

Barrett LS # 2

1-19-310-96

*OK*

STATE OF COLORADO )

CITY AND COUNTY OF DENVER )

RECEIVED  
BUREAU OF RECORDS  
COUNTY OF DENVER, CO  
FEBRUARY 27 1996

The foregoing instrument was acknowledged before me this 27<sup>th</sup> day of February 1996, by Bradley D. Bilyeu and, to the best of his knowledge, the surveys and calculations are correct.

*Bradley D Bilyeu*  
Bradley D Bilyeu  
Drilling Engineer - AMOCO PRODUCTION COMPANY

WITNESS my hand and official seal.

My commission expires:

11/21/99

*Patricia A Burrell*  
Patricia A Burrell  
Notary Public



Amoco Production Company

Sheet No \_\_\_\_\_ Of \_\_\_\_\_

ENGINEERING CHART

Appn \_\_\_\_\_

SUBJECT Barrett L.S. #2

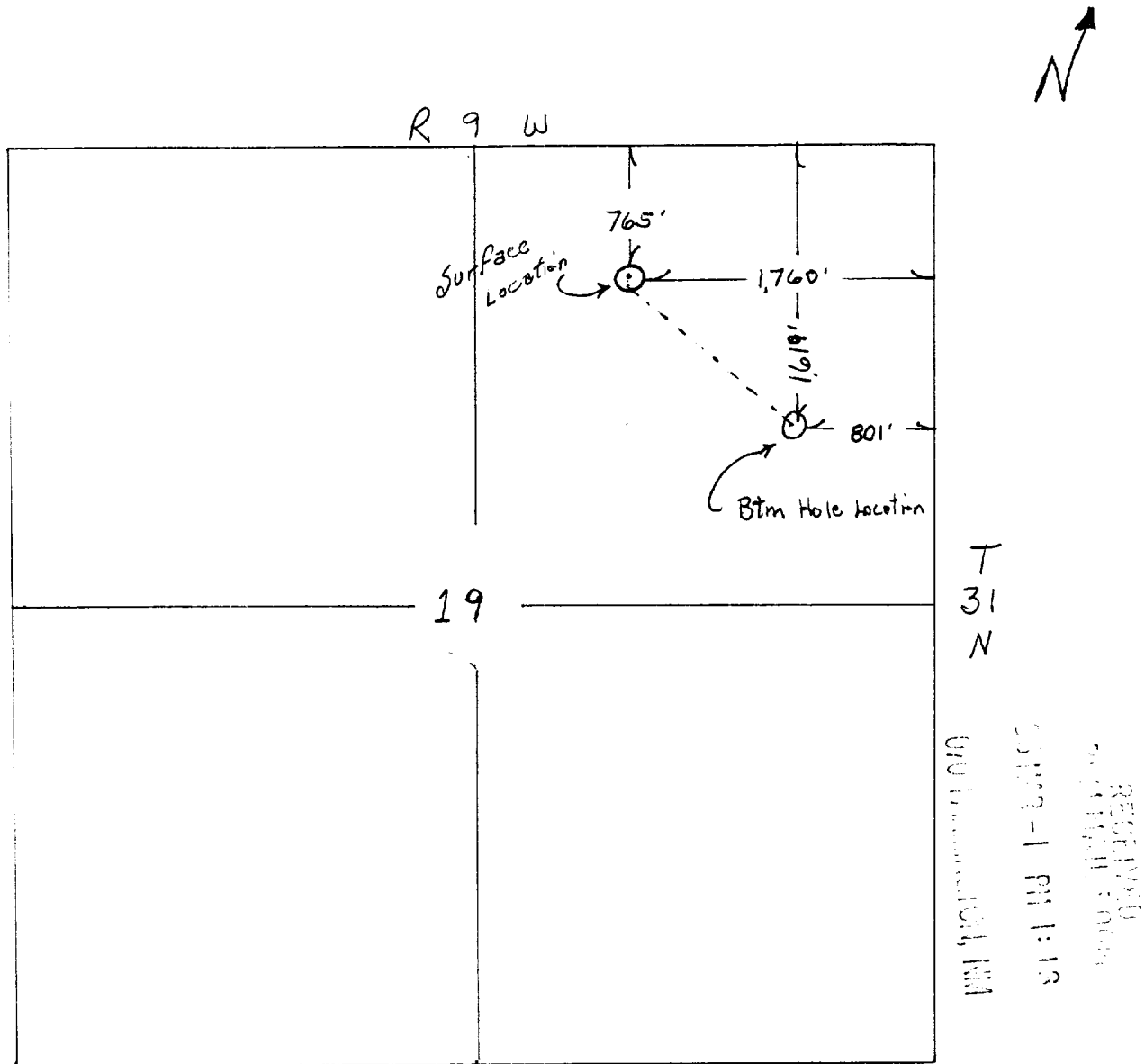
Date 2/27/96

765' FNL, 1760' FEL, Section 19, T31N, R9W (New Survey)  
San Juan County, New Mexico

By [Signature]

(Original Survey - 790' FNL, 1750' FEL)

Bottom hole location from surveys -  
853.92' South, 959.04' East of Surface Location



The sketch and the attached calculations are correct to the best of my knowledge.

[Signature]  
Bradley D. Bilyeu  
Drilling Engineer

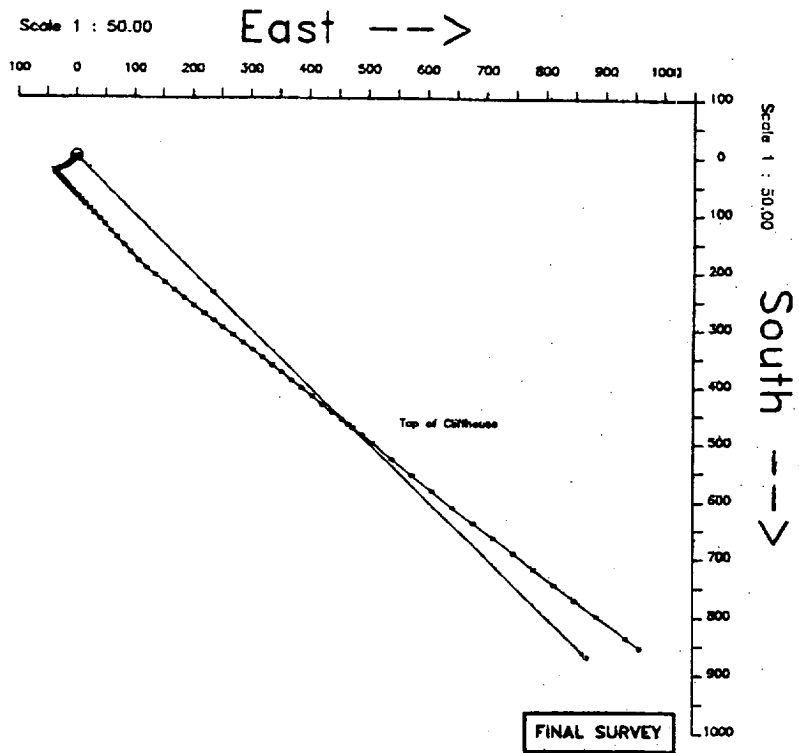
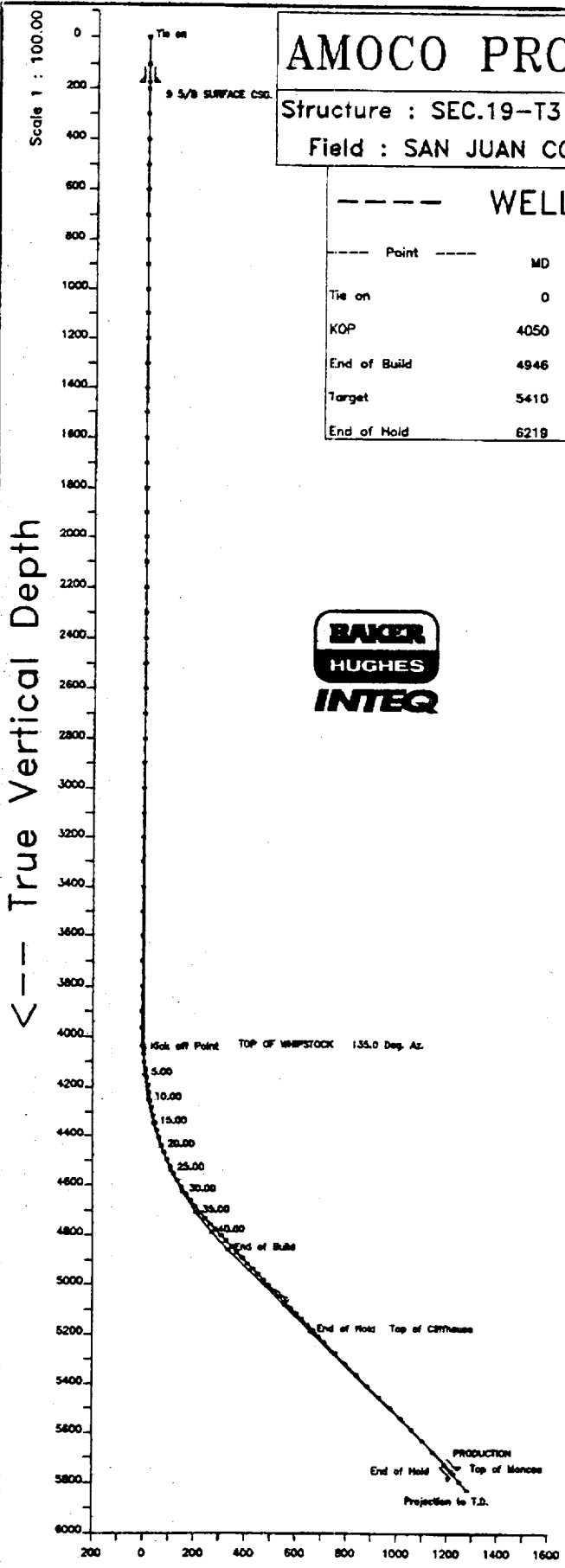
# AMOCO PRODUCTION COMPANY

Structure : SEC.19-T31N-R9W Well : LS #2, BARRETT  
 Field : SAN JUAN COUNTY Location : NEW MEXICO.

## WELL PROFILE DATA

Point	MD	Inc	Dir	TVD	North	East	Dep/100
Tie on	0	0.00	135.00	0	0	0	0.00
KOP	4050	0.00	135.00	4050	0	0	0.00
End of Build	4946	44.79	135.00	4857	-235	235	5.00
Target	5410	44.79	135.00	5187	-467	467	0.00
End of Hold	6218	44.79	135.00	5761	-870	870	0.00

TRUE  
 MAGNETIC DECLINATION  
 11.7 DEG



FINAL SURVEY

Baker Hughes INTEQ  
 DRAWN BY: WALLY HOLBROOK  
 DATE: Jan. 03, 1996  
 TVD REFERENCED RKB  
 DENVER, COLORADO  
 PHONE: (303) 860-0508

# SURVEY CALCULATION AND FIELD WORKSHEET

Job No. 0410-08064 Sidetrack No.          Page 1 of 1  
 Company AMOCO PRODUCTION COMPANY Field SAN JUAN COUNTY  
 Well Name & No. LS #2:BARRET Rig Contractor & No. A.W.S./124  
 Survey Section Name PAGE 3 BHI Rep. ERWIN SALVATIERRA

## WELL DATA

Target TVD 5187.00 (ft) Slot Coord. N/S 0.00 Grid Correction 0.000 Depths Measured From:  RKB  MSU  SS  
 Target Description TOP OF CLIFFHOUSE Slot Coord. E/W 0.00 Magn. Declination 0.000 Calculation Method Minimum Curvature  
 Target Direction 138.00 (deg) Build/Walk/DL per: 100  30m  10m  10m Magn. to Map Corr. 0.000 Map North to: TRUE NORTH

## SURVEY DATA

Date	Survey Tool Type	Survey Depth (ft)	Incl. Angle (deg)	Hole Direction (deg)	Course Length (ft)	TVD (ft)	Vertical Section	Total Coordinate		DL per 100	Build Rate Build (+) Drop (-)	Walk Rate Right (+) Left (-)	Comment
								N (+) / S (-) (ft)	E (+) / W (-) (ft)				
	MWD	5444.00	43.88	129.20		5206.28	889.93	-485.98	489.94	0.96	-0.41	1.25	Tie In Point
12-DEC-95	MWD	5476.00	43.75	129.60	32.00	5229.38	711.93	-500.04	507.06	2.26	2.11	1.13	DIRECTION QUESTIONAE
12-DEC-95	MWD	5538.00	45.08	130.30	62.00	5273.67	755.07	-527.90	540.31	0.85	-0.50	-0.97	
12-DEC-95	MWD	5600.00	44.75	129.70	62.00	5317.59	798.80	-556.03	573.84	0.89	-0.70	-0.79	
12-DEC-95	MWD	5663.00	44.31	129.20	63.00	5362.50	842.49	-584.11	607.96	1.23	1.10	-0.79	
12-DEC-95	MWD	5726.00	45.00	128.70	63.00	5407.31	886.44	-611.94	642.39	0.89	-0.59	-0.95	
12-DEC-95	MWD	5789.00	44.63	128.10	63.00	5452.01	930.45	-639.52	677.19	1.36	-1.11	-1.13	
13-DEC-95	MWD	5851.00	43.94	127.40	62.00	5496.39	973.29	-666.03	711.42	0.71	0.71	0.00	RESURVEY F4944T5851
13-DEC-95	MWD	5913.00	44.38	127.40	62.00	5540.87	1016.00	-692.26	745.73	0.86	-0.79	0.48	
13-DEC-95	MWD	5976.00	43.88	127.70	63.00	5586.09	1059.39	-718.99	780.51	0.21	-0.21	0.00	
13-DEC-95	MWD	6038.00	43.76	127.70	62.00	5630.82	1101.86	-745.24	814.47	1.23	-1.19	-0.48	
13-DEC-95	MWD	6101.00	43.00	127.40	63.00	5676.62	1144.68	-771.61	848.77	0.80	-0.09	-1.16	
14-DEC-95	MWD	6170.00	42.94	126.60	69.00	5727.11	1191.11	-799.92	886.33	2.04	-2.04	0.00	
14-DEC-95	MWD	6262.00	41.06	126.60	92.00	5795.47	1251.84	-836.62	935.75	2.04	-2.04	0.00	
14-Dec-95	Proj	6307	40.14	126.60	45.00	5829.87	1281.55	-853.92	959.04	2.04	-2.04	0.00	Projected to TMD

*Erwin Salvatierra*  
 2/27/96

# SURVEY CALCULATION AND FIELD WORKSHEET

Company **AMOCO PRODUCTION COMPANY**  
Well Name & No. **LS #2, BARRET**

Rig Contractor & No. **A. W. S. / 124**

Job No. **0410-08054**

Sidetrack No. \_\_\_\_\_

Page **1** of **1**

Field **SAN JUAN COUNTY**

Survey Section Name **PAGE 2**

BHI Rep.

## WELL DATA

Target TVD **5187.00** (ft)    Target Coord. N/S **-492.00**    Slot Coord. N/S **0.00**    Grid Correction **0.000**    Depths Measured From: **RKB**  **MSL**  **SS**  
 Target Description **TOP OF CLIFFHOUSE**    Target Coord. E/W **477.00**    Slot Coord. E/W **0.00**    Magn. Declination **0.000**    Calculation Method **Minimum Curvature**  
 Target Direction **136.00** (deg)    Build/Walk/IDL per: **100/30/10m**  **10m**     Vert. Sec. Azim. **136.00**    Magn. to Map Corr. **0.000**    Map North to: **TRUE NORTH**

## SURVEY DATA

Date	Survey Tool Type	Survey Depth (ft)	Incl. Angle (deg)	Hole Direction (deg)	Course Length (ft)	TVD (ft)	Vertical Section	Total Coordinate		DL (per 100)	Build Rate Build (+) Drop (-)	Walk Rate Right (+) Left (-)	Comment
								N(+) / S(-) (ft)	E(+) / W(-) (ft)				
	MWD	4726.00	38.31	134.70		4882.73	203.66	-179.84	106.80				Tie In Point
09-DEC-95	MWD	4757.00	39.81	131.80	31.00	4706.80	223.06	-193.22	121.03	7.63	4.84	-9.35	GEOSERVICES MWD
09-DEC-95	MWD	4788.00	41.25	128.60	31.00	4730.37	243.10	-206.21	136.42	8.16	4.65	-10.32	
09-DEC-95	MWD	4819.00	43.06	128.60	31.00	4753.35	263.73	-219.19	152.68	5.84	5.84	0.00	
09-DEC-95	MWD	4850.00	42.75	128.60	31.00	4776.05	284.66	-232.35	169.17	1.00	-1.00	0.00	
09-DEC-95	MWD	4892.00	42.19	127.80	32.00	4799.66	306.08	-245.72	186.15	2.43	-1.75	-2.50	
09-DEC-95	MWD	4913.00	43.44	127.80	31.00	4822.40	326.92	-258.63	202.80	4.03	4.03	0.00	
08-DEC-95	MWD	4944.00	43.31	127.60	31.00	4844.93	347.98	-271.65	219.64	0.61	-0.42	-0.65	
10-DEC-95	MWD	4974.00	42.88	127.10	30.00	4866.84	368.25	-284.08	235.93	1.83	-1.43	-1.67	
10-DEC-95	MWD	5005.00	42.69	127.10	31.00	4889.59	389.06	-296.78	252.73	0.61	-0.61	0.00	
10-DEC-95	MWD	5037.00	43.19	127.90	32.00	4913.01	410.61	-310.06	270.02	2.31	1.56	2.50	
10-DEC-95	MWD	5068.00	43.00	128.30	31.00	4935.66	431.59	-323.12	286.69	1.07	-0.61	1.29	
10-DEC-95	MWD	5099.00	42.69	128.40	31.00	4958.38	452.48	-336.20	303.22	1.02	-1.00	0.32	
10-DEC-95	MWD	5130.00	42.38	128.20	31.00	4981.22	473.25	-349.19	319.67	1.09	-1.00	-0.65	
11-DEC-95	MWD	5161.00	43.25	128.30	31.00	5003.96	494.12	-362.24	336.21	2.82	2.81	0.32	
11-DEC-95	MWD	5191.00	43.69	128.40	30.00	5025.74	514.58	-375.04	352.40	1.48	1.47	0.33	
11-DEC-95	MWD	5223.00	43.44	128.40	32.00	5048.92	536.44	-388.74	369.66	0.78	-0.78	0.00	
11-DEC-95	MWD	5255.00	44.89	128.60	32.00	5071.92	558.50	-402.59	387.10	3.93	3.91	0.63	
11-DEC-95	MWD	5286.00	45.06	128.90	31.00	5093.88	580.20	-416.28	404.16	1.38	1.19	0.97	
11-DEC-95	MWD	5317.00	44.75	128.90	31.00	5115.84	601.92	-430.03	421.19	1.00	-1.00	0.00	
11-DEC-95	MWD	5349.00	44.50	129.10	32.00	5138.62	624.23	-444.17	438.66	0.90	-0.78	0.63	
11-DEC-95	MWD	5380.00	44.25	129.20	31.00	5160.77	645.75	-457.86	455.47	0.84	-0.81	0.32	
12-DEC-95	MWD	5412.00	44.00	129.20	32.00	5183.74	667.88	-471.94	472.74	0.78	-0.78	0.00	
12-DEC-95	MWD	5444.00	43.88	129.20	32.00	5206.79	689.92	-485.88	489.94	0.38	-0.38	0.00	

# SURVEY CALCULATION AND FIELD WORKSHEET



Company AMOCO PRODUCTION COMPANY  
Well Name & No. LS #2, BARRET

Rig Contractor & No. A.W.S./124  
Survey Section Name PAGE 1

Job No. 0410-08054 Sidetrack No. \_\_\_\_\_ Page 1 of 1  
Field SAN JUAN COUNTY  
BHI Rep. ERWIN SALVA TIERRA

Target TVD 5187.00 (ft) Target Coord. N/S -492.00 Slot Coord. N/S 0.00 Grid Correction 0.000 Depths Measured From: RKB  MSL  SS  
 Target Description TOP OF CLIFFHOUSE Target Coord. E/W 477.00 Slot Coord. E/W 0.00 Magn. Declination 0.000 Calculation Method Minimum Curvature  
 Target Direction 136.00 (dd) Build/Walk/DL per: 100ft  30m  10m Vert. Sec. Azim. 136.00 Magn. to Map Corr. 0.000 Map North to: TRUE NORTH

## WELL DATA

## SURVEY DATA

Date	Survey Tool Type	Survey Depth (ft)	Incl. Angle (dd)	Hole Direction (dd)	Course Length (ft)	TVD (ft)	Vertical Section	Total Coordinate		DL (per 100)	Build Rate Build (+) Drop (-)	Walk Rate Right (+) Left (-)	Comment
								N(+) / S(-) (ft)	E(+) / W(-) (ft)				
	MWD	3966.00	1.42	267.96		3966.64	-7.99	-25.50	-37.91				Tie In Point
07-DEC-95	MSS	4037.00	5.83	148.20	71.00	4036.53	-5.17	-28.49	-36.95	9.09	5.93	-168.68	GEOSERVICES MWD
07-DEC-95	MSS	4068.00	7.38	136.20	32.00	4068.33	-1.58	-31.31	-34.70	6.90	5.47	-37.50	
07-DEC-95	MSS	4100.00	8.38	131.70	31.00	4099.03	2.66	-34.25	-31.64	3.79	3.23	-14.52	
07-DEC-95	MSS	4131.00	8.75	135.40	31.00	4129.89	7.27	-37.43	-28.30	2.14	1.19	11.94	
07-DEC-95	MSS	4163.00	8.63	135.80	32.00	4161.32	12.11	-40.89	-24.91	0.42	-0.38	1.25	
07-DEC-95	MSS	4195.00	8.50	135.80	32.00	4192.96	16.87	-44.30	-21.59	0.41	-0.41	0.00	
08-DEC-95	MSS	4224.00	8.38	136.90	29.00	4221.65	21.13	-47.38	-18.65	0.69	-0.41	3.79	
08-DEC-95	MSS	4256.00	9.25	138.80	32.00	4253.27	26.03	-51.02	-15.37	2.87	2.72	5.94	
08-DEC-95	MSS	4287.00	11.13	138.60	31.00	4283.78	31.51	-55.14	-11.74	6.07	6.08	-0.65	
08-DEC-95	MSS	4318.00	12.69	137.40	31.00	4314.11	37.90	-59.88	-7.46	5.10	5.03	-3.87	
08-DEC-95	MSS	4349.00	12.75	136.30	31.00	4344.35	44.72	-64.87	-2.79	0.80	0.19	-3.55	
08-DEC-95	MSS	4381.00	14.13	136.10	32.00	4375.48	52.16	-70.24	2.36	4.31	4.31	-0.63	
08-DEC-95	MSS	4413.00	16.44	135.30	32.00	4406.34	60.80	-76.27	8.25	7.25	7.22	-2.50	
08-DEC-95	MSS	4444.00	18.81	136.20	31.00	4435.88	69.98	-82.94	14.86	7.65	7.65	-0.32	
09-DEC-95	MSS	4475.00	21.06	134.60	31.00	4465.03	80.55	-90.40	22.35	7.29	7.26	-1.94	
09-DEC-95	MSS	4506.00	23.19	135.70	31.00	4493.74	92.22	-98.68	30.58	7.00	6.87	3.55	
09-DEC-95	MSS	4538.00	25.19	136.40	32.00	4522.93	105.33	-108.12	39.67	6.31	6.25	2.19	
09-DEC-95	MSS	4569.00	27.19	136.90	31.00	4550.75	119.01	-118.07	49.08	6.49	6.45	1.61	
09-DEC-95	MSS	4601.00	29.31	137.30	32.00	4578.93	134.16	-129.16	59.37	6.65	6.63	1.25	
09-DEC-95	MSS	4632.00	31.44	137.80	31.00	4605.68	149.82	-140.73	69.85	6.92	6.87	1.61	
09-DEC-95	MSS	4664.00	33.75	137.60	32.00	4632.63	167.05	-153.48	81.55	7.23	7.22	-0.63	
09-DEC-95	MSS	4695.00	36.13	136.40	31.00	4668.04	184.80	-168.46	93.68	7.89	7.68	-3.87	
09-DEC-95	MSS	4726.00	38.31	134.70	31.00	4682.73	203.55	-179.84	106.80	7.77	7.03	-5.48	