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ANSI N13.1 Compliance for 702AZ Exhauster

5.0 PROCEDURE

5.1 Annual Sample Probe Nozzle and Transport Line Inspections

5.2 Annual Sample Probe and Transport Line Integrity Check

5.3 Quarterly Stack Flow Rate System Response Check

5.4 Quarterly Record Sampler/CAM System Mass Flow Meter, Secondary Standard Check

5.5 Annual Timer/Totalizer Check

5.6 Restoration

5.7 Acceptance Criteria

5.8 Review

5.9 Records

Table 1 - Instrument Calibration Data

Table 2 – Sample Probe, Transport Line Inspection and Integrity Check (Annual Inspection)

Table 3 - Stack Flow Rate Instrument Response Check

Table 4 – Record Sample Flow Response Check

Table 5 – CAM Flow Response Check

Table 6 – Stack Flow Totalizer Check (Annual Inspection)

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Data Sheet 1 - Information Record Sheet

Data Sheet 2 – Stack Flow Sample Check

Figure 1 – Radiation Sample Probe Assembly

Figure 2 - Sample Cabinet Enclosure
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure ensures the AY/AZ Tank ventilation system primary exhaust system is within ANSI N13.1 compliance.

1.2 Scope

This procedure provides annual/quarterly instructions for inspecting and leak testing the stack flow elements and test sample nozzles of the AY/AZ Tank ventilation system primary exhaust system along with checking the sample flow response to comply with ANSI N13.1 requirements.

This procedure is performed to ensure compliance with ANSI N13.1 as mandated by 40 CFR 61. (Reference RPP-16922, Section 2)

2.0 INFORMATION

2.1 General Information

2.1.1 The subsections within Section 5.0 (and associated tables) are intended to be worked as independent activities. The subsections within Section 5.0 can be worked independently, concurrently, or in parallel with other sections as directed by the fieldwork supervisor. When this procedure is being performed to support maintenance activities the necessary sections of this procedure will be indicated in the work package, data sheets or other maintenance procedures. Any sections that are not required may be skipped with concurrence of the fieldwork supervisor.

2.1.2 Sections of this procedure may be performed in whole or part. In the event sections are not performed together, the technician may line out the sections not performed and initial the page with concurrence of the responsible engineer.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Do not leave stack ports or section of environmental sample transport line open while unattended.

3.2 Equipment Safety

CAUTION - A metal wire brush is not allowed to be used to clean nozzle or transport tubing because it could cause damage or could impair proper air flow after re-assembly.

3.3 Radiation and Contamination Control

3.3.1 Work in Radiological Areas will be performed using a Radiological Work Permit following review by Radiological Control per the ALARA Work Planning procedure TFC-ESHQ-RP_RWP-C-03.
3.4 Environmental Compliance

3.4.1 To ensure reporting requirements are met, all planned and unplanned outages of Tank Farm ventilation systems, abatement control equipment, and exhaust monitoring systems (including portable exhausters) must be reported to the applicable Shift Office and Environmental Compliance On Call List in accordance with Environmental notification procedure TFC-ESHQ-ENV_FS-C-01.

3.4.2 Work on potentially contaminated ventilation systems shall be in accordance with TFC-ESHQ-ENV-STD-06, As Low As Reasonably Achievable Control Technology (ALARACT) Requirements Standard, for Potentially Contaminated Ventilation System Components.

3.5 Limits

HNF-SD-WM-TSR-006, Tank Farms Technical Safety Requirements

- LCO 3.1, DST Primary Tank Ventilation Systems
- LCO 3.4, DST Induced Gas Release Event Flammable Gas Control
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure. Refer to applicable section being performed for the specific supplies needed for that section:

- Camera
- Calculator
- Calibrated mass flow meter capable of measuring 0-2 scfm in 0.05 scfm increments
- Timing device, e.g., stopwatch (commercially available accuracy)
- Vacuum source
- “O” ring for union on Record/CAM Sample tubing
- Dow Corning III compound
- Other tools, equipment, and supplies as identified by Shift Manager/OE/FLM/User.

4.2 Performance Documents

The following documents may be needed to perform this procedure:

- TO-100-052, "Perform Waste Generation, Segregation and Accumulation"
- TO-060-350, “Start, Stop and Operate AY/AZ Tank Ventilation Primary Exhaust System”
- H-14-105160, “ENCL-AZK1-1, Stack Monitor Enclosure Arrangement”
- H-14-105158, “Record Sample Filter Holder Assembly.”
4.3 Field Preparation

4.3.1 Shift Manager/OE **VERIFY** there are no ongoing transfers and no waste disturbing activities in AY/AZ Farm that requires this system to be OPERABLE and in operation. *(LCO 3.4)*

____________________ / ______________________ / __________
Signature Print Date
Shift Manager /OE

4.3.2 FWS **NOTIFY** Shift Manager to initiate time monitoring per LCO 3.1.A. *(LCO 3.1)*

4.3.3 **CONFIRM** Operations personnel have configured system/equipment to allow performance of this procedure.

4.3.4 **IF** performing annual inspection, **PREPARE** camera for operation.
5.0 PROCEDURE

5.1 Annual Sample Probe Nozzle and Transport Line Inspections

5.1.1 CONFIRM Operations personnel have shut down exhauster system/equipment per TO-060-350 to allow performance of this procedure.

5.1.2 IHT PERFORM monitoring EABO-11050 to confirm vapors are not present.

5.1.3 REMOVE nozzle head.

5.1.4 CLEAN nozzle and sample line.

5.1.5 RECORD “Pass” or “Fail” determination in Table 2.

5.1.6 IF inspection fails, NOTIFY FWS.

5.1.6.1 IF FWS gives any directions that deviate from this procedure DOCUMENT them on Data Sheet 1 AND PROCEED as directed by FWS.

5.1.7 REINSTALL nozzle head.

5.1.8 RECORD results in Table 2.

5.1.9 REMOVE record sample and CAM assembly.

5.1.10 UNTIL it reaches the sampling probe, SLOWLY, INSERT camera into each sample line, one at a time.

5.1.11 INSPECT for presence of deposits or other degrading factors.

5.1.12 RECORD results in Table 2.

5.1.13 CAREFULLY REMOVE camera.
5.1 Annual Sample Probe Nozzle and Transport Line Inspections (Cont.)

CAUTION
A metal wire brush is not allowed to be used to clean nozzle or transport tubing because it could cause damage or could impair proper air flow after re-assembly.

NOTE - Any suitable means may be used to clean sample lines (see following two examples).
- One method would be to use a vacuum or pressure to move string through the lines, then use it to pull cleaning swab(s) through
- Another method could be to use a non-metal bottle brush.

5.1.14 IF deposits are found, CLEAN sample lines AND

REPEAT Steps 5.1.10 through 5.1.13.
5.2 Annual Sample Probe and Transport Line Integrity Check

5.2.1 **ENSURE** all fittings at each end of the record sample transport line and CAM transport line are tightened appropriately and that there are no visual defects in the line (e.g., dents, holes, corrosion, etc.).

5.2.2 **RECORD** “Pass” or “Fail” determination in Table 2.

5.2.3 **START** Exhauster per TO-060-350.

5.2.4 **CHECK** line connections.
5.3 **Quarterly Stack Flow Rate System Response Check**

5.3.1 **IF** fan is not running, **START** fan per TO-060-350.

5.3.2 **RECORD** initial stack flow rate reading from Masstron instrument FIT-AZK1-3 in Table 3.

5.3.3 **SHUT DOWN** exhauster per TO-060-350.

5.3.4 **CONFIRM** stack flow rate indicating Masstron instrument number FIT-AZK1-3 responds appropriately.

**NOTE** - The stack flow rate reading should drop to near zero.

5.3.5 **RECORD** stack flow rate reading from Masstron instrument FIT-AZK1-3 in Table 3.

5.3.6 **CIRCLE** “Pass” or “Fail” determination in Table 3.

5.3.7 **IF** inspection fails, **NOTIFY** FWS.

5.3.7.1 **IF** FWS gives any directions that deviate from this procedure **DOCUMENT** them on Data Sheet 1 **AND**

**PROCEED** as directed by FWS.
5.4 Quarterly Record Sampler/CAM System Mass Flow Meter, Secondary Standard Check

5.4.1 PRIOR to performing this section, ENSURE the following supplies are available.
- Calculator
- Calibrated Mass Flow Meter capable of measuring 0-2 scfm in 0.05 scfm increments.

5.4.2 RECORD M&TE data of test equipment used in this section in Table 1.

Record Sampler Flow Rate Check

5.4.3 REMOVE section of piping from below record sampler.

5.4.4 INSTALL calibrated Mass Flow Meter in series with the record sample unit in place of the section of piping removed in previous step.

5.4.5 START exhauster per TO-060-350.

NOTE - Sample flow should remain unchanged or within 25% of normal operation.

5.4.6 WAIT for flow rates to reach steady state.

5.4.7 RECORD Masstron flow rate from instrument FIT-AZKI-2 in Table 4.

5.4.8 RECORD calibrated mass flow meter reading in Table 4.

5.4.9 CALCULATE comparison ratio of the calibrated mass flow meter to the record sample Masstron reading by dividing record sample Masstron reading into Mass Flow Meter reading.

5.4.10 CIRCLE “Pass” or “Fail” determination in Table 4.

5.4.11 IF inspection fails, NOTIFY FWS.

5.4.11.1 IF FWS gives any directions that deviate from this procedure DOCUMENT them on Data Sheet 1 AND PROCEED as directed by FWS.

5.4.12 SHUT DOWN exhauster per TO-060-350.

5.4.13 REMOVE Mass Flow Meter Test Piece Assembly.
ANSI N13.1 Compliance for 702AZ Exhauster

5.4 Quarterly Record Sampler/CAM System Mass Flow Meter, Secondary Standard Check (Cont.)

5.4.14 LUBE AND REPLACE “O” rings on unions of Record Sample Piping.
5.4.15 RE-INSTALL record sampler piping removed in Step 5.4.3.

CAM Flow Rate Check

5.4.16 REMOVE section of tubing below CAM.
5.4.17 INSTALL calibrated Mass Flow Meter in series with the CAM and tubing from the flow control valve. (See Figure 2.)
5.4.18 START exhauster per TO-060-350.

NOTE - Sample flow should remain unchanged or within 25% of normal operation.
5.4.19 WAIT for flow rates to reach steady state.
5.4.20 RECORD Masstron flow rate from instrument FIT-AZKI-1 in Table 5.
5.4.21 RECORD calibrated mass flow meter reading in Table 5.
5.4.22 CALCULATE Comparison Ratio of the calibrated mass flow meter to the CAM Masstron reading by dividing the CAM Masstron reading into the Mass Flow Meter reading.
5.4.23 CIRCLE “Pass” or “Fail” determination in Table 5.
5.4.24 IF inspection fails, NOTIFY FWS.
5.4.24.1 IF FWS gives any directions that deviate from this procedure DOCUMENT them on Data Sheet 1 AND PROCEED as directed by FWS.
5.4.25 SHUT DOWN exhauster per TO-060-350.
5.4.26 REMOVE calibrated mass flow meter.
5.4 Quarterly Record Sampler/CAM System Mass Flow Meter, Secondary Standard Check (Cont.)

5.4.27 REPLACE, LUBE AND REINSTALL “O” rings on unions of CAM tubing section.

5.4.28 RE-INSTALL section of tubing removed in Step 5.4.16.

5.4.29 START exhauster per TO-060-350.

5.4.30 CHECK line connections.

5.4.31 IF not performing Section 5.5 Annual Timer/Totalizer Check, GO TO Section 5.6.
5.5 Annual Timer/Totalizer Check

5.5.1 ENSURE the following supplies are available prior to performing this section.
- Calculator
- Timing device, e.g., stopwatch (commercially available accuracy).

5.5.2 IHT ENSURE monitoring is performed per monitoring plan to confirm vapors are not present.

Stack Totalizer Test (Table 6)

5.5.3 SET timing device to zero.

5.5.4 RECORD initial stack flow rate reading from FIT-AZK1-3 in Table 6.

5.5.5 START timing device as the far right digit on FQI-AZK1-3 changes.

5.5.6 RECORD initial stack flow totalizer reading from FQI-AZK1-3 in Table 6.

5.5.7 WAIT for timing device to show 15 minutes have elapsed.

5.5.8 STOP timing device as the far right digit on FQI-AZK1-3 again rolls over.

5.5.9 RECORD final FIT-AZK1-3 reading in Table 6.

5.5.10 RECORD time in Table 6.

5.5.11 RECORD final FQI-AZK1-3 reading in Table 6.

5.5.12 CALCULATE average flow rate using formula in Table 6.

5.5.13 CONVERT elapsed time to time in minutes using formula in Table 6.

5.5.14 CALCULATE accumulated stack flow using formula in Table 6.

5.5.15 CALCULATE totalizer increase times 100 using formula in Table 6.

5.5.16 CALCULATE difference ratio using formula in Table 6.

5.5.17 COMPARE end result to acceptance criteria in Table 6.

5.5.18 CIRCLE “Pass” or “Fail” determination in Table 6.
5.5 Annual Timer/Totalizer Check (Cont.)

5.5.19 IF inspection fails, NOTIFY FWS.

5.5.19.1 IF FWS gives any directions that deviate from this procedure DOCUMENT them on Data Sheet 1 AND PROCEED as directed by FWS.

Record Sampler Totalizer Test (Table 7)

5.5.20 SET timing device to zero.

5.5.21 RECORD initial stack flow rate reading from FIT-AZK1-2 in Table 7.

5.5.22 START timing device as the far right digit on FQI-AZK1-2 changes.

5.5.23 RECORD initial stack flow totalizer reading from FQI-AZK1-2 in Table 7.

5.5.24 WAIT for timing device to show 15 minutes have elapsed.

5.5.25 STOP timing device as the far right digit on FQI-AZK1-2 again rolls over.

5.5.26 RECORD final FQI-AZK1-2 reading in Table 7.

5.5.27 RECORD time in Table 7.

5.5.28 RECORD final FIT-AZK1-2 reading in Table 7.

5.5.29 CALCULATE average flow rate using formula in Table 7.

5.5.30 CONVERT elapsed time to time in minutes using formula in Table 7.

5.5.31 CALCULATE accumulated stack flow using formula in Table 7.

5.5.32 CALCULATE totalizer increase using formula in Table 7.

5.5.33 CALCULATE difference ratio using formula in Table 7.

5.5.34 COMPARE end result to acceptance criteria in Table 7.

5.5.35 CIRCLE “Pass” or “Fail” determination in Table 7.

5.5.36 IF inspection fails, NOTIFY FWS.

5.5.36.1 IF FWS gives any directions that deviate from this procedure DOCUMENT them on Data Sheet 1 AND PROCEED as directed by FWS.
5.6 Restoration

5.6.1 IF any problems were encountered with calibration, INFORM FLM.

5.6.2 DISCONNECT AND REMOVE test equipment.

5.6.3 FWS INFORM responsible Shift Manager status of maintenance activities.

5.6.4 RECORD test equipment information and calibration status on Data Sheet.

5.6.5 CHECK equipment system restoration by observing indications are consistent with expected conditions.

5.6.6 NOTIFY Operations testing is complete and system may be returned to desired configuration.

5.6.7 RECORD Radiological Survey Report (RSR) number(s) or N/A.

<table>
<thead>
<tr>
<th>RSR Number</th>
<th>RSR Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.7 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and As-Left values meet the specifications and tolerance(s) per the Data Sheet.
5.8 Review

5.8.1 INFORM FLM test is complete.

5.8.2 FLM REVIEW AND ENSURE the following:

- Complete Data Sheets meet the acceptance criteria
- Comments sections are filled out appropriately
- Work requests needed as a result of this procedure are identified and generated
- Work request number(s) of any work documents generated as a result of this procedure, are recorded in the Comments/Remarks section of the Data Sheet, as applicable.

5.8.3 FLM NOTIFY Production Operations environmental field representative the test is complete and status of what passed and what failed AND RECORD the following:

[Signature]

Printed name of Environmental Representative notified / Date of notification

5.9 Records

This procedure is performed within a work package, as such, the procedure in its entirety will be maintained as a record per the Work Control process.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
Table 1 - Instrument Calibration Data

<table>
<thead>
<tr>
<th>TOOL NAME</th>
<th>ID. NUMBER</th>
<th>CAL DUE DATE</th>
<th>INITIAL/DATE</th>
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<tbody>
<tr>
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Comments:
### Table 2 – Sample Probe, Transport Line Inspection and Integrity Check (Annual Inspection)

<table>
<thead>
<tr>
<th>STEP</th>
<th>Sample Probe Nozzle Inspection</th>
<th>Sample Transport Line Inspection</th>
<th>Sample Transport Line Re-Inspection</th>
<th>Sample Transport Line Integrity Check</th>
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</thead>
<tbody>
<tr>
<td>5.1.8</td>
<td>Sample Probe Nozzle Inspection</td>
<td>Probe Nozzles</td>
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<tr>
<td></td>
<td></td>
<td>Outside Probe Nozzles</td>
<td>Damage</td>
<td>No</td>
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<tr>
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<td></td>
<td>Deposits</td>
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<tr>
<td></td>
<td></td>
<td>Inside Probe Nozzles</td>
<td>Deposits</td>
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<tr>
<td></td>
<td></td>
<td>Record Sampler Line</td>
<td>Damage</td>
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<tr>
<td></td>
<td></td>
<td>CAM Line</td>
<td>Damage</td>
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<tr>
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<td></td>
<td>Deposits</td>
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<tr>
<td>5.1.12</td>
<td>Sample Transport Line Inspection</td>
<td>Record Sampler Line</td>
<td>Damage</td>
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<td></td>
<td>CAM Line</td>
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<td>Deposits</td>
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<td>5.1.13</td>
<td>Sample Transport Line Re-Inspection</td>
<td>Record Sampler Line</td>
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<td>CAM Line</td>
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<td>Deposits</td>
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<td>Sample Transport Line Integrity Check</td>
<td>Record Sampler Line</td>
<td>Tight Fittings</td>
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<td>Corrosion</td>
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<td>Yes</td>
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<td></td>
<td></td>
<td>Dents</td>
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<tr>
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<td></td>
<td>Holes</td>
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<tr>
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<td></td>
<td>CAM Line</td>
<td>Tight Fittings</td>
<td>Yes</td>
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<td>Corrosion</td>
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<td>Holes</td>
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Comments:
### Table 3 - Stack Flow Rate Instrument Response Check

<table>
<thead>
<tr>
<th>STEP</th>
<th>Initial Instrument Reading 5.3.2</th>
<th>Reading with Exhauster Shut Down 5.3.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.3.2 and 5.3.5 Stack Flow Rate</td>
<td>FIT-AZK1-3</td>
<td>Pass / Fail</td>
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</table>

Comments:
### Table 4 – Record Sample Flow Response Check

<table>
<thead>
<tr>
<th>STEP</th>
<th>Reading</th>
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<tbody>
<tr>
<td>5.4.7</td>
<td>Record Sample Masstron A</td>
</tr>
<tr>
<td></td>
<td>FIT-AZ-K1-2</td>
</tr>
<tr>
<td>5.4.8</td>
<td>Mass Flow Meter B</td>
</tr>
<tr>
<td>5.4.9</td>
<td>Comparison Ratio A/B</td>
</tr>
<tr>
<td>5.4.10</td>
<td>Pass: 0.9 &lt; A/B &lt; 1.1</td>
</tr>
</tbody>
</table>

Comments:

### Table 5 – CAM Flow Response Check

<table>
<thead>
<tr>
<th>STEP</th>
<th>Reading</th>
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</thead>
<tbody>
<tr>
<td>5.4.20</td>
<td>CAM Masstron A</td>
</tr>
<tr>
<td></td>
<td>FIT-AZK1-1</td>
</tr>
<tr>
<td>5.4.21</td>
<td>Mass Flow Meter B</td>
</tr>
<tr>
<td>5.4.22</td>
<td>Comparison Ratio A/B</td>
</tr>
<tr>
<td>5.4.23</td>
<td>Pass: 0.9 &lt; A/B &lt; 1.1</td>
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</tbody>
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Comments:
## Table 6 – Stack Flow Totalizer Check (Annual Inspection)

<table>
<thead>
<tr>
<th>STEP</th>
<th>Description</th>
<th>Formula</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>5.5.4</td>
<td>Initial Flow Rate (FIT-AZK1-3)</td>
<td>$F_i$</td>
<td>cfm</td>
</tr>
<tr>
<td>5.5.11</td>
<td>Final Flow Rate (FIT-AZK1-3)</td>
<td>$F_f$</td>
<td>cfm</td>
</tr>
<tr>
<td>5.5.6</td>
<td>Initial Totalizer Reading (FQI-AZK1-3)</td>
<td>$Tot_i$</td>
<td>ft³</td>
</tr>
<tr>
<td>5.5.9</td>
<td>Final Totalizer Reading (FQI-AZK1-3)</td>
<td>$Tot_f$</td>
<td>ft³</td>
</tr>
<tr>
<td>5.5.10</td>
<td>Final Timing Device Reading</td>
<td>$t_f$</td>
<td>:mm :ss</td>
</tr>
<tr>
<td>5.5.12</td>
<td>Average Flow Rate</td>
<td>$F_{avg} = \frac{(F_i + F_f)}{2}$</td>
<td>cfm</td>
</tr>
<tr>
<td>5.5.13</td>
<td>Elapsed Time</td>
<td>$t = \text{mm} + \text{ss}$</td>
<td>60 + 60 min</td>
</tr>
<tr>
<td>5.5.14</td>
<td>Accumulated Flow</td>
<td>$F_{acc} = F_{avg} \times t$</td>
<td>ft³</td>
</tr>
<tr>
<td>5.5.15</td>
<td>Totalizer Increase</td>
<td>$Tot_{inc} = Tot_f - Tot_i \times 100$</td>
<td>ft³</td>
</tr>
<tr>
<td>5.5.16</td>
<td>Difference Ratio</td>
<td>$DR = \frac{Tot_{inc}}{F_{acc}}$</td>
<td></td>
</tr>
<tr>
<td>5.5.18</td>
<td>Pass: $0.9 &lt; DR &lt; 1.1$</td>
<td>Pass / Fail</td>
<td></td>
</tr>
</tbody>
</table>

Comments:
# Table 7 – Record Sampler Flow Totalizer Check (Annual Inspection)

<table>
<thead>
<tr>
<th>STEP</th>
<th>Description</th>
<th>Formula/Calculation</th>
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<tr>
<td>5.5.21</td>
<td>Initial Flow Rate (FIT-AZK1-2)</td>
<td>$F_i$</td>
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<tr>
<td>5.5.28</td>
<td>Final Flow Rate (FIT-AZK1-2)</td>
<td>$F_f$</td>
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<td>5.5.23</td>
<td>Initial Totalizer Reading (FQI-AZK1-2)</td>
<td>$\text{Tot}_i$</td>
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<tr>
<td>5.5.26</td>
<td>Final Totalizer Reading (FQI-AZK1-2)</td>
<td>$\text{Tot}_f$</td>
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<tr>
<td>5.5.27</td>
<td>Final Timing Device Reading</td>
<td>$t_f$</td>
</tr>
<tr>
<td>5.5.29</td>
<td>Average Flow Rate</td>
<td>$F_{avg} = \frac{(F_i + F_f)}{2}$</td>
</tr>
<tr>
<td>5.5.30</td>
<td>Elapsed Time</td>
<td>$t = \text{HH} \times 60 + \text{mm} + \frac{\text{ss}}{60}$</td>
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<tr>
<td>5.5.31</td>
<td>Accumulated Flow</td>
<td>$F_{acc} = F_{avg} \times t$</td>
</tr>
<tr>
<td>5.5.32</td>
<td>Totalizer Increase</td>
<td>$\text{Tot}_{inc} = \text{Tot}_f - \text{Tot}_i$</td>
</tr>
<tr>
<td>5.5.33</td>
<td>Difference Ratio</td>
<td>$DR = \frac{\text{Tot}<em>{inc}}{F</em>{acc}}$</td>
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</tbody>
</table>

Comments:

Pass: $0.9 < DR < 1.1$
# Data Sheet 1 - Information Record Sheet

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<th>Record information</th>
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Signature: ____________________________ / ____________________________ / ____________________________
FWS  |  Print (First & Last)  |  Date  

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<td>CONTINUOUS</td>
<td>6-FCD-664</td>
<td>E-3</td>
<td>07/30/2018</td>
<td>25 of 28</td>
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Data Sheet 2 – Stack Flow Sample Check

<table>
<thead>
<tr>
<th>Environmental Stack Flow Sample Check Worksheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Table 3 (Step 5.3.2): ( X = \frac{(FIT-AZK1-3 \text{ Stack Flow}) (2)}{1100} )</td>
</tr>
<tr>
<td>( X = \underline{\text{SCFM}} )</td>
</tr>
<tr>
<td>From Table 5 (5.4.20): ( Y = FIT-AZK1-1 \text{ CAM Sample Flow} )</td>
</tr>
<tr>
<td>( Y = \underline{\text{SCFM}} )</td>
</tr>
<tr>
<td>X should be equal to Y ±10% of Y</td>
</tr>
<tr>
<td>( (Y - 0.1Y) \leq X \leq (Y + 0.1Y) )</td>
</tr>
</tbody>
</table>

**Calculation**

To compare the output of stack flow with the sample line flow to validate the flow is isokinetic and providing representative sample.
Figure 1 – Radiation Sample Probe Assembly

Nozzle – Viewed from Top of Duct

Nozzle – Viewed Along Duct Axis

Camera

(4) Radiation Sample Probe Nozzle
Figure 2 - Sample Cabinet Enclosure

ENCLAZK1-1
FOR MASS FLOW METER TESTING, REMOVE RECORD SAMPLER AND CAM AS SHOWN