

31436

APPLICATION FOR PERMIT TO DRILL A WELL FOR OIL, GAS, BRINE DISPOSAL, HYDROCARBON STORAGE OR FOR SECONDARY RECOVERY

Under Authority of Act 61, P.A. of 1939, As Amended.

JAN 14 1977

MAIL TO:

R 7207
Rev. 11/76

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
P.O. Box 30028, Lansing, Michigan 48909

See Reverse Side Before Filling Out This Application

<p>LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT - 640 ACRES</p>	1. Application to drill a well for: Oil and/or Gas	2. Date January 14, 1977	3. Fee enclosed \$ 100.00	
	4. Applicant's name(s) as it is on the surety bond(s) Shell Oil Company			
	5. Permanent address Grandview Plaza, Traverse City, MI 49684		6. Phone 616-941-1600	
	7. Lease name (owner of mineral rights) Stevens et al		8. Well No. 4-18A	
	9. Surface owner (Same surface location as well drilled under Permit No. 31,342)			
	10. Drilling contractor			
	11. Phone			
	12. Drilling contractor Dual Drilling Company (Rig No. 17)			
	13. Address		14. Phone	
	15. Surface location NW/4 of NE/4 of NW/4 Section 18, T25N-R11W 185' FNL and 724' FEL of NW/4			
16. Township Mayfield		17. County Grand Traverse		
18. BOTTOM HOLE LOCATION: NW/4 NE/4 NW/4 Section 18-T25N-R11W, Mayfield Twp., Grand Traverse Co.				
560 Ft. From North Line of quarter section (north-south)		724 Ft. From East Line of quarter section (east-west)		
560 Ft. From North Unit line (north-south)		724 Ft. From East Unit line (east-west)		
19. Kind of tools to be used (Cable, rotary, combination) Rotary		20. Formation in which well is to be completed Niagaran		
21. Intended depth of well 6500'		22. Program of casing, sealing, cementing and completing well (SEE REVERSE SIDE)		

- *1. 16" conductor pipe was driven to 100'.
- *2. 11 3/4" casing was cemented at 1156'. Cement circulated.
- *3. 8 5/8" casing was cemented at 3340'. TOC at 2550'.
- 4. Drill 7 7/8" hole to total depth. Log and complete as warranted with 5 1/2" liner.

*Permit No. 31,342

CASING IS NOT TO BE STRIPPED FROM THE HOLE AND NO CHANGE IS TO BE MADE IN THE PROGRAM OUTLINED ABOVE WITHOUT APPROVAL OF THE SUPERVISOR OF WELLS OR HIS AUTHORIZED REPRESENTATIVE

APPLICANT AGREES TO COMPLY WITH THE PROVISIONS OF ACT 61, PUBLIC ACTS OF 1939, AS AMENDED, AND RULES PERTAINING TO THE LOCATING, DRILLING, CASING, SEALING, COMPLETING, PRODUCING, AND PLUGGING OF WELLS. BEFORE COMMENCING DRILLING OPERATIONS, CONTACT THE NEAREST FIELD OFFICE. (See reverse side)

23. Send correspondence and permit to: Shell Oil Company Grandview Plaza		24. Phone 616-941-1600	
25. Address Traverse City, MI 49684 Attn: Regulatory-Permit Section			
LEAVE BLANK		26. Name of applicant's agent (Print) G. M. Jobe, Supervisor Regulatory-Permit Section	
Date Issued JAN 14 1977	Permit No. 31,436	27. Signature of agent <i>G. M. Jobe</i>	

FOR CASHIER'S USE ONLY. DO NOT WRITE IN THIS SPACE

DISTRIBUTION

- 1. White - Lansing
- 2. Canary - Cashier
- 3. Blue - Field
- 4. Goldenrod - Field
- 5. Green - Applicant

JAN 18 77 3494 100.00

INSTRUCTIONS FOR PREPARING APPLICATION FOR PERMIT

1. Use form R-7207. (Five copies in set. Green will be returned when permit is issued.)
2. WELL LOCATION SURVEY. Use form R-7208. Submit four copies. (Surveyors plat may be substituted for form R-7208.) Submit supplemental information and maps if lakes, streams, swamps, buildings, roads, powerlines, etc., are within one quarter mile of location.
3. ENVIRONMENTAL IMPACT ASSESSMENT. Use form R-7616 or equivalent. Submit four copies. (See instructions and guidelines furnished with forms.)
4. WELL ELEVATION. Furnish with well location survey or submit certification that elevation will be run and submitted within fourteen days after drilling commences.
5. SURETY BOND. Proper bond coverage must be submitted with application or must have been filed previously. (See General Rules for details.)
6. PERMIT FEE. Must accompany application for permit. (See statute for applicable fee.) (Make check payable to STATE OF MICHIGAN.)
7. PROGRAM OF CASING, SEALING, CEMENTING AND COMPLETING WELL (SECTION 22). Include the different hole sizes and depths to be drilled; casing sizes, weights, grades and lengths; amount and type of cement and additives if used. Indicate the type, weight and viscosities of drilling fluids to be used. List blowout control equipment to be used; give size, type, pressure ratings and order of assembly. Indicate intended well logging and completion program, auxiliary equipment to be used (i.e. sour gas), if any, and general information and remarks not covered by the above.

IF THIS APPLICATION IS FOR A HOLE TO BE DIRECTIONALLY DRILLED, SUBMIT THE FOLLOWING SUPPLEMENTAL INFORMATION:

(Four copies required.)

1. Give geographical description of intended bottom hole location.
2. Give correct footage measurements of intended bottom hole location from the NEAREST quarter section lines and from NEAREST unit lines.
3. Give RADIUS of intended bottom hole target area.
4. DIRECTIONAL DRILLING AND ENGINEERING PROGRAM. Include deviation kick-off points, degree of deviation intended, proposed depth and True Vertical Depth of the bottom hole. Specify the lateral distance and direction from the surface location to the proposed bottom hole location. Give name and address of the engineering company who will direct the deviation of the well bore and any general information and remarks not covered.

NOTICE: When drilling commences, the proper area field office MUST be notified!

FIELD OFFICES

Grayling P.O. Box 507, 49738 Phone (A/C 517) 348-6371	East Lansing 8562 East Stoll Rd., 48823 Phone (A/C 517) 339-8638	Mt. Pleasant 204 Court St., 48858 Phone (A/C 517) 773-9965	Imlay City P.O. Box 218, 48444 Phone (A/C 313) 724-2015
Plainwell P.O. Box 355, 49080 Phone (A/C 616) 685-6851	Cadillac P.O. Box 629, 49601 Phone (A/C 616) 775-9728	Gaylord P.O. Box 576, 49735 Phone (A/C 517) 732-1522	

THE SUPERVISOR OF WELLS IS PROHIBITED BY LAW FROM ISSUING A DRILLING PERMIT TO ANY OWNER OR OPERATOR WHO IS IN VIOLATION OF ANY OF THE PROVISIONS OF ACT 61, P.A. 1939, AS AMENDED, OR ANY OF THE RULES OR ORDERS PROMULGATED THEREUNDER.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
SUPERVISOR OF WELLS
PERMIT TO DRILL

No 3593

(POST WHITE COPY OF PERMIT AT WELL LOCATION)

Permit No. 31,436

Date Issued January 14, 1977

Permission is hereby granted to Shell Oil Company
Owner
Grandview Plaza, Traverse City, MI 49684
Address

Lease Name Stevens et al Well Number 4-18A

Location Surface Location: NW $\frac{1}{2}$ NE $\frac{1}{2}$ NW $\frac{1}{2}$ Sec. 18, T.25N., R.11W., Mayfield Twp.,
Grand Traverse Co., 185' FNL & 724' FEL of NW $\frac{1}{2}$

Footages BHL: NW $\frac{1}{2}$ NE $\frac{1}{2}$ NW $\frac{1}{2}$ Sec. 18, T.25N., R.11W., Mayfield Twp., Grand Traverse Co.
560' from north and 724' from east line of quarter section
560' from north and 724' from east unit line

Type of Well	Kind of	Objective	Intended
<u>Oil and/or Gas</u>	<u>Tools Rotary</u>	<u>Formation Niagaran</u>	<u>Depth 6500'</u>

This permit is issued subject to the provisions of Act 61, P.A. 1939, as amended, and rules, requirements, or orders issued by the Supervisor of Wells and Department of Natural Resources.

By *V. J. Sargent*
SUPERVISOR OF WELLS

CASING AND SEALING REQUIREMENTS

16" conductor pipe was driven to 100'.
11 3/4" casing was cemented at 1156', cement circulated.
8 5/8" casing was cemented at 3340'. TOC at 2550'.
Drill 7 7/8" hole to TD. Log and complete as warranted with 5 1/2" liner.

(SAME SURFACE LOCATION AS PERMIT NO. 31,342)

NOTICE

IT IS FURTHER MADE A REQUIREMENT OF THIS PERMIT that the applicant give notice to the Public Utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

DRILLING PERMIT ISSUED on the basis of the drilling, casing and sealing program as outlined on the application for permit and subject to requirements as set forth above. No change or alteration is to be made without the permission and approval of the Supervisor of Wells or his authorized representative.

DRILLING OPERATIONS ARE NOT TO BE COMMENCED until all the well location requirements have been completed and the permit has been posted in a conspicuous place at the well site. The nearest field office of the Department of Natural Resources must be notified prior to the commencement of drilling, deepening, reworking, and plugging.

DEPARTMENT OFFICES

Lansing, Phone 517-373-1256
Mt. Pleasant, Phone 517-773-9965
Cadillac, Phone 616-775-9728
Roscommon, Phone 517-275-5151
Grayling, Phone 517-348-6371

Plainwell, Phone 616-685-6851
Imley City, Phone 313-724-2015
Gaylord, Phone 517-732-1522
Region III, Lansing, Phone 517-373-1235

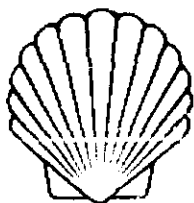
TO V. F. SARGENT -

STEVENS 3-18A (proposed S.T. permit)

Reassignment of 1-18 drilling unit necessary.
 " will remove Mrs. May Howard
 from the unit (see survey on p. 7). Located Mrs.
 Howard by calling Mr. & Mrs. Stevens (neighbors
 to Mrs. Howard) also discussed the S.T. permit -
 drilling reassignment and public hearing under
 paragraph 415 - they are not objectionable. Located
 Mrs. Howard's daughter and son-in-law (Mr. & Mrs. John
 Leach - 616-946-4419) explain the subject to Mr. & Mrs.
 Leach - they called Mrs. Howard (in Cal. 805-864-5070)
 they explained to Mrs. Howard and she also explained to
 Mrs. Howard what she desired to do. - S.T. efforts and
 80-acre drilling unit reassignment that she 40-acre tract would
 be eliminated and she could request a public hearing if
 she so desired. She expressed that she is not
 objectionable to the

Blair M. Goble
1-14-47

Proposed S.T. permit



SHELL OIL COMPANY

GRANDVIEW PLAZA

TRAVERSE CITY, MICHIGAN 49684
January 14, 1977

Subject: Shell Stevens et al No. 4-18A
Surface Location: 185'FNL and 724'FEL of
the NW/4 Section 18
Bottom Hole Target: 200' x 200' Square
Center of Target Located: 560'FNL and 724'FEL
of NW/4 Section 18-T25N-R11W
Mayfield Township
Grand Traverse County, Michigan

Mr. V. F. Sargent, Geologist and Head
Regulatory Control Unit
Geology Division
Department of Natural Resources
Stevens T. Mason Building
Lansing, Michigan 48926

Dear Mr. Sargent:

The subject test will be directionally drilled from the same surface location as the Shell Stevens et al No. 4-18 (P.N. 31,342). The Stevens et al No. 4-18 reached a total depth of 6051 feet on January 11, 1977. Niagaran porosity was encountered at a reef flank location below the water level.

In order to improve our structural position on the Niagaran reef, the existing hole will be plugged back to 3800 feet and will be side-tracked to a bottom hole location approximately 375 feet due south of the surface location.

Based on our current subsurface interpretation, we wish to attribute an 80-acre drilling unit described as the N/2 NW/4 of Section 18-25N-11W to the proposed test. This drilling unit alignment necessitates the deletion of the north 40 acre tract (SE/4 SW/4 Section 7) from the drilling unit attributed to the Stevens et al No. 4-18. In place of the north 40 acre tract, the NW/4 NW/4 of Section 18 has been added. The drilling unit re-alignment has been discussed with Mary Harrand, Rt. 1, Buckley, Michigan 49620 (phone 616-263-5502) and with Joseph A. Stevens, Rt. 1 Buckley, Michigan 49620 (phone 616-263-7182). Mrs. Harrand owns mineral rights in the SE/4 SW/4 Section 7. Mrs. Harrand understands that her tract is being deleted from the drilling unit and she has expressed no objections to the new drilling unit alignment attributed to the Stevens et al No. 4-18A.

Because this plan will utilized the existing drill pad and create no additional surface disturbance an environmental impact assessment has not been included with the enclosed permit application.

Please inform us if additional information is required to support issuance of the drilling permit.

Yours very truly,

Glen M. Jobe
Glen M. Jobe, Supervisor
Regulatory-Permit Section

RLT:JLM

Enclosures

cc: E. G. Schultz - Houston - WO/Enclosures
L. M. Gerschbacher - Land - WO/Enclosures
J. F. Cheadle - Houston - W/Enclosures

Supplemental Information
Sidetrack Directional Drill Permit Application
Shell Stevens et al No. 4-18A

80 -Acre Drilling Unit Being N/2 NW/4 Section 18
Township 25N Range 11W
Mayfield Township
Grand Traverse County, Michigan

- 1) Surface Location: NW /4 NE/4 NW /4 Section 18, T25N-R11W, Grand Traverse County, 185' from N L and 724' from E L of NW/4 of Section 18.
- 2) Center of Bottom Hole Target: NW /4 NE/4 NW/4, Section 18, T 25N-R 11W and located 560 feet from N L and 724 feet from the E L of NW /4 560 feet from N L and 724 feet from E L of drilling unit boundary.
- 3) Target Area: 200 x 200 foot square
- 4) 16" conductor pipe was driven to 100. 11 3/4" surface casing was set at 1156' and cmt circulated. 8 5/8" 32 # K-55 casing was cemented at 3340' M.D. A 7 7/8" hole will be drilled to a M.D. of 6273'. If warranted a 5 1/2" LINER consisting of 1175' 17.0# MN-80, 655' 17# K-55 and 1205' 15.5# K-ST&C will be run from surface to T.D. The 5 1/2" LINER will be cemented with 450 sx regular Poz with 4% added gel, salt saturated followed by 200 sx surface Poz, 18% salt and 1% CFR-2.

Directional Detail: The existing hole was drilled to 6051' M.D. (6051' T.V.D) and will be plugged back to 3800' +. At that point a down hole motor with a bent-sub will be used to deflect the hole. The present hole angle of 0° will be increased at the rate of 1 1/2°/100' until an angle of 10 1/2° is reached. The 10 1/2° angle will be carried to 6275' + M.D. At N/A the angle will be dropped at the rate of N/A -°/100' to T.D. The displacement from surface location to the bottom hole location is 390' + and the direction from surface location to bottom hole location is south. The Directional Company will be Eastman Whipstock, P. O. Box 672, Traverse City, MI or Oilwell Drilling Control, P. O. Box 504, Traverse City, MI. 49684.

Drilling Fluid: The drilling fluid in the hole when the Niagaran is penetrated will be salt saturated starch mud. The weight will be 10.6 ppg with a viscosity of 32-35 sec.

Blow Out Preventors: The BOP preventor equipment from bottom up will include the following:

Choke Spool - The kill line and choke outlet line are connected to this spool.

BOP - A double ram type preventor is used. The bottom rams are the pipe rams and the top rams are the blind rams. On top of the double ram preventor is a bag type preventor.

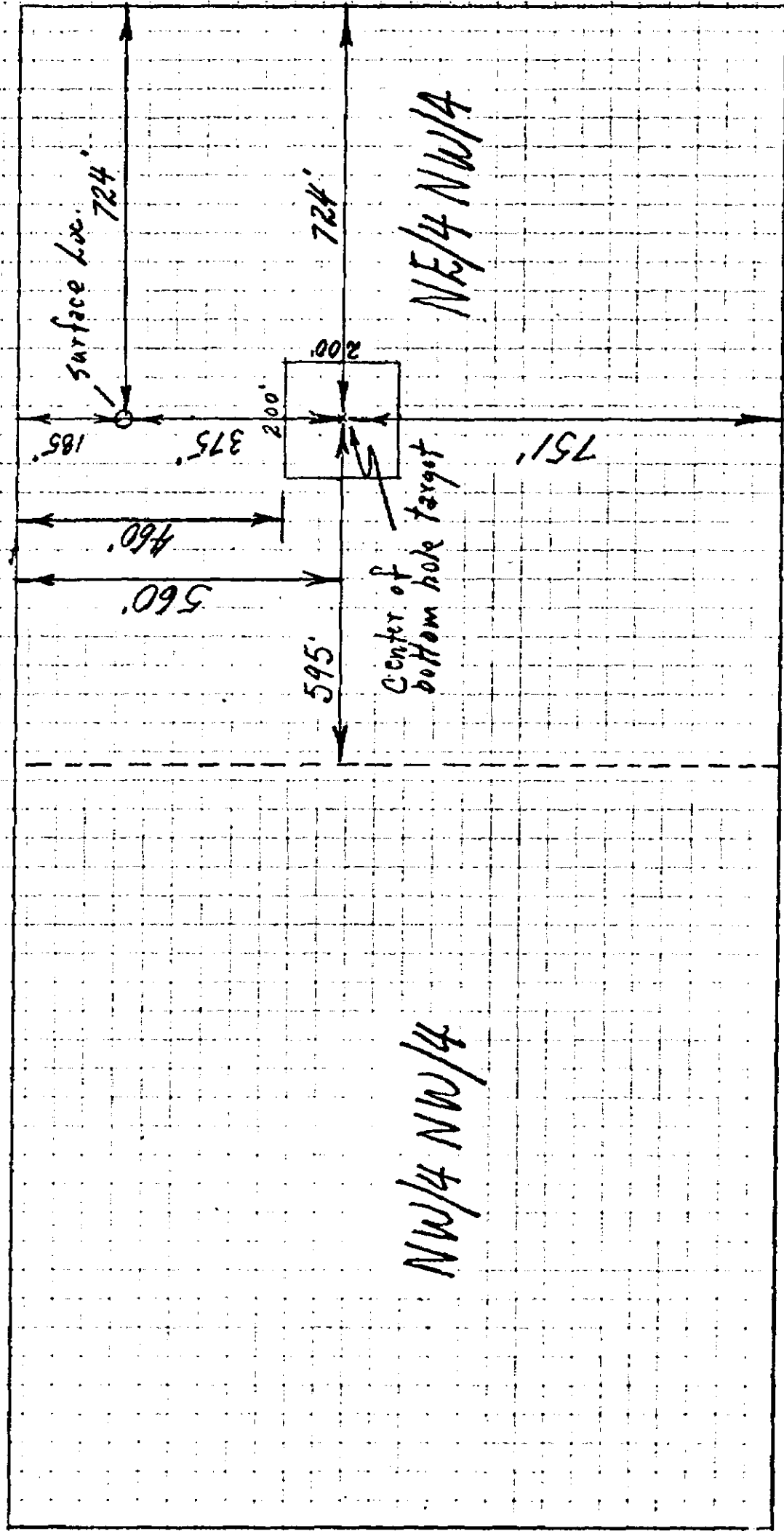
All BOP equipment is 10" - 3000 psi W.P. The preventors will be tested to 3000 psi twice on the well. In addition to the BOP stack there will be a 3" - 3000 psi W.P. choke manifold with a burner attached on the low pressure discharge lines of the choke manifold.

SHELL Stevens et al No. 4-18 A

Surface loc: 185' FNL & 724' FEL of NW/4 Sec. 18

Bottom Hole Target: 200' x 200' Square

Center of Bottom Hole Target: 560' FNL & 724' FEL of NW/4 Sec. 18
T25N - R11W, Mayfield Township, Grand Traverse Co.



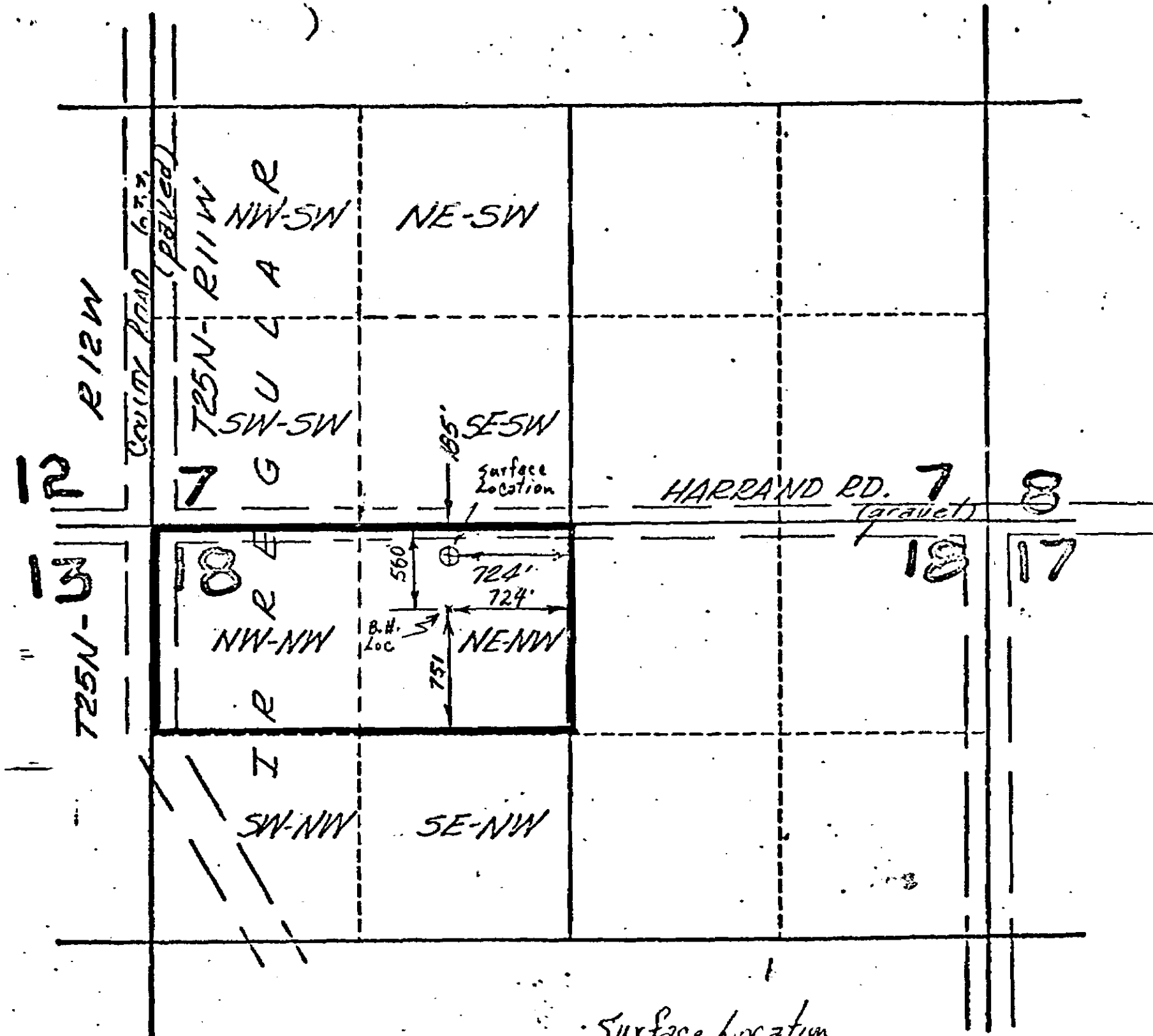
NW/4 NW/4

NE/4 NW/4

80 Acre Drilling Unit

Scale 1" = 300

R.L. Tyler
1-14-77

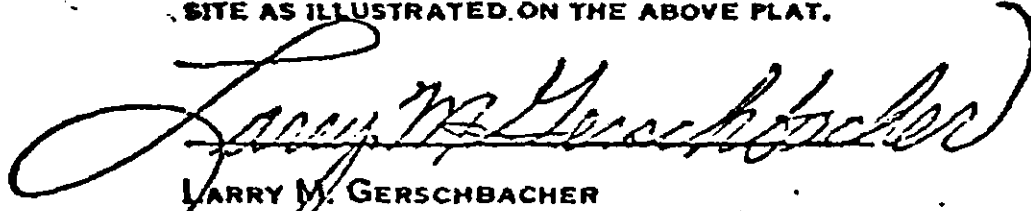


Surface location


 SCALE:
 1" = 1000'

PROPOSED WELL: SHELL STEVENS et al. No. 4-18A
 LOCATION: 185 FEET FROM THE NORTH LINE AND
724 FEET FROM THE EAST LINE OF THE NORTHWEST
 QUARTER OF ~~SECTION~~ FR'CL. SEC. 18 T 25N R 11W
MAYFIELD TOWNSHIP, GRAND TRVERSE COUNTY, MICHIGAN.

I HEREBY CERTIFY THAT I HAVE LOCATED THE PROPOSED WELL SITE AS ILLUSTRATED ON THE ABOVE PLAT.


 LARRY M. GERSCHBACHER
 REGISTERED LAND SURVEYOR
 REGISTRATION No. 18990

Revised 1-14-77

11-4-76

SHELL OIL COMPANY
 P.O. Box 342
 TRAVERSE CITY, MICH. 49684

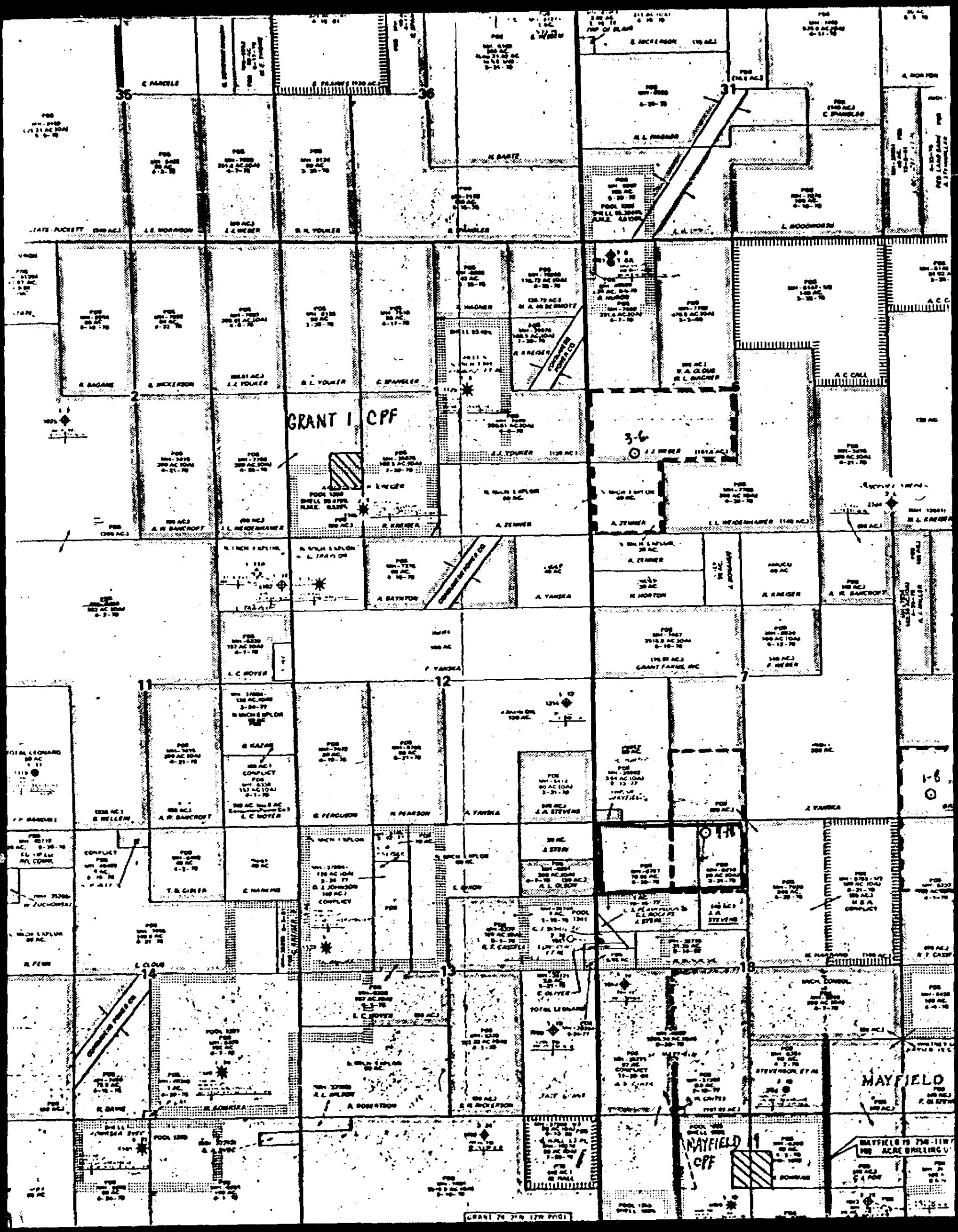
To V. F. SARGENT -

STEVENS 3-18A (proposed S.T. permit)

Realignment of 3-18 drilling unit necessary.
" will remove Mrs. May Harward
from the unit (5/4 sec/4 Sec. 7). Located Mrs.
Harward by calling Mr. & Mrs. Stevens (neighbors
to Mrs. Harward) also discussed the S.T. permit -
drilling realignment and public hearing under
Paragraph 715 - they are not objectional. Located
Mrs. Harward's daughter and son-in-law (Mr. & Mrs. John
Leach TC 616-946-4419) explain the subject to Mr. & Mrs.
Leach - they called Mrs. Harward (in Cal. 805-964-5070)
they explained to Mrs. Harward and I also explained to
Mrs. Harward what she desired to do. - S.T. efforts and
80-sec drilling unit realignment - that ~~she~~ her 40-acre tract would
be diminished and she could request a public hearing if
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Blair W. Goble
1-14-77

Proposed efforts.



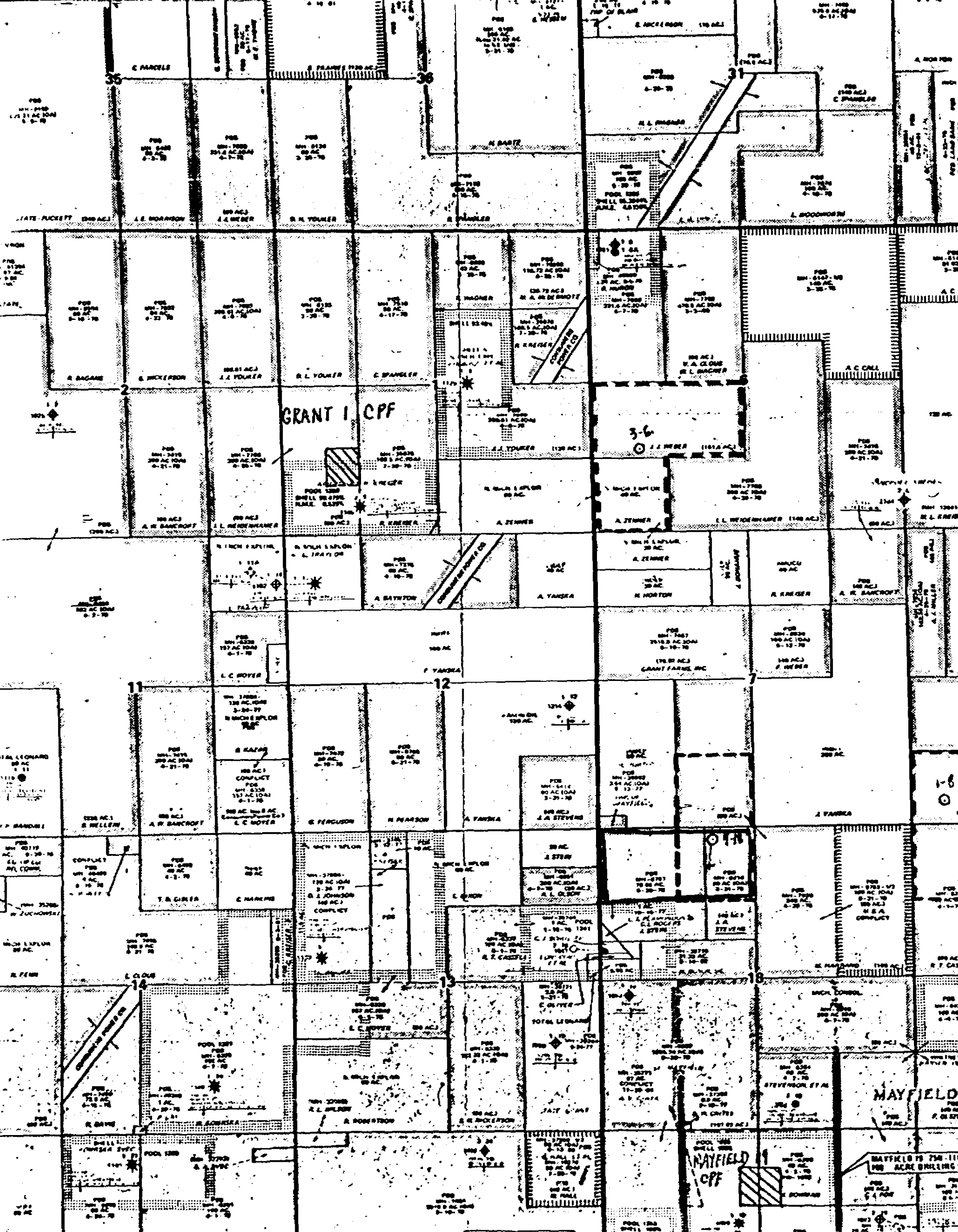
GRANT 1 CPF

MAYFIELD CPF

MAYFIELD

GRANT 74 75 176 POOL

MAYFIELD 750-117
100 ACRE BRILLING V



35

36

31

STATE RECEIPT 100 AC

FROM STATE

100% N

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100% S

100% S

100% S

J.E. MORRISON

J.L. YOKER

B.H. YOKER

B. SPANGLER

B. SPANGLER

L. BOONHORN

A. BAGARE

B. JACKSON

J.L. YOKER

B.L. YOKER

C. SPANGLER

A. ZANER

A. ZANER

L.L. WEIDENHAMER

A.R. BANCROFT

J.L. WEIDENHAMER

A. ZANER

A. ZANER

A. ZANER

A. ZANER

A. ZANER

L.L. WEIDENHAMER

A. BATHON

A. BATHON

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L.C. ROYER

L.C. ROYER

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L.C. ROYER

TOTAL LEONARD

CONFLICT

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B. KAYAK

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T.B. GIERA

C. MARINE

C. MARINE

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L.C. ROYER

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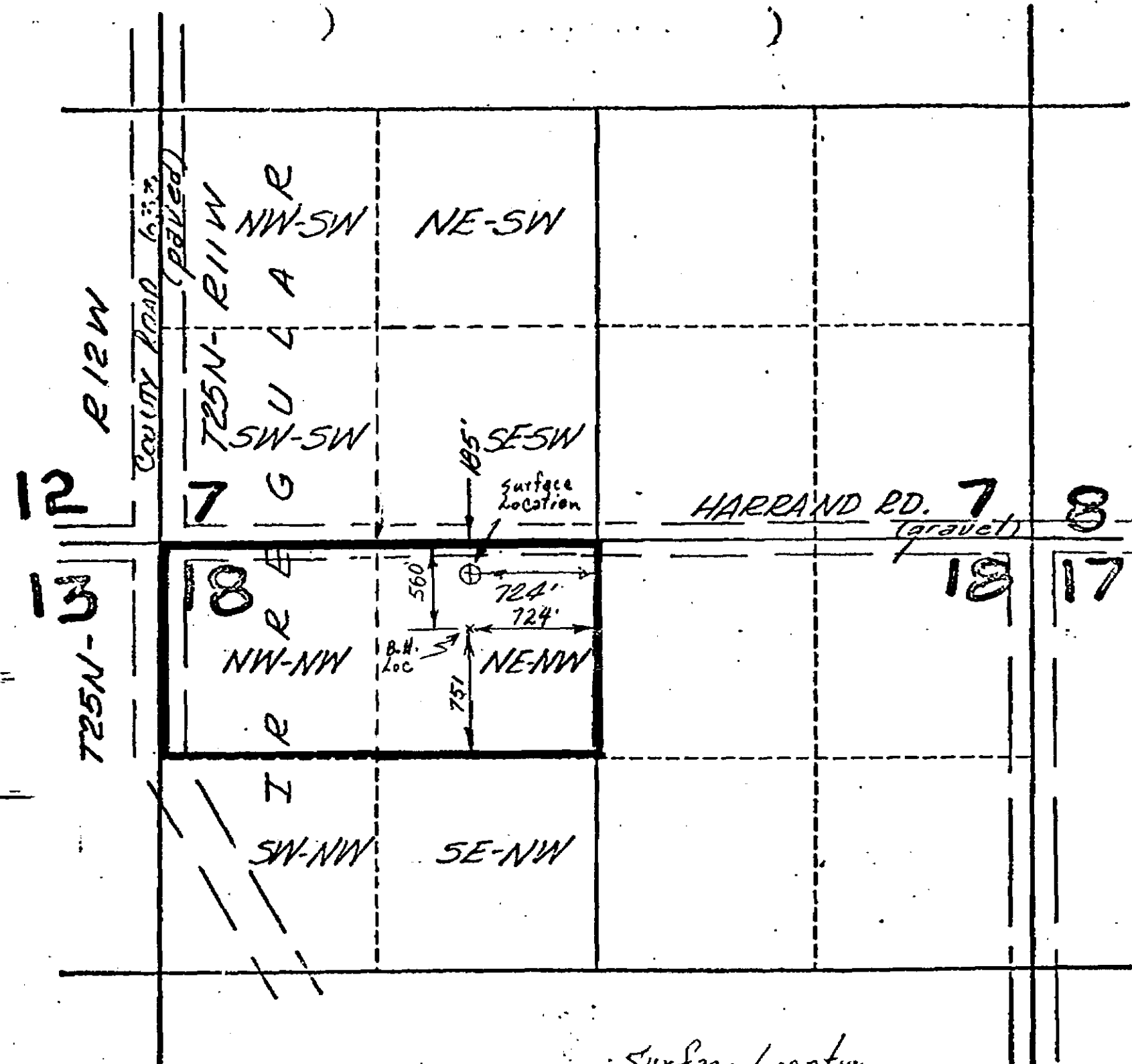
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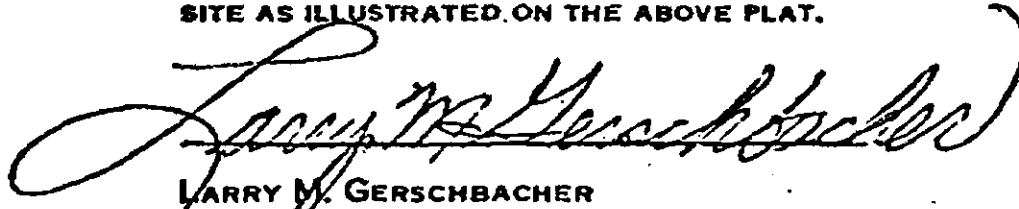


Surface Location

A
 |
 N
 |
 SCALE:
 1" = 1000'

PROPOSED WELL: SHELL STEVENS et al. No. 4-18 A
 LOCATION: 185 FEET FROM THE NORTH LINE AND
724 FEET FROM THE EAST LINE OF THE NORTHWEST
 QUARTER OF ~~FR'CL. SEC. 18~~ FR'CL. SEC. 18 T 25N R 11W
MAYFIELD TOWNSHIP, GLIND TRAVERSE COUNTY, MICHIGAN.

I HEREBY CERTIFY THAT I HAVE LOCATED THE PROPOSED WELL
 SITE AS ILLUSTRATED ON THE ABOVE PLAT.


 LARRY M. GERSCHBACHER
 REGISTERED LAND SURVEYOR
 REGISTRATION No. 18990

Revised 1-14-77

11-4-76

SHELL OIL COMPANY
 P.O. Box 342
 TRAVERSE CITY, MICH. 49684

Rec
12-27-77

JUL 28 1977

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61).
Submit in DUPLICATE Within 30 Days after Well Completion

PERMIT NUMBER 31,436
DEEPENING PERMIT NUMBER

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT Shell Oil Company Grandview Plaza Traverse City, MI 49684				NAME & ADDRESS OF DRILLING CONTRACTOR(S) Dual Drilling Williamsburg, MI	
LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT Stevens et al 4-18A				DIRECTIONALLY DRILLED YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	
SURFACE LOCATION NW/4 NE/4 NW/4		SECTION 18	TOWNSHIP 25N	RANGE 11W	TOWNSHIP NAME Mayfield
FOOTAGES (North/South) 185 Ft. from North		Line and 724		(East/West) East Line of quarter section	
FOOTAGES (North/South) 576 Ft. from North		Line and 800.46		(East/West) East Line of quarter section	
SUBSURFACE LOCATION NW/4 NE/4 NW/4		SECTION 18	TOWNSHIP 25N	RANGE 11W	TOWNSHIP NAME Mayfield
FOOTAGES (North/South) 576 Ft. from North		Line and 800.46		(East/West) East Line of quarter section	
DATE	DRILLING BEGUN 1-14-77	TOTAL DEPTH OF WELL Driller 6125' Log 6094'		TYPE WELL Oil	
	DRILLING COMPLETED 1-28-77	FORMATION AT T.D. Niagaran		FT. DRLD. - ROTARY TOOLS From 0 To 6125'	K.B. 1075.6
	WELL COMPLETED 4-19-77	PRODUCING FORMATION(S) Niagaran & AIC		FT. DRLD. - CABLE TOOLS From _____ To _____	R.T. Grd. 1057.6

CASING, CASING LINERS AND CEMENTING

PERFORATIONS

SIZE	WHERE SET	CEMENT	Ft. Pulled	DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN	
							YES	NO
16"	85'	---						
11 3/4"	1156'	1000 sx		2-12-77	19	5948' - 6074'		X
8 5/8"	3342'	600 sx		2-20-77	13	5830' - 5930'	X	
5-1/2"	3193-6124'	700 sx						
Liner								

GROSS PAY INTERVALS

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	FROM	TO	FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X)						
							Sam- ples	Odor	Pits	Mud Line	Gas Log.	Fill Up	
Niagaran	Oil	5830'	6075'	None									

STIMULATION BY ACID OR FRACTURING

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

DATE	Interval Treated	Materials and amount used	FORMATION	F.U.	L.C.	DEPTH	AMOUNT
2-14-77	5948'-6074'	6300 gal 28% NE HCl	None				
2-20-77	5830'-5930'	5100 gal 28% NE HCl					
2-25-77	5830'-5930'	8568 gal 28% NE HCl					

MECHANICAL LOGS, LIST EACH TYPE RUN

DEPTH CORRECTION DEVIATION SURVEY PLUGGED BACK

Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECT'N	RUN AT	DEGREES	YES	NO	DEPTH
Schlumberger	X	BHC-GR	3300 - 6090'			See				
Birdwell		SNP-GR	5650 - 6092'			directional				
		MLL	5650 - 6085'			survey.				
		S-DLL	5650 - 6076'							

PRODUCTION TEST DATA

OIL - Bbls/day	GRAVITY - °API	COND. Bbls/day	GAS - MCF/day	WATER - Bbls/day	H ₂ S - Grains/100 cu. ft.	B.H.P. AND DEPTH
150	43.8		204	66	.04-HS, .12-LS	2929 @ 5880'

I AM RESPONSIBLE FOR THIS REPORT. WITHIN MY KNOWLEDGE ALL FACTS ARE TRUE AND COMPLETE.

DATE 7/26/77	TITLE Operations Manager-Michigan, MCD	SIGNATURE <i>S. J. Portis</i>	For: C.W. Wilson
-----------------	---	----------------------------------	------------------

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

FORMATION RECORD

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

ELEVATION USED:	GEOLOGIST NAME:	TOPS TAKEN FROM:
		<input type="checkbox"/> DRILLERS LOG <input type="checkbox"/> SAMPLE LOG <input type="checkbox"/> ELECTRIC LOG

FROM	TO	FORMATION (TYPE, COLOR, HARDNESS)	FROM	TO	FORMATION (TYPE, COLOR, HARDNESS)
------	----	--------------------------------------	------	----	--------------------------------------

NOTE: IF WELL DIRECTIONALLY DRILLED, ADD TRUE VERTICAL DEPTH FORMATION TOPS WHERE APPROPRIATE.

See attached Sample Description.

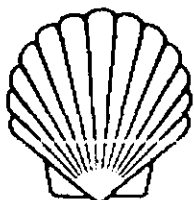
*SONIC LOG TOPS

	MD	TVD
Base Drift	893	893
Antrim Shale	1477	1477
Traverse Fm	1688	1688
Traverse Ls	1757	1757
Bell Shale	2337	2337
Dundee	2440	2440
Det. Riv. Evap.	2644*	2644*
Richfield	3256*	3256*
Amherstburg	3512	3507
Bois Blanc	3713	3710
Bass Islands	4090	4094
G Unit	4378	4383
F Unit	4412	4416
F Salt	4445	4450
E Unit	5048	5062
D Unit	5163	5180
C Shale	5192	5208
B Unit	5266	5282
B Salt	5302	5316
A2 Carbonate	5680	5659
A2 Evaporite	5775	5741
A1 Carbonate	5873	5779
Niagaran	5988	5850

*Sample Pick

IF WELL WAS CORED, ATTACH CORE DESCRIPTION

DRILL STEM TEST DATA



SHELL OIL COMPANY

GRANDVIEW PLAZA
TRAVERSE CITY, MICHIGAN 49684

July 26, 1977

Subject: Stevens et al 4-18A
NW/4 NE/4 NW/4
Section 18-T25N-R11W
Mayfield Township
Grand Traverse County, Michigan
Permit No. 31,436

Geological Survey Division
Department of Natural Resources
Stevens T. Mason Building
Lansing, MI 48926

Attention Assistant Supervisor of Wells

=
Gentlemen:

Enclosed please find a revised form R7210 on subject well.

Yours very truly,

SB Pontrevis

For: C. W. Wilson
Operations Manager-Michigan
Mid-Continent Division

:CMM

Enclosure

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)
Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER
31,436 JUN 15 1977

DEEPENING PERMIT NUMBER

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT Shell Oil Company Grandview Plaza Traverse City, Michigan				NAME & ADDRESS OF DRILLING CONTRACTOR(S) Dual Drilling Williamsburg, MI				
LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT Stevens et al 4-18A						DIRECTIONALLY DRILLED YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		
SURFACE LOCATION NW/4 NE/4 NW/4		SECTION 18	TOWNSHIP 25N	RANGE 11W	TOWNSHIP NAME Mayfield			
FOOTAGES (North/South) 185 Ft. from North		Line and 724		(East/West) East		COUNTY NAME Grand Traverse		
SUBSURFACE LOCATION NW/4 NE/4 NW/4		SECTION 18	TOWNSHIP 25N	RANGE 11W	TOWNSHIP NAME Mayfield			
FOOTAGES (North/South) 735 Ft. from South		Line and 518.54		(East/West) West		COUNTY NAME Grand Traverse		
DATE	DRILLING BEGUN 1-14-77		TOTAL DEPTH OF WELL Driller 6125' Log 6094'		TYPE WELL Oil		ELEVATIONS	
	DRILLING COMPLETED 1-28-77		FORMATION AT T.D. Niagaran		FT. DRLD. - ROTARY TOOLS From 0 To 6125'		K.B. 1075.6	R.F.
	WELL COMPLETED 4-19-77		PRODUCING FORMATION(S) Niagaran & AIC		FT. DRLD. - CABLE TOOLS From _____ To _____		R.T.	Grd. 1057.6

CASING, CASING LINERS AND CEMENTING

PERFORATIONS

SIZE	WHERE SET	CEMENT	Ft. Pulled	DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN	
							YES	NO
16"	85'	---						
11 3/4"	1156'	1000 sx		2-12-77	19	5948'-6074'		X
8 5/8"	3342'	600 sx		2-20-77	13	5830'-5930'	X	
5 1/2"	3193-6124'	700 sx						

GROSS PAY INTERVALS

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	FROM	TO	FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X)						
							Sam- ples	Odor	Pits	Mud Line	Gas Log.	Fill Up	
Niagaran	Oil	5830	6075	None									

STIMULATION BY ACID OR FRACTURING

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

DATE	Interval Treated	Materials and amount used	FORMATION	F.U.	L.C.	DEPTH	AMOUNT
2-14-77	5948'-6074'	6300 gal 28% NE HCl	None				
2-20-77	5830'-5930'	5100 gal 28% NE HCl					
2-25-77	5830'-5930'	8568 gal 28% NE HCl					

MECHANICAL LOGS, LIST EACH TYPE RUN

DEPTH CORRECTION DEVIATION SURVEY PLUGGED BACK

Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECT'N	RUN AT	DEGREES	YES	NO	DEPTH
Schlumberger	X	BHC-GR	3300 - 6090'			See				
Birdwell		SNP-GR	5650 - 6092'			directional				
		MLL	5650 - 6085'			survey.				
		S-DLL	5650 - 6076'							

PRODUCTION TEST DATA

OIL - Bbls/day	GRAVITY - °API	COND. Bbls/day	GAS - MCF/day	WATER - 8bbls/day	H ₂ S - Grains/100 cu. ft.	B.H.P. AND DEPTH
150	43.8		204	66	.04-HS, .12-LS	2929 @ 5880'

I AM RESPONSIBLE FOR THIS REPORT. WITHIN MY KNOWLEDGE ALL FACTS ARE TRUE AND COMPLETE.

DATE 6/14/77	TITLE Operations Manager-Michigan, MCD	SIGNATURE <i>SBC</i> For: C.W. Wilson
-----------------	---	--

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 12/75

FORMATION RECORD

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

ELEVATION USED:	GEOLOGIST NAME:	TOPS TAKEN FROM:
		<input type="checkbox"/> DRILLERS LOG <input type="checkbox"/> SAMPLE LOG <input type="checkbox"/> ELECTRIC LOG

FROM	TO	FORMATION (TYPE, COLOR, HARDNESS)	FROM	TO	FORMATION (TYPE, COLOR, HARDNESS)
------	----	--------------------------------------	------	----	--------------------------------------

NOTE: IF WELL DIRECTIONALLY DRILLED, ADD TRUE VERTICAL DEPTH FORMATION TOPS WHERE APPROPRIATE.

See attached Sample Description.

*SONIC LOG TOPS

	<u>MD</u>	<u>TVD</u>
Base Drift	893	893
Antrim Shale	1477	1477
Traverse Formation	1688	1688
Traverse Limestone	1757	1757
Bell Shale	2337	2337
Dundee	2440	2440
Detroit River Eva.	2644*	2644*
Richfield	3256*	3256*
Amherstburg	3512	3507
Bois Blanc	3713	3710
Bass Islands	4090	4094
G Unit	4378	4383
F Unit	4412	4416
F Salt	4445	4450
E Unit	5048	5062
D Unit	5163	5180
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B Unit	5266	5282
B Salt	5302	5316
A-2 Carbonate	5680	5659
A-2 Evaporite	5775	5741
A-1 Carbonate	5873	5779
Niagaran	5988	5850

IF WELL WAS CORED, ATTACH CORE DESCRIPTION

DRILL STEM TEST DATA

*Sample pick

SAMPLE DESCRIPTION

Stevens 4-18A
Sec 18, T25N, R11W
Grand Traverse County, Michigan
Directional Drill

ELEVATIONS: G. L. = 1057.6'

K. B. = 1075.6'

CASING: 8-5/8" @ 3342'

All depths are measured depths.

B Salt Top @ 5302'

5302'-5680'

Massive salt.

A-2 Carbonate Top @ 5680'

5680'-5775'

Dolomite--Dark gray brown to light brown, very fine to fine crystalline, hard, compact, argillaceous.

A-2 Evaporite Top @ 5775'

5775'-5873'

Salt--Becoming anhydrite. Anhydrite--white, soft, gummy, some dolomite stringers.

A-1 Carbonate Top @ 5873'

5873'-5988'

Dolomite--Gray brown to light gray brown, fine to medium crystalline, fair to good intercrystalline porosity.

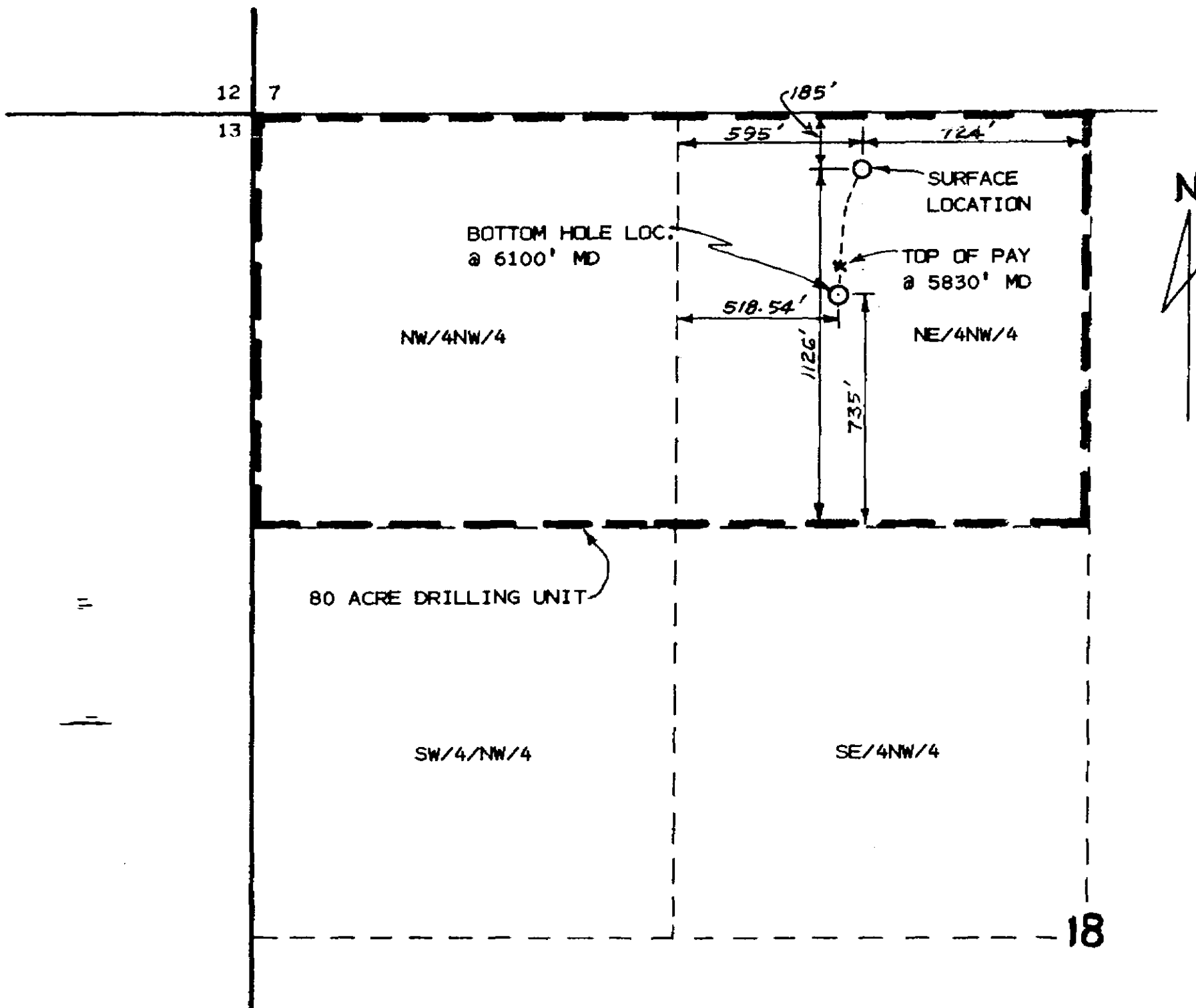
Niagaran Top @ 5988'

5988'-6125' (TD)

Dolomite--Light gray brown to white, fine to medium crystalline, fair to poor intercrystalline porosity, hard becoming gray dolomite.

T-25-N
R-12-W

T-25-N
R-11-W



REFERENCE: REPORT OF SUB-SURFACE DIRECTIONAL SURVEY
EASTMAN WHIPSTOCK JOB NO. E 0177 G 0430 DATE: 1/13/77
E 0177 D 0432 DATE: 1/26/77

SURFACE, INTERSECTION OF 'PAY' & BOTTOM HOLE LOCATION FOR:
SHELL-STEVENS ET AL 4-18A

SURFACE LOCATION: 185' FNL & 724' FEL OF THE NW/4 FR'CL. SEC. 18
T-25-N, R-11-W MAYFIELD TOWNSHIP, GRAND TRAVERSE
COUNTY, MICHIGAN.

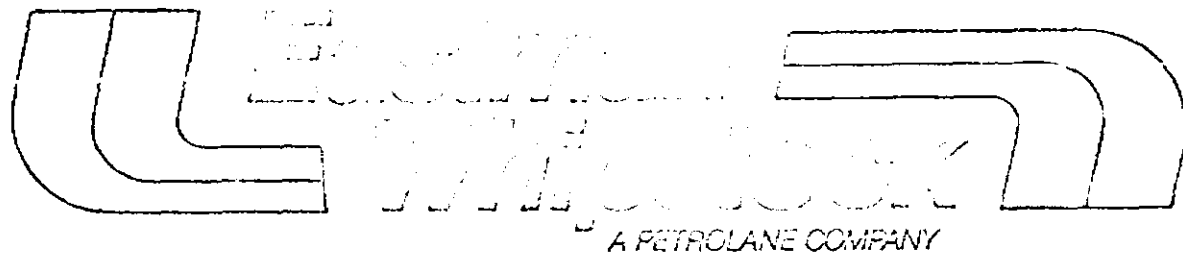
INTERSECTION-TOP OF 'PAY ZONE': 506.24' FNL & 533' FWL OF THE
NE/4NW/4 FR'CL. SEC.18, T-25-N, R-11-W

BOTTOM HOLE LOCATION: 518.54' FWL & 735' FSL OF THE NE/4NW/4
FR'CL. SEC. 18, T-25-N, R-11-W

DIRECTIONAL DRILL PERMIT NO. 31,436

SCALE: 1" = 500'

FEB 9 1977



REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY

Shell Oil Company
COMPANY

Stevens 4-12-A
WELL NAME

Grand Traverse County, Michigan
LOCATION

Permit No. 31,436

<u>JOB NUMBER</u>	<u>TYPE OF SURVEY</u>	<u>DATE</u>
W 0177 G 0430	Gyroscopic Survey	1/12/77
W 0177 D 0432	Single Shot Beorma	1/12/77

SURVEY BY
Eastern District

OFFICE
Converse City, Mich.



P. O. Box 672/ Traverse City, Michigan 49684/(616) 946-0310
TWX 910-881-5066/ Cable: EASTCO

January 27, 1977

Shell Oil Company
P.O. Box 552
Traverse City, MI 49684

Attention: Kris McManus

Re: Stevens 4-18A
Grand Traverse County, Michigan

= Dear Mrs. McManus:

Enclosed please find the original and seven (7) copies of the Gyroscopic Survey and Single Shot Records on the above mentioned well. As requested, we are making the following distribution:

ONE (1) COPY TO:
Shell Oil Co., P.O. Box 576, Houston, Texas Attention: D.D. McGill

ONE (1) COPY TO:
Eastman Whipstock, Inc., P.O. Box 672, Traverse City, MI 49684

We wish to take this opportunity to thank you for calling on us for our services and trust that we may continue to serve you in the future.

Yours truly,

Jeffrey D. Smith
Surveyor

JDS/dmf

RECORD OF SURVEY

EASTMAN CHEMISTS, INC.

JOB NO. _____ DATE _____ CHECKED BY _____

STATION	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	VERTICAL SECTION	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES				
							NORTH	SOUTH	EAST	WEST	
	100	.15	90 99			N 01 E	22			00	12
	200	.15	199 99			N 31 W	63				50
	300	.30	299 99			N 63 W	1 07				92
	400	1.00	399 99			N 83 W	1 45				78
	500	1.15	499 96			N 84 W	1 68				74
	600	1.00	599 94			S 99 W	1 75				20
	700	.45	699 93			S 89 W	1 71				01
	800	1.15	799 92			S 89 W	1 67				10
	900	1.15	899 99			N 96 W	1 73				10
	1000	.45	999 98			N 34 W	2 57				65
	1100	.45	1099 97			N 33 W	3 87				37
	1200	1.00	1199 96			N 23 W	5 01				00
	1300	1.00	1299 94			N 15 W	6 66				05
	1400	1.00	1399 93			N 19 W	9 37				03
	1500	1.15	1499 91			N 03 W	10 31				25
	1600	1.15	1599 76			N 10 E	12 49				19
	1700	1.30	1699 75			N 16 E	14 22				10
	1800	1.30	1799 72			N 06 E	17 39				09
	1900	1.15	1899 69			N 19 E	19 76				72
	2000	1.15	1999 67			N 02 W	21 93				59
	2100	1.15	2099 64			N 12 E	24 99				33
	2200	1.15	2199 62			N 19 E	26 29				70
	2300	1.00	2299 60			N 23 E	28 64				09
	2400	1.00	2399 59			N 04 W	29 74				70
	2500	1.15	2499 57			N 04 E	31 71				77
	2600	1.15	2599 54			N 01 W	33 90				79
	2700	1.00	2699 51			N 11 W	35 94				06
	2800	.30	2799 48			N 09 W	37 17				07
	2900	.30	2899 45			N 00 W	39 03				07

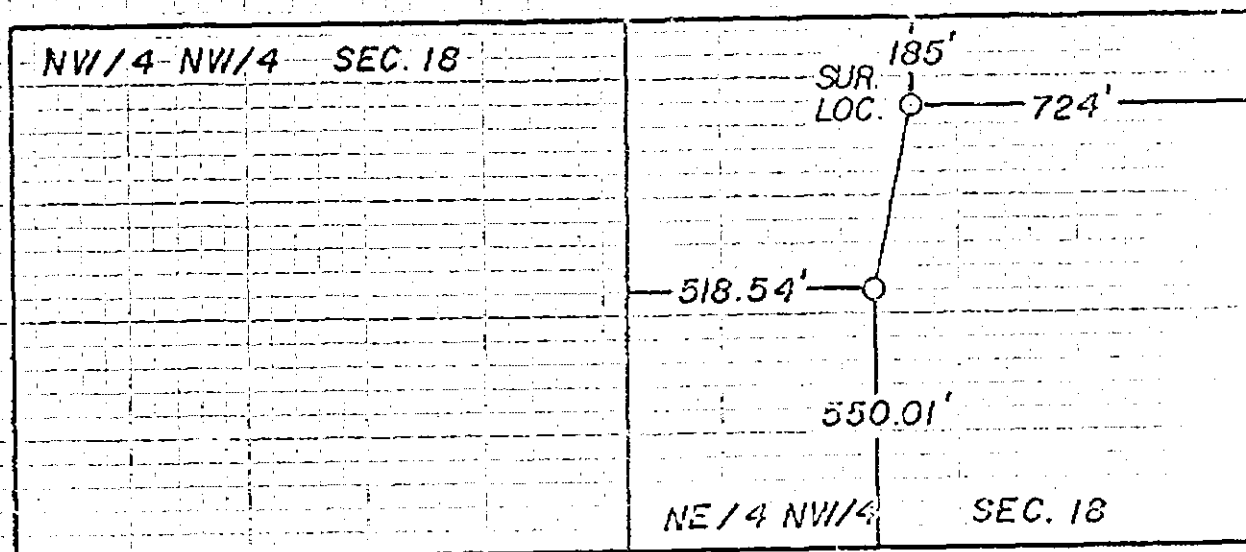
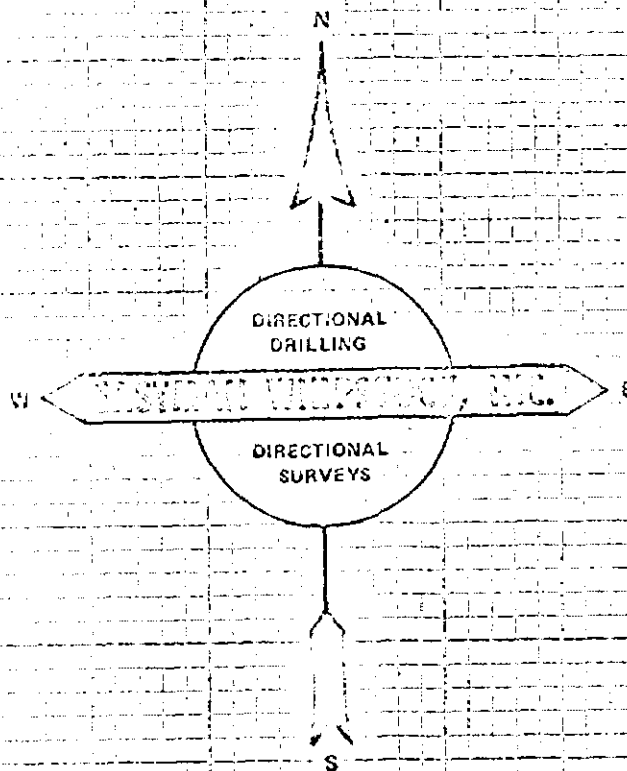
RECORD OF SURVEY

WASHTON WINDSTOCK, W.V.

JOB NO. _____ DATE _____ CHECKED BY _____

STATION	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	VERTICAL SECTION	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES			
							NORTH	SOUTH	EAST	WEST
	3000	.30	2999.51			N 27 W	39.95			12.17
	3100	.30	3099.50			N 13 W	39.67			12.47
	3200	.30	3199.50			N 24 W	40.50			12.74
	3300	.15	3299.50			N 39 W	41.05			13.10
	3400	.30	3399.49			N 15 W	41.63			13.30
	3500	.30	3499.49			N 49 W	42.36			13.24
	3600	1.00	3599.48			N 51 W	43.20			14.06
	3700	.45	3699.47			N 58 W	44.00			16.03
	3757	1.00	3766.46			N 55 W	44.65			16.03
	3910	9.45	3909.84			S 24 W	41.91			27.19
	4069	9.00	4065.93			S 25 W	10.49			37.25
	4194	0.30	4189.31			S 25 W	1.29			75.04
	4303	8.15	4376.04			S 29 W		24.69		59.00
	4541	10.15	4639.67			S 02 E		64.53		69.64
	4758	10.00	4745.85			S 02 E		85.08		67.02
	4899	11.00	4875.64			S 09 E		100.13		67.00
	5050	12.00	5032.42			S 01 E		141.03		67.23
	5270	12.00	5247.62			S 05 W		196.72		60.02
	5460	13.15	5433.02			S 03 W		222.14		71.72
	5522	14.00	5493.27			S 01 W		242.74		72.23
	5567	15.00	5533.65			S 01 W		270.04		72.23
	5761	15.00	5724.45			S 02 W		303.37		79.12
	5993	15.00	5948.84			S 02 W		363.39		74.53
	6100	15.00	6051.00			S 06 W		300.00		76.60
				399.405		N 110 04 E				

SHELL OIL COMPANY
 STEVENS 4-13A
 GRAND TRAVERSE COUNTY,
 MICHIGAN



DRILLING UNIT
 SCALE 1" = 500'

BOTTOM HOLE CLOSURE 398.41' AT S 11° 04' W OF
 SURFACE LOCATION

J.F.B. 1-28-77

43 6712

100' 10 X 10 TO THE INCH 7 X 10 INCHES

REFER TO ORIGINAL APPLICATION FOR DRILLING UNIT DESCRIPTION

CORRECTION FOR PERMIT LIST

Date 2-10-77

Checked by: A. Ostrander

Permit 31,436

Operator Shell Oil Company

Farm Stevens et al #4-18A

Surface Location: NW 1/4 NE 1/4 NW 1/4, Section 18, T. 25N,
R. 11W, Mayfield Township, Grand Traverse
County, being 185' from the NL
and 724' from the EL lines of
the quarter section.

Directionally Drilled: 398.4' at South 11° 04' East

Measured Depth: 6100'

True Vertical Depth: 6051.9'

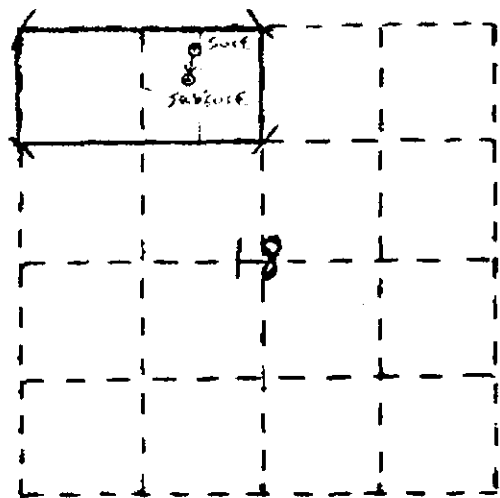
Bottom Hole Location: 391'S and 76.5' W of the surface location.

Corrected Subsurface Location: NW 1/4 NE 1/4 NW 1/4, Section 18,

T. 25N, R. 11W, Mayfield Township,
Grand Traverse County, being 576

from the NL and 800.5 from
the EL lines of the quarter section
and 576 from the NL and
800.5 from the EL lines
of the drilling unit.

80 acre drilling unit being $N \frac{1}{2} NW \frac{1}{4}$
Sec. 18 T 25N R 11W Mayfield Twp,
Grand Traverse Co.



STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
BOX 30028
LANSING, MICHIGAN 48909

OM

REQUIRED BY AUTHORITY OF:

ACT 61, P.A. 1939, AS AMENDED ACT 315, P.A. 1969, AS AMENDED

APPLICATION TO (Submit 4 copies):

CHANGE WELL STATUS PLUG AND ABANDON

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT

PERMIT NO. 31,436	TYPE OF WELL OIL
NAME AND ADDRESS OF WELL OWNER <input type="checkbox"/> APPROVAL MAILED	
SHELL WESTERN E&P INC. SEP 27 1993 P.O. BOX 576 HOUSTON, TEXAS 77001	
ATTN: JANICE BOTHWELL RM: 4511 WCK	
FIELD/FACILITY NAME MAYFIELD 18B FIELD	
WELL NAME STEVENS	WELL NO. 4-18A
WELL LOCATION NW 1/4 of NE 1/4 of NW 1/4 Section 18 T 25N R 11W	
TOWNSHIP MAYFIELD	COUNTY GRAND TRAVERSE
DATE DRILLING COMPLETED 01/28/77	DATE LAST PRODUCED/UTILIZED CURRENT
WORK TO BE DONE BY: <input type="checkbox"/> APPROVAL MAILED SWEPI, HALLIBURTON, BECKMAN	STARTING DATE UPON APPROVAL

CHANGE OF WELL STATUS REQUESTED FOR:

PLUG BACK EXTEND PLUGGING (T.A.) PERFORATE
 CONVERT TO INJECTION OR DISPOSAL WELL OTHER

ACIDIZE (315 ONLY) FRACTURE (315 ONLY)

LAST PRODUCTION/INJECTION AND TYPE OF FLUID
(Amount per day & injection pressure)

3 MCF + 2 BO + 10 BW

WORK TO BE DONE BY: APPROVAL MAILED

CASING AND CEMENTING RECORD						
HOLE DIA	CASING DIA & WT/FT	DEPTHS SET	SX	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	16" CONDUCTOR	85		DRIVEN		
14-3/4"	11-3/4" 42#	1,156	1,000		SURFACE	
10-5/8"	8-5/8" 32#	3,342	600		2550(TS)	
7-7/8"	5-1/2" 15.5 & 17#	3193-6124	700		LINER	5830-6074

FORMATION RECORD (Formation and depth, oil, gas and water shows, etc.):

BASE DRIFT	893	F UNIT	4,412	NIAGARAN	5,988
ANTRIM SHAL	1,477	F SALT	4,445	TD	6,124
TRAVERSE FM	1,688	E UNIT	5,048		
TRAVERSE LM	1,757	D UNIT	5,163		
BELL SHALE	2,337	C SHALE	5,192		
DUNDEE	2,440	B UNIT	5,266		
DETROIT RIV	2,644	B SALT	5,302		
AMHERSTBURG	3,512	A2 CARB	5,660		
BOIS BLANC	3,713	A2 EVAP	5,775		
G UNIT	4,378	A1 CARB	5,873		

OCT 01 1993
Permits & Compliance

DETAIL PROPOSED PROCEDURES

1) MI & RU RIG. INSTALL BOP'S & PULL PRODUCTION EQUIP. 2) RUN 5-1/2" CR & SET AT 5790'. PUMP 50 SX CLASS A CMT BELOW RETAINER, & SPOT 50 SX ON TOP. 3) SPOT 75 SX CLASS A CMT 100' ABOVE & BELOW TOL (3193'). 4) RUN FREEPOINT TEST & FIND 8-5/8" FREEPOINT. RUN CSG CUTTER & CUT 8-5/8" CSG 50 FEET ABOVE FREEPOINT. PULL 8-5/8" CSG. IF 8-5/8" IS PULLED FROM OPEN HOLE, IT WILL BE MONITORED FOR NORM SCALE PER THE SUPERVISOR OF WELL ORDER 1-92. 5) RIH W/TUBING & SPOT 95 SX OF CLASS A CMT FROM 100' BELOW TO 100' ABOVE 8-5/8" CSG STUB. 6) IF THE FOLLOWING ZONES ARE LEFT UNCOVERED IN OPEN HOLE, SPOT BALANCED CLASS A CMT PLUG ACROSS THEM AS FOLLOWS: DETROIT RIVER EVAP: 2540-2740' (125 SX), DUNDEE: 2340-2540' (125 SX), TRAVERSE LIME/ANTRIM: 1380-1790 (255 SX). 7) PICK UP & SPOT 120 SX CLASS A CMT ACROSS SURFACE CSG SHOE FROM 1050 TO 1250. 8) SPOT 20 SX CLASS A CMT FROM 10' TO 35'. CUT ALL REMAINING CSG STRINGS 3 TO 4' BELOW GL. WELD A STEEL PLATE ACROSS TOP. 9) REMOVE ALL EQUIP, REGRADE, FEED & RESTORE LOCATION.

DNR ADDITIONAL REQUIREMENTS

- Revise (8). Spot 20 sx Class A cmt. 60' below ground level toward surface.
- Weld a 1/2" steel plate across all stubs at least 4' below ground level.
- Notify Geological Survey Division (616-775-9727) at least 24 hours before work begins.

NAME SIGNATURE (Authorized Representative) <i>Janice Bothwell</i>	JANICE BOTHWELL	DATE 09/23/93
APPROVED BY DNR <i>[Signature]</i>	OFFICE Cadillac	APPROVAL DATE 9/28/93
		TERMINATION DATE 9/28/94

NOTE THREE COPIES OF WELL PLUGGING OR REWORK (PR 7200.8) ARE TO BE FILED WITHIN 30 DAYS OF COMPLETION.

MAY 17 1991

REQUIRED BY AUTHORITY OF:

ACT 61, P.A. 1939, AS AMENDED ACT 315, P.A. 1969, AS AMENDED

APPLICATION TO (Submit 4 copies) **Permits & Bonding Unit**

CHANGE WELL STATUS PLUG AND ABANDON

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

CHANGE OF WELL STATUS REQUESTED FOR:

PLUG BACK EXTEND PLUGGING (T.A.) PERFORATE
 CONVERT TO INJECTION OR DISPOSAL WELL OTHER

ACIDIZE (315 ONLY) FRACTURE (315 ONLY)

LAST PRODUCTION/INJECTION AND TYPE OF FLUID
(Amount per day & injection pressure)

2 BOPD + 10 BWPD + 2 MCFPD

WORK TO BE DONE BY: APPROVAL MAILED

Pool Well Services

PERMIT NO. 31,436	TYPE OF WELL Oil
NAME AND ADDRESS OF WELL OWNER <input type="checkbox"/> APPROVAL MAILED Shell Western E&P 200 N. Dairy Ashford Houston, Tx. 77001 Attn: Lali Castillo Room 7591	
FIELD/FACILITY NAME Mayfield 18	
WELL NAME Stevens et al	WELL NO. 4-18A
WELL LOCATION NW 1/4 of NE 1/4 of NW 1/4 Section 18 T 25N R 11W	
TOWNSHIP Mayfield	COUNTY Grand Traverse
DATE DRILLING COMPLETED 1/28/77	DATE LAST PRODUCED/UTILIZED Producing
STARTING DATE N/A	

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	16" Cond	85'	Driven		
14 3/4"	11 3/4", 42#	1156'	1000 sx POZ/CLASS A	Surf.	
10 5/8"	8 5/8", 32#	3342'	600 sx POZ/CLASS A	2550'	
7 7/8"	5.5", 15.5#, 17#	3193-6124	700 sx POZ/CLASS A	N/A	5830-6074

FORMATION RECORD (Formation and depth, oil, gas and water shows, etc.)

	MD	TVD		MD	TVD		MD	TVD
BASE DRIFT	893	893	BOIS BLANC	3713	3710			
ANTRIM SHALE	1477	1477	BASS ISLANDS	4090	4094			
TRAVERSE FORMATION	1688	1688	G UNIT	4378	4383			
TRAVERSE LIMESTONE	1757	1757	F UNIT	4412	4416			
BELL SHALE	2337	2337	F SALT	4445	4450	B SALT	5302	5316
DUNDEE	2440	2440	E UNIT	5048	5062	A-2 CARBONATE	5680	5659
DETROIT RIVER EVA.	2644	2644	D UNIT	5163	5180	A-2 EVAPORITE	5775	5741
RICHFIELD	3256	3256	C SHALE	5192	5208	A-1 CARBONATE	5873	5779
AMHERSTBURG	3512	3710	B UNIT	5266	5282	NIAGARAN	5988	5850

DETAIL PROPOSED PROCEDURES.

MI & RU PU. Kill well w/9.5 ppg brine. POOH w/prod. equipment. TIH w/cmt ret and set @ 5790'. Establish inj. rate w/9.5 ppg brine. Squeeze 50 sx Class A cmt below retainer & spot 50 sx cmt above retainer. Pull out of hole to 3243' (50' inside liner top). With hole balanced, spot 75 sx Class A cmt across liner. POOH. Freepoint 8 5/8" csg (TOC @ 2550). Cut & pull csg 50' above free pipe. TIH with open ended tbg to 50' inside 8 5/8" stub. Fill hole with mudladen fluid and monitor to ensure well is static. Spot LCM pill if hole will not remain static. With hole balanced, spot the following Class A cmt plugs: 75 sx @ 2550' (8 5/8" stub & Dundee), 75 sx @ 1782' (Traverse Lime), 185 sx @ 1231' (11 3/4" shoe & Base Drift), and 35 sx cmt at surface. Cut 11 3/4" csg below ground level & weld 1/2" steel plate on csg stub. Remove production equipment and restore location.

DNR ADDITIONAL REQUIREMENTS.

NAME/SIGNATURE (Authorized Representative) <i>John F. Michon</i>	DATE 5/10/91
APPROVED BY DNR <i>John W. Mikes</i>	OFFICE <i>Cadillac</i>
APPROVAL DATE 5/13/91	TERMINATION DATE 5/13/92

NOTE THREE COPIES OF WELL PLUGGING OR REWORK (PR 7200-8) ARE TO BE FILED WITHIN 30 DAYS OF COMPLETION



RECORD OF WELL PLUGGING OR REWORK

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells of Act 451 PA 1994, as amended
 Non-submission and/or falsification of this information may result in fines and/or imprisonment.

Permit number 31436	Well name and number Stevens 4-18A
Name and address of permittee Shell Western E&P Inc. P.O. Box 576; Rm. 5439 WCK Houston, Texas 77001-0576 Attn: S.A. Averyt	
Type of well Oil	Field name Mayfield 18b
Date plugging/rework started 8-9-96	
Date plugging/rework completed 8-12-96	
Date issued 7-29-96	

CADILLAC HAS COPY

SEP 17 1996

Name and address of contractor/service company Halliburton P.O. Box 519 Kalkaska, Michigan 49646	Beckman P.O. Box 670 Kalkaska, Michigan 49646
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NW 1/4 NE 1/4 NW 1/4	Sec 18	T 25N	R 11W
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DEQ employee issuing plugging permit or approving Change of Well Status. Derek Stadler	Date issued 7-29-96
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WELL PLUGGING (Hole conditions after plugging)

CASING				PLUGS				
Casing size	Where set	Amount casing pulled	Depth casing cut/perfed; or windows milled	Depth		Type of bridge or plug	Cement plugs: cement type, sacks, and additives	Tagged Top? Y/N
				Bottom	Top			
16"	85'			6100+/-	5284'	CR @ 5790'	100 Sx Cmt	Y
11-3/4"	1156'			3449'	2987'	Cmt Plug	75 Sx Cmt	Y
8-5/8"	3342'	None		1225'	889'	Cmt Plug	100 Sx Std Cmt	Y
5-1/2"	6124'			40'	Surf	Cmt Plug	35 Sx Cmt	N
				30'	Surf	Grout Pipe	15 Sx Cmt	N
						(Cmt 8-3/4" & 11-3/4" Annulus)		

Check if NORM material was reinserted into wellbore. If so, describe materials fully in the Daily Chronology section on reverse.

WELL REWORK

Rework was to:	<input type="checkbox"/> Convert current zone to:	<input type="checkbox"/> Remediate well:	<input type="checkbox"/> Plugback (recomplete as):	<input type="checkbox"/> Redrill:
	<input type="checkbox"/> Disposal	<input type="checkbox"/> Perf and test existing zone	<input type="checkbox"/> New production zone	<input type="checkbox"/> Horizontal drain hole
	<input type="checkbox"/> Production	<input type="checkbox"/> Repair casing/cement	<input type="checkbox"/> Disposal	<input type="checkbox"/> Collapsed casing
	<input type="checkbox"/> Storage	<input type="checkbox"/> Other	<input type="checkbox"/> Storage	<input type="checkbox"/> Underream open hole
	<input type="checkbox"/> Secondary recovery	<input type="checkbox"/> Temporarily abandon	<input type="checkbox"/> Enhanced recovery	<input type="checkbox"/> Other
	<input type="checkbox"/> Other		<input type="checkbox"/> Other	

Well casing record - BEFORE rework

Casing		Cement		Perforations			Acid or fracture treatment record
Size	Depth	Sacks	Type	From	To	If plugged, HOW?	

Well casing record - AFTER rework (Indicate additions and changes only, complete test record on next page)

Casing		Cement		Perforations			Acid or fracture treatment record
Size	Depth	Sacks	Type	From	To	If plugged, HOW?	

BEFORE REWORK

AFTER REWORK

Total depth	Completed Fm	Well completed for		Total depth	Completed Fm	Well completed for	
BOPD	MCFGPD	Inj Rate	Pressure	BOPD	MCFGPD	Inj Rate	Pressure



APPLICATION TO:

- CHANGE WELL STATUS OR
 PLUG AND ABANDON WELL

Required by authority of Part 615 Supervisor of Wells or
 Part 625 Mineral Wells, of Act 451 PA 1994, as amended.
 Non-submission and/or falsification of this information
 may result in fines and/or imprisonment.

Part 615 Oil or Gas Well Part 625 Mineral Well

Permit number 31436		Type of well Oil
Name and address of permittee Shell Western E&P Inc. P.O. Box 576; Rm. 5439 Houston, Texas 77001		JUL 25 1996
Field/facility name Mayfield 18b		
Change of well status requested to: <input type="checkbox"/> Plug back <input type="checkbox"/> Perforate <input type="checkbox"/> Temporarily abandon <input type="checkbox"/> Other <input type="checkbox"/> Convert to		Well name and number Stevens 4-18A
Last production/injection and type of fluid (amt. per day & injection pressure) 2 BOPD + 10 BWPD + 2 MCFPD		Well location NW 1/4 of NE 1/4 of NW 1/4 Section 18 T 25N R 11W
Brief description of project. Plug and abandon well, setting cement plugs at various depths throughout the well.		Township Mayfield
		County Grand Traverse
Work to be done by: SWEPI, Halliburton, Beckman		Date drilling completed 1/77
		Date last produced/utilized 5/90
		Starting date 8-1-96

CASING AND CEMENTING RECORD

Hole dia	Casing dia & w/ft	Depths set	Cement quantity, type, additives	Cement top	Perforations
-----	16"	85'	Driven		
15"	11-3/4" 42 #/ft.	1156'	1000 Sx	Surface	
10-5/8"	8-5/8" 32 #/ft.	3342'	600 Sx		
7-7/8"	5.5" 15.5/17 #/ft	6124'	700 Sx		5830-6074'

Formation record (formation and depth, oil, gas and water shows, etc.):

Formation	Depth	Dundee	2440'	F-Unit	4412'	A-2 Carb	5659'
		Detroit River Evap	2644'	F-Salt	4445'	A-2 Evap	5741'
Base Drift	893'	Richfield	3256'	E-Unit	5048'	A-1 Carb	5779'
Antrim Shale	1477'	Amherstburg	3512'	D-Unit	5163'	Niagaran	5850'
Traverse Fm	1688'	Bois Blanc	3710'	C-Shale	5192'		
Traverse Lm	1757'	Bass Islands	4090'	B-Unit	5266'		
Bell Shale	2337'	G-Unit	4378'	B-Salt	5302'		

Detail proposed procedures:

- 1) MI and RU rig... Install BOPs. Pull tbg.
- 2) Run 5-1/2" CR and set at 5780'. Pump 50 Sx Cmt below & 50 Sx Cmt above CR.
- 3) Pull tbg to 100' below liner top. Spot 50 Sx Cmt plug (100' below and 100' above liner top).
- 4) Run csg cutter and cut 8-5/8" csg 50' above freepoint. Pull 8-5/8" csg.
- 5) Spot 95 Sx Cmt from 100' below to 100' above csg stub.
- 6) If the following zones are left uncovered in open hole, spot 125 Sx balanced cmt plug across each zone: Detroit River Evap 2544-2744', Dundee 2340-2540', Traverse Lime 1657-1857', and Antrim 1377-1577'.
- 7) PU and spot 120 Sx Cmt across surface csg shoe from 1056-1256'.
- 8) Spot 20 Sx Cmt from 10-45'. Cut all remaining csg strings 3-4' below surface. Weld a steel plate across tops.
- 9) Remove all equipment, regrade, seed, & restore location.

DEQ additional requirements:

Name/signature (authorized representative): S.A. (Sharon) Averyt for Mike Benning	<i>Sharon Averyt</i>	Date: 7-23-96
FOR GEOLOGICAL SURVEY DIVISION USE ONLY		
Approved by DEQ: <i>Debra Studley</i>	Office: CADILLAC	Approval date: 7-24-96
		Termination Date: 7-24-97

EQP 7200-6 (Rev 2/96)

Submit original and three (3) copies of this application to the District Office.

Note: Three copies of Record of Well Plugging or Rework (EQP 7200-8) are to be filed within 30 days of completion at the District Office.



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY*"Better Service for a Better Environment"*

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO

GEOLOGICAL SURVEY DIVISION
735 E HAZEL ST
PO BOX 30256
LANSING MI 48909-7756

August 25, 2000

Shell Western Exploration and
Production Incorporated
P.O. Box 576
Houston, Texas 77001-0576

Dear Sir or Madam:

SUBJECT: Oil and Gas Blanket Conformance Bond U67522069

You are hereby notified that the following well(s) has been plugged and abandoned and brought to apparent final completion. Consequently, liability for the well(s) under the subject bond has been released subject to the conditions of the bond.

Notice: The release of a well from a blanket conformance bond does not release the permittee from liability for any violations of the act, the rules, permit conditions, instructions, or orders of the supervisor which occurred during the time the conformance bond was in effect and which have not been corrected and the corrections accepted by the Supervisor.

Permit	API Well Number	Well Name and Number
30132	21-055-30098-01-00	DUNCAN ET AL 4-10A
31326	21-055-31326-00-00	WEAVER ET AL 7-1
31436 ✓	21-055-31342-01-00	STEVEN ET AL 4-18A
31523	21-055-31523-00-00	ZIMMERMAN ET AL 12-10
31850	21-055-31850-00-00	ACKERMAN ET AL 2-35A

Sincerely,

David R. Davis
Bond Specialist
Permits and Bonding Unit
Geological Survey Division
517-334-6951

cc: Permit File



REPORT OF WELL PERMIT FINAL COMPLETION, TRANSFER OR TERMINATION

Permit: WellName: Activity W/LPA (final comp), TRAN or TERM: Date Effect:
 CompanyNo: CoName: BondNo:
 New CoNo: New CoName: New BondNo:

GSD Field Approval

Field comments:

Surface casing properly abandoned:
 Rat, mouse holes are properly abandoned:
 Well cellar, pits and excavations filled:
 Flowlines, vessels have been properly abandoned:
 Water well plugged or permitted under Public Health Code
 Debris has been removed:
 Surface contour restored and erosion minimized:

Yes
 Yes
 Yes
 Yes
 Yes
 Yes
 Yes

Pit plot is filed:
 Water well log is filed:
 Plugging records received and reviewed:
 Land owner Assumption or Resp.:
 Change of Well Status records filed:
 H2S analysis is filed:
 Other well records are filed:
 Loss reports filed:

NA
 NA
 Yes
 Yes
 NA
 NA
 Yes

Permit term expired:
 Well site construction not begun:

Field Apprvl: Yes No Date:

GSD Pet Gig/Prod Unit Approval

Drilling Records

Drilling records comments:

MB

Driller's log is filed:
 Electric logs are filed:
 Certification of surface casing filed:
 Well elevations filed:
 Directional surveys filed:
 Service company records filed as requested:
 Drill cuttings and cores delivered:
 Deepening records filed
 Other required records are filed:

Drig Apprvl: Yes No Date:

GSD Pet Gig/Prod Unit Approval

Engineering/Production Records

Eng/Prod comments:

GS

Well completion report is filed:
 Gas and oil production records are filed:
 Well capacity tests filed as required:
 Reservoir evaluation test data filed:
 Secondary recovery records filed:
 Injection well operating reports filed:
 Other required records filed:

Eng/Prod Apprvl: Yes No Date:

GSD Compliance Unit Approval

Compliance comments:

DT

No compliance cases initiated for this well
 Field level cases are closed:
 Compliance Unit cases are closed:
 Acquiring permittee eligible for permit
 Consent agreement signed by acquiring person

Compliance Apprvl: Yes No Date:

GSD Permit/Bond Unit Approval

Permit and Bond comments:

One yr elapsed since plug date (Part 625 only):
 Affidavit of compliance is on file (Part 625 only):
 Bond in effect prior to 9/20/96 rule changes:
 Final well on a blanket bond?:

Date Permit/Bond Apprvl:

Approved by: David K. D... Date: 8/25/00