Site Inspection Report of Airport Infrastructure at Moradabad Airport, UP for operationalization under Regional Connectivity Scheme (RCS)

Date of Visit-20.02.2018

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Development of Moradabad Airport (UP) for operation of flights under RCS – UDAN

(M 28, DO228-200, Beech craft 200 type - 19 Seater aircraft-Runway codes 1B)

AAI team consisting of officials from CNS Dte., ATM, Structure, Electrical Engg., Civil Engg., Planning, Arch. visited Moradabad Airport on 20.02.2018 along with officials from U.P. State Govt. (Annexure I) to study existing infrastructure and recommend action plan for works required to be carried out for operation of flights under RCS-UDAN.

Existing infrastructure :

- Runway : 2238Mx30m, Designation 12/30
- Turn Pad : Available
- VFR/IFR : VFR
- Apron : 57Mx29m
- No.of Parking bays : 1 No.
- Taxiway : (150mX15 m)
- Guest house : 300sq.mtr. Available
- Residential Quarters : 01No. -Type-I Available
- Boundary Wall : 2.4m height with 0.6 m barbed wire fencing
- Availability of Electric supply : State electricity supply is available and  stand by Generator is also available
- Availability of Water Supply : Yes (Only Bore well)
- Availability of Approach road to Airport : 2 Lane road available
- Availability of Car Parking : Land available for car Park

1. Terminal Building:
At Moradabad Airport, one VVIP Lounge is available. The design/layout and covered area of existing VVIP Lounge is sufficient to cater the passengers of small aircraft with minor modifications. Re-design & conversion of VVIP Lounge into Terminal with necessary Departure, Security check area and Arrival area along with the other infrastructure including furniture etc. are suggested to start the aircraft operation from Moradabad.

2. Runway & Runway Strip:
- The Existing Runway is 30 m wide with turning pads at both ends. It is informed by local authority that last resurfacing and extension was done in the year 2010.
- Overall surface rating is fair but slight raveling and lane joint cracking, therefore crack sealing and patch repair is required.
• Existing apron is a flexible pavement.
• Design aircraft: Hawker XP900
• Maximum take off weight: 12,755 kg
• Sub-grade CBR: 3%
• Annual departure: 1200

• Cross section of Old strengthened existing pavement:

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<td>60 mm Dense Bituminous Macadam</td>
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<td>175 mm Wet Mix Macadam</td>
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<td>225 mm Granular Sub Base</td>
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<td>Earth filling</td>
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• X-Section for Extension/Widening of Existing Pavements (New Construction)

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• Width of 30 m on either side from the runway centre line is available for basic strip. Available runway strip is also not maintained as per CAR as it’s full of wild growth, and a group of trees inside the operational area which require cleaning & grading.

• Runway End Safety Area (RESA) is not provided at both the end of runway strip. Land for RESA is available at the aerodrome which is required to be maintained as per CAR.

• Drainage system is available but 4 No.s RCC structures meant for drainage protruding the runway strip need to be maintained as per the provision of CAR.

3. Runway marking

• Runway marking are faded which needs to be repainted.

4. Taxiways, Taxiway Strip & Taxiway Markings

• Only one taxiway is available which is connected from the apron to runway having a length 150 m and width 15 m is flexible pavement. Overall surface rating is fair.
- PCN value of Taxiway also needs to be determined for the proposed aircraft operation.

5. Apron & Apron Markings
   - Apron is available with dimension 60 m X 30 m without is available.
   - On the west edge a dilapidated single storey structure, a handpump and a raised platform exist.

6. Boundary Wall
   - The boundary wall of 2.4m height with 0.6 m barbed wire fencing is available which is broken at two places and is used as a throughfare by villagers.

7. Water Supply System
   - Only one bore-well is available. However, one additional bore-well with overhead/underground tank is required to fulfill the requirement of water supply system.

8. Existing Infrastructure for Electrical System
   - Over Head Electric Lines: Electrical Overhead lines are passing through Operational area.
   - Transformer: Transformer installed in open space & in operational area.
   - DG sets: At present only 1 no, 28KVA DG set is available.

Note: The Runway Lights, Taxiway Lights, PAPI Lights, Approach Lights, Apron High Mast Lights, Perimeter Lights are not considered for VFR operation.

9. Existing Infrastructure for CNS Equipment
   At Moradabad Airport, ATC and space for CNS equipment are not available at present. One building is available with VVIP lounge set up along with scattered single story one/two room buildings. An approved proposal for Pre-engineered/Pre-fabricated ATC tower for Moradabad is already in process with Engineering Dte.

   - Availability of CNS Equipment: NIL
   - Availability of Power supply: Power source is available in all the places which can be utilized to energize UPS for CNS equipments subject to adequacy of its capacity/rating.
   - Availability of Telephone line: Telephone line (land line) is NOT available inside airport premises.
• Availability of DG Set as back up: One DG set is available as back-up for mains supply. It needs to check up for its capacity to cater the additional load of ATC tower & CNS equipments.

10. Existing Infrastructure for ATM Services:-
• ATC tower not available.
• There are trees in both side of approach path of RWY.
• There are trees inside operational area and close to Runway also.
• Farming is in progress near Runway.
• Boundary wall are broken, people, vehicles and animals are crossing Runway frequently.
• Mobile Tower in both side of approach path of Runway.
• No visual aids available.
• ARP recently established, but not maintained as per standard.

11. Existing Infrastructure for Fire Services:- Nil
PHOTOGRAPHS

Trees at Runway edge to be removed

RUNWAY-12

Condition of Runway edge, its abutting surface and boundary wall

RUNWAY-30
REPAIR MARKS ON RUNWAY

TREES AT RUNWAY EDGE

RESIDENTIAL BUILDINGS & OVERHEAD WATER-TANK AT RUNWAY-30

OPEN MAN-HOLE AT EDGE OF RUNWAY
THROUGH-FARE AT RUNWAY WITH BROKEN BOUNDARY WALL

Condition of Runway Surface
VVIP BUILDING FROM APRON

EXISTING STRUCTURES AT APRON EDGE
Requirements for operation of RCS Airport Code-1B

1. Minimum Length of Runway -800 mtr.
2. Minimum Basic Strip -30 Mtr. on either side
3. Shoulder required –Nil
4. RESA-(2xwidth of runway)x 30 mtr.
5. Apron Size-70X35
6. Taxiway width-10.5 mtr.
7. Terminal Building – Covered area 525 sqm.
8. Car Park for 25 cars @ 20 sqm. per car = 500 sqm.
9. Lateral Transition slope 20%
10. Longitudinal Transition slope 5%

M 28 Aircraft Technical Information (M 28 Twin Turboprop Aircraft)

- **Passenger Capacity** - 19 passengers + 2 Crew
- **Cabin Length** - 5.26 mtrs.
- **Cabin Height** - 1.70 mtrs.
- **Cabin Width** - 1.73 mtrs.
- **Cabin Volume** - 13.7 m³
- **External Luggage Pod Volume** - 1.3 m³
- **Rear door length** - 2.6 mtrs.
- **Rear door width** - 0.9 – 1.2 mtrs.
- **Wing Span** - 22.06 mtr.
- **Length** - 13.10 mtr.
- **Tail height** - 4.90 mtr.

Specifications

Performance (estimated)
Sea level, standard day, maximum takeoff gross weight unless otherwise noted
Maximum Takeoff Gross Weight - 7500 Kg.
**Takeoff Distance** - 548 m
**Landing Distance** - 499 m
VMO - 355 km/h
Maximum Cruise Speed - 355 km/h
Long Range Cruise Speed - 244 km/h
Range (10,000 ft, 45 minute reserve) - 1592 km
Range with Auxiliary Fuel Tanks (10,000 ft, 45 minute reserve) - 2444 km
Average Fuel Flow (10,000 ft.) - 268 kg./hr
Endurance Standard Tanks (10,000 ft., 45 minute reserve) - 6.2 hours
Endurance Auxiliary Tanks (10,000 ft., 45 minute reserve) - 11 hours
Stall Speed - 118 km/h
Rate of Climb - 12.29 m/s
Service Ceiling - 7620 m
OEI Service Ceiling - 3901 m
Weights

Maximum Takeoff Gross Weight - 7500 kg.
Empty Weight - 4354 kg.
Useful Load - 3145 kg.
Maximum Payload - 2300 kg.
Maximum Fuel Weight - 1766 kg (2278 l)

Fuel System

Normal Capacity - 2278 l
Auxiliary Ferry Tank - 2090 l

Dimensions

Propeller Diameter - 2.82 m
Wheelbase - 3.39 m
Wing Tip to Wing Tip turn radius - 14.73 m

Engines

Manufacturer/ Type - (2) PRATT & WHITNEY, CANADA PT6A-65 B
Max. take-off power (per engine) - 820 kw
Max. continuous power (per engine) - 820 kw
Max. cruise power (per engine) - 745 kw
Max. climbing power (per engine) - 745 kw

Dornier 228-212

- Wing Span (Over Winglets) - 16.97 m
- Wheel Base - 6.29 m
  - Passanger Capacity - 19 Seats

Beechcraft 1900 D

Aircraft Range - 1500 nm
Fuel Capacity - 2022 kg.
Main Gear - Dual
Passenger Capacity - 19 seats

A. Maximum Aircraft Ramp Weight - 7736 kg.
B. Maximum Aircraft Landing Weight - 7530 kg.
C. Maximum Aircraft Takeoff Weight - 7688 kg.
D. Minimum Turning Radius - Not Available
E. Length (Overall) - 17.63 m
F. Wing Span (Over Winglets) - 17.67 m
G. Tall Span - 5.63 m
H. Wheel Base - 7.25 m
I. Wheel Track - 5.23 m
J. Tail Height - 4.72 m
**Action Plan**

**Pavement works:- (To be done by the State Govt.)**

- Extension of apron by 797 Sqm (overall size 70mX35m= 2450 Sqm.)
  On the west edge a dilapidated single storey structure, a hand pump and a raised platform exist which need to be removed.
  Necessary drawings/specifications shall be provided by AAI. Monitoring by RED, NR.
  Approx.Cost: Rs 8 Crore
  PDC: June 2018

- Basic strip grading
- Construction of RESA 60X30 mtr
- Fire CFT Holding position road 5.0 mtr wide
- Connection roads from fire station & ATC tower
- Runway and Apron Marking
- Car park area – 40X20 mtrs.

  **Action:** State Govt. / RED, NR, AAI

**Terminal Building: (To be done by the State Govt.)**

The existing VVIP building is proposed to be used as Terminal Building with extension. There is a working plan available with the State Govt.. The State Govt. shall take up and complete the terminal building work along with required furniture, provision for CCTV, FIDS, PA System etc. Any guidance required shall be provided by RED, NR, AAI.

Approx.Cost: Rs.4 Crores

PDC: June 2018

  **Action:** State Govt. / RED, NR, AAI

**Operational Boundary Wall: (To be done by State Govt.)**

- The boundary wall of 2.4m height with 0.6 m barbed wire fencing is available. However concertina coil is required to be installed as overhang.
- The boundary wall is broken at two places and is used as a throughfare by villagers. This needs to be closed.
- The operational boundary wall is also needed to segregate City side and airside for security clearance.
- Provision of fire crash gates on both ends of boundary wall.

  Approx. Cost: Rs. 3 Crores.

  PDC: June 2018.

  **Action:** State Govt. / BCAS/RED, NR, AAI

**Runway Strength** (PCN) – Pavement classification number is not available / not known. For PCN evaluation, action has been initiated by AAI, CHQ Structure directorate.

  PDC: June, 2018

  **Action:** AAI, CHQ Structure Dte.

**Other Misc. Civil works:- (To be done by State Govt.)**

- Cooling pit, windsock, ARP, Car Park etc. The location for these works identified and action for completion shall be taken up by Uttar Pradesh State Govt.

  Approx. Cost: Rs. 50 Lakhs.

  PDC: June 2018

  **Action:** State Govt. / AAI Plg. Dte./ RED, NR, AAI

**Access Control/ Approach Road:- (To be done by State Govt.)**

- 2 lane Approach road from highway is available. Boom barriers needs to be installed at the airport entrance and properly illuminated. Necessary signage’s from highway also to be provided. Shelter covers/ booths to be provided for checking security staff.

  **Action:** State Govt.

**Control Tower:- (To be done by AAI)**

- Pre-engineered/Pre-fabricated ATC tower with control room size of 5.40 mtrx5.40 mtr. at a height of 6.30 mtr. with lightening /surge protection ,earthing ,RF/Data cable ducts etc. is in process of procurement. Space to be earmarked by AAI, necessary fixing drawings are available.

  Approx. Cost: Rs. 5 Crores.

  PDC: August 2018

  **Action:** Engg. Dte., CHQ/ ED (CNS)/ ED(Plg.)
**Documentation:- (To be done by the State Govt. as operator)**

The necessary documentation like security manual, quality control manual, aerodrome manual, emergency procedure and contingency plans, safety management manual etc. to be prepared by State Govt. in co-ordination with AAI Ops. Dte.

**Action:** State Govt.

**CNS Works:- (To be done by AAI)**

- Availability of Power supply: Power source is available in all the places which can be utilized to energize UPS for CNS equipments subject to adequacy of its capacity/rating.

- Provision of Air Conditioning: It is required to install two ACs in the equipment room for VHF, DVR and other CNS equipments.

- Provision of Earthing and lightning arrester: Provision of new Earthing and lightning arrester is required before installation of CNS equipment for protection of CNS/ATM equipments and officials.

- Availability of Telephone line: Telephone line (land line) is NOT available inside airport premises. Local administration has to take up the issue with BSNL/Other service provider to terminate few lines inside airport premises.

- Availability of DG Set as back up: One DG set is available as back-up for mains supply. It needs to check up for its capacity to cater the additional load of ATC tower & CNS equipments.

- Provision of Furniture for ATC & CNS equipment room: Furniture for ATC, equipment and officers is also required to be provided.

**CNS Requirements for VFR operation:-**

Following essential facilities are required to be provided by CNS Dte in order to provide Air Traffic Control Service under RCS at AAI and non AAI airports.

1. VHF for Control Tower (Main & Standby Frequency) with associated equipment’s recording facility (DVR) etc.
2. GPS Clock.
3. UPS -05KVA (Dual)
4. Direct Telephone line with STD with broadband facility and Fax machine.
5. Intercom facilities with CNS units, fire stations etc.
6. Direct Hot Lines (VAS) with City fire brigade and nearest ATC.
7. Walky-Talky with base station along with 06 handheld sets.
8. Crash Fire Alarm and PA systems.
9. Mobile Phone with dual SIM (One from BSNL and other having good coverage)
11. RWS terminal for AMSS, if feasible.

Remarks for CNS Equipment’s/facilities:

- CNS-P, CHQ is taking action to procure facilities at Sl. No: 1 wherever not available.
- CNS-OM, CHQ/RHQ, NR are required to take action to provide facilities from Sl. No. 2 to 11 wherever required.

An approved proposal for Pre-engineered/Pre-fabricated ATC Tower for Moradabad Airport is included in the list.

In case of requirement Equipment Room shall also serve as Anti Hijacking control room.

Approx. Cost: Rs. 1.0 Crore

PDC: Jun 2018

- Action: State Govt. / CNS Dte.AAI, CHQ/RED-NR

Security Equipment and services:- (To be done by the State Govt.)

The security services are to be provided by State Govt. The number of police personnel to be deputed shall be communicated to State Govt. by BCAS after inspection for training and deployment.

Security equipment required are assessed as below:

- XBIS (RB)-1 No.
- X-BIS(HB)-1 No.
- DFMD-4Nos. (SHA-2 Nos., Entrygate-1 No., Stop Gate-1 No.)
- HHMD-8 Nos.
- CCTV
- ETD-2 Nos.
- FIDS

PDC: June, 2018.

- Action: State Govt.

Airspace Management perspective and removal of obstacles -

- WGS coordinates of Moradabad Airport may be plotted on ATS routes map, and Air space requirement in terms of vertical and lateral limit may be examined.
- OLS survey work has been awarded by AAI.
The identified obstacles from survey, Trees, HT Lines, Buildings, Towers etc. shall be removed before commencement of operations.

PDC: April, 2018  
**Action: State Govt. / ED(ATM), CHQ, AAI**

**Fire Services:** (To be done by state Govt.)

In order to help commencement of operation immediately at the Airport by provisioning below mentioned facilities immediately:

- 01 CFT and 01 Ambulance to be commissioned.
- 01 CFT 01 Ambulance to be kept stand-by.

**Fire store requirements:**
- At least 700 liters of foam compound should be kept in reserve.
- At least 135 kg of DCP should be kept in reserve.

CFTs shall be provided by AAI. The necessary Fire personnel shall be deputed by State Govt. and duly trained by AAI.

CFT shade needs to be constructed (dimension: 10mx6m). approx. cost: Rs. 0.7 Cr.

PDC: June 2018  
**Action: State Govt./ RED, NR, AAI**

**Electrical works:** (To be done by State Govt.)

Over Head Electric Lines: Electrical Overhead lines are passing through Operational area. All Electrical Overhead lines will be underground or shifted away from Operational area.

Transformer: Transformer installed in open space & in operational area same may be shifted towards city side/ State Govt side. Capacity of transformer should also enhance as per new load.

DG sets: At present only 1 no, 28 KVA DG set is available. DG sets of adequate capacity should be installed.

UPS System: UPS system of adequate capacity should be installed.

CCR / Switch Room: At present no room / space available for CCR / Switch Room therefore same shall be allocated.

Passenger facilitation: For the facilitation of passenger Baggage Handling System, Airlines counters, Weighing Scale, AC System, water purifier, water cooler, hand dryer, emergency lights etc. shall be provided.
Automatic Boom Barrier:- Automatic Boom Barrier shall be provided.

Sign Boards: - Sign boards for Emergency exit, Operational Area, City side area shall be provided.

Fire detection & Fire fighting system: - Fire detection & Fire fighting system (If required), same shall be provided as per NBCC code 2016 with up to date amendments.

Advance lightening system: - At present lightening protection is not available therefore same shall be installed.

PDC: June 2018.

**Action:** RED, NR, AAI/State Govt.

**Meteorology** - Met observatory and the trained Met. Officials may be required before commencement of commercial flights. Necessary coordination with Met. Department to be taken up by State Govt. of UP.

**Action:** State Govt.

**Status of Airport Licence** - (To be taken by the State Govt. as operator) Presently Airport licence is not available. Action for taking Airport Licence from DGCA to be taken by State Govt.

PDC: August, 2018.

**Action:** State Govt.

**Protection of airspace** - State Government shall issue NOC for construction of Buildings/Structures as per the provisions of GSR 751(E) - the Ministry of Civil Aviation (Height Restrictions for Safeguarding of Aircraft Operations) Rules, 2015 available on the website of Ministry of Civil Aviation. Alternately the State Govt can provide the details of existing layout/masterplan of airports to AAI for processing the requests in NOCAS.

**Suitability of Airport** - Presently, Aerodrome is not fit for commercial flights, however, after actions as above and obtaining aerodrome licence, the commercial flight operations may be commenced.

(Pushpendra K Niralal) Mgr (Engg-Elect), NR

(Himanshu Soni) Mgr. (Arch.), CHQ

(Deepak Bhatnagar) AGM (Pilg), CHQ

(Anil Kumar) AGM (ATM), CHQ

(V. K. Sharma) Jt. GM (Structure)

(T. K. Gupta) DGM (CNS), NR

(Sunil Prasad) DGM (Engg.-C), CHQ
## Annexure-I

### List of Participants (Moradabad Airport Visit on 20.02.2018)

#### AAI Side

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name (S/Sh.)</th>
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<th>Mobile No.</th>
<th>E-mail</th>
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<tr>
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#### State Govt. / District Administration Side

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<td>1.</td>
<td>Laxmi Shankar Singh</td>
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<td>7906184596</td>
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<tr>
<td>2.</td>
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<td>4.</td>
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