Summary of the responses to Request for Support Message "SID Confusion"

INTRODUCTION

EUROCONTROL Agency on request of LVNL – ATC The Netherlands issued on 22 of January a Safety Alert type "Request for Support Message". This document offers to the registered users of EURCONTROL Safety Alert Service a summary of responses received by 19 of February 2008. The content of the published alert is provided bellow.

Request for Support Message

- *Safety Subject:*   SID Confusion
- *Origin:*   LVNL – ATC The Netherlands
- *Date:*   22/01/2008
- *Distribution:*   Aviation Safety Professionals

YOUR SUPPORT IS REQUIRED

- **The aviation safety professionals are kindly invited to share experience and good practices with the bellow mentioned subject**;

INFORMATION FROM ATC THE NETHERLANDS

- At Schiphol Airport (EHAM) we have identified a steady number of cases where flight crews execute different SIDs from the one given to them by ATC and acknowledged by the crew. We even had cases where the correct SID was provided to the crew by data link and where the correct SID was mentioned again by the TWR controller when clearing the a/c for take off, after which the crew read back the correct SID with the take off clearance, and still they flew a different (and incorrect) SID when airborne.

- At LVNL/ATC The Netherlands we have a strong suspicion that an underlying cause for this type of error can be found in the fact that many operators provide their crews with "ready made" operational flight plans before the start of the trip, in which the dispatchers have made assumptions about the runway in use and the corresponding departure route. If crews try to be as efficient as possible in managing their workload it may happen that FMS inputs/preparations are done based on the company flight plan BEFORE the actual ATC route clearance (including the SID) is obtained. After obtaining that clearance the crew for whatever reason subsequently omit to change the setup of the FMS, and the result is that the a/c follows an incorrect SID when airborne.

- To date this problem has not resulted in any dangerous situations, although there have been several cases where ATC had to intervene (by issuing heading and/or level off instructions to other aircraft in the vicinity) in order to maintain separation standards. The potential for a situation where safety is compromised is very real however.

A TRIAL WAS HELD

- For one particular set of SIDs (from one particular runway) that often seems to be interchanged at Schiphol Airport, a trial was held by one of the major operator at the airport in which the mentioning of a specific SID in the ready made flight plan was replaced by the words "check SID". This trial was considered a success, for after this modification there have been zero cases with this airline where the particular mistake occurred. Other airlines sometimes deviate from cleared SID.

- The reason for contacting you about this issue is first of all to find out whether this problem is an issue at other airports in Europe as well, and if so, to suggest that maybe a joint approach to the providers of these ready made flight plans could go a long way to help resolving the problem

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SUPPORT REQUESTED

Subscribers were requested to share their national and company experiences and to suggest a joint approach to resolve the problem.

RESPONSE

Responses were received from 16 operators, 5 ANSPs and 3 airports. EUROCONTROL Navigation Unit reported general agreement with the comments made by other responders and also offered additional suggestions.

One ANSP reported that they had experienced 16 cases of lateral deviation from SIDs in 2006 and 22 in 2007. In all cases, the correct SID had been issued and read back correctly by the pilot. Another ANSP reported two recent similar occurrences, one of which resulted in loss of separation despite early controller intervention. Most operators and airports also mentioned having experienced similar problems.

The responses received are summarised below. These relate only to SIDs, but in many cases, similar considerations apply to STARs. Responses are grouped together under generic titles; however, there is a certain amount of overlapping between groupings.

Not all responses will be relevant to the Schiphol experience, but all are repeated below, not in any order of priority.

1. Design and use of SIDs

SIDs are designed in accordance with ICAO guidelines to provide separation from other traffic and to reduce the impact of aircraft noise on the environment.

At Amsterdam/Schiphol, "ATC Factsheets" are published on their web-site (www.lvnl-ohd.nl) which provide background information on local ATC procedures, and explain some of the less intuitive aspects of ATC operations which are unique to that airport. These include some SID procedures as well as parallel runway departure and arrival procedures.

SID names should be chosen carefully to reduce the chance of confusion, taking into account that regional pronunciation can make names sound similar even if they are different when written.

Deviation from a SID, whether caused by inaccurate flying or through flying a SID different from that assigned, may have implications for safety and/or noise abatement.

Some countries require a standard SID being input into the ATC Flight Plan even if it cannot be planned independent of the runway in use. This is even required for a repetitive flight plan (RPL). Apparently this is because the national ATC data processing systems require it.

Several operators suggested that if the runway in use is in doubt or cannot be predicted then the ATC Plan/RPL should not specify a particular SID.

2. The Computerised Flight Plan

Most operators use Computerised Flight Plans (CFP). SID selection depends on the CFP company policy, e.g.:

    a)   Standard SIDs are used;

    b)   CFP provider or operator selects most probable SID & STAR based on forecast winds;

c) CFP reflects the longest SID and the longest STAR for fuel calculations;

d) CFP does not specify the SID, but only the airways transition point. Direct track and distance are used in the CFP;

e) The name of the SID is specified, but not the alphanumeric code which specifies the runway;

f) The SID or STAR is not specified in the CFP.

However, there may be fuel planning implications if the SID specified in the CFP is not the same as that assigned by ATC.

Several operators commented that they would consider inserting "Check SID" in the CFP.

3. The FMS

Most aircraft are equipped with Flight Management Systems (FMS) which are programmed with the route to be flown. Modern systems are programmed with a wide range of standard company routes and a number of SIDs. It is the pilots' responsibility to check that the programmed route is correct and corresponds to that used in the CFP and assigned in the clearance. This vital action is cross-checked by both pilots.

It may be possible to change the programmed SID to match the SID assigned for the flight; however, in that case the FMS route will not correspond to the CFP. This may be confusing and may lead to deviation, especially if the transition to the airways structure also changes.

Older systems may have limited memory capacity and may be unable to store all the possible SIDs for a route. If the SID assigned is not stored in the FMS database, the crew must work around the situation, e.g.:

a) SID is entered manually and cross-checked. This is time consuming and inadvisable once taxiing has commenced due to the possibility of error and distraction from other tasks (e.g. look-out and check-lists).

b) A similar SID is entered and the crew must remember to fly the differences manually.

c) The SID is flown manually.

Solutions such as b) and c) above increase the pilot workload at an already busy time. Because they bypass the standard procedures, they are prone to error.

SIDs are named with a five letter name followed by alphanumeric code (e.g. DONAD 1A). Some (but not all) FMS systems only accept a 4-letter name + alphanumeric code, so each procedure is named differently on the ATC Flight Plan from the Operational Flight Plan (OFP).

A partial solution to this problem is to adopt a standard procedure (ARINC 424 naming convention), so that, for example, DONAD 1A is listed in CFP and FMS as DONA 1A).

Some FMS equipment allows the entry of a 5-letter name; aircraft manufacturers and operators might be able to exert some influence on the choice of FMS equipment to address this problem.

Some FMS equipment is slow in operation, making any change and consequent cross-checking time consuming.

Occasionally, crews may omit the cross-check due to time constraints or distraction, and may not detect an error in re-programming the FMS.

The way in which lateral navigation (LNAV) is used, especially in aircraft not equipped with GPS, can result in lateral deviation from a SID, especially when the LNAV is armed prior to receipt of good navigation (e.g. VOR/DME) signals and in strong cross-wind conditions.

4. Issuing or changing ATC clearance

Departure clearances should be issued as early as possible. Changes should not be issued after an aircraft has commenced taxiing unless this is unavoidable.

Sometimes crews read back the correct SID and then fly the wrong one; in this case, crews were sometimes certain they had read back the SID they flew, although analysis of the tape showed that they read back the correct one. Occasionally, the crew read back the wrong SID and the read-back error is not detected by the controller.

Crews should write the ATC departure clearance down (for example on the paper copy of the flight plan or on a bug card placed in view of both pilots) once they receive it and before they read it back. After reading it back they can compare the SID name (written down) with the chart in front of them and with the SID programmed in the FMS.

Most operators require both pilots to receive and confirm the ATC clearance received by ACARS or from ATC by RTF and to confirm that it corresponds to the planned route (including SID) as programmed in the FMS.

At some airports it is possible (or even mandatory) to call for the ATC clearance 10-30 minutes prior the off-block time. In these cases, the crew may receive the ATC clearance firstly and then insert this into the FMS.

It was reported that normal practice at most small and medium airports in one European State is to issue the ATC clearance together with start-up and pushback clearance. The ATC clearance is composed of destination, SID and initial cleared flight level. The pilots read back the ATC clearance and input the information into the onboard computer. The reporter said that SID deviations did not occur after departure.

A small number of airports do not issue ATC clearance until after taxiing has commenced. This places extra responsibilities on the pilots at a time when the workload is already high, and the pilots may be distracted from other vital tasks (e.g. look-out and check-lists).

If the departure runway is changed from that expected by the crew, it is their responsibility to enter the new route in the FMS. This must be cross-checked by the other crew member. This will increase crew work load if runway changes are offered at short notice.

Change of departure runway may necessitate revision of take-off performance data, adding to the pilot work-load.

One operator has instructed crews faced with a runway change after taxiing to stop taxi in a convenient place and inform ATC of the time needed for preparation. They are then to reprogram the FMS, check settings according to the departure chart and report "ready for departure" to ATC.

Due to lack of language proficiency, some pilots may be able to read back a clearance correctly without comprehending the differences from the expected clearance.

One operator suggested that the ATCO should insert the instruction "Check the SID" in the ATC clearance as a reminder to the crew. A reminder in one of the checklists such as "Verify ATC Departure Clearance" would serve a similar purpose.

Last-minute changes to flight plan made by companies to avoid ATC delay on the original route can cause confusion if the flight plan is re-filed by the company without leaving sufficient time to inform the crew.

Since last-minute changes increase the likelihood of pilot error, ATCOs should consider issuing a heading and altitude clearance rather than a new SID when the routing must be changed at short notice.

Where week-end routings exist, if crews are not aware of these, they may have expectation of receiving SIDs which are not used with week-end routes.

5. Simplification of SIDs

Several responders referred to the large number of SIDs offered at Schiphol (70) and some other European airports as a potential source of error.

SIDs should be as simple as possible. The number of SIDs should be kept to a minimum.

The number of waypoints and conditional fixes should be kept to a minimum.

Common points should be used for transitions from SIDs to the airway structure, regardless of the runway in use on the day.

Avoid having several SIDs from the same Runway to the same TMA exit point, for example due to noise abatement, aircraft type (Jet or turboprop) etc.

An early move to a common, higher, Europe-wide transition altitude would remove one variable from a complex picture.

6. General

Greater communication between pilots and ANSPs when deviations occur (or nearly occur) would help to identify particular weak points allowing them to be addressed, or at least increasing awareness of the problems.

LIST OF RESPONCES

1.   Regarding "Working Paper - WP17.04 - Lateral Deviations from SIDs "I would like some comments. We have looked at this problem before. I am missing some factors in your working paper which by far are the most important regarding Lateral Deviations from SIDs. The first one is a bit complex. I will try to summarize it.

    Problem 1: SIDs can be flown using LNAV. On some aircraft LNAV is armed on the ground and immediately after lift off LNAV will start working. There are a number of navigation aids that LNAV can use (e.g GPS, VOR/DME). If these are not available the onboard systems like the IRS or the Attitude Heading Reference System (AHRS) are used instead. Immediately after takeoff the aircraft is flying too low to make use of VOR/DMEs. A GPS system approved for navigation is not installed on every aircraft (the GPS form the EGWPS/TAWS system cannot be used automatically for navigation as the FMS needs to be certified for this). An aircraft that has armed LNAV on the ground, which doesn't see the VOR/DME and does not have a GPS system for navigation, will use either the IRS or AHRS system to navigate. The AHRS system is the simplest, cheapest system. However, it's accuracy is also much less than a IRS system. SID deviations occur very often with aircraft that takeoff in crosswind that have an AHRS system installed and arm LNAV on the ground. What happens is that with the AHRS system available as the only navigation source the FMS calculates the lateral position of the aircraft using true airspeed and heading only. Crosswind will deviate the aircraft from the SID. However, pilots will not notice this as the ND shows that they are on track. The ND track is based on true airspeed and heading and doesn't correct for crosswind. As the aircraft climbs the deviation because larger until the FMS gets useable data from the VOR/DMEs. What will show then on the ND looks like a map shift (which it isn't). The flight director will then put the aircraft back on the SID. Problem 2: This is related to basic flying in crosswind conditions and it affects basically only aircraft that arm LNAV in the air (like every B737). Some pilots will not correct for (all the) crosswind just after takeoff. The heading they fly will not correct for the all the crosswind wind they encounter. This will cause deviations form the SID until LNAV is armed.

    These problems are the most common to result in SID deviations.

    I hope this helps.

2.   A few points from an operator airspace and design point of view that would go some way to reducing the problem.

    a) SID (and STARs) are named with a five letter name + alphanumeric but an aircraft FMS can only accept a 4 character code + alphanumeric. So each SID is named in the navigation database differently than used in a ATC Plan or on an OFP. I don't think ATC are aware of this FMS limitation.

    b) SIDs need to be designed better. I appreciate that are designed in accordance to the rules but it is high time that common points are used for transition onto the airway network that cover all runways not just one.

    c) Some countries insist on a standard SID being input into an OFP(ATC Plan) even if it cannot be planned independent of the runway in use. It must even be specified on an RPL! All because national ATC data processing systems cannot cope. If the runway in use is in doubt or cannot be predicted than the ATC Plan /RPL should not specify a particular SID.

3.   I have flown into Schiphol about 2000 times most probably far more than that. We never experienced a SID deviation problem so far in the company. Schiphol has one of the best ATC controllers in the world but still as you mentioned, there are several occasions where a SID deviation occurs. It might be a good idea, despite waiting for the crews correct readback of the SID clearance, to add the modification „check SID" since this triggers the pilots (in my opinion) much more to check the cleared SID against the FMS.

For your info, in the last 3 airlines I worked for, the EXPECTED SID was always inserted in the FMS BEFORE actually getting the ATC clearance. Once ATC SID clearance has been obtained, the whole SID was briefed on raw data AND FMS inputs.

4.   We recently experienced two similar incidents, the second lead unfortunately to a separation minima infringement, despite early ATC intervention (edged awareness!). I forwarded this message to the safety officer of the affected airline as post script to our email exchange, wherein he admitted "faulty action of the crew - they did not check the proper settings of the FMS". And of course I'll forward this message to the management and involved unit.

5.   After reading your request for information below, I am naturally, by dint of my professional perspective concerned with language and communication, inclined to ask if it is possible the airlines who adhere to their previously established 'ready-made' flight plan do so because of a failure to understand the language associated with the new SID?

Some pilots, with minimal plain language proficiency but relatively good phraseology proficiency, are able to mimic read-backs accurately, but perhaps don't compute the language in their mind.

Do you think that could possibly be a factor? Any indication of which airlines do this more than others? Or is it simply a matter of expectancy, rote workload factors? Just wondering…

6.   In addition to the comments already made, there are also a number of aircraft around with older FMS's with a memory of only 200k. This means that the airlines have to prioritize the DB contents they request from their supplier. Usually, the airways have priority, then the airports and the remaining space is filled with the most likely SID/STAR's. There is usually space remaining for only a few since they tend to consume a lot of memory due to their complexity. The pilots are then confronted with a dilemma: fly the SID manually which is not optimum, construct the SID which is time consuming and risky when there is a runway change during taxi, or insert the a wrong one but close enough to be manually adjusted.

Some FMS's are also very slow (remember, this technology has been certified 20 years ago) It can take up to 2 minutes to simply scroll a long–haul flight plan from top to bottom on an MD11!

For all those reasons, a number of operations taking only two mouse clicks on ground systems, are much more time consuming on airborne systems and may sometimes involve a lot of typing with all the possible errors associated to this activity.

The solution to alleviate the problem is to simplify as much as possible the design of SID's and STAR's by limiting the number of waypoints and the number of conditional fixes. This will reduce overall memory requirements and programming complexity and thus reduce the number of opportunities for mistakes.

7.   Ref to the Schiphol SID violence issue. I collected some information/findings from our Database.

Year 2006 we had 16 cases reported where the aircraft does not follow the SID (given correct by ATC + correct readback from the pilot).

Year 2007 we had 22 cases reported where the aircraft does not follow the SID (given correct by ATC + correct readback from the pilot).

Here some findings around the issue that can be seen as aggravating or at least situational factors from the ATC point of view:
-    Avoid having several SIDs from the same RWY ending to the same TMA exit point (these can exist for example due to noise abatement, prop SIDs / jet SIDs, quiet jet SIDs etc...).
-    SID naming issues (I suppose these are quite well known)
-    When changing for any reason the (already given) SID it might be wise NOT to give a new SID = it might be better to give a HEADING+ALTITUDE
-    When changing RWY for any reason from the initially intended RWY... it might be better to give a HEADING+ALTITUDE for the new departure RWY
-    All other last minute changes for the routing during the taxi or prior take off phase increase the possibility to have an aircraft using the wrong SID.
-    Company/Airliner procedures to select or change the departure route + FMS use/database routines.

8.   If I briefly elaborate from a slightly different perspective, it may assist:

(1) Whilst true for his Airbus 320 series, the restriction on FMS system input which describes above is not yet universal! It might be worth having a look at the range of equipment currently being installed on new aircraft as it is certainly an area which is evolving rapidly. There could be scope for exerting influence on either manufacturers or, if useful choices exist, operators.

2) The first (or last) en route waypoint should not vary according to the SID (or STAR) which is given on the day. It would also help SIDs if we could also move more quickly towards the common - and higher - European Transition Altitude we have all been talking about for years. The one State is a fertile ground for SID-busting because of the absence of even a common Transition Altitude for the particular TMA let alone the whole of the State!

(3) An RPL - or even an ad hoc FPL - cannot be expected to specify a SID/STAR which is predicated on one of a selection of possible runways in use!
And briefly, in respect of the original message, it is unfortunately true that a few pilots still plan ahead using what they expect will happen and the only way to prevent this is appropriate SOPs and an effective operational culture which means these SOPs are then followed.

It is, however, not that common for operators to put a 'default' SID on their pilot 'tailored' paper NAV logs for each flight or in their aircraft FMS memories/ EFBs. And 'dispatchers' at airports rarely have anything to do with aircraft navigation or FMS pre-departure set up, the problem is one for the pilots and either their lack of proper procedures and/or lack of application of them, or in the absence of procedures, lack of 'airmanship.

9. Regarding the AMS SID confusion may I point out the following:
   a) Our CFP (Computerized FPLs) normally reflects the Longest SID and the Longest STAR for Fuel calculations.
   b) As per the Actual wind expected (TAFs) sometimes the provider mentions the expected SID, associated with the expected departure runway.
   c) If in the last minute the wind veers or backs, and the runway for departure do not match with expectations it will be crew responsibility to enter the FMGS data correctly. This may increase crew work load if runway changes are offered in short notice despite a good intention.
   d) If the crew did not anticipate it with a Secondary flight plan prepared, than some time should be expected for the crew to professionally revise, and activate Secondary or Redo the Data, Check the new speeds etc, and carry out a proper revised departure briefing. This takes time, needs time and all professional controllers should support this time requirements. In fact AMS is in my opinion a pleasure to work with such like other airports.
   e) As a proposal I would like to suggest that the SID SHOULD not be mentioned in our CFP, but only the SID exit point. The CFP should reflect a DCT to SID point. EG DCT to LEKKO! In this case the crew would insert any SID suitable to reach LEKKO from any departing runway.

10. ATC is not aware about aircraft instrumentation and FMC limitations, so SIDs & STARs must be design much more better and in an friendly manner for the flight automation.

11. I would only be guessing at this point, and would need to do some research before having a solid theory, but we do not uplink the SIDS to our crews, although an assumed SID may very well be depicted on the paper Flight Plan for time and fuel approximations. Seasoned International crews are relatively adept at recognizing the sometimes confusing and numerous iterations of some European airports' SIDS, but less experienced crews may be less aware.

    Speaking only anecdotally from the perspective of a US operator, the shear number of potential departures and transitions out of many European airports vastly exceed US operators' domestic experience . AMS has 8 ANDIK designated SIDs and 10 BERGIs. Add a little difference in language accent or dialect and mis-communication becomes more probable.

    We take a very proactive stance on compliance failure, so timely feedback from controlling agencies is critical for resolution. I think this very process of open discussion is extremely beneficial.

12. Regarding the EHAM SID confusion:
   a) In our company, we use "ready made" OFP which includes expected departure RWY and SID (the same for arrival). For the fuel calculation, this is the way how to fulfill the Appendix 1 to JAR-OPS 1.255 Fuel policy (a) (2) (i) – *Fuel for take-off and climb from aerodrome elevation to initial cruising level/altitude, taking into account the expected departure routing;…*
   b) In SOPs there shall be explicitly stated that both pilots:
      - must receive the ATC clearance,
      - must carefully confirm that the ATC clearance agrees with FMS SID.
   c) At some airports it is possible (somewhere it is mandatory) to call for the ATC clearance 10-30 minutes prior the off-block time. In these cases, the crew may receive the ATC clearance firstly and then insert this into the FMS.
   d) During the last ten years, we only have one case of aircraft flying wrong SID.

13. With regard to the info you sent and your request for feedback, I can provide you the following. Our OFP flight plan that is issued to our flight crew does not contain the specific SID code. It only contains the SID name. Presently, we are considering to display the SID code on the OFP. However, this will be for fuel planning and crew information purposes only, to increase their confidence in the fuel calculation methods. The OFP info that is used to program the FMS or GNS-X will not contain the SID code, but only the SID name.

    Additionally, our Standard Operating Procedures require that an airway clearance has to be confirmed by both pilots. In 99% of all departures this is done before start up. Some smaller airports still issue airway clearances during taxi. In this case, it is still possible that a wrong SID is entered. Nonetheless, our SOP further stipulate to review the departure before take-off, thus, a wrong SID might still be picked-up.

    I might well be that our SOP are not watertight, as we recently had an SID violation. I hope this answer your question in some way or another. We will surely consider to display the "check SID" in our OFP.

14. My simple answer to this question, after 30 years of flying, is that Schiphol for us pilots, is "handle with care". It is very easy for a pilot, no matter how much experienced, to get confused with so many runways and so many type of arrivals and so many type of departures. (A look at the Jeppesen Charts confirms this). A pilot who is not familiar with Schipol would be very uneasy with the whole experience. Other major airports, despite being busier, seem to have found the solution to simplified SIDs.

    Secondly departure clearances should be given as early stage as possible in order for the pilots to prepare themselves better and there should be no changes to the assigned SIDs afterwards, particularly when taxiing, since this would mean the reprogramming of the FMS and the pilots re familiarizing themselves with a new SID when the cockpit workload is high.

15. Unfortunately...... we have on board our aircraft an old version of navigation system that not approved for terminal area navigation. All our SIDs based on radio navigation facility so we don't experience this kind of situation.

16. The more SID's exist from a certain airport, the more error sources you produce. AMS being one of the airports, where we pilots used to talk about a "telephone directory" when we started to search for the correct SID-Chart. It is clear that complex airports (many runways) require more charts, but it seems that a drive towards simplicity does not exist.

    Sources of errors also include non-programmable SIDs. Cases have been identified, where wrong SIDs were flown, because the correct one was not programmable for the FMS. Pilots then used a different SID to complete the FMS-Flight plan and due to distracting circumstances then forgot the wrong input.

17. My remarks to the mentioned problem:

    SID designers should be aware that the local pronunciation of SID's, are sounding sometimes very similar, even if they are written different. Especially for foreigners it's sometimes very difficult to detect which SID was provided. (Local English-dialect of ATC controllers in all the different countries in Europe).

Very similar and especially for first user of the airport a potential of misinterpretation. I don't know they had problems there but at the beginning I had several cases my Co-Pilot entered the wrong SID. Additionally the first turns on most of those are identical. There are others around Europe, I just can't remember.

18.   Our main experience of this has been as a result of last minute changes to flight plan by companies to avoid ATC delay on the original route. We have worked with the companies concerned to ensure that refils were only done if sufficient time remained to tell their crews and this solved the problem.

Their we also had a problem with a particular company's crews regularly not being aware of the different routes to be flown at weekends. The company were contacted on several occasions regarding this and the problem now appears to be solved.

19.   At our airport we issue the ATC clearance together with start-up and pushback clearance. The ATC clearance is composed by destination, SID and initial cleared flight level. The pilots readback the ATC clearance and input the info. into the onboard computer. We don't have SID deviations after departure. As far as I know it's the same procedure in the rest of small and medium towers in our country.

20.   It appears to me that the issues we are seeing are related but not quite the same as what you are seeing (as described in the paper you sent me). The errors are somewhat similar (wrong information in the box). In our case, the pilots have the wrong runway programmed into the FMS (for some of the same reasons you described in your paper). The pilots take off from the correct (cleared) runway and have the correct SID programmed, but since the wrong runway is in the box, they go the wrong way when they engage LNAV. It would be useful to combine lessons learned, because we are seeing different effects of similar classes of errors. For example, your description of the "ready made" operational flight plans seems to have resulted in some similar issues to what we see with our PreDeparture Clearances.

21.   It is correct that an expected SID is very often already entered in the FMS before the clearance is actually received. It is however not the dispatcher who is responsible for this but the pilots themselves, taking into account the runway in use, their experience with the airport, the enroute connection after the departure etc. Pilots just want to work in advance to be well prepared if things get busy. In addition they can already verify the expected fuel consumption if the complete profile is in the FMS. Most of the time it makes the operation efficient but as mentioned in the document it is probably also the cause for the errors. However, I think these errors could be avoided just by designing and applying good Standard Operating Procedures. Instead of just replying the clearance correctly, crews should write the ATC departure clearance down (for example on the paper copy of the flight plan or on a bug card placed in view of both pilots) once they receive it and before they read it back. After reading it back they can compare the SID name (written down) with the Jepp chart in front of them and with the SID programmed in the FMS. Even a reminder in one of the checklists like "VERIFY ATC DEPARTURE CLEARANCE" could help!

There is a need for keeping the operations and procedures as simple as possible, which is also already very well explained in the document. I just want to add that EHAM has 70 SIDs! No need to say that if a SID clearance is changed when the aircraft is already taxiing, it will lead to a very high workload situation in the cockpit.

22. We had similar events in one particular airport this year.
As a result of our investigation we found that the main reason was faulty action of the crew - they did not check the proper settings of the FMS. The new departure was not executed in the flight computer. Lack of time for preparation was the contributing factor. The new departure clearance was given during taxi when the crew focused on the another duties.

To avoid similar events we recommend our crew the following procedure (when the new departure was issued during taxi):
- stop taxi in the convenient place informing ATC of time needed for preparation
- reprogram the FMS
- check settings according to departure chart
- report "ready for departure" to ATC.

We have also contacted the representative of ANSP concerned to clarify the situation and to share the results of our investigation. We appreciated kindest approach and comprehension of our colleagues. This information is provided for safety improvement only.

23. We had several events with SID confusions (ANDIK1S and SPY1S) from RWY 24 in EHAM, in all cases same type of aircraft and same operator:
- crew was given runway 24 with a SPY1S by Delivery, read back AND1S to which Delivery said "that is correct". With the take-off clearance from 24 the TWR mentioned the SPY1S again, which was read back correctly by the crew, but they followed an AND1S departure (and thus became a conflict with a departure from runway 18L).
- crew received runway 24 with a SPY1S via datalink. TWR mentioned the SPY1S again with the take off clearance, which made the crew notice that they had programmed/planned/prepared a different SID, i.e. the AND1S departure. Change made in FMS while on the ground (i.e. before take off), after which the correct SID was followed.
- same scenario, except that the crew stated they were certain they were given an AND1S departure. It was found however that they received a SPY1S via datalink.

I'd like to invite the all to have a look at the website www.lvnl-ohd.nl and check under the button "ATC Factsheets" on the left side of the page. The button leads to a sub-page where Factsheets can be downloaded with useful information about the ATC operations at Schiphol. The latest Factsheet is titled "Departures from runway 24 to the north" and may be of interest for all.

24. We have these comments:

- The 5 letter name will be converted into 4 characters by use of the AIRINC 424 Naming Convention 2. We agree and are working with the issue.

- We agree.