



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL
Vertical / New Drill

EAGLE NATRIUM LLC
POST OFFICE BOX 191

NEW MARTINSVILLE, WV 26155

Re: Permit Modification Approval for 14 BRINE WELL
47-051-01919-00-00

**26 INCH HOLE WILL BE DRILLED CONCENTRICALLY WITH 26 INCH CASING AND
CASING WILL BE SET IN BEDROCK.**

EAGLE NATRIUM LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.


James A. Martin
Chief

Operator's Well Number: 14 BRINE WELL
Farm Name: EAGLE NATRIUM, LLC / AXIAL CORPORATION
U.S. WELL NUMBER: 47-051-01919-00-00
Vertical / New Drill
Date Issued: June 21,2017

Promoting a healthy environment.

06/23/2017

WW - 2B
(Rev. 8/10)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Eagle Natrium, LLC/ Axiall Corporation

39600	Marshall	Franklin	New Martinsville
Operator ID	County	District	Quadrangle

2) Operator's Well Number: 14 Brine Well 3) Elevation: 643 ft.

4) Well Type: (a) Oil _____ or Gas Brine Prod. Well
(b) If Gas: Production _____ / Underground Storage _____
Deep _____ / Shallow _____

5) Proposed Target Formation(s): Salina Proposed Target Depth: 6700 - 6800 ft.

6) Proposed Total Depth: 10,000 - 11,000 Feet Formation at Proposed Total Depth: Salina

7) Approximate fresh water strata depths: 40 ft.

8) Approximate salt water depths: N/A

9) Approximate coal seam depths: 276-278 ft., 876-880 ft., 946-948 ft., 1026-1028 ft., 1048-1050 ft., 1122-1124 ft.

10) Approximate void depths, (coal, Karst, other): N/A

11) Does land contain coal seams tributary to active mine? No

12) Describe proposed well work and fracturing methods in detail (attach additional sheets if needed)

Bore holes will be drilled, casing set per the casing/ tubing program, then No. 1/3 Brine Field will be intercepted.

26" HOLE WILL BE DRILLED CONCENTRICALLY WITH 26" CASING AND CASING WILL BE SET IN BEDROCK. (NO CEMENT) gmm

13) CASING AND TUBING PROGRAM

TYPE	SPECIFICATIONS			FOOTAGE	INTERVALS	CEMENT
	Size	Grade	Weight per ft			
Conductor	26" XH	A53 Gr. B	169 lb/ft	For Drilling 90 ft.	Left in Well 90 ft.	Fill -up (Cu. Ft.) 0 CF
Fresh Water	20"	J55	94 lb/ft	300 ft.	300 ft.	300 CF
Coal						
Intermediate	13-3/8"	J55	54.5 lb/ft	2,080 ft.	2,080 ft.	1820 CF
Production	9-5/8"	HCL80	53.5 lb/ft	6,320 ft.	6,320 ft.	1500 CF
Tubing	7"	L80	32.0 lb/ft	1,600 ft.	1,600 ft.	N/A
Liners						

Packers: Kind: 7" x 32 lb/ft x 9-5/8" x 53.5 lb/ft, L-80 Top Packer with Seals and L-80 Hanger

Sizes: (above)

Depths Set Approx. 5500 ft.

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Office of Oil and Gas

JUN 21 2017

06/23/2017

- CONDUCTOR PIPE - 26" A53 GR. B CARBON STEEL, 169 LB/FT, 90' ^{SET INTO BEOROCK NOT CEMENTED} ERW. 9MM
- FRESH WATER PIPE - 20" J-55, 94 LB/FT, 300.00' ERW, BTC, 6 RND. RANGE 3, TACK WELD COUPLINGS.
- INTERMEDIATE - 13 3/8" J-55, 54.5 LB/FT, 2080.00' CEMENTED TO SURFACE, STC, RANGE 3, ERW.
- PRODUCTION - 9 5/8" /HCL-80, 53.5 LB/FT, 6320.00', CEMENTED TO 1000', 8 ROUND - THREADED & LONG COUPLED, RANHE 3, SEAMLESS.
- LINER - 7" L-80, 32 LB/FT, 1600.00', NOT CEMENTED, HYDRIL 521 THREADED, RANGE 3, SEAMLESS.
- VALVE - GATE VALVE, 10" DIA. (API 11 IN. x 5M), FULL PORT, RTJ, EXPANDING GATE, ANSI CLASS 1500, ENP TRIM, VITON SEALS, WCC BODY, GEAR OPERATED, AND FIRESAFE.
- NUTS & BOLTS - (24) 1 7/8" Ø x 14 1/4" LG. STUD BOLT - ASTM A-193, GR. B-7 (FOR 10" VALVE) NUTS: ASTM A-194, CLASS 2H, ANSI B1.1
- OUTLET VALVE - 2" - 3000 LB. - THREADED BALL VALVE - 2 REQ' D.
- PACKER/HANGER - 7" 32 LB/FT x 9 5/8" 53.5 LB/FT, N-80, MODEL 'C' LINER TOP PACKER W/ 7 1/2" O. DIA. x 6 FT. LONG TIE BACK RECEPTACLE
7" 32 LB/FT x 9 5/8" 53.5 LB, N-80, MODEL 'HSC' MECHANICALLY SET LINER HANGER W/HYDRIL 521 PIN DOWN
- TOP FLANGE (A)- 10" DIA. x ANSI CLASS 1500 RTJ WELD NECK FLANGE W/ SCH. 80 BORE, ANSI B 16.5/A105-4130
- PACKOFF SPOOL (B)- 13 5/8" x 3M x 11" x 5M W/2 EA. 2" x 5M VALVES. ALSO INCLUDED: PACKOFF, PE ASSEMBLY AND 10 3/4" x 9 5/8" GBI W/HSN RUBBER.
- WELLHEAD (C)- CASING 13 3/8" x 9 5/8" W/HANGER SLIPS, TOP PACKING (BRADEN HEAD) WITH (2 EACH) 2" DIA. LPO'S. HEAD TO BE WELDED TO CASING.
- RING JOINT GASKET- R54 CAD PLATED RING GASKET FOR 10" x ANSI CLASS 1500, RTJ FLANGE (6 EACH).


RECEIVED
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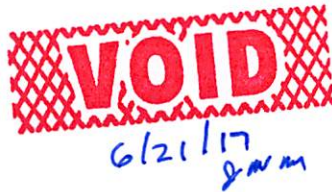
JUN 21 2017

F	DNV	12/23/17	REVISED NOTATIONS
E	DNV	12/16/17	REVISED NOTATIONS
D	DNV	01/12/17	REVISED NOTES
C	DNV	01/08/17	REVISED NOTES
B	DWS	12/20/16	REVISED NOTES
A	DNV	12/15/16	NEW #14 WELL
REV. BY	DATE		DESCRIPTION

WV Department of Environmental Protection
4" OPEN HOLE
EXISTING CAVITY (#1/3 BRINE FIELD)
ROUGH TO EXIST. CAVITY

DEPT: 70 - BRINE
TITLE: #14 BRINE WELL (API #47-051-XXXX)
PROPOSED CONFIGURATION (SCHEMATIC)
DRAWING TYPE: MECHANICAL PROCESS EQUIPMENT HPE
EQUIPMENT No: 7000-115-57

 NATRIUM	DRAWN D. WAYT	DATE 12/05/16
	CHECKED	DATE
	APP' VD S. CLARK	DATE -
	SCALE NONE	ACAD YES
	JOB No P-240-H	
DWG 70-2678	REV F	DATE 06/23/2017



5101919B

WW - 2B
(Rev. 8/10)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Eagle Natrium, LLC/ Axiall Corporation
Operator ID: 39600 County: Marshall District: Franklin Quadrangle: New Martinsville

2) Operator's Well Number: 14 Brine Well 3) Elevation: 643 ft.

4) Well Type: (a) Oil _____ or Gas Brine Prod. Well
(b) If Gas: Production _____ / Underground Storage _____
Deep _____ / Shallow _____ *JM 2/24/17*

5) Proposed Target Formation(s): Salina Proposed Target Depth: 6700 - 6800 ft.
6) Proposed Total Depth: 10,000 - 11,000 Feet Formation at Proposed Total Depth: Salina
7) Approximate fresh water strata depths: 40 ft.
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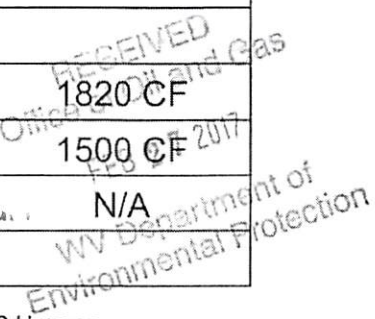
11) Does land contain coal seams tributary to active mine? No

12) Describe proposed well work and fracturing methods in detail (attach additional sheets if needed)
Bore holes will be drilled, casing set per the casing/ tubing program, then No. 1/3 Brine Field will be intercepted.

13) **CASING AND TUBING PROGRAM**

	SPECIFICATIONS			FOOTAGE INTERVALS		CEMENT
	Size	Grade	Weight per ft	For Drilling	Left in Well	Fill -up (Cu. Ft.)
Conductor	26" XH	A53 Gr. B	169 lb/ft	90 ft.	90 ft.	175 CF
Fresh Water	20"	J55	94 lb/ft	300 ft.	300 ft.	300 CF
Coal						
Intermediate	13-3/8"	J55	54.5 lb/ft	2,080 ft.	2,080 ft.	1820 CF
Production	9-5/8"	HCL80	53.5 lb/ft	6,320 ft.	6,320 ft.	1500 CF
Tubing	7"	L80	32.0 lb/ft	1,600 ft.	1,600 ft.	N/A
Liners						

Packers: Kind: 7" x 32 lb/ft x 9-5/8" x 53.5 lb/ft, L-80 Top Packer with Seals and L-80 Hanger
Sizes: (above)
Depths Set Approx. 5500 ft.



06/23/2017

VOID

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- FRESH WATER PIPE - 20' J-55, 94 LB/FT, 300.00' ERW, BTC, 6 RND.
RANGE 3, TACK WELD COUPLINGS.
- INTERMEDIATE - 13 3/8' J-55, 54.5 LB/FT, 2080.00' CEMENTED TO SURFACE, STC,
RANGE 3, ERW.
- PRODUCTION - 9 5/8' /HCL-80, 53.5 LB/FT, 6320.00', CEMENTED TO 1000',
8 ROUND - THREADED & LONG COUPLED, RANHE 3, SEAMLESS.
- LINER - 7' L-80, 32 LB/FT, 1600.00', NOT CEMENTED,
HYDRIL 521 THREADED, RANGE 3, SEAMLESS.
- VALVE - GATE VALVE, 10' DIA. (API 11 IN. x 5M), FULL PORT, RTJ,
EXPANDING GATE, ANSI CLASS 1500, ENP TRIM, VITON SEALS, WCC
BODY, GEAR OPERATED, AND FIRESAFE.
- NUTS & BOLTS - (24) 1 7/8" ϕ x 14 1/4" LG. STUD BOLT - ASTM A-193, GR. B-7
(FOR 10' VALVE) NUTS: ASTM A-194, CLASS 2H, ANSI B1.1
- OUTLET VALVE - 2' - 3000 LB. - THREADED BALL VALVE - 2 REQ' D.
- PACKER/HANGER - 7' 32 LB/FT x 9 5/8' 53.5 LB/FT, N-80, MODEL 'C' LINER TOP PACKER
W/ 7 1/2" O. DIA. x 6 FT. LONG TIE BACK RECEPTACLE
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(BRADEN HEAD) WITH (2 EACH) 2' DIA. LPO'S. HEAD TO BE WELDED
TO CASING.
- RING JOINT GASKET- R54 CAD PLATED RING GASKET FOR 10' x ANSI CLASS
1500, RTJ FLANGE (6 EACH).

VOID

6/21/17
g/m/m

RECEIVED
Office of Oil and Gas


FEB 27 2017

WV Department of
Environmental Protection
EXISTING CAVITY
(#1/3 BRINE FIELD)

F	DMV	12/23/17	REVISED NOTATIONS
E	DMV	12/16/17	REVISED NOTATIONS
D	DMV	01/12/17	REVISED NOTES
C	DMV	01/03/17	REVISED NOTES
B	DVS	12/20/16	REVISED NOTES
A	DMV	12/15/16	NEW #14 WELL
REV. BY	DATE	DESCRIPTION	

4" OPEN HOLE

ROUGH TO EXIST. CAVITY

DEPT: 70 - BRINE		
TITLE: #14 BRINE WELL (API #47-051-XXXX)		
PROPOSED CONFIGURATION (SCHEMATIC)		
DRAWING TYPE: MECHANICAL PROCESS EQUIPMENT	MPE	
EQUIPMENT No: 7000-115-57		
 NATRIUM	DRAWN D. VAYT	DATE 12/05/16
	CHECKED	DATE
	APP' VD S. CLARK	DATE -
	SCALE NONE	ACAD YES
	JOB No P-240-H	REV F
DWG 70-2678	06/23/2017	

McLaughlin, Jeffrey W

From: Stephen Clark (Natrium) <Stephen.Clark@axiall.com>
Sent: Wednesday, June 21, 2017 1:18 PM
To: McLaughlin, Jeffrey W
Cc: Nicholson, James I; Tom Horan; Stephen Clark (Natrium)
Subject: Eagle Natrium/ Axiall #14 Brine Well -- API #47-051-1919 -- Permit Modification Request
Attachments: WV DEP Form WW-2B for API #47-051-1919 Rev 1.pdf

Enclosed please find a revision to the Casing and Tubing Program for our 26 in. conductor casing.

Our drilling contractor has requested the conductor be drilled to bedrock in lieu of drilling a hole, setting the casing, and cementing the casing.

As such, the fill-up cement for the conductor is zero (0) cubic feet. Also, see attached revised Form WW-2B (pg. 1) reflecting the proposed change.

A one day turn-around authorization is being requested by Axiall, if possible.

Please note, Mr. James Nicholson has reviewed our proposed change and is in agreement.

Regards,

Stephen M. Clark, P.E. | Sr. Engineer

Stephen.Clark@axiall.com | Office: 304.455.2200, Ext. 3318 | Cell: 304.266.8264

Axiall Corporation, a Westlake company

16339 Energy Road, Proctor, West Virginia, 26055 | www.westlake.com



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