DATA SHEET FOR GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO

Operator___Chevron Midcontinent L.P._____

API #s if associated with a Well/'s___30-045-24392_____

Location: Unit Letter _A_ Sec _27__ Twp _32N_ Rng _132W_

Footages _1120FNL___ N/S, __1050 FEL___E/W

RCVD JAN 10'13
OIL CONS. DIV.
DIST. 3

Latitude: __36.9623871740292 ___ Longitude: __-108.185569421071 _____

Name of Well/Wells or Pipeline Serviced: ____Cardon Com SWD #1 ___

Elevation: 5897' Completion Date: 10/14/80 Total Depth 7952'

Land Type *:____S__

Types of Drilling performed: Air, Mud, Combination, Other, describe.

Casing, Sizes, Type, Grade, Weight and Depth Set DRILLED WITH AIR 0' TO 80'; DRILLED WITH WATER 80' TO 300'; CASING SET TO DEPTH OF 40' USING 8" DIA. SCH40 PVC

If Casing is cemented show amounts and types used: __NO USED BENTONITE

Vent Pipe size and depth____1" DIA X 300'__ Perforations _YES 300' TO 180' SOLID TO SURFACE

BETONITE USED TO SEAL CASING ANNULUS.

If Cement or Bentonite Plugs have been placed, show depths and amounts used: _

FROM CASING TO 180'

Description of the water formations encountered to include depth, thickness and water type. Fresh, Clear Salty, Sulfur etc: HIT WATER AT 80' -- CLEAR

PH of water zones encountered: unknown

Top of moisture zones not associated with a water formation: UNKNOWN

Depths gas encountered: N/A

Type and amount of coke breeze used: **LORESCO SC-3 50 BAGS**

Number and Depths of anodes: **1O ANODES;**

195', 205', 215', 225', 235', 245', 255', 265', 275', 285'.

Diagram showing location of Cathodic protection well and associated oil/gas well.

Remarks:

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers log, water analysis & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included

*Land Type may be shows: F-Federal; I-Indian; S-State; P-Fee. If Federal or Indian, add lease number

CATHODIC PROTECTION SYSTEM

COMMISSIONING SURVEY REPORT

CARDON COM SWD #1

LA PLATA, NEW MEXICO

Prepared for:

CHEVRON NORTH AMERICAN EXPLORATION AND PRODUCTION

Prepared by:

CORRPRO COMPANIES, INC.

FARMINGTON, NEW MEXICO

December 2012

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

This report contains a description of the new CP system; an outline of the test procedures and required cathodic protection criteria; analysis of the collected data; and recommendations for effective operation of the cathodic protection systems.

2.0 DESCRIPTION OF THE SYSTEMS

The complete CP system for the Cardon Com SWD #1 consists of one (1) impressed current cathodic protection system. The CP system is connected to a deep anode ground-bed. The rectifier is air-cooled and utilizes a rain proof enclosure for the anode bed junction box.

The following table summarizes the characteristics of the systems:

System No.	Rectifier Make	Serial No.	Rectifier Capacity		Ground Bed Type	No. of Anodes
			Volts	Amp		
1	Universal	121490	40	20	Deep Well (MMO)	10

In addition, a total of 8 test points were established throughout the location at various points to monitor structure-to-soil potentials on buried metallic structures.

3.0 TESTING PROCEDURES

3.1 Testing Activities:

1. Inspect and record voltage and current output readings at each rectifier to verify that all are operating.
2. Obtain "Native" potentials at eight (8) test points on location.
   Install synchronized current interrupters at transformer-rectifier.
3. Obtain DC "on" and "instant off" structure-to-soil potential measurements at all test points.
4. Test for possible stray current interference from adjacent CP systems.
5. Remove current interrupters and return all rectifiers to continuous operating mode.
6. Obtain individual current output of each anode at the junction box.

4.0 DESCRIPTION OF TESTS

4.1 Structure-to-Electrolyte Potential Measurement:

Structure-to-electrolyte potentials were measured using the voltmeter circuit of a calibrated digital, high impedance multimeter and a portable copper-copper sulfate reference electrode installed at grade directly over or at the nearest point of soil access to the structure. To measure structure-to-electrolyte potentials, the positive test lead of the meter was placed in contact with the structure terminal at each test station or directly to the structure itself and the negative terminal was connected to the portable reference electrode. A potential measurement was then observed and recorded at each test facility.

The purpose of the ON/OFF survey is to determine the "INSTANT-OFF" structure-to-electrolyte potential by eliminating the IR drop in the potential measurements. Thus, it is possible to evaluate the actual polarization potential of the underground structures. These practices are per the NACE International recommended practices.

4.2 Rectifier Operating Parameters

Circuit current output and individual anode output was measured using a high impedance digital multimeter and the shunt in each rectifier and junction box respectively. The voltage drop across the shunt was measured and the current calculated by Ohm's Law (I=V/R).

Rectifier voltage output was obtained by reading across the individual output lugs on the rectifier panel.

5.0 ANALYSIS OF TEST RESULTS

5.1 Rectifier Survey Results

Appendix I presents the rectifier characteristics and operating parameters. Measurements obtained with a calibrated multimeter indicated that the Cardon Com SWD #1 rectifier is providing 7.37 Volts and 17.9 Amps to the associated piping.

5.2 Test Point Survey Results

Appendix II presents the structure-to-electrolyte potentials collected at each test point and test station. The information contained in the survey table includes "native" or "static" potentials, as well as "on" potentials and "instant-off" potentials. According to the practices recommended by NACE International, as set forth in the standard SP 0169-2007, either a minimum Instant-Off (IR free) structure-to-soil potential of –850 mV

relative to a copper-copper sulfate reference electrode or a minimum of 100 mV of cathodic polarization, which is the difference between the native potential and the "instant off" potential, is required for effective cathodic protection. In plants, refineries or other areas where many structures exist in a small area, the 100 mV potential difference criteria is frequently utilized to determine effectiveness of the cathodic protection system.

Structure-to-electrolyte potential data indicates the following:

- 8 of the 8 total test points meet the NACE criteria for effective cathodic protection of a 100 mV polarization between the native potential and the "instant off" potential or a minimum "instant off" potential of -850 mV.

6.0 CONCLUSIONS

6.1 Analysis of the structure-to-electrolyte potentials indicates sufficient cathodic protection current is being provided for cathodic protection of all buried metallic structures at the Cardon Com SWD #1 as described above in the results.

6.2 The rectifier is operating satisfactorily with sufficient room to increase the output as needed.

7.0 RECOMMENDATIONS

7.1 Survey the cathodic protection rectifier at least bimonthly and keep a record of both voltage and current output. Also note any adjustment to the rectifier settings.

7.2 Perform an annual resurvey of "On" and "Instant-Off" structure-to-soil potentials at all test points to verify the buried metallic structures installed are being catholically protected. The next annual survey should be conducted in July of 2013.

APPENDIX I

RECTIFIER DATA SHEETS

CORRPRO COMPANIES, INC

CATHODIC PROPTECTION SYSTEM DETAILS

COMPANY: CHEVRON NORTH AMERICAN EXPLORATION AND PRODUCTION

CORRPRO JOB #: 340140268

RECTIFIER UNIT NAME: CARDON COM SWD #1

TYPE OF RECTIFIER UNIT: AIR COOLED — SERIAL # 121490

RECTIFIER MFG BY: UNIVERSAL — MODEL: ASAI

AC LINE INPUT: VOLTS: 115/230 — PHASE: SINGLE

RATED DC OUTPUT: **VOLTS:** 40 — AMPS: 20

TYPE OF GROUNDBED: DEEPWELL — 300'

TYPE OF ANODES: MMO — **# OF ANODES:** 10

ANODE DIAMETER: 1" — **ANODE LENGTH:** 39"

COKE BACKFILL: SC-3

RECORD OF READINGS AND INSPECTIONS

DATE	TAP SETTING		D-C OUTPUT		ENGINEER/TECHNICIAN
	COARSE	FINE	VOLTS	AMPERES	
10/19/12	1	4	7.37	17.90	PL

INDIVIDUAL CIRCUIT CURRENT FLOW

GROUNDBED RESISTANCE: 0.411

Individual Anode Current Ouput (Amps)

	Anode #1	2.10			COMMENTS:
	Anode #2	2.25			
	Anode #3	2.70			
	Anode #4	2.34			
	Anode #5	2.43			
	Anode #6	1.80			
	Anode #7	1.83			
	Anode#8	1.00			
	Anode #9	0.75			
	Anode #10	0.70			

COMMENTS: bonds installed all piping continuos

corrpro®

APPENDIX II

STRUCTURE-TO-SOIL POTENTIAL

TEST DATA

CHEVRON NORTH AMERICAN EXPLORATION AND PRODUCTION
CATHODIC PROTECTION POTENTIAL DATA
CARDON COM SWD #1

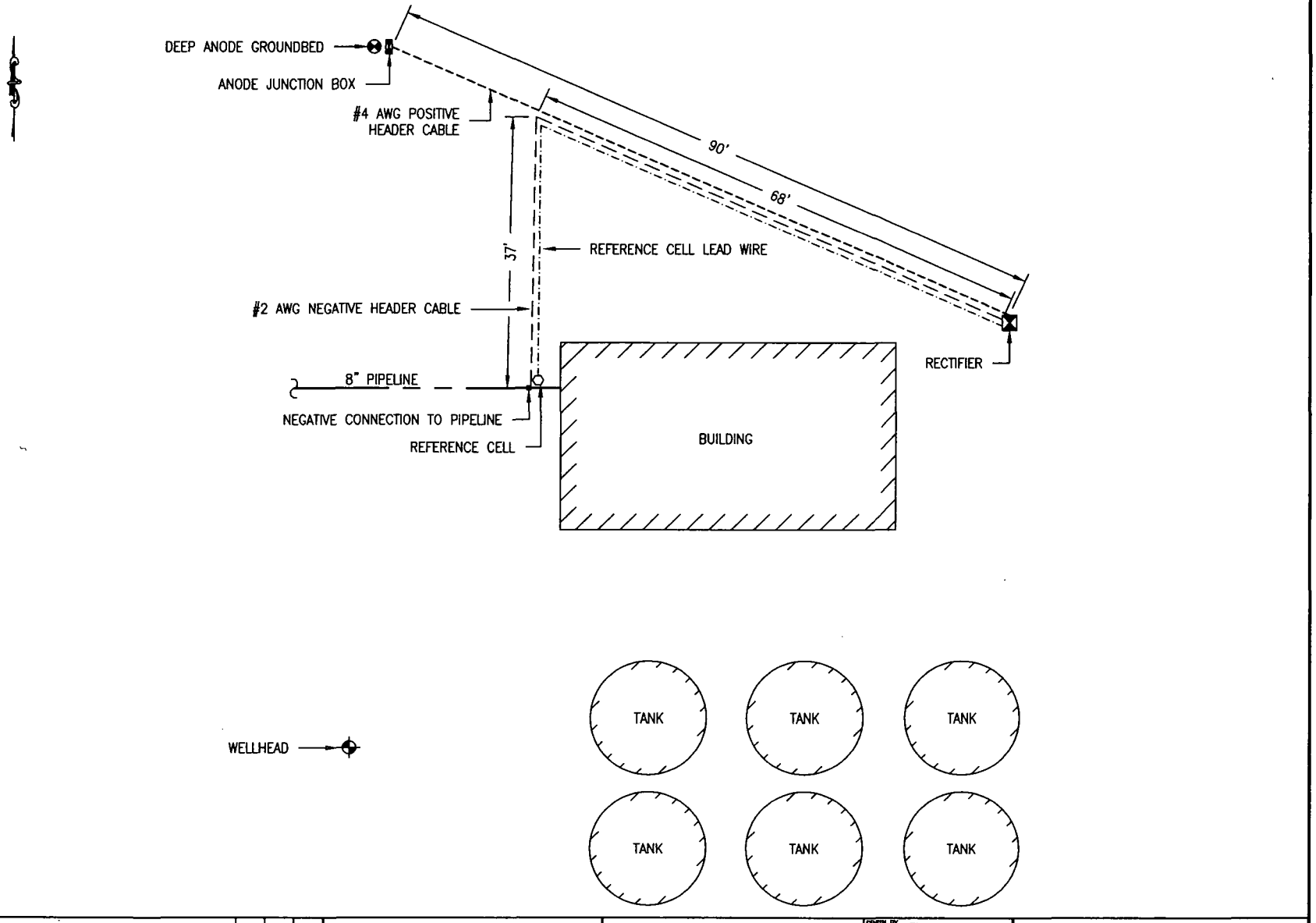
DATE: 10-19-2012 BY: Priscilla Luna

TS #	P/S Potentials (mV)			Comments
	Native	On	I-Off	
1	-549	-930	-822	Potentials within acceptable range
2	-649	-1390	-1035	Potentials within acceptable range
3	-537	-857	-744	Potentials within acceptable range
4	-507	-916	-779	Potentials within acceptable range
5	-484	-848	-722	Potentials within acceptable range
6	-565	-947	-799	Potentials within acceptable range
7	-514	-966	-805	Potentials within acceptable range

* - All potential measurements were taken using a portable copper-copper sulfate reference eletrode.

APPENDIX III

AS BUILT DRAWING



G:\Regional\JOBS\2012\14 FARMINGTON\340140268 CHEVRON PRODUCTION - IGNACIO, CO - CARDON COM\340140268-01.dwg LAYOUT: Model

REVISED NO.	REVISED DATE	REVISIONS	REV.	CHK.	APP.

corrpro
An Aegion Company

DRAWN BY	FMoreno
DESIGNED BY	PLuna
DATE	12-20-12
SCALE	N.T.S.
JOB NO.	340140268
DWG. NO.	340140268-01

CHEVRON NORTH AMERICA EXPLORATION

MID CONTINENT/ALASKA BUSINESS UNIT
CARDON COM SWD #1
CATHODIC PROTECTION SYSTEM
DEEP ANODE GROUNDBED
INSTALLATION LAYOUT

APPENDIX IV

DRILLER/WELL LOGS

COMPANY:	CHEVRON	DATE:	7/14/2012	CASING:	SCH40 PVC		
COMPANY REP.:	LAURA CLENNEY	DIA. HOLE:	7 7/8	DIAMETER:	8"	RECTIFIER MFG:	UNIVERSAL
LOCATION:	CARDON COM	DEPTH:	300'	CASING DEPTH:	40'	MODEL:	
JOB NO.:	340140268	COKE TYPE:	SC-3	# OF ANODES:	10	SERIAL #:	
FOREMAN:	RON LUNA	# OF COKE:	40 BAGS	ANODE TYPE:	MMO		
DRILLER:	DARREL FERRIER	# OF BENTONITE:	70 BAGS	ANODE LEAD:	HALAR	V-DC:	A -DC:

WELL LOG										ANODE PLACEMENT			
DEPTH FT.	DRILLERS LOG - SOIL TYPE	VOLTS	AMPS	COMMENTS / ANODE #	DEPTH FT.	DRILLERS LOG - SOIL TYPE	VOLTS	AMPS	COMMENTS / ANODE #	ANODE NO.	ANODE DEPTH	AMPS W/O COKE	AMPS W/ COKE
0	SAND	13.86		CASING	250	SHALE		1.50		1	285	1.30	6.30
5	SAND			CASING	255	SHALE			#4-255	2	275	1.20	6.50
10	SAND			CASING	260	SHALE		1.20		3	265	1.40	7.10
15	SAND			CASING	265	SHALE			#3-265	4	255	1.40	7.20
20	SAND			CASING	270	SHALE		1.30		5	245	1.50	7.50
25	SAND			CASING	275	SHALE			#2-275	6	235	0.70	4.30
30	SAND			CASING	280	SHALE		1.40		7	225	0.80	4.20
35	SANDSTONE			CASING	285	SHALE			#1-285	8	215	0.90	4.30
40	SANDSTONE			CASING	290	SHALE				9	205	0.90	4.60
45	SANDSTONE				295	SHALE				10	195	0.80	4.30
50	SANDSTONE				300	SHALE				11			
55	SANDSTONE				305					12			
60	SANDSTONE				310					13			
65	SHALE				315					14			
70	SHALE				320					15			
75	SANDSTONE				325					16			
80	SANDSTONE				330					17			
85	SANDSTONE				335					18			
90	SANDSTONE				340					19			
95	SHALE				345					20			
100	SHALE		1.10		350					21			
105	SHALE				355					22			
110	SHALE		1.20		360					23			
115	SHALE				365					24			
120	SHALE		1.10		370					25			
125	SHALE				375								
130	SHALE		1.10		380								
135	SANDY SHALE				385								
140	SANDY SHALE		0.80		390								
145	SHALE				395								
150	SHALE		1.00		400								
155	SHALE				405								
160	SHALE		1.00		410								
165	SHALE				415								
170	SHALE		1.00		420								
175	SANDY SHALE				425								
180	SANDY SHALE		0.90		430								
185	SHALE				435								
190	SHALE				440								
195	SHALE		0.90	#10-195	445								
200	SHALE				450								
205	SANDY SHALE			#9-205	455								
210	SANDY SHALE		0.90		460								
215	SANDY SHALE			#8-215	465								
220	SANDY SHALE		0.80		470								
225	SHALE			#7-225	475								
230	SHALE		0.70		480								
235	SHALE			#6-235	485								
240	SHALE		0.80		490								
245	SHALE			#5-245	495								

LORESCO, Inc.

421 J. M. Tatum Ind. Pk. Drive
Hattiesburg, MS 39401

Material Safety Data Sheet
LORESCO® TYPE SC.3
Revised 1/2007

SECTION I - MATERIAL IDENTIFICATION

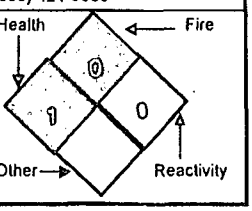
PRODUCT/CHEMICAL NAME:	Calcined Fluid Petroleum Coke
IDENTIFICATION No.:	SC.3
CHEMICAL FAMILY:	Carbon, carbonaceous material resulting from high temperature treatment of green petroleum coke
CAS No.:	64743-05-1

24 HOUR EMERGENCY INFORMATION

Loresco, Inc.	(601) 544-7490
CHEMTREC	(800) 424-9300

HMIS/NEPA HAZARD RATING

4 = Extreme
3 = Serious
2 = Moderate
1 = Minimal



SECTION II - CHEMICAL COMPOSITION & RECOMMENDED EXPOSURE LIMITS

COMPOSITION/ CAS No.	% WEIGHT (Dry Basis)	EXPOSURE GUIDELINES[1] ACGIH* TLV (8-hr TWA)**	EXPOSURE GUIDELINES[1] OSHA*** 1910.1000 PEL**** (8-hr TWA)**
Carbon / 7440-44-0	97 - 99%	Not Established	Not Established
Sulfur / 7704-34-9	0.5 - 5.5%	Not Established	Not Established
Dust	----------	Note 2	Note 2

1. State, local or other agencies may have established more stringent limits. Consult local agencies for further information.
2. See Additional Information Section IX.

* ACGIH = American Conference of Governmental Industrial Hygienist
** TLV- T WA = Threshold Limit Value-Time Weighted Average
*** OSHA = Occupational Safety and Health Administration
**** PEL = Permissible Exposure Limit

SECTION III - PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor	Irregular, steel gray to black, granular, odorless solid	Solubility in Water	< 0.1%
Boiling Point	Not Applicable	Specific Gravity	2 (typically)
Bulk Density	70-80 lbs/ft^3	Vapor Pressure	Not Applicable
Freezing/Melting Point	NA	Vapor Density	Not Applicable
Heat Value	~14,000 BTU/lb	Volatility by weight	Negligible

SECTION IV - HEALTH & SAFETY DATA

HEALTH HAZARDS Avoid contact with eyes. Wash thoroughly after handling.
PHYSICAL HAZARDS Keep away from all sources of ignition.

	POTENTIAL HEALTH EFFECTS	ACUTE	CHRONIC
Health	EYE CONTACT	No significant irritation expected. Possible abrasive mechanical irritation, dust may cause stinging, watering, or redness. Flush eyes with plenty of water.	No Data Available
Health	INHALATION (Breathing)	No significant irritation expected. Possible mechanical irritation. Possible irritation of respiratory tract. May aggravate pre-existing respiratory conditions.	Repeated overexposure to dusts may result in irritation of the respiratory tract, pneumoconiosis (dust congested lungs), pneumonitis (lung inflammation), coughing, and shortness of breath.
Health	INGESTION (Swallowing)	No significant health hazards expected. If large quantities are ingested, or discomfort occurs, seek medical attention.	No Data Available
Health	SKIN	First aid is not normally required. May be abrasive and mildy irritating. Prolonged or repeated contact may cause skin irritation or dermatitis to susceptible individuals.	No Data Available

Fire & Exposure	Flash Point (°F)	Not Applicable	Autoignition Temperature (°F)	Not Applicable
	Flammable Limits in Air (% by volume)	Upper NA%	Lower NA%	
	Extinguishing Media	Water spray,dry chemical type preferred, carbon dioxide, foam, sand, or earth is recommended.		
	Special Fire Fighting Procedures	Use washdown and spread out method. For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. If the potential hazard is unknown or in enclosed or confined areas self-contained breathing apparatus should be worn. Cool equipment exposed to fire with water, if it can be done with minimal risk.		
	Unusual Fire & Explosion Hazards	This material may burn , but will not ignite readily. When water is used to extinguish a fire in a confined storage space there is the possibility of a steam explosion. Whenever possible, the burning coke in a confined storage space should be removed and the material drenched in an open area to extinguish fire.		
Reactivity	Stability	☑ Stable	☐ Unstable	
	Hazardous Polymerization	☑ Will Not Occur	☐ Will Occur	
	Conditions to Avoid	None known		
	Incompatibility (Materials to avoid)	Incompatible with strong oxidizing agents, perchlorates, peroxides, nitric acid, especially when heated.		
	Typical Decomposition Products	Sulfur oxides, carbon oxides (CO/CO_2), metal oxides.		

SECTION V - FIRST AID MEASURES

EYES	If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.
INHALATION (Breathing)	First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air. Seek medical attention.
INGESTION (Swallowing)	First aid is not normally required. There are no known health effects form ingestion of small amounts. If swallowed and symptoms or discomfort develops, seek medical attention.
SKIN	First aid is not normally required. Wash any chemical from the skin with soap and water.

SECTION VI - PRECAUTIONS FOR SAFE HANDLING & USE

EYES PROTECTION	Approved eye protection, such as safety glasses or goggles, to safeguard against potential eye contact is recommended.
RESPIRATORY PROTECTION	Appropriate respirator depends upon the type and magnitude of exposure. A NIOSH/MSHA approved dus respirator (i.e., type 95 [R or P] particulate filter) may be used under conditions where airborne concentrations are expected to exceed exposure limits for dust (see Section IX). Use a positive pressure a respirator, if there is potential for uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.
VENTILATION	Mechanically ventilate the work environment to reduce dust concentration and to maintain normal atmospheric oxygen levels.
SKIN PROTECTION	Not required. However, it is considered good practice to wear gloves when handling.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT	Recommend using good personal hygiene practices and a clean source of water for flushing eyes and skin.

SECTION VII - REGULATORY INFORMATION

SARA 311/312	Acute: ☐ Yes ☑ No	Fire: ☐ Yes ☑ No	Reactive ☐ Yes ☑ No
	Chronic: ☐ Yes ☑ No	Pressure: ☐ Yes ☑ No	
SARA 313	This material contains no chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372		
EPA (CERCLA) REPORTABLE QUANTITY	None		
PRECAUTIONS FOR SAFE HANDLING & STORAGE	No special requirements. However, material should be stored to minimize dust formation. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits. Wash thoroughly after handling. Use good personal hygiene practices.		
SPILLS OR RELEASES	Contain and remove by mechanical means (scoop, sweep or vacuum). Prevent spilled material from entering sewers, storm drains, or other unauthorized treatment drainage systems and natural waterways.		
DISPOSAL CONSIDERATIONS	This material, if discarded as product, is not a RCRA "listed" or "characteristic" hazardous waste. Product may be processed by an approved recycler, or disposed of at an approved waste disposal facility. Method of disposal selected is subject to compliance with applicable federal, state and local laws and regulations and product characteristics at the time of disposal.		

SECTION VIII - TRANSPORTATION INFORMATION

PROPER SHIPPING NAME	Petroleum Coke	**REQUIRED PLACARDING**	None
HAZARD CLASS	Non-Hazardous	**PACKING GROUP (P.G.)**	

SECTION IX - ADDITIONAL INFORMATION

If dust is generated the following exposure guidelines have been established for airborne particulates:

ACGIH	OSHA	MSHA*	
10 mg/m^3	None Established	10 mg/m^3	Total - Time Weighted Average
3 mg/m^3	5 mg/m^3	None Established	Respiratory - Time Weighted Average
None Established	15 mg/m^3	None Established	Total - Short Term Exposure Limit (STEL)
* Mining Health and Safety Administration			

SECTION X - DOCUMENTARY INFORMATION

ISSUE DATE	January 2007
PREVIOUS ISSUE DATE	January 1, 2005
IDENTIFICATION No.	SC.3

SECTION XI - DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

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