

SUBJECT : Wind Sensor Assembly Upgrade, Model 2 Transmitters

PURPOSE : To add operational enhancements for the ASOS wind sensors

EQUIPMENT AFFECTED : ASOS

PARTS REQUIRED : Wind speed transmitter, Mod. 2, ASN S100-2A8MT1A2A1-1, (P/N 33079), qty. 1
Wind direction transmitter, Mod. 2, ASN S100-2A8MT1A3A1-1, (P/N 33080), qty. 1
Washer, ASN S100-2A8MT1A2MP3, qty. 2

MODIFICATION PROCUREMENT : Technicians will be issued one full set of the parts listed above for each ASOS site identified in the attachment (A-3). Additionally, each technician will be issued a set of spare mod. 2 transmitters for the spares kit.

SPECIAL TOOLS REQUIRED : None

TIME REQUIRED : 2 hours

EFFECT ON OTHER INSTRUCTIONS : ASOS Modification Note 8 is superseded.

AUTHORIZATION : This modification is authorized by Engineering Change Proposals E94SM05F108, E94SM05F110, E94SM05F111, E94SM05F114, and E94SM05F119.

VERIFICATION STATEMENT : It was successfully tested at the sites listed below:

ALB	ST1	FNT	SPI
ACY	IPT	PIA	GEG
BGM	ORH	RFD	
ERI	DTW	SUX	

GENERAL

This note provides procedures and instructions for upgrading the ASOS wind system. The current wind sensors will be upgraded with redesigned sensors designated ASN S100-2A8MT1A2A1-1, P/N 33079 and S100-2A8MT1A3A1-1, P/N 33080.

Enhancements to the sensors incorporate **a new decorative nut sealing washer**, an internal grounding strap attached to the direction potentiometer, wind speed optical chopper stabilizer,

F420-shaped top design, and wind speed no. 6 set screw. The sensors have been modified to improve performance.

Integrated in this note are procedures for wind sensor crossarm brass adapter replacement. The brass adapter decreases the probability of the wind speed and direction transmitters seizing on the crossarm assembly. This procedure also provides guidance for drilling vent holes in both crossarm wind sensor adapters. These vent holes will help prevent moisture condensation that contributes to premature bearing failures and excessive torque on the wind sensors. Both of these optional activities may have been completed as part of Modification Note 8. If the vent holes have been drilled, then ignore those sections of this procedure.

PROCEDURE

Before and After Installation Procedures

Procedures Related to Installation of Wind Transmitters

BEFORE INSTALLING TRANSMITTERS

1. Obtain approval of the site MIC/OIC before starting installation. You may install on any day of the month if permission is granted and the restrictions in step 3 are complied with.
2. Call the AOMC at 1-800-242-8194. Inform the AOMC at which site you will be installing this modification.
3. **Commissioned Sites Only:** Do **not** start installation during bad weather, while precipitation is falling, during instrument flight rule (IFR) conditions, or if either is expected within 3 hours.

AFTER INSTALLING TRANSMITTERS

4. **IF MANUAL BACKUP IS AVAILABLE**, office staff must implement manual full backup observation procedures if installation runs past the regular hourly observation time, or if a special observation must be generated. No special observation is needed when the wind system is restarted.
5. Inform office staff that the ASOS is again operational.
6. Verify that the ASOS transmitted an hourly observation. Call the AOMC and tell them:
 - a. Your location,
 - b. that installation of the modification has been completed, and
 - c. that the ASOS is operational.

WIND SENSOR UPGRADE

1. At the DCP, turn the wind circuit breaker to **OFF**.

2. Carefully tilt the wind tower to the down position and secure. Cover the lightning rod to prevent accidental impalement.
3. Remove the wind speed sensor from crossarm support. **Note: Cup nut is a left-hand thread.** If the wind speed sensor cannot be removed from the crossarm, remove the whole assembly with transmitters as one piece. Replace the crossarm assembly with S100-2A8MT1A4 as described in the ASOS Site Technical Manual paragraph 4.5.17. **Do not try to separate from the crossarm adapter.** Inspect connector P3 of cable P/N 32342, S100-2A8MT1W1, (tower signal cable) for corrosion. If it is corroded, replace tower signal cable. Cable may be obtained from NLSC.
4. Remove the wind direction sensor from the crossarm support. **Note: Vane nut is a left-hand thread.** If the wind direction sensor has seized and cannot be removed from the crossarm, remove the whole assembly with transmitters as one piece. Replace the crossarm assembly with S100-2A8MT1A4 as described in the ASOS Site Technical Manual paragraph 4.5.17. **Do not try to separate from the crossarm adapter.** Inspect connector P3 of cable P/N 32342, S100-2A8MT1W1, (tower signal cable) for corrosion. If connector is corroded, replace tower signal cable. Cable may be obtained from NLSC.
 - 4a. If the crossarm adapters have not been drilled with a drain hole, complete steps "a" through "g". Otherwise, proceed to step 5.
 - 4b. With a pencil, make a mark on the crossarm adapter keeping it clear of the connector's outside diameter (OD) and in line with the connector's alignment slot (see attached drawing, top view).
 - 4c. Loosen the two bolts securing the adapter into the crossarm. Loosen the two set screws securing the connector adapter and carefully pull the connector out of the adapter, taking care not to damage the wire bundle. Position and tape the connector/wire bundle clear of the pencil marked area.
 - 4d. Reassemble the adapter to the crossarm using the pencil mark for orientation.
 - 4e. Prepare to drill one 0.116 diameter hole in each crossarm adapter (be sure to use safety glasses).
 - 4f. Holding the drill at a 15 to 20 degree angle, drill the hole. (See the figure on page A-2). Penetration of the drill bit should be approximately 0.5 inch.
 - 4g. Reassemble the connector into the crossarm adapter after removing all tape and orienting correctly. When properly drilled, the hole should be clear of the connector's OD and in line with the connector's alignment slot. Reassemble the crossarm support using the Mod. 2 wind speed and wind direction sensors provided. Apply a very small amount of antiseize grease on the adapter. Do not apply grease near the newly drilled hole. Align the wind direction sensor using either the solar noon alignment procedure or the Davis Pelorus alignment procedure. (These procedures are in the ASOS Site Technical Manual paragraphs 4.5.2.5.1 and 4.5.2.5.2.)
5. Install the new sensor by aligning guide pins and connector on sensor with mounting holes and receptacle in crossarm supporting flange.

Install the sealing washer under the decorative nut on the direction and speed transmitters. Place the metal surface of the washer upright. When securing the nut to the shaft the metal surfaces of the bottom of the nut and sealing washer should come in contact. Tighten to ensure that the washer expands enough to cause a water tight seal. Incorrect orientation may cause damage to the washer.

6. Tighten each captive bolt.
7. Raise the wind tower and restore power to wind system.

(These procedures can be found in the ASOS Site Technical Manual paragraph 4.5.11.)

SHIPPING INSTRUCTIONS

After the modification has been accomplished, package the Mod. 1 wind sensors for shipment to NRC. Complete and attach a WS Form H-14 for each component you return. Items being returned should include ASN S100-2A8MT1A3A1 (Mod. 1 W/D transmitter), ASN S100-2A8MT1A2A1 (Mod. 1 W/S transmitter), and decorative nuts S100-2A8MT1A2MP1 (2 ea.)

REPORTING MODIFICATION

For commissioned sites, target date for completion of this modification is 7 days after receipt of parts. For other sites, target date for completion is 14 days after receipt of parts. Report completed modification on WS Form A-26, Maintenance Record, following instructions in EHB-4, Part 2. Use reporting code AWIND. (example WS Form A-26 provided as attachment.)

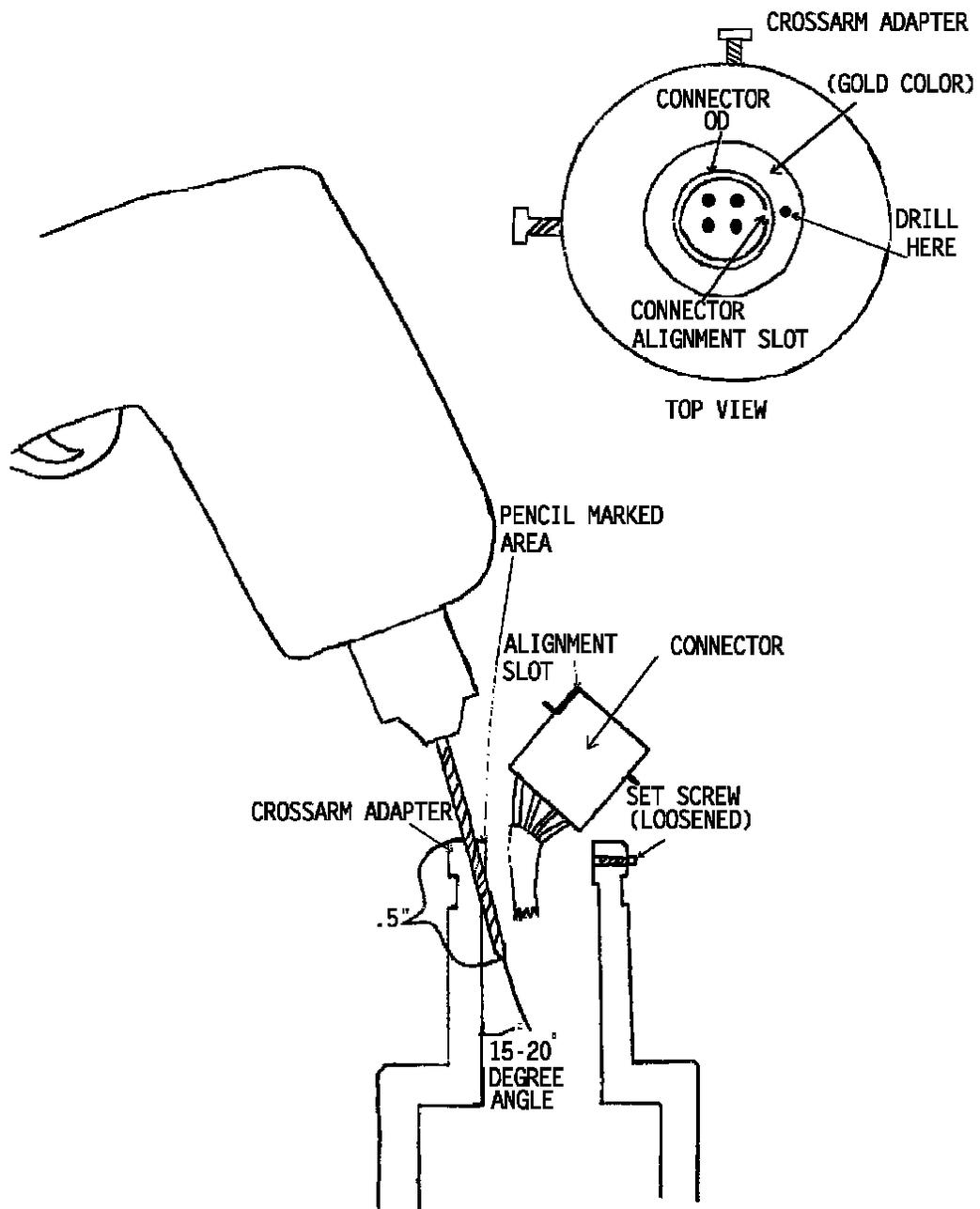
Make appropriate entries in the SYSLOG using the Maintenance Action keys, modification keys and comment fields for each Mod. 1 transmitter that is replaced. Follow the steps in the example below.

1. Log on as TECH.
2. Key the MAINT screen.
3. Key the ACTION page.
4. Key START - Stop here and perform the modification procedure.
After the task is complete, log onto the system.
5. Key the MAINT screen.
6. Key the ACTION page.
7. Key FMK - the OID will display the "Field Modification Kit Maintenance Data" page.
8. Enter the Field Modification Kit Number, MOD 19. Complete by entering **Y** in the Y/N if the information in the previous lines is correct.
9. Key PREVT - the OID will display the Preventative Maintenance Data page.
10. Enter the Agency Stock Number, **S100-2A8MT1A3A1-1** (Mod. 2 wind direction transmitter). Repeat step 9 to enter wind speed transmitter data **S100-2A8MT1A2A1-1** (Mod. 2 wind speed transmitter). Enter the serial number of the transmitter, e.g., **A0288**. Complete by entering **Y** in the Y/N if the information in the previous lines is correct.
11. Check the SYSLOG and verify the FMK and two PREVT messages. Notify the AOMC via telephone when site modification has been completed.

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Chief, Engineering Division

Attachments

W/OSO321:RWChambers:rhz:12/14/94:"amod19.new", disk HB11-E, Spellchecked
Redone 1/25/95:rhz:2/27/95:3/1/95:sol:spellchecked



LISTING OF SIDs REQUIRING WIND SENSOR MODIFICATION NOTE 19

07S 0A6 1S4 21A 22G 2B6 2V3 39J 3KM 3R5
3S2 3SM 3U6 47C 5B5 5C0 6R0 6V2 7G2 7MY
81J 9B9 A21 ABR ACT ACY ADG ADQ AFN AGS
AIA AKN AKO ALB ALS ALW AMA AMW ANC AOH
APN ARA ARB ARR AST ATL ATY AVX AXN AZO
B20 BDE BEH BFD BFF BFM BGD BGM BHM BIL
BIS BIX1 BIX2 BIX3 BJJ BKV BLF BLU BMG BML
BPI BPK BRD BRO BTL BTM BTR BTT BUY BVO
BWG BYG BZN C19 CAE CAG CDB CDS CEU CFV
CGI CKB CKV CLE CLM CNK CNU COS COU CPS
CQX CRS CRW CSG CSM CXO CYS DAB DCU DDC
DEC DET DFI DGW DHN DHT DKK DLN DMO DNL
DRO DSM DSV DTN DTO DTW DVN DVX E02 ELM
ELN ELY EMP ENA ENW EPH ERI ESF EST EVV
EVW EWB EWN F54 F90 FAI FCA FDR FFC FFT
FHR FIT FLD FNT FOE FOK FSD FST FVE FWA
GAG GCK GCN GEG GEY GIF GKN GLD GLR GOK
GRB GRI GRR GSH GTF GVL GWO HAO HBG HBR
HDO HEI HFD HIE HKA HKS HLG HLN HOM HON
HOT HRO HSI HSV HTL HUF HUT HVN HVR HWV
HYR I14 I15 ICT IJD IMT IOW IPT ISW ITO
IXD JAN JAX JBR JEF JKL KNFJ KNJW KNMM KOA
KOLA KOLW KTN LAA LAN LAW LBT LEE LEX LGU
LHX LIH LIT LNK LOU LOZ LVM LWC LWS LWV
M06 M50 M76 MAE MAI MBS MCB MCG MCI MCK
MCN MCO MEB MEM MFD MFI MGM MGW MGY MHK
MIC MIW MKE MKG MKL MKO MLC MLI MLS MLT
MLU MMV MNN MPV MRH MRI MSL MSN MSO MTH
MTJ MTO MVL MWH N00 N22 N63 N80 N97 NED
NEXC O18 O45 OFP OGB OGG OJC OKC OLF OLM
OMK ONO ORE ORH ORT OVE PADK PAH PAQ PBF
PBI PDT PGD PHBK PHD PHNA PHX PIA PIR PKD
PLB PLN PNC PPF PSC PTK PTW PUB PUW PWA
PWM PYM RAC RBG RFD RHI RIL RKP RSL RVS
RZZ S22 SAV SBM SBN SCC SCK SDF SEG SFF
SGF SIT SLK SLN SMF SMP SMX SNY SOV SPI
SPS SPW STC STJ STP SUX SWD SWO SXT SYR
T02 T27 T31 T39 TAL TAN TCL TDZ THV TLH
TMB TOI TOP TOR TQE TRL TUL TUP U11 U73
UCA UNO VEL VPZ VSF W52 WLD WVI X41 YKM
YNG ALO ASX BIH BPT CLL CMI COT CRP DBQ
DRA HKS IAH INL INW KNQI KNUQ KNYL LBX MRY
OMA RBL RDD RNO RST SLE SAT TPH VTN