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Singapore****AIRAC AIP SUP
094/2016****Effective from 02 MAR 2017
UFN
Published on 27 DEC 2016**

INTRODUCTION OF NEW ATS ROUTES WITHIN SINGAPORE FIR, REVISIONS TO EXISTING STANDARD INSTRUMENT DEPARTURES (SIDs), STANDARD TERMINAL ARRIVAL ROUTES (STARs) AND ESTABLISHMENT OF NEW ENROUTE HOLDING AREAS FOR SINGAPORE CHANGI AIRPORT

1 INTRODUCTION

1.1 This AIP Supplement provides details on the introduction of new ATS routes within Singapore FIR, revisions to existing SIDs and STARs and establishment of new Enroute Holding Areas for Singapore Changi Airport to improve safety, efficiency and enhance the provision of Air Traffic Services.

1.2 The new ATS routes, revised SIDs and STARs for Singapore Changi Airport and new Enroute Holding Areas shall be effective from **0000UTC, 02 March 2017**.

2 NEW ATS ROUTES

2.1 To enhance air traffic management within the Singapore FIR, the following ATS routes will be introduced to facilitate the transition of arrivals and departures at Singapore Changi Airport.

| Route Designator | Significant Points |
|------------------|-------------------------------|
| Q801 | ESPOB - ESBUM |
| Q802 | IPRIX - ESBUM - ELALO |
| Q803 | UPRON - IPDOL - KEXOL - ELALO |
| T611 | IDSEL - IPDOL - IPRIX |
| T612 | IDSEL - DOLOX |

2.2 For chart depicting the new ATS routes within Singapore FIR, please refer to **Appendix A**. Details of the new ATS routes are in **Appendix B**.

3 NEW SIDs AND STARs

3.1 The new SIDs will be introduced for departures planning on ATS routes M753 and M771 as shown below:

| New SIDs | Details of New SIDs |
|---------------|---------------------|
| IDSEL 1A & 1B | Appendix C1 |
| IDSEL 1E & 1F | Appendix C2 |

3.2 The new STARs replacing the existing STARs are shown below:

| New STARs | Replace | Details of New STARs |
|-----------|----------|----------------------|
| BELVA 1A | BIKTA 1A | Appendix D1 |
| BELVA 1B | BIKTA 1B | Appendix D2 |
| ELALO 1A | VEPLI 1A | Appendix D3 |

| New STARS | Replace | Details of New STARS |
|-----------|----------|----------------------|
| ELALO 1B | VEPLI 1B | Appendix D4 |
| MABAL 2A | MABAL 1A | Appendix D5 |
| MABAL 2B | MABAL 1B | Appendix D6 |

4 SPEED RESTRICTIONS ON SIDS AND STARS

4.1 Aircraft operating on the SIDs and STARS shall fly at the indicated airspeed as specified in the charts.

5 NEW ENROUTE HOLDING AREAS

5.1 New Enroute Holding Areas have been established to integrate with the revised STARS to optimize the air traffic flow into Singapore Changi Airport.

5.2 The new Enroute Holding Areas established are shown in the table below:

| HOLDING ID/FIX/WPT Coordinates | Inbound Track (°Mag) | Direction of Procedure Turn | MAS IAS | MIN-MAX HOLDING LEVEL | Time (min) | Controlling Unit and Frequency |
|----------------------------------|----------------------|-----------------------------|---------|-----------------------|------------|--------------------------------|
| ELALO 041240N 1043329E | 174 | Left | 300kts | FL350 FL280 | 1.5 | Pri 123.7 Sec 127.3 |
| KILOT 030217N 1044023E | 227 | Left | 250kts | FL270 FL220 | 1.5 | Pri 134.7 Sec 134.15 |

6 FLIGHT PLAN REQUIREMENTS AND RESTRICTIONS

6.1 Aircraft operators at Singapore Changi Airport are to adhere to the following flight plan requirements to operate on the respective ATS routes within and beyond the Singapore FIR.

| | ATS Route | Flight Plan | STAR |
|-----------|-------------|---|---------------|
| Arrival | L642 | ESPOB - Q801 - Q802 - ELALO | ELALO 1A / 1B |
| | M751 / B469 | M751 / B469 | BELVA 1A / 1B |
| | M753 | IPRIX - Q802 - ELALO | ELALO 1A / 1B |
| | M904 | UPRON - Q803 - ELALO | ELALO 1A / 1B |
| | N892 | N892 | MABAL 2A / 2B |
| | ATS Route | Flight Plan | SID |
| Departure | M753 | IDSEL - T611 - IPRIX M753 | IDSEL 1A / 1B |
| | M771 | IDSEL - T612 - DOLOX M771 | IDSEL 1A / 1B |
| | N884 | Not available for flight planning between VMR and LUSMO. Flight Plan via TOMAN L625 LUSMO | TOMAN 2A / 2B |

7 CONTINGENCY PROCEDURES

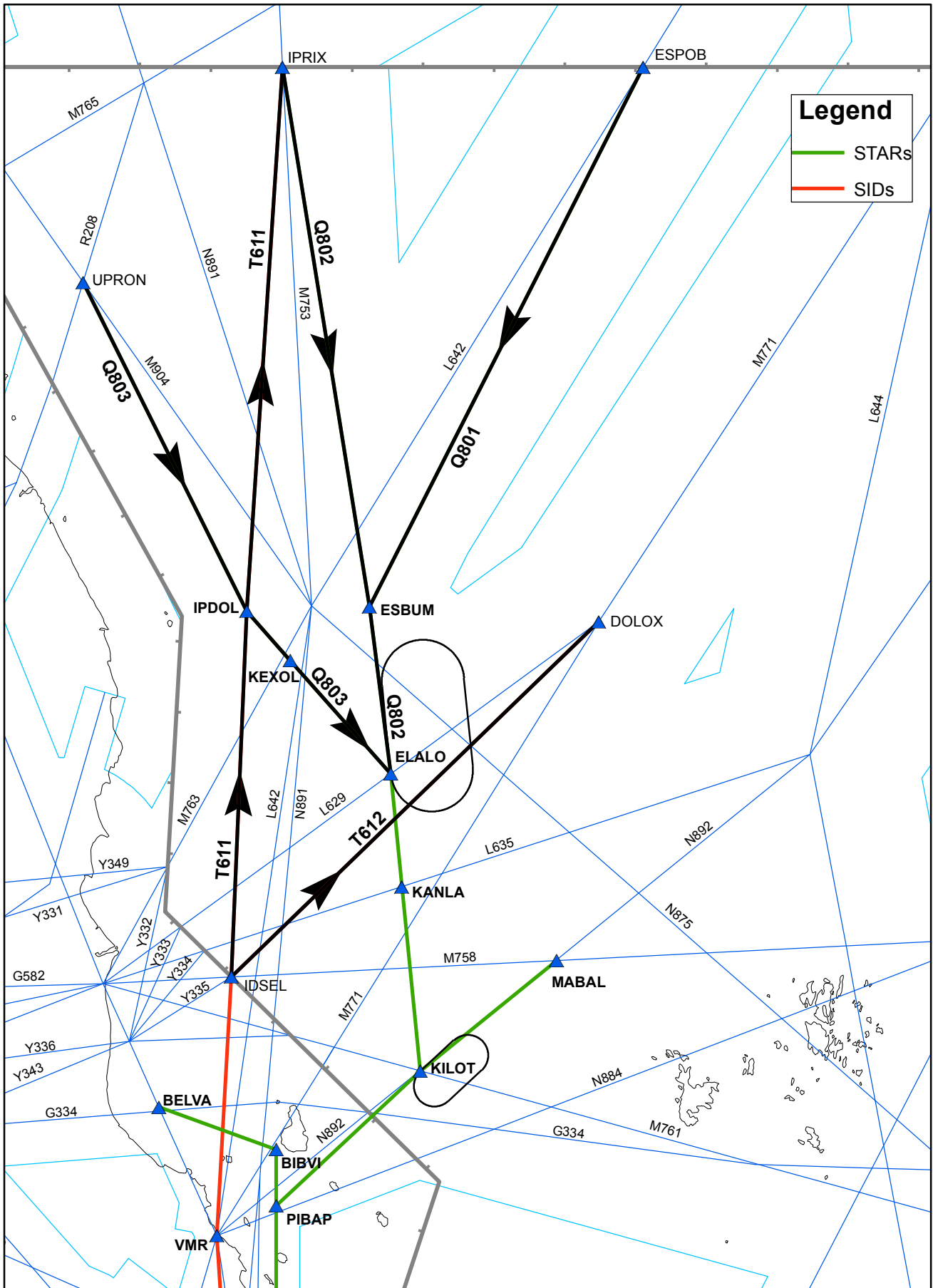
7.1 In the event of onboard RNAV equipment deterioration or failure, pilot shall inform ATC as soon as practicable. ATC shall then provide the appropriate heading instructions to ensure flight safety and separation with other air traffic in the vicinity.

8 CANCELLATION

8.1 Any changes to the content of this AIP Supplement will be notified by NOTAM or superseded by another AIP Supplement.

8.2 AIP Supplement 094/2016 will remain current until the information is incorporated into AIP Singapore.

NEW ATS ROUTES WITHIN SINGAPORE FIR



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ENR 3.3 AREA NAVIGATION (RNAV) ROUTES

| Route Designator (RNP Type) | (Route Usage Notes) | | | | | |
|--|-------------------------------|-------------------------|----------------------------|-------------------|---------|---|
| Significant Point Name | Significant Point Coordinates | | | | Remarks | |
| {RNP Type} | Initial Track MAG | Great Circle DIST NM | Upper Limit Lower Limit | FL series | | Controlling unit Frequency (Airspace class) Remarks |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Q801 | Route availability: H24 | | | | | |
| ▲ ESPOB (VVTS/WSJC FIR BDRY) | 070000N 1053317E | | | | | |
| | | 143.0NM | FL460 FL200 | | | {Class A} |
| ▲ ESBUM | 045210N 1042830E | | | | | |
| <p><u>Route Remarks:</u></p> <p>Lateral Limits: 15NM either side of line joining ESPOB to ESBUM.</p> <p>Uni-directional for southbound flights from ESPOB to ESBUM. No PDC Flight Levels FL310, FL320, FL350, FL360, FL390, FL400 applicable. Other levels available with prior approval.</p> <p>Singapore ACC FREQ: P134.35MHz S133.6MHz</p> | | | | | | |

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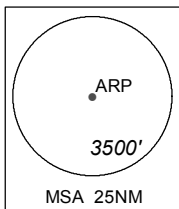
**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**

TWR 118.6 / 118.25
APP 120.3
ACC 133.8

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02C/20C
IDSEL DEPARTURES
IDSEL 1A (R02C)
IDSEL 1B (R20C)**



ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY

NOTE: RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

GENERAL INFORMATION

INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

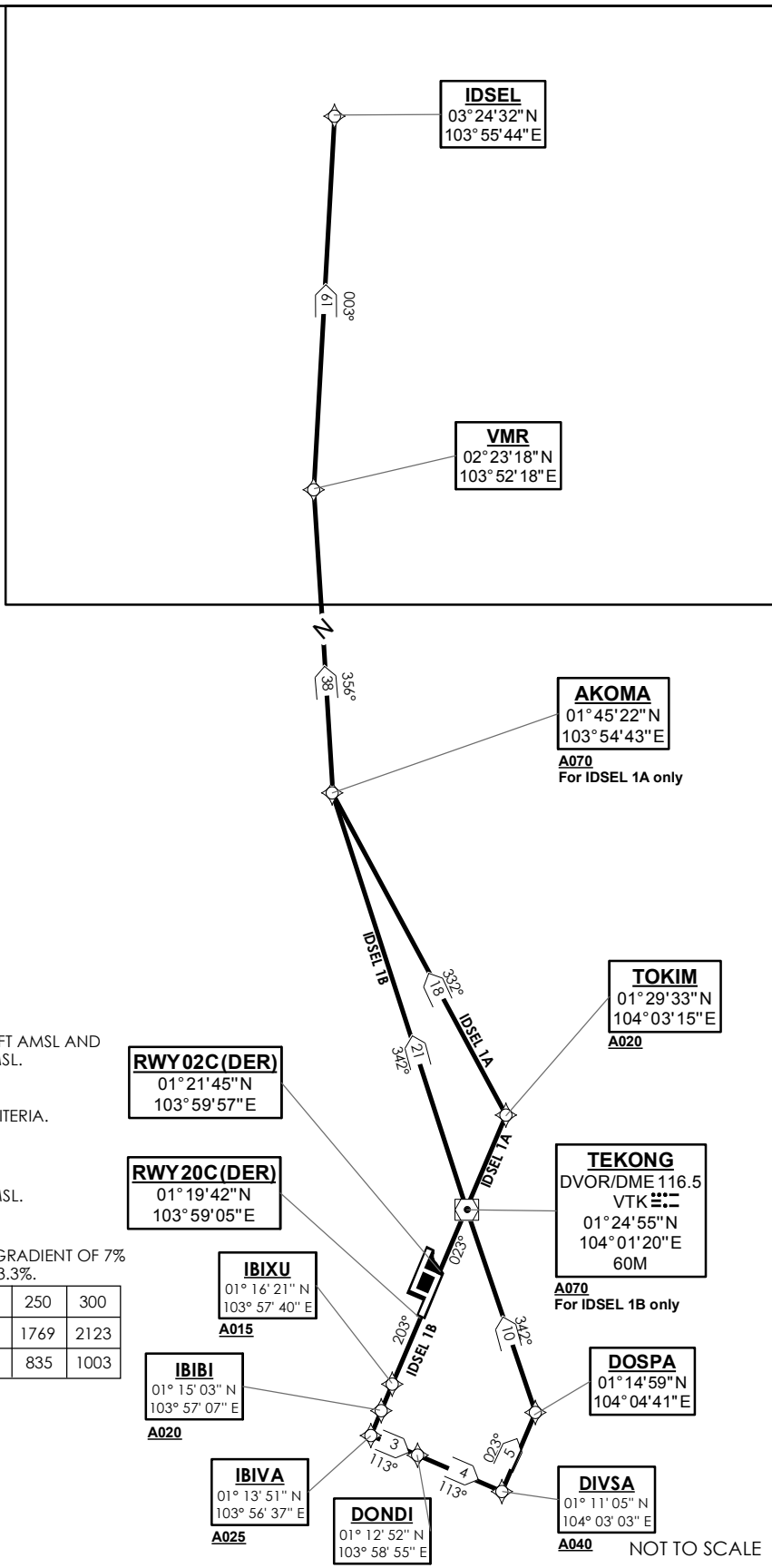
RWY 02C

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

RWY 20C

SHALL NOT EXCEED IAS 230KTS UNTIL DIVSA AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 7%
UNTIL REACHING OR PASSING 2500FT, THEREAFTER 3.3%.

| | | | | | | |
|-------------------|-----|-----|------|------|------|------|
| GND SPEED - KNOTS | 75 | 100 | 150 | 200 | 250 | 300 |
| 7% V/V (fpm) | 532 | 709 | 1062 | 1416 | 1769 | 2123 |
| 3.3% V/V (fpm) | 251 | 334 | 501 | 668 | 835 | 1003 |



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IDSEL 1A (SID) RNAV GNSS RWY 02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|---|--------------------------|-----------------|-------------------|
| To TOKIM on course 023° at or above 2000ft, turn left. To AKOMA at or above 7000ft, turn right. To VMR, turn right. To IDSEL. | TOKIM [M023; A020+; L] - | CF | N |
| | AKOMA [A070+; R] - | TF | N |
| | VMR [R] - | TF | N |
| | IDSEL | TF | N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|-----------|---------------|----------|---------------|--------------------|----------------|----------|-------------|-----------------|
| CF | TOKIM | - | 023(022.5) | -0.5 | L | A020+ | - | RNAV1 |
| TF | AKOMA | - | 332(331.5) | -0.5 | R | A070+ | - | RNAV1 |
| TF | VMR | - | 356(355.5) | -0.5 | R | - | - | RNAV1 |
| TF | IDSEL | - | 003(002.5) | -0.5 | - | - | - | RNAV1 |

IDSEL 1B (SID) RNAV GNSS RWY 20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|--|--------------------------|-----------------|-------------------|
| To IBIXU on course 203° at or above 1500ft. To IBIBI at or above 2000ft. To IBIVA at or above 2500ft, turn left. To DONDI. To DIVSA at or above 4000ft, speed 230kts, turn left. To DOSPA, turn left. To VTK at or above 7000ft. To AKOMA, turn right. To VMR, turn right. To IDSEL. | IBIXU [M203; A015+] - | CF | N |
| | IBIBI [A020+] - | TF | N |
| | IBIVA [A025+; L] - | TF | N |
| | DONDI - | TF | N |
| | DIVSA [A040+; K230; L] - | TF | N |
| | DOSPA [L] - | TF | N |
| | VTK [A070+] - | TF | N |
| | AKOMA [R] - | TF | N |
| | VMR [R] - | TF | N |
| | IDSEL | TF | N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|-----------|---------------|----------|---------------|--------------------|----------------|----------|-------------|-----------------|
| CF | IBIXU | - | 203(202.5) | -0.5 | - | A015+ | - | RNAV1 |
| TF | IBIBI | - | 203(202.5) | -0.5 | - | A020+ | - | RNAV1 |
| TF | IBIVA | - | 203(202.5) | -0.5 | L | A025+ | - | RNAV1 |
| TF | DONDI | - | 113(112.5) | -0.5 | - | - | - | RNAV1 |
| TF | DIVSA | - | 113(112.5) | -0.5 | L | A040+ | K230 | RNAV1 |
| TF | DOSPA | - | 023(022.5) | -0.5 | L | - | - | RNAV1 |
| TF | VTK | - | 342(341.5) | -0.5 | - | A070+ | - | RNAV1 |
| TF | AKOMA | - | 342(341.5) | -0.5 | R | - | - | RNAV1 |
| TF | VMR | - | 356(355.5) | -0.5 | R | - | - | RNAV1 |
| TF | IDSEL | - | 003(002.5) | -0.5 | - | - | - | RNAV1 |

RADIO COMMUNICATIONS FAILURE PROCEDURE

| | |
|---|---|
| 1 | SET TRANSPONDER TO MODE A/C CODE 7600 |
| 2 | <p>COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON:</p> <p>RWY 02C - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.</p> <p>RWY 20C - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.</p> |

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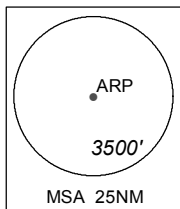
**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**

TWR 118.6 / 118.25
APP 120.3
ACC 133.8

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02L/20R
IDSEL DEPARTURES
IDSEL 1E (R02L)
IDSEL 1F (R20R)**



ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY

NOTE: RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

GENERAL INFORMATION

INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

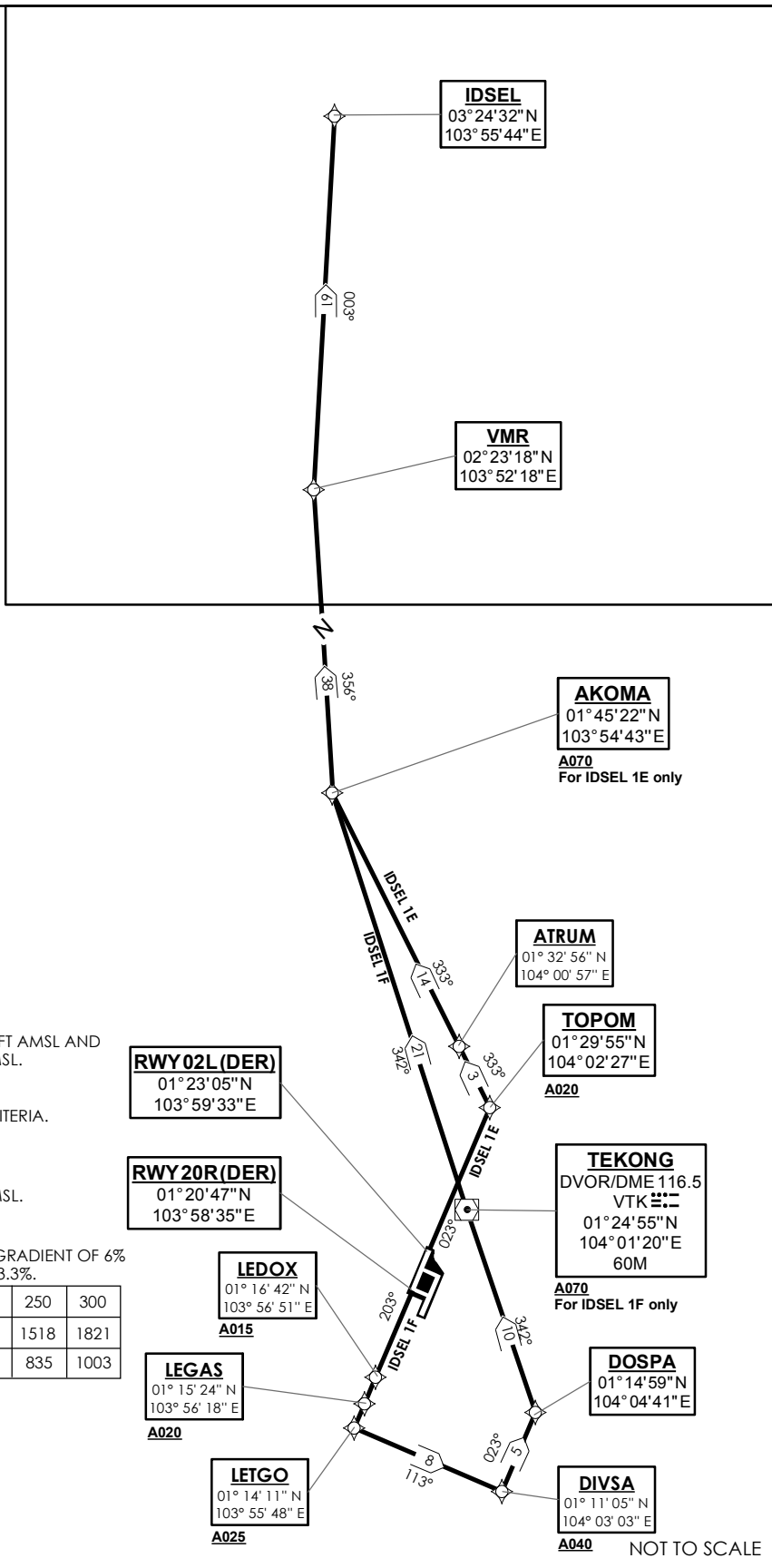
RWY 02L

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

RWY 20R

SHALL NOT EXCEED IAS 230KTS UNTIL DIVSA AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 6%
UNTIL REACHING OR PASSING 2500FT, THEREAFTER 3.3%.

| | | | | | | |
|-------------------|-----|-----|-----|------|------|------|
| GND SPEED - KNOTS | 75 | 100 | 150 | 200 | 250 | 300 |
| 6% V/V (fpm) | 456 | 608 | 911 | 1215 | 1518 | 1821 |
| 3.3% V/V (fpm) | 251 | 334 | 501 | 668 | 835 | 1003 |



AKOMA
01° 45' 22" N
103° 54' 43" E
A070
For IDSEL 1E only

VMR
02° 23' 18" N
103° 52' 18" E

ATRUM
01° 32' 56" N
104° 00' 57" E

TOPOM
01° 29' 55" N
104° 02' 27" E
A020

TEKONG
DVOR/DME 116.5
VTK
01° 24' 55" N
104° 01' 20" E
60M
A070
For IDSEL 1F only

RWY02L (DER)
01° 23' 05" N
103° 59' 33" E

RWY20R (DER)
01° 20' 47" N
103° 58' 35" E

LEDOX
01° 16' 42" N
103° 56' 51" E
A015

LEGAS
01° 15' 24" N
103° 56' 18" E
A020

LETGO
01° 14' 11" N
103° 55' 48" E
A025

DOSPA
01° 14' 59" N
104° 04' 41" E

DIVSA
01° 11' 05" N
104° 03' 03" E
A040

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IDSEL 1E (SID) RNAV GNSS RWY 02L - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|---|--------------------------|-----------------|-------------------|
| To TOPOM on course 023° at or above 2000ft, turn left. To ATRUM. To AKOMA at or above 7000ft, turn right. To VMR, turn right. To IDSEL. | TOPOM [M023; A020+; L] - | CF | N |
| | ATRUM - | TF | N |
| | AKOMA [A070+; R] - | TF | N |
| | VMR [R] - | TF | N |
| | IDSEL | TF | N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|-----------|---------------|----------|---------------|--------------------|----------------|----------|-------------|-----------------|
| CF | TOPOM | - | 023(022.5) | -0.5 | L | A020+ | - | RNAV1 |
| TF | ATRUM | - | 333(332.5) | -0.5 | - | - | - | RNAV1 |
| TF | AKOMA | - | 333(332.5) | -0.5 | R | A070+ | - | RNAV1 |
| TF | VMR | - | 356(355.5) | -0.5 | R | - | - | RNAV1 |
| TF | IDSEL | - | 003(002.5) | -0.5 | - | - | - | RNAV1 |

IDSEL 1F (SID) RNAV GNSS RWY 20R - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|--|--------------------------|-----------------|-------------------|
| To LEDOX on course 203° at or above 1500ft. To LEGAS at or above 2000ft. To LETGO at or above 2500ft, turn left. To DIVSA at or above 4000ft, speed 230kts, turn left. To DOSPA, turn left. To VTK at or above 7000ft. To AKOMA, turn right. To VMR, turn right. To IDSEL. | LEDOX [M203; A015+] - | CF | N |
| | LEGAS [A020+] - | TF | N |
| | LETGO [A025+; L] - | TF | N |
| | DIVSA [A040+; K230; L] - | TF | N |
| | DOSPA [L] - | TF | N |
| | VTK [A070+] - | TF | N |
| | AKOMA [R] - | TF | N |
| | VMR [R] - | TF | N |
| | IDSEL | TF | N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|-----------|---------------|----------|---------------|--------------------|----------------|----------|-------------|-----------------|
| CF | LEDOX | - | 203(202.5) | -0.5 | - | A020+ | - | RNAV1 |
| TF | LEGAS | - | 203(202.5) | -0.5 | - | A020+ | - | RNAV1 |
| TF | LETGO | - | 203(202.5) | -0.5 | L | A020+ | - | RNAV1 |
| TF | DIVSA | - | 113(112.5) | -0.5 | L | A040+ | K230 | RNAV1 |
| TF | DOSPA | - | 023(022.5) | -0.5 | L | - | - | RNAV1 |
| TF | VTK | - | 342(341.5) | -0.5 | - | A070+ | - | RNAV1 |
| TF | AKOMA | - | 342(341.5) | -0.5 | R | - | - | RNAV1 |
| TF | VMR | - | 356(355.5) | -0.5 | R | - | - | RNAV1 |
| TF | IDSEL | - | 003(002.5) | -0.5 | - | - | - | RNAV1 |

RADIO COMMUNICATIONS FAILURE PROCEDURE

| | |
|---|---|
| 1 | SET TRANSPONDER TO MODE A/C CODE 7600 |
| 2 | <p>COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON:</p> <p>RWY 02L - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.</p> <p>RWY 20R - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.</p> |

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**STANDARD ARRIVAL CHART
RNAV (GNSS) -
INSTRUMENT (STAR)**

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02L/C
BELVA ONE ALPHA ARRIVAL
BELVA 1A**

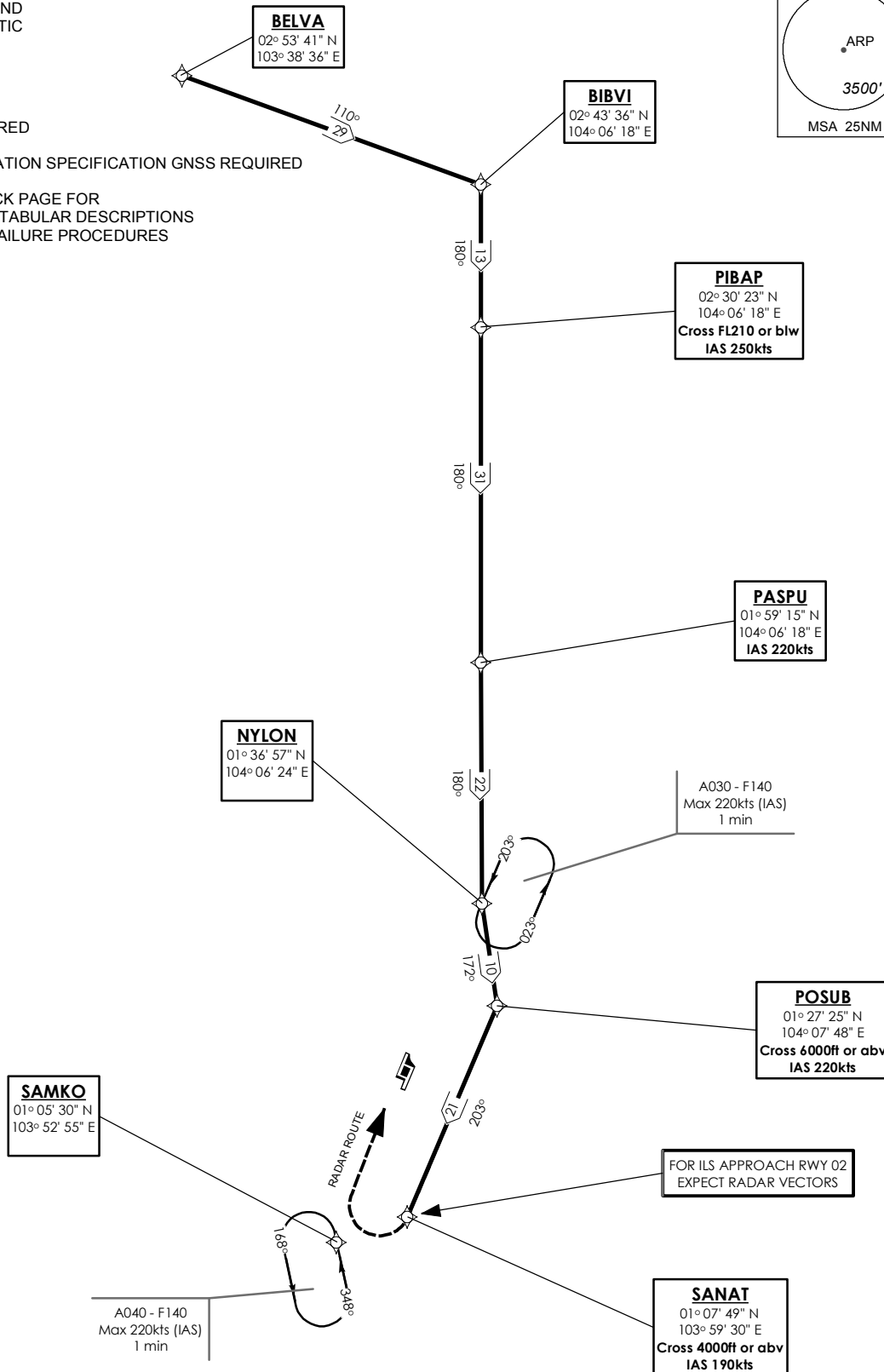
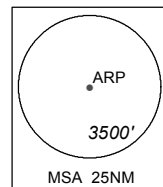
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES



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BELVA 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|--|--------------------------------|------------------------|--------------------------|
| From BELVA. To BIBVI, turn right. To PIBAP at or below FL210, speed 250kts. To PASPU, speed 220kts. To NYLON, turn left. To POSUB at or above 6000ft, speed 220kts, turn right. To SANAT at or above 4000ft, speed 190kts. | BELVA - | IF | N |
| | BIBVI [R] - | TF | N |
| | PIBAP [FL210-; K250] - | TF | N |
| | PASPU [K220] - | TF | N |
| | NYLON [L] - | TF | N |
| | POSUB [A060+; K220; R] - | TF | N |
| | SANAT [A040+; K190] | TF | N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|------------------|----------------------|-----------------|----------------------|---------------------------|-----------------------|-----------------|--------------------|------------------------|
| IF | BELVA | - | - | -0.5 | - | - | - | RNAV1 |
| TF | BIBVI | - | 110(110.5) | -0.5 | R | - | - | RNAV1 |
| TF | PIBAP | - | 120(120.5) | -0.5 | - | FL210- | K250 | RNAV1 |
| TF | PASPU | - | 180(180.0) | -0.5 | - | - | K220 | RNAV1 |
| TF | NYLON | - | 180(180.5) | -0.5 | L | - | - | RNAV1 |
| TF | POSUB | - | 172(172.5) | -0.5 | R | A060+ | K220 | RNAV1 |
| TF | SANAT | - | 203(203.1) | -0.5 | - | A040+ | K190 | RNAV1 |

RADIO COMMUNICATIONS FAILURE PROCEDURE

| | |
|----------|--|
| 1 | SET TRANSPONDER TO MODE A/C CODE 7600 |
| 2 | <p>When cleared via BELVA 1A by Singapore ATC</p> <p>(a) Maintain last assigned flight level or altitude and proceed on BELVA 1A to SANAT, then direct to SAMKO</p> <p>(b) From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA</p> <p>(c) If unable to effect a landing, refer to Singapore AIP for missed approach procedure</p> |
| 3 | <p>No clearance or instruction received from Singapore ATC</p> <p>- Refer to Singapore AIP for radio communications failure procedure</p> |

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**STANDARD ARRIVAL CHART
RNAV (GNSS) -
INSTRUMENT (STAR)**

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 20R/C
BELVA ONE BRAVO ARRIVAL
BELVA 1B**

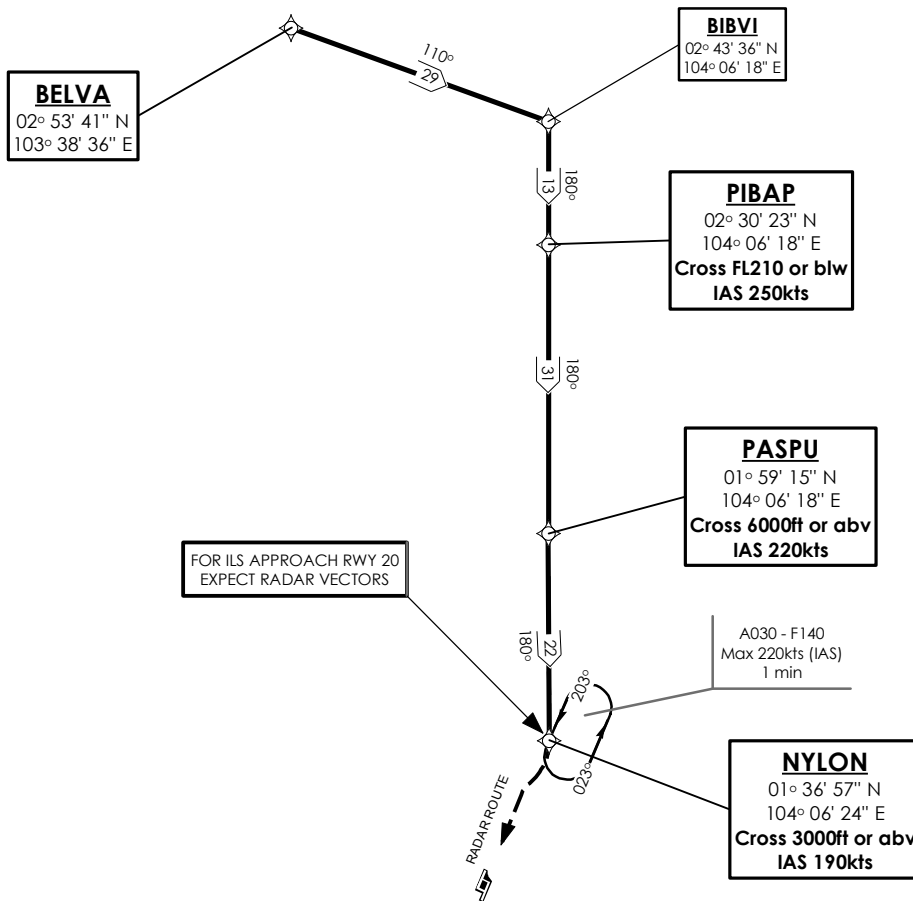
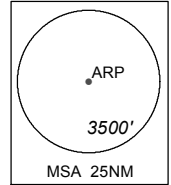
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES



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BELVA 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|--|--------------------------------|------------------------|--------------------------|
| From BELVA. To BIBVI, turn right. To PIBAP at or below FL210, speed 250kts, turn right. To PASPU, at or above 6000ft, speed 220kts. To NYLON at or above 3000ft, speed 190kts. | BELVA - | IF | N |
| | BIBVI [R] - | TF | N |
| | PIBAP [FL210-; K250] - | TF | N |
| | PASPU [A060+; K220] - | TF | N |
| | NYLON [A030+; K190] | TF | N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|------------------|----------------------|-----------------|----------------------|---------------------------|-----------------------|-----------------|--------------------|------------------------|
| IF | BELVA | - | - | -0.5 | - | - | - | RNAV1 |
| TF | BIBVI | - | 110(110.5) | -0.5 | R | - | - | RNAV1 |
| TF | PIBAP | - | 120(120.5) | -0.5 | - | FL210- | K250 | RNAV1 |
| TF | PASPU | - | 180(180.0) | -0.5 | - | A060+ | K220 | RNAV1 |
| TF | NYLON | - | 180(180.5) | -0.5 | - | A030+ | K190 | RNAV1 |

RADIO COMMUNICATIONS FAILURE PROCEDURE

| | |
|----------|---|
| 1 | SET TRANSPONDER TO MODE A/C CODE 7600 |
| 2 | When cleared via BELVA 1B by Singapore ATC (a) Maintain last assigned flight level or altitude and proceed on BELVA 1B to NYLON (b) From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA (c) If unable to effect a landing, refer to Singapore AIP for missed approach procedure |
| 3 | No clearance or instruction received from Singapore ATC - Refer to Singapore AIP for radio communications failure procedure |

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**STANDARD ARRIVAL CHART
RNAV (GNSS) -
INSTRUMENT (STAR)**

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02L/C
ELALO ONE ALPHA ARRIVAL
ELALO 1A**

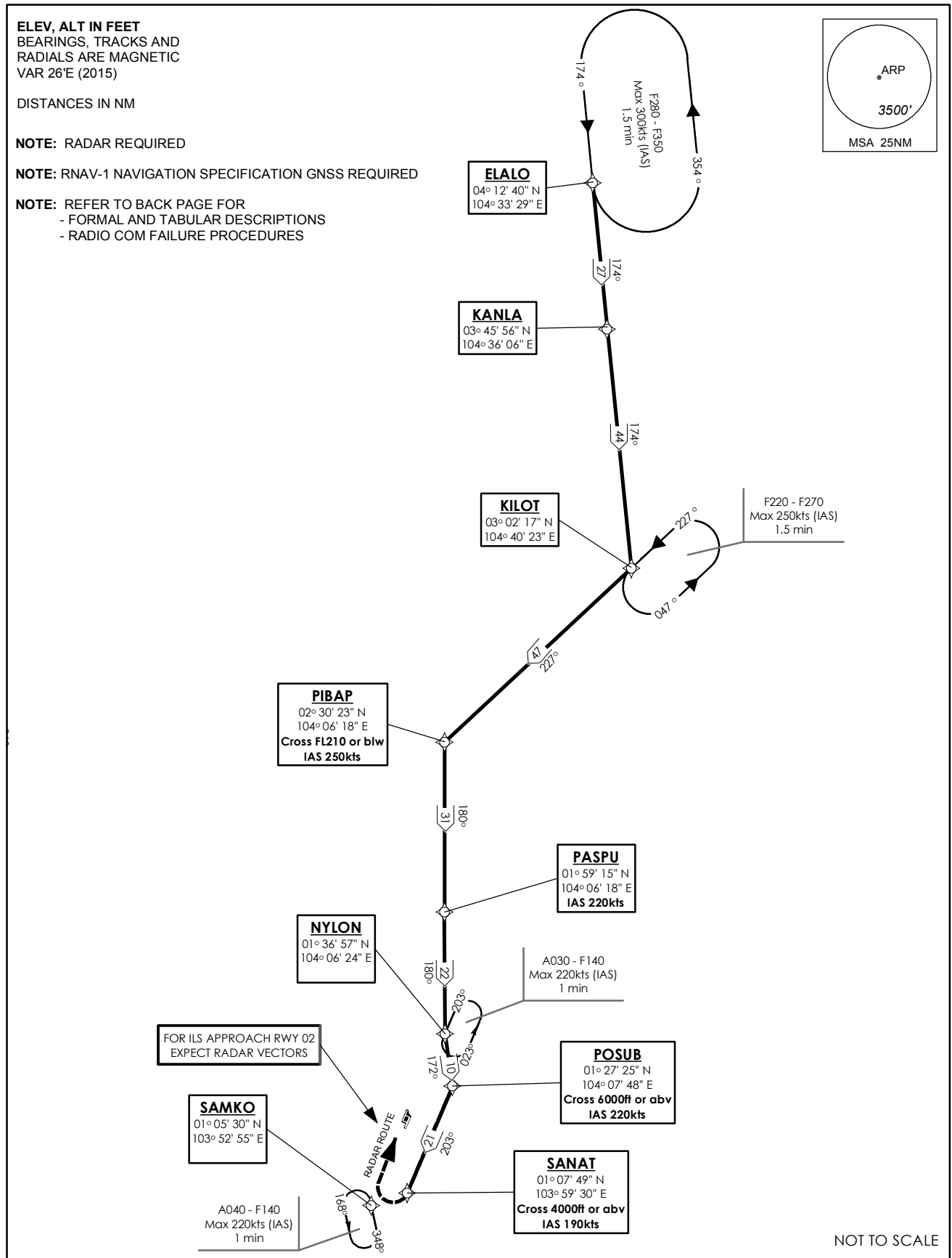
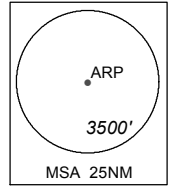
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES



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ELALO 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|---|---|-----------------|-------------------|
| From ELALO. To KANLA. To KILOT, turn right. To PIBAP at or below FL210, speed 250kts, turn left. To PASPU, speed 220kts. To NYLON, turn left. To POSUB at or above 6000ft, speed 220kts, turn right. To SANAT at or above 4000ft, speed 190kts. | ELALO - | IF | N |
| | KANLA - | TF | N |
| | KILOT [R] - | TF | N |
| | PIBAP [FL210-; K250; L] - | TF | N |
| | PASPU [K220] - | TF | N |
| | NYLON [L] - | TF | N |
| | POSUB [A060+; K220; R] - SANAT [A040+; K190] | TF | N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|-----------|---------------|----------|---------------|--------------------|----------------|----------|-------------|-----------------|
| IF | ELALO | - | - | -0.5 | - | - | - | RNAV1 |
| TF | KANLA | - | 174(174.5) | -0.5 | - | - | - | RNAV1 |
| TF | KILOT | - | 174(174.5) | -0.5 | R | - | - | RNAV1 |
| TF | PIBAP | - | 227(227.5) | -0.5 | L | FL210- | K250 | RNAV1 |
| TF | PASPU | - | 180(180.5) | -0.5 | - | - | K220 | RNAV1 |
| TF | NYLON | - | 180(180.5) | -0.5 | L | - | - | RNAV1 |
| TF | POSUB | - | 172(172.5) | -0.5 | R | A060+ | K220 | RNAV1 |
| TF | SANAT | - | 203(203.1) | -0.5 | - | A040+ | K190 | RNAV1 |

RADIO COMMUNICATIONS FAILURE PROCEDURE

| | |
|---|--|
| 1 | SET TRANSPONDER TO MODE A/C CODE 7600 |
| 2 | <p>When cleared via ELALO 1A by Singapore ATC</p> <p>(a) Maintain last assigned flight level or altitude and proceed on ELALO 1A to SANAT, then direct to SAMKO</p> <p>(b) From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA</p> <p>(c) If unable to effect a landing, refer to Singapore AIP for missed approach procedure</p> |
| 3 | <p>No clearance or instruction received from Singapore ATC</p> <p>- Refer to Singapore AIP for radio communications failure procedure</p> |

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**STANDARD ARRIVAL CHART
RNAV (GNSS) -
INSTRUMENT (STAR)**

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 20R/C
ELALO ONE BRAVO ARRIVAL
ELALO 1B**

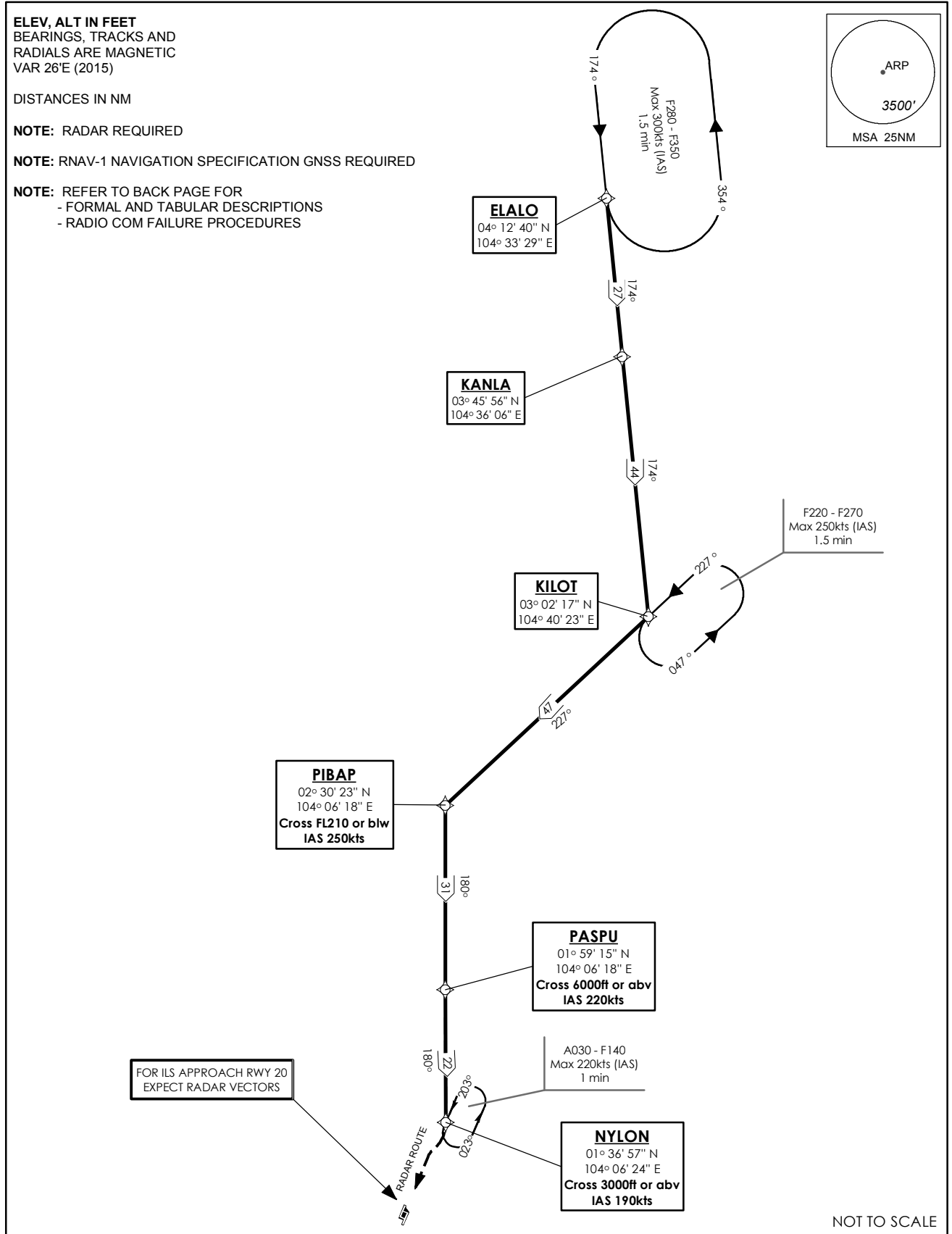
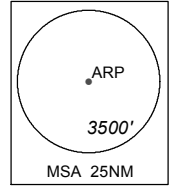
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES



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ELALO 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|--|---------------------------|-----------------|-------------------|
| From ELALO. To KANLA. To KILOT, turn right. To PIBAP at or below FL210, speed 250kts turn left. To PASPU, at or above 6000ft, speed 220kts. To NYLON at or above 3000ft, speed 190kts. | ELALO - | IF | N |
| | KANLA - | TF | N |
| | KILOT [R] - | TF | N |
| | PIBAP [FL210-; K250; L] - | TF | N |
| | PASPU [A060+; K220] - | TF | N |
| | NYLON [A030+; K190] | TF | N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|-----------|---------------|----------|---------------|--------------------|----------------|----------|-------------|-----------------|
| IF | ELALO | - | - | -0.5 | - | - | - | RNAV1 |
| TF | KANLA | - | 174(174.5) | -0.5 | - | - | - | RNAV1 |
| TF | KILOT | - | 174(174.5) | -0.5 | R | - | - | RNAV1 |
| TF | PIBAP | - | 227(227.5) | -0.5 | L | FL210- | K250 | RNAV1 |
| TF | PASPU | - | 180(180.5) | -0.5 | - | A060+ | K220 | RNAV1 |
| TF | NYLON | - | 180(180.5) | -0.5 | - | A030+ | K190 | RNAV1 |

RADIO COMMUNICATIONS FAILURE PROCEDURE

| | |
|----------|--|
| 1 | SET TRANSPONDER TO MODE A/C CODE 7600 |
| 2 | <p>When cleared via ELALO 1B by Singapore ATC</p> <p>(a) Maintain last assigned flight level or altitude and proceed on ELALO 1B to NYLON</p> <p>(b) From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA</p> <p>(c) If unable to effect a landing, refer to Singapore AIP for missed approach procedure</p> |
| 3 | <p>No clearance or instruction received from Singapore ATC</p> <p>- Refer to Singapore AIP for radio communications failure procedure</p> |

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**STANDARD ARRIVAL CHART
RNAV (GNSS) -
INSTRUMENT (STAR)**

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02L/C
MABAL TWO ALPHA ARRIVAL
MABAL 2A**

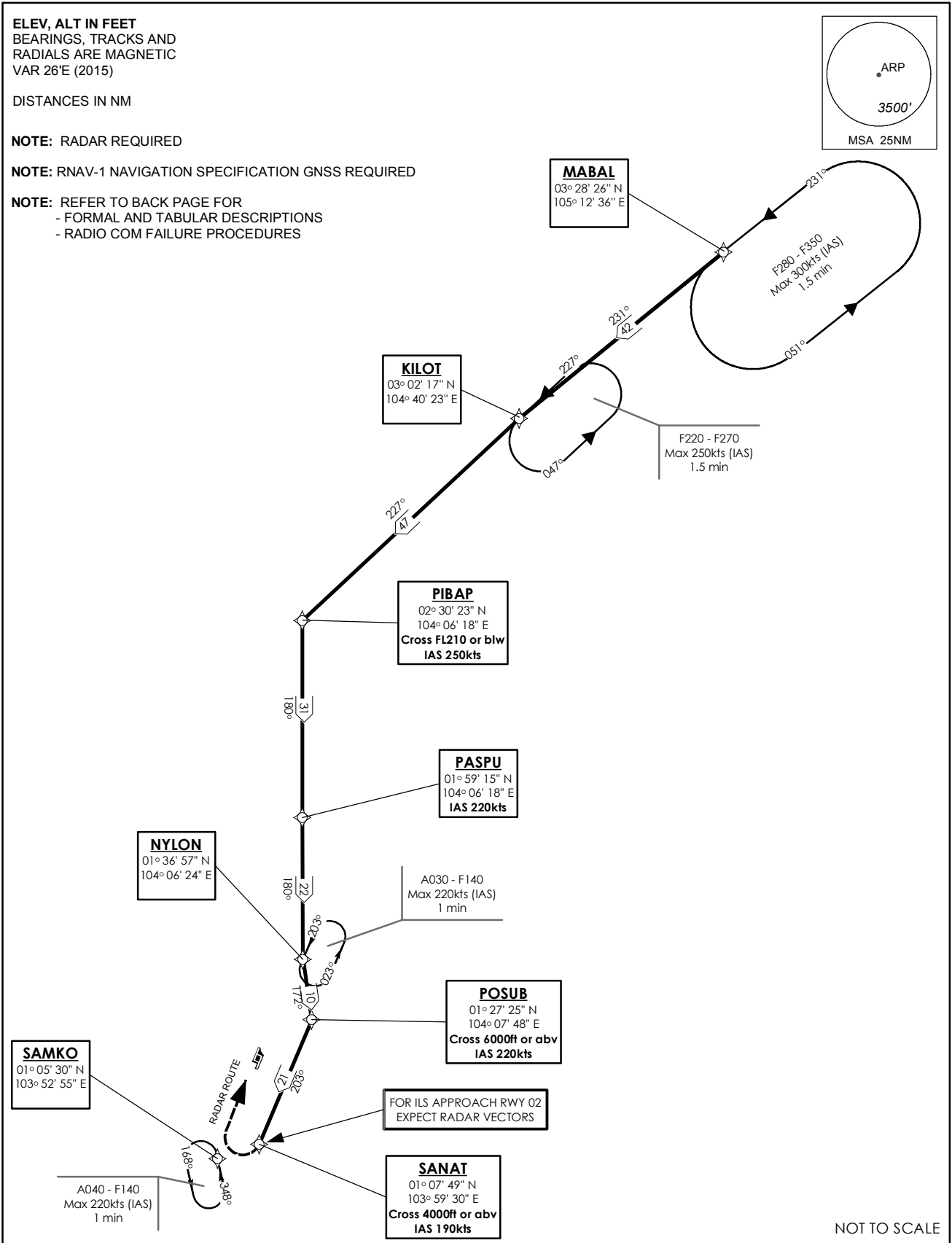
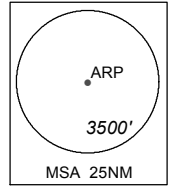
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES



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MABAL 2A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|--|--------------------------------|------------------------|--------------------------|
| From MABAL. To KILOT, turn left. To PIBAP at or below FL210, speed 250kts, turn left. To PASPU, speed 220kts. To NYLON, turn left. To POSUB at or above 6000ft, speed 220kts, turn right. To SANAT at or above 4000ft, speed 190kts. | MABAL - | IF | N |
| | KILOT [L] - | TF | N |
| | PIBAP [FL210-; K250; L] - | TF | N |
| | PASPU [K220] - | TF | N |
| | NYLON [L] - | TF | N |
| | POSUB [A060+; K220; R] - | TF | N |
| | SANAT [A040+; K190] | TF | N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|------------------|----------------------|-----------------|----------------------|---------------------------|-----------------------|-----------------|--------------------|------------------------|
| IF | MABAL | - | - | -0.5 | - | - | - | RNAV1 |
| TF | KILOT | - | 231(231.1) | -0.5 | L | - | - | RNAV1 |
| TF | PIBAP | - | 227(227.5) | -0.5 | L | FL210- | K250 | RNAV1 |
| TF | PASPU | - | 180(180.5) | -0.5 | - | - | K220 | RNAV1 |
| TF | NYLON | - | 180(180.5) | -0.5 | L | - | - | RNAV1 |
| TF | POSUB | - | 172(172.5) | -0.5 | R | A060+ | K220 | RNAV1 |
| TF | SANAT | - | 203(203.1) | -0.5 | - | A040+ | K190 | RNAV1 |

RADIO COMMUNICATIONS FAILURE PROCEDURE

| | |
|----------|--|
| 1 | SET TRANSPONDER TO MODE A/C CODE 7600 |
| 2 | <p>When cleared via MABAL 2A by Singapore ATC</p> <p>(a) Maintain last assigned flight level or altitude and proceed on MABAL 2A to SANAT, then direct to SAMKO</p> <p>(b) From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA</p> <p>(c) If unable to effect a landing, refer to Singapore AIP for missed approach procedure</p> |
| 3 | <p>No clearance or instruction received from Singapore ATC</p> <p>- Refer to Singapore AIP for radio communications failure procedure</p> |

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STANDARD ARRIVAL CHART
RNAV (GNSS) -
INSTRUMENT (STAR)

ACC 133.8
 APP 124.05 / 120.3
 ARR 119.3
 TWR 118.6 / 118.25

TRANSITION ALTITUDE
 11 000ft

D-ATIS AP ID-WSSS
 128.6

SINGAPORE/Singapore Changi
RWY 20R/C
MABAL TWO BRAVO ARRIVAL
MABAL 2B

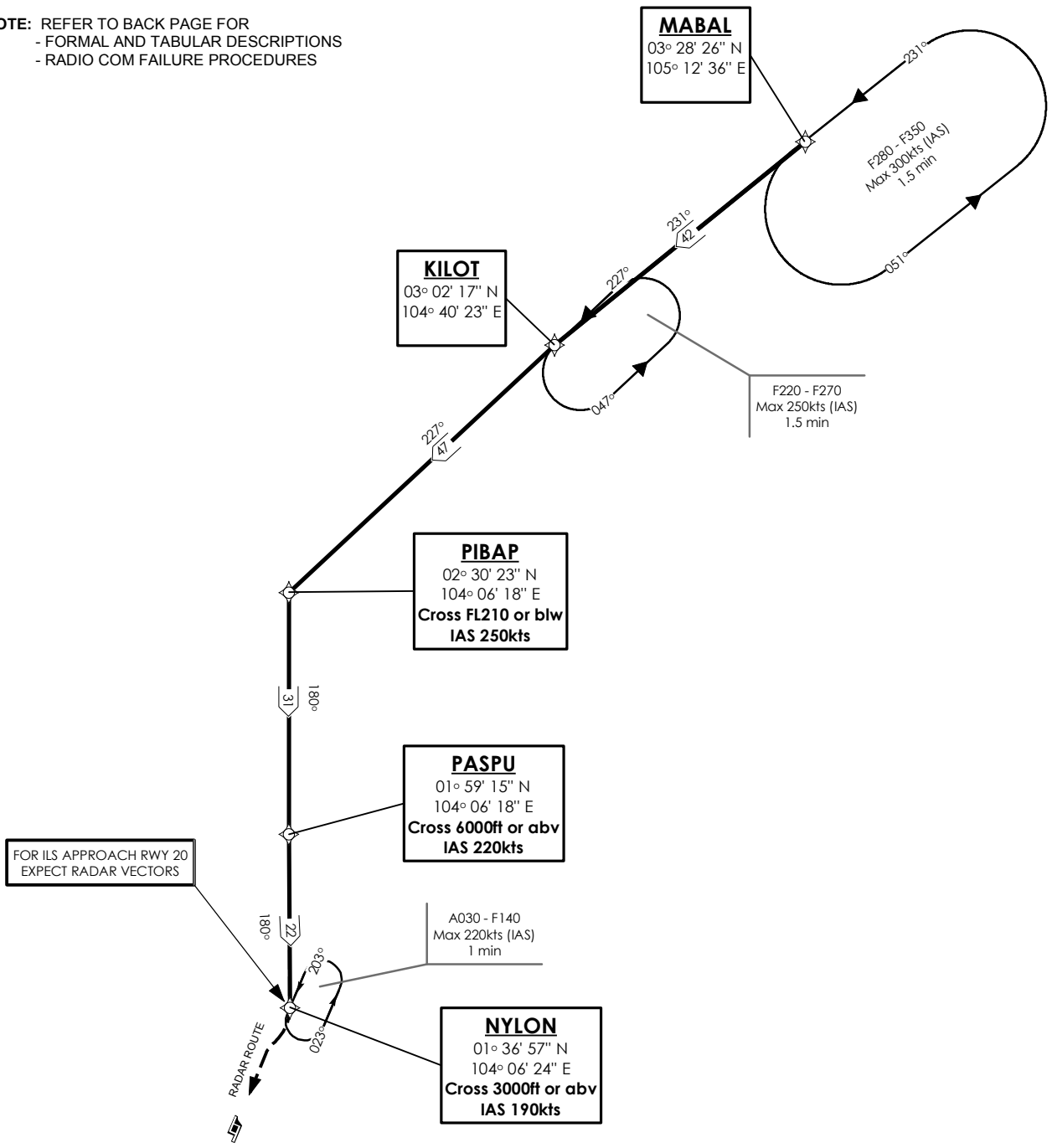
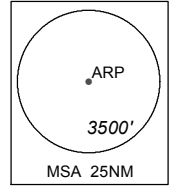
ELEV, ALT IN FEET
 BEARINGS, TRACKS AND
 RADIALS ARE MAGNETIC
 VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
 - FORMAL AND TABULAR DESCRIPTIONS
 - RADIO COM FAILURE PROCEDURES



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MABAL 2B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

| Formal Description | Abbreviated Description | Path Terminator | Fly-Over required |
|--|---|----------------------------|--------------------------|
| From MABAL. To KILOT, turn left. To PIBAP at or below FL210, speed 250kts, turn left. To PASPU, at or above 6000ft, speed 220kts. To NYLON at or above 3000ft, speed 190kts. | MABAL - KILOT [L] - PIBAP [FL210-; K250; L] - PASPU [A060+; K220] - NYLON [A030+; K190] | IF TF TF TF TF | N N N N N |

Tabular Descriptions

| Path Term | Waypoint Name | Fly-Over | Course °M(°T) | Magnetic Variation | Turn Direction | Altitude | Speed Limit | Navigation Spec |
|------------------|----------------------|-----------------|----------------------|---------------------------|-----------------------|-----------------|--------------------|------------------------|
| IF | MABAL | - | - | -0.5 | - | - | - | RNAV1 |
| TF | KILOT | - | 231(231.1) | -0.5 | L | - | - | RNAV1 |
| TF | PIBAP | - | 227(227.5) | -0.5 | L | FL210- | K250 | RNAV1 |
| TF | PASPU | - | 180(180.5) | -0.5 | - | A060+ | K220 | RNAV1 |
| TF | NYLON | - | 180(180.5) | -0.5 | - | A030+ | K190 | RNAV1 |

RADIO COMMUNICATIONS FAILURE PROCEDURE

| | |
|----------|--|
| 1 | SET TRANSPONDER TO MODE A/C CODE 7600 |
| 2 | <p>When cleared via MABAL 2B by Singapore ATC</p> <p>(a) Maintain last assigned flight level or altitude and proceed on MABAL 2B to NYLON</p> <p>(b) From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA</p> <p>(c) If unable to effect a landing, refer to Singapore AIP for missed approach procedure</p> |
| 3 | <p>No clearance or instruction received from Singapore ATC</p> <p>- Refer to Singapore AIP for radio communications failure procedure</p> |

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