

Chad Tameling

**4th International
Conference on SF6 and
the Environment**



Lorinda Alms

**Sulfur hexafluoride (SF6)
Recycling Program for Out of Service Equipment**



Introduction to Exelon

- **Exelon Corporation is one of the nation's largest electric utilities. Exelon's operations include energy generation, power marketing and energy delivery.**
 - **ComEd distributes electricity to approximately 3.7 million customers in northern Illinois.**
 - **PECO Energy provides electricity to 1.5 million customers and natural gas to 470,000 customers in southeastern Pennsylvania.**
- **Exelon's vision is to “constantly improve environmental performance.”**
 - **Exelon was named to the 2006 Dow Jones Sustainability North America Index**
 - **Exelon obtained ISO 14001 certification of its environmental management system at five facilities and is certifying additional sites this year**
 - **Exelon voluntarily committed to reduce greenhouse gas emissions to 8 percent below 2001 levels by year-end 2008 through its EPA Climate Leaders partnership**

SF6 Emissions Reduction Partnership

- **Exelon has participated in the SF6 emissions reduction partnership with U.S. EPA since 1998.**
 - **ComEd and PECO have approximately 200,000 lbs of SF6 in service within two-pressure breakers, puffer breakers, circuit switchers, and Gas Insulating Stations.**
- **Exelon has initiated several SF6 program enhancements through our ISO 14001 Environmental Management System and voluntary commitments.**
- **Exelon continues to phase out the 1st Generation Breakers wherever possible**
- **Exelon is exploring opportunities to recycle gas within its equipment when removed from service.**

Partnership in Environmental Excellence

- **Exelon's field personnel contacted Environmental Services for guidance on properly removing and disposing old circuit switch interrupters.**
- **This field need led to a partnership with SET Environmental Inc. to develop a method to recover/recycle the old circuit switch interrupters from substations. (SET Environmental Inc. has been Exelon's Environmental Contractor of Choice for 19years)**
- **SF6 Recycling Pilot program launched in January 2006**
 - **Pilot focused on ComEd substations**

SF6 Recycling Pilot

- **SET's task was to remove old circuit switch interrupters from potentially hundreds of electrical substations.**
- **SET Field Service Crews, in coordination with their Compressed Gas Cylinder Group, successfully removed and recycled both SF6 and metal from electrical equipment**
- **SET additionally worked with Exelon's Investment Recovery group to recover additional salvage revenue from this recycling**

2006 Case Study

- **Since inception SET has utilized their mobile recovery units at 15 ComEd Substations.**
- **Recovery and Recycle a total of 65 Circuit Switch Interrupters.**
- **Average project cost was under \$1,500 per location.**
- **Average recycling value was approximately \$75 per unit.**

Standard Operating Procedure SF6

- **SET Crew mobilizes to Substation and places job trailer near interrupters to be recycled.**
- **Interrupters are staged in an area by Exelon prior to our crews arrival.**
- **No recovery shall be conducted on an interrupter that is still in service.**
- **Utilizing Vacuum recovery system crew removes SF6 through a filtering pump that removes excess water and particulates prior to storage in DOT approved cylinders for transportation.**



Standard Operating Procedure SF6

- **Prior to handling the interrupters the technician verifies that the metal protection shield is placed around the ceramic portion of the interrupter and secured. This will guard the ceramic from shattering when being handled. The pressure relief disc guard is inspected and tightened. This guard will prevent an accidental discharge from the disc while handling the interrupter**
- **The technician can now remove the gas-pressure indicator.**



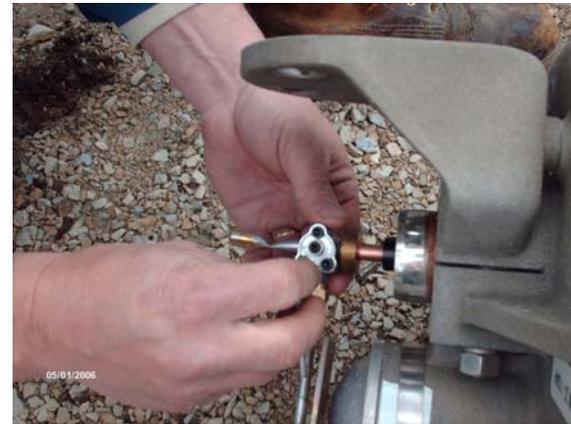
Standard Operating Procedure

- **Technician inspects the inlet & outlet drier/filter cartridge on SF6 recovery unit to verify that they are in good condition prior to start up.**
- **Technician then makes his connection to recovery unit.**



Standard Operating Procedure SF6

- **Technician applies the piercing valve to the copper tubing to prepare connection to circuit switch interrupter.**
- **Once the fittings are confirmed to be air tight on the vacuum unit and hoses the technician can now pierce the copper tube with the piercing valve.**



SET Standard Operating Procedure SF6

- **The SF6 technician utilizes an isolation manifold and gauges on the recovery unit to monitor recovery and pressure on the interrupters.**



Standard Operating Procedure SF6

- **The SF6 can now be recovered from the interrupters. The technician opens the valve on one of the recovery cylinders and begins to fill it.**
- **Cylinders are weighed and the weight is documented on a tag connected to the cylinder at the end of the project**
- **Technician confirms that there is a DOT 2.2 Diamond and a Label with the proper shipping name. Technician completes a bill of lading for transportation.**



Standard Operating Procedure SF6

- **The interrupters are tagged stating that the SF6 has been recovered and the date of recovery.**
- **Units are loaded in roll off container and taken to metal recycling company for final processing.**
- **Cylinders remain in trailer until 200lbs and then shipped to gas recycling company for final recycling process.**



Closing

On behalf of Exelon SET would like to thank everyone for their participation in our presentation today.

We will entertain any questions you may have at this time or you may contact SET Environmental at 877-437-7455 or setenv.com at your convenience for more information.