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Final Report
Special Core Analysis
Selected Samples
From
Wells : DMP Harvey-2,
DMP Harvey-3, and DMP Harvey-4

Western Australia

Prepared for
Department of Mines and Petroleum

June 2016

File : HOU-150878

Rock Properties Group
Core Laboratories
Perth (Australia) and Houston (USA)

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17th June 2016

Department of Mines and Petroleum
100 Plain Street
East Perth
Western Australia, 6004

Attention : Louise Stelfox

Subject : Special Core Analysis
Wells : DMP Harvey-2; DMP Harvey-3; and DMP Harvey-4
File : HOU-150878

Dear Louise,

Presented herein is the final report of the Special Core Analysis study conducted on selected core plug samples taken from the wells DMP Harvey-2, DMP Harvey-3 and DMP Harvey-4.

Thank you for the opportunity to have been of service to the Department of Mines and Petroleum. Please do not hesitate to contact us should you have any questions or if we can be of any further assistance.

Yours sincerely,
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TABLE OF CONTENTS

Page

SECTION 1: SUMMARY AND INTRODUCTION

- Introduction 1-1
- Special Core Analysis (SCAL) Test Schedule Summary 1-3
- Summary of Results 1-9

SECTION 2: FLOW STUDIES

- Laboratory Procedures 2-1
- Steady-State CO_2-Water Relative Permeability 2-5
- Tagged Synthetic Formation Brine Composition (Steady-State CO_2-Water Relative Permeability) 2-9
- Summary of Fluid Parameters (Steady-State CO_2-Water Relative Permeability) 2-10
- Unsteady-State CO_2-Water Relative Permeability (Endpoints) 2-11
- Effective Permeability to Brine 2-14
- Threshold Capillary Pressure 2-15
- Synthetic Formation Brine Composition (Unsteady-State CO2-Water Relative Permeability and Permeability to Brine) 2-16
- Summary of Fluid Parameters (Unsteady-State CO2-Water Relative Permeability and Permeability to Brine) 2-17

SECTION 3: MERCURY INJECTION ANALYSIS

- Laboratory Procedures 3-1
- Mercury Injection capillary pressure 3-6

SECTION 4: GEOMECHANICAL ANALYSIS

- Laboratory Procedures 4-1
- Summary of Triaxial Compressive Strength 4-3
- Acoustic Velocity 4-4
- Triaxial Compressive Strength – Individual Sample 4-5
- Mohr-Coulomb Failure Analysis 4-14
- Plug Photography (Before and after testing) 4-17

TABLE OF CONTENTS (cont'd)

APPENDICES

APPENDIX 1
Core Plug X-ray Computed Tomography (X-ray CT) Images : Pre-Test Samples.

APPENDIX 2
Core Plug X-ray Computed Tomography (X-ray CT) and White-Light Core Plug Images.
Sample #20 from the well DMP Harvey-3 : Post Steady-State Relative Permeability Test.
Sample #10 from the well DMP Harvey-4 : Rejected Sample (Selected for Steady-State Relative Permeability Test).

APPENDIX 3
Raw Data : Steady-State CO_2-Water / Water-CO_2 Relative Permeability.

APPENDIX 4
Porosity, Permeability and Grain Density : Pre- and –Post Relative Permeability.

APPENDIX 5
Temperature versus Depth Plot for the well Lake Preston-1.
Pressure versus Depth plot for the well Pinjarra-1.
(Provided by the Department of Mines and Petroleum)

APPENDIX 6
Net Confining Stress Calculations.
(Prepared by Core Laboratories)

APPENDIX 7
Calculation Parameters for CO_2 Threshold Pressure and Column Height.
(Provided by Sandeep Sharma, Department of Mines and Petroleum)

APPENDIX 8
SWH Project Planning Document (version 9).
Prepared by the Department of Mines and Petroleum (DMP).

APPENDIX 9
Units and Conversions
(Extracted from "Recommended Practices for Core Analysis, American Petroleum Institute RP 40, 1998).

SECTION 1
SUMMARY & INTRODUCTION

INTRODUCTION

This report contains the final results of the Special Core Analysis (SCAL) study performed on selected core plug samples from the wells DMP Harvey-2, DMP Harvey-3, and DMP Harvey-4 by Core Laboratories (CoreLab). This study was conducted on behalf of the Department of Mines and Petroleum (DMP).

The SCAL study comprised the following analyses :

1) Flow Studies
    - Steady-state supercritical CO_2-Brine relative permeability
    - Unsteady-state supercritical CO_2-Brine relative permeability
    - Effective permeability to brine
    - Threshold capillary pressure

2) Mercury Injection Analysis
    - Mercury injection capillary pressure

3) Geomechanical Analyses

    - Single-stage triaxial compressive strength
    - Mohr-Coulomb failure analysis
    - Acoustic velocity

The SCAL analysis each sample underwent is presented in the test schedule summary (pages 1-3 to 1-8). The flow studies and geomechanical analyses were performed at Core Laboratory's Advanced Technology Center in Houston, USA. The mercury injection tests were conducted at Core Laboratory's facility in Kewdale, Western Australia.

CT-scan images (pre-test) of selected plug samples are presented in Appendix-1.

CT-scan and white light plug images for samples #20 from the well DMP Harvey-3 and sample #10 from the well DMP Harvey-4 are presented in Appendix 2. Both samples were scheduled for steady-state CO2-Brine / Brine-CO2 relative permeability however only sample #20 completed the full relative permeability testing. Full testing on sample #10 was suspended since stable base permeability values could not be obtained which is likely due to mobile fines.

X-ray diffraction (XRD), standard thin section petrography, and scanning electron microscopy (SEM) analyses were performed for thirty-four (34) core samples. The project goal was to characterize the samples from the Lesueur Sandstone and the Eneabba Formation for suitability

as a carbon dioxide storage injection and storage complex. A complete discussion of the results are provided under separate cover titled "*Petrographic Analysis of Conventional Core Samples from the DMP Harvey 2, Harvey 3, and Harvey 4 Wells" by Core Laboratories Houston Texas, USA); December 2015 (Updated April 2016); File : 150878G.*

In addition, reference is made to the routine core analysis reports submitted to the DMP as follows

1) Routine Core Analysis Report for Well : Harvey-2; File : PRP-15005; dated 4th January 2016.
2) Routine Core Analysis Report for Well : Harvey-3; File : PRP-15068; dated 5th November 2015.
3) Routine Core Analysis Report for Well : Harvey-4; File : PRP-15017; dated 5th January 2016.

Please note this Quote provided by the DMP :

"The GSWA is currently reviewing the stratigraphy of the southern Perth Basin, including the usage of units originally defined in the northern Perth Basin. The formation names and tops quoted in the DMP's Harvey studies are therefore preliminary and may be subject to change following this review".

SPECIAL CORE ANALYSIS (SCAL) TEST SCHEDULE SUMMARY

(Sorted by well and depth)

Stratigraphic Unit	Sample no.	Depth (m)	Type**	Length (cm)	Diameter (cm)	Supercritical CO2-Brine Krel		Kbrine and Supercritical CO_2 Threshold Entry Pressure	MICP on Plug Offcuts*	Rock Mechanics			Petrology on Plug-Offcuts			CT-Scan
						SS Full-Curve	USS End-Points			Triaxial Comp. Strength	Mohr Coulomb Failure Analysis	Acoustic Velocity	Thin Section	SEM	XRD	
Well : DMP Harvey-2																
Yalgorup Member	PSV-4	511.10	V										X	X	X	
Yalgorup Member	PSSH-1	776.00	H	4.42	3.83			X	X							X
Yalgorup Member	PSH-11	790.68	H										X	X	X	
Yalgorup Member	PSSH-2	1132.10	H	4.94	3.80			X	X							X
Yalgorup Member	PSSV-1	1132.20	V	3.65	3.80			X	X							X
Well : DMP Harvey-3																
Eneabba Formation	PSH-7	725.44	H										X	X	X	
Yalgorup Member	PSH-9	740.70	H										X	X	X	
Yalgorup Member	PSSH-8	743.88	H	5.19	3.72			X	X							X
Yalgorup Member	142	760.15	H										X	X	X	
Yalgorup Member	PSSH-9	778.40	H	3.12	2.59			X	X							X
Yalgorup Member	147	863.00	H										X	X	X	

SPECIAL CORE ANALYSIS (SCAL) TEST SCHEDULE SUMMARY

(Sorted by well and depth)

Stratigraphic Unit	Sample no.	Depth (m)	Type**	Length (cm)	Diameter (cm)	Supercritical CO2-Brine Krel		Kbrine and Supercritical CO_2 Threshold Entry Pressure	MICP on Plug Offcuts*	Rock Mechanics			Petrology on Plug-Offcuts			CT-Scan
						SS Full-Curve	USS End-Points			Triaxial Comp. Strength	Mohr Coulomb Failure Analysis	Acoustic Velocity	Thin Section	SEM	XRD	
Well : DMP Harvey-3																
Yalgorup Member	152	919.00	H										X	X	X	
Yalgorup Member	PSH-11	965.64	H										X	X	X	
Yalgorup Member	163	1079.85	H										X	X	X	
Yalgorup Member	PSSH-3	1171.75	H	3.13	3.82			X	X							X
Yalgorup Member	168	1179.70	H										X	X	X	
Yalgorup Member	PSH-15	1226.38	H										X	X	X	
Yalgorup Member	175	1258.05	H										X	X	X	
Yalgorup Member	PSH-18	1291.61	H										X	X	X	
Yalgorup Member	PSSH-4	1333.10	H	5.18	3.81			X	X							X
Yalgorup Member	183	1335.50	H										X	X	X	
Yalgorup Member	PSH-24	1353.81	H										X	X	X	
Yalgorup Member	PSSV-2	1377.80	V	5.23	3.84			X	X							X

SPECIAL CORE ANALYSIS (SCAL) TEST SCHEDULE SUMMARY

(Sorted by well and depth)

Stratigraphic Unit	Sample no.	Depth (m)	Type**	Length (cm)	Diameter (cm)	Supercritical CO2-Brine Krel		Kbrine and Supercritical CO_2 Threshold Entry Pressure	MICP on Plug Offcuts*	Rock Mechanics			Petrology on Plug-Offcuts			CT-Scan
						SS Full-Curve	USS End-Points			Triaxial Comp. Strength	Mohr Coulomb Failure Analysis	Acoustic Velocity	Thin Section	SEM	XRD	
Well : DMP Harvey-3																
Yalgorup Member	PSSH-5	1378.00	H	5.18	3.81			X	X							X
Yalgorup Member	PSSV-3	1393.43	V	4.96	3.80			X	X							X
Yalgorup Member	187	1394.30	H										X	X	X	
Yalgorup Member	186	1395.70	H										X	X	X	
Yalgorup Member	PSH-28	1406.33	H										X	X	X	
Yalgorup Member	4	1414.00	H										X	X	X	
Yalgorup Member	PSH-30	1416.65	H										X	X	X	
Yalgorup Member	PSSH-6	1416.70	H	3.48	3.81			X	X							X
Wonnerup Member	11	1420.00	H	5.20	3.82		X		X				X	X	X	X
Wonnerup Member	Core Section 1GM (1420.40 - 1420.75m) sampled for plugs 1VA, 1VB, and 1VC															X
Wonnerup Member	1VA	1420.65	V	4.87	2.54					X	X	X				
Wonnerup Member	1VB	1420.65	V	4.94	2.54					X	X					

SPECIAL CORE ANALYSIS (SCAL) TEST SCHEDULE SUMMARY

(Sorted by well and depth)

Stratigraphic Unit	Sample no.	Depth (m)	Type**	Length (cm)	Diameter (cm)	Supercritical CO2-Brine Krel		Kbrine and Supercritical CO_2 Threshold Entry Pressure	MICP on Plug Offcuts*	Rock Mechanics			Petrology on Plug-Offcuts			CT-Scan
						SS Full-Curve	USS End-Points			Triaxial Comp. Strength	Mohr Coulomb Failure Analysis	Acoustic Velocity	Thin Section	SEM	XRD	
Well : DMP Harvey-3																
Wonnerup Member	1VC	1420.65	V	5.04	2.54					X	X					
Wonnerup Member	20	1429.00	H	5.09	3.85	X			X							X
Wonnerup Member	35	1444.00	H										X	X	X	
Wonnerup Member	53	1462.00	H										X	X	X	
Wonnerup Member	Core Section 2GM (1471.36 - 1471.83m) sampled for plugs 2VA, 2VB, and 2VC															X
Wonnerup Member	2VA	1471.45	V	4.46	2.55					X	X	X				
Wonnerup Member	2VB	1471.63	V	5.09	2.52					X	X					
Wonnerup Member	2VC	1471.73	V	5.06	2.52					X	X					
Wonnerup Member	70	1479.00	H										X	X	X	
Wonnerup Member	91	1500.00	H										X	X	X	
Wonnerup Member	Core Section 3GM (1511.71 - 1512.09m) sampled for plugs 3VA, 3VB, and 3VC															X
Wonnerup Member	3VA	1511.71	V	5.05	2.53					X	X	X				

SPECIAL CORE ANALYSIS (SCAL) TEST SCHEDULE SUMMARY

(Sorted by well and depth)

Stratigraphic Unit	Sample no.	Depth (m)	Type**	Length (cm)	Diameter (cm)	Supercritical CO2-Brine Krel		Kbrine and Supercritical CO_2 Threshold Entry Pressure	MICP on Plug Offcuts*	Rock Mechanics			Petrology on Plug-Offcuts			CT-Scan
						SS Full-Curve	USS End-Points			Triaxial Comp. Strength	Mohr Coulomb Failure Analysis	Acoustic Velocity	Thin Section	SEM	XRD	
Well : DMP Harvey-3																
Wonnerup Member	3VB	1511.79	V	4.97	2.54					X	X					
Wonnerup Member	3VC	1511.86	V	5.07	2.53					X	X					
Wonnerup Member	110	1519.00	H										X	X	X	
Wonnerup Member	135	1544.00	H	4.23	2.53		X		X*				X	X	X	X
Wonnerup Member	139	1548.00	H													X
Wonnerup Member	140	1549.00	H										X	X	X	
Well : DMP Harvey-4																
Eneabba Formation	PSH-1	893.04	H										X	X	X	
Eneabba Formation	PSH-5	899.12	H										X	X	X	
Eneabba Formation	PSH-7	902.78	H										X	X	X	
Eneabba Formation	PSH-10	906.33	H										X	X	X	
Eneabba Formation	PSSH-7	907.92	H	5.20	3.81			X	X							X

SPECIAL CORE ANALYSIS (SCAL) TEST SCHEDULE SUMMARY

(Sorted by well and depth)

Stratigraphic Unit	Sample no.	Depth (m)	Type**	Length (cm)	Diameter (cm)	Supercritical CO2-Brine Krel		Kbrine and Supercritical CO_2 Threshold Entry Pressure	MICP on Plug Offcuts*	Rock Mechanics			Petrology on Plug-Offcuts			CT-Scan
						SS Full-Curve	USS End-Points			Triaxial Comp. Strength	Mohr Coulomb Failure Analysis	Acoustic Velocity	Thin Section	SEM	XRD	
Well : DMP Harvey-4																
Yalgorup Member	1A	1326.25	H										X	X	X	
Wonnerup Member	4	1793.00	H	5.29	3.78		X		X*				X	X	X	X
Wonnerup Member	6	1796.00	H													X
Wonnerup Member	7	1797.00	H	5.27	3.80	Fractured			X							X
Wonnerup Member	8	1799.00	H	5.20	3.79		X		X							X
Wonnerup Member	10	1802.00	H			Replace-ment for										X

Footnotes

* Plug off-cut consumed for petrology. Core chips, adjacent to core plug drilled, sampled at DMP stores on 29/01/16

** H = Horizontal plug; V = Vertical plug

Plugs labelled with prefix : PSH; PSV; PSSH; and PSSV are drilled from the preserved core-sections.

SUMMARY OF RESULTS

Steady-State Relative Permeability

Samples #20 (1429.00m) from the DMP Harvey-3 well and #7 (1797.00m) from the DMP Harvey-4 well were initially selected for steady-state supercritical carbon dioxide (CO_2) - brine relative permeability (Krel) tests.

During the course of testing, sample #7 from Harvey-4 fractured and was subsequently replaced with sample #10 (1802.00m) also from the DMP Harvey-4 well.

Since stable base permeability values could not be obtained for the replacement sample #10 from the DMP Harvey-4 well, likely due to mobile fines, the full steady-state relative permeability (SS Krel) testing for this sample was thus suspended. No further replacement samples for SS Krel tests were suggested.

The steady-state supercritical CO_2 – brine relative permeability test was performed at 47.8^oC temperature. The test temperature was derived from the depth vs temperature plot for the Lake Preston-1 well, provided by the DMP (Appendix 5). The net confining stress applied was 1700 psi (maintaining the supercritical point for CO_2 throughout testing). Calculation of the formation confining stress is given in Appendix 6.

Tagged simulated formation brine based on 50,000 mg/L (the complete brine composition is given on page 2-9), was injected into the sample and specific permeability to brine (Kw at 100% Sw) was determined. Then CO_2 and brine were injected at several ratios allowing the CO_2 saturation to increase. Finally CO_2 only was injected. At initial conditions, the specific permeability to brine was 4.24 md. The effective permeability to CO_2 at terminal conditions was 0.792 md and the relative permeability to CO_2 was 18.7 percent (relative to the specific permeability to brine). Brine recovery was 50.8 percent of the initial brine-in-place. The results from the steady-state supercritical CO_2 – brine relative permeability tests are tabulated on page 2-5.

The sample was then tested for brine-displacing-supercritical CO_2. The effective permeability to CO_2 at the beginning of this test was 0.792 millidarcies, as noted previously. At the end of the test, the effective permeability to brine was 0.467 md and the relative permeability to brine was 11.0 percent (relative to the specific permeability to brine). The final CO_2 recovery was 47.9 percent of the gas-in-place and the residual CO_2 saturation was 26.5 percent of pore space. The results from the brine-displacing-supercritical CO_2 relative permeability tests are tabulated on page 2-5. Raw data from the CO_2-Brine / Brine-CO_2 relative permeability tests is presented in Appendix 3.

Unsteady-State Relative Permeability

Four (4) samples were submitted for the unsteady-state relative permeability gas-displacing-brine and brine-displacing-gas tests.

These four selected samples (listed below) had previously undergone Routine Core Analysis (RCA) measurements.

Well	Stratigraphic Unit	Sample no.	Plug Type	Depth (m)
DMP Harvey-3	Wonnerup Member	11	Horizontal	1420.00
DMP Harvey-3	Wonnerup Member	135	Horizontal	1544.00
DMP Harvey-4	Wonnerup Member	4	Horizontal	1793.00
DMP Harvey-4	Wonnerup Member	8	Horizontal	1799.00

The samples were tested for unsteady-state super-critical CO_2-displacing-brine relative permeability determinations (endpoints) at 1700 psi net confining stress. Test temperatures varied from 48.0 to 56°C (pages 2-11 and 2-12) to maintain supercritical point for CO_2.

Synthetic formation brine based on 50,000 mg/L (the full brine composition given on page 2-16) was injected through the saturated samples and specific permeability to brine (Kw at 100% Sw) was measured at two injection rates. CO_2 was then injected at a constant pressure and effective permeability to gas was determined.

Following the gas injection, the water saturations ranged from 41.9 to 64.8 percent of the pore space. The relative permeability to CO_2 ranged from 10.9 to 23.4% (relative to the specific permeability to water). Water recoveries ranged from 35.2 to 58.1 percent of the initial water in place. Results from the unsteady-state supercritical CO_2 displacing water relative permeability tests are presented on page 2-11.

At the conclusion of the CO_2 gas-displacing-water tests, unsteady-state water-gas relative permeability endpoint tests were performed on the same four samples. Brine was injected into the core sample, again at a net confining stress of 1700 psi and at the varied temperatures. The CO_2-gas recoveries ranged from 13.8 to 69.0 percent of the gas in place. The residual CO_2-gas

saturation values ranged from 18.0 to 37.4 percent of the gas in place. Results from the unsteady-state water-displacing-supercritical CO2 tests are presented on page 2-12.

Post-Test Base Properties

Upon completion of the CO_2-Brine relative permeability tests, all five samples were re-cleaned with methanol and dried in a conventional oven (95^{o}C) prior to re-measuring the samples' base properties (permeability, porosity, and grain density).

In all cases differences in permeability (Kair) were noted when comparing with the pre-test base properties (Appendix 4). Our interpretation of the Kair differences is primarily kaolinite break-up to create fines caused by the flow of brine during the relative permeability testing. This also explains the difference seen in the specific permeability to brine (Kw = 5.82 md) measurement reported in the Routine Core Analysis Report for Well : Harvey-3 (File reference : PRP-15068) and the specific permeability to brine measurement made prior to commencing the SS CO2 – Water relative permeability test (Kw = 4.24 md, page 2-6).

The presence of kaolinite clay was identified from the petrographic analysis performed on selected samples from the DMP Harvey-2, Harvey-3 and Harvey-4 wells (reference : "*Petrographic Analysis of Conventional Core Samples from the DMP Harvey 2, Harvey 3, and Harvey 4 Wells" by Core Laboratories Houston Texas, USA); December 2015 (Updated April 2016); File : 150878G).*

Effective Permeability to Brine and Threshold Entry Pressure

Twelve (12) samples were selected for effective permeability to brine and threshold entry pressure to supercritical CO_2 as follows :

Well	Stratigraphic Unit	Sample no.	Plug Type	Depth (m)
DMP Harvey-2	Yalgorup Member	PSSH-1	Horizontal	776.00
DMP Harvey-2	Yalgorup Member	PSSH-2	Horizontal	1132.10
DMP Harvey-2	Yalgorup Member	PSSV-1	Vertical	1132.20
DMP Harvey-3	Yalgorup Member	PSSH-8	Horizontal	743.88
DMP Harvey-3	Yalgorup Member	PSSH-9	Horizontal	778.40
DMP Harvey-3	Yalgorup Member	PSSH-3	Horizontal	1171.75
DMP Harvey-3	Yalgorup Member	PSSH-4	Horizontal	1333.10
DMP Harvey-3	Yalgorup Member	PSSV-2	Vertical	1377.80
DMP Harvey-3	Yalgorup Member	PSSH-5	Horizontal	1378.00
DMP Harvey-3	Yalgorup Member	PSSV-3	Vertical	1393.43
DMP Harvey-3	Yalgorup Member	PSSH-6	Horizontal	1416.70
DMP Harvey-4	Eneabba Formation	PSSH-7	Horizontal	907.92

Each sample was saturated with the simulated formation brine based on 50,000 mg/L (the full brine composition is given on page 2-16). The fully saturated samples were confined in hydrostatic coreholders and specific permeability to brine was determined. The effective permeabilitites to brine ranged from 0.0000027 to 0.0000237 md.

Confining pressure and temperature were elevated from room (ambient) conditions to 1250 psi and 100°F (37.8°C) respectively. CO_2 gas was then injected at one end and the downstream end was monitored for effluent flow. Threshold entry pressure breakthrough for all twelve samples was less than 1100 psi. The threshold pressure testing was used to determine the injection pressure at which gas would start to form continuous flow channels through the pore system.

The effective permeability to brine and threshold pressure to CO_2 gas measurements performed at room conditions on samples from the Yalgorup Member in the DMP Harvey-2 and DMP Harvey-3 wells mostly indicated no flow to brine at high flow pressures (>6000 psi) and no displacement of brine at CO_2 injection pressures up to 5,000 psi (reference : our Routine Core Analysis Reports files : PRP-15005 and PRP-15068). The fact that the room conditions CO_2 injection exhibited considerable potential seal while the reservoir condition supercritical CO2 injection testing indicated no seal potential could be due to sampling bias. Samples for room conditions testing were chosen on the basis that these were closest to maximum core gamma response (shaliest reservoir) from the logs. The reservoir condition samples were later chosen from the remaining preserved samples, because these were available and not necessarily because logs indicated good seal potential.

Mercury Injection

Mercury injection capillary pressure (MICP) analysis was conducted on eighteen (18) selected core plug off-cuts as follows :

Well	Stratigraphic Unit	*Sample no.	Plug Type	Depth (m)
DMP Harvey-2	Yalgorup Member	PSSH-1	Horizontal	776.00
DMP Harvey-2	Yalgorup Member	PSSH-2	Horizontal	1132.10
DMP Harvey-2	Yalgorup Member	PSSV-1	Vertical	1132.20
DMP Harvey-3	Yalgorup Member	PSSH-8	Horizontal	743.88
DMP Harvey-3	Yalgorup Member	PSSH-9	Horizontal	778.40
DMP Harvey-3	Yalgorup Member	PSSH-3	Horizontal	1171.75
DMP Harvey-3	Yalgorup Member	PSSH-4	Horizontal	1333.10
DMP Harvey-3	Yalgorup Member	PSSV-2	Vertical	1377.80
DMP Harvey-3	Yalgorup Member	PSSH-5	Horizontal	1378.00
DMP Harvey-3	Yalgorup Member	PSSV-3	Vertical	1393.43
DMP Harvey-3	Yalgorup Member	PSSH-6	Horizontal	1416.70
DMP Harvey-3	Wonnerup Member	11	Horizontal	1420.00
DMP Harvey-3	Wonnerup Member	20	Horizontal	1429.00
DMP Harvey-3	Wonnerup Member	135	Horizontal	1544.00
DMP Harvey-4	Eneabba Formation	PSSH-7	Horizontal	907.92
DMP Harvey-4	Wonnerup Member	4	Horizontal	1793.00
DMP Harvey-4	Wonnerup Member	7	Horizontal	1797.00
DMP Harvey-4	Wonnerup Member	8	Horizontal	1799.00

*Plugs labelled with prefix : PSH; PSV; PSSH; and PSSV are fresh-state samples drilled from the preserved core-sections.

MICP results are summarised on page 3-6 and given in tabular and graphical formats within pages 3-9 to 3-64. Injection pressure units are given in psia (pounds per square inch absolute).

The mercury injection entry pressure ranged from 8.89 to 3260 psia for samples taken from the Yalgorup Member and Eneabba Formation. The six samples selected from the Wonnerup Member indicated lower entry pressures ranging from 1.51 to 14.8 psia.

The MICP technique is often used for caprock analysis. However, the potential drawbacks are :

- the small size of the core plug offcut may not represent a more heterogeneous seal.
- the Pc entry pressure is NOT Pc threshold pressure (the injected fluid needs to reach a certain critical saturation before the seal is breached). Critical saturation has to be assumed or deduced before the associated Pc threshold pressure (Pcth) can be derived.
- the samples tested are dry. Lack of clay-bound water can influence the data, giving underestimates of the potential to retain CO_2.
- tests are not run at net overburden pressure (NOBP), which again would increase the potential to retain CO_2 beneath the confining strata/baffle.

The CO_2 column heights calculated from the MICP tests for samples from the Yalgorup and Eneabba Formation (page 3-8) are underestimates (pessimistic) for the reasons mentioned above. The assumptions and equations used for the CO2 column height calculations are tabulated below and in the following page.

Assumptions for column height calculations		
IFT CO2/water, dynes/cm	25	Based on Kaveh et al, 2013
Contact angle CO2/water, degrees	40	Based on Kaveh et al, 2013
Cosine contact angle, CO2/water	0.766	Need cosine of angle for height calculations
IFT Air/Hg, dynes/cm	480	
Contact angle Air/Hg, degrees	40	140 degrees through Hg: 180-140 through "wetting phase"
Cosine contact angle, Air/Hg	0.766	
Supercritical CO2 gradient, psi/m	0.895	Based on density 0.6293 g/cc
Brine gradient, psi/m	1.461	Based on 50,000 ppm formation brine, density 1.029 g/cc

Equations to calculate column height		
Pth CO2/water =	Pth Air/Hg*	IFT * Cos contact angle CO_2/Water / IFT*Cos contact angle Air/Hg
Column Height, m =		Threshold Pressure, CO_2/water / Brine gradient, psi/m - CO_2 gradient, psi/m

Geomechanical Analysis

Nine (9) samples were tested for single-stage triaxial compressive strength with Mohr-Coulomb failure analyses and acoustic velocities. The selected samples are listed below.

Well	Formation	Sample no.	Plug Type	Depth (m)
H3	Wonnerup	1VA	Vertical	1420.65
H3	Wonnerup	1VB	Vertical	1420.65
H3	Wonnerup	1VC	Vertical	1420.65
H3	Wonnerup	2VA	Vertical	1471.45
H3	Wonnerup	2VB	Vertical	1471.63
H3	Wonnerup	2VC	Vertical	1471.73
H3	Wonnerup	3VA	Vertical	1511.71
H3	Wonnerup	3VB	Vertical	1511.79
H3	Wonnerup	3VC	Vertical	1511.86

In a triaxial test, the sample dimensions are accurately measured using three Linear Variable Differential Transducers (LVDT's). One LVDT measures changes in sample circumference and two LVDT's measure changes in sample length as a function of applied stress. The applied stress is calculated based on measurements of applied load using a calibrated pressure gauge to measure the applied pressure.

Results of the triaxial compression tests are typically presented by the stress-strain curves (pages 4-5 to 4-13). Differential stresses are plotted as a function of both axial strain ε_L (= $\Delta L/L_o$ where L is the sample length) and radial strain ε_R (= $\Delta D/D_o$ where D is the sample diameter). The Differential stress (σ_d) is defined as the difference between the total axial stress and the confining pressure. Since all tests were conducted under compressive stresses, compressive stress and contraction (shortening) are considered positive. Accordingly, positive axial strain indicates shortening of sample and negative radial strain indicates increase in sample diameter during deformation.

When the sample is deformed to failure, the maximum stress achieved during the deformation is taken as the triaxial compressive strength of the sample. The triaxial compressive strength tests are commonly used to simulate the in-situ stress conditions of the reservoirs and provide compressive strength and static values of elastic constants. The static values of elastic constants are determined from the slope of the stress-strain curves. The static Young's modulus is determined by taking the average slope of linear elastic portion of the stress-axial strain curve. The static Poisson's ratio (= $-\Delta\varepsilon_R/\Delta\varepsilon_L$) is also determined in a similar way by taking the ratio of the slope of axial curve to the slope of radial curve. Poisson's ratio is a critical parameter in determining formation stress and consequently influences fracture height and width.

Triaxial testing indicates that the Wonnerup Member is very competent at reservoir depth which will allow a large margin of design safety between the intended CO2 injection pressure and the fracture pressure.

The single-stage triaxial testing, which includes Young's modulus and Poisson's ratio, for the DMP Harvey-3 Wonnerup Member plugs tested, are summarized in the table below.

Sample Number	Depth (m)	Confining Pressure (psi)	Compressive Strength (psi)	Young's Modulus (10^6 psi)	Poisson's Ratio
1VA	1420.65	435	4224	1.915	0.264
1VB	1420.65	725	5176	2.574	0.257
1VC	1420.65	1160	7717	2.814	0.242
2VA	1471.45	435	4058	2.633	0.190
2VB	1471.63	725	5210	2.841	0.187
2VC	1471.73	1160	6976	3.035	0.095
3VA	1511.71	435	4623	1.934	0.179
3VB	1511.79	725	5525	1.975	0.183
3VC	1511.86	1160	8222	2.870	0.175

Acoustic velocity measurements were performed on a single sample from each set (1VA, 2VA, and 3VA) using the pulse transmission technique at the same confining stresses listed above and at varied axial pressures. The acoustic velocities ranged from 10303 to 11813 ft/sec for the compressional waves and from 5810 to 7268 ft/sec for the shear waves. The corresponding dynamic Young's modulus ranged from 2.40 x 10^6 psi to 3.54 x 10^6 psi and the Poisson's ratio ranged from 0.18 to 0.31. The dynamic Young's modulus is higher than static (ranging from 1.915 x 10^6 psi to 3.035 x 10^6 psi) which indicates logs will overestimate rock strength.

Using the results of the single-stage triaxial compressive tests, the compressive strengths (σ1) were plotted against confining pressure, Mohr semicircles were constructed, and for each depth, a Mohr-Coulomb failure envelope was fit to the Mohr semicircles. The unconfined compressive strength, angle of internal friction, coefficient of internal friction and formation cohesion strength (inherent shear strength) were determined.

The results of the Mohr-Coulomb analysis from the single-stage triaxial tests on plugs from the Wonnerup Member from DMP Harvey-3 well are summarized below.

Depth (m)	Unconfined Compressive Strength (psi)	Cohesion (psi)	Angle of Internal Friction	Coefficient of Internal Friction
1420.65	1917	433	41.37	0.88
1471.45-1471.63	2300	573	37.03	0.75
1511.71-1511.86	2209	491	42.07	0.90

SECTION 2
FLOW STUDIES

Steady State CO_2-Water / Water- CO_2 Relative Permeability

1. Tagged synthetic formation brine was prepared based on the provided analysis with 73.0 g/L sodium iodide as the x-ray blocker, using deionized water and reagent grade chemicals (full brine composition given on page 2-9). The brine was filtered to 0.45 microns and degassed. Fluid parameters including viscosity and density were measured at 47.8°C (page 2-10).

2. The simulated formation brine was then saturated with carbon dioxide gas at 1700 psi.

3. The clean, dry core plugs were weighed and measured and sleeved with Teflon and heat shrink. Samples were then reweighed.

4. Each plug sample was loaded into the specially designed coreholders constructed of an alloy that allows penetration by the x-rays used to monitor saturation changes during steady-state testing. A net confining stress of 1700 psi was applied. The net confining stress calculation is given in Appendix 6.

5. The sample was x-ray scanned at the 100% gas saturation for the base scan.

6. Non-humidified nitrogen was injected for at least 10 pore volumes at a suitable constant rate until an equilibrium differential pressure was observed. Temperature was elevated to 118°F (47.8°C). Injection rate was decreased to half rate and continued until an equilibrium differential pressure was observed. The sample was x-ray scanned at the 100% nitrogen gas saturation for the nitrogen base scan.

7. Non-humidified carbon dioxide (CO_2) gas was injected at a suitable constant rate for at least to displace the nitrogen. Injection continued for at least 10 pore volumes and equilibrium differential pressure was observed. The sample was x-ray scanned at the 100% CO_2 gas saturation for the 100% CO_2 base scan.

8. Tagged non-gasified synthetic formation brine was injected at a suitable constant rate until an equilibrium differential pressure was observed. Injection continued for at least 10 pore volumes and equilibrium differential pressure was observed. Injection rate was decreased to half rate and continued until an equilibrium differential pressure was observed. The sample was x-ray scanned at the 100% tagged brine saturation for the 100% tagged brine base scan.

9. Tagged gasified synthetic formation brine (Appendix 2) was injected at a suitable constant rate until an equilibrium differential pressure was observed. Injection continued for at least 10 pore volumes and equilibrium differential pressure was observed. Injection rate was decreased to half rate and continued until an equilibrium differential pressure was observed. The sample was x-ray scanned at the 100% tagged gasified brine saturation for the 100% tagged gasified brine base scan.

10. Supercritical carbon dioxide and brine, which had been pre-equilibrated, were then injected simultaneously at 47.8°C and several increasing gas-water injection ratios to allow the CO_2 saturation within the sample to increase. Saturation changes were monitored by x-ray scan. The gas-water injection ratios are given within the test raw data (Appendix 3).

11. Injection was continued at each ratio until an equilibrium steady-state condition within the core plug was established, based on the consistency of the saturation profile and differential pressure. Flow rates and differential pressures were monitored throughout the test process. Finally CO_2 alone was injected until pressure equilibrated and effective permeability to CO_2 at residual water saturation was determined at two injection rates.

12. Supercritical carbon dioxide and brine, which had been pre-equilibrated, were then injected simultaneously at several increasing water-gas injection ratios to allow the water saturation within the sample to increase. Saturation changes were monitored by x-ray scan.

13. Injection was continued at each ratio until equilibrium, steady-state condition within the core plug was established, based on the consistency of the saturation profile and differential pressure. Finally approximately 3 pore volumes of brine alone were injected while scanning the sample every pore volume and effective permeability to water at trapped CO_2 saturation was determined at two injection rates.

14. Measured flow rates and differential pressures at equilibrium conditions for each water- CO_2 injection ratio were used to calculate the steady-state relative permeability data for each sample. Saturations were determined by the x-ray attenuation method where x-ray scans measured at each saturation were combined with base scans at 100% saturations by the following equation :

$$Sw = \frac{\log(scan) - \log(scan_{Kg})}{\log(scan_{Kw}) - \log(scan_{Kg})}$$

where:

Sw	= Water saturation, fraction pore space
scan	= X-ray scan, counts
$scan_{Kw}$	= X-ray scan at 100% Sw, counts
$scan_{Kg}$	= X-ray scan at 100% Sg, counts

Unsteady-State CO_2 Gas-Water and Water-CO_2 Gas Relative Permeability

1. The clean, dry core plugs were weighed and measured and sleeved with Teflon and nickel. Samples were then re-weighed.

2. The samples were pressure saturated with synthetic formation brine and specific permeability to brine was determined.

3. The saturated samples were loaded into coreholders and net confining stress of 1700 psi was applied. The calculated pore pressure for each sample (2000 and 2200 psi for the DMP Harvey-3 samples, 2600 psi for the DMP Harvey-4 samples) was established by passing formation brine through the system and around the sample. The pore pressures used were calculated from the pressure versus depth plot for the Pinjarra-1 well provided by the DMP (Appendix 5). Coreholder, sample, and system were elevated to reservoir temperature while maintaining net confining stress and pore pressure.

4. Synthetic formation brine was injected through each sample in the injection direction at a suitable constant rate until an equilibrium differential pressure was observed. Specific permeability to brine was measured at three injection rates

5. Supercritical CO_2 was injected at a constant rate. Produced liquid, CO_2 volumes, elapsed time, and differential pressure were monitored. Humidified supercritical CO2 was injected until a gas-water relative permeability ratio of 100:1 or greater was observed. Effective permeability to gas at residual water saturation was determined at three injection pressures.

6. Synthetic brine was again injected through the samples at a low constant rate, while monitoring gas volume, time and differential pressure until no more CO_2 production was detected. Effective permeability to brine at residual CO_2 saturation was determined at three injection rates.

7. Each sample was unloaded and submitted for Dean Stark* residual fluid determinations and cleaning.

8. Unsteady-state gas-water and water- CO_2 endpoints were calculated

* Reference : “Recommended Practices for Core Analysis”; American Petroleum Institute Recommended Practice 40; 2nd Edition; February 1998.

Specific Permeability to Brine

1. Synthetic formation brine (page 2-16) was filtered to 0.45 microns and degassed. Fluid parameters including viscosity and density were measured at ambient temperature (Page 2-17)

2. The fresh-state samples were loaded into a hydrostatic coreholder and 1250 psi net confining stress was applied (confining stress calculation, Appendix 6).

3. The sample was flushed with brine to ensure saturation.

4. Brine was injected through each sample at a constant (minimal) pressure. Produced volumes versus time were monitored, and apparent permeability to brine was determined once a stable flow rate was established.

5. Permeability to liquid data were calculated from the experimental data and measured sample and fluid parameters using Darcy's Law.

Threshold Entry Pressure

1. The sample was loaded into a hydrostatic coreholder, and 1250 psi net confining stress and 100°F (37.8°C) test temperature were applied.

2. The plug was injected with CO_2 gas at constant pressure starting at 1100 psi and was monitored for signs of carbon dioxide breakthrough. Breakthrough occurred within one hour of applying pressure.

3. Sample was unloaded and weighed.

CO_2 - BRINE RELATIVE PERMEABILITY

Steady State Method Extracted State Samples

Net Confining Stress: 1700 psi Temperature: 47.8°C

Well	Sample Number	Sample Depth, meters	Klinkenberg Permeability, millidarcies	Porosity, fraction	Initial Conditions		Terminal Conditions			Brine Recovery,	
					Brine Saturation, fraction pore space	Specific Permeability to Brine, millidarcies	Brine Saturation, fraction pore space	Effective Permeability to CO_2, millidarcies	Relative Permeability to CO_2*, fraction	fraction pore space	fraction water-in-place
DMP Harvey 3	20	1429.00	17.6	0.220	1.00	4.24	0.492	0.792	0.187	0.508	0.508

WATER - BRINE RELATIVE PERMEABILITY

Steady State Method Extracted State Samples

Net Confining Stress: 1700 psi Temperature: 47.8°C

Well	Sample Number	Sample Depth, meters	Klinkenberg Permeability, millidarcies	Porosity, fraction	Initial Conditions		Terminal Conditions			CO_2 Recovery,	
					Brine Saturation, fraction pore space	Effective Permeability to CO_2, millidarcies	CO_2 Saturation, fraction pore space	Effective Permeability to Brine, millidarcies	Relative Permeability to Brine*, fraction	fraction pore space	fraction gas-in-place
DMP Harvey 3	20	1429.00	17.6	0.220	0.492	0.792	0.265	0.467	0.110	0.243	0.479

* Relative to the Specific Permeability to Brine

CO_2 - BRINE / BRINE - CO_2 RELATIVE PERMEABILITY

Steady State Method Extracted State Sample
Net Confining Stress: 1700 psi Temperature: 47.8°C

Well: DMP Harvey-3

Sample Number:	20
Sample Depth, meters:	1429.00
Klinkenberg Permeability, md:	17.6
Porosity, fraction:	0.220
Initial Water Saturation, fraction:	1.00
Specific Permeability to Brine, md:	4.24

CO_2 Saturation, fraction Vp	CO_2-Brine Relative Permeability Ratio	Relative Permeability to CO_2*, fraction	Relative Permeability to Brine*, fraction	Fractional Flow of CO_2, fCO_2
CO_2 Displacing Brine				
0.000	-	-	1.00	-
0.205	0.0145	0.00316	0.217	0.147
0.238	0.0436	0.00696	0.159	0.342
0.300	0.218	0.0191	0.0877	0.722
0.357	1.09	0.0425	0.0390	0.928
0.428	10.9	0.0909	0.00833	0.992
0.508	-	0.187	-	1.00
Brine Displacing CO_2				
0.508	-	0.187	-	1.00
0.432	10.9	0.0714	0.00655	0.992
0.375	1.09	0.0249	0.0228	0.928
0.336	0.218	0.0104	0.0475	0.722
0.297	0.0436	0.00349	0.0799	0.342
0.277	0.0145	0.00144	0.0988	0.147
0.265	-	-	0.110	-

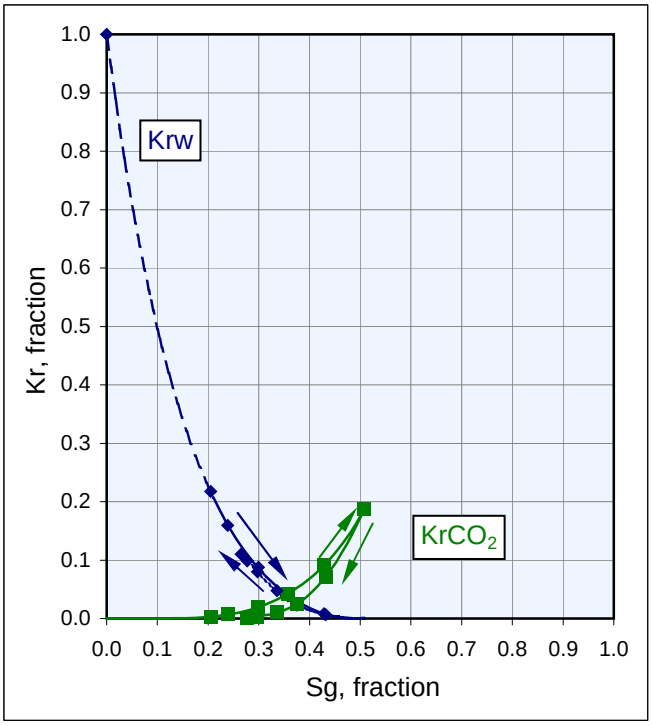
* Relative to the Specific Permeability to Brine

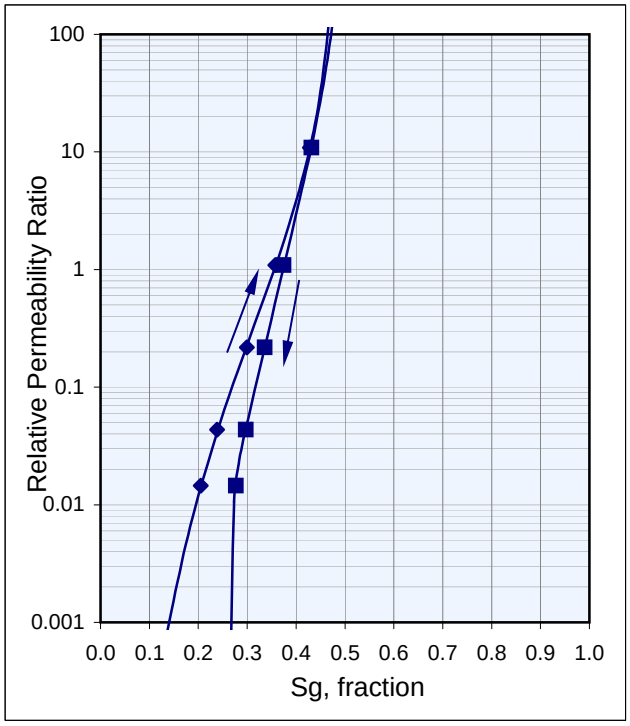
CO_2 - BRINE / BRINE - CO_2 RELATIVE PERMEABILITY

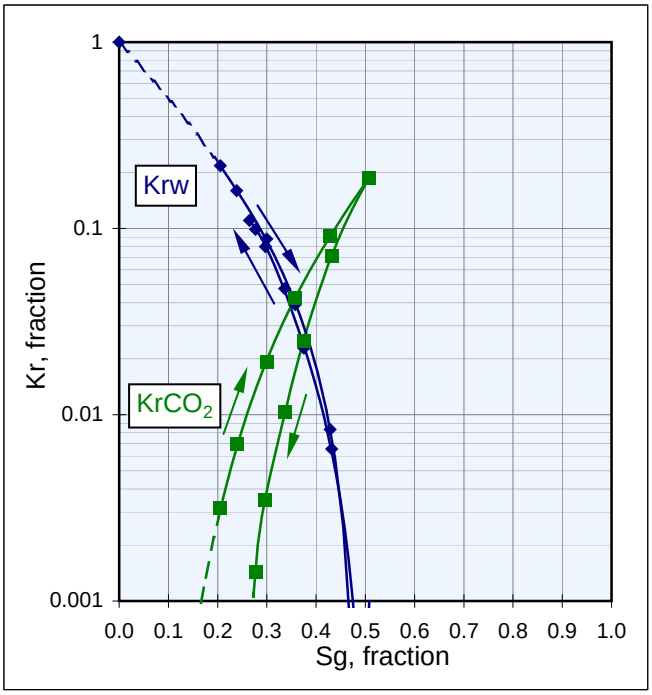
Steady State Method Extracted State Sample
Net Confining Stress: 1700 psi Temperature: 47.8°C

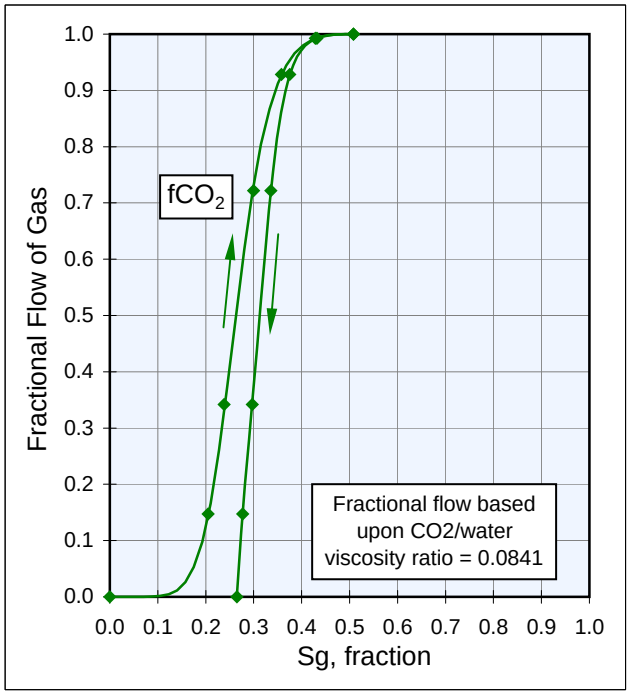
Well: DMP Harvey-3

Sample Number:	20
Sample Depth, meters:	1429.00
Klinkenberg Permeability, md:	17.6
Porosity, fraction:	0.220
Initial Water Saturation, fraction:	1.00
Specific Permeability to Brine, md:	4.24









CO_2 - BRINE / BRINE - CO_2 RELATIVE PERMEABILITY
BASIC PROPERTIES OF TEST SAMPLES

Well	Sample Number	Depth, meters	Net Confining Stress, psi	Permeability		Porosity, fraction	Grain Density, g/cm^3	Length, cm	Area, cm^2	Pore Volume, cm^3
				Klinkenberg (md)	Kair (md)					
DMP Harvey-3	20	1429.00	1700	17.6	22.0	0.220	2.64	5.08	11.76	13.146

TAGGED SYNTHETIC FORMATION BRINE COMPOSITION
CO_2 - BRINE / BRINE - CO_2 RELATIVE PERMEABILITY

Steady-State Method

Constituent		Concentration, g/L
Sodium Chloride	(NaCl)	11.538
Calcium Chloride	($CaCl_2$ * $2H_2O$)	5.000
Magnesium Chloride	($MgCl_2$*$6H_2O$)	2.500
Potassium Chloride	(KCl)	2.500
Sodium Iodide*	(NaI)	73.000
	Total Dissolved Solids (TDS)	50.000

* 73.000 g/L NaI replaces 28.462 g/L NaCl when tagging brine for x-ray saturation monitoring

SUMMARY OF FLUID PARAMETERS
CO_2 - BRINE / BRINE - CO_2 RELATIVE PERMEABILITY

Steady-State Method

Fluid	Temperature, °C	Viscosity, centipoise	Density, g/cm^3
Tagged Simulated Formation Brine	47.8	0.682	1.059
Carbon Dioxide	47.8	0.057	0.707

Gas-Brine Relative Permeability

Unsteady State Method Extracted State Samples

Net Confining Stress: 1700 psi Temperature: Various

Sample Number	Sample Depth, meters	Temperature, °C	Pore Pressure, psi	Klinkenberg Permeability millidarcys	Porosity, fraction	Initial Conditions		Terminal Conditions			Brine Recovery,	
						Brine Saturation, fraction pore space	Specific Permeability to Brine, millidarcys	Brine Saturation, fraction pore space	Effective Permeability to CO_2 millidarcys	Relative Permeability to CO_2*, fraction	fraction pore space	fraction water-in-place
Well : DMP Harvey-3												
11	1420.00	48.0	2000	35.0	0.234	1.00	19.5	0.533	4.57	0.234	0.467	0.467
135	1544.00	51.0	2200	864	0.191	1.00	530	0.566	58.0	0.109	0.434	0.434
Well : DMP Harvey-4												
4	1793.00	56.0	2600	2350	0.217	1.00	2180	0.648	251	0.115	0.352	0.352
8	1799.00	56.0	2600	53.2	0.174	1.00	18.0	0.419	2.63	0.146	0.581	0.581

* Relative to the Specific Permeability to Brine

Brine-Gas Relative Permeability

Unsteady State Method Extracted State Samples
Net Confining Stress: 1700 psi Temperature: Various

Sample Number	Sample Depth, meters	Temperature, °C	Pore Pressure, psi	Klinkenberg Permeability millidarcys	Porosity, fraction	Initial Conditions		Terminal Conditions			CO_2 Recovery,	
						Brine Saturation, fraction pore space	Effective Permeability to CO_2, millidarcys	CO_2 Saturation, fraction pore space	Effective Permeability to Brine, millidarcys	Relative Permeability to Brine*, fraction	fraction pore space	fraction gas-in-place
Well : DMP Harvey-3												
11	1420.00	48.0	2000	35.0	0.234	0.533	4.57	0.191	6.10	0.313	0.276	0.591
135	1544.00	51.0	2200	864	0.191	0.566	58.0	0.374	390	0.736	0.060	0.138
Well : DMP Harvey-4												
4	1793.00	56.0	2600	2350	0.217	0.648	251	0.296	542	0.249	0.056	0.159
8	1799.00	56.0	2600	53.2	0.174	0.419	2.63	0.180	7.96	0.442	0.401	0.690

* Relative to the Specific Permeability to Brine

Gas-Brine and Brine-Gas Relative Permeability

Unsteady State Method Extracted State Samples

BASIC PROPERTIES OF TEST SAMPLES

Sample Number	Depth, meters	Net Confining Stress, psi	Permeability, millidarcy's		Porosity, fraction	Grain Density, g/cm^3	Length, cm	Diameter cm	Area, cm^2	Pore Volume, cm^3
			Klinkenberg	to Air						
Well : DMP Harvey-3										
11	1420.00	1700	35.0	42.5	0.234	2.65	5.20	3.82	11.49	13.662
135	1544.00	1700	864	1130	0.191	2.64	4.23	2.53	5.03	3.957
Well : DMP Harvey-4										
4	1793.00	1700	2350	2720	0.217	2.64	5.29	3.78	11.24	12.514
8	1799.00	1700	53.2	67.7	0.174	2.64	5.20	3.79	11.28	10.097

SUMMARY OF LIQUID PERMEABILITY MEASUREMENTS

Temperature: 68°F
Fluid: Synthetic Formation Brine
Fresh State Samples

Sample Number	Depth, meters	Net Confining Stress, psi	Length, cm	Area, cm^2	Effective Permeability to Brine, millidarcies
Well : DMP Harvey-2					
PSSH-1	776.00	1250	4.424	11.55	0.0000080
PSSH-2	1132.10	1250	4.937	11.37	0.0000133
PSSV-1	1132.20	1250	3.653	11.36	0.0000072
Well : DMP Harvey-3					
PSSH-8	743.88	1250	5.191	10.90	0.0000144
PSSH-9	778.40	1250	3.118	5.26	0.0000237
PSSH-3	1171.75	1250	3.125	11.45	0.0000052
PSSH-4	1333.10	1250	5.179	11.38	0.0000027
PSSV-2	1377.80	1250	5.228	11.59	0.0000136
PSSH-5	1378.00	1250	5.182	11.41	0.0000053
PSSV-3	1393.43	1250	4.963	11.33	0.0000083
PSSH-6	1416.70	1250	3.484	11.38	0.0000047
Well : DMP Harvey-4					
PSSH-7	907.92	1250	5.198	11.39	0.0000137

SUMMARY OF THRESHOLD ENTRY PRESSURE RESULTS

Net Confining Stress : 1250 psi Temperature : 37.8°F
Fluid: Simulated Formation Brine
Fresh State Samples

Sample Number	Depth, meters	Length, cm	Diameter, cm	Threshold Entry Pressure, psi
Well : DMP Harvey-2				
PSSH-1	776.00	4.42	3.83	TEP<1100
PSSH-2	1132.10	4.94	3.80	TEP<1100
PSSV-1	1132.20	3.65	3.80	TEP<1100
Well : DMP Harvey-3				
PSSH-8	743.88	5.19	3.72	TEP<1100
PSSH-9	778.40	3.12	2.59	TEP<1100
PSSH-3	1171.75	3.13	3.82	TEP<1100
PSSH-4	1333.10	5.18	3.81	TEP<1100
PSSV-2	1377.80	5.23	3.84	TEP<1100
PSSH-5	1378.00	5.18	3.81	TEP<1100
PSSV-3	1393.43	4.96	3.80	TEP<1100
PSSH-6	1416.70	3.48	3.81	TEP<1100
Well : DMP Harvey-4				
PSSH-7	907.92	5.20	3.81	TEP<1100

SYNTHETIC FORMATION BRINE COMPOSITION
USS Gas-Brine and Brine-Gas Relative Permeability and PERMEABILITY TO BRINE TESTS

Constituent		Concentration, g/L
Formation Brine		
Sodium Chloride	(NaCl)	40.000
Calcium Chloride	(CaCl2 * 2H2O)	5.000
Magnesium Chloride	(MgCl2 * 6H2O)	2.500
Potassium Chloride	(KCl)	2.500
	Total Dissolved Solids (TDS)	50.000

SYNTHETIC FORMATION BRINE COMPOSITION
USS Gas-Brine and Brine-Gas Relative Permeability and PERMEABILITY TO BRINE TESTS

SUMMARY OF FLUID PARAMETERS

Fluid	Temperature, °C	Pore Pressure, psi	Viscosity, centipoise	Density, g/cm^3
Formation Brine	48.0	2000	0.640	1.013
	51.0	2200	0.612	1.011
	56.0	2600	0.570	1.006
Carbon Dioxide	48.0	2000	0.055	0.689
	51.0	2200	0.056	0.698
	56.0	2600	0.059	0.717

SECTION 3
MERCURY INJECTION ANALYSIS

Mercury Injection Drainage (0-55,000 psia)

Basic Properties

1. Selected core plug off-cuts were used mercury injection analysis. These plug off-cuts were trimmed as necessary to fit within the penetrometer chambers of the Micromeritics AutoPore devices.

2. After drying in a vacuum oven, the samples were placed into a dessicator to prevent adsorption of moisture from the atmosphere as they cooled.

3. Dry weight was measured on a three-place (±0.001 gm) analytical balance.

4. The Ultra-Porosimeter™ was used to obtain measured grain volume data. The system uses a sample chamber into which helium is allowed to expand as it is injected from reference cells of known volume and pressure. Grain volume was calculated using Boyle's law of gas expansion. The sample dry weight was divided by grain volume to calculate grain density.

5. An ambient, mercury immersion bulk volume was determined. An approximate pore volume was calculated as the difference between bulk volume and grain volume. The pore volume was divided by bulk volume to calculate an approximate porosity fraction.

Mercury Injection

1. Testing was performed using the Micromeritics Autopore 9500, an automated, high pressure mercury injection device that operates at injection pressures of 0 to 55,000 psia.

2. Each prepared test sample was weighed, then loaded into a glass penetrometer consisting of a sample chamber attached to a capillary stem with a cylindrical coaxial capacitor. To maximize accuracy and resolution, each penetrometer used was selected on the basis of how well its capacity matched the sample pore volume.

3. The sample/penetrometer assembly was weighed, then placed into the low pressure system.

4. The sample chamber was evacuated and filled with mercury, then the pressure was increased incrementally to slightly above atmospheric pressure. At the end of the low pressure phase the assembly was temporarily removed and re-weighed, then placed into the high pressure system of the apparatus.

5. Pressures were increased incrementally to 55,000 psia (maximum injection pressure of the Micromeritics AutoPore 9500 equipment).

6. Time was allowed at each incremental pressure for saturation equilibrium. The volume of mercury injected at each pressure was determined by the change in capacitance of the capillary stem.

7. The pressure was decreased to room (ambient) conditions and the sample unloaded.

8. Micromeritics data were imported to a spreadsheet and the mercury volumes calculated. A conformance (correction for surface roughness) value was selected, volume corrections made, and saturations calculated.

9. Pore throat size, fluid system pressure conversions, and height data were calculated using the calculation parameters provided by Sandeep Sharma (DMP) and given at the end of this discussion.

Pore Throat Size Distribution

1. Pore throat size distribution was calculated from the mercury injection test results. These data are typically used for pore geometry characterizations and comparisons. Pore throat size distribution can often help to evaluate the results of other analyses performed on the same, or similar companion, samples. It can also aid in designing filtration requirements for injection projects.

2. In general, pore throat radii can be divided into several categories which can be used in the classification and grouping of the test samples. Microporosity is often defined as pore throat radii of less than 0.50 microns. The following classification is utilized for this discussion:

Classification Number	Pore Radius Classification	Pore Radius, microns Minimum	Maximum
1	micro	<0.50	0.50
2	meso	0.50	2.5
3	macro	2.5	>10.

These ranges have been included on the pore throat radii histograms.

Calculations

1. Pore entry radii were calculated using the formula:

$$Ri = \frac{2T * \cos\theta * C}{Pc}$$

where :

Ri = pore entry radius, microns
T = interfacial tension, dynes/cm
θ = contact angle, degrees
C = unit conversion constant (to microns) = 0.145
Pc = mercury injection pressure, pounds per square inch absolute (psia)

2. J-Function values are calculated from capillary pressure (or mercury injection) data and basic sample properties using the following equation:

$$\text{J-Function} = \frac{0.2166 * Pc * (K/\phi)^{1/2}}{(T * \cos\theta)}$$

where :

Pc = injection pressure, psia
T = interfacial tension, dyne/cm
θ = contact angle, degrees
K = permeability to air (or Klinkenberg), millidarcys
ϕ = porosity, fraction
0.2166 = factor used to cancel units and make "J" dimensionless

3. Conversions of pressure from one fluid system to the others are calculated using the example formula:

$$Pc_{(g\text{-}w)} = Pc_{(meas.)} * \frac{(T * \cos\theta)_{(g\text{-}w)}}{(T * \cos\theta)_{(meas.)}}$$

where:

$Pc_{(g\text{-}w)}$ = Capillary pressure in a gas-water system, psi
$Pc_{(meas.)}$ = Capillary pressure of the measured fluid system, psi
T = interfacial tension, dynes/cm
θ = contact angle, degrees

4. Height above free water is calculated from laboratory capillary pressure data using the following equation:

$$Pc_R = Pc_L * (T\cos\theta)_R \div (T\cos\theta)_L$$
$$Height = Pc_R \div (\rho_w - \rho_h),$$

where:

Pc_L = Laboratory measured capillary pressure, psi
$T\cos\theta_R$ = Interfacial tension * cosine of contact angle (reservoir)
$T\cos\theta_L$ = Interfacial tension * cosine of contact angle (laboratory)
ρ_w = reservoir density gradient, water, psi/foot
ρ_h = reservoir density gradient, hydrocarbon , psi/foot
T = interfacial tension, dynes/cm
θ = contact angle, degrees

5. A correlation permeability value was calculated from the mercury injection results using the methods of (Swanson, B.F. “A Simple Correlation Between Permeabilities and Mercury Capillary Pressures” Journal of Petroleum Technology, December 1981).

Calculation Parameters for CO2 Threshold Pressure and Column Height provided by Sandeep Sharma, Department of Mines and Petroleum (Appendix 6)

Assumptions for column height calculations		
IFT CO2/water, dynes/cm	25	Based on Kaveh et al, 2013
Contact angle CO2/water, degrees	40	Based on Kaveh et al, 2013
Cosine contact angle, CO2/water	0.766	Need cosine of angle for height calculations
IFT Air/Hg, dynes/cm	480	
Contact angle Air/Hg, degrees	40	140 degrees through Hg: 180-140 through "wetting phase"
Cosine contact angle, Air/Hg	0.766	
Supercritical CO2 gradient, psi/m	0.895	Based on density 0.6293 g/cc
Brine gradient, psi/m	1.461	Based on 50,000 ppm formation brine, density 1.029 g/cc

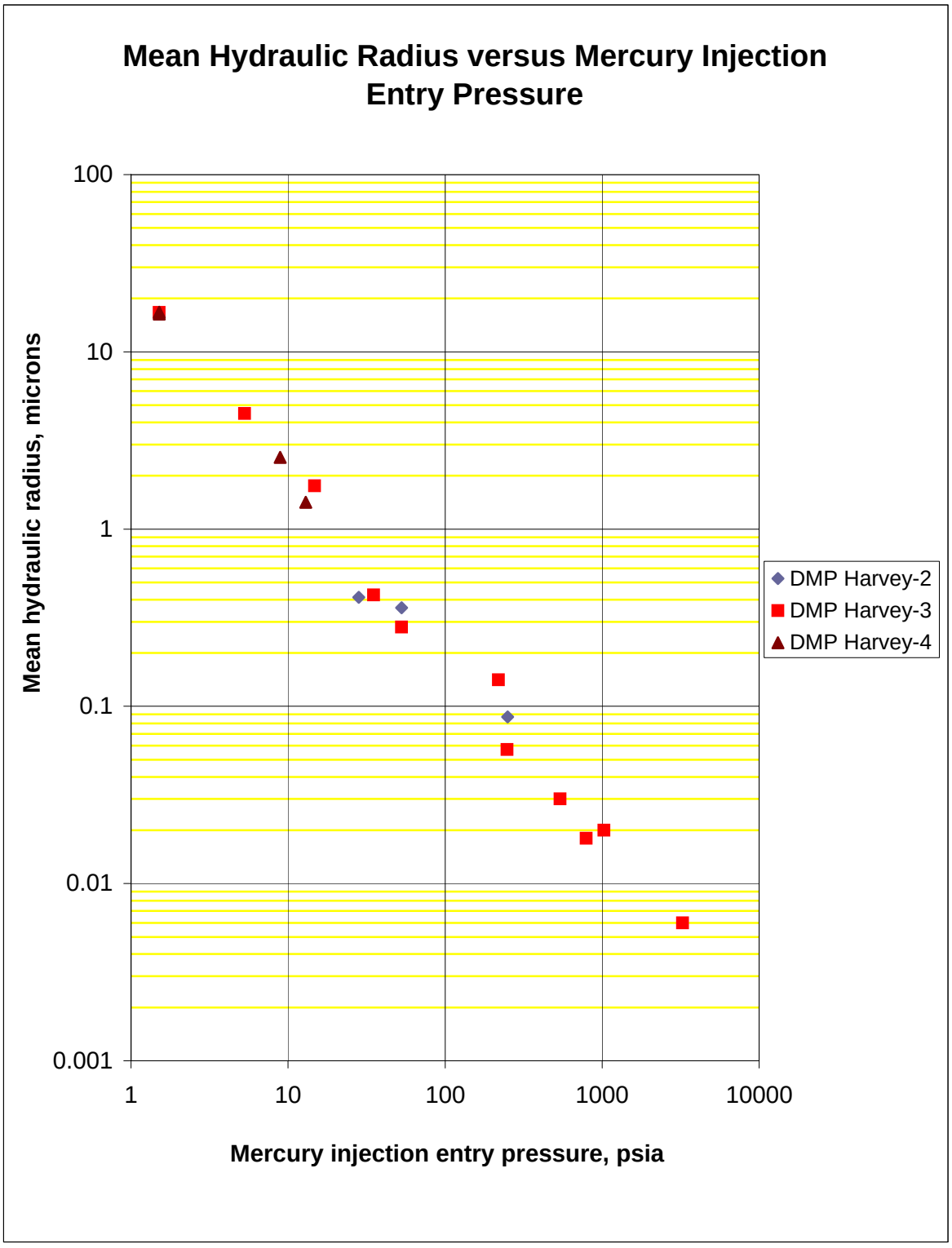
Equations to calculate column height		
Pth CO2/water =	Pth Air/Hg*	IFT * Cos contact angle CO_2/Water / IFT*Cos contact angle Air/Hg
Column Height, m =		Threshold Pressure, CO_2/water / Brine gradient, psi/m - CO_2 gradient, psi/m

SUMMARY OF MERCURY INJECTION ANALYSIS

Well name	Sample id	Plug Type	Depth (m)	Injection Sample Data		
				Porosity Fraction	Injection Entry Pressure** (psia)	Mean Hydraulic Radius (microns)
DMP HARVEY-2	PSSH1	Horizontal	776.00	0.154	250	0.087
DMP HARVEY-2	PSSH2	Horizontal	1132.10	0.130	28.2	0.412
DMP HARVEY-2	PSSV1	Vertical	1132.20	0.127	52.9	0.360
DMP HARVEY-3	PSSH8	Horizontal	743.88	0.146	540	0.030
DMP HARVEY-3	PSSH9	Horizontal	778.40	0.154	3260	0.006
DMP HARVEY-3	PSSH3	Horizontal	1171.75	0.106	1026	0.020
DMP HARVEY-3	PSSH4	Horizontal	1333.10	0.109	35.1	0.425
DMP HARVEY-3	PSSV2	Vertical	1377.80	0.106	52.8	0.280
DMP HARVEY-3	PSSH5	Horizontal	1378.00	0.106	219	0.141
DMP HARVEY-3	PSSV3	Vertical	1393.42	0.108	793	0.018
DMP HARVEY-3	PSSH6	Horizontal	1416.70	0.070	249	0.057
DMP HARVEY-3	11	Horizontal	1420.00	0.211	14.8	1.754
DMP HARVEY-3	20	Horizontal	1429.00	0.224	5.29	4.488
DMP HARVEY-3	135	Horizontal	1544.00	0.168	1.51	16.684
DMP HARVEY-4	PSSH7	Horizontal	907.92	0.151	8.89	2.534
DMP HARVEY-4	4	Horizontal	1793.00	0.196	1.51	16.315
DMP HARVEY-4	7	Horizontal	1797.00	0.187	1.51	16.728
DMP HARVEY-4	8	Horizontal	1799.00	0.149	13.0	1.415

*Plugs labelled with prefix : PSH; PSV; PSSH; and PSSV are fresh-state samples drilled from the preserved core-sections.

**Injection entry pressure is when when mercury injection first occurs and not threshold capillary pressure.


Mean Hydraulic Radius versus Mercury Injection Entry Pressure
Mean hydraulic radius, microns
100
10
1
0.1
0.01
0.001
1
10
100
1000
10000
Mercury injection entry pressure, psia
DMP Harvey-2
DMP Harvey-3
DMP Harvey-4

Mercury Injection Threshold Pressure

Well name	Stratigraphic Unit	Sample no.	Depth (m)	MICP			COLUMN HEIGHT, metres	
				Entry Pressure	Threshold/Breakthrough Pressure		Supercritical CO2	
					7.5% PV Hg	10% PV Hg	7.5% PV Hg	10% PV Hg
				psia	psia	psia		
DMP Harvey-2	Yalgorup Member	PSSH-1	776.00	250	613	773	56.4	71.1
DMP Harvey-2	Yalgorup Member	PSSH-2	1132.10	28.0	160	190	14.7	17.5
DMP Harvey-2	Yalgorup Member	PSSV-1	1132.20	53.0	150	167	13.8	15.4
DMP Harvey-3	Yalgorup Member	PSSH-8	743.88	540	1932	2407	177.8	221.5
DMP Harvey-3	Yalgorup Member	PSSH-9	778.40	3260	6220	6883	572.4	633.4
DMP Harvey-3	Yalgorup Member	PSSH-3	1171.75	1026	2149	2445	197.8	225.0
DMP Harvey-3	Yalgorup Member	PSSH-4	1333.10	35.1	437	539	40.2	49.6
DMP Harvey-3	Yalgorup Member	PSSV-2	1377.80	52.8	292	347	26.9	31.9
DMP Harvey-3	Yalgorup Member	PSSH-5	1378.00	219	307	354	28.3	32.6
DMP Harvey-3	Yalgorup Member	PSSV-3	1393.42	793	3452	4311	317.7	396.7
DMP Harvey-3	Yalgorup Member	PSSH-6	1416.70	249	4575	6255	421.0	575.6
DMP Harvey-4	Eneabba Formation	PSSH-7	907.92	8.89	30.2	38.7	2.8	3.6

Assumptions for column height calculations		
IFT CO2/water, dynes/cm	25	Based on Kaveh et al, 2013
Contact angle CO2/water, degrees	40	Based on Kaveh et al, 2013
Cosine contact angle, CO2/water	0.766	Need cosine of angle for height calculations
IFT Air/Hg, dynes/cm	480	
Contact angle Air/Hg, degrees	40	140 degrees through Hg: 180-140 through "wetting phase"
Cosine contact angle, Air/Hg	0.766	
Supercritical CO2 gradient, psi/m	0.895	Based on density 0.6293 g/cc
Brine gradient, psi/m	1.461	Based on 50,000 ppm formation brine, density 1.029 g/cc

Equations to calculate column height

$$\text{Pth CO2/water} = \text{Pth Air/Hg}^* \frac{\text{IFT}^*\text{Cos CA CO2/Water}}{\text{IFT}^*\text{Cos CA Air/Hg}}$$

$$\text{Column Height, m} = \frac{\text{Threshold Pressure, CO2/water}}{\text{Brine gradient, psi/m} - \text{CO2 gradient,psi/m}}$$

Well : DMP Harvey-2

Sample Identification :	**PSSH1**
Sample Depth, m :	**776.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.154**
Injection Sample Pore Volume, cm^3 :	**0.341**
Injection Sample Bulk Volume, cm^3 :	**2.206**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.087**
Swanson's Parameter :	**2.01E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.640	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	96.999	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.070	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.464	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.191	0.000	0.33	0.19	0.23	0.20	1.000	-
1.90	0.000	1.000	56.581	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	48.993	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.091	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.506	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.689	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.974	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.303	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.939	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.342	0.000	1.03	0.60	0.71	0.63	1.000	-
5.99	0.000	1.000	17.978	0.000	1.16	0.68	0.81	0.71	1.000	-
6.89	0.000	1.000	15.637	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.833	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.125	0.000	1.72	1.00	1.20	1.06	1.000	-
10.09	0.000	1.000	10.684	0.000	1.95	1.14	1.36	1.20	1.000	-
11.49	0.000	1.000	9.382	0.000	2.23	1.30	1.55	1.37	1.000	-
12.98	0.000	1.000	8.306	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.296	0.000	2.86	1.67	1.99	1.76	1.000	-
16.86	0.000	1.000	6.392	0.000	3.27	1.91	2.27	2.00	1.000	-
19.15	0.000	1.000	5.627	0.000	3.71	2.17	2.58	2.28	1.000	-
21.81	0.000	1.000	4.942	0.000	4.23	2.47	2.93	2.59	1.000	-
24.78	0.000	1.000	4.349	0.000	4.80	2.80	3.34	2.95	1.000	-
28.17	0.000	1.000	3.826	0.000	5.46	3.18	3.79	3.35	1.000	-
31.60	0.000	1.000	3.410	0.000	6.13	3.57	4.25	3.76	1.000	-
35.77	0.000	1.000	3.013	0.000	6.93	4.04	4.81	4.25	1.000	-
40.11	0.000	1.000	2.687	0.000	7.77	4.53	5.40	4.77	1.000	-
46.75	0.000	1.000	2.305	0.000	9.06	5.29	6.29	5.56	1.000	-
52.79	0.000	1.000	2.042	0.000	10.2	5.97	7.10	6.28	1.000	-
59.81	0.000	1.000	1.802	0.000	11.6	6.76	8.05	7.11	1.000	-
68.15	0.000	1.000	1.581	0.000	13.2	7.71	9.17	8.10	1.000	-
77.45	0.000	1.000	1.392	0.000	15.0	8.76	10.4	9.21	1.000	-
87.72	0.000	1.000	1.229	0.000	17.0	9.92	11.8	10.4	1.000	-
100.93	0.000	1.000	1.068	0.000	19.6	11.4	13.6	12.0	1.000	-
115.06	0.000	1.000	0.937	0.000	22.3	13.0	15.5	13.7	1.000	-
130.26	0.000	1.000	0.827	0.000	25.2	14.7	17.5	15.5	1.000	-
148.04	0.000	1.000	0.728	0.000	28.7	16.7	19.9	17.6	1.000	-

Well : DMP Harvey-2

Sample Identification :	**PSSH1**
Sample Depth, m :	**776.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.154**
Injection Sample Pore Volume, cm^3 :	**0.341**
Injection Sample Bulk Volume, cm^3 :	**2.206**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.087**
Swanson's Parameter :	**2.01E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
168.92	0.000	1.000	0.638	0.000	32.7	19.1	22.7	20.1	1.000	-
192.17	0.000	1.000	0.561	0.000	37.2	21.7	25.9	22.8	1.000	-
218.90	0.000	1.000	0.492	0.000	42.4	24.7	29.5	26.0	1.000	-
249.82	0.001	0.999	0.431	0.093	48.4	28.2	33.6	29.7	0.981	-
283.69	0.007	0.993	0.380	0.179	55.0	32.1	38.2	33.7	0.841	-
323.59	0.017	0.983	0.333	0.233	62.7	36.6	43.6	38.5	0.686	-
365.82	0.027	0.973	0.295	0.256	70.9	41.4	49.2	43.5	0.559	-
416.95	0.039	0.961	0.258	0.267	80.8	47.1	56.1	49.6	0.450	-
474.50	0.050	0.950	0.227	0.280	92.0	53.6	63.9	56.4	0.366	-
539.00	0.062	0.938	0.200	0.296	104	60.9	72.5	64.1	0.297	-
613.35	0.075	0.925	0.176	0.310	119	69.3	82.6	72.9	0.239	-
697.41	0.088	0.912	0.155	0.327	135	78.8	93.9	82.9	0.194	-
792.15	0.103	0.897	0.136	0.344	154	89.6	107	94.2	0.156	-
901.59	0.117	0.883	0.120	0.360	175	102	121	107	0.126	-
1026.42	0.133	0.867	0.105	0.377	199	116	138	122	0.101	-
1167.41	0.149	0.851	0.092	0.393	226	132	157	139	0.081	-
1326.24	0.166	0.834	0.081	0.404	257	150	178	158	0.065	-
1507.80	0.183	0.817	0.071	0.416	292	170	203	179	0.053	-
1715.15	0.201	0.799	0.063	0.432	332	194	231	204	0.042	-
1950.91	0.220	0.780	0.055	0.451	378	221	263	232	0.034	-
2217.14	0.239	0.761	0.049	0.476	430	251	298	264	0.028	-
2521.18	0.260	0.740	0.043	0.500	489	285	339	300	0.022	-
2866.93	0.282	0.718	0.038	0.519	556	324	386	341	0.018	-
3260.00	0.303	0.697	0.033	0.543	632	369	439	388	0.015	-
3706.85	0.327	0.673	0.029	0.568	718	419	499	441	0.012	-
4215.01	0.351	0.649	0.026	0.589	817	477	567	501	0.009	-
4790.57	0.376	0.624	0.022	0.617	928	542	645	570	0.008	-
5447.17	0.403	0.597	0.020	0.647	1056	616	733	648	0.006	-
6193.92	0.431	0.569	0.017	0.675	1200	700	834	736	0.005	-
7043.65	0.460	0.540	0.015	0.705	1365	796	948	837	0.004	-
8009.44	0.490	0.510	0.013	0.739	1552	906	1078	952	0.003	-
9107.29	0.522	0.478	0.012	0.770	1765	1030	1226	1083	0.002	-
10354.90	0.556	0.444	0.010	0.796	2007	1171	1394	1231	0.002	-
11775.10	0.588	0.412	0.009	0.851	2282	1331	1585	1400	0.002	-
13388.90	0.627	0.373	0.008	0.922	2595	1514	1802	1592	0.001	-
15224.90	0.668	0.332	0.007	0.964	2951	1721	2049	1810	0.001	-
17312.00	0.707	0.293	0.006	0.996	3355	1957	2330	2058	0.001	-
19682.80	0.752	0.248	0.005	1.000	3815	2225	2649	2340	0.000	-
22382.00	0.794	0.206	0.005	0.926	4338	2530	3012	2661	0.000	-
25449.90	0.831	0.169	0.004	0.808	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-2

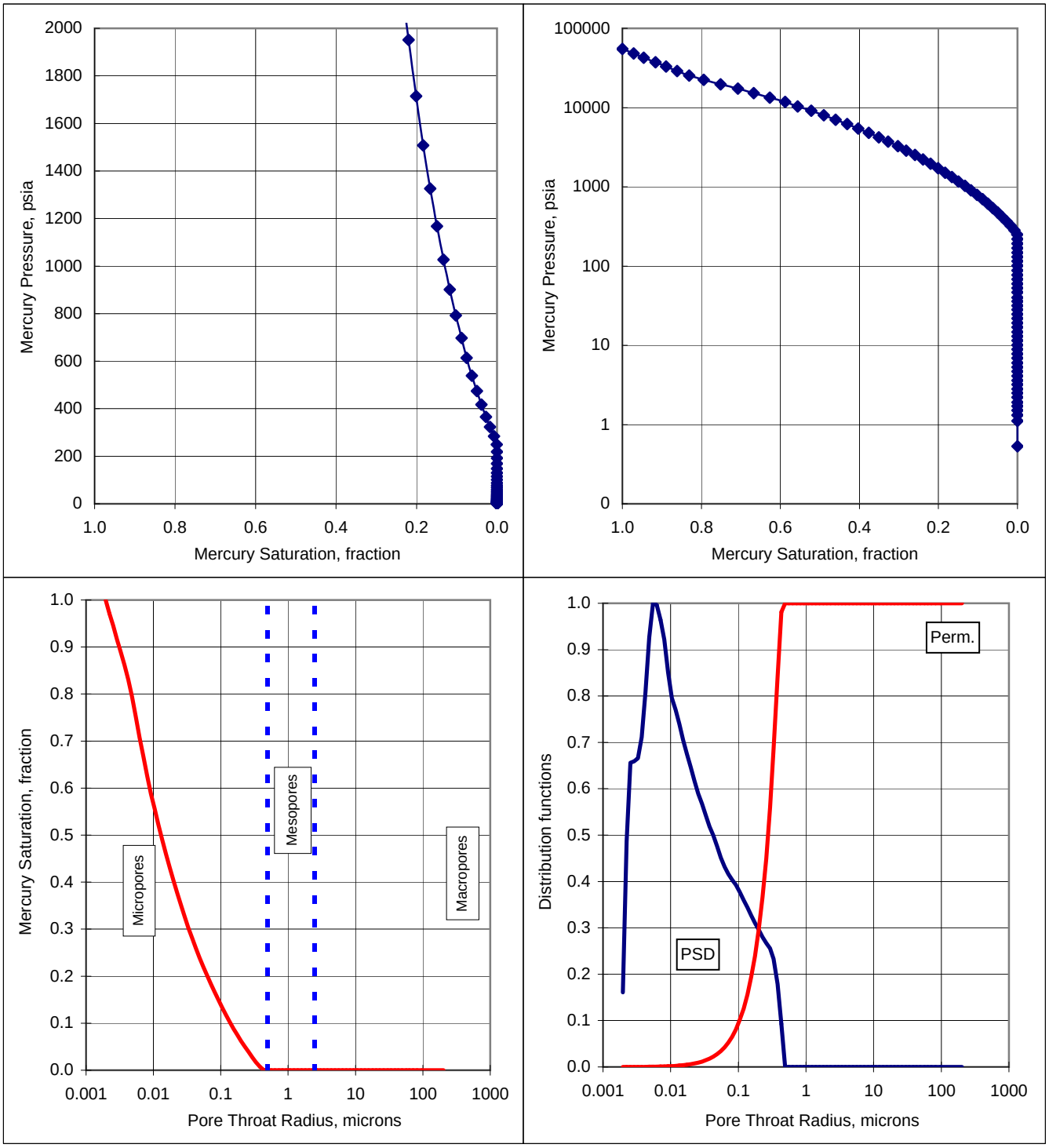
Sample Identification :	**PSSH1**
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IFT * Cosine Contact Angle				
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Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28938.70	0.862	0.138	0.004	0.712	5609	3272	3895	3441	0.000	-
32904.10	0.890	0.110	0.003	0.666	6377	3720	4429	3912	0.000	-
37413.70	0.916	0.084	0.003	0.660	7251	4230	5035	4448	0.000	-
42533.90	0.946	0.054	0.003	0.656	8243	4809	5725	5057	0.000	-
48357.00	0.971	0.029	0.002	0.486	9372	5467	6508	5749	0.000	-
54980.5	1.000	0.000	0.002	0.161	10656	6216	7400	6537	0.000	-

Well : DMP Harvey-2

Sample Identification : **PSSH1**
Sample Depth, m : **776.00**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.154**



Well : DMP Harvey-2

Sample Identification :	**PSSH2**
Sample Depth, m :	**1132.10**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.130**
Injection Sample Pore Volume, cm^3 :	**0.909**
Injection Sample Bulk Volume, cm^3 :	**6.979**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.412**
Swanson's Parameter :	**7.34E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.944	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	96.856	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.398	0.000	0.25	0.15	0.18	0.16	1.000	-
1.49	0.000	1.000	72.106	0.000	0.29	0.17	0.20	0.18	1.000	-
1.70	0.000	1.000	63.513	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.382	0.000	0.37	0.22	0.26	0.23	1.000	-
2.21	0.000	1.000	48.754	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.113	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.483	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.665	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.939	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.300	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.939	0.000	0.91	0.53	0.63	0.56	1.000	-
5.29	0.000	1.000	20.366	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.966	0.000	1.16	0.68	0.81	0.71	1.000	-
6.90	0.000	1.000	15.626	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.830	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.119	0.000	1.72	1.01	1.20	1.06	1.000	-
10.09	0.000	1.000	10.685	0.000	1.95	1.14	1.36	1.20	1.000	-
11.48	0.000	1.000	9.391	0.000	2.22	1.30	1.54	1.36	1.000	-
12.97	0.000	1.000	8.307	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.297	0.000	2.86	1.67	1.99	1.76	1.000	-
16.85	0.000	1.000	6.394	0.000	3.27	1.91	2.27	2.00	1.000	-
19.21	0.000	1.000	5.610	0.000	3.72	2.17	2.59	2.28	1.000	-
21.80	0.000	1.000	4.945	0.000	4.22	2.46	2.93	2.59	1.000	-
24.78	0.000	1.000	4.349	0.000	4.80	2.80	3.33	2.95	1.000	-
28.16	0.001	0.999	3.827	0.006	5.46	3.18	3.79	3.35	0.909	-
31.47	0.001	0.999	3.425	0.005	6.10	3.56	4.24	3.74	0.909	-
35.55	0.001	0.999	3.032	0.009	6.89	4.02	4.78	4.23	0.904	-
40.33	0.001	0.999	2.672	0.024	7.82	4.56	5.43	4.79	0.884	-
46.25	0.003	0.997	2.330	0.040	8.96	5.23	6.22	5.50	0.818	-
53.06	0.005	0.995	2.031	0.053	10.3	6.00	7.14	6.31	0.758	-
60.52	0.007	0.993	1.781	0.066	11.7	6.84	8.15	7.20	0.698	-
68.48	0.009	0.991	1.574	0.085	13.3	7.74	9.22	8.14	0.648	-
77.86	0.013	0.987	1.384	0.118	15.1	8.80	10.5	9.26	0.596	-
88.30	0.018	0.982	1.221	0.171	17.1	9.98	11.9	10.5	0.537	-
101.14	0.026	0.974	1.066	0.240	19.6	11.4	13.6	12.0	0.468	-
114.59	0.036	0.964	0.940	0.313	22.2	13.0	15.4	13.6	0.392	-
130.69	0.049	0.951	0.825	0.378	25.3	14.8	17.6	15.5	0.322	-
148.69	0.065	0.935	0.725	0.435	28.8	16.8	20.0	17.7	0.256	-

Well : DMP Harvey-2

Sample Identification :	**PSSH2**
Sample Depth, m :	**1132.10**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.130**
Injection Sample Pore Volume, cm^3 :	**0.909**
Injection Sample Bulk Volume, cm^3 :	**6.979**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.412**
Swanson's Parameter :	**7.34E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.21	0.083	0.917	0.637	0.475	32.8	19.1	22.8	20.1	0.199	-
192.35	0.102	0.898	0.560	0.495	37.3	21.7	25.9	22.9	0.152	-
219.78	0.121	0.879	0.490	0.505	42.6	24.8	29.6	26.1	0.115	-
249.16	0.140	0.860	0.433	0.505	48.3	28.2	33.5	29.6	0.087	-
283.37	0.160	0.840	0.380	0.491	54.9	32.0	38.1	33.7	0.065	-
322.78	0.178	0.822	0.334	0.476	62.6	36.5	43.4	38.4	0.049	-
366.55	0.195	0.805	0.294	0.464	71.0	41.4	49.3	43.6	0.037	-
416.99	0.213	0.787	0.258	0.447	80.8	47.1	56.1	49.6	0.028	-
474.76	0.230	0.770	0.227	0.429	92.0	53.7	63.9	56.4	0.021	-
540.23	0.245	0.755	0.199	0.413	105	61.1	72.7	64.2	0.016	-
613.79	0.261	0.739	0.176	0.400	119	69.4	82.6	73.0	0.012	-
697.44	0.276	0.724	0.155	0.385	135	78.8	93.9	82.9	0.009	-
793.75	0.290	0.710	0.136	0.374	154	89.7	107	94.4	0.007	-
901.62	0.304	0.696	0.120	0.366	175	102	121	107	0.006	-
1025.82	0.317	0.683	0.105	0.358	199	116	138	122	0.004	-
1166.09	0.331	0.669	0.092	0.350	226	132	157	139	0.003	-
1326.65	0.344	0.656	0.081	0.347	257	150	179	158	0.003	-
1508.00	0.357	0.643	0.071	0.346	292	170	203	179	0.002	-
1715.40	0.370	0.630	0.063	0.348	332	194	231	204	0.002	-
1949.35	0.383	0.617	0.055	0.354	378	220	262	232	0.001	-
2217.57	0.397	0.603	0.049	0.365	430	251	298	264	0.001	-
2520.32	0.411	0.589	0.043	0.385	488	285	339	300	0.001	-
2866.47	0.426	0.574	0.038	0.416	556	324	386	341	0.001	-
3260.05	0.442	0.558	0.033	0.460	632	369	439	388	0.001	-
3706.95	0.460	0.540	0.029	0.512	718	419	499	441	0.001	-
4214.90	0.481	0.519	0.026	0.566	817	477	567	501	0.000	-
4790.27	0.503	0.497	0.022	0.631	928	542	645	570	0.000	-
5447.55	0.528	0.472	0.020	0.702	1056	616	733	648	0.000	-
6194.28	0.556	0.444	0.017	0.768	1201	700	834	736	0.000	-
7043.71	0.586	0.414	0.015	0.824	1365	796	948	837	0.000	-
8008.97	0.619	0.381	0.013	0.880	1552	905	1078	952	0.000	-
9102.33	0.651	0.349	0.012	0.955	1764	1029	1225	1082	0.000	-
10355.40	0.692	0.308	0.010	1.000	2007	1171	1394	1231	0.000	-
11775.70	0.729	0.271	0.009	0.977	2282	1331	1585	1400	0.000	-
13389.60	0.766	0.234	0.008	0.927	2595	1514	1802	1592	0.000	-
15224.40	0.800	0.200	0.007	0.866	2951	1721	2049	1810	0.000	-
17311.00	0.831	0.169	0.006	0.782	3355	1957	2330	2058	0.000	-
19683.10	0.860	0.140	0.005	0.699	3815	2225	2649	2340	0.000	-
22375.90	0.882	0.118	0.005	0.647	4337	2530	3012	2660	0.000	-
25450.00	0.910	0.090	0.004	0.582	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-2

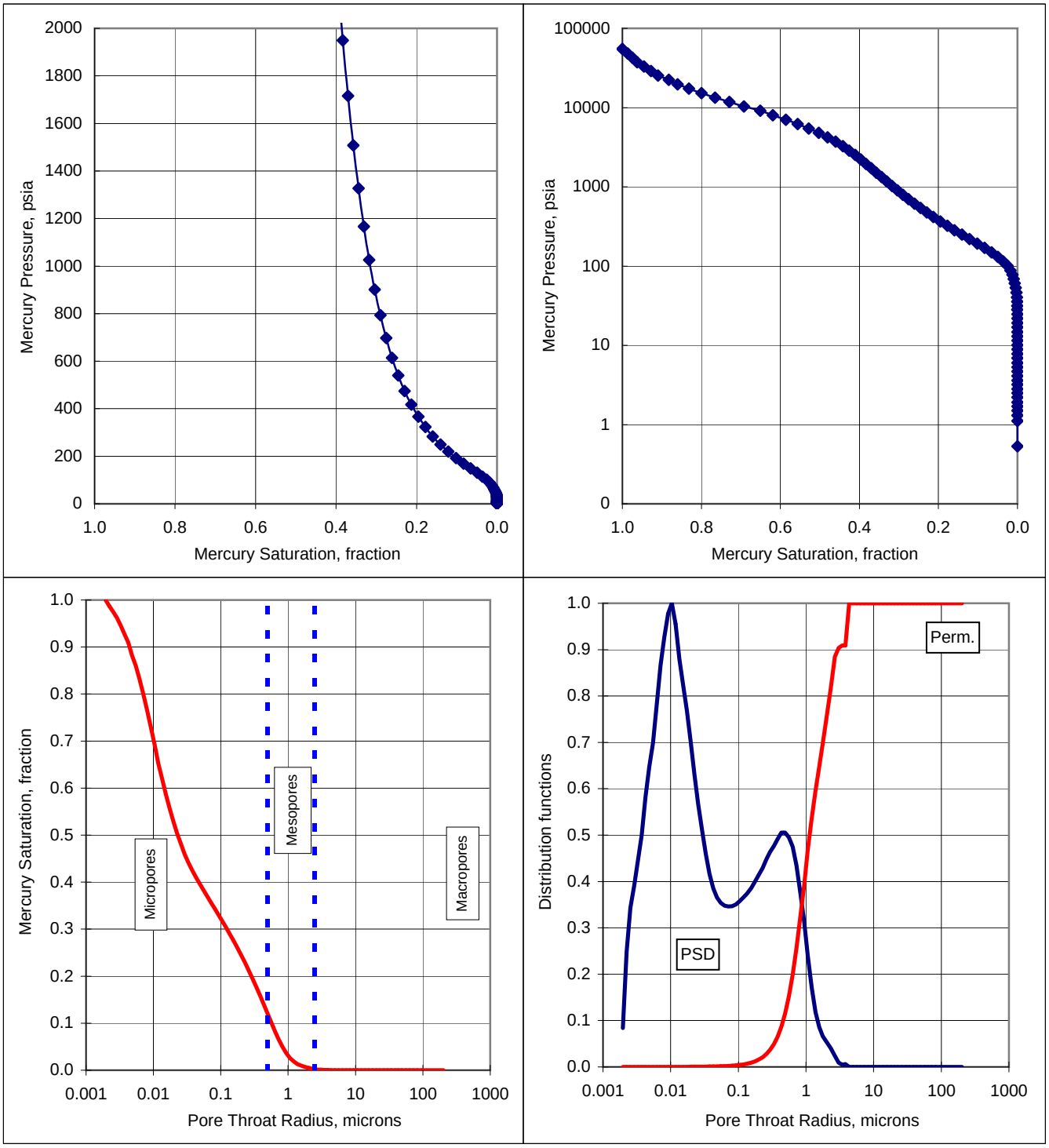
Sample Identification :	**PSSH2**
Sample Depth, m :	**1132.10**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.130**
Injection Sample Pore Volume, cm^3 :	**0.909**
Injection Sample Bulk Volume, cm^3 :	**6.979**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.412**
Swanson's Parameter :	**7.34E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28937.00	0.927	0.073	0.004	0.500	5608	3271	3895	3440	0.000	-
32900.60	0.945	0.055	0.003	0.445	6376	3720	4428	3912	0.000	-
37412.20	0.962	0.038	0.003	0.391	7251	4230	5035	4448	0.000	-
42533.50	0.975	0.025	0.003	0.343	8243	4809	5725	5057	0.000	-
48350.50	0.987	0.013	0.002	0.249	9371	5466	6507	5749	0.000	-
54979.8	1.000	0.000	0.002	0.084	10656	6216	7400	6537	0.000	-

Well : DMP Harvey-2

Sample Identification : **PSSH2**
Sample Depth, m : **1132.10**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.130**



Well : DMP Harvey-2

Sample Identification :	**PSSV1**
Sample Depth, m :	**1132.20**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.127**
Injection Sample Pore Volume, cm^3 :	**0.233**
Injection Sample Bulk Volume, cm^3 :	**1.839**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.360**
Swanson's Parameter :	**1.00E-02**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	203.161	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	97.135	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.372	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.402	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.060	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.471	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	49.051	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.097	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.476	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.719	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.916	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.314	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.943	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.342	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.976	0.000	1.16	0.68	0.81	0.71	1.000	-
6.90	0.000	1.000	15.624	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.836	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.120	0.000	1.72	1.01	1.20	1.06	1.000	-
10.08	0.000	1.000	10.687	0.000	1.95	1.14	1.36	1.20	1.000	-
11.49	0.000	1.000	9.382	0.000	2.23	1.30	1.55	1.37	1.000	-
12.97	0.000	1.000	8.308	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.299	0.000	2.86	1.67	1.99	1.76	1.000	-
16.85	0.000	1.000	6.395	0.000	3.27	1.91	2.27	2.00	1.000	-
19.20	0.000	1.000	5.613	0.000	3.72	2.17	2.58	2.28	1.000	-
21.79	0.000	1.000	4.945	0.000	4.22	2.46	2.93	2.59	1.000	-
24.77	0.000	1.000	4.351	0.000	4.80	2.80	3.33	2.94	1.000	-
28.15	0.000	1.000	3.828	0.000	5.46	3.18	3.79	3.35	1.000	-
31.06	0.000	1.000	3.470	0.000	6.02	3.51	4.18	3.69	1.000	-
35.55	0.000	1.000	3.031	0.000	6.89	4.02	4.78	4.23	1.000	-
40.74	0.000	1.000	2.645	0.000	7.90	4.61	5.48	4.84	1.000	-
46.56	0.000	1.000	2.314	0.040	9.02	5.26	6.27	5.54	0.980	-
52.87	0.002	0.998	2.039	0.082	10.2	5.98	7.12	6.29	0.929	-
59.16	0.006	0.994	1.822	0.109	11.5	6.69	7.96	7.03	0.840	-
68.36	0.009	0.991	1.577	0.128	13.2	7.73	9.20	8.13	0.775	-
78.28	0.014	0.986	1.377	0.165	15.2	8.85	10.5	9.31	0.710	-
88.45	0.020	0.980	1.218	0.218	17.1	10.0	11.9	10.5	0.647	-
101.48	0.028	0.972	1.062	0.289	19.7	11.5	13.7	12.1	0.580	-
114.95	0.038	0.962	0.938	0.402	22.3	13.0	15.5	13.7	0.515	-
130.14	0.051	0.949	0.828	0.576	25.2	14.7	17.5	15.5	0.447	-
148.53	0.073	0.927	0.726	0.779	28.8	16.8	20.0	17.7	0.361	-

Well : DMP Harvey-2

Sample Identification :	**PSSV1**
Sample Depth, m :	**1132.20**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.127**
Injection Sample Pore Volume, cm^3 :	**0.233**
Injection Sample Bulk Volume, cm^3 :	**1.839**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.360**
Swanson's Parameter :	**1.00E-02**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
168.71	0.103	0.897	0.639	0.929	32.7	19.1	22.7	20.1	0.273	-
192.66	0.135	0.865	0.559	0.987	37.3	21.8	25.9	22.9	0.199	-
218.92	0.167	0.833	0.492	0.963	42.4	24.8	29.5	26.0	0.141	-
248.91	0.197	0.803	0.433	0.885	48.2	28.1	33.5	29.6	0.099	-
283.51	0.224	0.776	0.380	0.803	54.9	32.1	38.2	33.7	0.071	-
322.29	0.248	0.752	0.334	0.738	62.5	36.4	43.4	38.3	0.051	-
366.30	0.270	0.730	0.294	0.674	71.0	41.4	49.3	43.6	0.037	-
416.89	0.291	0.709	0.259	0.613	80.8	47.1	56.1	49.6	0.027	-
473.63	0.309	0.691	0.228	0.564	91.8	53.5	63.7	56.3	0.020	-
539.24	0.326	0.674	0.200	0.523	105	61.0	72.6	64.1	0.015	-
613.08	0.342	0.658	0.176	0.487	119	69.3	82.5	72.9	0.011	-
697.91	0.357	0.643	0.154	0.460	135	78.9	93.9	83.0	0.008	-
794.07	0.372	0.628	0.136	0.440	154	89.8	107	94.4	0.006	-
902.00	0.385	0.615	0.119	0.422	175	102	121	107	0.005	-
1025.77	0.398	0.602	0.105	0.407	199	116	138	122	0.004	-
1167.09	0.411	0.589	0.092	0.398	226	132	157	139	0.003	-
1326.64	0.423	0.577	0.081	0.395	257	150	179	158	0.002	-
1508.29	0.436	0.564	0.071	0.395	292	171	203	179	0.002	-
1714.40	0.448	0.552	0.063	0.400	332	194	231	204	0.002	-
1949.31	0.461	0.539	0.055	0.409	378	220	262	232	0.001	-
2218.29	0.474	0.526	0.049	0.427	430	251	299	264	0.001	-
2520.69	0.488	0.512	0.043	0.458	489	285	339	300	0.001	-
2866.94	0.503	0.497	0.038	0.505	556	324	386	341	0.001	-
3259.59	0.520	0.480	0.033	0.574	632	369	439	388	0.001	-
3706.77	0.539	0.461	0.029	0.652	718	419	499	441	0.001	-
4214.40	0.562	0.438	0.026	0.706	817	476	567	501	0.000	-
4791.49	0.584	0.416	0.022	0.745	929	542	645	570	0.000	-
5446.64	0.609	0.391	0.020	0.787	1056	616	733	648	0.000	-
6194.76	0.635	0.365	0.017	0.822	1201	700	834	737	0.000	-
7043.77	0.661	0.339	0.015	0.862	1365	796	948	837	0.000	-
8009.41	0.689	0.311	0.013	0.920	1552	906	1078	952	0.000	-
9107.22	0.719	0.281	0.012	0.974	1765	1030	1226	1083	0.000	-
10355.50	0.751	0.249	0.010	1.000	2007	1171	1394	1231	0.000	-
11775.50	0.783	0.217	0.009	0.993	2282	1331	1585	1400	0.000	-
13388.50	0.815	0.185	0.008	0.954	2595	1514	1802	1592	0.000	-
15224.50	0.844	0.156	0.007	0.890	2951	1721	2049	1810	0.000	-
17310.40	0.871	0.129	0.006	0.815	3355	1957	2330	2058	0.000	-
19684.00	0.896	0.104	0.005	0.734	3815	2225	2649	2340	0.000	-
22382.10	0.918	0.082	0.005	0.647	4338	2530	3012	2661	0.000	-
25450.30	0.938	0.062	0.004	0.548	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-2

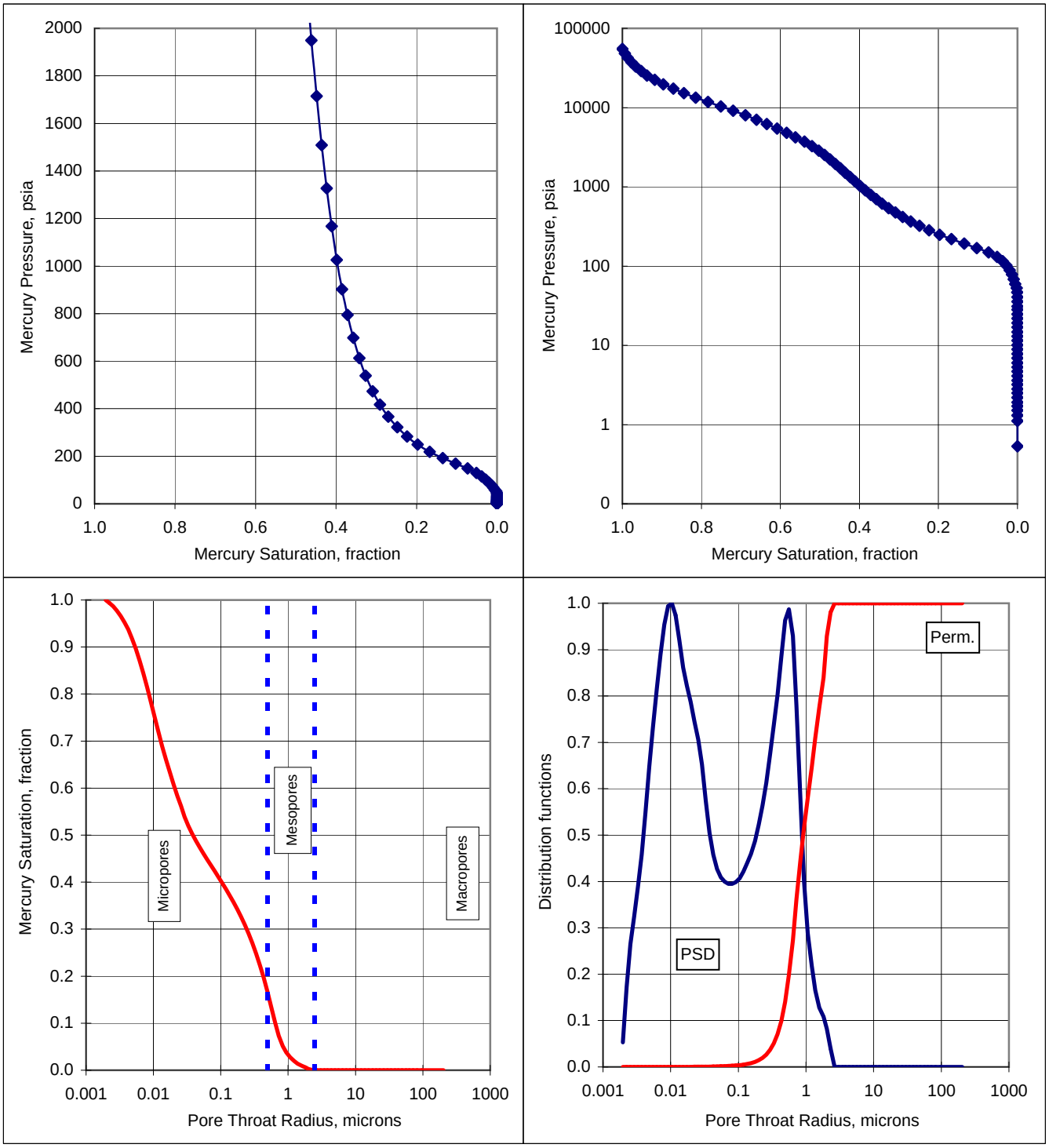
Sample Identification :	**PSSV1**
Sample Depth, m :	**1132.20**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.127**
Injection Sample Pore Volume, cm^3 :	**0.233**
Injection Sample Bulk Volume, cm^3 :	**1.839**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.360**
Swanson's Parameter :	**1.00E-02**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28938.10	0.952	0.048	0.004	0.458	5608	3272	3895	3441	0.000	-
32904.30	0.966	0.034	0.003	0.388	6377	3720	4429	3912	0.000	-
37413.20	0.977	0.023	0.003	0.325	7251	4230	5035	4448	0.000	-
42534.70	0.986	0.014	0.003	0.265	8244	4809	5725	5057	0.000	-
48355.80	0.994	0.006	0.002	0.172	9372	5467	6508	5749	0.000	-
54978.5	1.000	0.000	0.002	0.053	10655	6216	7400	6537	0.000	-

Well : DMP Harvey-2

Sample Identification : **PSSV1**
Sample Depth, m : **1132.20**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.127**



Well : DMP Harvey-3

Sample Identification :	**PSSH8**
Sample Depth, m :	**743.88**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.146**
Injection Sample Pore Volume, cm^3 :	**0.400**
Injection Sample Bulk Volume, cm^3 :	**2.742**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.030**
Swanson's Parameter :	**8.11E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.546	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	97.315	0.000	0.21	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.424	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.444	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.081	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.511	0.000	0.37	0.22	0.26	0.23	1.000	-
2.19	0.000	1.000	49.110	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.162	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.543	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.693	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.943	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.304	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.938	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.349	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.974	0.000	1.16	0.68	0.81	0.71	1.000	-
6.89	0.000	1.000	15.634	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.830	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.124	0.000	1.72	1.00	1.20	1.06	1.000	-
10.09	0.000	1.000	10.685	0.000	1.95	1.14	1.36	1.20	1.000	-
11.49	0.000	1.000	9.384	0.000	2.23	1.30	1.55	1.37	1.000	-
12.98	0.000	1.000	8.305	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.295	0.000	2.86	1.67	1.99	1.76	1.000	-
16.85	0.000	1.000	6.395	0.000	3.27	1.91	2.27	2.00	1.000	-
19.21	0.000	1.000	5.611	0.000	3.72	2.17	2.59	2.28	1.000	-
21.79	0.000	1.000	4.945	0.000	4.22	2.46	2.93	2.59	1.000	-
24.79	0.000	1.000	4.348	0.000	4.80	2.80	3.34	2.95	1.000	-
28.16	0.000	1.000	3.827	0.000	5.46	3.18	3.79	3.35	1.000	-
31.54	0.000	1.000	3.418	0.000	6.11	3.57	4.24	3.75	1.000	-
35.34	0.000	1.000	3.049	0.000	6.85	4.00	4.76	4.20	1.000	-
40.40	0.000	1.000	2.667	0.000	7.83	4.57	5.44	4.80	1.000	-
46.50	0.000	1.000	2.318	0.000	9.01	5.26	6.26	5.53	1.000	-
52.56	0.000	1.000	2.050	0.000	10.2	5.94	7.07	6.25	1.000	-
60.02	0.000	1.000	1.796	0.000	11.6	6.79	8.08	7.14	1.000	-
68.09	0.000	1.000	1.583	0.000	13.2	7.70	9.16	8.10	1.000	-
77.45	0.000	1.000	1.392	0.000	15.0	8.76	10.4	9.21	1.000	-
88.57	0.000	1.000	1.217	0.000	17.2	10.0	11.9	10.5	1.000	-
100.67	0.000	1.000	1.071	0.000	19.5	11.4	13.5	12.0	1.000	-
114.76	0.000	1.000	0.939	0.000	22.2	13.0	15.4	13.6	1.000	-
130.57	0.000	1.000	0.825	0.000	25.3	14.8	17.6	15.5	1.000	-
149.19	0.000	1.000	0.722	0.000	28.9	16.9	20.1	17.7	1.000	-

Well : DMP Harvey-3

Sample Identification :	**PSSH8**
Sample Depth, m :	**743.88**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.146**
Injection Sample Pore Volume, cm^3 :	**0.400**
Injection Sample Bulk Volume, cm^3 :	**2.742**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.030**
Swanson's Parameter :	**8.11E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.35	0.000	1.000	0.636	0.000	32.8	19.1	22.8	20.1	1.000	-
192.08	0.000	1.000	0.561	0.000	37.2	21.7	25.9	22.8	1.000	-
219.40	0.000	1.000	0.491	0.000	42.5	24.8	29.5	26.1	1.000	-
248.83	0.000	1.000	0.433	0.000	48.2	28.1	33.5	29.6	1.000	-
283.35	0.000	1.000	0.380	0.000	54.9	32.0	38.1	33.7	1.000	-
322.60	0.000	1.000	0.334	0.000	62.5	36.5	43.4	38.4	1.000	-
366.53	0.000	1.000	0.294	0.000	71.0	41.4	49.3	43.6	1.000	-
417.58	0.000	1.000	0.258	0.000	80.9	47.2	56.2	49.6	1.000	-
474.13	0.000	1.000	0.227	0.000	91.9	53.6	63.8	56.4	1.000	-
539.51	0.002	0.998	0.200	0.051	105	61.0	72.6	64.1	0.913	-
613.19	0.007	0.993	0.176	0.074	119	69.3	82.5	72.9	0.782	-
697.13	0.011	0.989	0.155	0.081	135	78.8	93.8	82.9	0.689	-
793.10	0.016	0.984	0.136	0.091	154	89.7	107	94.3	0.610	-
901.63	0.021	0.979	0.120	0.107	175	102	121	107	0.538	-
1026.20	0.028	0.972	0.105	0.123	199	116	138	122	0.470	-
1166.36	0.035	0.965	0.092	0.139	226	132	157	139	0.413	-
1325.51	0.043	0.957	0.081	0.160	257	150	178	158	0.363	-
1507.94	0.052	0.948	0.071	0.184	292	170	203	179	0.317	-
1714.57	0.063	0.937	0.063	0.211	332	194	231	204	0.278	-
1949.85	0.076	0.924	0.055	0.241	378	220	262	232	0.241	-
2217.50	0.090	0.910	0.049	0.274	430	251	298	264	0.210	-
2520.35	0.106	0.894	0.043	0.315	488	285	339	300	0.183	-
2865.97	0.124	0.876	0.038	0.367	555	324	386	341	0.158	-
3259.91	0.146	0.854	0.033	0.433	632	369	439	388	0.136	-
3706.37	0.172	0.828	0.029	0.513	718	419	499	441	0.115	-
4214.86	0.202	0.798	0.026	0.617	817	477	567	501	0.097	-
4790.42	0.239	0.761	0.022	0.746	928	542	645	570	0.079	-
5447.26	0.285	0.715	0.020	0.861	1056	616	733	648	0.062	-
6193.98	0.336	0.664	0.017	0.936	1200	700	834	736	0.048	-
7043.34	0.389	0.611	0.015	0.981	1365	796	948	837	0.036	-
8009.00	0.445	0.555	0.013	1.000	1552	905	1078	952	0.027	-
9106.64	0.501	0.499	0.012	0.978	1765	1030	1226	1083	0.019	-
10354.30	0.554	0.446	0.010	0.929	2007	1171	1394	1231	0.014	-
11774.40	0.603	0.397	0.009	0.887	2282	1331	1585	1400	0.010	-
13388.00	0.652	0.348	0.008	0.839	2595	1514	1802	1592	0.007	-
15223.50	0.697	0.303	0.007	0.777	2950	1721	2049	1810	0.005	-
17309.80	0.737	0.263	0.006	0.717	3355	1957	2330	2058	0.004	-
19681.40	0.777	0.223	0.005	0.653	3814	2225	2649	2340	0.002	-
22379.40	0.809	0.191	0.005	0.588	4337	2530	3012	2661	0.002	-
25448.80	0.842	0.158	0.004	0.539	4932	2877	3425	3026	0.001	-

Well : DMP Harvey-3

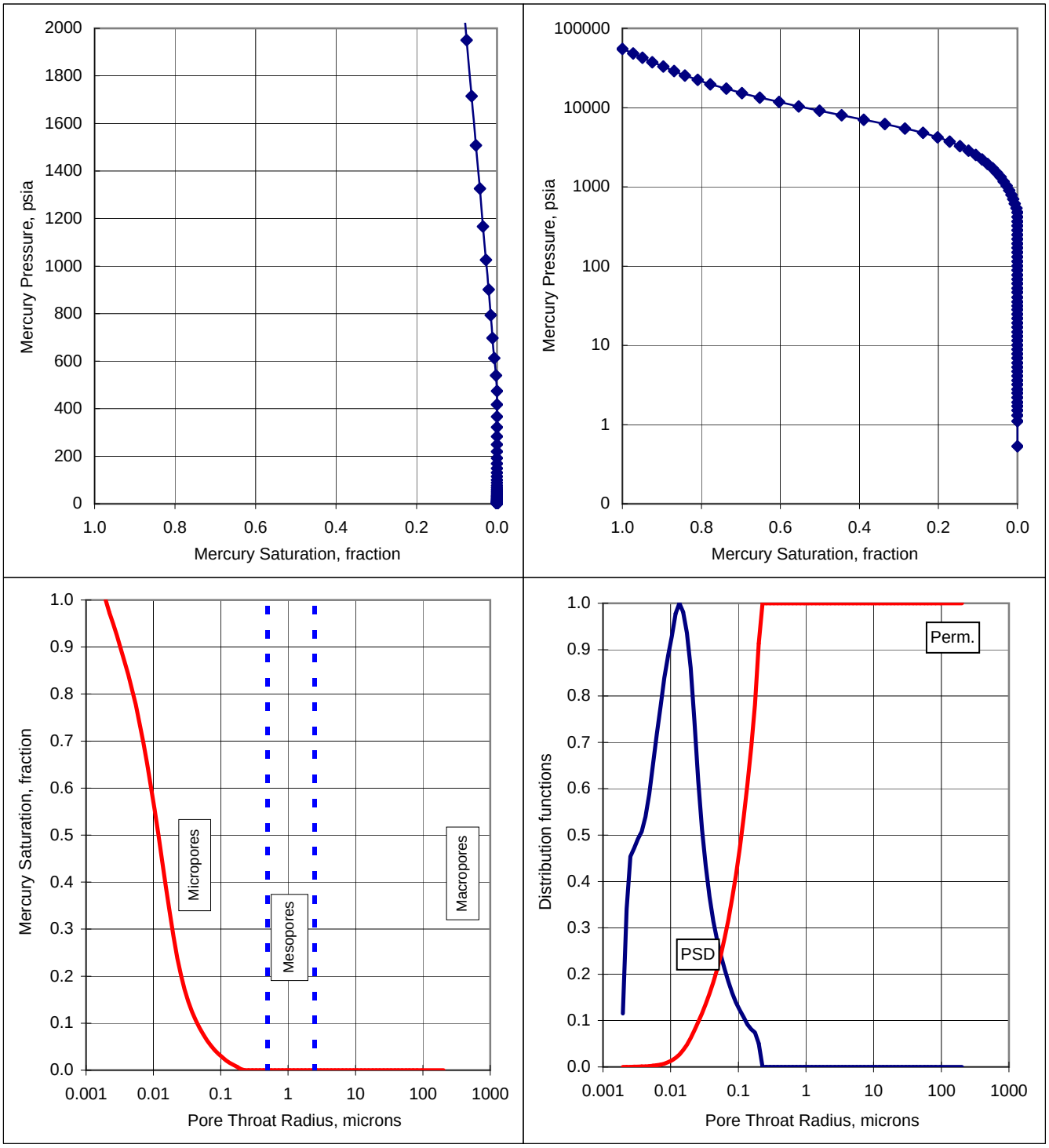
Sample Identification :	**PSSH8**
Sample Depth, m :	**743.88**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.146**
Injection Sample Pore Volume, cm^3 :	**0.400**
Injection Sample Bulk Volume, cm^3 :	**2.742**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.030**
Swanson's Parameter :	**8.11E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28937.80	0.869	0.131	0.004	0.508	5608	3272	3895	3441	0.001	-
32903.20	0.897	0.103	0.003	0.492	6377	3720	4428	3912	0.001	-
37399.10	0.924	0.076	0.003	0.472	7248	4228	5034	4447	0.000	-
42531.60	0.949	0.051	0.003	0.454	8243	4808	5724	5057	0.000	-
48353.60	0.973	0.027	0.002	0.340	9371	5467	6508	5749	0.000	-
54976.6	1.000	0.000	0.002	0.115	10655	6215	7399	6536	0.000	-

Well : DMP Harvey-3

Sample Identification :	**PSSH8**
Sample Depth, m :	**743.88**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.146**



Well : DMP Harvey-3

Sample Identification :	**PSSH9**
Sample Depth, m :	**778.40**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.154**
Injection Sample Pore Volume, cm^3 :	**0.906**
Injection Sample Bulk Volume, cm^3 :	**5.873**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.006**
Swanson's Parameter :	**5.09E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.640	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	96.999	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.070	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.464	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.191	0.000	0.33	0.19	0.23	0.20	1.000	-
1.90	0.000	1.000	56.581	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	48.993	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.091	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.506	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.689	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.974	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.303	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.939	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.342	0.000	1.03	0.60	0.71	0.63	1.000	-
5.99	0.000	1.000	17.978	0.000	1.16	0.68	0.81	0.71	1.000	-
6.89	0.000	1.000	15.637	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.833	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.125	0.000	1.72	1.00	1.20	1.06	1.000	-
10.09	0.000	1.000	10.684	0.000	1.95	1.14	1.36	1.20	1.000	-
11.49	0.000	1.000	9.382	0.000	2.23	1.30	1.55	1.37	1.000	-
12.98	0.000	1.000	8.306	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.296	0.000	2.86	1.67	1.99	1.76	1.000	-
16.86	0.000	1.000	6.392	0.000	3.27	1.91	2.27	2.00	1.000	-
19.15	0.000	1.000	5.627	0.000	3.71	2.17	2.58	2.28	1.000	-
21.81	0.000	1.000	4.942	0.000	4.23	2.47	2.93	2.59	1.000	-
24.78	0.000	1.000	4.349	0.000	4.80	2.80	3.34	2.95	1.000	-
28.17	0.000	1.000	3.826	0.000	5.46	3.18	3.79	3.35	1.000	-
32.06	0.000	1.000	3.362	0.000	6.21	3.62	4.31	3.81	1.000	-
35.41	0.000	1.000	3.043	0.000	6.86	4.00	4.77	4.21	1.000	-
40.31	0.000	1.000	2.674	0.000	7.81	4.56	5.43	4.79	1.000	-
46.14	0.000	1.000	2.336	0.000	8.94	5.22	6.21	5.49	1.000	-
53.05	0.000	1.000	2.032	0.000	10.3	6.00	7.14	6.31	1.000	-
60.44	0.000	1.000	1.783	0.000	11.7	6.83	8.13	7.19	1.000	-
68.68	0.000	1.000	1.569	0.000	13.3	7.76	9.24	8.17	1.000	-
77.57	0.000	1.000	1.389	0.000	15.0	8.77	10.4	9.22	1.000	-
88.65	0.000	1.000	1.216	0.000	17.2	10.0	11.9	10.5	1.000	-
100.72	0.000	1.000	1.070	0.000	19.5	11.4	13.6	12.0	1.000	-
114.48	0.000	1.000	0.941	0.000	22.2	12.9	15.4	13.6	1.000	-
130.86	0.000	1.000	0.824	0.000	25.4	14.8	17.6	15.6	1.000	-
148.28	0.000	1.000	0.727	0.000	28.7	16.8	20.0	17.6	1.000	-

Well : DMP Harvey-3

Sample Identification :	**PSSH9**
Sample Depth, m :	**778.40**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.154**
Injection Sample Pore Volume, cm^3 :	**0.906**
Injection Sample Bulk Volume, cm^3 :	**5.873**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.006**
Swanson's Parameter :	**5.09E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.41	0.000	1.000	0.636	0.000	32.8	19.2	22.8	20.1	1.000	-
192.33	0.000	1.000	0.560	0.000	37.3	21.7	25.9	22.9	1.000	-
218.34	0.000	1.000	0.494	0.000	42.3	24.7	29.4	26.0	1.000	-
249.16	0.000	1.000	0.433	0.000	48.3	28.2	33.5	29.6	1.000	-
283.22	0.000	1.000	0.381	0.000	54.9	32.0	38.1	33.7	1.000	-
321.84	0.000	1.000	0.335	0.000	62.4	36.4	43.3	38.3	1.000	-
365.68	0.000	1.000	0.295	0.000	70.9	41.3	49.2	43.5	1.000	-
417.01	0.000	1.000	0.258	0.000	80.8	47.1	56.1	49.6	1.000	-
474.40	0.000	1.000	0.227	0.000	91.9	53.6	63.8	56.4	1.000	-
538.55	0.000	1.000	0.200	0.000	104	60.9	72.5	64.0	1.000	-
612.67	0.000	1.000	0.176	0.000	119	69.3	82.5	72.8	1.000	-
696.85	0.000	1.000	0.155	0.000	135	78.8	93.8	82.9	1.000	-
793.03	0.000	1.000	0.136	0.000	154	89.7	107	94.3	1.000	-
901.50	0.000	1.000	0.120	0.000	175	101.9	121	107	1.000	-
1025.24	0.000	1.000	0.105	0.000	199	115.9	138	122	1.000	-
1165.81	0.000	1.000	0.092	0.000	226	131.8	157	139	1.000	-
1325.92	0.000	1.000	0.081	0.000	257	149.9	178	158	1.000	-
1509.02	0.000	1.000	0.071	0.000	292	170.6	203	179	1.000	-
1716.14	0.000	1.000	0.063	0.000	333	194.0	231	204	1.000	-
1951.60	0.000	1.000	0.055	0.000	378	220.6	263	232	1.000	-
2217.01	0.000	1.000	0.049	0.000	430	250.6	298	264	1.000	-
2521.73	0.000	1.000	0.043	0.000	489	285.1	339	300	1.000	-
2866.99	0.000	1.000	0.038	0.000	556	324.1	386	341	1.000	-
3259.53	0.001	0.999	0.033	0.063	632	368.5	439	388	0.993	-
3706.75	0.009	0.991	0.029	0.118	718	419.1	499	441	0.913	-
4214.77	0.020	0.980	0.026	0.161	817	476.5	567	501	0.837	-
4790.74	0.032	0.968	0.022	0.211	928	541.6	645	570	0.767	-
5447.37	0.050	0.950	0.020	0.284	1056	615.9	733	648	0.690	-
6193.72	0.074	0.926	0.017	0.388	1200	700.2	834	736	0.611	-
7042.55	0.106	0.894	0.015	0.529	1365	796.2	948	837	0.527	-
8008.96	0.151	0.849	0.013	0.698	1552	905.5	1078	952	0.438	-
9107.03	0.210	0.790	0.012	0.858	1765	1029.6	1226	1083	0.346	-
10354.40	0.281	0.719	0.010	0.966	2007	1170.6	1394	1231	0.262	-
11773.20	0.357	0.643	0.009	1.000	2282	1331.0	1585	1400	0.192	-
13389.50	0.432	0.568	0.008	0.974	2595	1513.8	1802	1592	0.138	-
15222.80	0.502	0.498	0.007	0.928	2950	1721.0	2049	1810	0.099	-
17310.50	0.569	0.431	0.006	0.881	3355	1957.0	2330	2058	0.070	-
19682.30	0.634	0.366	0.005	0.825	3815	2225.2	2649	2340	0.049	-
22381.30	0.692	0.308	0.005	0.761	4338	2530.3	3012	2661	0.034	-
25449.90	0.747	0.253	0.004	0.700	4932	2877.2	3425	3026	0.023	-

Well : DMP Harvey-3

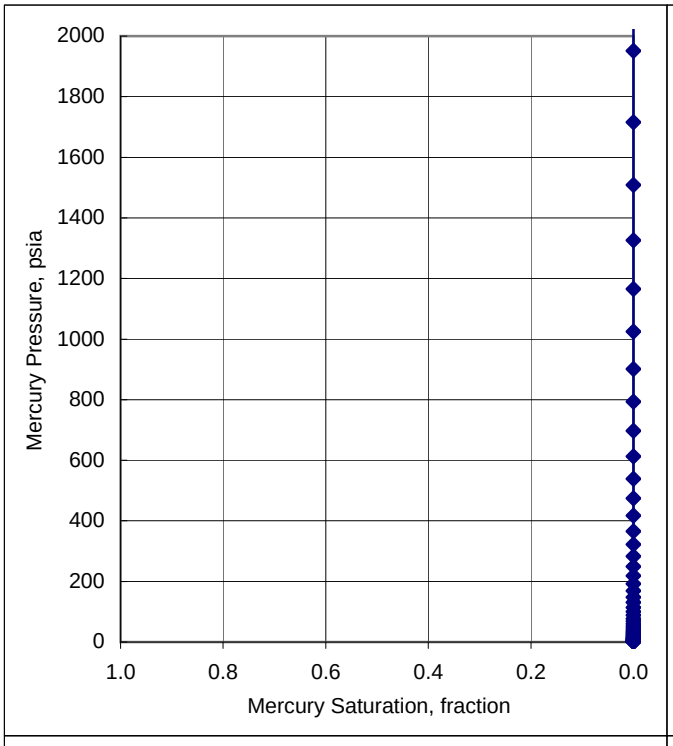
Sample Identification :	**PSSH9**
Sample Depth, m :	**778.40**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.154**
Injection Sample Pore Volume, cm^3 :	**0.906**
Injection Sample Bulk Volume, cm^3 :	**5.873**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.006**
Swanson's Parameter :	**5.09E-04**
Fzi :	

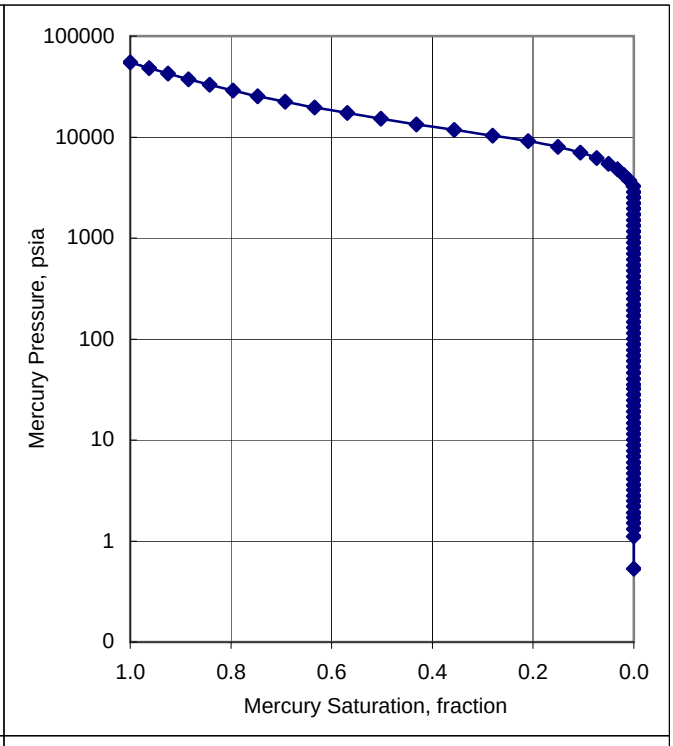
IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

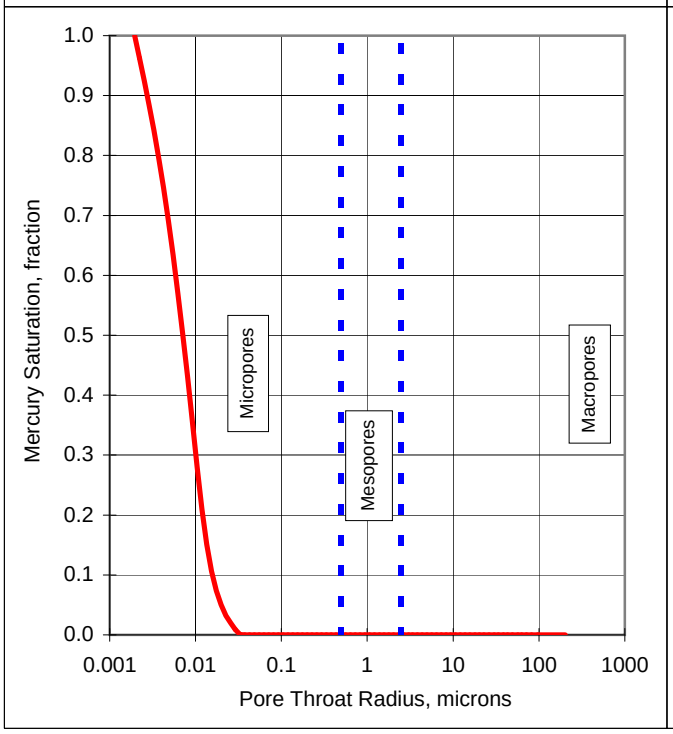
Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28938.00	0.796	0.204	0.004	0.644	5608	3271.6	3895	3441	0.016	-
32904.00	0.842	0.158	0.003	0.597	6377	3720.0	4429	3912	0.010	-
37413.80	0.884	0.116	0.003	0.558	7251	4229.8	5036	4448	0.007	-
42534.10	0.925	0.075	0.003	0.528	8243	4808.7	5725	5057	0.004	-
48354.90	0.962	0.038	0.002	0.385	9372	5466.8	6508	5749	0.002	-
54977.5	1.000	0.000	0.002	0.127	10655	6215.5	7399	6537	0.000	-

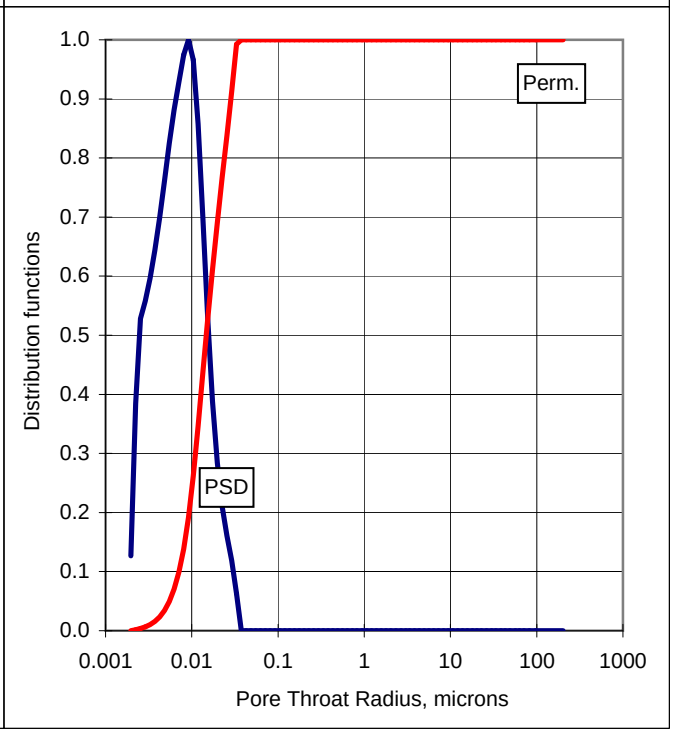
Well : DMP Harvey-3

Sample Identification :	**PSSH9**
Sample Depth, m :	**778.40**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.154**









Well : DMP Harvey-3

Sample Identification :	**PSSH3**
Sample Depth, m :	**1171.75**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.106**
Injection Sample Pore Volume, cm^3 :	**0.178**
Injection Sample Bulk Volume, cm^3 :	**1.684**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.020**
Swanson's Parameter :	**6.03E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.640	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	96.999	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.070	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.464	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.191	0.000	0.33	0.19	0.23	0.20	1.000	-
1.90	0.000	1.000	56.581	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	48.993	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.091	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.506	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.689	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.974	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.303	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.939	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.342	0.000	1.03	0.60	0.71	0.63	1.000	-
5.99	0.000	1.000	17.978	0.000	1.16	0.68	0.81	0.71	1.000	-
6.89	0.000	1.000	15.637	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.833	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.125	0.000	1.72	1.00	1.20	1.06	1.000	-
10.09	0.000	1.000	10.684	0.000	1.95	1.14	1.36	1.20	1.000	-
11.49	0.000	1.000	9.382	0.000	2.23	1.30	1.55	1.37	1.000	-
12.98	0.000	1.000	8.306	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.296	0.000	2.86	1.67	1.99	1.76	1.000	-
16.86	0.000	1.000	6.392	0.000	3.27	1.91	2.27	2.00	1.000	-
19.15	0.000	1.000	5.627	0.000	3.71	2.17	2.58	2.28	1.000	-
21.81	0.000	1.000	4.942	0.000	4.23	2.47	2.93	2.59	1.000	-
24.78	0.000	1.000	4.349	0.000	4.80	2.80	3.34	2.95	1.000	-
28.17	0.000	1.000	3.826	0.000	5.46	3.18	3.79	3.35	1.000	-
31.56	0.000	1.000	3.415	0.000	6.12	3.57	4.25	3.75	1.000	-
35.72	0.000	1.000	3.017	0.000	6.92	4.04	4.81	4.25	1.000	-
40.07	0.000	1.000	2.690	0.000	7.77	4.53	5.39	4.76	1.000	-
46.70	0.000	1.000	2.308	0.000	9.05	5.28	6.29	5.55	1.000	-
52.74	0.000	1.000	2.044	0.000	10.2	5.96	7.10	6.27	1.000	-
59.76	0.000	1.000	1.804	0.000	11.6	6.76	8.04	7.10	1.000	-
68.09	0.000	1.000	1.583	0.000	13.2	7.70	9.16	8.10	1.000	-
77.38	0.000	1.000	1.393	0.000	15.0	8.75	10.4	9.20	1.000	-
87.65	0.000	1.000	1.230	0.000	17.0	9.91	11.8	10.4	1.000	-
100.85	0.000	1.000	1.069	0.000	19.5	11.4	13.6	12.0	1.000	-
114.97	0.000	1.000	0.937	0.000	22.3	13.0	15.5	13.7	1.000	-
130.17	0.000	1.000	0.828	0.000	25.2	14.7	17.5	15.5	1.000	-
147.95	0.000	1.000	0.728	0.000	28.7	16.7	19.9	17.6	1.000	-

Well : DMP Harvey-3

Sample Identification :	**PSSH3**
Sample Depth, m :	**1171.75**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.106**
Injection Sample Pore Volume, cm^3 :	**0.178**
Injection Sample Bulk Volume, cm^3 :	**1.684**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.020**
Swanson's Parameter :	**6.03E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
168.83	0.000	1.000	0.638	0.000	32.7	19.1	22.7	20.1	1.000	-
192.07	0.000	1.000	0.561	0.000	37.2	21.7	25.9	22.8	1.000	-
218.80	0.000	1.000	0.493	0.000	42.4	24.7	29.4	26.0	1.000	-
249.72	0.000	1.000	0.432	0.000	48.4	28.2	33.6	29.7	1.000	-
283.59	0.000	1.000	0.380	0.000	55.0	32.1	38.2	33.7	1.000	-
323.50	0.000	1.000	0.333	0.000	62.7	36.6	43.5	38.5	1.000	-
365.73	0.000	1.000	0.295	0.000	70.9	41.3	49.2	43.5	1.000	-
416.87	0.000	1.000	0.259	0.000	80.8	47.1	56.1	49.6	1.000	-
474.42	0.000	1.000	0.227	0.000	91.9	53.6	63.9	56.4	1.000	-
538.94	0.000	1.000	0.200	0.000	104	60.9	72.5	64.1	1.000	-
613.29	0.000	1.000	0.176	0.000	119	69.3	82.5	72.9	1.000	-
697.35	0.000	1.000	0.155	0.000	135	78.8	93.9	82.9	1.000	-
792.10	0.000	1.000	0.136	0.000	154	89.6	107	94.2	1.000	-
901.55	0.000	1.000	0.120	0.000	175	102	121	107	1.000	-
1026.38	0.007	0.993	0.105	0.088	199	116	138	122	0.884	-
1167.38	0.015	0.985	0.092	0.130	226	132	157	139	0.781	-
1326.22	0.024	0.976	0.081	0.152	257	150	178	158	0.690	-
1507.78	0.034	0.966	0.071	0.181	292	170	203	179	0.606	-
1715.13	0.047	0.953	0.063	0.219	332	194	231	204	0.528	-
1950.88	0.063	0.937	0.055	0.270	378	221	263	232	0.455	-
2217.10	0.082	0.918	0.049	0.333	430	251	298	264	0.385	-
2521.11	0.106	0.894	0.043	0.404	489	285	339	300	0.317	-
2866.83	0.135	0.865	0.038	0.472	556	324	386	341	0.254	-
3259.86	0.169	0.831	0.033	0.520	632	369	439	388	0.197	-
3706.67	0.204	0.796	0.029	0.531	718	419	499	441	0.151	-
4214.79	0.240	0.760	0.026	0.510	817	477	567	501	0.115	-
4790.32	0.271	0.729	0.022	0.480	928	542	645	570	0.090	-
5446.89	0.302	0.698	0.020	0.454	1056	616	733	648	0.072	-
6193.62	0.331	0.669	0.017	0.432	1200	700	834	736	0.058	-
7043.32	0.358	0.642	0.015	0.426	1365	796	948	837	0.048	-
8009.09	0.386	0.614	0.013	0.448	1552	905	1078	952	0.041	-
9106.92	0.416	0.584	0.012	0.505	1765	1030	1226	1083	0.034	-
10354.60	0.451	0.549	0.010	0.604	2007	1171	1394	1231	0.029	-
11774.70	0.493	0.507	0.009	0.745	2282	1331	1585	1400	0.023	-
13388.30	0.547	0.453	0.008	0.898	2595	1514	1802	1592	0.018	-
15224.20	0.613	0.387	0.007	0.999	2951	1721	2049	1810	0.013	-
17311.20	0.683	0.317	0.006	1.000	3355	1957	2330	2058	0.008	-
19682.00	0.747	0.253	0.005	0.914	3815	2225	2649	2340	0.005	-
22381.20	0.803	0.197	0.005	0.786	4338	2530	3012	2661	0.003	-
25449.00	0.851	0.149	0.004	0.645	4932	2877	3425	3026	0.002	-

Well : DMP Harvey-3

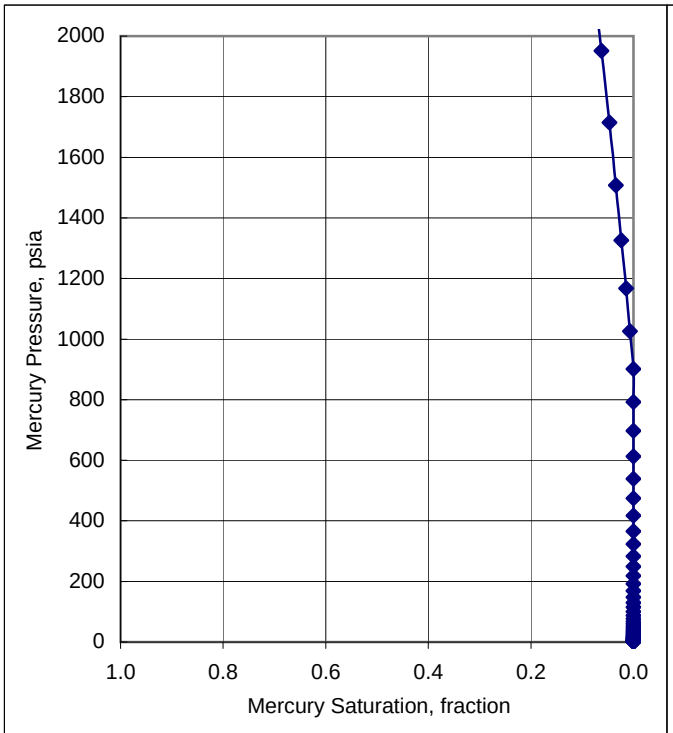
Sample Identification :	**PSSH3**
Sample Depth, m :	**1171.75**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.106**
Injection Sample Pore Volume, cm^3 :	**0.178**
Injection Sample Bulk Volume, cm^3 :	**1.684**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.020**
Swanson's Parameter :	**6.03E-04**
Fzi :	

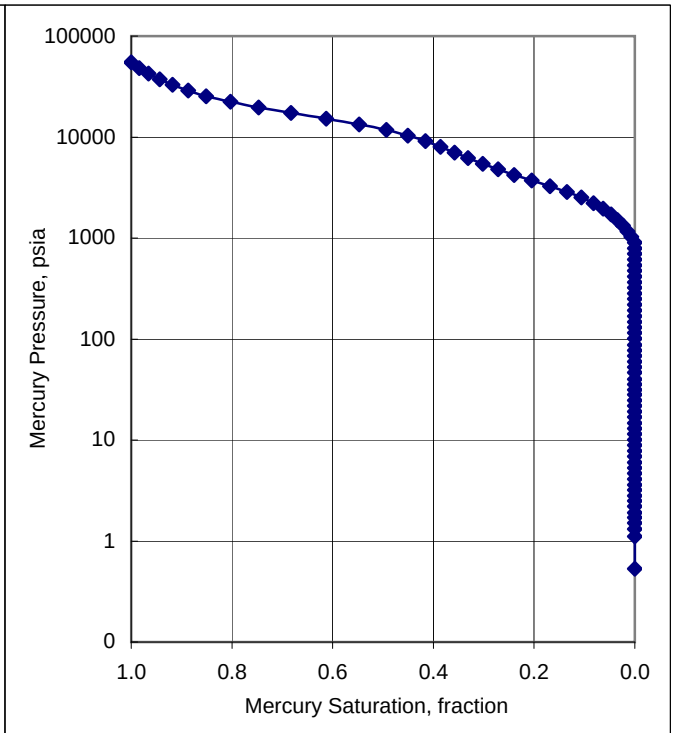
IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

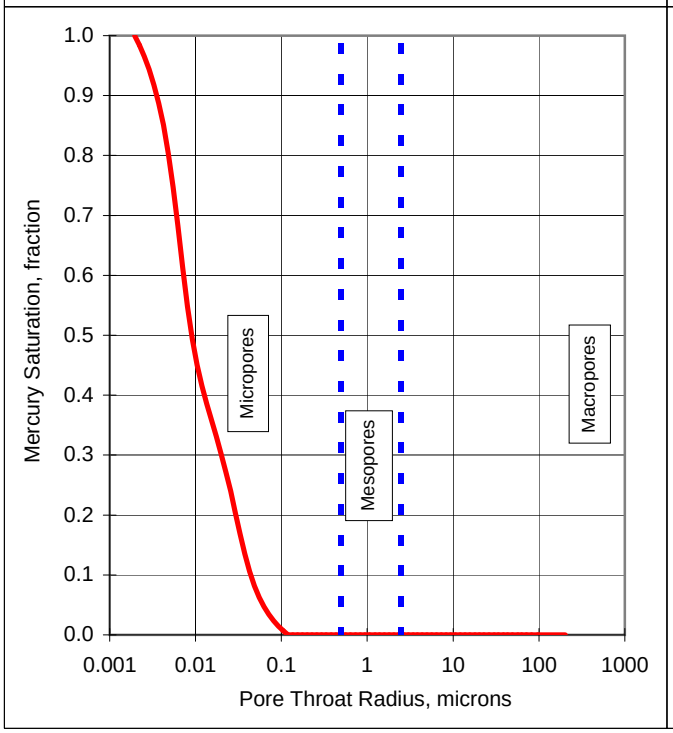
Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28937.70	0.887	0.113	0.004	0.523	5608	3272	3895	3441	0.001	-
32903.10	0.918	0.082	0.003	0.435	6377	3720	4428	3912	0.001	-
37412.70	0.944	0.056	0.003	0.366	7251	4230	5035	4448	0.000	-
42532.70	0.965	0.035	0.003	0.310	8243	4809	5724	5057	0.000	-
48355.90	0.984	0.016	0.002	0.209	9372	5467	6508	5749	0.000	-
54979.3	1.000	0.000	0.002	0.066	10655	6216	7400	6537	0.000	-

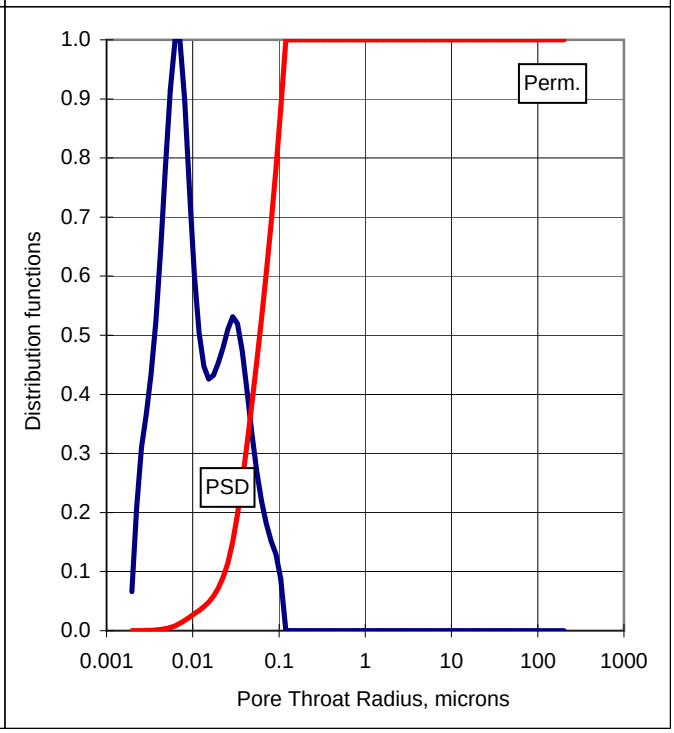
Well : DMP Harvey-3

Sample Identification : **PSSH3**
Sample Depth, m : **1171.75**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.106**









Well : DMP Harvey-3

Sample Identification :	**PSSH4**
Sample Depth, m :	**1333.10**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.109**
Injection Sample Pore Volume, cm^3 :	**0.693**
Injection Sample Bulk Volume, cm^3 :	**6.334**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.425**
Swanson's Parameter :	**2.12E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.032	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	97.270	0.000	0.21	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.399	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.430	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.035	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.506	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	49.036	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.113	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.514	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.708	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.940	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.302	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.951	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.350	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.967	0.000	1.16	0.68	0.81	0.71	1.000	-
6.89	0.000	1.000	15.633	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.833	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.122	0.000	1.72	1.01	1.20	1.06	1.000	-
10.09	0.000	1.000	10.684	0.000	1.95	1.14	1.36	1.20	1.000	-
11.48	0.000	1.000	9.386	0.000	2.23	1.30	1.55	1.37	1.000	-
12.97	0.000	1.000	8.308	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.296	0.000	2.86	1.67	1.99	1.76	1.000	-
16.86	0.000	1.000	6.392	0.000	3.27	1.91	2.27	2.00	1.000	-
19.15	0.000	1.000	5.628	0.000	3.71	2.17	2.58	2.28	1.000	-
21.79	0.000	1.000	4.945	0.000	4.22	2.46	2.93	2.59	1.000	-
24.78	0.000	1.000	4.349	0.000	4.80	2.80	3.34	2.95	1.000	-
28.16	0.000	1.000	3.827	0.003	5.46	3.18	3.79	3.35	0.921	-
32.06	0.000	1.000	3.362	0.006	6.21	3.62	4.31	3.81	0.921	-
35.09	0.001	0.999	3.071	0.014	6.80	3.97	4.72	4.17	0.888	-
40.28	0.002	0.998	2.676	0.024	7.81	4.55	5.42	4.79	0.790	-
46.35	0.003	0.997	2.325	0.031	8.98	5.24	6.24	5.51	0.673	-
52.99	0.005	0.995	2.034	0.038	10.3	5.99	7.13	6.30	0.578	-
60.62	0.006	0.994	1.778	0.044	11.7	6.85	8.16	7.21	0.489	-
68.96	0.009	0.991	1.563	0.050	13.4	7.80	9.28	8.20	0.408	-
77.79	0.011	0.989	1.385	0.055	15.1	8.79	10.5	9.25	0.353	-
87.97	0.013	0.987	1.225	0.058	17.0	9.95	11.8	10.5	0.293	-
101.86	0.016	0.984	1.058	0.060	19.7	11.5	13.7	12.1	0.246	-
114.64	0.019	0.981	0.940	0.062	22.2	13.0	15.4	13.6	0.213	-
130.71	0.021	0.979	0.824	0.066	25.3	14.8	17.6	15.5	0.185	-
148.40	0.024	0.976	0.726	0.070	28.8	16.8	20.0	17.6	0.161	-

Well : DMP Harvey-3

Sample Identification :	**PSSH4**
Sample Depth, m :	**1333.10**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.109**
Injection Sample Pore Volume, cm^3 :	**0.693**
Injection Sample Bulk Volume, cm^3 :	**6.334**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.425**
Swanson's Parameter :	**2.12E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.77	0.028	0.972	0.635	0.077	32.9	19.2	22.8	20.2	0.142	-
192.89	0.031	0.969	0.559	0.087	37.4	21.8	26.0	22.9	0.126	-
218.61	0.035	0.965	0.493	0.099	42.4	24.7	29.4	26.0	0.111	-
249.61	0.040	0.960	0.432	0.116	48.4	28.2	33.6	29.7	0.098	-
282.68	0.045	0.955	0.381	0.138	54.8	32.0	38.0	33.6	0.086	-
322.53	0.052	0.948	0.334	0.168	62.5	36.5	43.4	38.3	0.076	-
366.15	0.060	0.940	0.294	0.213	71.0	41.4	49.3	43.5	0.066	-
415.93	0.070	0.930	0.259	0.271	80.6	47.0	56.0	49.5	0.055	-
473.92	0.084	0.916	0.227	0.328	91.9	53.6	63.8	56.3	0.045	-
539.31	0.100	0.900	0.200	0.372	105	61.0	72.6	64.1	0.035	-
614.19	0.117	0.883	0.175	0.395	119	69.4	82.7	73.0	0.027	-
697.43	0.135	0.865	0.155	0.403	135	78.8	93.9	82.9	0.021	-
793.03	0.153	0.847	0.136	0.402	154	89.7	107	94.3	0.016	-
902.56	0.170	0.830	0.119	0.396	175	102	121	107	0.013	-
1025.34	0.188	0.812	0.105	0.387	199	116	138	122	0.010	-
1166.04	0.204	0.796	0.092	0.377	226	132	157	139	0.008	-
1325.77	0.221	0.779	0.081	0.369	257	150	178	158	0.006	-
1508.59	0.237	0.763	0.071	0.363	292	171	203	179	0.005	-
1714.56	0.253	0.747	0.063	0.360	332	194	231	204	0.004	-
1950.02	0.269	0.731	0.055	0.357	378	220	262	232	0.003	-
2217.88	0.284	0.716	0.049	0.359	430	251	299	264	0.003	-
2520.78	0.300	0.700	0.043	0.372	489	285	339	300	0.002	-
2866.29	0.317	0.683	0.038	0.394	556	324	386	341	0.002	-
3260.04	0.335	0.665	0.033	0.425	632	369	439	388	0.002	-
3706.86	0.354	0.646	0.029	0.461	718	419	499	441	0.001	-
4214.85	0.375	0.625	0.026	0.505	817	477	567	501	0.001	-
4791.08	0.398	0.602	0.022	0.575	929	542	645	570	0.001	-
5447.73	0.425	0.575	0.020	0.668	1056	616	733	648	0.001	-
6194.77	0.457	0.543	0.017	0.763	1201	700	834	737	0.001	-
7043.37	0.492	0.508	0.015	0.848	1365	796	948	837	0.000	-
8009.30	0.531	0.469	0.013	0.923	1552	905	1078	952	0.000	-
9107.99	0.574	0.426	0.012	0.975	1765	1030	1226	1083	0.000	-
10355.70	0.618	0.382	0.010	1.000	2007	1171	1394	1231	0.000	-
11775.40	0.663	0.337	0.009	1.000	2282	1331	1585	1400	0.000	-
13389.60	0.707	0.293	0.008	0.971	2595	1514	1802	1592	0.000	-
15224.90	0.749	0.251	0.007	0.907	2951	1721	2049	1810	0.000	-
17310.90	0.787	0.213	0.006	0.827	3355	1957	2330	2058	0.000	-
19683.50	0.821	0.179	0.005	0.781	3815	2225	2649	2340	0.000	-
22381.50	0.853	0.147	0.005	0.720	4338	2530	3012	2661	0.000	-
25450.10	0.892	0.108	0.004	0.566	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-3

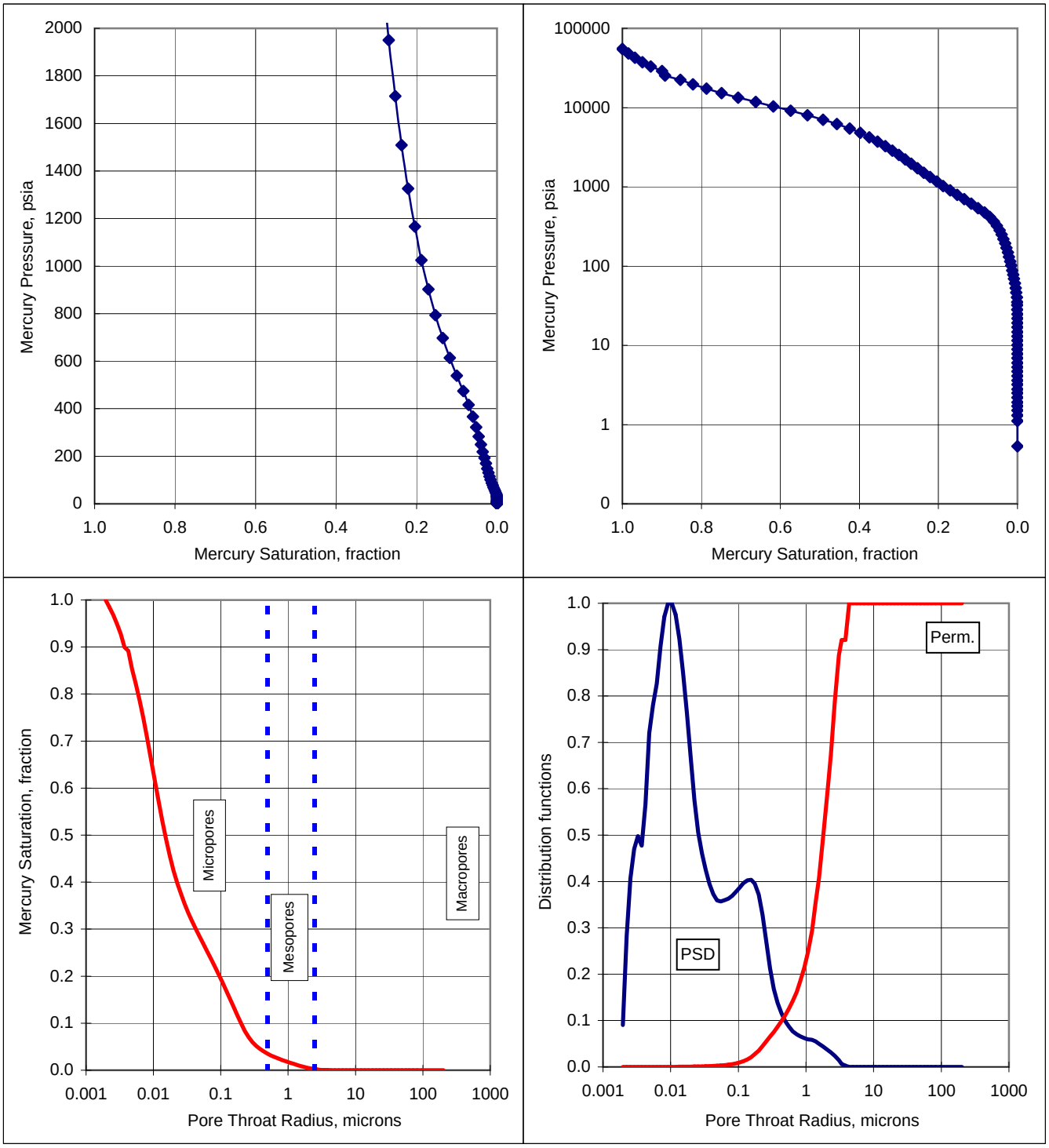
Sample Identification :	**PSSH4**
Sample Depth, m :	**1333.10**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.109**
Injection Sample Pore Volume, cm^3 :	**0.693**
Injection Sample Bulk Volume, cm^3 :	**6.334**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.425**
Swanson's Parameter :	**2.12E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28938.40	0.900	0.100	0.004	0.477	5609	3272	3895	3441	0.000	-
32903.90	0.928	0.072	0.003	0.498	6377	3720	4429	3912	0.000	-
37414.60	0.949	0.051	0.003	0.470	7251	4230	5036	4448	0.000	-
42534.50	0.968	0.032	0.003	0.406	8244	4809	5725	5057	0.000	-
48356.40	0.984	0.016	0.002	0.281	9372	5467	6508	5749	0.000	-
54980.9	1.000	0.000	0.002	0.090	10656	6216	7400	6537	0.000	-

Well : DMP Harvey-3

Sample Identification : **PSSH4**
Sample Depth, m : **1333.10**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.109**



Well : DMP Harvey-3

Sample Identification :	**PSSV2**
Sample Depth, m :	**1377.80**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.106**
Injection Sample Pore Volume, cm^3 :	**0.314**
Injection Sample Bulk Volume, cm^3 :	**2.973**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.280**
Swanson's Parameter :	**3.37E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	203.161	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	97.135	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.372	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.402	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.060	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.471	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	49.051	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.097	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.476	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.719	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.916	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.314	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.943	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.342	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.976	0.000	1.16	0.68	0.81	0.71	1.000	-
6.90	0.000	1.000	15.624	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.836	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.120	0.000	1.72	1.01	1.20	1.06	1.000	-
10.08	0.000	1.000	10.687	0.000	1.95	1.14	1.36	1.20	1.000	-
11.49	0.000	1.000	9.382	0.000	2.23	1.30	1.55	1.37	1.000	-
12.97	0.000	1.000	8.308	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.299	0.000	2.86	1.67	1.99	1.76	1.000	-
16.85	0.000	1.000	6.395	0.000	3.27	1.91	2.27	2.00	1.000	-
19.20	0.000	1.000	5.613	0.000	3.72	2.17	2.58	2.28	1.000	-
21.79	0.000	1.000	4.945	0.000	4.22	2.46	2.93	2.59	1.000	-
24.77	0.000	1.000	4.351	0.000	4.80	2.80	3.33	2.94	1.000	-
28.15	0.000	1.000	3.828	0.000	5.46	3.18	3.79	3.35	1.000	-
31.00	0.000	1.000	3.476	0.000	6.01	3.50	4.17	3.69	1.000	-
35.49	0.000	1.000	3.036	0.000	6.88	4.01	4.78	4.22	1.000	-
40.68	0.000	1.000	2.649	0.000	7.88	4.60	5.48	4.84	1.000	-
46.51	0.000	1.000	2.317	0.014	9.01	5.26	6.26	5.53	0.962	-
52.81	0.001	0.999	2.041	0.025	10.2	5.97	7.11	6.28	0.881	-
59.11	0.003	0.997	1.823	0.032	11.5	6.68	7.96	7.03	0.800	-
68.31	0.004	0.996	1.578	0.039	13.2	7.72	9.19	8.12	0.726	-
78.24	0.006	0.994	1.378	0.048	15.2	8.85	10.5	9.30	0.648	-
88.41	0.009	0.991	1.219	0.055	17.1	10.0	11.9	10.5	0.581	-
101.45	0.011	0.989	1.062	0.064	19.7	11.5	13.7	12.1	0.523	-
114.94	0.015	0.985	0.938	0.074	22.3	13.0	15.5	13.7	0.471	-
130.15	0.018	0.982	0.828	0.084	25.2	14.7	17.5	15.5	0.424	-
148.59	0.022	0.978	0.725	0.099	28.8	16.8	20.0	17.7	0.385	-

Well : DMP Harvey-3

Sample Identification :	**PSSV2**
Sample Depth, m :	**1377.80**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.106**
Injection Sample Pore Volume, cm^3 :	**0.314**
Injection Sample Bulk Volume, cm^3 :	**2.973**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.280**
Swanson's Parameter :	**3.37E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
168.83	0.027	0.973	0.638	0.130	32.7	19.1	22.7	20.1	0.347	-
192.83	0.034	0.966	0.559	0.179	37.4	21.8	26.0	22.9	0.307	-
219.15	0.043	0.957	0.492	0.238	42.5	24.8	29.5	26.1	0.263	-
249.17	0.056	0.944	0.433	0.301	48.3	28.2	33.5	29.6	0.220	-
283.79	0.071	0.929	0.380	0.362	55.0	32.1	38.2	33.7	0.178	-
322.57	0.089	0.911	0.334	0.413	62.5	36.5	43.4	38.4	0.139	-
366.57	0.109	0.891	0.294	0.444	71.0	41.4	49.3	43.6	0.107	-
417.13	0.131	0.869	0.258	0.450	80.8	47.2	56.1	49.6	0.080	-
473.85	0.151	0.849	0.227	0.438	91.8	53.6	63.8	56.3	0.060	-
539.44	0.170	0.830	0.200	0.424	105	61.0	72.6	64.1	0.045	-
613.25	0.190	0.810	0.176	0.409	119	69.3	82.5	72.9	0.034	-
698.06	0.208	0.792	0.154	0.391	135	78.9	94.0	83.0	0.025	-
794.19	0.226	0.774	0.136	0.372	154	89.8	107	94.4	0.019	-
902.11	0.242	0.758	0.119	0.353	175	102	121	107	0.015	-
1025.79	0.258	0.742	0.105	0.338	199	116	138	122	0.011	-
1167.15	0.273	0.727	0.092	0.329	226	132	157	139	0.009	-
1326.67	0.288	0.712	0.081	0.323	257	150	179	158	0.007	-
1508.31	0.303	0.697	0.071	0.320	292	171	203	179	0.006	-
1714.40	0.317	0.683	0.063	0.320	332	194	231	204	0.005	-
1949.29	0.332	0.668	0.055	0.324	378	220	262	232	0.004	-
2218.26	0.347	0.653	0.049	0.331	430	251	299	264	0.003	-
2520.63	0.362	0.638	0.043	0.343	489	285	339	300	0.003	-
2866.86	0.378	0.622	0.038	0.358	556	324	386	341	0.002	-
3259.50	0.395	0.605	0.033	0.379	632	369	439	388	0.002	-
3706.66	0.413	0.587	0.029	0.406	718	419	499	441	0.002	-
4214.29	0.432	0.568	0.026	0.441	817	476	567	501	0.001	-
4791.36	0.452	0.548	0.022	0.494	929	542	645	570	0.001	-
5446.48	0.477	0.523	0.020	0.570	1056	616	733	648	0.001	-
6194.57	0.504	0.496	0.017	0.670	1201	700	834	737	0.001	-
7043.53	0.537	0.463	0.015	0.788	1365	796	948	837	0.001	-
8009.11	0.576	0.424	0.013	0.899	1552	905	1078	952	0.000	-
9106.85	0.621	0.379	0.012	0.974	1765	1030	1226	1083	0.000	-
10355.10	0.667	0.333	0.010	1.000	2007	1171	1394	1231	0.000	-
11775.00	0.713	0.287	0.009	0.980	2282	1331	1585	1400	0.000	-
13387.90	0.757	0.243	0.008	0.925	2595	1514	1802	1592	0.000	-
15223.80	0.798	0.202	0.007	0.860	2951	1721	2049	1810	0.000	-
17309.70	0.836	0.164	0.006	0.798	3355	1957	2330	2058	0.000	-
19683.20	0.872	0.128	0.005	0.724	3815	2225	2649	2340	0.000	-
22381.30	0.902	0.098	0.005	0.642	4338	2530	3012	2661	0.000	-
25449.40	0.930	0.070	0.004	0.570	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-3

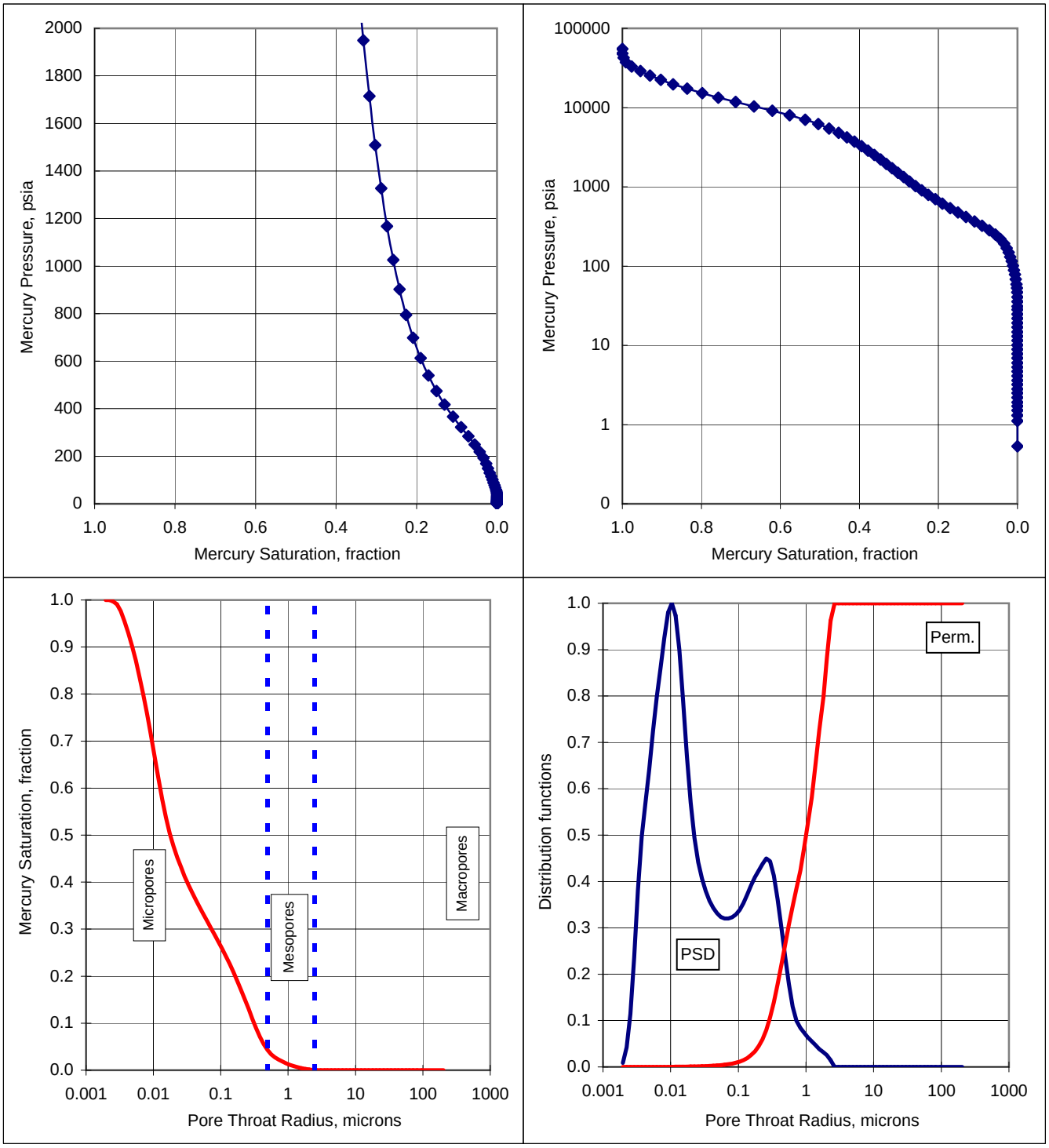
Sample Identification :	**PSSV2**
Sample Depth, m :	**1377.80**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.106**
Injection Sample Pore Volume, cm^3 :	**0.314**
Injection Sample Bulk Volume, cm^3 :	**2.973**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.280**
Swanson's Parameter :	**3.37E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28937.10	0.954	0.046	0.004	0.496	5608	3271	3895	3440	0.000	-
32903.30	0.977	0.023	0.003	0.382	6377	3720	4428	3912	0.000	-
37412.20	0.991	0.009	0.003	0.236	7251	4230	5035	4448	0.000	-
42533.70	0.997	0.003	0.003	0.114	8243	4809	5725	5057	0.000	-
48354.80	1.000	0.000	0.002	0.042	9372	5467	6508	5749	0.000	-
54977.5	1.000	0.000	0.002	0.009	10655	6215	7399	6537	0.000	-

Well : DMP Harvey-3

Sample Identification : **PSSV2**
Sample Depth, m : **1377.80**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.106**



Well : DMP Harvey-3

Sample Identification :	**PSSH5**
Sample Depth, m :	**1378.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.106**
Injection Sample Pore Volume, cm^3 :	**0.678**
Injection Sample Bulk Volume, cm^3 :	**6.420**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.141**
Swanson's Parameter :	**3.31E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.032	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	97.270	0.000	0.21	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.399	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.430	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.035	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.506	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	49.036	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.113	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.514	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.708	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.940	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.302	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.951	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.350	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.967	0.000	1.16	0.68	0.81	0.71	1.000	-
6.89	0.000	1.000	15.633	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.833	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.122	0.000	1.72	1.01	1.20	1.06	1.000	-
10.09	0.000	1.000	10.684	0.000	1.95	1.14	1.36	1.20	1.000	-
11.48	0.000	1.000	9.386	0.000	2.23	1.30	1.55	1.37	1.000	-
12.97	0.000	1.000	8.308	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.296	0.000	2.86	1.67	1.99	1.76	1.000	-
16.86	0.000	1.000	6.392	0.000	3.27	1.91	2.27	2.00	1.000	-
19.15	0.000	1.000	5.628	0.000	3.71	2.17	2.58	2.28	1.000	-
21.79	0.000	1.000	4.945	0.000	4.22	2.46	2.93	2.59	1.000	-
24.78	0.000	1.000	4.349	0.000	4.80	2.80	3.34	2.95	1.000	-
28.16	0.000	1.000	3.827	0.000	5.46	3.18	3.79	3.35	1.000	-
32.18	0.000	1.000	3.349	0.000	6.24	3.64	4.33	3.83	1.000	-
35.21	0.000	1.000	3.061	0.000	6.82	3.98	4.74	4.19	1.000	-
40.40	0.000	1.000	2.667	0.000	7.83	4.57	5.44	4.80	1.000	-
46.47	0.000	1.000	2.319	0.000	9.01	5.25	6.25	5.53	1.000	-
53.12	0.000	1.000	2.029	0.000	10.3	6.01	7.15	6.32	1.000	-
60.74	0.000	1.000	1.774	0.000	11.8	6.87	8.18	7.22	1.000	-
69.09	0.000	1.000	1.560	0.000	13.4	7.81	9.30	8.21	1.000	-
77.91	0.000	1.000	1.383	0.000	15.1	8.81	10.5	9.26	1.000	-
88.09	0.000	1.000	1.223	0.000	17.1	9.96	11.9	10.5	1.000	-
101.99	0.000	1.000	1.057	0.000	19.8	11.5	13.7	12.1	1.000	-
114.77	0.000	1.000	0.939	0.000	22.2	13.0	15.4	13.6	1.000	-
130.84	0.000	1.000	0.824	0.000	25.4	14.8	17.6	15.6	1.000	-
148.52	0.000	1.000	0.726	0.000	28.8	16.8	20.0	17.7	1.000	-

Well : DMP Harvey-3

Sample Identification :	**PSSH5**
Sample Depth, m :	**1378.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.106**
Injection Sample Pore Volume, cm^3 :	**0.678**
Injection Sample Bulk Volume, cm^3 :	**6.420**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.141**
Swanson's Parameter :	**3.31E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.88	0.000	1.000	0.634	0.000	32.9	19.2	22.9	20.2	1.000	-
192.98	0.000	1.000	0.558	0.000	37.4	21.8	26.0	22.9	1.000	-
218.67	0.013	0.987	0.493	0.347	42.4	24.7	29.4	26.0	0.851	-
249.62	0.035	0.965	0.432	0.532	48.4	28.2	33.6	29.7	0.659	-
282.63	0.060	0.940	0.381	0.572	54.8	32.0	38.0	33.6	0.484	-
322.43	0.084	0.916	0.334	0.555	62.5	36.5	43.4	38.3	0.358	-
366.00	0.106	0.894	0.294	0.531	70.9	41.4	49.3	43.5	0.266	-
415.74	0.128	0.872	0.259	0.505	80.6	47.0	56.0	49.4	0.196	-
473.70	0.148	0.852	0.228	0.478	91.8	53.6	63.8	56.3	0.146	-
539.06	0.168	0.832	0.200	0.455	104	60.9	72.6	64.1	0.109	-
613.92	0.187	0.813	0.176	0.433	119	69.4	82.6	73.0	0.081	-
697.15	0.204	0.796	0.155	0.408	135	78.8	93.8	82.9	0.061	-
792.73	0.221	0.779	0.136	0.387	154	89.6	107	94.3	0.047	-
902.25	0.236	0.764	0.119	0.373	175	102	121	107	0.036	-
1025.02	0.252	0.748	0.105	0.362	199	116	138	122	0.028	-
1165.71	0.267	0.733	0.092	0.350	226	132	157	139	0.022	-
1325.42	0.281	0.719	0.081	0.343	257	150	178	158	0.018	-
1508.31	0.295	0.705	0.071	0.342	292	171	203	179	0.014	-
1714.20	0.309	0.691	0.063	0.345	332	194	231	204	0.011	-
1949.64	0.324	0.676	0.055	0.349	378	220	262	232	0.009	-
2217.49	0.339	0.661	0.049	0.357	430	251	298	264	0.008	-
2520.38	0.354	0.646	0.043	0.370	488	285	339	300	0.006	-
2865.88	0.369	0.631	0.038	0.390	555	324	386	341	0.005	-
3259.61	0.386	0.614	0.033	0.416	632	369	439	388	0.004	-
3706.41	0.404	0.596	0.029	0.440	718	419	499	441	0.004	-
4214.39	0.423	0.577	0.026	0.474	817	476	567	501	0.003	-
4790.61	0.443	0.557	0.022	0.533	928	542	645	570	0.003	-
5447.23	0.467	0.533	0.020	0.613	1056	616	733	648	0.002	-
6194.26	0.494	0.506	0.017	0.706	1201	700	834	736	0.002	-
7042.84	0.526	0.474	0.015	0.810	1365	796	948	837	0.001	-
8008.74	0.562	0.438	0.013	0.910	1552	905	1078	952	0.001	-
9107.39	0.603	0.397	0.012	0.974	1765	1030	1226	1083	0.001	-
10355.00	0.644	0.356	0.010	0.998	2007	1171	1394	1231	0.001	-
11774.70	0.686	0.314	0.009	1.000	2282	1331	1585	1400	0.000	-
13388.90	0.729	0.271	0.008	0.968	2595	1514	1802	1592	0.000	-
15224.10	0.768	0.232	0.007	0.902	2951	1721	2049	1810	0.000	-
17310.10	0.804	0.196	0.006	0.829	3355	1957	2330	2058	0.000	-
19682.70	0.838	0.162	0.005	0.747	3815	2225	2649	2340	0.000	-
22380.70	0.866	0.134	0.005	0.664	4338	2530	3012	2661	0.000	-
25449.30	0.893	0.107	0.004	0.590	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-3

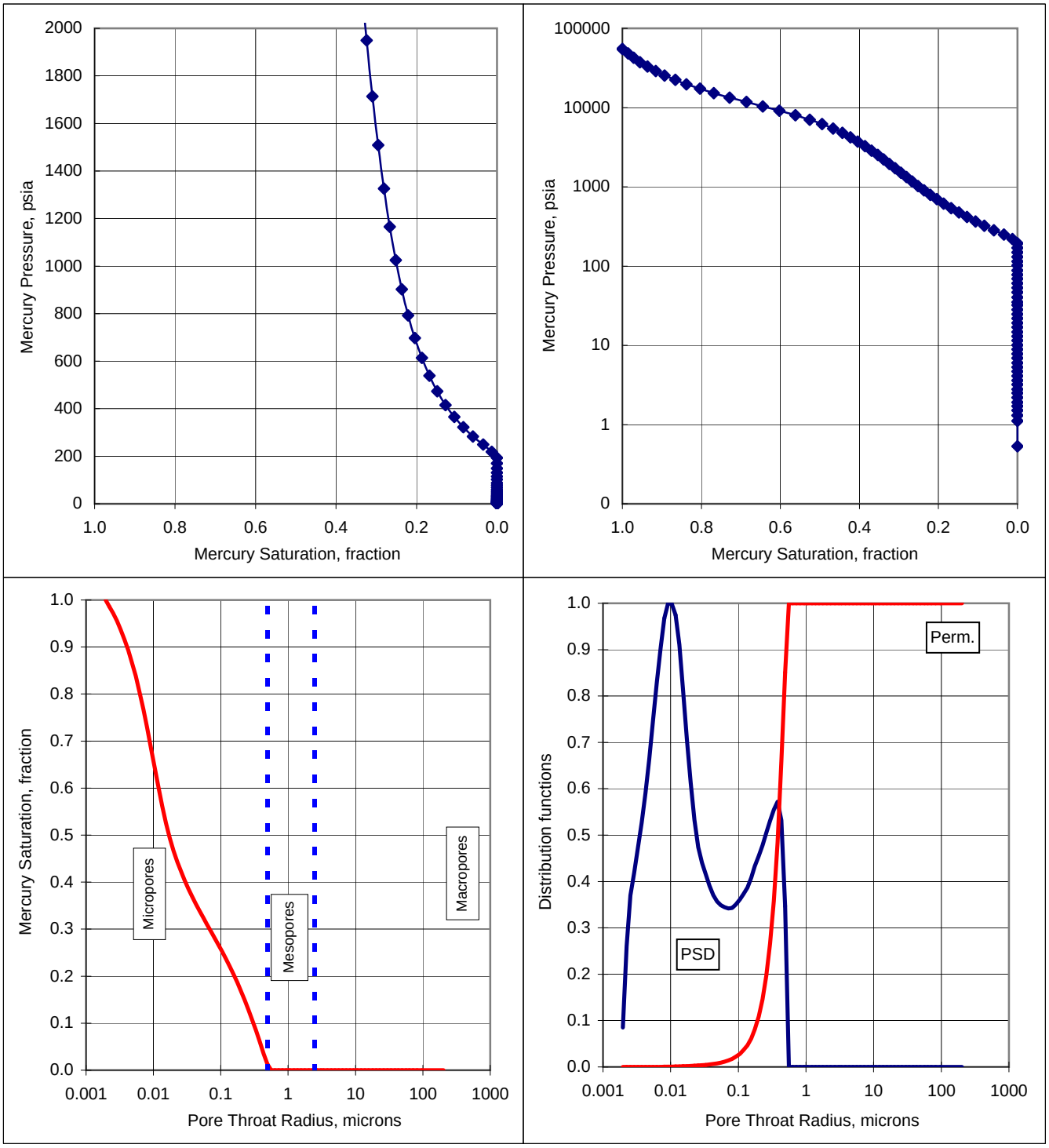
Sample Identification :	**PSSH5**
Sample Depth, m :	**1378.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.106**
Injection Sample Pore Volume, cm^3 :	**0.678**
Injection Sample Bulk Volume, cm^3 :	**6.420**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.141**
Swanson's Parameter :	**3.31E-03**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28937.60	0.916	0.084	0.004	0.527	5608	3272	3895	3441	0.000	-
32903.00	0.936	0.064	0.003	0.473	6377	3720	4428	3912	0.000	-
37413.70	0.955	0.045	0.003	0.419	7251	4230	5035	4448	0.000	-
42533.60	0.972	0.028	0.003	0.370	8243	4809	5725	5057	0.000	-
48355.50	0.985	0.015	0.002	0.261	9372	5467	6508	5749	0.000	-
54980.0	1.000	0.000	0.002	0.085	10656	6216	7400	6537	0.000	-

Well : DMP Harvey-3

Sample Identification : **PSSH5**
Sample Depth, m : **1378.00**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.106**



Well : DMP Harvey-3

Sample Identification :	**PSSV3**
Sample Depth, m :	**1393.42**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.108**
Injection Sample Pore Volume, cm^3 :	**0.215**
Injection Sample Bulk Volume, cm^3 :	**1.979**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.018**
Swanson's Parameter :	**3.48E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.546	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	97.315	0.000	0.21	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.424	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.444	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.081	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.511	0.000	0.37	0.22	0.26	0.23	1.000	-
2.19	0.000	1.000	49.110	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.162	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.543	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.693	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.943	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.304	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.938	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.349	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.974	0.000	1.16	0.68	0.81	0.71	1.000	-
6.89	0.000	1.000	15.634	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.830	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.124	0.000	1.72	1.00	1.20	1.06	1.000	-
10.09	0.000	1.000	10.685	0.000	1.95	1.14	1.36	1.20	1.000	-
11.49	0.000	1.000	9.384	0.000	2.23	1.30	1.55	1.37	1.000	-
12.98	0.000	1.000	8.305	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.000	1.000	7.295	0.000	2.86	1.67	1.99	1.76	1.000	-
16.85	0.000	1.000	6.395	0.000	3.27	1.91	2.27	2.00	1.000	-
19.21	0.000	1.000	5.611	0.000	3.72	2.17	2.59	2.28	1.000	-
21.79	0.000	1.000	4.945	0.000	4.22	2.46	2.93	2.59	1.000	-
24.79	0.000	1.000	4.348	0.000	4.80	2.80	3.34	2.95	1.000	-
28.16	0.000	1.000	3.827	0.000	5.46	3.18	3.79	3.35	1.000	-
31.61	0.000	1.000	3.409	0.000	6.13	3.57	4.25	3.76	1.000	-
35.42	0.000	1.000	3.043	0.000	6.86	4.00	4.77	4.21	1.000	-
40.48	0.000	1.000	2.662	0.000	7.85	4.58	5.45	4.81	1.000	-
46.58	0.000	1.000	2.314	0.000	9.03	5.27	6.27	5.54	1.000	-
52.64	0.000	1.000	2.047	0.000	10.2	5.95	7.09	6.26	1.000	-
60.10	0.000	1.000	1.793	0.000	11.6	6.79	8.09	7.15	1.000	-
68.17	0.000	1.000	1.581	0.000	13.2	7.71	9.17	8.10	1.000	-
77.53	0.000	1.000	1.390	0.000	15.0	8.76	10.4	9.22	1.000	-
88.65	0.000	1.000	1.216	0.000	17.2	10.0	11.9	10.5	1.000	-
100.75	0.000	1.000	1.070	0.000	19.5	11.4	13.6	12.0	1.000	-
114.85	0.000	1.000	0.938	0.000	22.3	13.0	15.5	13.7	1.000	-
130.66	0.000	1.000	0.825	0.000	25.3	14.8	17.6	15.5	1.000	-
149.28	0.000	1.000	0.722	0.000	28.9	16.9	20.1	17.7	1.000	-

Well : DMP Harvey-3

Sample Identification :	**PSSV3**
Sample Depth, m :	**1393.42**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.108**
Injection Sample Pore Volume, cm^3 :	**0.215**
Injection Sample Bulk Volume, cm^3 :	**1.979**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.018**
Swanson's Parameter :	**3.48E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.44	0.000	1.000	0.636	0.000	32.8	19.2	22.8	20.1	1.000	-
192.17	0.000	1.000	0.561	0.000	37.2	21.7	25.9	22.8	1.000	-
219.49	0.000	1.000	0.491	0.000	42.5	24.8	29.5	26.1	1.000	-
248.92	0.000	1.000	0.433	0.000	48.2	28.1	33.5	29.6	1.000	-
283.44	0.000	1.000	0.380	0.000	54.9	32.0	38.1	33.7	1.000	-
322.69	0.000	1.000	0.334	0.000	62.5	36.5	43.4	38.4	1.000	-
366.63	0.000	1.000	0.294	0.000	71.1	41.4	49.3	43.6	1.000	-
417.68	0.000	1.000	0.258	0.000	81.0	47.2	56.2	49.7	1.000	-
474.23	0.000	1.000	0.227	0.000	91.9	53.6	63.8	56.4	1.000	-
539.61	0.000	1.000	0.200	0.000	105	61.0	72.6	64.2	1.000	-
613.30	0.000	1.000	0.176	0.000	119	69.3	82.5	72.9	1.000	-
697.24	0.000	1.000	0.155	0.000	135	78.8	93.8	82.9	1.000	-
793.21	0.001	0.999	0.136	0.028	154	89.7	107	94.3	0.970	-
901.75	0.004	0.996	0.120	0.050	175	102	121	107	0.849	-
1026.32	0.008	0.992	0.105	0.062	199	116	138	122	0.729	-
1166.49	0.013	0.987	0.092	0.067	226	132	157	139	0.630	-
1325.65	0.018	0.982	0.081	0.069	257	150	178	158	0.546	-
1508.09	0.022	0.978	0.071	0.075	292	170	203	179	0.488	-
1714.73	0.028	0.972	0.063	0.088	332	194	231	204	0.432	-
1950.02	0.034	0.966	0.055	0.101	378	220	262	232	0.378	-
2217.69	0.042	0.958	0.049	0.116	430	251	298	264	0.335	-
2520.55	0.050	0.950	0.043	0.131	489	285	339	300	0.295	-
2866.19	0.060	0.940	0.038	0.143	555	324	386	341	0.258	-
3260.16	0.069	0.931	0.033	0.166	632	369	439	388	0.233	-
3706.63	0.083	0.917	0.029	0.201	718	419	499	441	0.204	-
4215.18	0.097	0.903	0.026	0.240	817	477	567	501	0.179	-
4790.78	0.115	0.885	0.022	0.286	928	542	645	570	0.156	-
5447.67	0.137	0.863	0.020	0.337	1056	616	733	648	0.134	-
6194.45	0.162	0.838	0.017	0.390	1201	700	834	736	0.115	-
7043.88	0.190	0.810	0.015	0.460	1365	796	948	837	0.098	-
8009.59	0.225	0.775	0.013	0.545	1552	906	1078	952	0.081	-
9107.29	0.265	0.735	0.012	0.634	1765	1030	1226	1083	0.067	-
10355.00	0.313	0.687	0.010	0.717	2007	1171	1394	1231	0.054	-
11775.10	0.365	0.635	0.009	0.798	2282	1331	1585	1400	0.042	-
13388.80	0.422	0.578	0.008	0.879	2595	1514	1802	1592	0.033	-
15224.20	0.488	0.512	0.007	0.938	2951	1721	2049	1810	0.024	-
17310.60	0.552	0.448	0.006	0.983	3355	1957	2330	2058	0.018	-
19682.20	0.624	0.376	0.005	1.000	3815	2225	2649	2340	0.013	-
22380.20	0.695	0.305	0.005	0.933	4337	2530	3012	2661	0.008	-
25449.60	0.756	0.244	0.004	0.797	4932	2877	3425	3026	0.005	-

Well : DMP Harvey-3

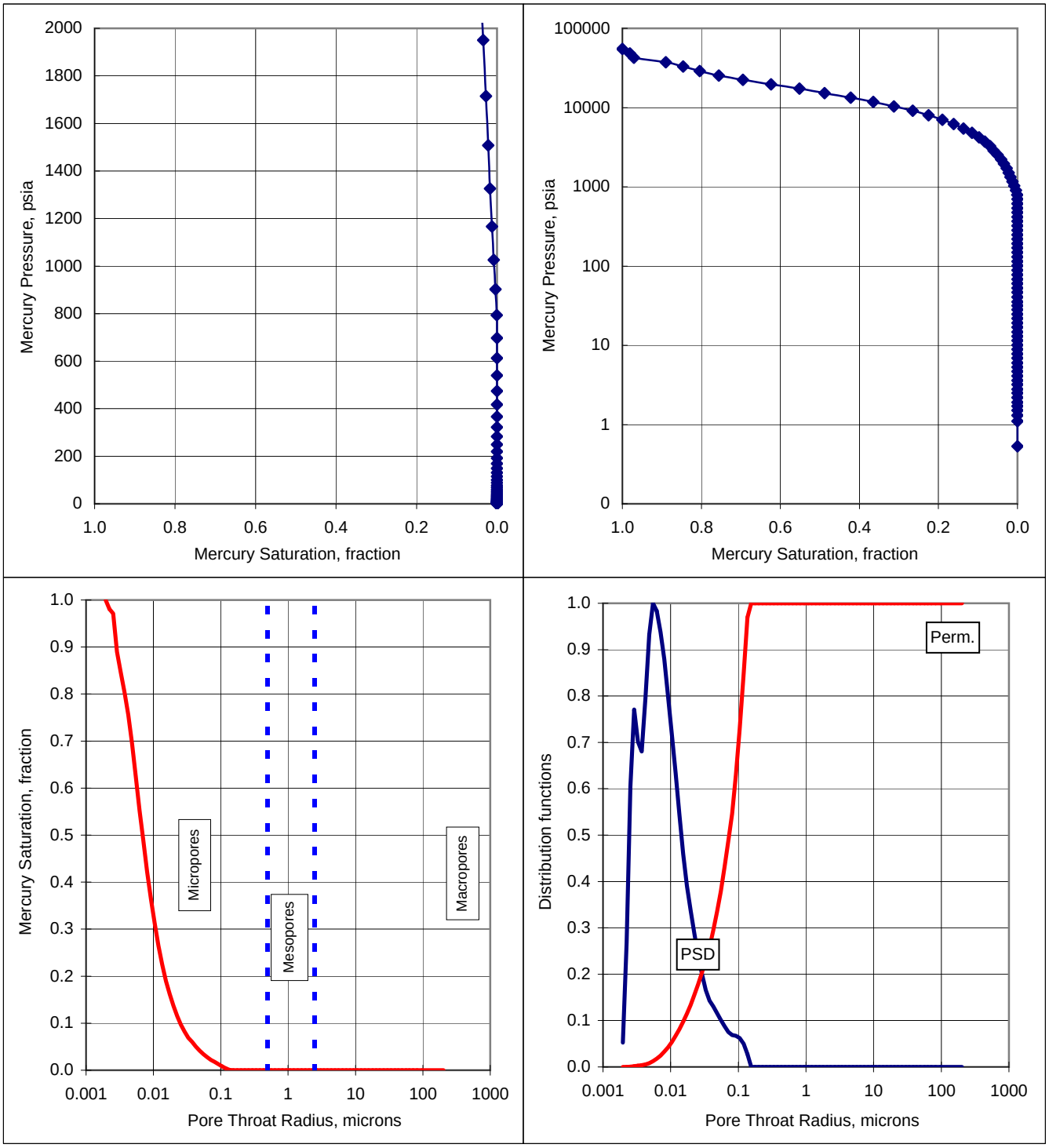
Sample Identification :	**PSSV3**
Sample Depth, m :	**1393.42**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.108**
Injection Sample Pore Volume, cm^3 :	**0.215**
Injection Sample Bulk Volume, cm^3 :	**1.979**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.018**
Swanson's Parameter :	**3.48E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28938.50	0.804	0.196	0.004	0.680	5609	3272	3895	3441	0.004	-
32904.00	0.846	0.154	0.003	0.701	6377	3720	4429	3912	0.003	-
37399.90	0.890	0.110	0.003	0.771	7248	4228	5034	4447	0.002	-
42532.40	0.971	0.029	0.003	0.605	8243	4809	5724	5057	0.000	-
48354.30	0.981	0.019	0.002	0.268	9371	5467	6508	5749	0.000	-
54977.4	1.000	0.000	0.002	0.052	10655	6215	7399	6537	0.000	-

Well : DMP Harvey-3

Sample Identification : **PSSV3**
Sample Depth, m : **1393.42**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.108**



Well : DMP Harvey-3

Sample Identification :	**PSSH6**
Sample Depth, m :	**1416.70**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.070**
Injection Sample Pore Volume, cm^3 :	**0.491**
Injection Sample Bulk Volume, cm^3 :	**6.980**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.057**
Swanson's Parameter :	**2.25E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	203.293	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	96.797	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.464	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.379	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.118	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.510	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	49.037	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.063	0.000	0.49	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.500	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.704	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.915	0.000	0.70	0.41	0.48	0.43	1.000	-
4.09	0.000	1.000	26.321	0.000	0.79	0.46	0.55	0.49	1.000	-
4.69	0.000	1.000	22.956	0.000	0.91	0.53	0.63	0.56	1.000	-
5.31	0.000	1.000	20.315	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.971	0.000	1.16	0.68	0.81	0.71	1.000	-
6.90	0.000	1.000	15.623	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.840	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.122	0.000	1.72	1.01	1.20	1.06	1.000	-
10.08	0.000	1.000	10.690	0.000	1.95	1.14	1.36	1.20	1.000	-
11.48	0.000	1.000	9.391	0.000	2.22	1.30	1.54	1.36	1.000	-
12.97	0.000	1.000	8.307	0.000	2.51	1.47	1.75	1.54	1.000	-
14.76	0.000	1.000	7.301	0.000	2.86	1.67	1.99	1.76	1.000	-
16.86	0.000	1.000	6.392	0.000	3.27	1.91	2.27	2.00	1.000	-
19.21	0.000	1.000	5.610	0.000	3.72	2.17	2.59	2.28	1.000	-
21.80	0.000	1.000	4.945	0.000	4.22	2.46	2.93	2.59	1.000	-
24.78	0.000	1.000	4.349	0.000	4.80	2.80	3.33	2.95	1.000	-
28.16	0.000	1.000	3.827	0.000	5.46	3.18	3.79	3.35	1.000	-
31.90	0.000	1.000	3.379	0.000	6.18	3.61	4.29	3.79	1.000	-
35.93	0.000	1.000	3.000	0.000	6.96	4.06	4.84	4.27	1.000	-
40.16	0.000	1.000	2.683	0.000	7.78	4.54	5.41	4.78	1.000	-
46.42	0.000	1.000	2.322	0.000	9.00	5.25	6.25	5.52	1.000	-
53.10	0.000	1.000	2.030	0.000	10.3	6.00	7.15	6.31	1.000	-
59.84	0.000	1.000	1.801	0.000	11.6	6.77	8.05	7.11	1.000	-
68.66	0.000	1.000	1.570	0.000	13.3	7.76	9.24	8.16	1.000	-
77.78	0.000	1.000	1.386	0.000	15.1	8.79	10.5	9.25	1.000	-
88.63	0.000	1.000	1.216	0.000	17.2	10.0	11.9	10.5	1.000	-
101.55	0.000	1.000	1.061	0.000	19.7	11.5	13.7	12.1	1.000	-
115.07	0.000	1.000	0.937	0.000	22.3	13.0	15.5	13.7	1.000	-
129.68	0.000	1.000	0.831	0.000	25.1	14.7	17.5	15.4	1.000	-
148.52	0.000	1.000	0.726	0.000	28.8	16.8	20.0	17.7	1.000	-

Well : DMP Harvey-3

Sample Identification :	**PSSH6**
Sample Depth, m :	**1416.70**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.070**
Injection Sample Pore Volume, cm^3 :	**0.491**
Injection Sample Bulk Volume, cm^3 :	**6.980**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.057**
Swanson's Parameter :	**2.25E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.65	0.000	1.000	0.635	0.000	32.9	19.2	22.8	20.2	1.000	-
192.54	0.000	1.000	0.560	0.000	37.3	21.8	25.9	22.9	1.000	-
219.06	0.000	1.000	0.492	0.000	42.5	24.8	29.5	26.0	1.000	-
248.55	0.001	0.999	0.434	0.009	48.2	28.1	33.5	29.6	0.910	-
282.97	0.002	0.998	0.381	0.014	54.8	32.0	38.1	33.6	0.734	-
322.30	0.004	0.996	0.334	0.016	62.5	36.4	43.4	38.3	0.596	-
366.48	0.006	0.994	0.294	0.016	71.0	41.4	49.3	43.6	0.474	-
416.77	0.008	0.992	0.259	0.016	80.8	47.1	56.1	49.6	0.391	-
474.89	0.010	0.990	0.227	0.017	92.0	53.7	63.9	56.5	0.324	-
538.84	0.011	0.989	0.200	0.017	104	60.9	72.5	64.1	0.267	-
614.27	0.013	0.987	0.175	0.018	119	69.4	82.7	73.0	0.227	-
696.81	0.015	0.985	0.155	0.019	135	78.8	93.8	82.8	0.191	-
792.43	0.017	0.983	0.136	0.019	154	89.6	107	94.2	0.163	-
901.45	0.020	0.980	0.120	0.020	175	102	121	107	0.141	-
1025.75	0.022	0.978	0.105	0.022	199	116	138	122	0.122	-
1165.75	0.024	0.976	0.092	0.023	226	132	157	139	0.106	-
1325.92	0.027	0.973	0.081	0.025	257	150	178	158	0.095	-
1507.23	0.030	0.970	0.072	0.028	292	170	203	179	0.083	-
1715.50	0.033	0.967	0.063	0.031	332	194	231	204	0.074	-
1950.30	0.037	0.963	0.055	0.034	378	220	262	232	0.067	-
2217.54	0.041	0.959	0.049	0.038	430	251	298	264	0.059	-
2520.74	0.045	0.955	0.043	0.043	489	285	339	300	0.054	-
2867.26	0.050	0.950	0.038	0.048	556	324	386	341	0.048	-
3259.67	0.056	0.944	0.033	0.055	632	369	439	388	0.044	-
3706.97	0.062	0.938	0.029	0.062	718	419	499	441	0.040	-
4214.67	0.070	0.930	0.026	0.071	817	476	567	501	0.037	-
4791.19	0.078	0.922	0.022	0.083	929	542	645	570	0.034	-
5447.72	0.088	0.912	0.020	0.098	1056	616	733	648	0.031	-
6194.29	0.099	0.901	0.017	0.118	1201	700	834	736	0.028	-
7043.66	0.113	0.887	0.015	0.146	1365	796	948	837	0.026	-
8009.41	0.131	0.869	0.013	0.187	1552	906	1078	952	0.024	-
9106.52	0.153	0.847	0.012	0.249	1765	1030	1226	1083	0.021	-
10355.90	0.184	0.816	0.010	0.352	2007	1171	1394	1231	0.019	-
11774.60	0.228	0.772	0.009	0.518	2282	1331	1585	1400	0.016	-
13389.40	0.294	0.706	0.008	0.743	2595	1514	1802	1592	0.013	-
15224.00	0.392	0.608	0.007	0.943	2951	1721	2049	1810	0.010	-
17311.10	0.514	0.486	0.006	1.000	3355	1957	2330	2058	0.006	-
19682.70	0.625	0.375	0.005	0.895	3815	2225	2649	2340	0.004	-
22381.00	0.716	0.284	0.005	0.718	4338	2530	3012	2661	0.002	-
25450.10	0.782	0.218	0.004	0.558	4932	2877	3425	3026	0.001	-

Well : DMP Harvey-3

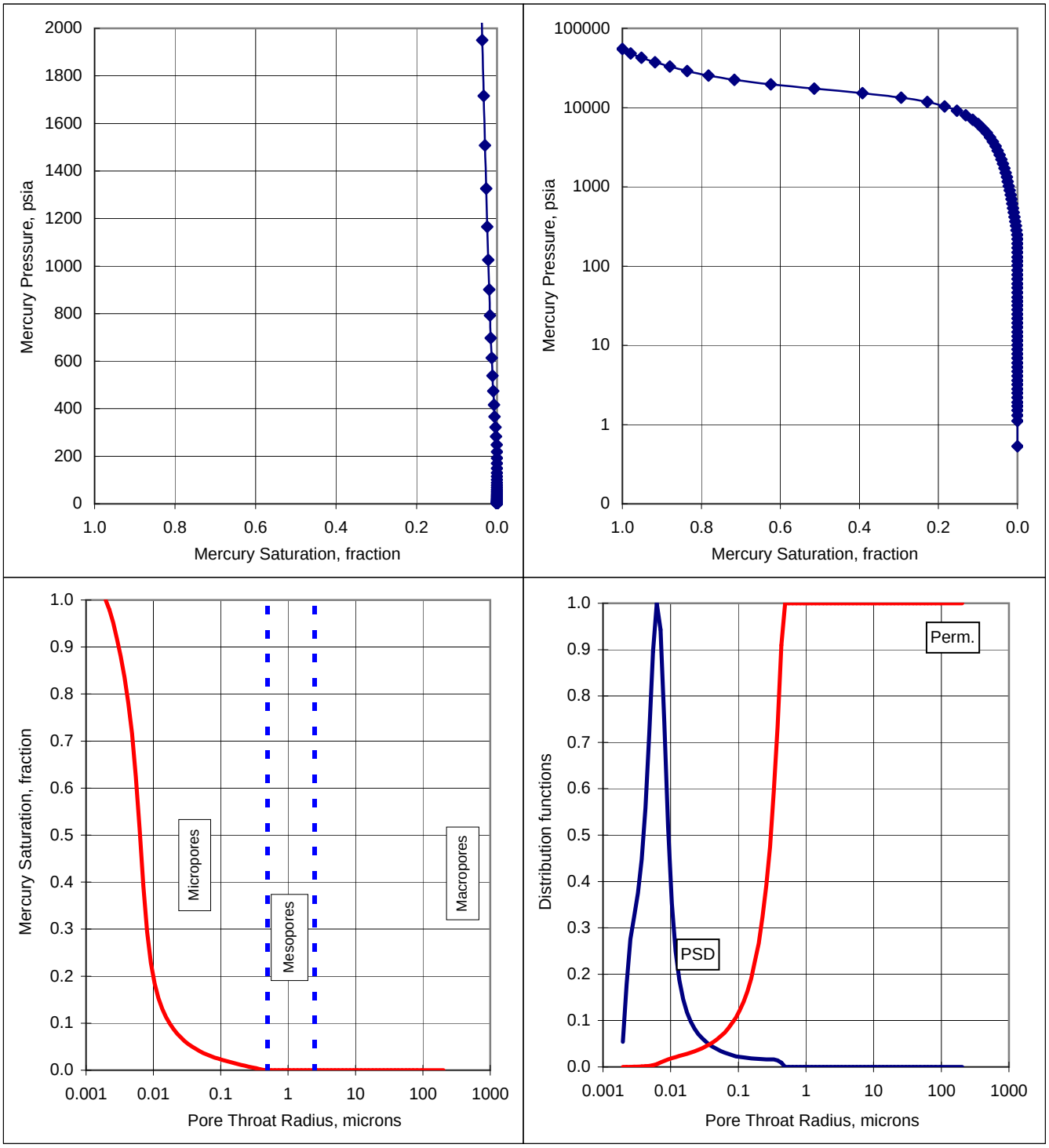
Sample Identification :	**PSSH6**
Sample Depth, m :	**1416.70**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.070**
Injection Sample Pore Volume, cm^3 :	**0.491**
Injection Sample Bulk Volume, cm^3 :	**6.980**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**0.057**
Swanson's Parameter :	**2.25E-04**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28937.80	0.836	0.164	0.004	0.448	5608	3272	3895	3441	0.001	-
32904.00	0.880	0.120	0.003	0.375	6377	3720	4429	3912	0.001	-
37414.80	0.917	0.083	0.003	0.324	7251	4230	5036	4448	0.000	-
42534.50	0.952	0.048	0.003	0.276	8244	4809	5725	5057	0.000	-
48356.70	0.979	0.021	0.002	0.179	9372	5467	6508	5749	0.000	-
54978.7	1.000	0.000	0.002	0.054	10655	6216	7400	6537	0.000	-

Well : DMP Harvey-3

Sample Identification : **PSSH6**
Sample Depth, m : **1416.70**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.070**



Well : DMP Harvey-3

Sample Identification :	**11**
Sample Depth, m :	**1420.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.211**
Injection Sample Pore Volume, cm^3 :	**1.063**
Injection Sample Bulk Volume, cm^3 :	**5.040**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**1.754**
Swanson's Parameter :	**1.00E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.640	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	96.999	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.070	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.464	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.191	0.000	0.33	0.19	0.23	0.20	1.000	-
1.90	0.000	1.000	56.581	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	48.993	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.091	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.506	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.689	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.974	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.303	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.939	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.342	0.000	1.03	0.60	0.71	0.63	1.000	-
5.99	0.000	1.000	17.978	0.000	1.16	0.68	0.81	0.71	1.000	-
6.89	0.000	1.000	15.637	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.833	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.125	0.000	1.72	1.00	1.20	1.06	1.000	-
10.09	0.000	1.000	10.684	0.000	1.95	1.14	1.36	1.20	1.000	-
11.49	0.000	1.000	9.382	0.000	2.23	1.30	1.55	1.37	1.000	-
12.98	0.000	1.000	8.306	0.000	2.51	1.47	1.75	1.54	1.000	-
14.77	0.008	0.992	7.296	0.266	2.86	1.67	1.99	1.76	0.890	-
16.86	0.022	0.978	6.392	0.402	3.27	1.91	2.27	2.00	0.759	-
19.15	0.034	0.966	5.627	0.502	3.71	2.17	2.58	2.28	0.667	-
21.81	0.052	0.948	4.942	0.673	4.23	2.47	2.93	2.59	0.555	-
24.78	0.074	0.926	4.349	0.881	4.80	2.80	3.34	2.95	0.453	-
28.17	0.110	0.890	3.826	1.000	5.46	3.18	3.79	3.35	0.325	-
31.86	0.138	0.862	3.382	0.990	6.18	3.60	4.29	3.79	0.247	-
35.21	0.165	0.835	3.061	0.901	6.82	3.98	4.74	4.19	0.188	-
40.08	0.190	0.810	2.689	0.793	7.77	4.53	5.39	4.77	0.144	-
45.89	0.215	0.785	2.348	0.729	8.89	5.19	6.18	5.46	0.110	-
52.78	0.239	0.761	2.042	0.718	10.2	5.97	7.10	6.28	0.085	-
60.15	0.262	0.738	1.792	0.743	11.7	6.80	8.10	7.15	0.067	-
68.36	0.285	0.715	1.576	0.776	13.2	7.73	9.20	8.13	0.053	-
77.23	0.311	0.689	1.395	0.786	15.0	8.73	10.4	9.18	0.041	-
88.29	0.335	0.665	1.221	0.785	17.1	9.98	11.9	10.5	0.032	-
100.33	0.360	0.640	1.074	0.799	19.4	11.3	13.5	11.9	0.025	-
114.07	0.386	0.614	0.945	0.814	22.1	12.9	15.4	13.6	0.019	-
130.41	0.413	0.587	0.826	0.825	25.3	14.7	17.6	15.5	0.015	-
147.80	0.438	0.562	0.729	0.836	28.6	16.7	19.9	17.6	0.011	-

Well : DMP Harvey-3

Sample Identification :	**11**
Sample Depth, m :	**1420.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.211**
Injection Sample Pore Volume, cm^3 :	**1.063**
Injection Sample Bulk Volume, cm^3 :	**5.040**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**1.754**
Swanson's Parameter :	**1.00E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
168.90	0.466	0.534	0.638	0.844	32.7	19.1	22.7	20.1	0.009	-
191.80	0.492	0.508	0.562	0.854	37.2	21.7	25.8	22.8	0.007	-
217.78	0.520	0.480	0.495	0.862	42.2	24.6	29.3	25.9	0.005	-
248.58	0.547	0.453	0.434	0.864	48.2	28.1	33.5	29.6	0.004	-
282.60	0.575	0.425	0.381	0.857	54.8	31.9	38.0	33.6	0.003	-
321.20	0.602	0.398	0.336	0.829	62.3	36.3	43.2	38.2	0.002	-
365.02	0.627	0.373	0.295	0.783	70.7	41.3	49.1	43.4	0.002	-
416.32	0.652	0.348	0.259	0.738	80.7	47.1	56.0	49.5	0.001	-
473.68	0.674	0.326	0.228	0.713	91.8	53.6	63.8	56.3	0.001	-
537.81	0.696	0.304	0.200	0.698	104	60.8	72.4	63.9	0.001	-
611.91	0.718	0.282	0.176	0.671	119	69.2	82.4	72.8	0.000	-
696.07	0.739	0.261	0.155	0.630	135	78.7	93.7	82.8	0.000	-
792.23	0.758	0.242	0.136	0.592	154	89.6	107	94.2	0.000	-
900.69	0.776	0.224	0.120	0.566	175	102	121	107	0.000	-
1024.41	0.794	0.206	0.105	0.541	199	116	138	122	0.000	-
1164.97	0.811	0.189	0.093	0.505	226	132	157	139	0.000	-
1325.06	0.826	0.174	0.081	0.473	257	150	178	158	0.000	-
1508.15	0.840	0.160	0.071	0.457	292	171	203	179	0.000	-
1715.26	0.855	0.145	0.063	0.436	332	194	231	204	0.000	-
1950.71	0.868	0.132	0.055	0.414	378	221	263	232	0.000	-
2216.12	0.880	0.120	0.049	0.405	430	251	298	263	0.000	-
2520.84	0.894	0.106	0.043	0.383	489	285	339	300	0.000	-
2866.09	0.905	0.095	0.038	0.344	555	324	386	341	0.000	-
3258.64	0.916	0.084	0.033	0.312	632	368	439	387	0.000	-
3705.87	0.924	0.076	0.029	0.293	718	419	499	441	0.000	-
4213.89	0.934	0.066	0.026	0.277	817	476	567	501	0.000	-
4789.88	0.942	0.058	0.023	0.259	928	542	645	569	0.000	-
5446.55	0.950	0.050	0.020	0.236	1056	616	733	648	0.000	-
6192.94	0.957	0.043	0.017	0.209	1200	700	834	736	0.000	-
7041.83	0.963	0.037	0.015	0.190	1365	796	948	837	0.000	-
8008.33	0.969	0.031	0.013	0.172	1552	905	1078	952	0.000	-
9106.52	0.974	0.026	0.012	0.145	1765	1030	1226	1083	0.000	-
10354.00	0.978	0.022	0.010	0.111	2007	1171	1394	1231	0.000	-
11773.00	0.981	0.019	0.009	0.084	2282	1331	1585	1400	0.000	-
13389.40	0.983	0.017	0.008	0.076	2595	1514	1802	1592	0.000	-
15223.00	0.985	0.015	0.007	0.077	2950	1721	2049	1810	0.000	-
17310.70	0.989	0.011	0.006	0.052	3355	1957	2330	2058	0.000	-
19682.70	0.989	0.011	0.005	0.019	3815	2225	2649	2340	0.000	-
22381.80	0.989	0.011	0.005	0.020	4338	2530	3012	2661	0.000	-
25450.50	0.990	0.010	0.004	0.039	4933	2877	3425	3026	0.000	-

Well : DMP Harvey-3

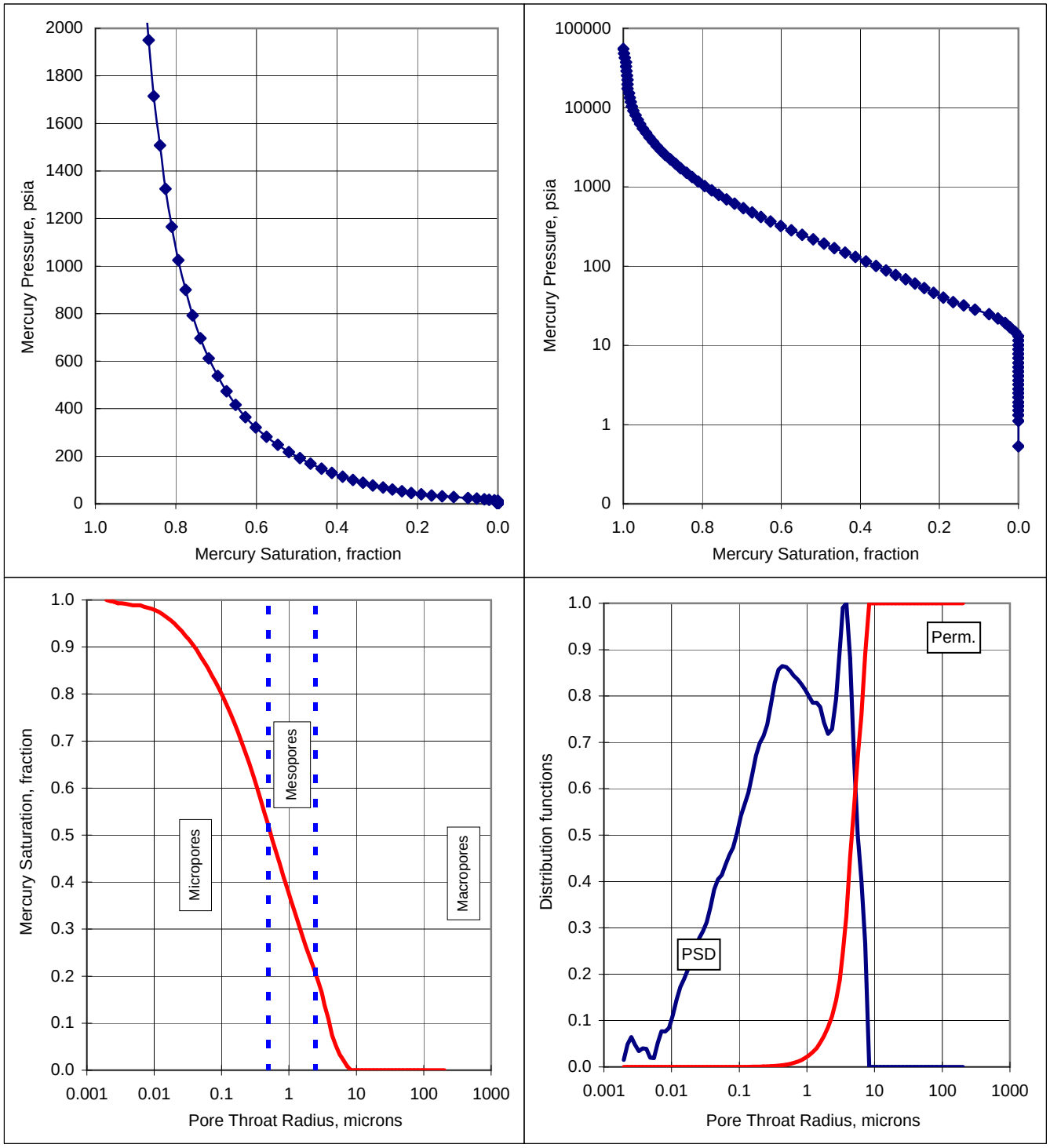
Sample Identification :	**11**
Sample Depth, m :	**1420.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.211**
Injection Sample Pore Volume, cm^3 :	**1.063**
Injection Sample Bulk Volume, cm^3 :	**5.040**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**1.754**
Swanson's Parameter :	**1.00E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28938.70	0.992	0.008	0.004	0.040	5609	3272	3895	3441	0.000	-
32904.80	0.993	0.007	0.003	0.034	6377	3720	4429	3912	0.000	-
37414.70	0.993	0.007	0.003	0.048	7251	4230	5036	4448	0.000	-
42535.10	0.996	0.004	0.003	0.064	8244	4809	5725	5057	0.000	-
48356.00	0.998	0.002	0.002	0.049	9372	5467	6508	5749	0.000	-
54978.7	1.000	0.000	0.002	0.015	10655	6216	7400	6537	0.000	-

Well : DMP Harvey-3

Sample Identification :	**11**
Sample Depth, m :	**1420.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.211**



Well : DMP Harvey-3

Sample Identification :	**20**
Sample Depth, m :	**1429.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.224**
Injection Sample Pore Volume, cm^3 :	**1.708**
Injection Sample Bulk Volume, cm^3 :	**7.622**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**4.488**
Swanson's Parameter :	**3.35E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.944	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	96.856	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.398	0.000	0.25	0.15	0.18	0.16	1.000	-
1.49	0.000	1.000	72.106	0.000	0.29	0.17	0.20	0.18	1.000	-
1.70	0.000	1.000	63.513	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.382	0.000	0.37	0.22	0.26	0.23	1.000	-
2.21	0.000	1.000	48.754	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.113	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.483	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.665	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.939	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.300	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.939	0.027	0.91	0.53	0.63	0.56	0.998	-
5.29	0.002	0.998	20.366	0.065	1.03	0.60	0.71	0.63	0.970	-
6.00	0.006	0.994	17.966	0.116	1.16	0.68	0.81	0.71	0.926	-
6.90	0.013	0.987	15.626	0.194	1.34	0.78	0.93	0.82	0.862	-
7.79	0.022	0.978	13.830	0.385	1.51	0.88	1.05	0.93	0.794	-
8.89	0.041	0.959	12.119	0.731	1.72	1.01	1.20	1.06	0.693	-
10.09	0.092	0.908	10.685	1.000	1.95	1.14	1.36	1.20	0.480	-
11.48	0.145	0.855	9.391	0.993	2.22	1.30	1.54	1.36	0.308	-
12.97	0.183	0.817	8.307	0.844	2.51	1.47	1.75	1.54	0.212	-
14.77	0.221	0.779	7.297	0.692	2.86	1.67	1.99	1.76	0.137	-
16.85	0.248	0.752	6.394	0.553	3.27	1.91	2.27	2.00	0.095	-
19.21	0.271	0.729	5.610	0.452	3.72	2.17	2.59	2.28	0.068	-
21.80	0.290	0.710	4.945	0.395	4.22	2.46	2.93	2.59	0.052	-
24.78	0.307	0.693	4.349	0.374	4.80	2.80	3.33	2.95	0.040	-
28.16	0.323	0.677	3.827	0.381	5.46	3.18	3.79	3.35	0.031	-
30.91	0.338	0.662	3.487	0.373	5.99	3.49	4.16	3.68	0.025	-
34.98	0.353	0.647	3.081	0.341	6.78	3.95	4.71	4.16	0.019	-
39.75	0.368	0.632	2.711	0.314	7.70	4.49	5.35	4.73	0.015	-
45.65	0.383	0.617	2.361	0.306	8.85	5.16	6.14	5.43	0.012	-
52.44	0.398	0.602	2.055	0.324	10.2	5.93	7.06	6.23	0.010	-
59.88	0.414	0.586	1.800	0.355	11.6	6.77	8.06	7.12	0.008	-
67.81	0.431	0.569	1.589	0.381	13.1	7.67	9.13	8.06	0.006	-
77.16	0.449	0.551	1.397	0.401	15.0	8.72	10.4	9.17	0.005	-
87.58	0.468	0.532	1.231	0.419	17.0	9.90	11.8	10.4	0.004	-
100.40	0.488	0.512	1.073	0.442	19.5	11.4	13.5	11.9	0.003	-
113.84	0.510	0.490	0.947	0.468	22.1	12.9	15.3	13.5	0.002	-
129.92	0.533	0.467	0.830	0.483	25.2	14.7	17.5	15.4	0.002	-
147.91	0.555	0.445	0.729	0.490	28.7	16.7	19.9	17.6	0.001	-

Well : DMP Harvey-3

Sample Identification :	**20**
Sample Depth, m :	**1429.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.224**
Injection Sample Pore Volume, cm^3 :	**1.708**
Injection Sample Bulk Volume, cm^3 :	**7.622**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**4.488**
Swanson's Parameter :	**3.35E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
168.42	0.578	0.422	0.640	0.493	32.6	19.0	22.7	20.0	0.001	-
191.56	0.602	0.398	0.563	0.491	37.1	21.7	25.8	22.8	0.001	-
218.99	0.625	0.375	0.492	0.485	42.4	24.8	29.5	26.0	0.001	-
248.37	0.647	0.353	0.434	0.472	48.1	28.1	33.4	29.5	0.000	-
282.58	0.669	0.331	0.381	0.450	54.8	31.9	38.0	33.6	0.000	-
321.99	0.689	0.311	0.335	0.427	62.4	36.4	43.3	38.3	0.000	-
365.76	0.708	0.292	0.295	0.406	70.9	41.4	49.2	43.5	0.000	-
416.21	0.726	0.274	0.259	0.392	80.7	47.1	56.0	49.5	0.000	-
473.98	0.744	0.256	0.227	0.389	91.9	53.6	63.8	56.4	0.000	-
539.45	0.763	0.237	0.200	0.389	105	61.0	72.6	64.1	0.000	-
613.01	0.781	0.219	0.176	0.383	119	69.3	82.5	72.9	0.000	-
696.66	0.798	0.202	0.155	0.371	135	78.8	93.8	82.8	0.000	-
792.97	0.815	0.185	0.136	0.357	154	89.6	107	94.3	0.000	-
900.83	0.831	0.169	0.120	0.342	175	102	121	107	0.000	-
1025.04	0.847	0.153	0.105	0.328	199	116	138	122	0.000	-
1165.31	0.862	0.138	0.092	0.313	226	132	157	139	0.000	-
1325.87	0.876	0.124	0.081	0.298	257	150	178	158	0.000	-
1507.22	0.889	0.111	0.072	0.281	292	170	203	179	0.000	-
1714.63	0.902	0.098	0.063	0.266	332	194	231	204	0.000	-
1948.58	0.914	0.086	0.055	0.249	378	220	262	232	0.000	-
2216.82	0.925	0.075	0.049	0.232	430	251	298	264	0.000	-
2519.57	0.935	0.065	0.043	0.216	488	285	339	300	0.000	-
2865.85	0.945	0.055	0.038	0.201	555	324	386	341	0.000	-
3259.13	0.954	0.046	0.033	0.185	632	368	439	387	0.000	-
3706.25	0.962	0.038	0.029	0.166	718	419	499	441	0.000	-
4214.24	0.969	0.031	0.026	0.143	817	476	567	501	0.000	-
4789.65	0.975	0.025	0.023	0.123	928	541	645	569	0.000	-
5446.97	0.981	0.019	0.020	0.105	1056	616	733	648	0.000	-
6193.75	0.985	0.015	0.017	0.088	1200	700	834	736	0.000	-
7043.24	0.989	0.011	0.015	0.069	1365	796	948	837	0.000	-
8008.57	0.992	0.008	0.013	0.052	1552	905	1078	952	0.000	-
9101.99	0.993	0.007	0.012	0.041	1764	1029	1225	1082	0.000	-
10355.10	0.995	0.005	0.010	0.034	2007	1171	1394	1231	0.000	-
11775.50	0.997	0.003	0.009	0.025	2282	1331	1585	1400	0.000	-
13389.50	0.998	0.002	0.008	0.020	2595	1514	1802	1592	0.000	-
15224.40	0.998	0.002	0.007	0.018	2951	1721	2049	1810	0.000	-
17311.00	0.999	0.001	0.006	0.015	3355	1957	2330	2058	0.000	-
19683.20	1.000	0.000	0.005	0.007	3815	2225	2649	2340	0.000	-
22376.10	1.000	0.000	0.005	0.002	4337	2530	3012	2660	0.000	-
25450.20	1.000	0.000	0.004	0.000	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-3

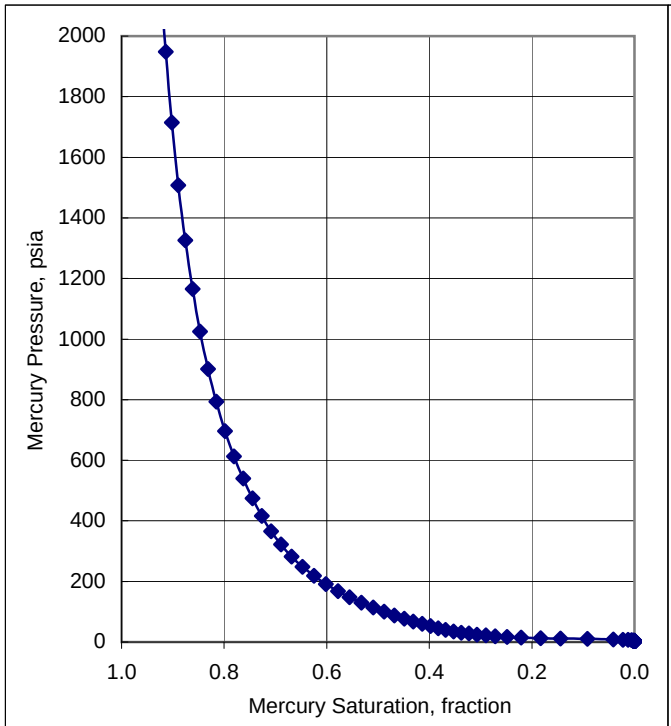
Sample Identification :	**20**
Sample Depth, m :	**1429.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.224**
Injection Sample Pore Volume, cm^3 :	**1.708**
Injection Sample Bulk Volume, cm^3 :	**7.622**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**4.488**
Swanson's Parameter :	**3.35E-01**
Fzi :	

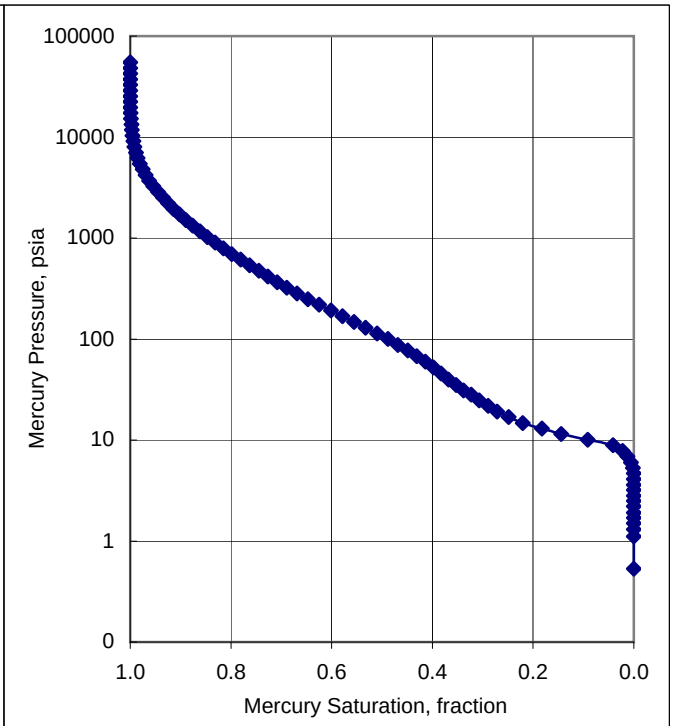
IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

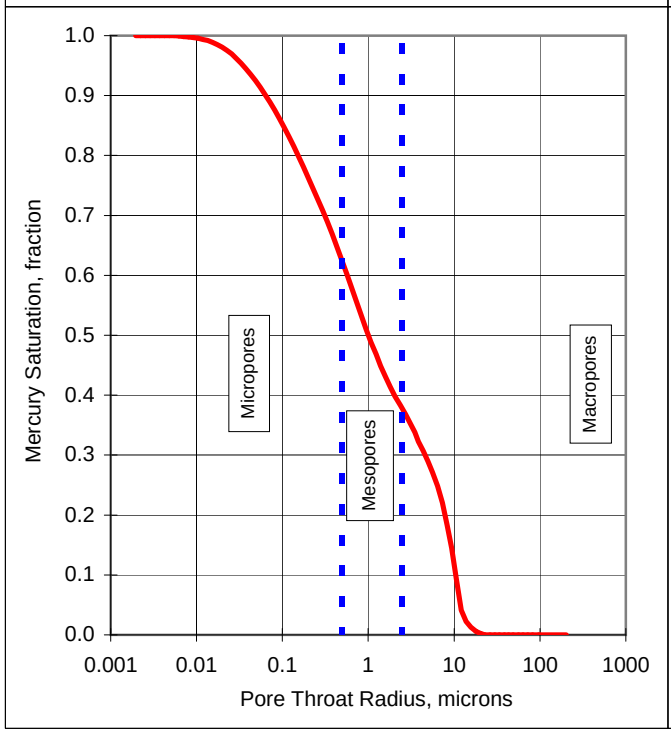
Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28937.30	1.000	0.000	0.004	0.000	5608	3272	3895	3441	0.000	-
32900.90	1.000	0.000	0.003	0.000	6376	3720	4428	3912	0.000	-
37412.60	1.000	0.000	0.003	0.000	7251	4230	5035	4448	0.000	-
42533.80	1.000	0.000	0.003	0.000	8243	4809	5725	5057	0.000	-
48350.80	1.000	0.000	0.002	0.000	9371	5466	6508	5749	0.000	-
54980.2	1.000	0.000	0.002	0.000	10656	6216	7400	6537	0.000	-

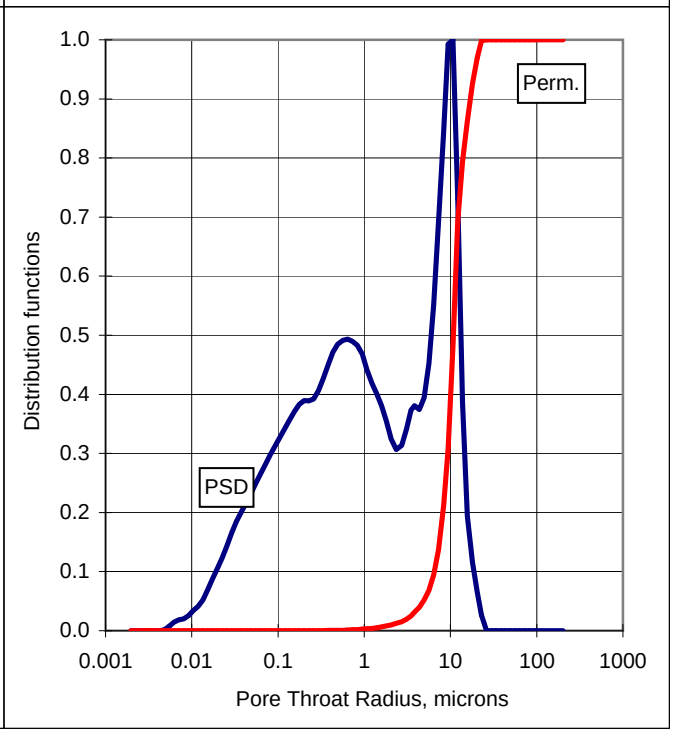
Well : DMP Harvey-3

Sample Identification :	**20**
Sample Depth, m :	**1429.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.224**









Well : DMP Harvey-3

Sample Identification :	**135**
Sample Depth, m :	**1544.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.168**
Injection Sample Pore Volume, cm^3 :	**1.088**
Injection Sample Bulk Volume, cm^3 :	**6.481**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**16.684**
Swanson's Parameter :	**9.61E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.830	0.000	0.10	0.06	0.07	0.06	1.000	-
1.12	0.000	1.000	96.651	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.256	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.004	0.996	71.188	0.065	0.29	0.17	0.20	0.18	0.945	-
1.71	0.008	0.992	62.900	0.129	0.33	0.19	0.23	0.20	0.895	-
1.91	0.015	0.985	56.309	0.210	0.37	0.22	0.26	0.23	0.837	-
2.20	0.032	0.968	48.916	0.307	0.43	0.25	0.30	0.26	0.722	-
2.50	0.048	0.952	43.055	0.455	0.49	0.28	0.34	0.30	0.639	-
2.80	0.076	0.924	38.461	0.672	0.54	0.32	0.38	0.33	0.524	-
3.20	0.117	0.883	33.631	0.906	0.62	0.36	0.43	0.38	0.391	-
3.60	0.174	0.826	29.909	1.000	0.70	0.41	0.48	0.43	0.249	-
4.11	0.234	0.766	26.244	0.839	0.80	0.46	0.55	0.49	0.132	-
4.70	0.269	0.731	22.939	0.586	0.91	0.53	0.63	0.56	0.080	-
5.29	0.292	0.708	20.358	0.421	1.03	0.60	0.71	0.63	0.053	-
6.00	0.311	0.689	17.966	0.328	1.16	0.68	0.81	0.71	0.036	-
6.89	0.328	0.672	15.635	0.261	1.34	0.78	0.93	0.82	0.024	-
7.79	0.340	0.660	13.828	0.212	1.51	0.88	1.05	0.93	0.018	-
8.89	0.350	0.650	12.119	0.180	1.72	1.01	1.20	1.06	0.013	-
10.09	0.359	0.641	10.682	0.158	1.96	1.14	1.36	1.20	0.010	-
11.48	0.367	0.633	9.384	0.145	2.23	1.30	1.55	1.37	0.008	-
12.98	0.374	0.626	8.305	0.135	2.52	1.47	1.75	1.54	0.007	-
14.77	0.382	0.618	7.299	0.130	2.86	1.67	1.99	1.76	0.006	-
16.86	0.388	0.612	6.394	0.138	3.27	1.91	2.27	2.00	0.005	-
19.21	0.396	0.604	5.612	0.165	3.72	2.17	2.58	2.28	0.005	-
21.79	0.406	0.594	4.947	0.202	4.22	2.46	2.93	2.59	0.004	-
24.78	0.418	0.582	4.349	0.242	4.80	2.80	3.34	2.95	0.003	-
28.17	0.432	0.568	3.826	0.294	5.46	3.18	3.79	3.35	0.003	-
31.67	0.448	0.552	3.403	0.342	6.14	3.58	4.26	3.76	0.002	-
35.82	0.468	0.532	3.008	0.363	6.94	4.05	4.82	4.26	0.002	-
40.75	0.487	0.513	2.645	0.361	7.90	4.61	5.48	4.84	0.001	-
45.72	0.506	0.494	2.357	0.342	8.86	5.17	6.15	5.44	0.001	-
53.01	0.525	0.475	2.033	0.330	10.3	5.99	7.13	6.30	0.001	-
60.16	0.543	0.457	1.791	0.336	11.7	6.80	8.10	7.15	0.001	-
68.24	0.561	0.439	1.579	0.336	13.2	7.72	9.19	8.11	0.000	-
77.46	0.579	0.421	1.391	0.322	15.0	8.76	10.4	9.21	0.000	-
88.56	0.597	0.403	1.217	0.311	17.2	10.0	11.9	10.5	0.000	-
101.37	0.614	0.386	1.063	0.307	19.6	11.5	13.6	12.1	0.000	-
114.62	0.630	0.370	0.940	0.304	22.2	13.0	15.4	13.6	0.000	-
129.86	0.646	0.354	0.830	0.293	25.2	14.7	17.5	15.4	0.000	-
148.32	0.662	0.338	0.727	0.280	28.7	16.8	20.0	17.6	0.000	-

Well : DMP Harvey-3

Sample Identification :	**135**
Sample Depth, m :	**1544.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.168**
Injection Sample Pore Volume, cm^3 :	**1.088**
Injection Sample Bulk Volume, cm^3 :	**6.481**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**16.684**
Swanson's Parameter :	**9.61E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.84	0.678	0.322	0.635	0.276	32.9	19.2	22.9	20.2	0.000	-
192.51	0.692	0.308	0.560	0.276	37.3	21.8	25.9	22.9	0.000	-
218.70	0.707	0.293	0.493	0.272	42.4	24.7	29.4	26.0	0.000	-
248.90	0.722	0.278	0.433	0.267	48.2	28.1	33.5	29.6	0.000	-
283.25	0.736	0.264	0.380	0.264	54.9	32.0	38.1	33.7	0.000	-
322.57	0.751	0.249	0.334	0.264	62.5	36.5	43.4	38.4	0.000	-
366.38	0.765	0.235	0.294	0.264	71.0	41.4	49.3	43.6	0.000	-
416.11	0.779	0.221	0.259	0.262	80.6	47.0	56.0	49.5	0.000	-
473.99	0.794	0.206	0.227	0.261	91.9	53.6	63.8	56.4	0.000	-
539.38	0.808	0.192	0.200	0.262	105	61.0	72.6	64.1	0.000	-
612.73	0.822	0.178	0.176	0.262	119	69.3	82.5	72.9	0.000	-
697.18	0.836	0.164	0.155	0.259	135	78.8	93.8	82.9	0.000	-
792.98	0.850	0.150	0.136	0.254	154	89.7	107	94.3	0.000	-
902.49	0.864	0.136	0.119	0.246	175	102	121	107.3	0.000	-
1026.80	0.877	0.123	0.105	0.236	199	116	138	122.1	0.000	-
1166.62	0.890	0.110	0.092	0.223	226	132	157	138.7	0.000	-
1325.90	0.901	0.099	0.081	0.209	257	150	178	157.6	0.000	-
1508.64	0.912	0.088	0.071	0.194	292	171	203	179.4	0.000	-
1715.35	0.923	0.077	0.063	0.179	332	194	231	203.9	0.000	-
1950.05	0.932	0.068	0.055	0.163	378	220	262	231.9	0.000	-
2217.40	0.940	0.060	0.049	0.148	430	251	298	263.6	0.000	-
2522.08	0.948	0.052	0.043	0.134	489	285	339	299.9	0.000	-
2867.67	0.955	0.045	0.038	0.120	556	324	386	341.0	0.000	-
3260.06	0.961	0.039	0.033	0.106	632	369	439	387.6	0.000	-
3707.10	0.966	0.034	0.029	0.092	718	419	499	440.8	0.000	-
4214.93	0.971	0.029	0.026	0.077	817	477	567	501.1	0.000	-
4791.04	0.975	0.025	0.022	0.067	929	542	645	569.6	0.000	-
5447.44	0.978	0.022	0.020	0.059	1056	616	733	647.7	0.000	-
6194.39	0.981	0.019	0.017	0.050	1201	700	834	736.5	0.000	-
7043.37	0.983	0.017	0.015	0.041	1365	796	948	837.4	0.000	-
8008.99	0.985	0.015	0.013	0.034	1552	905	1078	952.2	0.000	-
9107.92	0.987	0.013	0.012	0.030	1765	1030	1226	1082.9	0.000	-
10355.60	0.989	0.011	0.010	0.024	2007	1171	1394	1231.2	0.000	-
11775.20	0.990	0.010	0.009	0.016	2282	1331	1585	1400.0	0.000	-
13389.10	0.990	0.010	0.008	0.013	2595	1514	1802	1591.9	0.000	-
15222.80	0.991	0.009	0.007	0.012	2950	1721	2049	1809.9	0.000	-
17310.10	0.992	0.008	0.006	0.013	3355	1957	2330	2058.1	0.000	-
19684.00	0.992	0.008	0.005	0.017	3815	2225	2649	2340.3	0.000	-
22381.40	0.994	0.006	0.005	0.021	4338	2530	3012	2661.0	0.000	-
25449.90	0.995	0.005	0.004	0.020	4932	2877	3425	3025.9	0.000	-

Well : DMP Harvey-3

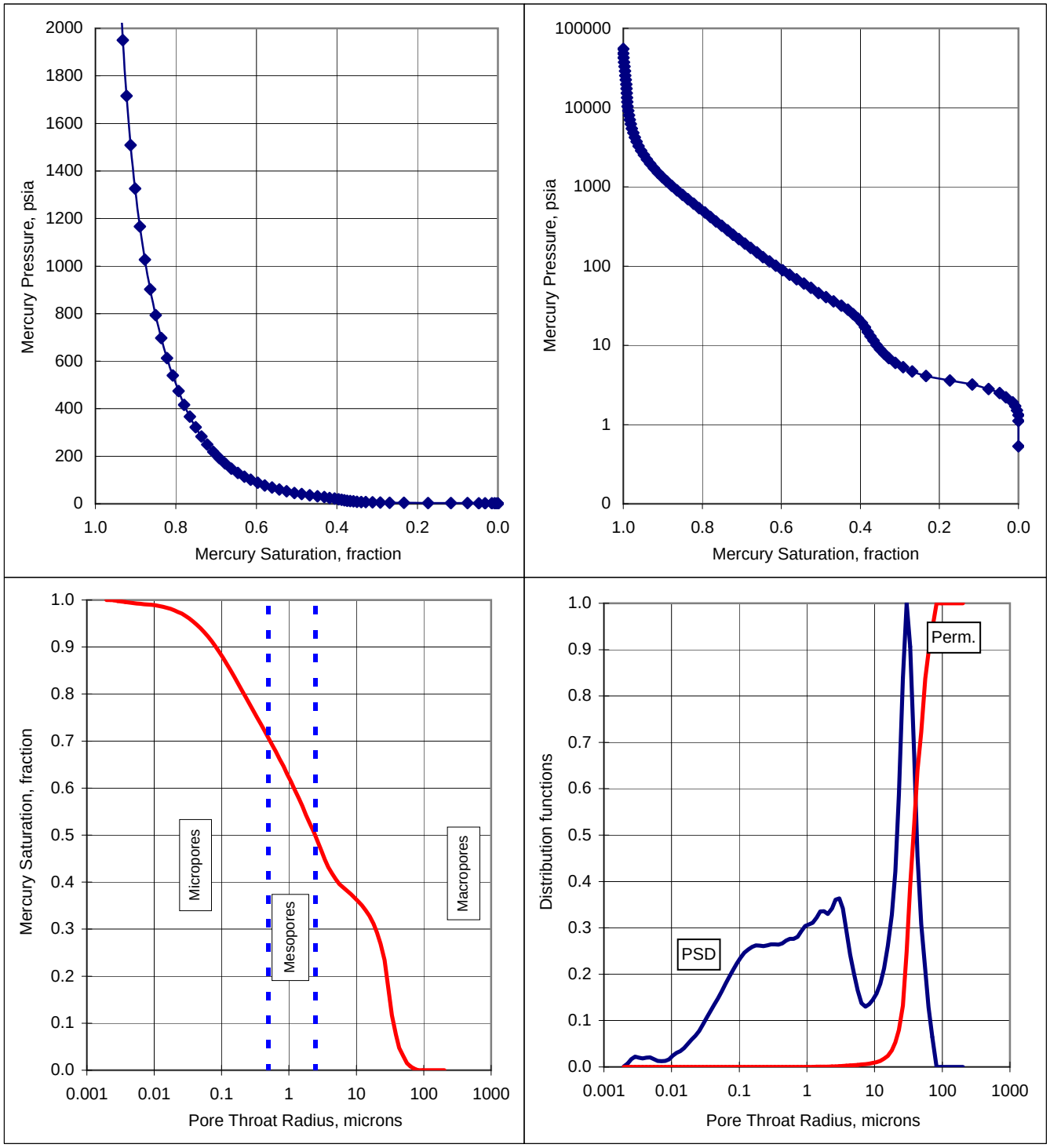
Sample Identification :	**135**
Sample Depth, m :	**1544.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.168**
Injection Sample Pore Volume, cm^3 :	**1.088**
Injection Sample Bulk Volume, cm^3 :	**6.481**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**16.684**
Swanson's Parameter :	**9.61E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28931.10	0.996	0.004	0.004	0.018	5607	3271	3894	3439.8	0.000	-
32903.70	0.997	0.003	0.003	0.020	6377	3720	4428	3912.1	0.000	-
37410.10	0.998	0.002	0.003	0.022	7250	4229	5035	4447.9	0.000	-
42533.60	0.999	0.001	0.003	0.017	8243	4809	5725	5057.0	0.000	-
48356.00	1.000	0.000	0.002	0.007	9372	5467	6508	5749.3	0.000	-
54977.7	1.000	0.000	0.002	0.001	10655	6216	7399	6536.6	0.000	-

Well : DMP Harvey-3

Sample Identification :	**135**
Sample Depth, m :	**1544.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.168**



Well : DMP Harvey-4

Sample Identification :	**PSSH-7**
Sample Depth, m :	**907.92**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.151**
Injection Sample Pore Volume, cm^3 :	**0.848**
Injection Sample Bulk Volume, cm^3 :	**5.630**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**2.534**
Swanson's Parameter :	**3.89E-02**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	203.293	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	96.797	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.464	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.379	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.118	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.510	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	49.037	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.063	0.000	0.49	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.500	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.704	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.915	0.000	0.70	0.41	0.48	0.43	1.000	-
4.09	0.000	1.000	26.321	0.000	0.79	0.46	0.55	0.49	1.000	-
4.69	0.000	1.000	22.956	0.000	0.91	0.53	0.63	0.56	1.000	-
5.31	0.000	1.000	20.315	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.971	0.000	1.16	0.68	0.81	0.71	1.000	-
6.90	0.000	1.000	15.623	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.840	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.001	0.999	12.122	0.036	1.72	1.01	1.20	1.06	0.956	-
10.08	0.004	0.996	10.690	0.064	1.95	1.14	1.36	1.20	0.849	-
11.48	0.008	0.992	9.391	0.084	2.22	1.30	1.54	1.36	0.747	-
12.97	0.012	0.988	8.307	0.103	2.51	1.47	1.75	1.54	0.649	-
14.76	0.018	0.982	7.301	0.124	2.86	1.67	1.99	1.76	0.557	-
16.86	0.024	0.976	6.392	0.151	3.27	1.91	2.27	2.00	0.466	-
19.21	0.033	0.967	5.610	0.181	3.72	2.17	2.59	2.28	0.382	-
21.80	0.042	0.958	4.945	0.216	4.22	2.46	2.93	2.59	0.308	-
24.78	0.054	0.946	4.349	0.249	4.80	2.80	3.33	2.95	0.238	-
28.16	0.068	0.932	3.827	0.265	5.46	3.18	3.79	3.35	0.175	-
31.60	0.080	0.920	3.410	0.264	6.12	3.57	4.25	3.76	0.131	-
35.63	0.092	0.908	3.025	0.250	6.91	4.03	4.80	4.24	0.097	-
39.87	0.103	0.897	2.703	0.226	7.73	4.51	5.37	4.74	0.071	-
46.13	0.114	0.886	2.336	0.207	8.94	5.22	6.21	5.48	0.052	-
52.80	0.125	0.875	2.041	0.202	10.2	5.97	7.11	6.28	0.038	-
59.53	0.134	0.866	1.810	0.195	11.5	6.73	8.01	7.08	0.027	-
68.33	0.144	0.856	1.577	0.185	13.2	7.73	9.20	8.12	0.020	-
77.44	0.153	0.847	1.392	0.174	15.0	8.75	10.4	9.21	0.014	-
88.28	0.162	0.838	1.221	0.161	17.1	9.98	11.9	10.5	0.010	-
101.18	0.170	0.830	1.065	0.153	19.6	11.4	13.6	12.0	0.007	-
114.69	0.177	0.823	0.940	0.144	22.2	13.0	15.4	13.6	0.005	-
129.30	0.184	0.816	0.834	0.127	25.1	14.6	17.4	15.4	0.004	-
148.12	0.190	0.810	0.728	0.111	28.7	16.7	19.9	17.6	0.003	-

Well : DMP Harvey-4

Sample Identification :	**PSSH-7**
Sample Depth, m :	**907.92**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.151**
Injection Sample Pore Volume, cm^3 :	**0.848**
Injection Sample Bulk Volume, cm^3 :	**5.630**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**2.534**
Swanson's Parameter :	**3.89E-02**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.24	0.195	0.805	0.637	0.102	32.8	19.1	22.8	20.1	0.002	-
192.13	0.200	0.800	0.561	0.098	37.2	21.7	25.9	22.8	0.002	-
218.64	0.205	0.795	0.493	0.094	42.4	24.7	29.4	26.0	0.001	-
248.12	0.209	0.791	0.434	0.090	48.1	28.1	33.4	29.5	0.001	-
282.54	0.214	0.786	0.381	0.086	54.8	31.9	38.0	33.6	0.001	-
321.86	0.218	0.782	0.335	0.084	62.4	36.4	43.3	38.3	0.001	-
366.04	0.222	0.778	0.294	0.083	70.9	41.4	49.3	43.5	0.000	-
416.33	0.226	0.774	0.259	0.083	80.7	47.1	56.0	49.5	0.000	-
474.44	0.230	0.770	0.227	0.085	92.0	53.6	63.9	56.4	0.000	-
538.38	0.235	0.765	0.200	0.086	104	60.9	72.5	64.0	0.000	-
613.81	0.239	0.761	0.176	0.086	119	69.4	82.6	73.0	0.000	-
696.35	0.243	0.757	0.155	0.088	135	78.7	93.7	82.8	0.000	-
791.96	0.248	0.752	0.136	0.093	153	89.5	107	94.2	0.000	-
900.98	0.252	0.748	0.120	0.101	175	102	121	107	0.000	-
1025.27	0.258	0.742	0.105	0.109	199	116	138	122	0.000	-
1165.27	0.263	0.737	0.092	0.117	226	132	157	139	0.000	-
1325.42	0.269	0.731	0.081	0.129	257	150	178	158	0.000	-
1506.73	0.276	0.724	0.072	0.146	292	170	203	179	0.000	-
1714.93	0.284	0.716	0.063	0.168	332	194	231	204	0.000	-
1949.78	0.293	0.707	0.055	0.194	378	220	262	232	0.000	-
2217.01	0.303	0.697	0.049	0.231	430	251	298	264	0.000	-
2520.19	0.315	0.685	0.043	0.278	488	285	339	300	0.000	-
2866.69	0.330	0.670	0.038	0.327	556	324	386	341	0.000	-
3259.07	0.348	0.652	0.033	0.378	632	368	439	387	0.000	-
3706.35	0.368	0.632	0.029	0.424	718	419	499	441	0.000	-
4214.02	0.390	0.610	0.026	0.468	817	476	567	501	0.000	-
4790.51	0.414	0.586	0.022	0.521	928	542	645	570	0.000	-
5447.00	0.442	0.558	0.020	0.585	1056	616	733	648	0.000	-
6193.53	0.473	0.527	0.017	0.654	1200	700	834	736	0.000	-
7042.86	0.507	0.493	0.015	0.733	1365	796	948	837	0.000	-
8008.57	0.545	0.455	0.013	0.825	1552	905	1078	952	0.000	-
9105.63	0.589	0.411	0.012	0.919	1765	1029	1226	1083	0.000	-
10355.00	0.637	0.363	0.010	0.986	2007	1171	1394	1231	0.000	-
11773.60	0.688	0.312	0.009	1.000	2282	1331	1585	1400	0.000	-
13388.50	0.739	0.261	0.008	0.954	2595	1514	1802	1592	0.000	-
15223.20	0.785	0.215	0.007	0.861	2950	1721	2049	1810	0.000	-
17310.40	0.825	0.175	0.006	0.745	3355	1957	2330	2058	0.000	-
19682.20	0.859	0.141	0.005	0.631	3815	2225	2649	2340	0.000	-
22380.70	0.887	0.113	0.005	0.533	4338	2530	3012	2661	0.000	-
25449.80	0.912	0.088	0.004	0.447	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-4

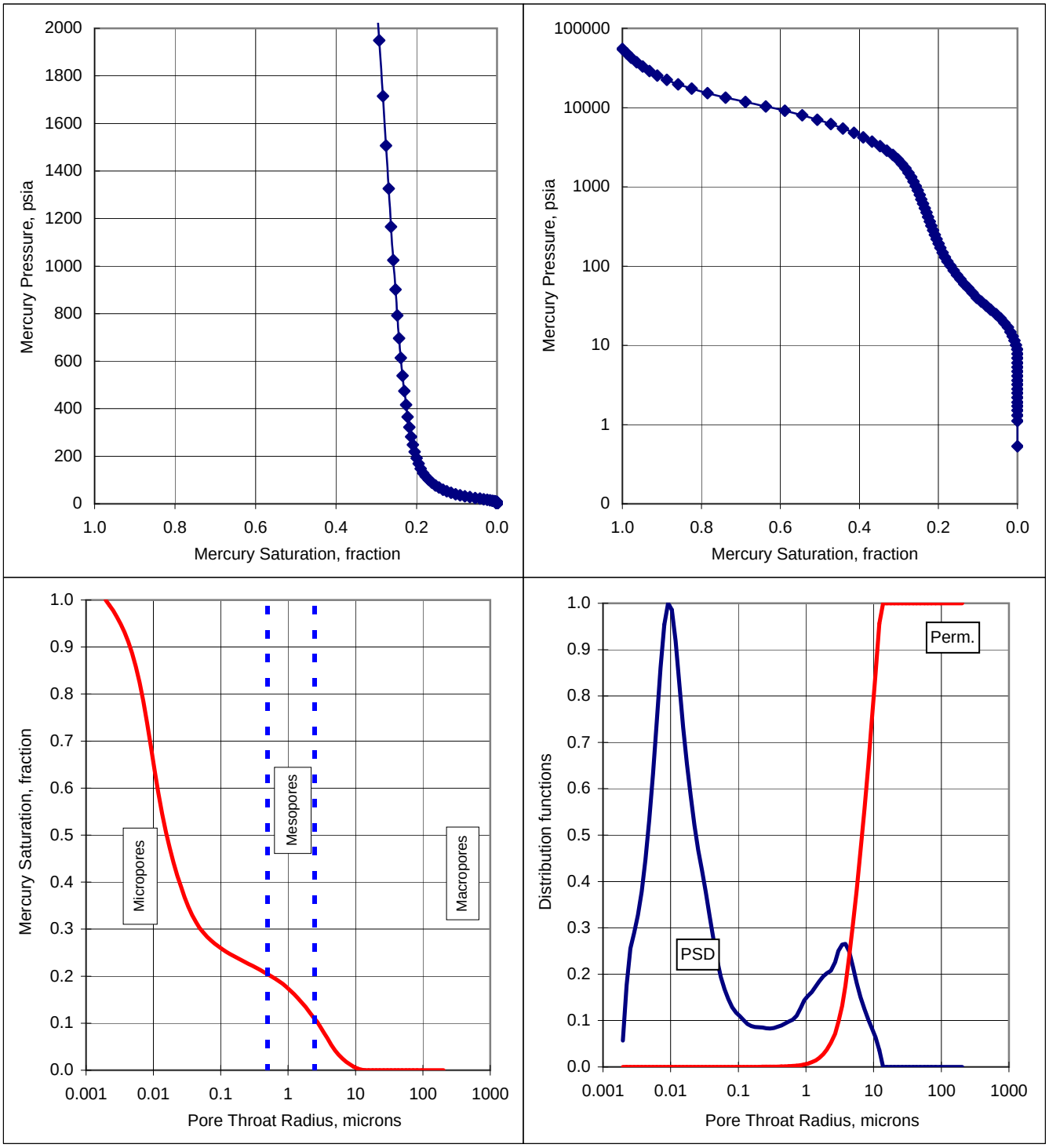
Sample Identification :	**PSSH-7**
Sample Depth, m :	**907.92**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.151**
Injection Sample Pore Volume, cm^3 :	**0.848**
Injection Sample Bulk Volume, cm^3 :	**5.630**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**2.534**
Swanson's Parameter :	**3.89E-02**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28937.60	0.931	0.069	0.004	0.378	5608	3272	3895	3441	0.000	-
32903.90	0.949	0.051	0.003	0.328	6377	3720	4429	3912	0.000	-
37414.70	0.964	0.036	0.003	0.289	7251	4230	5036	4448	0.000	-
42534.50	0.977	0.023	0.003	0.256	8244	4809	5725	5057	0.000	-
48356.70	0.989	0.011	0.002	0.176	9372	5467	6508	5749	0.000	-
54978.7	1.000	0.000	0.002	0.057	10655	6216	7400	6537	0.000	-

Well : DMP Harvey-4

Sample Identification : **PSSH-7**
Sample Depth, m : **907.92**
Permeability to air, md : **NA**
Injection Sample Porosity, fraction : **0.151**



Well : DMP Harvey-4

Sample Identification :	**4**
Sample Depth, m :	**1793.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.196**
Injection Sample Pore Volume, cm^3 :	**1.137**
Injection Sample Bulk Volume, cm^3 :	**5.788**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**16.315**
Swanson's Parameter :	**4.39E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	202.830	0.000	0.10	0.06	0.07	0.06	1.000	-
1.12	0.000	1.000	96.651	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.256	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.010	0.990	71.188	0.285	0.29	0.17	0.20	0.18	0.770	-
1.71	0.019	0.981	62.900	0.352	0.33	0.19	0.23	0.20	0.601	-
1.91	0.025	0.975	56.309	0.315	0.37	0.22	0.26	0.23	0.516	-
2.20	0.033	0.967	48.916	0.301	0.43	0.25	0.30	0.26	0.429	-
2.50	0.040	0.960	43.055	0.320	0.49	0.28	0.34	0.30	0.371	-
2.80	0.047	0.953	38.461	0.381	0.54	0.32	0.38	0.33	0.328	-
3.20	0.057	0.943	33.631	0.453	0.62	0.36	0.43	0.38	0.274	-
3.60	0.069	0.931	29.909	0.476	0.70	0.41	0.48	0.43	0.227	-
4.11	0.079	0.921	26.244	0.492	0.80	0.46	0.55	0.49	0.195	-
4.70	0.091	0.909	22.939	0.639	0.91	0.53	0.63	0.56	0.166	-
5.29	0.106	0.894	20.358	0.856	1.03	0.60	0.71	0.63	0.139	-
6.00	0.134	0.866	17.966	0.891	1.16	0.68	0.81	0.71	0.097	-
6.89	0.151	0.849	15.635	0.804	1.34	0.78	0.93	0.82	0.079	-
7.79	0.170	0.830	13.828	0.824	1.51	0.88	1.05	0.93	0.062	-
8.89	0.189	0.811	12.119	0.935	1.72	1.01	1.20	1.06	0.050	-
10.09	0.214	0.786	10.682	1.000	1.96	1.14	1.36	1.20	0.036	-
11.48	0.238	0.762	9.384	0.959	2.23	1.30	1.55	1.37	0.027	-
12.98	0.259	0.741	8.305	0.871	2.52	1.47	1.75	1.54	0.020	-
14.77	0.278	0.722	7.299	0.815	2.86	1.67	1.99	1.76	0.016	-
16.86	0.297	0.703	6.394	0.801	3.27	1.91	2.27	2.00	0.012	-
19.21	0.317	0.683	5.612	0.795	3.72	2.17	2.58	2.28	0.009	-
21.79	0.334	0.666	4.947	0.792	4.22	2.46	2.93	2.59	0.008	-
24.78	0.353	0.647	4.349	0.793	4.80	2.80	3.34	2.95	0.006	-
28.17	0.372	0.628	3.826	0.795	5.46	3.18	3.79	3.35	0.005	-
32.33	0.391	0.609	3.333	0.821	6.27	3.66	4.35	3.84	0.004	-
36.50	0.411	0.589	2.953	0.872	7.07	4.13	4.91	4.34	0.003	-
41.43	0.431	0.569	2.601	0.908	8.03	4.68	5.58	4.93	0.002	-
46.42	0.452	0.548	2.321	0.894	9.00	5.25	6.25	5.52	0.002	-
53.74	0.474	0.526	2.005	0.881	10.4	6.08	7.23	6.39	0.001	-
60.92	0.495	0.505	1.769	0.913	11.8	6.89	8.20	7.24	0.001	-
69.02	0.516	0.484	1.561	0.935	13.4	7.80	9.29	8.21	0.001	-
78.26	0.538	0.462	1.377	0.922	15.2	8.85	10.5	9.30	0.001	-
89.38	0.560	0.440	1.206	0.910	17.3	10.1	12.0	10.6	0.000	-
102.20	0.582	0.418	1.054	0.920	19.8	11.6	13.8	12.2	0.000	-
115.47	0.603	0.397	0.933	0.926	22.4	13.1	15.5	13.7	0.000	-
130.74	0.625	0.375	0.824	0.901	25.3	14.8	17.6	15.5	0.000	-
149.20	0.646	0.354	0.722	0.876	28.9	16.9	20.1	17.7	0.000	-

Well : DMP Harvey-4

Sample Identification :	**4**
Sample Depth, m :	**1793.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.196**
Injection Sample Pore Volume, cm^3 :	**1.137**
Injection Sample Bulk Volume, cm^3 :	**5.788**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**16.315**
Swanson's Parameter :	**4.39E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
170.74	0.667	0.333	0.631	0.878	33.1	19.3	23.0	20.3	0.000	-
193.43	0.688	0.312	0.557	0.877	37.5	21.9	26.0	23.0	0.000	-
219.64	0.708	0.292	0.491	0.852	42.6	24.8	29.6	26.1	0.000	-
249.85	0.728	0.272	0.431	0.816	48.4	28.2	33.6	29.7	0.000	-
284.21	0.747	0.253	0.379	0.783	55.1	32.1	38.3	33.8	0.000	-
323.55	0.765	0.235	0.333	0.751	62.7	36.6	43.5	38.5	0.000	-
367.37	0.782	0.218	0.293	0.705	71.2	41.5	49.4	43.7	0.000	-
417.13	0.798	0.202	0.258	0.653	80.8	47.2	56.1	49.6	0.000	-
475.03	0.813	0.187	0.227	0.615	92.1	53.7	63.9	56.5	0.000	-
540.43	0.827	0.173	0.199	0.587	105	61.1	72.7	64.3	0.000	-
613.80	0.841	0.159	0.176	0.563	119	69.4	82.6	73.0	0.000	-
698.27	0.854	0.146	0.154	0.544	135	78.9	94.0	83.0	0.000	-
794.10	0.866	0.134	0.136	0.526	154	89.8	107	94.4	0.000	-
903.63	0.878	0.122	0.119	0.505	175	102	122	107	0.000	-
1027.96	0.890	0.110	0.105	0.483	199	116	138	122	0.000	-
1167.80	0.901	0.099	0.092	0.458	226	132	157	139	0.000	-
1327.09	0.912	0.088	0.081	0.431	257	150	179	158	0.000	-
1509.86	0.922	0.078	0.071	0.400	293	171	203	180	0.000	-
1716.58	0.931	0.069	0.063	0.368	333	194	231	204	0.000	-
1951.29	0.939	0.061	0.055	0.343	378	221	263	232	0.000	-
2218.66	0.947	0.053	0.049	0.318	430	251	299	264	0.000	-
2523.35	0.954	0.046	0.043	0.279	489	285	340	300	0.000	-
2868.95	0.960	0.040	0.038	0.235	556	324	386	341	0.000	-
3261.34	0.965	0.035	0.033	0.194	632	369	439	388	0.000	-
3708.40	0.969	0.031	0.029	0.161	719	419	499	441	0.000	-
4216.23	0.973	0.027	0.026	0.141	817	477	567	501	0.000	-
4792.35	0.976	0.024	0.022	0.127	929	542	645	570	0.000	-
5448.75	0.978	0.022	0.020	0.117	1056	616	733	648	0.000	-
6195.70	0.981	0.019	0.017	0.108	1201	700	834	737	0.000	-
7044.69	0.983	0.017	0.015	0.102	1365	796	948	838	0.000	-
8010.31	0.986	0.014	0.013	0.095	1552	906	1078	952	0.000	-
9109.26	0.988	0.012	0.012	0.075	1765	1030	1226	1083	0.000	-
10357.00	0.990	0.010	0.010	0.052	2007	1171	1394	1231	0.000	-
11776.60	0.991	0.009	0.009	0.036	2282	1331	1585	1400	0.000	-
13390.40	0.991	0.009	0.008	0.035	2595	1514	1802	1592	0.000	-
15224.20	0.992	0.008	0.007	0.048	2951	1721	2049	1810	0.000	-
17311.40	0.994	0.006	0.006	0.041	3355	1957	2330	2058	0.000	-
19685.30	0.994	0.006	0.005	0.013	3815	2226	2649	2340	0.000	-
22382.80	0.994	0.006	0.005	0.000	4338	2530	3012	2661	0.000	-
25451.20	0.994	0.006	0.004	0.005	4933	2877	3425	3026	0.000	-

Well : DMP Harvey-4

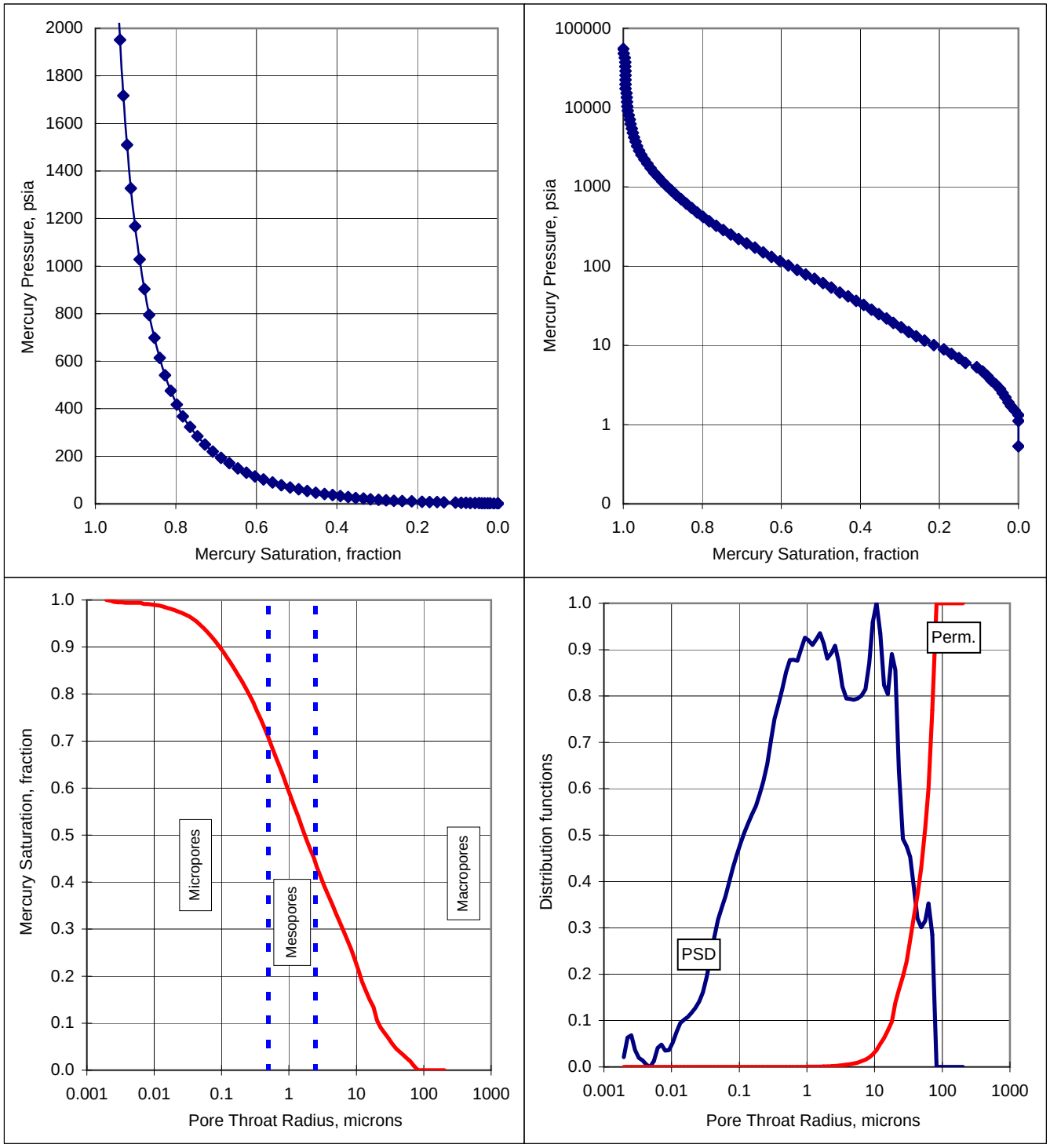
Sample Identification :	**4**
Sample Depth, m :	**1793.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.196**
Injection Sample Pore Volume, cm^3 :	**1.137**
Injection Sample Bulk Volume, cm^3 :	**5.788**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**16.315**
Swanson's Parameter :	**4.39E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28932.40	0.994	0.006	0.004	0.014	5607	3271	3894	3440	0.000	-
32905.10	0.995	0.005	0.003	0.019	6377	3720	4429	3912	0.000	-
37411.40	0.995	0.005	0.003	0.036	7251	4230	5035	4448	0.000	-
42534.90	0.996	0.004	0.003	0.068	8244	4809	5725	5057	0.000	-
48357.30	0.999	0.001	0.002	0.063	9372	5467	6508	5749	0.000	-
54979.0	1.000	0.000	0.002	0.021	10655	6216	7400	6537	0.000	-

Well : DMP Harvey-4

Sample Identification :	**4**
Sample Depth, m :	**1793.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.196**



Well : DMP Harvey-4

Sample Identification :	**7**
Sample Depth, m :	**1797.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.187**
Injection Sample Pore Volume, cm^3 :	**1.039**
Injection Sample Bulk Volume, cm^3 :	**5.548**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**16.728**
Swanson's Parameter :	**7.78E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	203.161	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	97.135	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.372	0.081	0.25	0.15	0.18	0.16	0.997	-
1.51	0.005	0.995	71.402	0.188	0.29	0.17	0.20	0.18	0.916	-
1.71	0.013	0.987	63.060	0.308	0.33	0.19	0.23	0.20	0.817	-
1.91	0.023	0.977	56.471	0.429	0.37	0.22	0.26	0.23	0.721	-
2.20	0.041	0.959	49.051	0.529	0.43	0.25	0.30	0.26	0.584	-
2.50	0.060	0.940	43.097	0.597	0.48	0.28	0.34	0.30	0.474	-
2.80	0.077	0.923	38.476	0.669	0.54	0.32	0.38	0.33	0.394	-
3.20	0.100	0.900	33.719	0.749	0.62	0.36	0.43	0.38	0.311	-
3.60	0.126	0.874	29.916	0.796	0.70	0.41	0.48	0.43	0.240	-
4.10	0.151	0.849	26.314	0.873	0.79	0.46	0.55	0.49	0.187	-
4.70	0.181	0.819	22.943	1.000	0.91	0.53	0.63	0.56	0.137	-
5.30	0.220	0.780	20.342	0.970	1.03	0.60	0.71	0.63	0.087	-
6.00	0.245	0.755	17.976	0.772	1.16	0.68	0.81	0.71	0.062	-
6.90	0.268	0.732	15.624	0.617	1.34	0.78	0.93	0.82	0.044	-
7.79	0.286	0.714	13.836	0.546	1.51	0.88	1.05	0.93	0.033	-
8.89	0.302	0.698	12.120	0.520	1.72	1.01	1.20	1.06	0.026	-
10.08	0.319	0.681	10.687	0.519	1.95	1.14	1.36	1.20	0.020	-
11.49	0.336	0.664	9.382	0.504	2.23	1.30	1.55	1.37	0.015	-
12.97	0.351	0.649	8.308	0.483	2.51	1.47	1.75	1.54	0.012	-
14.77	0.366	0.634	7.299	0.472	2.86	1.67	1.99	1.76	0.009	-
16.85	0.382	0.618	6.395	0.473	3.27	1.91	2.27	2.00	0.007	-
19.20	0.397	0.603	5.613	0.481	3.72	2.17	2.58	2.28	0.006	-
21.79	0.413	0.587	4.945	0.490	4.22	2.46	2.93	2.59	0.005	-
24.77	0.429	0.571	4.351	0.522	4.80	2.80	3.33	2.94	0.004	-
28.15	0.445	0.555	3.828	0.584	5.46	3.18	3.79	3.35	0.003	-
30.99	0.463	0.537	3.478	0.609	6.01	3.50	4.17	3.68	0.002	-
35.44	0.482	0.518	3.041	0.571	6.87	4.01	4.77	4.21	0.002	-
40.53	0.501	0.499	2.659	0.542	7.86	4.58	5.46	4.82	0.001	-
46.66	0.519	0.481	2.310	0.546	9.04	5.28	6.28	5.55	0.001	-
52.51	0.537	0.463	2.052	0.550	10.2	5.94	7.07	6.24	0.001	-
60.44	0.555	0.445	1.783	0.565	11.7	6.83	8.13	7.19	0.001	-
68.76	0.574	0.426	1.567	0.597	13.3	7.77	9.25	8.18	0.001	-
78.00	0.594	0.406	1.382	0.618	15.1	8.82	10.5	9.27	0.000	-
88.92	0.614	0.386	1.212	0.629	17.2	10.1	12.0	10.6	0.000	-
100.68	0.635	0.365	1.070	0.635	19.5	11.4	13.6	12.0	0.000	-
114.48	0.655	0.345	0.941	0.631	22.2	12.9	15.4	13.6	0.000	-
130.87	0.677	0.323	0.823	0.618	25.4	14.8	17.6	15.6	0.000	-
148.63	0.696	0.304	0.725	0.596	28.8	16.8	20.0	17.7	0.000	-

Well : DMP Harvey-4

Sample Identification :	**7**
Sample Depth, m :	**1797.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.187**
Injection Sample Pore Volume, cm^3 :	**1.039**
Injection Sample Bulk Volume, cm^3 :	**5.548**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**16.728**
Swanson's Parameter :	**7.78E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
168.76	0.715	0.285	0.639	0.570	32.7	19.1	22.7	20.1	0.000	-
192.42	0.733	0.267	0.560	0.544	37.3	21.8	25.9	22.9	0.000	-
219.02	0.751	0.249	0.492	0.517	42.4	24.8	29.5	26.0	0.000	-
249.48	0.767	0.233	0.432	0.497	48.4	28.2	33.6	29.7	0.000	-
283.64	0.783	0.217	0.380	0.484	55.0	32.1	38.2	33.7	0.000	-
322.50	0.798	0.202	0.334	0.468	62.5	36.5	43.4	38.3	0.000	-
366.08	0.813	0.187	0.294	0.444	70.9	41.4	49.3	43.5	0.000	-
416.45	0.827	0.173	0.259	0.424	80.7	47.1	56.1	49.5	0.000	-
474.37	0.841	0.159	0.227	0.410	91.9	53.6	63.8	56.4	0.000	-
538.60	0.854	0.146	0.200	0.399	104	60.9	72.5	64.0	0.000	-
613.31	0.866	0.134	0.176	0.389	119	69.3	82.5	72.9	0.000	-
697.06	0.879	0.121	0.155	0.384	135	78.8	93.8	82.9	0.000	-
793.29	0.891	0.109	0.136	0.383	154	89.7	107	94.3	0.000	-
902.21	0.904	0.096	0.119	0.381	175	102	121	107	0.000	-
1026.10	0.916	0.084	0.105	0.369	199	116	138	122	0.000	-
1166.12	0.928	0.072	0.092	0.348	226	132	157	139	0.000	-
1325.70	0.939	0.061	0.081	0.321	257	150	178	158	0.000	-
1507.68	0.949	0.051	0.071	0.292	292	170	203	179	0.000	-
1715.07	0.958	0.042	0.063	0.259	332	194	231	204	0.000	-
1950.42	0.966	0.034	0.055	0.226	378	221	263	232	0.000	-
2217.78	0.972	0.028	0.049	0.194	430	251	298	264	0.000	-
2521.31	0.978	0.022	0.043	0.163	489	285	339	300	0.000	-
2866.36	0.983	0.017	0.038	0.134	556	324	386	341	0.000	-
3259.75	0.987	0.013	0.033	0.105	632	369	439	388	0.000	-
3706.13	0.990	0.010	0.029	0.078	718	419	499	441	0.000	-
4215.05	0.992	0.008	0.026	0.057	817	477	567	501	0.000	-
4790.08	0.993	0.007	0.022	0.044	928	542	645	570	0.000	-
5447.02	0.995	0.005	0.020	0.035	1056	616	733	648	0.000	-
6193.87	0.996	0.004	0.017	0.028	1200	700	834	736	0.000	-
7043.66	0.996	0.004	0.015	0.026	1365	796	948	837	0.000	-
8009.01	0.997	0.003	0.013	0.025	1552	905	1078	952	0.000	-
9107.03	0.998	0.002	0.012	0.016	1765	1030	1226	1083	0.000	-
10355.00	0.998	0.002	0.010	0.006	2007	1171	1394	1231	0.000	-
11774.30	0.998	0.002	0.009	0.007	2282	1331	1585	1400	0.000	-
13388.20	0.999	0.001	0.008	0.010	2595	1514	1802	1592	0.000	-
15222.60	0.999	0.001	0.007	0.010	2950	1721	2049	1810	0.000	-
17310.90	0.999	0.001	0.006	0.010	3355	1957	2330	2058	0.000	-
19682.70	1.000	0.000	0.005	0.008	3815	2225	2649	2340	0.000	-
22381.50	1.000	0.000	0.005	0.003	4338	2530	3012	2661	0.000	-
25449.50	1.000	0.000	0.004	0.000	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-4

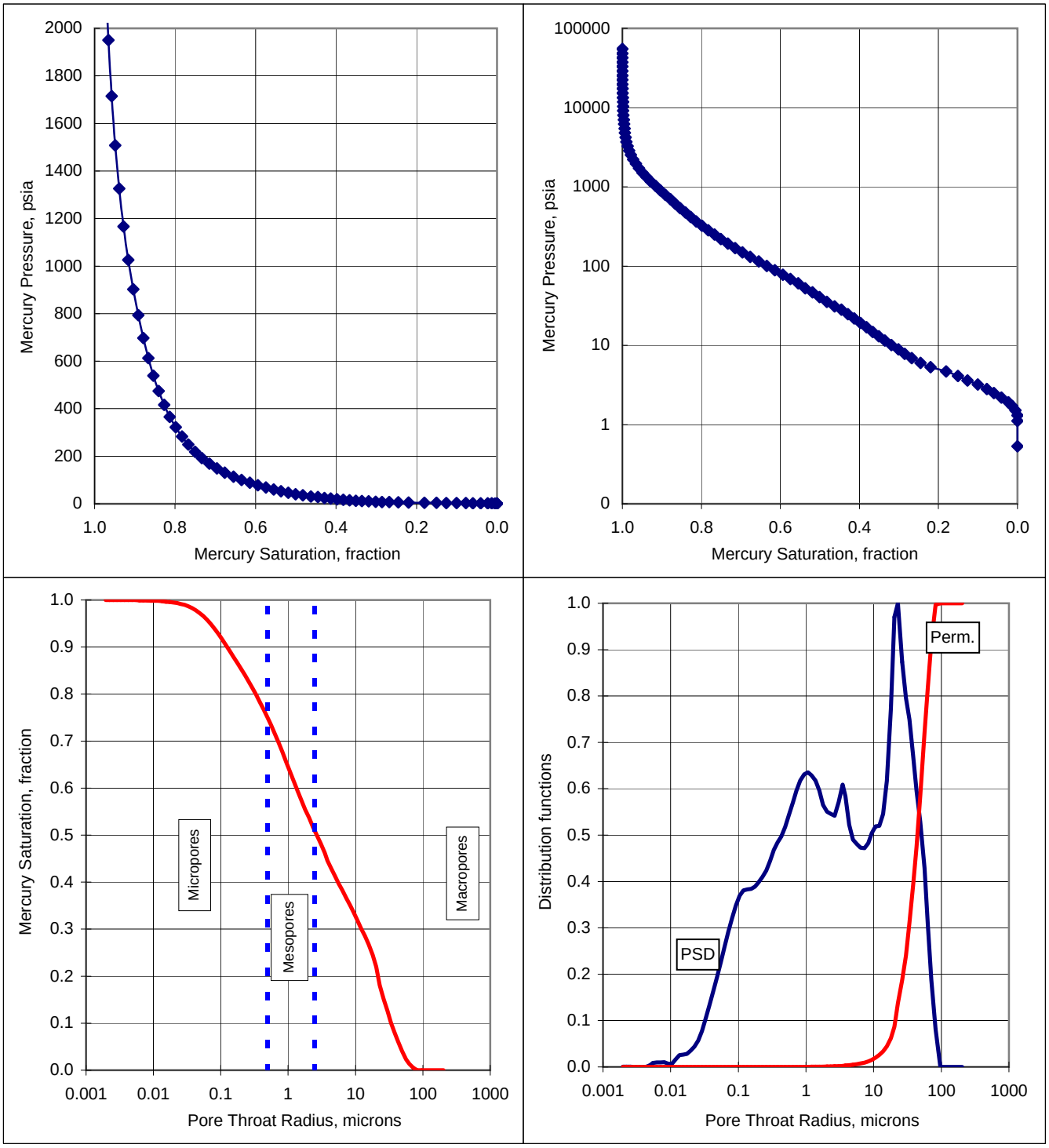
Sample Identification :	**7**
Sample Depth, m :	**1797.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.187**
Injection Sample Pore Volume, cm^3 :	**1.039**
Injection Sample Bulk Volume, cm^3 :	**5.548**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**16.728**
Swanson's Parameter :	**7.78E-01**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28938.40	1.000	0.000	0.004	0.000	5609	3272	3895	3441	0.000	-
32903.30	1.000	0.000	0.003	0.000	6377	3720	4428	3912	0.000	-
37413.70	1.000	0.000	0.003	0.000	7251	4230	5035	4448	0.000	-
42534.20	1.000	0.000	0.003	0.000	8244	4809	5725	5057	0.000	-
48356.00	1.000	0.000	0.002	0.001	9372	5467	6508	5749	0.000	-
54977.9	1.000	0.000	0.002	0.000	10655	6216	7399	6537	0.000	-

Well : DMP Harvey-4

Sample Identification :	**7**
Sample Depth, m :	**1797.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.187**



Well : DMP Harvey-4

Sample Identification :	**8**
Sample Depth, m :	**1799.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.149**
Injection Sample Pore Volume, cm^3 :	**0.988**
Injection Sample Bulk Volume, cm^3 :	**6.656**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**1.415**
Swanson's Parameter :	**5.93E-02**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
0.53	0.000	1.000	203.161	0.000	0.10	0.06	0.07	0.06	1.000	-
1.11	0.000	1.000	97.135	0.000	0.22	0.13	0.15	0.13	1.000	-
1.31	0.000	1.000	82.372	0.000	0.25	0.15	0.18	0.16	1.000	-
1.51	0.000	1.000	71.402	0.000	0.29	0.17	0.20	0.18	1.000	-
1.71	0.000	1.000	63.060	0.000	0.33	0.19	0.23	0.20	1.000	-
1.91	0.000	1.000	56.471	0.000	0.37	0.22	0.26	0.23	1.000	-
2.20	0.000	1.000	49.051	0.000	0.43	0.25	0.30	0.26	1.000	-
2.50	0.000	1.000	43.097	0.000	0.48	0.28	0.34	0.30	1.000	-
2.80	0.000	1.000	38.476	0.000	0.54	0.32	0.38	0.33	1.000	-
3.20	0.000	1.000	33.719	0.000	0.62	0.36	0.43	0.38	1.000	-
3.60	0.000	1.000	29.916	0.000	0.70	0.41	0.48	0.43	1.000	-
4.10	0.000	1.000	26.314	0.000	0.79	0.46	0.55	0.49	1.000	-
4.70	0.000	1.000	22.943	0.000	0.91	0.53	0.63	0.56	1.000	-
5.30	0.000	1.000	20.342	0.000	1.03	0.60	0.71	0.63	1.000	-
6.00	0.000	1.000	17.976	0.000	1.16	0.68	0.81	0.71	1.000	-
6.90	0.000	1.000	15.624	0.000	1.34	0.78	0.93	0.82	1.000	-
7.79	0.000	1.000	13.836	0.000	1.51	0.88	1.05	0.93	1.000	-
8.89	0.000	1.000	12.120	0.000	1.72	1.01	1.20	1.06	1.000	-
10.08	0.000	1.000	10.687	0.000	1.95	1.14	1.36	1.20	1.000	-
11.49	0.000	1.000	9.382	0.000	2.23	1.30	1.55	1.37	1.000	-
12.97	0.003	0.997	8.308	0.068	2.51	1.47	1.75	1.54	0.933	-
14.77	0.006	0.994	7.299	0.112	2.86	1.67	1.99	1.76	0.871	-
16.85	0.011	0.989	6.395	0.151	3.27	1.91	2.27	2.00	0.797	-
19.20	0.018	0.982	5.613	0.199	3.72	2.17	2.58	2.28	0.723	-
21.79	0.027	0.973	4.945	0.264	4.22	2.46	2.93	2.59	0.651	-
24.77	0.038	0.962	4.351	0.354	4.80	2.80	3.33	2.94	0.579	-
28.15	0.055	0.945	3.828	0.441	5.46	3.18	3.79	3.35	0.494	-
32.48	0.075	0.925	3.318	0.537	6.30	3.67	4.37	3.86	0.415	-
36.88	0.096	0.904	2.922	0.698	7.15	4.17	4.96	4.38	0.353	-
41.93	0.129	0.871	2.571	0.891	8.13	4.74	5.64	4.98	0.279	-
47.97	0.169	0.831	2.247	1.000	9.30	5.42	6.46	5.70	0.208	-
53.74	0.208	0.792	2.005	0.975	10.4	6.08	7.23	6.39	0.154	-
61.61	0.244	0.756	1.749	0.913	11.9	6.96	8.29	7.32	0.117	-
69.87	0.279	0.721	1.543	0.881	13.5	7.90	9.40	8.31	0.088	-
79.06	0.312	0.688	1.363	0.852	15.3	8.94	10.6	9.40	0.067	-
89.94	0.344	0.656	1.198	0.826	17.4	10.2	12.1	10.7	0.051	-
101.66	0.375	0.625	1.060	0.812	19.7	11.5	13.7	12.1	0.039	-
115.42	0.406	0.594	0.934	0.798	22.4	13.0	15.5	13.7	0.030	-
131.78	0.438	0.562	0.818	0.784	25.5	14.9	17.7	15.7	0.022	-
149.50	0.468	0.532	0.721	0.773	29.0	16.9	20.1	17.8	0.017	-

Well : DMP Harvey-4

Sample Identification :	**8**
Sample Depth, m :	**1799.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.149**
Injection Sample Pore Volume, cm^3 :	**0.988**
Injection Sample Bulk Volume, cm^3 :	**6.656**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**1.415**
Swanson's Parameter :	**5.93E-02**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
169.59	0.497	0.503	0.635	0.762	32.9	19.2	22.8	20.2	0.013	-
193.21	0.527	0.473	0.558	0.744	37.4	21.8	26.0	23.0	0.010	-
219.78	0.556	0.444	0.490	0.723	42.6	24.8	29.6	26.1	0.007	-
250.48	0.584	0.416	0.430	0.706	48.5	28.3	33.7	29.8	0.005	-
284.31	0.611	0.389	0.379	0.691	55.1	32.1	38.3	33.8	0.004	-
323.13	0.638	0.362	0.334	0.671	62.6	36.5	43.5	38.4	0.003	-
366.67	0.664	0.336	0.294	0.640	71.1	41.5	49.3	43.6	0.002	-
417.01	0.688	0.312	0.258	0.611	80.8	47.1	56.1	49.6	0.002	-
474.89	0.711	0.289	0.227	0.591	92.0	53.7	63.9	56.5	0.001	-
539.08	0.734	0.266	0.200	0.570	104	60.9	72.6	64.1	0.001	-
613.75	0.756	0.244	0.176	0.547	119	69.4	82.6	73.0	0.001	-
697.48	0.777	0.223	0.155	0.528	135	78.9	93.9	82.9	0.001	-
793.68	0.797	0.203	0.136	0.510	154	89.7	107	94.4	0.000	-
902.57	0.817	0.183	0.119	0.494	175	102	121	107	0.000	-
1026.44	0.836	0.164	0.105	0.479	199	116	138	122	0.000	-
1166.43	0.854	0.146	0.092	0.463	226	132	157	139	0.000	-
1325.99	0.872	0.128	0.081	0.447	257	150	178	158	0.000	-
1507.94	0.889	0.111	0.071	0.430	292	170	203	179	0.000	-
1715.31	0.906	0.094	0.063	0.416	332	194	231	204	0.000	-
1950.63	0.922	0.078	0.055	0.405	378	221	263	232	0.000	-
2217.95	0.937	0.063	0.049	0.397	430	251	299	264	0.000	-
2521.44	0.953	0.047	0.043	0.383	489	285	339	300	0.000	-
2866.46	0.968	0.032	0.038	0.345	556	324	386	341	0.000	-
3259.81	0.981	0.019	0.033	0.267	632	369	439	388	0.000	-
3706.17	0.989	0.011	0.029	0.170	718	419	499	441	0.000	-
4215.08	0.994	0.006	0.026	0.092	817	477	567	501	0.000	-
4790.11	0.996	0.004	0.022	0.046	928	542	645	570	0.000	-
5447.05	0.997	0.003	0.020	0.020	1056	616	733	648	0.000	-
6193.90	0.997	0.003	0.017	0.006	1200	700	834	736	0.000	-
7043.70	0.997	0.003	0.015	0.001	1365	796	948	837	0.000	-
8009.05	0.997	0.003	0.013	0.000	1552	905	1078	952	0.000	-
9107.08	0.997	0.003	0.012	0.000	1765	1030	1226	1083	0.000	-
10355.10	0.997	0.003	0.010	0.000	2007	1171	1394	1231	0.000	-
11774.30	0.997	0.003	0.009	0.000	2282	1331	1585	1400	0.000	-
13388.20	0.997	0.003	0.008	0.000	2595	1514	1802	1592	0.000	-
15222.70	0.997	0.003	0.007	0.000	2950	1721	2049	1810	0.000	-
17310.90	0.997	0.003	0.006	0.000	3355	1957	2330	2058	0.000	-
19682.70	0.997	0.003	0.005	0.000	3815	2225	2649	2340	0.000	-
22381.50	0.997	0.003	0.005	0.000	4338	2530	3012	2661	0.000	-
25449.60	0.997	0.003	0.004	0.000	4932	2877	3425	3026	0.000	-

Well : DMP Harvey-4

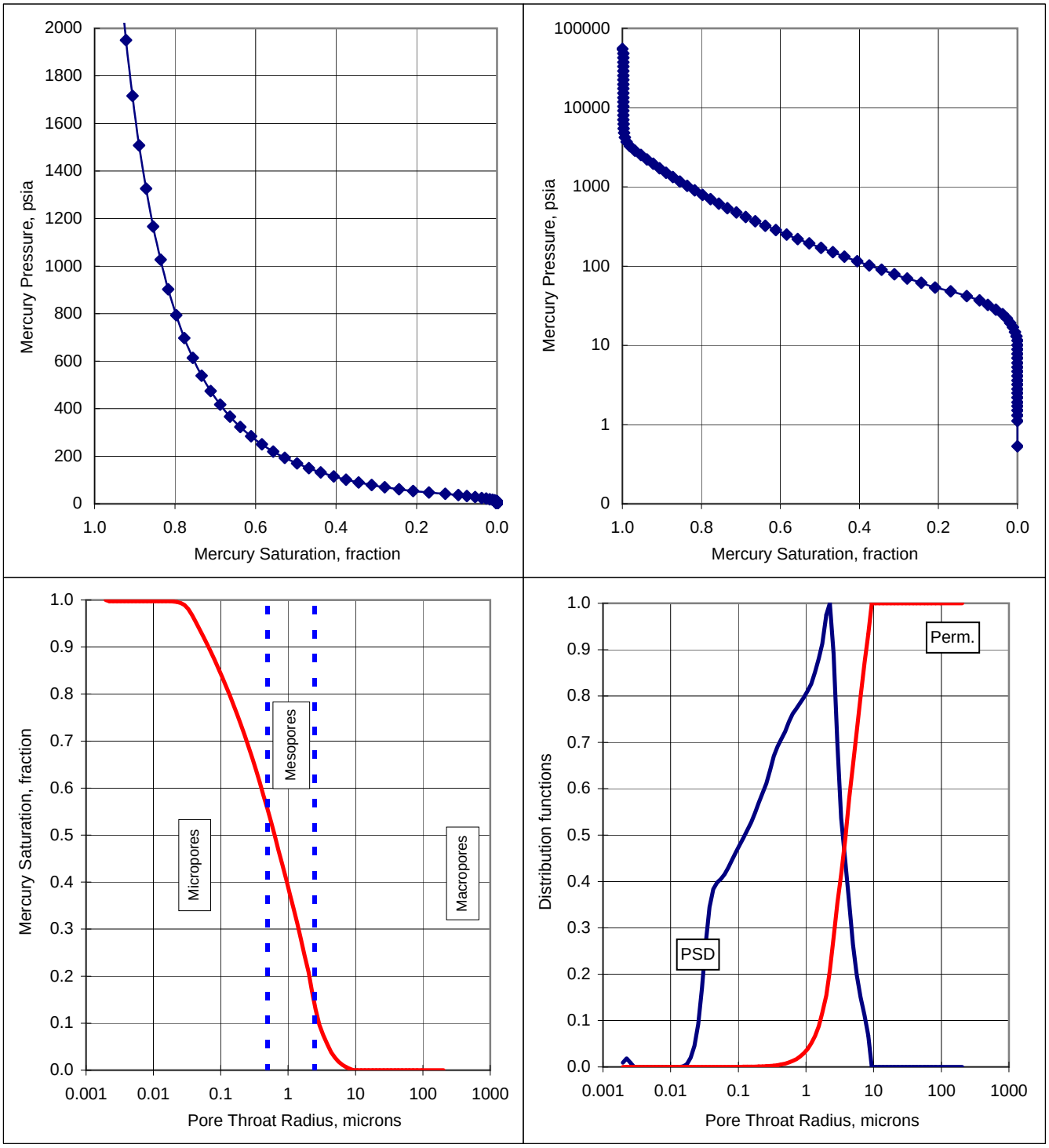
Sample Identification :	**8**
Sample Depth, m :	**1799.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.149**
Injection Sample Pore Volume, cm^3 :	**0.988**
Injection Sample Bulk Volume, cm^3 :	**6.656**
Brine Density Gradient, psig/m:	**1.437**
Gas Density Gradient, psig/m:	**0.305**
Mean Hydraulic Radius, microns :	**1.415**
Swanson's Parameter :	**5.93E-02**
Fzi :	

IFT * Cosine Contact Angle				
	Air-Brine	Air-Oil	Oil-Brine	Air-Hg
Lab --->	72	24	42	372
Res --->	50		26	

Injection Pressure, psia	Mercury Satn, fraction Vp	Equiv. Water Satn, fraction Vp	Pore Throat Radius, microns	Normalized Pore Size Distribution Function	Equivalent Injection Pressure, psia			Height Above Free Water, m	Normalized Permeability Distribution Function	J Function
					A/B (Lab)	O/B (Lab)	G/B (Res)			
28938.40	0.997	0.003	0.004	0.000	5609	3272	3895	3441	0.000	-
32903.30	0.997	0.003	0.003	0.000	6377	3720	4428	3912	0.000	-
37413.70	0.997	0.003	0.003	0.000	7251	4230	5035	4448	0.000	-
42534.30	0.997	0.003	0.003	0.009	8244	4809	5725	5057	0.000	-
48356.00	0.997	0.003	0.002	0.018	9372	5467	6508	5749	0.000	-
54978.0	1.000	0.000	0.002	0.009	10655	6216	7399	6537	0.000	-

Well : DMP Harvey-4

Sample Identification :	**8**
Sample Depth, m :	**1799.00**
Permeability to air, md :	**NA**
Injection Sample Porosity, fraction :	**0.149**



SECTION 4
GEOMECHANICAL ANALYSES

Triaxial Compressive Strength

1. The sample length, diameter and mass were measured and recorded. The samples were tested in a drained condition.
2. The sample was inserted into a rubber jacket and a radial Linear Variable Differential Transducer (LVDT) was placed around the lateral surface of the sample.
3. Sample was mounted between pistons with ports on the contacting surfaces for controlling pore pressure.
4. The entire assembly was mounted in a pressure vessel that allows application of confining pressure and axial stress. The top piston extends through the top of the pressure vessel enabling the application of axial load.
5. The pressure vessel was then loaded into a computer-controlled load frame where another LVDT is attached for axial strain measurements.
6. The pressure system was inspected for leaks, before confining and axial pressures were increased at the same rate to the desired hydrostatic testing pressure.
7. Data-logging started and the axial load was increased in a cyclic pattern that increased stress and then decreased stress several times throughout testing while holding the confining pressure constant.
8. The test was terminated upon attaining the desired level of axial stress or after sample failure. Axial stress was reduced to the hydrostatic condition. Axial and confining pressures were reduced to zero simultaneously.

Triaxial Data Analysis

Deviatoric stresses are plotted against both axial strain ε_L (= $\Delta L/L_o$) and radial strain ε_R (= $\Delta R/R_o$). Deviatoric stress (σ_d) is defined as the difference between the total axial stress and the confining pressure. Since all the tests were conducted under compressive stresses, compressive stress and contraction (shortening) are considered positive. Accordingly, positive axial strain indicates a shortening of the sample and negative radial strain indicates an increase in the sample diameter during deformation.

The compressive strength is defined as the maximum principal stress (σ_1) achieved during testing, however, the deviatory stresses (σ_1 – Pc) are plotted in the stress-strain curves. Static Young's modulus is determined by taking the slope of the linear elastic part of the curve, plotted on σ_d vs. ε_L space. Static Poisson's ratio (= $-\Delta\varepsilon_R/\Delta\varepsilon_L$) is also determined in a similar way by taking the ratio of the slope of the axial curve to the slope of the radial curve.

Acoustic Velocities and Dynamic Elastic Parameters

The pulse transmission technique of velocity measurements was used with 1MHz frequency for P-waves and S-waves. The accuracy of velocity measurements is about 1%. Dynamic elastic parameters (bulk modulus, Young's modulus, shear modulus, and Poisson's ratio) were calculated using compressional-wave and shear-wave velocities (Vp and Vs, respectively) and the bulk density of the sample, based on the linear elastic theory.

Mohr-Coulomb Failure Analysis

With the results of the triaxial compressive tests at confining pressures ($P_c = \sigma_3$), the compressive strengths (σ_1) were plotted against confining pressure and Mohr semicircles were constructed. A Mohr-Coulomb failure envelope was fit to the Mohr semicircles. The slope of the line plotted is based on compressive strength (σ_1) vs confining pressure (σ_3).

TRIAXIAL COMPRESSIVE TEST RESULTS

Saturation Fluid : As Received

Well : **DMP Harvey-3**

Triaxial Static Young's Modulus, Poisson's Ratio and Compressive Strength

Sample Number	Depth (m)	Confining Pressure (psi)	Bulk Density (gm/cm^3)	Compressive Strength (psi)	Young's Modulus (10^6 psi)	Poisson's Ratio
1VA	1420.65	435	2.029	4224	1.915	0.264
1VB	1420.65	725	2.054	5176	2.574	0.257
1VC	1420.65	1160	2.035	7717	2.814	0.242
2VA	1471.45	435	2.082	4058	2.633	0.190
2VB	1471.63	725	1.975	5210	2.841	0.187
2VC	1471.73	1160	2.037	6976	3.035	0.095
3VA	1511.71	435	1.990	4623	1.934	0.179
3VB	1511.79	725	2.008	5525	1.975	0.183
3VC	1511.86	1160	2.028	8222	2.870	0.175

ACOUSTIC VELOCITIES AND DYNAMIC ELASTIC PARAMETERS

Saturation Fluid : As Received

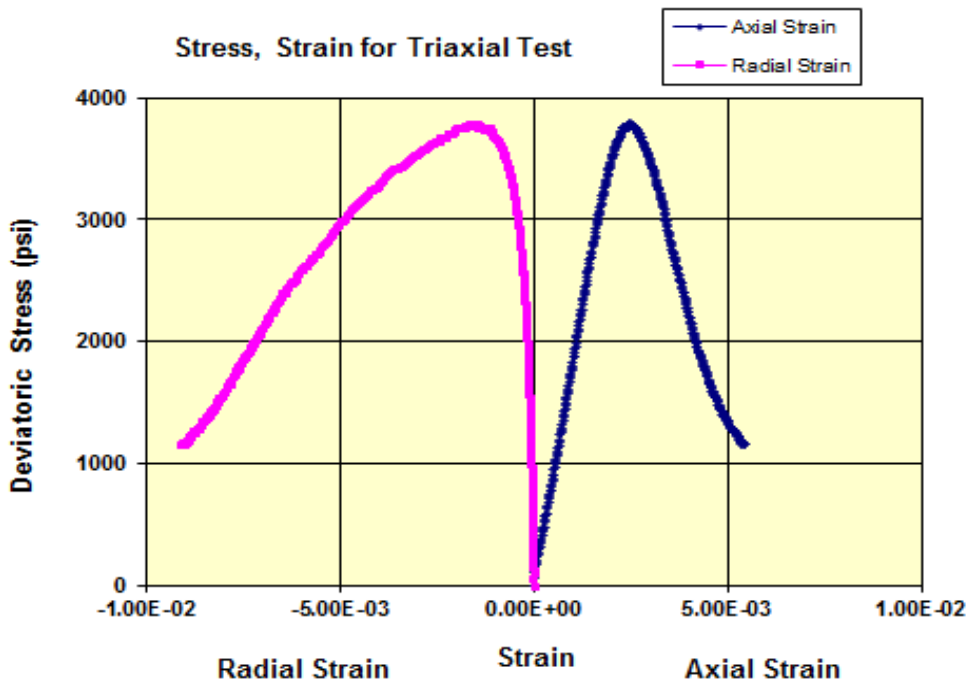
Well : Harvey-3

Acoustic Velocities and Dynamic Moduli at Triaxial Stress Conditions

Sample No.	Depth (m)	Confining Pressure (psi)	Axial Pressure (psi)	Bulk Density (g/cm^3)	Acoustic Velocity				Dynamic Elastic Parameters			
					Compressional		Shear		Bulk Modulus ($x10^6$ psi)	Young's Modulus ($x10^6$ psi)	Shear Modulus ($x10^6$ psi)	Poisson's Ratio
					ft/sec	µs/ft	ft/sec	µs/ft				
1VA	1420.65	435	435	2.029	10818	92.44	5810	172.13	1.97	2.40	0.92	0.297
		435	4000	2.029	11356	88.06	5939	168.38	2.24	2.53	0.96	0.312
2VA	1471.45	435	435	2.082	11534	86.70	7197	138.95	1.80	3.43	1.45	0.181
		435	3500	2.082	11813	84.65	7268	137.59	1.94	3.54	1.48	0.195
3VA	1511.71	435	435	1.990	10303	97.06	6416	155.86	1.38	2.61	1.10	0.183
		435	3400	1.990	10433	95.85	6479	154.35	1.42	2.67	1.13	0.186

Triaxial Compressive Strength

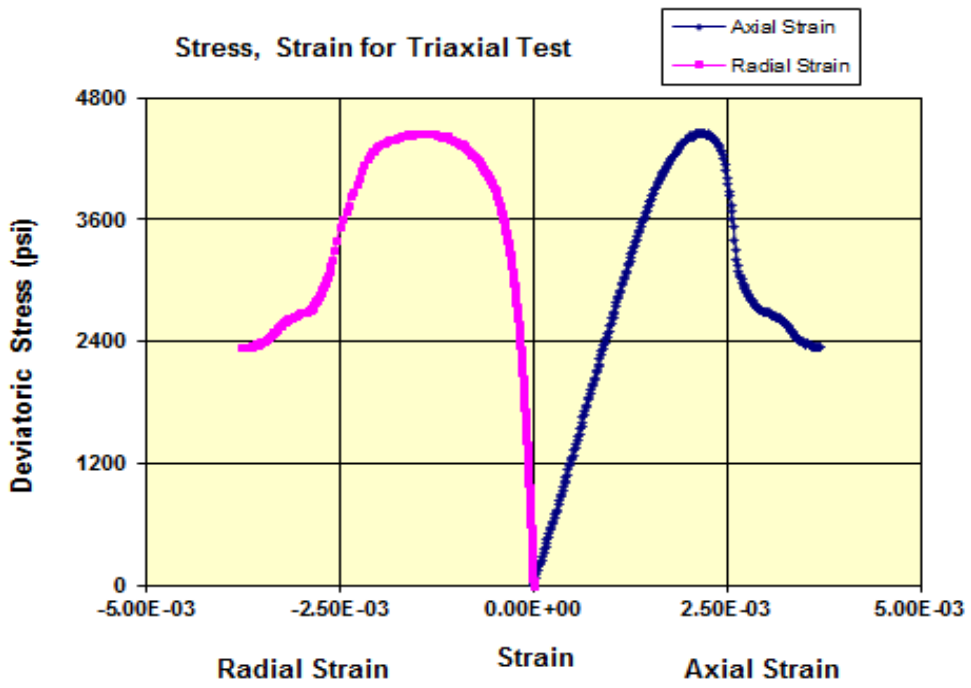
Well : DMP Harvey-3



Sample	1VA
Depth (m)	1420.65
Diameter (in)	1
Length (in)	1.9183
Mass (g)	50.1
Saturation Fluid	As Received
Bulk Density (g/cc)	2.029
Confining Pressure (psi)	435
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	1.915
Static Poisson's Ratio	0.264
Compressive Strength (psi)	4224

Triaxial Compressive Strength

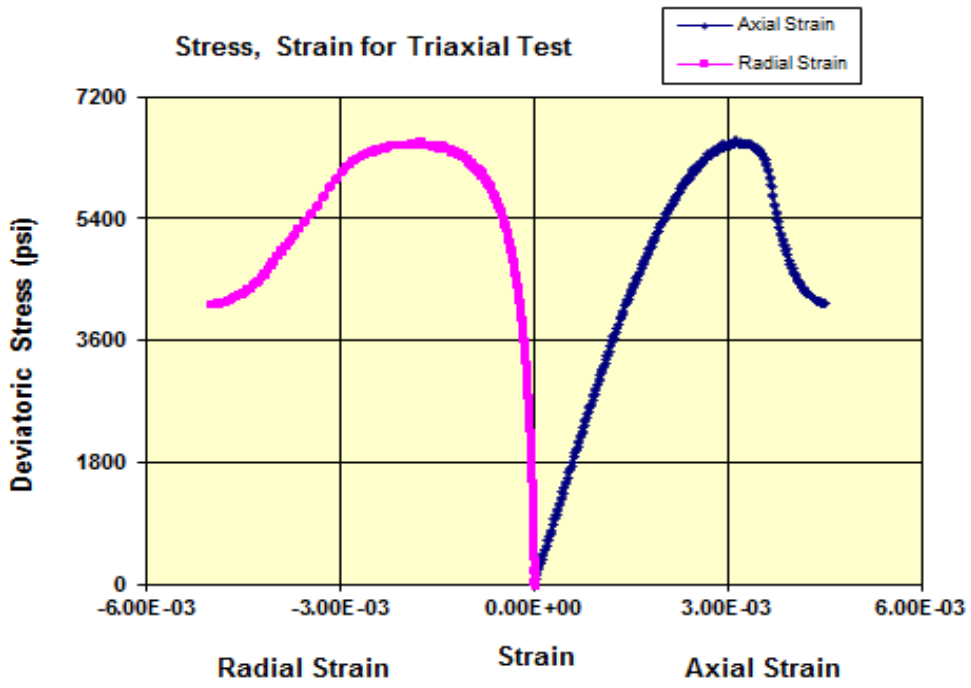
Well : **DMP Harvey-3**



Sample	1VB
Depth (m)	1420.65
Diameter (in)	1.0009
Length (in)	1.9442
Mass (g)	51.5
Saturation Fluid	As Received
Bulk Density (g/cc)	2.054
Confining Pressure (psi)	725
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	2.574
Static Poisson's Ratio	0.257
Compressive Strength (psi)	5176

Triaxial Compressive Strength

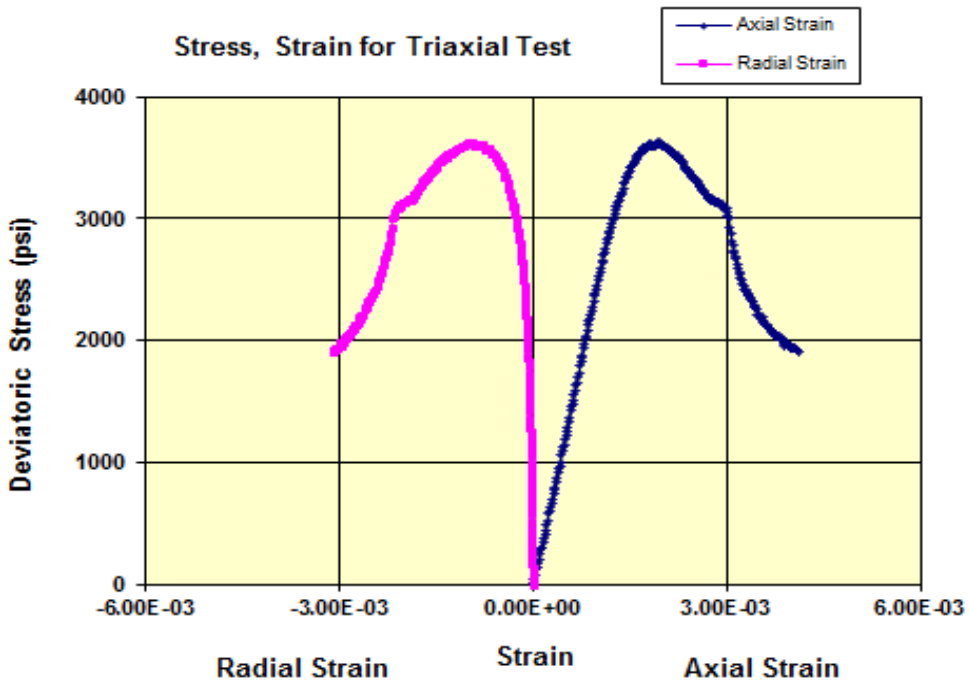
Well : DMP Harvey-3



Sample	1VC
Depth (m)	1420.65
Diameter (in)	0.9994
Length (in)	1.9839
Mass (g)	51.9
Saturation Fluid	As Received
Bulk Density (g/cc)	2.035
Confining Pressure (psi)	1160
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	2.814
Static Poisson's Ratio	0.242
Compressive Strength (psi)	7717

Triaxial Compressive Strength

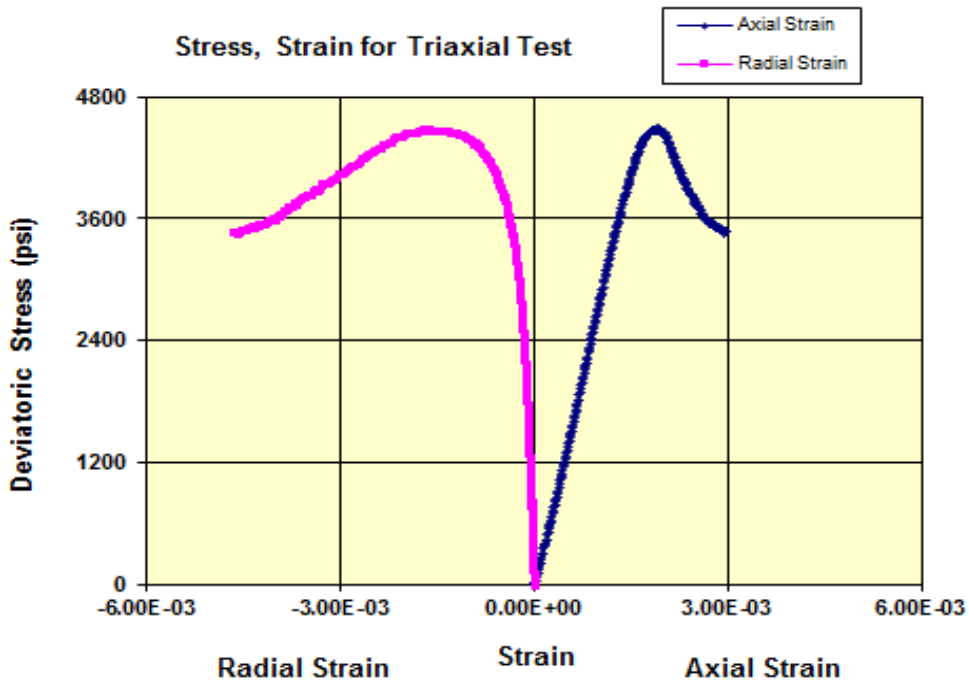
Well : **DMP Harvey-3**



Sample	2VA
Depth (m)	1471.45
Diameter (in)	1.003
Length (in)	1.7545
Mass (g)	47.3
Saturation Fluid	As Received
Bulk Density (g/cc)	2.082
Confining Pressure (psi)	435
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	2.633
Static Poisson's Ratio	0.190
Compressive Strength (psi)	4058

Triaxial Compressive Strength

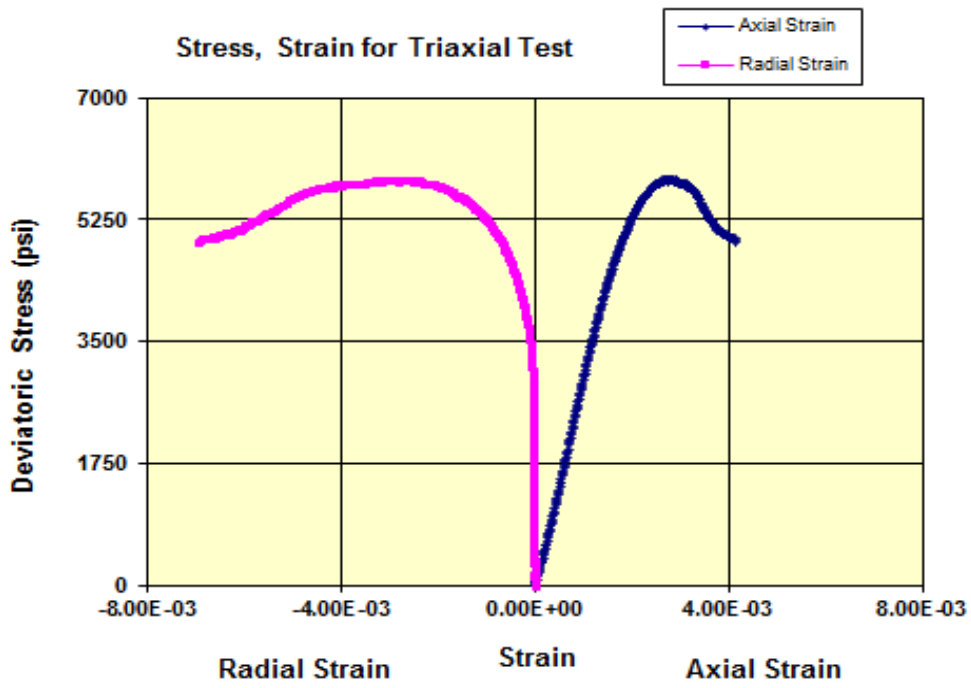
Well : DMP Harvey-3



Sample	2VB
Depth (m)	1471.63
Diameter (in)	0.9932
Length (in)	2.0057
Mass (g)	50.3
Saturation Fluid	As Received
Bulk Density (g/cc)	1.975
Confining Pressure (psi)	725
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	2.841
Static Poisson's Ratio	0.187
Compressive Strength (psi)	5210

Triaxial Compressive Strength

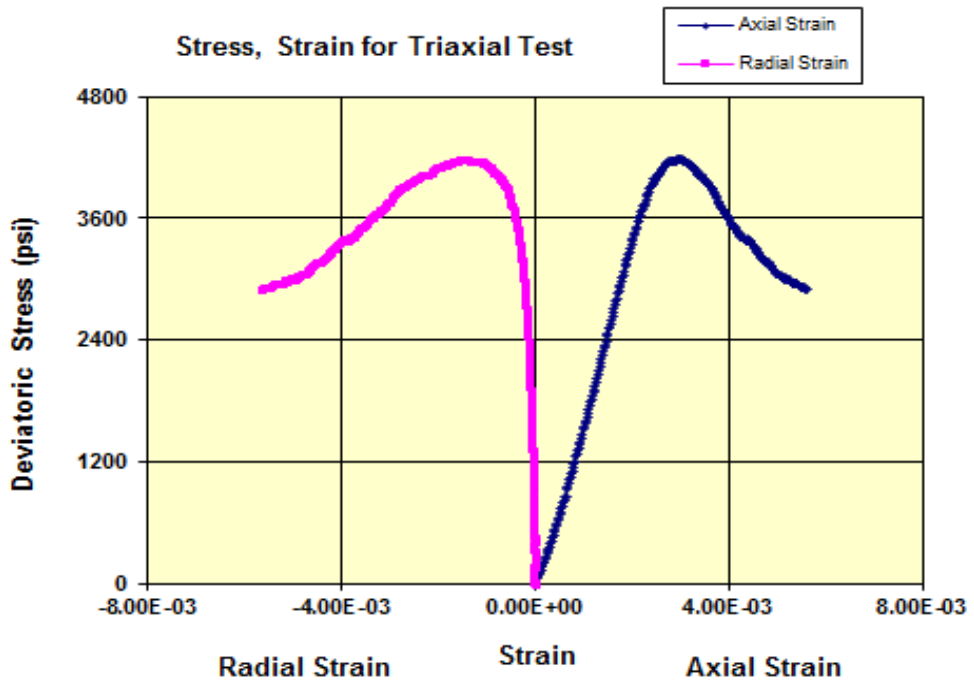
Well : **DMP Harvey-3**



Sample	2VC
Depth (m)	1471.73
Diameter (in)	0.9926
Length (in)	1.9938
Mass (g)	51.5
Saturation Fluid	As Received
Bulk Density (g/cc)	2.037
Confining Pressure (psi)	1160
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	3.035
Static Poisson's Ratio	0.095
Compressive Strength (psi)	6976

Triaxial Compressive Strength

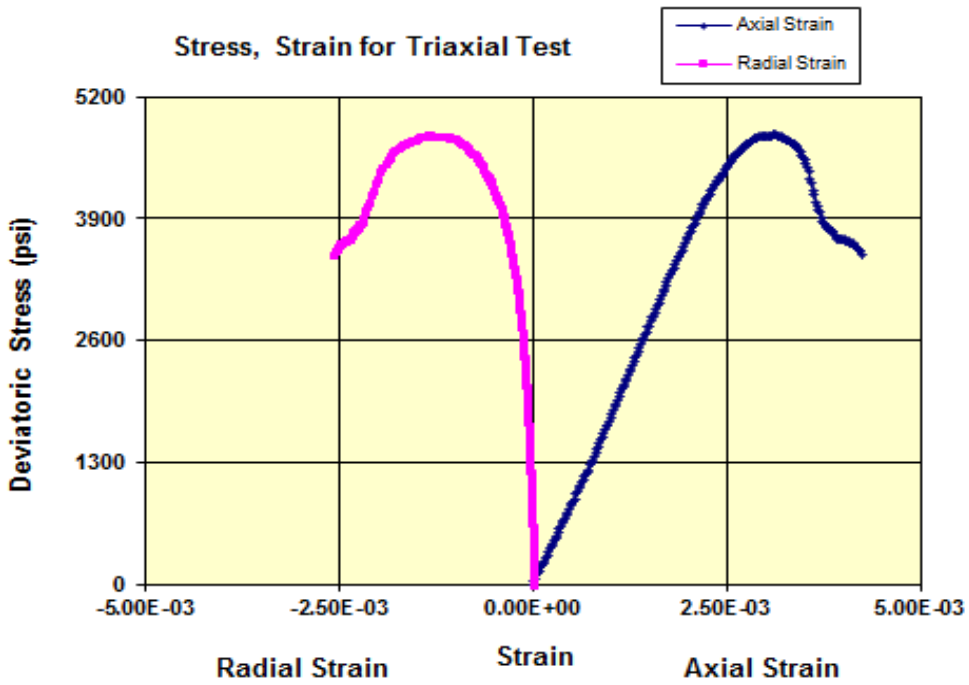
Well : DMP Harvey-3



Sample	3VA
Depth (m)	1511.71
Diameter (in)	0.998
Length (in)	1.9876
Mass (g)	50.7
Saturation Fluid	As Received
Bulk Density (g/cc)	1.990
Confining Pressure (psi)	435
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	1.934
Static Poisson's Ratio	0.179
Compressive Strength (psi)	4623

Triaxial Compressive Strength

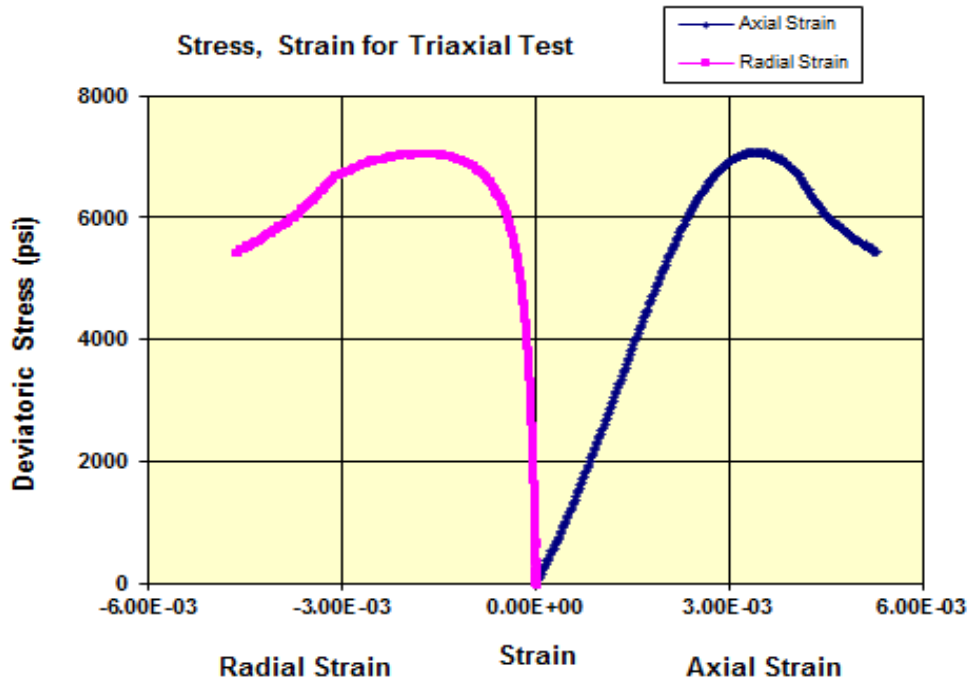
Well : DMP Harvey-3



Sample	3VB
Depth (m)	1511.79
Diameter (in)	1.002
Length (in)	1.9582
Mass (g)	50.8
Saturation Fluid	As Received
Bulk Density (g/cc)	2.008
Confining Pressure (psi)	725
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	1.975
Static Poisson's Ratio	0.183
Compressive Strength (psi)	5525

Triaxial Compressive Strength

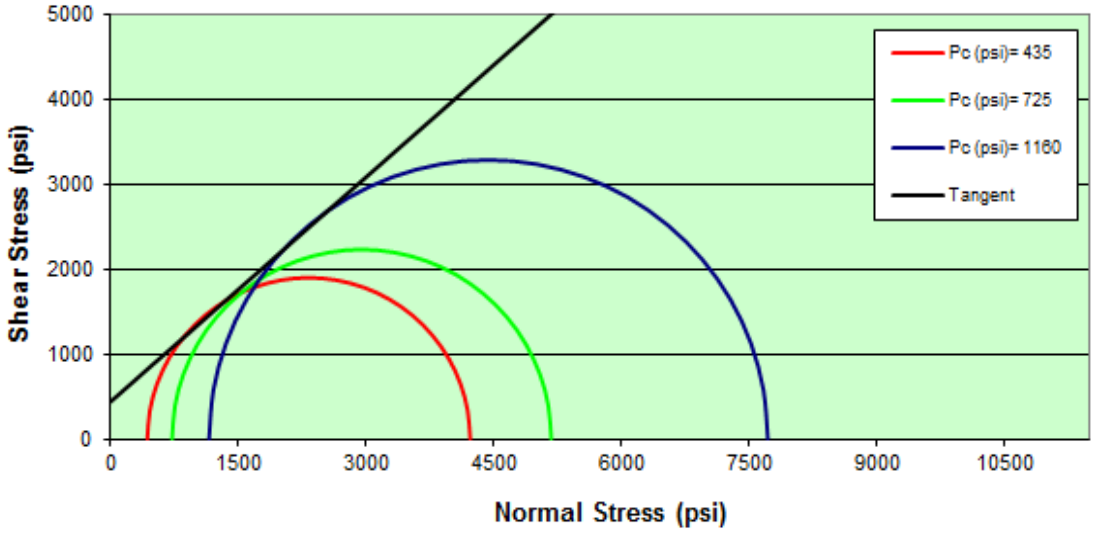
Well : **DMP Harvey-3**

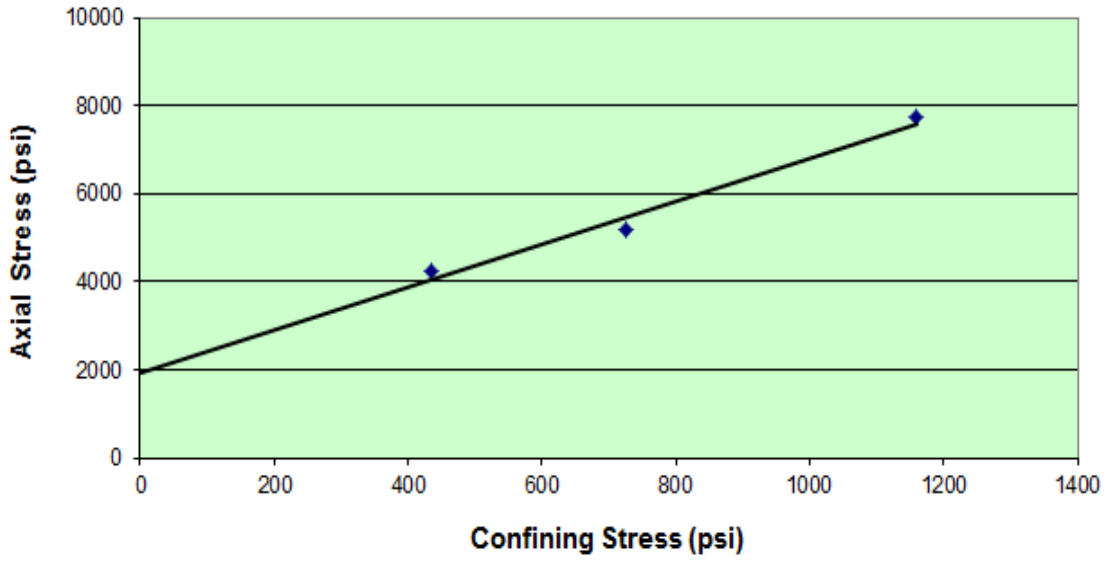


Sample	3VC
Depth (m)	1511.86
Diameter (in)	0.9958
Length (in)	1.9977
Mass (g)	51.7
Saturation Fluid	As Received
Bulk Density (g/cc)	2.028
Confining Pressure (psi)	1160
Pore Pressure (psi)	0
Static Young's Modulus ($X10^6$ psi)	2.870
Static Poisson's Ratio	0.175
Compressive Strength (psi)	8222

MOHR - COULOMB FAILURE ANALYSIS

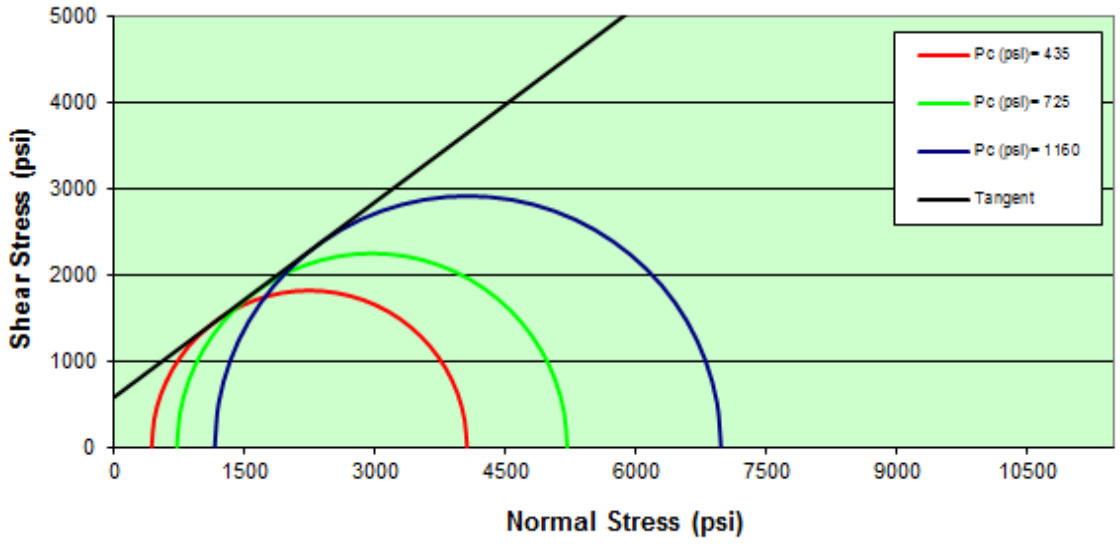
Well Name	Sample Depth (m)	Confining Pressure P_c = σ_3 (psi)	Compressive Strength σ_1 (psi)	Slope on σ_1 vs. σ_3	Unconfined Compressive Strength (psi)	Cohesion (psi)	Angle of Internal friction (deg)	Coefficient of Internal Friction
DMP Harvey-3	1420.65	435	4224					
DMP Harvey-3	1420.65	725	5176	4.90	1917	433	41.37	0.88
DMP Harvey-3	1420.65	1160	7717					

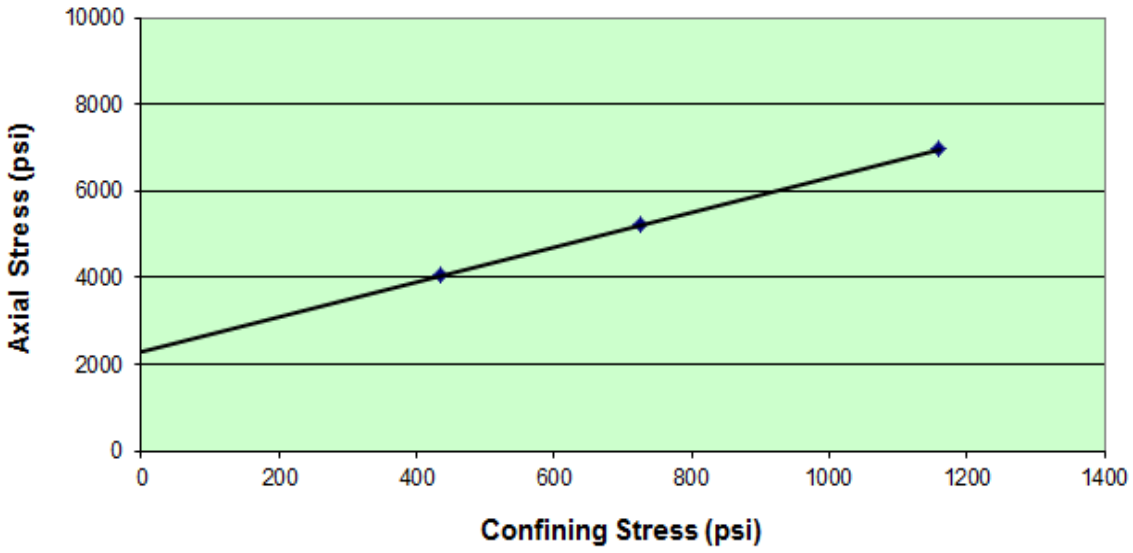




MOHR - COULOMB FAILURE ANALYSIS

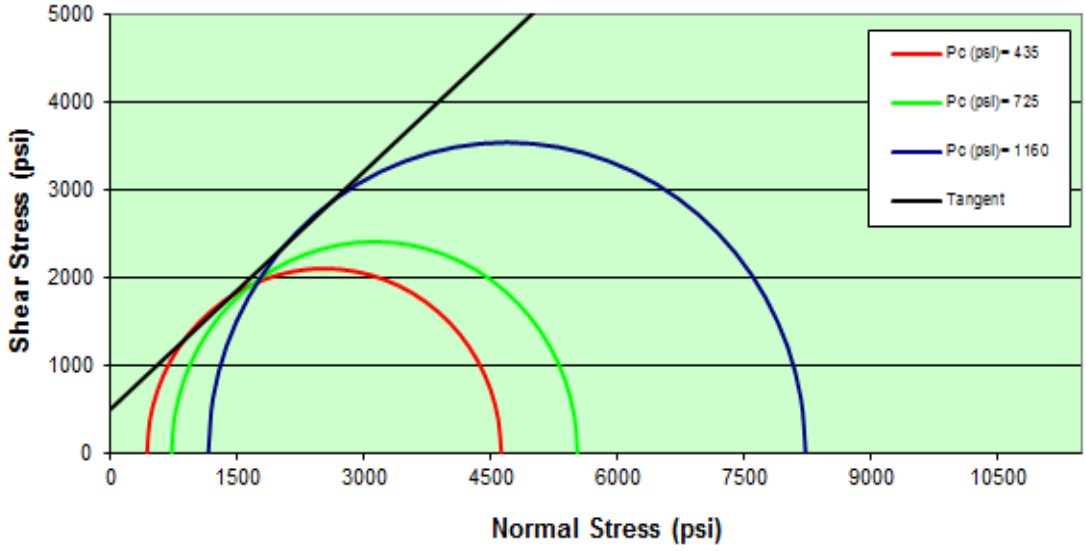
Well	Sample Depth (m)	Confining Pressure $P_c = \sigma_3$ (psi)	Compressive Strength σ_1 (psi)	Slope on σ_1 vs. σ_3	Unconfined Compressive Strength (psi)	Cohesion (psi)	Angle of Internal friction (deg)	Coefficient of Internal Friction
DMP Harvey-3	1471.45	435	4058					
DMP Harvey-3	1471.45	725	5210	4.03	2300	573	37.03	0.75
DMP Harvey-3	1471.45	1160	6976					

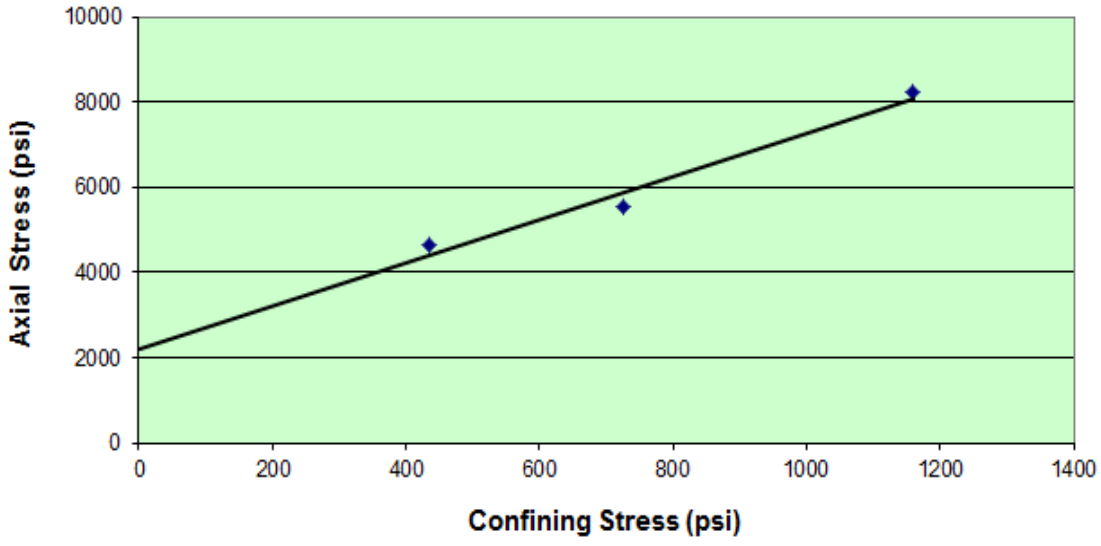




MOHR - COULOMB FAILURE ANALYSIS

Well	Sample Depth (m)	Confining Pressure P_c = σ_3 (psi)	Compressive Strength σ_1 (psi)	Slope on σ_1 vs. σ_3	Unconfined Compressive Strength (psi)	Cohesion (psi)	Angle of Internal friction (deg)	Coefficient of Internal Friction
DMP Harvey-3	1511.71	435	4623					
DMP Harvey-3	1511.79	725	5525	5.06	2209	491	42.07	0.90
DMP Harvey-3	1511.86	1160	8222					





PLUG PHOTOGRAPHY

Before & After Testing

Well : **DMP Harvey-3**

1VA (1420.65 m) Before Testing



1VA (1420.65 m) After Testing

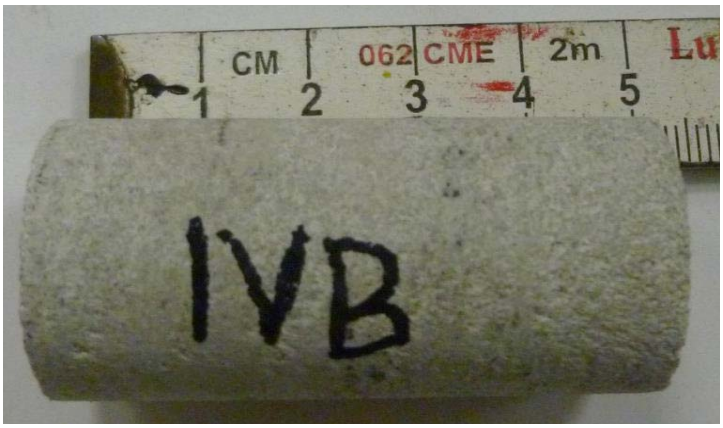


PLUG PHOTOGRAPHY

Before & After Testing

Well : **DMP Harvey-3**

1VB (1420.65 m) Before Testing



1VB (1420.65 m) After Testing

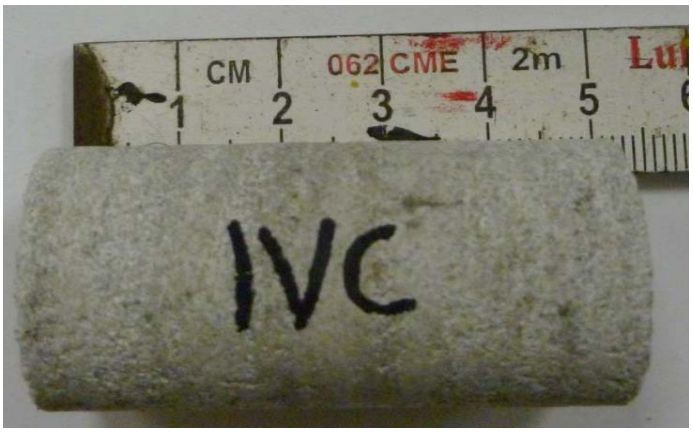


PLUG PHOTOGRAPHY

Before & After Testing

Well : **DMP Harvey-3**

1VC (1420.65 m) Before Testing



1VC (1420.65 m) After Testing



PLUG PHOTOGRAPHY
Before & After Testing

Well : **DMP Harvey-3**

2VA (1471.45 m) Before Testing



2VA (1471.45 m) After Testing



PLUG PHOTOGRAPHY

Before & After Testing

Well : **DMP Harvey-3**

2VB (1471.63 m) Before Testing



2VB (1471.63 m) After Testing

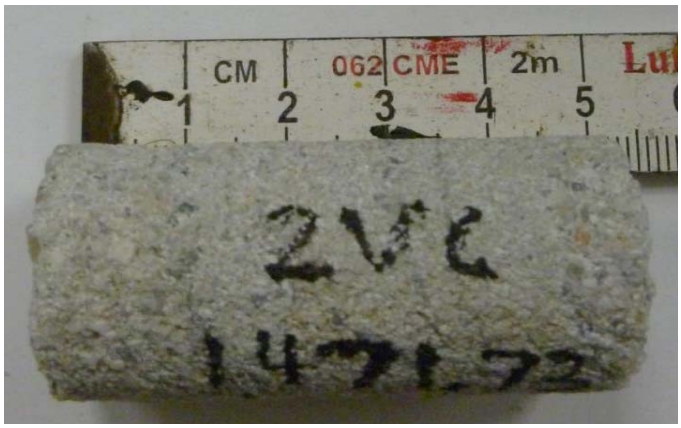


PLUG PHOTOGRAPHY

Before & After Testing

Well : **DMP Harvey-3**

2VC (1471.73 m) Before Testing



2VC (1471.73 m) After Testing

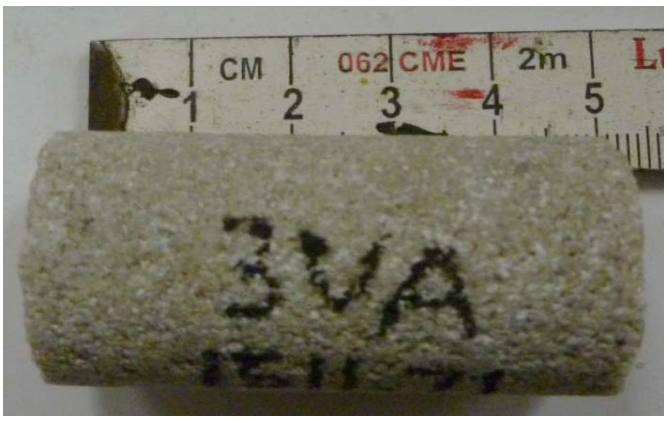


PLUG PHOTOGRAPHY

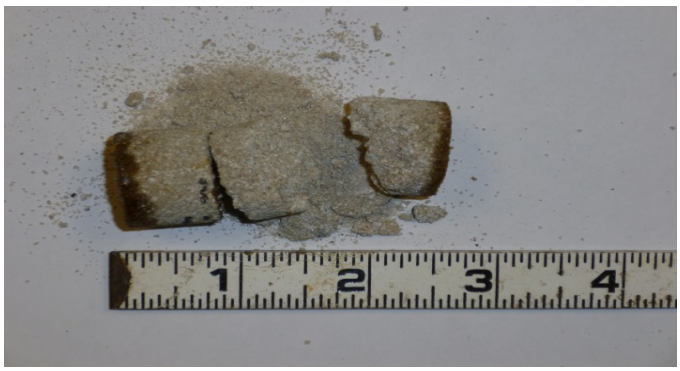
Before & After Testing

Well : **DMP Harvey-3**

3VA (1511.71 m) Before Testing



3VA (1511.71 m) After Testing

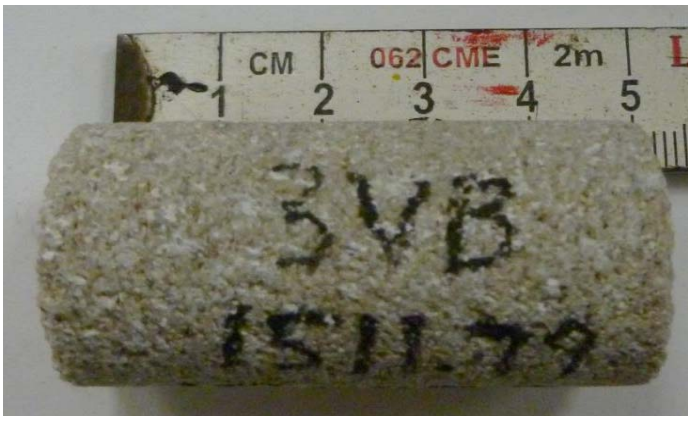


PLUG PHOTOGRAPHY

Before & After Testing

Well : **DMP Harvey-3**

3VB (1511.79 m) Before Testing



3VB (1511.79 m) After Testing

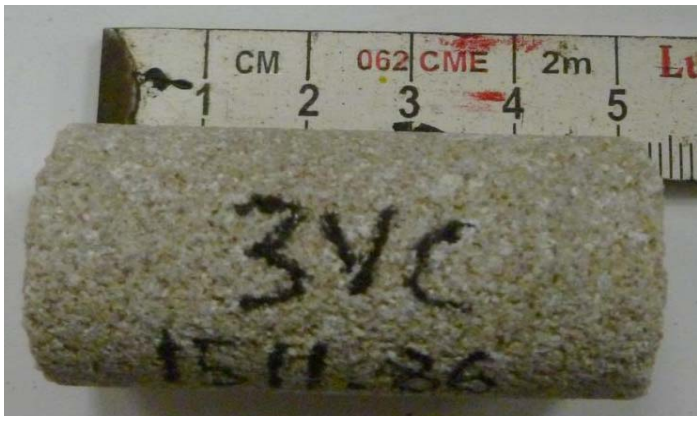


PLUG PHOTOGRAPHY

Before & After Testing

Well : **DMP Harvey-3**

3VC (1511.86 m) Before Testing



3VC (1511.86 m) After Testing



APPENDICES

APPENDIX 1

Core Plug X-ray Computed Tomography (X-ray CT) Images

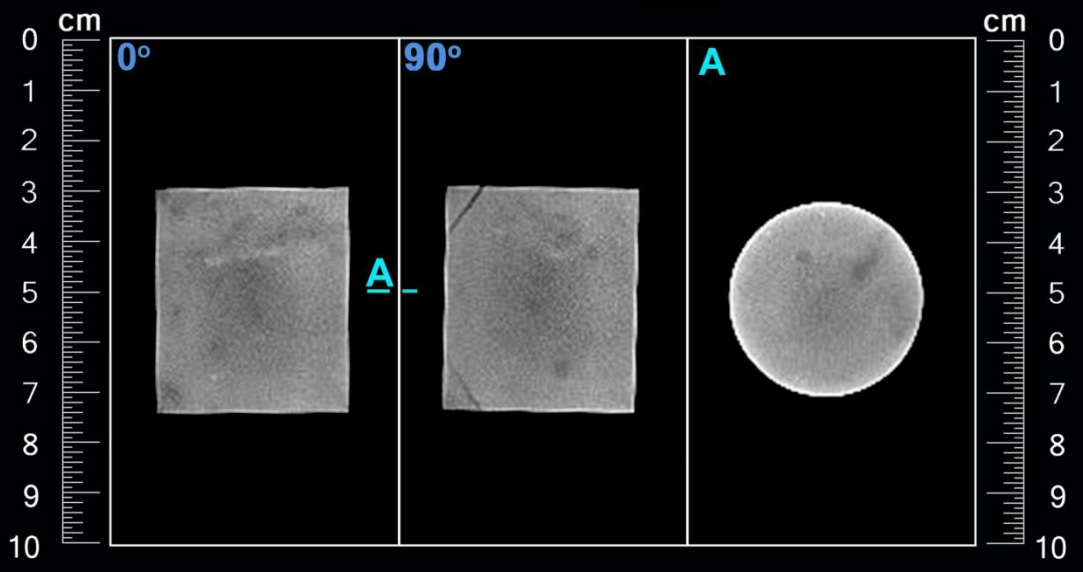
Pre-Test Samples

(Sorted by Well and Depth)

Department of Mines and Petroleum

DMP HARVEY-2

Plug ID: PSSH-1 Depth: 776.00m Density: 1977 HU

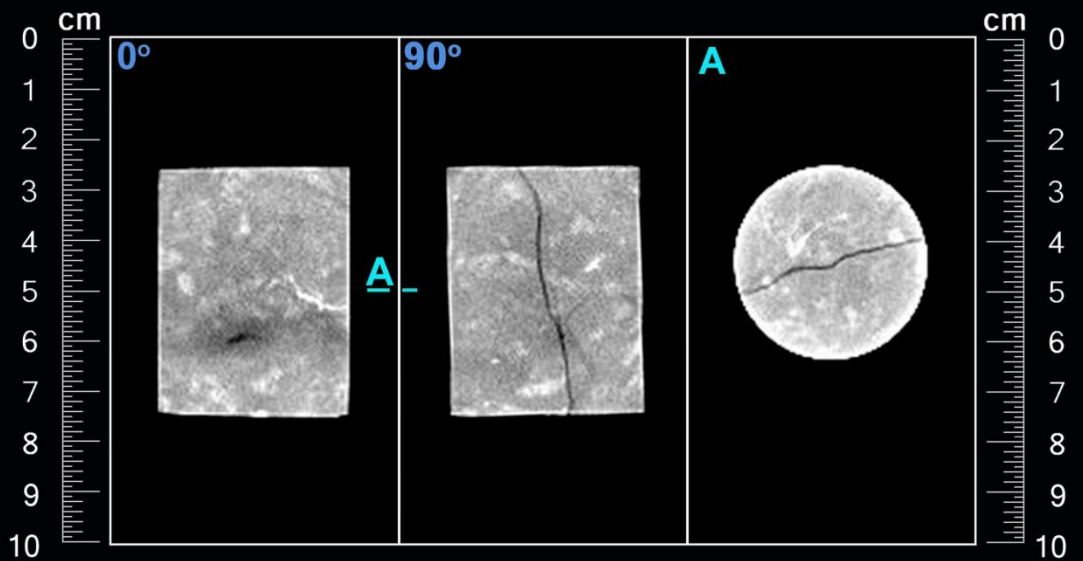


Scan Settings - Window: 900 / Level: 1950

Department of Mines and Petroleum

DMP HARVEY-2

Plug ID: PSSH-2 Depth: 1132.10m Density: 2139 HU

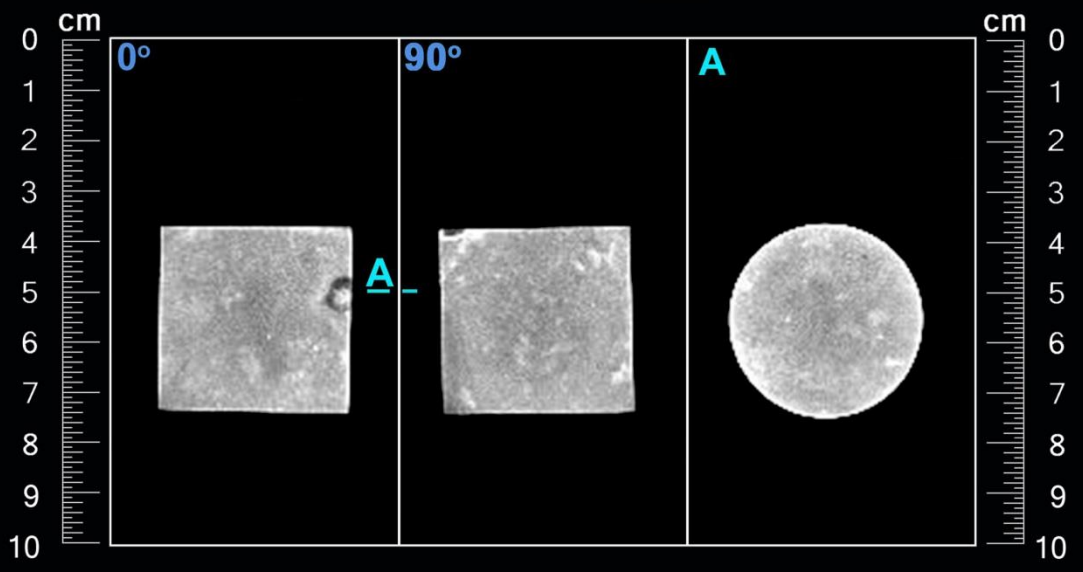


Scan Settings - Window: 900 / Level: 1950

Department of Mines and Petroleum

DMP HARVEY-2

Plug ID: PSSV-1 Depth: 1132.20m Density: 2098 HU

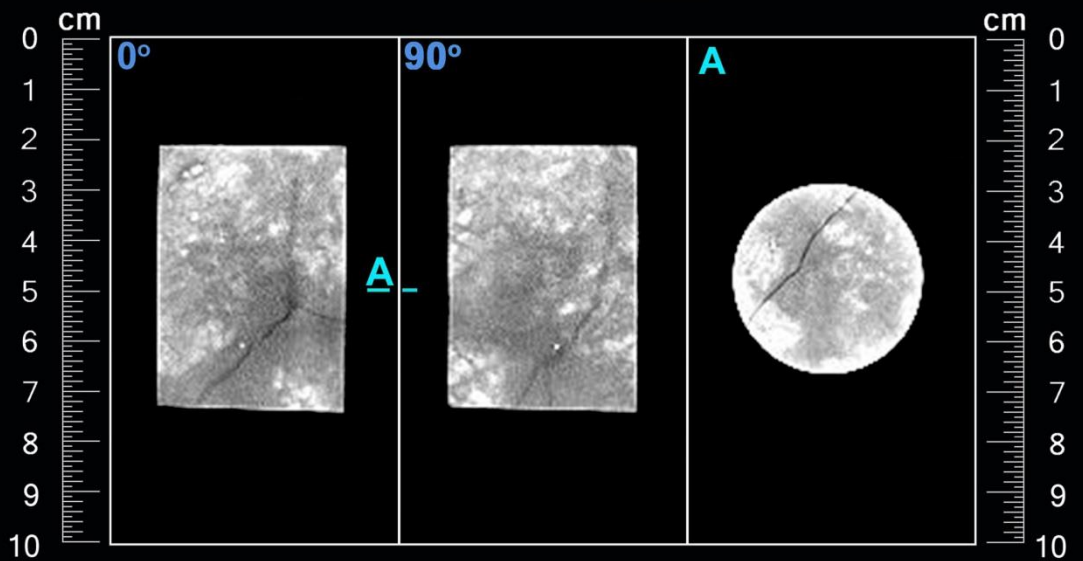


Scan Settings - Window: 900 / Level: 1950

Department of Mines and Petroleum

DMP HARVEY-3A

Plug ID: PSSH-8 Depth: 743.88m Density: 2135 HU

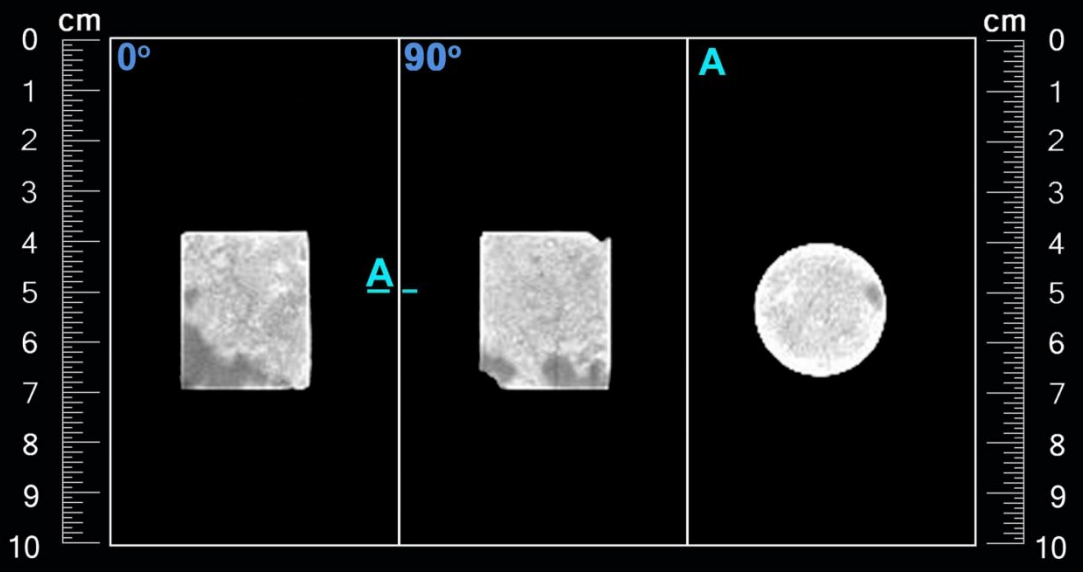


Scan Settings - Window: 900 / Level: 1950

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DMP HARVEY-3A

Plug ID: PSSH-9 Depth: 778.40m Density: 2278 HU

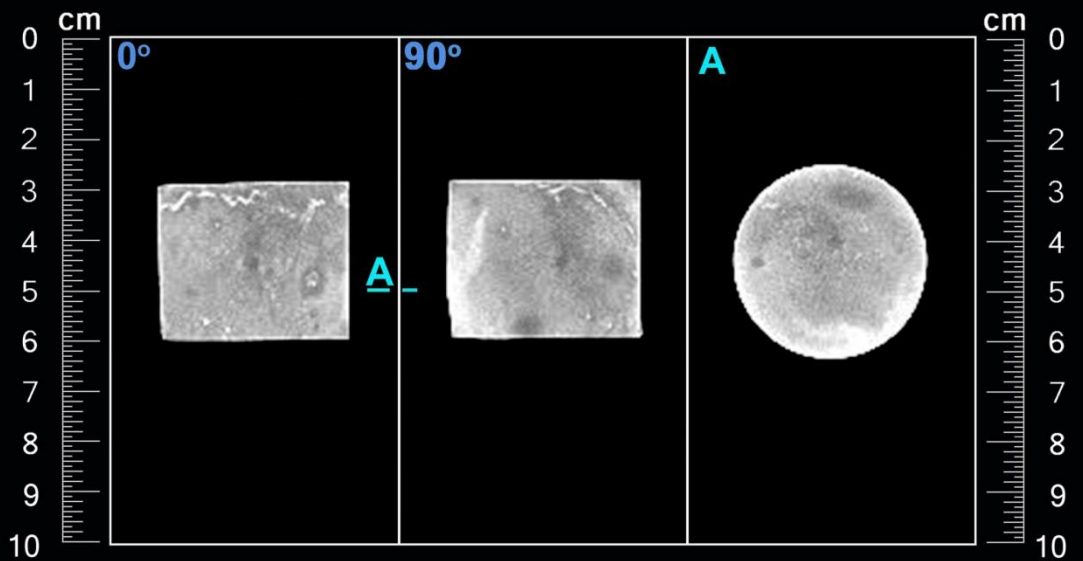


Scan Settings - Window: 900 / Level: 1950

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DMP HARVEY-3A

Plug ID: PSSH-3 Depth: 1171.80m Density: 2106 HU

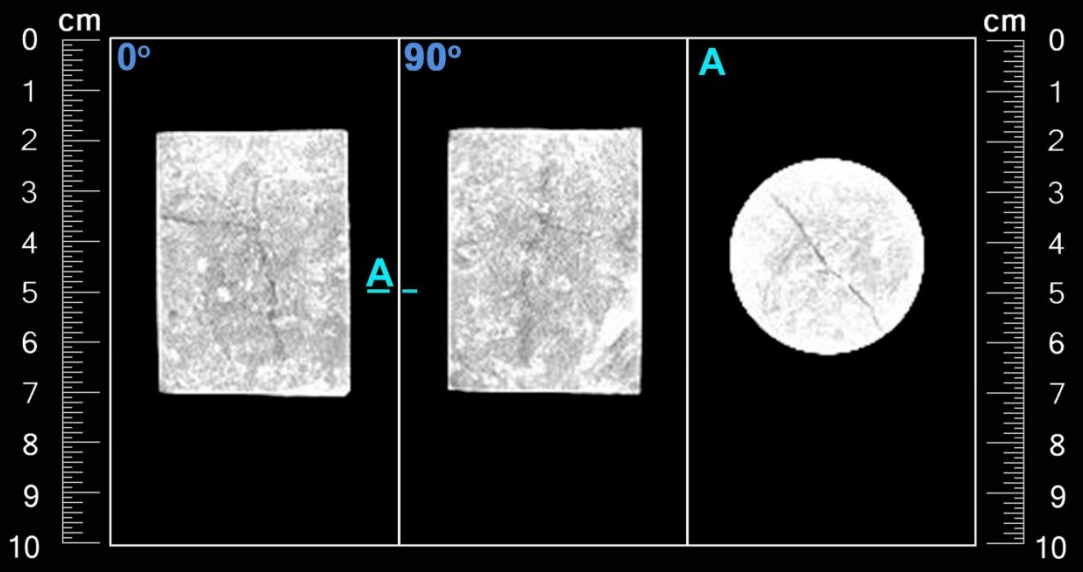


Scan Settings - Window: 900 / Level: 1950

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DMP HARVEY-3A

Plug ID: PSSH-4 Depth: 1333.10m Density: 2336 HU

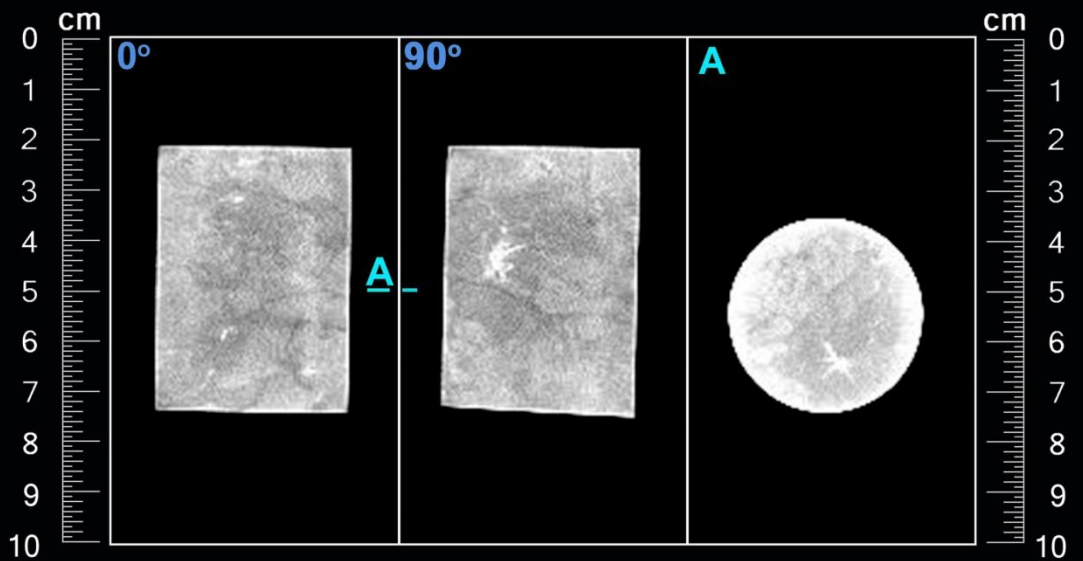


Scan Settings - Window: 900 / Level: 1950

Department of Mines and Petroleum

DMP HARVEY-3A

Plug ID: PSSV-2 Depth: 1377.80m Density: 2218 HU

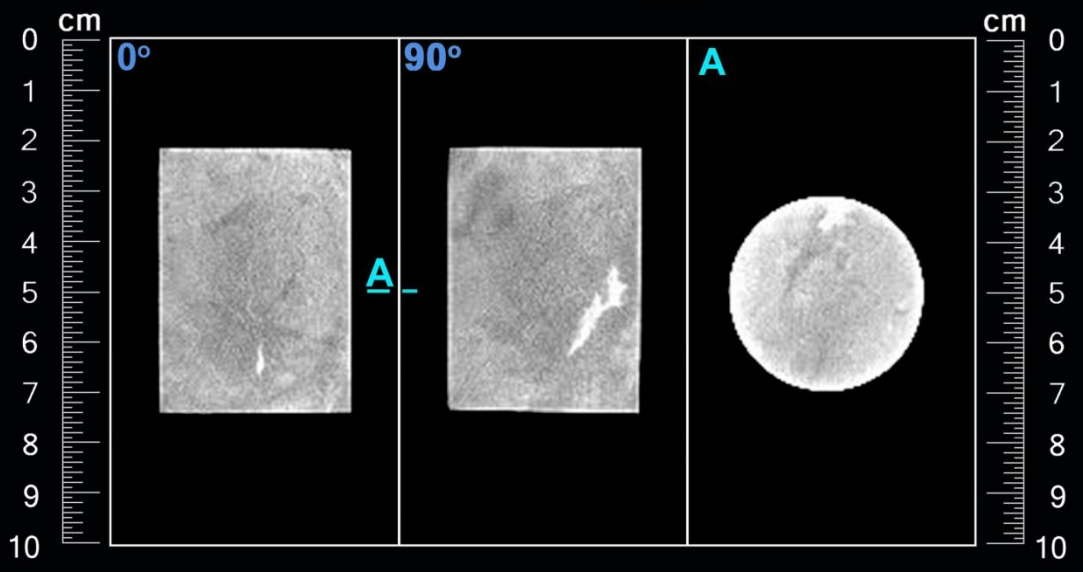


Scan Settings - Window: 900 / Level: 1950

Department of Mines and Petroleum

DMP HARVEY-3A

Plug ID: PSSH-5 Depth: 1378.00m Density: 2174 HU

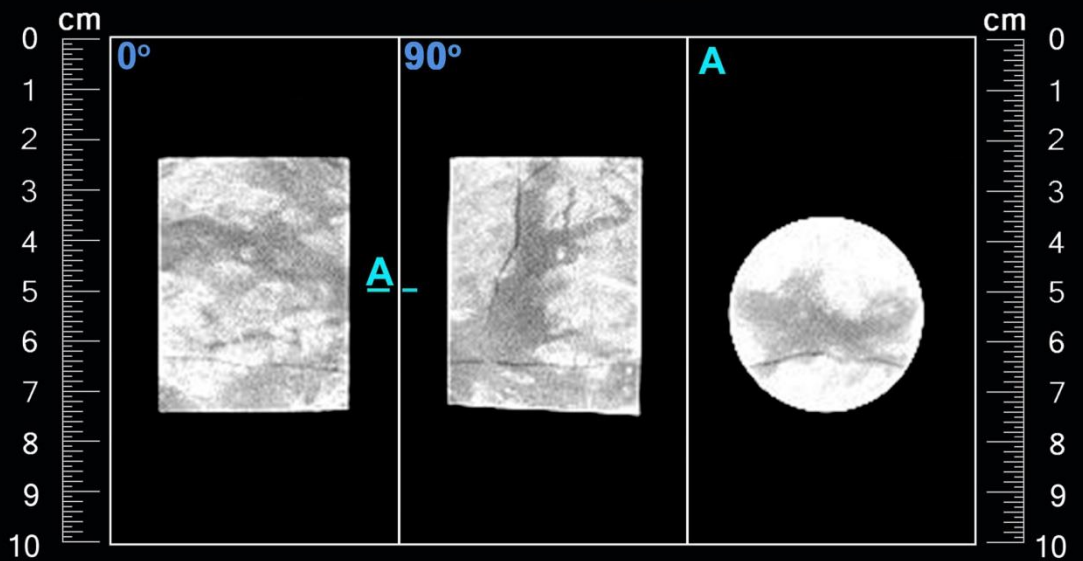


Scan Settings - Window: 900 / Level: 1950

Department of Mines and Petroleum

DMP HARVEY-3A

Plug ID: PSSV-3 Depth: 1393.43m Density: 2273 HU

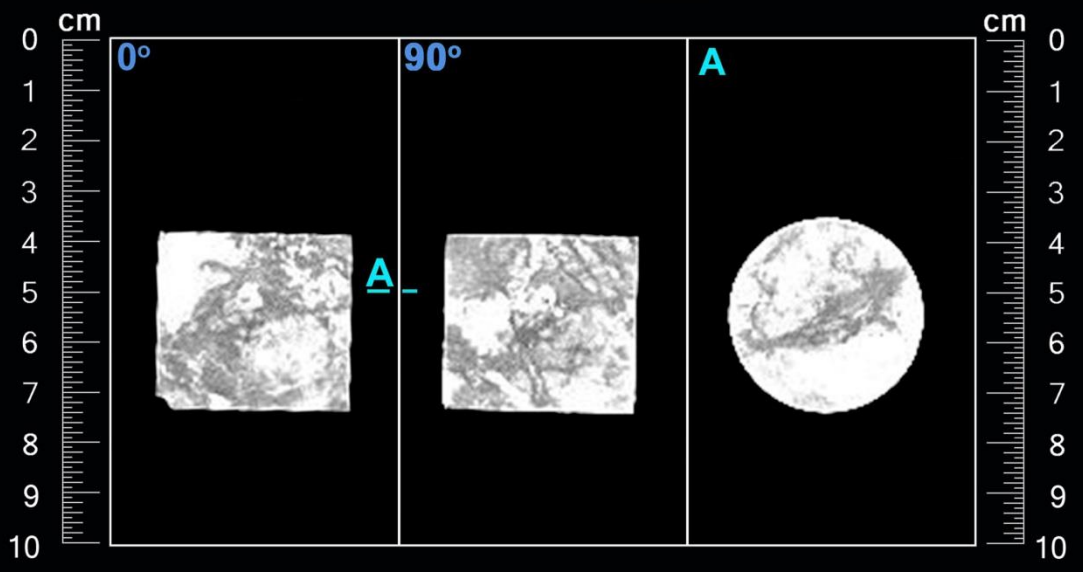


Scan Settings - Window: 900 / Level: 1950

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DMP HARVEY-3A

Plug ID: PSSH-6 Depth: 1416.70m Density: 2303 HU

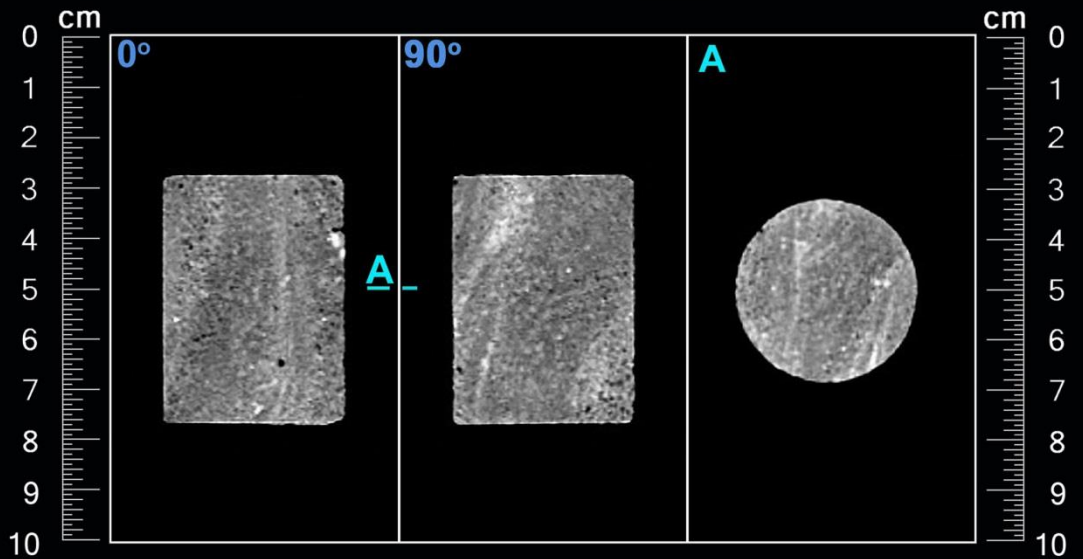


Scan Settings - Window: 900 / Level: 1950

Department of Mines and Petroleum

DMP HARVEY-3

Plug ID: 11 Depth: 1420.00 m Density: 1404 HU



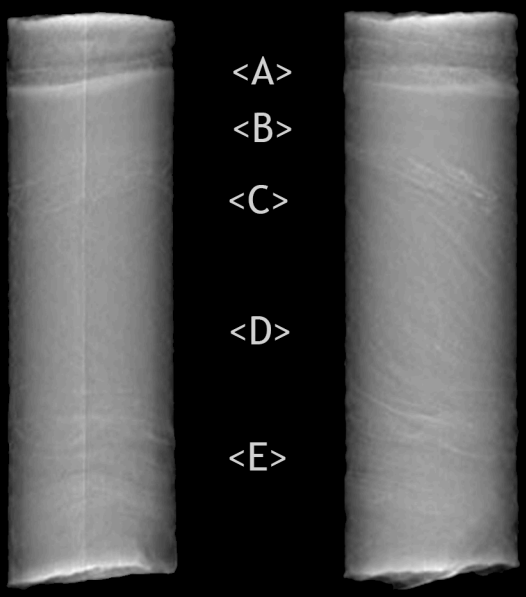
Scan Settings - Window: 1000 / Level: 1350

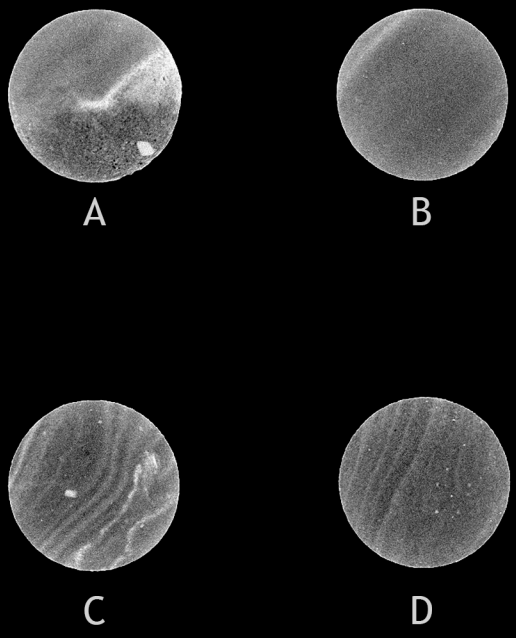
Department of Mines and Petroleum

DMP HARVEY-3

0°	90°	Axials

1GM - 1420.4 m





Centimetres

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

KV:	130
mA:	100

Slice Window:	1000
Slice Level:	1400

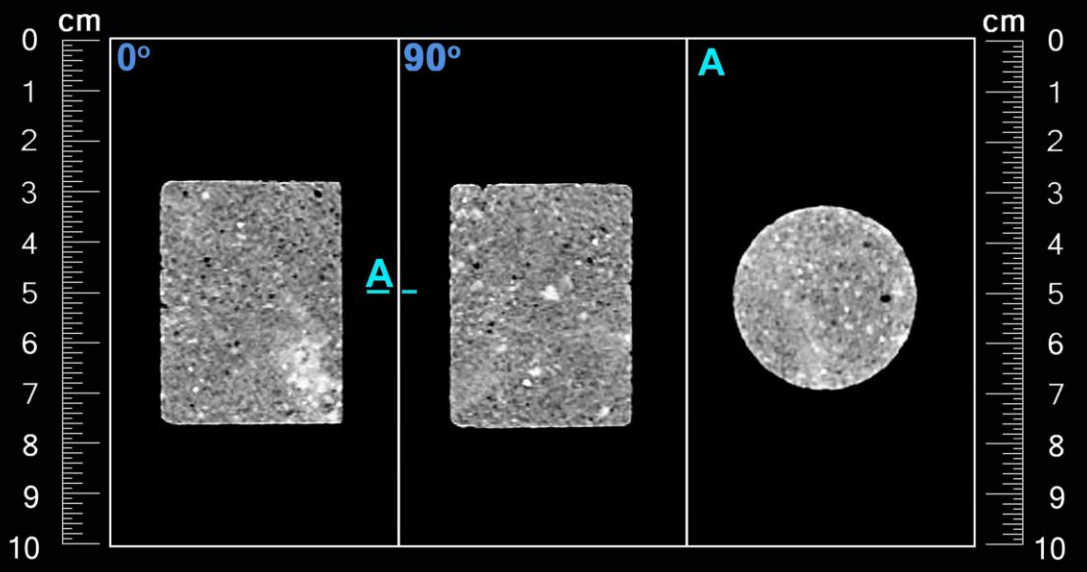
1420.75 m

UltraScan

Department of Mines and Petroleum

DMP HARVEY-3

Plug ID: 20 Depth: 1429.00 m Density: 1487 HU



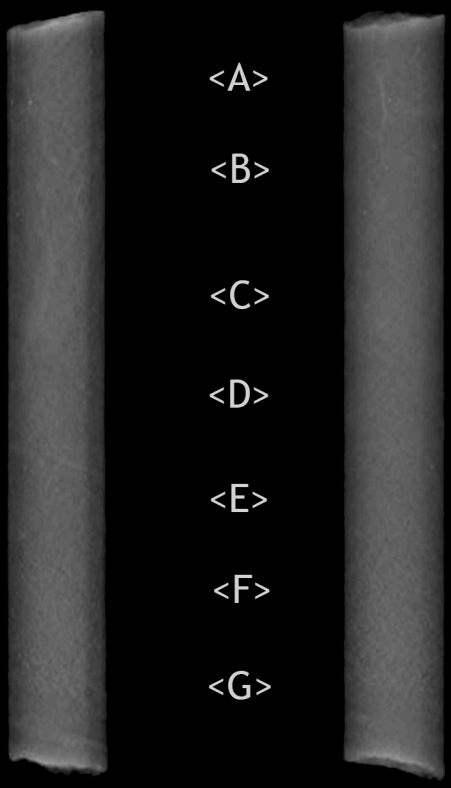
Scan Settings - Window: 1100 / Level: 1350

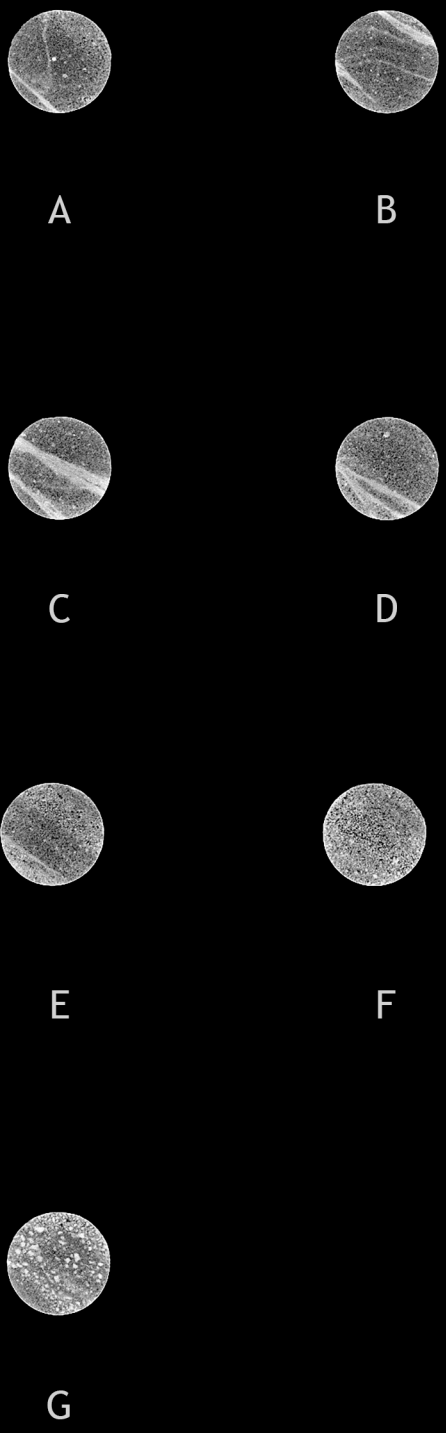
Core Lab
RESERVOIR OPTIMIZATION

Department of Mines and Petroleum
DMP HARVEY-3

0°	90°	Axials

2GM - 1471.36 m





Centimetres

KV:	130
mA:	100

Slice Window:	1000
Slice Level:	1400

1471.83 m

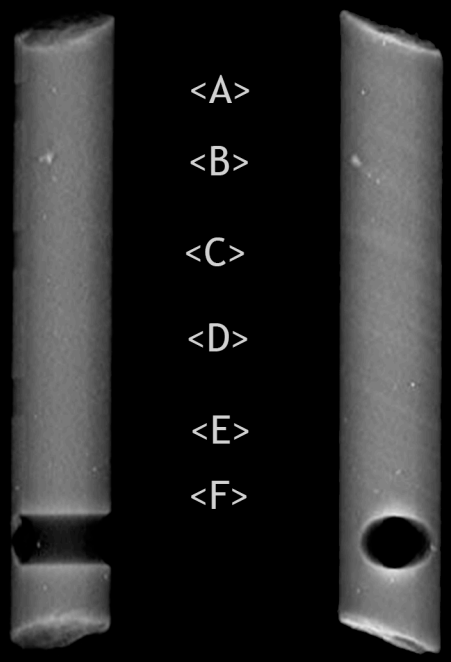
UltraScan

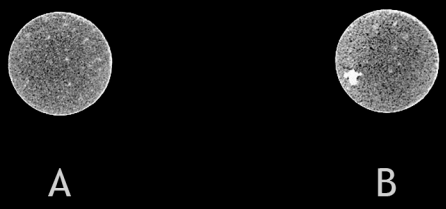
Core Lab
RESERVOIR OPTIMIZATION

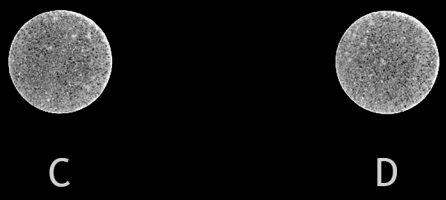
Department of Mines and Petroleum
DMP HARVEY-3

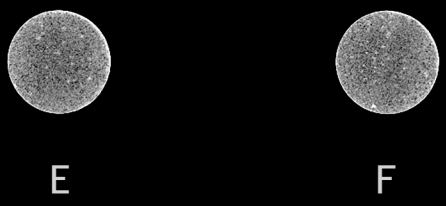
0°	90°	Axials

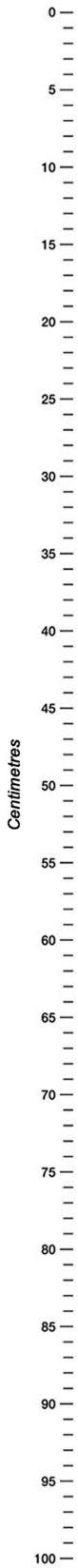
3GM - 1511.71 m











KV:	130
mA:	100

Slice Window:	1000
Slice Level:	1400

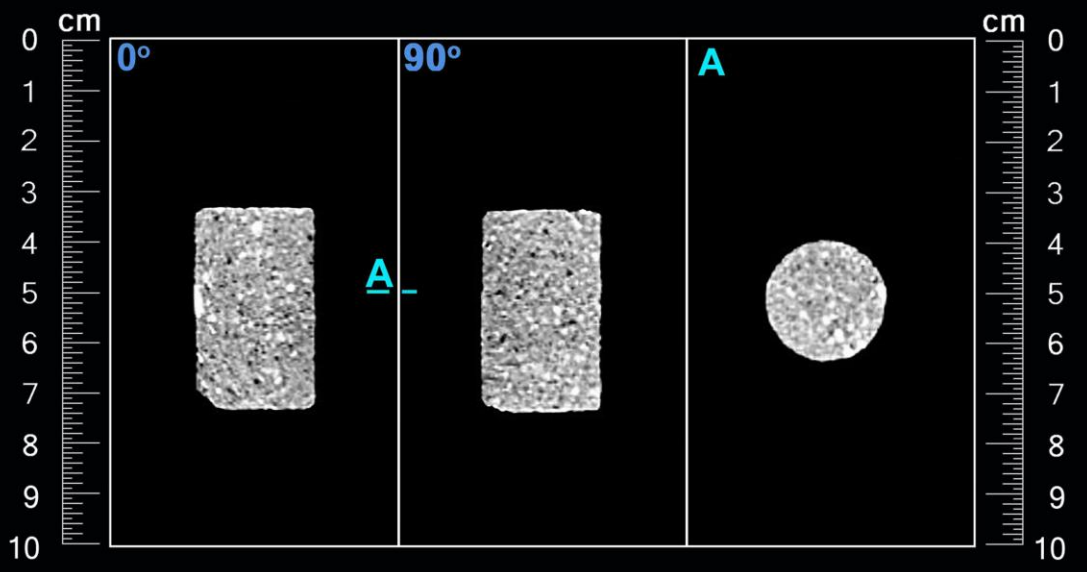
1512.09 m

UltraScan

Department of Mines and Petroleum

DMP HARVEY-3

Plug ID: 135 Depth: 1544.00 m Density: 1607 HU

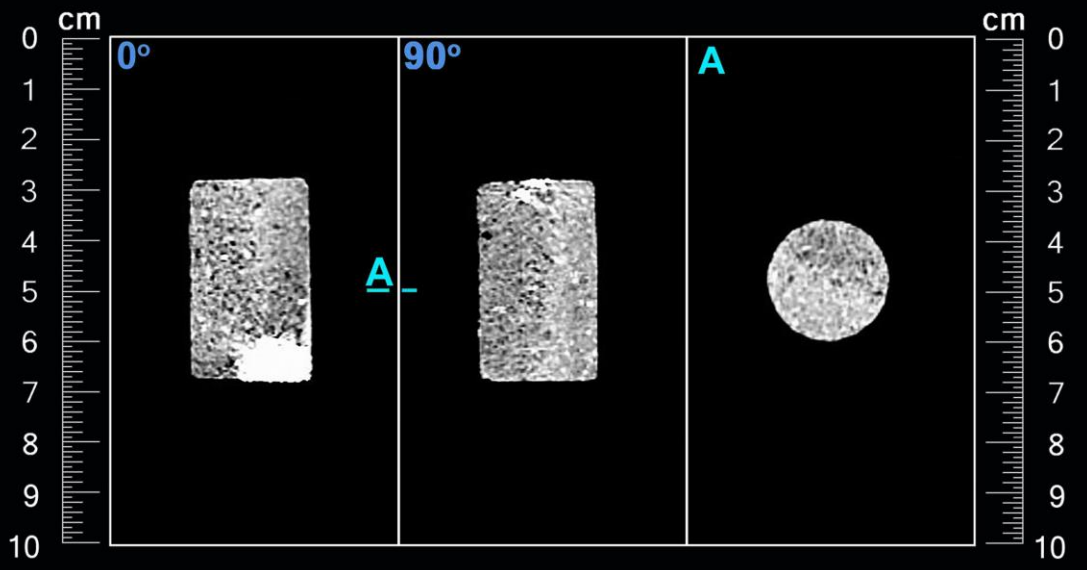


Scan Settings - Window: 1100 / Level: 1350

Department of Mines and Petroleum

DMP HARVEY-3

Plug ID: 139 Depth: 1548.00 m Density: 1584 HU

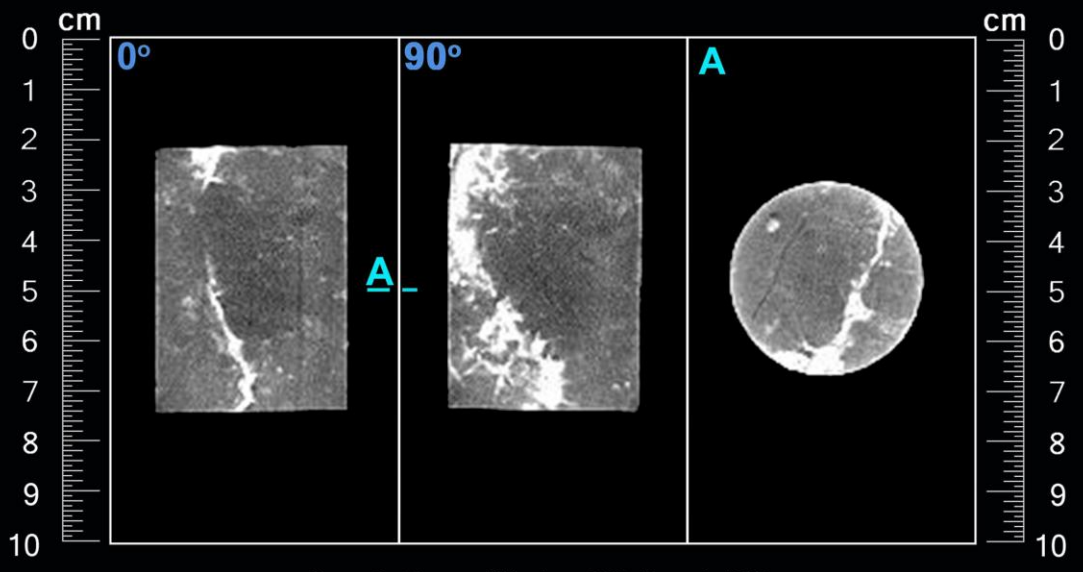


Scan Settings - Window: 1100 / Level: 1350

Department of Mines and Petroleum

DMP HARVEY-4

Plug ID: PSSH-7 Depth: 907.92m Density: 1969 HU

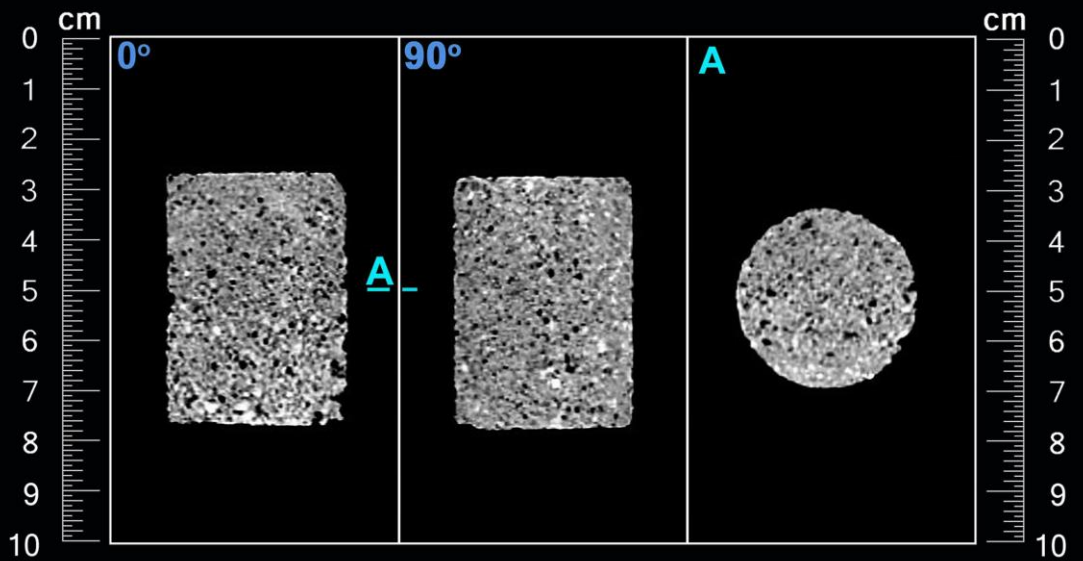


Scan Settings - Window: 900 / Level: 1950

Department of Mines and Petroleum

DMP HARVEY-4

Plug ID: 04 Depth: 1793.0 m Density: 1427 HU

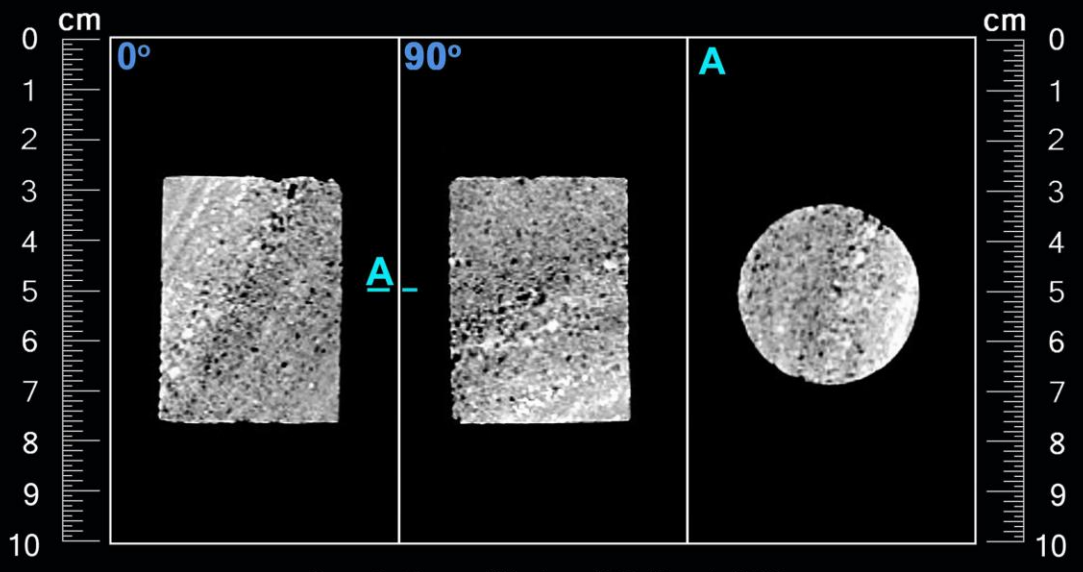


Scan Settings - Window: 1100 / Level: 1350

Department of Mines and Petroleum

DMP HARVEY-4

Plug ID: 06 Depth: 1796.0 m Density: 1427 HU

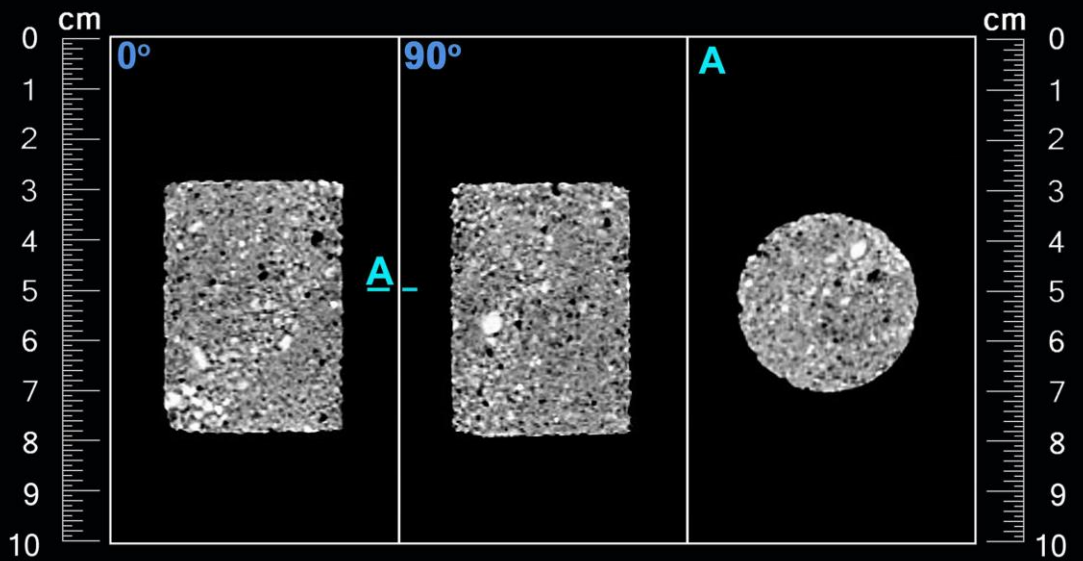


Scan Settings - Window: 1100 / Level: 1350

Department of Mines and Petroleum

DMP HARVEY-4

Plug ID: 07 Depth: 1797.0 m Density: 1446 HU

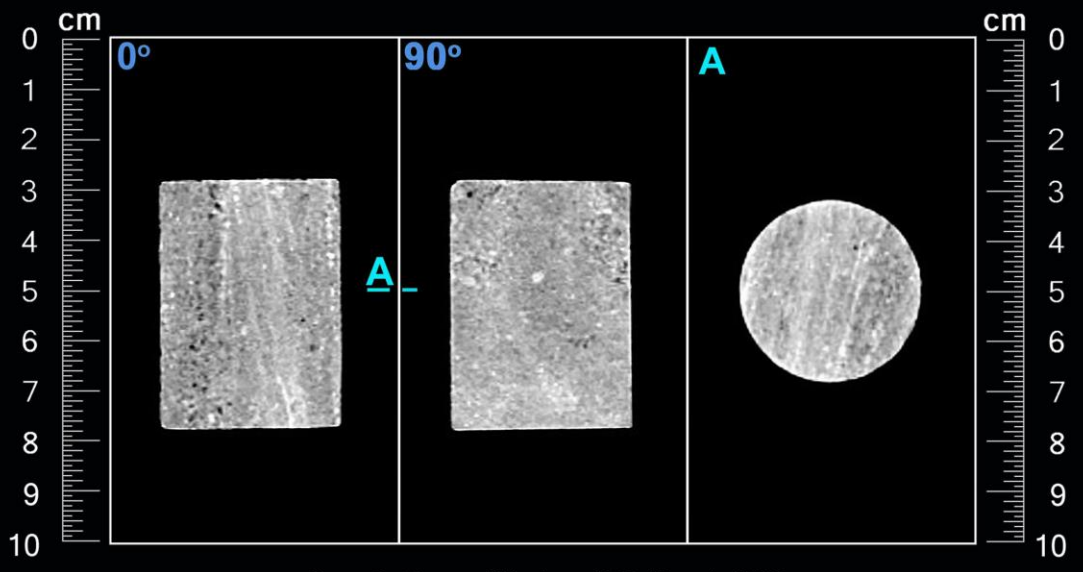


Scan Settings - Window: 1100 / Level: 1350

Department of Mines and Petroleum

DMP HARVEY-4

Plug ID: 08 Depth: 1799.0 m Density: 1590 HU

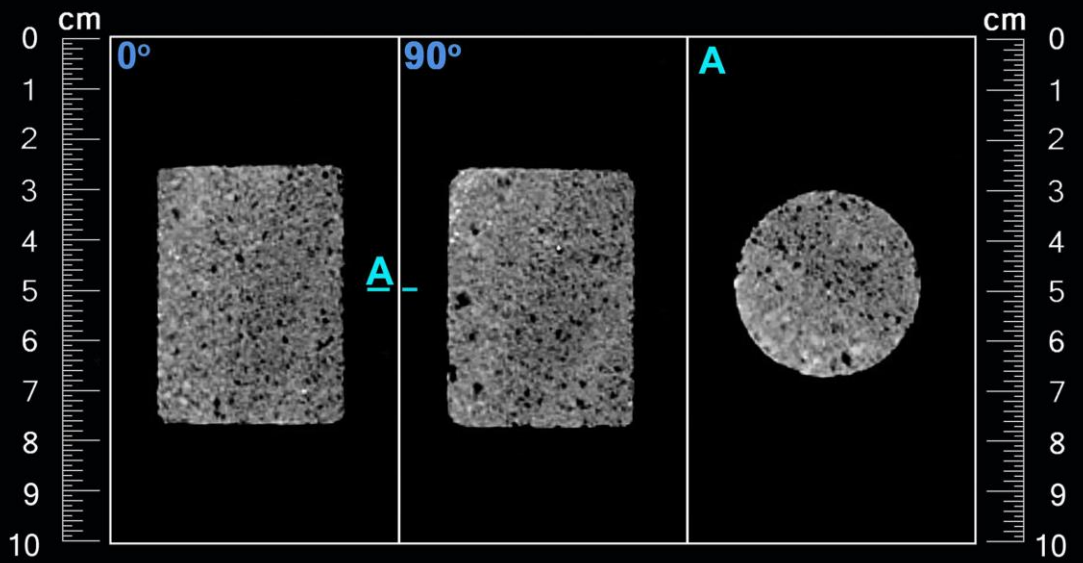


Scan Settings - Window: 1100 / Level: 1350

Department of Mines and Petroleum

DMP HARVEY-4

Plug ID: 10 Depth: 1802.00 m Density: 1427 HU



Scan Settings - Window: 1700 / Level: 1500

APPENDIX 2

Core Plug X-ray Computed Tomography (X-ray CT) and White-Light Core Plug Images

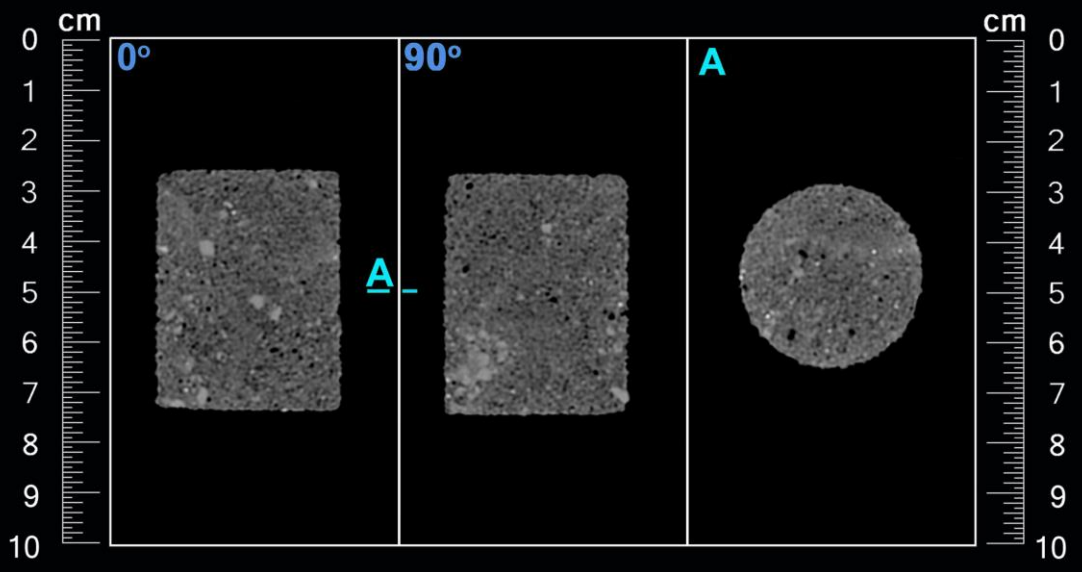
Sample #20 from the well DMP Harvey-3 : Post Steady-State Relative Permeability Test

Sample #10 from the well DMP Harvey-4 : Rejected Sample (Selected for Steady-State Relative Permeability Test)

Department of Mines and Petroleum

DMP HARVEY-3

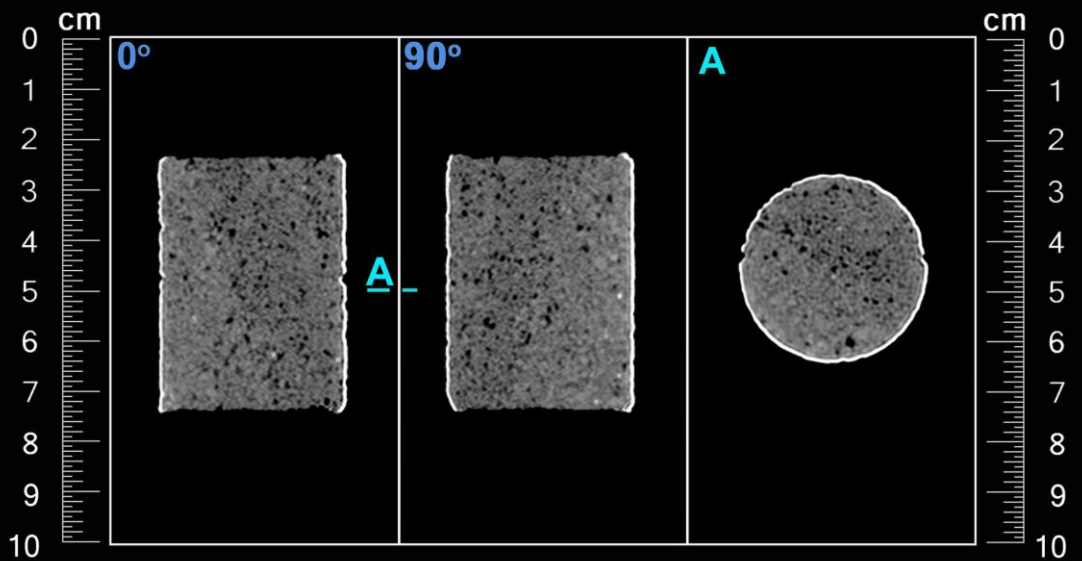
Plug ID: 20 Depth: 1429.00 m



Department of Mines and Petroleum

DMP HARVEY-4

Plug ID: 10 Depth: 1802.00 m



Department of Mines and Petroleum

DMP HARVEY WELLS

Well: DMP Harvey-4
Sample: 10
Depth: 1802.00m



Well: DMP Harvey-3
Sample: 20
Depth: 1429.00m



Job #: Hou-150878

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APPENDIX 3

Raw Data

Steady-State CO2-Water / Water-CO2 Relative Permeability

RAW DATA

CO_2 - BRINE / BRINE - CO_2 RELATIVE PERMEABILITY

Steady State Method Extracted State Sample
Net Confining Stress: 1700 psi Temperature: 47.8°C

Well :	DMP Harvey-3
Sample Number :	20
Sample Depth, meters :	1429.00
Klinkenberg Permeability to Air, md :	17.6
Porosity, fraction :	0.220
Initial Water Saturation, fraction :	1.000
Specific Permeability to Brine, md :	4.24

Endpoint Permeability Measurement	CO_2-Brine Relative Permeability Ratio	Brine Flow Rate, cm^3/min	Gas Flow Rate, cm^3/min	Brine Throughput, pore volume	Gas Throughput, pore volume
Specific Kw	-	6.000	-	19.1	-
-	0.0145	5.179	0.821	43.7	6.9
-	0.0436	4.065	1.935	20.5	9.8
-	0.218	1.775	4.225	5.1	12.1
-	1.09	0.465	5.535	1.8	21.9
-	10.9	0.050	5.950	0.2	20.8
Kg at Swr	-	-	6.000	-	32.9
-	10.9	0.050	5.950	0.7	84.5
-	1.09	0.465	5.535	2.2	26.6
-	0.218	1.775	4.225	4.3	10.3
-	0.0436	4.065	1.935	17.2	8.6
-	0.0145	5.179	0.821	33.9	5.4
Kw at Sgt	-	3.000	-	3.0	-

APPENDIX 4

Porosity, Permeability and Grain Density
(Pre- and –Post Relative Permeability)

COMPANY : DEPARTMENT OF MINES and PETROLEUM

WELLS : DMP HARVEY-2; DMP HARVEY-3; DMP HARVEY-4

POROSITY, PERMEABILITY, and GRAIN DENSITY

Pre- and -Post Relative Permeability Tests. Confining Stress : 1700 psi

(Sorted by well and depth)

			ROUTINE CORE ANALYSIS				POST-SCAL TESTING			
Stratigraphic Unit	Sample no.	Depth (m)	Permeability		Porosity (%)	Grain Density (g/cc)	Permeability		Porosity (%)	Grain Density (g/cc)
			Kinf (md)	Kair (md)			Kinf (md)	Kair (md)		
Well : DMP Harvey-3										
Wonnerup Member	11	1420.00	29.7	35.1	23.2	2.64	34.8	42.5	23.4	2.65
Wonnerup Member	20	1429.00	17.6	22.0	22.0	2.64	44.8	52.8	22.7	2.65
Wonnerup Member	135	1544.00	436	633	18.4	2.64	684	922	18.9	2.64
Well : DMP Harvey-4										
Wonnerup Member	4	1793.00	1750	2230	21.1	2.64	4990	5035	21.2	2.64
Wonnerup Member	8	1799.00	30.8	37.9	17.2	2.64	21.4	26.4	17.4	2.65

APPENDIX 5

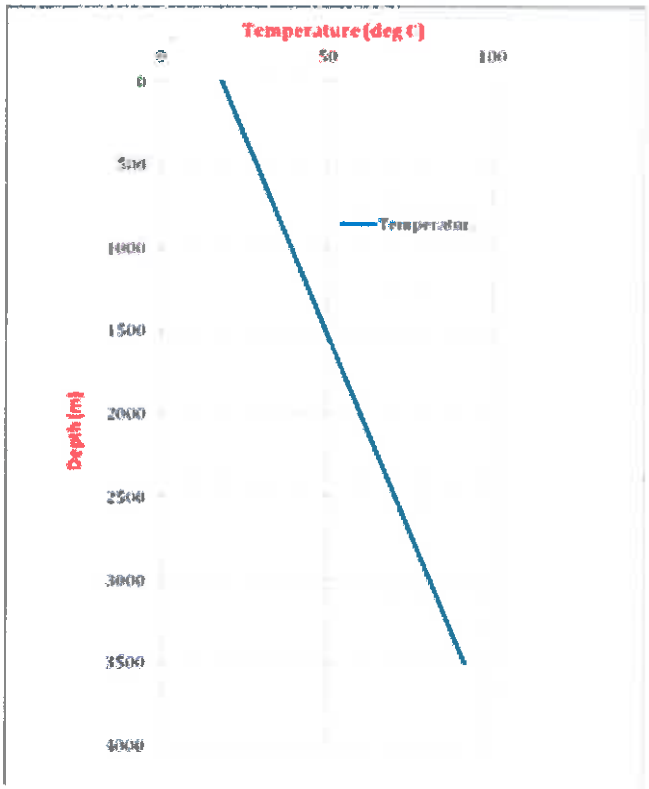
Temperature versus Depth Plot for the well Lake Preston-1
Pressure versus Depth Plot for the well Pinjarra-1
(Provided by the Department of Mines and Petroleum)

Singh, Ajit

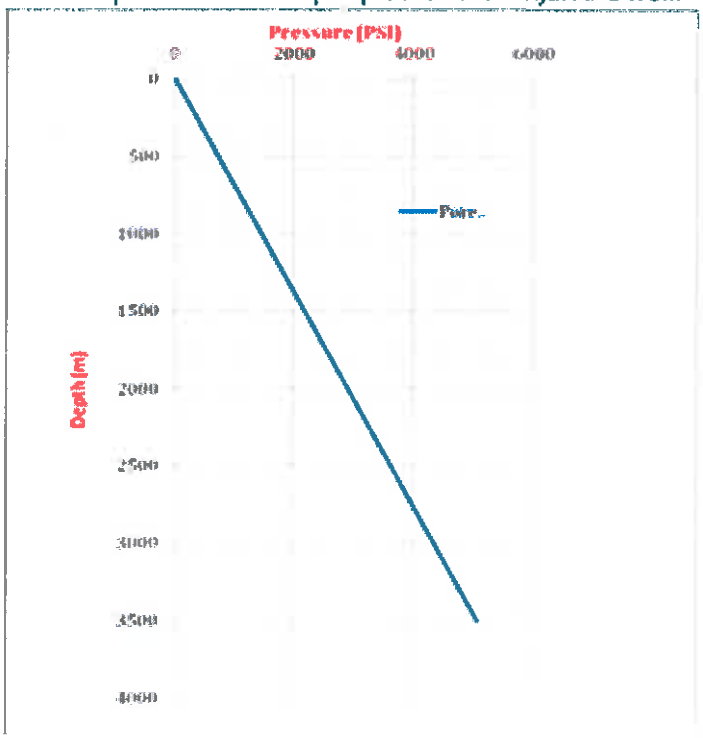
From: STELFOX, Louise <Louise.STELFOX@dmp.wa.gov.au>
Sent: Thursday, 12 November 2015 12:00 PM
To: Brown, James C.
Cc: Singh, Ajit; Sandeep Sharma; VAN GENT, Dominique
Subject: RE: SCAL - Relative permeability, Item 4, page 9, SWH Project Planning Document.

Hi James

Here is the temp with depth plot for Lake Preston-1 well



with the pressure with depth plot for the Pinjarra-1 well.



APPENDIX 6

Net Confining Stress Calculations

(Prepared by Core Laboratories)

Net Confining Stress Calculations
(Prepared by Core Laboratories)

Conversion 1m =	3.2808	ft
Lithostatic gradient =	1.000	psi/ft
Hydrostatic gradient =	0.440	psi/ft
Poisson's Ratio =	0.3	

Calculated NOBP values

Harvey Formation Names	Harvey 2 Depth m	Harvey 2 Net Stress psi	Harvey 3 Depth m	Harvey 3 Net Stress psi	Harvey 4 Depth m	Harvey 4 Net Stress psi	Average Mid-Point Stress	Average Stress Rounded
Basal Eneabba Unit	393	447	655	745	808	919		
Mid-Point Eneabba Unit	406	462	698	794	1005	1143	800	800
Yalgorup Member Top	419	477	741	843	1202	1367		
Mid-Point Yalgorup Member	832	946	1080	1228	1410	1603	1259	1250
Wonnerup Member Top	1245	1416	1418	1613	1617	1839		
Mid-Point Wonnerup Member	1298	1476	1484	1688	1710	1944	1703	1700
Total Depth	1351	1537	1550	1763	1802	2049		

Values of NOBP (psi) to use for RCA

	All Wells	
	All	20%
Basal Eneabba Unit*	NA	NA
Yalgorup Member (Shale)*	NA	NA
Yalgorup Member (Sandstone)*	1250	800
Wonnerup Member*	1700	800

*Ka/Kl, HePhi and GD will not be performed on shales

* Select one plug in every 5 BEFORE analysis so that they can be run at the lower then the higher NOBP.

Values of NOBP (psi) to use for SCAL

	All Wells
Basal Eneabba Unit	800
Yalgorup Member (Shale)	1250
Yalgorup Member (Sandstone)	1250
Wonnerup Member (Sandstone)	1700

Singh, Ajit

From: Kennaird, Tony
Sent: Monday, 13 July 2015 10:52 AM
To: Sandeep Sharma; Brown, James C.; Tomlinson, Justin
Cc: Singh, Ajit; Daken, Kevin; 'STELFOX, Louise'
Subject: RE: Harvey Project
Attachments: Harvey 4 Reservoir Pressures.xlsx

Sandeep,

Thank you!

Must admit, I am not used to looking at such tables but the key indicates that "Pstop" is the build-up reservoir pressure at the given depths.

A couple of quick calculations in excel (attached) indicates that at most depths the pressure gradient is a "normal" salt-water gradient of 0.44 psi/ft.

Where the remarks column mentions "supercharged", it looks like that means the reservoir is a little over-pressured (see gradient calculation at 0.48 psi/ft).

For consistency we will use 0.44 psi/ft to calculate net overburden pressures.

Best regards

Tony

From: Sandeep Sharma [mailto:sharmass@bigpond.com]
Sent: Monday, 13 July 2015 10:15 AM
To: Kennaird, Tony; Brown, James C.; Tomlinson, Justin
Cc: Singh, Ajit; Daken, Kevin; 'STELFOX, Louise'
Subject: RE: Harvey Project

Hi Tony

- Will aim to sort out the depths for the reaming plugs this week.
- The Harvey 4 pressure data file is too large to send by email. The data was acquired with the Halliburton RDT tool and pore pressures can be seen at the sample points. Similar data was collected on H-3 as well and will be sent once received from HAL. The summary is as below (Harvey 4)

PRESSURE TEST SUMMARY

Test Identification					Hydrostatic Pres.		Eq. Mud Wt.		Test Pressures - Temperatures				
Test No.	File No.	MD (m)	TVD (m)	Probe #	Phyds1 (psia)	Phyds2 (psia)	EqFmMw (lbs/gal)	EqBhMw (lbs/gal)	Psdd (psia)	Pedd (psia)	Pstop (psia)	dPob (psia)	
1.1	4-4.1	755.01	755.01	P1+P2	1437.04	1437.01	8.54	11.16	1100.11	532.86	1099.63	337.38	
2.1	4-6.1	833.96	833.96	P1+P2	1586.80	1586.83	8.44	11.15	1200.32	838.68	1201.43	385.40	
3.1	4-8.1	868.01	868.01	P1+P2	1651.89	1651.83	9.25	11.15	1355.37	1091.49	1369.93	281.90	
4.1	4-9.1	868.49	868.49	P1+P2	1652.85	1652.86	9.29	11.16	1362.45	1033.63	1377.18	275.68	
5.1	4-12.1	1043.50	1043.50	P1+P2	1987.01	1987.03	8.41	11.16	1497.90	1448.70	1497.83	489.20	
6.1	4-14.1	1160.00	1160.00	P1+P2	2210.23	2209.87	8.43	11.17	1668.06	1656.80	1668.05	541.82	
7.1	4-16.1	1231.10	1231.10	P1+P2	2346.17	2346.19	8.44	11.17	1772.40	1642.75	1772.28	573.90	
8.1	4-20.1	1313.00	1313.00	P1+P2	2503.81	2503.85	8.51	11.18	1906.97	1893.32	1906.88	596.97	
9.1	4-22.1	1419.48	1419.48	P1+P2	2707.24	2707.53	8.50	11.18	2054.95	1866.43	2058.91	648.62	
10.1	4-24.1	1486.49	1486.49	P1+P2	2836.15	2836.23	8.64	11.18	2161.65	1656.95	2191.89	644.34	
11.1	4-27.1	1504.00	1504.00	P1+P2	2869.85	2869.92	8.54	11.18	2192.18	1468.12	2190.23	679.69	
12.1	4-30.1	1610.49	1610.49	P1+P2	3073.83	3073.99	8.47	11.19	2327.79	2296.10	2327.68	746.31	
13.1	4-32.1	1674.09	1674.09	P1+P2	3196.22	3196.52	8.47	11.19	2419.91	2381.58	2419.83	776.69	
14.1	4-34.1	1706.99	1706.99	P1+P2	3260.06	3260.30	8.47	11.20	2467.67	2350.12	2467.52	792.78	
15.1	4-36.1	1726.00	1726.00	P1+P2	3297.47	3297.48	8.47	11.20	2492.06	2361.80	2495.24	802.24	
16.1	4-38.1	1632.00	1632.00	P1+P2	3117.06	3115.27	8.47	11.19	2359.52	2347.33	2359.55	755.72	
17.1	4-40.1	1527.03	1527.03	P1+P2	2915.14	2915.52	8.68	11.19	3395.84	627.02	2260.49	655.02	
18.1	4-41.1	1486.49	1486.49	P1+P2	2837.61	2836.81	8.65	11.19	3310.61	649.54	2192.56	644.25	
19.1	4-44.1	1486.50	1486.50	P1+P2	2836.82	2837.00	8.60	11.19	2774.69	1452.10	2180.10	656.89	
20.1	4-47.1	1270.00	1270.00	P1+P2	2422.57	2421.82	8.56	11.18	1852.38	1864.99	1855.34	566.47	
21.1	4-50.1	742.05	742.05	P1+P2	1412.03	1411.14	8.49	11.15	1075.36	1038.60	1075.16	335.98	

Legend

Phyds1: Initial Hydrostatic Pressure
Phyds2: Final Hydrostatic Pressure
EqFmMw:Equivalent Formation Mud Weight (Pstop / (TVD * Constant))
EqBhMw: Equivalent Borehole Mud Weight (Phyd
Psdd: Initial Drawdown Pressure
Pedd: Final Drawdown or End Drawdown Pressure
Pstop: Final Buildup Pressure
Temp: Final Temperature
dTdd= Tedd-Tsdd: Tedd - End of Drawdown Time, Tsdd - Initial Drawdown Time
dTbu=Tstop - Tedd:Buildup Time, Tedd - End of Dr
dPob= Phyds2 - Pstop: Over Balance

- If you need the full data - will put on a memory stick and post or find another way to get the same to you

Rgds

Sandeep Sharma
Land Line : +618 9385941 Mobile: +61 412 515494

APPENDIX 7

Calculation Parameters for CO_2 Threshold Pressure and Column Height

(Prepared by Sandeep Sharma, Department of Mines and Petroleum)

From: Sandeep Sharma [mailto:sharmass@bigpond.com]
Sent: Sunday, 14 February 2016 11:50 AM
To: Singh, Ajit; 'STELFOX, Louise'
Cc: Karolia, Moussa; Kennaird, Tony
Subject: RE: MICP - Preliminary Results

Hi Ajit

The density is correct – but am sceptical about the gradient. Water gradient is 1.433psi/m at 1 gm/cc. and as the CO2 density varies we cannot extrapolate – but its highly unlikely that the gradient numerical value is the same.

Will work with the density number where we have some confidence

Rgds

Sandeep Sharma
Land Line : +618 9385 5941 Mobile: +61 412 515494

From: Singh, Ajit [mailto:Ajit.Singh@corelab.com]
Sent: Saturday, 13 February 2016 5:59 PM
To: Sandeep Sharma <sharmass@bigpond.com>; 'STELFOX, Louise' <Louise.STELFOX@dmp.wa.gov.au>
Cc: Karolia, Moussa <Moussa.Karolia@corelab.com>; Kennaird, Tony <Tony.Kennaird@corelab.com>
Subject: MICP - Preliminary Results

Sandeep,

Attached are recalculated column heights based on the data you provided. Please note there are two versions:

(1) Supercritical CO2 gradient 0.6293 psi/m. This is close to the value we were originally using (based on a density from Reid et al-- but that dates back to 1987).
(2) Supercritical CO2 density 0.6293 g/cc. The actual value you provided.

Assume that the CO2 density that you provided is geared to Harvey reservoir conditions and should be considered correct. If yes, please delete the first worksheet. Just that your density provided was so different to Reid's value we thought we had better flag it.

Kind Regards
ajit

From: Sandeep Sharma [mailto:sharmass@bigpond.com]
Sent: Friday, 12 February 2016 7:40 PM
To: Singh, Ajit; 'STELFOX, Louise'
Cc: Karolia, Moussa; Kennaird, Tony
Subject: RE: MICP - Preliminary Results

Ajit

We should always be in sc CO2 phase and not have any gaseous CO2 .

The values listed are fine

Rgds

Sandeep Sharma
Land Line : +618 9385 5941 Mobile: +61 412 515494

From: Singh, Ajit [mailto:Ajit.Singh@corelab.com]
Sent: Friday, 12 February 2016 3:51 PM
To: Sandeep Sharma <sharmass@bigpond.com>; 'STELFOX, Louise' <Louise.STELFOX@dmp.wa.gov.au>
Cc: Karolia, Moussa <Moussa.Karolia@corelab.com>; Kennaird, Tony <Tony.Kennaird@corelab.com>
Subject: MICP - Preliminary Results

Sandeep

Thank you for your email.

Just to clarify, you would like us to recalculate column heights using:

Supercritical CO2 density = 0.6293 g/cc
IFT CO2/water = 25 mN/m (=dynes/cm)
Contact Angle CO2/water = 40 degrees
Water density = 1.0271 g/cc

Please confirm above values.

The paper quoted (Kaveh et al) indicates IFT and Contact angle does not change much for gaseous to supercritical CO2 (incidentally low contact angle indicates system is always water-wet—that is, CO2 does not change the wettability). However density is MUCH different. Do you have a preferred value to use for gaseous CO2 column? The value we has (0.001977 g/cc or 1.98 kg/m3) is quoted several times on the net and also in the CRC handbook of Chemistry and Physics.

Please advise and we will revert ASAP.

Kind regards
ajit

From: Sandeep Sharma [mailto:sharmass@bigpond.com]
Sent: Friday, 12 February 2016 12:14 PM
To: Singh, Ajit; 'STELFOX, Louise'
Cc: Karolia, Moussa; Kennaird, Tony
Subject: RE: MICP - Preliminary Results

Ajit

Thanks for the explanation's. Your comments on seal thickness are very valid as well.

We too have looking at reasonable ranges to convert to column heights and have the following conclusions

Web based calculator used the parameters below (Pressure / Temp / Salinity) to work out IFT /Density of CO_2 and Brine - etc. There is one used by the CSIRO but the one from AIST (reference provided earlier is supposed to be very robust as well)

For Contact Angle considered a sensitivity range from 0^0 to 60^0. Although research completed last year by Stefan Iglauer (Curtin Uni) for the Darling Basin Project showed that $scCO_2$ CA was around 40^0 on shaly seal rocks. So that could be considered an optimum – if a sensitivity range doesn't suit.

For an average IFT for Super Critical CO_2 would range from 23 to 27 mN/m

Some are similar to the parameters you had used not clear what was used for CO2 density and other P/T parameters .

Would suggest a rework using these please. For the report It would also be useful to have pictures of the cores and descriptions to better understand the pore structure as part of the seal effectiveness input.

Louise will be sending a detailed email on the MICP results early next week.

Input Parameters	Properties to be calculated
Pressure (MPa):	Density, viscosity, solubility and interfacial tension of carbon dioxide and brine
Temperature (C):	Enthalpy, Fugacity and Speed of Sound for Carbon Dioxide
Salinity (ppm):	Formation Volume Factors and Gas-Water Ratio

Results

Carbon dioxide density	0.6293 g cm^{-3}
Carbon dioxide phase region	Supercritical
Viscosity	47.89 μ Pa s
Brine density (unsaturated)	1.0171 g cm^{-3}
Brine Compressibility (unsaturated)	4.164e-10 Pa^{-1}
Brine viscosity	688.5 μ Pa s
Brine viscosibility	2.445e-10 Pa^{-1}
Solubility of CO2 in brine	47.44 kg per 1000 kg of brine
Brine density (saturated)	1.0271 g cm^{-3}
Interfacial tension	25.10 mN m^{-1}

Rgds

Sandeep Sharma
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From: Singh, Ajit [mailto:Ajit.Singh@corelab.com]
Sent: Thursday, 11 February 2016 4:31 PM

To: STELFOX, Louise <Louise.STELFOX@dmp.wa.gov.au>; Sandeep Sharma <sharmass@bigpond.com>
Cc: Karolia, Moussa <Moussa.Karolia@corelab.com>; Kennaird, Tony <Tony.Kennaird@corelab.com>
Subject: MICP - Preliminary Results

Hi Louise and Sandeep

The attached CO2 column height calculations result from discussions between our Houston group, Tony, Moussa and myself. Assumptions for calculations are stated and the spreadsheet is left "live" in case you wish to alter the inputs.

There are several considerations when converting mercury injection data to CO2 column height:

(1) The pressure at which mercury first enters the sample is NOT threshold pressure. Threshold or "breakthrough" pressure is when the non-wetting phase becomes continuous in the pore spaces (that is, CO2 will actually breach the seal). Schowalter (1979) suggested the non-wetting phase may be at 10% pore volume (PV) saturation while Sneider et al (AAPG Memoir 67) suggested 7.5% as a better figure. There is an "inflection point" technique but that does not work with this data. Hence threshold pressures calculated on the attachment are based on Schowalter and Sneider.

(2) The petrography shows a LOT of smectite (swelling clay) in the more argillaceous (seal capacity) samples. When these samples are water-saturated at reservoir conditions, pore throat sizes will be reduced. When the samples are dried for mercury injection tests (as they must be) the smectites dry out, pore throat sizes become larger, mercury injects at a lower threshold pressure and hence the calculated CO2 column heights become pessimistic. There is a way to correct for swelling clay saturation (Juhasz correction) but we need CEC data for this.

(3) Following on from (2), more realistic seal capacity data will come from the fresh-state samples injected with CO2 because those samples were water-saturated (with smectites in swollen condition).

A couple of general points with reference to seal capacity:

(A) There is an empirical relationship between seal thickness and seal effectiveness, which can be attributed to the fact that thicker seals are less likely to be breached by undetected faults or fractures. Also, locally 'large' pore networks that could lead to premature capillary leakage are less likely to extend over the entire height of a thicker seal.

(B) The geologic setting should also be taken into account; for example folded seals are more susceptible to crestal tensile fractures than seals in lower relief structures. The seal lithology and its potential lateral extent are also important considerations. The lateral extent of the seal may be assessed by regional studies that incorporate seismic and available well log data, and consider the depositional environment and lithology of the potential seal.

(C) Ductility is also an important general consideration. Brittle rocks will tend to fracture rather than flow under regional stresses. Downey, 1984 lists lithologies in the following order of decreasing ductility:

- Salt, Anhydrite, Kerogen rich Shales, Clay Shales, Silty Shales, Carbonate Mudstones, Chert.

Kind regards
ajit

APPENDIX 8

SWH Project Planning Document (version 9)
(Prepared by the Department on Mines and Petroleum)

SWH Project
Harvey 2, 3, 4 Core Analysis Program
Routine Core Analysis
Special Core Analysis

Planning Document

Version	Date	Done by	Reviewed by	Approved by
Update 9	June 24, 2015	TK	LS	
Update 8	June 16, 2015	LS		
Update 7	May 26, 2015	SS	LS	
Update 6	May 20, 2015	SS/LS		
Update 5	May 18, 2015	SS/LS	LS	
Update 4	May 11, 2015	SS/LS		
Update 3	April 20, 2015	SS/LS		
Update 2	28 Feb 2015	SS	LS	DVG
Update 1	24 Feb 2015	SS	LS	
RFT Scope	Oct 2014	SS/LS	DVG	

1 SUMMARY OF APPROACH TO CORE ANALYSIS

The DMP RFT scope was discussed and adapted based on the project objectives through discussions with Core Lab (Core Analysis Consultants), ODIN (Modelling and Interpretation consultants) and GSWA. The finalised scope is outlined below and the rationale defined in the subsequent sections.

In terms of classification the core analysis terminology for cap rock refers to the Eneabba basal 'shale' and the Yalgorup paleosols. The reservoir refers to the Wonnerup sands and the Yalgorup sandy facies.

While normally TRA analysis would not be done on cap-rock, in the case of the Lesueur as these are dominated by paleosols a few TRA tests are worth performing in addition to special MICP (SCAL) work.

A specific learning from the Harvey 1 exercise is to perform a CT scan of plugs for SCAL so that the plugs tested are representative.

A certain number of plugs will be required for the ANLEC research projects. Around 5 plugs per well will likely be needed for the paleo-salinity while the requirements for the others is yet to be defined.

Tabulation of Strata tops: predicted vs preliminary actual (updated 16/06/15).

16/06/2015

Depth to strata tops

Harvey 2 DDH1 Rig 16 (RT = 0.6m)

	Odin's 3-D seismic depth prognosis (m AHD)	Approx. actual depth interpretation (m depth)	Approx. strata elevation (m AHD) from Core	Diff between prognosed & prelim actual (m)
X : 392052.65 Y : 6347141.74				
G.L (m AHD)	15.40			
Rig table datum (m AHD)	16.00			
Driller's datum (m AHD)	16.00			
Base of Leederville unconformity (m sub sea)	-145	135	-119	-26
Eneabba basal shale (m sub sea)	-425	393	-377	-48
Top Yalgorup Member (m sub sea)	-491	419	-403	-88
Top Wonnerup Member (m sub sea)	-1,237	1,245	-1,229	-8
Final depth	~ 1,350 m	1,351	-1,335	-15
Completion depth (m)		414.6	-399	

Harvey 3 DDH1 Rig 16 (RT = 0.6m)

	Odin's 3-D seismic depth prognosis (m AHD)	Approx. actual depth interpretation (m depth)	Approx. strata elevation (m AHD) from Core	Diff between prognosed & prelim actual (m)	
X : 387392.24 Y : 6343895.95					
Lat and Long					
Ground elevation, as surveyed (m AHD)	20.20				
Rig table datum (m AHD)	20.80				
Driller's datum (m AHD)	20.80				
Base of Leederville unconformity (m sub sea)	-226	cased	tentatively from GR log ?		
Eneabba basal shale (m sub sea)	-628	655	-634	6	
Top Yalgorup Member (m sub sea)	-713	741	-720	7	
Top Wonnerup Member (m sub sea)	-1,426	1,418	-1,398	-28	Installing casing to TD, approx.
Final depth	~ 1,550 m				
Completion depth (m)		HQ coring to TD			1,462 m (16/6/14)

Harvey 4 DCA Rig (RT = 4.0m)

	Odin's 3-D seismic depth prognosis (m AHD)	Approx. actual depth interpretation (m depth)	Approx. strata elevation (m AHD) from Cuttings	Diff between prognosed & prelim actual (m)
X : 389946.08 Y : 6343842.51				
Ground elevation, as surveyed (m AHD)	15.89			
Rig table datum (m AHD)	19.89			
Driller's datum (m AHD)	15.89			
Base of Leederville unconformity (m sub sea)	-154	165	-149	-5
Eneabba basal shale (m sub sea)	-837	808	-792	-43
Top Yalgorup Member (m sub sea)	-1,016	1,020	-1,004	-12
Top Wonnerup Member (m sub sea)	-1,665	1,617	-1,601	-64
Final depth	~ 1,800 m	1,802	-1,786	-14
Completion depth (m)		1,802	-1,786	

Drilling finished 21/04/15

Notes

Well sites surveyed by DMP's surveyor in Nov 14 and again on 25 April 2015.

Actual strata tops are preliminary pending palynology results and wireline logging data

There is difficulty in defining transition between the Eneabba Formation and

Yalgorup Member.

Intervals Cored

Harvey 2 was fully-cored. Core samples preserved in mineral oil (claystone and/or siltstone- rich facies):

Sample Number	Depth (m)		Date
	Start	End	
1	402.1	402.45	12/01/2015
2	411.75	412.1	14/01/2015
3	417.6	417.95	14/01/2015
4	424.7	425.05	14/01/2015
5	433	433.35	14/01/2015
6	452.1	452.45	14/01/2015
7	464.7	464.95	15/01/2015
8	487.4	487.75	15/01/2015
9	492	492.3	16/01/2015
10	501.95	502.3	16/01/2015
11	510.95	511.3	17/01/2015
12	725.2	725.55	27/01/2015
13	742.75	743	27/01/2015
14	748.1	748.45	27/01/2015
15	754.9	755.2	27/01/2015
16	767.05	767.3	28/01/2015
17	775.9	776.25	28/01/2015
18	790.65	790.95	28/01/2015
19	815.9	816.25	29/01/2015
20	835.35	835.65	30/01/2015
21	961.25	961.6	04/02/2015
22	968.25	968.55	04/02/2015
23	979.1	979.4	05/02/2015
24	988	988.25	05/02/2015
25	1036.4	1036.7	07/02/2015
26	1107.85	1108.15	08/02/2015
27	1119.15	1119.4	08/02/2015
28	1132.05	1132.4	09/02/2015
29	1145.25	1145.55	09/02/2015
30	1166.05	1166.35	10/02/2015
31	1190.75	1191.05	10/02/2015
32	1228.55	1228.8	12/02/2015

Radio-isotope samples

Sample Number	Depth (m)		Date
	Start	End	
R1	464.3	464.55	15/01/2015
R2	512.4	512.75	17/01/2015
R3	975.9	976.22	05/02/2015
R4	1085.25	1085.55	08/02/2015

Harvey 3 was fully-cored.

Core samples preserved in mineral oil (claystone and/or siltstone- rich facies):

Sample Number	Depth (m)		Date
	Start	End	
1	604.25	604.65	27/03/2015
2	647.55	647.9	28/03/2015
3	657	657.2	28/03/2015
4	662.7	663.05	28/03/2015
5	664.55	664.9	29/03/2015
6	673.25	673.55	29/03/2015
7	696.70	697.00	31/03/2015
8	717.50	717.80	01/04/2015
9	716.25	716.45	01/04/2015
10	720.15	720.45	01/04/2015
11	725.05	725.35	01/04/2015
12	728.60	728.90	02/04/2015
13	740.50	740.80	02/04/2015
14	743.75	743.95	02/04/2015
Harvey 3A			
15	765.55	765.85	09/04/2015
16	778.35	778.65	09/04/2015
17	888.05	888.35	17/04/2015
18	914.7	915	19/04/2015
19	1171.1	1172	03/05/2015
20	1226.3	1226.65	08/05/2015

Radio-isotope samples

Sample Number	Depth (m)		Date
	Start	End	
R1	688.55	688.85	30/03/2015
R2	725.05	725.35	01/04/2015
R3	735.3	735.6	02/04/2015

Yalgorup Member Sandstone (Glad wrapped)

Sample Number	Depth (m)		Date
	Start	End	
YS1	1250.95	125195	11/05/2015

Harvey 4 was interval-cored (four times), with a special large barrel use to retrieve a broken TCI roller bit in the Yalgorup Member.

Run 1		
893.00-894.00 m	placed in oil in PVC tubes	exposed to air for ~ 3 hours, transported to CoreLab on 19/02
894.00-895.00 m	placed in oil in PVC tubes	exposed to air for ~ 3 hours, transported to CoreLab on 19/02
895.00-895.96 m	placed in oil in PVC tubes	exposed to air for ~ 3 hours, transported to CoreLab on 19/02
895.96-896.00 m	dropped	-
896.00-896.30 m	wrapped in plastic, refrigerated	???
896.3	zipped plastic bag	transported to Core Library on 23/04/2015
896.30-897.30 m	placed in oil in PVC tubes	exposed to air for ~ 6.5 hours, transported to CoreLab on 19/02
897.30-898.30 m	placed in oil in PVC tubes	exposed to air for ~ 6.5 hours, transported to CoreLab on 19/02
898.30-899.25 m	placed in oil in PVC tubes	exposed to air for ~ 6.5 hours, transported to CoreLab on 19/02
899.25-899.30 m	zipped plastic bag	transported to Core Library on 23/04/2015
899.30 m	zipped plastic bag	transported to Core Library on 23/04/2015
Run 2		
898.40-898.60 m	zipped plastic bag	transported to Core Library on 23/04/2015
898.60-899.60 m	placed in oil in PVC tubes	exposed to air for ~ 2 hours, transported to CoreLab on 20/02
899.60-900.60 m	placed in oil in PVC tubes	exposed to air for ~ 2 hours, transported to CoreLab on 20/02
900.60-901.60 m	placed in oil in PVC tubes	exposed to air for ~ 2 hours, transported to CoreLab on 20/02
901.60-901.75 m	wrapped in glad wrap, alfoil, refrigerated	transported to CoreLab on 20/02
901.75-902.75 m	placed in oil in PVC tubes	exposed to air for ~ 2.75 hours, transported to CoreLab on 20/02
902.75-903.75 m	placed in oil in PVC tubes	exposed to air for ~ 2.75 hours, transported to CoreLab on 20/02
903.75-904.80 m	placed in oil in PVC tubes	exposed to air for ~ 2.75 hours, transported to CoreLab on 20/02
904.80-905.05 m	wrapped in glad wrap, alfoil, refrigerated	transported to CoreLab on 20/02
905.05-905.15 m	zipped plastic bag	transported to Core Library on 23/04/2015
905.15-906.15 m	placed in oil in PVC tubes	exposed to air for ~ 3.75 hours, transported to CoreLab on 20/02
906.15-907.15 m	placed in oil in PVC tubes	exposed to air for ~ 3.75 hours, transported to CoreLab on 20/02
907.15-908.05 m	placed in oil in PVC tubes	exposed to air for ~ 3.75 hours, transported to CoreLab on 20/02
908.05-908.35 m	2 x zipped plastic bags	transported to Core Library on 23/04/2015
Run 3		
1665.05-1666.65 m	wrapped in glad wrap and kept in tray	transported to Core Library on 29/4/2015
Run4		
1792.70-1802.55	kept in tray (except samples below)	transported to Core Library on 29/4/2015
1795.10-1795.60	Long term preservation sample - glad wrapped and placed in tubes	transported to Core Labs on 23/04/2015
1797.60-1798.10	Long term preservation sample - glad wrapped and placed in tubes	transported to Core Labs on 23/04/2015
1800.65-1801.15	Long term preservation sample - glad wrapped and placed in tubes	transported to Core Labs on 23/04/2015

The two samples from Run 1 in zip lock bags were crumbled core from the lifter and barrel join. These are estimated to be 0.05 – 0.10 m long.

Well Name	Sample type	Depth from (m)	Depth To (m)	Sampling and Preservation method	Comments
Harvey 4	6" Core from Yalgorup	1325.50	1326.60	Washed, placed in tray	Core was recovered during core operations to retrieve metals pieces from the bottom of the hole. Sent to Core Library 13/05/15.
Harvey 4	6" Core from Yalgorup	1324.00	1325.25	In PVC tube in mineral oil	Core was recovered during core operations to retrieve metals pieces from the bottom of the hole. Sent to Core Labs 13/05

1,324	1,327	Sandstone	Pale grey with thin purple mottled bands. Very fine to very coarse grained - occasional granular grains, moderately to poorly sorted, angular to sub-rounded, predominantly quartz (clear to frosted with grey and purple grains in purple bands), feldspar (white, pink); minor black heavy minerals, trace garnet and glauconite (increasing in purple band). Well cemented with trace argillic (pale green, dark purple) cementation. (Note: core samples are very different from drill cuttings either side, where siltstone/mudstone predominates - possible wash out from hole above, Steve Bolton, 2015).

Notes

- Plug selections to be referenced from Harvey 3 as the well has whole cores over the entire area of interest
- Horizontal Plugs to be taken every 1 m and Vertical Plugs every 3 m (close to 3rd horizontal plug) in wells Harvey 3 and Harvey 4.
- Harvey 4 has fewer plugs as the wells have been interval cored.
- Plug frequency reduced in Harvey 2 as it is not in the fairway of interest.
- The number of plugs has been increased from the original plan of 280 plugs (165 H, 105V).
- SCAL plugs to be CT scanned to check for consistency.
- No provision as yet for additional plugs for R&D. Researchers to advise.
- The well H-2 intercepts the F0 fault. This provides an opportunity to collect some plugs and do some tests in the fault zone. Whilst not visibly obvious, approximate depth of the intercept is between 340 and 440 m. This is largely based on Hylogger data where some distinct markers are seen – amorphous silica (348-385 m), gypsum (from 420 m), wet core signature (430-440 m). Cap rock type tests are planned here with 6 H and 2 V plugs.

2 FINAL SCOPE: ROUTINE CORE ANALYSIS (RCA)

No	Sample	Program	Requirement with estimated volumes	Comments
1.	Caprock (Eneabba and Yalgorup)	Preparation	Harvey 2: F10 investigation 6 horizontal plugs and 2 vertical plugs (normal to bedding) Harvey 2: 10 horizontal plugs and 5 vertical plugs (normal to bedding) Harvey 3: 30 horizontal and 10 vertical plugs (normal to bedding) Harvey 4: 10 horizontal plugs and 5 vertical plugs (normal to bedding)	V plugs should be cut adjacent to relevant H plugs. From original plan number of V plugs reduced. V plugs taken every 2nd or 3rd H plug.
2.	Reservoir Yalgorup and Wonnerup)	Preparation	Harvey 2: 20 H and 10 V in Wonnerup Harvey 3: 140 Hand 50 V in Wonnerup Harvey 3: 20 H and 5 V in Yalgorup	. V plugs should be cut adjacent to relevant H plugs.

No	Sample	Program	Requirement with estimated volumes	Comments
			Harvey 4: 10 H and 5 V in Wonnerup	
3.	Caprock (Eneabba and Yalgorup	Routine rock properties: Caprock analysis	Harvey 2: F10 investigation 5 horizontal plugs and 1 vertical plugs (normal to bedding) Harvey 2: 8 horizontal plugs and 4 vertical plugs (normal to bedding) Harvey 3: 27 horizontal and 9 vertical plugs (normal to bedding) Harvey 4: 8 horizontal plugs and 4 vertical plugs (normal to bedding) Use selected plugs from Item 1	Kw and threshold pressure for CO2 injection to understand the paleosol properties for containment. Some vertical plugs to include the tree root systems in the Yalgorup
4.	Reservoir Yalgorup and Wonnerup)	Routine rock properties: Porosity and permeability (P&P) to gas and water (Kg and Kw) at NOBP	Harvey 2: 20 horizontal and 10 vertical plugs Harvey 3: 140 H + 50 V plugs—Wonnerup Harvey 3: 20H + 5 V--Yalgorup Harvey 4: 10 horizontal and 5 vertical plugs Use plugs from Item 2	For evaluating porosity, Ka, Kw and grain density. Kw on 20% of plugs or more to be able to draw a correlation No Kw measurements in Harvey 2. Plugs to be taken in Wonnerup and Yalgorup sands.
5.	Reservoir Yalgorp and Wonnerup)	As in Item 4 but at a different pressure	Use selected plugs from Item 4	To evaluate the properties in 4 at a different pressure for estimation of KPhi at any NOBP using 2-point fit
6.	Core: Caprock and reservoir	Petrographic analysis: thin section (TS), X-Ray diffraction (XRD) and Scanning electron microscopy (SEM)	Use end-trims from the Caprock and P&P plugs. Caprock – F10 test – 6 samples Caprock: 14 representative samples Reservoir: 20 representative samples (4 Yalgorup and 16 Wonnerup)	For reservoir, plugs to be taken in Wonnerup and Yalgorup sands. For caprock samples, consider in Yalgorup and Eneabba paleosols. Select from those that undergo MICP/Pc tests in the SCAL programme. For the F10 confirm mineralogy particularly Gypsum
7.	Fluid	Fluid compositional analyses	Consider a total of 6 Modular Formation Dynamics Tester (MDT) samples	3 samples from H4 and possibly 3 from H3. Use 50% of the samples or less for baseline dissolved CO2 in the formation water in addition to the planned tests (10 ions etc.).

3 FINAL SCOPE: SPECIAL CORE ANALYSIS (SCAL)

No	Sample	Program Name	Details	CoreLabs Discussions
1.	Caprock	Kw and threshold capillary pressure	Capillary Pressure for supercritical CO2 brine: 1) capillary pressure H2 fault—1H + 1V H2 shale—2H+1V H3 shale—3H +1V H4 shale—2H+1V	On *samples from Eneabba Formation/Yalgorup Member.* 10 plugs selected from RCA item 1. 7H and 3V. 2 plugs from the F10 fault set in H2 (1H and 1V) 12 plugs in total
2.	Caprock and Reservoir	Capillary pressure: mercury injection capillary pressure (MICP)	Will provide pore size distribution curves, capillary entry pressure and to establish seal capacity (not suitable in heterogeneous seal)	On *samples from Eneabba Formation/Yalgorup Member.* Trim ends of 10 plugs from SCAL item 1. This is a destructive test. 2 plugs from the F10 fault set in H2 (trim-ends from SCAL item 1). Trims of 6 Krel samples (SCAL item 4). 18 samples in total
3.	Caprock and Reservoir	Geomechanical testing: Triaxial compression test with ultrasonic velocities (TXC)	The parameters measured are static/dynamic Young's Modulus, Bulk Modulus, Shear Modulus and Poisson's Ratio for rock stability	Use V plugs from P&P for the Wonnerup reservoir. This is a destructive test but the materials will still be available for other uses.
4.	Reservoir	Relative permeability	Drainage and imbibition and end point measurements for CO_2/water (brine) under high pressure and temperature	End point measurement for 4 horizontal plugs. Drainage and imbibition for 2 horizontal plugs. Plugs from porosity and permeability (P&P) testing will be used if suitable (RCA item 4)

Note: Versions 7 & 8 of this document include input from ODIN Consulting.

Document developed by Sandeep Sharma, in consultation with Tony Kenniard, Core Lab, 26 May 2015.

Reviewed by Louise Stelfox, 16 June 2015

Update to sample numbers (in yellow) advised by Tony Kenniard, Core Lab, 24 June 2015.

APPENDIX 9

Units and Conversions
(Extracted from "Recommended Practices for Core Analysis, American Petroleum Institute RP 40, 1998)

Table 8-11—Units and Conversions

Quantity	Customary unit	Metric unit SPE preferred	Conversion factor multiply customary unit by factor to get metric unit	
t = time	d	s	8.6400	E+04
	s	d	1.1574	E-05
L = length	ft	m	3.048	E-01
	in	mm	2.54	E+01
A = area	sq ft	m^2	9.290	E-02
	sq in	mm^2	6.4516	E=02
V = volume, capacity	liter	dm^3	1.0	
	ft^3	m^3	2.831685	E-02
m = mass	lbm	kg	4.535942	E-01
	kg	g	1.0	E+03
	g	kg	1.0	E-03
T = temperature	°F	°C	(°F - 32)/1.8	
	°C	°C	1.0	
	°R	K	5/9	
	K	K	1.0	
P = pressure	atm (760 mm Hg at 0°C or 14.696 lbf/in^2)	MPa	1.01325	E-01
		kPa	1.01325	E+02
	bar	MPa	1.0	E-01
	bar	kPa	1.0	E+02
	lbf/in^2 (psi)	MPa	6.894757	E-03
	lbf/in^2 mm Hg (0°C)	kPa	6.894757	
	torr	kPa	1.333224	E-01
	$dyne/cm^2$	Pa	1.0	E-01
q = flow rate	ft^3/D	m^3/d	2.831685	E-02
	U.S. gal/min (liquids)	dm^3/s	6.309020	E-02
	ft^3/D	cm^3/s	3.277413	E-01
u = volumetric velocity (flux, or superficial)	ft/D	m/d	3.048	E-01
	ft/D	cm/d	3.048	E+01
	ft/D	mm/d	3.48	E+02
	ft/s	m/s	3.048	E-01
ρgas = Density (gases)	lbm/ft^3	kg/m^3	1.601846	E+01
	lbm/ft^3	g/m^3	1.601846	E+04
ρw, ρo = Density	lbm/U.S. gal (liquids)	kg/m^3	1.198264	E+02
	lbm/U.S. gal (liquids)	g/cm^3	1.198264	E-01
	lbm/ft^3	kg/m^3	1.601846	E+01
	lbm/ft^3	g/cm^3	1.601846	E-02
	g/cm^3	kg/m^3	1.0	E+03
	g/cm^3	kg/dm^3	1.0	
	°API	specific gravity	141.5/(131.5+°API)	
ρma = density (solids)	lbm/ft^3	kg/m^3	1.601846	E+01
v = viscosity (Kinematic)	cm^2/s	mm^2/s	1.0	E+02
	ft^2/hr	mm^2/s	2.58064	E+01
	cST mm^2/s	1.0		
μ = viscosity (dynamic)	$dyne-s/cm^2$	Pas	1.0	E-01
	cP	Pas	1.0	E-03
	lbm/(ft-hr)	Pas	4.133789	E-04

Table 8-11—Units and Conversions (Continued)

Quantity	Customary unit	Metric unit SPE preferred	Conversion factor multiply customary unit by factor to get metric unit	
	cP	(Ns)/m²	1.0	E-03
σs = surface tension	dyne/cm	m(milli)N/m	1.0	
γg = interfacial tension (IFT)	dyne/cm	m(milli)N/m	1.0	
k = absolute/specific permeability	darcy (d)	µm²	9.869233	E-01
	millidarcy (md)	µm²	9.869233	E-04
	microdarcy (µmd)	µm²	9.869233	E-07
ω = angular velocity	rpm	radian/s	1.047198	E-01