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Cc: Wayne Sepitko, Carl Snyder, Nancy Parr

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Subject: **Assessment of Public Dose from Liquid and Gaseous Effluents for First Half 2013**

Effluents released from plant operations are monitored to determine the quantities of radio nuclides discharged into the environment. In order to assess the radiological impacts, the accumulated activities are normally summarized on an annual basis and input into dose models developed by the NRC/EPA to estimate commitment rates from the following pathways:

- Air Effluents by Direct Inhalation
- Liquid Effluents by Ingestion of Potable Water
- Liquid Effluents by Ingestion of Fish
- Liquid Effluents by Irradiation from Shoreline Deposits

We are now providing an estimate of public dose both semi-annually and annually. Since all of our current computer codes and formulas are based on an annual assessment, we determined it would be more appropriate to use a ratio of activities to dose from 2012 applied to the measured release activities in 2013 to calculate the public dose for the first half of 2013. The annual dose calculation will be determined and reported when the data is available for the entire calendar year. There were no significant changes in our process, compounds, or release points between 2012 and the first half of 2013.

The total activities measured and /or estimated for calendar year 2012 were:

- 431.5 μCi of Uranium released as gaseous effluent resulted in a public dose of

  Whole Body 0.160 mrem/yr Bone 5.86E-03 mrem/yr , Lung 1.54 mrem/yr

- 2.9 mCi of Uranium and 18.5 mCi of Technetium released in liquid effluent resulted in a public dose of

  Whole Body 7.60-05 mrem/yr Bone 1.07E-03 mrem/yr , Lung 0 mrem/yr

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The activities measured for the first half of calendar year 2013 were:

253.0 μCi of Uranium released as gaseous effluent
3.7 mCi of Uranium released in liquid effluent
3.2 mCi of Technetium released in liquid effluent

This year's dose for whole body and lung from inhalation pathways can be calculated using the current year activities and last year's ratio of dose to activity:

(253.0÷431.5) * 0.160 = 0.094 mRem
(253.0÷431.5) * 1.54 = 0.903 mRem

The dose values are summarized in the table below resulting in a maximum whole body dose of 0.094 mRem and a lung dose of 0.903 mRem for the first half of 2013. These doses are well below both 12.5 mrem (1/2 of the 25 mrem annual dose limit) as well as the 5 mrem ALARA limit (1/2 of 10 mrem annual ALARA limit). The contribution to dose to whole body and to the bone from liquid effluent is negligible but is included for completeness. These values were estimated using the original spreadsheet for 2012 by using half year standard values and 2013 activities.

Results			
Pathways	Total Body (mRem/6 months)	Organ Dose (mRem/6 months)	Organ Dose (mRem/6 months)
		Bone	Lung
Air Effluents			
Direct Inhalation	0.094	3.41E-03	0.903
Liquid Effluents			
Potable Water	4.45E-05	6.54E-04	
Aquatic Food (Fish)	2.54E-06	2.60E-04	
Shoreline Deposit	1.48E-09		
Total (mRem/6 months)	0.094	4.13E-03	0.903

* Assumes 80 % residence time

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