An Environmental Work Practice is a set of positive guidelines or "Do's and Don'ts" on how to control an aspect of the services, activities, or products of Yukon Energy that may have a negative effect on the environment.

MEASUREMENT and RECORD KEEPING FOR SF_6 GAS USE & EMISSIONS

EMS-EWP-003

1.0 Introduction

1.1 Purpose

The purpose of the **Environmental Work Practice** for **Measuring SF_6 gas** is to outline the steps required to record use and emissions of SF_6 gas from electrical transmission and distribution equipment. SF_6 (Sulphur Hexaflouride) is a powerful greenhouse gas with a global warming potential 23,900 times the strength of CO_2. Thus, emitting 1 kg of SF_6 gas is equivalent to emitting nearly 24 tonnes of CO_2. For example, each kg of SF_6 released would equate to nearly 1% of Yukon Energy's 2012 emissions from diesel generation, so a few kg of gas lost could significantly add to annual green house gas emissions.

2.0 SF6 GAS

SF_6 gas is an inorganic, colourless, odorless, non-flamable, extremely potent greenhouse gas.
Fugitive SF_6 emissions can potentially occur during/from:

(1) Gas handling and transferring operations;
(2) Equipment operation; and/or
(3) Equipment mechanical failure.

2.1 Requirements

YEC is required to measure these emissions yearly and report these numbers to the Canadian Electrical Association (CEA). The following are methods of measuring SF_6 releases;

1. Measuring SF_6 releases from cylinders in storage:

- Weigh the bottle yearly;
- Note the air temperature when weighing. Discrepancies in weight can be caused by air temperature from one wighing to the next
- If the weight is less, note the difference in weight and report the difference to Manager of Environment on an annual basis;
- Keep all documentation of weight checks.

2. Measuring SF_6 releases from Top-ups of breakers

The need for equipment top-ups can indicate a case of SF_6 releases. The methods below are used to tracking these releases in order to report them to the Canadian Electricity Association (CEA).

- Look at the pressure indicator if a piece of equipment needs a top up;
- If the pressure indicator is reading a value lower than the prevous (recorded) measurement then a release from the equipment is assumed;
- Note air temperature
- Weigh SF_6 cylinder to be used to fill up equipment before top up;
- Weigh cylinder after top up;
- Note the change in the weight before and after top-up. This is the amount of loss from the equipment and resulting emission since the last top up of the equipment. Report emissions to the Manager of Environment.
- Keep all documentation of the top ups in order to track emissions that may occur over several years.

3. Equipment disposal requirements

- Extract the SF_6 from the equipment;
- Use leak detectors on the equipment that is being extracted of SF_6;
- If there is a leak, stop extraction process and fix the leak;
- Continue extraction;
- Record any losses for annual reporting purposes.

3.0 Applicable Legislation and Other Requirements

Canadian Electricity Association Guidance on the Monitoring and Management of SF_6 Emissions. www.ec.gc.ca under publications

4.0 Other related Information

Yukon Energy Safe Work Practices
SWP's can be found on the Health and Safety Department's SharePoint site

Refer to MSDS sheet on SF6 (Sulphur Hexaflouride) gas in your work area.

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