Doncaster Sheffield Airport

Airspace Change Proposal for the Introduction of RNAV (GNSS) Departure and Approach Procedures

ANNEX B TO PART B

PEEL

European Commission

Doncaster Sheffield Airport

Robin Hood

ANNEX B TO PART B:
Runway 20
Westerly Departure
UPTON 2B

Contents

1. Runway 20: Departures to the west (to UPTON)

1.1. The proposed RNAV SID procedure is referred to as the UPTON 2B and reflects as closely as practicable the previous conventional navigation SID named the UPTON 1B.

1.2. UPTON is a position-on the en route ATS system in the vicinity of Moorthorpe. It is specified by NATS PC as the designated position for aircraft departing from DSA to join the Route Network.

1.3. The existing UPTON 1B SID uses the GAM VOR (situated on Retford (Gamston) Aerodrome) as the ground-based navigational aid to define the route to UPTON. The GAM VOR is being withdrawn by NATS in 2019 in accordance with agreed CAA Policies (see Part A of the Consultation Document).

1.4. The UPTON 1B SID is a secondary departure route which is only used when the UPTON 1A (see Annex A of this consultation) is not available due to gliding activity in a delegated portion of the controlled airspace to the west of DSA[01]. It is also used for slow-climbing aircraft which cannot meet the minimum climb requirements specified in the primary UPTON 1A procedure.

1.5. Consequently, the utilisation of the UPTON 1B SID is very low. Less than 5 aircraft were cleared via the UPTON 1B SID in the period June to July 2016, encompassing a busy summer period. During this period, the 'UPTON Corridor' glider airspace was not active and so those flights that used the procedure did so because they could not achieve the climb requirements on the UPTON 1B.

1.5.1. Figure 1 shows historic tracks (in green) of the 5 aircraft departing from Runway 20 on the UPTON 1B over the June and July period. The tracks end at the point the aircraft pass 7,000 feet amsl and therefore not all tracks end at the same distance from take-off as aircraft differ in climb capability. The red line is the nominal track of the proposed UPTON 2B which replicates as closely as practicable, within RNAV procedure design criteria, the existing nominal track of the UPTON 1B. It must be noted that not all aircraft indicated in Figure 1 were issued the UPTON 1B SID, it is not possible to filter these tracks using the existing track keeping system at DSA.

01 The "UPTON Corridor" is a portion of controlled airspace established to the west of DSA which is delegated to the British Glider Association (BGA) for competition and club cross-country flying days. A Letter of Agreement (LoA) is established between the BGA and DSA ATC which formalises use of the corridor as part of the airspace sharing arrangements required by the CAA

Figure 1: Runway 20 – Historic departure tracks for the period June-July 2016 via UPTON 1B

1.6. It is necessary to retain a secondary SID procedure routing to the east of the airport and redefining it as an RNAV SID in order to:

- provide aircraft, with poor climb performance, the opportunity to remain within controlled airspace en-route to UPTON; and
- provide an alternative route for those occasions when the "UPTON Corridor" glider area is activated.

As detailed in Section 5 of Part A of the Consultation Document, once aircraft are above the upper limit of the NPR they may be tactically routed by ATC for integration with other traffic flows.

2. The UPTON 2B SID procedure

2.1. The procedure is described as follows:

Climb straight ahead to intercept a course 209°M to CNS04, left to CNS10, left to CNN26, left to UPTON.

2.2. A schematic diagram of the SID is shown in Figure 2 below and diagrams of the SID overlaid on Google Earth are shown in Appendix A1 and Appendix A2 respectively.

2.3. The SID deviates by 10° to the right 0.5NM after departure to minimise the impact felt by Bawtry, which is on the immediate extended centreline from the runway. Due to PANS-OPS limitation on procedure design, SIDs are not permitted to deviate by more than 15° after departure. The initial deviation only occurs at 0.5NM to allow aircraft to stabilise and adjust to the deviation allowing for better repeatability with 10° considered optimum for the environment.

Note: A deviation of 15° or less is not considered a turn in PANS-OPS.

2.4. The route then turns to the east then north, avoiding, as far as is practicable, the communities of Bawtry, Bircotes, Scrooby, Ranskill, Mattersey, Wiseton and Clayworth (see Figure 3).
We consider that, on balance we have developed the optimum route which avoids overflight of communities to the maximum practicable extent.

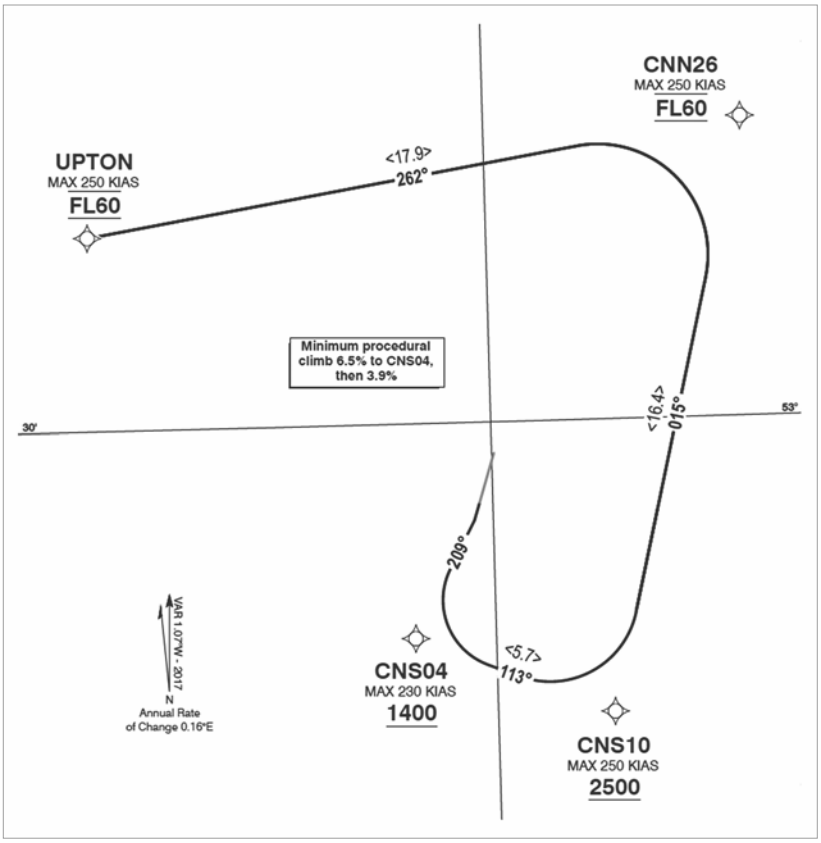


Figure 2: Schematic of UPTON 2B SID

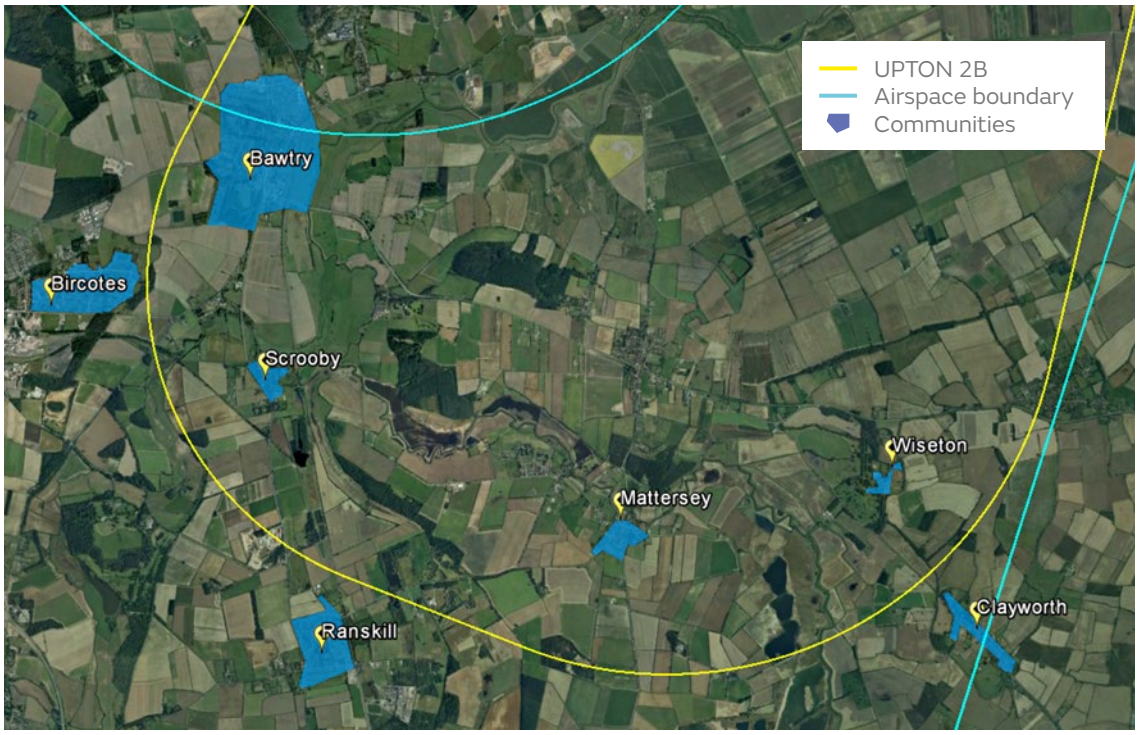


Figure 3: UPTON 2B route plot and nearby communities

2.5. Vertical constraints

2.5.1. The SID applies altitude requirements to meet initial obstacle clearance requirement after departure. The minimum climb gradient has been designed to ensure keep aircraft within controlled airspace. While the regulations allow SID designs to leave controlled airspace, where possible the designs have attempted to keep the SIDs contained inside controlled airspace.

2.5.2. The upper limit of the SID procedure is FL60 and this is specified at waypoint CNN26, which is the procedural upper limit of the SID procedure to define the ATC procedural interface arrangements between NATS PC en-route Sectors and DSA ATC. However, on a day-to-day basis, under normal operational conditions, departing aircraft will have been transferred to PC long before reaching FL60 and will have been given further climb clearance by PC without needing to level out.

3. Differences between the UPTON 1B and the UPTON 2B SIDs

3.1. Diagrams showing the proposed UPTON 2B SID overlaid on the nominal track of the existing UPTON 1B are shown in Appendices A1 and A2.

3.2. The current and proposed SIDs are depicted in Appendix A1. There is little change, in design terms, other than the initial departure track after getting airborne (to avoid Bawtry, and then again further north on the turn to UPTON. The turn towards UPTON is not intended to provide benefit to communities as it is improbable that aircraft would be below 7,000ft at this point; it is entirely a design improvement to the previous conventional design.

3.3. Appendix A2 includes the NTK data but due to insignificant aircraft numbers using this route it serves of little value. The diagram is included for the sake of continuity of demonstrating, in each of the annexes, the relevance of NTK across all SIDs.

3.4. It is again stressed, the need to retain this SID is primarily as a contingency for when the 'UPTON Corridor' is required by the gliders, and, while it may not have been activated often, an alternative SID should be retained.

4. Other options considered

4.1. Do nothing:
This option cannot be considered as the current UPTON 1B SID is predicated on the GAM VOR which is being withdrawn. The SID, without the ground-based navigational aid, cannot be flown. In addition, there are no alternative ground-based navigational aids in the vicinity.

4.2. Replicate the existing UPTON 1B SID:
This option is feasible. The existing UPTON 1B impacts both Bawtry and Scrooby and an opportunity was seen to re-design those elements of the SID that impact these communities. As a result, the UPTON 2B is mostly a replication with changes to the initial segment made in an attempt to reduce the impact on those communities previously impacted.

4.3. Radical New Design:
Options were considered but not deemed appropriate due to the purpose of this SID, i.e. a secondary route option for the when the 'UPTON Corridor' is active and for poor performing aircraft unable to make the climb gradient for the UPTON 2B. Additionally, the impact of earlier turns to UPTON was considered, and while more expeditious, these tracks would conflict with Runway 02 arrivals from either end. The current design, in principle, allows for greater flexibility for ATC who are able to radar vector aircraft direct to UPTON when the arriving sequence of aircraft and climb performance of the departing aircraft permits (i.e. they are beyond the NPR and are clear of other traffic).

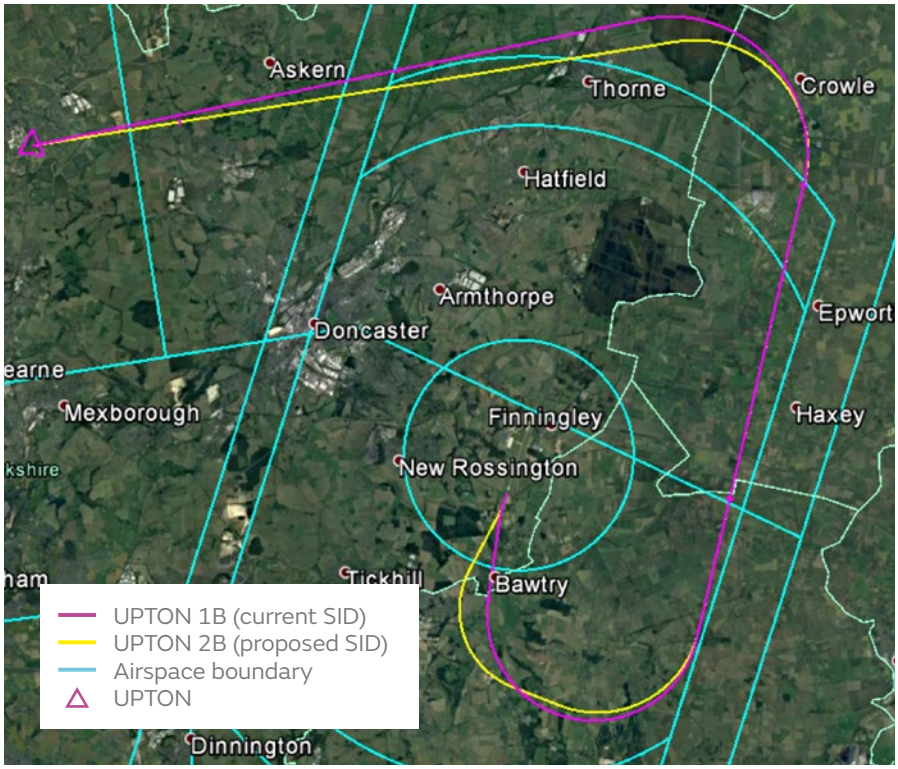
5. Environmental assessment

5.1. The nominal route of the SID closely replicates the current SID after the initial turn intended to avoid Bawtry. It is appreciated that this brings aircraft closer to Bircotes but this allows for an optimum turn to avoid direct overflight of Bircotes, Scrooby and Bawtry. It is important to point out that this is an infrequently flown procedure as demonstrated by the NTK data.

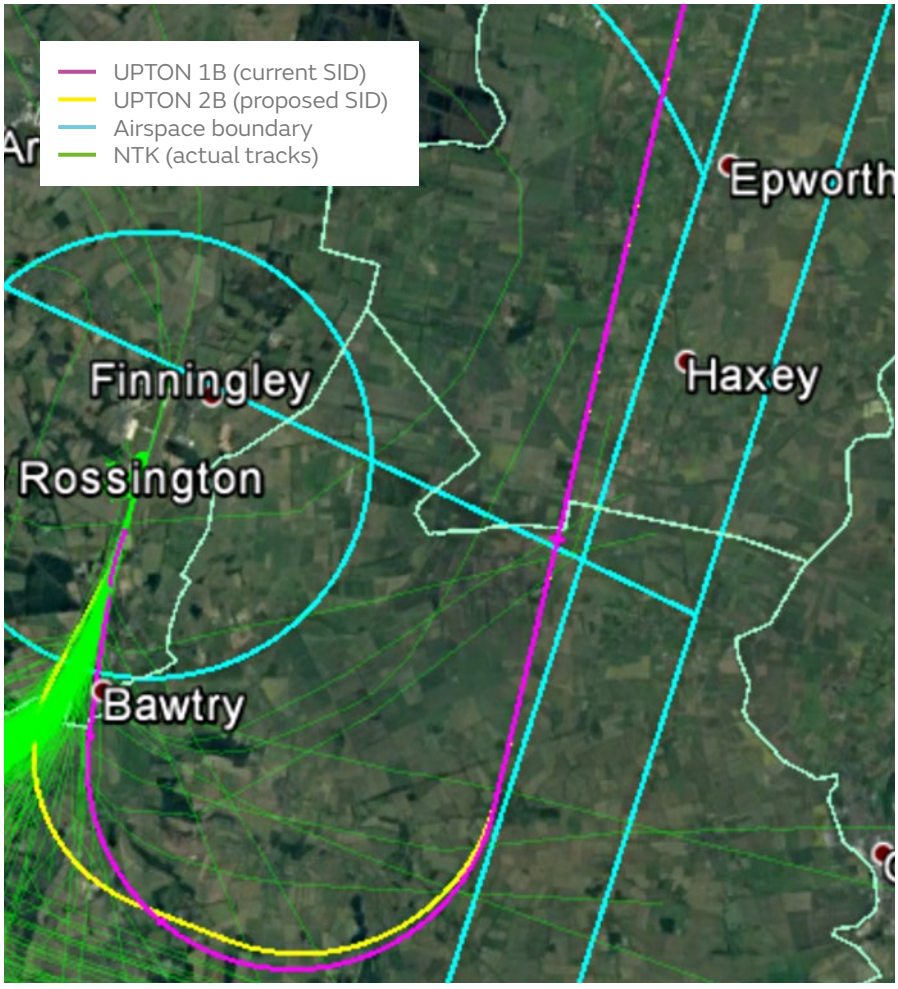
5.2. The Airport Noise Contours are specific to each runway rather than each individual SID and are therefore detailed in Part A Section 4.

5.3. The Chart at Appendix A3 shows the shows the 80 and 90 dB(A) departure footprints of both SIDs. There is no change in the 90 dB(A) population count but an increase in the 80dB(A) is expected. The increase is due to the 80 dB(A) footprint capturing parts of Bircotes. In real terms, the positive element is the reduction of aircraft directly overflying any of the communities shown in the footprint. Given the low usage of this SID, the actual impact to the communities should not be of any significance.

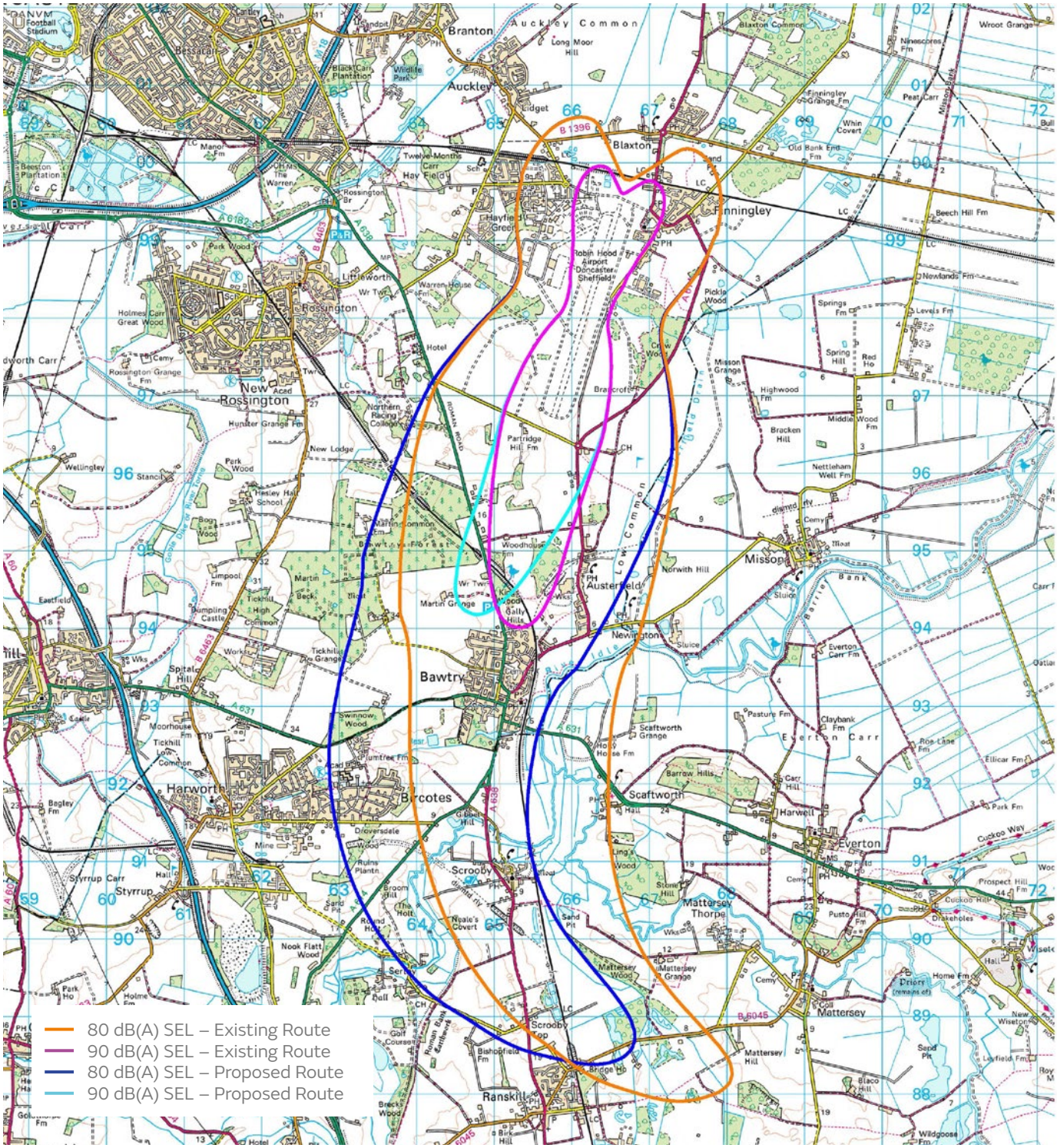
5.4. The introduction of RNAV SIDs with a navigation standard of RNAV-1 will result in improved repeatability of tracks in accordance with CAA policy and DfT guidance.



Appendix A1:
Diagram of UPTON 1B and UPTON 2B SIDs



Appendix A2:
UPTON 2B SID as compared with UPTON 1B



Appendix A3:
Departure Footprints for
UPTON 1B and UPTON 2B

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Annex B to Part B:
Runway 20 Westerly Departure UPTON 2B

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