CL31 Sensor Installation and Configuration Test (SIT test 4.1)

This procedure demonstrates installation of the replacement ceilometer (in accordance with draft installation procedures) and verification of SYSLOG messages generated when primary, backup, and meteorological discontinuity sensors are configured. This test contains three parts. The first part performs installation of a Primary Official replacement ceilometer in an ACU-Only installation as a local sensor, the second part performs installation of a Primary Official replacement ceilometer in a Single Cabinet ASOS (SCA), and the third part performs installation of the replacement ceilometer at a multiple DCP configuration as Primary Official sensor, Meteorological Discontinuity sensor, and Backup sensor, as well as re-installation of the legacy CT12-K at a different sensor location as a "TEST" sensor.

PART I - Local Sensor (ACU Only) installation and configuration procedure

The Local Sensor ACU Only procedure demonstrates installation and configuration of the replacement ceilometer on an ASOS ACU without DCP. As there are no ACU-only systems with legacy ceilometers, this procedure will only demonstrate installation of the replacement ceilometer without removal of a legacy sensor, although a legacy sensor will be configured initially to demonstrate data ingest. The initial ASOS configuration will be an ACU with only an Ultrasonic Wind sensor configured on Local Sensor Port 1 and a CT-12K ceilometer configured on Local Sensor Port 2. The replacement ceilometer will interface to the ACU via a local sensor fiber optic interface. This procedure will be performed using ASOS System SP1 located in the ASOS laboratory at NWS Headquarters (6th floor). Because this is an indoor test, the Vaisala Termination Hood must be used to allow the replacement ceilometer to be operational. The Ultrasonic Wind sensor and CT-12K ceilometer will be simulated using ASENSE. The replacement ceilometer will be interfaced to the ACU using Fiber Optic Cables. AC power will be provided to the ceilometer directly from a non-ASOS AC outlet as is typical at ACU only locations.

Following successful completion of this procedure, Part II of this procedure (SCA installation) can begin.

It is anticipated that this procedure will be witnessed by representatives of the Office of Operational Systems (Observing Systems Branch – OPS22, Test and Evaluation Branch – OPS24, Maintenance Assurance Branch –OPS12, the Federal Aviation Administration, the Navy, and the Air Force.

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
1	Ensure the ACU is operational by observing the 1-minute screen.	ASOS time is updating on OID 1-minute screen	Complete the Date, Start Time, Executed By, sensor and hood S/N entries in the test record.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
2	Using the Installation Instructions developed by the ASOS Product Improvement Program Office (OST11), perform installation of the replacement ASOS Ceilometer on the pedestal provided using the liquitite conduit, fiber optic cable, AC power wiring and safety ground wire provided with the pedestal. Do not perform the steps in section A6 of the installation instructions, sensor configuration will be performed within this test procedure. **Following installation, install the termination hood on the CL31**.	Ceilometer installation is complete	Red line Installation Instructions and attach a copy to the test record for this test.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
3	Using ASOS Modification Note 80, install the Version 2.79S software (provided by the Software Branch) on the ACU.	Version 2.79S installs properly and begins execution as is evident by the time of day update on the OID	Use the ACU only instructions. The Site ID is **SP1.** Source of Materials will be Software Branch and not ASOS Technicians Home page. Technical Assistance is not required during execution of this test. Reporting Instructions are not applicable during this test. Section A.2,A.3, and A.4 steps 1-6 are not applicable during this test. During A.5, step 1b, the AOMC phone number to be entered is 713-1338. Section A.5 steps 2 thru 22 are not applicable during this test.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
4	From the 1-minute screen, depress the following menu keys to verify ACU software configuration: **REVUE-SITE-VERSN-SW.**	Verify that the MEMORY ACU APPLICATION VERSION EPROM Version is 2.79S dated 03/18/08	PRINT the version information and attach to the test report	P	
5	Log onto the ACU as technician. From the 1-minute screen, depress the following menu keys and configure the ACU-only system as indicated: **REVUE-SITE-CONFIG-HDWE** CPU=1, SIO=minimum 4, UPS=1 , VIDEO CARD=0, VOICE PORT = OID-2 SECONDARY PORT	The configuration is correct.	PRINT the final configuration and attach to the test report	P	
6	From the 1-minute screen, depress the following menu keys and configure the ACU-only system as indicated: **REVUE-SITE-CONFIG-DEFINE** CEILOMETER=CT-12K WIND=VAISALA 425 ACU UPS=DELTEK	The configuration is correct.	PRINT the final configuration and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
7	From the 1-minute screen, depress the following menu keys and configure the ACU-only system as indicated: **REVUE-SITE-CONFIG-SENSR** **NO** remote sensors defined LOCAL SENSORS are WI,C1, L1 PRESSURE SENSORS are P1,P2,P3	The configuration is correct.	PRINT the final configuration and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
8	From the 1-minute screen, depress the following menu keys and configure the ACU-only system as indicated: **REVUE-SITE-CONFIG-COMS** Port 2-2 = Pressure 1 Port 2-3 = OID-4 on modem 4 Port 2-4= Voice Port 3-2= Pressure 2 Port 3-3= OID-5 on modem 5 Port 3-4= OID-1 local Port 4-1= UPS Port 4-2= Pressure 3 Port 4-3= AFOS Phone Port 5-2= Printer Port 7-1= Local Sensor 1 Port 7-2 = Local Sensor 2 Port 7-3 = Local Sensor 3	The configuration is correct.	PRINT the final configuration and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
9	Configure **ASENSE** as follows: Sensor 1 – 425 wind sensor, real life emulation enabled, wind speed 5 knots, wind direction 120 degrees Sensor 2 – CT12K ceilometer, real life emulation enabled, one cloud layer at 1000 feet. Ensure that ASENSE port 1 is connected to ACU local sensor 1 RS-232 input, and ASENSE port 2 is connected to ACU local sensor 2 RS-232 input.			N/A	N/A
10	From the 1-minute screen depress the following menu keys to verify data is being reported from local sensors: **REVUE-SENSR-12HR for wind data)** **PAGE** 1 time (for pressure data) **PAGE** 2 times to display ASENSE sky data Wait 5 minutes before proceeding to the next step.	Verify that Pressure Datat from 3 sensors, Wind Data, and Sky data are being reported from the emulated sensor.	PRINT the sensor data screens and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
11	Depress **TEST-PAGE** menu key and verify that data is being issued from the CL31	Verify that the CL31 is reporting no cloud layers	PRINT the final configuration and attach to the test report	P	
12	From the 1-minute screen depress the following menu keys **REVUE-SITE-CONFG-DEFIN** Depress the CHANG menu key to position to CEILOMETER and depress SEQN to set the ceilometer's configuration to CL31. Depress **EXIT** Press REVUE-SYSLG. Verify CL31 is identified as the official ceilometer sensor.	The ceilometer's configuration is set to CL31.	Note that because insufficient number of ceilometer samples have been reported a Data Quality Error will be flagged for the sensor.	P	
13	From the 1-minute screen depress the following menu keys to verify data is being reported from local sensors: **REVUE-SENSR-12HR for wind data)** **PAGE** 3time to display official ceilometer data.	Verify that sky condition of no cloud layers (clear) is reported by the official sensor (CL31).	PRINT the sensor data screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
14	Depress **TEST-PAGE** menu key and verify that data is being issued from the CL31	Verify that the sky condition of 1 layer at 1000 feet is reported by the test sensor (ASENSE)	PRINT the final configuration and attach to the test report	P	
15	Log off of the ASOS OID and remove power from the CL31 ceilometer	Complete remaining sections of the test report.		P	

Test Results : ACU-Only Installation test

Test Date: 7/15/08

Start Time: 12:00

Executed By (print) : John Monte

(print) : Joel Williams

End Time: 3:20p

Test Result (Pass/Fail): P

Ceilometer Serial Number: C350007

Result Certified By (signature): John Monte

Comments/Deficiencies:

Red-lined installation instructions attached.

Witnessed by:

Name	Representing
Nick Parry	W/OPS22
Joseph L DeVoat	W/OPS 12
Henry Tim	W/OPS24
[illegible]	W/OPS 22
J. Dire	W/OPS24

PART II – Single Cabinet ASOS (SCA) installation procedure

ACU LOCAL SENSOR INSTALLATION AND CONFIGURATION TEST RESULT NOTES:

Joe Verost will provide refined procedure to participants

PART II – Single Cabinet ASOS (SCA) installation procedure

The SCA procedure demonstrates installation and configuration of the replacement ceilometer on an ASOS SCA without DCP. As there are no SCA installations with unused pedestals, there will be no installations which can support re-installation of the CT-12K as a test sensor after the CL31 replacement ceilometer is installed, this procedure will only demonstrate installation of the replacement ceilometer after removal of a legacy sensor, although a legacy sensor will be configured initially to demonstrate data ingest. The initial ASOS configuration will be a SCA with an extensive configuration of sensors, all of which are simulated using ASENSE. The configuration includes Primary Ceilometer as local sensor 1, and Ice Free Wind sensor, LEDWI, Visibility sensor, Temperature sensor, and Dewpoint sensor. The replacement ceilometer will interface to the ACU via a fiber optic interface. This procedure will be performed using ASOS System 1S2 located in the Software Branch ASOS laboratory at NWS Headquarters (6th floor). Because this is an indoor test, the Vaisala Termination Hood must be used to allow the replacement ceilometer to be operational. Initaally all sensor will be simulated using ASENSE. The replacement ceilometer will be interfaced to the ACU using Fiber Optic Cables. AC power will be provided to the ceilometer directly from Electronics and Heater circuit breaker pair in the Single Cabinet ASOS as is typical at SCA locations.

Following successful completion of this procedure, Part III of this procedure (DCP installation) can begin.

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
1	Verify that the ACU is operational by observing that the OID display updates	OID time is updating normally.	Complete the Date, Start Time, Executed By, sensor and hood S/N entries in the test record.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
2	Using the Installation Instructions developed by the ASOS Product Improvement Program Office (OST11), perform installation of the replacement ASOS Ceilometer on the pedestal provided using the liquitite conduit, fiber optic cable, AC power wiring and safety ground wire provided with the pedestal. Do not perform the steps in section A6 of the installation instructions, sensor configuration will be performed within this test procedure. Remove AC power from the ceilometer by setting the SCA circuit breakers to the "OFF" position. **Following installation, install the termination hood on the CL31**	Ceilometer installation is complete	Red line Installation Instructions and attach a copy to the test record for this test.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
3	Using ASOS Modification Note 80, install the Version 2.79S software (provided by the Software Branch) on the ACU.	Version 2.79S installs properly and begins execution as is evident by the time of day update on the OID	Use the ACU only instructions. The Site ID is **1S2** Source of Materials will be Software Branch and not ASOS Technicians Home page. Technical Assistance is not required during execution of this test. Reporting Instructions are not applicable during this test. Section A.2,A.3, and A.4 steps 1-6 are not applicable during this test. During A.5, step 1b, the AOMC phone number to be entered is 713-1338. Section A.5 steps 2 thru 22 are not applicable during this test.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
4	Go to the **REVUE-SITE-VERSN-SW** screen and ensure that the ACU software version is correct.	The MEMORY ACU APPLICATION VERSION EPROM Version is 2.79S dated 03/18/08	PRINT the version information and attach to the test report	P	
5	Log onto the ACU as technician. From the 1-minute screen, depress the following menu keys and configure the SCA as indicated: **REVUE-SITE-CONFIG-HDWE** CPU=1, SIO=minimum 4, UPS=0 , VIDEO CARD=0, VOICE PORT = OID-2 SECONDARY PORT Set all DCPs to "disabled"	The configuration is correct.	PRINT the final configuration and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
6	From the 1-minute screen, depress the following menu keys and configure the SCA as indicated: **REVUE-SITE-CONFIG-DEFINE** CEILOMETER=CT-12K VISIBILITY=BELFORT ASOS TEMP=1088 DEWPOINT=1088 PRESENT WX=LEDWI WIND=VAISALA 425	The configuration is correct. TFmot then change	PRINT the final configuration and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
7	From the 1-minute screen, depress the following menu keys and configure the SCA as indicated: **REVUE-SITE-CONFIG-SENSR** **NO** remote sensors defined LOCAL SENSORS are as follows: C1, WI, PW, V1, TD, **, DT PRESSURE SENSORS are P1,P2,P3	The configuration is correct.	PRINT the final configuration and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
8	From the 1-minute screen, depress the following menu keys and configure the SCA as indicated: **REVUE-SITE-CONFIG-COMS** Port 2-2 = Pressure 1 Port 2-3 = OID-4 on modem 4 Port 2-4= Voice Port 3-2= Pressure 2 Port 3-3= OID-5 on modem 5 Port 3-4= OID-1 local Port 4-1= UPS Port 4-2= Pressure 3 Port 4-3= OID3 SECONDARY Port 5-1=LOCAL SENSOR #1 Port 5-2=LOCAL SENSOR #2 Port 5-3=LOCAL SENSOR #3 Port 5-4=LOCAL SENSOR #4 Port 6-1=LOCAL SENSOR #5 Port 6-3=LOCAL SENSOR #7 Port 6-4=LOCAL SENSOR #8 Port 7-4=PRINTER	The configuration is correct.	PRINT the final configuration and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
9	Configure **ASENSE** as follows: Sensor 2 – IFW Model 425NWS Sensor 3 – Present Weather Sensor 4 – Visibility Sensor 5 – Temp/Dew Sensor 6 – Dewpoint For all of the above, enable Real Life and Range checking and enter typical values. Ensure that ASENSE port 1 is connected to ACU local sensor 1 RS-232 input.	ASENSE configuration proper and operational		N/A	N/A
10	From the 1-minute screen depress the following menu keys to verify data is being reported from local sensors: **REVUE-SENSR-12HR** (for wind, visibility and temp/dew data) **PAGE** to display pressure data **PAGE** 3 times to display rotate through all 12 hour data.	Verify that Pressure Data from 3 sensors, Wind Data, Present Weather, Visibility, Ambient Temperature, and Dewpoint Temperature are being reported from the emulated sensor. Verify that no Ceilometer data is displayed (since the CL31 is not yet configured). Missing	PRINT the sensor data screens and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
11	From the 1-minute screen depress the following menu keys **REVUE-SITE-CONFG-DEFIN** Depress the CHANG menu key to position to CEILOMETER and depress SEQN to set the ceilometer's configuration to CL31. Depress **EXIT** Press REVUE-SYSLG. Verify CL31 is identified as the official ceilometer sensor. Apply AC power to the ceilometer. Wait 5 minutes before proceeding to the next step.	The ceilometer's configuration is set to CL31.	Note that because insufficient number of ceilometer samples have been reported a Data Quality Error will be flagged for the sensor.	P	

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Step No.	Operator Action	Expected Results	Comments	Results P	Results F
12	From the 1-minute screen, depress the following menu keys and configure the SCA as indicated: **REVUE-SITE-CONFIG-SENSR** Depress the CHANG menu key to position to the first local sensor and enter "L1" (replacement ceilometer).	The configuration is correct.	PRINT the final configuration and attach to the test report	P	
13	From the 1-minute screen depress the following menu keys to verify data is being reported from the replacement ceilometer: **REVUE-SENSR-12HR , then PAGE** until the ceilometer data page is displayed.	Verify that sky condition of no cloud layers (clear) is reported by the official sensor (CL31).	PRINT the sensor data screen and attach to the test report	P	
14	Log off of the ASOS OID and remove power from the CL31 ceilometer	Complete remaining sections of the test report.		P	

Test Results : Single Cabinet ASOS Installation and Configuration test

Test Date: 7/24/08

Start Time: 9:50a.m.

Executed By (print) : John Monte

(print) : Joel William

End Time: 10:55a.m.

Test Result (Pass/Fail): PASS

Result Certified By (signature): John Monte

Ceilometer Serial Number: C350007

Comments/Deficiencies:

Witnessed by:

Name	Representing
Rick Parry	OPS22
J Davis	OPS24
Greg Sibora	OPS12
[illegible]	T-AA

SINGLE CABINET ASOS INSTALLATION AND CONFIGURATION TEST RESULT NOTES:

PART III – ACU Remote Sensor installation procedure

The Remote Sensor (DCP) procedure demonstrates installation and configuration of the replacement ceilometer as a remote sensor in a multiple DCP system configuration. This procedure requires installation of three replacement ceilometers after removal of three legacy sensors, and subsequent installation and configuration of one legacy sensor as a "test" sensor. Note that the ASOS ACU software DOES NOT SUPPORT configuration of a test sensor (i.e. – CT-12K) with more than one replacement ceilometer due to communication bandwidth limitations. The Sterling Research and Development Center "ST0" ASOS, which has three DCPs, will be used for this test. This system is typically configured to emulate a normally configured ASOS system, with full complement of sensors. No special sensor configuration will be required for this test, except that the ASOS will have three DCPs enabled, each DCP will contain a legacy ceilometer, and the official sensor will be defined to be the CT-12K. This installation procedure will replace the three legacy ceilometers with three replacement ceilometers, and re-install one of the three legacy ceilometers on a "spare" wired pedestal. The three replacement ceilometers will be configured identically to the sensor configuration of the baseline sensors (e.g., Primary Official sensor (C1), Backup sensor(C3) and Meteorological Discontinuity (C2) sensor) and the re-installed legacy sensor will, by virtue of the fact that the ceilometer sensor will be DEFINED as CL31 during this procedure), become a "test" sensor when CONFIGURED. Because this is an outdoor test, the Vaisala Termination Hood will not be used. The replacement ceilometer will be interfaced to the ACU using Fiber Optic Cables. AC power will be provided to the ceilometer directly from a standard ceilometer power control module.

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
1	Verify that the ACU is operational by observing that the OID display updates. From the 1-minute screen, depress the following menu keys to record the sensor configuration of the system legacy ceilometers: **REVUE-SITE-CONFIG-SENSR** From the 1-minute screen, depress the following menu keys to record the hardware configuration of the system: **REVUE-SITE-CONFIG-HDWE**	OID time is updating normally. Verify that three CT-12K legacy ceilometers are configured and that each ceilometer is configured on a separate DCP. Verify that three DCPs are enabled.	Complete the Date, Start Time, Executed By, and initial legacy ceilometer configuration information in the test record.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
2	Using the Installation Instructions developed by the ASOS Product Improvement Program Office (OST11): 1) replace the Primary and Backup legacy ceilometer with replacement ASOS Ceilometers on the pedestals occupied by the legacy ceilometers. Do not perform the steps in section A6 of the installation instructions, sensor configuration will be performed within this test procedure. 2) install a replacement ASOS Ceilometer on an unused pedestals at the DCP which contains the Met. Discontinuity legacy ceilometer using the liquitite conduit, fiber optic cable, AC power wiring and safety ground wire provided at the pedestal. Install a ceilometer power control module in the DCP for the replacement ceilometer location. Do not perform the steps in section A6 of the installation instructions.	Replacement ceilometer installations are complete	Red line Installation Instructions and attach a copy to the test record for this test. Complete the replacement ceilometer S/N and configuration entries in the test record.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
3	Using ASOS Modification Note 80, install the Version 2.79S software (provided by the Software Branch) on the ACU and the version 2.0 DCP firmware in each of the three DCPs.	Version 2.79S installs properly and begins execution as is evident by the time of day update on the OID	Use the ACU only instructions. The Site ID is **ST0** Source of Materials will be Software Branch and not ASOS Technicians Home page. Technical Assistance is not required during execution of this test. Reporting Instructions are not applicable during this test. Section A.2,A.3, and A.4 steps 1-6 are not applicable during this test. During A.5, step 1b, the AOMC phone number to be entered is 301 713 1338. Section A.5 steps 2 thru 22 are not applicable during this test.	ALREADY DONE	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
4	Log onto the ACU as technician From the 1-minute screen access the Processor Maintenance screen by depressing: **MAINT**, depressing **NEXT** until *PROC* is highlighted and **SEL** Depress **NEXT** until DCP #1 *HARD* is highlighted. Depress **RESET** and when prompted *ARE YOU SURE* enter **Y.** When the download to DCP #1 is completed, repeat the procedure for DCP #2 and #3.	Download is successfully accomplished for each DCP Verify that the STATUS of the ACU and all 3 DCPs is **RUNNING**		DONE PASS	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
5	From the 1-minute screen, depress: **REVUE-SITE-VERSN-SW** screen and ensure that the ACU and DCP software versions are correct.	The *MEMORY ACU APPLICATION VERSION EPROM* Version is 2.79S dated *03/18/08*, that for each DCP: 1) the *CPU-A and CPU-B BOOT EPROM* is Version is 2.0 dated *05/02/06* 2) the *MEMORY DCP APPLICATION RAM* Version is 2.79S dated *03/18/08*	PRINT the version information and attach to the test report	CONDITIONAL NON-CELOMETER ISSUE	

NOTE: CPU B NOT INSTALLED AND SO NO INFO. DISPLAYED FOR DCP #3

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
6	From the 1-minute screen, depress the following menu keys and configure the ASOS as indicated: **REVUE-SITE-CONFIG-SENSR** Configure the SIO ports corresponding to the three replacement sensors as L1, L2, and L3 by depressing **CHANGE** then **NEXT** to position to the correct DCP SIO location and entering "**L1**", "**L2**", and "**L3**" as appropriate. Refer to the print obtained during step 1 above for sensor configuration DCP and SIO card/port numbers.	The configuration is correct.	PRINT the final configuration and attach to the test report	P	

SIO 1-3 = L1

2-1 = L2

2-1 = L3

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
7	From the 1-minute screen depress the following menu keys to define the official ceilometer to be the CL31: **REVUE-SITE-CONFG-DEFIN** Depress the **CHANG** menu key to position to CEILOMETER and depress **SEQN** to set the ceilometer's configuration to CL31. Depress **EXIT** Press **REVUE-SYSLG**. Verify CL31 is identified as the official ceilometer sensor. Ensure that AC power is applied to all ceilometers. **Wait 5 minutes before proceeding to the next step.**	The ceilometer's configuration is set to CL31. Verify that the SYSLOG contains a message: *1517 – CL31 IS THE OFFICIAL CEILOMETER SENSOR*	Note that because insufficient number of ceilometer samples have been reported a Data Quality Error will be flagged for the sensor.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
8	From the 1-minute screen, depress the **MAINT** menu key to access the maintenance screen. Depress **NEXT** until *DCP #1* is highlighted. Depress **SEL** to select the DCP maintenance screen Depress **NEXT** until *CL31 #1* is highlighted and depress **SEL**	Verify that on the CL31 #1 maintenance page, the sensor parameters are indicated as pass, the Sensor Response is indicated as pass, and Data Quality is indicated as Failed.	Note that because insufficient number of ceilometer samples have been reported a Data Quality Error will be flagged for the sensor. PRINT the maintenance screen and attach it to the test report.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
9	Depress the BACK key to return to the Maintenance screen.. Depress **NEXT** until *DCP #2* is highlighted. Depress **SEL** to select the DCP maintenance screen Depress **NEXT** until *CL31 #2* is highlighted and depress **SEL**	Verify that on the CL31 #2 maintenance page, the sensor parameters are indicated as pass, the Sensor Response is indicated as pass, and Data Quality is indicated as Failed.	Note that because insufficient number of ceilometer samples have been reported a Data Quality Error will be flagged for the sensor. PRINT the maintenance screen and attach it to the test report.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
10	Depress the BACK key to return to the Maintenance screen.. Depress **NEXT** until *DCP #3* is highlighted. Depress **SEL** to select the DCP maintenance screen Depress **NEXT** until *CL31 #3* is highlighted and depress **SEL**	Verify that on the CL31 #3 maintenance page, the sensor parameters are indicated as pass, the Sensor Response is indicated as pass, and Data Quality is indicated as Failed.	Note that because insufficient number of ceilometer samples have been reported a Data Quality Error will be flagged for the sensor. PRINT the maintenance screen and attach it to the test report.	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
11	From the 1-minute screen depress the following menu keys to verify data is being reported from local sensors: **REVUE-SENSR-12HR** Depress **PAGE** until the data for Ceilometer # 1 is displayed Depress **PAGE** until the data for Ceilometer # 2 is displayed Depress **PAGE** until the data for Ceilometer # 3 is displayed	Verify that ceilometer data is displayed for the Primary CL31 Verify that ceilometer data is displayed for the Met. Discontinuity CL31 Verify that ceilometer data is displayed for the Backup CL31	PRINT the sensor data screens and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
12	From the 1-minute screen, depress the following menu keys and configure the ASOS as indicated: **REVUE-SITE-CONFIG-SENSR** De-configure the SIO ports corresponding to the L2 and L3 sensor by depressing **CHANGE** then **NEXT** to position to the DCP SIO location corresponding to L2 and L3 and entering "**". Configure the SIO port corresponding to the legacy sensor being configured as the test sensor by depressing **NEXT** to position to the correct DCP SIO location and entering "**C1**". Depress **EXIT** to save the configuration. Refer to the print obtained during step 1 above for DCP and SIO care/port nos. **Wait 5 minutes before proceeding**.	Sensor configuration is as specified	PRINT the sensor configuration screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
13	From the 1-minute screen depress the following menu keys to verify data is being reported from the legacy ceilometer which is a "test" sensor: **REVUE-SENSR-12HR-TEST** , then **PAGE** until the test ceilometer data page is displayed.	Verify that ceilometer data is displayed for the test ceilometer	PRINT the sensor data screen and attach to the test report	PASS	
14	Log off of the ASOS OID and remove power from the CL31 ceilometer	Complete remaining sections of the test report.		PASS	

Test Results : Remote Ceilometer Installation and Configuration test

Test Date: 8/12/08

Start Time: 9:15 AM

Executed By (print) : JOHN MONTE

(print) :

End Time: 2:00 pM

Test Result (Pass/Fail): PASS - 1 NON-2.79s Anomaly

Ceilometer # 1 Serial Number: ~~3005~~ C3530008

Ceilometer # 2 Serial Number: C3530007

Ceilometer # 3Serial Number: C3530005

Result Certified By (signature): John Monte

Comments/Deficiencies:

1 NON-CEILOMETER defect

Witnessed by:

Name	Representing
J. Jure	NWS w/OPS24
B. Huang	FAA ATO/T
L. Wayne Knight	DOD-Navy
Bob Born	DOD-USAF
Khien Nguyen	NWS w/OPS24
Rick Parry	NWS w/OPS22

Step 5 CPU BOOT EPROMS "UNKNOWN" & MISSING

This is a known problem in ACU S/W

REMOTE CEILOMETER INSTALLATION AND CONFIGURATION TEST RESULT NOTES:

ST0 CEILOMETER CONFIGURATION

Ceilometer # 1 (Primary) :

DCP Number 1 SIO Board 1 SIO Port 3

Ceilometer # 2 (Meteorological Discontinuity) :

DCP Number 2 SIO Board ~~2~~ 1 SIO Port 4

Ceilometer # 3 (Backup) :

DCP Number 3 SIO Board 1 SIO Port 2

CL31 Sensor Interface Test – Local ACU sensor (SIT test 4.3)

This procedure demonstrates that a replacement ceilometer installed on an ACU only system and properly configured is fully operational. The various user screens are displayed and verified to contain data provided by the replacement ceilometer. The demonstration uses unsigned user, electronics technician, and observer. The demonstration will not include download of data via direct communication mode (DCM). This will be demonstrated as part of the stability test procedure.

This procedure requires that the CL-31 replacement ceilometer be installed, configured and be operational on the ACU as a local sensor. This procedure should be executed after the ACU-only local sensor installation procedure is successfully completed.

It is anticipated that this procedure will be witnessed by representatives of the Office of Operational Systems (Observing Systems Branch – OPS22, Test and Evaluation Branch – OPS24, Maintenance Assurance Branch –OPS12, the Federal Aviation Administration, the Navy, and the Air Force.

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
1	Ensure the ACU is operational by observing the 1-minute screen. Verify that the termination hood is installed on the ceilometer. Verify that AC power has been removed from the ceilometer for a minimum of 5 minutes.	ASOS time is updating on OID 1-minute screen	Complete the Date, Start Time, Executed By, and ceilometer serial number entries in the test record.	P	
2	From the 1-minute screen, depress the following menu keys to verify proper ACU software configuration: **REVUE-SITE-VERSN-SW**	The MEMORY ACU APPLICATION VERSION EPROM Version is 2.79S dated 03/18/08	PRINT the final configuration and attach to the test report	P	
3	From the 1-minute screen, depress the following menu keys to verify proper ceilometer configuration: **REVUE-SITE-CONFIG-DEFINE**	Verify that the CEILOMETER is set to CL31. If CL31 is not defined as indicated, log onto the system as TECHNICIAN and define it.	PRINT the final configuration and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
4	From the 1-minute screen, depress the following menu keys to verify proper ceilometer configuration: **REVUE-SITE-CONFIG-SENSR**	Verify that local sensor 3 is set to **L1.** Verify that C1 is **NOT configured** as a local sensor.	If L1 is not defined as indicated, log onto the system as TECHNICIAN and configure it. If C1 is defined, log onto the system as TECHNICIAN and de-configure it. PRINT the final configuration and attach to the test report	P	
5	From the 1-minute screen, depress the following menu keys to verify proper ceilometer configuration: **REVUE-SITE-CONFIG-COMS**	Verify that SIO board 8 Port 3 is set to Local Sensor #3.	PRINT the final configuration and attach to the test report	P	
6	Observe the sky condition field on the 1-minute screen.	Verify that the sky condition is displayed as "**MM**" indicating missing.	PRINT the 1-minute screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
7	From the 1-minute screen depress the following menu keys to verify data is NOT being reported from the ceilometer which is not powered on: **REVUE-SENSR-12HR** and depress **PAGE** until CL31 #1 page is displayed.	Verify that the ceilometer data is displayed as "**M**" or "**[M]**" indicating missing.	PRINT the sensor data screen and attach to the test report	P	
8	Depress the following menu keys to display the TEST ceilometer data page: **TEST** and depress **PAGE** until the test ceilometer data page is displayed.	Verify that the test ceilometer data is displayed as a blank	PRINT the test sensor data screen and attach to the test report	P	
9	From the 1-minute screen depress the following menu keys to display the ceilometer status page: **REVUE-SENSR-STAT**	Verify that the CL31 #1 is displayed as failed for Selftest and Data Quality. Verify that Report Processing for the CL31 is set to **OFF.** If report processing is set to **ON**, turn report processing **OFF**.	If report processing is set to **ON**, log onto the system as TECHNICIAN turn CL31 report processing **OFF**. PRINT the sensor status screen and attach to the test report	P	
10	From the 1-minute screen depress the following menu keys to verify data is being reported from the ceilometer: **REVUE-SENSR-DATA** and depress **PAGE** until Ceilometer page is displayed.	Verify that the ceilometer data is displayed as "**M**".	PRINT the sensor data screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
11	From the 1-minute screen, log onto the ASOS system as OBSERVER Depress the following menu keys to generate and transmit a Special: **GENOB-SPEC-XMIT**	Verify that the OID indicates that the system is "transmitting observation". When the "transmitting observation" indication is no longer displayed, verify that the Special observation on the 1-minute screen does not contain a sky condition report.	PRINT the 1-minute screen and attach to the test report	P	
12	From the 1-minute screen depress the following menu keys to verify that no data is being reported from the ceilometer **REVIEW-RPT-5MIN**	Verify that the current 5-min observation does not contain a sky condition report	PRINT the 5-minute report screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
13	From the 1-minute screen, log onto the ASOS system as TECHNICIAN Depress the following menu keys to access the define page: **REVUE-SITE-CONFIG-DEFIN** Depress **CHANG-SEQN-BACK** to define CEILOMETER as CT-12K Depress **BACK** to save the configuration **Wait 1 minute before proceeding** Depress **CHANG-SEQN-EXIT** to re-define CEILOMETER as CL31 Depress **REVUE-SYSLOG** to view syslog entries	Verify that message 1518 (CT-12K is the official ceilometer sensor) is displayed and immediately followed by message 1517 (CL31 is the official ceilometer sensor) After 1 minute, observe that a "Check the SYSLOG" message is displayed on the 1-minute screen	PRINT the SYSLOG screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
14	From the 1-minute screen depress the **MAINT** menu key to access the maintenance screen. Depress **SEL** to select the ACU maintenance screen Depress **NEXT** until CL31#1 is highlighted and depress **SEL**	Verify that on the ACU maintenance screen, the ACU is indicated as Failed Verify that on the CL31#1 maintenance page, the sensor parameters are indicated as asterisk, and the Sensor Response and Data Quality are indicated as Failed.		P	
15	Apply AC power to the Ceilometer by setting the external circuit breakers to the ON position. Verify that the internal CL31 breakers for Electronics and Heaters are set to the on position. **<u>Wait 2 minutes before proceeding</u>** From the 1-minute screen depress the following menu keys to verify data is being reported from the ceilometer: **REVUE-SENSR-12HR** and depress **PAGE** until CL31 #1 page is displayed	Ceilometer powers on and begins to provide 12 hour data. Verify that the ceilometer data is displayed as clear sky ("/////" for first, second and third layer) and that the data is within brackets.	PRINT the sensor data screen and attach to the test report	P	
16	Depress **TEST-PAGE** to display the test sensor data page	Verify that Ceilometer #1 is displayed with blank data	PRINT the test sensor data screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
17	From the 1-minute screen depress the following menu keys to verify data is being reported from the ceilometer: **REVUE-SENSR-DATA** and depress **PAGE** until CL31 #1 page is displayed	Verify that the ceilometer data is displayed as clear sky ("/////" for all reports)	PRINT the sensor data screen and attach to the test report	P	
18	Observe the SKY condition report on the 1-minute screen	Verify that the SKY condition is reported as missing (**MM**)	PRINT the 1-minute screen and attach to the test report	P	
19	From the 1-minute screen, log onto the ASOS system as OBSERVER Depress the following menu keys to generate and transmit a Special: **GENOB-SPEC-XMIT**	Verify that the OID indicates that the system is "transmitting observation". When the "transmitting observation" indication is no longer displayed, verify that the Special observation on the 1-minute screen does not contain a sky condition report.	PRINT the 1-minute screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
20	From the 1-minute screen depress the following menu keys to verify data is being reported from the ceilometer **REVIEW-RPT-5MIN**	Verify that the current 5-min observation does not contain a sky condition report.	PRINT the sensor data screen and attach to the test report	P	
21	From the 1-minute screen depress the following menu keys to display the ceilometer status page: **REVUE-SENSR-STAT**	Verify that the CL31 #1 is displayed as passed for Selftest and failed for Data Quality.	PRINT the sensor status screen and attach to the test report	P	
22	From the 1-minute screen log onto the ACU as Technician Depress the **MAINT** menu key to access the maintenance screen. Depress **SEL** to select the ACU maintenance screen Depress **NEXT** until CL31#1 is highlighted and depress **SEL**	Verify that on the ACU maintenance screen, the ACU is indicated as Failed Verify that on the CL31#1 maintenance page, the sensor parameters are indicated as pass, the Sensor Response is indicated as pass, and Data Quality is indicated as Failed.		P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
23	Depress the **TEST** menu key to cause the sensor to run built-in test **Wait 30 minutes before proceeding**	Verify that after approx. one minute, the sensor test status is displayed as pass, the Sensor Response is indicated as pass, and Data Quality is indicated as Failed.	PRINT the sensor maintenance screen and attach to the test report	P	
24	From the 1-minute screen, depress the following menu keys to display the SYSLOG: **REVUE-SYSLOG**	Verify that the syslog indicates that the CL31 #1 is operative	PRINT the syslog screen and attach to the test report	P	
25	From the 1-minute screen, depress the following menu keys to display the sensor status: **REVUE-SENSR-STAT**	Verify that the CL31 #1 is displayed as passed for Selftest and for Data Quality.	PRINT the sensor status screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
26	From the 1-minute screen log onto the ACU as Technician Depress the following menu keys to display the sensor status: **REVUE-SENSR-STAT** Depress **NEXT** until CL31#1 is highlighted. Depress the **PROC** menu key to turn report processing on for the CL31	Verify that report processing is displayed as ON		P	
27	From the 1-minute screen, depress the following menu keys to display the SYSLOG: **REVUE-SYSLOG**	Verify that the syslog indicates that report processing has been turned on for the CL31 #1.	PRINT the SYSLOG screen and attach to the test report	P	
28	From the 1-minute screen depress the following menu keys to view sensor data: **REVUE-SENSR-12-HR**	Verify that the ceilometer data for the next update is displayed as clear sky ("/////" for first, second and third layer) and that no brackets are displayed around the data	PRINT the sensor data screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
29	From the 1-minute screen depress the following menu keys to view sensor data: **REVUE-SENSR-DATA**	Verify that the ceilometer data for the next update is displayed as clear sky ("/////" for first, second and third layer) .	PRINT the sensor data screen and attach to the test report	P	
30	On the 1-minute screen observe the SKY condition	Verify that the sky condition is displayed as **CLR**	PRINT the 1-minute screen and attach to the test report	P	
31	From the 1-minute screen, log onto the ASOS system as OBSERVER Depress the following menu keys to generate and transmit a Special: **GENOB-SPEC-XMIT**	Verify that the OID indicates that the system is "transmitting observation". When the "transmitting observation" indication is no longer displayed, verify that the Special observation on the 1-minute screen indicates that the sky condition is clear (e.g. – **CLR** is reported).	PRINT the 1-minute screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
32	From the 1-minute screen depress the following menu keys to verify data is being reported from the ceilometer **REVIEW-RPT-5MIN**	Verify that the 5-min observation which is recorded following the SPECI issued in the step above indicates that the sky condition is clear (e.g. – **CLR** is reported).		P	
33	Remove AC power from the ceilometer by setting the controlling circuit breaker to the off position **Wait 2 minutes before proceeding** From the 1-minute screen depress the following menu keys to access the SYSLOG: **REVIEW-SYSLOG**	Verify that the SYSLOG indicates "1515 CL31 #1 Sensor Response Timeout"		P	
34	Observe the sky condition field on the 1-minute screen.	Verify that the sky condition is displayed as "**MM**" indicating missing.	PRINT the sensor data screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
35	From the 1-minute screen depress the following menu keys to verify data is NOT being reported from the ceilometer which is not powered on: **REVUE-SENSR-12HR** and depress **PAGE** until CL31 #1 page is displayed.	Verify that the ceilometer data is displayed as "**M**" or "**[M]**" indicating missing.	PRINT the sensor data screen and attach to the test report	P	
36	From the 1-minute screen depress the following menu keys to display the ceilometer status page: **REVUE-SENSR-STAT**	Verify that the CL31 #1 is displayed as failed for Selftest and Data Quality.	. PRINT the sensor status screen and attach to the test report	P	
37	From the 1-minute screen depress the following menu keys to verify data is being reported from the ceilometer: **REVUE-SENSR-DATA** and depress **PAGE** until Ceilometer page is displayed.	Verify that the ceilometer data is displayed as "**M**".	PRINT the sensor data screen and attach to the test report	P	

Step No.	Operator Action	Expected Results	Comments	Results P	Results F
38	From the 1-minute screen, log onto the ASOS system as OBSERVER Depress the following menu keys to generate and transmit a Special: **GENOB-SPEC-XMIT**	Verify that the OID indicates that the system is "transmitting observation". When the "transmitting observation" indication is no longer displayed, verify that the Special observation on the 1-minute screen does not contain a sky condition report.	PRINT the 1-minute screen and attach to the test report	P	
39	From the 1-minute screen depress the following menu keys to verify that no data is being reported from the ceilometer **REVIEW-RPT-5MIN**	Verify that the 5-min observation which is issued after the SPECIAL generated above does not contain a sky condition report	PRINT the 5-minute obs screen and attach to the test report		
40	Log off of the ASOS OID and remove power from the CL31 ceilometer	Complete remaining sections of the test report.			

Test Results : Local ACU Sensor Integration test

Test Date: 7/24/08

Start Time: 12:30p.m.

Executed By (print) : JOHN MONTE

(print) : ~~KHIEN~~

End Time: P 01:25p.m.

Test Result (Pass/Fail): Pass

Ceilometer Serial Number: C 3530007

Result Certified By (signature):

Comments/Deficiencies:

Witnessed by: Name	Representing
	FAA
	OPS12
	OPS 22
	OPS 22
KHIEN NGUYEN	OPS24

LOCAL ACU SENSOR INTEGRATION TEST RESULT NOTES: