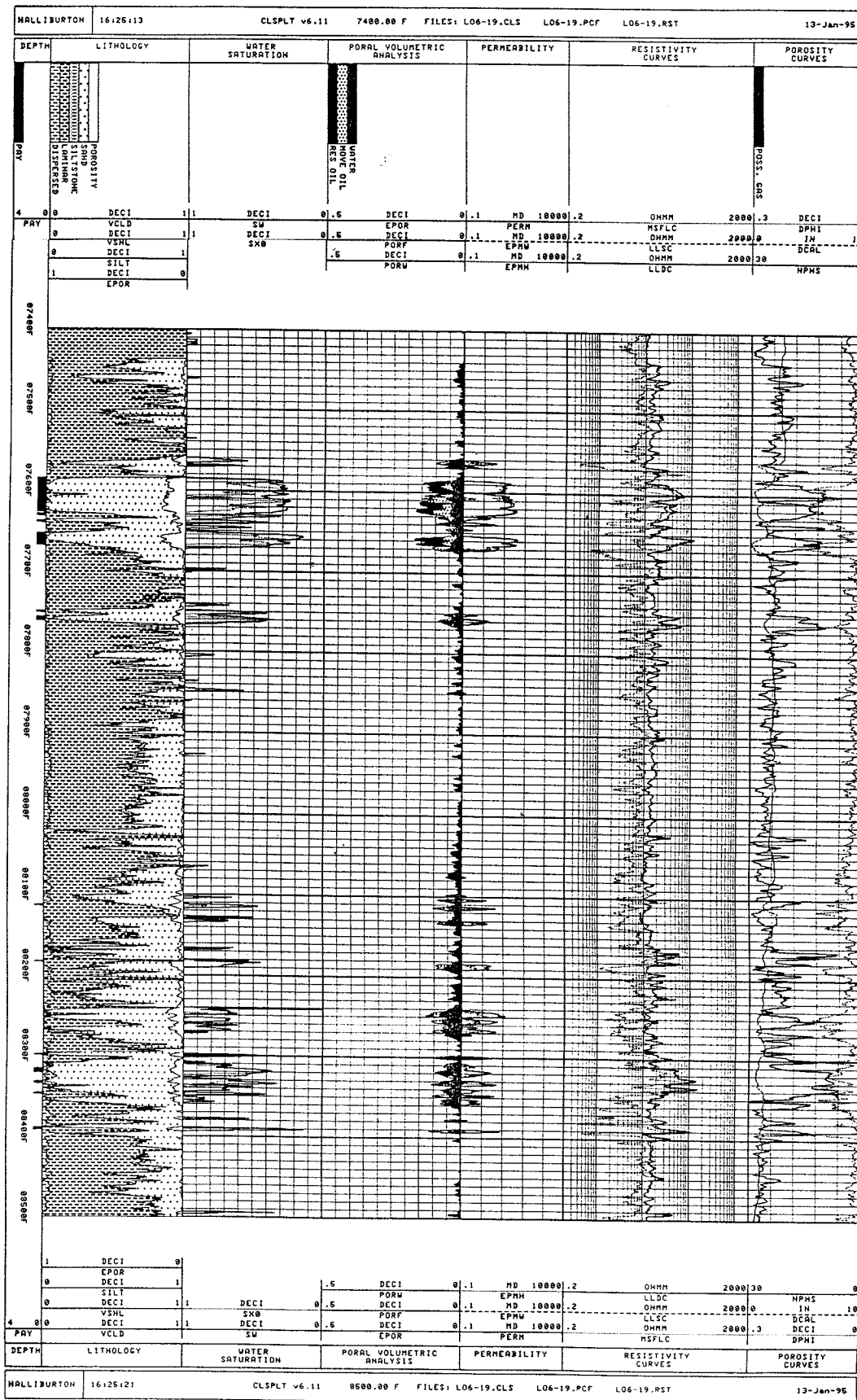


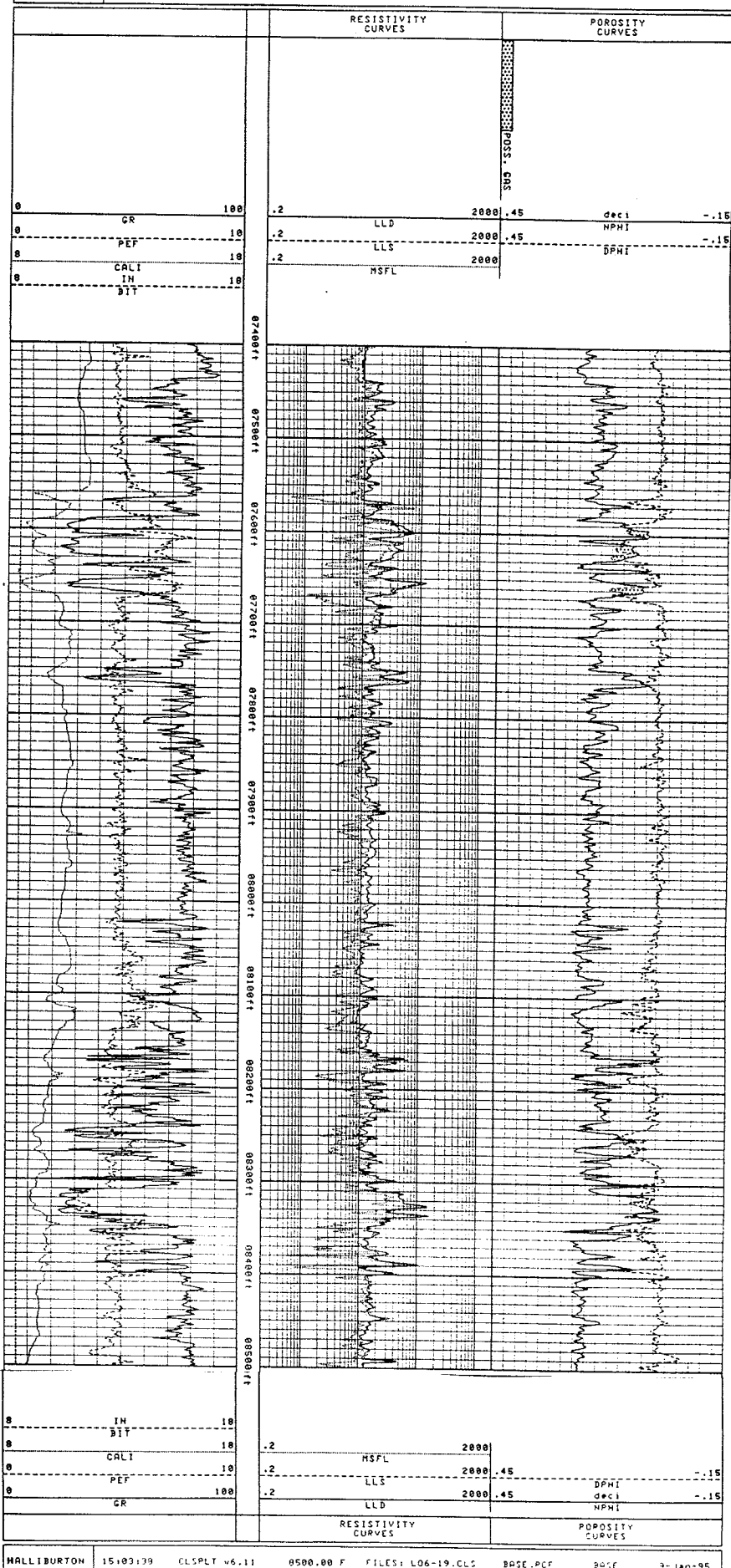
Sand - Shale Analysis
SASHA

Company : Petro Tech Peruana S.A.
Well : LO6-19
Formation: Basal Salina
Interval : 7400' - 8500'



Sand Shale Analysis
7400' - 8500'
Main section with
NPMS = Neutron Porosity in sandstone

HALLIBURTON	15:03:36	CLSPLY v6.11	7400.00 F	FILES: L06-19.CLS	BASE.PCF	BASE	9-Jan-95
-------------	----------	--------------	-----------	-------------------	----------	------	----------

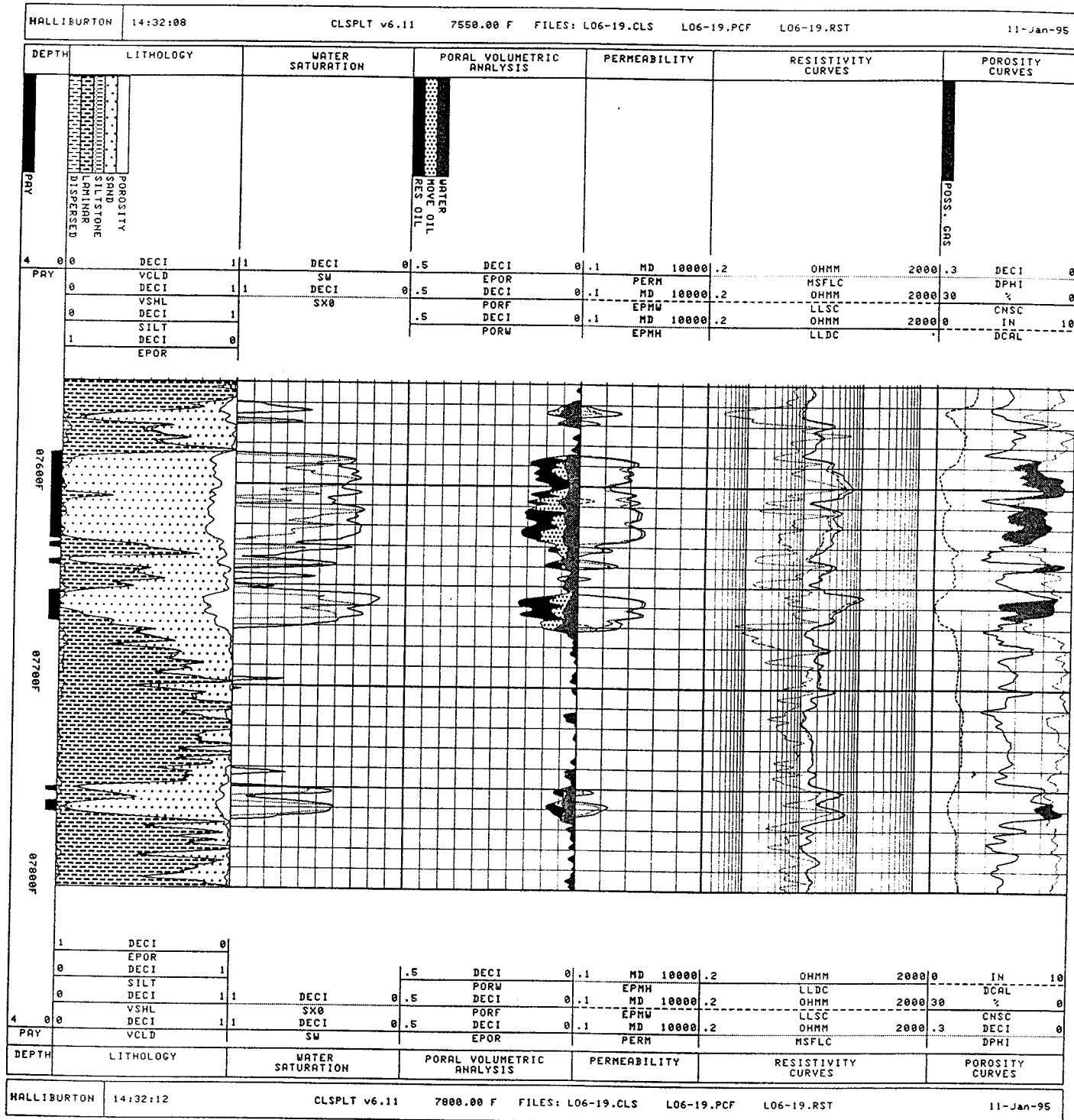


Basal salina

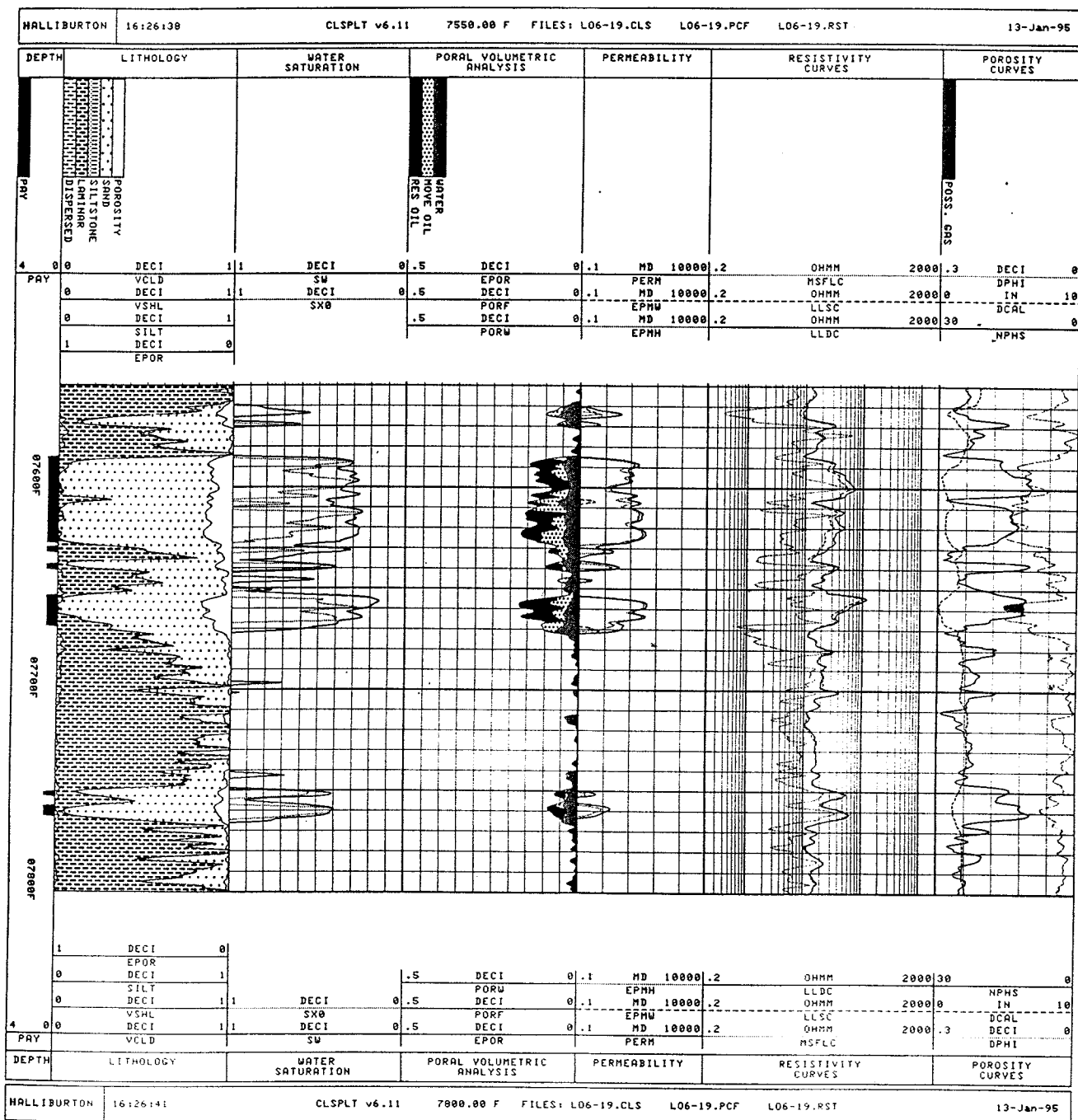
HALLIBURTON		15:46:55	CLSPLT v6.11	7400.00 F	FILES: L06-19.CLS	CORRECT.PCF	CORRECT.RST	9-Jan-95
LOG-19 CORRECTED DATA		DUAL LATEROLOG DEEPER		MICROSPHERICAL		NEUTRON POROSITY		
0	100	.2	2000	.2	2000	45	%LS	-15
GR		LLD		MSFL			NPHI	
0	100	.2	2000	.2	2000	45	%LS	-15
GRC		LLDC		MSFLC			CNSC	
07400ft								
07500ft								
07600ft								
07700ft								
07800ft								
07900ft								
08000ft								
08100ft								
08200ft								
08300ft								
08400ft								
08500ft								
0	100	.2	2000	.2	2000	45	%LS	-15
GRC		LLDC		MSFLC			CNSC	
0	100	.2	2000	.2	2000	45	%LS	-15
GR		LLD		MSFL			NPHI	
LOG-19 CORRECTED DATA		DUAL LATEROLOG DEEPER		MICROSPHERICAL		NEUTRON POROSITY		
HALLIBURTON		15:46:57		CLSPLT v6.11		8500.00 F		FILES: L06-19.CLS
								CORRECT.PCF
								CORRECT.RST
								9-Jan-95

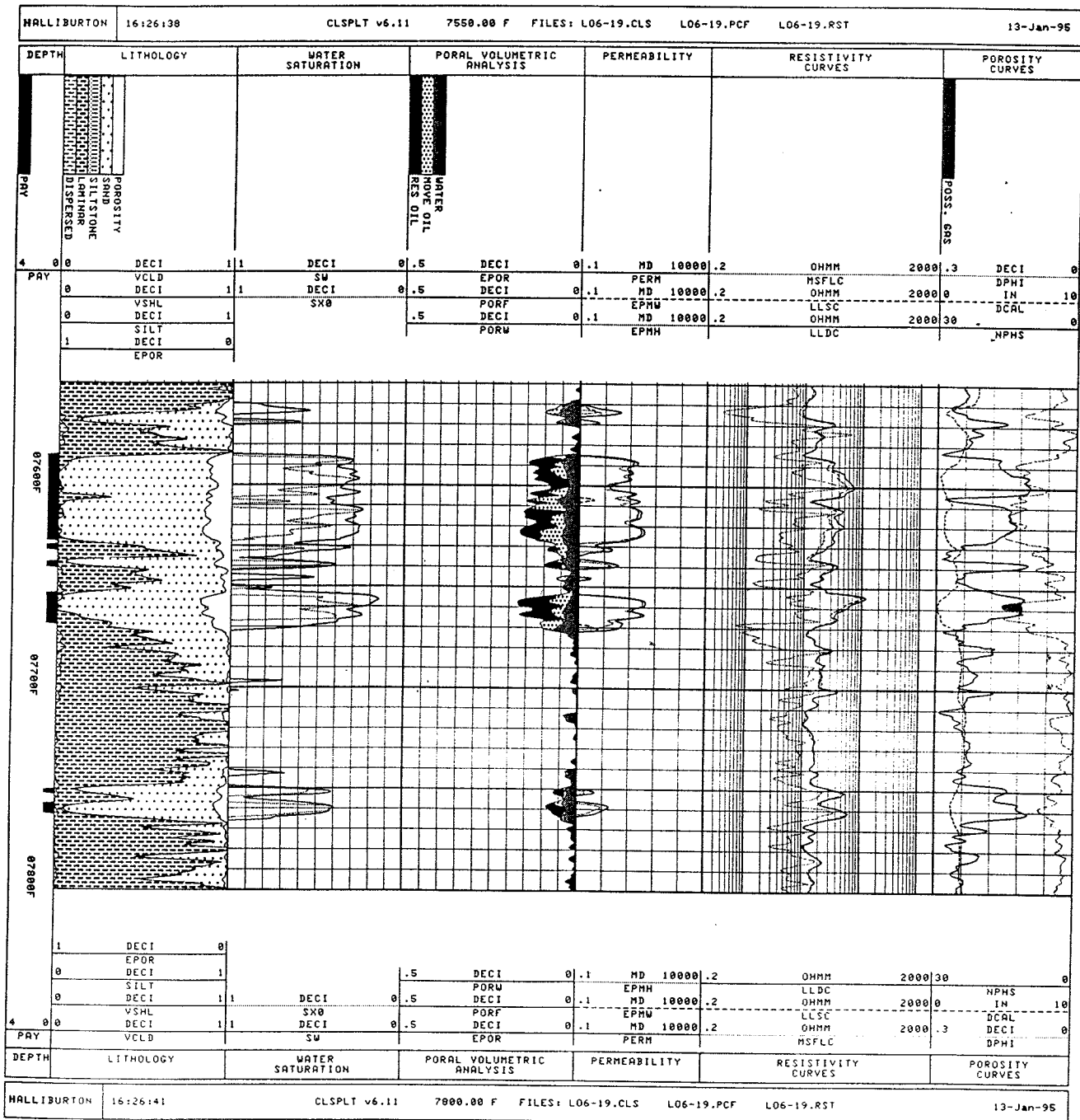
UPPER BASAL SALINA

Sand Shale Analysis
 Upper Basal Salina
 7550' - 7800'
 with CNCS = Corrected NPHI in limestone

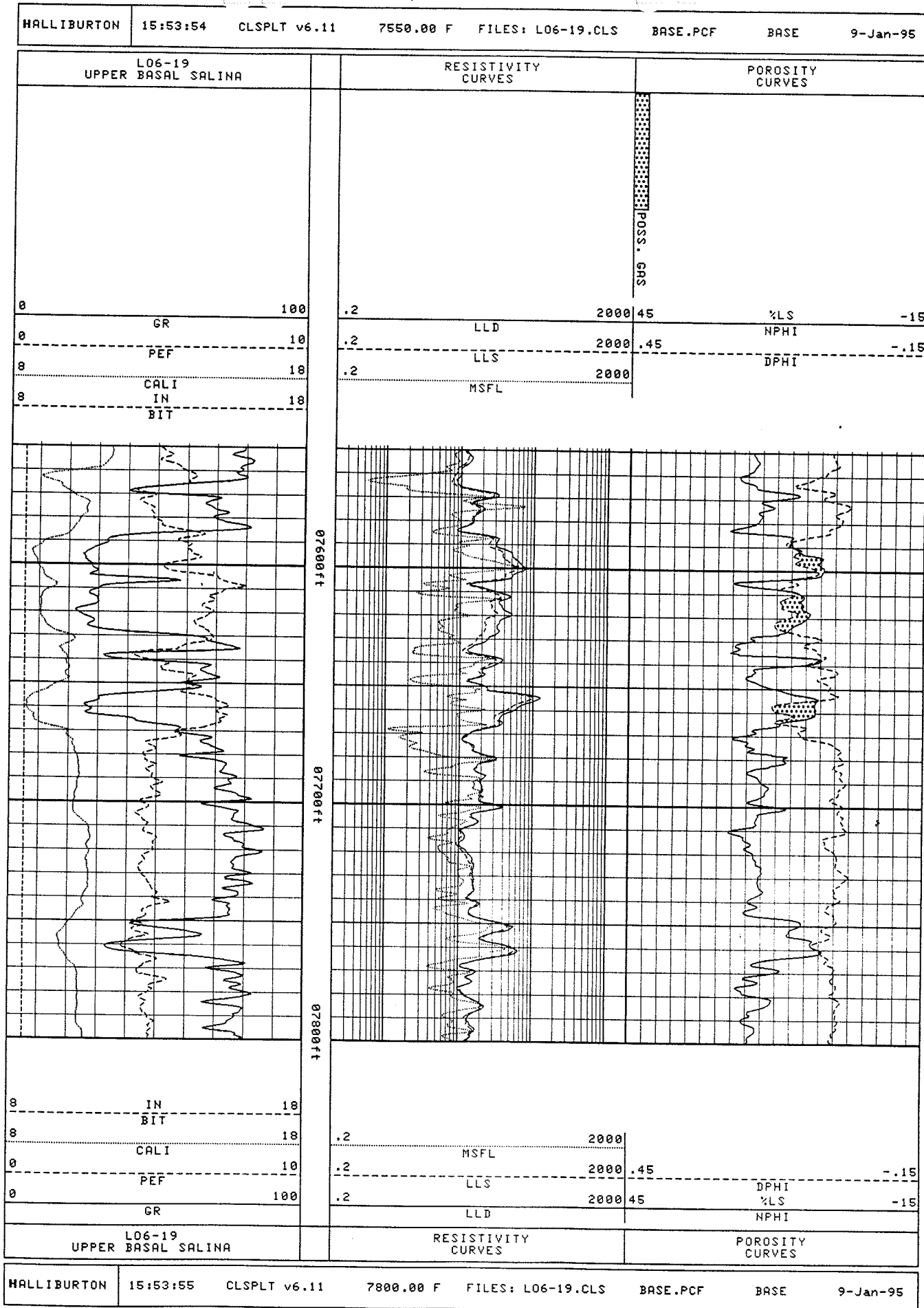


Sand Shale Analysis
 Upper Basal Salina Fm.
 7550' - 7800'
 with NPHS = Neutron Porosity in sandstone

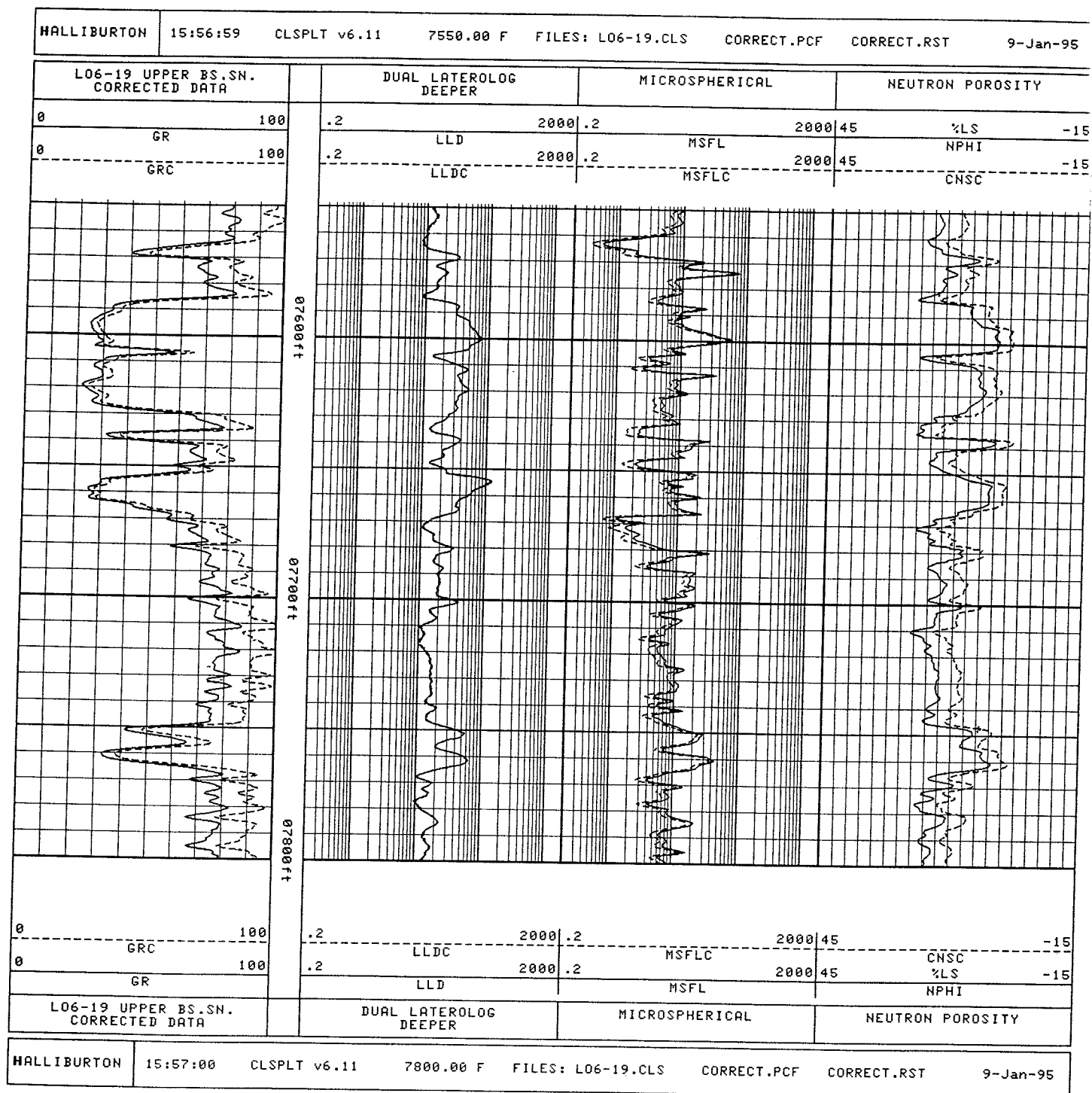




Sand Shale Analysis
Report
Upper Basal salina
7400' - 7900'



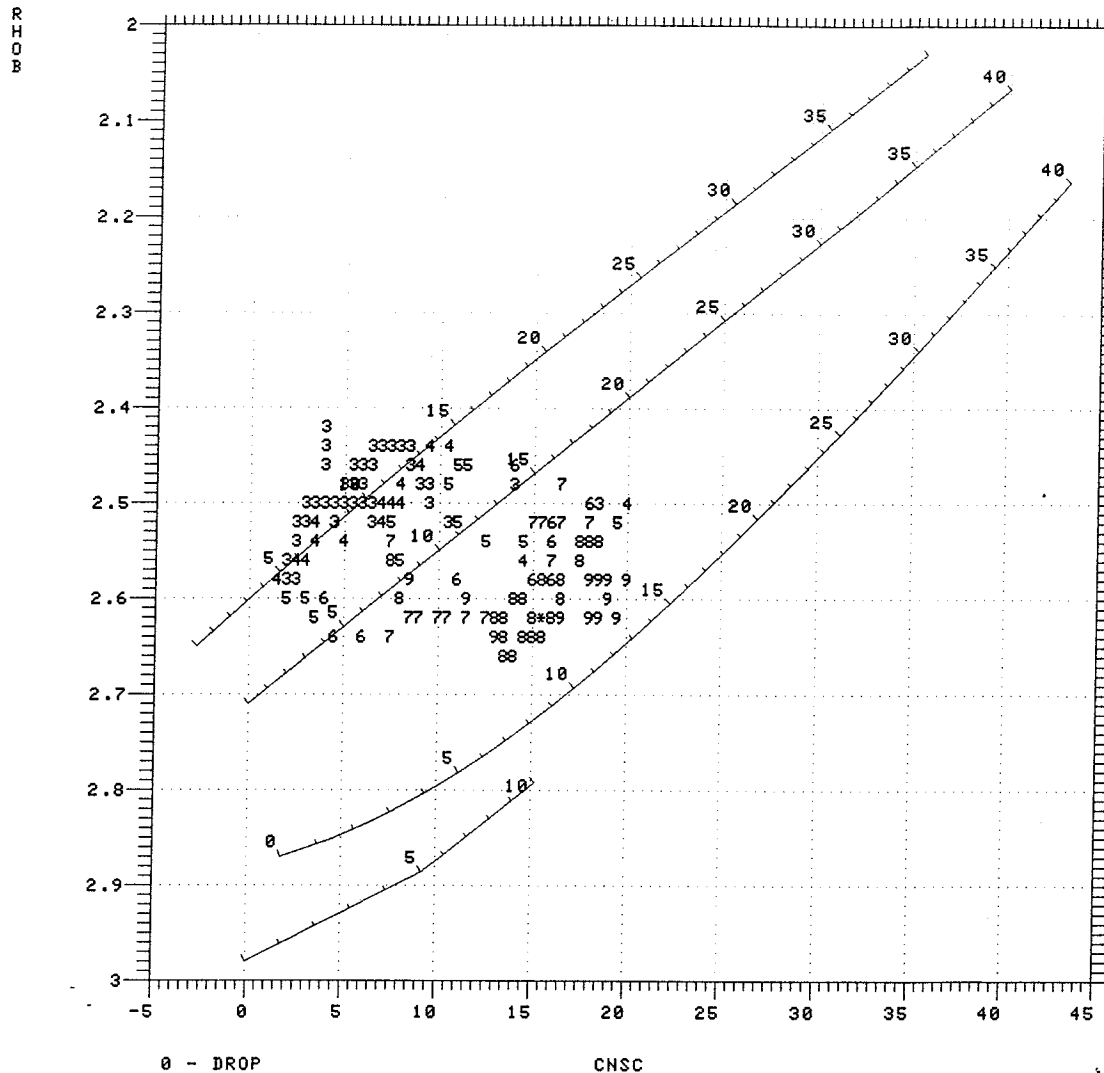
Open Hole Data
Upper Basal Salina Fm.
7550' - 7800'



Corrected Open Hole Data
Upper Basal Salina Fm.
7550' - 7800'

CROSS PLOTS

Z AXIS PLOT - CNSC v s RHO B Z = GRC



Z AXIS PLOT SUMMARY - CNSC v s RHO B Z =

Symbol:	0	1	2	3	4	5	6
Mean GRC	0	10	20	30	40	50	60
Symbol:	A	B	C	D	E	F	G

Note: A letter symbol scale is used if the Z-axis Standard Deviation is greater than:

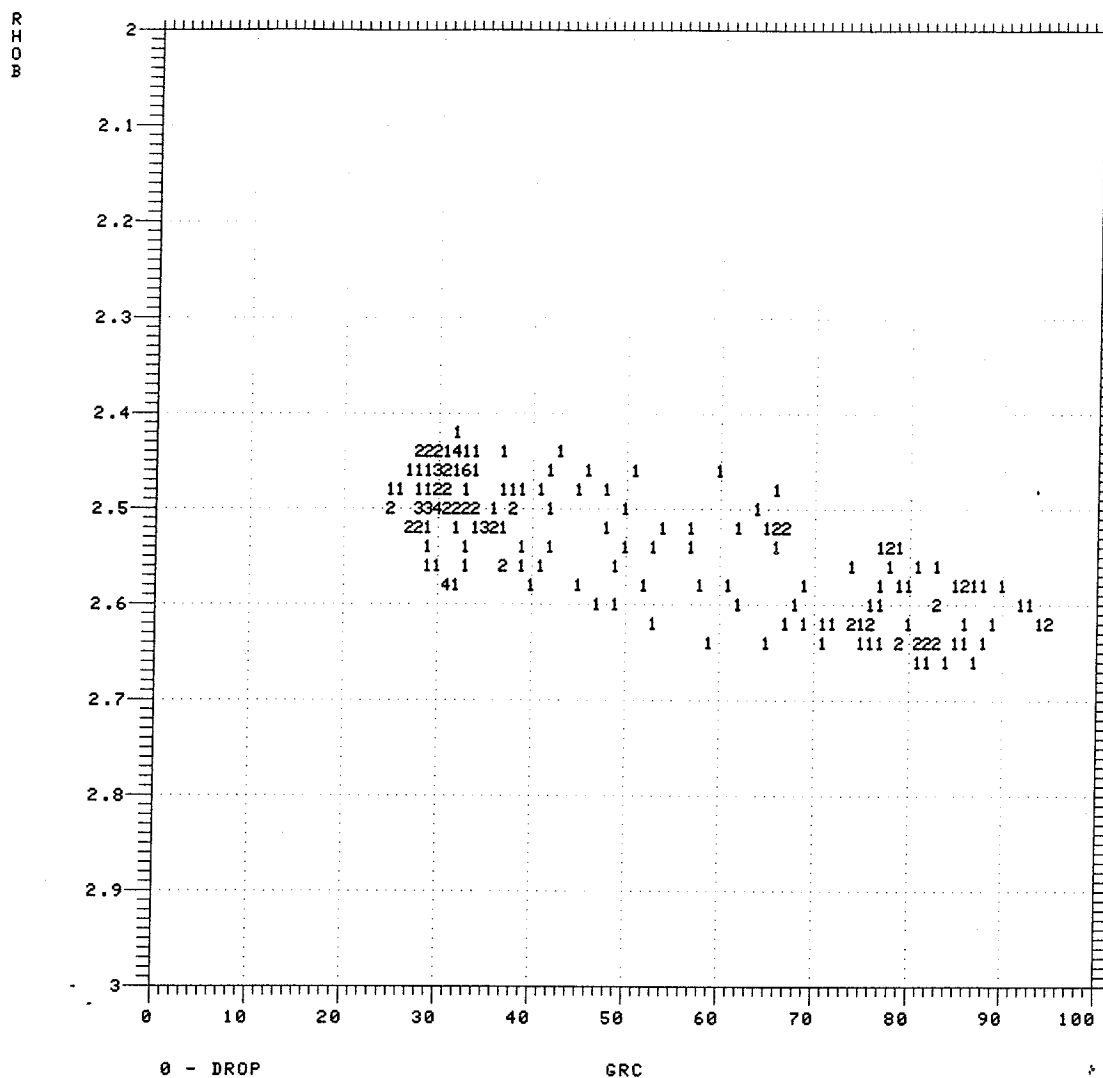
CURVES:	Axis	Curve	Units	Log Suite	
=====	---	---	---	---	-----
	X	- CNSC		BHCOR	
	Y	- RHO B			Created
	Z	- GRC		BHCOR	

CUTOFFS:	Curve or	Relation	Curve or
=====	Constant	Operator	Constant
	-----	-----	-----

----- NONE -----

Lithology file is: LITH70.LIT

CROSS PLOT - GRC vs RHOB



CROSS PLOT SUMMARY - GRC vs RHOB

Symbol:	123456789ABCDEFGHIJKLMN						OPQRSTUVWXYZ						abcdefghijklmnopqrstuvwxyz*					
	-----+-----+-----+-----+-----+-----																	
Count:	1		2		3		4		5		6							
	1234567890		1234567890		1234567890		1234567890		1234567890		1234567890		12					

* = 62 or greater

CURVES:
=====

Axis Curve

X - GRC
Y - RHOB

Units

Log Suite

BHCOR

Created

CUTOFFS:
=====

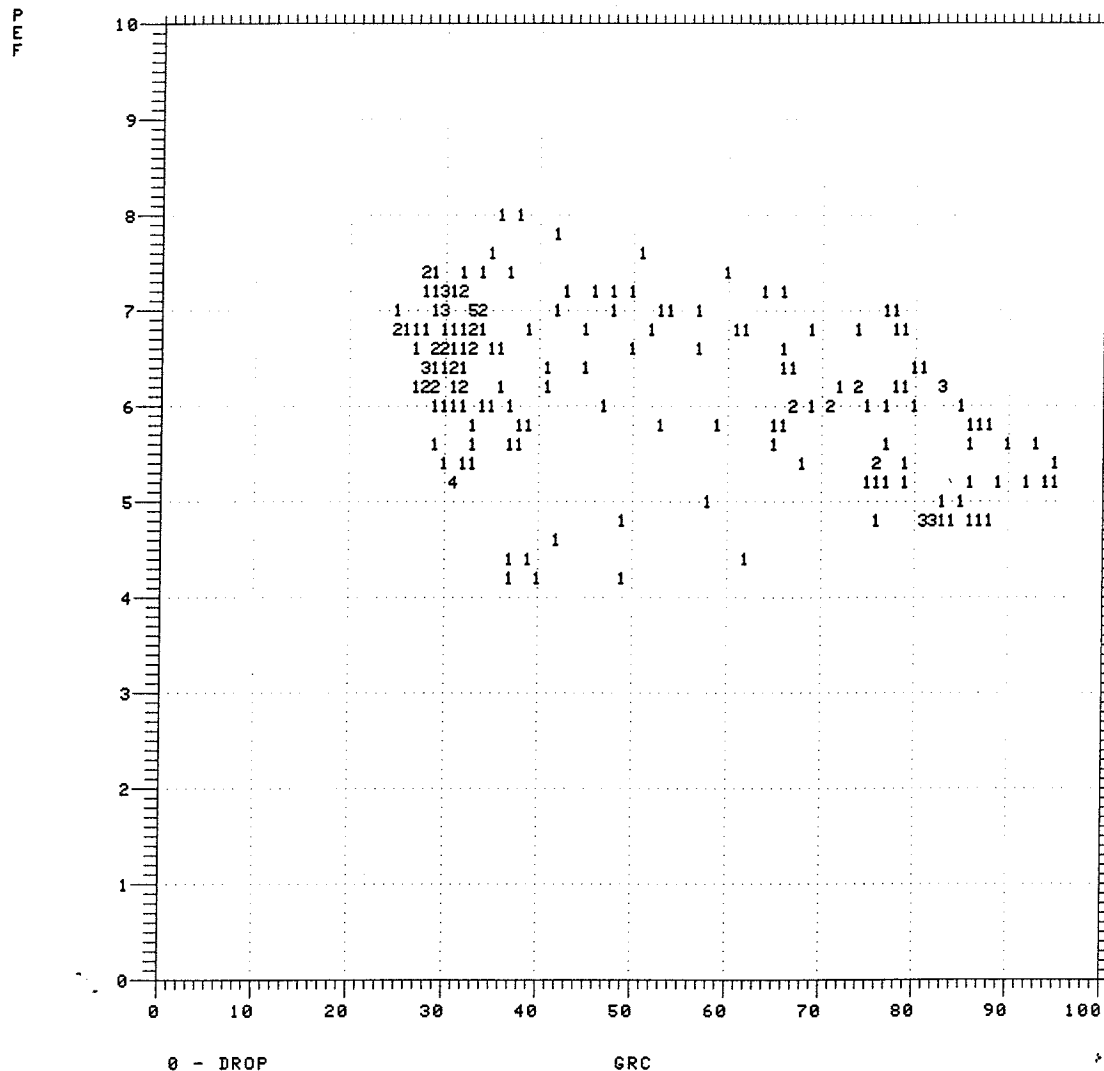
Curve or
Constant

Relation
Operator

Curve or
Constant

----- NONE -----

CROSS PLOT - GRC vs PEF



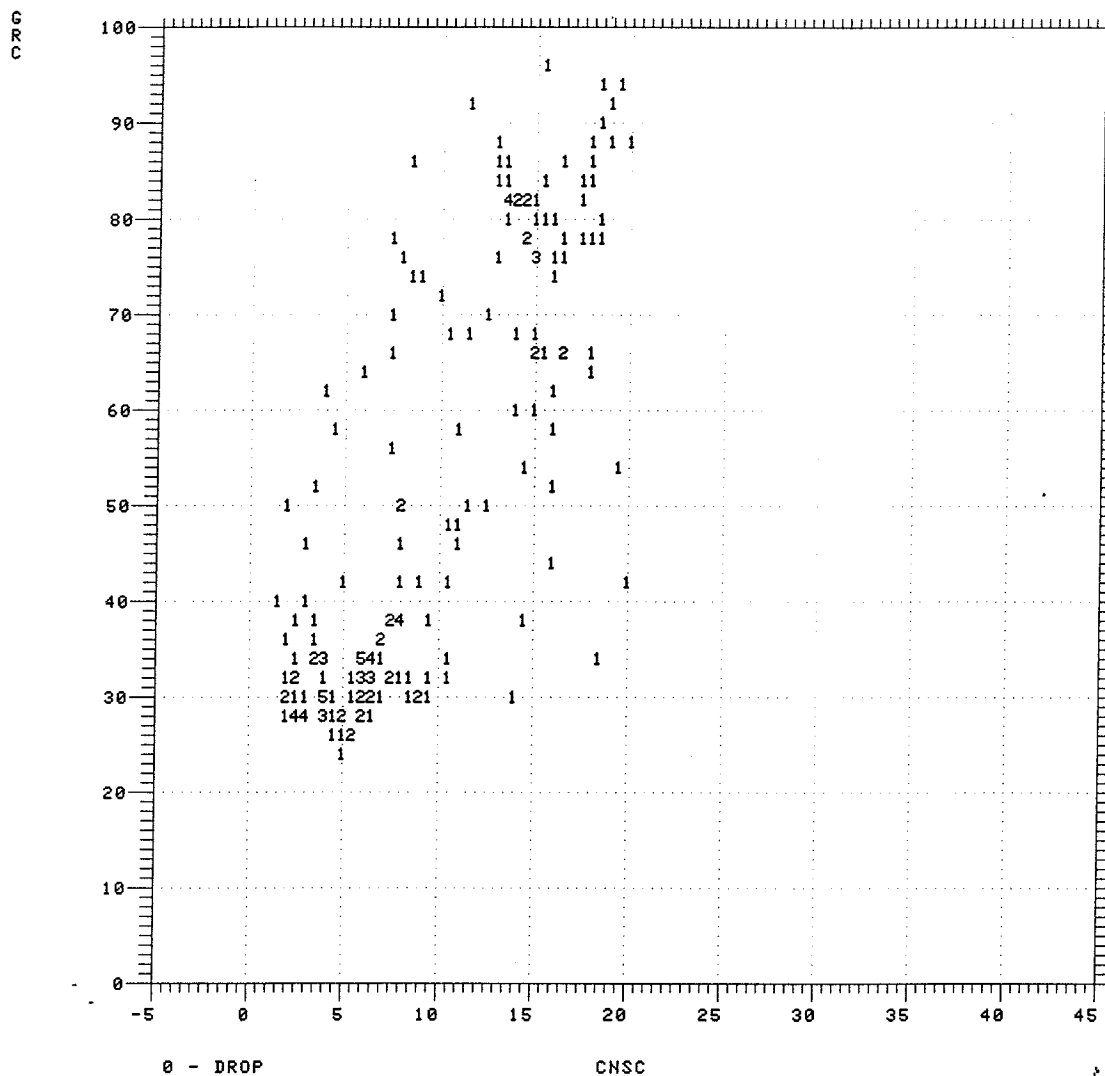
CROSS PLOT SUMMARY - GRC vs PEF

Symbol: 123456789ABCDEFGHIJKLMNQRSTUWXYZabcdefghijklmnopqrstuvwxyz*
Count: 1 2 3 4 5 6
12345678901234567890123456789012345678901234567890123456789012

* = 62 or greater

CURVES:	Axis	Curve	Units	Log Suite	
-----	----	-----	-----	-----	-----
	X - GRC			BHCR	
	Y - PEF				Created
CUTOFFS:	Curve or	Relation		Curve or	
-----	Constant	Operator		Constant	
	-----	-----		-----	
		NONE			

CROSS PLOT - CNSC vs GRC



CROSS PLOT SUMMARY - CNSC vs GRC

Symbol: 123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz*

Count: 1 2 3 4 5 6
1234567890123456789012345678901234567890123456789012

* = 62 or greater

CURVES:
=====

Axis Curve
X - CNSC
Y - GRC

Units

Log Suite

BHCOR
BHCOR

CUTOFFS:
=====

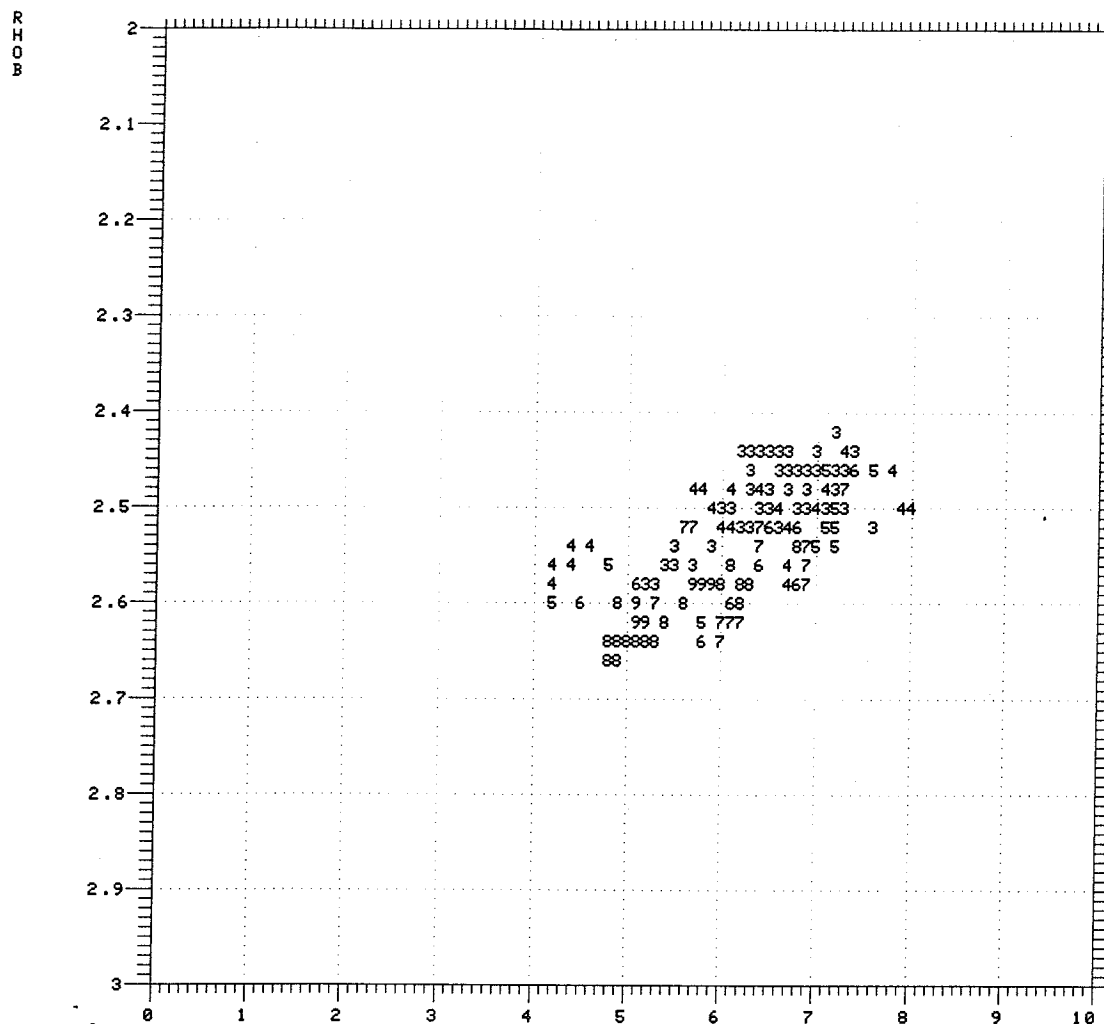
Curve or
Constant

Relation
Operator

Curve or
Constant

NONE

Z AXIS PLOT - PEF vs RHO B Z = GRC



0 - DROP

PEF

Z AXIS PLOT SUMMARY - PEF vs RHO B Z =

Symbol:	0	1	2	3	4	5	6
Mean GRC	0	10	20	30	40	50	60
Symbol:	A	B	C	D	E	F	G

Note: A letter symbol scale is used if the Z-axis Standard Deviation is greater than:

CURVES:
=====

Axis	Curve
X	PEF
Y	RHO B
Z	GRC

Units

Log Suite

BHCOR

Created
CreatedCUTOFFS:
=====

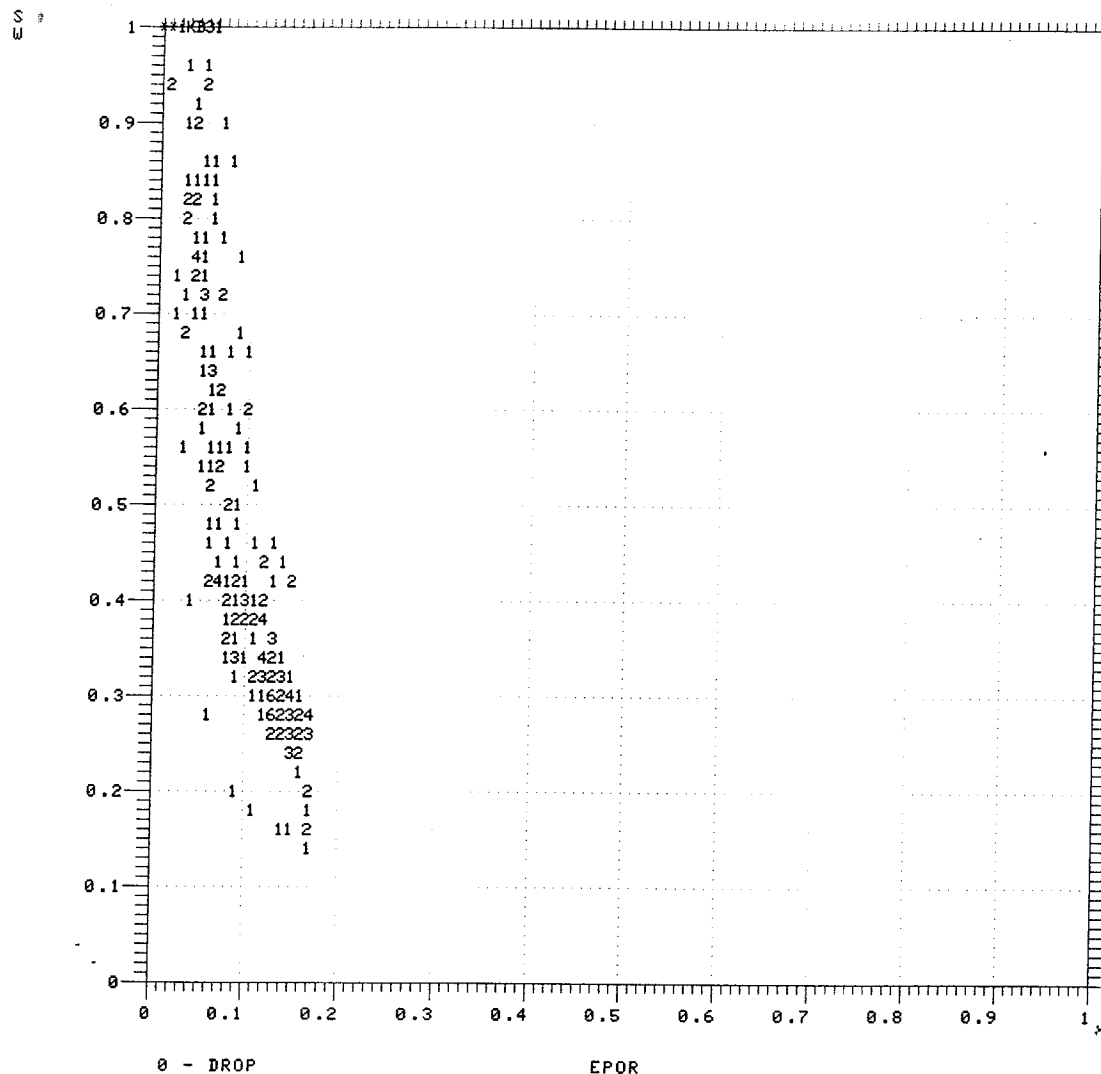
Curve or Constant

Relation Operator

Curve or Constant

----- NONE -----

CROSS PLOT - EPOR vs SW



CROSS PLOT SUMMARY - EPOR vs SW

Symbol:	123456789ABCDEFGHIJKLMN										OPQRSTUVWXYZ										abcdefghijklmnopqrstuvwxyz*																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Count:	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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* = 62 or greater

CURVES:
=====

Axis Curve

X - EPOR
Y - SW

Units Log Suite

DECI SASHA
DECI SASHA

EFFECTI
WATER S

CUTOFFS:
=====

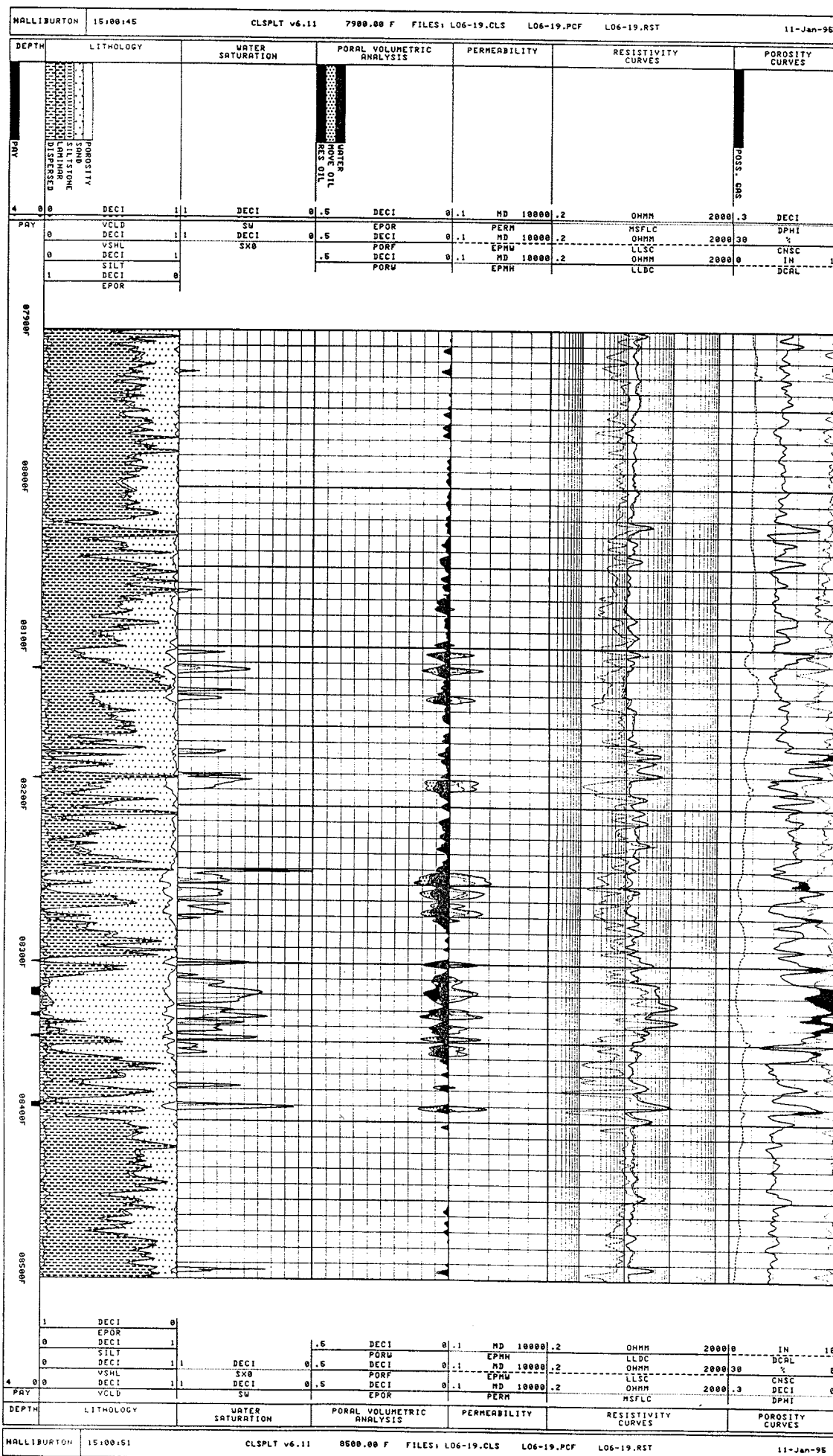
Curve or
Constant

Relation
Operator

Curve or
Constant

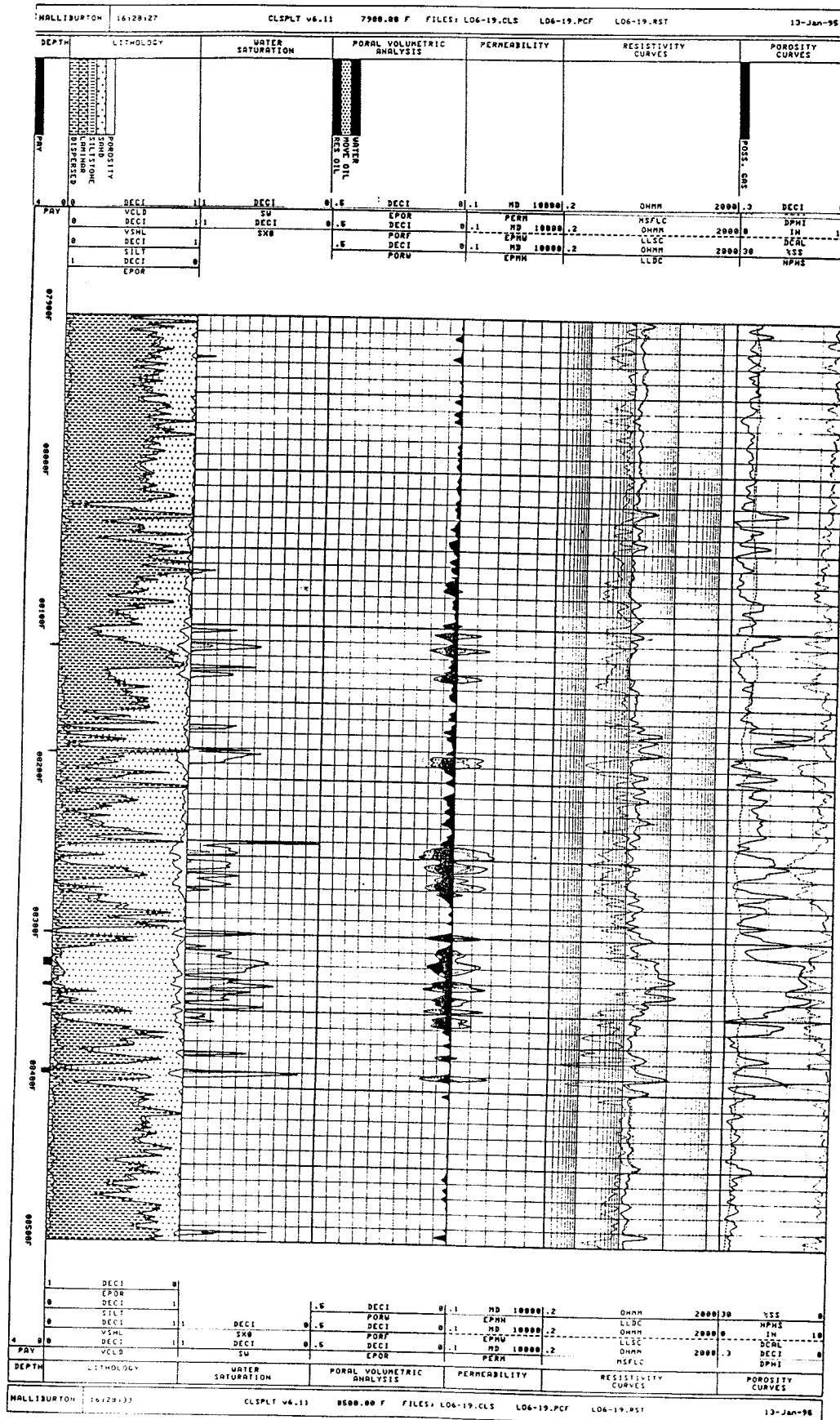
----- NONE -----

LOWER BASAL SALINA



Sand Shal
Analysis
Lower Bas
Salina
7900'-850
with
Neutron
Porosity
limestone

Sand Shale Analysis
 Lower Basal Salina
 7900' - 8500'
 with NPHS = Neutron Porosity in sandstone



```

*****
*          H   H   L           SSSSS          SASHA ANALYSIS          REPORT
*          H   H   L           SSSSS          COMPANY :    PETRO-TECH PERUANA S.A.
*          HHHHH L           SSSSS          WELL NAME :    LO6-19
*          H   H   LLLLL SSSSS          FIELD NAME :    LOBITOS OFFSHORE
*          H   H   LLLLL SSSSS          COUNTRY :    PERU
*****

```

```

*****
* THE FOLLOWING PARAMETERS WERE USED FROM 8500.00 TO 7900.00
* BIT SIZE = 8.50 AGE FLAG = 0.
* STEIBER = 3.00 CLAY TO SHALE RATIO = .60
* WET SHALE DENSITY VALUE = 2.64 DRY SHALE DENSITY VALUE = 2.70
* WET SHALE NEUTRON VALUE = *** DRY SHALE NEUTRON VALUE = ***
* WET SHALE ACOUSTIC VALUE = 80.0 DRY SHALE ACOUSTIC VALUE = 50.0
* TEMPERATURE GRADIENT = 1.00 BOTTOM HOLE TEMPERATURE = 128.0
* BOTTOM HOLE DEPTH = 8530. WATER RESISTIVITY DEPTH = 0.
* WATER RESISTIVITY = .260 MUD FILTRATE RESISTIVITY = .130
* SHALE WATER RESISTIVITY = .100 DEEP SHALE RESISTIVITY = 17.00
* FORMATION FACTOR CONSTANT A = 1.00 CEMENTATION EXPONENT M = 2.00
* WATER SATURATION EXPONENT N = 1.71
*****

```

```

*****
* FROM TO RW RMF POROSITY LIMIT WATER SAT. LIMIT.
* 8500.00 7900.00 .26 .13 .05 .50
*****

```

DEPTH	SHALE VOLUME	EFFECTIVE POROSITY	PERM	WATER SAT.	FLUSHED ZONE SATURATION	POROSITY FEET	HYDROCARBON FEET
8114.00	.63	.10	4.72	.46	.83	.05	.03
8114.50	.67	.10	3.33	.47	.86	.10	.05
8183.50	.74	.08	1.27	.45	1.00	.14	.08
8299.50	.03	.09	2.36	.45	.45	.19	.10
8300.00	.03	.09	3.02	.46	.46	.23	.13
8317.00	.04	.08	1.50	.46	.46	.27	.15
8317.50	.03	.09	2.22	.41	.44	.32	.17
8318.00	.03	.09	2.77	.38	.42	.36	.20
8318.50	.03	.09	2.87	.36	.40	.41	.23
8319.00	.03	.09	2.51	.37	.38	.46	.26
8319.50	.03	.09	1.93	.39	.39	.50	.29
8320.00	.04	.08	1.43	.41	.41	.54	.31
8320.50	.04	.08	1.08	.44	.44	.58	.33
8321.00	.05	.07	.86	.46	.49	.61	.35
8321.50	.05	.07	.71	.48	.53	.65	.37
8333.00	.01	.11	5.07	.43	.75	.70	.40
8333.50	.02	.10	4.65	.34	.78	.75	.44
8334.00	.03	.09	2.14	.32	.80	.80	.47
8334.50	.06	.06	.46	.40	.81	.83	.48
8347.00	.26	.10	3.33	.41	.98	.88	.51
8347.50	.37	.10	4.27	.41	1.00	.93	.54
8348.00	.46	.09	2.18	.46	1.00	.97	.57
8389.50	.12	.05	.14	.41	.41	1.00	.58
8390.00	.18	.08	1.05	.23	.54	1.04	.61
8390.50	.30	.10	3.58	.15	.71	1.09	.65
8391.00	.47	.11	6.87	.13	1.00	1.14	.70
8391.50	.60	.11	7.99	.30	1.00	1.20	.74
8392.00	.70	.10	5.15	.42	1.00	1.25	.77

```

*****
* DEPTH SHALE VOLUME EFFECTIVE PERM WATER FLUSHED ZONE POROSITY HYDROCARBON
* SAT. SATURATION FEET FEET
*****

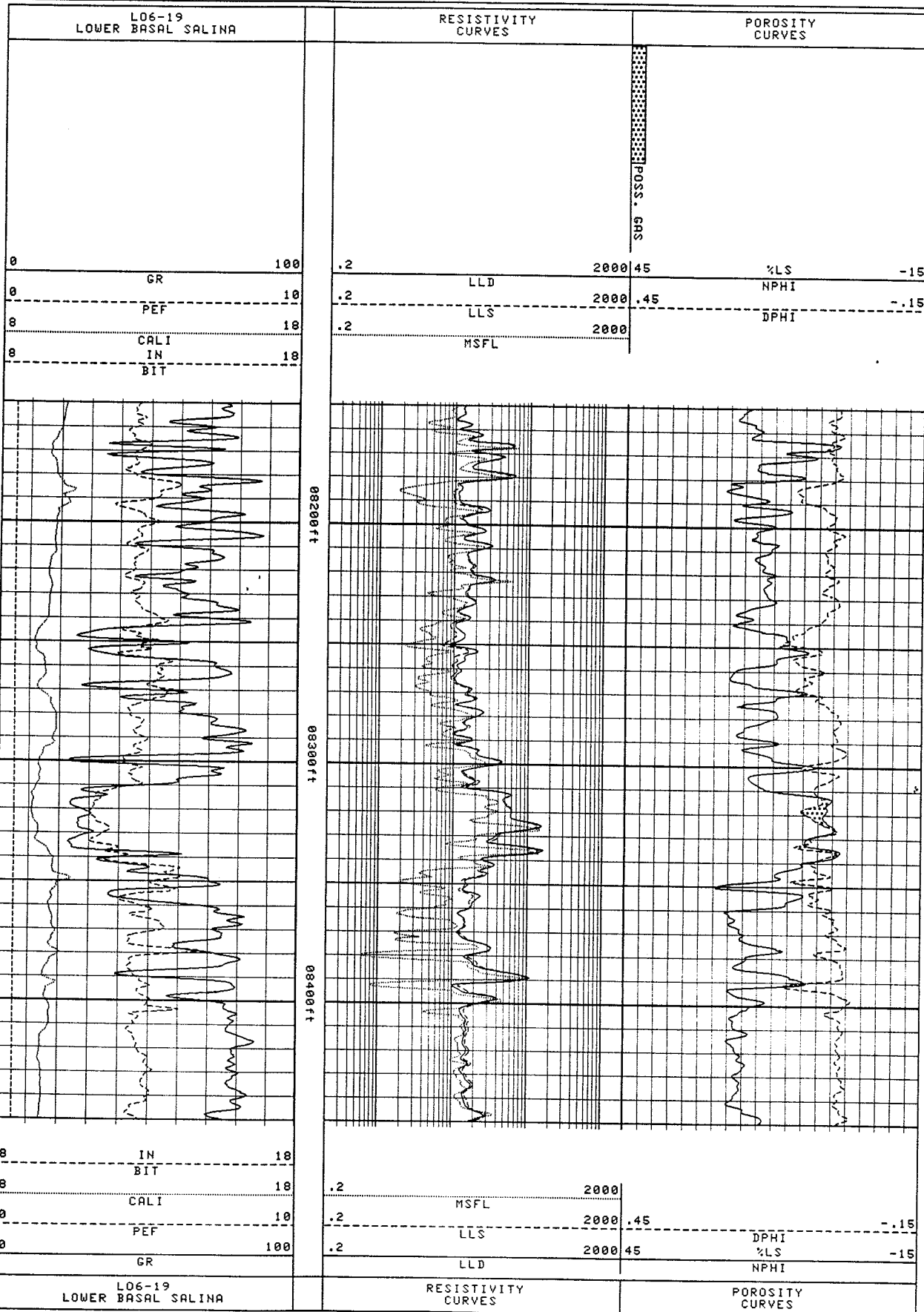
```

```

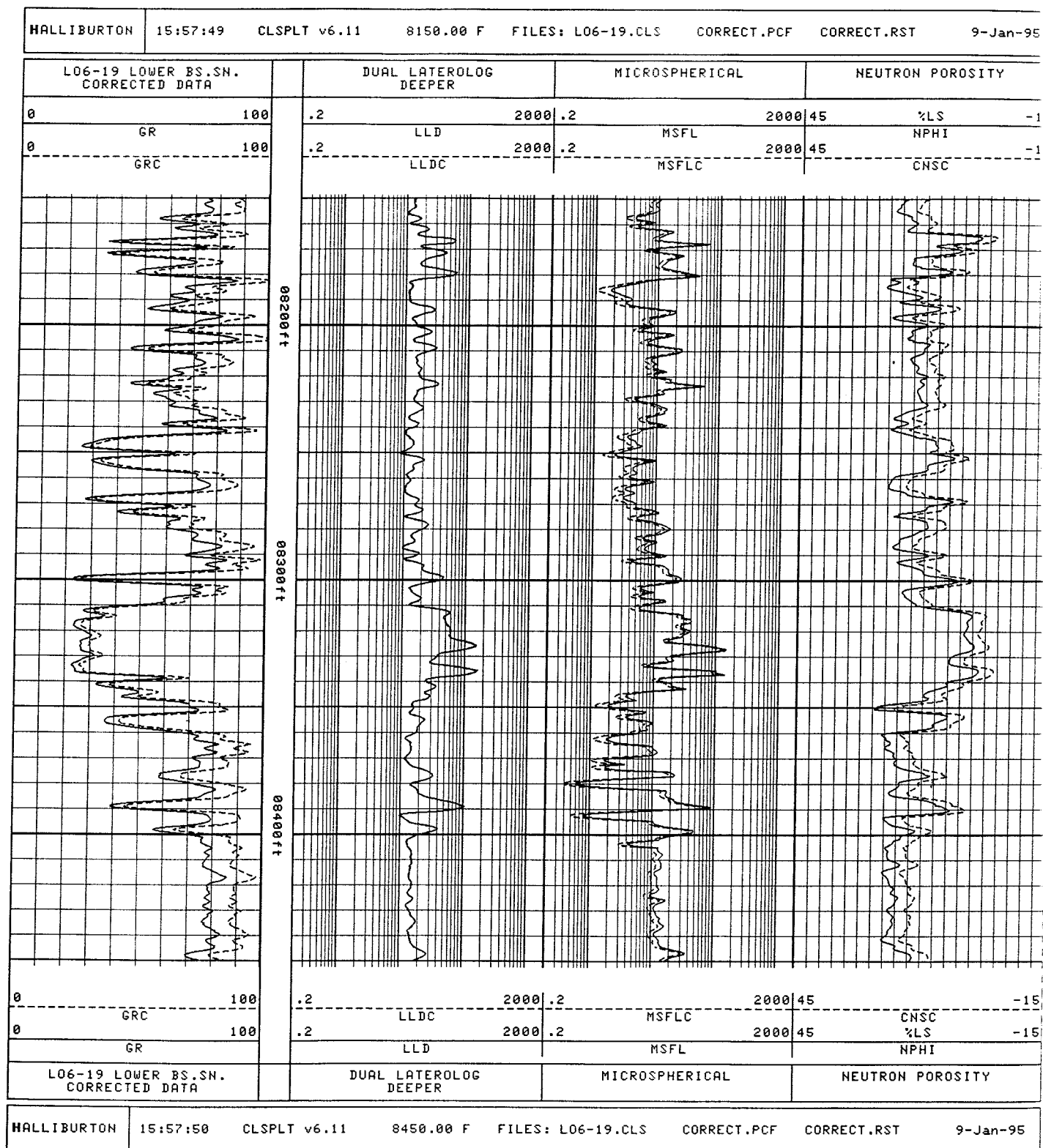
*****
* FOR THE INTERVAL FROM 8500.00 TO 7900.00
* WITH A RW OF : .26
* WITH A RMF OF : .13
* WITH POROSITY GREATER THAN : .05
* AND WATER SATURATION LESS THAN : .50
* FEET OF PAY FOR INTERVAL : 14.00
* FEET OF EFFECTIVE POROSITY : 1.25
* WITH AN AVERAGE EFFECTIVE POROSITY : .09
* WITH AN AVERAGE PERMEABILITY OF : 2.84
* WITH AN AVERAGE WATER SATURATION OF : .38
* HYDROCARBON PORE VOLUME IN FEET : .77
* HYDROCARBON PORE VOLUME IN BBLS/ACRE : 5997.48
*****

```

Sand Shale Analysis Report
 Lower Basal Salina
 7900' - 8500'



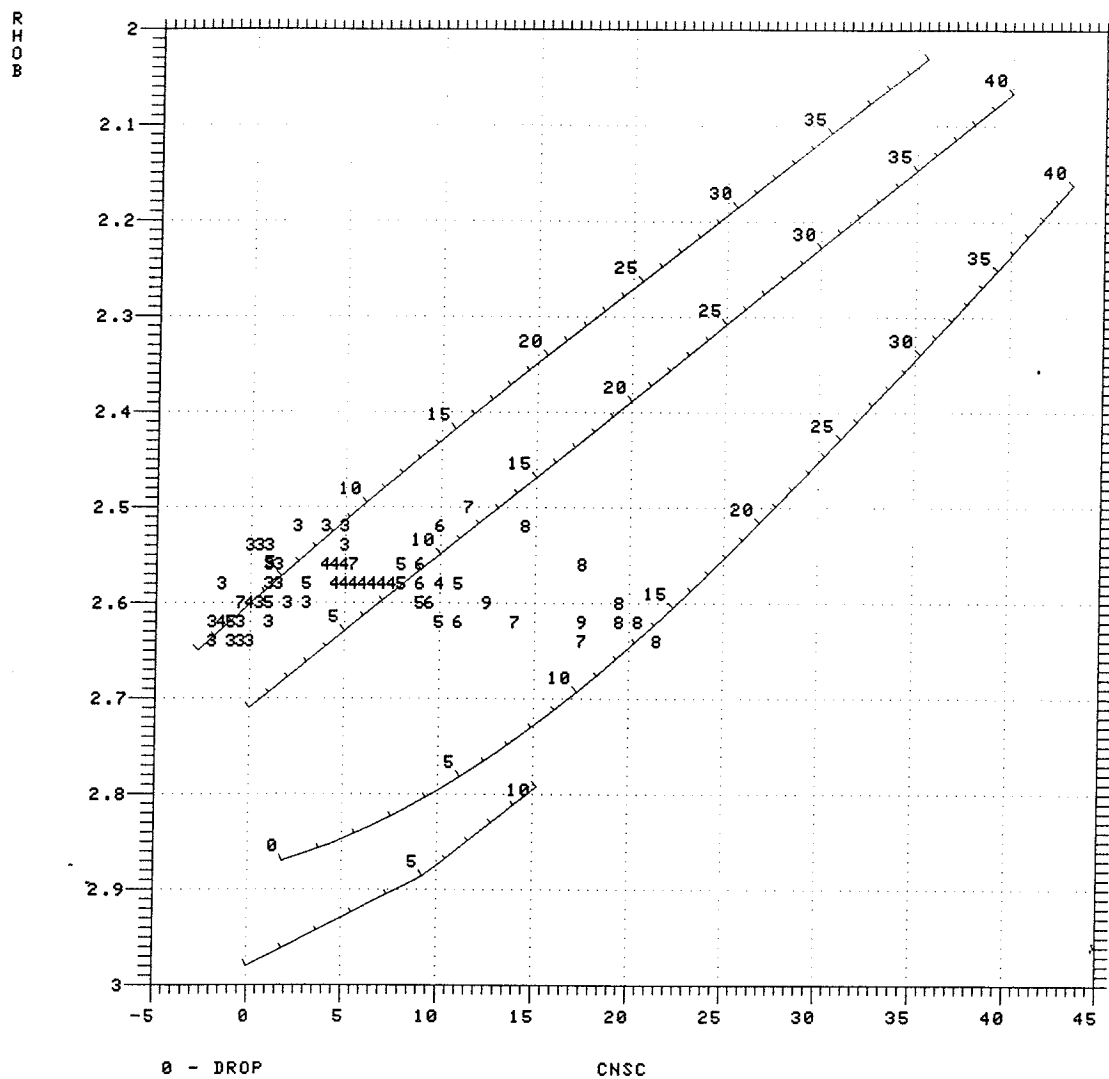
Open Hole
Data
Lower Bas
Salina
8150'-845'



Corrected Open Hole Data
Lower Basal Salina Fm.
8150' - 8450'

CROSS PLOTS

Z AXIS PLOT - CNSC vs RHOB Z = GRC



Z AXIS PLOT SUMMARY - CNSC vs RHOB Z :

Symbol:	0	1	2	3	4	5	6
Mean GRC	0	10	20	30	40	50	60
Symbol:	A	B	C	D	E	F	G

Note: A letter symbol scale is used if the Z-axis Standard Deviation is greater than:

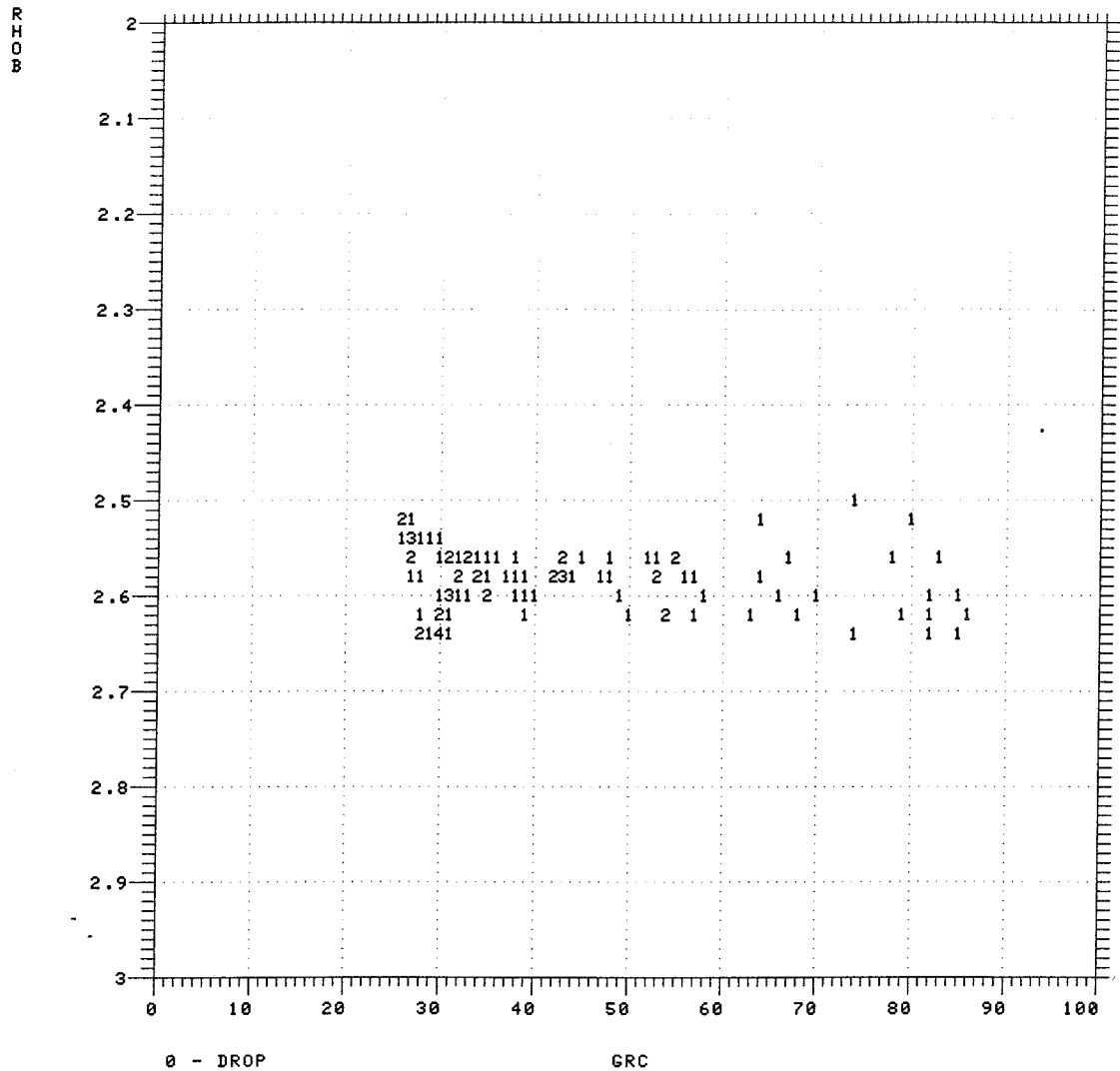
CURVES:	Axis	Curve	Units	Log Suite	
=====	X	CNCS		BHCR	
	Y	RHOB		BHCR	Created
	Z	GRC			

CUTOFFS:	Curve or	Relation	Curve or
=====	Constant	Operator	Constant
	-----	-----	-----

----- NONE -----

Lithology file is: LITH70.LIT

CROSS PLOT - GRC vs RHOB



CROSS PLOT SUMMARY - GRC vs RHOB

Symbol:	1	2	3	4	5	6
Counts:	1	2	3	4	5	6
	1234567890123456789012345678901234567890123456789012					

* = 62 or greater

CURVES:
=====

Axis Curve

X - GRC
Y - RHOB

Units

Log Suite

BHCOR

Created

CUTOFFS:
=====

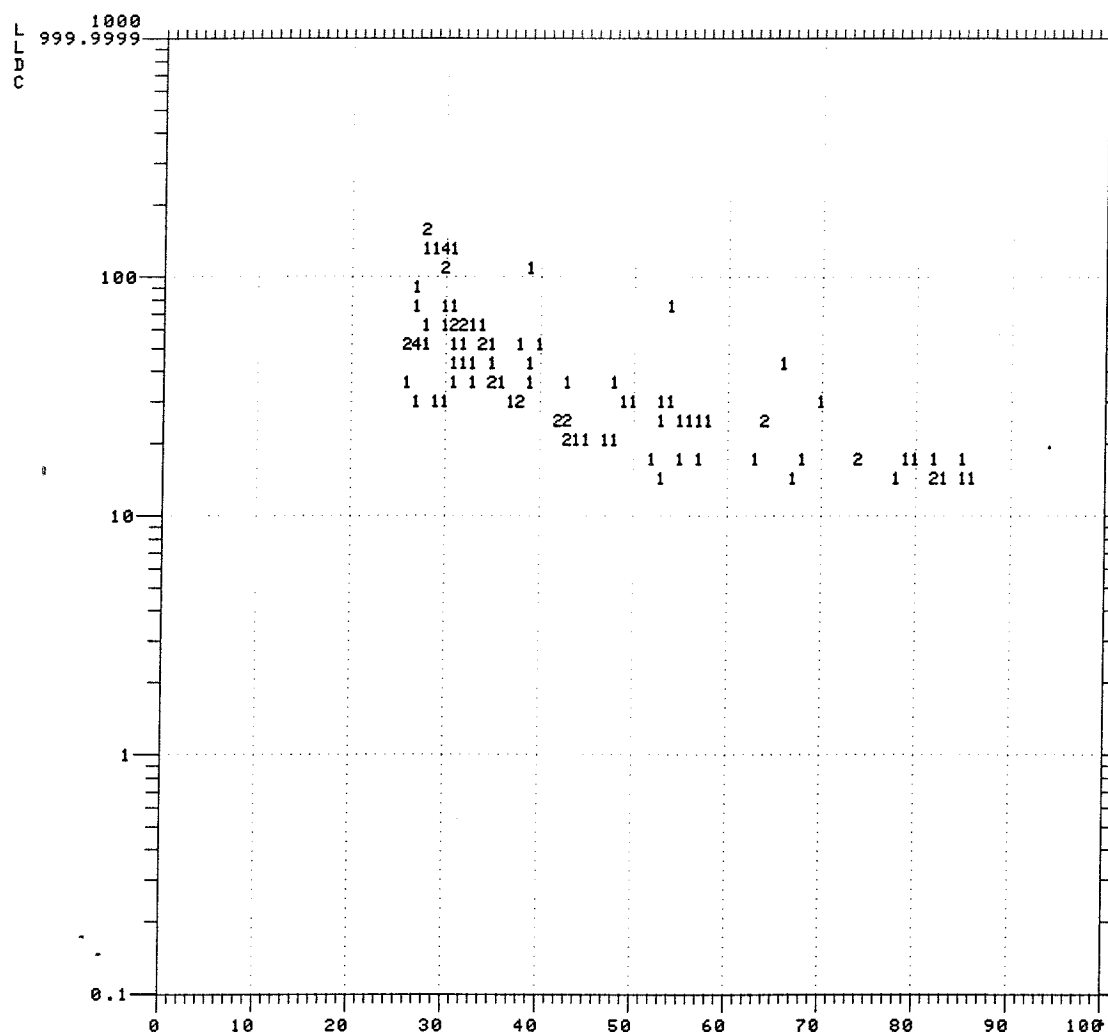
Curve or
Constant

Relation
Operator

Curve or
Constant

----- NONE -----

CROSS PLOT - GRC vs LLDC



0 - DROP

GRC

CROSS PLOT SUMMARY - GRC vs LLDC

Symbol: 123456789ABCDEFGHIJKLMN O PQRSTU VWXYZabcdefghijklmnopqrstuvwxy z*

Count: 1 2 3 4 5 6

12345678901234567890123456789012345678901234567890123456789012

* = 62 or greater

CURVES:
=====

Axis Curve
X - GRC
Y - LLDC

Units

Log Suite
BHCOR
BHCOR

CUTOFFS:
=====

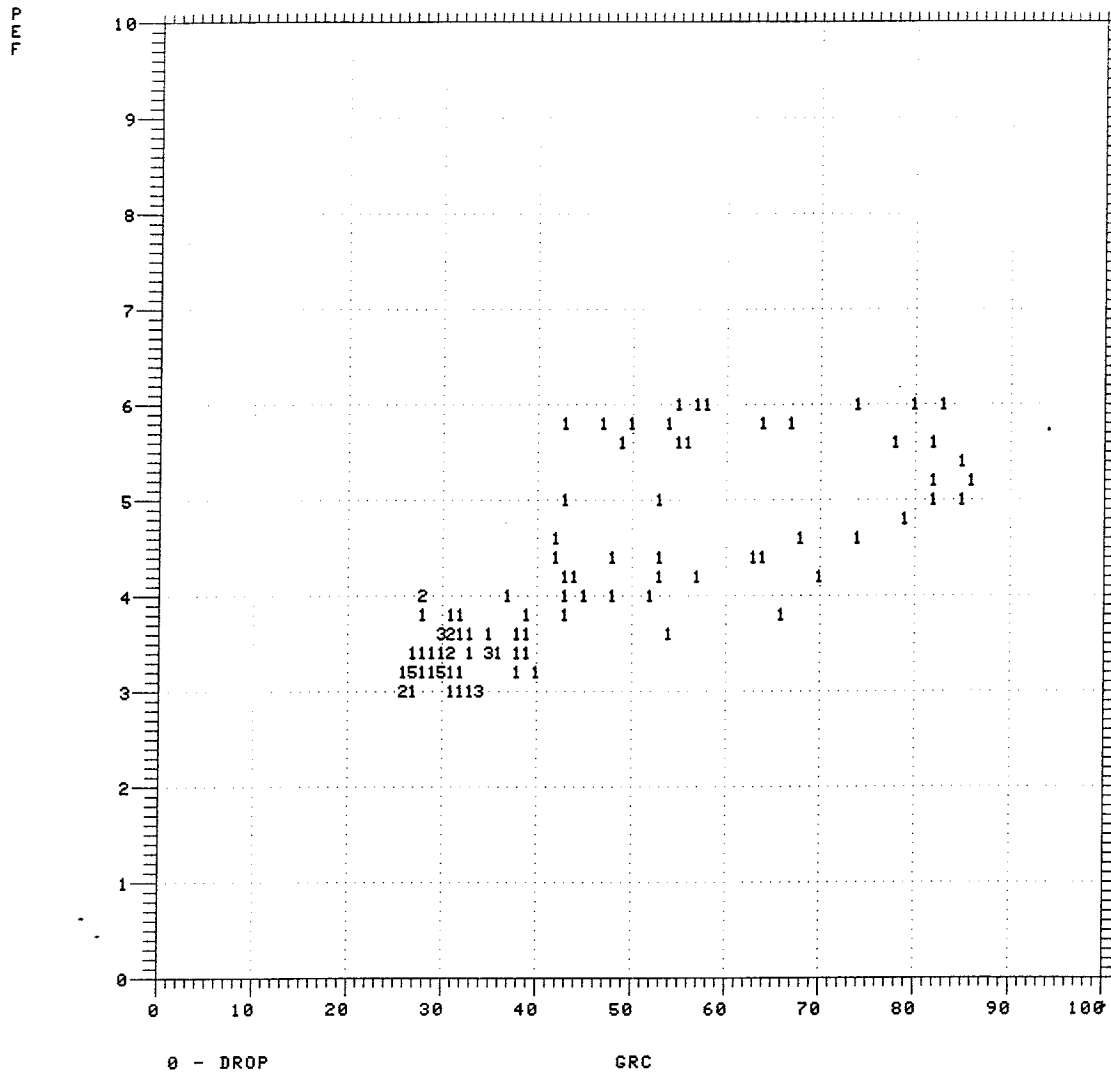
Curve or
Constant

Relation
Operator

Curve or
Constant

----- NONE -----

CROSS PLOT - GRC v s PEF



CROSS PLOT SUMMARY - GRC v s PEF

Symbol:	123456789ABCDEFGHIJKLMN						OPQRSTUVWXYZ						abcdefghijklmnopqrstuvwxyz*					
	-----+-----+-----+-----+-----+-----																	
Count:	1		2		3		4		5		6							
	12345678901234567890		12345678901234567890		12345678901234567890		12345678901234567890		12345678901234567890		12345678901234567890		12345678901234567890		1234567890123456789012			

* = 62 or greater

CURVES:
=====

Axis Curve

X - GRC
Y - PEF

Units

Log Suite

BHCOR

Created

CUTOFFS:
=====

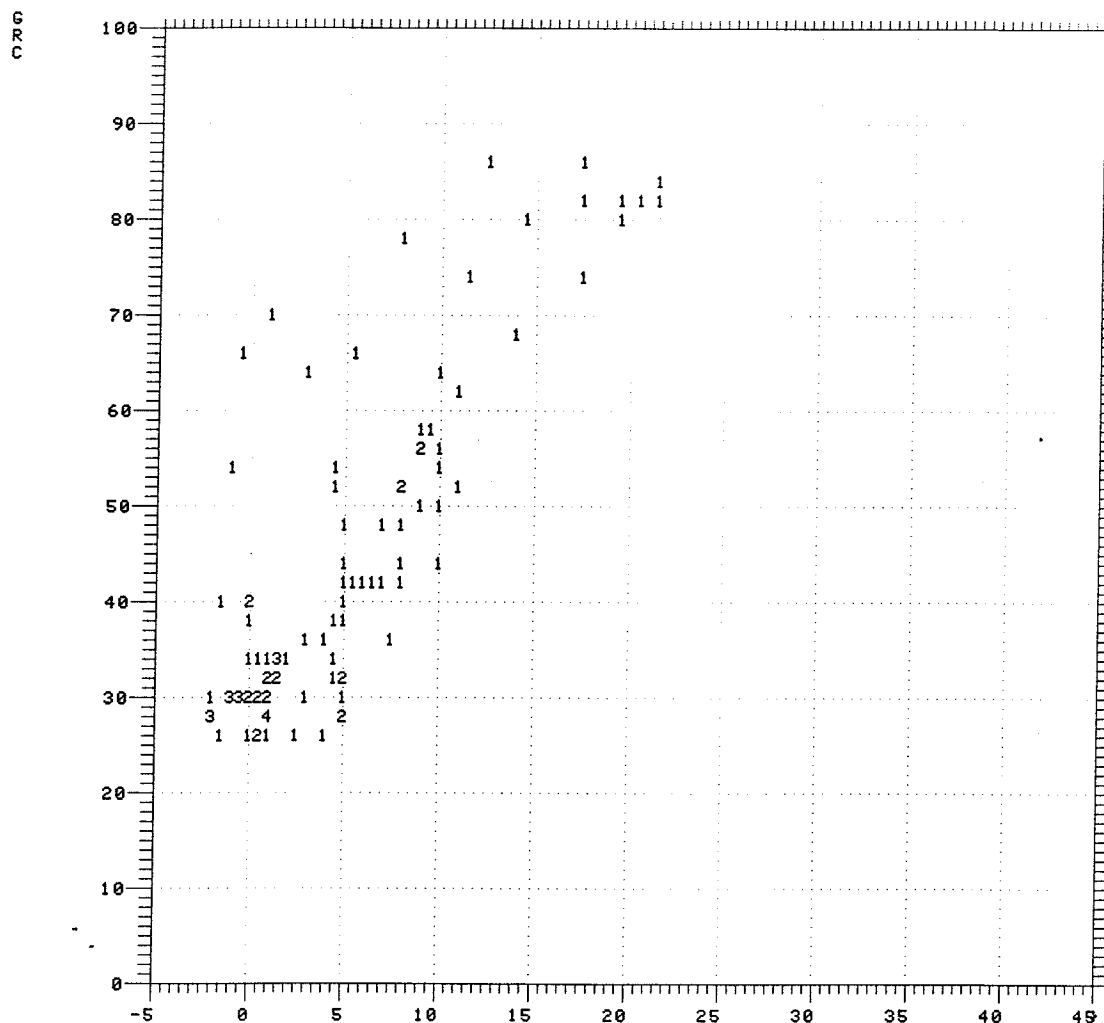
Curve or
Constant

Relation
Operator

Curve or
Constant

----- NONE -----

CROSS PLOT - CNSC vs GRC



0 - DROP

CNCS

CROSS PLOT SUMMARY - CNSC vs GRC

Symbol: 123456789ABCDEFGHIJKLMNPOQRSTUVWXYZabcdefghijklmnopqrstuvwxyz*

Count: 123456
1234567890123456789012345678901234567890123456789012

* = 62 or greater

CURVES:
=====

Axis Curve
X - CNSC
Y - GRC

Units Log Suite
BHCOR
BHCOR

CUTOFFS:
=====

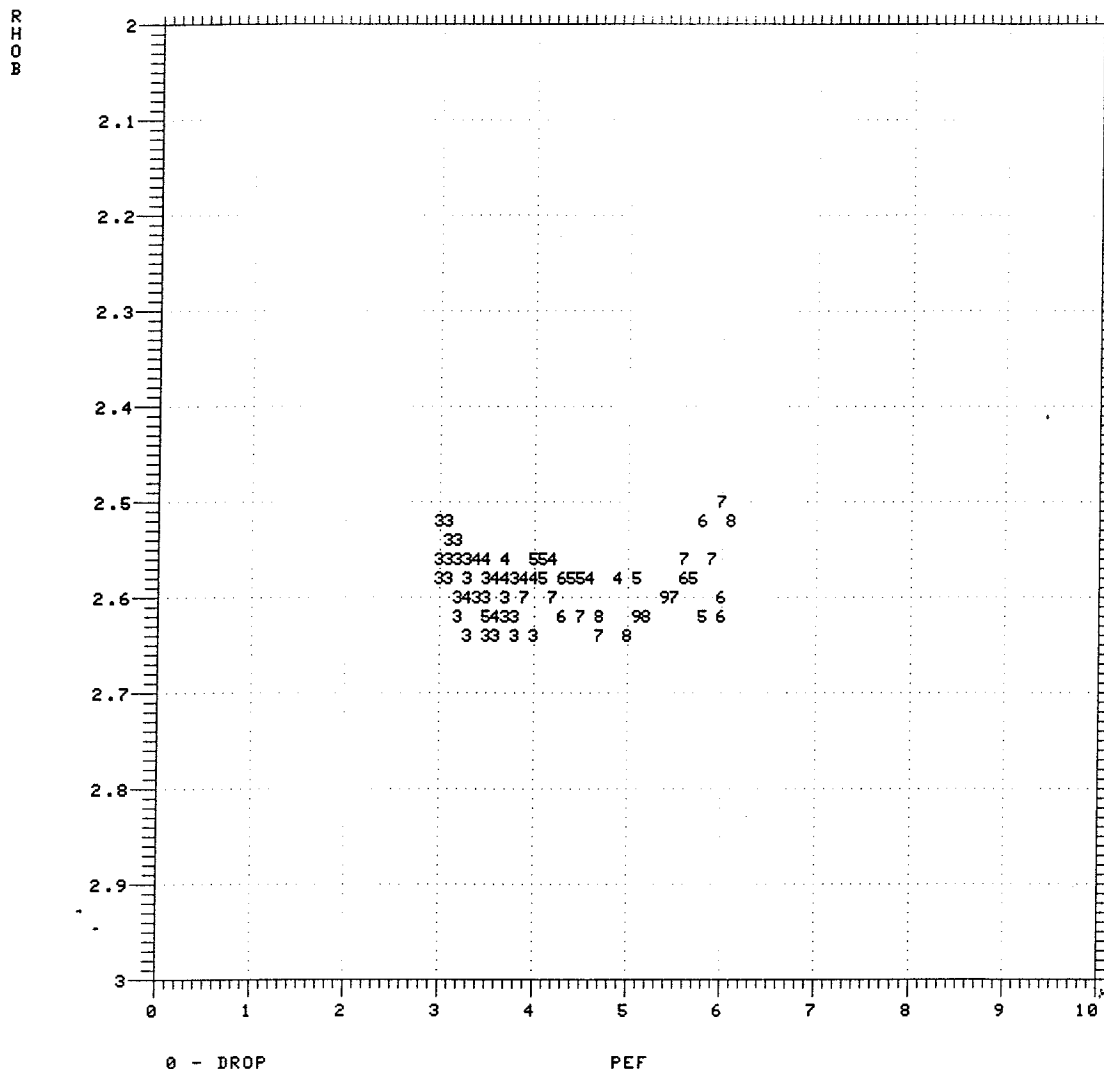
Curve or
Constant

Relation
Operator

Curve or
Constant

----- NONE -----

Z AXIS PLOT - PEF vs RHOB Z = GRC



Z AXIS PLOT SUMMARY - PEF vs RHOB Z =

Symbol:	0	1	2	3	4	5	6
Mean GRC	0	10	20	30	40	50	60
Symbol:	A	B	C	D	E	F	G

Note: A letter symbol scale is used if the Z-axis Standard Deviation is greater than:

CURVES:
=====

Axis Curve

X - PEF
Y - RHOB
Z - GRC

Units

Log Suite

Created
Created

BHCOR

CUTOFFS:
=====

Curve or
Constant

Relation
Operator

Curve or
Constant

----- NONE -----

