Uranerz Energy Corporation
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August 29, 2016

40-9067

Attn: Document Control Desk
Director
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attn: Deputy Director
Division of Decommissioning, Uranium Recovery and Waste Programs
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
11545 Rockville Pike, Mail Stop T-8F5
Rockville, MD 20852-2738

Re: Semi-Annual Report Uranerz Energy Corporation Nichols Ranch ISR Project, SUA-1597

Dear Director and Deputy Director,

This letter and attachment serves as the Semi-Annual Report for the Uranerz Energy Corporation Nichols Ranch ISR Project that is required by License Condition 11.1 B and D in SUA-1597.

If you have any questions regarding the provided information, please contact Aaron Linard at 307-265-8900 or by email at alinard@energyfuels.com.

Sincerely,

William P. Goranson
Executive Vice President ISR Operations
Uranerz Energy Corporation (an Energy Fuels Company)

WG/th

Attachments – January - June 2016 Semi-Annual Report
Wind Rose and Atmospheric Stability Analysis

cc: Ron Linton, NRC Project Manager (email)
Bernadette Baca, NRC Health Physicist (email)
Mark Rogaczewski, WDEQ-LQD District III Supervisor (email)

IE48
NMSS20

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Nichols Ranch ISR Project
License Number SUA-1597
Docket No.40-9067

Semi-Annual Report

January - June 2016

ENERGY FUELS

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ENERGY FUELS

1.0 INTRODUCTION

Uranerz received Source Material License SUA-1597 on July 19, 2011. In accordance with 10 CFR 40.65 and Source Material License SUA-1597 Uranerz Energy Corporation submits the first 2016 Semi-Annual Effluent and Monitoring Report summarizing the operational and environmental activities monitored for the Nichols Ranch and Hank Units. Semi-Annual reporting is performed according to SUA-1597 License Condition 11.1 and includes information for the period of January 1, 2016 through June 30, 2016. Annual Reporting is submitted per License Conditions 9.4E, 10.11, 11.2 and 11.7.

2.0 OPERATIONAL MONITORING

2.1 Activities Summary

Production continues in Production Area #1 (PA#1) in header houses 1 through 7. Please refer to the Quarterly Reports submitted to the NRC on April 27, 2016 and July 25, 2016 for additional information (e.g. production and bleed rates) as it is not reproduced in the Semi-annual report.

Construction of header house 8 began during the first half of 2016 and is scheduled to begin production in July 2016.

The NRC performed a routine onsite inspection January 26 through January 28, 2016 at the Nichols Ranch Unit.

Uranerz was approved for all production circuits (IX exchange, elution, and drying packaging) with the issuance of NRC License SUA-1597 and WDEQ permit to mine 778. A Central Process Plant (CPP) build-out for the processing circuit was completed during 1st quarter 2016 The processing circuit constructed, enables Uranerz to elute resin and precipitate a di-uranyl peroxide material (yellowcake slurry) which is, at this time, shipped to White Mesa for final drying and packaging. Prior to start-up, the NRC completed a pre-operational inspection in conjunction with the routine onsite inspection in January 2016 and approved commencement of the processing circuit in early February.

No operational activities occurred at the Hank Unit during the report period.

2.2 Excursion Well Status

License Condition 11.1(B) requires a status update of any long term excursion. As reported in the Quarterly Reports mentioned above, no wells were on excursion status during the report period.

2.3 Disposal Well Volumes

License Condition 10.11 requires the volume disposed in each disposal well to be reported annually. Uranerz presently has two deep disposal wells permitted through the Wyoming Department of Environmental Quality, Water Quality Division (WDEQ-WQD), (Permit 10-392). The purpose of the two deep disposal wells is to dispose the wellfield bleed to maintain a hydrologic inward gradient during production. Quarterly and annual reports pertaining to the use of the deep disposal wells are submitted to the WDEQ-WQD. As of the 2nd Quarter 2016 report submitted to WQD, 188,262 barrels (bbls), year to date, have been disposed using the deep wells.

2.4 Flow Rates and Manifold Pressures

Per License Condition 11.1(C), Uranerz is required to record flow rates and manifold pressures daily. A summary of these items were submitted in the above named Quarterly Reports. Otherwise, the flow rate and manifold pressure records are compiled and available to inspectors on site upon their request.

2.5 Summary of Mechanical Integrity Testing (MIT) Data

The number of wells installed and mechanical integrity test (MIT) status, License Condition 11.1(B), are reported in Quarterly Reports to the NRC. Please refer to Quarterly Reports submitted April 27, 2016 and July 25, 2016.

2.6 Restoration

No areas are in restoration for the reporting period.

3.0 ENVIRONMENTAL MONITORING

3.1 Ground Water Monitoring

In accordance with License Condition 11.5, monitor wells in the production area (perimeter, overlying and underlying wells) are sampled for excursion parameters. Results of the monitor well samples are provided in Quarterly Reports submitted to the NRC.

License Condition 11.7 requires sampling of domestic and livestock wells to be sampled within 1 km of the production area monitoring ring wells (MR-wells) on an annual basis. Collected samples are analyzed at an offsite laboratory for natural uranium, radium-226, and those constituents, chloride, conductivity, and alkalinity, as listed in Section 5.7.8.9 of the license application. The ground water quality analysis will be included in the Annual and Semi-Annual Effluent Report submitted in February 2017.

The surficial aquifer well, URNZG-15, located in Production Area #1 was sampled during the report period. In accordance with License Condition 11.3(C) the surficial well will be analyzed for parameters listed in Table D6-6a of the license application. Sampling was attempted; however, no water was available to sample during the report period. The sampling dates for the surficial well are as follows.

Date	Water Level Results
1/26/2016	dry
2/23/2016	dry
3/9/2016	dry
4/28/2016	dry
5/31/2016	dry
6/22/2016	dry

3.2 Surface Water Monitoring

In accordance with License Condition 11.1(D), Regulatory Guide 4.14 and Section 5.7.7.3.1 of the license application, surface water, if available, will be collected and analyzed for total uranium, Th-230, Ra-226, and Pb-210. There are two surface water self-samplers located at the Nichols Ranch Unit. The surface water quality analysis will be included in the Annual and Semi-Annual Effluent Report submitted in February 2017.

As per discussion with NRC staff, the Hank Unit is not operational at this time, therefore, surface water monitoring will not occur until production begins in that area. Baseline sampling for the Hank Unit was completed and approved with the issuance of the NRC license.

3.3 Summary of Unplanned Releases

In accordance with License Condition 11.1(D), reportable unplanned releases are to be reported in the semi-annual report. There were no reportable unplanned releases of production solution during the reporting period.

3.4 Sediment and Soil Sampling

In accordance with License Condition 11.1(D), Regulatory Guide 4.14 and Section 5.7.7.5 of the license application, sediment samples will be collected annually and analyzed for uranium, Ra-226, Pb-210 and Th-230.

Soil samples are also collected annually in the vicinity of where radon is monitored. The sediment and soil analyses will be included in the Annual and Semi-Annual Effluent Report submitted in February 2017.

3.5 Air Particulate, Radon, and Gamma Radiation Monitoring

In accordance with License Condition 11.1, Uranerz maintains an environmental air monitoring program at six locations around the licensed Nichols Ranch facility. These stations are used to monitor air particulates, radon, and passive gamma measurements. Uranerz also maintains radon monitors at four locations surrounding the active wellfield and eight surrounding the CPP. These are compared to background for use in calculating annual dose to the public.

The six air station locations are as follow:

- NA-1, monitors the nearest full time resident at Dry Fork Ranch
- NA-2, is located at the southern license boundary and monitors the down wind conditions of the northwest winds for the CPP.
- NA-3, is located at the northern license boundary and monitors the downwind conditions of south west winds for the wellfield and the CPP
- NA-4, is located at the eastern license boundary and is the background station upwind from the wellfield and the CPP.
- NA-5, is located west of the CPP and monitors the downwind conditions of the easterly winds that occur at night.
- NA-6, is located northeast of the CPP and monitors the man camp that is historically the maximally exposed member of the public.

Air particulate samples are collected weekly and then composited quarterly for analysis by an outside laboratory. Review of the data shows that the concentration of the parameters are less than the 10 CFR 20 Appendix B, Effluent Concentration Limits. Appendix A contains the air particulate data collected from the six air station locations for first and second quarter 2016.

As mentioned above, radon gas is also monitored continuously at the six air particulate stations for public dose assessment. There are also eight additional radon detectors surrounding the CPP and four surrounding the active wellfield which are used for public dose assessments and personnel dose assessments. Passive outdoor radon detectors are exchanged quarterly for six locations and semi-annually for the additional locations and the CPP, as required, and sent to Landauer for analysis. The radon monitoring data shown in Appendix B. These values are then compared to radon daughter effluent releases found in 10 CFR 20 Appendix B values to assess dose to the public.

Passive gamma radiation is monitored continuously at the six air particulate stations and at other monitoring stations located throughout the licensed area. The other locations are additional data points that are intended to be used for determining dose to the public. The monitoring is performed using Optically Stimulated Luminescence (OSL) dosimeters that are exchanged and analyzed by Landauer quarterly. The passive gamma radiation monitoring data is shown in Appendix C. Data is given as raw data without subtracting the control badge.

3.6 Effluent Monitoring Program

The effluent monitoring program is designed to meet the requirements of 10 CFR 40.65 and is reported in accordance with License Condition 11.1. Sampling occurs inside the central processing plant monthly, Deep Disposal Wells (DDW) semi-annually, and the header houses quarterly, to measure long-lived particulate effluents in accordance with NRC Regulatory Guide 8.30. The results are summarized in Appendix D.

Sampling also occurs inside the central processing plant, DDW, and the header houses to measure radon effluents, using the modified Kusnetz method. These measurements are taken in accordance with NRC Regulatory Guide 8.30. Radon monitoring also includes quarterly samples of at least 10% of operational recovery wells using the modified Kusnetz method as well as measurements of radon emitted from point source tank ventilation located in the CPP using Method 115 from 40 CFR 61 Appendix B. The results are summarized in Appendix E.

The total effluents emitted January through June of 2016 are a sum of each source's effluents and are calculated for long-lived particulate and radon effluents, as shown below. These amounts are compared to operational projections in the license application and will be analyzed and summarized in the annual ALARA report. Average concentrations are taken from Appendix D and Appendix E and the background (BKD) concentration for U-Nat is taken from averaging the concentration of U-Nat for NA-4 for the period monitored (which is 1.45E-16 µCi/ml). The average concentration of radon is taken from averaging the concentration of radon for NR-5 for the period monitored (which is 5.00E-10 µCi/ml).

$$Total\ Effluent\ of\ Natural\ Uranium\ (period\ monitored) = (CPP\ \mu Ci) + (Header\ House\ \mu Ci) + (DDW\ \mu Ci)$$

$$CPP\ (\mu Ci) = \left[Avg.Conc\left(\frac{\mu Ci}{ml}\right) - BKD\ Conc.\left(\frac{\mu Ci}{ml}\right)\right] * 13{,}500(cfm) * 28{,}316\left(\frac{ml}{ft^3}\right) * 262{,}800(minutes\ of\ operations\ in\ period\ monitored)$$

$$Header\ House\ (\mu Ci) = \left[Avg.Conc\left(\frac{\mu Ci}{ml}\right) - BKD\ Conc.\left(\frac{\mu Ci}{ml}\right)\right] * 1{,}275(cfm) * 28{,}316\left(\frac{ml}{ft^3}\right) * 262{,}800(minutes\ of\ operations\ in\ period\ monitored)$$

$$DDW\ (\mu Ci) = \left[Avg.Conc\left(\frac{\mu Ci}{ml}\right) - BKD\ Conc.\left(\frac{\mu Ci}{ml}\right)\right] * 1{,}275(cfm) * 28{,}316\left(\frac{ml}{ft^3}\right) * 262{,}800(minutes\ of\ operations\ in\ period\ monitored)$$

$$CPP\ (\mu Ci) = (6.90E^{-13} - 1.45E^{-16}) * 13{,}500 * 28{,}316 * 262{,}800 = 69.3\ \mu Ci$$

$$Header\ House\ (uCi) = (6.39E^{-13} - 1.45E^{-16}) * 1{,}275 * 28{,}316 * 262{,}800 = 6.06\ \mu Ci$$

$$DDW\ (uCi) = (2.22E^{-13} - 1.45E^{-16}) * 1{,}275 * 28{,}316 * 262{,}800 = 2.10\ \mu Ci$$

$$\boldsymbol{Total\ Effluents\ of\ U-Nat\ (period\ monitored) = 69.3 + 6.06 + 2.10 = 77.46\ \mu Ci}$$
$$\boldsymbol{= 7.746\ E^{-5}\ Ci\ of\ Natural\ Uranium}$$

$$Total\ Effluents\ of\ Radon\ and\ its\ Progeny\ (period\ monitored)$$
$$= (CPP\ (\mu Ci)) + (CPP\ Tanks\ (\mu Ci)) + (Header\ House\ (\mu Ci))$$
$$+ (DDW\ (\mu Ci)) + (Recovery\ Wells\ (\mu Ci) + (Spills\ (\mu Ci))$$

$$CPP\ (\mu Ci) = \left[\left(Avg.Conc\ (WL) * 9.1E^{-8}\left(\frac{\mu Ci/ml}{WL}\right)\right) - BKD\ Conc.\left(\frac{\mu Ci}{ml}\right)\right] * 13{,}500\ (cfm)$$
$$* 28{,}316\left(\frac{ml}{ft^3}\right) * 262{,}800(minutes\ of\ operations\ in\ period\ monitored)$$

$$CPP\ Vents\ (\mu Ci)$$
$$= \left[\left(Avg.Conc\ (WL) * 9.1E^{-8}\left(\frac{\mu Ci/ml}{WL}\right)\right) - BKD\ Conc.\left(\frac{\mu Ci}{ml}\right)\right] * 293\ (cfm)$$
$$* 28{,}316\left(\frac{ml}{ft^3}\right) * 262{,}800(minutes\ of\ operations\ in\ period\ monitored)$$

$$Header\ House\ (\mu Ci)$$
$$= \left[\left(Avg.Conc\ (WL) * 9.1E^{-8}\left(\frac{\mu Ci/ml}{WL}\right)\right) - BKD\ Conc.\left(\frac{\mu Ci}{ml}\right)\right]$$
$$* 1{,}275\ (cfm) * 28{,}316\left(\frac{ml}{ft^3}\right)$$
$$* 262{,}800(minutes\ of\ operations\ in\ period\ monitored)$$

$$DDW\ (\mu Ci) = \left[\left(Avg.Conc\ (WL) * 9.1E^{-8}\left(\frac{\mu Ci/ml}{WL}\right)\right) - BKD\ Conc.\left(\frac{\mu Ci}{ml}\right)\right] * 1{,}275\ (cfm)$$
$$* 28{,}316\left(\frac{ml}{ft^3}\right) * 262{,}800(minutes\ of\ operations\ in\ period\ monitored)$$

$$Recovery\ Wells\ (\mu Ci) = \left[\left(\frac{Avg.Conc\ (WL)}{Well} * 9.1E^{-8}\left(\frac{\mu Ci/_{ml}}{WL}\right)\right) - BKD\ Conc.\left(\frac{\mu Ci}{ml}\right)\right] * 151\ (maximum\ number\ of\ operational\ recovery\ wells) * 3{,}000\ (emmision\ rate\ in \frac{ml}{min}.) * 262{,}800(minutes\ of\ operations\ in\ period\ monitored)$$

$Spills\ (\mu Ci) = There\ were\ no\ spills\ that\ contributed\ detectable\ amounts\ of\ radon\ to\ the\ environment\ during\ the\ reporting\ period$

$$CPP\ (\mu Ci) = [(0.0108 * 9.1E^{-8}) - 5.00E^{-10}] * 13{,}500 * 28{,}316 * 262{,}800 = 4.85E^{4}\mu Ci$$

$$CPP\ Vents\ (\mu Ci) = [(12.6 * 9.1E^{-8}) - 5.00E^{-10}] * 293 * 28{,}316 * 262{,}800 = 2.50\ E^{6}\ \mu Ci$$

$$Header\ House\ (\mu Ci) = [(0.0095 * 9.1E^{-8}) - 5.00E^{-10}] * 1{,}275 * 28{,}316 * 262{,}800 = 3.45E^{3}\ \mu Ci$$

$$DDW\ (\mu Ci) = [(0.0077 * 9.1E^{-8}) - 5.00E^{-10}] * 1{,}275 * 28{,}316 * 262{,}800 = 1.90E^{3}\ \mu Ci$$

$$Recovery\ Wells\ (\mu Ci) = [(0.5170 * 9.1E^{-8}) - 5.00E^{-10}] * 151 * 3{,}000 * 262{,}800 = 5.54E^{3}\ \mu Ci$$

Total Effluents of Radon and its Progeny (period monitored)
$= \mathbf{4.85E^{4}\mu Ci + 2.50E^{6}\ \mu Ci + 3.45E^{3}\ \mu Ci + 1.90E^{3}\ \mu Ci + 5.54E^{3}\mu Ci = 2.56E^{6}\ \mu Ci}$
$= \mathbf{2.56\ Ci\ of\ Radon\ and\ its\ Progeny}$
$\mathbf{-\ 222.\ Radon\ is\ assumed\ to\ be\ in\ equilibrium\ with\ its\ short\ lived\ progeny.}$

3.7 Meteorological Data

In accordance with License Condition 10.15 meteorological data is collected in order to verify the data to be representative of long term conditions at Nichols Ranch ISR Project. The data collected includes temperature, wind speed and direction. The data was recovered at better than a 98% recovery rate. A wind rose and stability analysis was prepared by a third party laboratory, Inter Mountain Laboratories. A copy of the wind rose and stability analysis report is included with this Semi-Annual Report (Appendix F).

A review of the report shows no changes in conditions warranting a change in environmental monitoring stations or radon detectors at this time.

4.0 SUMMARY OF EMPLOYEE URINALYSIS RESULTS

Bioassay samples are collected on all employees at initial hiring. Monthly samples are collected from plant operators. Analysis is performed by an outside laboratory. The bioassay results are summarized annually, pursuant to 10 CFR Part 20, Subpart M and will be included in the Annual and Semi-Annual Effluent Report submitted in February 2017.

5.0 PUBLIC DOSE

10 CFR 20.1301 requires that each NRC licensee conduct their operations in a manner that the total effective dose equivalent (TEDE) to members of the public does not exceed 100 mrem in a year, and that the dose from external sources in any unrestricted area does not exceed 2 mrem in any hour. Additionally, 10 CFR 20.1302 requires licensees to show compliance to these dose limits by demonstrating one of the following:

1. Show by actual measurement or calculation that the TEDE to the public does not exceed 100 mrem; or
2. Show that the annual average concentration of radioactive effluent released at the restricted boundary do not exceed the values in Table 2 of Appendix B in 10 CFR 20. Also that the external dose to an individual continuously present in an unrestricted area would not exceed 2 mrem in an hour.

The public dose data is summarized annually and will be included in the annual review of the radiation protection program in accordance with License Condition 11.2. See section 7.0 for further details.

6.0 SAFETY AND ENVIRONMENTAL REVIEW PANEL (SERP) EVAULATIONS

Per License Condition 9.4E, Uranerz shall furnish, in an annual report to the NRC, a description of such changes, tests, or experiments, including a summary of the evaluations made by the safety and environmental evaluation panel (SERP). A summary of SERPs performed during the annual report period will be included in the Annual and Semi-Annual Effluent Report submitted in February 2017.

7.0 RADIATION PROTECTION PROGRAM

As required by License condition 11.2, the licensee shall submit the results of the annual review of the radiation protection program content and implementation performed in accordance with 10 CFR 20.1101(c). These results shall include doses to individual members of the public. This submittal will occur once the Nichols Ranch facility has processed licensed material for a calendar year. After the year, an ALARA audit will occur and will be submitted as a standalone document. An ALARA audit has been scheduled for mid-September 2016. Upon receipt of the ALARA audit report the results will be reviewed and submitted to the NRC under a separate cover letter.

8.0 SURETY

All activities conducted, to date, at the Nichols Ranch ISR Project are covered in the surety estimate as required by License Condition 9.5. The surety estimate is reviewed annually and is to be submitted to the NRC by December 29. The WDEQ-LQD also requires an annual surety review in December. Uranerz, therefore reviews the surety in December, aligning the NRC and LQD surety reviews for consistency, standardization and reduced redundancy.

Uranerz updated the surety estimate and submitted it to the NRC on December 18, 2015. The next annual surety review will occur in December 2016.

Uranerz Energy Corporation
Appendix A
Air Particulate Data
January to June 2016

Sample Location	Sample Period	Radionuclide	Concentration (µCi/ml)	Error ±(µCi/ml)	LLD (µCi/ml)	10CFR 20 APP B Table 2 Values (µCi/ml)	Percent Concentration % (Does not include Background Subtraction)
NA-1 Air Station Nearest Resident	1st Quarter 2016	U-Nat	1.4E-16	NA**	1.0E-16	9E-14	0.2
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	ND*	NA*	1.0E-16	9E-13	0.0
		Pb-210	2.7E-14	2.5E-15	2.0E-15	6E-13	4.5
		Po-210	6.0E-15	1.6E-15	2.0E-15	9E-13	0.7
	2nd Quarter 2016	U-Nat	3.2E-16	NA**	1.0E-16	9E-14	0.4
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	ND*	NA*	1.0E-16	9E-13	0.0
		Pb-210	2.2E-14	1.7E-15	2.0E-15	6E-13	3.7
		Po-210	ND*	NA*	2.0E-15	9E-13	0.0
	3rd Quarter 2016	U-Nat					0.0
		Th-230					0.0
		Ra-226					0.0
		Pb-210					0.0
		Po-210					0.0
	4th Quarter 2016	U-Nat					0.0
		Th-230					0.0
		Ra-226					0.0
		Pb-210					0.0
		Po-210					0.0
NA-2 Air Station Downwind Southern Boundary	1st Quarter 2016	U-Nat	2.1E-16	NA**	1.0E-16	9E-14	0.2
		Th-230	1.2E-16	7.0E-17	1.0E-16	3E-14	0.4
		Ra-226	ND*	NA*	1.0E-16	9E-13	0.0
		Pb-210	2.1E-14	3.1E-15	2.0E-15	6E-13	3.5
		Po-210	3.4E-15	1.2E-15	2.0E-15	9E-13	0.4
	2nd Quarter 2016	U-Nat	2.3E-16	NA**	1.0E-16	9E-14	0.3
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	ND*	NA*	1.0E-16	9E-13	0.0
		Pb-210	1.5E-14	1.5E-15	2.0E-15	6E-13	2.5
		Po-210	ND*	NA*	2.0E-15	9E-13	0.0
	3rd Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					
	4th Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					

Uranerz Energy Corporation
Appendix A
Air Particulate Data
January to June 2016

Sample Location	Sample Period	Radionuclide	Concentration (µCi/ml)	Error ±(µCi/ml)	LLD (µCi/ml)	10CFR 20 APP B Table 2 Values (µCi/ml)	Percent Concentration % (Does not include Background Subtraction)
NA-3 Air Station Downwind North Boundary	1st Quarter 2016	U-Nat	1.7E-16	NA**	1.0E-16	9E-14	0.2
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	1.1E-16	3.3E-17	1.0E-16	9E-13	0.0
		Pb-210	2.3E-14	2.9E-15	2.0E-15	6E-13	3.8
		Po-210	2.4E-15	9.7E-16	2.0E-15	9E-13	0.3
	2nd Quarter 2016	U-Nat	1.5E-16	NA**	1.0E-16	9E-14	0.2
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	1.0E-16	3.4E-17	1.0E-16	9E-13	0.0
		Pb-210	1.3E-14	1.5E-15	2.0E-15	6E-13	2.2
		Po-210	ND*	NA*	2.0E-15	9E-13	0.0
	3rd Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					
	4th Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					
NA-4 Air Station Background Site	1st Quarter 2016	U-Nat	ND*	NA**	1.0E-16	9E-14	0.0
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	1.1E-16	3.4E-17	1.0E-16	9E-13	0.0
		Pb-210	2.5E-14	2.7E-15	2.0E-15	6E-13	4.2
		Po-210	2.6E-15	1.0E-15	2.0E-15	9E-13	0.3
	2nd Quarter 2016	U-Nat	1.9E-16	NA**	1.0E-16	9E-14	0.2
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	ND*	NA*	1.0E-16	9E-13	0.0
		Pb-210	1.2E-14	1.4E-15	2.0E-15	6E-13	2.0
		Po-210	ND*	NA*	0.0E+00	9E-13	0.0
	3rd Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					
	4th Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					

Uranerz Energy Corporation
Appendix A
Air Particulate Data
January to June 2016

Sample Location	Sample Period	Radionuclide	Concentration (µCi/ml)	Error ±(µCi/ml)	LLD (µCi/ml)	10CFR 20 APP B Table 2 Values (µCi/ml)	Percent Concentration % (Does not include Background Subtraction)
NA-5 Air Station Downwind West of CPP	1st Quarter 2016	U-Nat	4.0E-16	NA**	1.0E-16	9E-14	0.4
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	ND*	NA*	1.0E-16	9E-13	0.0
		Pb-210	2.3E-14	2.2E-15	2.0E-15	6E-13	3.8
		Po-210	2.5E-15	1.1E-15	2.0E-15	9E-13	0.3
	2nd Quarter 2016	U-Nat	2.9E-16	NA**	1.0E-16	9E-14	0.3
		Th-230	1.0E-16	6.6E-17	1.0E-16	3E-14	0.3
		Ra-226	ND*	NA*	1.0E-16	9E-13	0.0
		Pb-210	9.2E-15	1.3E-15	2.0E-15	6E-13	1.5
		Po-210	ND*	NA*	2.0E-15	9E-13	0.0
	3rd Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					
	4th Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					
NA-6 Air Station Downwind North East of CPP	1st Quarter 2016	U-Nat	2.0E-16	NA**	1.0E-16	9E-14	0.2
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	ND*	NA*	1.0E-16	9E-13	0.0
		Pb-210	2.5E-14	2.4E-15	2.0E-15	6E-13	4.2
		Po-210	2.6E-15	1.0E-15	2.0E-15	9E-13	0.3
	2nd Quarter 2016	U-Nat	ND*	NA**	1.0E-16	9E-14	0.0
		Th-230	ND*	NA*	1.0E-16	3E-14	0.0
		Ra-226	ND*	NA*	1.0E-16	9E-13	0.0
		Pb-210	ND*	NA*	2.0E-15	6E-13	0.0
		Po-210	ND*	NA*	2.0E-15	9E-13	0.0
	3rd Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					
	4th Quarter 2016	U-Nat					
		Th-230					
		Ra-226					
		Pb-210					
		Po-210					

* Provided as results from laboratory
** No result provided from laboratory

Uranerz Energy Corporation
Appendix B
Radon Monitoring
January to June 2016

Location	1st Quarter (µCi/ml)	Uncertainty (µCi/ml)	2nd Quarter (µCi/ml)	Uncertainty (µCi/ml)	3rd Quarter (µCi/ml)	Uncertainty (µCi/ml)	4th Quarter (µCi/ml)	Uncertainty (µCi/ml)	Location Average Gross(µCi/ml)	Location Average - Background (µCi/ml)	Average Uncertainty (µCi/ml)	10CFR 20 APP B Table 2 Values (µCi/ml)
Nichols Ranch Project												
NR-1 (Nearest Resident)	7.00E-10	4.00E-11	6.00E-10	5.00E-11					6.50E-10	1.50E-10	4.50E-11	1.00E-10
NR-2 (Southern Boundary Downwind)	6.00E-10	4.00E-11	4.00E-10	3.00E-11					5.00E-10	0.00E+00	3.50E-11	1.00E-10
NR-3 (North Boundary Downwind)	4.00E-10	3.00E-11	6.00E-10	3.00E-11					5.00E-10	0.00E+00	3.00E-11	1.00E-10
NR-5 (Background)	6.00E-10	5.00E-11	4.00E-10	3.00E-11					5.00E-10	0.00E+00	4.00E-11	1.00E-10
NR-6 (West of CPP downwind)	4.00E-10	3.00E-11	6.00E-10	6.00E-11					5.00E-10	0.00E+00	4.50E-11	1.00E-10
NR-7 (North East of CPP)	5.00E-10	3.00E-11	6.00E-10	5.00E-11					5.50E-10	5.00E-11	4.00E-11	1.00E-10
NR-1 (Duplicate #1)	5.00E-10	3.00E-11	8.00E-10	6.00E-11					6.50E-10	1.50E-10	4.50E-11	1.00E-10
NR-1 (Duplicate #2)	6.00E-10	4.00E-11	2.00E-10	2.00E-11					4.00E-10	-1.00E-10	3.00E-11	1.00E-10
Nichols Ranch CPP Locations (9 locations changed semi-annually)												
Location	**Quarter 1 2016 to Quarter 2 2016**	**Uncertainty**			**Quarter 3 2016 to Quarter 4 2016**	**Uncertainty**			**Location Average (µCi/ml)**			**10CFR 20 APP B Table 2 Values (µCi/ml)**
Nichols Ranch Project												
Man Camp	2.00E-10	2.00E-11							2.00E-10			1.00E-10
CPP Ranch (East Side)	7.00E-10	4.00E-11							7.00E-10			1.00E-10
CPP Fence (SW Corner)	6.00E-10	4.00E-11							6.00E-10			1.00E-10
CPP Fence (South Corner)	6.00E-10	4.00E-11							6.00E-10	**N/A**	**N/A**	1.00E-10
CPP Fence (SE Corner)	8.00E-10	4.00E-11							8.00E-10			1.00E-10
CPP Fence (NW Corner)	6.00E-10	3.00E-11							6.00E-10			1.00E-10
CPP Fence (North Side)	6.00E-10	4.00E-11							6.00E-10			1.00E-10
CPP Fence (NE Side)	6.00E-10	4.00E-11							6.00E-10			1.00E-10
CPP Fence (West Side)	1.00E-09	5.00E-11							1.00E-09			1.00E-10

Uranerz Energy Corporation
Appendix B
Radon Monitoring
January to June 2016

Nichols Ranch Wellfield Locations (4 locations changed semi-annually)												
Location Nichols Ranch Project	**Quarter 1 2016 to Quarter 2 2016**	**Uncertainty**			**Quarter 3 2016 to Quarter 4 2016**	**Uncertainty**			**Location Average (µCi/ml)**			**10CFR 20 APP B Table 2 Values (µCi/ml)**
NCBM-5	6.00E-10	3.00E-11							6.00E-10	**N/A**	**N/A**	1.00E-10
NCBM-6	5.00E-10	3.00E-11							5.00E-10			1.00E-10
Wellfield (Fence)	7.00E-10	3.00E-11							7.00E-10			1.00E-10
NR-4 (North Wellfield Boundary)	6.00E-10	3.00E-11							6.00E-10			1.00E-10

MDA for all samples is 3.00E-10

Green box indicates no data was collected during that time due to semi-annual changeout and will be reported in the second semi-annual report for 2016

Appendix C
Passive Gamma Radiation Monitoring
January to June 2016

Location Nichols Ranch Project (2016)	1st Quarter (mrem/quarter) Gross	2nd Quarter (mrem/quarter) Gross	3rd Quarter (mrem/quarter) Gross	4th Quarter (mrem/quarter) Gross	Location Average (Net mrem/quarter) Gross
Control Badge	38.7	31.2			35.0
NR-1(Nearest Resident)	44.5	36.6			40.6
NR-2 (Southern Boundary Downwind)	46.2	38.0			42.1
NR-3 (North Boundary Downwind)	45.5	35.2			40.4
NR-5 (Background Upwind)	46.1	36.1			41.1
NR-6 (West of CPP downwind)	44.8	32.1			38.5
NR-7 (North East of CPP Downwind, maximally exposed member of the public)	45.4	37.6			41.5
Quarterly Average	45.4	35.9			

Appendix D
Effluent Program
Particulates
January to June 2016

Sample Location	Sample Date	Radionuclide	Concentration (µCi/ml)	Error ±(µCi/ml)	MDC (µCi/ml)
Header House**	1/21/2016	U-Nat	1.78E-13	3.54E-14	1.60E-13
Header House**	2/3/2016	U-Nat	2.31E-14	1.97E-14	2.32E-15
CPP*	2/5/2016	U-Nat	1.46E-12	0.00E+00	1.46E-12
DDW***	2/11/2016	U-Nat	2.22E-13	8.20E-14	1.64E-13
CPP*	2/25/2016	U-Nat	1.63E-13	3.27E-15	1.62E-13
CPP*	3/15/2016	U-Nat	6.97E-13	4.39E-13	1.93E-13
Header House**	3/16/2016	U-Nat	1.32E-12	1.11E-12	1.92E-13
CPP*	4/5/2016	U-Nat	1.08E-12	4.12E-13	1.06E-12
Header House**	4/7/2016	U-Nat	1.48E-12	4.80E-13	1.24E-12
CPP*	5/5/2016	U-Nat	3.48E-13	4.18E-13	1.82E-13
Header House**	5/18/2016	U-Nat	1.97E-13	0.00E+00	1.97E-13
CPP*	6/2/2016	U-Nat	3.91E-13	2.15E-13	2.00E-13
		Average CPP measurements	6.90E-13	2.48E-13	5.42E-13
		Average Header House measurements	6.39E-13	3.29E-13	3.58E-13
		Average DDW measurements	2.22E-13	8.20E-14	1.64E-13

*CPP concentrations are taken at least monthly from an average of six different sampling locations inside the CPP. No samples were retrieved during the month of January because plant expansion was not approved or operating so two samples were retrieved in February from each location for characterization of elution and precipitation circuits.
** Header House concentrations are taken at least quarterly from an average of each operational header house (6 houses were operational January through February, a 7th house was added in March)
***DDW concentrations are taken at least semi-annually from an average of each operational DDW (currently 2 wells)

Appendix E
Effluent Program
Rn-222 and Progeny
January to June 2016

Sample Location	Sample Date	Concentration (Working Levels)	Error ±(Working Levels)	MDC (Working Levels)
CPP*	1/18/2016	0.0103	0.0028	0.0090
Header House**	1/20/2016	0.0092	0.0024	0.0092
DDW***	1/20/2016	0.0070	0.0000	0.0070
CPP*	2/5/2016	0.0153	0.0160	0.0153
Header House**	2/11/2016	0.0073	0.0006	0.0073
DDW***	2/11/2016	0.0085	0.0007	0.0085
CPP*	3/15/2016	0.0108	0.0016	0.0108
Header House**	3/16/2016	0.0111	0.0075	0.0078
Recovery Wells****	3/28/2016	0.2707	0.9328	0.0121
CPP Vents +*	3/31/2016	0.0961	N/A*****	0.0961
CPP*	4/5/2016	0.0077	0.0012	0.0077
DDW***	4/6/2016	0.0075	0.0007	0.0075
Header House**	4/7/2016	0.0098	0.0033	0.0098
CPP	5/5/2016	0.0080	0.0019	0.0080
Header House**	5/18/2016	0.0113	0.0025	0.0113
CPP*	6/3/2016	0.0128	0.0012	0.0128
Header House**	6/3/2016	0.0085	0.0007	0.0085
CPP Vents	6/15/2016	12.5781	N/A*****	0.0960
Recovery Wells****	6/29/2016	0.7634	1.3345	0.0136

Appendix E
Effluent Program
Rn-222 and Progeny
January to June 2016

Average CPP measurements	0.0108	0.0041	0.0106
Average Header House measurements	0.0095	0.0028	0.0090
Average DDW measurements	0.0077	0.0005	0.0077
Average Recovery Wells	0.5170	1.1336	0.0129
Average CPP Tanks	12.5781	N/A*****	0.0960

*CPP concentrations are taken from an average of six different sampling locations inside the CPP
** Header house concentrations are taken from an average of each operational header house (6 houses were operational January through February, a 7th house was added in March)
***DDW concentrations are taken from an average of each operational DDW (currently 2 wells)
****Recovery well concentrations are an average of at least 10% of active recovery wells during the sampling period. The average number of wells sampled each quarter was 19 wells with a maximum number of operational recovery wells of 151 during the monitoring period.
*****No published way to perform uncertainty calculations with sampling method.
+* Sample was retrieved approximately 3 feet from vent opening at exterior of plant instead of at contact with vent opening. Sample will not be used for annual concentration average.

ENERGY FUELS

APPENDIX F

METEORLOGICAL DATA

Wind Rose and Atmospheric Stability Analysis

Semi-Annual Update for Nichols Ranch Site

16 August 2016

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Figures

Tables

Introduction

Baseline hourly meteorological data were collected at the Nichols Ranch site from 6/28/2011 to 7/3/2012. This period was established as the baseline year and results were provided in a previous report. Meteorological monitoring at Nichols Ranch has continued through 6/27/2016, providing an additional 4 years of hourly data. This report summarizes the wind monitoring results from the first half of 2016 and compares these to the project-to-date results. These results include wind roses, atmospheric stability class distributions, and joint distributions of stability class, wind speed and wind direction.

Wind Monitoring Results

January – June 2016

Figure 1 shows the most recent six-month wind rose for Nichols Ranch. Joint wind data recovery exceeded 99% for this period. The highest wind speeds occur from the north-northwest and southwest directions. The dominant wind direction overall is from the east. A previous report demonstrated that this pattern is due mostly to night-time drainage, or downslope convection winds from nearby North Pumpkin Butte.

Project-to-Date Results

Table 1 presents the project-to-date monitoring results for all recorded meteorological parameters. Joint wind speed and wind direction data recovery was 99.1% over the entire monitoring period. East winds accounted for nearly 16% of the total hours.

Figure 2 shows the project-to-date wind rose, which corresponds to the same period of record reported in Table 1. Winds were calm (less than 0.5 m/sec) only 0.2% of the time. Table 2 lists the joint frequencies of wind speed categories and wind direction sectors that make up the project-to-date wind rose.

Figure 1. Nichols Ranch Semi-Annual Wind Rose

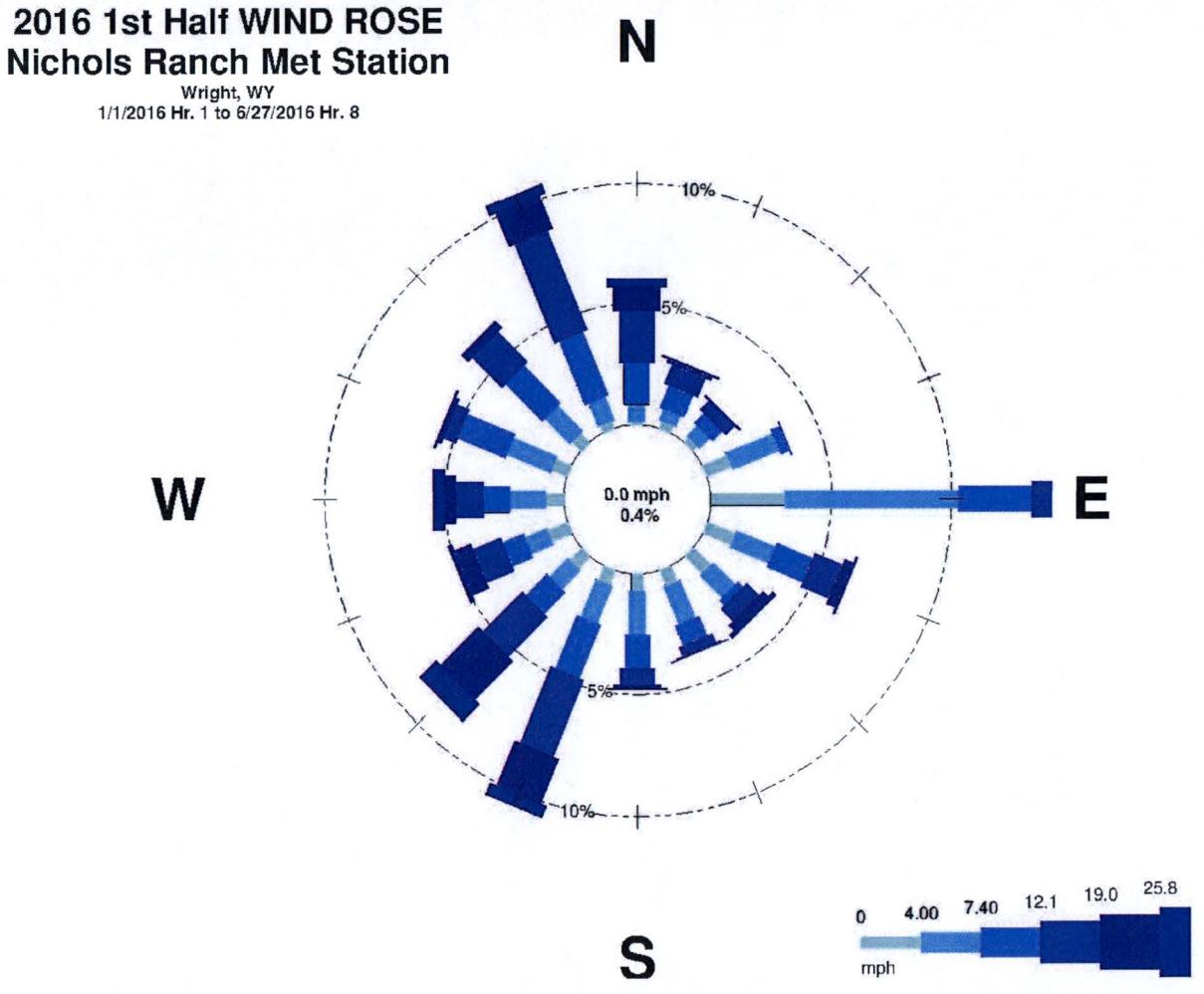


Table 1. Nichols Ranch PTD Meteorological Summary

Nichols Ranch

Meteorological Data Summary

6/28/2011 - 6/27/2016

Hourly Data

	Average/Total	Max	Min
Wind Speed (mph)	10.7	51.3	0.3
Sigma-Theta (°)	15.9	82.7	1.3
Temperature (C)	8.7	38.2	-32.5

Predominant wind direction was from the E sector,
accounting for 15.6% of the possible winds

Data Recovery

Parameter	Possible (hours)	Reported (hours)	Recovery
Wind Speed	43848	43463	99.12%
Wind Direction	43848	43463	99.12%
Sigma-Theta	43848	43463	99.12%
Temperature	43848	43279	98.70%

Figure 2. Nichols Ranch PTD Wind Rose

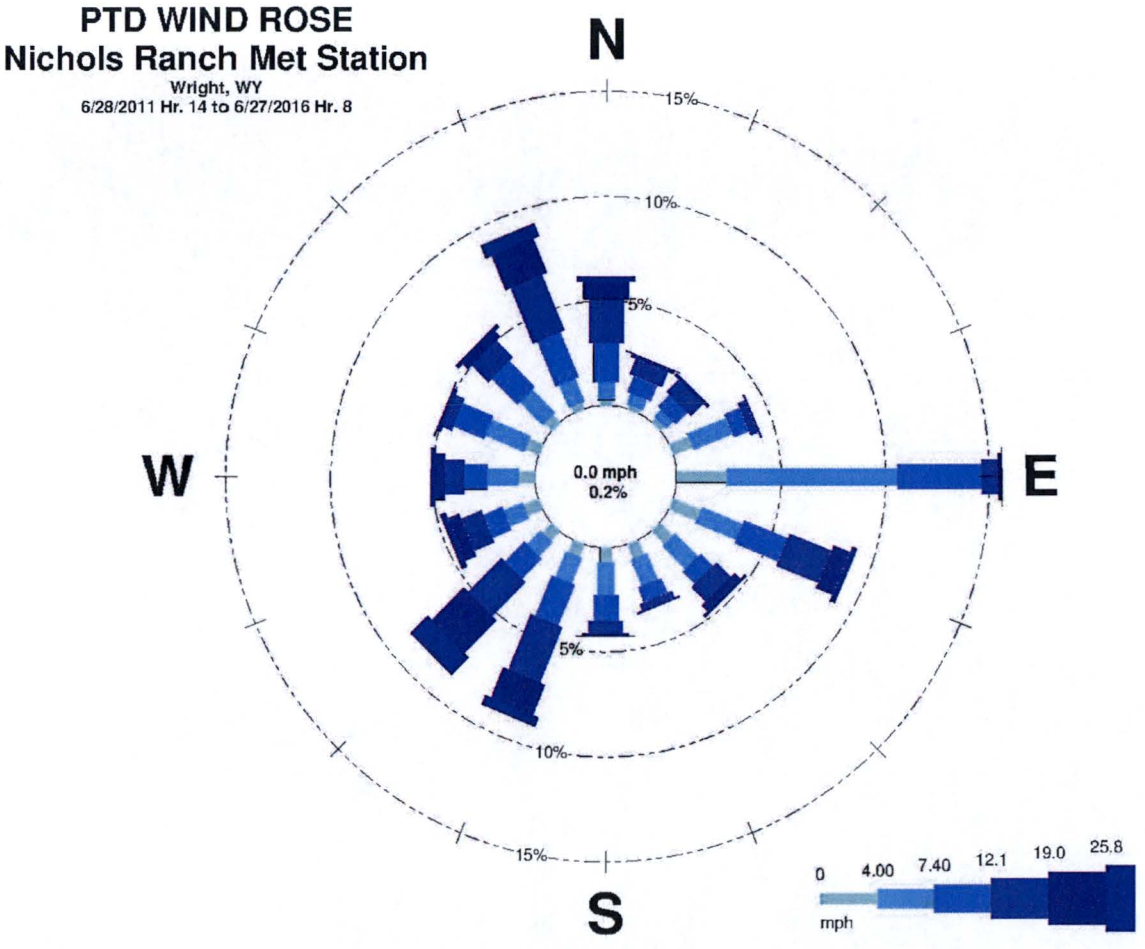


Table 2. Nichols Ranch PTD Wind Rose Matrix

PTD WIND ROSE
Nichols Ranch Met Station

Wright, WY
6/28/2011 Hr. 14 to 6/27/2016 Hr. 8

RELATIVE FREQUENCY (% of Recorded Winds) TABLE

	mph						
Wind Direction	0.0- 4.0	4.0- 7.4	7.4-12.1	12.1-19.0	19.0-25.8	25.8-100.0	Row Tota
0.0 deg.(North)	0.29	0.86	1.88	2.11	0.86	0.22	6.2
22.5 deg.	0.22	0.54	0.86	0.79	0.16	0.00	2.6
45.0 deg.	0.28	0.50	0.81	0.83	0.14	0.00	2.6
67.5 deg.	1.00	2.02	0.79	0.38	0.07	0.00	4.3
90.0 deg.	2.40	8.18	4.07	0.83	0.14	0.00	15.6
112.5 deg.	1.41	2.14	2.25	2.16	0.85	0.23	9.0
135.0 deg.	0.86	1.60	0.84	0.96	0.38	0.11	4.7
157.5 deg.	0.76	1.38	0.78	0.33	0.07	0.00	3.3
180.0 deg.	0.70	1.61	1.24	0.58	0.14	0.00	4.3
202.5 deg.	0.64	1.34	2.11	2.87	1.55	0.46	9.0
225.0 deg.	0.66	0.93	1.36	2.32	2.19	1.18	8.6
247.5 deg.	0.81	1.00	1.01	1.07	0.61	0.26	4.8
270.0 deg.	0.85	1.51	1.13	0.97	0.46	0.22	5.1
292.5 deg.	0.74	2.05	1.63	0.48	0.18	0.00	5.1
315.0 deg.	0.53	1.59	1.76	1.14	0.37	0.16	5.5
337.5 deg.	0.36	1.18	2.34	2.89	1.77	0.65	9.2
	12.51	28.43	24.84	20.70	9.92	3.61	100.0

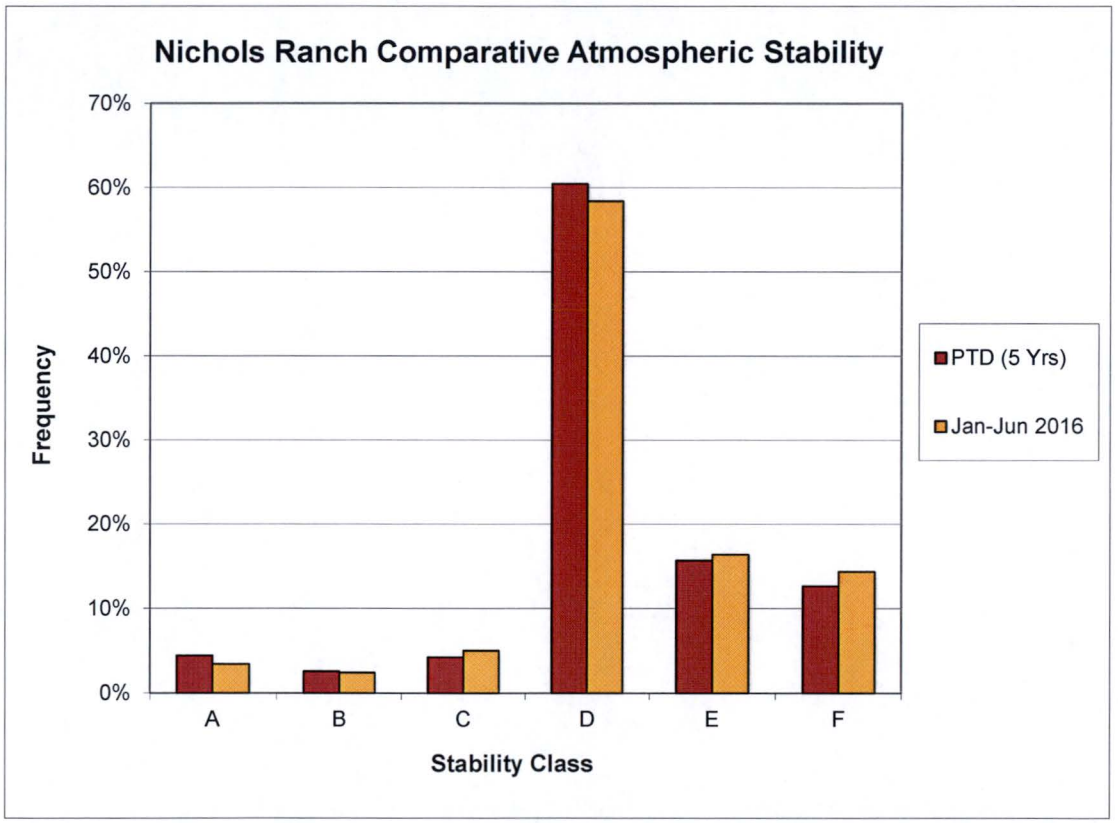
0 mph (0.2%) INVALID READINGS 356

NUMBER OF POSSIBLE READINGS 43819 VALID READINGS 43463 DATA CAPTURE 99.19%

Atmospheric Stability Results

Figure 3 compares the most recent atmospheric stability class distribution to the PTD distribution for Nichols Ranch. Roughly 60% of the winds at the project site consistently fall into stability class D which represents near neutral to slightly unstable conditions. The light-to-calm winds which accompany stable environments, corresponding to stability class F, are also quite consistent for the two periods.

Figure 3. Nichols Ranch Atmospheric Stability Class Period Comparison



The σ_θ method was used to determine the Pasquill-Gifford stability class, where σ_θ refers to the standard deviation of the horizontal wind azimuth angle in degrees. This method is also referred to as the σ_A method in EPA's Meteorological Monitoring Guidance for Regulatory Modeling Applications (February 2000). It is a lateral turbulence based method which uses the standard deviation of the wind direction in combination with the scalar mean horizontal wind speed. Wind speed and direction data are recorded hourly at a height of 10 meters. To minimize the effects of wind meander, the 1-hour σ_θ is defined using

15-minute σ_θ values which are in turn based on more frequent sampling of wind direction (e.g. every five seconds). According to this method, initial stability classes are assigned based solely on standard deviation of wind direction, or σ_θ. The initial assignments are then adjusted for horizontal wind speed. The magnitude of this adjustment depends on whether the measurement is taken during daylight or nighttime hours, a diurnal dependency that varies with the time of year.

Tables 3 and 4 present the most recent six-month joint frequency distribution (JFD) at Nichols Ranch. Stability classes A, B, and C appear in Table 3, while stability classes D, E, and F appear in Table 4. Tables 5 and 6 present the project-to-date joint frequency JFD. Stability classes A, B, and C appear in Table 5, while stability classes D, E, and F appear in Table 6. The JFD partitions hourly wind speed and direction by stability class, wind direction sector, and wind speed category. It is the basis for meteorological input to the MILDOS dispersion model.

Table 3. Nichols Ranch Semi-Annual JFD, Classes A-C

Stability Class	Wind Direction	Wind Speed (mph) - Jan-Jun 2016					
		< 3	4 - 7	8 - 12	13 - 18	19 - 24	> 24
A	N						
	NNE						
	NE						
	ENE	0.003038					
	E		0.001321				
	ESE	0.003038	0.002642				
	SE	0.001519	0.001321				
	SSE		0.001321				
	S	0.001519	0.003963				
	SSW						
	SW	0.001519	0.002642				
	WSW	0.003038	0.002642				
	W	0.003038					
	WNW	0.001519					
	NW						
	NNW						
B	N						
	NNE						
	NE						
	ENE	0.001519					
	E						
	ESE						
	SE		0.001321				
	SSE		0.001321				
	S		0.005284				
	SSW		0.003963				
	SW		0.003963				
	WSW		0.002642				
	W		0.001321				
	WNW	0.001519	0.001321				
	NW						
	NNW						
C	N						
	NNE						
	NE						
	ENE						
	E	0.006077	0.001321				
	ESE						
	SE		0.001321				
	SSE			0.001321			
	S		0.002642	0.006605			
	SSW		0.001321	0.011889			
	SW	0.001519	0.002642	0.001321			
	WSW		0.001321				
	W	0.001519	0.001321				
	WNW		0.002642	0.001321			
	NW		0.002642				
	NNW		0.001321				

Table 4. Nichols Ranch Semi-Annual JFD, Classes D-F

Stability Class	Wind Direction	Wind Speed (mph) - Jan-Jun 2016					
		< 3	4 - 7	8 - 12	13 - 18	19 - 24	> 24
D	N		0.003963	0.006605	0.002642	0.001321	
	NNE			0.001321			
	NE		0.001321				
	ENE	0.001519	0.006605				
	E	0.016711	0.027741	0.005284			
	ESE	0.001519	0.005284	0.005284			
	SE		0.005284	0.001321			
	SSE		0.011889	0.010568			
	S		0.015852	0.029062	0.009247		
	SSW		0.025099	0.079260	0.073976	0.035667	0.005284
	SW		0.001321	0.011889	0.023778	0.015852	0.002642
	WSW	0.001519	0.003963	0.005284	0.002642	0.001321	
	W		0.007926	0.003963			
	WNW		0.006605	0.011889			
	NW	0.001519	0.011889	0.011889	0.003963		
	NNW			0.029062	0.033025	0.001321	0.001321
E	N						
	NNE		0.001321	0.001321			
	NE						
	ENE		0.007926				
	E	0.015192	0.038309	0.001321			
	ESE	0.006077	0.002642				
	SE	0.001519	0.005284				
	SSE	0.001519	0.013210				
	S		0.010568				
	SSW	0.001519	0.009247	0.001321			
	SW	0.003038	0.001321				
	WSW	0.006077	0.002642				
	W		0.006605				
	WNW	0.001519	0.007926				
	NW	0.004557	0.002642	0.001321			
	NNW		0.002642	0.005284			
F	N		0.001321				
	NNE	0.001519					
	NE	0.001519	0.001321				
	ENE	0.001519					
	E	0.012153					
	ESE	0.015192	0.005284				
	SE	0.006077	0.009247				
	SSE	0.009115	0.017173				
	S	0.010634	0.013210				
	SSW	0.006077	0.006605				
	SW	0.007596					
	WSW	0.006077	0.001321				
	W	0.004557					
	WNW	0.001519					
	NW	0.001519					
	NNW	0.003038					

Table 5. Nichols Ranch PTD JFD, Classes A-C

Stability Class	Wind Direction	Wind Speed (mph) - Project to Date					
		< 3	4 - 7	8 - 12	13 - 18	19 - 24	> 24
A	N	0.000570	0.000744				
	NNE	0.000499	0.000068				
	NE	0.000427	0.000338				
	ENE	0.000926	0.000676				
	E	0.001923	0.000811				
	ESE	0.002350	0.000811				
	SE	0.001282	0.001758				
	SSE	0.001780	0.001691				
	S	0.001282	0.002773				
	SSW	0.001638	0.001555				
	SW	0.002279	0.001691				
	WSW	0.002279	0.001420				
	W	0.002136	0.001758				
	WNW	0.001852	0.001758				
	NW	0.001638	0.001555				
	NNW	0.001139	0.000811				
B	N	0.000071	0.000811	0.000068			
	NNE		0.000406				
	NE	0.000142	0.000068				
	ENE	0.000356	0.000338				
	E	0.000570	0.000473	0.000068			
	ESE	0.000499	0.001014				
	SE	0.000142	0.001758				
	SSE	0.000071	0.001758				
	S	0.000214	0.002773	0.000270			
	SSW	0.000427	0.002232	0.000270			
	SW	0.000214	0.000676	0.000338			
	WSW	0.000499	0.001691	0.000135			
	W	0.000783	0.001150	0.000068			
	WNW	0.000499	0.002029	0.000068			
	NW	0.000142	0.001352	0.000203			
	NNW	0.000142	0.000744	0.000135			
C	N	0.000071	0.000541	0.000947			
	NNE		0.000068	0.000135			
	NE	0.000071	0.000270				
	ENE	0.000071	0.000203	0.000135			
	E	0.001282	0.001150	0.000135			
	ESE	0.000356	0.001150	0.000338			
	SE	0.000214	0.001014	0.000744			
	SSE	0.000071	0.000676	0.000879			
	S		0.001893	0.001555			
	SSW		0.001352	0.005207			
	SW	0.000356	0.001420	0.002502			
	WSW	0.000214	0.001961	0.001961			
	W	0.000356	0.001691	0.001758			
	WNW	0.000285	0.002705	0.001488			
	NW	0.000142	0.001623	0.001555			
	NNW	0.000071	0.000879	0.000811			

Table 6. Nichols Ranch PTD JFD, Classes D-F

Stability Class	Wind Direction	Wind Speed (mph) - Project to Date					
		< 3	4 - 7	8 - 12	13 - 18	19 - 24	> 24
D	N	0.000285	0.006830	0.013322	0.010008	0.004057	0.001285
	NNE	0.000071	0.002367	0.003178	0.001150	0.000068	0.000135
	NE	0.000142	0.001893	0.002367	0.001352	0.000068	
	ENE	0.002564	0.011225	0.001082	0.000744	0.000135	
	E	0.007050	0.043616	0.006357	0.001014	0.000270	
	ESE	0.000712	0.007371	0.009873	0.009061	0.001623	0.000541
	SE	0.000214	0.003719	0.004260	0.002502	0.000811	0.000068
	SSE	0.000214	0.004666	0.004801	0.000338		
	S	0.000071	0.008318	0.014201	0.004193	0.001082	0.000068
	SSW	0.000356	0.011158	0.036178	0.046795	0.021842	0.005613
	SW	0.000427	0.004193	0.018393	0.034082	0.029416	0.012645
	WSW	0.000783	0.003449	0.008250	0.010820	0.004057	0.001691
	W	0.001424	0.007438	0.006289	0.005816	0.001826	0.001285
	WNW	0.001139	0.011834	0.007438	0.002029	0.000676	0.000068
	NW	0.000712	0.009264	0.012037	0.008115	0.002908	0.001488
	NNW	0.000285	0.007371	0.019543	0.025020	0.014065	0.005004
E	N	0.000499	0.002164	0.000811			
	NNE	0.000214	0.000473	0.000947			
	NE	0.000142	0.001082	0.001014			
	ENE	0.003062	0.011361	0.000609			
	E	0.005982	0.052475	0.008994			
	ESE	0.001780	0.006289	0.002773			
	SE	0.000499	0.003787	0.000406			
	SSE	0.000783	0.005139	0.000068			
	S	0.000285	0.005680	0.000270			
	SSW	0.000570	0.003787	0.000676			
	SW	0.000712	0.001893	0.000135			
	WSW	0.001923	0.002232	0.000879			
	W	0.001353	0.002840	0.000744			
	WNW	0.001567	0.005139	0.001691			
	NW	0.001068	0.004193	0.001961			
	NNW	0.000427	0.002975	0.002502			
F	N	0.001638	0.001082				
	NNE	0.001139	0.000879				
	NE	0.001852	0.000473				
	ENE	0.003703	0.001691				
	E	0.010184	0.006086				
	ESE	0.009401	0.006897				
	SE	0.006552	0.008588				
	SSE	0.004558	0.007979				
	S	0.004487	0.007438				
	SSW	0.003988	0.003922				
	SW	0.003347	0.002164				
	WSW	0.004771	0.001555				
	W	0.004771	0.001826				
	WNW	0.004344	0.002299				
	NW	0.003276	0.002164				
	NNW	0.001709	0.001623				