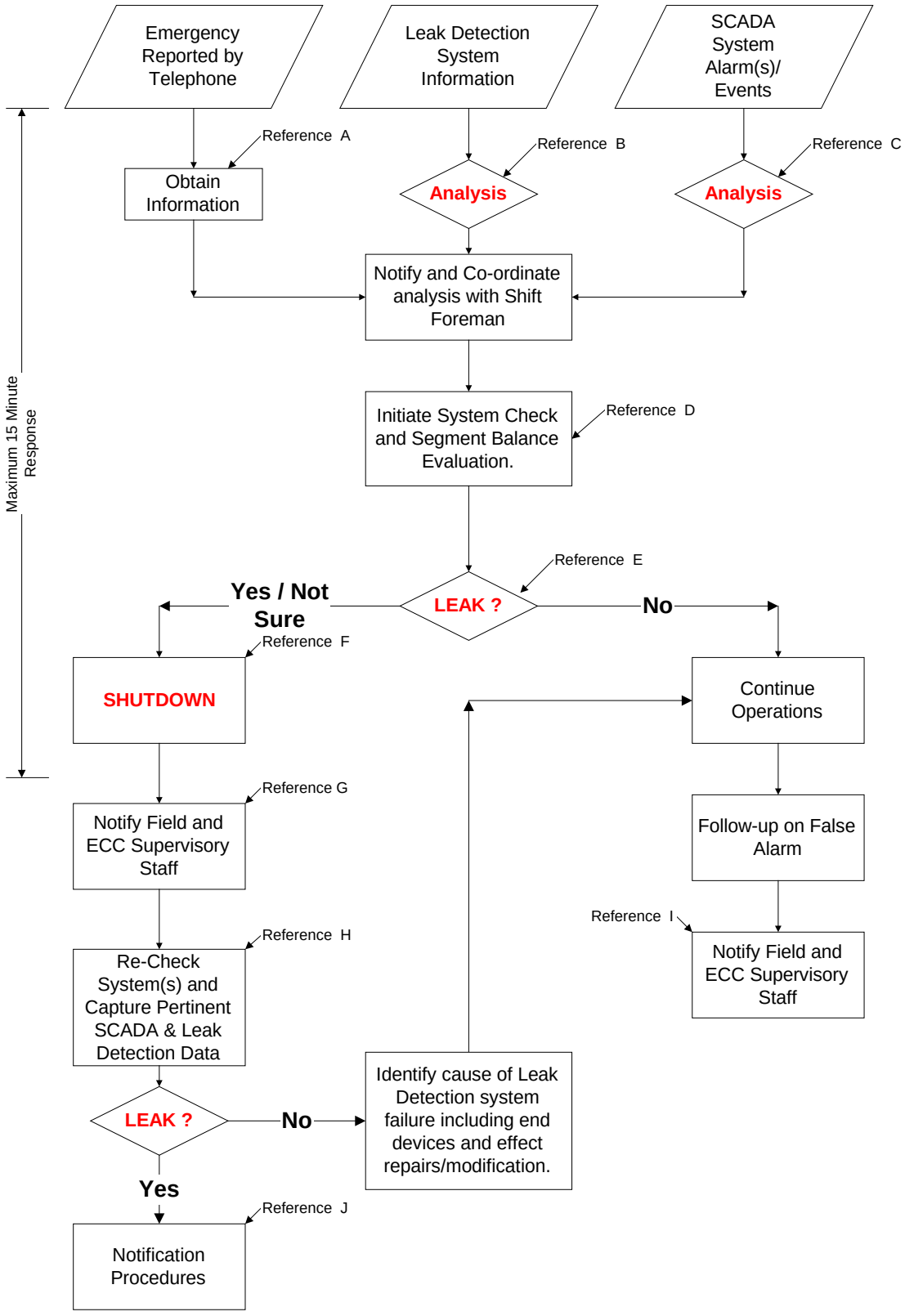
Segment Imbalance Response Protocol



Operator expertise, experience and discretion are critical components of any response protocol. The above flowchart should be considered as a model or guide for responding to segment imbalances.

A.) Emergency Reported by Telephone – Obtain information.

- Information regarding a leak or other pipeline emergencies reported by non-Pembina personnel must be recorded as completely as possible, investigated and followed up on.
- Record the following information on a Pembina Incident Report Form:
  - Time & Date of Emergency
  - Caller's Name (and Title if applicable), present location, telephone number and additional call-back number (if available).
  - Emergency Description – Include information about the product involved, location of the emergency, proximity to a populated area, danger to people or livestock, evacuation requirements, injuries, medical assistance requirements, fire control requirements, weather information (wind direction, speed, temperature, other), and any actions taken so far in the process (has the caller notified any and what emergency agencies).

B.) Leak Detection System Information Analysis

- Determine whether the leak alarm has a rationally acceptable explanation. Has the segment imbalance been caused by:
  a) A communications interruption?
  b) Start-up or shut down pressure changes (line pack or drain)?
  c) A pre-determined metering malfunction awaiting repair/calibration?
  d) A pre-determined leak detection system malfunction awaiting repair/correction?
  e) A malfunctioning or seized tank level transmitter?
- Advise and co-ordinate further analysis of the Leak Detection System Information with the Shift Foreman if one of a) through e) does not apply.

C.) SCADA System Alarm/Event Analysis

- Scrutinize all SCADA alarms and events carefully for evidence of product release. Examples of SCADA alarms/events that could indicate a leak:
  a) A sudden inexplicable pressure drop at a block valve(s).
  b) A sudden loss of discharge pressure at an initiating station.
  c) An inexplicable loss of a booster station on low suction.
  d) Fire, High LEL or H2S alarms; particularly if coincident with a start-up or shut down of equipment.
- Advise and co-ordinate further analysis of SCADA System Alarms/Events with the Shift Foreman if one of a) through d) does not apply.

D.) Initiate System Check and Segment Balance Evaluation

- Check and review all related SCADA displays for evidence of a leak.
- Check and review all related segment balances and Leak Detection systems for evidence of a leak.
- Review all related events leading up to the situation including SCADA alarms, pressures, flow rates, field personnel activity, communications, etc.

E.) Leak ?

- Following the coordinated review of the Leak Detection System Information and the SCADA Alarms/Events with the shift foreman, confirm or dismiss the possibility of a product release.
- If the possibility of a leak cannot be reasonably dismissed, continue as if a leak were probable.

F.) Shutdown.

- For the segment or segments involved:

1. Shut down the pumps at the initiating station.
2. Close the discharge valve(s) at the initiating station.
3. Consider continuing delivery for a reasonable period of time after the initiating station has been stopped, thereby draining (reducing the line pack) the segment. On lines with additional booster stations, consider running booster units downstream of the suspected location of the problem, letting the booster stations stop themselves on Low Suction Pressure.
4. Stop all booster stations (if applicable).
5. Close all intermediary injection valves (if applicable) and remote controlled block valves.
6. Close the receipt valve(s) at the delivery station.

- Continue to monitor SCADA pressures and events to determine the location of the leak if not already known.

G.) Notify Field and ECC Supervisory Staff

- Notify the field supervisor for the district/area in which the leak is suspected. Be prepared to provide information on the following:
  - Location of or pipeline on which the leak is suspected.
  - Product released (multiple product lines).
  - Additional information as requested.
- Notify the ECC Supervisory staff.

H.) Re-check System(s) and Capture Pertinent SCADA and Leak Detection Data

- Segment Balance Information
- Pressure Trends
- Flow Trends
- Pipeline Pressure Profiles
- Event Summaries - SCADA
- Chronology of Events (Who called, who was notified, what times, nature of the information exchanged).
- Any other pertinent information.

I.) Notify Field and ECC Supervisory Staff

- Log pertinent information to the shift log.
- Attach hard-copied data and trends to the shift log.
- Log to the failure report – follow up with a telephone call to the appropriate field supervisor of the district in which the event occurred.

J.) Notification Procedures

- Notification of a product release to the appropriate regulatory authorities and the media is to be handled **only** by the district Manager.