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Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM97153

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.:

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.: VACA DRAW 9418 10 FED 8H (317432)

2. Name of Operator: BTA OIL PRODUCERS LLC (260297)

9. API Well No.: 30-025-44250

3a. Address: 104 S. Pecos Midland TX 79701

3b. Phone No. (include area code): (432)682-3753

10. Field and Pool, or Exploratory: RED HILLS / UPPER BONE SPRING SH

4. Location of Well (Report location clearly and in accordance with any State requirements.*)

At surface: NWNW / 200 FNL / 520 FWL / LAT 32.151786 / LONG -103.567083

At proposed prod. zone: SWSW / 50 FSL / 330 FWL / LAT 32.137955 / LONG -103.567713

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 10 / T25S / R33E / NMP

14. Distance in miles and direction from nearest town or post office*: 22 miles

12. County or Parish: LEA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 50 feet

16. No. of acres in lease: 640

17. Spacing Unit dedicated to this well: 160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 200 feet

19. Proposed Depth: 10100 feet / 15126 feet

20. BLM/BIA Bond No. on file: FED: NM1195

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3418 feet

22. Approximate date work will start*: 03/01/2018

23. Estimated duration: 45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature	Name (Printed/Typed)	Date
(Electronic Submission)	Kayla McConnell / Ph: (432)682-3753	06/01/2017

Title: Regulatory Analyst

Approved by (Signature)	Name (Printed/Typed)	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	11/17/2017

Title	Office
Supervisor Multiple Resources	CARLSBAD

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

APPROVED WITH CONDITIONS

KZ
12/04/17

Approval Date: 11/17/2017

Additional Operator Remarks

Location of Well

1. SHL: NWNW / 200 FNL / 520 FWL / TWSP: 25S / RANGE: 33E / SECTION: 10 / LAT: 32.151786 / LONG: -103.567083 (TVD: 0 feet, MD: 0 feet)
   PPP: NWNW / 330 FNL / 515 FWL / TWSP: 25S / RANGE: 33E / SECTION: 10 / LAT: 32.151429 / LONG: -103.567083 (TVD: 10100 feet, MD: 10379 feet)
   BHL: SWSW / 50 FSL / 330 FWL / TWSP: 25S / RANGE: 33E / SECTION: 10 / LAT: 32.137955 / LONG: -103.567713 (TVD: 10100 feet, MD: 15126 feet)

BLM Point of Contact

Name: Tenille Ortiz
Title: Legal Instruments Examiner
Phone: 5752342224
Email: tortiz@blm.gov

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM collects this information to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications.
Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease.
The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

OCD Hobbs

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U.S. Department of the Interior
Bureau of Land Management

Application for Permit to Drill

APD Package Report

Date Printed: 11/20/2017 09:17 AM

APD ID: 10400014586
APD Received Date: 06/01/2017 01:18 PM 260297
Operator: BTA OIL PRODUCERS LLC

Well Status: AAPD 317432
Well Name: VACA DRAW 9418 10 FED
Well Number: 8H

Pool id 97900

APD Package Report Contents

- Form 3160-3

- Operator Certification Report

- Application Report
- Application Attachments
  -- Well Plat: 1 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 2 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 1 file(s)
  -- Casing Design Assumptions and Worksheet(s): 3 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 1 file(s)
  -- Other Facets: 2 file(s)
  -- Other Variances: 2 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 2 file(s)
  -- Attach Well map: 1 file(s)
  -- Production Facilities map: 1 file(s)
  -- Water source and transportation map: 1 file(s)
  -- Well Site Layout Diagram: 1 file(s)

- PWD Report
- PWD Attachments
  -- None

- Bond Report
- Bond Attachments
  -- None

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(Continued on page 3)

Engineer Worksheet

Carlsbad Field Office

620 E. Greene St.

Carlsbad, NM 88220-6292

Tracking Number:	ATS-17-813	County:	Lea
Company:	BTA Oil Producers	Well Name and Number:	VACA DRAW 9418 10 FED -8H
Surface Hole Location:	200'/N.& 520'/W. SEC010 T025S, R033E	Bottom Hole Location:	50'/S.& 330'/W. SEC010 T025S, R033E

Lease Number:	NMNM97153	Prod Status:		Effective:	
Bond:	Statewide	Bond #:	NM1195	Potash:	No
NOS Received:	NO	APD Received:	6-1-2017	10-Day LTR Sent:	
Acreage:		Orthodox:	Yes	COM Agr Required:	No

Deficiencies Noted:

☐ Form 3160-3 ☐ Survey Plat ☐ Drilling Plan ☐ Surface Plan ☐ Bonding ☐ Original Signature ☐ Operator Cert Statement

Other Deficiencies: ☐

Adjudication Comments:

GEO Report Completed: 9-29-2017

Technical Checklist

Plat:	ok	Elevation:	3418		
Proposed Depth: TVD:	10100	MD:	15126	Targeted Formation:	Bone Spring
Anticipated Water-Oil, Gas, Etc.:	Expected fresh water above 1141 ft/ Oil-Gas: Delaware and Bone Spring				
Casing/Cement Program:	See COA for depth changes / See COA for cement deficiency.				
Bottom Hole Mud Weight	9.2	BHP:	4831.84	MASP:	2609.84

◉ Horizontal ○ Directional ○ Vertical ☐ Re-entry

Well Control Prog(BOP, ETC)	3M BOP after surface casing. Variance: 3M Multibowl BOP	Mud Program:	Ok
Test-Log-Cores Program:	Required: See COA. Proposed: GR		
H2S or Other Hazards:	H2S no. Possibility of water flows in the Salado and Castile. Possibility of lost circulation in Red Beds, Rustler, and Delaware.		

Water Basin: Carlsbad

Casings to Witness: ☑ Surface ☐ Intermediate ☐ Production ☐ CIT Required

☐ Other Witness

Comments: Witness surface casing.

Mustafa Haque 11-7-2017

Engineer	Date	Siganture	Adjudication Date	Adjudicator Initials

Approved By: 11/17/2017

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

PWD Data Report
11/20/2017

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data Report

11/20/2017

Bond Information

Federal/Indian APD: FED

BLM Bond number: NM1195

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

11/20/2017

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Kayla McConnell **Signed on:** 06/01/2017

Title: Regulatory Analyst

Street Address: 104 S. Pecos

City: Midland **State:** TX **Zip:** 79701

Phone: (432)682-3753

Email address: kmcconnell@btaoil.com

Field Representative

Representative Name: Nick Eaton

Street Address: 104 South Pecos

City: Midland **State:** TX **Zip:** 79701

Phone: (432)682-3753

Email address: neaton@btaoil.com

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report

11/20/2017

APD ID: 10400014586 **Submission Date:** 06/01/2017

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED **Well Number:** 8H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400014586 **Tie to previous NOS?** 10400010933 **Submission Date:** 06/01/2017

BLM Office: CARLSBAD **User:** Kayla McConnell **Title:** Regulatory Analyst

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM97153 **Lease Acres:** 640

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** BTA OIL PRODUCERS LLC

Operator letter of designation:

Operator Info

Operator Organization Name: BTA OIL PRODUCERS LLC

Operator Address: 104 S. Pecos **Zip:** 79701

Operator PO Box:

Operator City: Midland **State:** TX

Operator Phone: (432)682-3753

Operator Internet Address: pinskeep@btaoil.com

Section 2 - Well Information

Well in Master Development Plan? NO **Mater Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: VACA DRAW 9418 10 FED **Well Number:** 8H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** RED HILLS **Pool Name:** UPPER BONE SPRING SHALE

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED **Well Number:** 8H

Describe other minerals:

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** YES **New surface disturbance?** Y

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** VACA DRAW 9418 10 FED **Number:** 1

Well Class: HORIZONTAL **Number of Legs:**

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 22 Miles **Distance to nearest well:** 200 FT **Distance to lease line:** 50 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: Vaca_Draw_9418_10_Fed_8H___C102_06-01-2017.pdf

Well work start Date: 03/01/2018 **Duration:** 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NGVD29

Survey number:

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	200	FNL	520	FWL	25S	33E	10	Aliquot NWNW	32.151786	-103.567083	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 97153	3418	0	0
KOP Leg #1	200	FNL	520	FWL	25S	33E	10	Aliquot NWNW	32.151786	-103.567083	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 97153	-2911	6329	6329
PPP Leg #1	330	FNL	515	FWL	25S	33E	10	Aliquot NWNW	32.151429	-103.567083	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 97153	-6682	10379	10100

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED **Well Number:** 8H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
EXIT Leg #1	330	FSL	340	FWL	25S	33E	10	Aliquot SWSW	32.138725	-103.567678	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 97153	-6682	14845	10100
BHL Leg #1	50	FSL	330	FWL	25S	33E	10	Aliquot SWSW	32.137955	-103.567713	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 97153	-6682	15126	10100

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

11/20/2017

APD ID: 10400014586 **Submission Date:** 06/01/2017

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED **Well Number:** 8H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

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Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	QUATERNARY	3237	0	0	ALLUVIUM	NONE	No
2	RUSTLER	2146	1091	1091		NONE	No
3	TOP SALT	1742	1495	1495	SALT	NONE	No
4	BASE OF SALT	-1257	4494	4494	SALT	NONE	No
5	DELAWARE	-1837	5074	5074		NATURAL GAS,OIL	No
6	BONE SPRING LIME	-6006	9243	9243		NATURAL GAS,OIL	No

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M **Rating Depth:** 11100

Equipment: The 13-5/8" blowout preventer equipment (BOP) shown in Exhibit A will consist of a (3M system) double ram type (3000 psi WP) preventer and a bag-type (Hydril) preventer (3000 psi WP). Both units will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and 4-½" drill pipe rams on bottom. The BOP's will be installed on the 13 3/8" surface casing and utilized continuously until total depth is reached. All BOP's and associated equipment will be tested as per BLM drilling Operations Order No. 2. A 2" kill line and 3" choke line will be incorporated in the drilling spool below the ram-type BOP. Other accessory BOP equipment will include a Kelly cock, floor safety valve, choke lines, and choke manifold having a 3000 psi WP rating.

Requesting Variance? YES

Variance request: A choke hose variance is requested. See attached test chart and spec.

Testing Procedure: Pipe rams will be operated and checked each 24-hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily driller's log.

Choke Diagram Attachment:

Choke Hose - Test Chart and Specs_12-08-2016.pdf

Vaca_Draw_9418_10_Fed___3k_Choke_05-31-2017.pdf

BOP Diagram Attachment:

Vaca_Draw_9418_10_Fed___3k_BOP_05-31-2017.pdf

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

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Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025- 44250	97900	Red Hills Upper;Bone Spring Shale

Property Code	Property Name	Well Number
305274 317432	VACA DRAW 9418 10 FEDERAL	8H

OGRID No.	Operator Name	Elevation
260297	BTA OIL PRODUCERS, LLC	3418'

Surface Location

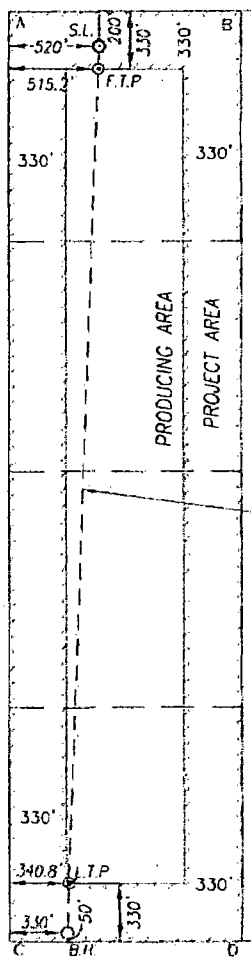
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	10	25-S	33-E		200	NORTH	520	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	10	25-S	33-E		50	SOUTH	330	WEST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



GEODETIC COORDINATES
NAD 27 NME
SURFACE LOCATION
Y=419740.9 N
X=737291.5 E
LAT.=32.151662° N
LONG.=103.566609° W

GEODETIC COORDINATES
NAD 83 NME
SURFACE LOCATION
Y=419799.0 N
X=778477.0 E
LAT.=32.151786° N
LONG.=103.567083° W

FIRST TAKE POINT
NAD 27 NME
Y=419610.9 N
X=737287.3 E
LAT.=32.151305° N
LONG.=103.566625° W

FIRST TAKE POINT
NAD 83 NME
Y=419669.1 N
X=778472.9 E
LAT.=32.151429° N
LONG.=103.567099° W

CORNER COORDINATES TABLE
NAD 27 NME
A - Y=419937.5 N, X=736770.5 E
B - Y=419946.2 N, X=738093.6 E
C - Y=414656.6 N, X=736802.4 E
D - Y=414662.9 N, X=738127.1 E

CORNER COORDINATES TABLE
NAD 83 NME
A - Y=419995.6 N, X=777956.0 E
B - Y=420004.3 N, X=779279.1 E
C - Y=414714.6 N, X=777988.1 E
D - Y=414720.9 N, X=779312.8 E

LAST TAKE POINT
NAD 27 NME
Y=414988.2 N
X=737140.8 E
LAT.=32.138600° N
LONG.=103.567205° W

LAST TAKE POINT
NAD 83 NME
Y=415046.2 N
X=778326.6 E
LAT.=32.138725° N
LONG.=103.567678° W

BOTTOM HOLE LOCATION
NAD 27 NME
Y=414708.2 N
X=737132.0 E
LAT.=32.137831° N
LONG.=103.567240° W

BOTTOM HOLE LOCATION
NAD 83 NME
Y=414766.2 N
X=778317.7 E
LAT.=32.137955° N
LONG.=103.567713° W

OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Kayla McConnell 6/1/17
Signature Date

Kayla McConnell
Printed Name

kmcconnell@btaoil.com
E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

FEBRUARY 14, 2017
Date of Survey
Signature & Seal of Professional Surveyor

NEW MEXICO
3239
REGISTERED PROFESSIONAL SURVEYOR

Ronald J Eidson 2/24/2017
Certificate Number Gary G. Eidson 12641
Ronald J. Eidson 3239

ACK REL. W.O.: 16111030 JWSC W.O.: 17.11.0114

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED **Well Number:** 8H

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 length MD	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	1100	0	1100	-6682	-7782	1100	J-55	54.5	STC	1.6	3.86	DRY	5.7	DRY	9.5
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5070	0	5070	-6682	-11752	5070	J-55	40	LTC	1.6	1.4	DRY	2.1	DRY	2.9
3	PRODUCTION	8.75	7.0	NEW	API	N	0	15126	0	10100	-6682	-16782	15126	P-110	17	LTC	1.5	2.1	DRY	2.5	DRY	3.1

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_9418_10_Fed_8H___Casing_Assumptions_05-31-2017.pdf

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED **Well Number:** 8H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_9418_10_Fed_8H___Casing_Assumptions_05-31-2017.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_9418_10_Fed_8H___Casing_Assumptions_05-31-2017.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	890	640	1.75	13.5	1811	81	Class C	4% Gel
SURFACE	Tail		890	1100	200	1.34	14.8	268	81	Class C	2% CaCl2
INTERMEDIATE	Lead		0	4420	1085	2.18	12.7	2365	61	Class C	6% Gel
INTERMEDIATE	Tail		4420	5070	425	1.22	14.4	332	61	Class C	0.004 GPS cf-41L
PRODUCTION	Lead		4000	9200	425	4.43	10.5	1838	42	50:50 H	0.004 GPS cf-41L

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED **Well Number:** 8H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail		9200	15126	2100	1.22	14.4	3324	15	50:50 H	2% Gel

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 will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/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
0	1100	SPUD MUD	8.3	8.4							
1100	5070	SALT SATURATED	10	10.2							
5070	10100	OTHER : Cut Brine	8.6	9.2							

Operator Name: BTA OIL PRODUCERS LLC

Well Name: VACA DRAW 9418 10 FED **Well Number:** 8H

Section 6 - Test, Logging, Coring

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

No DST Planned

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

GR

Coring operation description for the well:

No cores are currently planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4831 **Anticipated Surface Pressure:** 2609

Anticipated Bottom Hole Temperature(F): 161

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? NO

Hydrogen sulfide drilling operations plan:

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Vaca_Draw_9418_10_Fed_8H___Directional_Plan_05-31-2017.pdf

Other proposed operations facets description:

A variance is requested for a Multi Bowl Wellhead. See the attached schematic and running procedure.

Other proposed operations facets attachment:

H2S Plan m_12-08-2016.pdf

H2S_Equipment_Schematic___Well_Pad_05-23-2017.pdf

Other Variance attachment:

Multi Bowl Wellhead Schematic_12-08-2016.pdf

Wellhead System and Testing_12-08-2016.pdf

ContiTech

CONTITECH RUBBER Industrial Kft.	No:QC-DB- 590/ 2014
	Page: 16 / 176

Rig 94 Asset 24455

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE			CERT. N°: 1592
PURCHASER: ContiTech Oil & Marine Corp.			P.O. N°: 4500461753
CONTITECH ORDER N°: 539225	HOSE TYPE: 3" ID	Choke & Kill Hose	
HOSE SERIAL N°: [illegible]	NOMINAL / ACTUAL LENGTH:	7,62 m / 7,66 m	
W.P. 68,9 MPa 10000 psi	T.P. 103,4 MPa 15000 psi	Duration: 60 min.	

Pressure test with water at ambient temperature

See attachment. (1 page)

→ 10 Min.
↑ 50 MPa

COUPLINGS Type	Serial N°	Quality	Heat N°
3" coupling with	2574 5533	AISI 4130	A1582N H8672
4 1/16" 10K API Swivel Flange end		AISI 4130	58855
Hub		AISI 4130	A1199N A1423N

Not Designed For Well Testing **API Spec 16 C**

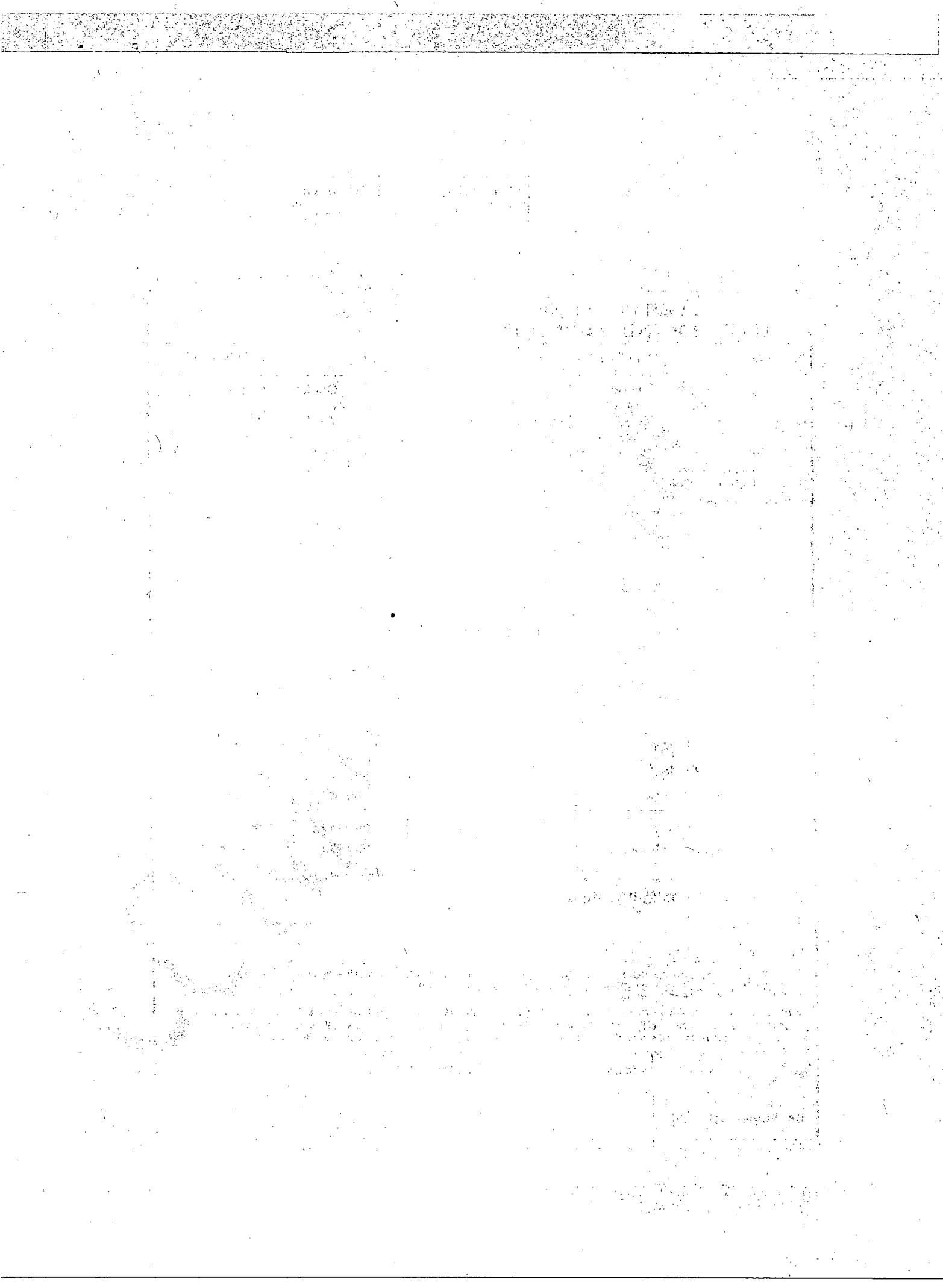
Fire Rated **Temperature rate:"B"**

All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

Date:	Inspector	Quality Control
04. September 2014.		ContiTech Rubber Industrial Kft. Quality Control Dept. [signature]



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Data Count	: 9946
Sampling Int.	: 1.000 sec
Start Time	: 2014/09/04 01:53:54.000
Stop Time	: 2014/09/04 04:39:39.000
Print Group	: Press-Temp
Print Range	: 2014/09/04 01:53:54.000 - 2014/09/04 04:39:39.000
Comment	:

	Cursor A	Cursor B	Difference
Data No.	3430	7002	3572
Absolute Time	2014/09/04 02:51:06.000	2014/09/04 03:51:06.000	01:00:00.000
Tag Comment	Value A	Value B	Value B-A
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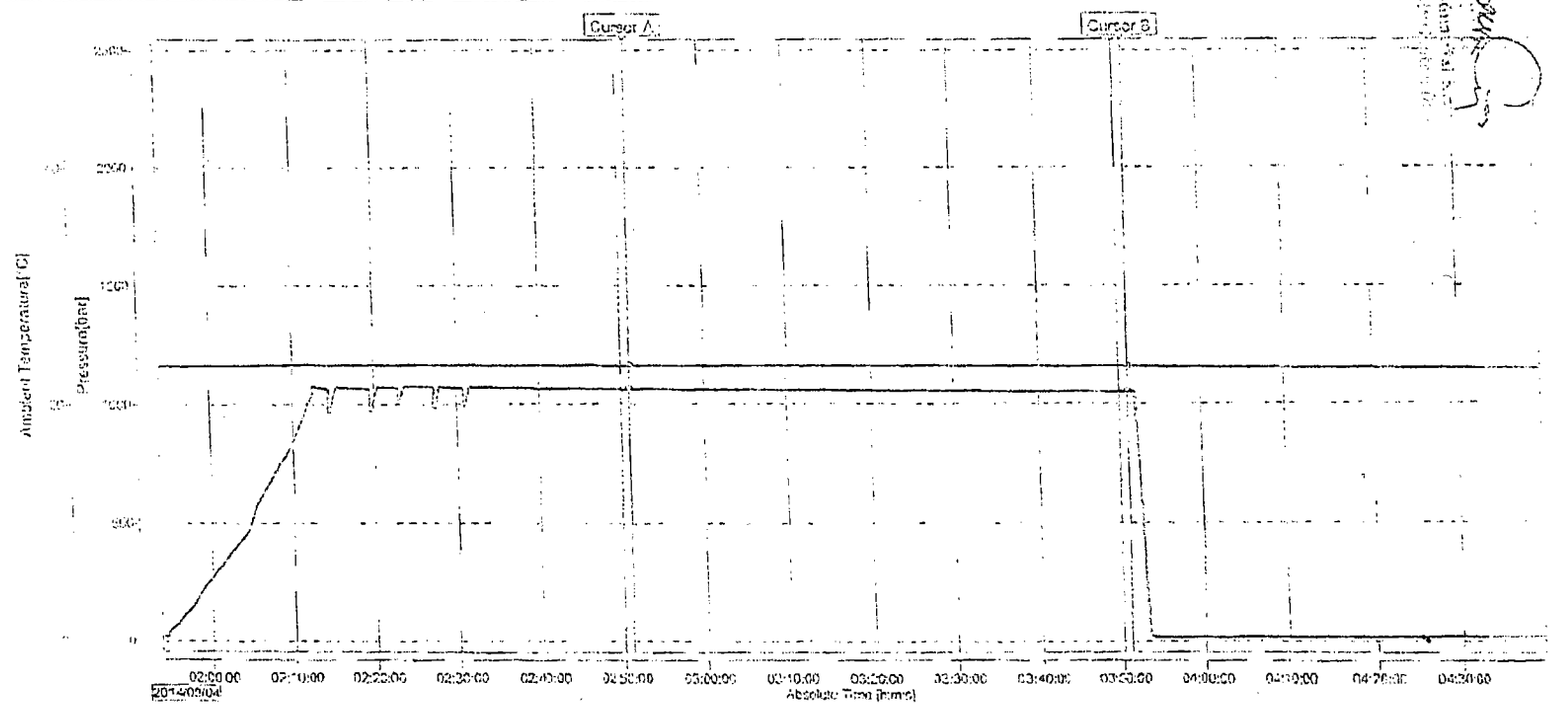
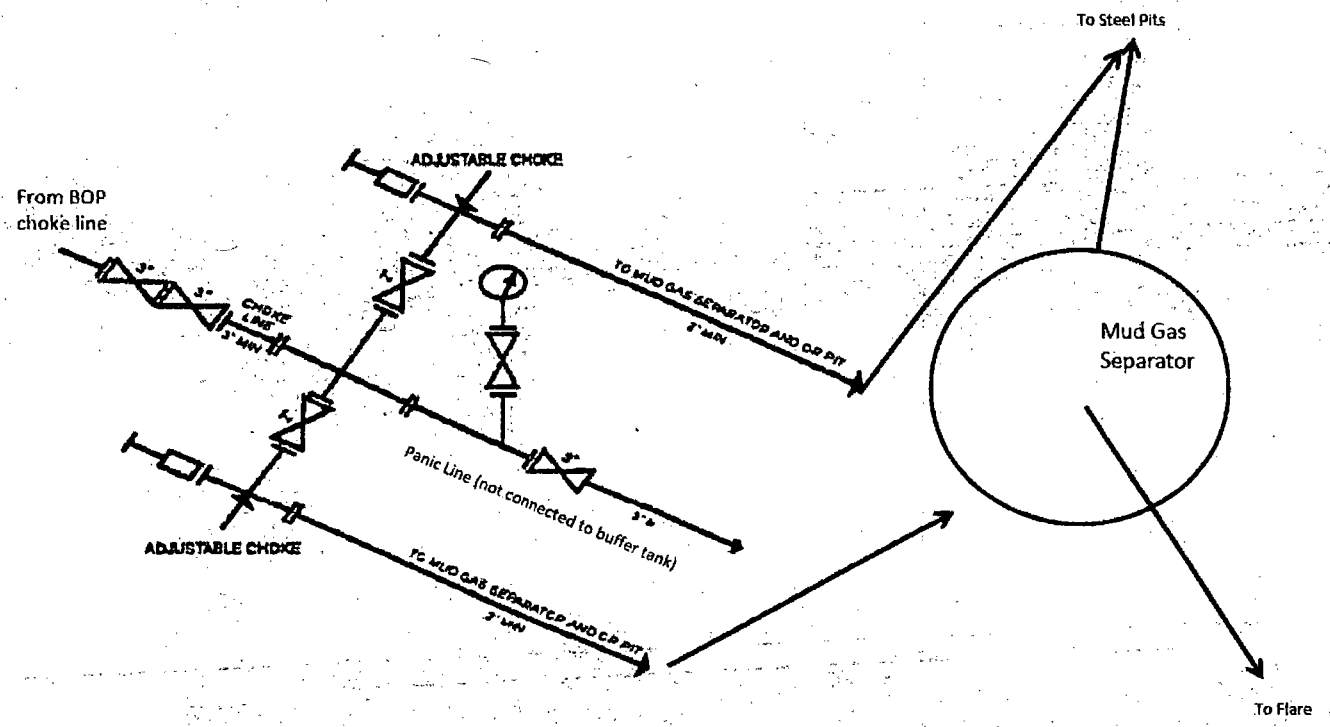
Ambient Temperature[°C]	23.24	23.14	-0.10



ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE No. 1588, 1590, 1592

Page 1 / 1



3M choke manifold design

3,000 psi BOP Schematic

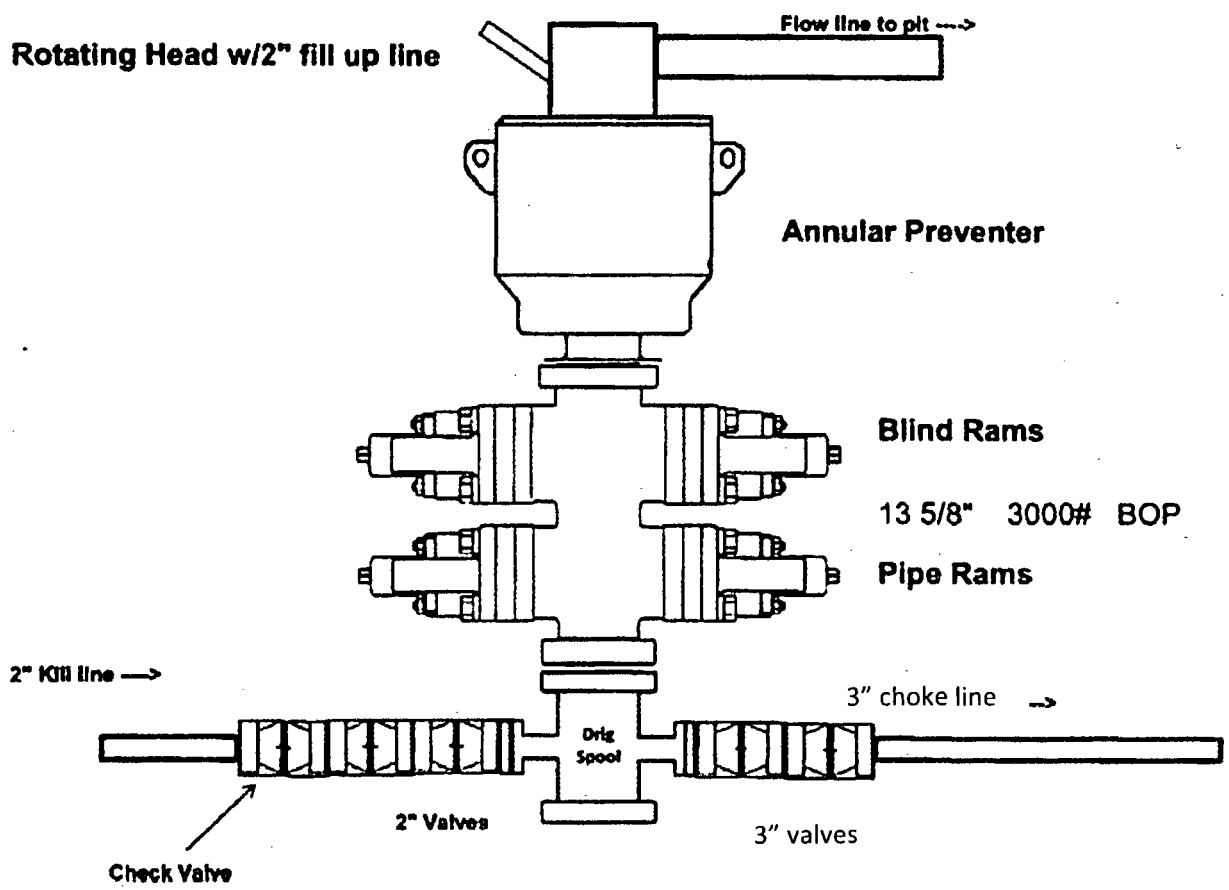


Exhibit A

BTA Oil Producers, LLC **Well: Vaca Draw 9418 10 Fed #8H**

Casing Assumption

Hole Size	Csg.Size	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/ Buoyant	Mud Weight (ppg)
17.50	13.375	0	1100	0	1100	No	54.5	J-55	STC	1.60	3.86	9.50	5.70	Dry	8.4
12.25	9.625	0	5070	0	5070	No	40.0	J-55	LTC	1.60	1.40	2.90	2.10	Dry	10.0
8.75	5.500	0	15126	0	10100	No	17.0	P-110	LTC	1.50	2.10	3.10	2.50	Dry	9.2

BTA Oil Producers, LLC **Well: Vaca Draw 9418 10 Fed #8H**

Casing Assumption

Hole Size	Csg.Size	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/ Buoyant	Mud Weight (ppg)
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12.25	9.625	0	5070	0	5070	No	40.0	J-55	LTC	1.60	1.40	2.90	2.10	Dry	10.0
8.75	5.500	0	15126	0	10100	No	17.0	P-110	LTC	1.50	2.10	3.10	2.50	Dry	9.2

BTA Oil Producers, LLC

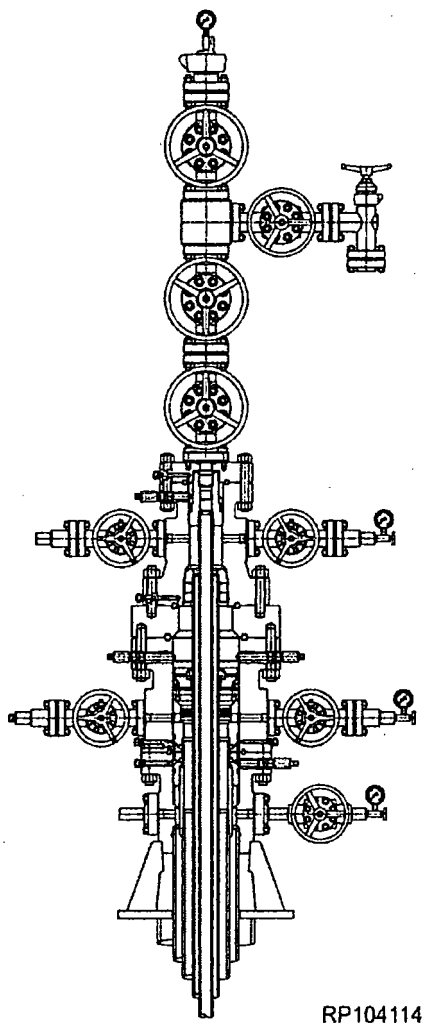
Well: Vaca Draw 9418 10 Fed #8H

Casing Assumption

Hole Size	Csg.Size	From (MD)	To (MD)	From (TVD)	To (TVD)	Tapered String	Weight (lbs)	Grade	Conn.	Collapse	Burst	Body Tension	Joint Tension	Dry/ Buoyant	Mud Weight (ppg)
17.50	13.375	0	1100	0	1100	No	54.5	J-55	STC	1.60	3.86	9.50	5.70	Dry	8.4
12.25	9.625	0	5070	0	5070	No	40.0	J-55	LTC	1.60	1.40	2.90	2.10	Dry	10.0
8.75	5.500	0	15126	0	10100	No	17.0	P-110	LTC	1.50	2.10	3.10	2.50	Dry	9.2

Weatherford®

Wellhead Field Service Manual



WFT-SB Wellhead System Running Procedure

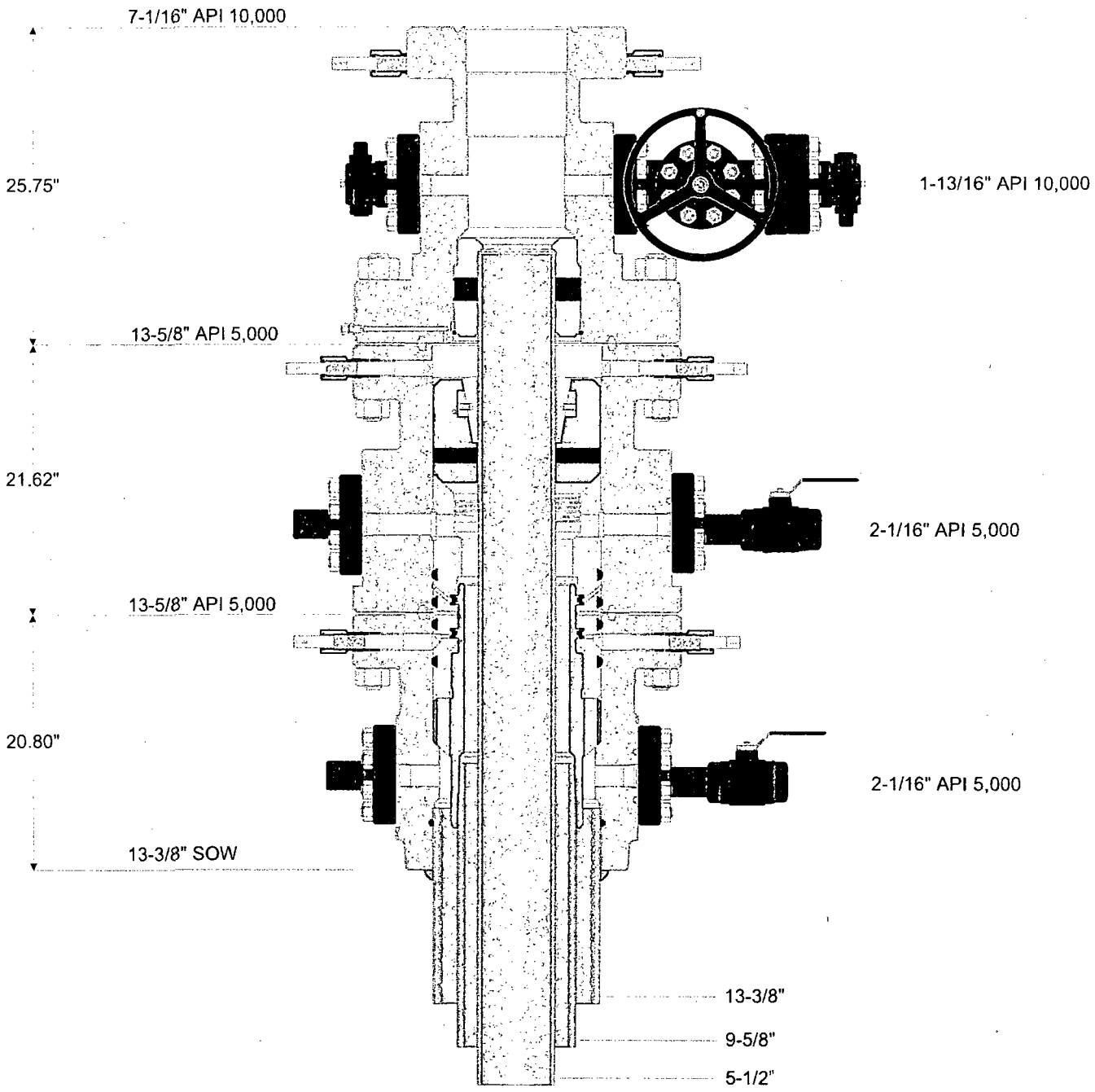
Publication: SM-11-1

Release Date: December 2014

RP104114

Weatherford	Field Service Manual	Prepared By:	Reviewed By:	Approved By:	SM-11-1
		Marion Robertson	Bruce Ross	Manuel Zaragoza	Rev WIP
5-3-GL-GL-WES-00XXX		Marion Robertson Dec 2014	Bruce Ross Dec 2014	Manuel Zaragoza Dec 2014	Page 1 of 24

NOTE: THIS DRAWING IS NOT TO SCALE. THE DIMENSIONS REFLECTED ON THIS DRAWING ARE ESTIMATED DIMENSIONS AND ARE FOR REFERENCE ONLY.

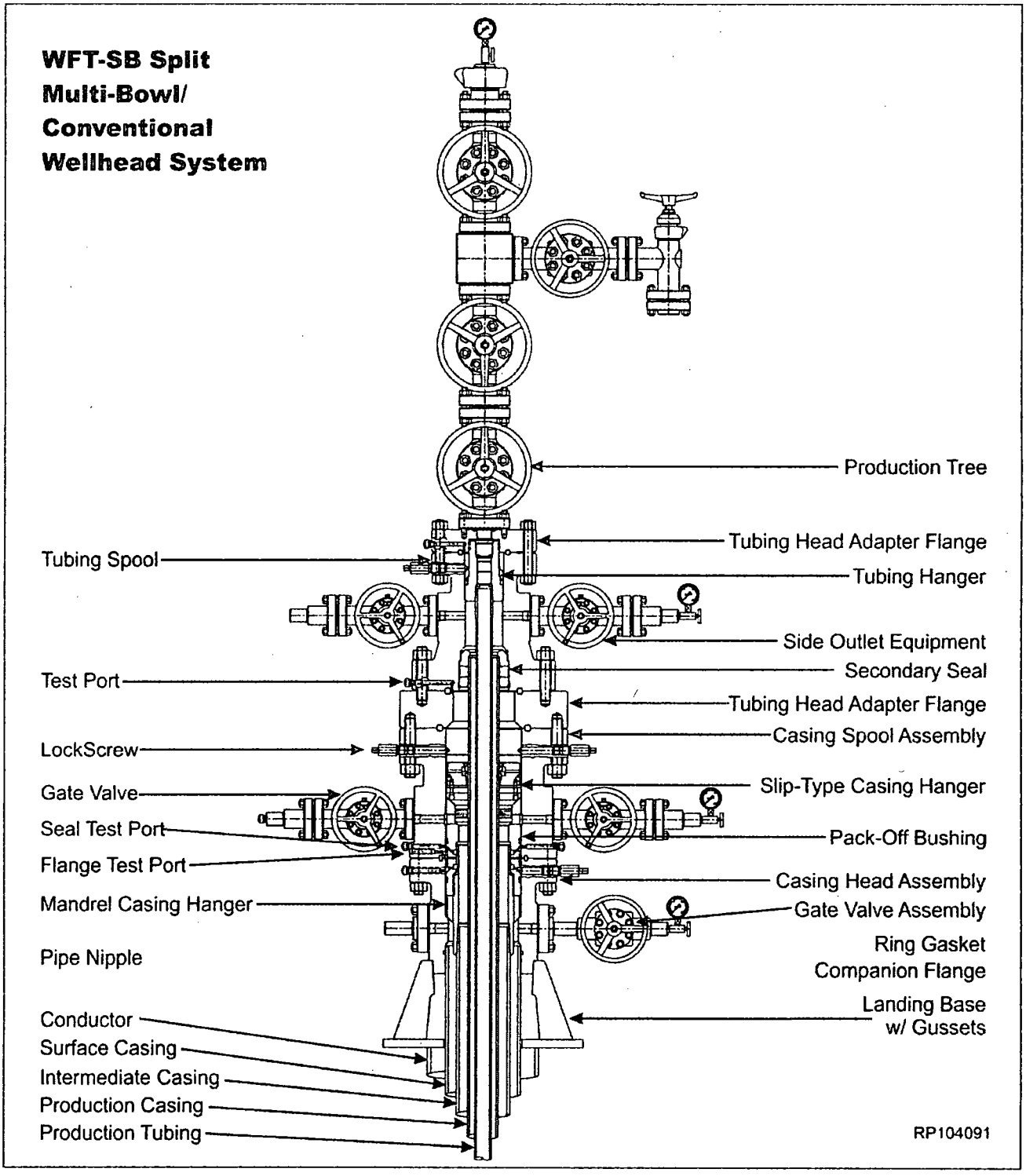


Weatherford®

Customer:	BTA OIL PRODUCERS	Project No.:	146245	Quote No.:	291545 v2
Project Name:	WEST TEXAS	Date:	07/06/16	Drawn By:	JL

Table of Content

WFT Split Bowl (SB) Wellhead System



WFT-SB Casing Head/Spool Assembly Rig Up and Installation

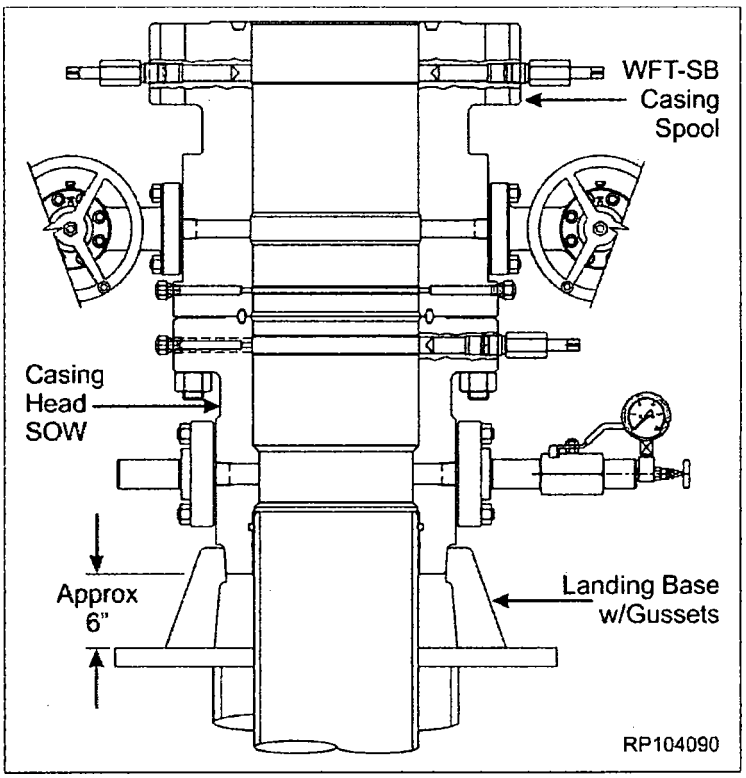
1. Determine the correct elevation for the wellhead system, and cut the conductor pipe at a comfortable elevation, below the surface casing final cut.

NOTE

Ensure that the cut on the conductor is level, as this will determine the orientation of all remaining wellhead equipment.

2. Remove any excess conductor pipe and set aside.
3. Grind the conductor pipe and remove any sharp edges, ensuring that the conductor pipe cut is level.
4. Run the surface casing to the required depth and cement casing in place. Allow the cement to set.
5. Lift the blow-out preventer (BOP) or diverter and prepare to cut off the surface casing at a sufficient height above the cellar deck to facilitate the installation of the WFT-SB Casing Head/Spool Assembly with Base Plate.
6. Once the surface casing is released from the rig floor, cut it approximately 12 inches (or more) above the final cut location.
7. Remove the excess surface casing, and the BOP or diverter, and set aside.
8. Bevel the surface casing outer diameter (3/16" x 3/8") and inner diameter (1/8" x 45 degrees). Remove any sharp edges.
9. Examine the Casing Head with Slip-On Weld (SOW) bottom prep. Verify the following:

- O-ring seal, bore, ports and exposed ring grooves are clean and in good condition.
- Test fittings, studs and nuts, valves, flanges and bull plugs are intact and in good condition.



10. Determine the correct elevation for the wellhead assembly. Measure depth of the surface casing socket in SOW with O-ring bottom prep.
11. Lightly lubricate the casing stub with an oil or light grease.

⚠WARNING⚠

Excessive oil or grease will prevent a positive seal from forming.

12. Align and level the WFT-SB Casing Head/Spool Assembly over the casing stub, orienting the outlets to drilling equipment, per the drilling supervisor's direction.

14. Slowly and carefully lower the assembly over the casing stub until the stub bottoms in the casing socket.
15. Remove the test fitting from the casing head test port, and set aside.
16. Ensure that the WFT-SB Casing Head/Spool Assembly is plumb and level.
17. Weld and test the surface casing using the recommended welding procedure located in the Appendices Section of this manual.

Testing the BOP Stack

1. Examine the Test Plug/Running & Retrieval Tool. Verify the following:

- Elastomer seals, threads and plugs are intact and in good condition.
- Drill pipe threads are correct size, clean and in good condition.

2. Install a new, appropriately sized ring gasket in the ring groove of the WFT-SB Spool and make up the BOP stack.

NOTE

Immediately after make-up of the BOP stack and periodically during drilling of hole for the casing string, the BOP stack (flanged connections and rams) must be tested.

3. Orient the test plug with elastomer down/ACME threads up, and make up a joint of drill pipe to the test plug.

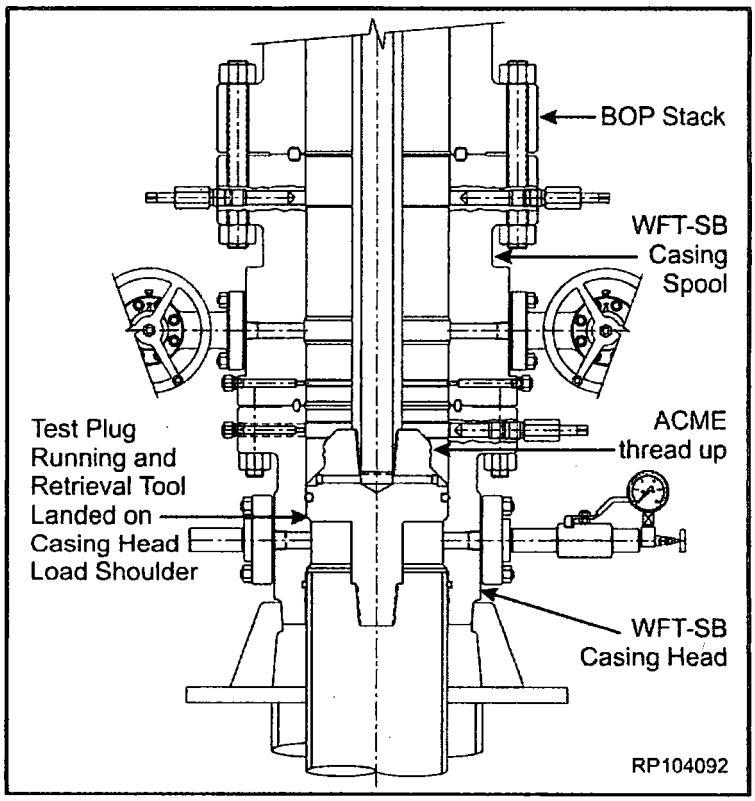
NOTE

If pressure is to be supplied through the drill pipe, remove the pipe plug from the weep port.

⚠CAUTION⚠

Ensure that the test plug elastomer is down and Acme threads are up when testing.

4. Fully retract all lockscrews in the entire WFT-SB casing head/spool assembly.
5. Lubricate the test plug elastomer seal with a light oil or grease.
6. Lower the test plug through the BOP stack into the WFT-SB assembly, until it lands on the casing head load shoulder.



7. Open lower casing head side outlet valve. Monitor any leakage past the test plug seal.
8. Close the BOP rams on the drill pipe, and test to **5,000 psi or as required by the drilling supervisor**.
9. After a satisfactory test is achieved, release pressure and open the rams.
10. Remove as much fluid from the BOP stack as possible.
11. Retrieve the test plug assembly slowly to avoid damage to the seal.
12. Close all outlet valves on WFT-SB Casing Head/Spool Assembly.
13. Repeat Steps 1 thru 12, as required during drilling of the hole.

Running and Retrieval of the Long Bowl Protector

NOTE

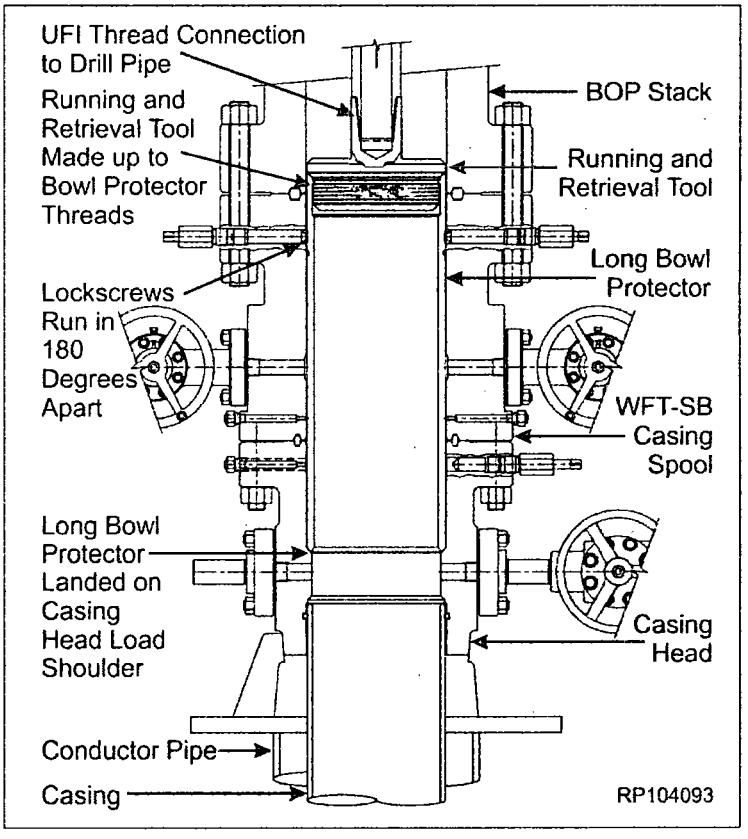
Always use a bowl protector while drilling to protect wellhead load shoulders from damage by drill bit or rotating drill pipe. The bowl protector must be retrieved prior to running the casing string.

Running in the Bowl Protector prior to Drilling

1. Examine the Long Bowl Protector. Verify the following:
   - Bore drift is correct size, clean, in good condition, and free of debris
   - Threads are clean and undamaged
   - O-ring seals are properly installed, clean, and undamaged.
2. Examine the Bowl Protector Running/Retrieval Tool. Verify the following:
   - Threads are clean, undamaged and free of debris
   - Ports are clean and unobstructed.
   - Drill Pipe threads are correct size, clean and in good condition.
3. Orient the Bowl Protector Running Tool with Acme threads down.

⚠ CAUTION ⚠

Ensure that the left hand (LH) Acme threads are down prior to engaging Bowl Protector Running Tool into Long Bowl Protector.



4. Make-up a drill pipe joint to the Running Tool.
5. Thread Running Tool into the Long Bowl Protector, rotating two turns counterclockwise.
6. Verify that all lockscrews in the WFT-SB Casing Head/Spool Assembly are fully retracted.
7. Slowly lower the Running Tool/Bowl Protector Assembly through the BOP stack and into the WFT-SB Casing Head/Spool Assembly, until it lands securely on the casing head load shoulder.
8. On WFT-SB Casing Spool, run in two Lockscrews ("snug" tight **ONLY**), 180 degrees apart, to hold Bowl Protector in place.

⚠WARNING⚠

Do NOT over tighten the lockscrews, as this will cause damage to the Bowl Protector and the lockscrews.

9. Remove the running tool from the bowl protector, by rotating the drill pipe clockwise two turns while lifting straight up.
10. Drill out and prepare to run the casing string per the drilling supervisor's instruction.

Retrieving the Bowl Protector after Drilling

1. Make-up the retrieval tool to the drill pipe, with Acme threads down.
2. Slowly lower the retrieval tool through the BOP Stack into the Bowl Protector.
3. Rotate the retrieval Tool counterclockwise, two turns, to engage with bowl protector Acme threads.
4. Fully retract both lockscrews on the WFT-SB casing spool, and retrieve the bowl protector.

NOTE

Ensure that all lockscrews in both the upper flange (casing spool) and lower flange (casing head) of the wellhead Assembly are fully retracted from well bore.

5. Remove the bowl protector and the running and retrieval tool from the drill floor.

Hanging off the Intermediate Casing

1. Run the intermediate casing as required and space out appropriately for the mandrel casing hanger.

NOTE

If the intermediate casing becomes stuck and the mandrel casing hanger cannot be landed, refer to STAGE 4B.

2. Examine the WFT-SBD-SN Mandrel Casing Hanger. Verify the following:
   - Bore drift is correct size, clean and free of debris
   - All threads are clean and undamaged.
   - Flow-By flutes are clear and unobstructed.
   - Slick Neck seal area is clean and undamaged.
3. Examine the Mandrel Casing Hanger Running Tool. Verify the following:
   - Threads are clean and in good condition.
   - O-ring seals are clean and undamaged.
4. Thread the mandrel hanger onto the last joint of casing to be run. Torque the connection thread to manufacturer's optimum "make-up" torque value.
5. Make up a landing joint to the top of the running tool. Torque the connection to thread manufacturer's maximum "make-up" torque valve.

⚠CAUTION⚠

If Steps 4 and 5 were performed prior to being shipped to location, the hanger running tool should be backed off and made back up to ensure it will back off freely.

6. Liberally lubricate the outer diameter of the hanger neck and inner diameter of the running tool O-ring seals with a light oil or grease.

⚠WARNING⚠

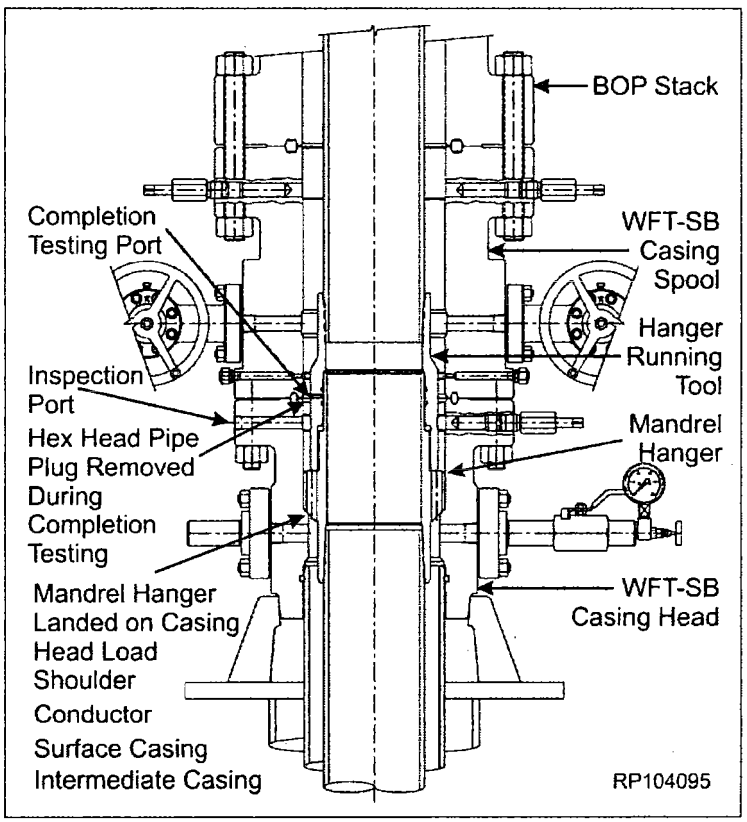
Do NOT use pipe dope or other metal based compounds. This will cause galling.

7. Maintaining a neutral weight, rotate the hanger running tool with chain tongs, first clockwise until a thread "jump" can be felt, then counterclockwise, approximately eight turns, to a positive stop, and then back off (clockwise) one quarter (1/4) turn.

⚠CAUTION⚠

Do NOT torque the running tool to the casing hanger connection. Do NOT back off more than one quarter (1/4) turn.

8. Remove the flush fitting hex head pipe plug from the outer diameter of the running tool and attach a test pump.
9. Apply hydraulic test pressure to **5,000 psi and hold for 15 minutes or as required by the drilling supervisor.**
10. Upon completion of a successful test, bleed off test pressure through the test pump and remove the pump. Replace the pipe plug.
11. Locate indicator groove machined in outer diameter of Running Tool, coat with white paint.
12. Verify that all lockscrews in the WFT-SB casing head/casing spool assembly are fully retracted.
13. Slowly and carefully lower the mandrel hanger through the BOP stack, and land the hanger onto the casing head load shoulder.
14. Slack off weight on the casing.
15. Check that the well is stable and no pressure buildup or mud flow is occurring.



16. Drain the BOP stack through the casing head side outlet valves.
17. Remove the pipe plug from the casing head flange port marked "Inspection Port."
18. Visually verify that the running tool groove is in the center of the inspection port, and that the mandrel hanger has landed properly.
19. Reinstall the pipe plug and tighten securely.
20. Place a paint mark on the landing joint level with the rig floor, and cement casing as required.

NOTE

If the casing is to be reciprocated during cementing, it is advisable to pick up the mandrel hanger a minimum of eight feet above the landing point. Place a mark on the landing joint, level with the rig floor, and then reciprocate above that point. If at any time resistance is felt, land the mandrel casing hanger immediately.

21. Retrieve the hanger running tool and landing joint by rotating landing joint clockwise (to the right), fourteen full turns.

Hanging off Intermediate Casing – Contingency Completion

NOTE

The following procedure should ONLY be followed if the intermediate casing should become stuck in the hole. If the casing did NOT get stuck and is successfully hung off with the mandrel casing hanger, skip this stage.

1. Cement the intermediate casing in accordance with the program, taking returns through the flow-by flutes of the mandrel casing hanger as required.
2. Drain the casing head bowl through the side outlet.
3. Separate the WFT-SB casing spool from the casing head.
4. Pull up on WFT-SB casing spool and suspend it above casing head, high enough to install a WFT-21 Slip Type Casing Hanger.
5. Wash out as required.
6. Examine the WFT-21 slip type casing hanger. Verify the following:
   - Hanger is correct size, clean and undamaged.
   - Slip segments are sharp and in proper position.
   - All screws are in place.
7. Remove the latch screw to open the slip type hanger.
8. Place two boards on the casing head flange, against the casing, to support the hanger.
9. Wrap the hanger around the casing and replace the latch screw.
10. Prepare to lower the hanger into the casing head bowl.
11. Grease the WFT-21 slip type casing hanger body and remove the slip retaining cap screws.
12. Remove the boards and allow the hanger to slide down into the casing head.

13. Once the hanger has landed securely on the casing head bowl load shoulder, pull tension on the casing to the desired hanging weight, and then slack off.

NOTE

A sharp decrease on weight indicator will signify that the hanger has taken weight. If this does not occur, pull tension again and slack once more.

14. Rough cut the casing approximately eight inches, or more, above the top of the casing head flange. Remove the excess casing.
15. Final cut the casing at 2 1/2" +/- 1/8" above casing head flange.
16. Bevel the casing outer diameter (1/4" x 30 degrees) and inner diameter (1/8" x 30 degrees).
17. Remove and discard the used gasket ring from the casing head.
18. Clean the mating ring grooves on the WFT-SB casing spool and casing head. Lightly wipe with oil or grease.

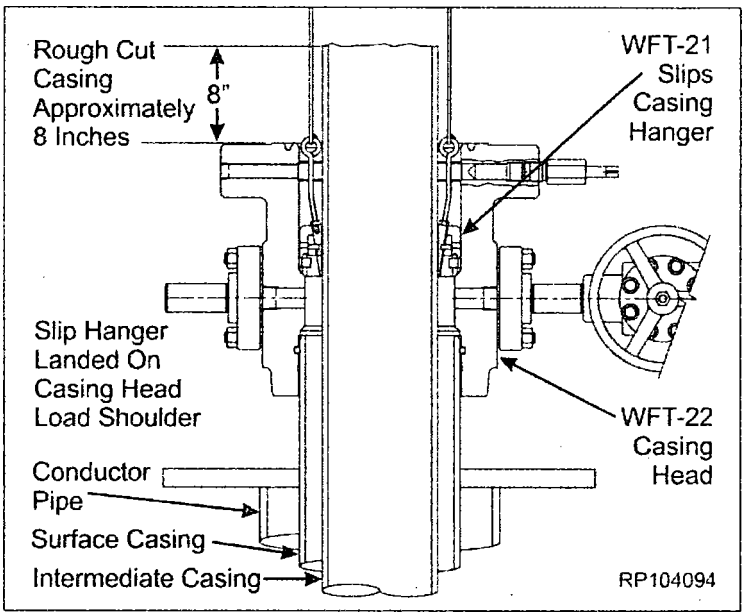
⚠WARNING⚠

Excessive oil or grease will prevent a positive seal from forming.

19. Install a new appropriately sized ring gasket into the casing head groove.
20. Loosely reconnect or make up the WFT-SB casing spool to the casing head.

NOTE

The casing spool to casing head connection will be fully tightened after the pack-off bushing is run and proper setting is verified.



Installation of the Pack-Off Bushing and Energizing the P-Seals

WFT-SB Pack-Off Bushing Installation

NOTE

Installation procedure is identical for both Standard and Emergency WFT-SB Pack-Off Bushings.

1. Determine which pack-off bushing to use:
   - If casing has been run normally and is hung off with a mandrel casing hanger, use a standard packoff bushing.
2. Examine the appropriate pack-off bushing. Verify the following:
   - All elastomer seals are in place and undamaged.
   - Bore, ports and alignment lugs are clean and in good condition.
   - Coat the lockscrew relief groove with white paint.
3. Liberally lubricate the inner diameter of the double P-seal grooves and outer diameter of dovetail seals with a light oil or grease.

4. Examine the pack-off bushing running tool. Verify the following:
   - All elastomer seals are properly installed, clean and undamaged
   - Threads are clean, undamaged and free of debris
   - Bore and ports are clean and unobstructed.
5. Make-up a landing joint to the running tool and rack back assembly.
6. Run two or three stands of heavy weight drill pipe or collars in the hole and set floor slips.

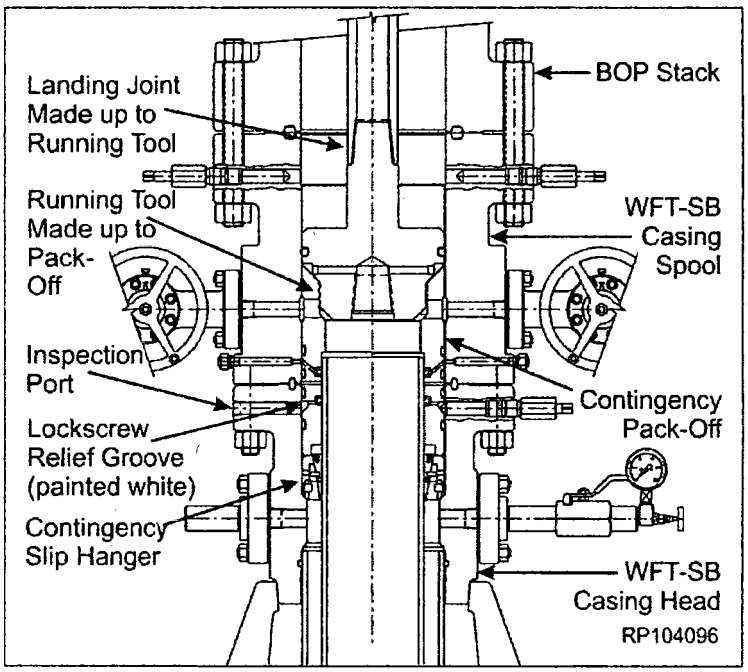
NOTE

Use heavy weight drill pipe or drill collars. Weight required to push Pack-Off Bushing into Casing Head, over Mandrel Hanger slick neck, is approximately 14,000 lbs.

⚠WARNING⚠

When lowering the drill pipe into the well, extreme caution must be taken to not damage the top of the mandrel hanger with the end of the drill pipe. It is recommended that the drill pipe be centralized to the hanger inner diameter, as closely as possible, when entering the hanger.

7. Carefully lower the bushing over the drill pipe and set it on top of floor slips.
8. Make up the landing joint/running tool assembly to the drill pipe suspended in floor slips.
9. Carefully pick up the pack-off bushing, thread the bushing into the running tool, then rotate the bushing approximately two turns counterclockwise (to the left), coming to a positive stop.
10. Lower the assembly through the BOP Stack and the WFT-SB spool assembly until the pack-off bushing lands on the casing hanger.



11. Verify, through inspection port that the pack-off bushing has landed properly after:
    - ensuring well is stable and no pressure buildup or mud flow is occurring.
    - drain BOP Stack through Casing Head side outlet valves.
    - remove Pipe Plug (1"-NPT) from Casing Head flange port marked "Inspection Port".
    - Check, to ensure, bottom of Lockscrew relief groove (painted white) on Support Bushing is at bottom of inspection port.
    - Reinstall Pipe Plug and tighten securely.
12. Fully run in all Casing Head Lockscrews (lower flange), in an alternating cross pattern.
13. Using two chain tongs, 180° apart, rotate Landing Joint/Running Tool approximately 2 turns clockwise (to the

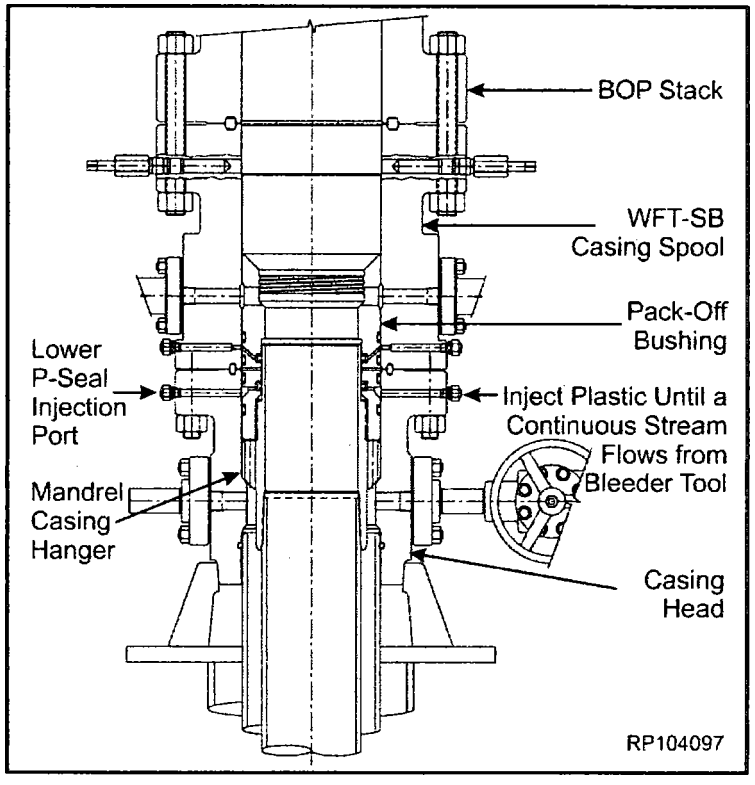
right), coming to a stop and carefully lift tool to Drill Floor, set aside.

NOTE

If the Contingency Pack-Off Bushing is being installed, it is now necessary to make up the Speed Head Casing Head/Casing Spool connection. Tighten all studs in an alternating cross pattern until the flange bolting is fully made up.

Energizing the P-Seals

1. Locate the two lower injection fittings ("INJ"), located 180 degrees apart on the casing head. Remove the dust cap from one fitting and remove the second fitting entirely.
2. Attach a bleeder tool to the injection fitting without the dust cap, in the casing head. Open the bleeder tool.
3. Attach a plastic injection tool to the open port and inject plastic packing into the port until a continuous stream flows from the bleeder tool. Close the bleeder tool.
4. Remove the injection tool. Reinstall the injection fitting into the open port and remove the dust cap. Reattach the injection tool.
5. Continue injecting plastic packing to **5,000 psi. or to 80% of casing collapse pressure, whichever is less.**



NOTE

The strength of a mandrel casing hanger slick neck is equivalent to P110 Grade casing with the same weight as run in the casing string.

6. Hold and monitor pressure for 15 minutes or as required by the drilling supervisor.
7. If pressure drops, the plastic packing has not filled the seal area completely. Open the bleeder tool, bleed off the pressure and repeat Steps 5 and 6, until pressure is stabilized.
8. Remove the plastic injection tool and bleeder tool. Reinstall the dust caps on both injection fittings.
9. Repeat Steps 1 thru 8 to pack off and energize the upper P-Seal.

10. Locate the "SEAL TEST" fitting, slightly below and 90 degrees from the injection fittings. Remove the dust cap from this fitting.
11. Attach a test pump to the fitting.
12. Pump clean test fluid between the P-Seals until a test pressure of **5,000 psi or 80% of casing collapse pressure is attained, whichever is lower.**

⚠WARNING⚠

Do NOT exceed 80% of casing collapse pressure when a slip type casing hanger and contingency pack-off bushing are utilized.

13. Hold test pressure for **15 minutes or as required by the drilling supervisor.**
14. If pressure drops, a leak has developed. Take the appropriate action per the following table:

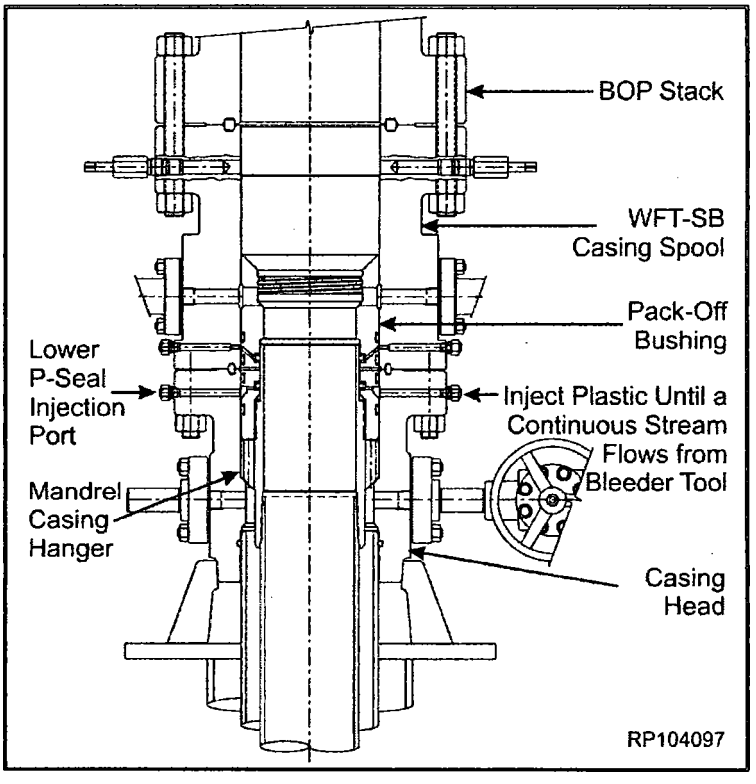
Leak Location	Cause	Action
Into the bore of the casing head	Upper P-seal leaking	Bleed off pressure and re-inject plastic packing into leaking upper P-seal port.
Around the casing	Lower P-Seal leaking	Bleed off pressure and re-inject plastic packing into lower P-seal port.

15. Repeat Steps 12 thru 14 until a satisfactory test is achieved.
16. Once a satisfactory test is achieved, carefully bleed off pressure and remove Test Pump.
17. Attach the bleeder tool to the test port fitting and open the tool to vent any remaining trapped pressure.

⚠CAUTION⚠

Always direct the bleeder tool port away from people and property.

18. Remove the bleeder tool and reinstall dust cap in Test Port Fitting.



Retesting the BOP Stack

1. Examine the Test Plug/Running Tool. Verify the following:
   - Elastomer seals are intact and in good condition.
   - Drill pipe threads are clean and in good condition.

NOTE

Immediately after testing the support bushing seals and periodically during conditioning of the hole prior to running tubing, the BOP stack (flanged connections and rams) must be tested.

2. Orient the test plug with elastomer down/ACME threads up. Make up a joint of drill pipe to the test plug.

NOTE

Remove the pipe plug from the weep port if pressure is to be supplied through the drill pipe.

⚠CAUTION⚠

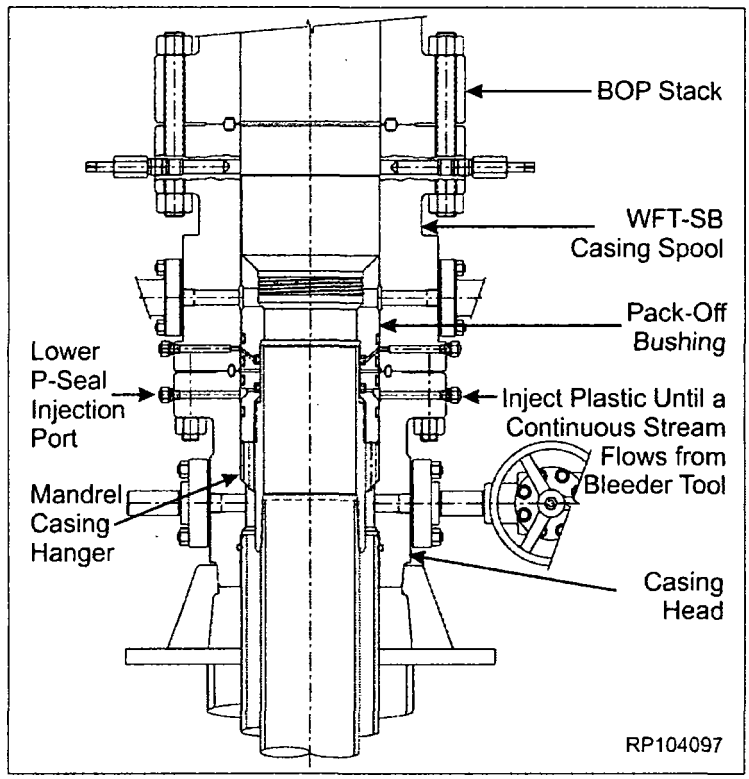
Make sure the elastomer is down and ACME threads are up when testing.

3. Fully retract all lockscrews in the upper WFT-SB Spool Assembly.

⚠WARNING⚠

Do NOT retract the lockscrews located in the casing head (lower flange). Doing so could allow the pack-off support bushing to rise out of position.

4. Lubricate the test plug elastomer seal with light oil or grease.



5. Lower the test plug through the BOP stack into the WFT-SB spool assembly until it lands on top of the pack-off bushing.
6. Open the upper WFT-SB casing spool side outlet valves. Monitor for any leakage past the test plug seal.
7. Close the BOP rams on the drill pipe and test to **10,000 psi or as required by the drilling supervisor.**
8. After a satisfactory test is achieved, release all pressure and open the rams.
9. Remove as much fluid from the BOP stack as possible.
10. Retrieve the test plug assembly slowly to avoid damage to the seal.
11. Close all outlet valves on the WFT-SB casing head/spool assembly.

Running and Retrieving the Short Bowl Protector

NOTE

Always use a bowl protector while drilling to protect the wellhead load shoulders from damage by the drill bit or rotating drill pipe. The bowl protector must be retrieved prior to running the casing string!

Running the Bowl Protector Prior to Drilling

1. Examine the short bowl protector. Verify the following:
   - Bore drift is correct size, is clean, in good condition, and free of debris.
   - Threads are correct size and type.
   - Threads are clean and in good condition.
2. Orient the bowl protector running tool with ACME threads down.

NOTE

The running tool is the same tool used for handling the long bowl protector.

⚠CAUTION⚠

Make sure that the left hand (LH) ACME threads are down prior to engaging the bowl protector running tool into the short bowl protector.

3. Make-up a drill pipe joint to the running tool.
4. Thread the running tool into the short bowl protector, rotating two turns counterclockwise (to the left).
5. Verify that all upper lockscrews in the WFT-SB spool assembly are fully retracted. Slowly lower the running tool/bowl protector assembly through the BOP stack into the WFT-SB spool assembly until it lands on top of the pack-off bushing.

⚠WARNING⚠

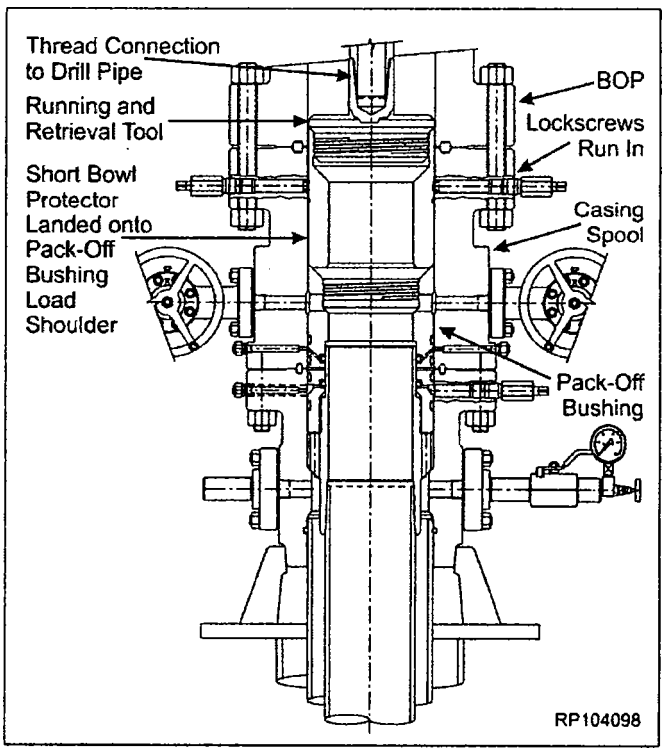
Do NOT retract the lower lockscrews located in the WFT-SB casing head, as this could allow the pack-off bushing to rise out of position.

6. On the upper WFT-SB spool assembly, run in two lockscrews ("snug" tight ONLY), 180 degrees apart, to hold the bowl protector in place.

⚠WARNING⚠

Do NOT over tighten the lockscrews, as this will cause damage to both the bowl protector and lockscrews.

7. Remove the running tool from the bowl protector, by rotating the drill pipe clockwise two turns while lifting straight up.
8. Drill out and prepare to the production casing string per the drilling supervisor's instructions.



Retrieval of the Short Bowl Protector After Drilling

1. Make up the retrieval tool to the drill pipe with ACME threads down.
2. Slowly lower the retrieval tool into the bowl protector.
3. Rotate the retrieval tool counterclockwise, two turns, to engage with the bowl protector ACME threads.
4. Fully retract both lockscrews on the casing spool (upper flange), and retrieve the bowl protector.
5. Remove the bowl protector and retrieval tool from the drill string.

Running the Production Casing

1. Run the production casing to necessary depth and cement as required.

NOTE

There are two methods for installing WFT-22 Slip Type Casing Hangers:

- **Under the BOP stack.**
- **Through the BOP stack.**

Installation of the Slip-Type Casing Hanger Under the BOP Stack

1. Drain the casing head through the uppermost side outlet valve.
2. Lift and suspend the BOP stack above the WFT-SB spool assembly to a minimum of 18 inches.
3. Wash out the WFT-SB casing head/spool assembly as required.
4. Confirm that ONLY the lockscrews in the casing spool (upper flange) are fully retracted.
5. Examine the WFT-22 slip-type casing hanger. Verify the following:
   - Slip segments are clean and undamaged.
   - All screws are in place.
   - Packing element is clean and undamaged.

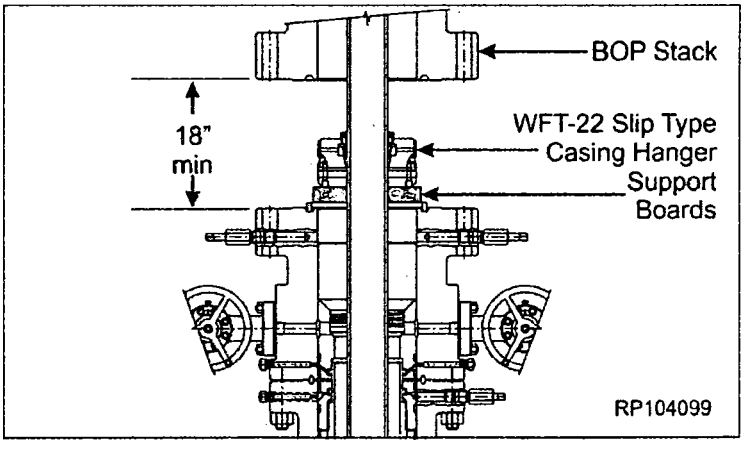
⚠CAUTION⚠

The packing element should not protrude past the casing hanger outer diameter. If the packing element does extend past the outer diameter, loosen the cap screws in the bottom of the hanger.

6. Place two boards across the casing spool face, against the casing, to support the hanger.
7. Disengage the spring loaded latch, open the hanger and wrap the hanger around the casing, allowing the support boards to carry weight.
8. Re-engage the casing hanger spring loaded latch.
9. Remove the slip retaining cap screws from the outer diameter of the hanger body, allowing the slip segments to settle around the casing.
10. Supporting the weight of the casing hanger, remove the support boards and lower the hanger into the WFT-SB casing head/spool assembly until it lands on the pack-off bushing load shoulder.

⚠CAUTION⚠

Do NOT drop the hanger; lower it carefully.



Installation of the Slip-Type Casing Hanger through the BOP Stack

1. Drain the WFT-SB casing head/spool assembly and BOP stack through the side outlet valves on the spool assembly.
2. Wash out the wellhead assembly until clean returns are seen.
3. Examine the slip type casing hanger. Verify the following:
   - slip segments are clean and undamaged
   - all screws are in place
   - Packing Element is clean and undamaged.

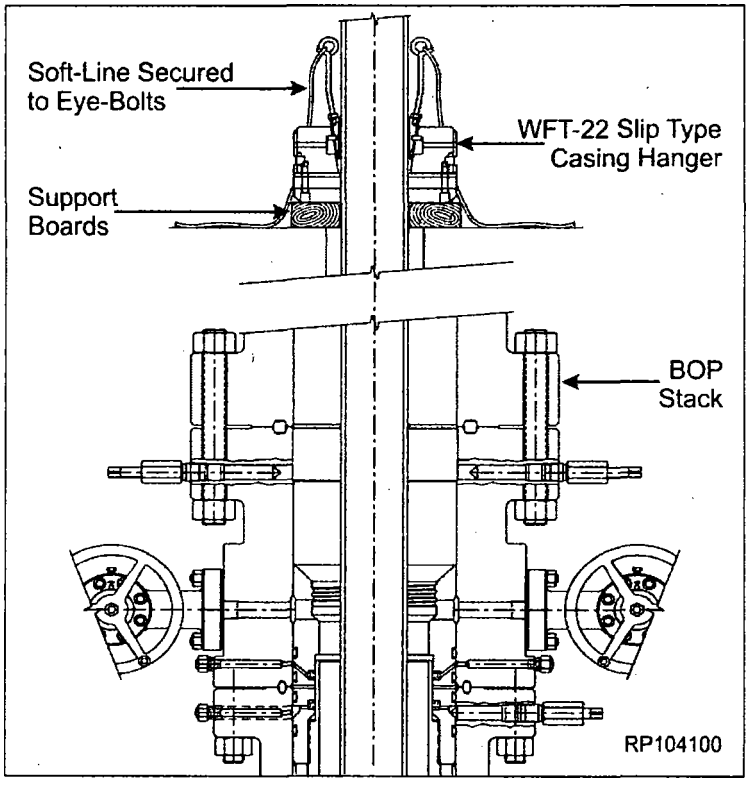
⚠ CAUTION ⚠

The packing element should not protrude past the casing hanger outer diameter. If the packing element does extend past the outer diameter, loosen the cap screws in the bottom of the hanger.

4. Place two boards across the rotary table, against the casing, to support the hanger.
5. Disengage the spring loaded latch, open the hanger and wrap it around the casing, allowing the support boards to carry the weight.
6. Re-engage the casing hanger's spring loaded latch.
7. Measure the distance from the top flange of the WFT-SB casing spool to the drilling rig floor (RKB).
8. Measure out two lengths of soft-line cord (rope) to the same length as the RKB measurement, and adding an additional 10 feet to each line.
9. Mark the soft line cord at the required length.
10. Install two eyebolts into the tapped holes in the top of the casing hanger slip segments, 180 degrees apart.
11. Securely tie the soft-line cord to the eyebolts.

NOTE

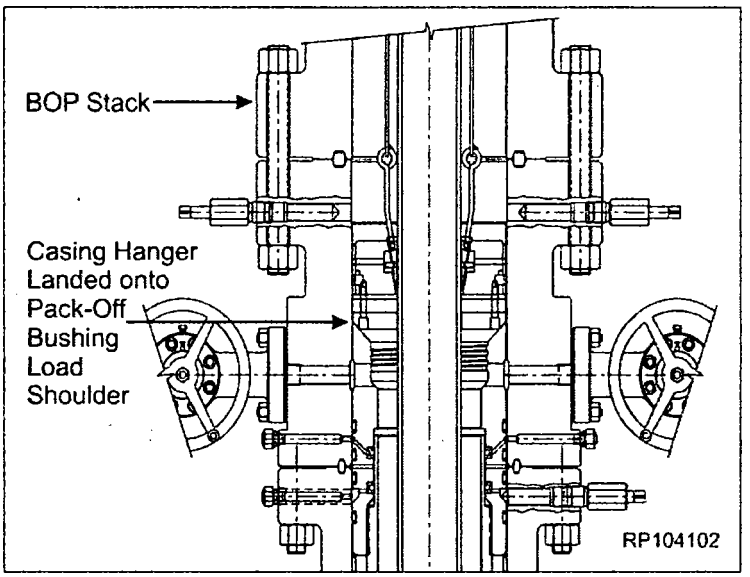
Measuring the soft-line cord and installing the eyebolts into the hanger segments should be done offline.



12. Remove the slip retaining cap screws from the outer diameter of the hanger body, allowing the slip segments to settle around the casing.
13. Supporting the weight of the casing hanger, remove the support boards and carefully lower the hanger through the BOP stack into the WFT-SB casing head/spool assembly, until it securely lands on the pack-off bushing load shoulder.

⚠CAUTION⚠

Do NOT drop hanger; lower it carefully.



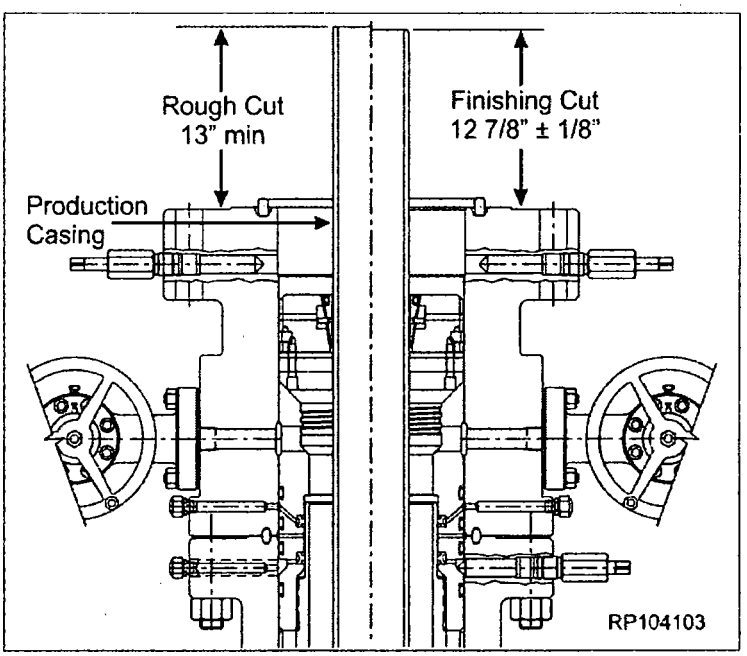
Hanging off the Production Casing

1. With the casing hanger now landed onto the pack-off bushing load shoulder, pull tension on the casing to the desired hanging weight, and then slack off.

NOTE

A sharp decrease on the weight indicator will signify that the hanger has taken weight. If this does not occur, pull tension again and slack off once more.

2. Rough cut casing approximately 16" above top of WFT-SB Spool top flange. Remove excess casing.
3. Carefully remove BOP stack, set aside.
4. Final cut the casing at about 12 7/8" +/- 1/8" above the face of the WFT-SB spool, which will allow room for the double studded adapter flange.
5. Grind the casing stub level and bevel the casing outer diameter (1/4" x 1/8") and inner diameter (1/8" x 45 degrees).



Installation of the Double-Studded Adapter (DSA) Flange

1. Examine the double studded adapter (DSA) Flange. Verify the following:
   - Ring grooves are clean and undamaged.
   - Stud threads are clean and undamaged.
2. Orient the DSA flange with the 10M side down.
3. Thoroughly clean the mating grooves of the DSA flange and the WFT-SB spool assembly. Wipe lightly with oil or grease.

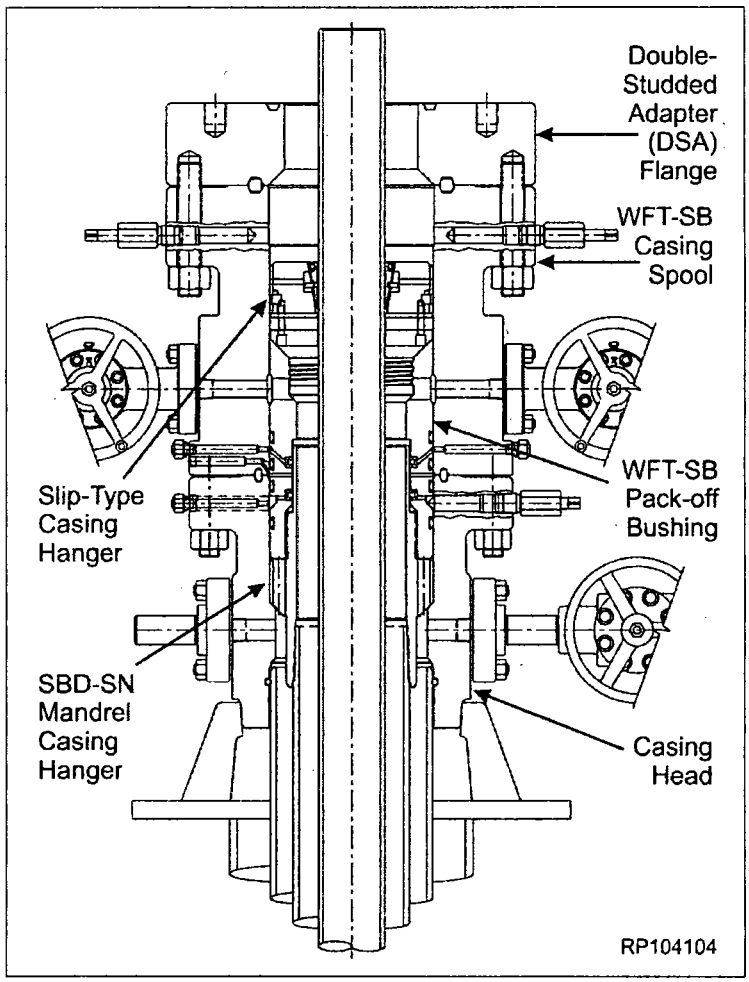
⚠WARNING⚠

Excessive oil or grease will prevent a positive seal from forming.

4. Install a new appropriately sized ring gasket into the WFT-SB spool assembly groove.
5. Lift, while holding level, and carefully lower the DSA over the production casing stub until it lands on the ring gasket.
6. Make-up the flange connection with appropriate nuts, tightening in alternate cross pattern, as required by API 6A.
7. Fill the void area in the DSA around the production casing with a light weight oil.
8. Continue filling with a light weight oil to the top of the DSA.

⚠WARNING⚠

Do NOT allow oil to run into the ring groove. This may prevent a positive seal from forming.



Installation and Testing of the Tubing Spool Assembly

Installation of the TCM Tubing Spool Assembly

1. Examine the tubing spool assembly. Verify the following:
   - bore is clean and free of debris
   - ring grooves and seals are clean and undamaged
   - PE-seal assembly is properly installed, clean and undamaged.
2. Thoroughly clean the mating ring grooves of the WFT-TCM Tubing Spool and WFT-SB Casing Spool.
3. Lightly lubricate the inner diameter of the PE-seal and outer diameter of the casing stub with oil or grease.

⚠WARNING⚠

Excessive oil or grease will prevent a positive seal from forming.

4. Install a new appropriately sized ring gasket into the WFT-SB casing spool assembly groove.
5. Orient the tubing spool assembly as required and carefully lower it over the casing stub, until it lands on the ring gasket.
6. Make up the flange connection with the appropriate studs and nuts, tightening in an alternating cross pattern, as required by API 6A.

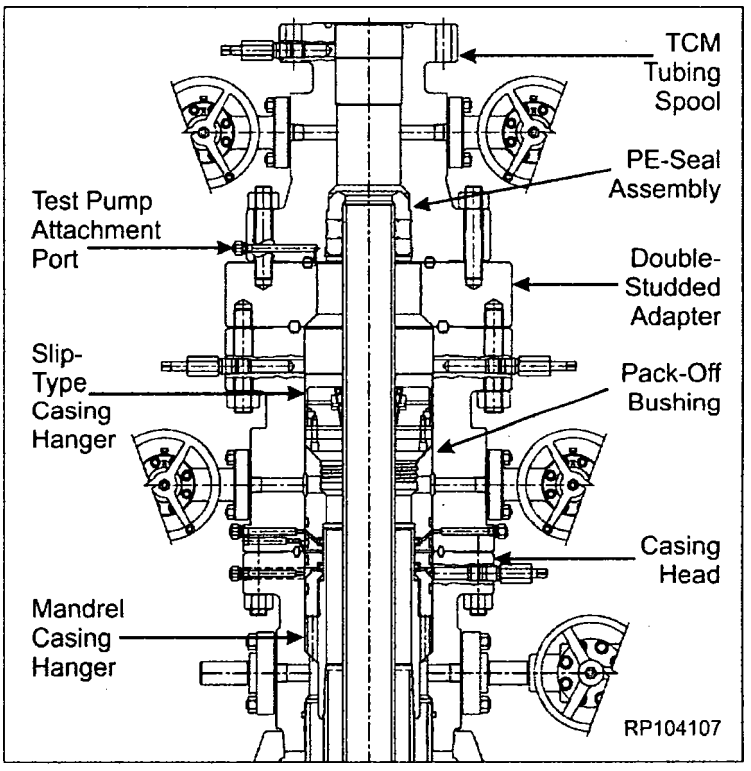
Testing the Secondary Seal and Flange Connection Test

1. Locate the test port fitting on the OD of the tubing spool lower flange. Remove the dust cap from the fitting.
2. Attach a test pump to the test port fitting.
3. Pump clean test fluid into the void area between the flanges until a test pressure of **10,000 psi or 80% of casing collapse pressure is attained**, whichever is lower.
4. Hold and monitor pressure for 15 minutes or as required by the drilling supervisor.
5. Once a satisfactory test is achieved, carefully bleed off pressure and remove the test pump
6. Attach a bleeder tool to the test port fitting and open the tool to vent any remaining trapped pressure.

⚠CAUTION⚠

Always direct the bleeder tool port away from people and property.

7. Remove the bleeder tool and reinstall the dust cap on the test port fitting.
8. Install a new appropriately sized ring gasket into the tubing spool groove.



Testing the BOP

NOTE

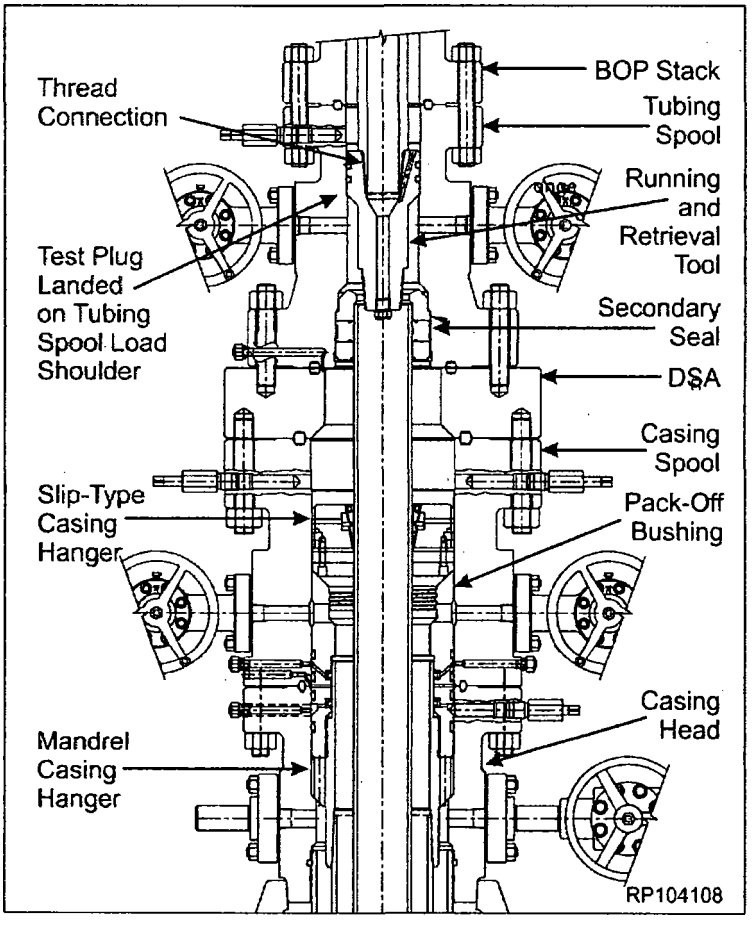
Immediately after the make-up of the BOP Stack and periodically during drilling of hole for the next string, the BOP stack (flanged connections and rams) must be tested.

1. Examine the test plug. Verify that:
   - O-ring seals and plugs are properly installed, clean and undamaged.
   - All threads are clean and undamaged.
2. Orient the test plug with O-ring seals up and drill pipe pin connection down.
3. Make up a joint of drill pipe to the top of the test plug.

NOTE

If pressure is to be supplied through the drill pipe, the pipe plug should be removed from the weep port.

4. Fully retract all lockscrews on the WFT-TCM tubing spool assembly.
5. Open the side outlet valves on the tubing spool.
6. Wipe the test plug O-ring seals with a light oil or grease.
7. Lower the test plug through the BOP until it lands on the tubing spool load shoulder.
8. Close the BOP rams on the drill pipe and test to **10,000 psi maximum.**
9. Monitor the open outlets for signs of leakage past the test plug.
10. Once a satisfactory test is achieved, release pressure and open the rams.
11. Close the side outlet valves.
12. Remove as much fluid from the BOP stack as possible.
13. Slowly retrieve the test plug, avoiding damage to the seals.
14. Repeat this procedure, as required, during drilling or conditioning of the hole.



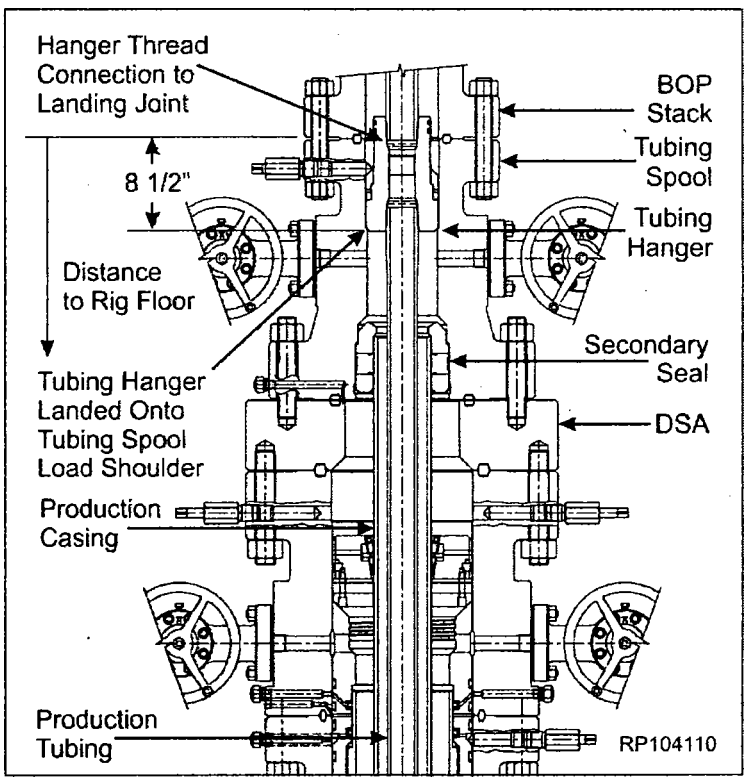
Hanging off the Production Tubing String

1. Run the production tubing and space out appropriately for the tubing hanger.
2. Examine the TC1AEN Tubing Hanger. Verify the following;
   - Packing element is clean and undamaged.
   - S-seals are properly installed.
   - S-seals are clean and undamaged.
   - All threads are clean and undamaged.
3. Make-up a short handling joint to the top of the tubing hanger.
4. Pick up the tubing hanger and make it up to the tubing string, tightening the connection to the thread manufacturer's recommended optimum torque value.
5. Remove the short handling joint from the top of the hanger. Make up the landing joint to the top of the tubing hanger, tightening the connection to the thread manufacturer's recommended minimum torque values.
6. Ensure that all tubing spool lockscrews are fully retracted from the bore and open side outlet valves. Drain the BOP stack.

NOTE

The side outlet valves should remain open while landing the tubing hanger.

7. Calculate the distance from the tubing spool load shoulder to the rig floor. Measure from the face of the tubing spool.
8. Carefully lower the tubing hanger into the well, tallying the tubing every five feet, until the tubing hanger lands securely on the tubing spool load shoulder.
9. Run in all tubing spool lockscrews, in an alternating cross pattern, to 300 ft-lbs, in 75 ft-lb increments.
10. Remove the landing joint from the tubing hanger, and set it aside.



11. Install the Type H Back Pressure Valve, carefully lowering the BPV through the BOP stack into the tubing hanger. Rotate the BPV counterclockwise (to the left) until it bottoms out in the tubing hanger BPV prep. Continue rotating counterclockwise, approximately 7 turns, to retrieve the running tool.
12. With the well safe and under control, the BOP stack may be removed.

Installation and Testing of the Production Tree

Installation

1. Examine the production tree assembly. Verify the following;
   - Bore is clean and free of debris.
   - All valves are in the fully open position.
   - All threads and seal areas are clean and undamaged.
   - All fittings, nuts and handwheels are intact and undamaged.
2. Thoroughly clean all exposed portions of the tubing hanger, tubing head adapter flange and bottom prep of the tubing head adapter.
3. Thoroughly clean mating ring grooves of the tubing head adapter flange and WFT-TCM tubing spool.
4. Lightly lubricate the tubing hanger neck outer diameter and tubing head adapter flange bottom prep with oil or grease.

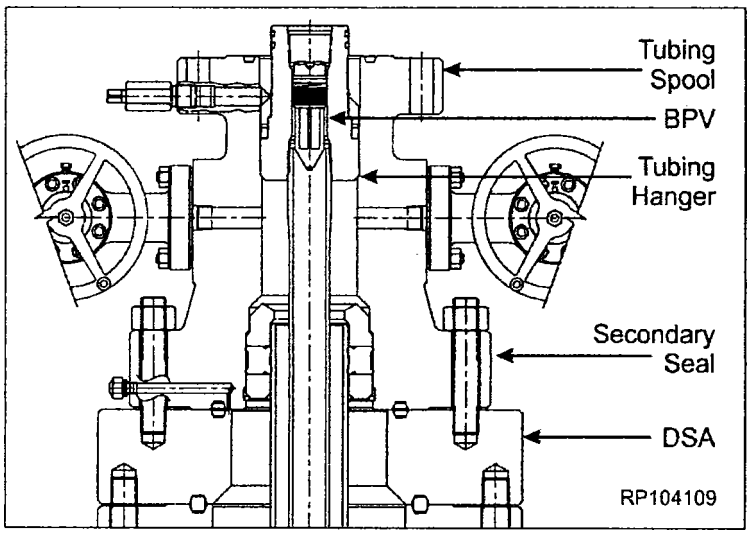
⚠WARNING⚠

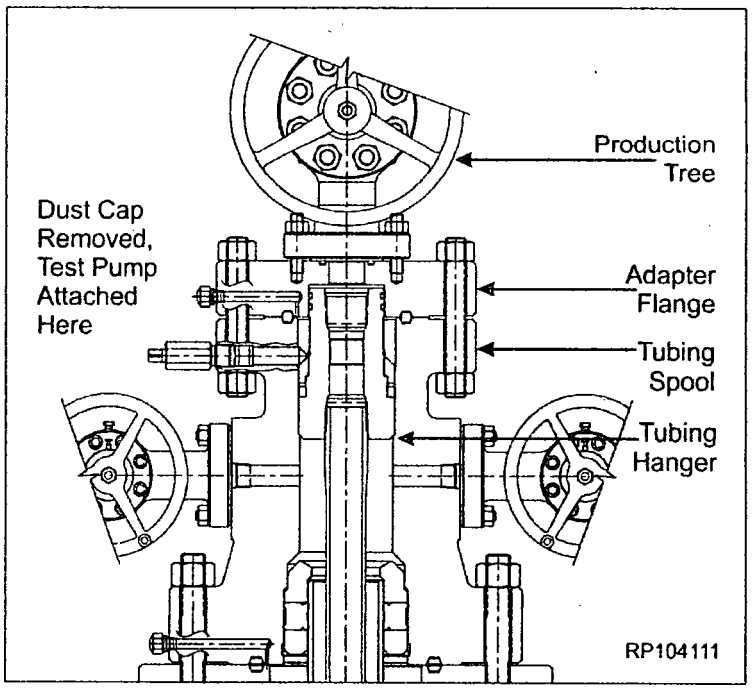
Excessive oil or grease will prevent a positive seal from forming.

5. Install a new appropriately sized ring gasket into the WFT-TCM tubing spool groove.
6. Fill the void area around the hanger with hydraulic fluid, to the top of the tubing spool assembly.

⚠WARNING⚠

Do NOT overfill the void area, allowing oil to run into the ring groove. This may prevent a positive seal from forming.





7. Align and level the production tree above the tubing hanger and carefully lower it over the tubing hanger neck, landing it on the ring gasket.

⚠WARNING⚠

Do NOT damage the hanger neck seals, as this will impair their sealing ability.

8. Make up the connection using the appropriate studs and nuts, and tightening in an alternating cross pattern, as required by API 6A.

Testing the Production Tree Connection

1. Locate the test port fitting on the outer diameter of the tubing head adapter flange. Remove the dust cap from the fitting.
2. Attach a test pump to test port fitting, and open the pump.
3. Pump clean test fluid into void area between flanges, test to 10,000 psi maximum.
4. Hold and monitor pressure for **15 minutes or as required by the production supervisor**.
5. Once a satisfactory test is achieved, carefully bleed off test pressure and remove the test pump.
6. Attach a bleeder tool to the test port fitting, and open the tool to vent any remaining trapped pressure.

⚠CAUTION⚠

Always direct the bleeder tool away from people and property.

7. Remove the bleeder tool and reinstall the dust cap on the test port fitting.
8. Remove the type 'H' back pressure valve (BPV) through the production tree.
9. Ensure that the well is safe and secure by closing all gate valves.