

LEAK DETECTION AND ELIMINATION PROGRAM

ABERDEEN CHEMICAL PLANT

H. ROUTINE LEAK PATROL-DATA RECORDING AND HANDLING

There are five different leak patrols conducted at various intervals during the year. If a leak is detected (as identified in Section K), the Action Plan for Leak Elimination (Section J) must be initiated and the leak recorded on the Leak Detection Reporting Form. The five leak patrols are as follows:

1. Daily Leak Patrol- Check each pump and compressor on the attached "PUMP AND COMPRESSOR SURVEY" form for sensor or visual evidence of a leak. File the form in the Operations Supervisor's office.
2. Weekly Leak Patrol- Check each location on the attached list and complete the attached "WEEKLY LEAK PATROL SURVEY" form once per week. The HNU portable hydrocarbon detector will be used for this patrol. The inspector is to record the concentration at each point monitored. If there is a reading where the HNU reads full scale (2000 p.p.m.), the TLV must be used to determine if it is a leak as defined in Section K. The pumps in VCM service must also be checked visually once per week. This form will be filed in the Environmental Director's office.
3. Monthly Leak Patrol- Check each item on the attached "Monthly Patrol Survey" form. The HNU portable hydrocarbon detector will be used for this patrol. The inspector is to record the concentration at each point monitored. If there is a reading where the HNU reads full scale (2000 PPM), the TLV must be used to determine if it is a leak as defined in section K. This form will be filed in the Environmental Director's office.
4. Yearly Random Valve Survey- At the direction of the Director of Environmental Control, 200 valves in VOC service chosen at random will be tested in accordance with Section 61.65(b)(8)ii of the NESHAP regulations. File the documentation in the Engineering Files.
5. Yearly Closed Vent Piping Survey- At the direction of the Director of Environmental Control, the closed vent piping and valves from the Old Module VCM receivers to the incinerator firing chamber will be tested in accordance with Section 61.242-11 of Subpart V of the NESHAP regulations.

LEAK DETECTION AND ELIMINATION PROGRAM

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PUMP AND COMPRESSOR SURVEY

-Daily check each pump and compressor listed below and initial below if there is no evidence of a leak by visual or sensor check. If there is evidence of a leak, go to the Action Plan for Leak Elimination and follow procedures.

Date:

1. Emission Recovery System

a. East Vacuum Pump	_____	_____	_____	_____	_____	_____
b. West Vacuum Pump	_____	_____	_____	_____	_____	_____
c. East Compressor	_____	_____	_____	_____	_____	_____
d. West Compressor	_____	_____	_____	_____	_____	_____

2. Old Module Recovery System

a. East Vacuum Pump	_____	_____	_____	_____	_____	_____
b. West Vacuum Pump	_____	_____	_____	_____	_____	_____
c. East Compressor	_____	_____	_____	_____	_____	_____
d. West Compressor	_____	_____	_____	_____	_____	_____

3. New Module Recovery System

a. North Vacuum Pump	_____	_____	_____	_____	_____	_____
b. South Vacuum Pump	_____	_____	_____	_____	_____	_____
c. North Compressor	_____	_____	_____	_____	_____	_____
d. South Compressor	_____	_____	_____	_____	_____	_____

WEEKLY LEAK PATROL SURVEY

I. NEW MODULE

A. Reactor Area-Third Level

- 1.741 Lenape Seal
- 2.741 Condenser Bottom Seal
- 3.741 Rinse Water Valve
- 4.742 Lenape Seal
- 5.742 Condenser Bottom Seal
- 6.742 Rinse Water Valve
- 7.743 Lenape Seal
- 8.743 Condenser Bottom Seal
- 9.743 Rinse Water Valve
- 10.744 Lenape Seal
- 11.744 Condenser Bottom Seal
- 12.744 Rinse Water Valve
- 13.745 Lenape Seal
- 14.745 Condenser Bottom Seal
- 15.745 Rinse Water Valve

B. Reactor Area-Condenser Level

- 1.741 Condenser Top Seal
- 2.741 Recovery Valve
- 3.742 Condenser Top Seal
- 4.742 Recovery Valve
- 5.743 Condenser Top Seal
- 6.743 Recovery Valve
- 7.744 Condenser Top Seal
- 8.744 Recovery Valve
- 9.745 Condenser Top Seal
- 10.745 Recovery Valve

C. Charge Pumps and Filters

- 1. East Rec. VCM Charge Pump Seal
- 2. East Rec. VCM Charge Pump Valves
- 3. West Rec. VCM Charge Pump Seal
- 4. West Rec. VCM Charge Pump Valves
- 5. Rec. VCM Filter Pack Head
- 6. East VCM Charge Pump Seal
- 7. East VCM Charge Pump Seal
- 8. West VCM Charge Pump Seal
- 9. West VCM Charge Pump Seal
- 10. North VCM Filter Pack Head
- 11. South VCM Filter Pack Head

Weekly Leak Patrol Survey

II. Old Module

A. Reactor Area-Third Level

- 1.300 Lenape Seal
- 2.300 Condenser Bottom Seal
- 3.300 Rinse Water Valve
- 4.400 Lenape Seal
- 5.400 Condenser Bottom Seal
- 6.400 Rinse Water Valve
- 7.500 Lenape Seal
- 8.500 Condenser Bottom Seal
- 9.500 Rinse Water Valve
- 10.600 Lenape Seal
- 11.600 Condenser Bottom Seal
- 12.600 Rinse Water Valve
- 13.700 Lenape Seal
- 14.700 Condenser Bottom Seal
- 15.700 Rinse Water Valve

B. Reactor Area-Condenser Level

- 1.300 Condenser Top Seal
- 2.300 Recovery Valve
- 3.400 Condenser Top Seal
- 4.400 Recovery Valve
- 5.500 Condenser Top Seal
- 6.500 Recovery Valve
- 7.600 Condenser Top Seal
- 8.600 Recovery Valve
- 9.700 Condenser Top Seal
- 10.700 Recovery Valve

C. Charge Pumps and Filters

- 1.Rec. VCM Transfer Pump Seal
- 2.East VCM Charge Pump Seal
- 3.West VCM Charge Pump Seal
- 4.Rec. VCM Filter Pack Head
- 5.North VCM Filter Pack Head
- 6.South VCM Filter Pack Head
- 7.West VCM Return Pump Seal
- 8.East VCM Return Pump Seal

III. VCM Tank Farm

A. Compressor Shed

- 1.#1 Compressor
- 2.#2 Compressor
- 3.#3 Compressor
- 4.#4 Compressor
- 5.#5 Compressor

B. Transfer Pumps

- 1.North Transfer Pump
- 2.South Transfer Pump

Monthly Leak Patrol Survey

I. New Module

A. Reactor Area-Ground Level

- 1.741 Charge Valves
- 2.Directly Under 741
- 3.742 Charge Valves
- 4.Directly Under 742
- 5.743 Charge Valves
- 6.Directly Under 743
- 7.744 Charge Valves
- 8.Directly Under 744
- 9.745 Charge Valves
- 10.Directly Under 745

B. Recovery Area

Ground Level

- 1.East VCM Storage Tank Bottom (Area)
- 2.East VCM Storage Tank Top (Area)
- 3.Middle VCM Storage Tank Bottom (Area)
- 4.Middle VCM Storage Tank Top (Area)
- 5.West VCM Storage Tank Bottom (Area)
- 6.West VCM Storage Tank Top (Area)
- 7.South Seal Water Separator Pump Seal
- 8.North Seal Water Separator Pump Seal

Second Level

- 1.901 South Vacuum Pump Seal
- 2.902 North Vacuum Pump Seal
- 3.903 Recovery Compressor Seal
- 4.904 Recovery Compressor Seal
- 5.905 Recovery Compressor Seal
- 6.Recovery Condenser Area

II. Old Module

A. Reactor Area-Ground Level

- 1.300 Charge Valves
- 2.Directly Under 300
- 3.400 Charge Valves
- 4.Directly Under 400
- 5.500 Charge Valves
- 6.Directly Under 500
- 7.600 Charge Valves
- 8.Directly Under 600
- 9.700 Charge Valves
- 10.Directly Under 700

Monthly Leak Patrol Survey

II. Old Module (cont.)

B. Recovery Area

V-11 Building Second Level

1. East Vacuum Pump Seal
2. West Vacuum Pump Seal
3. East Recovery Compressor Seal
4. West Recovery Compressor Seal
5. Recovery Condenser Area

Area West of V-11 Building

1. South VCM Receiver Bottom Area
2. South VCM Receiver Top Area
3. Middle VCM Receiver Bottom Area
4. Middle VCM Receiver Top Area
5. North VCM Receiver Bottom Area
6. North VCM Receiver Top Area
7. VCM Collect Tank Area
8. Batch Water Stripper Top Area

III. VCM Tank Area

1. Railcar Connection #1 (North)
2. Railcar Connection #2
3. Railcar Connection #3
4. Railcar Connection #4 (South)
5. Sphere Bottom Area
6. Sphere Top Area

LEAK DETECTION AND ELIMINATION PROGRAM

LOCATION OF CONTINUOUS MONITORING POINTS

I. LOCATION OF CONTINUOUS MONITORING POINTS

The plant has four Honeywell Model 1000 Process Gas Chromatographs. Each instrument monitors 10 locations for the presence of vinyl chloride. Thus a total of forty points are monitored.

The continuous vinyl chloride monitoring system serves two primary purposes.

1. Monitoring of plant process equipment to detect potential vinyl chloride leaks.
2. Protection of Employees from exposure to vinyl chloride.

Changing process conditions or newly identified needs may suggest moving the monitoring points. The system used is adaptable to such changes. The plant reserves the right to modify the location of the forty points. The locations will be changed and the location records revised only as desired to optimize the needs of the two defined functions.

The precise location of the forty points is shown on the attached Table 17. The location is also indicated on the attached Plot Plan Layout drawing.

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TABLE 17
FIXED POINT MONITORING SYSTEM
SAMPLING LOCATIONS
ABERDEEN CHEMICAL PLANT

GC No. 1 - Tank Farm

1. VCM Railcar Unloading Compressor Shed
2. North VCM Railcar Unloading Station
3. North Middle VCM Railcar Unloading Station
4. South Middle VCM Railcar Unloading Station
5. South VCM Railcar Unloading Station
6. VCM Storage Sphere
7. Emission Recovery System, Upstairs
8. Emission Recovery System, Downstairs
9. No. 6 Dryer Blend Tanks
10. Process Control Room

GC No. 2 - Old Reactor Module

1. Fresh VCM Receiver
2. North RVCN Receiver
3. Large Recovery System, Downstairs
4. Large Recovery System, Upstairs
5. Reactor Dump Sweco
6. Bottom of D-300 Reactor
7. Top of D-400 Reactor
8. Bottom of D-500 Reactor
9. Top of D-600 Reactor
10. Bottom of D-700 Reactor

GC No. 3 - New Reactor Module

1. Bottom of 741 Reactor
2. Top of 742 Reactor
3. Bottom of 743 Reactor
4. Top of 744 Reactor
5. Bottom of 745 Reactor
6. Reactor Dump Sweco
7. Recovery System, Downstairs
8. Middle VCM Receiver
9. Blowdown Tank
10. Recovery System, Upstairs

GC No. 4 - Lab

1. Front Guard House
2. Maintenance Shop
3. No. 1 Dryer Blend Tanks
4. Quality Control Lab
5. GC Lab
6. South of Plasticizer Building
7. Compound Line I
8. Old Module D-700 Dump System
9. New Module 745 Dump System
10. Plant Breathing Air

LEAK DETECTION AND ELIMINATION PROGRAMABERDEEN CHEMICAL PLANTJ. ACTION PLAN FOR LEAK ELIMINATION

If the Fixed Point Monitoring System action level or a potential leak is detected, it will activate a search, identification and elimination program. The Fixed Point Monitoring System action level and a leak are identified in Section K.

1. The person identifying the action level will notify the Shift Supervisor who will direct personnel to complete the following action steps.
2. Personnel will use the HNU or TLV portable hydrocarbon detector to go to the area to pinpoint the source of the VCM reading. This person will wear appropriate protective equipment consistent with plant safety rules.
3. When the source is pinpointed, the person will take a reading with the HNU or TLV portable hydrocarbon detector as close to the source as practical. If the HNU reads full scale (2000 ppm), the person will take a reading with the TLV as close to the source as practical.
4. Immediate action will be taken, if possible, to eliminate the source of the emission.
5. If a leak is determined to exist by any of the five definitions given in Section K, the person will record items 1, 2, 3, 5, and 6 on the attached "LEAK REPORTING FORM". He will attempt to stop the leak if practical and notify the Shift Supervisor. He will also complete item 7.
6. The Shift Supervisor will attempt to stop the leak if it has not been stopped and it is practical. He will complete items 4 and 8. If the leak cannot be stopped, he will generate an emergency work order for repair.
7. After maintenance has repaired the leak, the Shift Supervisor will note the maintenance action on item 9.
8. The Shift Supervisor will note the time and date of the first leak repair attempt on item 12 and the time and date of the leak repair on item 13. A first attempt to repair a leak must be made within five days.

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LEAK DETECTION AND ELIMINATION PROGRAM

ABERDEEN CHEMICAL PLANT

J. ACTION PLAN FOR LEAK ELIMINATION - Continued

9. After the leak repair is complete, the Shift Supervisor will use the TLV to confirm that a leak no longer exist, record the TLV reading on item 10, and initial item 11. A leak must be repaired within fifteen days unless it can only be done during a turnaround.
10. The "LEAK REPORTING FORM" will be included in each morning report if a leak has occurred and has not yet been repaired.
11. If a leak cannot be repaired in fifteen days and is a turnaround item, the Vinyl Operations Superintendent must complete and file the attached "DELAY OF LEAK REPAIR FORM".

LEAK DETECTION AND ELIMINATION PROGRAM
ABERDEEN CHEMICAL PLANT

LEAK REPORTING FORM

	<u>Leak No.</u>	<u>Leak No.</u>	<u>Leak No.</u>	<u>Leak No.</u>
1. DATE				
2. TIME				
3. OPERATOR				
4. SHIFT SUPERVISOR				
5. LEAK LOCATION				
6. TLV DETECTOR READING PPM OR EVIDENCE OF LEAK				
7. OPERATOR ACTION OR RESULT				
8. SHIFT SUPERVISOR ACTION OR RESULT				
9. MAINTENANCE ACTION OR RESULT				
10. TLV DETECTOR READING AFTER REPAIR, PPM				
11. REPAIR VERIFIED BY				
12. DATE AND TIME OF FIRST ATTEMPT TO REPAIR LEAK				
13. DATE AND TIME OF LEAK REPAIR				

LEAK DETECTION AND ELIMINATION FORM
ABERDEEN CHEMICAL PLANT

DELAY OF LEAK REPAIR FORM

1. Detailed Leak Location _____
2. Give Detailed Reason Why Leak Cannot Be Repaired Within Fifteen Days (Please refer to Section 61.242-10 of the Subpart V regulations) _____

3. Give Probable Date of Repair _____

Vinyl Operations Superintendent

tp

cc: JF, JWW, RAF, VEM
Attach appropriate Leak Detection Reporting Form

LEAK DETECTION AND ELIMINATION PROGRAM

ABERDEEN CHEMICAL PLANT

K. DEFINITION OF THE FIXED POINT MONITORING SYSTEM ACTION LEVEL
AND A LEAK

1. The plant defines the Fixed Point monitoring system action level to initiate the Leak Detection and Leak Elimination Action Plan as three successive readings in excess of the 5.0 ppm. The value at each monitoring point will be observed by the operator on the existing recorders and will be transcribed onto a data sheet once per hour. This will be used by management to insure the action level is being properly detected and acted upon by plant personnel. The once per hour reading will be recorded on forms similar to the one attached.

Table 18 indicates the 5.0 ppm action levels for the Leak Detection Program. Also shown are typical background levels at each location.

2. The plant defines a leak as:

A 10,000 ppm or greater concentration reading with the TLV portable hydrocarbon detector near the source of the leak as prescribed in Subpart V of the NESHAP regulations.

A sensor detection of a pump seal or barrier fluid failure.

Evidence of liquids dripping.

A 500 ppm or greater concentration reading with the TLV portable hydrocarbon detector near the source of the leak as prescribed in Subpart V of the NESHAP regulations from the closed vent system from the Old Module VCM and RVCM receivers to the incinerator firing chamber.

An unusual and unintentional event or occurrence which interrupts confinement of vinyl chloride, excluding relief valve discharges.

TABLE 18

ACTION LEVELS FOR LEAK DETECTION REPORTING AND ELIMINATION PROGRAMABERDEEN CHEMICAL PLANT

<u>POINT NO.</u>	<u>LOCATION</u>	<u>BACKGROUND</u>	<u>ACTION</u>
1-A	VCM Railcar Unloading Compressor Shed	0.5	5.0
1-B	North VCM Railcar Unloading Station	0.5	5.0
1-C	North Middle VCM Railcar Unloading Station	0.5	5.0
1-D	South Middle VCM Railcar Unloading Station	0.5	5.0
1-E	South VCM Railcar Unloading Station	0.5	5.0
1-F	VCM Storage Sphere	0.5	5.0
1-G	Emission Recovery System, Upstairs	0.5	5.0
1-H	Emission Recovery System, Downstairs	0.5	5.0
1-I	No. 6 Dryer Blend Tanks	0.5	5.0
1-J	Process Control Room	0.5	5.0
2-A	Fresh VCM Receiver	0.5	5.0
2-B	North RVCM Receiver	0.5	5.0
2-C	Large Recovery System, Downstairs	0.5	5.0
2-D	Large Recovery System, Upstairs	0.5	5.0
2-E	Reactor Dump Sweco	0.5	5.0
2-F	Bottom of D-300 Reactor	0.5	5.0
2-G	Top of D-400 Reactor	0.5	5.0
2-H	Bottom of D-500 Reactor	0.5	5.0
2-I	Top of D-600 Reactor	0.5	5.0
2-J	Bottom of D-700 Reactor	0.5	5.0
3-A	Bottom of 741 Reactor	0.5	5.0
3-B	Top of 742 Reactor	0.5	5.0
3-C	Bottom of 743 Reactor	0.5	5.0
3-D	Top of 744 Reactor	0.5	5.0
3-E	Bottom of 745 Reactor	0.5	5.0
3-F	Reactor Dump Sweco	0.5	5.0
3-G	Recovery System, Downstairs	0.5	5.0
3-H	Middle VCM Receiver	0.5	5.0
3-I	Blowdown Tank	0.5	5.0
3-J	Recovery System, Upstairs	0.5	5.0
4-A	Front Guard House		
4-B	Maintenance Shop	0.5	5.0
4-C	No. 1 Dryer Blend Tanks	0.5	5.0
4-D	Quality Control Lab	0.5	5.0
4-E	GC Lab	0.5	5.0
4-F	South of Plasticizer Building	0.5	5.0
4-G	Compound Line I	0.5	5.0
4-H	Old Module D-700 Dump System	0.5	5.0
4-I	New Module 745 Dump System	0.5	5.0
4-J	Plant Breathing Air	0.5	5.0