5 Sta. 4
APR 27 1995

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 136007

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) PFP Environmental Engineering
4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: W15540	6. Cog. Engr.: DR Hirzel
7. Purchase Order No.: N/A	
8. Originator Remarks: Operability Test Procedure for testing the 225-WC Wastewater samplers and monitors is routed for approval.	9. Equip./Component No.: N/A
	10. System/Bldg./Facility: 225-WC
11. Receiver Remarks: RECEIVED MAY 17 1995 OSTI	12. Major Assm. Dwg. No.: H-2-99525
	13. Permit/Permit Application No.: N/A
	14. Required Response Date: ASAP

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-CP-OTP-153		0	OTP for PFP Wastewater Sampling Facility	E^CQ	1	1	

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1	1	Cog. Eng. PR Hirzel		4/18/95	T5-54	PE Proj			T5-02	3	
1	2	Cog. Mgr. DJ McBride		4/18/95	T5-54	PJ Sullivan			T5-54	3	
1	2	QA	DR Groth	4-27-95	T4-15	GD Anderson			T5-21	3	
~~1~~ DRH 4/18/95		Safety				Central Files (2)			L8-04	3	
1	2	Env. PJ McBride		4/18/95	T5-54	O.S.T.I. (2)			L8-07	3	
1	1	Ops. DM Burks		4/24/95	T5-04						

18.	19.	20.	21. DOE APPROVAL (if required)
Signature of EDT Originator — Date: 4/26/95	Authorized Representative for Receiving Organization — Date	Cognizant Manager — Date: 4/27/95 for DJ McBride	Ltr No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments

BD-7400-172 (07/91)

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

RELEASE AUTHORIZATION

Document Number:	WHC-SD-CP-OTP-153, REV 0
Document Title:	Operability Test Procedure for PFP Wastewater Sampling Facility
Release Date:	4/27/95

This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara M. Broz — April 27, 1995

SUPPORTING DOCUMENT

1. Total Pages ~~*~~ 27

2. Title	3. Number	4. Rev No.
Operability Test Procedure for PFP Wastewater Sampling Facility	WHC-SD-CP-OTP-153	0

5. Key Words	6. Author
Wastewater Sampling TEDF PFP OTP 225-WC	Name: DR Hirzel Signature Organization/Charge Code 15540/K6014

7. Abstract

Document provides instructions for performing the Operability Test of the 225-WC Wastewater Sampling Station which monitors the discharge to the Treated Effluent Disposal Facility from the Plutonium Finishing Plant.

MASTER

DISCLAIMER

8. RELEASE STAMP

OFFICIAL RELEASE BY WHC (5)
DATE APR 27 1995

TABLE OF CONTENTS

1.0	Test Plan	2
2.0	Safety	3
3.0	Tools, Equipment, and Supplies	3
4.0	Quality Assurance and Pre-test Inspection Requirements	4
5.0	Procedure Steps	
5.1	Chart Recorder UR-201	5
5.2	Current Isolator IB-201	6
5.3	Current Isolator IB-202	7
5.4	Current Isolator IB-203	8
5.5	IB-1 and IB-2 Current Isolators	9
5.6	Time Delay Relays TDR1 and TDR3	10
5.7	Sampler Unit #1	11
5.8	Sampler Unit #2	12
5.9	pH Transmitter AIT-201	13
5.10	Conductivity Transmitter AIT-202	14
5.11	Flow Computer FQ-301	15
5.12	Digital Indicator FQ-201 in Room 104	16
5.13	Recorder AIR-202 in Room 104	17
6.0	Data Verification Sheets	20
Attachment 1	Exception List	24
Attachment 2	Acceptance Sheet	26

1.0 TEST PLAN

This Operability Test Procedure (OTP) has been prepared to verify correct configuration and performance of the PFP Wastewater sampling system installed in Building 225-WC located outside the perimeter fence southeast of the Plutonium Finishing Plant (PFP). The objective of this test is to ensure the equipment in the sampling facility operates in a safe and reliable manner.

The sampler consists of two Manning Model S-5000 units which are rate controlled by the Milltronics ultrasonic flowmeter at manhole #C4 and from a pH measuring system with the sensor in the stream adjacent to the sample point.

The intent of the dual sampling system is to utilize one unit to sample continuously at a rate proportional to the wastewater flow rate so that the aggregate tests are related to the overall flow and thereby eliminate isolated analyses. The second unit will only operate during a high or low pH excursion of the stream (hence the need for a pH control). The dual units are interconnected with a switch so that their "duty" (constant sampling during pH excursion) may be selected by selector switch actuation. This also permits back-up operation for the "constant" monitor in the event of failure or the servicing of one unit while the other continues to operate. Flow, pH and sample failure alarms are to be monitored in room 104, Building, 234-5Z on a strip chart recorder and an annunciator. Digital readouts in room 104 will indicate flow rate and total flow.

The major items in this OTP include testing of the Manning Sampler System and associated equipment including the pH measuring and control system, the conductivity monitor, and the flow meter.

Acceptance of this OTP will require an Operations representative to initial each step that is satisfactorily completed. The Quality Control (QC) representative will initial, date, and/or stamp each section after it has been completed, and a representative from Environmental engineering will also initial and date each section. Operation of the system within the given parameters described in this OTP will constitute satisfactory test results. If any of the procedure steps outlined in this OTP can not be performed, Operations management and Environmental Engineering shall be contacted.

An Acceptance Test Procedure (ATP) has been previously performed on this system by construction forces during installation.

2.0 SAFETY

Individuals shall carry out their assigned work in a safe manner to protect themselves and others from undue hazards and to prevent damage to property and environment. Facility line managers shall assure the safety of all activities within their areas to prevent injury, property damage, or interruption of operation.

A pre-job safety meeting will be held.

3.0 TOOLS, EQUIPMENT AND SUPPLIES

Two DVM's (Example: Fluke 8060A)

One stop watch.

Temperature reading device (Example: temp/transmation)

One adjustable current generator - 0-20 mA minimum range $\pm 2\%$, capable of driving 1,000 ohms impedance. (Example: Transmation)

Two containers with several gallons of demineralized water.

Beaker - 1,000 milliliters nominal size with graduation increments of 10 ml or less.

Jumpers, common

Fischer and Porter Instruction Manual - Model 52FT1000 Rev. 1, page 14.

Manning S-5000 Instruction Manual - Section III.

Tigraph chart recorder Model 200 Users Manual.

Rosemount Operators Manual for model 1054A pH transmitter.

Rosemount Operators Manual for model 1054A C transmitter.

pH standards (4, 7, & 10)

Conductivity standards (100 and 500 μS/cm)

Calibration/Functional Stickers

4.0 QUALITY ASSURANCE AND PRE-TEST INSPECTION REQUIREMENTS

1. Verify all supplies required to perform this OTP are available.

2. Verify all required personnel are present. (2 Instrument Techs, Env. Eng. and QC)

3. Verify test equipment is within calibration.

Initial/ Date	Equipment Type	M&TE No.	Cal. Due

SECTION 4.0 COMPLETE

Environmental Engineer_____ Date_____

Quality Control _____ Stamp_____ Date_____

5.0 PROCEDURE STEPS

- Testing will be conducted by Operations personnel with Quality Control and Environmental Engineering sign-off.
- If test circumstances require red-lining, Operations management may make written procedural changes, with approval in accordance with WHC-CM-3-5, 2.7.
- If equipment is faulty, the OTP will be discontinued until the problem is solved.
- Discrepancies must be written down on the provided Exceptions List located in Attachment 1.
- Persons performing calibration and measurements must initial each step when completed.

5.1 Chart Recorder UR-201 (Tigraph)

Refer to Section 6.4, **Chart Recorder UR-201 Data Sheet.**

_____ 1. Test operability of chart recorder according to instruction manual.

Perform the following steps to test the recorder operation using the instruction manual.

_____ 2. Turn power switch ON.

_____ 3. Set Date/Time.

_____ 4. Set channels A , B, and C to "ON" and channels D-F to "OFF".

_____ 5. Set the following scale limits:

Channel A: Low = 0, High = 695
Channel B: Low = 0, High = 14
Channel C: Low = 0, High = 500

_____ 6. Print out chart status and verify parameters.

_____ 7. Check out and program recorder to come up on record mode when power is applied.

_____ 8. Restore recorder to operational status.

SECTION 5.1 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date _____

5.2 Current Isolator IB-201 (Moore Industries)

_____ 1. Disconnect input leads from IB-201.

_____ 2. Attach the current generator to IB-201 input terminals. Attach (+) to (+) and (-) to (-).

_____ 3. Disconnect the (+) output lead from IB-201 and install a milliammeter in series with the output terminal and the lead disconnected.

_____ 4. Turn on a-c power to UR-201, FI-201, IB-201, IB-203, and FQ-301.

_____ 5. Set current generator input to IB-201 to 4 mA.

_____ 6. Adjust "zero" control on IB-201 for 4 mA $\pm$0.1 display on meter hooked in series in Step 5.2.3.

_____ 7. Set 20 mA on input to IB-201 and adjust "span" control for 20 mA $\pm$0.1 output as above.

_____ 8. Repeat steps 5.2.5 thru 5.2.7 until no further adjustments are necessary.

_____ 9. Connect output leads to IB-201.

_____ 10. Check existing recorder UR-201 for proper operation (to 100% full span) at 4 mA and 20 mA ($\pm$0.1) input to IB-201.

SECTION 5.2 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date_____

5.3 Current Isolator IB-202 (Moore Industries)

_____ 1. Disconnect input leads from IB-202.

_____ 2. Attach the current generator to IB-202 input terminals. Attach (+) to (+) and (-) to (-).

_____ 3. Disconnect the (+) output lead from IB-202 and install a milliammeter in series with the output terminal and the lead disconnected.

_____ 4. Turn on a-c power to IB-202, UR-201, AIT-201, and AIR-202.

_____ 5. Set current generator input to IB-202 to 4 mA.

_____ 6. Adjust "zero" control on IB-202 for 4 mA $\pm$0.1 display on meter hooked in series in Step 5.3.3.

_____ 7. Set 20 mA on input to IB-202 and adjust "span" control for 20 mA $\pm$0.1 output as above.

_____ 8. Repeat steps 5.3.5 thru 5.3.7 until no further adjustment is necessary.

_____ 9. Connect output leads to IB-202.

_____ 10. Check existing recorder UR-201 for proper operation (to 100% full span) at 4 mA and 20 mA ($\pm$0.1) input to IB-202.

SECTION 5.3 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date_____

5.4 Current Isolator IB-203 (Moore Industries)

_____ 1. Disconnect input leads from IB-203.

_____ 2. Attach the current generator to IB-203 input terminals. Attach (+) to (+) and (-) to (-).

_____ 3. Disconnect the (+) output lead from IB-203 and install a milliammeter in series with the output terminal and the lead disconnected.

_____ 4. Turn on a-c power to IB-1, IB-2, UR-201, FI-201, AIR-202, IB-201, IB-203, and FQ-201.

_____ 5. Set current generator input to IB-203 to 4 mA.

_____ 6. Adjust "zero" control on IB-203 for 4 mA $\pm$0.1 display on meter hooked in series in Step 5.3.3.

_____ 7. Set 20 mA on input to IB-203 and adjust "span" control for 20 mA $\pm$0.1 output as above.

_____ 8. Repeat steps 5.4.5 thru 5.4.7 until no further adjustment is necessary.

_____ 9. Connect output leads to IB-203.

_____ 10. Check existing recorder UR-201 for proper operation (to 100% full span) at 4 mA and 20 mA ($\pm$0.1) input to IB-203.

SECTION 5.4 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date_____

5.5 IB-1 and IB-2 Current Isolator (Action Instruments)

These isolators are necessary because of grounded inputs to each of the Manning samplers and the current cannot be input in series.

5.5.1 Testing IB-1

_____ 1. Disconnect input leads to sampler unit #1 and 2 and connect milliammeter to leads instead.

_____ 2. Apply 4 mA to input of IB-203.

_____ 3. Turn sampler selector switch to position #1.

_____ 4. Adjust #1 to 4 mA output with zero control.

_____ 5. Verify input to sampler #2 reads 4 mA $\pm$0.1.

_____ 6. Apply 20 mA to input of IB-203.

_____ 7. Set span control of IB-1 to 20 mA output on meter.

_____ 8. Verify input to sampler #2 reads 20 mA $\pm$0.1.

_____ 9. Repeat steps 5.5.1.2 through 5.5.1.7 as necessary until no further adjustment is needed.

_____ 10. Turn sampler selector switch to position #2 to test IB-2.

5.5.2 Testing IB-2

_____ 1. Adjust #2 to 4 mA output with zero control.

_____ 2. Verify input to sampler #1 reads 4 mA $\pm$0.1.

_____ 3. Apply 20 mA to input of IB-203.

_____ 4. Verify input to sampler #1 reads 20 mA $\pm$0.1.

_____ 5. Set span control of IB-2 to 20 mA output on meter.

_____ 6. Repeat steps 5.5.2.1 through 5.5.2.5 as necessary until no further adjustment is needed.

SECTION 5.5 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date _____

5.6 Time Delay Relays TDR1 and TDR3 (Potter-Brumfield)

_____ 1. Set TDR1 to minimum setting (0 seconds).

_____ 2. While 20 mA is applied to IB-203 and Sampler Selector Switch is in position 2, short terminals 1 and 2 of AIT-201 at TB-1.

_____ 3. Check that milliammeter to Sampler #1 shows 20 mA.

_____ 4. Switch Sampler Selector Switch to position 1.

_____ 5. Check that milliammeter to Sampler 2 shows 20 mA.

_____ 6. Press reset button on Sampler Control panel to acknowledge LO pH alarm.

_____ 7. Set TDR3 to minimum setting (0 seconds).

_____ 8. While 20 mA is applied to IB-203 and Sampler Selector Switch is in position 2, remove jumper from terminals 1 and 2 of AIT-201 and place across terminal 3 and 4 of AIT-201.

_____ 9. Check that milliammeter to Sampler #1 shows 20 mA.

_____ 10. Switch Sampler Selector Switch to position 1.

_____ 11. Check that milliammeter to Sampler #2 shows 20 mA.

_____ 12. Press reset button on Sampler Control panel to acknowledge HI pH alarm.

_____ 13. Remove jumper from AIT terminals 3 and 4 and reconnect leads to Sampler #1 and #2 inputs.

SECTION 5.6 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date _____

5.7 Sampler Unit #1 (Manning S-5000)

_____ 1. Turn function knob to OFF.

_____ 2. Check power switch to be ON.

_____ 3. Disconnect from riser and immerse open end of intake hose into container of water with end of hose resting on the bottom.

_____ 4. Make sure Sample Control Switch is positioned to PH No. 2 position.

5. Test for ability to calibrate at operating points by the following steps:

_____ a. Input 4 mA to IB-203.

_____ b. Turn underrange pot CCW until LED (light emitting diode) to the immediate right of the underrange pot, just goes out.

_____ c. Set milliamp source to 20 mA and turn overrange pot until the LED just goes out.

_____ d. Repeat steps 5.7.4.b and 5.7.4.c until no further adjustment is necessary. Refer to page 3 of Manning instructions.

_____ 6. Set the three digit screwdriver adjustment switch marked MAX FLOW INPUT to read a maximum of 695, which is set to read in gallons per minute.

_____ 7. Set rate switch at 6 and multiple switch at 10 to obtain a 150 ml sample for every 60 gal of waste. (about 9 gallons collected for a flowrate of 12000 gallons/day)

_____ 8. Obtain 150 ml sample and verify sampling cycle operates properly.

SECTION 5.7 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date_____

5.8 Sampler Unit #2 (Manning S-5000)

_____ 1. Turn function knob to OFF.

_____ 2. Check power switch to be ON.

_____ 3. Disconnect from riser and immerse open end of intake hose into container of water with end of hose resting on the bottom.

_____ 4. Make sure Sample Control Switch is positioned to PH No. 1 position.

5. Test for ability to calibrate at operating points by the following steps:

_____ a. Input 4 mA to IB-203.

_____ b. Turn underrange pot CCW until LED (light emitting diode) to the immediate right of the underrange pot, just goes out.

_____ c. Set milliamp source to 20 mA and turn overrange pot until the LED just goes out.

_____ d. Repeat steps 5.8.4.b and 5.8.4.c until no further adjustment is necessary. Refer to page 3 of Manning instructions.

_____ 6. Set the three digit screwdriver adjustment switch marked MAX FLOW INPUT to read a maximum of 695, which is set to read in gallons per minute.

_____ 7. Set rate switch at 6 and multiple switch at 10 to obtain a 150 ml sample for every 60 gal of waste. (about 9 gallons collected for a flowrate of 12000 gallons/day)

_____ 8. Obtain 150 ml sample and verify sampling cycle operates properly.

SECTION 5.8 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date _____

5.9 pH Transmitter (Rosemount Model 1054A pH)

Reference Manufacturer's Instruction Manual, P/N 5101054AP

Refer to section 6.1, **pH Data Sheet.**

_____ 1 Place assembly in position to rinse with clean water and rinse probe thoroughly.

_____ 2. Program in alarm set points at 6.5 for low pH and 8.5 for high pH.

_____ 3. Verify Temperature Indicator is within tolerance as outlined in section 5.2 of vendor manual.

_____ 4. Calibrate system as outlined in section 5.3.1 of vendor manual.

_____ 5. Verify correct pH is being sent to Effluent Treatment Facility (ETF) Control Room. (phone # 373-7975)

_____ 6. Verify hi/lo pH alarms on transmitter.

_____ 7. Verify hi/lo pH alarms on Local Control Unit.

_____ 8. Set DELAY TIME ON to 10 seconds for both alarms.

9. Perform a integrated functional test of the pH sampling system:

_____ a. Place pH probe into low pH buffer.

_____ b. Alarm should sound 10 seconds later.

_____ c. Manning Sampler #2 should switch on and collect a sample.

_____ d. Acknowledge pH alarm.

_____ 10. Return pH and Manning samplers to operational status.

SECTION 5.9 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date _____

5.10 Conductivity Transmitter (Rosemount model 1054A C)

Refer to Section 6.2, **Conductivity Data Sheet.**

_____ 1. Place assembly in position to rinse with clean water and rinse probe thoroughly.

_____ 2. Adjust Cell Constant Input to a value of 5.0 as outlined in step 7.4 of PSCP-5-036.

_____ 3. Perform Temperature calibration as outlined in step 7.5 of PSCP-5-036.

_____ 4. Perform conductivity calibration with buffer solutions as outlined in step 7.6 of PSCP-5-036.

_____ 5. Verify correct conductivity is being sent to ETF Control Room.

_____ 6. Set TIME DELAY ON to 10 seconds for alarm.

_____ 7. Restore the transmitter to operational mode.

SECTION 5.10 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date _____

5.11 FQ-301 flow computer (Milltronics Multiranger Plus)

Reference: Multiranger Plus Programmable Level System Instruction Manual

Refer to Section 6.3, **Flow Computer Data Sheet.**

_____ 1. Program in Operating Parameters as outlined in Vendor Manual.

_____ 2. Calibrate for empty conditions as outlined in Vendor Manual.

_____ 3. Calibrate for full conditions as outlined in Vendor Manual.

_____ 4. Verify flow computer alarms at 500 GPM as outlined in Vendor Manual.

_____ 5. Verify alarm on Local Control Unit.

_____ 6. Verify correct flow data is being sent to ETF Control Room.

SECTION 5.11 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date _____

5.12 Digital Indicator FQ-201 in Room 104 (Fischer-Porter)

_____ 1. Set totalizer digital indicator section of FQ-201 to proper range and check.

_____ 2. Calculate scale factor. (6000 x 60 x 10)/695 = 5180

_____ 3. Verify totalizer scaling switches 4096, 1024, 32, 16, 8, and 4 to ON, all others to OFF.

_____ 4. Momentarily short circuit terminals M and N on display board to reading to zeros.

_____ 5. Apply 4 mA input to FQ-201 for a reading of "0" $\pm$7 counts. Adjust ZERO potentiometer R4 for "0" count if necessary.

_____ 6. Apply 20 mA input to FQ-201 for a reading of 695 counts $\pm$7 counts. Adjust span potentiometer R10 if necessary for appropriate readings.

_____ 7. Repeat steps 5.12.5 and 5.12.6 if necessary for appropriate readings.

_____ 8. Set millimeter to 4 mA output.

_____ 9. Reset scaler of FQ-201 to zero.

_____ 10. Observe totalized scale for 1 minutes. Reading shall be "0" $\pm$7 counts. (If more than 7 counts, check milliammeter for exact 4 mA and rerun.)

_____ 11. Set milliammeter to 20 mA.

_____ 12. Reset scales to zero and time exactly 10 minutes for a required count of 695 $\pm$7 counts.

SECTION 5.12 COMPLETE

Environmental Engineer_____ Date_____

Quality Control_____ Stamp_____ Date_____

5.13 Recorder AIR-202 in Room 104 (Tigraph)

Refer to section 6.5, **Chart Recorder AIR-202 Data Sheet.**

The intent of this section is to sufficiently check out the TI recorder and its association with the annunciator -- not to necessarily set it up for operation but functionally checkout.

_____ 1. Test operability of paper drive according to Section 3.2 of instruction manual.

Perform the following steps to test the recorder operation using the instruction manual.

_____ 2. Turn power switch ON.

_____ 3. Set Date/Time.

_____ 4. Set channels A, B to "ON" and channels C-F "OFF".

_____ 5. Set high point alarm on channel A at 72% of full scale. This represents 500 gpm.

_____ 6. Set low point alarm on channel B at 46%. This corresponds to pH=6.5.

_____ 7. Set high point alarm on channel B at 61%. This corresponds to pH=8.5.

_____ 8. Set the following scale limits:

Channel A: Low = 0, High = 695
Channel B: Low = 0, High = 14

Perform the following steps on channel B.

_____ 9. Set current generation to 12 mA. Clear annunciator pH light.

_____ 10. Gradually increase current until alarm occurs. Alarm should occur at approximately 13.7 mA (pH = 8.5). Tolerance on pH alarm = ± 0.1.

_____ 11. Set current generator to 13 mA and clear annunciator.

_____ 12. Gradually decrease current until alarm occurs. Alarm should occur at approximately 11.4 mA (pH = 6.5). Tolerance on pH alarm = ± 0.1.

Perform the following steps on channel A.

_____ 13. Set current generation to 12 mA.

_____ 14. Gradually increase current until alarm occurs. Alarm should occur at approximately 15.5 mA (flow = 500 GPM). Tolerance on flow alarm = $\pm$7 GPM.

_____ 15. Remove generators and reconnect wire inputs.

_____ 16. Print out chart status and verify parameters.

_____ 17. Check out and program recorder to come up on record mode when power is applied.

SECTION 5.13 COMPLETE

Environmental Engineer _____ Date _____

Quality Control _____ Stamp _____ Date _____

5.14 Reference Drawings

H-2-81331, Sh. 1, Rev 0:	TEDF Effluent Instr Arrangement Wiring & Details
H-2-81331, Sh. 2, Rev 0:	TEDF Effluent Instr Arrangement Relay Cabinet
H-2-81331, Sh. 3, Rev 0:	TEDF Effluent Instr Arrangement Details
H-2-81331, Sh. 4, Rev 0:	TEDF Effluent Instr Arrangement Wiring Diagram
H-2-99525, Sh. 1, Rev 0:	Engineering Flow Diagram - PFP Wastewater Effluent
H-2-99526, Sh. 1, Rev 0:	Piping Plan and Details - PFP Wastewater Effluent
H-2-99527, Sh. 1, Rev 0:	Piping Plan and Details - Sampler Rack #1
H-2-99527, Sh. 2, Rev 0:	Piping Plan and Details - Instr. Rack Assy
H-2-99527, Sh. 3, Rev 0:	Piping Plan and Details - Sampler Rack #1 Assy
H-2-140390, Sh.2, Rev 0:	Electrical/Instr Monitoring Sta Details
H-2-140391, Sh.1, Rev 0:	Electrical/Instr Installation Details TYP LCU Cabinet

6.0 DATA VERIFICATION SHEET

6.1 pH Transmitter AIT-201

Tolerance for Output Display ±2.5%
Tolerance for Chart Recorder ±2.5%

	AS-FOUND		AS-LEFT		
BUFFER pH	OUTPUT DISPLAY	CHART RECORDER	OUTPUT DISPLAY	CHART RECORDER	ETF CONTROL ROOM
4					
7					
10					

6.2 Conductivity Transmitter AIT-202

Tolerances ±5%

	ASSIGNED VALUE	AS-FOUND	AS-LEFT	ETF CONTROL ROOM
Cell Constant	5.0			N/A
Temp DI water	measured		N/A	N/A
Alarm #1 Setpoint	400 μS			N/A
Buffer #1	100 μS			
Buffer #2	500 μS			

6.0 DATA VERIFICATION SHEET (Cont.)

6.3 Flow Computer FQ-301

Tolerances ±5%

PARAMETER	ASSIGNED VALUE	AS FOUND	AS LEFT	PARAMETER	ASSIGNED VALUE	AS FOUND	AS LEFT
P-1	3			P-45	1		
P-2	5			P-46	694.8		
P-3	2			P-48	0		
P-4	1			P-49	1		
P-5	1			P-50	2		
P-6	2			P-52	0		
P-7	2			P-53	2		
P-8	0			P-54	.00		
P-11	0			P-55	00		
P-14	0			P-56	0		
P-17	0			P-68	10		
P-20	0			P-69	10		
P-23	0			P-71	1		
P-38	0			P-72	1		
P-39	4			P-73	0		
P-40	1			P-74	1		
P-41	1			P-75	.5		
P-42	2.6363						
P-43	1						

6.0 DATA VERIFICATION SHEET (Cont.)

6.4 Chart Recorder UR-201

Tolerances for channel A ±1%
Tolerances for channel B ±2.5%
Tolerances for channel A ±5%

TIGRAPH 200 STATUS

CHANNEL	A	B	C	D	E	F
HI SETPOINT %	72	61	80	0	0	0
LO SETPOINT %	0	46	0	0	0	0
CHANNEL SELECT	ON	ON	ON	OFF	OFF	OFF
CHART MODULE	P1D	P2E	P3F	NONE	NONE	NONE
SCALE HI END	695	14	500	100	100	100
SCALE LO END	0000	0	0	0	0	0
SCALE UNITS	FLOW	PH	COND			
LO PASS FILTER	OUT	OUT	OUT	OUT	OUT	OUT
CHART SPEED	1 IN/HOUR					
JUMP SPEED	OFF IN/HOUR					
TIME FORMAT	MONTH - DAYS, HOURS : MINUTES					
TIME						
GRIDS ORDERED	BY CHANNEL LINE SYNC 60 HZ.					

6.0 DATA VERIFICATION SHEET (Cont.)

6.5 Chart Recorder AIR-201 (in Room 104)

Tolerances for channel A ±1%
Tolerances for channel B ±2.5%

TIGRAPH 200 STATUS

CHANNEL	A	B	C	D	E	F
HI SETPOINT %	72	61	0	0	0	0
LO SETPOINT %	0	46	0	0	0	0
CHANNEL SELECT	ON	ON	OFF	OFF	OFF	OFF
CHART MODULE	P1D	P2E	NONE	NONE	NONE	NONE
SCALE HI END	695	14	100	100	100	100
SCALE LO END	0000	0	0	0	0	0
SCALE UNITS	FLOW	PH				
LO PASS FILTER	OUT	OUT	OUT	OUT	OUT	OUT
CHART SPEED	1 IN/HOUR					
JUMP SPEED	OFF IN/HOUR					
TIME FORMAT	MONTH - DAYS, HOURS : MINUTES					
TIME						
GRIDS ORDERED	BY CHANNEL LINE SYNC 60 HZ.					

ATTACHMENT 1 EXCEPTION LIST

STEP	EXCEPTION	RESOLUTION	INITIALS

ATTACHMENT 1 EXCEPTION LIST

STEP	EXCEPTION	RESOLUTION	INITIALS

ATTACHMENT 2 ACCEPTANCE SHEET

The undersigned concur that the OTP was successfully completed.

PFP Liquid Effluent Cognizant Engineer	Date
PFP Operations Manager	Date
QC	Date