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Air Dispersion Modeling Protocol

OXY USA WTP LP
Indian Basin Gas Plant

Introduction

Purpose of Modeling

OXY USA WTP LP (Oxy) is preparing a permit application pursuant to 20.2.72.219.D NMAC for a significant revision to the current NSR permit for the Indian Basin Gas Plant (IBGP). The IBGP is currently permitted under NSR Permit 0295-M8-R4 and Title V Permit P103-R2.

The purpose of the permit application is to fulfill the Specific Condition added to Permit number PSD0295-M8-R1:

> *The permittee shall submit a significant permit revision per 20.2.72.219.D NMAC to include an ambient impact analysis for H_2S, within 12 months from the issuance date of NSR PSD0295-M8R3.*

Also, Oxy would like to propose a cap on fugitive emissions (unit FUG). The cap would allow for the interchange of fugitive components without triggering a 20.2.72.219.B or 20.2.72.219.D NMAC permit revision as long as the change does not result in an exceedance of the allowable emission limit.

Permit number PSD0295-M8-R1 was issued on August 13, 2015. No other changes are proposed with this application. In accordance with this permit condition, Oxy seeks to demonstrate that the facility H_2S emissions will neither cause nor contribute to an exceedance of New Mexico Ambient Air Quality Standards (NMAAQS).

Facility Description and Location

The function of the facility is to remove hydrogen sulfide, carbon dioxide and water from raw natural gas to make commercial natural gas. The facility also extracts natural gas liquids (propane and butane) from natural gas. The facility is located approximately 14.5 miles west of Carlsbad in Zone 13, Eddy County, New Mexico. The approximate UTM coordinates of the facility are 540,250 meters east and 3,592,590 meters north with WGS 84 datum at an elevation of approximately 3,821 feet above mean sea level.

Proposed Modeling

Model Input Options

The latest version of the AERMOD dispersion model, v15181, will be used for this analysis. The model will be executed for the 1-hour averaging period in Regulatory Default mode to determine the impacts for H_2S. The IBGP is located within the Pecos-Permian Basin Intrastate AQCR and is not within 5 miles of the corporate limits of a municipality within the Pecos-Permian Basin AQCR.

A building downwash analysis using the latest version of BPIP will be conducted and incorporated into the modeling analysis to account for potential effluent downwash due to any facility structures.

Receptor Grid Description and Elevation Data

The center point of the facility will be designated at 540,250 meters east and 3,592,590 meters north in Zone 13 and will serve as the center point for all receptor grids.

A very fine 50 meter grid spacing will be used for the facility area, expanding out 500 meters from the center point. A 100 meter grid spacing will extend from about 500 meters to 1,500 meters in each direction for a fine grid resolution. A 500 meter grid spacing will extend from 1,500 meters to 5,000 meters in each direction for a medium grid resolution. A 1,000 meter grid spacing will extend from 5,000 meters to 50,000 meters in each direction for a coarse grid resolution. It is expected that the highest impacts from the proposed source will be at or near the facility area.

The elevations of receptors, structures, and facility sources will be determined using the most recent DEM data currently available. Elevations for surrounding sources will be preserved as provided by Eric Peters (4/29/2016), Air Dispersion Modeler at the NMED Air Quality Bureau.

Meteorological Data

This modeling will use a recently developed representative meteorological data set for 2015 using Automated Weather Observation System (AWOS) data collected at the Artesia Municipal Airport (KATS). Artesia Municipal Airport is the location for which the NMED approved Empire Abo (1993 – 1994) meteorological data set is derived. We feel that this meteorological data set is the best representation available for conditions at the facility. The data was processed in accordance with EPA guidelines and used AERSURFACE and AERMET in the generation of this data.

Sources to be Modeled

The table below shows the facility emission sources which will be modeled as well as the stack parameters and hourly emission rates. The H_2S emission rates are as currently permitted in NSR Permit 0295-M8-R4 (issued May 5, 2016).

Table A. Emission Sources to be Modeled

	H_2S	Height	Temp	Velocity	Effective Diameter
Source	**lb/hr**	**ft**	**F**	**m/s**	**m**
ES-14 SSM	118.4	174	1832	20	12.64
ES-42 SSM	33.6	195	1832	20	11.96
ES-50 SSM	44.1	120	1832	20	5.95

Significance Analysis and Cumulative Impact Analysis (CIA)

The modeled ground-level concentrations will be compared to the corresponding significant impact level (SIL) to determine whether any modeled ground-level concentrations at any receptor locations are greater than the SIL (i.e., “significant” receptors). If the significance analysis reveals that modeled ground-level concentrations are greater

than the applicable SIL, a Cumulative Impact Analysis (CIA) will be performed at the significant receptors.

If significant, the CIA will be performed including impacts from the facility sources and any surrounding sources within 25 km of the facility, as well as any sources within 50 km of the facility with emissions of 1,000 lb/hr or more.

An inventory of surrounding sources was obtained from Eric Peters at the NMED on 4/29/2016. If required, adjustments to surrounding source parameters will be made per the guidance in Section 4.8.1 of the Modeling Guidelines and documented in the modeling report. Surrounding source locations and elevations will be preserved as provided.

PSD Increment Analysis

There are no PSD increment standards for H_2S. A PSD increment analysis is not applicable.