

AD 2 AERODROMES

RORS AD 2.1 AERODROME LOCATION INDICATOR AND NAME

RORS - SHIMOJISHIMA

RORS AD 2.2 AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA

| | | |
|---|--|--|
| 1 | ARP coordinates and site at AD | 244936N/1250841E 014°/1.5km from RWY 35 THR |
| 2 | Direction and distance from (city) | 14km NW from Miyakojima City Office |
| 3 | Elevation/ Reference temperature | 25ft / 32°C (2004-2008) |
| 4 | Geoid undulation at AD ELEV PSN | |
| 5 | MAG VAR/ Annual change | 4° W(2009) / 3.6°W |
| 6 | AD Administration, address, telephone, telefax, telex, AFS, e-mail and/or Web-site addresses | Okinawa Pref. Public AP. 1739, Sawada, Irabu, Miyakojima-shi, Okinawa Pref. TEL : 0980-78-4184 FAX : 0980-78-4016 |
| 7 | Types of traffic permitted(IFR/ VFR) | IFR/VFR |
| 8 | Remarks | Nil |

RORS AD 2.3 OPERATIONAL HOURS

| | | |
|----|---------------------------|---|
| 1 | AD Administration | 2300 - 1030 |
| 2 | Customs and immigration | On request Customs: 0980-72-2310 Immigration: 0980-72-3440 |
| 3 | Health and sanitation | On request Quarantine(human): 0980-73-5115 Quarantine(animal): 098-861-4370 Quarantine(plant): 0980-72-2433 |
| 4 | AIS Briefing Office | Nil |
| 5 | ATS Reporting Office(ARO) | Nil |
| 6 | MET Briefing Office | H24 (NAHA) |
| 7 | ATS | 2300 - 1030 Remarks : 2300 - 0000 and 0730 - 1030, Airport Remote Mobile Communication Service provided by Naha FSC. |
| 8 | Fuelling | Ask AD administration |
| 9 | Handling | Ask AD administration |
| 10 | Security | Ask AD administration |
| 11 | De-icing | Nil |
| 12 | Remarks | Nil |

RORS AD 2.4 HANDLING SERVICES AND FACILITIES

| | | |
|---|---|----------------------|
| 1 | Cargo-handling facilities | Nil |
| 2 | Fuel/ oil types | JET A-1 |
| 3 | Fuelling facilities/ capacity | Fuel truck refueling |
| 4 | De-icing facilities | Nil |
| 5 | Hangar space for visiting aircraft | Nil |
| 6 | Repair facilities for visiting aircraft | Nil |
| 7 | Remarks | Nil |

RORS AD 2.5 PASSENGER FACILITIES

| | | |
|---|----------------------|--|
| 1 | Hotels | Hotels in Miyakojima city |
| 2 | Restaurants | At airport / In Miyakojima city |
| 3 | Transportation | Buses and Taxis |
| 4 | Medical facilities | Clinic 6.5km from airport |
| 5 | Bank and Post Office | Bank ATM at airport / Bank in Miyakojima city / Post office in Miyakojima city |
| 6 | Tourist Office | At airport / In Miyakojima city |
| 7 | Remarks | Nil |

RORS AD 2.6 RESCUE AND FIRE FIGHTING SERVICES

| | | |
|---|---|---|
| 1 | AD category for fire fighting | Fire protection ; Scale of protection ICAO required : CAT 9 Available : CAT 9 |
| 2 | Rescue equipment | Chemical fire fighting truck x 3 |
| 3 | Capability for removal of disabled aircraft | Incapable |
| 4 | Remarks | Nil |

RORS AD 2.7 SEASONAL AVAILABILITY-CLEARING

| | | |
|---|-----------------------------|----------------|
| 1 | Types of clearing equipment | Not Applicable |
| 2 | Clearance priorities | Not Applicable |
| 3 | Remarks | Nil |

RORS AD 2.8 APRONS, TAXIWAYS AND CHECK LOCATIONS DATA

| | | |
|---|-------------------------------------|---|
| 1 | Apron surface and strength | Surface : Cement-concrete Strength : PCN 70/R/B/X/T |
| 2 | Taxiway width, surface and strength | Width : 30m Surface : Asphalt-concrete Strength : PCN 77/F/B/X/T |
| 3 | ACL and elevation | Not available |
| 4 | VOR checkpoints | Not available |
| 5 | INS checkpoints | (Spot NR) S-1-1 244946.83N,1250852.34E S-1-2 244946.24N,1250851.63E S-2-1 244944.09N,1250853.09E S-2-2 244943.49N,1250852.38E S-3-1 244941.35N,1250853.84E S-3-2 244940.75N,1250853.13E S-5-R 244933.67N,1250853.32E S-5-L 244935.39N,1250852.85E S-6-R 244930.87N,1250855.73E S-6-L 244932.38N,1250855.32E S-7-R 244927.16N,1250855.46E S-7-L 244928.70N,1250855.04E |
| 6 | Remarks | Nil |

RORS AD 2.9 SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS

| | | |
|---|--|---|
| 1 | Use of aircraft stand ID signs, TWY guide lines and Visual docking/ parking guidance system of aircraft stands | Nil |
| 2 | RWY and TWY markings and LGT | RWY: RWY17/35 (Marking) RWY designation, RWY CL, RWY THR, RWY middle point, Aiming point, TDZ, RWY side stripe (LGT) RCLL, REDL, RTHL, RENL, RTZL(RWY17) TWY: (Marking) TWY CL, TWY side stripe (LGT)TWY edge LGT,TWY CL LGT(T1-T5), RWY guard LGT(T1-T5), Taxiing guidance sign |
| 3 | Stop bars | Nil |
| 4 | Remarks | (Marking) Overrun area (LGT) Apron flood LGT |

RORS AD 2.10 AERODROME OBSTACLES

| RWY/Area affected | Obstacle type | Coordinates | Elevation | Markings/ LGT | Remarks |
|-------------------|---------------|-------------|-----------|---------------|---------|
| Nil | | | | | |

RORS AD 2.11 METEOROLOGICAL INFORMATION PROVIDED

| | | |
|----|--|---|
| 1 | Associated MET Office | NAHA |
| 2 | Hours of service MET Office outside hours | H24 (NAHA) |
| 3 | Office responsible for TAF preparation Periods of validity | Nil |
| 4 | Trend forecast Interval of issuance | Nil |
| 5 | Briefing/ consultation provided | Briefing is available upon inquiry at NAHA |
| 6 | Flight documentation Language(s) used | C En |
| 7 | Charts and other information available for briefing or consultation | S ₆ , U ₈₅ , U ₇ , U ₅ , U ₃ , U ₂₅ , U _{2/T_r} , P _S , P ₅ , P ₃ , P ₂₅ , P _{SWE} , P _{SWF} , P _{SWG} , P _{SWI} , P _{SWM} , P _{SW(domestic)} , E, C, W _E , W _F , W _G , W _I , W, N |
| 8 | Supplementary equipment available for providing information | Nil |
| 9 | ATS units provided with information | TWR / REMOTE |
| 10 | Additional information(limitation of service, etc.) | Nil |

RORS AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

| Designations RWY NR | TRUE BRG | Dimensions of RWY(M) | Strength(PCN) and surface of RWY | THR coordinates THR geoid undulation | THR elevation and highest elevation of TDZ of precision APP RWY |
|------------------------|------------------------|--|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 17 | 165.50° | 3000x60 | PCN 77/F/B/X/T Asphalt-Concrete | 245024.16N 1250828.87E | THR ELEV : 15.1ft |
| 35 | 345.50° | 3000x60 | Cement-Concrete(*1) | 244849.55N 1250854.74E | THR ELEV : 54.4ft |
| Slope of RWY | Strip Dimensions(M) | RESA(Overrun) Dimensions(M) | Remarks | | |
| 7 | 10 | 11 | 14 | | |
| See AD2.24 AD chart | 3120x300 3120x300 | 243x491 189x(MNM:158 MAX:299)* *For detail, ask airport administrator | RWY GROOVING 3000x40m (*1)First 900m(2955ft)of RWY 17/35-rigid RWY | | |

RORS AD 2.13 DECLARED DISTANCES

| | TORA | TODA | ASDA | LDA | |
|----------------|------|------|------|------|---------|
| RWY Designator | (m) | (m) | (m) | (m) | Remarks |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 17 | 3000 | 3000 | 3000 | 3000 | Nil |
| 35 | 3000 | 3000 | 3000 | 3000 | Nil |

RORS AD 2.14 APPROACH AND RUNWAY LIGHTING

| RWY Designator | APCH LGT type LEN INTST | RTHL Color WBAR | PAPI (VASIS) Angle DIST FM THR MEHT | RTZL LEN | RCLL LEN Spacing Color INTST | REDL LEN Spacing Color INTST | RENL Color WBAR | STWL LEN Color |
|--|-------------------------|-----------------|-------------------------------------|----------|---------------------------------------|--|-----------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 17 | PALS (CAT-I) 900m LIH | Green Green | PAPI 3.0° /LEFT 422.6m 65.6FT | 900m | 3000m 30m Coded color (White/Red) LIH | 3000m 60m Coded color (White/Yellow) LIH | Red | Nil(*1) |
| 35 | PALS 900m LIH | Green | PAPI 3.0° /LEFT 482m 65.6FT | - | 3000M 30m Coded color (White/Red) LIH | 3000m 60m Coded color (White/Yellow) LIH | Red | Nil(*1) |
| Remarks | | | | | | | | |
| 10 | | | | | | | | |
| Overrun area edge LGT(LEN:60m Color:Red)(*1) | | | | | | | | |

RORS AD 2.15 OTHER LIGHTING, SECONDARY POWER SUPPLY

| | | |
|---|--|---|
| 1 | ABN / IBN location, characteristics and hours of operation | ABN: 244848N/1250933E, White/Green EV4.3sec, HO |
| 2 | LDI location and LGT Anemometer location and LGT | LDI:Nil Anemometer: RWY 17 : 243m from RWY 17 THR, lighted RWY 35 : 242m from RWY 35 THR, lighted |
| 3 | TWY edge and center line lighting | TWY edge and center line lights installed, see AD2.9 |
| 4 | Secondary power supply / switch-over time | All LGT / Within 15 sec |
| 5 | Remarks | WDI LGT |

RORS AD 2.16 HELICOPTER LANDING AREA

| |
|-----|
| Nil |
|-----|

RORS AD 2.17 ATS AIRSPACE

| Designation and lateral limits | | Vertical limits (ft) | Airspace classification | ATS unit call sign Language | Remarks |
|--------------------------------|---|----------------------|-------------------------|---|--------------------------------|
| 1 | | 2 | 3 | 4 | 6 |
| Shimoji CTR | Area within a radius of 5nm of SHIMOJISHIMA ARP, excluding the area of MIYAKO CTR | 3,000 or below | D | Shimoji TWR Shimoji REMOTE(1) En | (1):2300 - 0000 0730 - 1030 |
| Sakishima ACA | See ROMY attached chart | | E | Sakishima APP Sakishima DEP Sakishima Radar En | |

RORS AD 2.18 ATS COMMUNICATION FACILITIES

| Service designation | Call sign | Frequency | Hours of operation | Remarks |
|---|--|---|-------------------------------|--|
| 1 | 2 | 3 | 4 | 5 |
| APP/ASR | Sakishima Approach/ Sakishima Radar | 125.0MHz(1) 120.3MHz 121.2MHz 121.5MHz(E) 243.0MHz(E) | 2300 - 1030 | (1)Primary APP service provided by Sakishima APP |
| DEP | Sakishima Departure | 125.0MHz 121.5MHz(E) 243.0MHz(E) | 2300 - 1030 | |
| TWR | Shimoji Tower | 118.3MHz(1) 126.2MHz 121.5MHz(E) 243.0MHz(E) | 0000 - 0730(*) | |
| GND | Shimoji Ground | 121.7MHz | 0000 - 0730(*) | |
| A/G | Shimoji Remote | 118.3MHz | 2300 - 0000 0730 - 1030(*) | Remote air-ground facilities controlled by Naha FSC |
| * Depending on air traffic situation, ATC service will be provided either from 2345 to 0000 or from 0730 to 0745. | | | | |

RORS AD 2.19 RADIO NAVIGATION AND LANDING AIDS

| Type of aid (VOR declination) | ID | Frequency | Hours of operation | Position of transmitting antenna coordinates | Elevation of DME transmitting antenna | Remarks |
|----------------------------------|-----|----------------------|--------------------|--|---------------------------------------|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| VOR (3°W/2008) | SJE | 117.1MHz | 2300 - 1030 | 244918.96N/1250837.70E | | |
| DME | SJE | 1205MHz (CH-118X) | 2300 - 1030 | 244918.96N/1250837.70E | 66FT | |
| ILS-LOC 17 | ISB | 111.5MHz | 2300 - 1030 | 244840.60N/1250857.18E | | LOC: 283m(928ft) away FM RWY 35 THR BRG 170°(MAG). |
| ILS-GP 17 | - | 332.9MHz | 2300 - 1030 | 245013.30N/1250827.43E | | GP: 315m(1033ft) inside FM RWY 17 THR, 120m(394ft) W of RCL. GP angle 3.0° HGT of ILS Ref datum 16.5m (54ft) |
| ILS-DME 17 | ISB | 1013MHz | 2300 - 1030 | 245013.20N/1250827.09E | 31FT | DME:315m(1033ft)inside FM RWY17 THR. 130m(427ft) W of RCL. |
| MSAS | | 1575.42MHz | H24 | | | Transmitting antennas are satellite based. |

SHIMOJISHIMA AP

ILS FOR RWY17



REMARKS : 1.LOC beam BRG(MAG) 170°
2.HGT of ILS REF datum 16.5m(54ft)
3.GP Angle 3.0°
4.ELEV of ILS-DME 9.5m(31ft)

RORS AD 2.20 LOCAL TRAFFIC REGULATIONS

1. Airport regulations

Prior notification should be required with AD Administration for the purpose of getting the permission when crossing Shimojishima CTR from 2300UTC to 0000UTC or from 0730UTC to 1030UTC.

For further information (0000UTC - 0800UTC MON - FRI EXC HOL)

Air Traffic Controller Office, Miyako Airport Branch Office and Air Route Surveillance Rader Office

TEL: 0980-73-3764

8 時 00 分 から 9 時 00 分 または 16 時 30 分 から 19 時 30 分 までの間、下地島管制圏を通過する場合は、当該通過の許可を得るためにあらかじめ宮古空港・航空路監視レーダー事務所へ調整すること。

問い合わせ先

宮古空港・航空路監視レーダー事務所管制官事務室

(月曜日から金曜日までのうち、9 時 00 分 から 17 時 00 分 までの間。ただし休日を除く。)

TEL: 0980-73-3764

2. Taxiing to and from stands

Nil

3. Parking area for small aircraft(General aviation)

Nil

4. Parking area for helicopters

Nil

5. Apron - taxiing during winter conditions

Nil

6. Taxiing - limitations

Nil

7. School and training flights - technical test flights - use of runways

Nil

8. Helicopter traffic - limitation

Nil

9. Removal of disabled aircraft from runways

Nil

RORS AD 2.21 NOISE ABATEMENT PROCEDURES

Nil

RORS AD 2.22 FLIGHT PROCEDURES**1.TAKE OFF MINIMA**

| | RWY | ACFT CAT | REDL & RCLL | | REDL or RCLL or RCL Marking | | NIL (DAYTIME ONLY) | |
|---|-----|-------------|-----------------|-----------|--------------------------------|-----------|-----------------------|-----------|
| | | | CEIL-RVR | CEIL-VIS | CEIL-RVR | CEIL-VIS | CEIL-RVR | CEIL-VIS |
| Multi-Engine ACFT with TKOF ALTN AP Filed | 35 | A,B,C,D | 0'-400m | 0'-400m | 0'-400m | 0'-400m | - | 0'-500m |
| | 17 | A,B,C,D | 200'-800m | 200'-800m | 200'-800m | 200'-800m | - | 200'-800m |
| OTHER | 35 | A,B,C,D | AVBL LDG MINIMA | | | | | |
| | 17 | A,B,C,D | | | | | | |

2. Lost Communication Procedures for Arrival Aircraft under radar navigational guidance

If radio communications with Sakishima Approach/Radar are lost for one minute, squawk Mode A/3 Code 7600 and ;

1. Contact Shimoji Tower.
2. If unable, proceed in accordance with visual flight rules.
3. If unable, proceed to Shimojishima VOR at the last assigned altitude, or 2,000 feet whichever is higher, and execute instrument approach.

NOTE: Procedures other than above will be issued when situation requires.

RORS AD 2.23 ADDITIONAL INFORMATION

Nil

RORS AD 2.24 CHARTS RELATED TO AN AERODROME

Aerodrome/Heliport Chart
 Standard Departure Chart- Instrument (ANNIE)
 Standard Departure Chart- Instrument (BETTY)
 Standard Departure Chart- Instrument (MIYAKOJIMA)
 Standard Departure Chart- Instrument (PAYAO)
 Standard Arrival Chart- Instrument (ANNIE, BETTY)
 Standard Arrival Chart- Instrument (LUCKY-RNAV)
 Instrument Approach Chart (ILS Z or LOC Z RWY17)
 Instrument Approach Chart (ILS Y or LOC Y RWY17)
 Instrument Approach Chart (VOR RWY17)
 Instrument Approach Chart (VOR RWY35)
 Instrument Approach Chart (RNAV(GNSS) RWY17)
 Instrument Approach Chart (RNAV(GNSS) RWY35)
 Other Chart (VISUAL REP)
 Other Chart (LDG CHART)
 Other Chart (MVA CHART)

AD CHART

LONGITUDINAL PROFILE OF RWY



REMARKS :
RWY GROOVING 3000m x 40m
WIDTH OF TWY 30m

STANDARD DEPARTURE CHART - INSTRUMENT

RORS / SHIMOJISHIMA

SID

ANNIE FOUR DEPARTURE

RWY 17 : Climb RWY HDG to 500FT, turn right HDG036° to intercept and proceed ...
 RWY 35 : Climb ...
 ... via SJE R351 to ANNIE.
 Cross ANNIE at assigned altitude.



STANDARD DEPARTURE CHART - INSTRUMENT

RORS / SHIMOJISHIMA

SID

BETTY FOUR DEPARTURE

RWY 17 : Climb RWY HDG to 500FT ...

RWY 35 : Climb RWY HDG to 500FT, turn left HDG 126° to intercept and proceed ...

... via SJE R171 to BETTY.

Cross BETTY at assigned altitude.



STANDARD DEPARTURE CHART - INSTRUMENT

RORS / SHIMOJISHIMA

SID

MIYAKOJIMA THREE DEPARTURE

RWY 17 : Climb RWY HDG to 500FT, turn left,...

RWY 35 : Climb RWY HDG to 500FT, turn right,...

...direct to MJC VORTAC. Cross MJC VORTAC at or above 3000FT.

MIYAKOJIMA THREE DEPARTURE



STANDARD DEPARTURE CHART - INSTRUMENT

RORS / SHIMOJISHIMA

SID

PAYAO ONE DEPARTURE

RWY 17 : Climb RWY HDG to 500FT, turn left HDG 021°...

RWY 35 : Climb RWY HDG to 500FT, turn right HDG 111°...

... to intercept and proceed via SJE R066 to PAYAO.



STANDARD ARRIVAL CHART - INSTRUMENT

RORS / SHIMOJISHIMA

STAR

ANNIE ARRIVAL

From over ANNIE, proceed via SJE R351 to DIANA.
Cross DIANA at or above 1600FT.



STANDARD ARRIVAL CHART - INSTRUMENT

RORS / SHIMOJISHIMA

STAR

BETTY ARRIVAL

From over BETTY, proceed via MJC R184 to intercept and proceed via SJE R169 to CHIMI.

Cross CHIMI at or above 1600FT.



STANDARD ARRIVAL CHART - INSTRUMENT

RORS / SHIMOJISHIMA

➔ RNAV STAR RWY35

LUCKY ARRIVAL

RNAV1

Note 1) DME/DME/IRU or GNSS required.
2) RADAR service required.

VAR 5°W (2017)

VOR/DME
SHIMOJISHIMA
117.1 SJE
CH-118X
24°49'19"N/125°08'38"E
100FT



CHIMI
243927.6N
1251128.2E
1600

LUCKY ARRIVAL

LUCKY
243025.9N
1251355.5E

LUCKY ARRIVAL

From LUCKY, to CHIMI at or above 1600FT.

| | |
|------------------------|--|
| Critical DME | — |
| DME GAP | — |
| Inappropriate Nav aids | See AD1.1.6.10.3. Inappropriate NAVAIDS for RNAV1. |

| Serial Number | Path Descriptor | Waypoint Identifier | Fly Over | Course °M(°T) | Magnetic Variation | Distance (NM) | Turn Direction | Altitude (FT) | Speed (KIAS) | Vertical Angle | Navigation Specification |
|---------------|-----------------|---------------------|----------|----------------|--------------------|---------------|----------------|---------------|--------------|----------------|--------------------------|
| 001 | IF | LUCKY | — | — | -4.7 | — | — | — | — | — | RNAV1 |
| 002 | TF | CHIMI | — | 351 (346.1) | -4.7 | 9.3 | — | +1600 | — | — | RNAV1 |

INSTRUMENT APPROACH CHART

RORS / SHIMOJISHIMA

ILS Z or LOC Z RWY17



CHANGE : FREQ (SHIMOJI REMOTE) added



Missed APCH climb gradient MNM 3.0%

| MINIMA | | THR elev. 15 | | AD elev. 25 | | | |
|--------|-----------|--------------|-----------|-------------|-----------|------|------|
| CAT | CAT I | | LOC | | CIRCLING | | |
| | DA(H) | RVR/ CMV | MDA(H) | RVR/ CMV | MDA(H) | VIS | |
| A | 240 (225) | 600 | 460 (445) | 900 | 510 (485) | 1600 | |
| B | | | | 1000 | | | |
| C | | | | | | 1400 | 2400 |
| D | | | | | | | 3200 |

MINIMA with Missed APCH climb gradient of 2.5% are not established.
Circling to WEST side of RWY only.

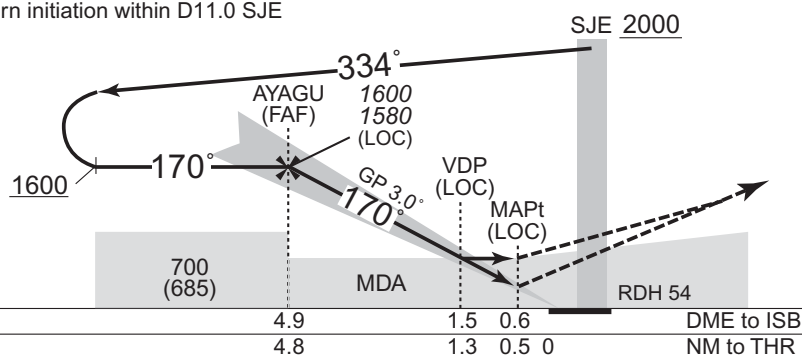
INSTRUMENT APPROACH CHART

RORS / SHIMOJISHIMA

ILS Y or LOC Y RWY17



Turn initiation within D11.0 SJE



MISSED APPROACH

Climb to 2000FT on HDG170°,
turn right, direct to SJE
VOR/DME and hold.
Contact SAKISHIMA APP.

Timing not authorized for defining
the MAPt.

Missed APCH climb gradient MNM 3.0%

| MINIMA | | THR elev. 15 | | AD elev. 25 | | |
|--------|-----------|--------------|-----------|-------------|-----------|------|
| CAT | CAT I | | LOC | | CIRCLING | |
| | DA(H) | RVR/ CMV | MDA(H) | RVR/ CMV | MDA(H) | VIS |
| A | 240 (225) | 600 | 460 (445) | 900 | 510 (485) | 1600 |
| B | | | | 1000 | | 2400 |
| C | | | | | 1400 | |
| D | | | | 3200 | | |

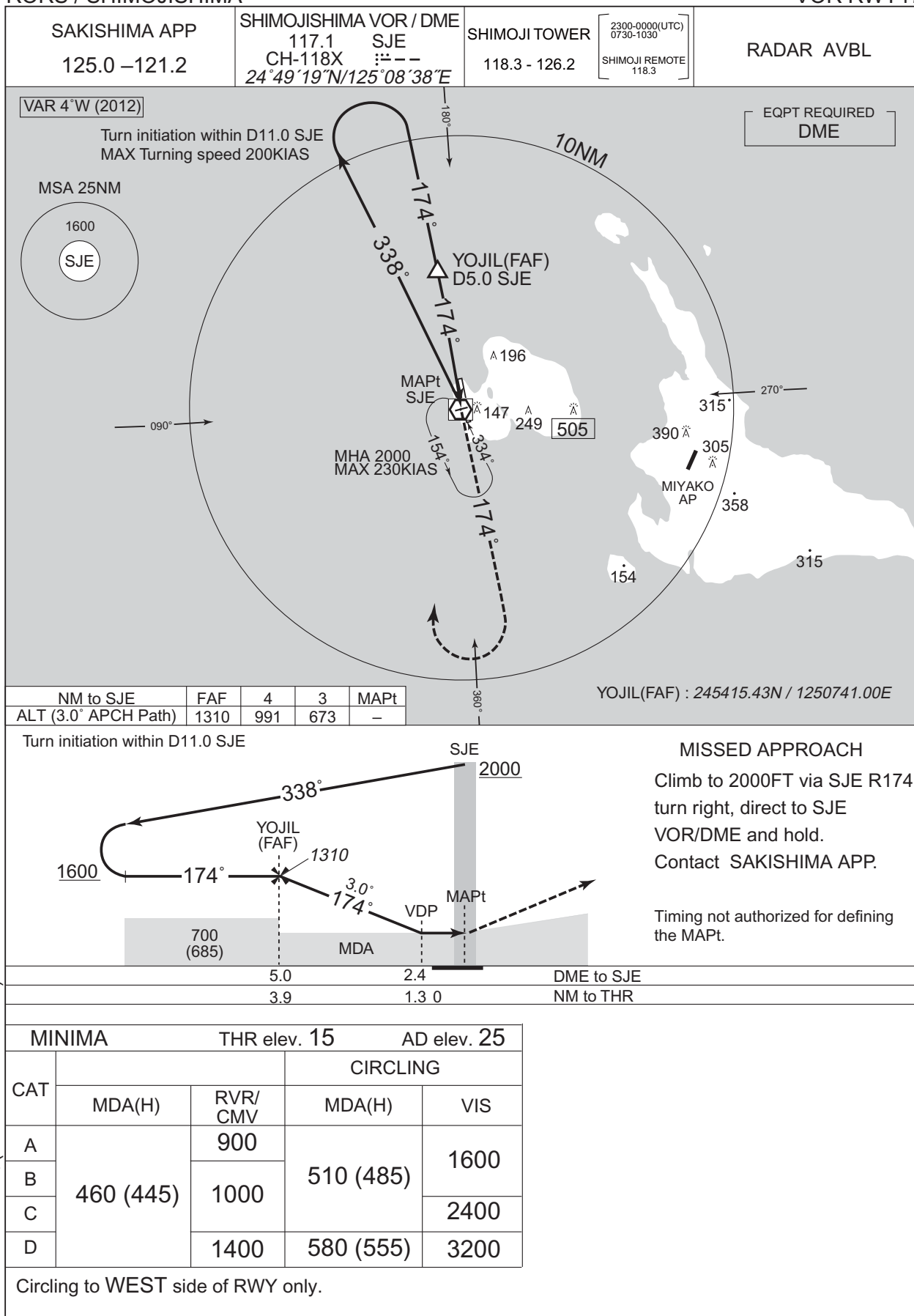
MINIMA with Missed APCH climb gradient of 2.5% are not established.
Circling to WEST side of RWY only.

CHANGE : FREQ (SHIMOJI REMOTE) added

INSTRUMENT APPROACH CHART

RORS / SHIMOJISHIMA

VOR RWY17

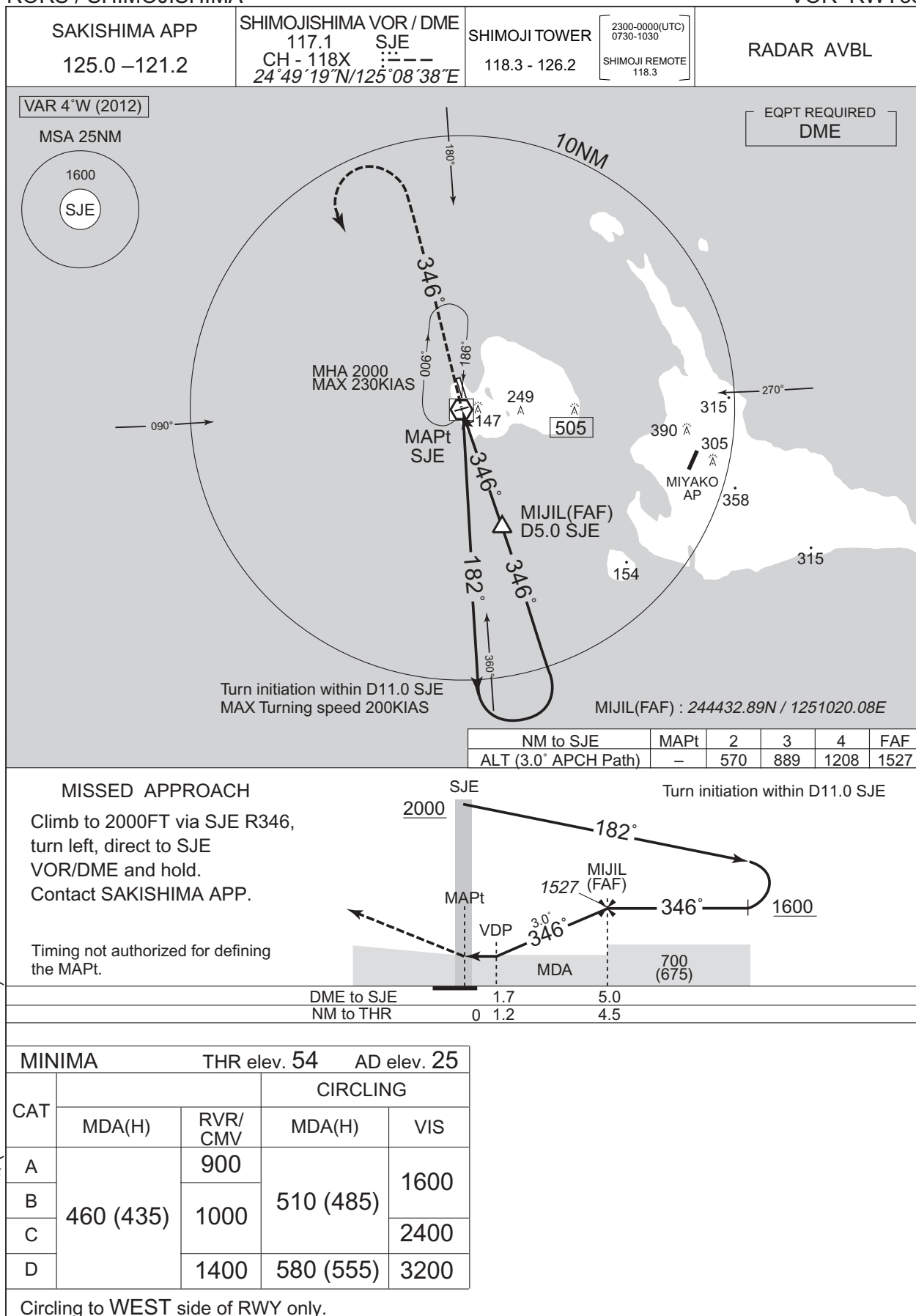


CHANGE : FREQ (SHIMOJI REMOTE) added

INSTRUMENT APPROACH CHART

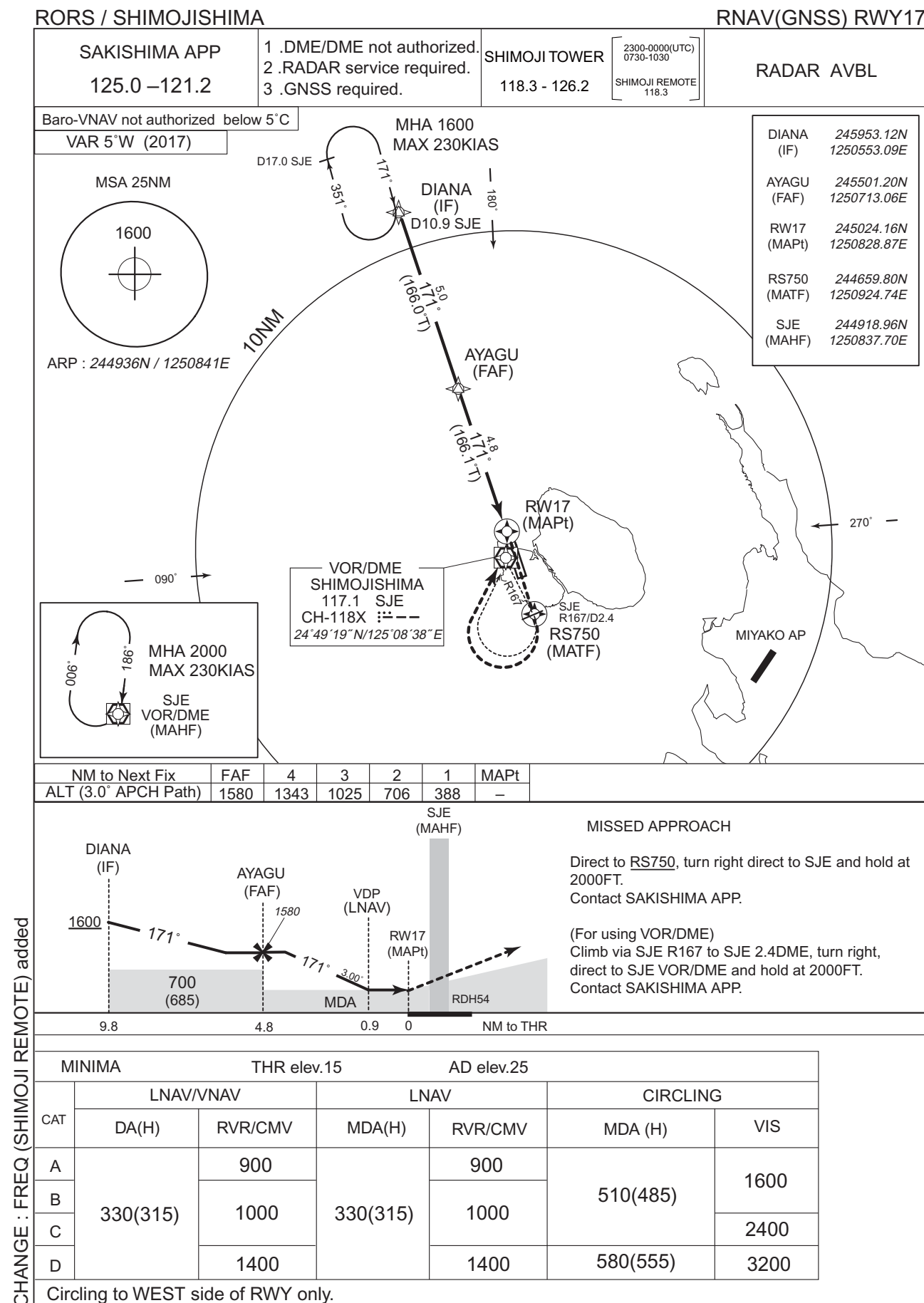
RORS / SHIMOJISHIMA

VOR RWY35



CHANGE : FREQ (SHIMOJI REMOTE) added

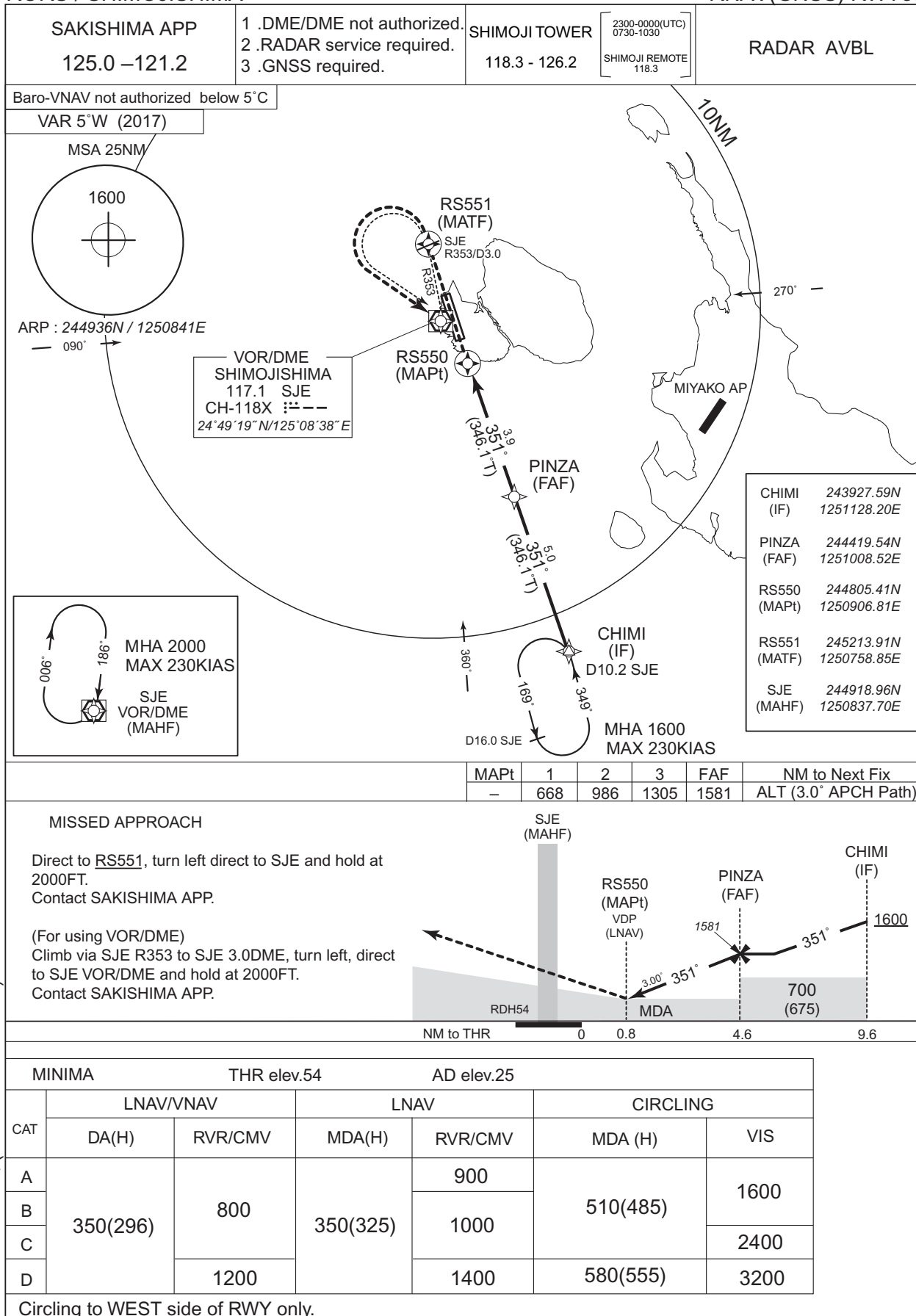
INSTRUMENT APPROACH CHART



INSTRUMENT APPROACH CHART

RORS / SHIMOJISHIMA

RNAV(GNSS) RWY35



CHANGE : FREQ (SHIMOJI REMOTE) added

RORS SHIMOJISHIMA Visual REP



| Call sign | BRG / DIST from ARP | Remarks |
|------------------|---------------------|--------------------|
| 池間島 Ikemajima | 045° / 9NM | 島 Island |
| 9NM NW | 290° / 9NM | 海上 Over the sea |
| 9NM SW | 230° / 9NM | 海上 Over the sea |

LDG CHART



RORS / SHIMOJISHIMA

Minimum Vectoring Altitude CHART

