

APD ID: 10400011717

Submission Date: 02/22/2017

Highlighted data  
reflects the most  
recent changes

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 17-8 FEDERAL COM

Well Number: 73H

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Well Type: OIL WELL

Well Work Type: Drill

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	3557	884	884	SHALE, DOLOMITE, ANHYDRITE	USEABLE WATER	No
2	SALADO	2351	1206	1206	SHALE, DOLOMITE, HALITE, ANHYDRITE	OTHER : SALT	No
3	LAMAR	-1163	4720	4720	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
4	BELL CANYON	-1210	4767	4767	SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER :	No
5	CHERRY CANYON	-1957	5514	5514	SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER :	No
6	BRUSHY CANYON	-3343	6900	6900	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
7	BONE SPRING	-5029	8586	8586	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	No
8	BONE SPRING 1ST	-6139	9696	9696	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Yes
9	BONE SPRING 2ND	-6371	9928	9928	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Yes
10	BONE SPRING 3RD	-7257	10814	10819	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Yes

## Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M

Rating Depth: 11700

Equipment: 13-5/8" 5M Annular, Blind Ram, Double Ram

Requesting Variance? YES

Variance request: Request for the use of a flexible choke line from the BOP to Choke Manifold.

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE 17-8 FEDERAL COM

**Well Number:** 73H

cock and floor safety valve (inside BOP) and choke lines and choke manifold. A multibowl wellhead or a unionized multibowl wellhead system will be employed. The wellhead and connection to the BOPE will meet all API 6A requirements. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system will be tested. We will test the flange connection of the wellhead with a test port that is directly in the flange. We are proposing that we will run the wellhead through the rotary prior to cementing surface casing as discussed with the BLM on October 8, 2015.

**Choke Diagram Attachment:**

MesaVerde17-8FdCom73H\_ChkManifold(5M)\_02-22-2017.pdf

**BOP Diagram Attachment:**

MesaVerde17-8FdCom73H\_FlexHoseCert\_02-22-2017.pdf

MesaVerde17-8FdCom73H\_BOP(5M13-58)\_02-22-2017.pdf

**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	934	0	934			934	J-55	54.5	BUTT	2.43	1.31	BUOY	2.59	BUOY	2.42
2	PRODUCTI ON	12.2 5	9.625	NEW	API	N	0	9732	0	9732			9732	HCL -80	43.5	BUTT	1.22	1.58	BUOY	2.15	BUOY	2.05
3	PRODUCTI ON	12.2 5	9.625	NEW	API	N	9732	11032	9732	11027			1300	HCL -80	47	BUTT	1.29	1.85	BUOY	4.16	BUOY	3.83
4	LINER	8.5	5.5	NEW	API	N	10932	21603	10927	11700			10671	P- 110	20	OTHER - DQX	1.79	1.2	BUOY	2.37	BUOY	2.12

**Casing Attachments**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE 17-8 FEDERAL COM

**Well Number:** 73H

**Casing Attachments**

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**Casing ID:** 1            **String Type:** SURFACE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

MesaVerde17-8FdCom73H\_CsgCriteria\_02-22-2017.pdf

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**Casing ID:** 2            **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

MesaVerde17-8FdCom73H\_CsgCriteria\_02-22-2017.pdf

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**Casing ID:** 3            **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

MesaVerde17-8FdCom73H\_CsgCriteria\_02-22-2017.pdf

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Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE 17-8 FEDERAL COM

Well Number: 73H

### Casing Attachments

Casing ID: 4 String Type: LINER

Inspection Document:

Spec Document:

Tapered String Spec:

### Casing Design Assumptions and Worksheet(s):

MesaVerde17-8FdCom73H\_CsgCriteria\_02-22-2017.pdf

MesaVerde17-8FdCom73H\_5.5-20-P110DQX\_02-22-2017.pdf

### Section 4 - Cement

String Type	Lead/Tail	Stage Tool	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	934	748	1.35	14.8	1010	50	Class C Cement	Accelerator

PRODUCTION	Lead	4770	0	4270	1172	1.85	12.9	2168	75	Cl C Cement	Accelerator, Retarder
PRODUCTION	Tail		4270	4770	265	1.33	14.8	352	125	CL C Cement	none
PRODUCTION	Lead		0	1003 2	1747	3.05	10.2	5328	75	Poz/C Cement	Retarder
PRODUCTION	Tail		1003 2	1103 2	239	1.65	13.2	394	20	Class H Cement	Retarder, Dispersant, Salt
LINER	Lead		1093 2	2160 3	1726	1.63	13.2	2813	15	Class H Cement	Retarder, Disperant, Salt

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Well Number: 73H

### Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

**Describe what will be on location to control well or mitigate other conditions:** Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CaCl<sub>2</sub>. OXY proposes to drill out the 13-3/8" surface casing shoe with a saturated brine system from 934-4770', which is the base of the salt system. At this point we will swap fluid systems to a high viscosity mixed metal hydroxide system. We will drill with this system to the production casing TD @ 11032'.

**Describe the mud monitoring system utilized:** PVT/MD Totco/Visual Monitoring

### Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
934	4770	OTHER : Brine	9.8	10							
0	934	WATER-BASED MUD	8.4	8.6							
4770	1103 2	WATER-BASED MUD	8.8	9.6							
1103 2	2160 3	OIL-BASED MUD	10	12							

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE 17-8 FEDERAL COM

**Well Number:** 73H

## Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

GR from TD to surface (horizontal well – vertical portion of hole). Mud Log from Surface casing shoe to TD.

**List of open and cased hole logs run in the well:**

GR,MUDLOG

**Coring operation description for the well:**

No coring is planned at this time.

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 5719

**Anticipated Surface Pressure:** 3145

**Anticipated Bottom Hole Temperature(F):** 174

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

MesaVerde17-8FdCom73H\_H2S1\_02-22-2017.pdf

MesaVerde17-8FdCom73H\_H2S2\_02-22-2017.pdf

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

MesaVerde17-8FdCom73H\_DirectPlan\_02-22-2017.pdf

MesaVerde17-8FdCom73H\_DirectPlot\_02-22-2017.pdf

**Other proposed operations facets description:**

Well will be drilled with a walking/skidding operation. Plan to drill the two well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well.

OXY requests the option to set casing shallower yet still below the salts if losses or hole conditions require this. Cement volumes may be adjusted if casing is set shallower and a DV tool will be run in case a contingency second stage is required for cement to reach surface. If cement circulated to surface during first stage we will drop a cancelation cone and not pump the second stage.

**Cement Top and Liner Overlap**

1. Oxy is requesting permission to have minimum fill of cement behind the 5-1/2" production liner to be 100' into previous casing string. The reason for this is so that we can come back and develop shallower benches from the same 9-5/8" mainbore in the future.

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE 17-8 FEDERAL COM

**Well Number:** 73H

2. Our plan is to use a whipstock for our exit through the mainbore. Based on our lateral target, we are planning a whipstock cased/hole exit so that kick-off point will allow for roughly 10deg/100' doglegs needed for the curve.

3. Cement will be brought to the top of this liner hanger.

4. See attached for additional casing tie-back information.

OXY requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that OXY would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. See attached for additional spudder rig information.

**Other proposed operations facets attachment:**

MesaVerde17-8FdCom73H\_DrillPlan\_02-22-2017.pdf

MesaVerde17-8FdCom73H\_CsgTieBackDetail\_02-22-2017.pdf

MesaVerde17\_8FdCom73H\_SpudRigData\_07-18-2017.pdf

**Other Variance attachment:**