- Dip of contact wire or steady arm projection (out of range).
- Dirty Insulators
- Dis-plumbed cantilever
- Catenary suspension clamp for any catenary strands cut/damage.

**c) Jumpers and Droppers**

- Open and damaged droppers/jumpers.
- Condition of PG clamps, inadequate provision of PG clamps.
- Dropper/jumper hanging.
- Loose droppers and jumpers.

**d) OHE Span**

- Opened/damaged dropper
- Catenary/feeder strand damaged
- Excessive sagging or hogging of contact wire
- Damaged/Chipped insulator
- One conductor rubbing against another.

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e) **Section Insulator/Neutral section**

- Misalignment and dropper condition.
- Damaged/Dirty Core insulator of section insulator.

f) **Isolator**

- Post insulator damaged/flushed/sign of sparking
- Damaged strands of Jumpers

g) **Auto-Tensioning Device**

- Tilted equalizing plate
- SS wire rope strands cut and bird caging
- Check for bend, deformation, missing guide tube, deformation of eye of base counter weight.
- Rusting on components.
- missing counterweights, position of counterweights with reference to upper and lower limits of movement marked on the mast.
- Rubbing of SS wire rope on pulley
- Abnormal x and y parameter of ATD.

h) **Auxiliary Transformer**

- Fallen/damaged Drop out fuse
- Core insulator having flash mark/ damaged
- Arcing horn condition(misaligned)
- Condition of earth connection
- Oil leakage if any from AT
- Breather condition.

i) **Feeder/AEC (Aerial Earth Conductor)**

- Strands damaged
- Discontinuity in wire.
- Excessive sag in wire.
- Any hanging parts
- Abnormal clearance near structure.

j) **Masts and Portals**

- Bent Mast Towards /away from track
- Hit mark or damage to the mast
- Rusting on OHE structures.

k) **Defects of Transmission Lines**

As mentioned in RDSO guideline no. TI/IN/0053

ii. **Non- Critical Defects**

- Number plate missing/damage
- Vegetation near Mast or portal
- Condition of Sigma boards and other caution boards

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iii. **Thermal Scanning** : Thermal scanning of all OHE components to comply with RDSO SMI no. TI/MI/0055 Rev 2 or latest. Temperature rise of OHE components through thermo-vision camera.

iv. **Critical Areas of Particular Interest (CAPI)** : CAPI are the specific areas based on the historical inspection records, failure reports, repair and rehabilitation records and need special attention while inspection.

## 6.0 Drone Details

- 6.1 Purpose of these details is to standardize OHE inspection methodology using drones for consistent and comparable results irrespective of drone type, skill of operator and other site based variables such as location and weather conditions.
- 6.2 The supplier shall ensure compliance of Drone Rule, 2021 or latest issued by The Gazette of India CG-DL-E-26082021-229221 dated 25.08.2021.
- 6.3 Drones, camera and data processing technologies are evolving at rapid pace hence it becomes further more important to have uniformity.

S.No	Items	Details
1.	Drone	DGCA Compliant
2.	Drone Type	Rotatory Wing
3.	Number of Propellers	4 minimum
4.	Flight Control System	Offer Critical systems redundancy
5.	Operating Temperature	-10° C to 50° C
6.	GPS / GNSS	Drone must be fitted with multiband GPS/GNSS receivers to constantly provide accurate location based information
7.	Geotagging	Photo & Videos captured by Drone must be geo tagged to position recorded by Drone
8.	Operating Frequency	DGCA Compliant
9.	Transmission Distance	DGCA Compliant
10.	Display	Must have an appropriate display to indicate Drone position, altitude, heading and remaining battery status all the times when Drone is airborne.

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11.	Flashing Lights	Flashing lights, anti-collision strobe lights with heading indicator
12.	Aircraft Colour	Any colour except red, yellow and green, or as per regulations
13.	Obstacle avoidance	Should be equipped with omni directional obstacle avoidance.
14.	Low Battery Charge	Must have low battery audio warning to warn operator below 30% charge.
15.	Image Resolution	20 MP or better to capture high resolution image
16.	Video Resolution	4K to capture high definition videos
17.	Photo Format	JPEG (Resolution – 1080p)
18.	Video Format	4k (or a Resolution – 1080p x 720p)
19.	Thermal Camera	Suitable thermal camera that can collect details conforming to RDSO SMI no. TI/MI/0055 Rev 2 or latest
20.	Field of View (FOV)	60° or higher
21.	FPV- (First Person View)	System should have live video/picture available at control station to capture the relevant project details precisely with right context
22.	Drone should have these capabilities	<p>a) Capability of capturing stationary or orbiting mode at any point.</p> <p>b) App based tracking</p> <p>c) Geo Fencing capability</p> <p>d) 'No Permission – No Takeoff' hardware and firmware;</p> <p>e) Real-time tracking beacon that communicates the unmanned aircraft system's location, altitude, speed and unique identification number</p> <p>Drone shall be equipped with sensors appropriate to fulfill the functional requirement of the deliverables</p>

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#### 6.4 Other Functional Requirements of the System:

- i. The system is expected to continuously monitor the OHE.
- ii. High-resolution RGB (i.e., visual) cameras capture sharp imagery of insulators, conductors, and fittings.
- iii. Thermal Infrared Camera. Capability to overlay thermal on visible imagery. Radiometric data recording to allow offline analysis. Identification of defects using thermal infrared camera shall comply RDSO SMI no. TI/MI/0055 Rev 2 or latest.
- iv. Thermal Sensitivity (NETD): < 40 mK (milli-Kelvin) for detailed temperature differentiation.
- v. Minimum clearance of 2 meter shall be maintained from Mast/OHE.
- vi. The drone shall have minimum capacity to meet the functional requirement as prescribed above to support multiple high-end sensors
- vii. Flight time : Minimum 40 minutes
- viii. Optical Zoom: Minimum 10x optical zoom for safe distance component inspection.
- ix. System shall have Gimbal feature for 3-axis, high-precision stabilization for vibration-free, clear images/video
- x. The system shall have the interference sensitivity against all kinds of electromagnetic signal as specified in IEC 50121-3-2. The system shall be protected from external EMI/EMC/RFI interferences, electrified OHE (Over Head Equipment).
- xi. The system shall have IP Protection:IP43
- xii. The drone shall be capable to reach at predetermined locations/ destination in case of adverse weather (strong winds/ rain) during monitoring.
- xiii. Collision-avoidance sensors for obstacle detection, especially near structures.
- xiv. The system shall be traceable in case of crash.
- xv. The system shall be capable of meeting specified functional requirements in Existing Indian Railway working Conditions.
- xvi. The system shall be non-intrusive type.
- xvii. The system shall be capable of working satisfactorily on different Terrains of Indian Railways having Single Line/ Multiple Line/ Electrified/Non-Electrified sections.
- xviii. The system shall neither be affected nor cause any effect on normal working of OHE Components/Signaling/Telecom or any other working system of Indian Railways.

**Note: The data of Indian Railways shall not be shared with Third Party without prior permission of Indian Railways. The OEM should submit Non Disclosure Agreement to Purchaser. (Format attached as Annexure II)**

## 7.0 Systematic OHE Inspection Methodology

### 7.1 Introduction

The methodology of inspection using Drone will be a Seven-stage process.

- a) Planning & Preparation
- b) Site Assessment
- c) Drone Data Acquisition
- d) Drone Data Processing
- e) Analysis and Reporting
- f) Data Publishing and Integration with TDMS

### 7.2 Stage 1: Planning & Preparation

Historical inspection reports, and other applicable documents should be studied in this stage to ensure a complete inspection of the OHE structure. For instance, the review of the inspection reports allows a pilot to identify critical inspection locations prior to the drone-enabled inspection. The information gained during this stage permits the pilot to develop flight strategies, identify current damage, and monitor or update critical damage.

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### 7.3 Stage 2: Site Assessment - To perform a thorough Site Risk Assessment

This stage is intended to identify potential risks to safely proceed with the drone-enabled inspection. Other benefits of performing a site risk assessment prior to conducting the inspection include identification of safe landing/take off zones, safe OHE clearance approaching areas, and pilot risk minimization. Additionally, the legal regulations should be accounted for prior to establishing a flying strategy. Legal regulations vary from location to location.

The objective of the study will be to finalize operational parameters such as Drone take-off and landing zones, flight plan, traffic or power block requirements, GCP locations (if needed), requirements of observers and any other measures for safety of the men and material. The operator is to also ensure that they are ensuring compliance with the DGCA drone regulations as applicable.

### 7.4 Stage 3: Drone Data Acquisition

Once all the preliminary information has been gathered during the previous stages, the inspection using the drone can be conducted. During the operation of the drone, it is necessary to consider weather conditions such as wind, because it can negatively affect the performance of the drone. Aside from weather condition, the inspection plan should be performed as planned to avoid delays or damage to both the structure and the drone. It is recommended to capture the overall sections of the OHE, and then gather close-up or detailed information of each structural and non-structural component. It can be noted that current regulation does not allow drone operation over traffic, thus, the inspection of some sections (i.e., location over roadway) should be conducted accordingly. The Pilot-in-Command (PIC) should be continuously assisted by an observer to avoid distraction and possible accidents. Arrangement of proper medical facilities shall be ensured in case of any incident/accident.

**To perform the Drone Pre-flight Setup** - It is recommended, to conduct a thorough inspection of the drone prior to the first flight of the day. Inspections of all the softwares and hardwares including, but not limited to, propellers and rotors inspection, full charging of all instruments (e.g., a remote controller, storage batteries, and a monitor), remote controller adjustments, gimbal inspection, and firmware updates should be conducted. A compass calibration must be performed prior to flying at a new location to prevent GPS signal loss during a flight.

**Ground Control Points (GCP):** GCP's are used to enhance the positional accuracy of the data developed from drone images. At least 4 GCP's shall be established using DGPS (Differential Global Positioning system), GCP's shall be marked on permanent structures (Masts) by paint marking so that it can be referred during the data collection for each repeated OHE inspections in future.

**Data Acquisition:** The whole parameters as mentioned in para 5 is to be inspected. Survey grade Drone with High resolution digital camera capable of collecting geo-tagged video (at least 4K resolutions) & high resolution images (at least 20MP resolution) fitted on 3-axis gimbal (Pitch, roll, yaw) to be used for stable and clear data acquisition quality. The Drone should be able to capture the video & imagery of the OHE assets. Data acquisition shall be done in good Photographic Conditions and Ground must be free of fog, haze, dust, and smoke. Also Data to be collected in good light conditions to ensure the Image & Video are Clear and sharp in detail. Drone will be flown as per the flight plan and images acquired for the complete OHE. This may require multiple passes and may be on automatic flight mode, unless there are infringements. Pilot shall collect the data with in possible line of sight

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of the OHE without colliding with the OHE structure.

All the scan images/videos to be recorded and stored on the CRIS/ cloud server as per MeghRaj initiative of MeitY or PC for manual analysis. Supplier shall suggest the storage size required in the server/ on the cloud storage system/PC.

**High Resolution Video Data with GPS** – 4K Video shall be captured along with the GPS information.

The broad requirements of drone and its capturing process shall ensure following:

- a) **Qualified Drone Pilot:** Drone pilot shall have the training certificate from DGCA approved recognized FTO (Flying Training Organization) as per current rules.
- b) The drone operator shall be trained for all operation and safety requirement for working on Indian Railways and certified by Railway Authority for foot patrolling. Only certified operators shall be allowed for drone based OHE monitoring. Zonal Railway shall devise a training module as per site requirement to cover the operation and safety requirement. The module shall cover broadly all the aspect as being done for a foot patrol staff.
- c) The Organization shall have the Unique Identification Number issued by DGCA as authorized Owner & Operator of Drone.
- d) Drone must be able to photograph from close enough distance to obtain a right resolution, resolution of 1mm/pixel is shown to obtain detail images that are comparable with close-up photos. For accurate crack detection, this resolution needs to be even better.
- e) Standardization of the mission planning and data analysis processes are needed
- f) Operator should be able to steer the camera to capture the correct images/data.
- g) Lot of data is acquired during flight, this data should be analyzed in an efficient way. Pre-analysis of acquired data shall be done by staff of supplier/bidder. The concerned staff shall be certified by Sr DEE/TRD after proper training of defects/ abnormalities identification in OHE.
- h) Post analysis shall be done by Railway representative. Any lapse found in the analyzed data shall be taken for suitable penalty to the bidder/supplier.
- i) Automatic image processing is preferred; currently photos are viewed piece by piece which takes a lot of man-hours and is therefore costly and time consuming.
- j) Fail-Safe mechanism to control the drone in case of signal loss/ battery discharge and should be able to land safely.
- k) GPS for horizontal and vertical position fixing & Autonomous & manual flying
- l) Autonomous Flight Termination System or Return to Home (RH) option.

#### 7.5 Stage 4 : Drone Data Processing

**Image / Video Data Processing:** The image/ videos acquired should be informative, important annotations should be super imposed on the output. Proper imaging / recording of actual state of affairs shall be done where-ever possible to find defects that may exist, but also should help in anticipating problems and recognizing these areas. All the videos shall have the Geotagging information along.

All the images/videos to be recorded and stored on a local PC for manual analysis. Supplier shall provide necessary hardware with adequate capacity storage along with the software for the purpose.

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**7.6 Stage 5: Analysis and Reporting - To complete the Defect Identification.**

Acquired data shall be analyzed by the supplier/bidder. The concerned staff of the supplier/bidder shall be certified by Sr DEE/TRD after proper training of defects/ abnormalities identification in OHE. Zonal Railway shall devise a mechanism for proper training of defects identification to concerned staff of the supplier/bidder.

Additionally, an experienced TRD engineer shall examine the images of CAPIs from various angles and making use of software tools and mark potential failures, areas of concern or any abnormality. A rating system may be derived to denote the severity and the engineer shall allot a rating to every CAPI. The results shall then be shown against the historical data in the form of tables, charts and graphs, as appropriate and compiled in the form of a report. Further, as the database builds up for a particular OHE patterns of a location can be recognized and any change can be flagged.

**7.7 Integration with TDMS**

Integration of Reports generated shall be done with Traction Distribution Management System (TDMS). Existing user of TDMS shall be able to visualize the drone visual inspection reports, drone video, high resolution imagery 24x7 by clicking on a link as per the requirement of Indian Railways. The defects report so identified shall be mapped into the TDMS, by staff of supplier/bidder (Drone service provider) in consultation with Railway Authorized representative.

The drone patrolling reports generated shall be in the format compatible for integration of the exception report with the existing Traction Distribution Management System (TDMS). The service provider shall arrange systematic integrate/uploading of all exception reports generated from the drone patrolling data with TDMS. The format of exception report in the TDMS shall be decided by the purchaser. The integration of drone database shall also include provision of necessary link/accessibility of video or pictures of the drone survey on TDMS. The software provided by the service provider shall also facilitate cutting/ pruning the part of the video and provide the option to the user to store the relevant portion of videos or pictures. The authorized representative of the purchaser shall facilitate the required access to TDMS for this purpose.

**7.8 Features of Video and photography output**

Aerial videography and photography is used to capture video using the video camera fitted on drone as live video in downward and oblique looking mode so as to access defect in critical members of OHE. Output of this recording is a Geotagged video file which can be viewed on video analyzer. Subsequently annotation can be put on the video in post processing. The zoom lens provides quality detail without having to position the drone too close to the OHE.

Aerial photography is used for taking high resolution still pictures of the important parts of the OHE. These photos/videos can be zoomed for getting the closer view of the visual inspection.

The system shall provide two selectable options for video and image capture, as decided by the Purchaser:

- (i) **Manual Capturing (Manual Flying Mode):** Video and photography shall be captured through manual operation of the drone. For this purpose, a trained operator/personnel shall be deputed to physically control and fly the drone at site.
- (ii) **Remote Capturing (Autonomous Flying Mode):** Video and photography shall be

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captured through autonomous operation of the drone. The drone shall be capable of executing pre-programmed or remotely commanded flight missions, with data capture and monitoring carried out from a centralized control center without physical presence at the site.

The drone should have live video/picture available at control station (FPV- First Person Video) to capture the relevant details precisely with right context. Data acquisition shall be done in good Photographic Conditions and location must be free of fog, haze, dust, and smoke. Data to be collected in good light conditions to ensure that images and videos are clear and sharp.

## 7.9 Drone Survey Accuracy

A practice to have and measure several check points in the field, besides the Ground Control Points. The check points will enable calculating the accuracy of the model.

It is important to make sure the points are measured with an accuracy higher than the pixel size.

## 8.0 ENVIRONMENTAL/CLIMATIC CONDITIONS

Drone shall be capable of working satisfactorily under Prevailing Climatic Conditions over Indian Railways. Limitation/pre-requisite, if any, may be indicated by the supplier.

The system shall be resistant to vibrations, electromagnetic interferences and external atmospheric conditions (cold, sunlight, wind, snow, rain etc) as per the parameters given below :

SN	Environmental condition	Limits
i.	Ambient Air Temperature.	0 deg C to 45 deg C
ii.	Maximum temperature of metallic object under sun.	70 deg C
iii.	Minimum temperature.	0 deg C
iv.	Maximum Relative humidity	100%
v.	Annual Rainfall	Ranging from 1750mm to 6250mm
vi.	Maximum number of Thunder storm days per annum.	85
vii.	Maximum number of Dust storm days per annum.	35
viii.	Number of Rainy days per annum	120
ix.	Altitude	1000 m above mean sea level. 120 m AGL (above ground level)

## 9.0 System Trials and Drone surveillance Periodicity

**9.1** The field trial scheme and trial period shall be decided by Zonal Railway and system should be approved by Zonal Railway based on successful trials. Trial period shall be used for training of operator for drone operation and staff of the supplier/bidder for defect identification.

**9.2** The OEM may then obtain a certification for the approved system for regular Drone based OHE surveillance system.

## 10.0 Other General Requirements

**10.1** The high resolution pictures of the OHE components and defect locations should be suitably geo-tagged in order to get the location reference.

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- 10.2** Forward and backward Video Capture with a perpendicular or oblique angle suitable to capture details of the inaccessible locations in line of sight of the drone..
- 10.3** Left & Right Side Videography / Photography should be sufficiently close to visualize any defect or crack looking approximate 90 degree to the side face of the component. Videography/ photography should have high resolution zooming provision at intermittent suspicious portion of the member to clearly observe the cracks and dislocation.
- 10.4** Pier Video/Stitched Photographs should be taken all around and should be sufficiently close for inspecting the cracks. It should also have high resolution zooming provision at intermittent suspicious portion.
- 10.5** The videos captured from the drone stitched together and annotation is being done on the various structures

#### **11.0 OWNERSHIP AND CONFIDENTIALITY OF DATA AND SOFTWARE**

- 11.1** Concerned Zonal Railway shall be the executing agency.
- 11.2** All the data being generated by system, software, servers etc with respect to Indian Railway operations shall be the property of Indian Railways.
- 11.3** The data shall be compiled, stored in a medium, transferred and made available in a format as finally decided by Indian Railways in consultation with final supplier in suitable database (exportable to MS Excel and PDF). Data Localization rules of the government of India shall be applicable for the system.
- 11.4** The data shall not be divulged by the supplier to anyone other than consignee and to those authorized by consignee.(NDA as per Annexure II shall be signed by concerned Zonal Railway and supplier)
- 11.5** Apart from the details mentioned in this document, any other accessory/ component/ system(s) essentially required for proper functionality of system, will fall under the scope of supplier.

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**Annexure-I**

**Typical Compliance Checklist**

**Compliance:** Apart from being in accordance with above guidelines, compliance must be confirmed in regard to following.

<b>COMPLIANCE CHECKLIST</b>					
<b>SN</b>	<b>Item</b>	<b>Reference Para of this Guideline</b>	<b>Comp liance (Yes No)</b>	<b>Provide details and write up on methodology of each proposed item with makes / model number etc. Add Annexures / brochures for details and proposed items</b>	<b>Remarks</b>
1.	DGCA Complaint Drone	6.2 S.No.1 in table.		Certificate from OEM shall be attached	
2.	DGCA Issued UIN No	7.4(C)		Certificate Issued from DGCA Shall be Submitted	
3.	DGCA issued pilots license				
4.	Qualified Drone Pilot: Drone pilot shall have the training certificate from DGCA approved recognized FTO (Flying training Organization) as per current rules	7.4(b)		Certificate shall be submitted	

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**ANNEXURE-II****NON-DISCLOSURE AGREEMENT**

This Non-Disclosure Agreement is made on of this 21st day of January 2025 between President of India acting through Zonal Railway the “**Disclosing Party**” and,

M/S XXXXX, a Company incorporated under the Companies Act, 1956 and having its Registered Office at .....(hereinafter referred to as “**M/S XXXX**”) the “**Recipient**”.

*(Each reference to “M/S XXXX” in this Agreement shall be deemed to include its respective subsidiaries, affiliates and sister companies or any other organization in which M/S XXXX has an ownership stake or over which M/S XXXX can exert control, each of which/such party shall cause to observe the requirements of this Agreement with respect to the information disclosed by ZONAL RAILWAY to M/S XXXX under this Agreement. )*

Whereas ZONAL RAILWAY desires to give certain information about its products, Customers, financial data, technical data etc. to M/S XXXX and M/S XXXX will also be collecting certain information from the ZONAL RAILWAY past, present, future Customers which is **ZONAL RAILWAY Proprietary** and confidential information and shall be using the same for a project with Indian Railways.

Whereas Traction Installation Directorate of ZONAL RAILWAY is exploring various AI based technologies for Indian Railways. Recently **M/S XXXX** have offered free Proof of Concept Trials of their technologies/system in Indian Railways. Trial of same will be conducted shortly and in trial, data regarding OHE will be collected by system for analyzing the same. It is necessary to sign a non-disclosure agreement with **M/S XXXX** to maintain confidentiality of data of Indian Railways collected during trial.

Now, therefore, in consideration for the premises and obligations set forth herein, it is hereby agreed that :

**Definition of Confidential Information**

1. For purposes of this Agreement, “**Confidential Information**” shall mean any data or information that is proprietary to the Disclosing Party and not generally known to the public, whether in tangible or intangible form, whenever and however disclosed, including, but not limited to (1) any scientific or technical information, relating to the invention, design, process, procedure, formula, improvement, technology, method for operation and manufacture of ZONAL RAILWAY products (2) manufacturing drawing and all information referred to in such manufacturing drawings (3) all type of data collected either from **ZONAL RAILWAY** or any existing, potential, past Customer of **ZONAL RAILWAY** during interview, survey or through telephonic conversation, letters or any other means while and during carrying out the assignment mentioned above (4) costs, margins and pricing (5) any concepts, reports, data, know-how, works-in-progress, designs, development tools, specifications, computer

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software, source code, object code, flow charts, databases, inventions, information and trade secrets (6) marketing studies, strategies, or projections, operations, business plans and performance results relating to the past;; (7) information, documents and materials relating to the ZONAL RAILWAY financial management and other business conditions, prospects, plans, procedures and affairs which ZONAL RAILWAY holds confidential or considers proprietary and has not publicly disclosed and (8) names of developmental programs, sales or marketing plans, or references to next generation products and new product introductions, which is transmitted or communicated by ZONAL RAILWAY to the party of the other part of this agreement. Provided that information disclosed orally or by observation will be treated as **Proprietary Information**, only if the same is confirmed as confidential in writing within a period of three (3) days from its disclosure;

Confidential Information need not be novel, unique, patentable, copyrightable or constitute a trade secret in order to be designated Confidential Information. The Receiving Party acknowledges that the Confidential Information is proprietary to the Disclosing Party, has been developed and obtained through great efforts by the Disclosing Party and that Disclosing Party regards all of its Confidential Information as trade secrets.

## **TERMS AND CONDITIONS**

### **2. Confidentiality Obligations :**

- a. All Proprietary Information and confidential information which is transmitted or communicated by **ZONAL RAILWAY** to **M/S XXXX** shall in all cases be held in confidence by **M/S XXXX** and it shall not directly or indirectly, in any way, reveal, report, publish and disclose or transfer to any third party unless written consent of **ZONAL RAILWAY** is first obtained. Except that, **M/S XXXX** has the right to disclose such information to its own employees, consultants and representatives who are bound by an obligation of confidentiality and who need to know such information for the purpose specified hereinabove.
- b. **M/S XXXX** shall advise each of the persons to whom it provides access to any of the Confidential Information, that such persons are strictly prohibited from making any use, publishing or otherwise disclosing to others, or permitting others to use for their benefit or to the detriment of the Disclosing Party, any of the Confidential Information, and, upon Request of the Disclosing Party, to provide the Disclosing Party with a copy of a written agreement to that effect signed by such persons.
- c. **M/S XXXX** agrees to use the Confidential Information solely in connection with the current or contemplated relationship between the parties and not for any purpose other than as authorized by this Agreement without the prior written consent of an authorized representative of the Disclosing Party. No other right or license,

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whether expressed or implied, in the Confidential Information is granted to the Receiving Party hereunder. Title to the Confidential Information will remain solely in the Disclosing Party. All use of Confidential Information by the Receiving Party shall be for the benefit of the Disclosing Party and any modifications and improvements thereof by the Receiving Party shall be the sole property of the Disclosing Party.

- d. **M/S XXXX** agrees to protect and safeguard the Confidential Information against unauthorized use, publication or disclosure; For the purpose of protecting Proprietary Information received from **ZONAL RAILWAY** hereunder, **M/S XXXX** will use efforts commensurate with those it employs for the protection of corresponding information of its own, including as a minimum, alerting its employees of the confidential and sensitive nature of the Proprietary Information of **ZONAL RAILWAY**, disclosure to its employees only on a need-to-know basis and using appropriate safe-keeping procedures for Proprietary Information.
- e. **M/S XXXX** agrees not to use any of the Confidential Information except for the Indian Railways.
- f. **M/S XXXX** agrees not to use any Confidential Information to unfairly compete or obtain unfair advantage vis-a-vis **ZONAL RAILWAY**.
- g. **M/S XXXX** agrees to comply with any other reasonable security measures requested in writing by the **ZONAL RAILWAY**.
- h. **M/S XXXX** agrees to refrain from directly contacting or communicating by whatsoever means to the Source(s) of Information without written consent of the Disclosing Party
- i. **M/S XXXX** agrees To undertake not to disclose any names and their particulars to third parties without the written consent by the **ZONAL RAILWAY**

### 3. Exceptions:

Notwithstanding the provisions of Paragraph 2 of this Agreement **M/S XXXX** shall not be require to maintain confidentiality or be restricted in its use of any **Proprietary Information** which:

- i. was in the public domain at the date of disclosure to **M/S XXXX**;
- ii. becomes public knowledge during the term of this Agreement without breach of this Agreement

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- iii. **M/S XXXX** can show that it was in its possession with the full right to disclose prior to its receipt from or disclosure by ZONAL RAILWAY;
- iv. disclosure of which is required by law or by order of a court of competent jurisdiction;
- v. is independently received by the Receiving Party from a third party, with no restrictions on disclosure.

*However, it is expressly agreed that the data information collected during carrying the assignment by M/S XXXX shall form part of the confidential information and shall be governed by this agreement.*

#### 4. **Compelled Disclosure of Confidential Information.**

Notwithstanding anything in the foregoing to the contrary, the Receiving Party may disclose Confidential Information pursuant to any governmental, judicial, or administrative order, subpoena, discovery request, regulatory request or similar method, provided that the Receiving Party promptly notifies, to the extent practicable, the Disclosing Party in writing of such demand for disclosure so that the Disclosing Party, at its sole expense, may seek to make such disclosure subject to a protective order or other appropriate remedy to preserve the confidentiality of the Confidential Information; provided in the case of a broad regulatory request with respect to the Receiving Party's business (not targeted at Disclosing Party), the Receiving Party may promptly comply with such request provided the Receiving Party give (if permitted by such regulator) the Disclosing Party prompt notice of such disclosure. The Receiving Party agrees that it shall not oppose and shall cooperate with efforts by, to the extent practicable, the Disclosing Party with respect to any such request for a protective order or other relief. Notwithstanding the foregoing, if the Disclosing Party is unable to obtain or does not seek a protective order and the Receiving Party is legally requested or required to disclose such Confidential Information, disclosure of such Confidential Information may be made without liability.

#### 6. **Term:**

This Agreement shall be effective from the date of execution of this agreement and shall remain in force for a period of 5 (five) years from the date of the said execution.

#### 7. **Termination:**

Either party hereto, upon written notice to the other, may terminate this Agreement. Such termination shall be effective thirty (30) days after receipt of such notice. All obligations arising under this Agreement shall survive any termination or expiration of this Agreement and any confidentiality obligations will remain in effect for a period of five (5) years from date of first disclosure hereunder. Upon termination or expiration of this Agreement, any **Proprietary Information** received by **M/S XXXX** pursuant to this

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Agreement shall be returned, together with all copies thereof.

## 8. Notice of Breach.

**M/S XXXX** shall notify the Disclosing Party immediately upon discovery of any unauthorized use or disclosure of Confidential Information by **M/S XXXX** or its Representatives, or any other breach of this Agreement by **M/S XXXX** or its Representatives, and will cooperate with efforts by the Disclosing Party to help the Disclosing Party regain possession of Confidential Information and prevent its further unauthorized use.

## 9. Return of Confidential Information.

**M/S XXXX** shall immediately return any **Proprietary Information** received in pursuance to this Agreement and redeliver to the other, all tangible material embodying the Confidential Information provided hereunder and all notes, summaries, memoranda, drawings, manuals, records, excerpts or derivative information deriving there from and all other documents or materials ("Notes") (and all copies of any of the foregoing, including "copies" that have been converted to computerized media in the form of image, data or word processing files either manually or by image capture) based on or including any Confidential Information, in whatever form of storage or retrieval, upon the earlier of (i) the completion or termination of the dealings between the parties contemplated hereunder; (ii) the termination of this Agreement; or (iii) at such time as the Disclosing Party may so request; provided however that the Receiving Party may retain such of its documents as is necessary to enable it to comply with its document retention policies. Alternatively, the Receiving Party, with the written consent of the Disclosing Party may (or in the case of Notes, at the Receiving Party's option) immediately destroy any of the foregoing embodying Confidential Information (or the reasonably non recoverable data erasure of computerized data) and, upon request, certify in writing such destruction by an authorized officer of the Receiving Party supervising the destruction).

## 10. Rights, Remedies and Restrictions.

Both parties acknowledge that the Confidential Information to be disclosed hereunder, is of a unique and valuable character, and that the unauthorized dissemination of the Confidential Information would destroy or diminish the value of such information. The damages to Disclosing Party that would result from the unauthorized dissemination of the Confidential Information would be impossible to calculate. Therefore, **M/S XXXX** acknowledges that:

- (a) ZONAL RAILWAY possesses and will continue to possess **Proprietary Information** that has been created, discovered or developed by or on behalf of ZONAL RAILWAY by third parties, which information has commercial value and is not in the public domain;

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- (b) Unauthorized use or disclosure of **Proprietary Information** is likely to cause irreparable injury not readily measurable in monetary damages;
- (c) In the event of an unauthorized use or disclosure, ZONAL RAILWAY shall be entitled to, without waiving any other rights, recourses or remedies to which it may be entitled under this Agreement, at law or in equity, such injunctive or equitable relief as may be deemed proper by a court of competent jurisdiction ;
- (d) ZONAL RAILWAY and its licensors retain all right, title and interest in and to the **Proprietary Information** including without limiting the generality of the foregoing, title to all materials whether provided by or on behalf of ZONAL RAILWAY.
- (e) Any authorized use or disclosure by the proprietor, agents representatives, advisors, directors, officers or employees of **M/S XXXX** shall be deemed to be an unauthorized use or disclosure by **M/S XXXX** and that **M/S XXXX** shall indemnify and hold harmless ZONAL RAILWAY from and against any and all damages, losses, costs, expenses and attorneys' fees incurred as a result of such breach.
- (f) This agreement shall remain in force notwithstanding any change in the ownership, management, constitution, merger and amalgamation etc. of **M/S XXXX**.
- (g) Any failure by either party to enforce the other party's strict performance of any provision of this Agreement will not constitute a waiver of its right to subsequently enforce such provision or any other provision of this Agreement.

#### 11. **Severability of Provisions:**

Should any part of this Agreement be declared invalid by a court of law, such decision shall not affect the validity of any remaining portion which shall remain in full force and effect as if the invalid portion was never a part of this Agreement when it was executed. As it is, the parties' intent that this Agreement be enforced to the fullest extent permitted by law, such invalidated section shall be deemed amended so as to avoid the reasons for its invalidity. Should the severance or amendment of any such part of this Agreement materially affect any other rights and obligations of the parties hereunder, the parties hereto will negotiate in good faith to amend this Agreement in a manner satisfactory to the parties.

#### 12. **Non-Assignability:**

Neither party hereto shall, directly or indirectly, assign or purport to assign this

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Agreement or any of its rights and obligations in whole or part to any third party without the prior written consent of the other party.

**13. Warranty.**

ZONAL RAILWAY warrants that it has the right to make the disclosures under this Agreement. **NO WARRANTIES ARE MADE BY ZONAL RAILWAY UNDER THIS AGREEMENT WHATSOEVER.** ZONAL RAILWAY acknowledges that although they shall endeavor to include in the Confidential Information all information that they believe relevant for the purpose, however no representation or warranty as to the accuracy or completeness of the Confidential Information is being made by ZONAL RAILWAY as the Disclosing Party. Further, ZONAL RAILWAY is not under any obligation under this Agreement to disclose any Confidential Information it chooses not to disclose.

**14. Amendment:**

Subject to Paragraph 9 above, this Agreement shall not be amended, modified or altered, except in writing, duly accepted and executed by both parties.

**15. Governing Law:**

This Agreement shall be governed by and construed in accordance with the laws of India. Any dispute arising out of this Agreement or interpretation of any provision of this agreement or arising out of execution of this agreement shall be referred to the arbitrator nominated by the ZONAL RAILWAY in accordance with Indian Law. The disputes shall be subject to the jurisdiction of the Courts at Lucknow, India only.

**16. Entire Agreement :**

This Agreement constitutes the entire agreement and understanding of the parties hereto, and no representations or promises have been made that are not fully set forth herein.

**17. Notices:**

Any notices or communications required or permitted to be given hereunder, from either party to the other will be given in writing to the attention of the persons listed below, or to other such addresses or addressees as may hereafter be designated in writing for notices by either party to the other and may be delivered by hand, deposited with a nationally recognized overnight carrier, electronic-mail, or mailed by certified mail, return receipt requested, postage prepaid, in each case. All such notices or communications shall be

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deemed to have been given and received (a) in the case of personal delivery or electronic-mail, on the date of such delivery, (b) in the case of delivery by a nationally recognized overnight carrier, on the third business day following dispatch and (c) in the case of mailing, on the seventh business day following such mailing.

If to ZONAL RAILWAY:  
Attention : **Sri ABC**

If to M/S XXXX:

Attention : **Sri XYZ**

IN WITNESS WHEREOF, the parties hereby or authorized agents thereof have executed this Agreement, as of the date first above written i.e. .... which shall be binding upon them and their respective successors and assigns, as of the day and year first above written.

For DISCLOSING PARTY i.e. ZONAL RAILWAY	For RECEPIENT i.e M/S XXXX
Name : Shri ABC	Name : Shri XYZ
Designation :	Designation :
Witness :	Witness :

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