

FMS/RNAV SIDs AT STOCKHOLM/ARLANDA

Note: This information must be included in Company Route Manuals.

GENERAL

FMS/RNAV SIDs at Stockholm/Arlanda are designed in order to minimize noise dispersion resulting from ACFT flying outside designated tracks.

APPROVED USERS, EQUIPMENT AND OPERATIONS

According to chapter 6 and 8 of the Swedish Civil Aviation Regulations (BCL-D) 1.21, a Swedish operator with an Air Operator Certificate (AOC) must have an FMS/RNAV approval by the Aviation Safety Department at the Swedish Civil Aviation Authority in order to use FMS/RNAV SIDs.

Foreign operators with ACFT with FMS/RNAV equipment, which has a lateral position accuracy equal to or better than +/- 1NM for 95% of the flight time (RNP 1), may use the FMS/RNAV SIDs without a specific approval.

Other types of RNAV equipment (e.g. Stand-alone GPS) must not be used for FMS/RNAV SIDs.

Note: A Basic RNAV (B-RNAV) approval does not constitute an approval for FMS/RNAV use.

RESTRICTED USE FOR CERTAIN ACFT TYPES

B757, B767 and MD-11 have FMS equipment which do not get the ACFT inside designated tracks after first turn. A note in the description of certain SIDs requires these ACFT types to use following procedure:

1. After TKOF disregard FMS.
2. At a specified DME distance, turn to a specified track.
3. When established on the specified track, use FMS and fly direct to a specified WPT.

FMS/RNAV EQUIPMENT FAILURE

If the airborne FMS/RNAV equipment fails, ATS shall be informed as soon as practicable. ATC will then provide radar vectors.

NON FMS/RNAV EQUIPPED AIRCRAFT

Departing aircraft that is not equipped for FMS/RNAV SID shall inform Clearance Delivery by using phraseology "UNABLE RNAV SID DUE RNAV TYPE". After receiving a SID, Non FMS/RNAV aircraft shall follow instructions in "ACFT unable to follow FMS/RNAV SID", that contains tracks and speed and can expect radar vectors to the exit point stated in the flight plan.

Additionally at first contact with STOCKHOLM CONTROL, aircraft shall report altitude to verify SSR Mode C, and once again report that aircraft is unable to follow FMS/RNAV SID by using phraseology "UNABLE RNAV SID".

APPLIED PRACTICE FOR LOW SPEED AIRCRAFT

ACFT, described below, will during daytime 0600-2100 (0500-2000) be cleared to follow low speed departure routes (climb-out on a heading to an altitude) instead of SIDs. These low speed departure routes will be assigned by ATC.

- Propeller driven ACFT with a MTOW less than 9 tons.
- Propeller driven ACFT with a MTOW more than 9 tons which fulfil the requirements in ICAO Annex 16 chapter 3 or 5.

Note:

Some high speed propeller driven ACFT will be cleared to follow SIDs (e.g. SAAB 2000, Dash 8 Q400).

Some noisy propeller driven ACFT will be cleared to follow SIDs due to environmental restrictions. (e.g. Lockheed C-130 Hercules, Hawker Siddley HS 748).

SID INSTRUCTION

For each SID, there is a description as a list of waypoints in sequence, where FLY-OVER WPTs are printed underlined. If there is a speed limit, it will be notified in the list. There is also a description of the database coding to be used by navdatabase suppliers only. The coding is according to ARINC 424 standard.

Note: In order to adapt SID coding to certain FMS equipment, a minimum 1500 ft altitude restriction is added at some waypoints in those first turns where a speed restriction is prescribed.

WAYPOINT TYPES

FLY-OVER WPTs are designed to guide an ACFT to pass over the waypoint and, if a turn is required, immediately after the passage initiate a turn.

FLY-BY WPTs are designed to guide an ACFT towards a waypoint. If a turn at the waypoint is required, the FMS initiates a turn at a distance before the waypoint. The turn anticipation varies with speed and magnitude of turn.

Fly-over wpt



Fly-by wpt



WAYPOINT NAMING

The naming convention used is based on the two last letters in the Airport code, SA, followed by 3 digits numbered from 400 to 999. The digits are divided into four quadrants of a circle with centre at ESSA ARP:

0° - 89°	400 – 549
90° - 179°	550 – 699
180° - 269°	700 – 849
270° - 359°	850 – 999

WAYPOINT LIST

A separate list of co-ordinates in WGS-84 for all waypoints used at Stockholm/Arlanda is provided.

DME FAILURE

All FMS/RNAV SIDs are based on DME/DME for position update. Failure of one DME in Stockholm TMA will not affect FMS/RNAV navigation based on DME/DME.

REPORTING

Malfunctioning FMS shall, for statistical reasons, be reported briefly to address below. Pilots and operators are also requested to report any error or difficulty (e.g. discontinuity) with SIDs to:

Airspace team
LFV-ASD/SPS
Fax: +46-(0)11-19 22 46
E-mail: maria.ullvetter@lfv.se

List of Waypoints and Name-code designators (WGS84) for FMS/RNAV SIDs at Stockholm/Arlanda (ESSA)

WPT	LAT	LONG	
SA401	594405.58N	0175654.99E	
SA402	594510.20N	0180858.18E	
SA403	595054.28N	0175743.51E	
SA404	594011.82N	0175759.57E	
SA405	594216.70N	0180931.84E	
SA406	594326.96N	0182501.29E	
SA407	594557.36N	0180006.49E	
SA408	594802.58N	0180052.68E	
SA409	600140.90N	0180556.99E	
SA410	594122.30N	0182658.37E	
SA411	594053.83N	0182543.98E	
SA412	594013.78N	0180152.39E	
SA413	594312.88N	0180402.44E	
SA414	594223.60N	0175541.67E	
SA415	594602.90N	0180213.76E	
SA416	594243.37N	0182440.44E	
SA417	600139.82N	0180549.16E	
SA418	594006.38N	0180053.95E	
SA419	594525.65N	0175952.07E	
SA420	595025.49N	0175519.18E	
SA421	594026.97N	0175535.67E	
SA422	594506.51N	0182602.77E	
SA550	593702.04N	0180433.47E	
SA551	593659.35N	0175651.74E	
SA552	593730.78N	0180913.60E	
SA557	593555.02N	0175831.58E	
SA558	593801.90N	0175720.22E	
SA559	593446.99N	0175529.84E	
SA561	593347.67N	0180045.91E	
SA562	593008.90N	0175932.03E	
SA563	592902.85N	0175909.78E	
SA700	593812.71N	0172737.02E	Deleted
SA701	593748.12N	0172505.17E	Deleted
SA702	593325.49N	0173503.07E	
SA703	593008.44N	0174656.51E	
SA704	583730.49N	0172409.95E	Deleted
SA705	593725.24N	0175429.89E	
SA706	593401.58N	0174421.60E	
SA708	591637.59N	0172713.13E	
SA709	593236.17N	0174728.79E	
SA710	593509.05N	0173943.84E	
SA712	592858.08N	0172812.22E	
SA713	592307.20N	0173620.21E	
SA714	591509.52N	0172725.86E	
SA715	593741.84N	0172411.40E	Deleted
SA716	593302.28N	0175118.71E	

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WPT	LAT	LONG	
SA717	593014.10N	0174419.37E	
SA718	591510.35N	0172725.74E	
SA719	591930.27N	0172536.32E	
SA721	593029.44N	0174402.45E	
SA722	593405.03N	0174029.01E	
SA723	593651.67N	0173300.95E	New
SA724	593122.05N	0173347.61E	New
SA850	594116.59N	0174644.77E	
SA851	594003.73N	0173907.55E	
SA852	594113.69N	0174252.97E	Deleted
SA853	594615.97N	0173929.04E	
SA854	594147.20N	0171441.30E	
SA855	594845.84N	0174235.75E	
SA857	594137.99N	0175137.81E	
SA858	594735.02N	0174106.89E	
SA859	594239.82N	0171607.08E	
SA860	594845.84N	0175039.48E	
SA861	593930.70N	0173913.50E	
SA862	594621.95N	0175431.09E	
SA863	594128.56N	0174641.75E	New
ABENI	591416.30N	0170519.60E	
BABAP	592520.20N	0184227.50E	
DIGLI	590657.90N	0171822.20E	
GALNU	585915.59N	0172942.57E	
KOGAV	600452.00N	0171346.60E	
LUMAX	601903.84N	0180030.79E	
MENGA	592551.35N	0183640.46E	
NEKLA	590000.00N	0191549.10E	
NOSLI	590422.00N	0171529.20E	
RESNA	602201.00N	0180129.40E	
ROKNI	593503.90N	0164455.20E	
TALEK	600254.69N	0171818.47E	