Remote Control Valve (RCV) Conversion of Valves on Existing Pipelines

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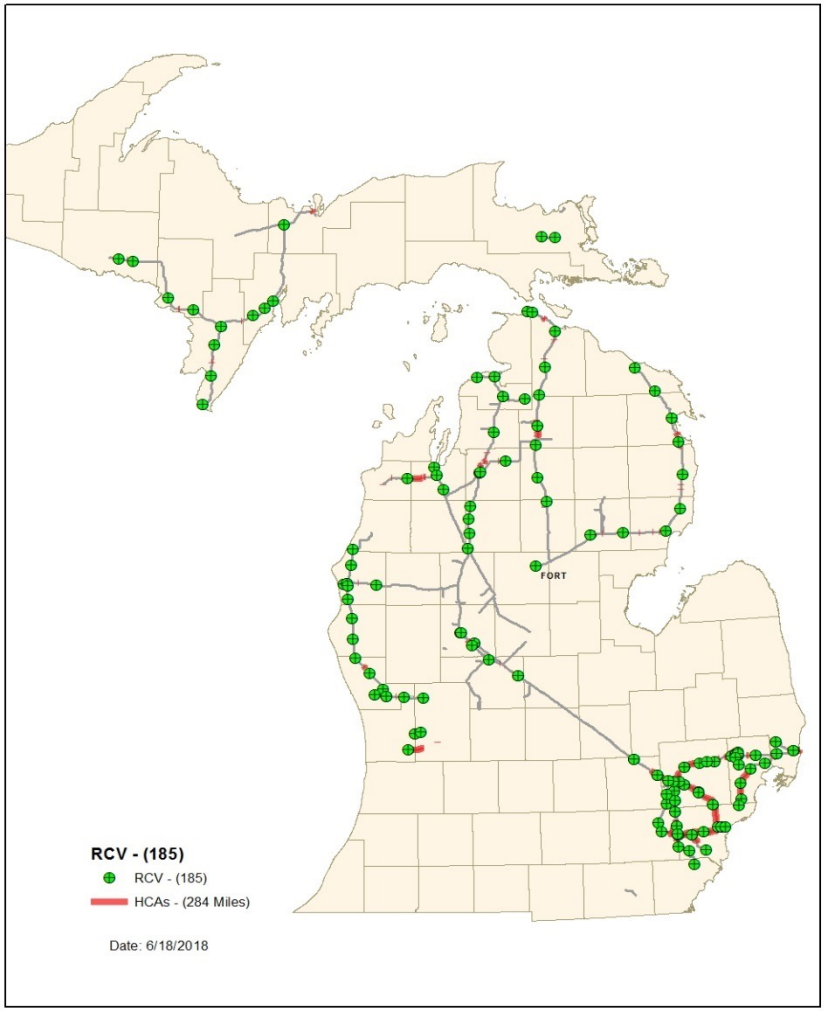
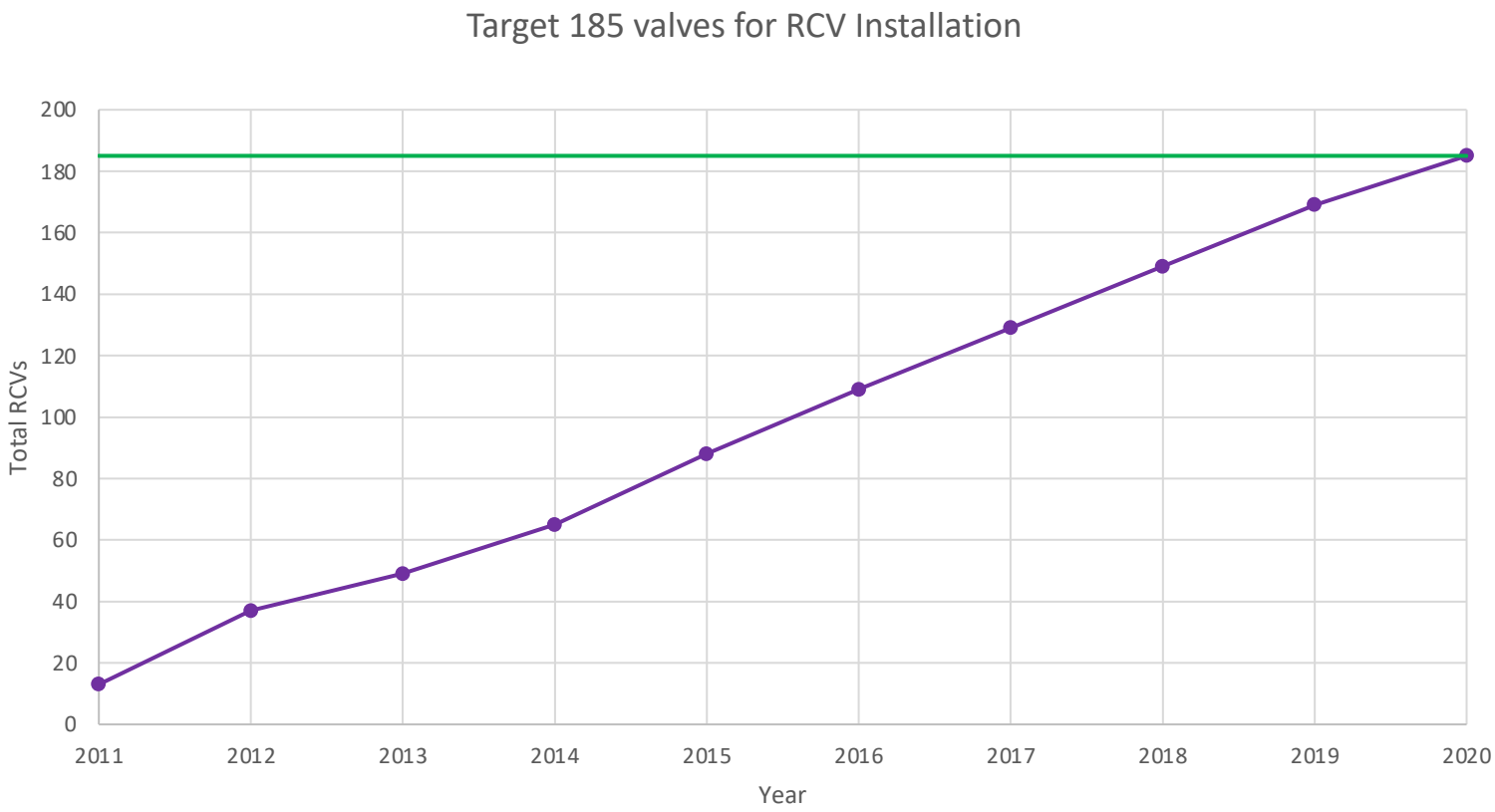
Agenda

- Identifying the valves on existing pipelines that require modification
- Typical configuration and components of the modification
- Commissioning, Planning and Training
- Real Life Example – Melvindale Incident
- Accelerating the Program

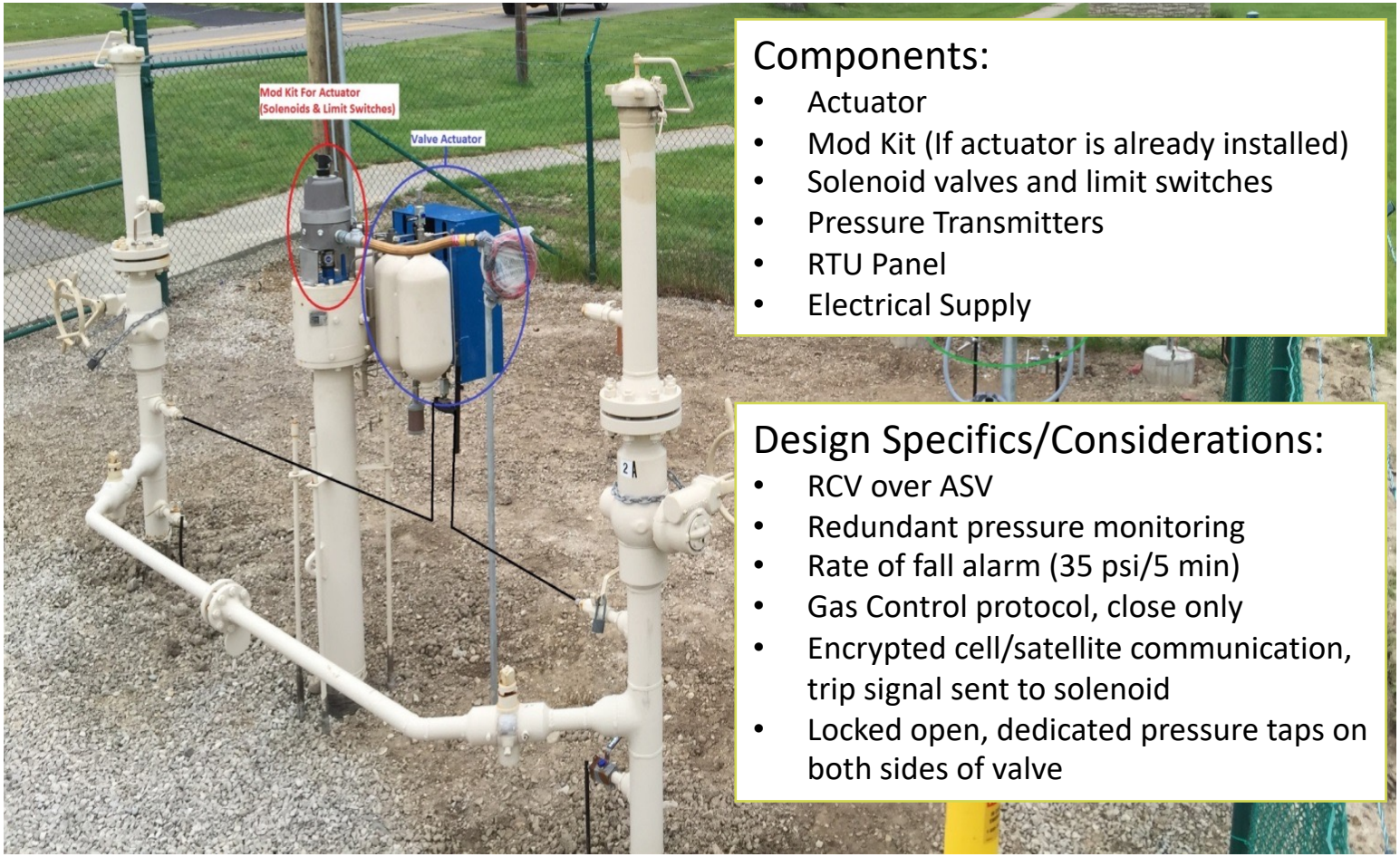
DTE Gas identified 185 valves installed in our transmission system HCAs that required conversion to Remote Control Valves (RCV)



15 to 20 RCV installations per year were planned with a program completion date of 2020



RCV installations were considered high, medium or low complexity depending on the scope required for each valve



Components:

- Actuator
- Mod Kit (If actuator is already installed)
- Solenoid valves and limit switches
- Pressure Transmitters
- RTU Panel
- Electrical Supply

Design Specifics/Considerations:

- RCV over ASV
- Redundant pressure monitoring
- Rate of fall alarm (35 psi/5 min)
- Gas Control protocol, close only
- Encrypted cell/satellite communication, trip signal sent to solenoid
- Locked open, dedicated pressure taps on both sides of valve

RCV Operational & Maintenance Considerations

Functionality Tests

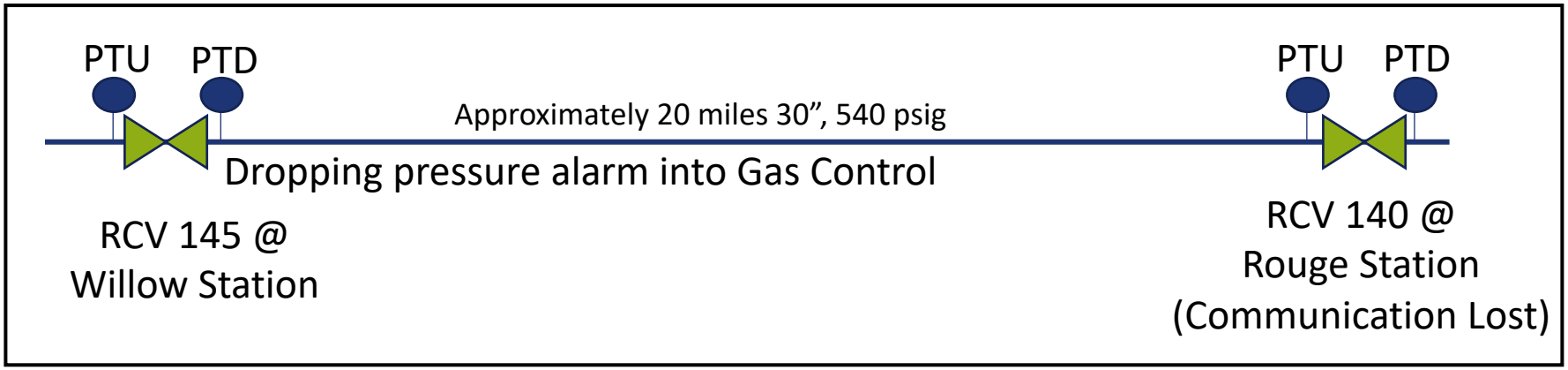
- Instrument calibration (Point to Point)
- Valve Travel (Open/Close Limits)
- Simulated rupture to commission each RCV
  - RTU sends signal to Gas Control indicating rate of drop above limit
  - Gas Control initiates closure
  - Completely stroke the valve
  - Verify limit switches
  - Operations opens valve
- RCVs are tested annually

Training

- Operations personnel
- Gas Controllers (Activation Protocol)
  - Confirmation of incident
  - Recommendation to management
  - Management approval
- Tabletop exercises conducted with Gas Controllers.
  - Walk through rupture scenarios
  - Talk through closure procedure, steps before, during, and after the closure

The Melvindale Incident proved the importance and criticality of the Remote Control Valve Program

On July 2nd, 2016 at approximately 2:40 AM, a passenger vehicle turns the wrong way, breaks through the station fence, and strikes an above grade riser at the Rouge Station in Melvindale, MI



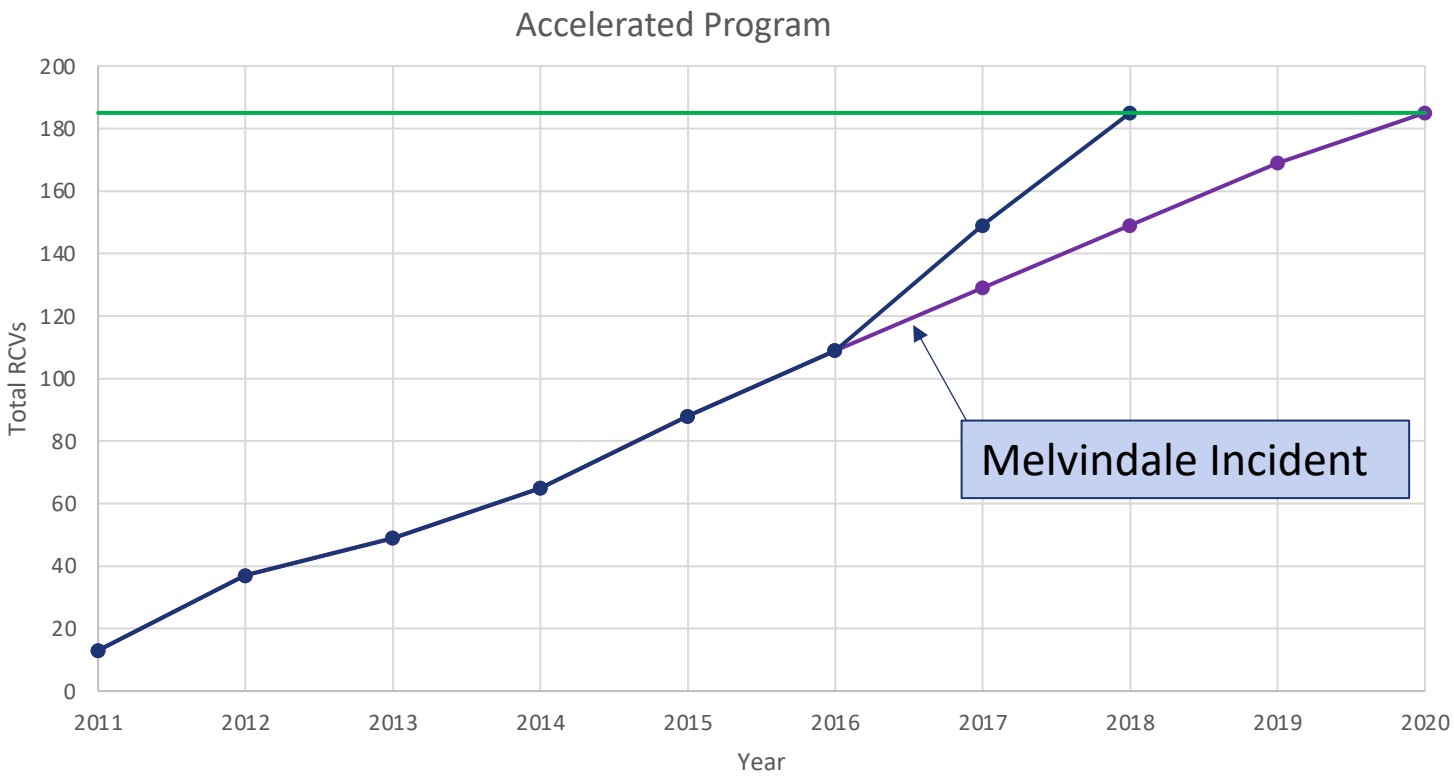
Overhead view the day of the incident

Photo extracted from WDIV (Detroit) helicopter footage

Advanced planning provided Gas Control the training needed to make the necessary decisions

- Gas Control loses communications with RCV 140 at Rouge Station
- Gas Control begins to see low pressures along the pipeline and begins to receive additional alarms at RCV 145 at Willow Station.
- A call is made to the supervisor and the decision to close the valve is made.
- Gas Control closes RCV 145 to stop gas flow into the pipeline.
- By utilizing the RCV, Gas Control was able to close RCV 145 in less that 5 minutes after initial indication
- It is estimated that it would have taken approximately 75 minutes for a technician to be contacted, drive to the site and close the valve.
- Because of this quick reaction time, the closure of RCV 145 allowed the fire at Rouge Station to burn out sooner, thus minimizing the extent of property damage and potentially saving lives.

Because of the success of RCV 145, DTE accelerated the completion of the program from 2020 to 2018



Questions