

March 23, 1998

Working Interest Owners :OT

Install compression for gas cycling RE:

Dero Fed Com #2

Winchester Morrow Field

Eddy County, New Mexico

additional fluids and reduce the producing bottom hole pressure. AFE will install a compressor to cycle gas down the casing-tubing annulus, which will lift in bottom hole pressure of 1278 psi, indicating substantial remaining reserves. This has recently been producing approximately 30 MCFGPD. The well had a 48 hour shut of \$ 20,000 to install compression for gas cycling on the subject well. The subject well Enclosed for your approval is an Authority for Expenditure ("AFE") in the amount

are any additional questions, please call. pay out in approximately 1.6 months, while recovering an additional 1.34 BCF. If there Cost of this project is \$20,000. Based on the attached economics, this project will

Sincerely,

Joe M. Clement

Area Engineer

**Enclosure** 

# Dero Fed Com #2 Unit N, Sec. 35-T19S-R28E Eddy County, New Mexico

# Recommended procedure to gas lift the subject well.

- 1) RU hot oiler. Test casing to 500#. If casing tests, continue with procedure.
- 2) RU slick line truck w/ lubricator. RIH w/ blanking plug, set in Otis Perma Latch pkr @ 10950' (still attempting to determine profile and size of profile nipple). RIH, perforate tubing above on-off tool w/ 4 js. RU swab, swab casing down as far as possible.
- 3) RU slick line truck w/ full lubricator. RIH, pull blanking plug. RD slick line.
- 4) RU compressor. Swab well if necessary to kick well off.
- 5) Put well on line.

# Saga Petroieum LLC

415 W. Wall, Suite 835 Midland TX 79701 915-684-4293 Fax 915-684-0829



INVOICE NO: OXY-032398 DATE: March 23, 1998

To: OXY USA

QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
t i	AFE #9832832 Dero Federal Com #2		\$1250.00
	Install Compressor for Gas Cycling		
		SUBTOTAL	\$1250.00
		TOTAL DUE	\$1250.00

Make all checks payable to: Saga Petroleum LLC

If you have any questions concerning this invoice, call: Bonnie Caldwell, (915) 684-4293

T0:

CHUCK FARMER ROBERT SETZLER

FROM:

MARCH 26,1998

SUBJECT:

**DERO FEDERAL COM NO. 1-A (35N-19S-28E)** 

PROPOSED GAS CYCLING SYSTEM

Attached is an AFE in the amount of \$20,000 to install gas cycling equipment on the subject well. A detailed review of the well has shown that this well is completed in both the Upper and Lower Morrow formations. This review has shown the following:

ZONE	CUM	PROD	REM	PROD	EUR P	ROD
	BCF	MBO	BCF	MBO	BCF	мво
UPPER MORROW	1.280	4.733	1.340	4.000	2.620	8.733
LOWER MORROW	0.546	<u>1.952</u>	0.000	0.000	<u>0.546</u>	1.952
TOTAL	1.826	1.950	1.340	4.000	3,166	10.685

Currently the Lower Morrow zone is located below a bridge plug with the Upper Morrow being the only producing zone. Decline curve analysis indicates that the lower Morrow zone has been depleted. The Upper Morrow zone which is currently producing 100 MCFD and 1 BCPD is currently loading with liquid which is restricting its ability to produce. Calculations indicate to keep this well flowing through 2 3/8" production tubing an ascending gas flow rate of 250-300 MCFD is required to mist the liquid and remove it from the well bore. This can be accomplished by installing a closed gas cycling system. This system will continously cycle gas down the casing and back up through the tubing. All excess gas will be sold. It is anticipated that after the well cleans up a producing rate of 350-400 MCFD of gas will be realized which will recover the remaining reserves of 1.340 BCF in the next seventeen years. This project as shown on the attached economics should payout in 1.6 months and realize a rate of return of 100% and generate a present worth net profit when discounted at 10% of \$645,482. A performance curve (Exhibit No.1) has been prepared for this well which shows past and anticipated future performance.

The Lower Morrow was initially completed in 1979. This zone was perforated with 2JSPF from 11,167' - 11,179' in selected intervals. This well was completed flowing natural 4624 MCFD of gas and 49.68 BCPD with a flowing tubing pressure of 3186# on a 16/64" choke. This zone produced a total of 546 MMCF of gas and 1,952 BC when the Lower Morrow ceased to produce in July 1982. This well was plugged back from the Lower Morrow using a cast iron bridge plug set at 11,145' capped with 35' of cement. Records indicate that the only BHP taken on the lower zone was obtained when it was potentialed. A review of the production records suggests that the Lower zone started loading with fluid in May 1981. From that time on the wells productivity steadily declined. Sufficient pressure data was not available to calculate OGIP for the Lower Morrow. Decline curve analysis using both straight line decline and exponential decline methods indicate that all economically recoverable reserves had been produced from the Lower Morrow when it was abandoned.

The Upper Morrow was perforated from 11,024'-11,087' in selected intervals as shown on the attached well bore diagram (Exhibit No. 2). The Upper Morrow was treated with 5000 gallons of 7½% acid followed by a gel water frac consisting of 15,000 gallons of gelled water carrying 22,500# sand and 23.5 tons of CO2 of This zone was potentialed on August 5, 1982 flowing 548 MCFD. 5 BCPD and 3 BWPD. The Upper Morrow is currently producing 100 MCFD of gas per day and 1 BCPD. To date this zone has produced a total of 1,280 BCF of gas and 4733 BC. Since being plugged back to the Upper Morrow a number shut in well head pressures have been taken. On November 17, 1997 the bottom hole pressure of the Upper Morrow was measured with a BHP bomb and was found to be 1278# after a 72 hour shut in period. Bottom hole pressures were calculated for all the measured SIWHP. Two P/Z plots or curves were prepared. One curve used all of the pressure points while the other curve only used the actual BHP taken November 17, 1997along with two other points which appeared not to have any fluid in the tubing or the casing when the surface pressures were taken. These P/Z curves are shown in Exhibit No.3. The curve using the three pressure points is considered to be the more correct and shows that their are significant additional reserves to be recovered which can be accomplished through gas cycling.

Normally as most depletion gas wells are produced and their bottom hole pressure drops fluid consisting of either oil or water will start collecting in and around the well bore. The amount of fluid which collects is the function of the ascending velocity of the gas to mist this fluid and carry it out of the well bore. The attached table (Exhibit No. 4) shows the volume of gas required to accomplish this for varying surface pressures and tubing sizes. As the produced gas volume continues to drop more fluid will collect until the well ceases to produce at all. Following this, the well is normally shut in to allow pressure to build or it is swabbed or soap sticks are used to remove the liquid from the well bore. This is only a short term solution to the problem. This results in many wells being plugged which still have significant reserves to be recovered. The recommended closed gas cycling system will prevent fluid from collecting in and around the well bore and will allow the recovery of all gas reserves without any cessation of production. This system will keep the Upper Morrow zone producing at an efficient rate. In this application down hole gas lift valves will not have to be installed. It will only be necessary to install a gas compressor and to make piping modifications at the surface. Down hole it will be necessary to release the packer and lower it 140' to place the bottom of the tubing below the perforations which will keep all the fluid swept out of the well bore. This type of system is designed to provide sufficient make up gas to be combined with the produced gas to achieve the lift velocities required to mist the liquids in the tubing. As previously discussed high pressure gas will be injected down the casing annulus and returned to the surface through the tubing along with the produced fluids. The liquids will be separated at the surface, the required gas lift gas will be continuously cycled down the casing annulus and the excess gas will be sold.

It is recommended that bids were solicited from several vendors for the leasing of a gas compressor to be used for this well. This bid should request that the compressor be supplied with full maintenance and a guaranteed run time of 97% to 98%. All major components and labor will be supplied

by the vendor and will be included in the lease cost. The unit will be checked by the vendor on a regular basis. Saga would only have to provide such items as oil and antifreeze and would be responsible for providing personnel such as the pumper to operate the unit. After reviewing the bids it is recommended that a compressor be chosen and installed as soon as possible. Gas lift Sales and Service Inc. will supply surface control valves and personnel to help direct the surface installation and start up of the equipment.

DERO FEDERAL 2
EDDY, NEW MEXICO
WINCHESTER, MORROW (PENN)
SAGA PETROLEUM LLC OF CO

# RESERVES 7 N D ECOHOMICS

# AS OF JANUARY 1, 1998

	PRODUCT MONTHS	FIRAL W.I.			ETAX NE				H.F.	CIPM.	TOTAL	REM.	s Tor		12-15	12-13	;	12-12	12-11	12 19	12-8					- I		 		1 2 - 3 9	12-98		
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FRODUCTION DATES: 10/1994-08/1995 FERFS: 10087-10114 LOCATION: 35-19S-28E-N

DATE: 03/17/98 TIME: 10:59:36 FILE: JOE GET#: 17

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101 DERO FEDERAL 2 102 EDDY, NEW MEXICO 103 WINCHESTER, MORROW (PENN) 104 SAGA PETROLEUM LLC OF CO

108		405 CALC		222		210	
INVEST	INV NAME	GAS	PH. NAME	SVt	PHASE	1.00000000	W. 1. FRACTION
.000	INV.	EXP E	CURVE TP	1777.390	CUM PROD (MUNITS)	.00	OP. COST (\$/W/MO)
.000 YRS	INV. POINT	END= 11.228	DECLINE	.81190000	REV. INT	2000.00	OP. COST
G	(G OR N)	500.000	Q1 RATE	1.410	PRICE (\$/UNIT)	1.500	ADV. TAX
7.700	TANG-M\$	EL 62.759	QT RATE	7.085	SEV. TAX	GAS	MAJOR PH. NAME
12.300	INTANG-M\$	1.340 17.425	CUM.	1.0	NO. OF WELLS	1/ 1/98	PROD DATE (MO/DY/YR)
.000	LSEHLD-M\$	IBCF YRS	CUM. LIMIT		RATIO TO MAJOR PH		
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9	OVHD FLAG	3117.390	CVIVO				
		3.0 PH	CALC VALUE				

# FOOTHOTES:

901 PRODUCTION DATES: 10/1994-08/1995 902 FERFS: 10087-10114 904 LOCATION: 35-19S-28E-N

# <u>EXHIBITS</u> DERO FEDERAL COM NO.2

UPPER AND LOWER MORROW PERFORMANCE CURVE	1
WELL BORE SCHEMATIC	2
P/Z VRS CUMULATIVE PRODUCTION CURVES	3
MINIMUM CAS ELOW DATE CHART	4

### SAGA PETROLEUM

### **WELL BORE DATA SHEET**

LEASE: DERO FEDERAL COM WELL NO: 1-A FIELD: WINCHESTER (MORROW) LOCATION: 660' FROM SOUTH LINE & 1980' FROM WEST LINE . UNIT LETTER N SECTION: TOWNSHIP: 198 RANGE: 28E COUNTY: EDDY STATE: NEW MEXICO API NO.30-015-20973 **ELEVATION** DATE **INITIAL COMPLETION DATA:** 11/17/73 RAN : GR/COMP ACOUSTIC .GUARD .FRACTURE FINDER DF 3310' KB 3311' 4 1/2" CSG CMT W/ 770 SX C/H TOC NOT REPORTED. CALC TOC AT 8830' USING 20% HOLE SURF CSG WASH OUT NOTE A (WOLFCAMP) 12 3/4" 42# H& J 1/10/74 WELL PERF 9051'-57', 68-73', 9112'-16', 24'-38', 66'-70', ST&C CSG AT 302 N 17" HOLE W/ 350 SX C/C 9325', 30', 34', 44'-66', 67'-71', 74'-77'; 1JSPF DMT CIRC A/2M GAL MCA 15% FOLLOWED W/ A/1.5M GAL MCA 15% INTER CSG 1/16/74 FLOW 1.890.000 CFGPD +672 BC ON 16/64" CHK,1895# 3 5/6" 24# & 35# K-55 CSG IN 11 3/4" FTP, GOR 2813 2 3/8 TBG N-80 10/8/79 CMT SQ Wc PERF 9051'-9377' W/50 SX C/H MAX HOLE, CMT W/ 300 SX C/C. TOC NOT 4 73#/FT AT 10950 **TOC CALC 8810** PRESS 2300# DRILL OUT & TEST TO 1500# OK ?EPORTED NOTE B (STRAWN) NOTE A: WOLFCAMP PERF 9051-9377 11/27/73 PERF 10087'-11114'.A-4000 GAL15% W/ N2, Frac W/ 12600 YOTE: NOTE B: STRAWN GAL GEL WTR & 17000# 20/40 SND.AIR 10 BPM, ISIP 3000# PERF 10087-10114 **10 REPORT WHEITHER PERFS** 11/29/73 FLOW 1648-1462 MMCFD ON 20/64" CHK, FP NOT REPORTED IN NOTES C.D OR G. HAVE NOTE G: ATOKA 1/11/74 FLOW 1,070,000 CFGPD+ 288 BC ON 16/64" CHK 1485# FTP, . PERF10768-10818 **3EEN CMT .SQUEEZED OR NOT GOR 3715** 10/12/79 CMT SQ STR PERF 10087'-11114' W/535 SX C/H MAX NOTE D: ATOKA PERF 10914-11129 PRESS 3250# DRILL OUT & TEST TO 1500# OK. **OTIS PERMA LATCH PKR** NOTE F & H : MORROW NOTE C (MORROW) 10/14/79 PERF MORROW; 11167'-11179' 2JSPF AT 10950' W/ON-OFF & PROFILE PERF11024'-11087 WELL COMPLETED NATURAL 10/17/79 F-24 HR 4624 MCFD 49.68 BC 0 8W 16/64" CHK FTP CIBP AT 11145 WI 35' CHT 3186#. SIBHP 4232# BHP BOMB AT 11173' NOTE C: MORROW 11167-11170 NOTE E :MORROW NOTE D (ATOKA) PROD CSG 10/22/79 PERF 10914'-918', 10964'- 74',11085'-94'& 11184-11188 PLUG BACK 11125'-29', RESULTS N/A 1/2" 11.0# & 13.5# K&N CSG @ 11252 CMT W/

## 70 SX CM IN 7 7/6" HOLE TOTAL DEPTH

11252

# NOTE E (MORROW)

7/6/82 PERF L. MORROW 11184,185',186' A3M GAL 71/2 % REC SL AMT OF GAS

NOTE F (U-MORFROW)7/11/82 SET CIBP AT 11145' DUMP 35' CMT ON TOP .PERF U. MORROW SND 11024'-033', 11041'. 11060'-

070', & 11087'. A-5M GAL 71/2% , WELL FLOW 246 MCFD. FRAC W/ 15M GAL GEL WTR & 22.5M# SND & 23.5 TONS CO2 CO2. WELL FLOW 350 MCFD

NOTE G (ATOKA )7/19/1982 PERF ATOKA 10768'-775',10779',10780',10798'-805,& 10810'-818'COMP. RESULTS N/A NOTE H (U-MOR ROW) 8/5/82 F-548MCFD 5BC 3BW FROM UPPER MORROW PERF 11024'-087'

<u>DST#1</u> 9060-9204 IF 15 min, GTS in 5 min flowing 1.5 MMCF,ISI 90 min, open tool at end of 60 min flow @ rate of 4.5 MMCFPD w/ small amt of distilate. Flow a total of 120 min.Max flow rate 6.2 MMCFD on 1/2"chk.Fsi 180 min.IF 422#-699#,ISI 592#-651#, =FP 1860#- 1886#. Tool failed. Did not get FSIP.

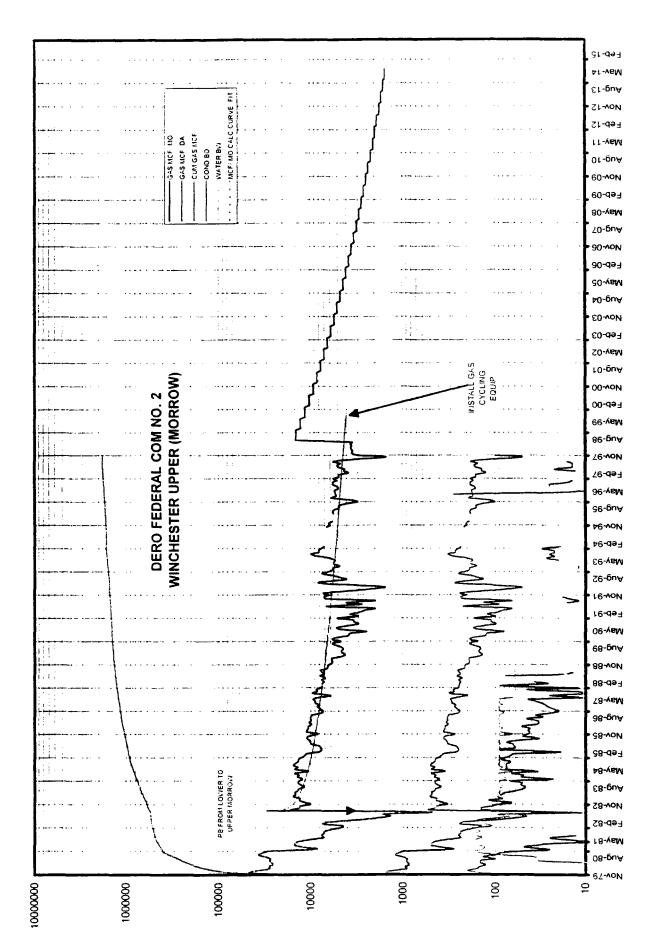
<u>DST #2</u> 10,910-11,085,REC 685' GCDF, IF 92#-159# 30min ,ISIP1537# -1439# 60 MIN,FFP 321# -- 331# 180 MIN, FSIP 3755# - . 3760# 240 min.

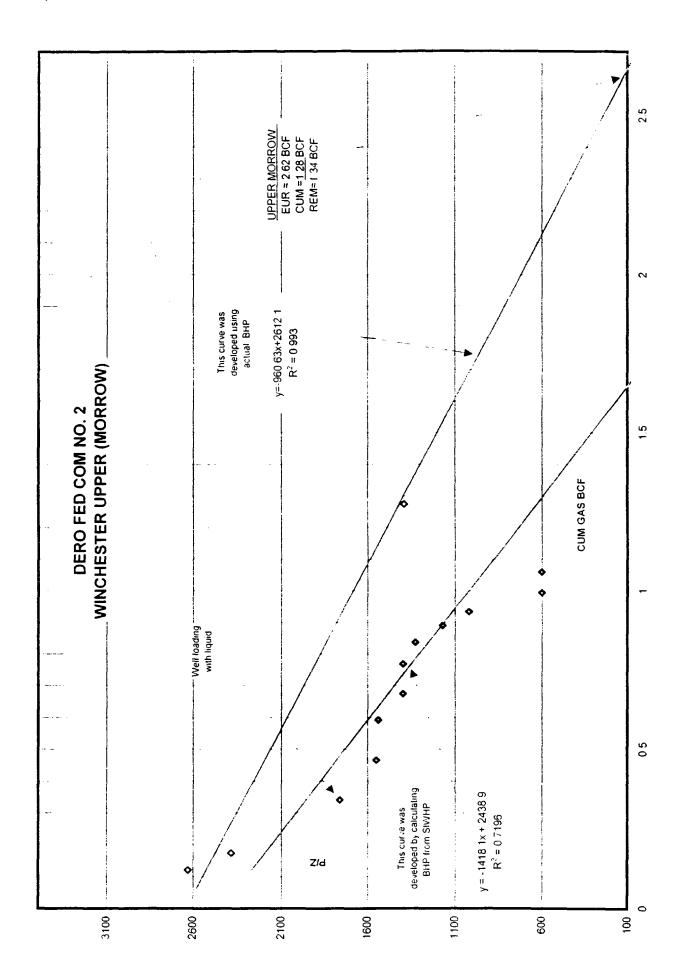
DST #3 11081-181 Open tool w/ strong blow, GTS in 7 min, IFP 750#-1551# 30 min, ISIP4429#-4448# 90 MIN, reopen tool flow on 1/4"chk 3.697 MMCFD,FFP 883#-901# 150 MIN, FSIP 4429#-4468# 300 min,POH Rec 440' GCM, 10' Distilate & 30' filtrate wtr

TOC CALC AT 8810

HÍNIMUM FLOW NATE IN MELZIE TO CONTINUEN ALMONE FLITIS FROM A VELLHONSE WITH NUMINAL TOURING AS FLOW COMMOTE AT 40°F (5,20°K) AND Z = 6,9

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1160.		2269.	340%	5956.	466. 634.		/50.	965.	1444.	21.70.	3798.
											. 711





Page 1

SAGA PETROI	LEUM			FIELD: Winchester	LEASE:		WELL
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ACCT INTANGIBLE	S			DRILLING	COMPLETION	H	TOTAL
36 Location: Survey, P	lats. Damages	s. ROW. Permits	Ť		<del></del>	ĪS	
36  Dirtwork: Road, Loc	ation, Pits					S	
1   Contract Drilling - Fo	ootage	ft @	ft	s -		İs	•
3 Contract Drilling - Da		dy @	/dy	S -		S	
12 Fuel and Power	<del></del>					S	
14 Water					\$ 500.00	1 \$	500.00
30 Mud and Chemicals						\$	•
29 Bits, Reamer & Stab	oilizers					\$	
5 Cementing Services						\$	•
26 Drill Stem Tests, Co	ring & Analysis	s				\$	
2 Geological Services					1	\$	
37 Rental Equipment (C		dy @	/dy	S -	1	\$	-
37 Rental Equipment (C		0 dy @	0 /dy		S -	\$	
16 Completion Unit		3 dy @	1200 /dy	1	\$ 3.600.00	5	3.600.00
51 Logging & Perforating	ng				\$ 3,000.00	+	3,000.00
15 Non-Controllable Ma	<u> </u>					\$	-
35 Waste Disposal & R				1	\$ -	\$	
27 Hauling & Transport					\$ 500.00	<del></del>	500.00
23 Supervision (Drilling		dy @	/dv l	S -		\$	
23 Supervision (Comple		3 dy @ \$	450 /dy	<del>                                     </del>	\$ 1.350.00	\$	1,350.00
8 Overhead (Drilling)		dy @	/dy	\$ -		\$	-
8 Overhead (Completi	ion)	3 dy @ S	100 /dy	<del>  -</del>	\$ 300.00	+-	300.00
7 Well Stimulation		, & -	1	1	\$ -	\$	
3/24 Contract / Company	Labor		· ·		\$ 2,000.00	+	2,000.00
6 Insurance				1	2,000.00	\$	-
21 Miscellaneous		<del></del>			\$ 550.00	\$	550.00
Contingencies		10%		<b>s</b> -	\$ 500.00	+-	500.00
	The Table	TOTAL INTANGIE	LE COST	\$	\$ 12,300.00		12,800.00
		i grande		2913	Land State Co.		
UB  1320/1321							
CT TANGIBLES	2			DRILLING	COMPLETION		TOTAL
/ Surface Casing		ft @	/ft	S -		S	-
/ Intermediate Casing		ft @	/ft	S -	<del> </del>	S	•
1 Production Casing		ft @	/ft	<u> </u>	\$ -	\$	
13 Liner		ft @	/ft	<u> </u>	S -	\$	•
/ 3 Tubing		ft @	/ft	<u> </u>	\$ -	\$	
12 Float Equipment, Sh	oes, Centraliz					\$	•
/ 8 Wellhead Equipmen	t				\$ 500.00	S	500.00
7 Artificial Lift & Acces	sory Equipme	nt	·   -			\$	•
4 Rods		ft @	/ft		\$ -	\$	-
/ 2 Engine/Motor & Acci	essories				1	\$	-
6 Bottom Hole Pump					1	\$	•
/ 9 Tank Battery/Installa	ation					\$	-
						\$	•
19 Ineater Heater/Sepa						\$	•
					1	\$	
17 Electrical System							2,000.00
17 Electrical System 15 Packers & Anchors	ment				\$ 2.000.00	\$	
<ul><li>17 Electrical System</li><li>15 Packers &amp; Anchors</li><li>10 Other Surface Equip</li></ul>				<u> </u>	\$ 2.000.00	\$	-
17 Electrical System 15 Packers & Anchors 10 Other Surface Equip 19 Other Subsurface Ed	quipment	ft @	.ft		\$ 2.000.00	\$	4.000.00
17 Electrical System 15 Packers & Anchors 10 Other Surface Equip 19 Other Subsurface Ec 11 Line Pipe, Valves &	quipment Fittings	ft @	.ft			\$	
/ 9 Heater Treater/Sepa / 17 Electrical System / 15 Packers & Anchors / 10 Other Surface Equip / 19 Other Subsurface Ed / 11 Line Pipe, Valves & / 23 Hauling/Transportati / 18 Non-Controllable Ma	quipment Fittings on	ft @	.ft			<b>\$</b>	
17 Electrical System 15 Packers & Anchors 10 Other Surface Equip 19 Other Subsurface Ec 11 Line Pipe, Valves & 23 Hauling/Transportati	quipment Fittings on	ft @	.ft			\$   \$   \$	
17 Electrical System 15 Packers & Anchors 10 Other Surface Equip 19 Other Subsurface Ed 11 Line Pipe, Valves & 23 Hauling/Transportati 18 Non-Controllable Ma	quipment Fittings on	ft @	.ft	\$ -	\$ 4.000.00	\$   \$   \$   \$	4.000.00
17 Electrical System 15 Packers & Anchors 10 Other Surface Equip 19 Other Subsurface Ed 11 Line Pipe, Valves & 13 Hauling/Transportati 18 Non-Controllable Ma 18 Miscellaneous Contingencies	quipment Fittings on			\$	\$ 4.000.00 \$ 500.00 \$ 700.00	\$   \$   \$   \$	4.000.00 - - 500.00

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SAGA PETROLEUM LLC			Authoriz	ation for Expendition
( ) Exploration, ( )Recompletion. ( )Development, ()World	kover.	()Supplement, (;	c)Other	
Project: Install compressor for gas cycling		Budget Year:	1998	Ownership
Field: Winchester Morrow	1 [	Start Date:	Apr-98	() 100%
Lease Name and #: Dero Federal Com #2	iΓ	Completion Date:	Apr-98	(x) Jt. Owned
Unit N	i F	Geologic Area:	Permian Basin	1
Section 35 - T19S - R28E	i	Operator:		<del>-</del>
County, State: Eddy County, New Mexico	<u> </u>	Oberator	Jaya	<u>.</u>
			<del></del>	1
Description of Project:			1 82833 	
The subject well has recently been producing appr				
bottom hole pressure of 1278 psi, indicating substa				
to cycle gas down the casing-tubing annulus, whic				-
hole pressure. Cost of this project is \$20,000. Base			nomics, this projec	ct will pay out in
approximately 1.6 months, while recovering an add				
Estimated Cost of Work to be Approved (8/8ths	) :		and the same of th	Conches de la constante de la
Description of Expenditures		Original	Revision	
Drilling Intangibles	!	s - i		
Drilling Tangibles	1	S -		The same of the sa
Completion Intangibles		\$ 12,300.00		STORY OF THE
Completion Tangibles	<del>i i</del> -	5 7.700.00		A TOPPONT
	<del>                                     </del>	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Other Capital Expenditure	$\vdash \vdash$			Special Control of the last of
Sub-Total	1	20,000.00	\$ -	
Administrative Overhead				- Contract of the last of the
Gross Estimated Costs (8/8ths)		20.000.00		- September
ess Costs to Others				C
Less Non-Refundable Contribution				<u>.</u>
	$\vdash \vdash$		<del> </del>	Bernelling the Control
Less Trade In				
ess Salvage	ot			535-2 12 5 22 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ess Other	1		-	and the state of the second
Net Est. Cash Outlay	- 4	\$20,000.00		Mar Land
Division of Working Interest		<b>%</b>	Cost	71
Division of Working interest	<del>   -</del>		2031	Karanjah meran D
	$\vdash$			2
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Dxy USA		0.06250000	<b>\$</b> 1,250.00	1000
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		0.000000		1000
Total	-1-	_ 0.0625000	<u>-\$1,250.00.</u>	· · · · · · · · · · · · · · · · · · ·
Prepared by:	Je	oe N. Clement - A	rea Engineer	
			_	
Operator Approvals				-
Operator Approvals:	۷.			
Title:	-47	lanager, Saga Pe	troleum LLC	
Date:		March 23, 1998		
REMARKS:				
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ION-OPERATOR APPROVAL:		The state of the s	TENERAL AREA	dent transfer of the second
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Company:	Ĺ	INT THE !!	<b>V</b> . 1	
Approved By:-		( - X	limi	<del></del>
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Date:			, -	
Date:	7	VV X	1110	2
Date: is recognized that the amounts herein are estimates on	ily and	) X V A I O this au	thorization shall exte	) end