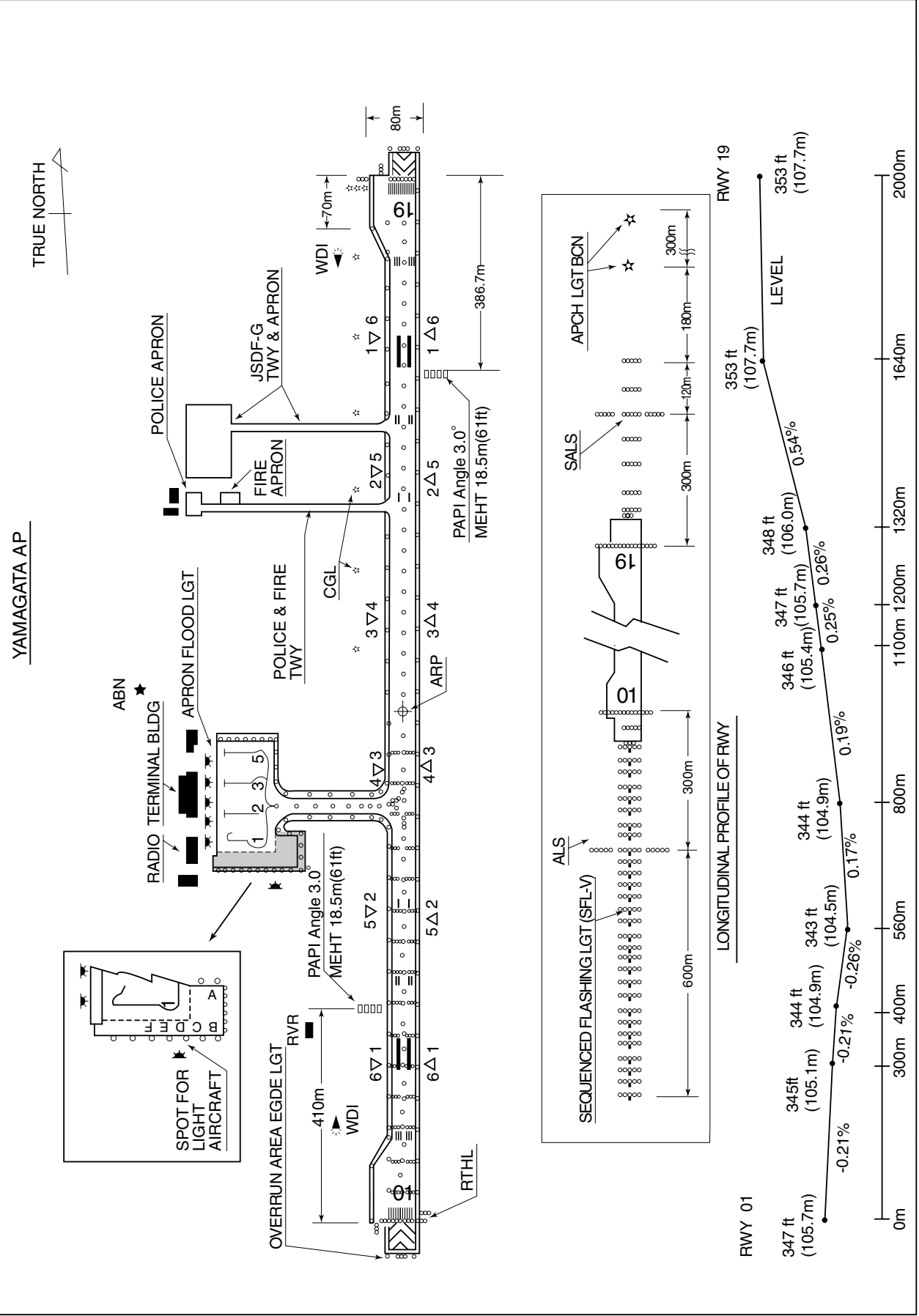


RJSC / YAMAGATA

AD CHART



STANDARD DEPARTURE CHART-INSTRUMENT

RJSC / YAMAGATA

SID

YAMAGATA FOUR DEPARTURE

RWY01 : Climb RWY HDG to 2000FT, via YTE R017 to 22.0DME, turn left, via YTE R003 to YTE VOR/DME.

RWY19 : Climb RWY HDG to 2000FT, turn right, direct to YTE VOR/DME, cross YTE VOR/DME at or above 4000FT, via YTE R017 to 15.0DME, turn left, via YTE R354 to YTE VOR/DME.

Note RWY01: 5.0% climb gradient required up to 2000FT.

OBST ALT 1182FT located at 4.2NM 033° FM end of RWY01.

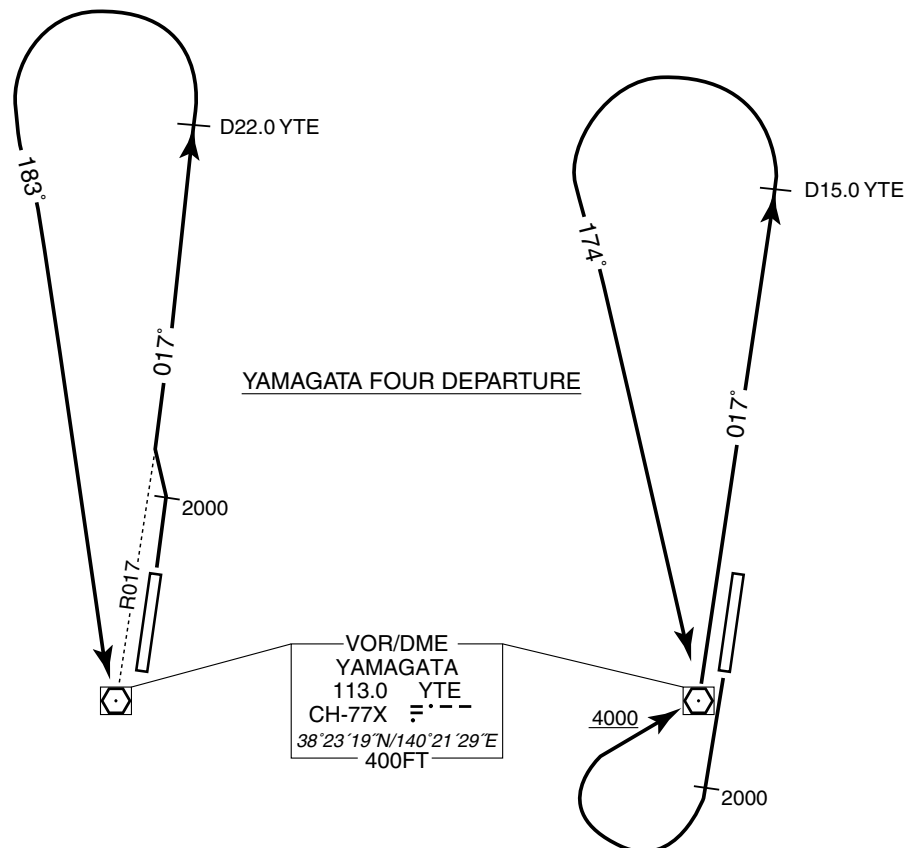
RWY19: 5.0% climb gradient required up to 2000FT.

OBST ALT 788FT located at 3.1NM 181° FM end of RWY19.

Note No turn before DER.

For RWY01

For RWY19



## STANDARD DEPARTURE CHART-INSTRUMENT

RJSC / YAMAGATA

RNAV SID

## RUBIS ONE DEPARTURE

Basic RNP1

Note GNSS required.

VAR 8°W (2017)

RUBIS ONE DEPARTURE

RWY01 : Climb on HDG015° at or above 800FT, direct to SC101, to SC102 at or above 7000FT,...

RWY19 : Climb on HDG195° at or above 1300FT, direct to SC903, to SC904, to SC905, to SC906,...

... to ZUNDA at or above FL170, to RUBIS at or above FL200.

Note RWY01 : 5.0% climb gradient required up to 2000FT.  
OBST ALT 3609FT located at 16.0NM 039° FM end of RWY01.

RWY19 : 4.0% climb gradient required up to 1300FT.  
OBST ALT 919FT located at 3.2NM 181° FM end of RWY19.

CHANGE : New PROC

## STANDARD DEPARTURE CHART-INSTRUMENT

## RJSC / YAMAGATA

## RNAV SID

RUBIS ONE DEPARTURE

## RWY01

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	VA	—	—	015 (006.6)	-8.2	—	—	+800	—	—	Basic RNP1
002	DF	SC101	—	—	-8.2	—	—	—	—	—	Basic RNP1
003	TF	SC102	—	105 (096.6)	-8.2	8.4	—	+7000	—	—	Basic RNP1
004	TF	ZUNDA	—	200 (192.2)	-8.2	31.2	—	+FL170	—	—	Basic RNP1
005	TF	RUBIS	—	169 (161.2)	-8.2	26.9	—	+FL200	—	—	Basic RNP1

## RWY19

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	VA	—	—	195 (186.6)	-8.2	—	—	+1300	—	—	Basic RNP1
002	DF	SC903	—	—	-8.2	—	—	—	—	—	Basic RNP1
003	TF	SC904	—	285 (276.6)	-8.2	9.4	—	—	—	—	Basic RNP1
004	TF	SC905	—	015 (006.4)	-8.2	10.5	—	—	—	—	Basic RNP1
005	TF	SC906	—	105 (096.5)	-8.2	10.6	—	—	—	—	Basic RNP1
006	TF	ZUNDA	—	179 (171.0)	-8.2	15.7	—	+FL170	—	—	Basic RNP1
007	TF	RUBIS	—	169 (161.2)	-8.2	26.9	—	+FL200	—	—	Basic RNP1

CHANGE : New PROC

STANDARD DEPARTURE CHART-INSTRUMENT

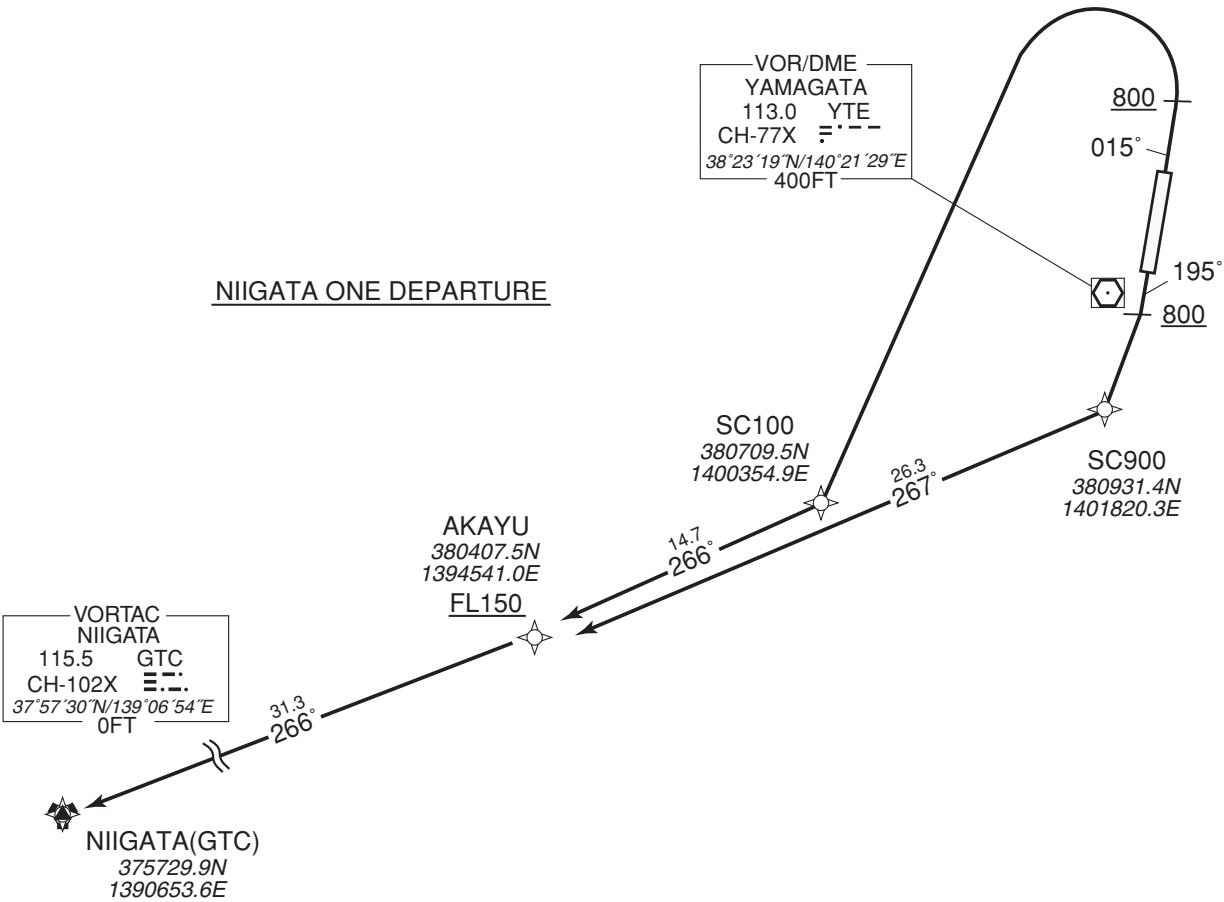
RJSC / YAMAGATA

RNAV SID

NIIGATA ONE DEPARTURE	Basic RNP1
-----------------------	------------

Note GNSS required.

VAR 8°W (2017)



NIIGATA ONE DEPARTURE

RWY01 : Climb on HDG015° at or above 800FT, turn left direct to SC100,...  
RWY19 : Climb on HDG195° at or above 800FT, direct to SC900,...  
... to AKAYU at or above FL150, to GTC.

Note RWY01 : 5.5% climb gradient required up to 2500FT.  
OBST ALT 2198FT located at 6.3NM 321° FM end of RWY01.  
RWY19 : 4.3% climb gradient required up to 800FT.  
OBST ALT 722FT located at 2.8NM 182° FM end of RWY19.

CHANGE : New PROC

## STANDARD DEPARTURE CHART-INSTRUMENT

## RJSC / YAMAGATA

## RNAV SID

NIIGATA ONE DEPARTURE

## RWY01

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	VA	—	—	015 (006.6)	-8.2	—	—	+800	—	—	Basic RNP1
002	DF	SC100	—	—	-8.2	—	L	—	—	—	Basic RNP1
003	TF	AKAYU	—	266 (258.2)	-8.2	14.7	—	+FL150	—	—	Basic RNP1
004	TF	GTC	—	266 (258.0)	-8.2	31.3	—	—	—	—	Basic RNP1

## RWY19

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	VA	—	—	195 (186.6)	-8.2	—	—	+800	—	—	Basic RNP1
002	DF	SC900	—	—	-8.2	—	—	—	—	—	Basic RNP1
003	TF	AKAYU	—	267 (258.3)	-8.2	26.3	—	+FL150	—	—	Basic RNP1
004	TF	GTC	—	266 (258.0)	-8.2	31.3	—	—	—	—	Basic RNP1

CHANGE : New PROC

## STANDARD DEPARTURE CHART-INSTRUMENT

RJSC / YAMAGATA

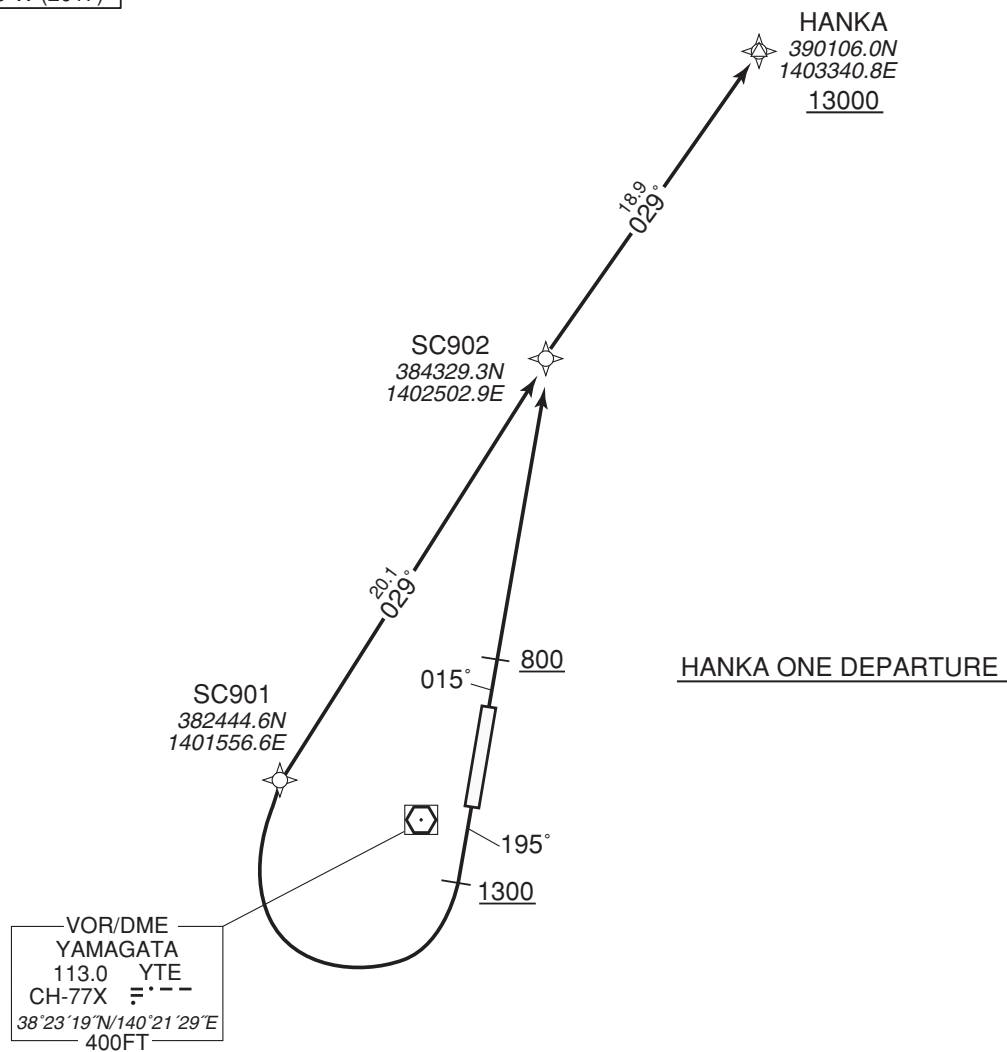
RNAV SID

## HANKA ONE DEPARTURE

Basic RNP1

Note GNSS required.

VAR 8°W (2017)

HANKA ONE DEPARTURE

RWY01 : Climb on HDG015° at or above 800FT, direct to SC902,...

RWY19 : Climb on HDG195° at or above 1300FT, turn right direct to SC901, to SC902,...  
... to HANKA at or above 13000FT.

Note RWY01 : 5.0% climb gradient required up to 800FT.

OBST ALT 1542FT located at 6.5NM 026° FM end of RWY01.

RWY19 : 4.0% climb gradient required up to 1300FT.

OBST ALT 919FT located at 3.2NM 181° FM end of RWY19.

No turn before DER.

CHANGE : New PROC

## STANDARD DEPARTURE CHART-INSTRUMENT

RJSC / YAMAGATA

RNAV SID

HANKA ONE DEPARTURE

## RWY01

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	VA	—	—	015 (006.6)	-8.2	—	—	+800	—	—	Basic RNP1
002	DF	SC902	—	—	-8.2	—	—	—	—	—	Basic RNP1
003	TF	HANKA	—	029 (020.8)	-8.2	18.9	—	+13000	—	—	Basic RNP1

## RWY19

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	VA	—	—	195 (186.6)	-8.2	—	—	+1300	—	—	Basic RNP1
002	DF	SC901	—	—	-8.2	—	R	—	—	—	Basic RNP1
003	TF	SC902	—	029 (020.7)	-8.2	20.1	—	—	—	—	Basic RNP1
004	TF	HANKA	—	029 (020.8)	-8.2	18.9	—	+13000	—	—	Basic RNP1

CHANGE : Editorial



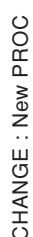
## RJSC / YAMAGATA

RNAV STAR RWY01

## Basic RNP1

Note GNSS required.

VAR 8°W (2017)



## STANDARD ARRIVAL CHART - INSTRUMENT

RJSC / YAMAGATA

RNAV STAR RWY01

YOZAN WEST ARRIVAL

From ELDAK at or above FL150, to SUGGY at or above 11000FT, to YOZAN at or above 9000FT.

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	ELDAK	—	—	-8.2	—	—	+FL150	—	—	Basic RNP1
002	TF	SUGGY	—	085 (076.3)	-8.2	12.1	—	+11000	—	—	Basic RNP1
003	TF	YOZAN	—	083 (074.8)	-8.2	7.2	—	+9000	—	—	Basic RNP1

YOZAN NORTH ARRIVAL

From YTE, to IMONY, to YOZAN at or above 9000FT.

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	YTE	—	—	-8.2	—	—	—	—	—	Basic RNP1
002	TF	IMONY	—	255 (216.5)	-8.2	15.1	—	—	-250	—	Basic RNP1
003	TF	YOZAN	—	195 (186.4)	-8.2	4.9	—	+9000	—	—	Basic RNP1

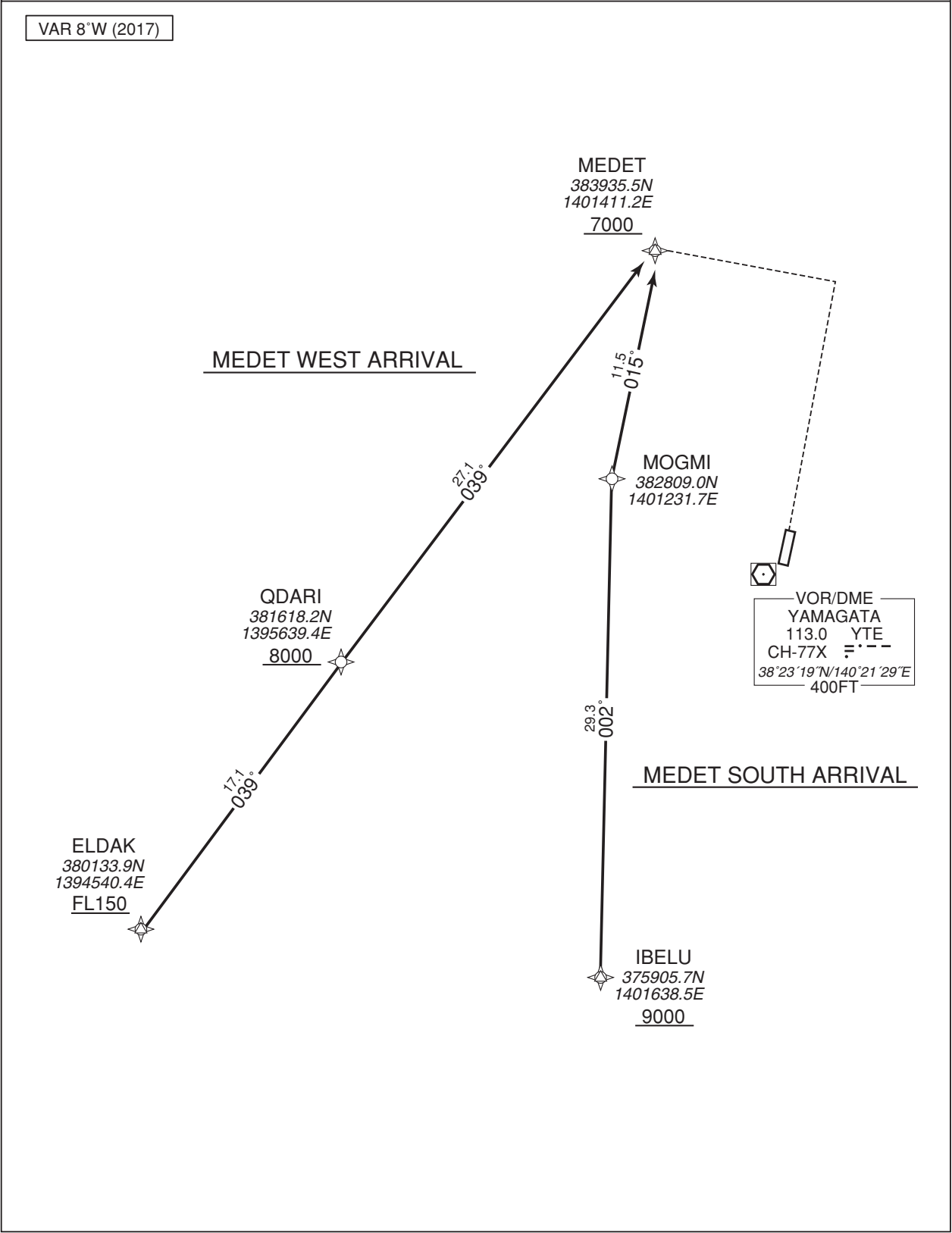
CHANGE : New PROC

STANDARD ARRIVAL CHART - INSTRUMENT

RJSC / YAMAGATA RNAV STAR RWY19

MEDET WEST ARRIVAL / MEDET SOUTH ARRIVAL	Basic RNP1
--	------------

Note GNSS required.



CHANGE : New PROC

## STANDARD ARRIVAL CHART - INSTRUMENT

RJSC / YAMAGATA

RNAV STAR RWY19

MEDET WEST ARRIVAL

From ELDAK at or above FL150, to QDARI at or above 8000FT, to MEDET at or above 7000FT.

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	ELDAK	—	—	-8.2	—	—	+FL150	—	—	Basic RNP1
002	TF	QDARI	—	039 (030.3)	-8.2	17.1	—	+8000	—	—	Basic RNP1
003	TF	MEDET	—	039 (030.4)	-8.2	27.1	—	+7000	—	—	Basic RNP1

MEDET SOUTH ARRIVAL

From IBELU at or above 9000FT, to MOGMI, to MEDET at or above 7000FT.

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	IBELU	—	—	-8.2	—	—	+9000	—	—	Basic RNP1
002	TF	MOGMI	—	002 (353.7)	-8.2	29.3	—	—	—	—	Basic RNP1
003	TF	MEDET	—	015 (006.5)	-8.2	11.5	—	+7000	—	—	Basic RNP1

CHANGE : New PROC

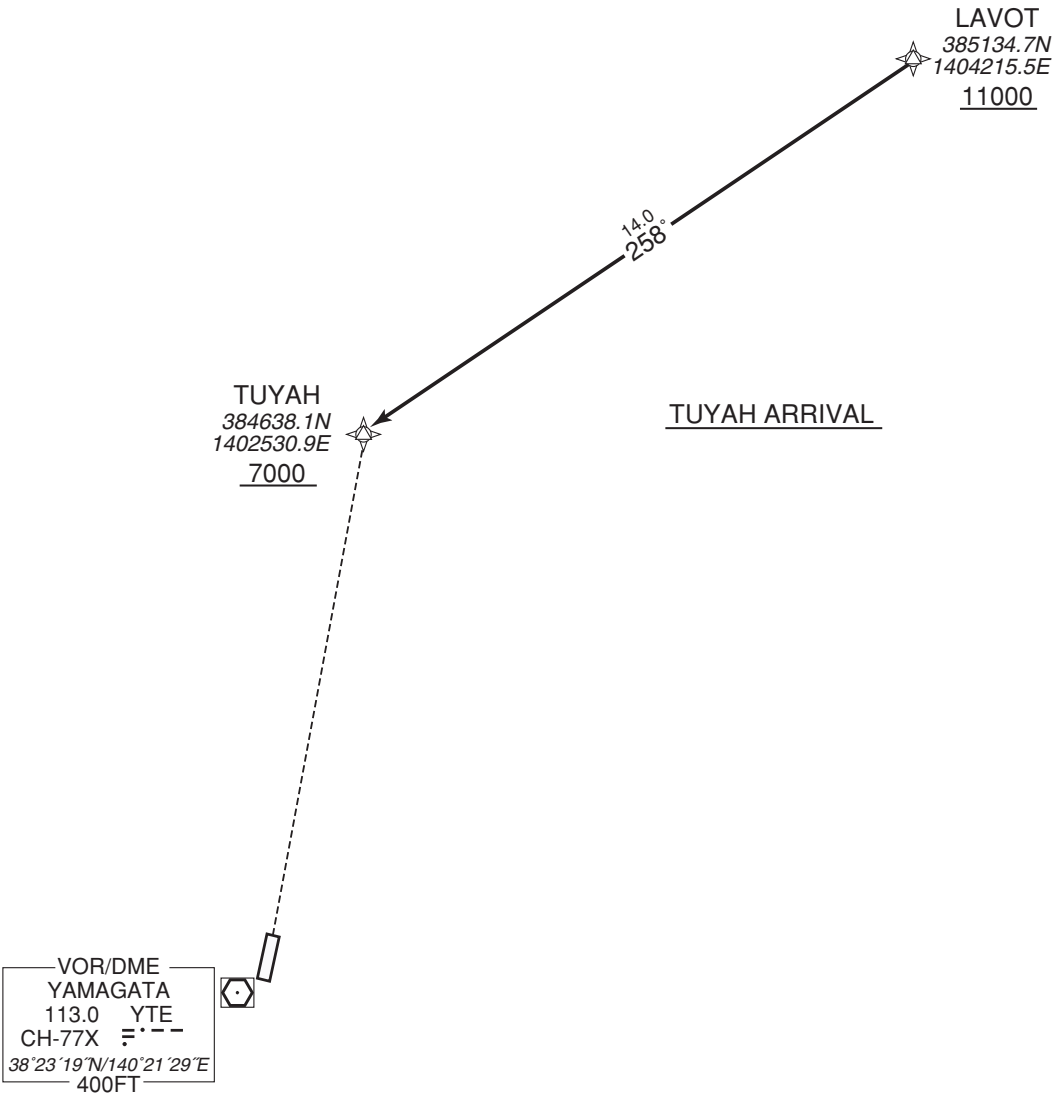
STANDARD ARRIVAL CHART - INSTRUMENT

RJSC / YAMAGATARNAV STAR RWY19

TUYAH ARRIVAL	Basic RNP1
---------------	------------

Note GNSS required.

VAR 8°W (2017)



TUYAH ARRIVAL

From LAVOT at or above 11000FT, to TUYAH at or above 7000FT.

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	LAVOT	—	—	-8.2	—	—	+11000	—	—	Basic RNP1
002	TF	TUYAH	—	258 (249.3)	-8.2	14.0	—	+7000	—	—	Basic RNP1

CHANGE : New PROC

INSTRUMENT APPROACH CHART

RJSC / YAMAGATA

ILS Z RWY01



CHANGE : New PROC

## RJSC / YAMAGATA

**TOKYO CONTROL**  
118.9 - 276.8  
135.9 - 230.6

**ILS LOC**  
110.1 IYT ---  
ILS-DME CH-38

**YAMAGATA RADIO**  
122.7 - 126.2

**NO RADAR**

**VAR 8°W (2017)**

**MSA 25NM**

**YTE**  
7600 6100  
7300 7200  
380

**VOR/DME YAMAGATA**  
113.0 YTE  
CH-77X ---  
38°23'19"N/140°21'20"E

**MAPt**  
D0.8 IYT  
794

**EQPT REQUIRED**  
DME  
VOR

**NOTE:** For Initial approach segment  
(1) Basic RNP1.  
(2) GNSS required.

**MHA 9000**  
MAX 230KIAS

**YOZAN(IAF)**  
D19.5 YTE  
380617.11N  
1400922.81E  
9000

**IBELU(IAF)**  
375905.65N  
1401638.49E  
9000

**KAJYO(FAF)**  
D14.1 IYT

**LAFRA(IF)**  
380522.60N  
1401927.16E  
D19.1 IYT

**KAJYO(FAF) : 381021.06N/1402010.69E**

**MISSED APPROACH**  
Climb to 2000FT on HDG014°,  
via YTE R017 to 5000FT,  
turn left, via YTE R003 to YTE  
VOR/DME and hold at 7000FT.  
Contact YAMAGATA RADIO.  
PAPI and descent angles not coincident.  
Timing not authorized for defining the MAPt.

NM to IYT	FAF	14	13	12	11	10	9	8	7	6	5	4	3	2	MAPt
ALT(3.1° APCH Path)	4969	4945	4616	4286	3957	3628	3299	2970	2641	2312	1983	1654	1325	995	-

DME to IYT	NM to THR
19.1	18.9
14.1	13.9
11.8	11.6
6.6	6.4
0.8	0.6
0.2	0

CAT	MINIMA		AD elev. 345 CIRCLING		
	MDA(H)	RVR/CMV	MDA(H)	VIS	
A	870 (525)	1000	870 (525)	1600	
B		1200		2400	
C		1600		900 (555)	3200
D					

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

INSTRUMENT APPROACH CHART

RJSC / YAMAGATA

ILS Y RWY01



Missed APCH climb gradient MNM 5.0%				
MINIMA	THR elev. 347		AD elev. 345	
CAT	CAT I		CIRCLING	
	DA(H)	RVR/CMV	MDA(H)	VIS
A	547 (200)	550	790 (445)	1600
B			800 (455)	2400
C			900 (555)	
D				

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

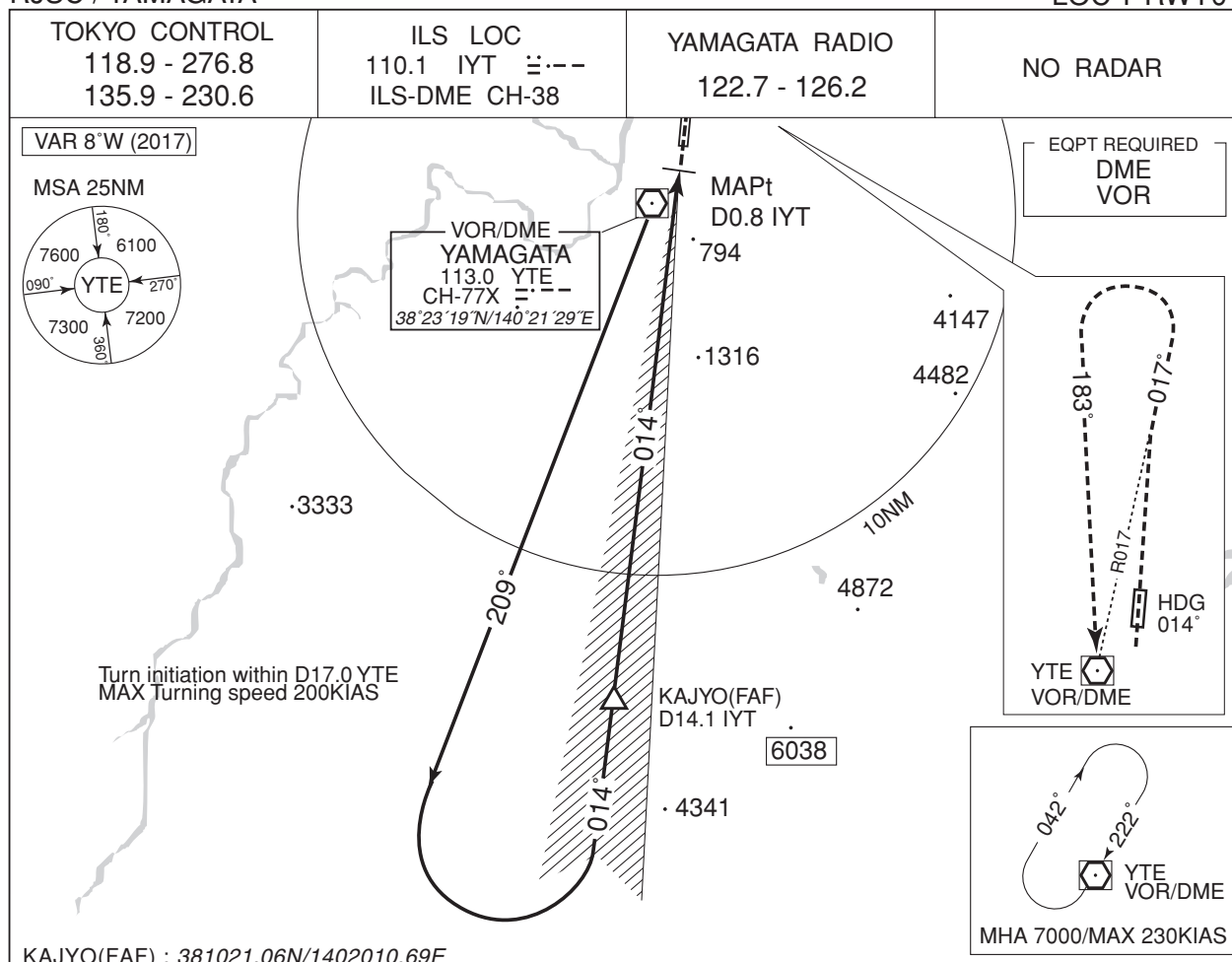
CHANGE : New PROC



## INSTRUMENT APPROACH CHART

RJSC / YAMAGATA

LOC Y RWY01



NM to IYT	FAF	14	13	12	11	10	9	8	7	6	5	4	3	2	MAPt
ALT(3.1° APCH Path)	4969	4945	4616	4286	3957	3628	3299	2970	2641	2312	1983	1654	1325	995	-



Missed APCH climb gradient MNM 5.0%

MINIMA		THR elev. 347	AD elev. 345	
CAT			CIRCLING	
	MDA(H)	RVR/ CMV	MDA(H)	VIS
A	870 (525)	1000	870 (525)	1600
B		1200		2400
C				
D		1600	900 (555)	3200

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

CHANGE : New PROC

INSTRUMENT APPROACH CHART

RJSC / YAMAGATA

VOR A



CHANGE : MHA

## RJSC / YAMAGATA

<b>TOKYO CONTROL</b> 118.9 - 276.8 135.9 - 230.6	1. DME/RNP0.3 not authorized. 2. RNP0.3 required. 3. GNSS required.	<b>YAMAGATA RADIO</b> 122.7 - 126.2	<b>NO RADAR</b>
Baro-VNAV not authorized below -15°C		<b>MSA 25NM</b>	
<b>VAR 8°W (2017)</b>			
	ARP : 382443N/1402216E		
<b>6496</b>	MEDET 383935.50N (IAF) 1401411.24E		
	TUYAH 384638.07N (IAF) 1402530.85E		
	SC950 384232.58N (SDF) 1402454.48E		
	GINZA 383840.62N (IF) 1402420.18E		
	SC951 383444.66N (SDF) 1402345.35E		
	YASYO 383051.89N (FAF) 1402311.06E		
	SC952 382849.74N (SDF) 1402253.08E		

Figure 1 is a graph showing the relationship between the number of amino acid residues (NM) from the N-terminus to the Thr195 residue (THR) and the molecular weight (MW) of the protein. The x-axis represents NM to THR (0 to 13.5) and the y-axis represents MW (kDa) (0 to 3000). A solid line shows the theoretical MW, and a dashed line shows the observed MW. Key points on the graph include YTE, SC952 (SDF) (LNAV), YASYO (FAF), SC951 (SDF), and GINZA (IF). The observed MW is consistently lower than the theoretical MW, with a difference of approximately 300 kDa at NM 5.7.

CAT	LNAV/VNAV		LNAV		CIRCLING	
	DA(H)	CMV	MDA(H)	CMV	MDA(H)	VIS
A	720 (367)	1200	720 (375)	1200	790 (445)	1600
B		1300		1300	800 (455)	
C		1400		1400		2400
D		1600		1600	900 (555)	3200

CHANGE : New PROC





## RJSC / YAMAGATA

## Visual REP

Call sign	BRG / DIST from ARP	Remarks
舟 形 Funagata	351°T/17.7NM	舟形インターチェンジ Interchange
徳良湖 Tokurako	017°T/11.5NM	徳良湖 Lake
楯 岡 Tateoka	010°T/ 4.0NM	村山駅(旧楯岡駅) JR station
基 点 Goten	344°T/ 4.5NM	村山市民体育館 Gymnasium
谷 地 Yachi	282°T/ 3.0NM	谷地高校 School
関山峠 Sekiyama Toge	100°T/ 9.5NM	関山トンネル Tunnel
西 川 Nishikawa	274°T/ 9.8NM	西川インターチェンジ Interchange
寒河江 Sagae	242°T/ 5.1NM	寒河江駅 JR station
アテラ Atera	203°T/ 9.3NM	山形中央インターチェンジ Interchange
山形ステーション Yamagata Station	192°T/10.0NM	山形駅 JR station
上 山 Kaminoyama	196°T/16.2NM	上山温泉駅 JR station

CHANGE : Obanazawa deleted, Funagata, Tokurako added



RJSC / YAMAGATA

Minimum Vectoring Altitude CHART

