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January 31, 2023

Max Trehus
PDC Energy
4000 Burlington Ave.
Evans, CO 80620

Work Order: **HS23010682**

Laboratory Results for: **Raindance FC 26-272HN**

Dear Max Trehus ,

ALS Environmental received 2 sample(s) on Jan 14, 2023 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER

Tyler Monroe

Client: PDC Energy
Project: Raindance FC 26-272HN
Work Order: HS23010682

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23010682-01	26-272HN A	Water		12-Jan-2023 12:25	14-Jan-2023 08:50	<input type="checkbox"/>
HS23010682-02	26-272HN B	Water		12-Jan-2023 12:25	14-Jan-2023 08:50	<input type="checkbox"/>

Client: PDC Energy
Project: Raindance FC 26-272HN
Work Order: HS23010682

CASE NARRATIVE

Work Order Comments

- Login Notes: 26-272HN metals pH at receipt 4, preserved with 0.5ml of HNO3 (Lot:321101202). pH after preservation is 1.

GC Semivolatiles by Method RSK-175

Batch ID: R425957

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Volatiles by Method SW8015

Batch ID: R426151

Sample ID: 26-272HN A (HS23010682-01)

- Surrogate failed outside control limits high due to matrix interference. This was confirmed by reanalysis.

GCMS Volatiles by Method SW8260

Batch ID: R426172

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method E200.8

Batch ID: 188967

Sample ID: 26-272HN B (HS23010682-02)

- Sample ran at a 2X dilution due to high concentration of Sodium.

Sample ID: HS23010703-01MS, HS23010856-02MS

- MS and MSD are for an unrelated sample

Batch ID: 188949

Sample ID: HS23011293-03MS, HS23011295-03MS

- MS and MSD are for an unrelated sample

WetChemistry by Method E300

Batch ID: R426761

Sample ID: HS23010879-01MS, HS23010780-02MS

- MS and MSD are for an unrelated sample (Chloride,Sulfate)

WetChemistry by Method SM2320B

Batch ID: R426612

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: PDC Energy
Project: Raindance FC 26-272HN
Work Order: HS23010682

CASE NARRATIVE

WetChemistry by Method M2540C

Batch ID: R426222

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: PDC Energy
 Project: Raindance FC 26-272HN
 Sample ID: 26-272HN A
 Collection Date: 12-Jan-2023 12:25

ANALYTICAL REPORT

WorkOrder:HS23010682
 Lab ID:HS23010682-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260				Analyst: PC	
Benzene	660		100	500	ug/L	500	20-Jan-2023 08:00
Ethylbenzene	14,000		150	500	ug/L	500	20-Jan-2023 08:00
m,p-Xylene	18,000		250	1000	ug/L	500	20-Jan-2023 08:00
o-Xylene	8,800		150	500	ug/L	500	20-Jan-2023 08:00
Toluene	7,000		100	500	ug/L	500	20-Jan-2023 08:00
Xylenes, Total	27,000		150	500	ug/L	500	20-Jan-2023 08:00
Surr: 1,2-Dichloroethane-d4	96.6			70-126	%REC	500	20-Jan-2023 08:00
Surr: 4-Bromofluorobenzene	104			77-113	%REC	500	20-Jan-2023 08:00
Surr: Dibromofluoromethane	89.8			77-123	%REC	500	20-Jan-2023 08:00
Surr: Toluene-d8	104			82-127	%REC	500	20-Jan-2023 08:00
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015				Analyst: FT	
Gasoline Range Organics	2,710		5.00	25.0	mg/L	500	19-Jan-2023 13:52
Surr: 4-Bromofluorobenzene	472	S		70-123	%REC	500	19-Jan-2023 13:52
DISSOLVED GASES BY RSK-175		Method:RSK-175				Analyst: PPM	
Ethane	867		57.6	400	ug/L	400	16-Jan-2023 14:40
Methane	8,980		42.8	200	ug/L	400	16-Jan-2023 14:40
Propane	1,240		400	400	ug/L	400	16-Jan-2023 14:40
TOTAL METALS BY E200.8, REV 5.4, 1994		Method:E200.8				Prep:E200.8 / 27-Jan-2023	Analyst: JC
Calcium	2,080		0.900	25.0	mg/L	5	30-Jan-2023 17:07
Magnesium	121		0.390	25.0	mg/L	5	30-Jan-2023 17:07
Potassium	154		1.65	25.0	mg/L	5	30-Jan-2023 17:07
Sodium	2,060		10.5	100	mg/L	50	30-Jan-2023 19:43
ANIONS BY E300.0, REV 2.1, 1993		Method:E300				Analyst: TH	
Chloride	1,440		10.0	25.0	mg/L	50	28-Jan-2023 10:50
Sulfate	41.9		10.0	25.0	mg/L	50	28-Jan-2023 10:50
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		Method:M2540C				Analyst: DC	
Total Dissolved Solids (Residue, Filterable)	16,600		5.00	10.0	mg/L	1	19-Jan-2023 10:30
ALKALINITY BY SM 2320B-2011		Method:SM2320B				Analyst: JAC	
Alkalinity, Bicarbonate (As CaCO3)	2,530		5.00	5.00	mg/L	1	25-Jan-2023 17:46
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	25-Jan-2023 17:46
Alkalinity, Total (As CaCO3)	2,530		5.00	5.00	mg/L	1	25-Jan-2023 17:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: PDC Energy
Project: Raindance FC 26-272HN
Sample ID: 26-272HN B
Collection Date: 12-Jan-2023 12:25

ANALYTICAL REPORT

WorkOrder:HS23010682
Lab ID:HS23010682-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
DISSOLVED METALS BY E200.8, REV 5.4, 1994	Method:E200.8 (dissolved)				Prep:E200.8 / 27-Jan-2023		Analyst: JC
Calcium	1,210		1.80	50.0	mg/L	100	30-Jan-2023 13:37
Magnesium	65.8		0.0156	1.00	mg/L	2	30-Jan-2023 12:17
Potassium	867		3.30	50.0	mg/L	100	30-Jan-2023 13:37
Sodium	800		2.10	20.0	mg/L	100	30-Jan-2023 13:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

Batch ID: 188665	Start Date: 20 Jan 2023 15:30	End Date: 20 Jan 2023 16:00
Method: SAMPLE FILTRATION - 0.45 MICRON FILTER		Prep Code: FILTRATION

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23010682-02		100 (mL)	100 (mL)	1	250 mL plastic, Neat

Batch ID: 188949	Start Date: 27 Jan 2023 09:00	End Date: 27 Jan 2023 13:00
Method: TOTAL METALS PREP BY E200.8, REV 5.4, 1994		Prep Code: 200.8PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23010682-01		1 (mL)	10 (mL)	10	250 mL plastic, HNO3 to pH <2

Batch ID: 188967	Start Date: 27 Jan 2023 08:30	End Date: 27 Jan 2023 12:30
Method: DISSOLVED METALS DIGESTION BY E200.8,REV 5.4,1994		Prep Code: 200.8_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23010682-02		10 (mL)	10 (mL)	1	250 mL plastic, Neat

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 188949 (0)		Test Name : TOTAL METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS23010682-01	26-272HN A	12 Jan 2023 12:25		27 Jan 2023 09:00	30 Jan 2023 19:43	50
HS23010682-01	26-272HN A	12 Jan 2023 12:25		27 Jan 2023 09:00	30 Jan 2023 17:07	5
Batch ID: 188967 (0)		Test Name : DISSOLVED METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS23010682-02	26-272HN B	12 Jan 2023 12:25		27 Jan 2023 08:30	30 Jan 2023 13:37	100
HS23010682-02	26-272HN B	12 Jan 2023 12:25		27 Jan 2023 08:30	30 Jan 2023 12:17	2
Batch ID: R425957 (0)		Test Name : DISSOLVED GASES BY RSK-175			Matrix: Water	
HS23010682-01	26-272HN A	12 Jan 2023 12:25			16 Jan 2023 14:40	400
Batch ID: R426151 (0)		Test Name : GASOLINE RANGE ORGANICS BY SW8015C			Matrix: Water	
HS23010682-01	26-272HN A	12 Jan 2023 12:25			19 Jan 2023 13:52	500
Batch ID: R426172 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS23010682-01	26-272HN A	12 Jan 2023 12:25			20 Jan 2023 08:00	500
Batch ID: R426222 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C-2011			Matrix: Water	
HS23010682-01	26-272HN A	12 Jan 2023 12:25			19 Jan 2023 10:30	1
Batch ID: R426612 (0)		Test Name : ALKALINITY BY SM 2320B-2011			Matrix: Water	
HS23010682-01	26-272HN A	12 Jan 2023 12:25			25 Jan 2023 17:46	1
Batch ID: R426761 (0)		Test Name : ANIONS BY E300.0, REV 2.1, 1993			Matrix: Water	
HS23010682-01	26-272HN A	12 Jan 2023 12:25			28 Jan 2023 10:50	50

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: R425957 (0)		Instrument: FID-4		Method: DISSOLVED GASES BY RSK-175					
MBLK	Sample ID: MBLK-230116	Units: ug/L		Analysis Date: 16-Jan-2023 09:06					
Client ID:	Run ID: FID-4_425957	SeqNo: 7076296		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	U	1.00							
Methane	U	0.500							
Propane	U	1.00							

LCS	Sample ID: LCS-230116	Units: ug/L		Analysis Date: 16-Jan-2023 09:21					
Client ID:	Run ID: FID-4_425957	SeqNo: 7076297		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	20.5	1.00	18.04	0	114	75 - 125			
Methane	10.2	0.500	9.647	0	106	75 - 125			
Propane	31.22	1.00	26.46	0	118	75 - 125			

LCSD	Sample ID: LCSD-230116	Units: ug/L		Analysis Date: 16-Jan-2023 09:37					
Client ID:	Run ID: FID-4_425957	SeqNo: 7076298		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	19.93	1.00	18.04	0	110	75 - 125	20.5	2.82	30
Methane	8.996	0.500	9.647	0	93.3	75 - 125	10.2	12.6	30
Propane	32.15	1.00	26.46	0	122	75 - 125	31.22	2.95	30

The following samples were analyzed in this batch: HS23010682-01

Client: PDC Energy
 Project: Raindance FC 26-272HN
 WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: R426151 (0)		Instrument: FID-20		Method: GASOLINE RANGE ORGANICS BY SW8015C						
MBLK	Sample ID: MBLK-230119	Units: mg/L		Analysis Date: 19-Jan-2023 12:58						
Client ID:	Run ID: FID-20_426151		SeqNo: 7080450		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.0500								
Surr: 4-Bromofluorobenzene	0.08346	0.00500	0.1	0	83.5	70 - 121				

LCS	Sample ID: LCS-230119	Units: mg/L		Analysis Date: 19-Jan-2023 12:04						
Client ID:	Run ID: FID-20_426151		SeqNo: 7080448		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.025	0.0500	1	0	103	76 - 124				
Surr: 4-Bromofluorobenzene	0.08939	0.00500	0.1	0	89.4	52 - 138				

LCSD	Sample ID: LCSD-230119	Units: mg/L		Analysis Date: 19-Jan-2023 12:17						
Client ID:	Run ID: FID-20_426151		SeqNo: 7080449		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9622	0.0500	1	0	96.2	76 - 124	1.025	6.33	20	
Surr: 4-Bromofluorobenzene	0.09031	0.00500	0.1	0	90.3	52 - 138	0.08939	1.03	20	

The following samples were analyzed in this batch: HS23010682-01

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: 188949 (0)		Instrument: ICPMS07		Method: TOTAL METALS BY E200.8, REV 5.4, 1994					
MBLK	Sample ID: MBLK-188949	Units: ug/L		Analysis Date: 30-Jan-2023 14:04					
Client ID:	Run ID: ICPMS07_426817	SeqNo: 7096210		PrepDate: 27-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	40.84	500							J
Magnesium	12.7	500							J
Potassium	U	500							
Sodium	U	200							

LCS	Sample ID: LCS-188949	Units: ug/L		Analysis Date: 30-Jan-2023 14:05					
Client ID:	Run ID: ICPMS07_426817	SeqNo: 7096211		PrepDate: 27-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	5071	500	5000	0	101	85 - 115			
Magnesium	5415	500	5000	0	108	85 - 115			
Potassium	5270	500	5000	0	105	85 - 115			
Sodium	5278	200	5000	0	106	85 - 115			

MS	Sample ID: HS23011295-03MS	Units: ug/L		Analysis Date: 30-Jan-2023 14:15					
Client ID:	Run ID: ICPMS07_426817	SeqNo: 7096216		PrepDate: 27-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	65690	500	5000	47790	358	70 - 130			SO
Magnesium	25420	500	5000	15970	189	70 - 130			S
Potassium	57220	500	5000	41360	317	70 - 130			SO
Sodium	2423000	200	5000	1929000	9900	70 - 130			SEO

MS	Sample ID: HS23011293-03MS	Units: ug/L		Analysis Date: 30-Jan-2023 15:49					
Client ID:	Run ID: ICPMS07_426817	SeqNo: 7096340		PrepDate: 27-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	43390	500	5000	33200	204	70 - 130			SO
Magnesium	7895	500	5000	2134	115	70 - 130			
Potassium	366000	500	5000	361100	97.5	70 - 130			EO
Sodium	1310000	200	5000	1277000	675	70 - 130			SEO

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: 188949 (0)		Instrument: ICPMS07		Method: TOTAL METALS BY E200.8, REV 5.4, 1994						
MSD	Sample ID: HS23011295-03MSD	Units: ug/L		Analysis Date: 30-Jan-2023 14:17						
Client ID:	Run ID: ICPMS07_426817	SeqNo: 7096217		PrepDate: 27-Jan-2023		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	59380	500	5000	47790	232	70 - 130	65690	10.1	20	SO
Magnesium	23390	500	5000	15970	148	70 - 130	25420	8.31	20	S
Potassium	51810	500	5000	41360	209	70 - 130	57220	9.92	20	SO
Sodium	2139000	200	5000	1929000	4200	70 - 130	2423000	12.5	20	SEO

MSD	Sample ID: HS23011293-03MSD	Units: ug/L		Analysis Date: 30-Jan-2023 14:11						
Client ID:	Run ID: ICPMS07_426817	SeqNo: 7096214		PrepDate: 27-Jan-2023		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	42360	500	5000	33200	183	70 - 130	43390	2.4	20	SO
Magnesium	7837	500	5000	2134	114	70 - 130	7895	0.741	20	
Potassium	365100	500	5000	361100	80.6	70 - 130	366000	0.232	20	EO
Sodium	1329000	200	5000	1277000	1040	70 - 130	1310000	1.38	20	SEO

The following samples were analyzed in this batch: HS23010682-01

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: 188967 (0)		Instrument: ICPMS07		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)					
MBLK	Sample ID: MBLKF1-188967	Units: ug/L		Analysis Date: 28-Jan-2023 15:16					
Client ID:	Run ID: ICPMS07_426743	SeqNo: 7093934		PrepDate: 27-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	121.5	500							J
Magnesium	28.49	500							J
Potassium	U	500							
Sodium	U	200							

MBLK	Sample ID: MBLK-188967	Units: ug/L		Analysis Date: 28-Jan-2023 15:14					
Client ID:	Run ID: ICPMS07_426743	SeqNo: 7093933		PrepDate: 27-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	22.24	500							J
Magnesium	U	500							
Potassium	U	500							
Sodium	U	200							

MBLK	Sample ID: MBLK-188967	Units: ug/L		Analysis Date: 30-Jan-2023 13:14					
Client ID:	Run ID: ICPMS07_426817	SeqNo: 7095986		PrepDate: 27-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	U	500							
Magnesium	U	500							
Potassium	U	500							
Sodium	U	200							

LCS	Sample ID: LCS-188967	Units: ug/L		Analysis Date: 28-Jan-2023 15:18					
Client ID:	Run ID: ICPMS07_426743	SeqNo: 7093935		PrepDate: 27-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	5307	500	5000	0	106	85 - 115			
Magnesium	5304	500	5000	0	106	85 - 115			
Potassium	5103	500	5000	0	102	85 - 115			
Sodium	5187	200	5000	0	104	85 - 115			

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: 188967 (0)		Instrument: ICPMS07		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)					
MS		Sample ID: HS23010856-02MS		Units: ug/L		Analysis Date: 28-Jan-2023 16:46			
Client ID:		Run ID: ICPMS07_426743		SeqNo: 7094065		PrepDate: 27-Jan-2023		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Calcium	1351000	5000	5000	1444000	-1860	85 - 115			SO
Magnesium	512200	5000	5000	532300	-403	85 - 115			SO
Potassium	41740	5000	5000	38360	67.5	85 - 115			SO
MS		Sample ID: HS23010703-01MS		Units: ug/L		Analysis Date: 28-Jan-2023 15:22			
Client ID:		Run ID: ICPMS07_426743		SeqNo: 7093937		PrepDate: 27-Jan-2023		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Calcium	84150	500	5000	76980	143	85 - 115			SO
Magnesium	16660	500	5000	11290	107	85 - 115			
Potassium	11670	500	5000	6499	103	85 - 115			
Sodium	120000	200	5000	114300	113	85 - 115			O
MS		Sample ID: HS23010856-02MS		Units: ug/L		Analysis Date: 28-Jan-2023 16:09			
Client ID:		Run ID: ICPMS07_426743		SeqNo: 7093949		PrepDate: 27-Jan-2023		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Sodium	12100000	2000	5000	11810000	5900	85 - 115			SEO
MSD		Sample ID: HS23010856-02MSD		Units: ug/L		Analysis Date: 28-Jan-2023 16:11			
Client ID:		Run ID: ICPMS07_426743		SeqNo: 7093950		PrepDate: 27-Jan-2023		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Calcium	1456000	5000	5000	1444000	241	85 - 115	1351000	7.49 20	SO
Magnesium	533600	5000	5000	532300	24.5	85 - 115	512200	4.09 20	SO
Potassium	43720	5000	5000	38360	107	85 - 115	41740	4.64 20	O
Sodium	11820000	2000	5000	11810000	234	85 - 115	11420000	3.46 20	SEO

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: 188967 (0)		Instrument: ICPMS07		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)						
MSD		Sample ID: HS23010703-01MSD		Units: ug/L		Analysis Date: 28-Jan-2023 15:24				
Client ID:		Run ID: ICPMS07_426743		SeqNo: 7093938		PrepDate: 27-Jan-2023		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	80910	500	5000	76980	78.6	85 - 115	84150	3.92	20	SO
Magnesium	16240	500	5000	11290	99.0	85 - 115	16660	2.56	20	
Potassium	11290	500	5000	6499	95.9	85 - 115	11670	3.24	20	
Sodium	116900	200	5000	114300	52.0	85 - 115	120000	2.58	20	SO

The following samples were analyzed in this batch: HS23010682-02

Client: PDC Energy
 Project: Raindance FC 26-272HN
 WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: R426172 (0)		Instrument: VOA6		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK		Sample ID: VBLKW-230119		Units: ug/L		Analysis Date: 19-Jan-2023 23:56			
Client ID:		Run ID: VOA6_426172		SeqNo: 7080810		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	U	1.0							
Ethylbenzene	U	1.0							
m,p-Xylene	U	2.0							
o-Xylene	U	1.0							
Toluene	U	1.0							
Xylenes, Total	U	1.0							
Surr: 1,2-Dichloroethane-d4	48.37	1.0	50	0	96.7	70 - 123			
Surr: 4-Bromofluorobenzene	49.06	1.0	50	0	98.1	77 - 113			
Surr: Dibromofluoromethane	45.58	1.0	50	0	91.2	73 - 126			
Surr: Toluene-d8	53.09	1.0	50	0	106	81 - 120			

LCS		Sample ID: VLCSW-230119		Units: ug/L		Analysis Date: 19-Jan-2023 23:14			
Client ID:		Run ID: VOA6_426172		SeqNo: 7080809		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	20.15	1.0	20	0	101	74 - 120			
Ethylbenzene	21.03	1.0	20	0	105	77 - 117			
m,p-Xylene	41.05	2.0	40	0	103	77 - 122			
o-Xylene	20.24	1.0	20	0	101	75 - 119			
Toluene	20.07	1.0	20	0	100	77 - 118			
Xylenes, Total	61.29	1.0	60	0	102	75 - 122			
Surr: 1,2-Dichloroethane-d4	54.13	1.0	50	0	108	70 - 123			
Surr: 4-Bromofluorobenzene	48.82	1.0	50	0	97.6	77 - 113			
Surr: Dibromofluoromethane	49.87	1.0	50	0	99.7	73 - 126			
Surr: Toluene-d8	48.45	1.0	50	0	96.9	81 - 120			

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: R426172 (0)		Instrument: VOA6		Method: LOW LEVEL VOLATILES BY SW8260C					
MS		Sample ID: HS23010875-01MS		Units: ug/L		Analysis Date: 20-Jan-2023 00:59			
Client ID:		Run ID: VOA6_426172		SeqNo: 7080813		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	19.1	1.0	20	0	95.5	70 - 127			
Ethylbenzene	20.78	1.0	20	0	104	70 - 124			
m,p-Xylene	40.79	2.0	40	0	102	70 - 130			
o-Xylene	20.03	1.0	20	0	100	70 - 124			
Toluene	20.15	1.0	20	0	101	70 - 123			
Xylenes, Total	60.82	1.0	60	0	101	70 - 130			
Surr: 1,2-Dichloroethane-d4	47.33	1.0	50	0	94.7	70 - 126			
Surr: 4-Bromofluorobenzene	50.17	1.0	50	0	100	77 - 113			
Surr: Dibromofluoromethane	44.71	1.0	50	0	89.4	77 - 123			
Surr: Toluene-d8	52.31	1.0	50	0	105	82 - 127			

MSD		Sample ID: HS23010875-01MSD		Units: ug/L		Analysis Date: 20-Jan-2023 01:20			
Client ID:		Run ID: VOA6_426172		SeqNo: 7080814		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.83	1.0	20	0	94.2	70 - 127	19.1	1.42	20
Ethylbenzene	20.52	1.0	20	0	103	70 - 124	20.78	1.23	20
m,p-Xylene	39.53	2.0	40	0	98.8	70 - 130	40.79	3.16	20
o-Xylene	19.13	1.0	20	0	95.6	70 - 124	20.03	4.59	20
Toluene	19.41	1.0	20	0	97.0	70 - 123	20.15	3.75	20
Xylenes, Total	58.65	1.0	60	0	97.8	70 - 130	60.82	3.63	20
Surr: 1,2-Dichloroethane-d4	47.77	1.0	50	0	95.5	70 - 126	47.33	0.92	20
Surr: 4-Bromofluorobenzene	49.77	1.0	50	0	99.5	77 - 113	50.17	0.788	20
Surr: Dibromofluoromethane	44.51	1.0	50	0	89.0	77 - 123	44.71	0.446	20
Surr: Toluene-d8	52.06	1.0	50	0	104	82 - 127	52.31	0.48	20

The following samples were analyzed in this batch: HS23010682-01

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: R426222 (0)		Instrument: Balance1		Method: TOTAL DISSOLVED SOLIDS BY SM2540C-2011					
MBLK	Sample ID: WBLK-01162023	Units: mg/L		Analysis Date: 19-Jan-2023 10:30					
Client ID:	Run ID: Balance1_426222	SeqNo: 7082171		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Total Dissolved Solids (Residue, Filterable)		U	10.0						
LCS	Sample ID: LCS-01162023	Units: mg/L		Analysis Date: 19-Jan-2023 10:30					
Client ID:	Run ID: Balance1_426222	SeqNo: 7082170		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Total Dissolved Solids (Residue, Filterable)		914	10.0	1000	0	91.4	85 - 115		
DUP	Sample ID: HS23010778-02DUP	Units: mg/L		Analysis Date: 19-Jan-2023 10:30					
Client ID:	Run ID: Balance1_426222	SeqNo: 7082163		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Total Dissolved Solids (Residue, Filterable)		U	10.0					-12	0 5
DUP	Sample ID: HS23010749-01DUP	Units: mg/L		Analysis Date: 19-Jan-2023 10:30					
Client ID:	Run ID: Balance1_426222	SeqNo: 7082153		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Total Dissolved Solids (Residue, Filterable)		44	10.0					44	0 5
The following samples were analyzed in this batch: HS23010682-01									

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: R426612 (0)		Instrument: ManTech01		Method: ALKALINITY BY SM 2320B-2011					
MBLK	Sample ID: WBLKW1-012523	Units: mg/L		Analysis Date: 25-Jan-2023 14:37					
Client ID:	Run ID: ManTech01_426612	SeqNo: 7090267		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Bicarbonate (As CaCO3)	U	5.00							
Alkalinity, Carbonate (As CaCO3)	U	5.00							
Alkalinity, Total (As CaCO3)	U	5.00							

LCS	Sample ID: LCS1-012523	Units: mg/L		Analysis Date: 25-Jan-2023 14:47					
Client ID:	Run ID: ManTech01_426612	SeqNo: 7090268		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Carbonate (As CaCO3)	1084	5.00	1000	0	108	85 - 115			
Alkalinity, Total (As CaCO3)	1114	5.00	1000	0	111	85 - 115			

LCSD	Sample ID: LCSD1-012523	Units: mg/L		Analysis Date: 25-Jan-2023 14:56					
Client ID:	Run ID: ManTech01_426612	SeqNo: 7090269		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Carbonate (As CaCO3)	1086	5.00	1000	0	109	85 - 115	1084	0.205	20
Alkalinity, Total (As CaCO3)	1118	5.00	1000	0	112	85 - 115	1114	0.339	20

DUP	Sample ID: HS23010566-10DUP	Units: mg/L		Analysis Date: 25-Jan-2023 15:10					
Client ID:	Run ID: ManTech01_426612	SeqNo: 7090271		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Bicarbonate (As CaCO3)	134.7	5.00					115.5	15.3	20
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20
Alkalinity, Total (As CaCO3)	134.7	5.00					115.5	15.3	20

The following samples were analyzed in this batch: HS23010682-01

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: R426761 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993					
MBLK	Sample ID: MBLK	Units: mg/L		Analysis Date: 28-Jan-2023 10:09					
Client ID:	Run ID: ICS-Integrion_426761		SeqNo: 7094163		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Chloride	U	0.500							
Sulfate	U	0.500							

LCS	Sample ID: LCS	Units: mg/L		Analysis Date: 28-Jan-2023 10:15					
Client ID:	Run ID: ICS-Integrion_426761		SeqNo: 7094164		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Chloride	21.04	0.500	20	0	105	90 - 110			
Sulfate	21.61	0.500	20	0	108	90 - 110			

MS	Sample ID: HS23010879-01MS	Units: mg/L		Analysis Date: 28-Jan-2023 11:41					
Client ID:	Run ID: ICS-Integrion_426761		SeqNo: 7094176		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Chloride	395.6	0.500	10	398.1	-24.7	80 - 120			SEO
Sulfate	15.05	0.500	10	4.217	108	80 - 120			

MS	Sample ID: HS23010780-03MS	Units: mg/L		Analysis Date: 28-Jan-2023 14:35					
Client ID:	Run ID: ICS-Integrion_426761		SeqNo: 7094200		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Chloride	10.15	0.500	10	0.065	101	80 - 120			
Sulfate	10.55	0.500	10	0.0241	105	80 - 120			

MS	Sample ID: HS23010780-02MS	Units: mg/L		Analysis Date: 28-Jan-2023 13:32					
Client ID:	Run ID: ICS-Integrion_426761		SeqNo: 7094192		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Chloride	150.2	0.500	10	142.9	72.8	80 - 120			SEO
Sulfate	84.05	0.500	10	78.8	52.4	80 - 120			SO

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

QC BATCH REPORT

Batch ID: R426761 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993						
MSD	Sample ID: HS23010879-01MSD	Units: mg/L		Analysis Date: 28-Jan-2023 11:47						
Client ID:	Run ID: ICS-Integrion_426761		SeqNo: 7094177		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	373	0.500	10	398.1	-250	80 - 120	395.6	5.87	20	SEO
Sulfate	14.16	0.500	10	4.217	99.4	80 - 120	15.05	6.09	20	

MSD	Sample ID: HS23010780-03MSD	Units: mg/L		Analysis Date: 28-Jan-2023 14:41						
Client ID:	Run ID: ICS-Integrion_426761		SeqNo: 7094201		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.692	0.500	10	0.065	96.3	80 - 120	10.15	4.63	20	
Sulfate	10.04	0.500	10	0.0241	100	80 - 120	10.55	4.91	20	

MSD	Sample ID: HS23010780-02MSD	Units: mg/L		Analysis Date: 28-Jan-2023 13:37						
Client ID:	Run ID: ICS-Integrion_426761		SeqNo: 7094193		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	149.9	0.500	10	142.9	69.7	80 - 120	150.2	0.207	20	SEO
Sulfate	84.01	0.500	10	78.8	52.1	80 - 120	84.05	0.0386	20	SO

The following samples were analyzed in this batch: HS23010682-01

Client: PDC Energy
Project: Raindance FC 26-272HN
WorkOrder: HS23010682

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
Date	
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2023	31-Dec-2023
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

Sample Receipt Checklist

Work Order ID: HS23010682

Date/Time Received: 14-Jan-2023 08:50

Client Name: PDC Energy 80620

Received by: Corey GranditsCompleted By: /S/ Corey Grandits

16-Jan-2023 12:17

Reviewed by: /S/ Tyler Monroe

16-Jan-2023 14:53

eSignature

Date/Time

eSignature

Date/Time

Matrices: WCarrier name: FedEx

Shipping container/cooler in good condition?

Yes ☒No ☐Not Present ☐

Custody seals intact on shipping container/cooler?

Yes ☐No ☐Not Present ☒

Custody seals intact on sample bottles?

Yes ☐No ☐Not Present ☒

VOA/TX1005/TX1006 Solids in hermetically sealed vials?

Yes ☐No ☐Not Present ☒

Chain of custody present?

Yes ☒No ☐

1 Page(s)

Chain of custody signed when relinquished and received?

Yes ☒No ☐

Samplers name present on COC?

Yes ☒No ☐

Chain of custody agrees with sample labels?

Yes ☒No ☐

Samples in proper container/bottle?

Yes ☒No ☐

Sample containers intact?

Yes ☒No ☐

Sufficient sample volume for indicated test?

Yes ☒No ☐

All samples received within holding time?

Yes ☒No ☐

Container/Temp Blank temperature in compliance?

Yes ☒No ☐

Temperature(s)/Thermometer(s):

1.8UC/1.3C

IR31

Cooler(s)/Kit(s):

49618

Date/Time sample(s) sent to storage:

1/16/23

Water - VOA vials have zero headspace?

Yes ☒No ☐No VOA vials submitted ☐

Water - pH acceptable upon receipt?

Yes ☐No ☒N/A ☐

pH adjusted?

Yes ☒No ☐N/A ☐

pH adjusted by:

Si Ma

Login Notes: 26-272HN metals pH at receipt 4, preserved with 0.5ml of HNO3 (Lot:321101202). pH after preservation is 1.

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:



Chain of Custody Form

Page _____ of _____

HS23010682

PDC Energy
Raindance FC 26-272HN

ital
ice
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99
22



ALS Project Manager:

Customer Information			Project Information				Request for Analysis												
Purchase Order		Project Name	Raindance FC 26-272HN				A	Dissolved Gases (Methane, Ethane, Propane)											
Work Order		Project Number					B	BTEx 8260											
Company Name	PDC Energy	Bill To Company	PDC Energy				C	DRO 8015											
Send Report To	Max Trehus	Invoice Attn.	Max Trehus				D	GRO 8015											
Address	4000 Burlington Ave	Address	1775 Sherman St #3000				E	Anions (Cl, SO ₄), Alk (T, CO ₃ , HCO ₃), TDS											
City/State/Zip	Evans, CO 80620	City/State/Zip	Denver, CO 80203				F	Dissolved Ca, Mg, K, Na - need to lab filter											
Phone	720-762-3569	Phone	303-860-5800				G	Total Ca, Mg, K, Na											
Fax		Fax					H												
e-Mail Address	max.trehus@pdce.com jenifer.hakkarinen@pdce.com jessica.johannsen@pdce.com	e-Mail Address					I												
J																			
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	26-272HN A	1/12/23	12:25	W	8	3	X												
2	26-272HN A			W	1	3		X											
3	26-272HN A			W	1	3			X										
4	26-272HN A			W	1	3				X									
5	26-272HN A			W	8	1					X								
6	26-272HN B			W	8	1						X							
7	26-272HN A			W	2	1							X						
8																			
9																			
10																			

Sampler(s): Please Print & Sign Max Trehus			Shipment Method:		Required Turnaround Time: <input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour			Results Due Date:	
Relinquished by:	Date:	Time:	Received by:	Notes: Facility ID: 432196					
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler Temp. 1.8°C					
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	QC Package: (Check Box Below)					
				X		Level II: Standard QC		TRRP-Checklist	
						Level III: Std QC + Raw Data		TRRP Level IV	
						Level IV: SW846 CLP-Like			
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035						Other:			

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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49618

JAN 14 2023

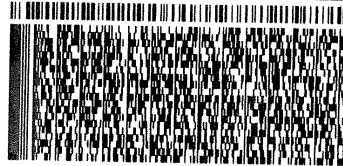
ORIGIN ID:GMYA (970) 305-1648
AMY KEPHART
ALS
965 E 11TH ST
LOVELAND, CO 80537
UNITED STATES US

SHIP DATE: 13JAN23
ACTWGT: 43.95 LB
CAD: 0487862/CAFE3618
DIMS: 24x14x12 IN
BILL THIRD PARTY

TO **SAMPLE RECEIVING**
ALS
10450 STANCLIFF RD
SUITE 210
HOUSTON TX 77099

49618

REF: WSP & PDC



FedEx
Express

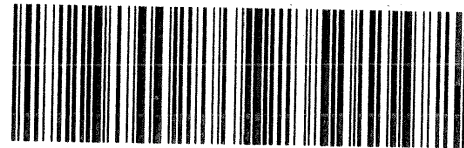


TRK# 6182 5243 5095
0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO SGRA

77099
TX-US IAH



Ref: # 167077-434-INTN EXP Q8/23