

TANK FARM SURVEILLANCE AND OPERATIONS DEPARTMENT		STANDARD OPERATING PROCEDURE	
Subject SPECIFIC CROSS-SITE TRANSFER PROCEDURE TK-102-SY TO TK-102-AW VIA 244-S		Issued By MANAGER - TFS & O	
<p>I. <u>GENERAL DESCRIPTION</u></p> <p>The purpose of this procedure is to transfer liquid waste from TK-102-SY in the West Area to TK-102-AW in East Area.</p> <p>II. <u>SAFETY</u></p> <p>IF THIS JOB IS PERFORMED UNDER OTHER THAN STANDARD CONDITIONS, A JOB SAFETY ANALYSIS MUST BE PERFORMED.</p> <p>General Regulations and Practices for radiation Work (GEN-O), Radiation Work Procedure F-1, the Master Safety Rules, General Safety Rules and Tank Farm Safety Rules must be closely followed in performing the work of this procedure.</p> <p>The primary concern, aside from leaks and emergencies, is the plugging of the cross-country line. To prevent this, the transfer is started using 100% heated dilution water to preheat the line and test out the system. After 102-AW starts receiving the dilution water, process solution is started through the line and the heated dilution water is adjusted to a % dilution that laboratory work and experience show will prevent plugging. Also, the total 102-SY liquor flow is kept as high as possible considering the 102-SY flow meter range, available dilution water rate and available 102-SY pump capacity.</p> <p>Tank Farm Supervision will review this procedure with all operators using it to ensure it is understood. Any instruction that is not understood or which appears to endanger personnel, equipment or the transfer success that is identified by the operators and/or supervisor will be resolved by shift supervision or the next appropriate level of management.</p> <p>The 102-SY Pump is connected to the 242-S Master Shutdown Interlock System. Any trip that activates the Master Shutdown will stop the cross-site 102-SY pump. To prevent unnecessary shutdown of this pump, due to alarms not caused by the cross-country route, a 30 minute bypass timer has been installed.</p>			
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This bypasses the 102-SY pump only. After 30 minutes, the pump will shut down unless the cause of the alarm is found and the alarm cleared. If the alarm is on the cross-site line, the pump must be shut down manually.

During the transfer, personnel at CASS, 242-A and 242-S who are responsible for receiving panelboard, gamewell and CASS alarms must be aware of which alarms affect the cross-site transfer and how to reach the responsible operators and supervision in charge of the transfer. In the event an alarm on the transfer route is received, the responsible operators and supervision in charge of the transfer must be immediately notified.

Before the transfer may begin, and during the transfer, 244-S catch tank must have sufficient volume to hold 12,000 gallons of liquid while 244-A catch tank must have 14,000 gallons of allowable capacity.

The possibility of syphoning from tank 102-SY to 244-S exists. To prevent syphoning, 102-SY-02A pump pit valve 2 must be open and the pump discharge DOV closed before placing 244-S valve A-4 to route from nozzles 4 to G. (Dropleg).

III. TOOLS, EQUIPMENT AND SUPPLIES

Maintenance personnel will provide their own tools. Attach a copy of SOP TO-025-001, TO-040-540 and Data Sheets and follow these instructions before beginning this procedure.

IV. PROCEDURE

Transfer Routing (See Figure 1)

<u>LOCATION</u>	<u>NOTES</u>	<u>CONNECTION</u>	<u>DRAINS TO</u>
241-SY-A V.P.	1	L-8 to L-9	TK-102-SY
TK-102-SY-02A P.P.	1	Pump to H	TK-102-SY
241-SY-B V.P.	1	R-11 to R-15	TK-102-SY
244-S Catch Station	2	4 to 5	244-S-CT
241-S-151 D.B.	4	C-1 to U-1	241-S-302A CT
241-UX-154 D.B.	3	L-8 to L-1	UX-302-A CT
241-EW-151 Vent Station	5	Vent Valve V-360	EW-151 CT

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Transfer Routing - Contd.

<u>LOCATION</u>	<u>NOTES</u>	<u>CONNECTION</u>	<u>DRAINS TO</u>
241-ER-151-D.B.	6	U-2 to U-10	ER-311 CT
241-ER-153 D.B.	6	2 to 3	244-A CT
244-A Lift Station	6	P-3 to P-7	244-A CT
241-AA V.P.	6, 7	L-16 to L-2	A-350 CT
241-AWA V.P.	8	L-2 to L-1	TK-102-AW
TK-102-AW-02A P.P.	8	3 to L (Dropleg)	TK-102-AW

NOTES:

1. LDT 13 - Leak detectors in the 102-SY 02A and 02D pits, SY-A and SY-B valve pits and flush pits, interlocked to stop pump. These alarm at 241-SY-271, 242-S and CASS. Area radiation monitors and service pit radiation monitors alarm at 242-S.
2. Leak Detector installed, interlocked to the pump, alarms at 242-S.
3. Leak detector installed, not interlocked to the pump alarms on LDT 12 at 242-S, 241-S-151 and CASS.
4. Leak detector installed, not interlocked to the pump, alarms on LDT 21 at 242-S and CASS.
5. Leak detector installed, not interlocked to the pump, alarms on CASS only.
6. Leak detector installed, not interlocked to the pump, alarms at 242-A.
7. Also alarms RAT 34 at 241-A-271 Instrument Building 242-A and CASS.
8. Leak detector installed, not interlocked to the pump, alarms on LDT 43 and RAT 42 in 241-AW-271 Instrument Building.

WARNING: Do not set 244-S valve A-4 to route from nozzle 4 to G unless 102-SY-02A pump pit valve 2 is open and the pump discharge DOV closed.

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A. Valving Instructions

1. In SY-B Flush Pit

- a. Close all valves (1, 2, 4, 5, 6, 7, 8 & RW Inlet valve)
- b. Set valve B-3 to drain.

2. In the SY-A Flush Pit

- a. All valves closed, except valve 9 open.
- b. Close DOV-1.

3. In the SY-Farm Service Pit

- a. Open raw water supply valve from 14" main to service pit.
- b. Open Valve 1 ("Water Supply").
- c. Open Valve 2 ("To Flush Pit").
- d. Open Valve 3 (4" RW Valve).

4. In the 102-SY-02A Pump Pit

- a. Close the pump discharge DOV.
- b. Close Valve 2.
- c. Open Valve 1.

5. In the SY-B Valve Pit

- a. Close Valve B-20.
- b. Using Valve B-16, route flow from Nozzle R-11 (SN-286) to Valve B-23.
- c. Using Valve B-23, route flow from Valve B-16 to R-15 Nozzle.
- d. Close Valve B-14.
- e. Set Valve B-15 to route from Valve B-13 to R-16

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6. In the SY-A Valve Pit
 - a. No valving required. A straight through jumper is installed from L-8 to L-9.
7. In the 244-S Lift Station
 - a. Using Valve A-4, route flow from Nozzle 4 (Line V-561) to Nozzle 5 (Line V-522).
8. In the 241-S-151 D.B.
 - a. No valving required. A straight through jumper is installed from C-1 to U-1.
9. In the 241-UX-154 D.B.
 - a. No valving is required. A straight through jumper is installed from L-8 to L-1.
10. In the 241-EW-151 Vent Station
 - a. Close vent Valve V-360.
11. In the 241-ER-151 D.B.
 - a. No valving is required. A straight through jumper is installed from U-2 to U-10.
12. In the 241-ER-153 D.B.
 - a. No valving is required. A straight through jumper is installed from 2 to 3.
13. In the 244-A Lift Station
 - a. Route flow from Nozzle P-3 to Nozzle P-7 by setting MS-MOV-2 (located in 242-A control room) to "Close".
14. In the 241-AA Valve Pit
 - a. Using Valve A-15, route flow from Nozzle L-16 to Valve A-13.
 - b. Close Valve A-14.
 - c. Using Valve A-13, route flow from Valve A-15 to Nozzle L-2.

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15. In the 241-AWA Valve Pit

- a. Using Valve A-12, route flow from Nozzle L-2 to Nozzle L-1.
- b. Close Valve A-13.
- c. Set Valve A-14 to block by routing L-16 to Valve 15.

16. In the 102-AW Pump Pit

- a. No valving is required. A straight through jumper is installed from J to L (Dropleg).

B. Transfer

1. Record all required starting data on the data sheet for SOP-T0-025-001, "Tank Farm Transfer Procedure-General" and the special data sheet for this procedure.
2. In the SY-A Flush Pit, in the following order:
 - a. Slowly open Valve 1 to full position to get maximum water flow.
 - b. Open Valve 3.
 - c. Slowly open Valve 2 and start steam to DOV-2.
 - d. Using DOV-1, adjust water flow so that the dilution water flow rate is between 30 and 50 gpm.
 - e. Verify that the dilution water temperature is 95 - 115°F. Adjust TC1-3 if required.
3. In the 102-SY-02A Pump Pit, in the following order:
 - a. Unlock and start the pump.
 - b. Using the DOV, control the 102-SY total liquid flow to within ± 3 gpm of the dilution water flow.
 - c. Record the time that the pump was started and other applicable data on the data sheets.
 - d. As a secondary control to the flowmeters, closely monitor the 102-SY liquid level. The liquid level should neither increase nor decrease by more than .1 inch per hour when transferring 100% dilution water.

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4. Perform the following data sheet readings at the specified frequencies:

- a. Until the dilution water reaches the 102-AW tank, take readings every 30 minutes for the special data sheet and at least once an hour for the TO-025-001, "Tank Farm Transfer Procedure-General" data sheet. The TO-025-001 material balance frequency requirements must also be met.
- b. After liquid is being received in 102-AW tank, special data sheet readings and readings for data sheet TO-025-001 are required at least every two hours. The TO-025-001 material balance frequency requirements must still be met.
- c. Record the dilution water flow and integrator, the 102-SY liquid flow and integrator, and the SY farm water meter integrator (found in SY farm service pit) as concurrently as possible. Convert the SY-A flush pit integrator and SY farm integrator to net gallons each time readings are taken. Compute the % difference by:

$$\% \text{Difference} = 100 \times \frac{\text{SY farm gallons minus SY-A flush pit gallons}}{\text{SY farm gallons}}$$

Notify supervision that differences greater than 10% must be corrected unless water is being used in SY farm. If this cannot be corrected, contact Tank Farm Management and Tank Farm and Evaporator Process Control (TF&EPC) for instructions.

- d. For the material balance calculations use the SY-A flush pit integrator if it is working properly. If not, request permission from TF&EPC and TF management to use the SY farm integrator.
- e. Whenever water is used in SY farm that registers on the water meter integrator, make a notation on the special data sheet. If the SY farm integrator is being used for the m.b., estimate the additional water used by the difference in the SY-A flush pit and SY farm integrators and subtract this from the cumulative water used in the X-site. Request the supervisor to check the estimate of the extra water used.

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5. Monitor the 102-AW tank liquid level to see when it starts receiving the dilution water. It takes 15,000 gallons to fill the line if it was empty at the start of the transfer. The time it takes to fill the line can be figured by the formula:

$$\text{Time (in minutes)} = \frac{15,000 \text{ gallons}}{102\text{-SY Liquid Flow Rate (in GPM)}}$$

6. Within 30 minutes after 102-AW starts receiving the dilution water, start transferring diluted process solution by performing the following steps:
- a. Obtain the required % dilution to be used from the Job Control Sheet or as specified by the TFPO manager.
 - b. Use Figure 2 to determine the required dilution flow.
 - c. In the 102-SY-02A pump pit adjust the DOV to obtain 48 - 49 gpm.
 - d. In the SY-A flush pit adjust the DOV-1 to obtain the required water dilution flow determined from Figure 2.
 - e. If the maximum heated dilution water is reached before the specified % dilution is, decrease the total flow by closing the DOV in the 102-SY-02A pump pit just enough to meet the specified dilution. The total flow must remain above 30 gpm.
 - f. Steps 6.c., 6.d. and 6.e. may have to be repeated several times before the specified conditions are met since changes in one parameter will affect the others.
 - g. Adjust 102-SY-02A pump pit DOV and SY-A flush pit DOV-1, as described in Steps 6.c., 6.d., 6.e. and 6.f. so as to maintain the specified dilution or change to a new dilution flow during the transfer.
 - h. After dilute process solution is pumping to 102-AW tank, plot the 102-SY flow meter rate on a graph similar to Figure 3. Plot the flow every hour for the first 3 hours and then at two hour intervals. The first 3 hours of the plot will be the baseline flow rate. If the flow drops by 10 gpm from the baseline flow rate and cannot be restored, increase the % dilution to between 90 - 100% and notify TF&EPC and TFPO management and ask for instructions. If the flow drops below 30 gpm and cannot be restored, proceed to the pump shutdown instructions.

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- i. After starting dilute process solution to 102-AW tank and the pump pressure readings have stabilized, set the alarm set points on the pressure indicator to + 5% of the stabilized pressure reading. High and low pressure alarms on the H annunciator panel at 242-S. Make sure the alarm is on and working properly. It may be tested by adjusting one of the set points to alarm.
- j. Do not shutdown the 102-SY pump without requesting permission from supervision unless it is an emergency.

C. Material Balance Discrepancy

The estimated line holdup is 5.4 inches. The allowable material balance discrepancy is +.5 to -6.0 inches.

D. Pump Shutdown

1. When the transfer is complete or when the pump must be shutdown for an emergency alarm, stop the pump at the 102-SY pump control station or motor control center. Lock out the pump. Four and one-half (4-1/2) inches of space must be left in 102-AW tank for the line drain back and flush.
2. In the SY-A flush pit in the following manner:
 - a. Close Valve 3.
 - b. Close Valve 2.
 - c. Close DOV-1.
 - d. Close Valve 1.
3. In the SY farm service pit:
 - a. Slowly close Valve 3.
4. Record the time of pump shutdown and LL's of 102-SY and 102-AW tanks at this time.
5. Proceed immediately to part E, line drain.

E. Line Drain (Proceed immediately after performing part D, Pump Shutdown)

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WARNING: To prevent syphoning from 102-SY to 244-S, do not set 244-S, Valve A-4, to route from Nozzle 4 to G unless 102-SY-02A pump pit valve 2 is open and the pump discharge DOV closed.

1. In the 102-SY-02A Pump Pit:
 - a. Close pump discharge DOV.
 - b. Open Valve 2.
2. In the 241-EW-151 Vent Station:
 - a. Open vent Valve V-360 and drain lines for 1-1/2 hours.
3. Continuously monitor the line drain back into 102-SY and 102-AW. Each tank should receive approximately 2" of drainback. If at any time during drainback the line appears to be plugging, immediately proceed to Part F, Line Flush.
4. Continue to perform a material balance during drainback. This includes catch tanks and interconnecting tank readings.
5. After 1-1/2 hours have passed, in the 244-S Catch Station:
 - a. Using Valve A-4, route flow from Nozzle 5 (Line V-522) to Nozzle G (dropleg).
6. In the 244-A Lift Station:
 - a. Using the motor operated Valve 2, whose control is in the 242-A evaporator control room, route flow from Nozzle P-3 to Nozzle B.
7. Record L.L. of 244-S and 244-A Catch Tanks every 15 minutes.

WARNING: Valve 2 in the 102-SY-02A pump pit must be open and the pump discharge DOV closed before setting Valve A-4 in 244-S to route from Nozzle 4 to G, to prevent possible syphon drainage of 102-SY tank.

8. When the L.L. in 244-S remains constant within a 30 minute period, reroute Valve A-4 from Nozzle 4 to Nozzle G. This will drain the remaining portion of the line.
9. When the L.L. in 244-A remains constant within a 30 minute period, reroute the motor operated Valve 2, whose

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control is in the 242-S evaporator control room, from P-7 Nozzle to Nozzle B. This will drain the remainder of the East Area line.

10. After the L.L. in both tanks remains constant for a consecutive 30 minutes, reroute Valve A-4 in 244-S from Nozzle 4 to Nozzle 5, and reroute MOV -2 in 244-A from Nozzle P-3 to Nozzle P-7.
11. Close vent Valve V-360 at 241-EW-151 vent station.
12. Go immediately to Part F, Line Flush.

F. Line Flush

(All valves except service pit valves should be in transfer position according to Section IV, Part A, Valving Instructions, before beginning this step).

NOTE: See TO-040-540, "Raw Water Surveillance and Usage" for additional requirements.

This flush will be performed in two parts. The part of line from SY-B flush pit to the 102-SY tank will be performed first. Immediately following will be the remainder of the transfer line.

1. Record the starting SY farm water meter reading and close Valve B-14 in SY-B valve pit.
 - a. Attach hose to hydrant in SY farm and to SY-B flush pit raw water inlet.
 - b. Open hydrant water valve to SY-B flush pit.
2. In the 102-SY-02A pump pit:
 - a. Close pump discharge DOV.
 - b. Open Valve 2.
3. In the SY-B Flush Pit in the following order:
 - a. Close Valves 2, 5, 6, 7 and 8.
 - b. Using Valve 3, route flow from Valve 1 to Valve 4.
 - c. Open Valve 1, then raw water hose inlet valve.

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- d. Open Valve 4.
 - e. If a hot flush is desired, adjust Valve 2 to get the desired temperature (95 - 115°F).
4. In the SY-B Valve Pit:
- a. Close Valve B-13.
 - b. Using Valve B-15, route flow from Valve B-14 to Valve B-16.
 - c. Using Valve B-16, route flow from B-15 to Nozzle R-11.
 - d. Open Valve B-14, this starts the flush.
5. Flush the line with 200 gallons of water. The flush rate should be greater than 30 gpm, unless the line is partially plugged. Notify TF&EPC and TFPO management if the rate is less than 30 gpm.
6. After the 200 gallon limit is reached, in the SY-B Valve Pit:
- a. Using Valve B-16, route flow from B-15 to B-23. This begins the flush for the remainder of the line.
7. Flush the line with 20,000 gallons of water. The flush should be greater than 30 gpm, unless the line is partially plugged. Notify TF&EPC and TFPO management if the rate is less than 30 gpm.
8. Continue to perform a material balance during the flush and during the flush drain back. This includes taking catch tank and interconnecting tank readings.
9. In the SY-B valve pit, after the line has been flushed with 20,000 gallons of water, in the following order:
- a. Close Valve B-14.
 - b. Using Valve B-16, route flow from B-23 to Nozzle R-11.
10. In the SY-B Flush Pit in the following order:
- a. Close Valve 4.
 - b. Close Valve 2, if hot water flush was used.
 - c. Close raw water hose inlet valve.

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- d. Set Valve 3 to drain.
 - e. Open Valve 6 to drain, then close Valve 6 after draining is complete.
11. Close hydrant water valve.
 12. In the SY-B Flush Pit, in the following order:
 - a. Close Valve 1.
 - b. Open raw water hose inlet valve to relieve hose pressure, then close.
 13. Disconnect hose from hydrant, drain and store.
 14. Record the time the flush ends, ending SY farm water meter reading, and the 102-SY, 244-S, 244-A and 102-AW LL's at the time the flush ends and before drain back.
 15. At this time, repeat Step E, Parts 1 to 11.
 16. After the drain back is complete, perform a final MB including catch tanks and interconnecting tank readings. Send the completed data sheets to TF&EPC.

G. Pump Flush - Special Instructions

1. Stop the 102-Sy-02A pump at the pump station or motor control center. Set DOV in the 102-SY-02A pump pit to maximum pressure to fully open valve.
2. Record the time of the flush and the starting SY-farm water reading on the special data sheet.
3. In the SY-A Flush Pit:
 - a. Close Valve 3.
 - b. Close Valve 2.
 - c. Close DOV-1.
 - d. Close Valve 1.
4. In the SY-B Flush Pit in the following order:
 - a. Attach hose to hydrant in SY farm and to SY-B flush pit raw water inlet. Open hydrant water valve to SY-B valve pit.
 - b. Close Valves 2, 5, 6, 7 and 8.
 - c. Using Valve 3, route flow from Valve 1 to Valve 4.
 - d. Open Valve 1, then open the raw water hose inlet valve.

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- e. Open valve 4.
 - f. If a hot water flush is required, open Valve 2 and adjust it to desired temperature.
5. In the SY-B Valve Pit:
 - a. Close Valve B-13.
 - b. Using Valve B-15, route flow from Valve B-14 to Valve B-16.
 - c. Using Valve B-16, route flow from Valve B-15 to Nozzle R-11.
 - d. Close Valve B-20.
 - e. Open Valve B-14, this starts the flush.
 6. In the SY-B Valve Pit, after the desired amount of flush has been performed:
 - a. Close Valve B-14, this stops the flush.
 - b. Using Valve B-16, route flow from B-23 to Nozzle R-11.
 7. In the SY-B Flush Pit:
 - a. Close Valve 4.
 - b. Close Valve 2 if hot flush was used.
 - c. Close raw water hose inlet valve.
 - d. Set Valve 3 to drain.
 - e. Open Valve 6 to drain line, then close Valve 6 after draining is complete.
 8. Close hydrant water valve.
 9. In the SY-B flush pit, in the following order:
 - a. Close Valve 1.
 - b. Open Raw Water Hose Inlet Valve to relieve hose pressure, then close.
 10. Disconnect hose from hydrant, drain and store.
 11. Record the time the flush is completed and the ending SY Farm meter reading on the special data sheet.

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H. Alarm Responses

1. 102-SY "Low Waste Transfer Pressure"

A low pressure alarm can indicate the following conditions:

- a. Pump suction is plugging. Will be accompanied by a decrease in flow and pump amps. Try stopping and starting the pump several times. Allow the dilution water and drain-back to flush the pump and try again. Pump amps are located on the limit alarm module in the 241-SY-271 Instrument Building.
- b. Decrease in the Sp.G. of the material being pumped. The total flow will remain constant or very slightly increase, the amps may slightly decrease, and the pressure will gradually be decreasing over several hours. Request permission from TF&EPC or TFPO management to reset the Hi and Low pressure alarm points.
- c. Pump failure. Check to see if the pump is running. The pump may run but have a broken shaft or damaged impellers. This will be accompanied by low flow and low or high amps. Pump may vibrate and be noisy.
- d. Increased Flow. Maybe accompanied by an increase in amps. Check the total flow from 102-SY and the dilution water flow for an increase, correct as required. If not caused by dilution water flow, the flow increase could be due to a leak in the 102-SY pit or in a DB. Check for leaks and misrouting.
- e. Loss of pump suction caused by low tank liquid level, will be accompanied by a decrease in flow and pump amps. Check the Job Control Sheet for pump suction and compare it to the tank L.L.. If the liquid level is at or near the pump suction level proceed to pump shutdown.

2. 102-SY "High Waste Transfer Pressure"

A Hi pressure alarm can indicate the following conditions:

- a. An increase in the specific gravity of the material being pumped. The amps may increase slightly and the flow decrease slightly. Check the dilution water flow and temperature and pump discharge temperature for a decrease and correct if required. This could also be caused by a failure of dilution water to reach the pump intake, check the 102-SY pit for leaks.

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- b. A restriction or plug in the transfer route. The amps and flow will decrease. Check the position of 102-SY valve 1 and the pump discharge DOV to see that it has not vibrated closed or is plugging, adjust if necessary. If valve 1 and the DOV are ok, the line is probably plugging. If the flow is greater than 30 gpm follow the instructions in Section IV, Part B, Step 6.h. If the flow is less than 30 gpm proceed to the pump shutdown.
- c. Increase in flow. The total flow and pump amps will increase. Check the dilution water rate and temperature and DOV setting. Adjust if required. If the total flow has been running less than the 48-49 gpm rate and was at the maximum rate the pump could deliver, some restriction in the pump suction may have been removed or pump efficiency changed. Request instructions from TF&EPC or TFPO management.

If any of the above conditions in 1 or 2 can't be corrected shutdown the pump.

- 3. 102-SY "Low Dilution Water Flow" alarm. This alarm can be caused by the following conditions:
 - a. Loss of raw water to the SY-A flush pit. Check the SY farm service pit to see if the water has been shut off. Turn the water on if required. This could also be caused by a leak in the supply line to the pit.
 - b. Failure of the SY-A flush pit flow meter. Check the water line by feel or crack the drain valve to check for flow. If the flow is still good contact TF&EPC or TFPO management for instructions on whether or not to continue the transfer.
 - c. Incorrect adjustment or positioning of the SY-A flush pit valves. Check and adjust the valves as required.
 - d. Failure of a component in the SY-A flush pit such as a broken line, leaking valve or flange. Repair the trouble if possible.

As long as no indications of line pluggage occur while the dilution water flow is low the transfer may be continued for the following times:

Transfers requiring \leq 30% dilution - 1 hour

Transfers requiring $>$ 30% dilution - 20 minutes

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With the dilution water low or off the pump pressure will increase to a higher reading and the flow and amps will stay close to the same. If after the flow, amps, and pressure have leveled off, the flow and amps start decreasing and the pressure increasing, the line is probably starting to plug, shut off the pump. If the out of limit condition cannot be repaired by the above allowable times, shutdown the pump.

4. 102-SY "Low Flow Waste Stream" alarm. This alarm can be caused by the following conditions.

- a. A restriction or plug in the transfer route. The amps and flow will decrease and the pump pressure will increase. Check the position of 102-SY valve 1 and DOV setting to see if it has vibrated closed or is plugged, adjust if necessary. If valve 1 and the DOV setting are ok the line is probably plugging. If the flow is greater than 30 gpm follow the instructions in Section IV, Part B, Step 6.h. If the flow is less than 30 gpm proceed to pump shutdown.
- b. The pump suction is plugging. The amps, flow, and pressure will decrease. Try stopping and starting the pump several times. Allow the dilution water and drain back to flush the pump and try again.
- c. Pump failure. Check to see if the pump is running, start it if stopped. The pump may run but have a broken shaft or damaged impellers. This will be accompanied by low flow and pressure and high or low amps. The pump may vibrate and be noisy.
- d. 102-SY Flowmeter failure. Check that the pump amps and pressure are normal. Feel 102-SY valve 1 for flow. Check the 102-SY-02A pump pit for leaks. If the pump is still pumping good contact TF&EPC or TFPO management for instructions on whether or not to continue the transfer.
- e. Loss of pump suction caused by low tank liquid level. Will be accompanied by a decrease in pressure and pump amps. Check the Job Control Sheet for pump suction and compare it to the tank L.L. If the liquid level is at or near the pump suction level proceed to pump shutdown.

If any of the above conditions cannot be resolved shutdown the pump.

5. "High SN Flush Water Pressure" - SY-A Flush Pit.

This alarm can be caused by the following conditions:

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NOTE: This pressure alarm does not deal directly with the cross-site transfer, but it is on the master shut down switch. Pump bypass will activate for transfer to continue for 30 minutes.

1. Another transfer going through the SY-A valve pit that has a valve leaking process solution back the flush line into the SY-A flush pit. Check to see if another transfer is being valved through SY-A valve pit. If another transfer is running, contact TFS&O to shut down this other transfer so the line may be flushed. The 102-SY pump will be on a 30 minute bypass. The line to SY-A valve pit from the SY-A flush pit should be flushed and allowed to drain back. If alarm can not be corrected, contact TFS&O or TF&FPC.

6. "High Dilution Water Temperature Alarm" - SY-A Flush Pit

This alarm can be caused by the following conditions:

- a. Low raw water flow to the SY-A flush pit. Check the water dilution flow meter to see if the flow has decreased. If it has, check valving, DOV-1, and raw water flow from the service pit. Correct as required. If any of the above conditions can not be corrected, shutdown the pump.

7. Leak detection and radiation alarms.

- a. If the alarm is on the 242-S master shutdown interlock system but not on the 102-SY transfer route, the master shutdown bypass will activate the 102-SY pump. After 30 minutes, the pump will shutdown unless the alarm is cleared.
- b. For any alarm received that is on the transfer route, unless the alarm is known to be faulty, stop the 102-SY pump and immediately notify the supervisor. Determine the cause of the alarm and clear it if it is a false alarm or bypass it if it is faulty and can't be cleared. A bypassed alarm may require constant surveillance at the detection location.
- c. If the alarm is found to be valid perform Part D, Pump Shutdown. If there is not any safety hazard involved, also perform Part E, Line Drain. Remember, that the line will partially drain whether Part E is performed or not, but performing it will considerably increase the rate of drainback. Performing Part E will help prevent line pluggage.

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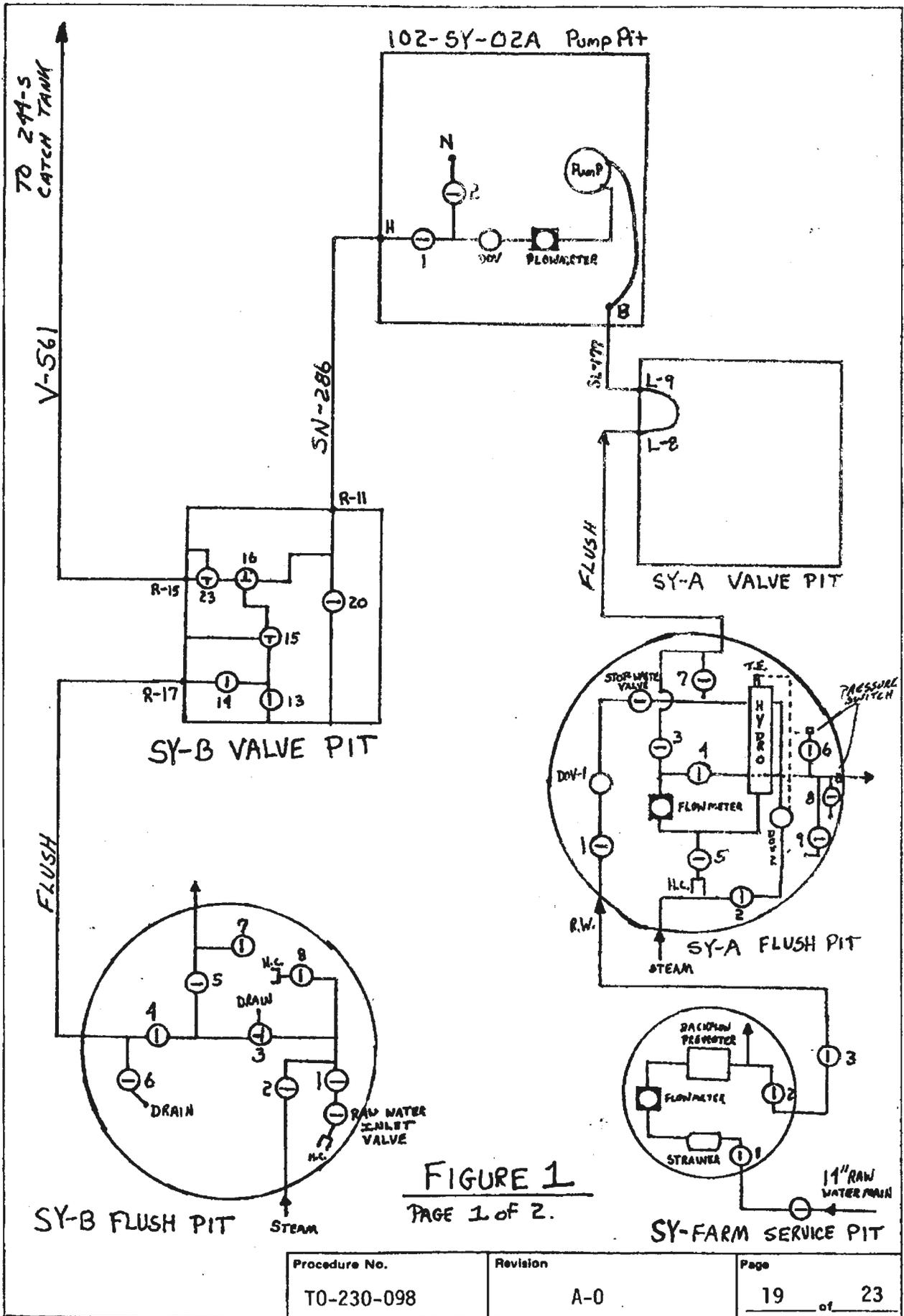


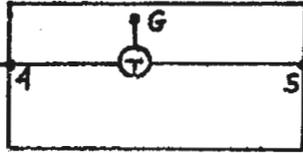
FIGURE 1
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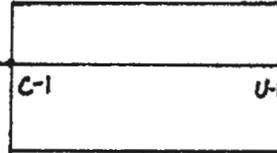
FROM
241-SY-B
VALVE PIT

V-561



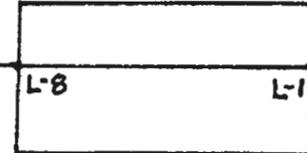
244-S CATCH STATION

V-522



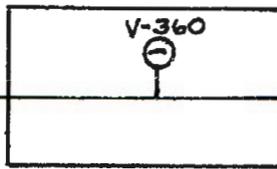
241-S-151
DIVERSION BOX

V-503



241-UX-154
DIVERSION BOX

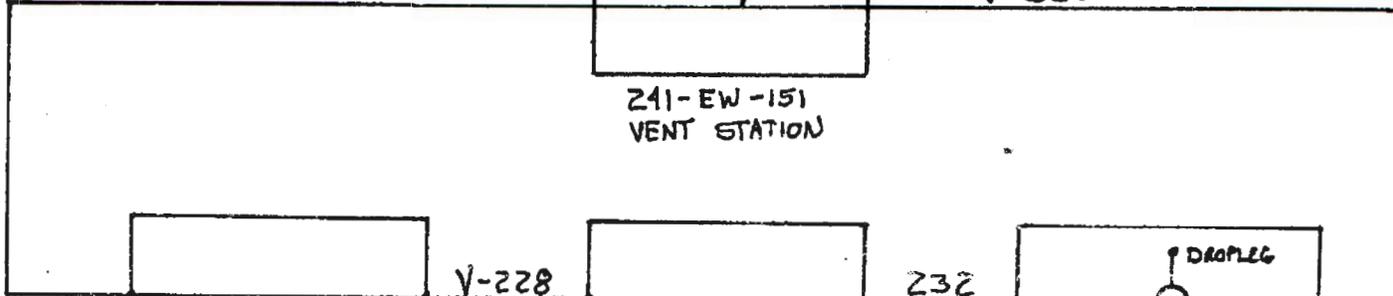
V-360



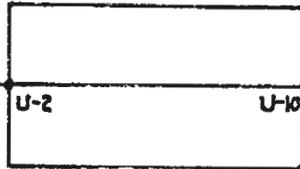
241-EW-151
VENT STATION

V-360

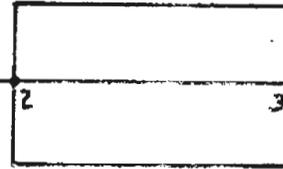
FIGURE 1
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V-228

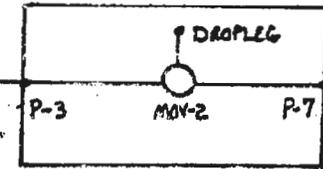


241-ER-151
DIVERSION BOX



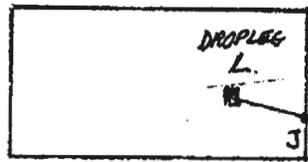
241-ER-153
DIVERSION BOX

V-232

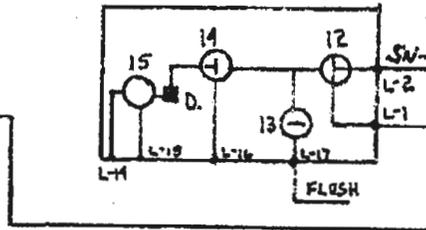


244-A LIFT STATION

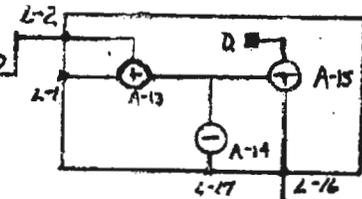
SN-215



TK-102-AW-02A
Pump PIT



SN-267
241-AWA VALVE PIT



241-AA
VALVE PIT

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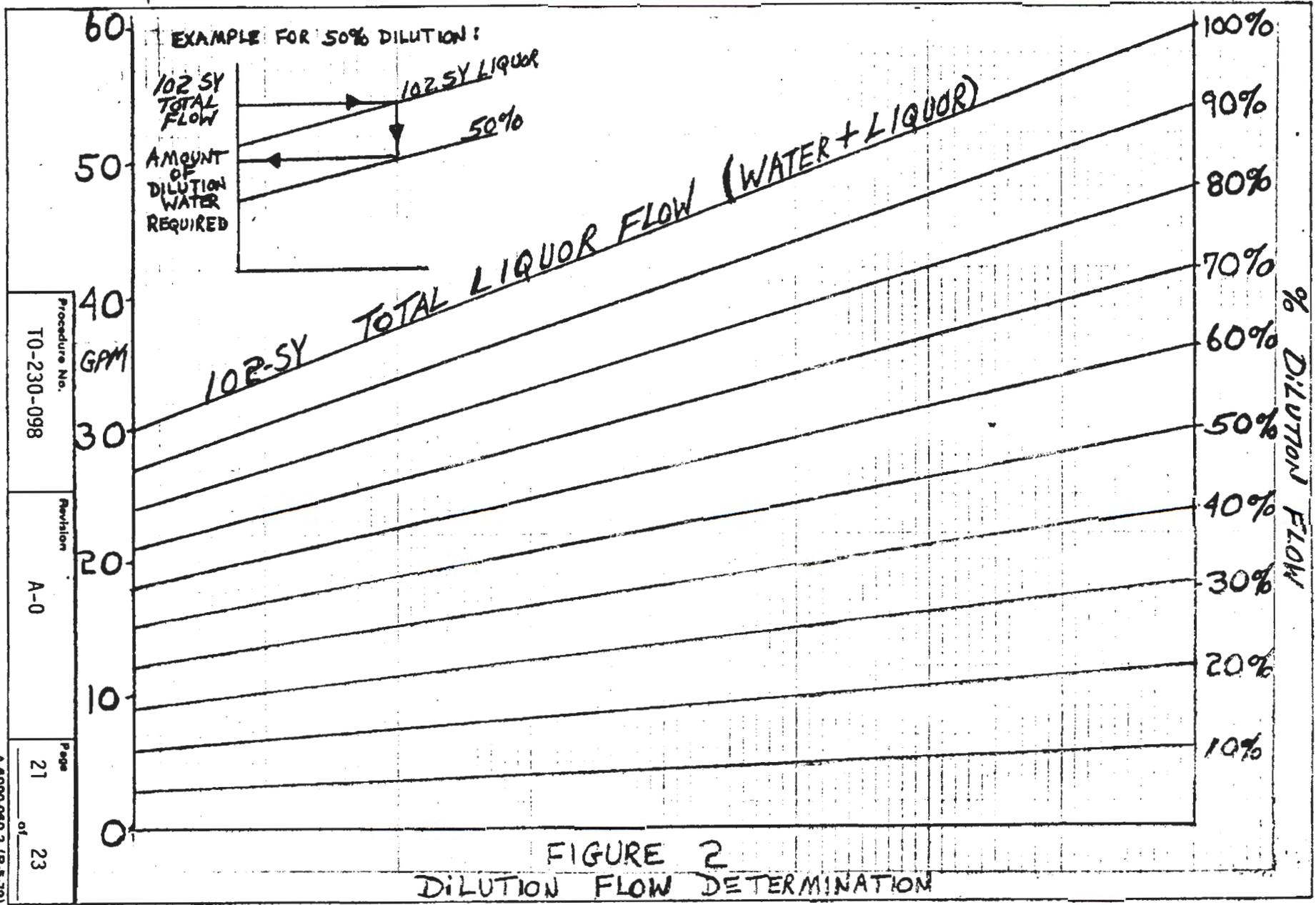


FIGURE 2
DILUTION FLOW DETERMINATION

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FIGURE 3
PLOT OF 102-SY LIQUID FLOW

EXAMPLE

60
50
40
30

TIME
DATE

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SPECIAL DATA SHEET FOR SOP 10-230-098

Date:																			
Time:																			
SY-Farm Integrator Readings																			
SY-Farm Water Net Gallons																			
SY-A Integrator Readings																			
SY-A Dilution Water Net Gal.																			
Difference Between Integrators Gallons / % Diff.																			
Cumulative Inches SY-A Gallons X 1.0 2750																			
SY-A Dilution Water Flow GPM per Flowmeter																			
Temperature: (95-115°F)																			
102-SY Pump Amps (in 271-SY)																			
Initial Plot Flow Reading																			
102-SY Liquor Flow GPM:																			
102-SY Integrator Reading:																			
% Dilution:																			
$\left(\frac{\text{Dil. Flowmeter Flow}}{\text{102-SY Flow}} \right) \times 100$																			
Allowable % Dilution																			
TFO Management Approval for Change in Dilution																			
Pump Pressure Reading in PSIG:																			

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