

February 22, 2007

**Operational Acceptance Test (OAT) Report
for
Automated Surface Observing System (ASOS) Software Version (V) 2.79C**

Introduction and Background

ASOS Operational Trouble Report (OTR) # 1078, dated 09/18/06, identifies an Acquisition Control Unit software V2.79B problem with erroneous Ice Free Wind (IFW) sensor maintenance indicators (\$) being appended to the Aviation Routine Weather Report (METAR) or Aviation Selected Special Weather Report (SPECI) reports. Each time the IFW sensor reported a path error for path 5 (one of the 6 IFW sensor paths), incorrect interpretation of the path error by V2.79B resulted in an erroneous \$ being appended to the next METAR or SPECI. Although the IFW sensor was operating normally (it only needs 4 of the 6 paths to produce a valid wind report) and no data quality error or missing wind occurred, this erroneous maintenance flag could mask other potential ASOS problems. In addition, the ASOS Operations and Monitoring Center (AOMC) experienced an increased workload in responding to the erroneous \$ indicators and, in some cases, IFW sensor which were functioning properly were replaced unnecessarily. The V2.79C software incorporates a fix for the erroneous maintenance indicators.

Installation of V2.79C for the OAT was authorized on November 16, 2006, with the issuance of the *Operational Acceptance Test (OAT) Plan for Automated Surface Observing System (ASOS) Software Version (V) 2.79C*, dated November 14, 2006. The purpose of the OAT was to verify V2.79C is acceptable for national deployment to resolve the IFW maintenance indicator problem.

Conduct of the OAT

The OAT began on November 11, 2006, with installation of V2.79C at The Dalles (KDLS), Oregon, and was completed on January 16, 2007. During the OAT, V2.79C software was installed at 20 of the 29 planned sites:

SID	Site Name	Install Date	Days of Operation
KDLS	The Dalles, OR	11/17/06	60
PANC	Anchorage, AK	11/17/06	60
PALH	Anchorage (Lake Hood), AK	11/17/06	60
KITR	Burlington, CO	11/28/06	49
KGFK	Grand Forks, ND	11/29/06	48
KLND	Lander, WY	11/30/06	47
KMYV	Marysville, CA	12/01/06	46

KSHN	Shelton, WA	12/01/06	46
KMFI	Marshfield, WI	12/04/06	43
KCEC	Crescent City, CA	12/05/06	42
KOFK	Norfolk, NE	12/06/06	41
KOKB	Oceanside, CA	12/06/06	41
KDHT	Dalhart, TX	12/08/06	39
KGUY	Guymon, OK	12/08/06	39
KRNM	Ramona, CA	12/08/06	39
KBKE	Baker, OR	12/11/06	36
KVPZ	Valparaiso, IN	12/12/06	35
KHYR	Hayward, WI	12/13/06	34
KSFO	San Francisco, CA	12/14/06	33
KGRR	Grand Rapids, MI	01/10/07	6

Although V2.79C was not installed at some planned OAT sites, all planned system configurations and interfaces were evaluated. A table of characteristics and interfaces for the installed OAT sites is provided as an Appendix.

Results

At the completion of the OAT (January 16, 2007), a total of 844 site-days of operation were accumulated and no software-related problems were reported.

Two cases confirming the V2.79C erroneous maintenance indicator fix were documented during the OAT (data from the IFW sensor maintenance page):

12/11/06 at Oceanside (KOKB), CA

BAD ONE-SECOND READINGS 02110

PATH 0 SIGNAL QUALITY INDEX	98	P	5
PATH 1 SIGNAL QUALITY INDEX	96	P	4
PATH 2 SIGNAL QUALITY INDEX	99	P	3
PATH 3 SIGNAL QUALITY INDEX	98	P	2
PATH 4 SIGNAL QUALITY INDEX	97	P	2
PATH 5 SIGNAL QUALITY INDEX	99	P	1

12/27/06 at Crescent City (KCDC), CA

BAD ONE-SECOND READINGS 00015

PATH 0 SIGNAL QUALITY INDEX	94	P	4
PATH 1 SIGNAL QUALITY INDEX	87	P	4
PATH 2 SIGNAL QUALITY INDEX	83	P	4
PATH 3 SIGNAL QUALITY INDEX	88	P	10
PATH 4 SIGNAL QUALITY INDEX	87	P	9
PATH 5 SIGNAL QUALITY INDEX	91	P	10

In both cases, although there were errors on path 5, there were no data quality errors, wind was never missing, and there was no \$ appended to the METAR.

Recommendation

Based on the results of this OAT, the V2.79C software is acceptable for use at all ASOS sites with IFW sensors.

Appendix

ASOS V2.79C OAT Site Characteristics and Interfaces

SID	Name	FAA Service Level	Staffing	DCPs	Multiple Sensors	Comms	ZR	TSTM/ALDARS	GTA/ATIS	ACE	RVR	WSP	IFW	AWPAG	Current Software Version
KGFK	Grand Forks, ND	B	FT	1	---	ADAS	ZR	ALDARS	ATIS	---	---	---	IFW	AWPAG	2.79B
KGRR	Grand Rapids, MI	B	FT	2	M	H/W	ZR	-	ATIS	---	---	WSP	---	AWPAG	2.79B
KHYR	Hayward, WI	D	---	1	---	ADAS	ZR	ALDARS	---	--	---	---	IFW	---	2.79B
KITR	Burlington, CO	D	---	1	---	ADAS	ZR	ALDARS	GTA	---	---	---	IFW	---	2.79B
KLND	Lander, WY	D	---	1	---	DIAL	---	TS	---	---	---	---	IFW	AWPAG	2.79B
KMFI	Marshfield, WI	D	---	1	---	ADAS	ZR	ALDARS	GTA	---	---	---	IFW	---	2.79B
KOFK	Norfolk, NE	C	---	1	---	ADAS	ZR	ALDARS	GTA	---	---	---	IFW	AWPAG	2.79B
KVPZ	Valparaiso, IN	D	---	1	---	DIAL	ZR	---	---	---	---	---	IFW	---	2.79B
KDHT	Dalhart, TX	D	---	1	---	ADAS	ZR	ALDARS	GTA	---	---	---	IFW	---	2.79B
KGUY	Guymon, OK	D	---	SCA	---	ADAS	---	ALDARS	GTA	---	---	---	IFW	AWPAG	2.79B
KBKE	Baker, OR	D	---	1	---	ADAS	ZR	ALDARS	---	---	---	---	IFW	---	2.79B
KCEC	Crescent City, CA	D	---	1	---	ADAS	---	ALDARS	GTA	---	---	---	IFW	---	2.79B
KDLS	The Dalles, OR	D	---	1	---	ADAS	ZR	ALDARS	GTA	---	---	---	IFW	---	2.79B
KMYV	Marysville, CA	D	---	1	---	ADAS	---	ALDARS	GTA	---	---	---	IFW	---	2.79B
KOKB	Oceanside, CA	D	---	1	---	ADAS	---	ALDARS	GTA	---	---	---	IFW	---	2.79B
KRNM	Ramona, CA	C	PT	1	---	ADAS	---	ALDARS	---	---	---	---	IFW	AWPAG	2.79B
KSFO	San Francisco, CA	A	FT	3	M/B	DIAL	---	---	ATIS	ACE	RVR	---	IFW	AWPAG	2.79B
KSHN	Shelton, WA	D	---	1	---	ADAS	ZR	ALDARS	GTA	---	---	---	IFW	AWPAG	2.79B
PALH	Lake Hood, AK	C	---	2	Remote wind	ADAS	ZR	---	ATIS	---	---	---	---	---	2.7B
PANC	Anchorage, AK	A	FT	2	M	ADAS	ZR	---	ATIS	---	RVR	---	IFW	AWPAG	2.7B