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आज़ादी का
अमृत महोत्सव

EASTERN COALFIELDS LIMITED
(A Subsidiary of Coal India Ltd.)
Office of the General Manager
(Security),
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Ref. No.: ECL/SEC/GM/23/10

Date: 10.01.2023.

To,

The General Manager's

Rajmahal, S.P.Mines, Mugma, Sodepur, Salanpur, Sripur, Satgram, Kunustoria, Sonepur Bazari,
Kenda, Bankola, Pandaveswar, Jhanjra, Kajora Area ECL.

Sub: - Circulation of Standard Operating Procedure (SOP) approved by the Empowered Committee of Functional Directors of Eastern Coalfields Limited (16th of 2022) held on 08.08.2022.

Dear Sir,

Please find attached copy containing 09 pages of the SOP (Standard Operating Procedure) for action plan to prevent illegal mining and pilferage of coal in ECL, which has been approved by Empowered Committee of Functional Directors of Eastern Coalfields Limited (16th of 2022) held on 08.08.2022.

This is as per communication of company secretary ECL vide ref. no. ECL/CS/27 (Z-7)/16th of 2022/6 Dated. 16.08.2022.

This is for your implementation and action by all officials under your command as described in the approved book (SOP).

Yours faithfully,

10/01/2023
General Manager (Security),
ECL.

Copy to:-

1. Director (Personnel), ECL.
2. TS to CMD, ECL.
3. General Manager (Vigilance), ECL.
4. Company Secretary, ECL.
5. Sr. Commandant CISF ECL, Seetalpur.

Eastern Coalfields Limited
(A Subsidiary of Coal India Limited)



STANDARD OPERATING PROCEDURE (SOP)

USAGE & IMPLEMENTATION OF DRONES FOR SURVEILLANCE OF LEASEHOLD AREA TO PREVENT ILLEGAL MINING IN EASTERN COALFIELDS LIMITED.

STANDARD OPERATING PROCEDURE (SOP) : USAGE AND IMPLEMENTATION OF DRONES FOR SURVEILLANCE OF LEASEHOLD AREA TO PREVENT ILLEGAL MINING IN EASTERN COALFIELDS LIMITED.

OBJECTIVE & OVERVIEW :

The prime objective of this SOP is to prevent illegal mining & pilferage of coal in Eastern Coalfields Limited(ECL) by frequent monitoring of leasehold Areas of ECL, that are prone to illegal mining with the help of Drone Survey. The use of Drone should be done strictly for monitoring and surveillance purpose without endangering the privacy, safety and security of any person(s) or property(s) and within the Drone Rules, 2021 notified by Ministry of Civil Aviation dated 25th, August, 2021 & it's amendment from time to time.

Illegal mining takes place in three main forms in eastern India: (1)small shallow-dug village mines on public/private land, (2)mining on re-opened abandoned or orphaned government mines, and (3)scavenging on the leasehold land of official operating mines. Coal may be extracted through a series of small open-cut holes, which may extend underground.

Such blatant illegal practice leads to developing of a parallel economy. It also leads to drop in e-auction rates and loss of royalty to the Government of India. The jump in Coal pilferage and the growth of Mafia activities in the region eventually lead to increase in crime rates. All the matters are linked in such a way that this practice also encourages corruption and growth of Black Money.

To stop Coal pilferage and illegal mining, Drone based surveillance will provide option for Quick Response by security officials and records generated thereby can also be used as first hand evidences to the Police/State administration as well as in the Hon'ble Court of Law.

REQUIREMENTS :

- (a) The Drones used should have Unique Identification Number(UIN) obtained through Digital Sky Platform, issued from Director General of Civil Aviation(DGCA) or any entity authorised by DGCA.
- (b) The Drones used should have Type Certificate obtained through Digital Sky Platform, if applicable from DGCA or any entity authorised by DGCA.
- (c) Information on transferred Unmanned Aircrafts Systems(UAS), Remote Pilot Certificate duly obtained from Remote Pilot Training Organisation approved by DGCA, etc should be thoroughly checked.
- (d) Ensure drone is in good condition (not damaged) and should have mandatory safety features as notified by DGCA from time to time.
- (e) The Drone should be fitted with accurate altitude sensor to ensure the desired flying height is maintained throughout the Drone Flight Operation.
- (f) The GPS accuracy of the Drone must be ensured so that the Drone can only be operated within the Geo-fenced Area.
- (g) The Drone should have necessary fail safe arrangements such as Autonomous Flight Termination System or Return To Home(RTH) on low battery and auto mission restart from the point, RTH was engaged.
- (h) The Drone may be equipped with features such as Detection and Collision Avoidance Capability and it should also have Flight data logging capability for accurate POS(Positioning & Orientation System) data collection.
- (i) The camera resolution along with the flying height of Drones should be selected or operated in such a way, so that the captured photographs should have a GSD(Ground Sample Distance) less than or equal to 2.5 cm for surveillance purpose.

(j) The Video Footage should be recorded at such a focal length and resolution, so that the person(s)/object(s) if any, connected with Illegal Mining Operation and Coal Theft can be distinctly identified and the recordings can be used as first hand evidences.

(k) A definite mechanism for storage of clippings/records which will be used as evidences should be finalised before commencement of Drone Surveillance Operations.

OPERATION & MONITORING :

- i. As ECL does not currently have any technical expertise in respect of Drone Operation, in the first phase one Pilot Project may be implemented through any Contractual agency having expertise in Drone Operations.
- ii. The skilled manpower of ECL should also be identified for operation of Drones in near future, so that, they can be sent to authorised Remote Pilot Training Organisation for obtaining required training and certificate.
- iii. The operations of Drones in ECL should not, in any means violates the Drones Rules, 2021 (as amended from time to time).
- iv. One Nodal Officer from Security Department and an assisting officer from any technical discipline should be appointed and they should monitor the necessary requirements for flying of Drones in a particular Area.
- v. The Operation of the Drone should be Geo-fenced and its usage should be limited to 100m horizontally beyond the mine leasehold boundary of ECL in line with the SOP for Drone Survey issued by IBM and subsequent amendment, as demarcated by GPS Coordinates provided by HOD(Survey), ECL or his authorised representative.
- vi. The airspace map published by Digital Sky Platform should be taken in consideration, to check which portion of leasehold Area of ECL falls under Green Zone, Yellow Zone and Red Zone as defined in Drones Rules, 2021(amended from time to time).
- vii. The Operation of Drones will be done by Person(s) of a reputed nominated Agency having Remote Pilot Certificate obtained by an authorised Remote Pilot Training Organisation under rule 34 of Drones Rules, 2021(as amended from time to time).

- viii. All Aerial Operations using Drones should be pre-planned by HOD(Security), ECL or his authorised representative in consultation with nearby Area/Colliery management and if required, necessary permissions should be obtained before hand by Nodal Officer. Documentary proofs regarding non-requirement of any permissions should also be kept for records.
- ix. The Nodal Officer as well as the Drone Operator should check the weather conditions such as wind speed, thundering, rain, etc before flying the Drone to avoid any possible damage to Drone.
- x. The Nodal Officer should ensure that the Drone is Digital Sky Safety Compliant with 'No Permission —No Take-off' hardware and firmware.
- xi. The Nodal Officer should properly plan the flight route/path of Drone including the flying speed, flying height, take-off and landing point with necessary inputs from the Drone Operator regarding obstacles/hindrances in flying the Drone in the specified flying path.
- xii. The Nodal Officer and the Drone Operator should also check for possible signal interference from all electronic devices, high tension electrical lines or blockage of signals and accordingly plan the flying path of Drone.
- xiii. The Drone Operator(s) should be trained on both drone operation as well as storing the recorded data for further initiation of action.
- xiv. The Drone Surveillance Program should be planned in such a way that any unforeseen hindrance/events such as damage of Drone during its flight whether intentional or unintentional does not hamper the program.
- xv. The operation of Drone should be limited to monitoring and surveillance regarding illegal mining and theft/pilferage of Coal.
- xvi. The operation of Drone should not be in contraventions to the Drones Rules, 2021 as published by Ministry of Civil Aviation vide G.S.R. 589(E) dated 25th August, 2021 and as amended from time to time.

xvii. Discretion should be maintained for Drone Surveillance by nominated Agency representative as well as ECL nominated officials to ensure that information such as Drone flying location, date, time, etc. is not leaked to any unauthorized person(s).

xviii. Live Streaming of Drone Surveillance Operation Program should be monitored by Security Department and if any illegal activities is noticed, then they should coordinate with the Drone Pilot so that the same can be captured thoroughly.

xix. All flights conducted shall be recorded in a Flight Logbook and shall be kept minimum for a period of 1 year. Each Flight details to be recorded in the Flight Logbook will include :

- a) Date, time and duration of flight
- b) Location of flight
- c) Purpose of flight
- d) Drone configuration used for flight
- e) Remote pilot(s)-in-command

Incident/Accident Reporting

Reporting Requirements

The Drone Operator shall inform DGCA of any airworthiness or operational incident/accident, relating to the Drone within 48 hours of its occurrence, and follow up with a written report within 3 working days (from the day of occurrence).

The initial notification shall include, but should not be limited to the following:

- Permit details (such as Drone Operator Permit number, Exemption letter no. etc.)
- Date, time and location of the incident/accident
- Casualty and damaged of property Involved
- Details on Drone used and condition of Drone
- Details of Drone Pilot(s) involved
- Initial analysis to the cause of incident/accident
- Immediate action taken after the incident/accident

The written report shall include, but should not be limited to the following:

- Information provided in the initial notification to DGCA
- Outcome of Investigation
- Root cause analysis / causal factors analysis
- Corrective / preventive actions taken to prevent a recurrence

Management of Casualties

In the event of a Drone incident or accident resulting in casualties, all personnel involved in the Drone operations shall follow the casualty management plan as set out in the following:

- The Drone Pilot shall stop the Drone operation as soon as possible, and attend to the casualty immediately.
- For minor injuries, first aid shall be administered to the injured.
- For serious injuries, the injured shall be transported to the nearest identified hospital.

REPORTS GENERATION & ACTION TO BE TAKEN :

(a) The recordings/clippings of each Drone Survey should immediately be provided by Drone Operator after completion of each survey to security in-charge and Nodal Officer.

(b) The use of the recordings done by Drone should only be for detection and reporting of Illegal Mining and pilferage of Coal without endangering the privacy, safety and security of any person(s) or property(s).

(c) A Quick Response team consisting of Security Personnels should be formed to take immediate corrective measures with due assistance from local Police / CISF by monitoring the live footage of Drone Survey.

(d) Area Security-in-charge should analyse the recordings obtained through Drone Survey and take necessary action as per approved SOP on Action Plan - Illegal Mining and Coal Theft.

(e) The record of clippings obtained through Drone Survey should be kept for a minimum period of One(01) Month. Special clippings that are to be used as evidences should be kept for more than one month by Nodal Officer/Area Security-in-charge for future reference.

(g) Flight log is to be maintained and stored. The location of the Drone at which illegal mining or theft/pilferage of coal is detected needs to be noted and this information is to be furnished in fortnightly report.

(h) Fortnightly Reports in the below mentioned format should be submitted to Director-in-charge by Area General Manager highlighting the incidences observed through Drone Surveillance vis-a-vis Action Taken against those incidences.

(i) The recorded footage and report generated may be called for scrutiny anytime after competent approval.

Fortnightly Drone Survey Monitoring Report

Area :

Date of Report:

Name of Nodal Officer: Name of Drone Operator:

Name of Security-in-charge :

S. no	Date of Drone Survey	Time of Drone Take-off	Flight Hrs Logged	Drone Take-off Location	Locations intended to be covered	GPS Coordinates /Grid reference	Anomalies Observed during Drone Survey	Action Taken	Remarks
1									

****** Note:**

- (1) Annexure on Procedure to obtain approval for flying of Drones in ECL.
- (2) Revision of SOP on Drones should be done whenever Drones are purchased by ECL and operated by ECL officials.

(1) Annexure on Present Procedure to obtain approval for flying of Drones in ECL.

1) Application for exemption of ECL from obtaining approval for flying of Drones within leasehold Areas of ECL should be submitted to the Director Operations – Drone Directorate, Director General Of Civil Aviation(DGCA) in line with CMPDIL.

2) Before commencement of Drone Operations, coordination should be done with Airport Authority and intimation should be sent to CISF and local police & administrative authorities.

3) The Digital Sky Platform website of DGCA should be thoroughly checked for Green , Yellow and Red Zone as defined under Drone Rules,2021(amended from time to time). The procedure for obtaining permissions through Digital Sky Platform, for Green Zone is as follows :-

