Schlumberger

GEOFRAME PROCESSED INTERPRETATION

Bordip

4' X 2' X 60 Degree

Run 1 & 2 2inch and 5inch Scale

*A Mark of Schlumberger

Using the following logs: FMI-GR

COMPANY:	NORTHWEST NATURAL GAS COMPANY
WELL:	IW 14dH-23-65
FIELD:	CALVIN CREEK-REICHHOLD POOL
COUNTY:	COLUMBIA
STATE:	OREGON
COUNTRY:	US
Date Logged:	21-Oct-2001 Date Processed: 27-Feb-2002
Well Location:	SHL: 976.5' NORTH & 1256.3 ' EAST FROM THE SW CORNER
Elevations:	KB: 922.5ft DF: 922.3ft GL: 905ft
API Number:	36-009-00353 Job Number:

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot. and do not guarantee the accuracy or correctness of any interpretation. and we shall not. except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretations made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

Field Recording:	Location: SACRAMENTO	Software Version: 9C2-303	Engineer: M. KHAN
Office Recording:	ICS Center:	Baseline:	Log Analyst: C. Blume

Mud and Borehole Measurements:

Rm @ Measured Temperature:	@	BHT: 212degF	Bitsize: 12.25in
Rmf @ Measured Temperature:	@	Type Fluid in Hole:	GEL-WATER
Rmc @ Measured Temperature:	@	Mud Density: 9.6lbm/gal	

Remarks:

BHL: 1' NORTH & 1176' EAST OF THE SOUTHWEST CORNER OF SECTION 23

N
W E
S

GR .BASIC .FMI
150 (gAPI) 300

C1 .CRC [A1095
6 (in) 16

True Dip
BorDip DIP .MSD [C12139430]

MD
1 : 600
ft

C2 .CRC [A1095
6 (in) 16

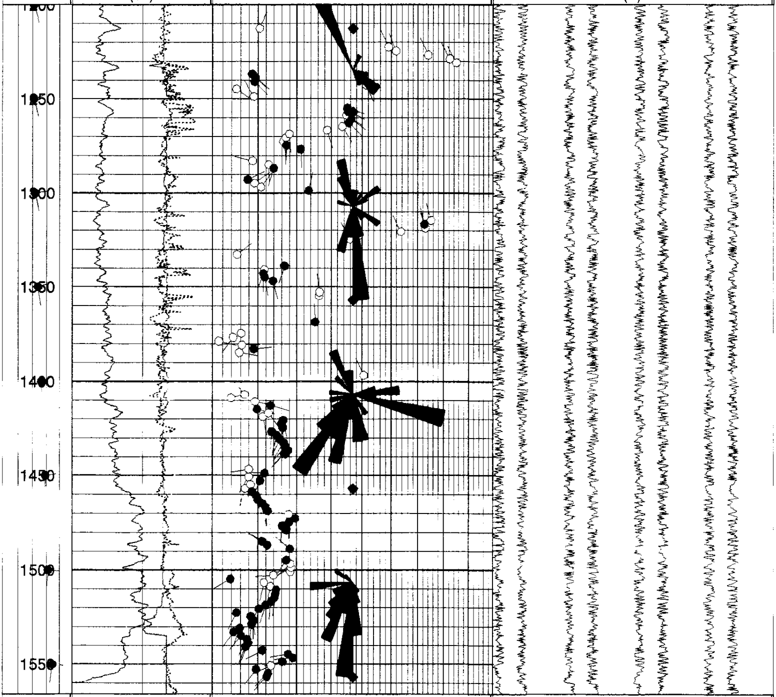
BorDip DIP .MSD [C12139430]
Tadpoles
True Dip
Quality]4,12[
Quality [12,20]
0 Deg 90

Tadpole
Borehole drif
0 Deg 90

GR .BASIC .FMI
0 (gAPI) 150

HCAL .BASIC .A
6 (in) 16

FMI - Dipmeter Fast Channels
0 ( ) 1000



Tadpole
Borehole drif
0 Deg 90

HCAL .BASIC .A
6 (in) 16

GR .BASIC .FMI
0 (gAPI) 150

BorDip DIP .MSD [C12139430]
Tadpoles
True Dip
Quality]4,12[
Quality [12,20]
0 Deg 90

FMI - Dipmeter Fast Channels
0 ( ) 1000

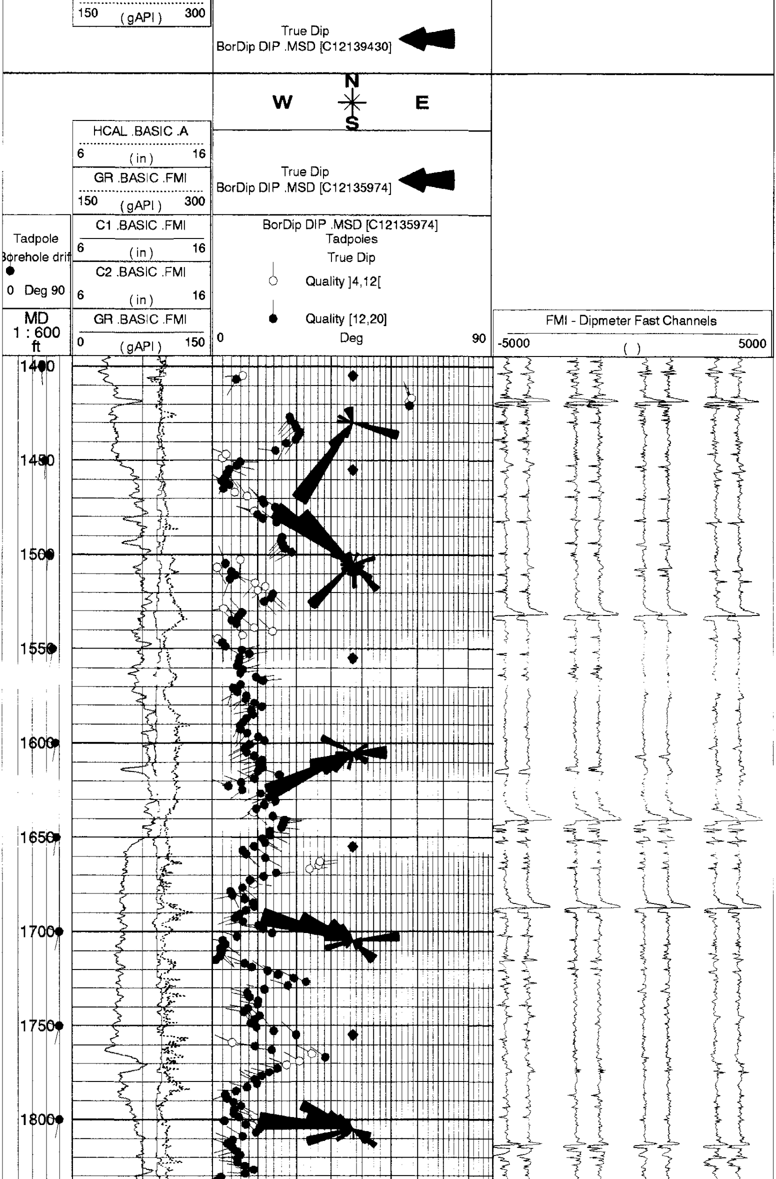
MD
1 : 600
ft

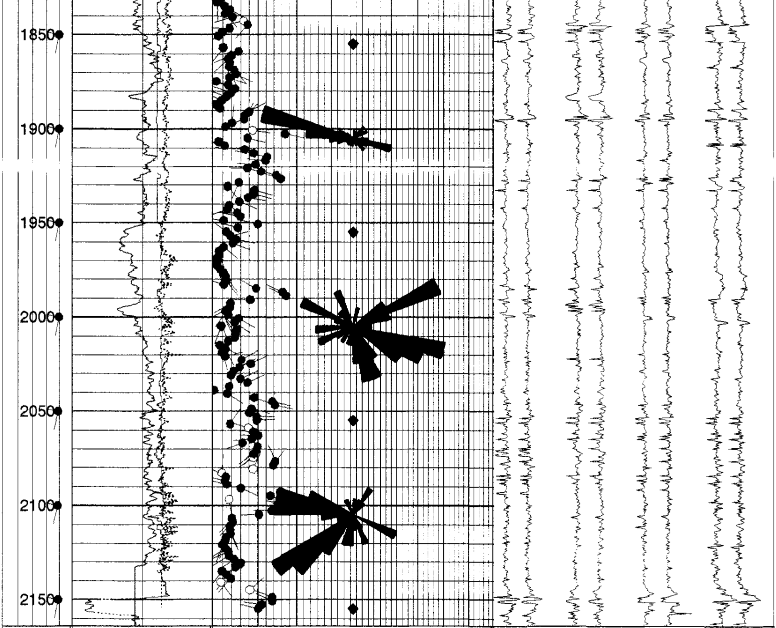
C2 .CRC [A1095
6 (in) 16

C1 .CRC [A1095
6 (in) 16

N
W E
S

GR .BASIC .FMI





MD
1 : 600
ft

Tadpole
Borehole drif
●
0 Deg 90

GR .BASIC .FMI
0 (gAPI) 150

C2 .BASIC .FMI
6 (in) 16

C1 .BASIC .FMI
6 (in) 16

GR .BASIC .FMI
150 (gAPI) 300

HCAL .BASIC .A
6 (in) 16

BorDip DIP .MSD [C12135974]
Tadpoles
True Dip

○ Quality]4,12[

● Quality [12,20]

0 Deg 90

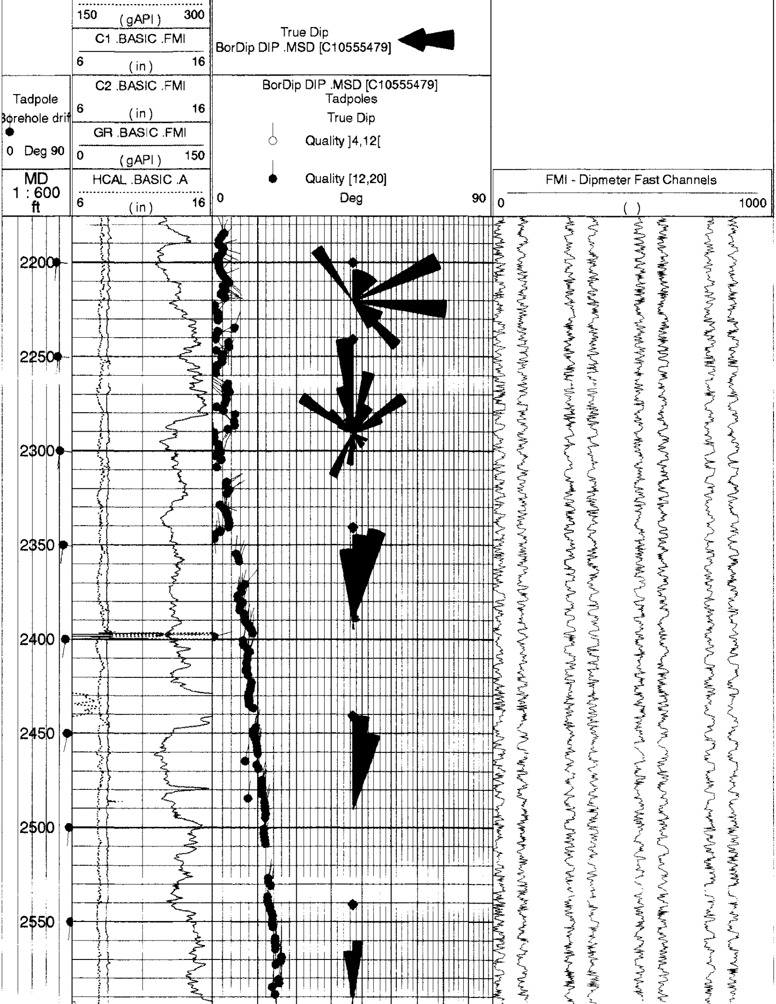
N
W E
S

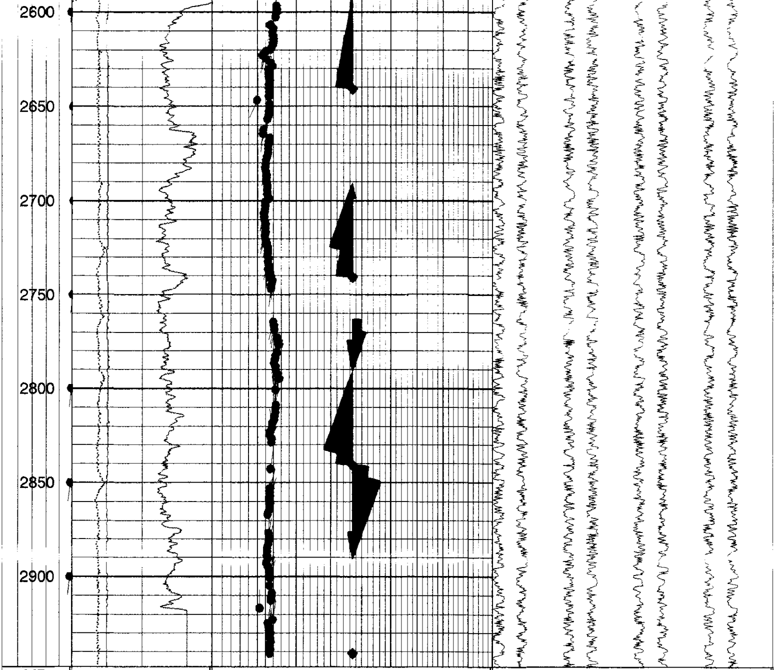
True Dip
BorDip DIP .MSD [C12135974]

N
W E
S

FMI - Dipmeter Fast Channels
-5000 ( ) 5000

GR .BASIC .FMI





MD
1 : 600
ft

Tadpole
Borehole drift
●
0 Deg 90

HCAL .BASIC .A
6 (in) 16

GR .BASIC .FMI
0 (gAPI) 150

C2 .BASIC .FMI
6 (in) 16

C1 .BASIC .FMI
6 (in) 16

GR .BASIC .FMI
150 (gAPI) 300

BorDip DIP .MSD [C10555479]
Tadpoles
True Dip

○ Quality]4,12[

● Quality [12,20]

0 Deg 90

N
W E
S

True Dip
BorDip DIP .MSD [C10555479] ◀

FMI - Dipmeter Fast Channels
0 ( ) 1000

N

W E
S

GR .BASIC .FMI
150 (gAPI) 300

C1 .BASIC .FMI
6 (in) 16

True Dip
BorDip DIP .MSD [C10564663]

Tadpole
Borehole drif
●
0 Deg 90

C2 .BASIC .FMI
6 (in) 16

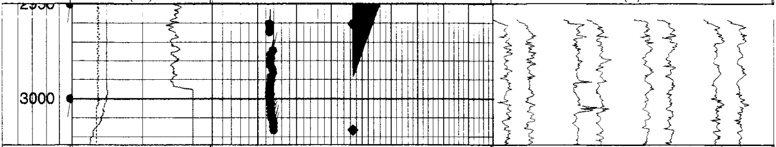
GR .BASIC .FMI
0 (gAPI) 150

BorDip DIP .MSD [C10564663]
Tadpoles
True Dip
○ Quality]4,12[
● Quality [12,20]
0 Deg 90

MD
1 : 600
ft

HCAL .BASIC .A
6 (in) 16

FMI - Dipmeter Fast Channels
-5000 ( ) 5000



MD
1 : 600
ft

HCAL .BASIC .A
6 (in) 16

BorDip DIP .MSD [C10564663]
Tadpoles
True Dip
○ Quality]4,12[
● Quality [12,20]
0 Deg 90

FMI - Dipmeter Fast Channels
-5000 ( ) 5000

Tadpole
Borehole drif
●
0 Deg 90

GR .BASIC .FMI
0 (gAPI) 150

C2 .BASIC .FMI
6 (in) 16

C1 .BASIC .FMI
6 (in) 16

N
W E
S

GR .BASIC .FMI
150 (gAPI) 300

True Dip
BorDip DIP .MSD [C10564663]

N
W E
S

GR .BASIC .FMI
150 (gAPI) 300

C1 .CRC [A1095
6 (in) 16

True Dip
BorDip DIP .MSD [C12139430]

MD
1 : 240
ft

C2 .CRC [A1095
6 (in) 16

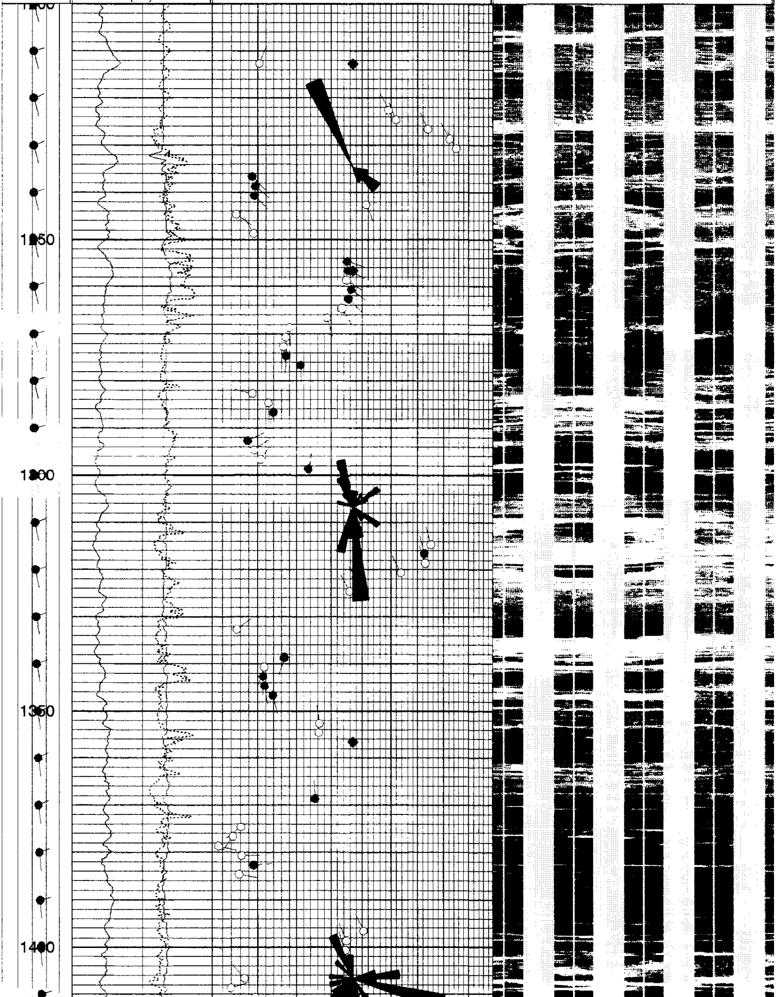
BorDip DIP .MSD [C12139430]
Tadpoles
True Dip
○ Quality]4,12[
● Quality [12,20]
0 Deg 90

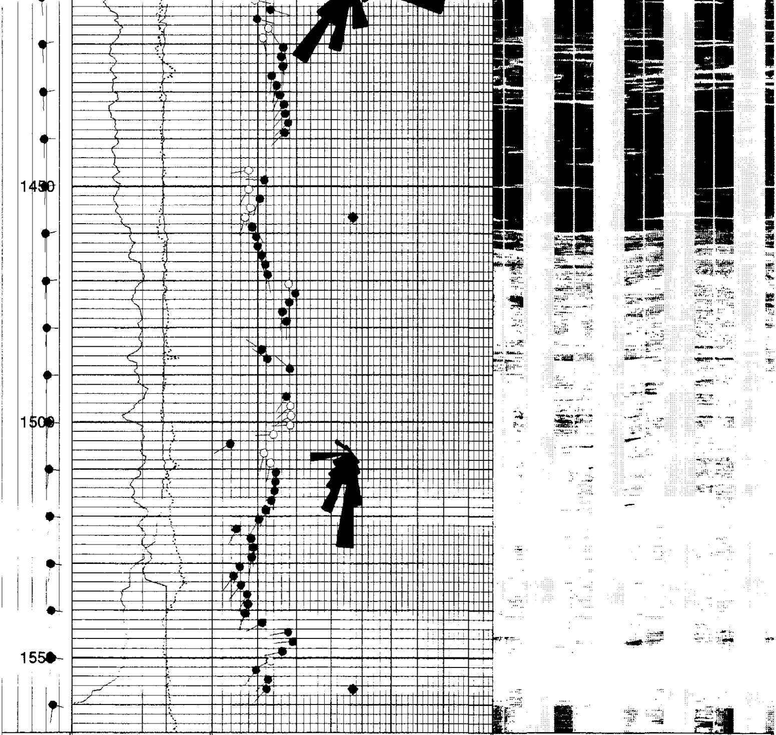
FMI_018LUP FMI .STAT [C10954543]
Horizontal Scale: 1 : 12.828
Straight Image
0 120 240 360
Resistive FMI Image Conductive

Tadpole
Borehole drif
●
0 Deg 90

GR .BASIC .FMI
0 (gAPI) 150

HCAL .BASIC .A
6 (in) 16





Tadpole
Borehole drif
●
0 Deg 90

MD
1 : 240
ft

HCAL .BASIC .A
6 (in) 16

GR .BASIC .FMI
0 (gAPI) 150

C2 .CRC [A1095
6 (in) 16

C1 .CRC [A1095
6 (in) 16

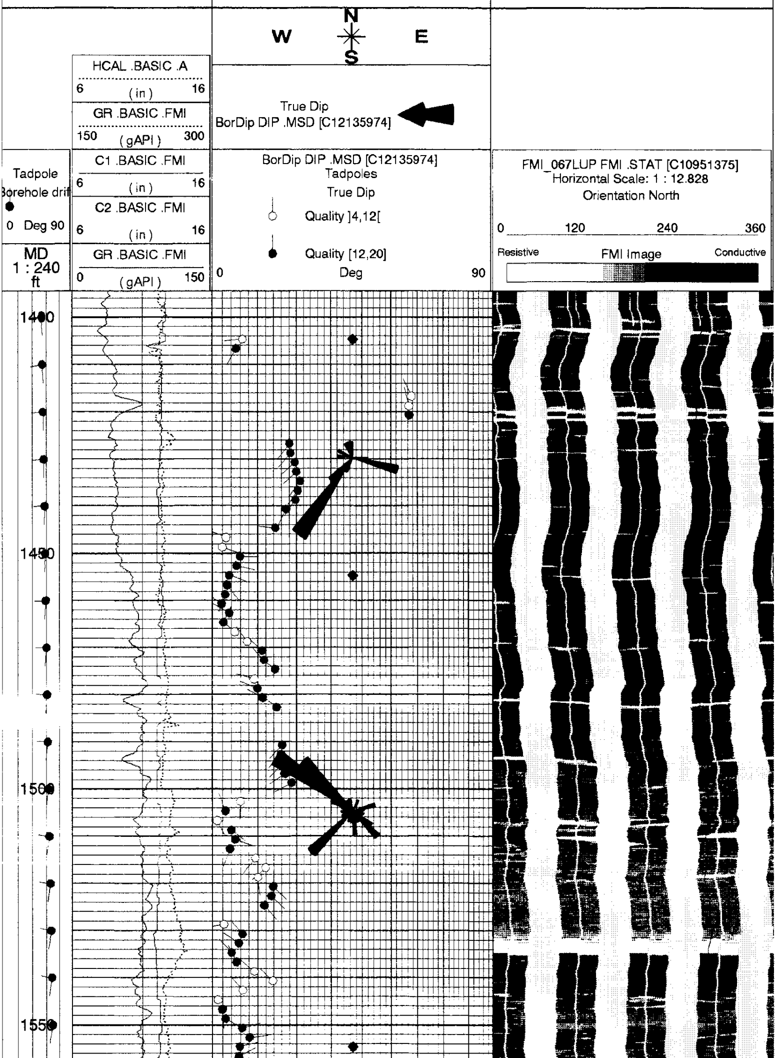
GR .BASIC .FMI
150 (gAPI) 300

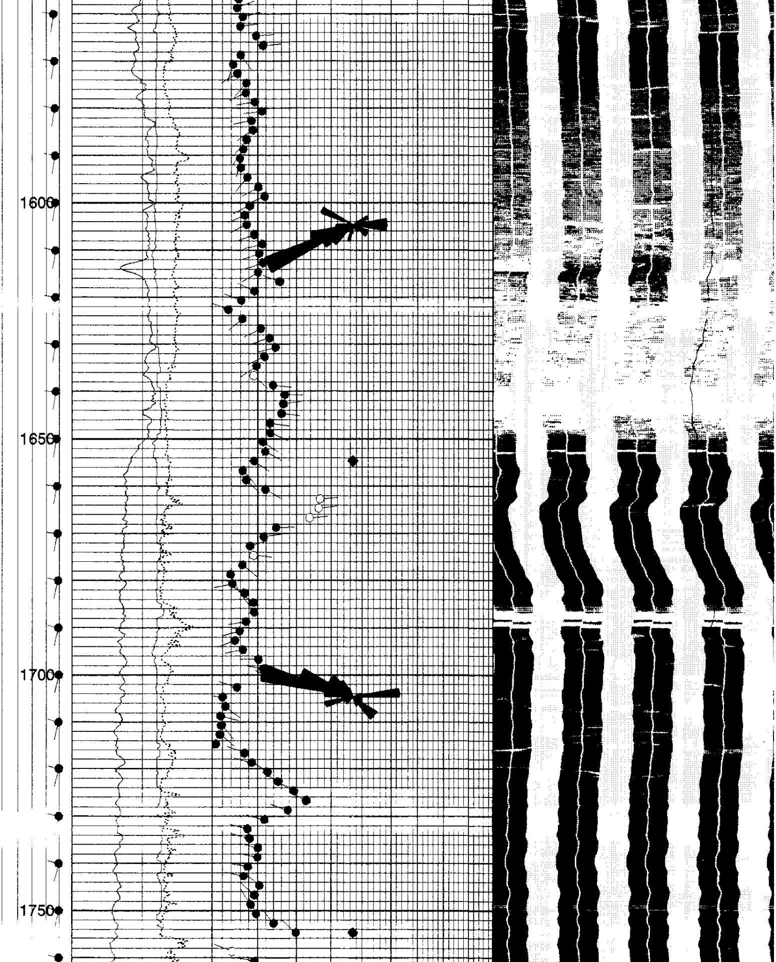
BorDip DIP .MSD [C12139430]
Tadpoles
True Dip
○ Quality]4,12[
● Quality [12,20]
0 Deg 90

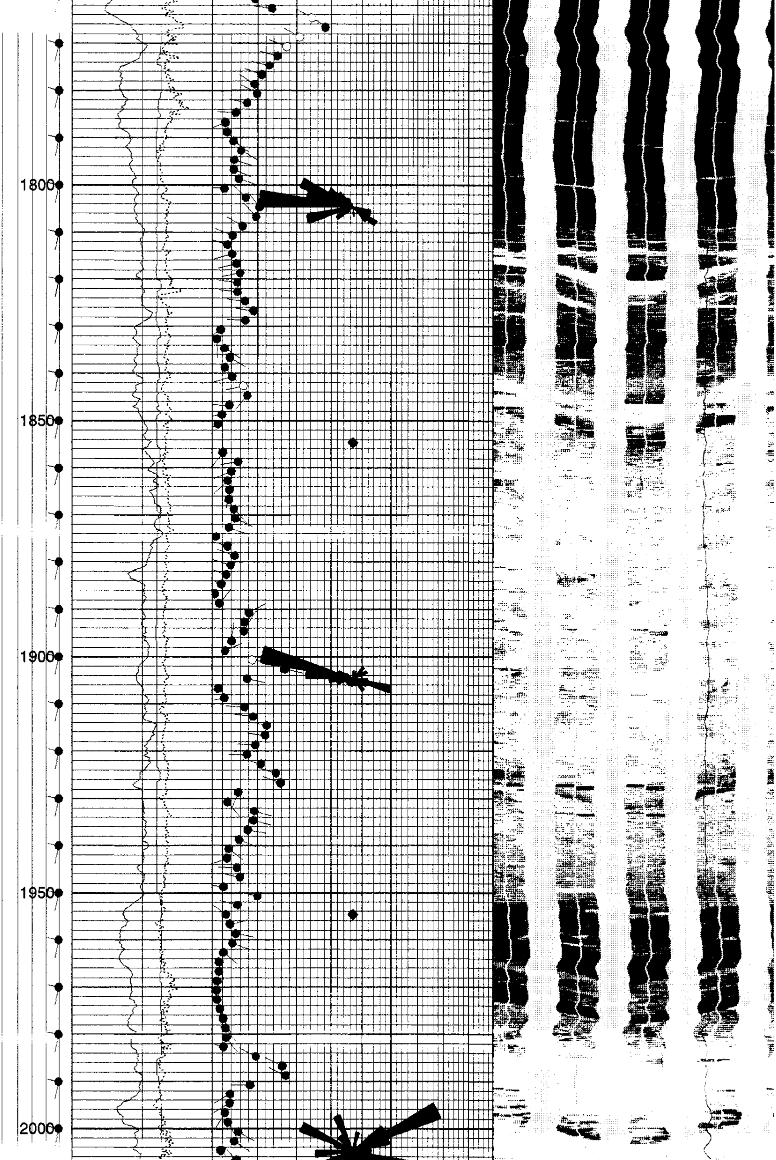
N
W E
S

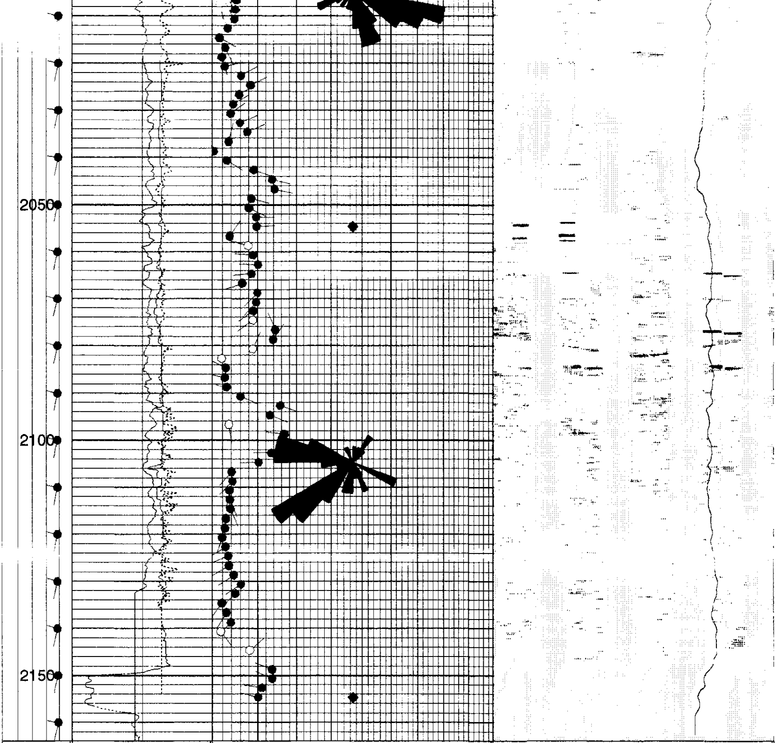
True Dip
BorDip DIP .MSD [C12139430]

FMI_018LUP FMI .STAT [C10954543]
Horizontal Scale: 1 : 12.828
Straight Image
0 120 240 360
Resistive FMI Image Conductive









MD
1 : 240
ft

Tadpole
Borehole drif
●
0 Deg 90

GR .BASIC .FMI
0 (gAPI) 150

C2 .BASIC .FMI
6 (in) 16

C1 .BASIC .FMI
6 (in) 16

GR .BASIC .FMI
150 (gAPI) 300

HCAL .BASIC .A
6 (in) 16

BorDip DIP .MSD [C12135974]
Tadpoles
True Dip

○ Quality]4,12[

● Quality [12,20]

0 Deg 90

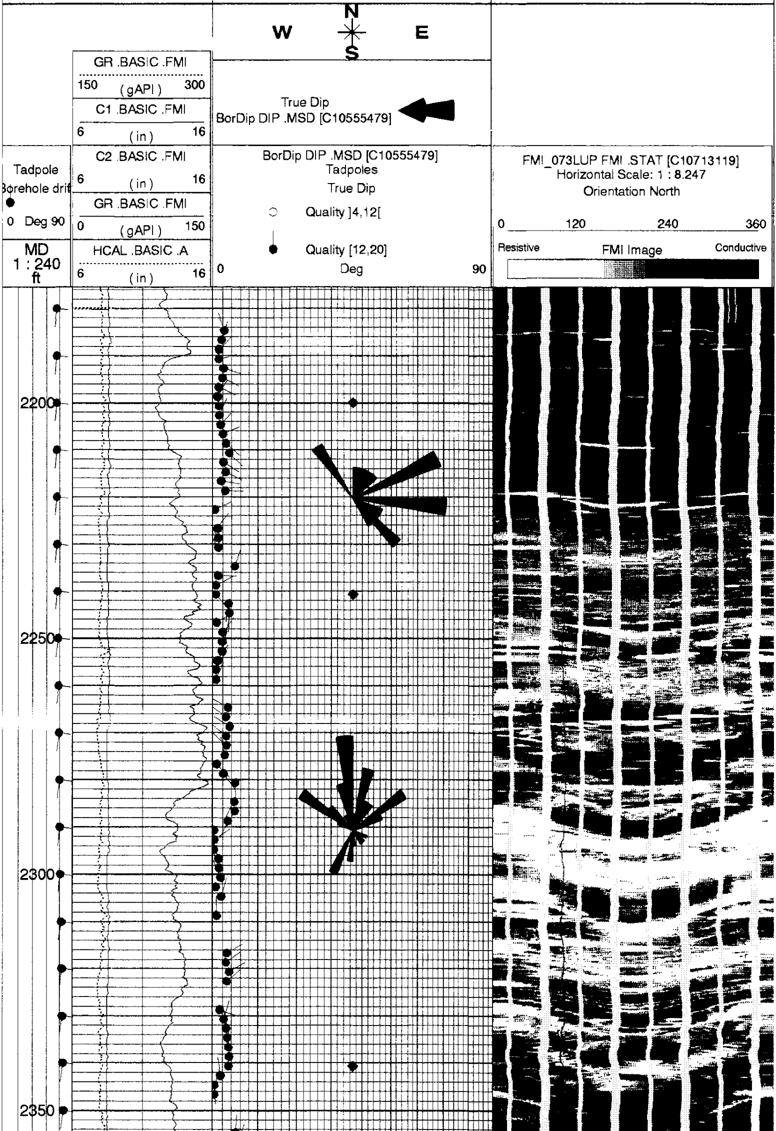
N
W E
S

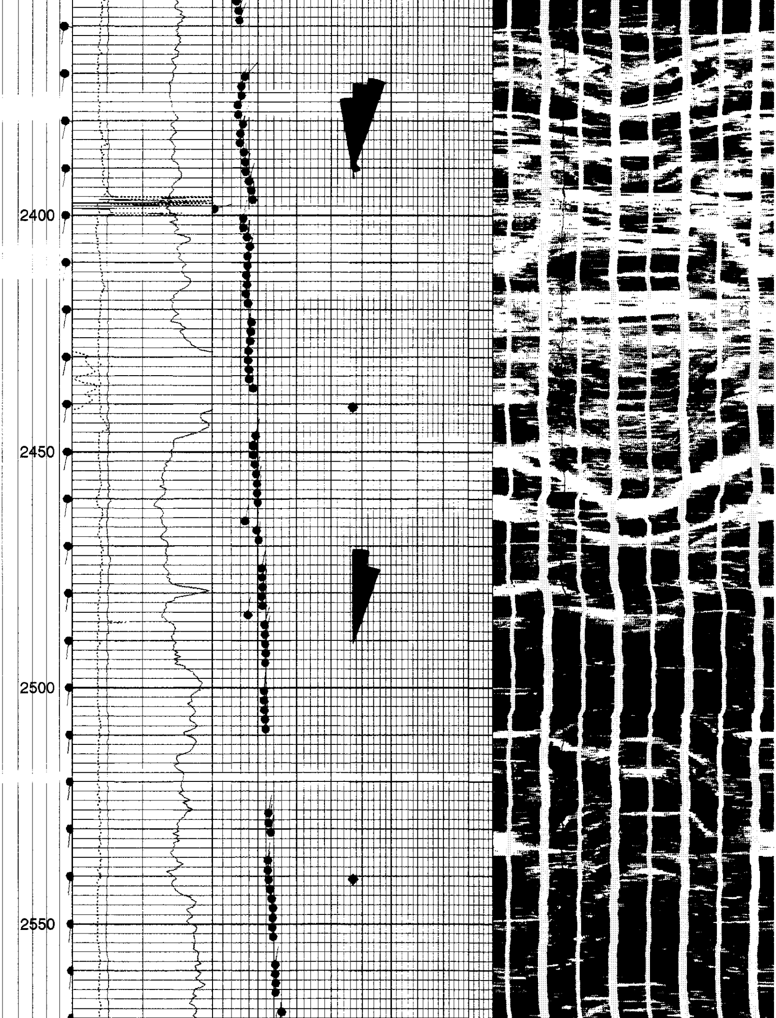
True Dip
BorDip DIP .MSD [C12135974]

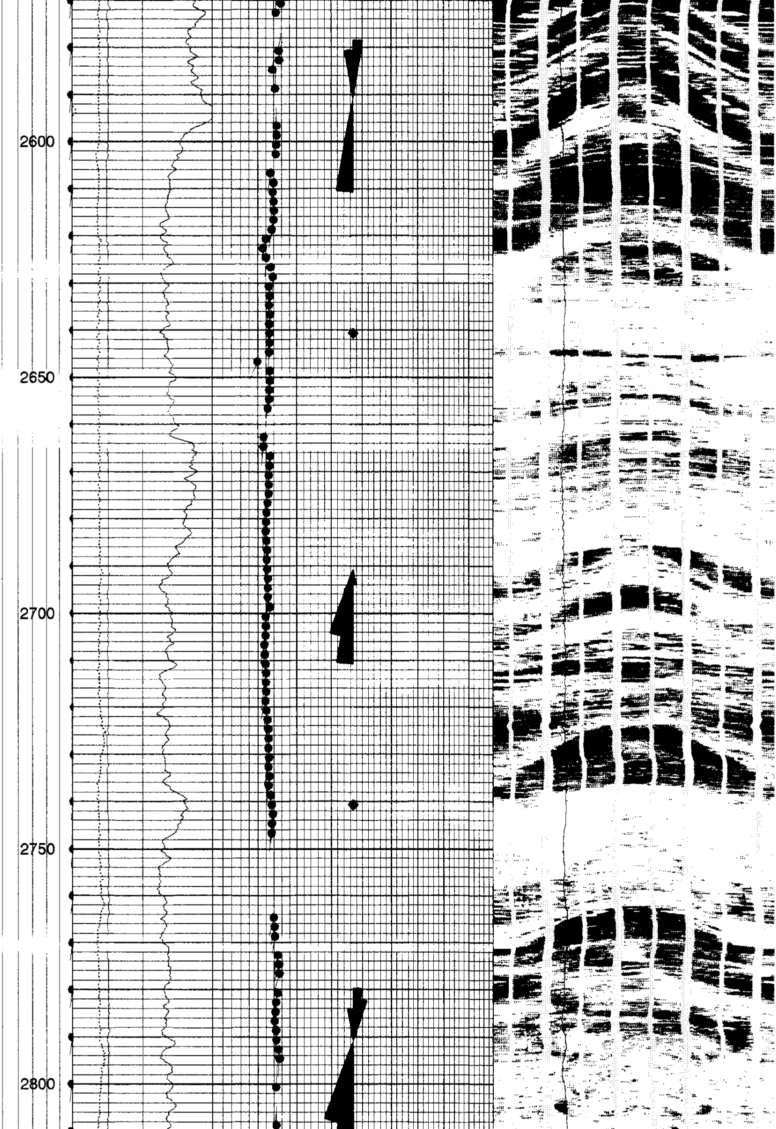
FMI_067LUP FMI .STAT [C10951375]
Horizontal Scale: 1 : 12.828
Orientation North

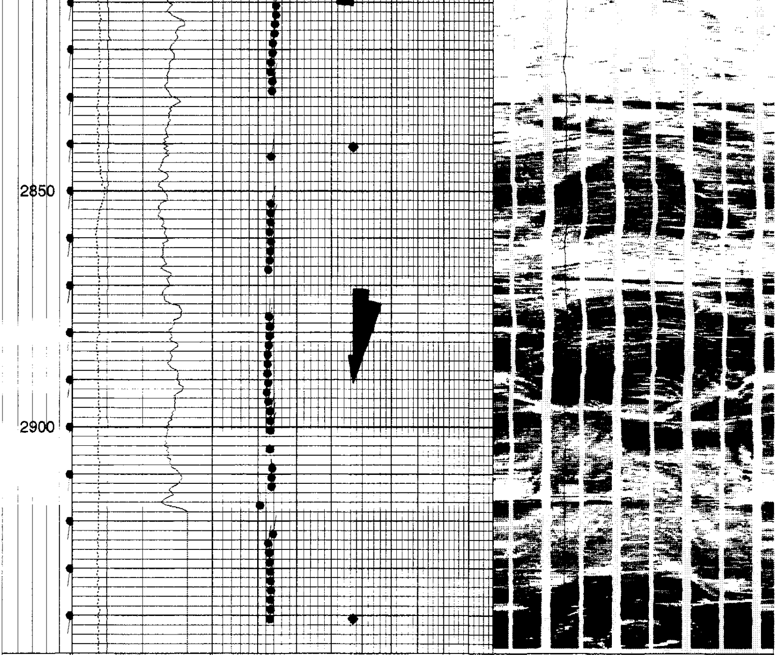
0 120 240 360

Resistive FMI Image Conductive









MD
1 : 240
ft

Tadpole
Borehole drift
●
0 Deg 90

HCAL .BASIC .A
6 (in) 16

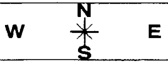
GR .BASIC .FMI
0 (gAPI) 150

C2 .BASIC .FMI
6 (in) 16

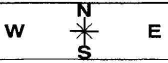
C1 .BASIC .FMI
6 (in) 16

GR .BASIC .FMI
150 (gAPI) 300

BorDip DIP .MSD [C10555479]
Tadpoles
True Dip
○ Quality]4,12[
● Quality [12,20]
0 Deg 90



True Dip
BorDip DIP .MSD [C10555479]



GR .BASIC .FMI

FMI_073LUP FMI .STAT [C10713119]
Horizontal Scale: 1 : 8.247
Orientation North

0 120 240 360

Resistive FMI Image Conductive

150 (gAPI) 300

C1 .BASIC .FMI
6 (in) 16

True Dip
BorDip DIP .MSD [C10564663]

MD
1 : 240
ft

Tadpole
Borehole drift
●
0 Deg 90

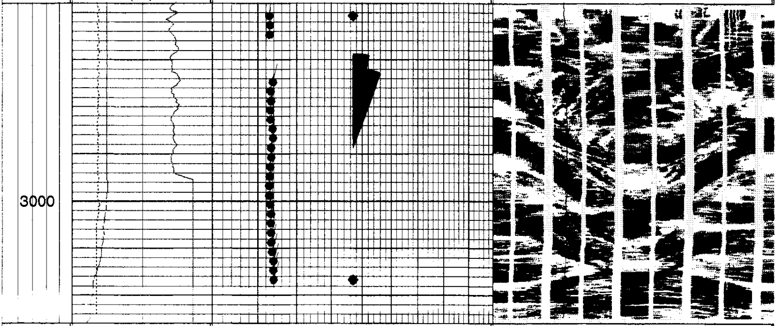
C2 .BASIC .FMI
6 (in) 16

GR .BASIC .FMI
0 (gAPI) 150

HCAL .BASIC .A
6 (in) 16

BorDip DIP .MSD [C10564663]
Tadpoles
True Dip
○ Quality]4,12[
● Quality [12,20]
0 Deg 90

FMI_072LUP FMI .STAT [C10729151]
Horizontal Scale: 1 : 8.247
Orientation North
0 120 240 360
Resistive FMI Image Conductive



Tadpole
Borehole drift
●
0 Deg 90

MD
1 : 240
ft

HCAL .BASIC .A
6 (in) 16

GR .BASIC .FMI
0 (gAPI) 150

C2 .BASIC .FMI
6 (in) 16

C1 .BASIC .FMI
6 (in) 16

GR .BASIC .FMI
150 (gAPI) 300

BorDip DIP .MSD [C10564663]
Tadpoles
True Dip
○ Quality]4,12[
● Quality [12,20]
0 Deg 90

N
W E
S

True Dip
BorDip DIP .MSD [C10564663]

FMI_072LUP FMI .STAT [C10729151]
Horizontal Scale: 1 : 8.247
Orientation North
0 120 240 360
Resistive FMI Image Conductive

Schlumberger

Company:	NORTHWEST NATURAL GAS COMPANY				
Well:	IW 14dH-23-65				
FIELD:	CALVIN CREEK-REICHHOLD POOL				
COUNTY:	COLUMBIA				
STATE:	OREGON				
Date Logged:	27-Oct-2001	Date Processed:			
Well Location:	SHL: 976.5' NORTH & 1256.3' EAST FROM THE SW CORNER				
Elevations:	KB: 923ft	DF:	921.5ft	GL:	905ft
API Number:	36-009-00353	Job Number:			