WORLD METEOROLOGICAL ORGANIZATION

ET-AIR-3 and AMDAR Panel-14/Doc.4.3.1

(28.X.2011)

JOINT MEETING:
CBS EXPERT TEAM ON AIRCRAFT BASED OBSERVATIONS
(Third Session)
AND
AMDAR PANEL
(Fourteenth Session)

ITEM: 4.3

(QUEBEC CITY, CANADA, 2-4 NOVEMBER 2011)

Original: ENGLISH ONLY

PROJECTS, PLANNING AND WORK PROGRAMME

AMDAR Software Development

Status report on AAA Software Issues in South Africa

(Submitted by South Africa)

Summary and purpose of document

This document gives a report on the challenges in the implementation AAA v3 Software at the South African Weather Service.

ACTION PROPOSED

The Panel is invited to note the information contained in the document.

The SAWS decoding software for AMDAR2 have been working on SAWS's message switch system since July 2005. There were no known challenges to the SAWS ICT section with AMDAR2 decoding software and SAWS was not aware of any changes to AMDAR version 3, until July 2010 when SAWS was contacted by South African Airways (SAA) about new AMDAR version (AMDAR3) that has been implemented on some of the airbuses 320.

SAA informed SAWS that the changes were minor and requested that the SAWS make changes to its decoding software. The SAWS ICT section conducted an investigation that will assist in effecting changes to the SAWS AMDAR decoding software. The result of this initial investigation showed that the changes required were not minor. The SAWS needed a lot more of technical information before changes can be effected. This technical information needed was requested from Aviation Section of SAWS and was supplied in November 2010. As these changes were not trivial and SAWS was not involved from the beginning of the change from AMDAR2 to AMDAR3, SAWS had to schedule time to effect those changes.

The modification of the software started in February 2011 and the new software was implemented in March of 2011 by the SAWS. All AMDAR3 messages that were received from SAA were decoded and sent on the GTS. Please note that this software decoding of AMDAR3 was done to best of the SAWS's ability, as SAWS, ICT only had the basic decoding rules available as there were no encoded relevant decoded messages for doing full testing.

As far as SAWS, ICT section was concerned everything was functioning correctly and all the messages where decoded and sent to the GTS. On the 7th July 2011 SAWS, ICT section received an email from the WMO complaining that the SAA was still sending AMDAR2 version message that contained the location errors that was occurring during the encoding on the aircraft. It was only then that SAWS, ICT section was informed why the change from AMDAR2 to AMDAR3 was required and why it was so important). SAA did inform WMO and SAWS that the AMDAR3 version was only loaded on 3 aircrafts, and that this information was sent to SAWS as per agreement.

An investigation was carried out on why the encoded messages still had errors and it was found that the software that was developed by SAWS for decoding of AMDAR3 messages and implemented in March 2011 was disabled. All the AMDAR3 messages were archived but not processed. The SAWS activated the processing of the AMDAR3 again and informed WMO and all relevant parties to monitor these messages that were being sent on the GTS. After this the SAWS was informed by Dean Lockett from WMO that there were decoding errors in the AMDAR3 messages and there were duplicate messages in AMDAR2 message.

The SAWS informed Dean Lockett that it needed an example of the encoded AMDAR3 version data in its decoded format so that SAWS can check, test and verify the decoding software, as SAWS could not do so during initial software development. From here SAWS, ICT section did fix the AMDAR2 decoding to remove duplicate reading in the messages. When the SAWS ICT section had a look at the AMDAR3 messages it found out that there was an additional and illegal character (?) in the messages that was causing the problems during decoding.

In the meantime WMO and Australian Bureau of Meteorology were looking into SAA sending the encoded AMDAR3 messages to them so that they could decode messages. SAA did route the messages to Australia and Australia Bureau of Meteorology would investigate if they could decode the messages. The SAWS, ICT section did in the meantime fix the decoding of AMDAR3 version by looking and removing the illegal character. The SAWS ICT section also enquired if this illegal character was received by Australia or anybody else, this was negative and it was concluded that this illegal character got into the message between the SITA downlink, Johannesburg ATNS and the SAWS. The SAWS then left the additional testing in its software to solve the issue of the illegal

character. In the meantime Australia informed the SAWS that they could do manual decoding but not automated as the header information in the AMDAR3 version was not compatible with their systems. Australia also suggested that the SAWS fix their decoding problems as this was the easier route to follow. The SAWS, ICT section then asked for examples of the encoded and decoded message and finally did receive them from Australia via the WMO.

With above examples the SAWS ICT section could finally fix the remaining decoding problems after receiving the information requested. The changes that needed to be made were mainly focused on the way the truncating and rounding of the data were done. Once these changes were made and verified to be correct by WMO and NOAA, SAA proceeded in loading the AMDAR3 encoding software on all there remain Airbuses in there fleet. The last changes in the software by SAWS was implemented on the 25th August 2011 and since then the amount AMDAR3 messages from South Africa on the GTS has increased.

Lastly the SAWS ICT section request that similar changes to the AMDAR encoding software in the future is clearly communicated between all interested parties to stop a repeat of issues like above from occurring again.