JPV 4/27/2016

W.O.# 1617480

STATION B STACK COV TESTING WITH IVS AND UVFS

CONTENTS

1.0 PURPOSE/SCOPE

This Work Control Document (WCD) provides instructions for performing a pitot tube traverse on Station B stack exhaust flow, as requested per vendor instructions. The traverse will record data from velocity, temperature, and pressure.

2.0 SPECIAL TOOLS/EQUIPMENT/MATERIALS

MATERIAL LIST

Item	Material Description	Qty	Unit	Pr / Whse Stock No.
1	Solution of water and mild soap	AR	EA	N/A
2	Denatured alcohol OR Contact cleaner	AR	EA	X-12-0-5120 X-12-00010
3	Compressed air	AR	EA	N/A

* - Required Item, all other as required

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Description
*Safety glasses with side shields.
*Hard Hat
*Hearing Protection
*Nitrile gloves
*Fall Protection Harness
*Safety Toe Shoes

* - Required Item, all other as required.

TOOLS AND EQUIPMENT

Description
*70" or greater standard Pitot tube
*Airdata TEW-19 19" temperature extension wand
*Airdata TRC-16 temperature probe extension cord
*Calculator
*Man lift or ladder

* - Required Item, all other as required.

MEASUREMENT & TESTING EQUIPMENT (M&TE)

Description
*Process Calibrator (Temperature and Pressure), Calibrated

3.0 PRECAUTIONS/LIMITATIONS

3.1 PRECAUTIONS

EYE, FOOT, HEAD, HAND HAZARDS exist. Personnel may be exposed to hazard while performing work throughout site. Don cut-resistant/mechanics gloves as needed.

FALLS FROM ELEVATION HAZARD exists. Personnel may be exposed to falls from elevation due to working from elevated work platform. Use Fall Protection PPE in accordance with WP 12-IS.01-10, Industrial Safety Program – Fall Protection and Prevention when working from aerial man lift platform. Hard hat must be worn while working on and around work platform. Utilize barriers and barricades per WP 12 IS.01-1 procedure. Ensure aerial lift is run by a qualified operator and a spotter is present throughout the progression of the work evolution.

MOVING/FALLING OBJECTS FROM HEIGHT HAZARD exists. Personnel may be exposed to hazard while performing maintenance near aerial lift. Use Fall Protection PPE in accordance with WP 12-IS.01-10, Industrial Safety Program – Fall Protection and Prevention when working from aerial man lift platform. Hard hat must be worn while working on and around work platform. Utilize barriers and barricades per WP 12 IS.01-1 procedure.

PINCH POINTS HAZARD exist. Personnel may be exposed to pinch points hazard while performing maintenance. Don mechanics/cut-resistant gloves throughout procedure.

RADIOLOGICAL HAZARD exists. Craft may be exposed to Radiological Hazards if equipment is in a radiological area. Work to be performed in accordance with the approved Radiological Work Permit (RWP). A radiological survey will be required per each traverse and probe measurement. RCT will check for levels commencurate.

SLIPS AND TRIPS HAZARD exists. Craft may be exposed to slips and tripping hazards while accessing work area and around the work area Care should be taken while moving about the work area.

3.2 OPERATIONAL RESTRICTIONS AND INTERIM CONTROLS

- ESS-2015-01 Controls

The Controls shall be established and maintained as Programmatic Administrative Controls

- The Fire Protection Program (FPP) is relied upon to protect the FW, CW, and MOI.
  - Restrict and minimize combustibles in the vicinity (within 25 ft.) of the Exhaust Filter Building (Building 413) and the above ground UVS exhaust ductwork. Necessary combustibles to support planned work must be evaluated and the allowed configurations SHALL be preapproved by the Fire Protection Engineer (FPE).

4.0 PREREQUISITES

- Field Work Supervisor (FWS) **CONDUCT** pre-job brief per WP 04-AD3030.
- **OBTAIN** items shown in Section 2.0,Special Tools/Equipment/Materials.
- **REQUEST** RADCON be at work site to perform RWP surveys and determinations as needed.

NOTE

If deficiencies are found during the performance of this Work Order, document deficiencies on the Work Status Log and notify the FWS.

5.0 PERFORMANCE

5.1 RWP EVALUATION AND RADCON SURVEY

[ ] 5.1.1 Rad Con Operations (RCO) – **PERFORM** a RWP evaluation **AND RECORD** RWP number below.

RWP #: _____

_____/_____
RCS DATE

[ ] 5.1.2 **IF** RWP is required, **THEN** RCT and all personnel **READ AND DISCUSS** the RWP, radiological hazards, precautions, and mitigating actions to be taken as documented in the RWP, **THEN SIGN** the RWP. **MARK** N/A if not required.

_____ / _____
CRAFT DATE

_____ / _____
CRAFT DATE

_____ / _____
RCT DATE

NOTE

During the work evolution, the temperature/pressure probe and pitot tube will be repeatedly in and out of the access ports, per contractors instruction.

[ ] 5.1.3 Rad Con Tech (RCT) – **SURVEY** probe/tube and gloved hands AFTER EACH exit from the access ports to ensure the levels are commencurate.

IF contamination is found and per RCT request, **THEN** work **WILL BE STOPPED** and the Rad Con Supervisor (RCS) will be notified.

_____ / _____
RCT DATE

5.2 PITOT TUBE PREPERATION

[ ] 5.2.1 **CONTACT** Radcon for pitot tubes.

[ ] 5.2.2 **INSPECT** tube for:

- ☐ Visible damage
- ☐ Tip deformation
- ☐ Tip clogging
- ☐ Obstruction of ports

_____ / _____
CRAFT DATE

[ ] 5.2.3 **IF** Pitot tube does not pass inspections, **THEN REPLACE** the Pitot tube.

[ ] 5.2.4 **MARK** insertion depths on probe, (if needed, as close as possible) as follows:

- ☐ 3.0 inches
- ☐ 8.0 inches
- ☐ 14.0 inches
- ☐ 24.0 inches
- ☐ 48.0 inches
- ☐ 57.5 inches
- ☐ 64.75 inches
- ☐ 69.5 inches

_____ / _____
CRAFT DATE

5.3 WORK AREA CONFIGURATION

[ ] 5.3.1 **UTILIZE** barricades and barriers per WP 12 IS.01-1, Industrial Safety Program – Barricades and Barriers.

[ ] 5.3.2 **($) ENSURE** Firewatch and fire extinguisher are in place **BEFORE MOVING** aerial lift into position to perform tasks. **[ESS-2015-01]**

_____ / _____
CRAFT DATE

4/27/16 ~ 0900

[ ] 5.3.3 **REQUEST** Facility Operations shut down Building 413 HVAC System.

_____ / _____
CRAFT DATE

[ ] 5.3.4 **ENSURE** 413-HD-321-003 damper is open and debris screen is free of obstructions.

[ ] 5.3.5 **REQUEST** fans 41-B-960A and 41-B-960B are placed in-service with a flow rate of 26,500 cfm to 27,500 cfm through each fan.

0930 [ ] 5.3.6 **REQUEST** Facility Operations ensure flow through in-service 860 fan is 57,000 cfm to 60,000 cfm.

860 C (south) in service

0930 [ ] 5.3.7 **ALLOW** flow to stabilize before performing pitot tube traverse.

0933 [ ] 5.3.8 **VERIFY** Station B mass flow monitoring indicates a nominal flow of 114 KCFM with both 960 fans and in-service 860 fan **AND RECORD** read value below.

_____ / _____
CRAFT DATE

Nominal Flow Reading _____ kCFM

5.4 PITOT TUBE TRAVERSE AT STATION B

NOTE

Use traverse points 90 degrees from each other for data collection. The points may be adjusted per subcontractor instructions.

No more than 2 plugs should be removed at a time. If more are removed, an adverse flow condition will be created that will affect calibration data.

The contractor may have sufficient data points prior to full completion of section 5.4. Per contractors request, you may N/A the incomplete steps of section 5.4 and skip to step [ ] 5.4.2.32.

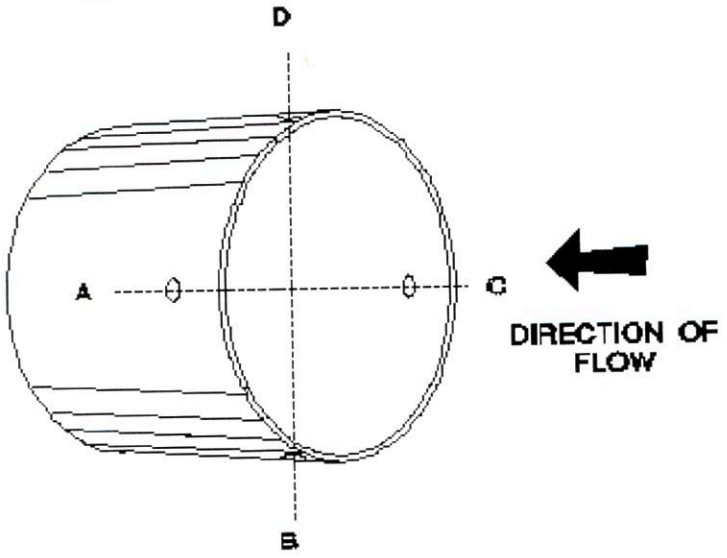

Figure 1 – Station B Traverse Penetrations Orientation

0937 [ ] 5.4.1 **SELECT AND REMOVE** penetration plugs from traverse pitot access ports at Station B.

[ ] 5.4.2 **PERFORM** pitot tube traverses as varied in Data Blocks for Station B.

begin 0945

[ ] 5.4.2.1 **INSERT** Pitot tube into an open access port.

NOTE

When recording nominal exhaust flow rate for the UVS and IVS, use CMS point AP2415 for Loop 41A001W2001.

[ ] 5.4.2.2 **VARY** probe depth **AND RECORD** data for each block as indicated in applicable Data Block per operational 860 fan.

[ ] 5.4.2.3 **REMOVE** Pitot Tube.

[ ] 5.4.2.4 **INSERT** Temperature/Pressure probe into closest adjacent access port.

[ ] 5.4.2.5 **RECORD** temperature and pressure readings per applicable Data Block.

[ ] 5.4.2.6 **REMOVE** probes.

0955 - Radcon swipes of equipment

1015 - Horizontal traverse complete

NOTE

Per steps [ ] 5.4.2.7 and [ ] 5.4.2.20:

- Control Damper 413-HD-056-10A and 413-HD-056-10B are the dampers for fan 41-B-860A
- Control Damper 413-HD-056-11A and 413-HD-056-11B are the dampers for fan 41-B-860B
- Control Damper 413-HD-056-12A and 413-HD-056-12B are the dampers for fan 41-B-860C
-

[ ] 5.4.2.7 **WHEN** complete with pitot traverse, **REQUEST** Facops to:

[ ] 5.4.2.8 **SECURE** 41-B-960A and 41-B-960B.

[ ] 5.4.2.9 **SECURE** Insevice 860 fan.

[ ] 5.4.2.10 **ENSURE** to FULLY CLOSE both the inlet and outlet control damper on all off 860 fans.

[ ] 5.4.2.11 **PLACE** standby 860 fan in-service.

[ ] 5.4.2.12 **REQUEST** fans 41-B-960A and 41-B-960B are placed in-service with a flow rate of 26,500 cfm to 27,500 cfm through each fan.

[ ] 5.4.2.13 **VERIFY** Station B mass flow monitoring indicates a nominal flow of 114 KCFM with both 960 fans and in-service 860 fan **AND RECORD** read value below.

_____ / _____
CRAFT DATE

Nominal Flow Read _____ kCFM

[ ] 5.4.2.14 **INSERT** Pitot tube into an open access port.

[ ] 5.4.2.15 **VARY** probe depth **AND RECORD** data for each block as indicated in applicable Data Block per operational 860 fan.

[ ] 5.4.2.16 **REMOVE** Pitot tube.

[ ] 5.4.2.17 **INSERT** Temperature/Pressure probe into closest adjacent access port.

[ ] 5.4.2.18 **RECORD** temperature and pressure readings per applicable Data Block.

[ ] 5.4.2.19 **REMOVE** probes.

[ ] 5.4.2.20 **WHEN** complete with pitot traverse, **NOTIFY** Facops to:

[ ] 5.4.2.21 **SECURE** 41-B-960A and 41-B-960B.

[ ] 5.4.2.22 **SECURE** Insevice 860 fan.

[ ] 5.4.2.23 **ENSURE** to FULLY CLOSE both the inlet and outlet control damper on all off 860 fans.

[ ] 5.4.2.24 **PLACE** standby 860 fan in-service,

[ ] 5.4.2.25 **REQUEST** fans 41-B-960A and 41-B-960B are placed in-service with a flow rate of 26,500 cfm to 27,500 cfm through each fan.

[ ] 5.4.2.26 **VERIFY** Station B mass flow monitoring indicates a nominal flow of 114 KCFM with both 960 fans and in-service 860 fan **AND RECORD** read value below.

_____ / _____

CRAFT DATE

Nominal Flow Read _____ kCFM

[ ] 5.4.2.27 **INSERT** Pitot tube into an open access port.

[ ] 5.4.2.28 **VARY** probe depth **AND RECORD** data for each block as indicated in applicable Data Block per operational 860 fan.

[ ] 5.4.2.29 **REMOVE** Pitot tube.

[ ] 5.4.2.30 **INSERT** Temperature/Pressure probe into closest adjacent access port.

[ ] 5.4.2.31 **RECORD** temperature and pressure readings per applicable Data Block.

[ ] 5.4.2.32 **REMOVE** probes and **SECURE** penetration plugs in original configuration.

5.5 VENDOR REQUEST

[ ] 5.5.1 Per Vendor request, **IF** more readings are needed **THEN REPERFORM** section 5.4 as needed and **RECORD** data in Work Status Log. **N/A** if not applicable.

_____ / _____
VENDOR DATE

[ ] 5.5.2 Cognizant Engineer/Responsible Engineer (CE/RE) – **VERIFY** all testing is complete for Work Package.

_____ / _____
CE/RE DATE

5.6 RADCON PITOT TUBE

[ ] 5.6.1 RCT – **SURVEY** pitot tube and **ENSURE** it is commencurate with site radiological restrictions.

_____ / _____
RCT DATE

6.0 TESTING AND RESTORATION

6.1 POST-JOB RESTORATION

[ ] 6.1.1 **NOTIFY** Facops that work on Station B Pitot Tube Traverse is complete.

_____/_____
FWS DATE

[ ] 6.1.2 **SECURE** fans 41-B-960A and 41-B-960B.

[ ] 6.1.3 **REMOVE** barriers and barricades.

[ ] 6.1.4 **REQUEST** Facops restore building 413 HVAC system.

[ ] 6.1.5 **RESTORE** 413-HD-321-003 damper back to it's original configuration.

6.2 POST-JOB REVIEW

[ ] 6.2.1 FWS **CONDUCT** post-job review per WP 04-AD3030.

_____/_____
CRAFT DATE

[ ] 6.2.2 All personnel affixing initials to these work instructions **PROVIDE** the information listed in the PERSONNEL DATA table below:

PERSONNEL DATA

PRINTED NAME	SIGNATURE	INITIALS	DATE

Data Block 1 – Traverse Data per 860A fan

Depth (inches) **VERTICLE**	Traverse velocity fpm (860A fan operational) 1	Traverse velocity fpm (860A fan operational) 2	Traverse velocity fpm (860A fan operational) 3
3.0			
8.0			
14.0			
24.0			
48.0			
57.5			
64.75			
69.5			
Temperature (F°)			
Pressure (inWC)			
Depth (inches) **HORIZONTAL**	Traverse velocity fpm (860A fan operational) 1	Traverse velocity fpm (860A fan operational) 2	Traverse velocity fpm (860A fan operational) 3
3.0			
8.0			
14.0			
24.0			
48.0			
57.5			
64.75			
69.5			
Temperature (F°)			
Pressure (inWC)			

Data Block 2 – Traverse Data per 860B fan

Depth (inches) **VERTICLE**	Traverse velocity fpm (860B fan operational) 1	Traverse velocity fpm (860B fan operational) 2	Traverse velocity fpm (860B fan operational) 3
3.0			
8.0			
14.0			
24.0			
48.0			
57.5			
64.75			
69.5			
Temperature (F°)			
Pressure (inWC)			
Depth (inches) **HORIZONTAL**	Traverse velocity fpm (860B fan operational) 1	Traverse velocity fpm (860B fan operational) 2	Traverse velocity fpm (860B fan operational) 3
3.0			
8.0			
14.0			
24.0			
48.0			
57.5			
64.75			
69.5			
Temperature (F°)			
Pressure (inWC)			

Data Block 3 – Traverse Data per 860C fan

Depth (inches) **VERTICLE**	Traverse velocity fpm (860C fan operational) 1	Traverse velocity fpm (860C fan operational) 2	Traverse velocity fpm (860C fan operational) 3
3.0			
8.0			
14.0			
24.0			
48.0			
57.5			
64.75			
69.5			
Temperature (F°)			
Pressure (inWC)			
Depth (inches) **HORIZONTAL**	Traverse velocity fpm (860C fan operational) 1	Traverse velocity fpm (860C fan operational) 2	Traverse velocity fpm (860C fan operational) 3
3.0			
8.0			
14.0			
24.0			
48.0			
57.5			
64.75			
69.5			
Temperature (F°)			
Pressure (inWC)			