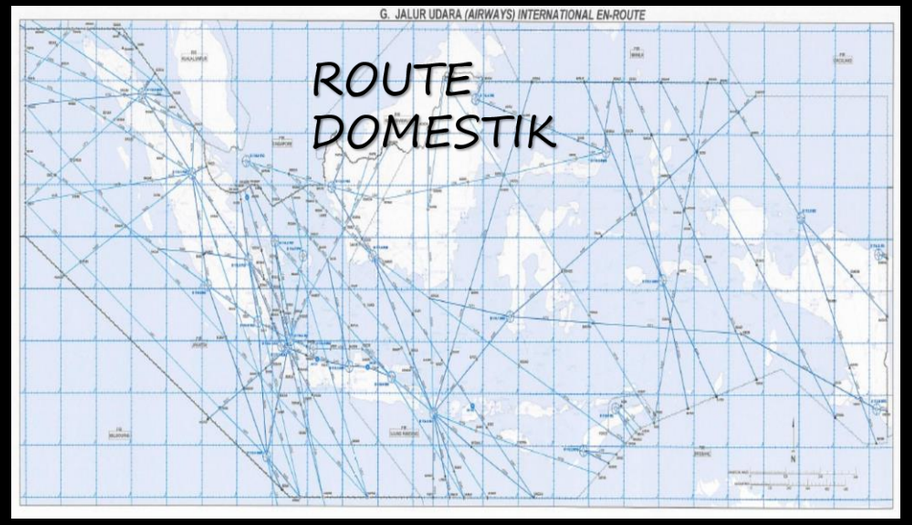
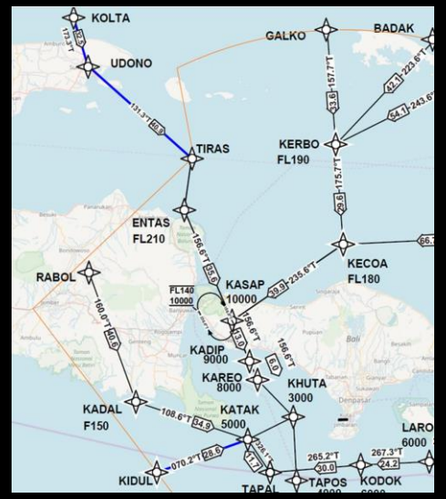
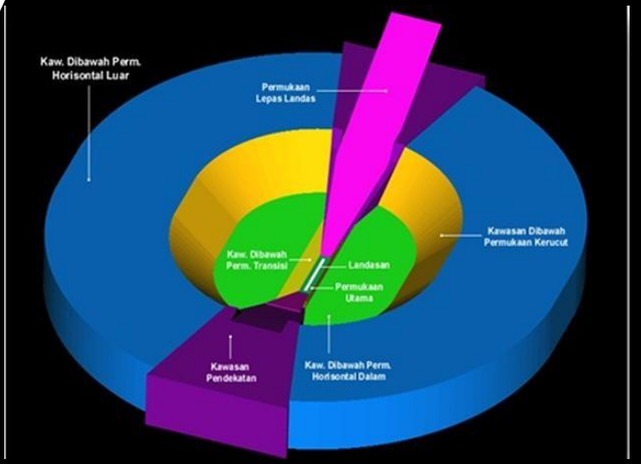
PENGATURAN RUANG UDARA & PENGOPERASIAN BANDAR UDARA

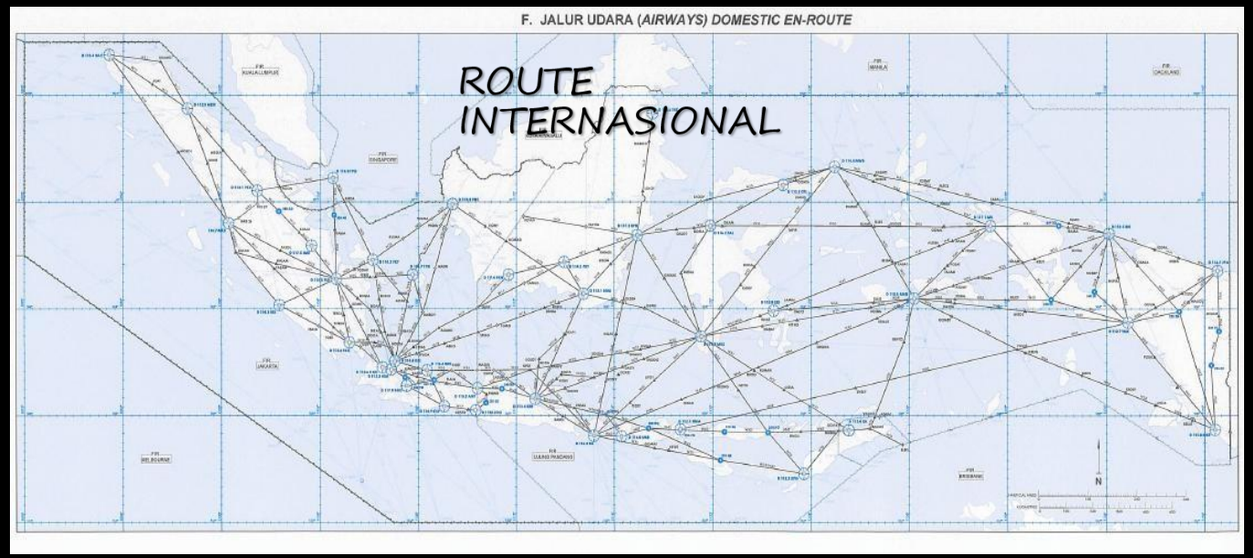


SID & STARR

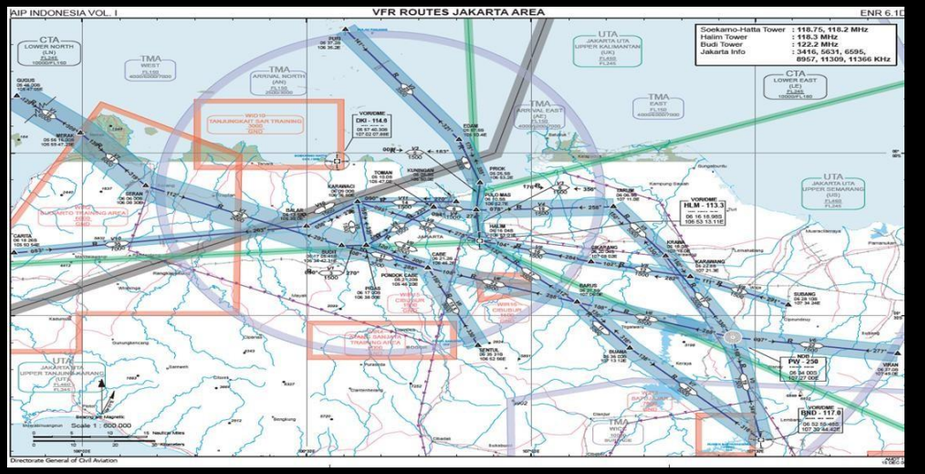


KKOP

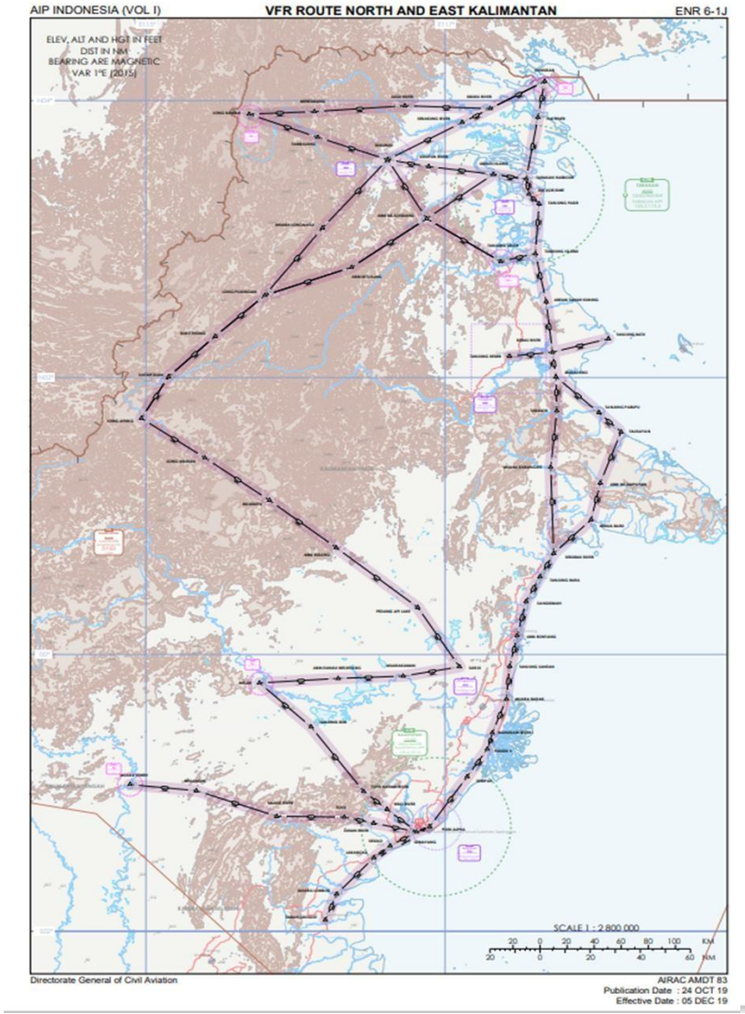


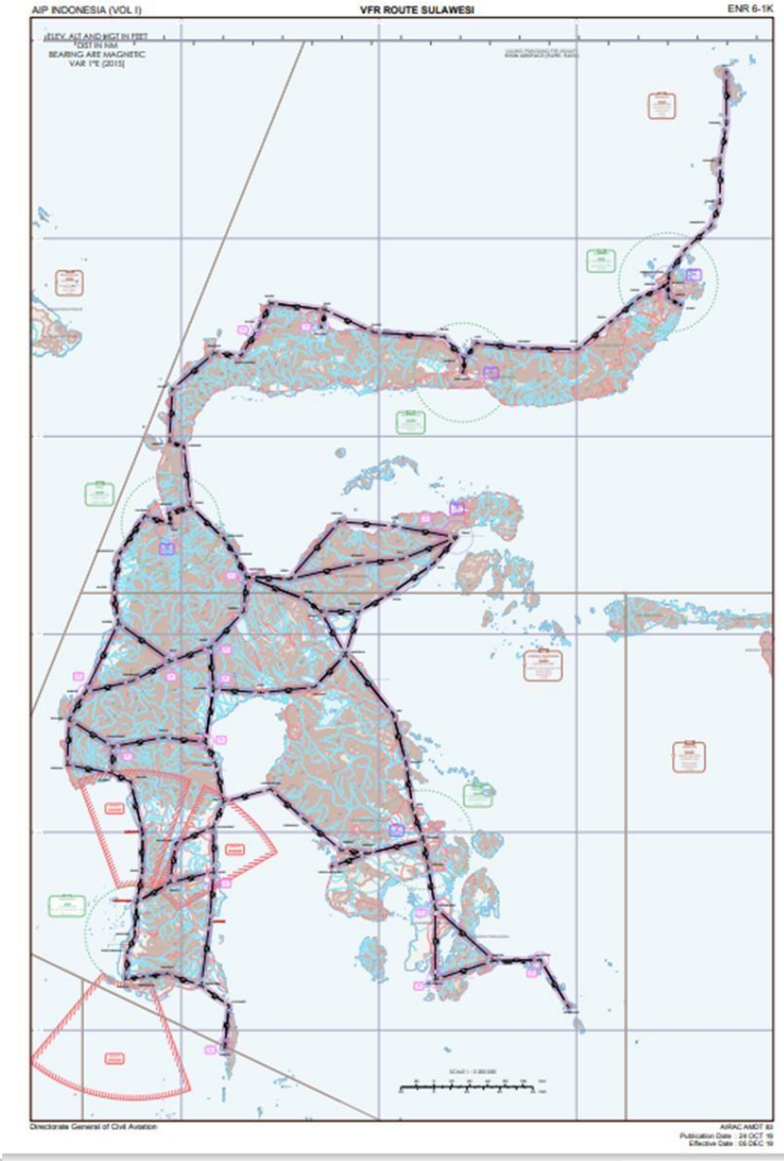


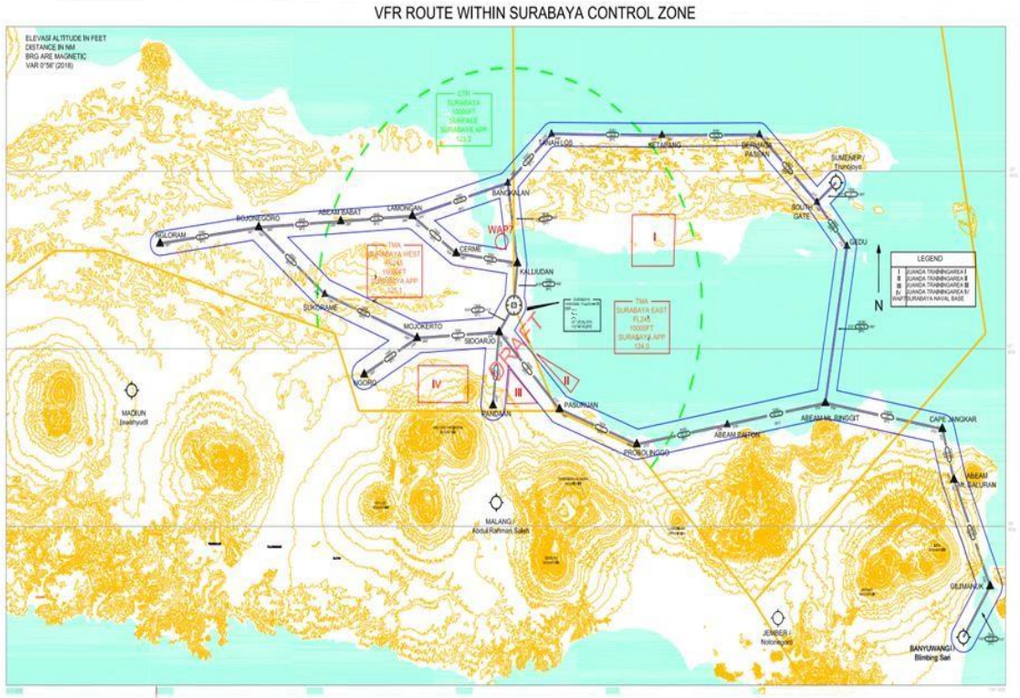
VFR ROUTE

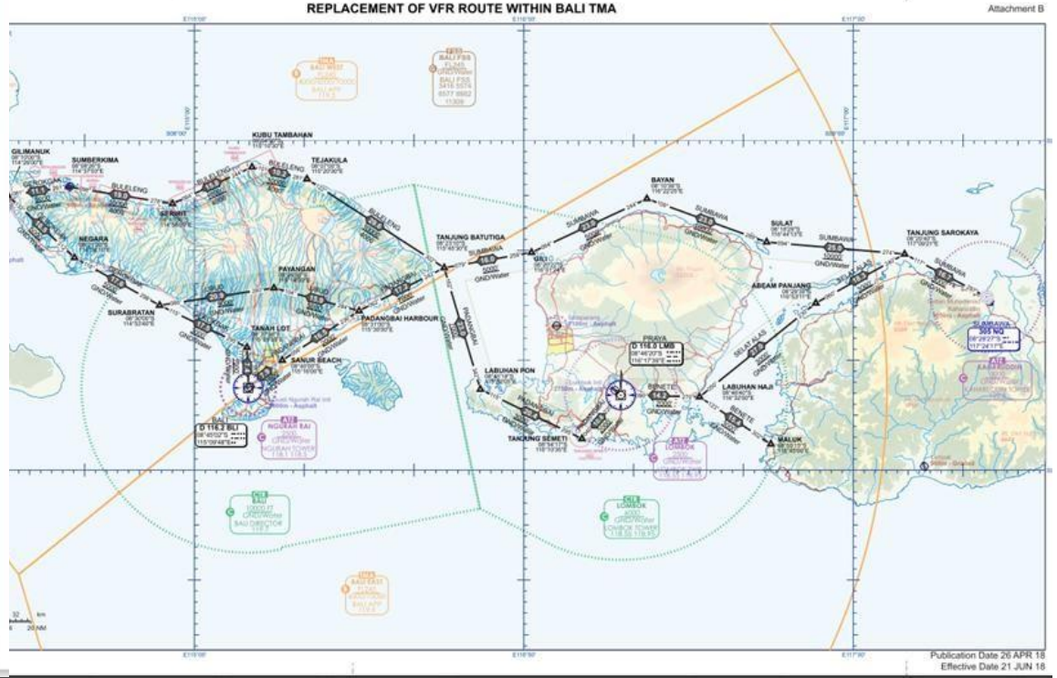


VISUAL FLIGHT ROUTES

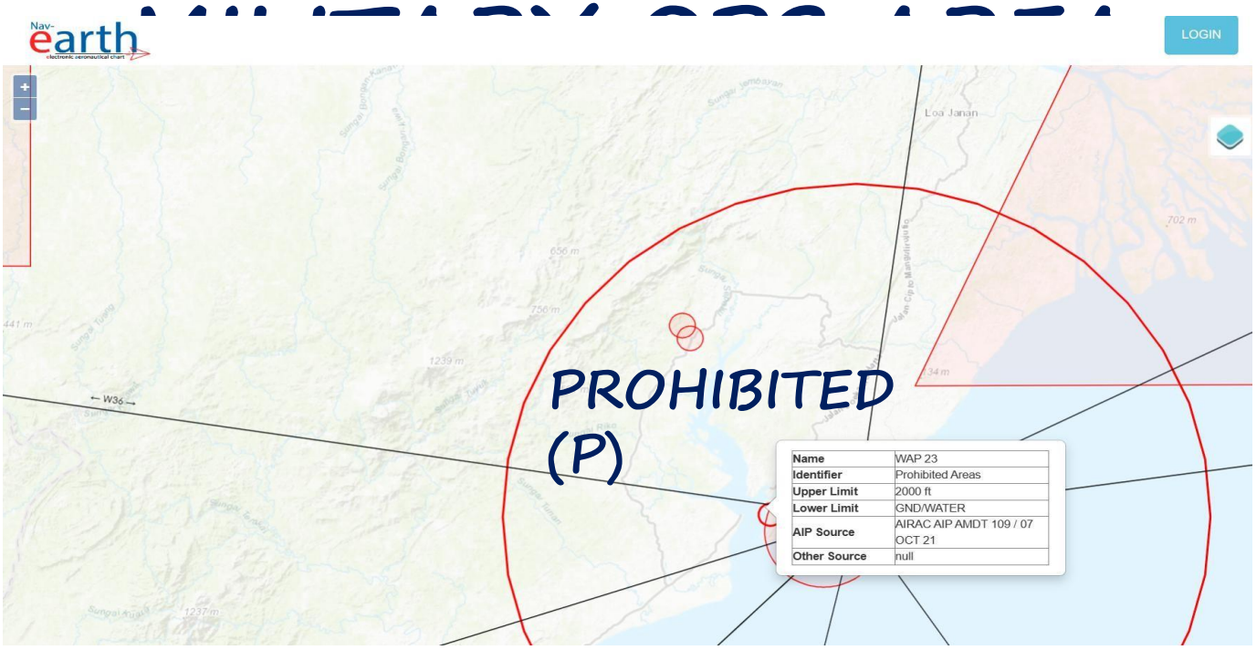


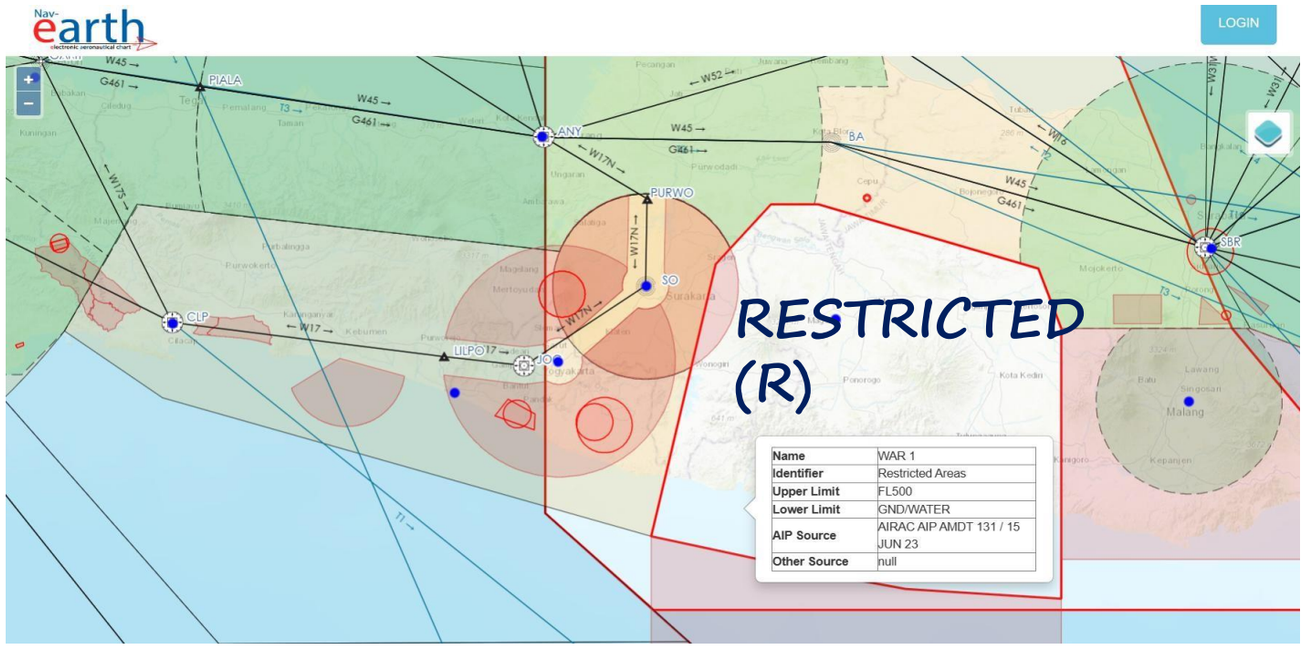


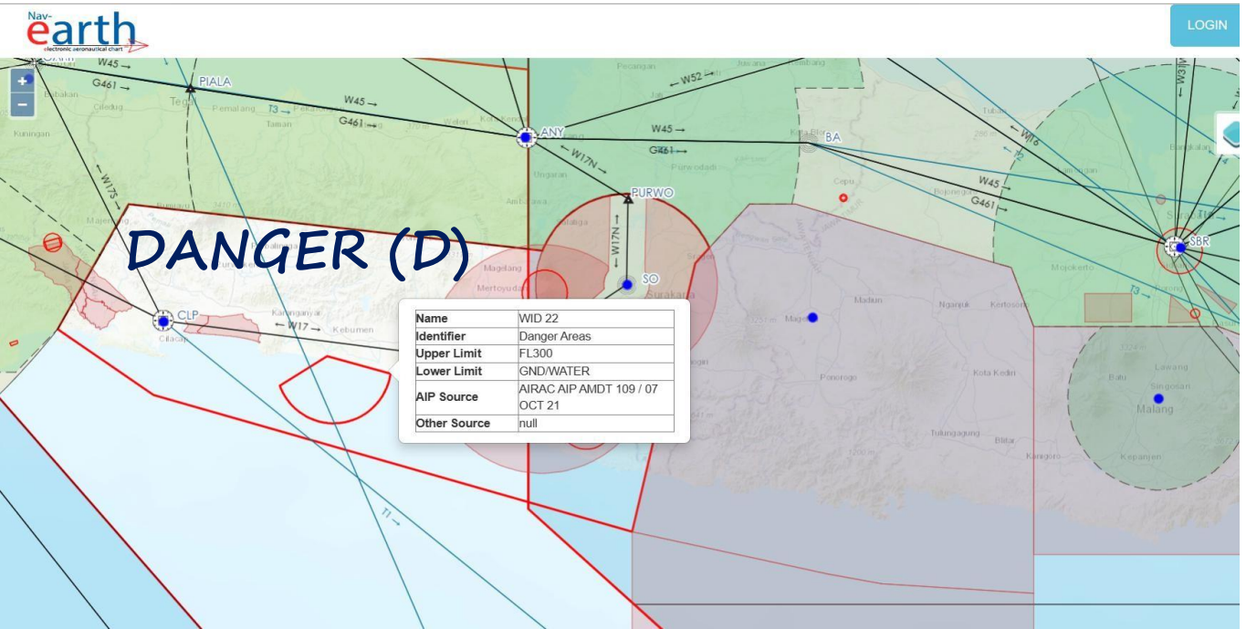




PROHIBITED, RESTRICTED, DANGER &







PENGOPERASIAN PUTA / DRONE

PRE OPS

- REGISTRASI & SERTIFIKASI UAV & PILOT VIA SIDOPI GO KEMHUB
- SELF ASSESSMENT
- PERMOHONAN ASSESSMENT & NOTAM KE AIRNAV INDONESIA
- PERMOHONAN PERSETUJUAN PENGOPERASIAN DNP KEMHUB
- PENERBITAN NOTAM OLEH AIRNAV
- KOORDINASI PRE OPS DENGAN PIC AIRNAV SETEMPAT

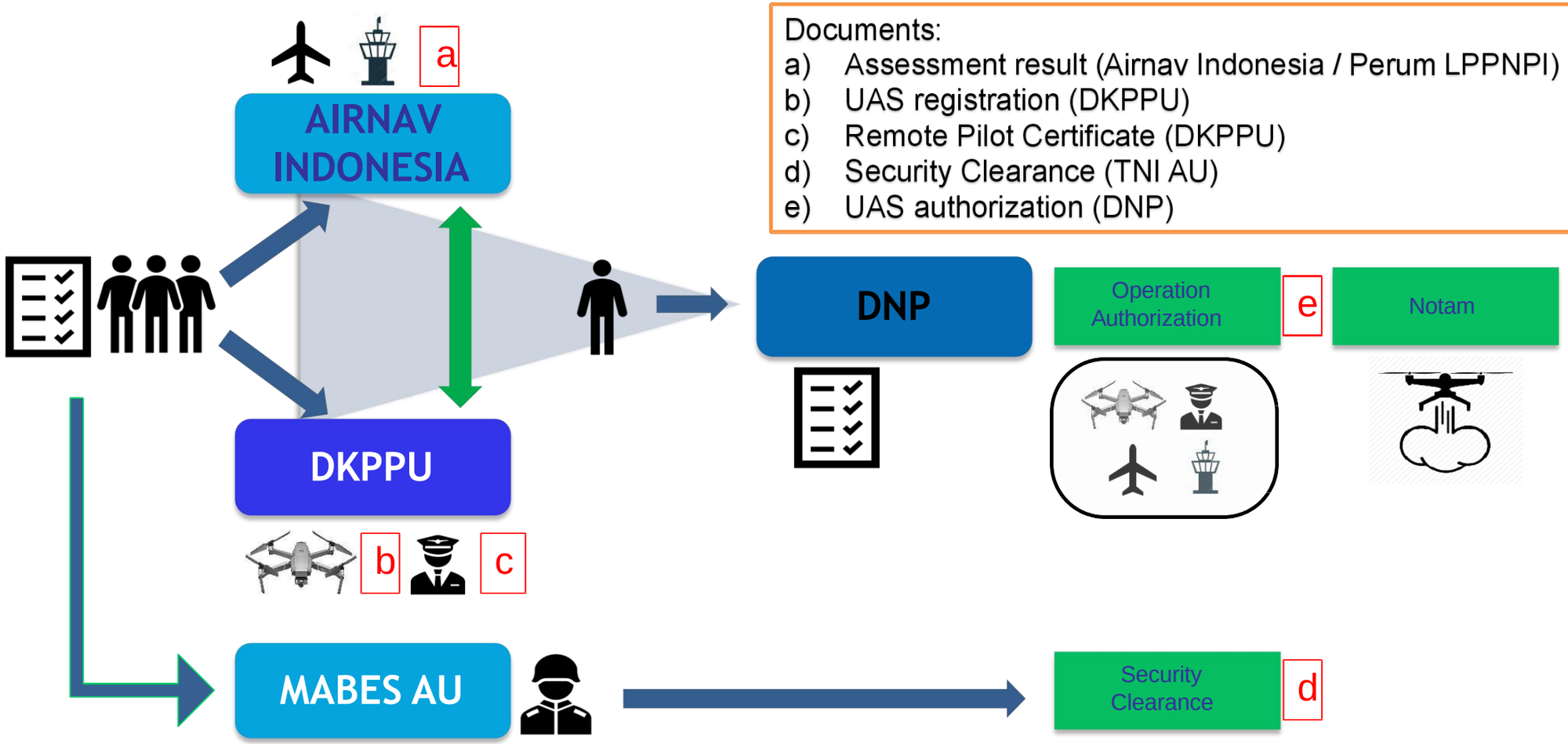
OPS

- KOORDINASI & KOMUNIKASI LANGSUNG / MELALUI RADIO/HT/HANDPHONE DENGAN PIC AIRNAV / LANUD SETEMPAT

POST OPS

- PELAPORAN KEGIATAN KE ATS UNIT AIRNAV SETEMPAT

TATA CARA & MEKANISME PENGAJUAN PERIJIAN



Documents:

a) Assessment result (Airnav Indonesia / Perum LPPNPI)
b) UAS registration (DKPPU)
c) Remote Pilot Certificate (DKPPU)
d) Security Clearance (TNI AU)
e) UAS authorization (DNP)

CONTOH SURAT PERMOHONAN ASESSMENT

SURAT PERMOHONAN ASESSMENT & PENERBITAN NOTAM

> GENERAL MANAGER SETEMPAT

- ✓ KOORDINAT AREA PENGOPERASIAN
- ✓ KETINGGIAN PENGOPERASIAN
- ✓ WAKTU/JADWAL PENGOPERASIAN
- ✓ CONTINGENCY PROSEDUR
- ✓ MISI PENGOPERASIAN
- ✓ DATA WAHANA & PILOT
- ✓ ASURANSI PIHAK KETIGA
- ✓ SURAT TUGAS INSTANSI

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET DAN TEKNOLOGI
DIREKTORAT JENDERAL KEBUDAYAAN
Jalan Jenderal Sudirman, Senayan, Jakarta 10270 Telepon (021) 5725542;
Faksimile (021) 5725542 Laman www.kebudayaan.kemdikbud.go.id
Pos-el ditjenkebudayaan@kemdikbud.go.id

Nomor : 7267/F.F1/KB.01.02/2021 — 21 Oktober 2021
Lampiran : 1 (satu) berkas
Perihal : Permohonan Assessment dan Penerbitan NOTAM Drone pada Acara Pekan Kebudayaan Nasional (PKN) 2021

Yth. General Manager Perum LPPNPI Medan
di Medan, Sumatera Utara

1. Bedasarkan Peraturan Menteri Perhubungan Nomor PM 37 Tahun 2020 tentang Pengoperasian Pesawat udara Tanpa Awak di Ruang Udara yang Dilayani Indonesia.
2. Menindaklanjuti butir 1 (satu) di atas, dengan hormat kami sampiakn permohonan assessment rencana pengoperasian Pesawat Udara Tanpa Awak (PUTA) dengan melampirkan data sebagai berikut :

a. Nama dan Kotak *Remote Pilot in Command (RPIC);*

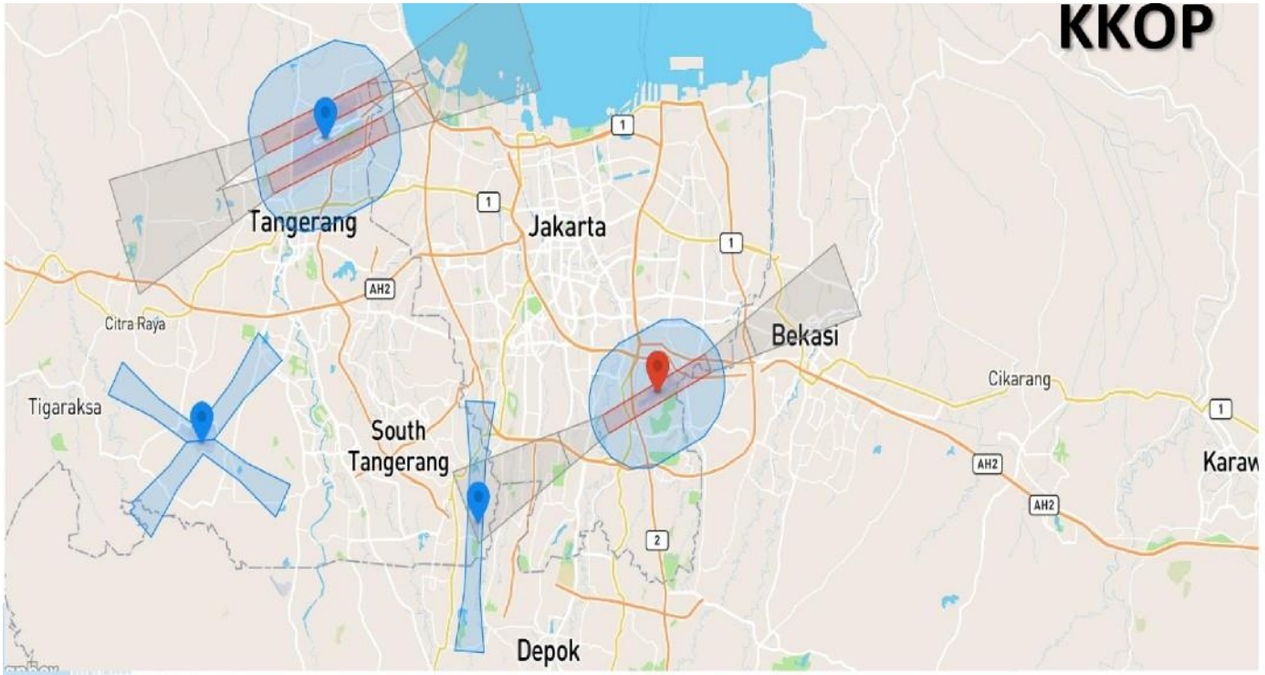
Nama	Antonius Trinovryandi
No Hp	081386011300
Email	liu.drone1991@gmail.com

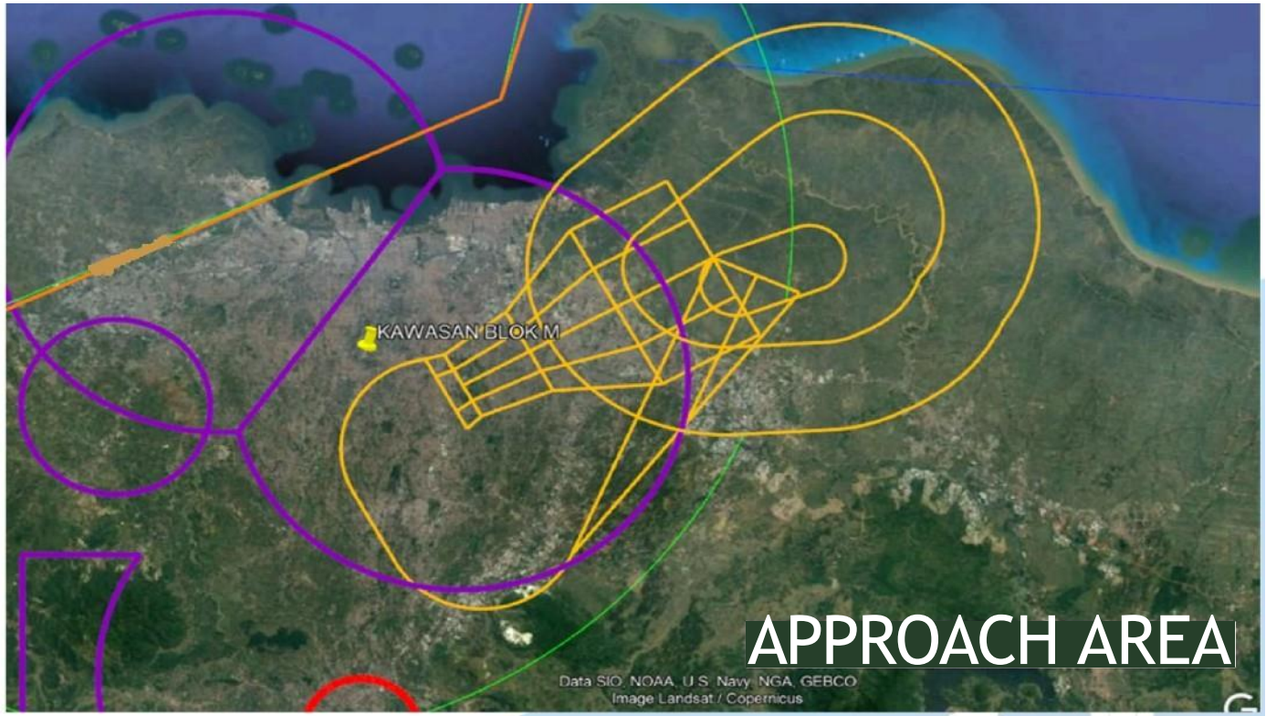
b. Spesifikasi Teknis *airborne systems;*

Type	DJI Mavic 2 Pro
Manufacture	DJI
Category	Rotorcraft
Berat	970g
Flight Time	10 Min

c. Spesifikasi Teknis *Ground Systems;*

RC	Remote Controler Bawaan DJI
Software	DJI GO 4
Device	iPad Mini 5





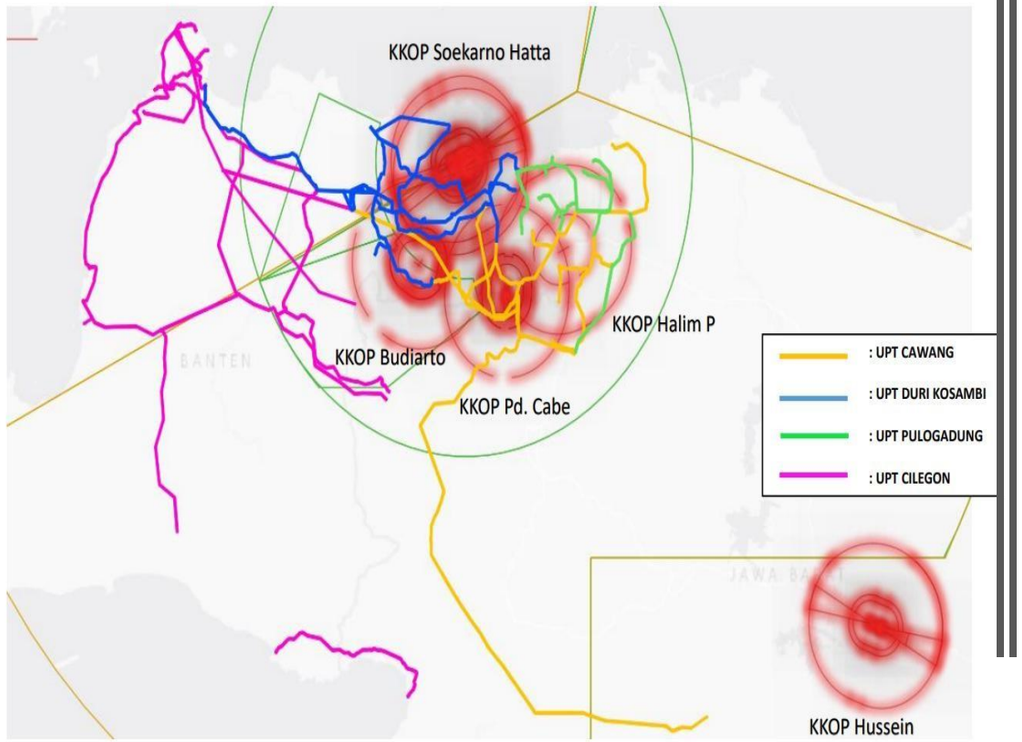
AREA SAFE Y ASESSMENT

PUTA PLN VS KKOP & IAP

AirNav Indonesia

NAMA PEMOHON
PT.PLN Unit JJB
TIPE UAV
Matrice 300 RTK
TUJUAN
Inspeksi Tower Listrik
WAKTU & KETINGGIAN
16 Januari 2023 s.D 16 Januari 2024 Ketinggian : 120 m AGL / 400 ft AGL

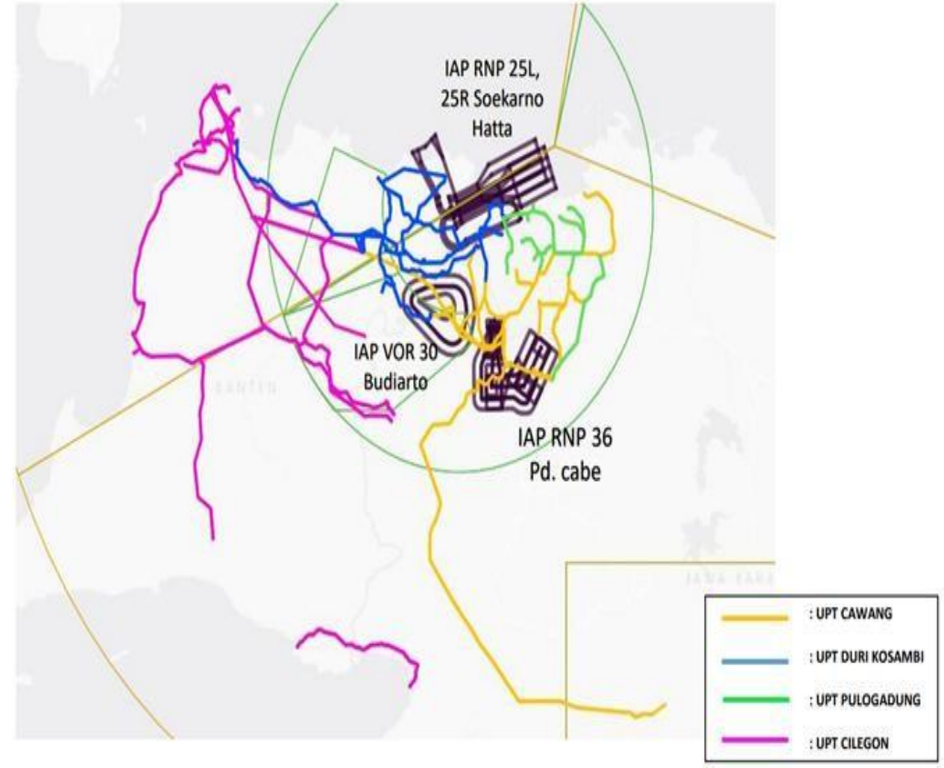
AREA OPERASI TERHADAP
Kawasan Keselamatan Operasi Penerbangan di Sekitarnya



AirNav Indonesia

NAMA PEMOHON
PT.PLN Unit JJB
TIPE UAV
Matrice 300 RTK
TUJUAN
Inspeksi Tower Listrik
WAKTU & KETINGGIAN
16 Januari 2023 s.D 16 Januari 2024 Ketinggian : 120 m AGL / 400 ft AGL

AREA OPERASI TERHADAP
Instrument Approach Procedure (IAP) di sekitarnya

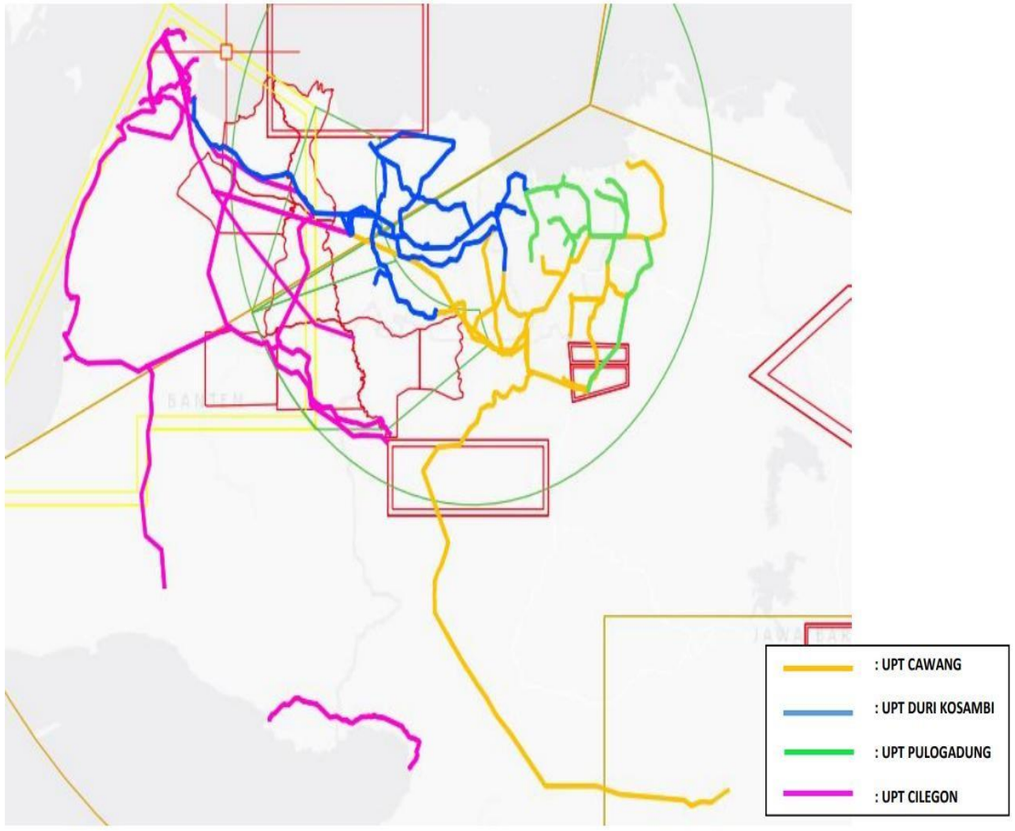


PUTA PLN VS RPD & VFR ROUTE

AirNav Indonesia

NAMA PEMOHON
PT.PLN Unit JJB
TIPE UAV
Matrice 300 RTK
TUJUAN
Inspeksi Tower Listrik
WAKTU & KETINGGIAN
16 Januari 2023 s.D 16 Januari 2024 Ketinggian : 120 m AGL / 400 ft AGL

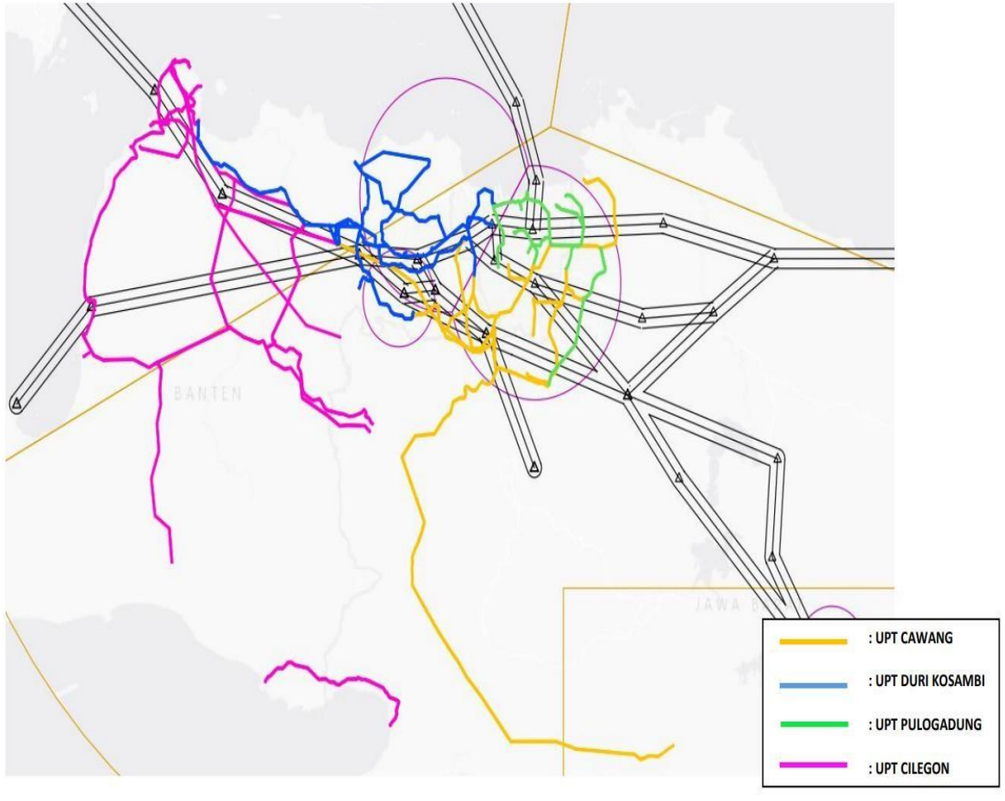
AREA OPERASI TERHADAP
Kawasan Penerbangan terbatas *(restricted area)*



AirNav Indonesia

NAMA PEMOHON
PT.PLN Unit JJB
TIPE UAV
Matrice 300 RTK
TUJUAN
Inspeksi Tower Listrik
WAKTU & KETINGGIAN
16 Januari 2023 s.D 16 Januari 2024 Ketinggian : 120 m AGL / 400 ft AGL

AREA OPERASI TERHADAP
Kawasan Rute Penerbangan Visual

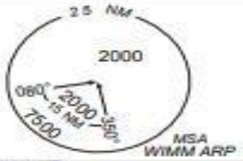


AIP INDONESIA (VOL II)
STANDARD ARRIVAL
CHART - INSTRUMENT (STAR) - ICAO

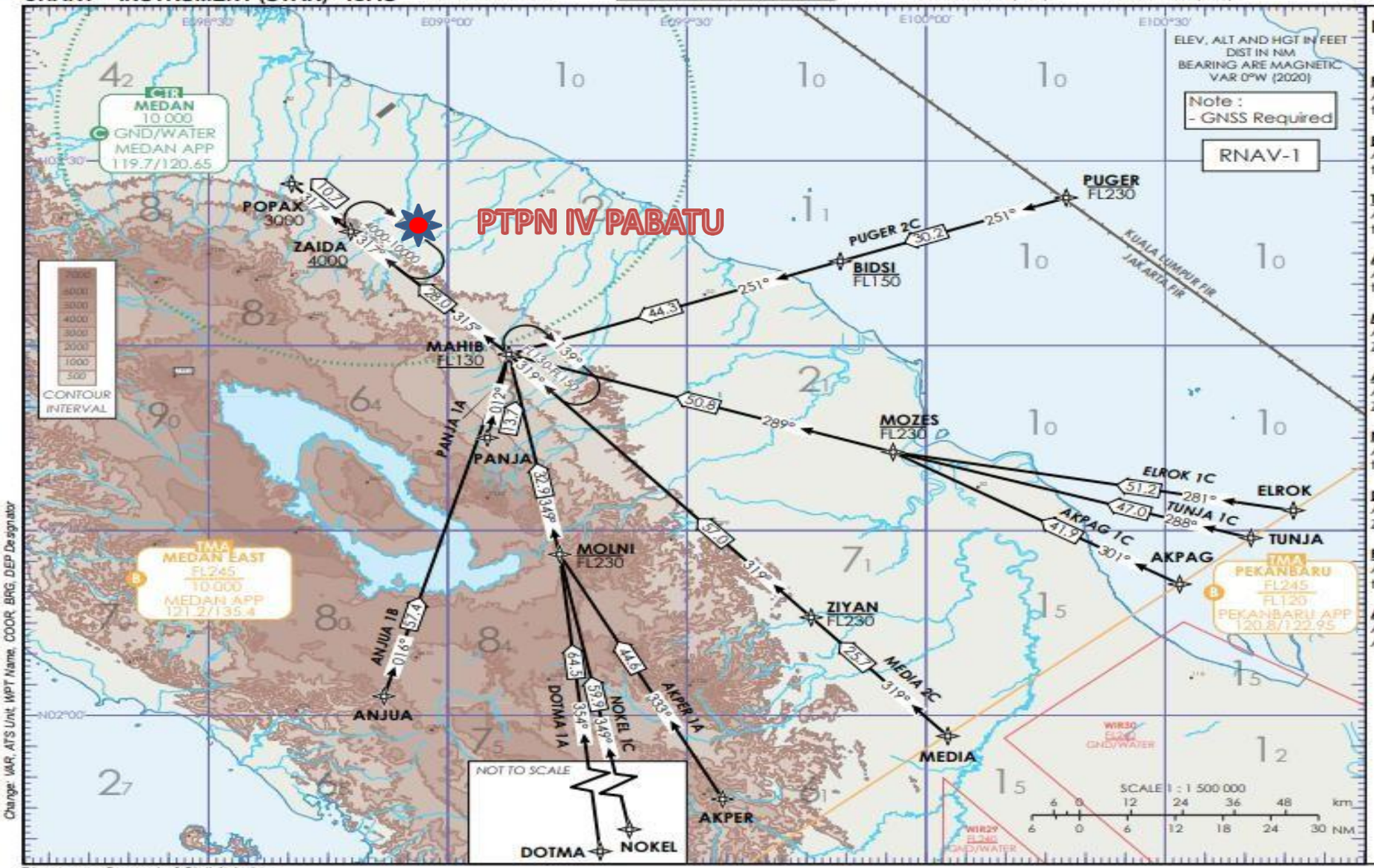
AD ELEV : 23

TRANSITION LEVEL : FL130
TRANSITION ALT : 11 000

ATIS	: 126.3
Kualanamu Tower	: 118.6/120.85 (SRY)
Medan Radar (TMA West)	: 135.9
Medan Radar (TMA East)	: 121.2/135.4 (SRY)
Medan Radar (CTR)	: 119.7/120.65 (SRY)



WIMM AD 2.24 - 9B1
DELI SERDANG/
Kualanamu International
RNAV RWY 05



RUNWAY 05

PUGER TWO CHARLIE ARRIVAL
Arrival from G582/P574/R461 to PUGER to BIDSI to MAHIB to ZAIDA to POPAX.

ELROK ONE CHARLIE ARRIVAL
Arrival from N563 to ELROK to MOZES to MAHIB to ZAIDA to POPAX.

TUNJA ONE CHARLIE ARRIVAL
Arrival from M300 to TUNJA to MOZES to MAHIB to ZAIDA to POPAX.

AKPAG ONE CHARLIE ARRIVAL
Arrival from L762 to AKPAG to MOZES to MAHIB to ZAIDA to POPAX.

MEDIA TWO CHARLIE ARRIVAL
Arrival from W12 to MEDIA to ZIYAN to MAHIB to ZAIDA to POPAX.

AKPER ONE ALPHA ARRIVAL
Arrival from T10 to AKPER to MOLNI to MAHIB to ZAIDA to POPAX.

NOKEL ONE CHARLIE ARRIVAL
Arrival from W11 to NOKEL to MOLNI to MAHIB to ZAIDA to POPAX.

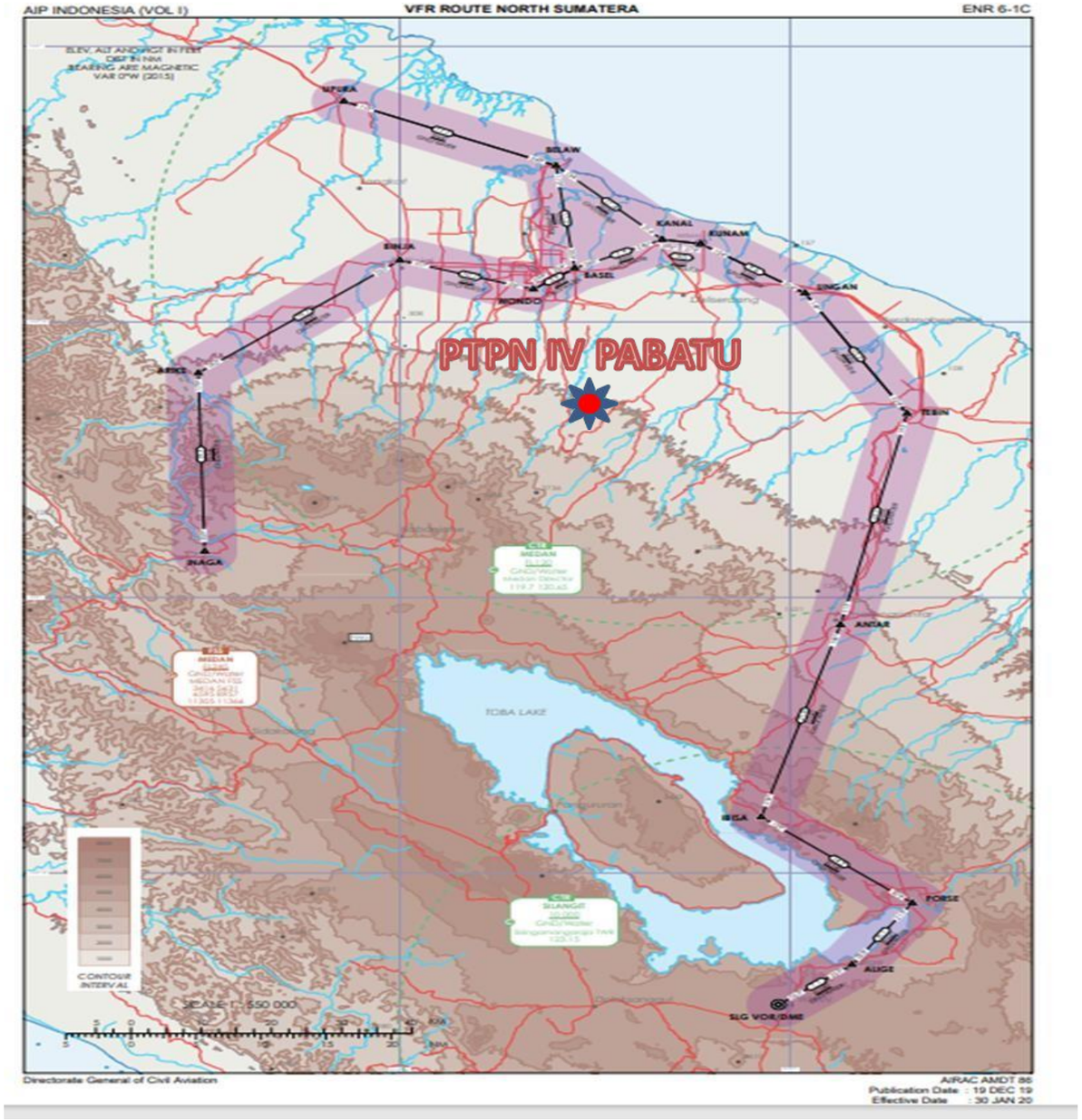
DOTMA ONE ALPHA ARRIVAL
Arrival from T8 to DOTMA to MOLNI to MAHIB to ZAIDA to POPAX.

PANJA ONE ALPHA ARRIVAL
Arrival from Raja Sisingamangaraja XII to PANJA to MAHIB to ZAIDA to POPAX.

ANJUA ONE BRAVO ARRIVAL
Arrival from DR Ferdinand Lumban Tobing to ANJUA to MAHIB to ZAIDA to POPAX.

Change: VAR, ATS Unit, WPT Name, COOR, BRG, DEP Designator

NORTH SUMATERA VFR ROUTES



AirNav Indonesia

Perum LPPNPI
UNIT PIA WILAYAH DENPASAR
Gedung Operasional Perum LPPNPI
Cab Denpasar Bali 80361
Telp: 0361-9351011 ext: 5103
Fax: 0361-9361387
ais.denpasar1@gmail.com
ais.denpasar@airnavindonesia.co.id
www.airnavindonesia.co.id

NOTAM

Nomor NOTAM	:	**B2199/21 NOTAMN**
Lokasi	:	**WAAF [UJUNG PANDANG FIR]**
Perihal	:	**AIRSPACE RESERVATION**
Ringkasan Isi NOTAM	:	**AIRSPACE RESERVATION FOR WSBK MANDALIKA**

Text Notam

B2199/21 NOTAMN [Will take place Airspace reservation]
Q)WAAF/QRALW/IV/NBO/W/000/005/0853S11618E001
A)WAAF B)2111180000 C)2111210900
D)DAILY 0000-0900
E)AIRSPACE RESERVATION FOR WSBK MANDALIKA WILL TAKE PLACE WI AREA AS FLW:
085337.29S1161758.60E - 085336.31S1161834.94E - 085408.24S1161835.26E - 085423.92S1161759.60E - 085337.29S1161758.60E
RMK: ALL ACFT ARE REQ TO AVOID THIS AREA EXC MEDIVAC FLT, STATE ACFT AND MIL FLT
F)SFC G)500FT AMSL

Grafis NOTAM

PENERBITAN NOTAM (notice to air mission)

- 7 HARI SEBELUM PENGOPERASIAN
- RUANG UDARA RESERVED
- AWARENESS BAGI PENERBANGAN SEHINGGA FLIGHT SAFETY TERJAGA
- ACUAN AREA PENGAMANAN BAGI OPERATOR JAMMER
- INFORMASI PENGGUNAAN RUANG UDARA UPDATE UNTUK KEPERLUAN SELF ASSESSMENT
- BERBAHASA INGGRIS DAN SINGKATAN RADIOTELEPHONY

TATA CARA PENGOPERASIAN KONDISI DARURAT

3.16 Dalam hal kondisi kejadian luar biasa atau bencana alam atau bencana non alam, sebuah pesawat udara tanpa awak dapat dioperasikan di sekitar lokasi kecelakaan atau bencana alam setelah berkoordinasi dengan institusi yang berwenang dan unit pelayanan navigasi penerbangan yang bertanggung jawab atas ruang udara tempat terjadinya kejadian luar biasa atau bencana alam untuk mendapatkan batas horizontal dan vertikal daerah pengoperasian yang diperbolehkan.

4.15 Dalam hal tertentu persetujuan pengoperasian dapat dibatalkan atau ditunda pelaksanaanya.

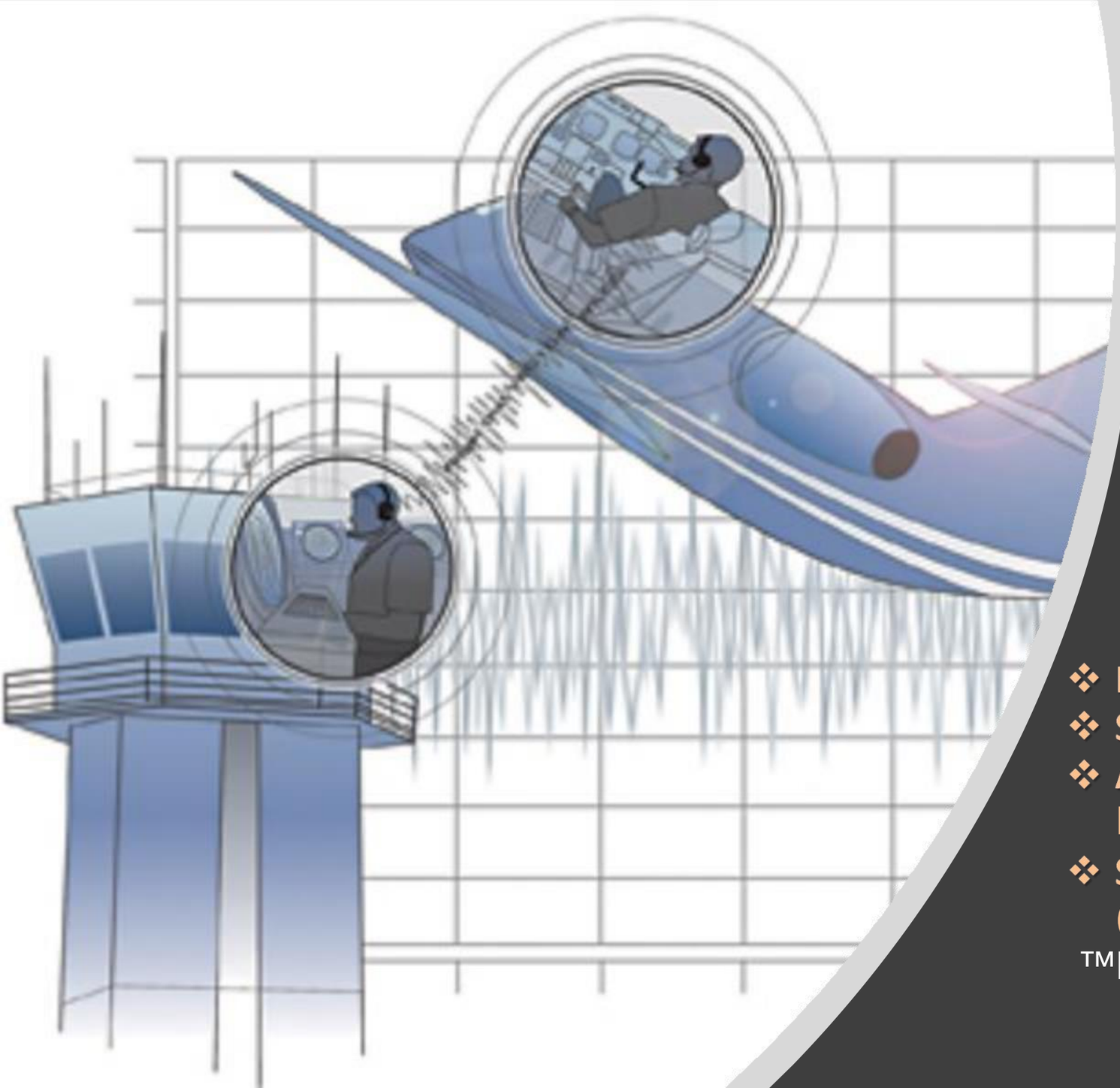
4.16 Hal tertentu sebagaimana dimaksud pada butir 4.15, meliputi:

1) untuk kepentingan angkutan udara yang memerlukan prioritas penggunaan ruang udara;
2) untuk kepentingan kenegaraan;
3) kondisi darurat sipil;
4) kondisi darurat militer;
5) kondisi darurat perang;
6) kondisi bencana.

Pasal 5

(1) Pesawat udara tanpa awak yang dimiliki oleh Pemerintah dan dipergunakan untuk kepentingan Pemerintah diberlakukan sebagai pesawat udara negara.

(2) Pelaksanaan pengoperasian pesawat udara tanpa awak sebagai pesawat udara negara sebagaimana dimaksud pada ayat (1) mengacu pada ketentuan peraturan perundang-undangan tentang pesawat udara negara.



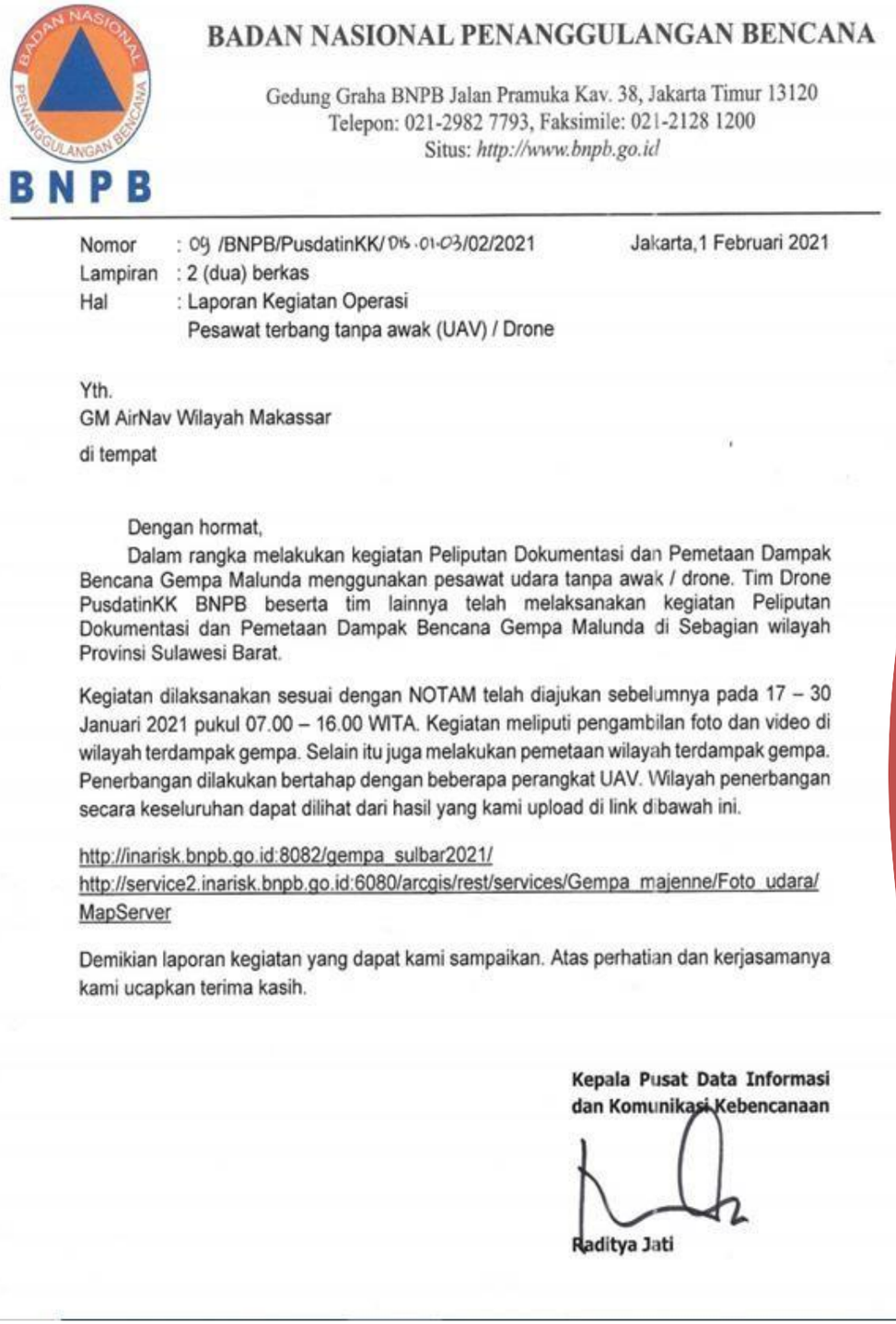
KOORDINASI & KOMUNIKASI LANGSUNG PILOT DENGAN PIC ATS UNIT (DCPC)

- **KONFIRMASI** PENGOPERASIAN
- **SATU PERSEPSI** SKENARIO DAN PROSEDUR
- **ALAT KOMUNIKASI** LANGSUNG (RADIO VHF, HANDY TALKY, HANDPHONE, SATCOM)
- **STANDRAD** RADIOTELEPHONY PHRASEOLOGY (MUST BE FAMILIAR)

™PATUH TERHADAP INSTRUKSI ATS UNIT

PELAPORAN PASCA PENGOPERASIAN

- ADA KENDALA TIDAK DALAM PENGOPERASIAN
- DATA & EVALUASI PENGOPERASIAN MAUPUN PELAYANAN (R&D)
- PELAPORAN PADA KESEMPATAN PERTAMA



BADAN NASIONAL PENANGGULANGAN BENCANA

Gedung Graha BNPB Jalan Pramuka Kav. 38, Jakarta Timur 13120
Telepon: 021-2982 7793, Faksimile: 021-2128 1200
Situs: *http://www.bnpb.go.id*

BNPB

Nomor : 09 /BNPB/PusdatinKK/ DIS.01.03/02/2021 Jakarta,1 Februari 2021
Lampiran : 2 (dua) berkas
Hal : Laporan Kegiatan Operasi
Pesawat terbang tanpa awak (UAV) / Drone

Yth.
GM AirNav Wilayah Makassar
di tempat

Dengan hormat,

Dalam rangka melakukan kegiatan Peliputan Dokumentasi dan Pemetaan Dampak Bencana Gempa Malunda menggunakan pesawat udara tanpa awak / drone. Tim Drone PusdatinKK BNPB beserta tim lainnya telah melaksanakan kegiatan Peliputan Dokumentasi dan Pemetaan Dampak Bencana Gempa Malunda di Sebagian wilayah Provinsi Sulawesi Barat.

Kegiatan dilaksanakan sesuai dengan NOTAM telah diajukan sebelumnya pada 17 – 30 Januari 2021 pukul 07.00 – 16.00 WITA. Kegiatan meliputi pengambilan foto dan video di wilayah terdampak gempa. Selain itu juga melakukan pemetaan wilayah terdampak gempa. Penerbangan dilakukan bertahap dengan beberapa perangkat UAV. Wilayah penerbangan secara keseluruhan dapat dilihat dari hasil yang kami upload di link dibawah ini.

http://inarisk.bnpb.go.id:8082/gempa_sulbar2021/
http://service2.inarisk.bnpb.go.id:6080/arcgis/rest/services/Gempa_majenne/Foto_udara/MapServer

Demikian laporan kegiatan yang dapat kami sampaikan. Atas perhatian dan kerjasamanya kami ucapkan terima kasih.

Kepala Pusat Data Informasi dan Komunikasi Kebencanaan

Raditya Jati

ELECTRONIC FORM FOR OCCURRENCE REPORT (EFFORT)

Mandatory ATS Occurrence ID : EFFORT - 20220928135

DETAILS OF OCCURRENCE

Occurrence Date and Time	:	2022-09-29 00:00:00 UTC
Reporting Branch	:	PALANGKARAYA
ATS UNIT	:	TWR
Occurrence Category	:	Unmanned Rocket/free balloon/unmanned aerial vehicle (UAV) hazard
Occurrence Classification	:	Hazard
Additional Information	:	

AIRCRAFT DETAILS

Aircraft 1

Aircraft Identification	:	SQS8355
Aircraft Registration	:	PKBVI
Type Of Aircraft	:	C208
Pilot In Command	:	Capt. Yogesh
Operator	:	ASI PUDJIASTUTI AVIATION
Flight Operation	:	VFR
Flight Phase	:	Approach
Aerodrome Of Departure	:	WAGB
Aerodrome Of Destination	:	WAGG
Type Of Flight Operation	:	Non-Scheduled

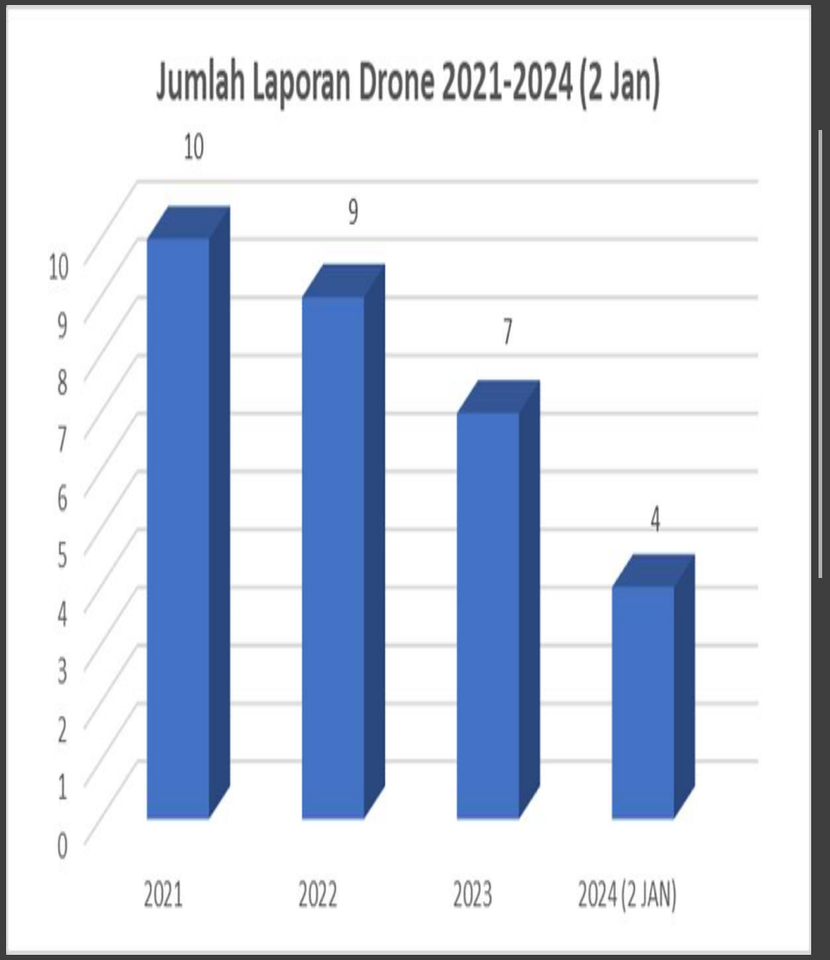
DESCRIPTION

Occurrence Details :

TIME 06.07 UTC UPON LANDING RWY 16 SQS8355 REPORT DRONE / UAV OPERATION ON FINAL APP AREA (ALT 700 FT, DIST 1 NM TO THR RWY 16). ATC FOLLOW UP REPORT TO AVSEC UNIT AP2 TJILIK RIWUT APT. ACFT LANDED SAFELY TIME 06.07 UTC.

RMK : NO PERMIT RECEIVE OR PUBLISH BY AIRNAV PALANGKA RAYA FOR DRONE OPERATE OVER THE AREA

METAR WAGG 290600Z 03002KT 9999 BKN011 31/24 Q1005=



Occurrences

ELECTRONIC FORM FOR OCCURRENCE REPORT (EFFORT)

Mandatory ATS Occurrence ID : EFFORT - 20211022030

DETAILS OF OCCURRENCE

Occurrence Date and Time	:	2021-10-01 05:25:00 UTC
Reporting Branch	:	MATSC
ATS UNIT	:	APP
Occurrence Category	:	Unmanned Rocket/free balloon/unmanned aerial vehicle (UAV) hazard
Occurrence Classification	:	Hazard
Additional Information	:	

AIRCRAFT DETAILS

Aircraft 1

Aircraft Identification	:	GIA605
Aircraft Registration	:	PKGFD
Type Of Aircraft	:	B738
Pilot In Command	:	
Operator	:	GARUDA INDONESIA
Flight Operation	:	IFR
Flight Phase	:	Climb
Aerodrome Of Departure	:	WAAA
Aerodrome Of Destination	:	WIII
Type Of Flight Operation	:	Scheduled

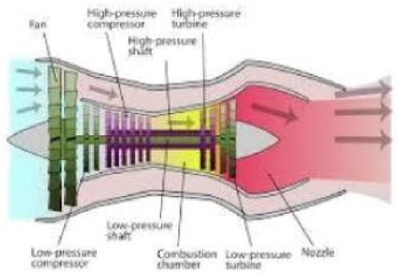
DESCRIPTION

Occurrence Details : AT 05.25Z GIA605 WAS ON CLIMB PASSING 5000 FEET AND A DRONE WAS INSIGHT BY PILOT. POSITION ABOUT OVER OLVAS

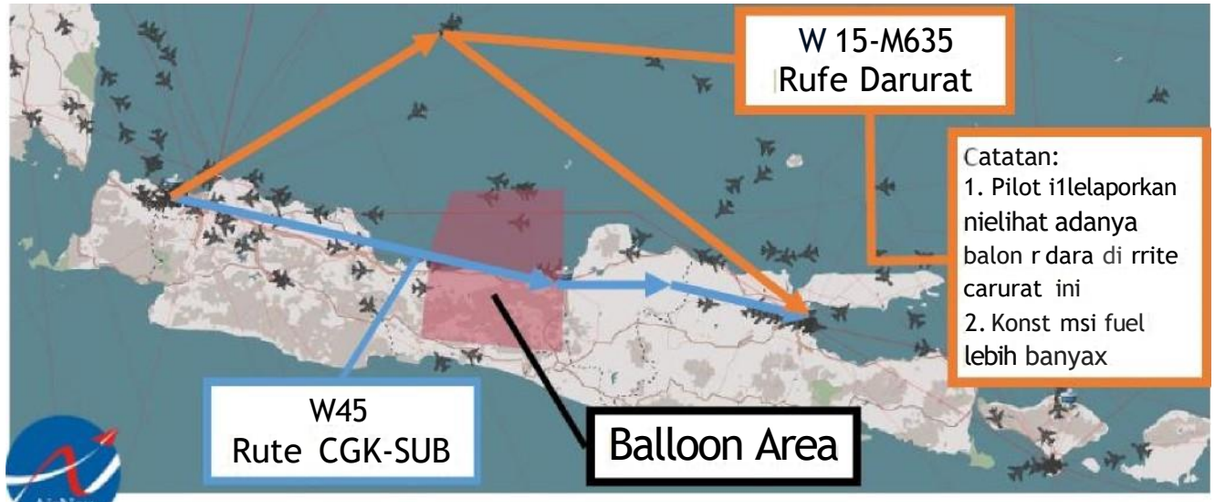
DAMPAK BALON UDARA TERHADAP PENERBANGAN

Java Traditional Balloon Festival 2019

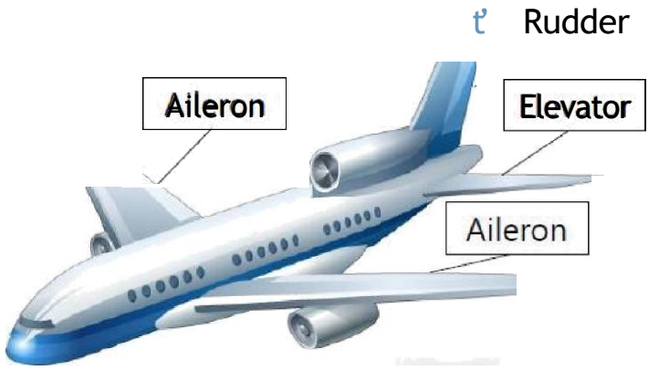
1. Terhisap ke dalam mesin jet Pesawat sehingga mengakibatkan kerusakan struktur mesin yang bisa berakibat fatal sampai dengan mesin mati



RUTE DARURAT JUGA TERDAMPAK

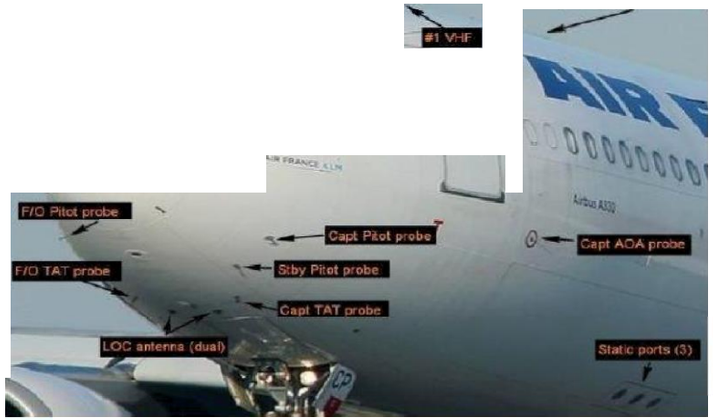


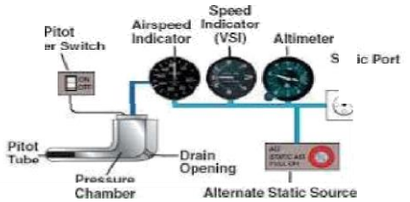
DAMPAK BALON UDARA TERHADAP PENERBANGA



2. Tersangkut pada sayap atau ekor seh!ngga mengganggu flight contru/. yaitu instrumen untuK mengendaliKan arah pesawat di udara yang terdiri dari e/evctor, ,ruDHei dan simma

DAMPAK BALON UDARA TERHADAP PENERBANGA



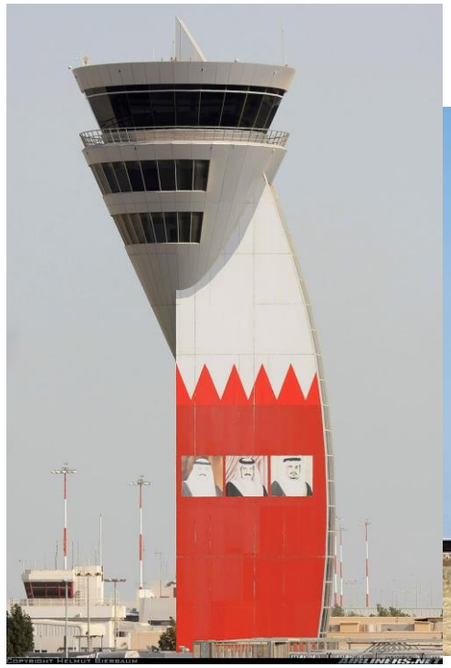


3. Tersangkrit di niclunp pesawat ridar‹a sehingga menutuDi *pitot tLIbe* dan *pitot* sfafic hole serta menghalangi panc‹ans•n pilot yang mens•kibatkan tergangs°' Ya keman puan pilot dalafı mendapatkan if formasi akurat mengenai aral dan kecep‹atan pesawat

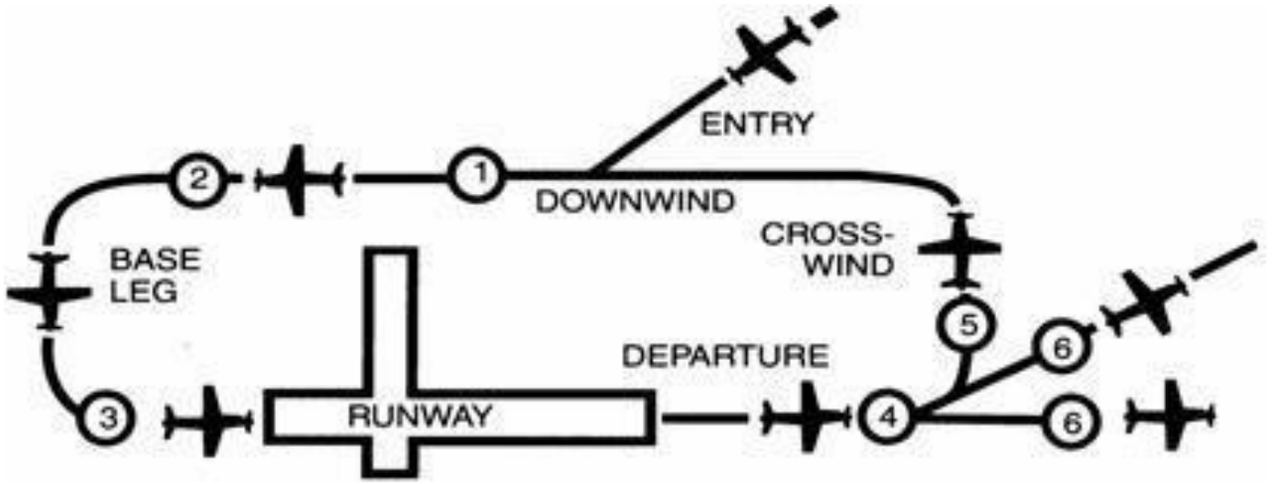
BANDAR UDARA

area tertentu di daratan atau perairan (termasuk bangunan, instalasi dan peralatan) yang diperuntukkan baik secara keseluruhan atau sebagian untuk kedatangan, keberangkatan dan pergerakan pesawat.

TOWERED AIRPORT



NON TOWERED AIRPORT



Circuit flight pattern

PELAYANAN NAVIGASI PENERBANGAN DI BANDARA PERINTIS, BANDARA TERDAMPAK BENCANA ATAU ISU KEAMANAN

AFIS

REMOTE AFIS

CTAF
(common traffic advisory frequency)

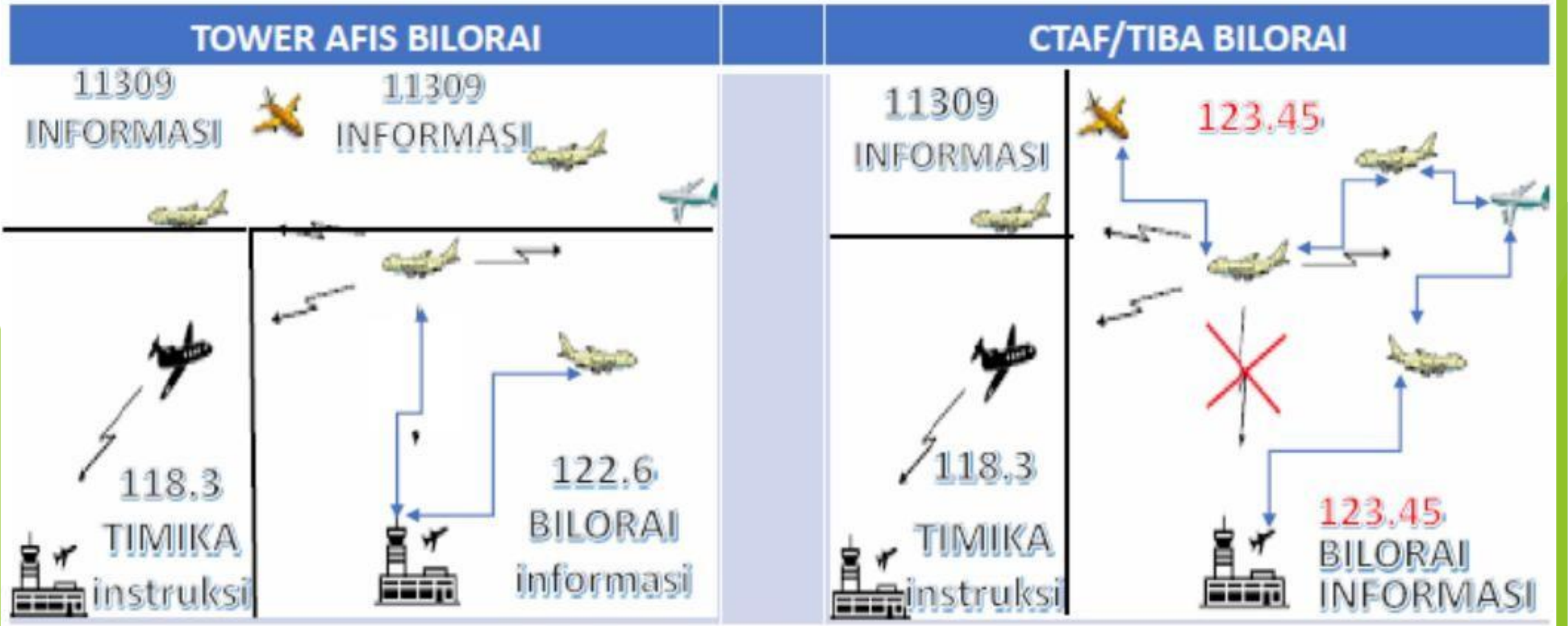
atau

TIBA
(traffic information broadcast advisory)

FLIGHT WATCH, SMS GATEWAY

PENGGUNAAN SATU FREKUENSI RADIO UNTUK SEMUA PENERBANGAN UNTUK SALING MEMBERIKAN INFORMASI (BROADCAST)

PERBEDAAN PELAYANAN NAVIGASI PENERBANGAN MELALUI TOWER DAN MELALUI CTAF/TIBA



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Telp/Fax: 0967-594161
ais.sentani@airnavindonesia.co.id
ais.sentanijayapura@gmail.com
www.airnavindonesia.co.id

NOTAM

Nomor NOTAM	:	C1015/21 NOTAMN
Lokasi	:	WAYL / ILLAGA
Perihal	:	Perubahan prosedur TIBA
Ringkasan Isi NOTAM	:	Perubahan prosedur TIBA karena pelayanan AFIS N/a

Text Notam

A)WAYL
B)2109242200
C)2112230400
E)ALL ACFT ADZ USING TRAFFIC INFORMATION BROADCAST BY AIRCRAFT (TIBA)
DUE TO ILAGA AFIS UNABLE TO PROVIDE AIR TRAFFIC SERVICE.
FOR FURTHER INFORMATION SEE AIRAC AIP VOL I AMDT 104 DATED 20 MAY 21
ENR 1.1-8

AirNav Indonesia

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Sentani 99352 Jayapura-Papua
Telp/Fax: 0967-594161
ais.sentani@airnavindonesia.co.id
www.airnavindonesia.co.id

NOTAM

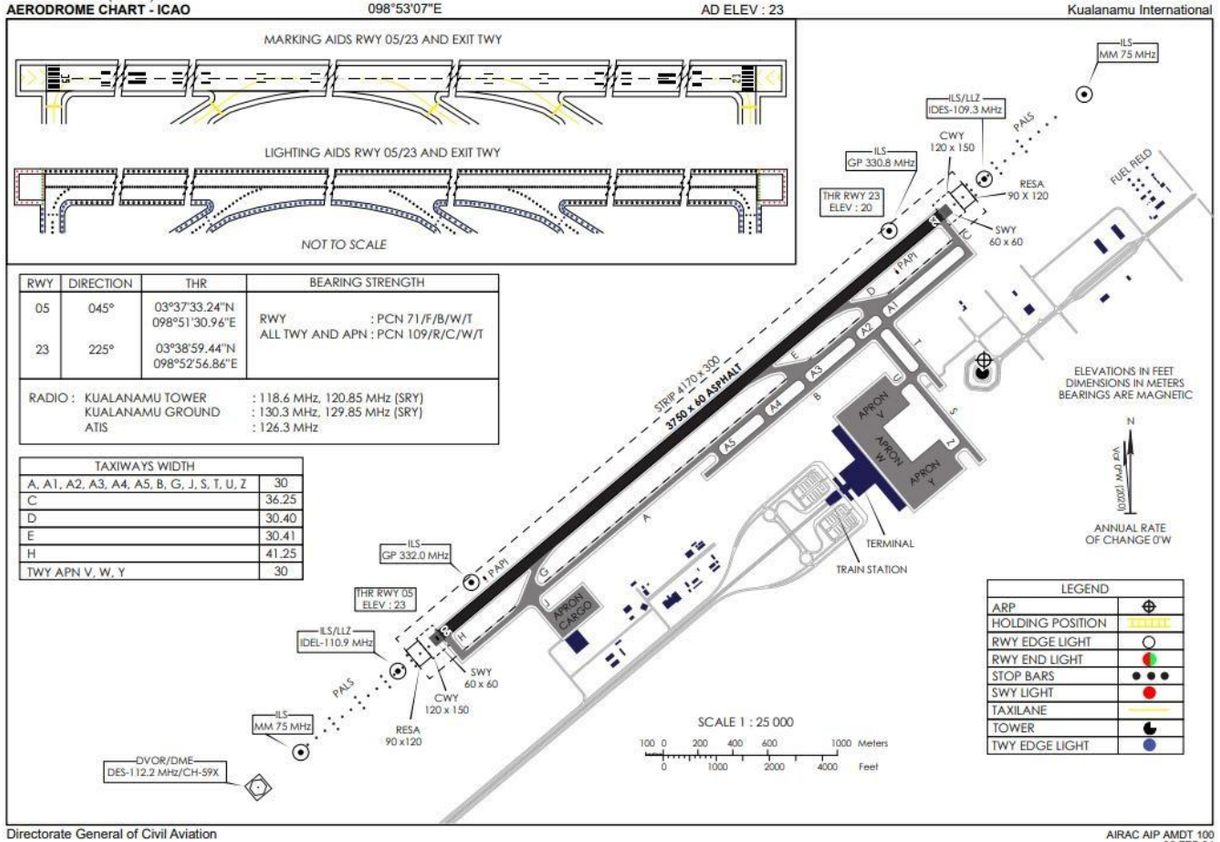
Nomor NOTAM	:	C1185/21 NOTAMN
Lokasi	:	WAYB /BILORAI
Perihal	:	PROSEDUR TIBA
Ringkasan Isi NOTAM	:	PEMBERLAKUAN PROSEDUR TIBA BILORAI

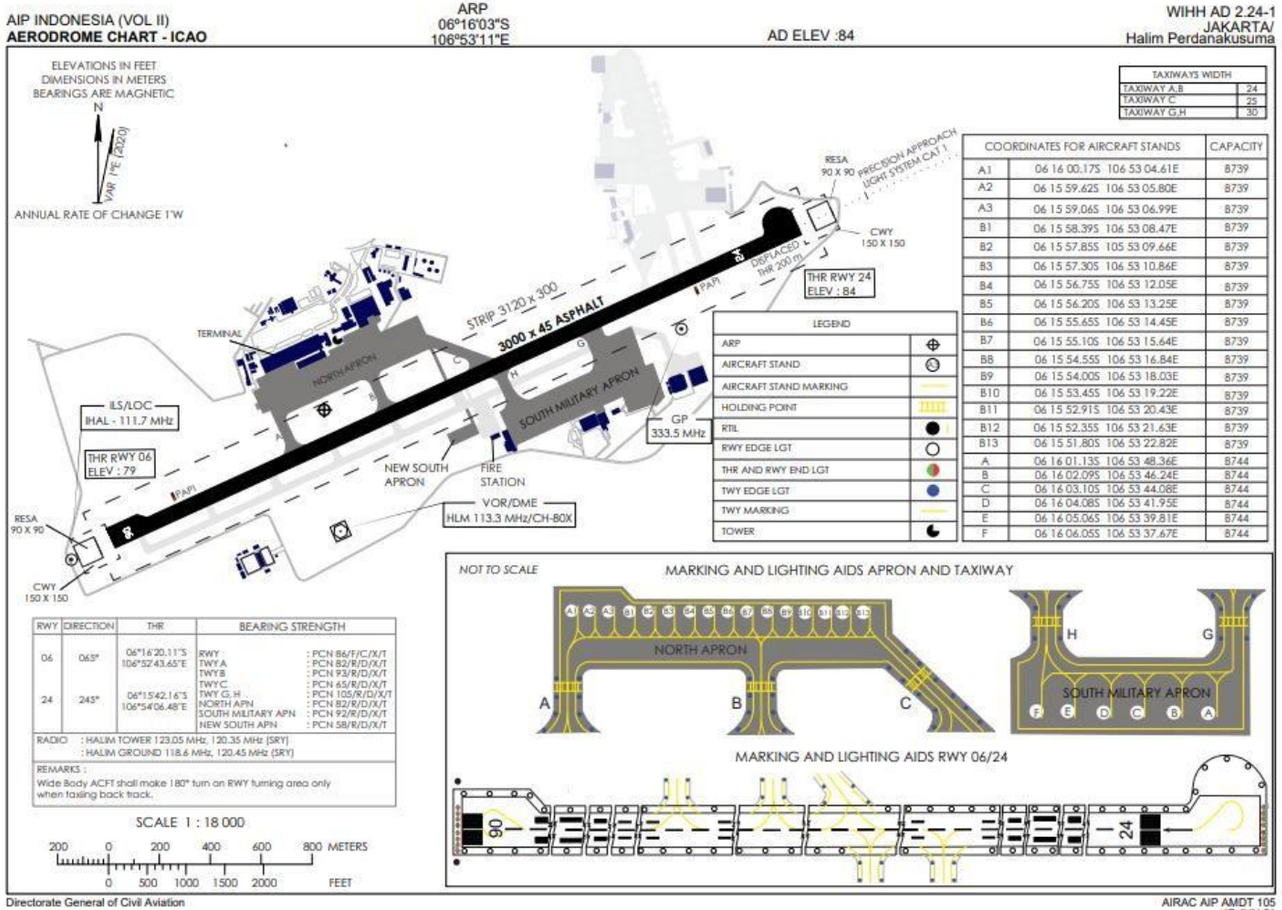
Text Notam

A)WAYB
B)2110292200
C)2111290500
E)ALL ACFT ADZ USING TRAFFIC INFORMATION BROADCAST BY AIRCRAFT (TIBA) DUE TO BILORAI AFIS UNABLE TO PROVIDE AIR TRAFFIC SERVICE.

NOTICE TO AIR MISSION (NOTAM)

CIVIL – MILITARY AIRPORT

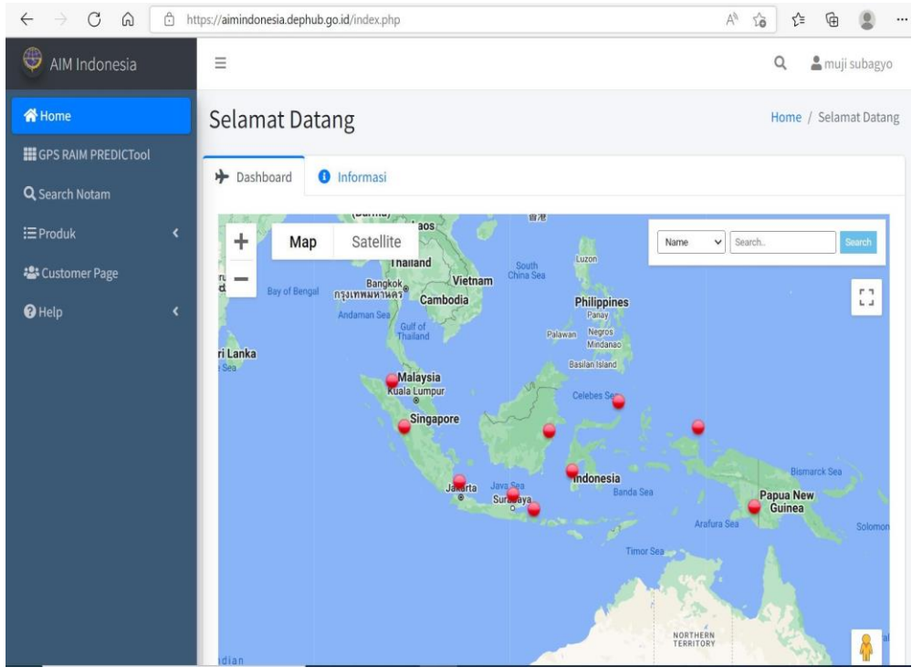


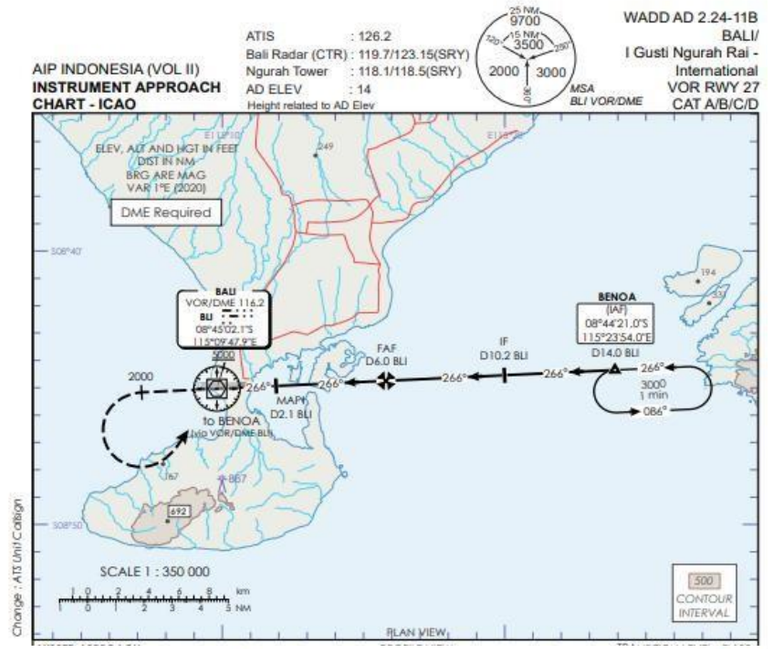


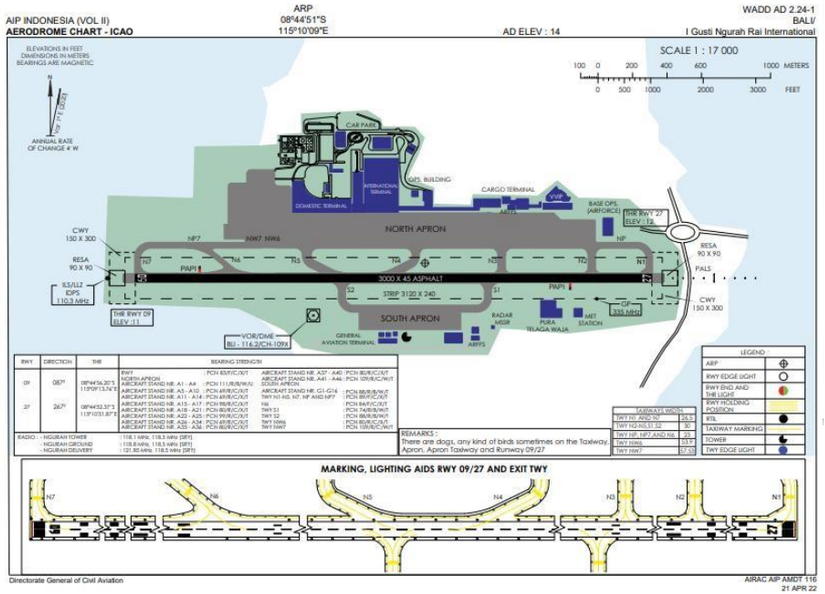
AIM INDONESIA

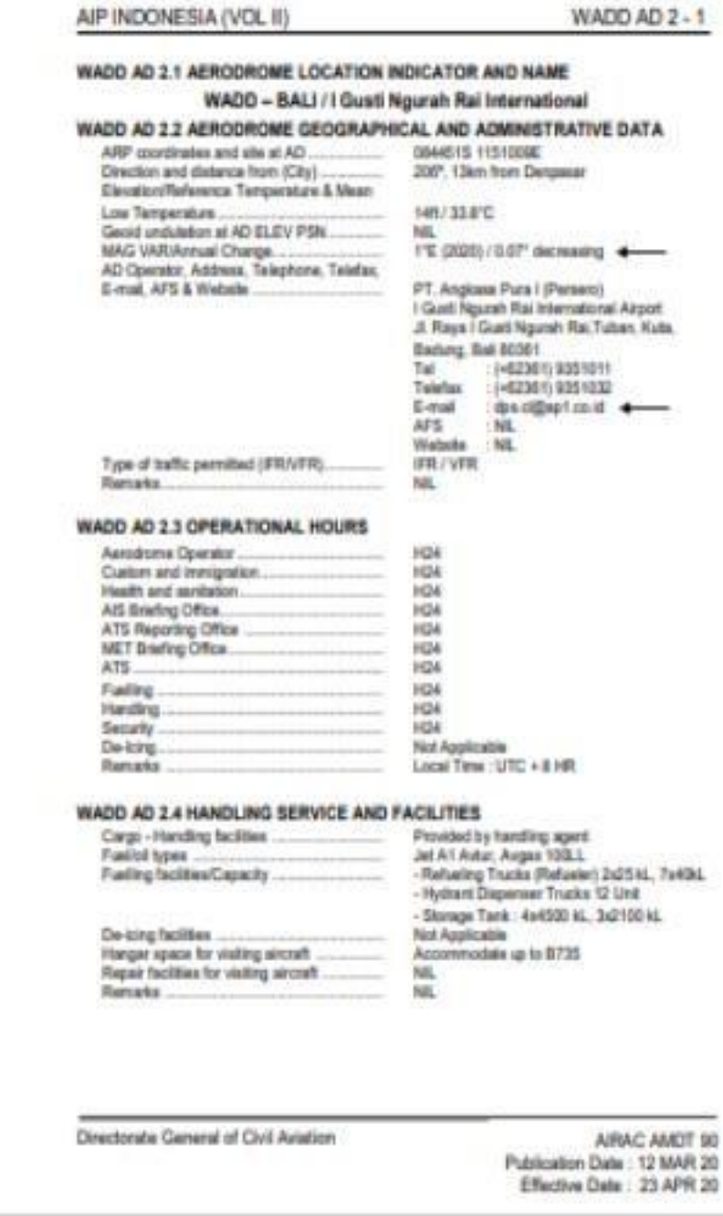
aimindonesia@dephub.go.id

- DATA AIRPORT/HELIPORTS
- DATA RUANG UDARA
- DATA RUTE PENERBANGAN
- DATA PROSEDUR PENERBANGAN
- DATA ATS UNIT
- PETA PENERBANGAN
- PEREKAM PERUBAHAN DATA PENERBANGAN







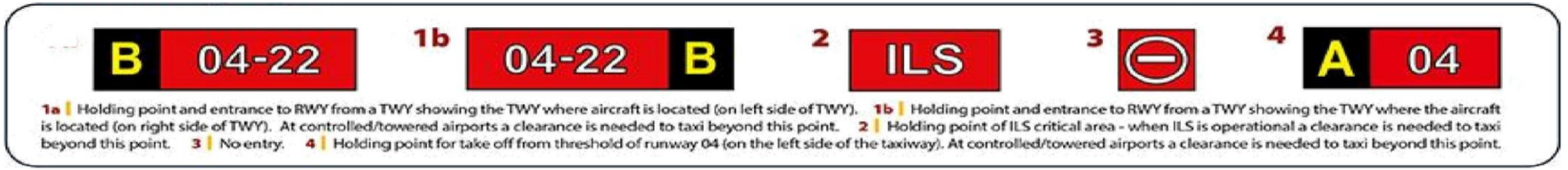


AIRPORT SIGNS AND MARKING – QUICK REFERENCE GUIDE

It is the pilot´s responsibility to make appropriate decisions while using uncontrolled/ non-towered airports.

At controlled/ towered airports the pilot must respect the instructions of the appropriate controller.

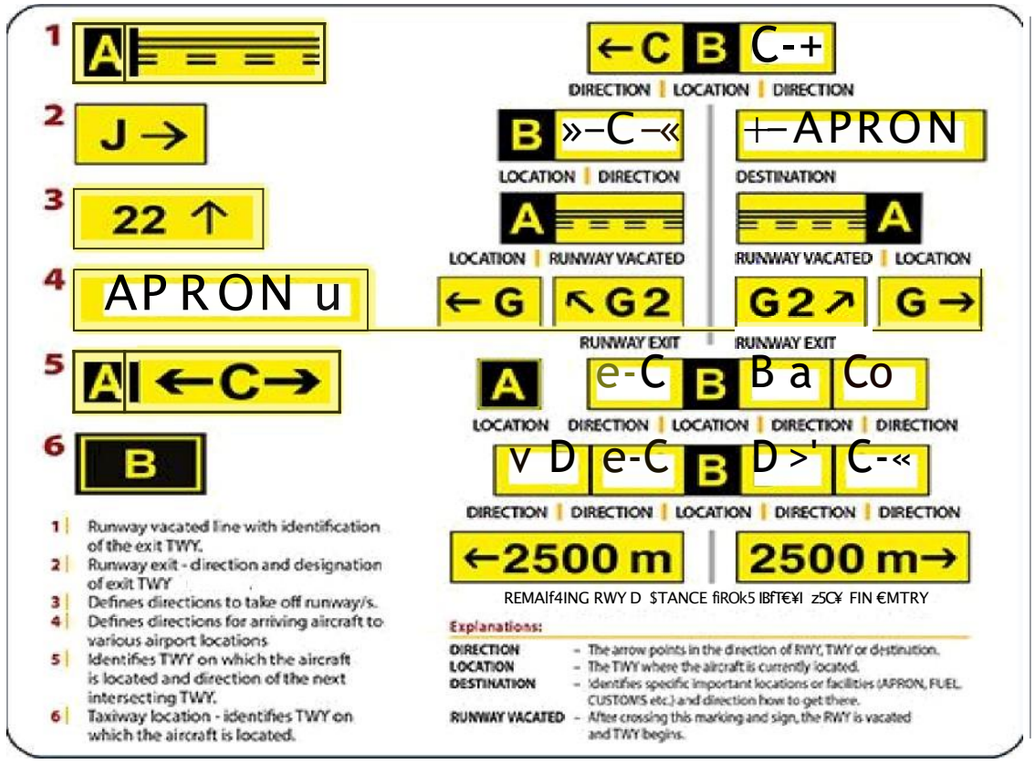
Mandatory sfgns –+hife inredfield. usually onboth sides efa taxiway.



1a | Holding point and entrance to RWY from a TWY showing the TWY where aircraft is located (on left side of TWY). 1b | Holding point and entrance to RWY from a TWY showing the TWY where the aircraft is located (on right side of TWY). At controlled/towered airports a clearance is needed to taxi beyond this point. 2 | Holding point of ILS critical area - when ILS is operational a clearance is needed to taxi beyond this point. 3 | No entry. 4 | Holding point for take off from threshold of runway 04 (on the left side of the taxiway). At controlled/towered airports a clearance is needed to taxi beyond this point.

Information signs

—usually placed on the left orboth sides of a taxiway (TWYI.



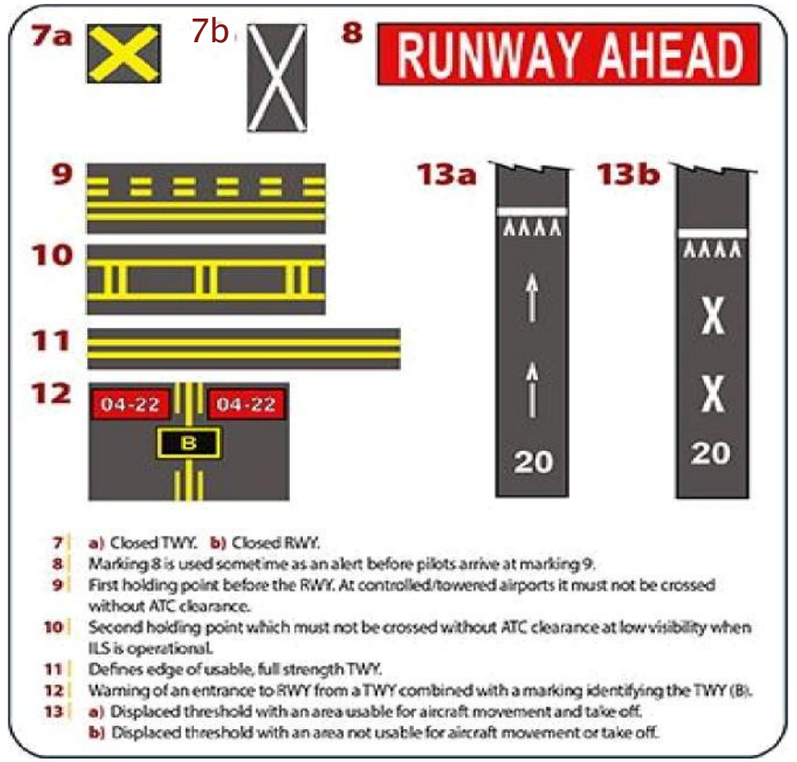
1 | Runway vacated line with identification of the exit TWY.
2 | Runway exit - direction and designation of exit TWY
3 | Defines directions to take off runway/s.
4 | Defines directions for arriving aircraft to various airport locations
5 | Identifies TWY on which the aircraft is located and direction of the next intersecting TWY.
6 | Taxiway location - identifies TWY on which the aircraft is located.

Explanations:

DIRECTION – The arrow points in the direction of RWY, TWY or destination.
LOCATION – The TWY where the aircraft is currently located.
DESTINATION – Identifies specific important locations or facilities (APRON, FUEL, CUSTOMS etc.) and direction how to get there.
RUNWAY VACATED – After crossing this marking and sign, the RWY is vacated and TWY begins.

Runway and taxiway marking

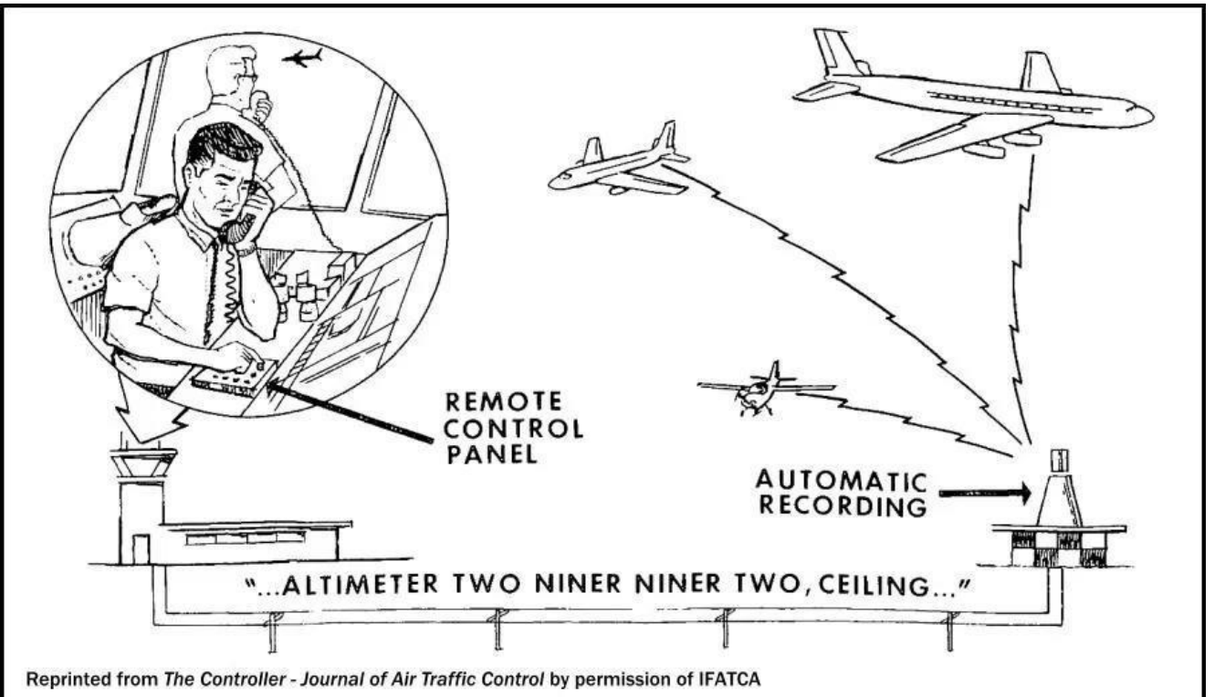
—painted on the taxiway/runHay surface.



7 | a) Closed TWY. b) Closed RWY.
8 | Marking 8 is used sometime as an alert before pilots arrive at marking 9.
9 | First holding point before the RWY. At controlled/towered airports it must not be crossed without ATC clearance.
10 | Second holding point which must not be crossed without ATC clearance at low visibility when ILS is operational.
11 | Defines edge of usable, full strength TWY.
12 | Warning of an entrance to RWY from a TWY combined with a marking identifying the TWY (B).
13 | a) Displaced threshold with an area usable for aircraft movement and take off.
b) Displaced threshold with an area not usable for aircraft movement or take off.

You will find information for planning your VFR flights within Europe on www.flying-revue.com in section Fly Europe.

ATIS & ANTENNA



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Wild life strike a plane

TERIMA KASIH

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