International Virtual Aviation Organisation

Royal Rainmaking Operation

Special Operations Thailand Division

Saturday, 3rd August of 2024

Special Operations Department

International Virtual Aviation Organisation

Content

Introduction

Before expressing the idea of “making clouds coalesced and become rainfall” to M.R. Debbrihi Devakul, an expert in agricultural engineering, H.M. King Bhumibol Adulyadej had devoted fourteen years to the research and experimentation in methods concerning weather modification until realizing the possibility of conducting actual trials in the sky.

In 1969, Royal Rainmaking Operation Group was the only integrated and specified study and trial group which was supported by the Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives, with personnel from the Agricultural Relations Division, a partial budget from the Rice Department, aircrafts and pilots from Insecticide Aviation Section and Agricultural Engineering Group. Included were academicians from various fields as agriculture, farm mechanics, mechanical engineers who were graduated from high vocational school. By use of the existing budget and equipment, supplemented by H. M. King Bhumibol Adulyadej's private funds, the first trial in the sky took place during the 19th -20th July 1969.

From then, H. M. King Bhumibol Adulyadej had confidence in the Office of the Permanent Secretary for the Ministry of Agriculture and Cooperatives to operate and full fill his intentions in researching, experimenting, along with reducing drought problems.

Scenario

After start of rainy season, there is still not enough water in the upper central regions for agriculture activity, so the Department of Royal Rain Making and Agricultural Aviation is tasked to perform Rain Making missions in the area to create rain. Rain Making missions involve release chemical compounds at various altitudes to induce formation of clouds and rain from the humidity in the air.

Two airports, Phitsanulok (VTPP) and Khon Kaen (VTUK) will be used for this event, they are the main base for Rain Making operation in their regions. Aircraft will depart from one of two bases as single aircraft or formation flight and proceed to the mission area to release chemical compound payloads at an appropriate altitude range.

After completion of mission aircraft will return to one of the bases (may be point of origin or the other base). Members can plan route to target area and return route for their team as desired.

Helicopters can depart from either of the 2 bases and return to point of origin or fly cross country to the other base after mission. Management personnel of the department are visiting the bases to observe operations today, you may take them up with you or take them to visit the other base too.

Airports

VTPP — PHITSANULOK

ICAO: VTPP

Charts: https://aip.caat.or.th/2024-07-11-AIRAC/html/eAIP/VT-AD-2.VTPP-en-GB.html#AD-2.VTPP

Runway	Length	ILS	CIRCUIT	HEIGHT
14	3000 m	N/A	Right/Left	145 ft.
32	3000 m	110.1 MHz IPSL	Right/Left	145 ft.

VTUK — KHON KAEN

ICAO: VTUK

Charts: https://aip.caat.or.th/2024-07-11-AIRAC/html/eAIP/VT-AD-2.VTUK-en-GB.html#AD-2.VTUK

Runway	Length	ILS	CIRCUIT	HEIGHT
03	3050 m	N/A	Right/Left	635 ft.
21	3050 m	N/A	Right/Left	670 ft.

Aircraft

ICAO: **-** CN35 (CASA CN-235)

- C212 (CASA C-212 Aviocar)
- B350 (Beechcraft (Super) King Air 350)
- C208 (CESSNA 208 Caravan)

Units

- Lead Section:
  - Lead Team: At least 1x C208 / C212 / CN35
    - Payload: 1,000kg Calcium Chloride $CaCl_2$
    - Crew: 2 pilots + 2/3 payload handler
    - Recommend Altitude: 8,000ft or Cloud Base + 1,000ft

- Main Section:
  - High Team: At least 2x C208 / C212 / CN35
    - Payload: 1,000kg Sodium Chloride NaCl
    - Crew: 2 pilots + 2/3 payload handler
    - Recommend Altitude: Cloud top, not above 10,000ft
  - Low Team: At least 2x C208 / C212 / CN35
    - Payload: 1,000kg Urea $CO(NH_2)_2$
    - Crew: 2 pilots + 2/3 payload handler
    - Recommend Altitude: 7,000ft or Cloud Base

- Support Section:
  - Support: At least 1x B350 or twin pressurized turboprop
    - Payload: 1,000kg Silver Iodide Flares AgI
    - Crew: 2 pilots + 1/2 payload handler
    - Recommend Level: Level of SAT -8 °C to -12 °C (~FL215)

- Observation Section:
  - Helicopter Team: 1x AS350 / B206 / B407
    - Crew: 1 pilot + 1 observer
    - As desired altitude
    - Report cloud tops/base and position of clouds

*Choosing a section will tell you your aircraft type(s), payload and recommended spraying altitude/level.

*Transition altitude 11,000 ft, Transition level FL130 in Thailand.

*King Air may be vector by ATC or remain own navigation via radial, arc, direct or own navigation heading/direct requests, ATC will approve as traffic permit.

ATC

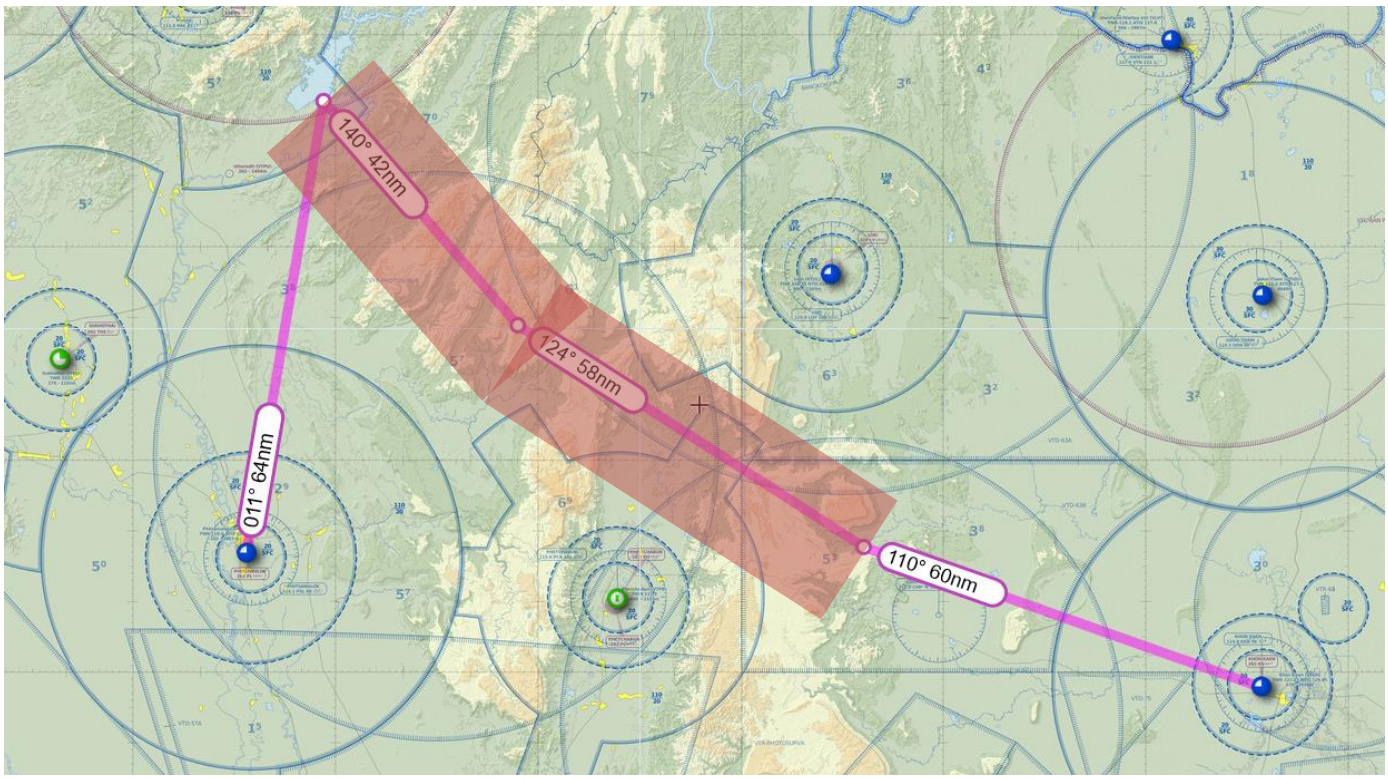
Position	Callsign	Frequency
VTBB_CTR	Bangkok Control	120.500 MHz
VTBB_FSS	Oscar	127.000 MHz
VTPP_APP	Phitsanulok Approach	120.700 MHz
VTPP_TWR	Phitsanulok Tower	118.900 MHz
VTPP_GND	Phitsanulok Ground	121.900 MHz
VTPP_ATIS	Phitsanulok Airport	263.0 KHz
VTUK_APP	Khon Kaen Approach	123.400 MHz
VTUK_TWR	Khon Kaen Tower	122.250 MHz
VTUK_GND	Khon Kaen Ground	121.900 MHz
VTUK_ATIS	Khon Kaen Airport	393.0 KHz

Outside controlled airspace, ATC will advise to contact Oscar, who will accept position reports, provide flight information service and give traffic information.

On initial contact with Oscar, provide at least Callsign, position and altitude. Oscar will advise identified/radar contact and say ‘radio monitor’ or ‘radar monitor’ meaning pilot keep monitoring frequency for information and Oscar will continue observing you on radar.

Parking Information

Airspace



Target area is along following points:

PSL R-010, 65 NM (Sirikit Dam)

PSL R-050, 50NM

KKN R-290, 60NM (Phu Kradueng)

VTBNYDYB

(J1415/24 NOTAMN

Q) VTBB/QRALW/IV/NBO/W/050/100/1720N10110E055

A) VTBB B) 2408030345 C) 2408030515

E) AIRSPACE RESERVATION RAINMAKING WILL TAKE PLACE ON
RDL010 AT DIST 65NM FM PSL DVOR THEN HDG140/40NM
RDL290 AT DIST 60NM FM KKN DVOR THEN HDG305/60NM

F) 5000FT AMSL G) 10000FT AMSL

Timeline

0315Z BREIFING

0345Z DEPARTURE FROM PHITSANULOK AND KHON KAEN AERODROMES

0400Z START OPERATION TIME

0500Z END OF OPERATION TIME

0530Z ARRIVAL AT PHITSANULOK / KHON KAEN AERODROMES

Roles

PILOT

5 Teams/Sections (1-2 minimum aircrafts per 1 Squad)
(Can have more than 1 team/section of each unit type/role)

ATC

Bangkok Control
Oscar
Approach x 2 (VTPP + VTUK)
Tower x 2 (VTPP + VTUK)
Ground x 2 (VTPP + VTUK)

Briefing

- Briefing prior to event start at 0315Z at SO Discord.
- For formation flight, only lead has to talk with ATC and activate transponder.
- Aircraft types as recommended or suitable single/twin piston/turboprop aircraft with payload of over 500kg and radio.

Flight Plan

Callsign: KSTxxxx (pronounced Ka-Set)

*xxxx can be number for single aircraft or color for formation with lead having color code only. Example: lead KSTBLUE, wing KSTBLU2, KSTBLU3..., KSTGREN, KSTGRE2...
(Common color in Thailand flight plan are BLUE GREN WHIT BLCK)

Number: Put number of aircraft in your formation/team

Flight Rules: VFR (except support section flying above FL200 is IFR)

Type of Flight: X

Airspace is reserved by NOTAM, formation flight with below standard VMC and cloud separations is approved for this mission. Pilot responsible for own separation, ATC will give traffic information on other traffic transiting area.

For route, please use VOR radial distance format, optional information are altitude changes. Example DCT PSL010065 DCT PSL050050/N0150A095 DCT KKN290060 DCT KKN.

Resources

eAIP : VTPP - Phitsanulok
VTUK- Khon Kaen

VTPP Scenery :	Xplane.org (Freeware)	- X-Plane10+
	Avism (Freeware)	- FS2004
VTUK Scenery :	Simmarket(Payware)	- MSFS2020
	Xplane.org (Freeware)	- X-Plane9+
	Avism (Freeware)	- FS2004

*Addon scenery is optional, if taxiway doesn't exist in some default scenery, please advise ATC for alternate instructions.

Contact

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Discord: https://sod.ivao.aero/discord