



LOG CALIBRATION, SYNTHETIC SEISMOGRAM AND ZERO OFFSET VSP REPORT

***Well: MARTHA-1
Area: OFFSHORE-AUSTRALIA***

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BAKER HUGHES – CGG JOINT VENTURE**

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Data Acquisition

By



Baker Atlas

Data Processing

by



In the processing and interpretation of the data, **VSFusion** employees have relied on experience and exercised their best judgement. However, since all interpretations are opinions based on inferences from acoustical or other measurements, we cannot and we do not guarantee the accuracy or the correctness of any interpretations. As such, we shall not be liable for any loss, cost, damages or expenses resulting from reliance on such interpretation.

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CD CONTENTS

DIGITAL_DATA:

SEISLINK_SEGY I-O TEMPLATE.pdf	: SEG-Y Description
rawfield.sgy	: Raw Field Data
stack.sgy	: T-Gain Stacked Data
downwave.sgy	: Downgoing Wavefield – Aligned at 200 msec
upwave.sgy	: Undeconvolved Unenhanced Upwaves
deconup.sgy	: Deconvolved Unenhanced Upwaves
finup.sgy	: Deconvolved Enhanced Upwaves Filtered 5,10 - 50,75Hz
csraw.sgy	: Corr. Stack Bandpass Filtered 5,10 - 70,105Hz
csbpf30.sgy	: Corr. Stack Bandpass Filtered 5,10 - 30,50Hz
csbpf40.sgy	: Corr. Stack Bandpass Filtered 5,10 - 40,60Hz
csbpf50.sgy	: Corr. Stack Bandpass Filtered 5,10 - 50,75Hz
srz25.sgy	: Synthetic Seismogram Filtered By Zero Ricker 25Hz
srz30.sgy	: Synthetic Seismogram Filtered By Zero Ricker 30Hz
srz35.sgy	: Synthetic Seismogram Filtered By Zero Ricker 35Hz
srz40n.sgy	: Synthetic Seismogram Filtered By Zero Ricker 40Hz

LISTINGS:

VELO_LIST.txt	: Velocity Listing
COMP_LIST.txt	: Computation Listing

DISPLAYS:

enclo1a.pdf	: Field Report of Well MARTHA-1
enclo1b.pdf	: Enclosure 1B as in the Report
enclo2.pdf	: Enclosure 2 as in the Report
enclo3.pdf	: Enclosure 3 as in the Report
enclo4.pdf	: Enclosure 4 as in the Report
enclo5a.pdf	: Enclosure 5A as in the Report
enclo5b.pdf	: Enclosure 5B as in the Report
enclo6a.pdf	: Enclosure 6A as in the Report
enclo6b.pdf	: Enclosure 6B as in the Report
enclo6c.pdf	: Enclosure 6C as in the Report
enclo7.pdf	: Enclosure 7 as in the Report

REPORT:

MARTHA-1_Report.pdf	: VSP Report of Well MARTHA-1
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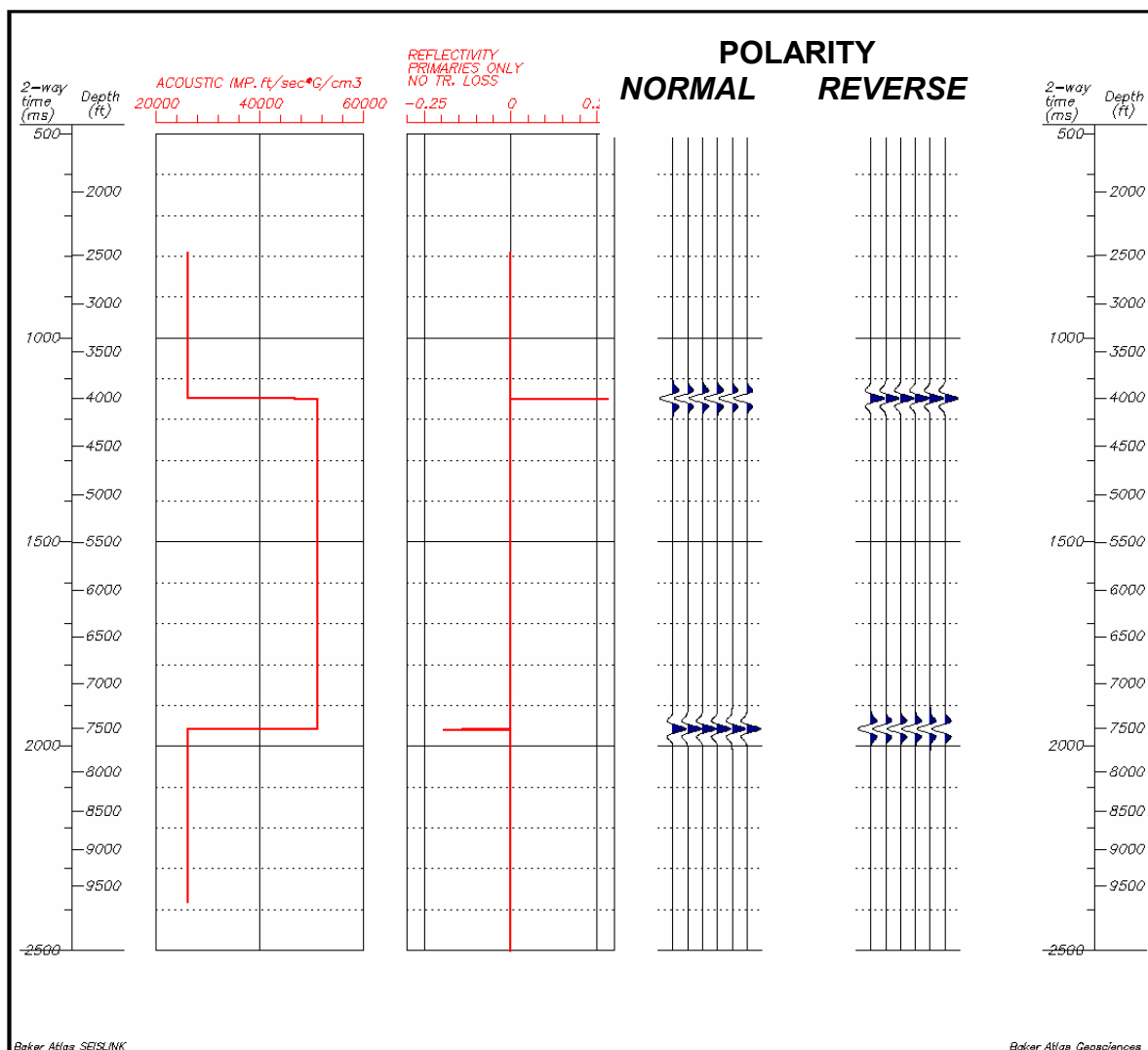
1. INTRODUCTION

BAKER ATLAS conducted a Zero Offset Source (Rig Source) VSP survey for SANTOS & PARTNERS, in their MARTHA-1 well located offshore Australia. The wireline services for this survey were provided by Baker Atlas Logging Services.

The seismic reference datum for this VSP survey is Mean Sea Level (MSL). All measured depths are referenced to the Rotary Table (RT), at an elevation of 21.5m above MSL.

At the time of the survey, the well had been drilled to a measured depth of 1785m (TD Driller) below RT. The borehole was reported as a vertical well, therefore, a deviation correction for the VSP and log data was not applicable for this well.

The polarity convention used in this report is illustrated below.



2. DATA ACQUISITION

Baker Atlas Downhole Seismic Services crew arrived at the well on 1ST November 2004. All equipment was tested on site prior to the survey. Baker Atlas employed standard techniques for the Zero Offset (Rig) Source VSP survey.

The energy source used for this survey was a dual air gun array with a total volume of 300 cu in. The source was offset 46.3m from the wellhead on a bearing of 328 degrees North at a depth of 5m below MSL. A reference phone positioned 2m below the source was used for timing and monitoring purposes.

The survey was recorded using an MLR three component downhole receiver. The VSP data consisted of 3400 files (3 components geophone and 1 component hydrophone), they have been gathered into 116 recorded levels between 75m and 1785m measured depth below RT. The data was recorded in one run.

At the start of the survey, the wireline depth sensor was zeroed at the Rotary Table elevation and the MLR was lowered down the well. During the downtrip the geophone receiver was stopped to check the equipment performance and checkshot data were recorded at 960 – 1020, 1260 - 1320 and 1560 - 1620m below RT. TD was tagged at a depth of 1785m and then the VSP data was recorded as the geophone was raised up the well, up to the shallowest level at 75m.

At each downhole station, the geophones were firmly clamped to the borehole wall. An average of 5 shots were recorded for each depth level.

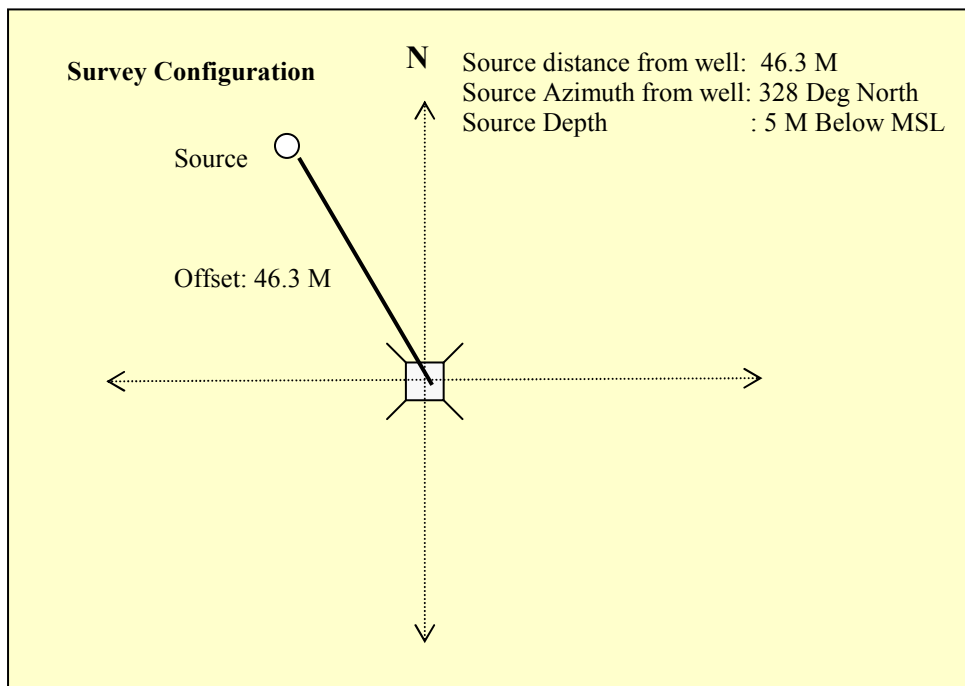
3. VELOCITY CHECKSHOT DATA PROCESSING

3.1. Stacking

The digital data were demultiplexed and displayed. The reference phone (hydrophone) traces were examined and first-break times were picked from these data. Each recorded downhole geophone trace was subsequently shifted by the first-break time value of the corresponding reference phone trace. A time correction of 1ms to account for the time from the reference phone to source at water velocity was then applied to the data so that all downhole geophone traces were referenced back to the source. The downhole geophone traces for each depth level were then stacked using a median summation technique.

3.2. Survey Geometry

It is important to accurately describe VSP geometry for each trace. Survey geometry was applied to the VSP data prior to the First Break picking.



3.3. First break picking

First-break times were picked from the stacked vertical geophone component records. The first break picking was performed manually and no filtering was applied. Enclosure 2 displays the stacked seismic data for all levels for the vertical component.

3.4. Velocity Survey Processing

Reliable first-break times for the levels at 870m 885m, 900m and 915m below RT could not be obtained. These levels have therefore been omitted leaving a total of 111 levels between 75m and 1785m in the production of final velocity computations.

The first break slant times were first converted to vertical times using the cosine correction to derive corrected vertical times from the source to the receiver geophone in the well. The time correction from source to datum was performed by dividing the source depth with a water velocity of 1500m/sec. This time correction from the source to datum was then added to the corrected vertical time from the source to the well geophone to derive the corrected vertical travel-time between datum and receiver geophone in the well. These corrections can be seen in the Time/Depth Information Table listing.

3.5. Acoustic Log Calibration

The input log data consisted of merged Gamma Ray, Density, Neutron, Resistivity, Caliper and Acoustic logs supplied by the client. The Acoustic log was recorded over the interval of 630 and 1770m below RT. The acoustic (sonic) log was calibrated using the VSP data over the above interval, this calibrated acoustic log was then used to generate the Synthetic Seismogram.

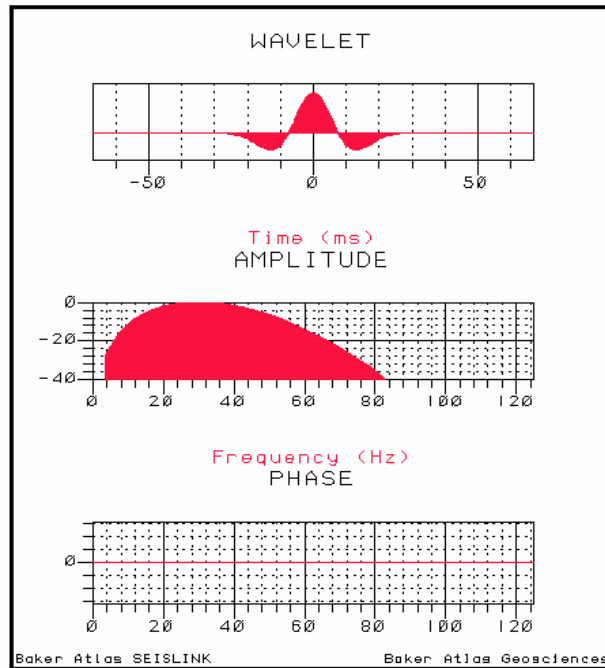
For the calibration, the acoustic log is integrated to produce a (depth-indexed) time-log. A drift curve is generated, showing the difference between the TVD-corrected Checkshot times and the corresponding times from the Acoustic (Sonic) log. Calibration points fixing the drift at certain depths (including the top and bottom of the logged interval) are then chosen such that they divide the drift curve into intervals of approximately linear drift. Where possible, these calibration points are picked at velocity contrasts (typically formation boundaries), thus avoiding false reflectivity. The calibration points are indicated with x-marks on the drift curve displayed on Figure 2.

For each interval between consecutive calibration points, the ratio between the difference in the fixed drift of these calibration points and the interval thickness is computed. This constant is added to all acoustic log values over the interval, thus shifting the acoustic log over the interval by this amount. The whole acoustic log is calibrated by repeating this procedure for all calibration point intervals. The drift curve after calibration is shown in Figure 3.

The calibration results are tabulated at 20ft (Page) and 2ms (Page) intervals below datum. Calibrated and uncalibrated acoustic logs are illustrated in Enclosure 4.

4. SYNTHETIC SEISMOGRAM

The acoustic impedance curve was computed by multiplication of the calibrated acoustic log with the bulk-density log and a reflectivity series was derived from primaries only. The synthetic seismogram is then generated at a sample rate of 1ms.



4.1. Zero Phase Ricker Wavelet

This reflectivity series were then convolved with zero phase Ricker wavelets using the following frequency ranges as requested by the client.

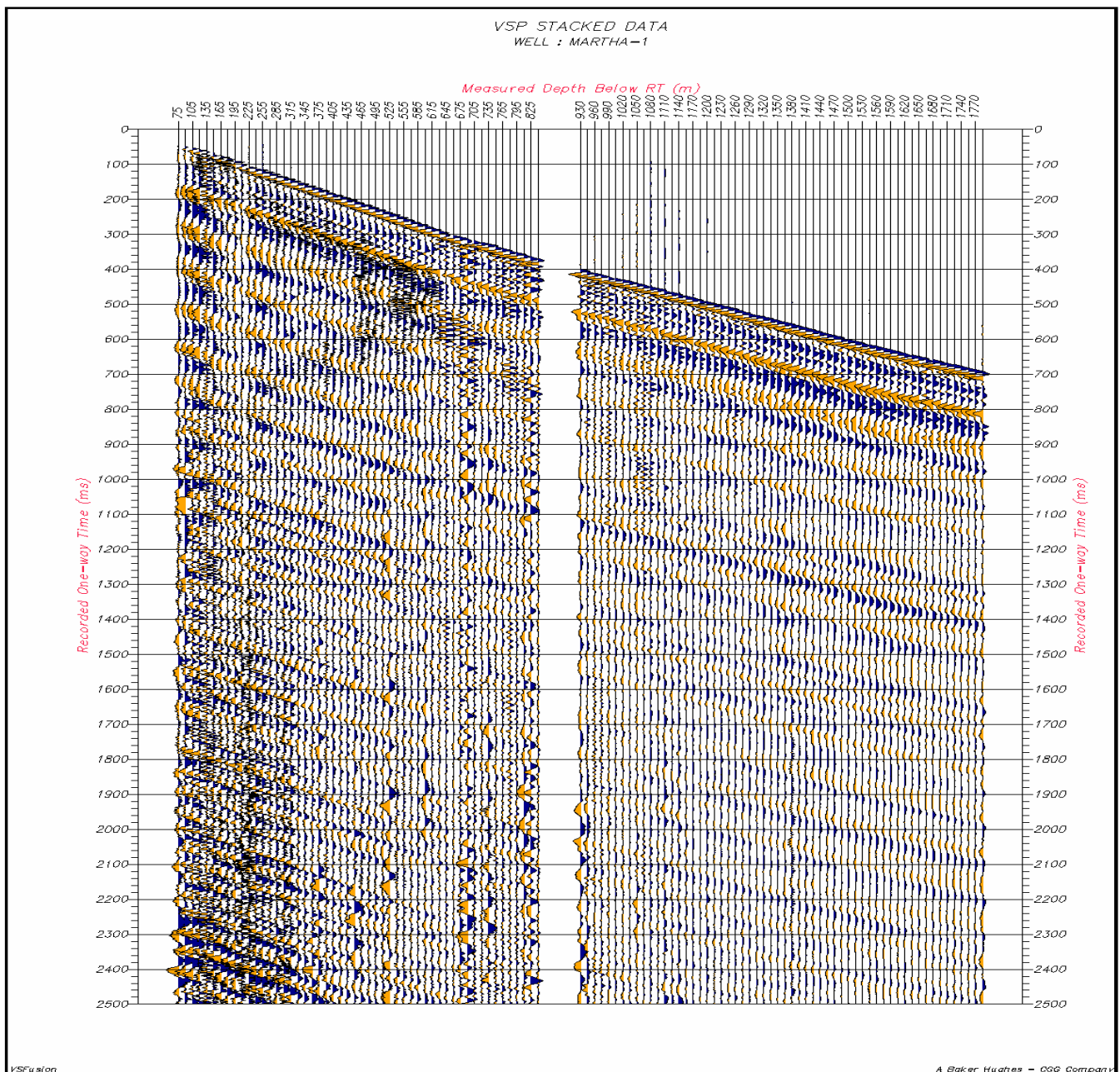
25 HZ	35 HZ
30HZ	40 HZ

The Synthetic Seismograms are plotted with the Density log, Acoustic Impedance Log, Calibrated Acoustic Log, Uncalibrated Acoustic Log, Gamma Ray Log, Caliper, Transmission Loss and the Reflectivity Series. These Zero Phase normal and reverse polarity Synthetic Seismograms are plotted at scales of 10cm/sec and 20cm/sec (Enclosures 5A and 5B).

5. ZERO OFFSET VSP DATA PROCESSING

5.1. Data Quality

The level at 855m below RT was not used in the VSP processing as it was distorted by poor borehole conditions, leaving a total of 110 levels from 75m to 1875m in the final VSP report. The unstacked VSP data was affected by the presence of random noise, however in the preliminary processing this noise have been reduced by stacking and filtering with a zero phase bandpass filter of 5,10–80,120 Hz. This preliminary filter was derived from FK analysis of the stacked data. The display of the VSP stacked data shows generally good quality with well defined first arrivals.



5.2. Spherical Divergence Correction

The vertical geophone component traces were edited and stacked, the first arrival onset picked and the traces sorted on measured depth. A compensation for amplitude decay due to spherical divergence was applied using an exponential gain function of $T^{*1.5}$ (where T is the recorded time). A display of the gained total wavefield or VSP Stacked Data is shown in Enclosure 6A at a scale of 20 cm/sec.

5.3. Wavefield separation by median filtering

Median filtering is a data smoothing technique (Figure A). The median filter operates at constant time (zero moveout) “across” the data set. The filter length N refers to the number of consecutive traces over which the filter will be applied.

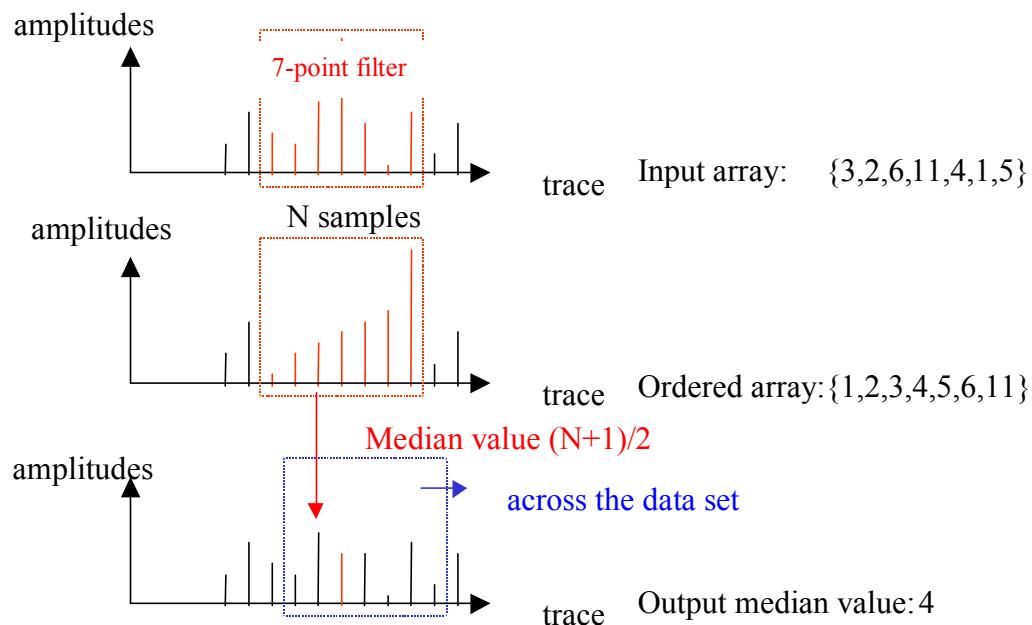


Figure A: Principle of median filtering

At each time sample, the array of N samples is arranged in order of increasing amplitudes. The median value occupies the $(N+1)/2$ position in the array. An N point median filter will generate one output trace by taking this median value from N samples at each time array point. The output trace will be assigned to the position occupied by the centre trace of the filter.

Two properties that make median filter attractive in VSP data processing are:

- Median filter rejects noise spikes (because the data are ordered according to amplitudes values, a spike will almost always occupy a position other than the median value, and as such, will be rejected).
- Median filter passes step functions without altering them.

The smoothing property of the median filter constitutes an inconvenience. Hence, the filter length necessary for wavefield separation must be carefully chosen and it is data dependent.

The wavefield separation by median filtering is performed as follows:

The downgoing wavefield is aligned by shifting each trace by the negative of the first arrival time.

A median filter was applied to pass downwaves. The estimated signal is the downgoing wavefield.

Upon estimation, the downgoing wavefield is then subtracted from the input total wavefield to yield the upcoming wavefield along with a residual noise component.

The noise component can be rejected with a short median filter applied after the upwaves have been time aligned to two-way time. This is done by adding the first break time.

5.4. Wavefield Separation, Downgoing Wavefield

The downgoing waves were flattened using the first arrival times. Each trace was cross-correlated with a selected reference trace using a time window around the first arrival, and the first arrival times were subsequently shifted to ensure maximum coherency of the downgoing waves. A 7-point median filter was applied to the total wavefield to pass the flattened downgoing waves. This was followed by a zero phase frequency 5,10–80,120 Hz bandpass filter.

5.5. Wavefield Separation, Upgoing Wavefield

The flattened downgoing waves were then subtracted from the total wavefield to provide the upcoming waves, this upcoming waves were then shifted to corrected two-way time below datum as the Undeconvolved Unenhanced Upwaves, displayed in Enclosure 6A. This was followed by a zero phase frequency 5,10–80,120 Hz bandpass filter.

These displays describe the primary and multiple reflection responses of the subsurface at the borehole location, within and below the depth range of the VSP.

Any dip across the well location can be recognised by moveout of the primary event to shorter time, as the geophone moves up the well and away from the lithology creating the reflection. No azimuth of dip can be computed from this display but true dip can be computed from a measurement of the delta T against vertical depth increment.

5.6. Deterministic Deconvolution

Downwave deconvolution is used to compress the seismic wavelet and suppress the multiple reflections. An important assumption of VSP downwave deconvolution is that the waves propagate vertically. This implies a zero offset from the well head, flat layers and a vertical borehole. In this way, the upcoming wavefield equals to the convolution between the downgoing wavefield and the reflectivity series of the earth. An inverse operator from the downgoing wavefield is derived and then used to deconvolve the upcoming wavefield. The

deconvolution is carried out in the frequency domain by spectral division. Therefore, convolving the upcoming wavefield with the inverse of the downgoing wavefield will theoretically remove all multiple reflections generated above the receiver, as well as the source signature characteristic. Only the reflection response generated below the receiver will remain.

This deconvolution approach is unique to zero-offset VSP. Due to the fact that downgoing energy strikes the downhole geophone from the above, and upcoming reflections will strike the phone from below, the downgoing wavetrain can easily be extracted from the recorded total wavefield. This is direct contrast to surface seismic data, where all recorded energy impinges on the geophone from below. Because the downgoing wavefield in a VSP survey is a measured quantity, not an estimated one as with surface recorded data, VSP downgoing deconvolution is a deterministic process, not a predictive process. Downgoing deconvolution provides source shaping as well as multiple suppression capabilities.

5.7. Operator Design

Deconvolution operators are designed from the downgoing wavefield. The ultimate goal is to design an operator that will compress the downgoing wavetrain to the desired output wavelet. If the deconvolved downgoing data shows no residual reverberations over the length of design window, then the operator design step was successful, and those inverse operators should be used to deconvolve the upcoming wavefield. A designed single operator can be applied to all traces. This operator is designed from a summed trace taken over a user-specified range of downwaves.

5.8. Operator Length

The length of the operator design window will determine how many multiple events will be removed. With the assumption of zero offset, in theory, the entire downwave trace could be used for operator design. In practice, however, the length over which to design the operator must be limited. With longer window lengths, the effect of violating this assumption is augmented. It is therefore, recommended that the shortest possible window be used that contains all reverberations of significant amplitude.

Individual deconvolution operators were designed using 800ms of the downgoing waveform for each depth level to shape the wavetrain to a spike. These operators were then applied to the corresponding upcoming waves.

5.9. Enhanced Deconvolved Upwaves

In order to improve continuity and suppress the noise of the upwaves, a 7-point median filter was applied to the deconvolved upwaves followed by a zero phase frequency 5,10–50,75Hz bandpass filter this upwaves was then displayed as a Deconvolved Enhanced Upwaves or Final Upwaves.

5.10. Corridor Stack

A corridor was defined close to the time of the first arrivals and a corridor stack generated. A display of the corridor mute window, raw corridor stack and filtered corridor stack is illustrated in Enclosures 6B and 6C.

6. OPERATION PARAMETERS

Well Name	: MARTHA-1
Well Location	: Offshore Australia
Wellhead Co-ordinates	: 038 ⁰ 37' 24.33" S 142 ⁰ 42' 05.02" E
Datum Plane	: 0.0 ft (MSL)
Rotary Table Elevation	: 21.5m above MSL
Water Depth	: 54.66 M
Total Depth Logger	: 1785 Below RT
Number of Levels Occupied	: 116 levels
Shallowest Geophone Level	: 75 M (RT)
Deepest Geophone Level	: 1785 M (RT)
Tool in Hole	: 12.29 on November 1, 2004
Tool out of Hole	: 18:27 on November 1, 2004
Net Operating Time	: 5 hours and 58 minute
Source Type	: Sleeve Gun (2x150 Cu. In.)
Record Length	: 4 sec.
Sample Rate	: 1 ms
Source Location	: 46.3 M, N 328 ⁰ from Wellhead
Source Depth	: 5 M Below MSL
Seismic Observer	: B.Read
Client Representative	: J. Pitman; F Fernandes

7. EQUIPMENT SPECIFICATION

Recording System	9700LA, S/N: 302869 DSS 16 data channels A/D SEG Y format 1 msec. Sampling rate 4 sec. Record length Filter. High cut : 250 hz Low cut : 0 hz Notch : OUT
Downhole Tool	Type : AWS 1300 GM Frequency : 10 Hz Preamp Gain : 51 dB
Source Type	Sleeve Gun Array
Gun Volume	2 x 150 Cubic inch
Gun to gun distance	1M

8. VELOCITY SURVEY

CLIENT	SANTOS & PARTNERS
WELL	MARTHA-1
AREA	OTWAY BASIN, AUSTRALIA
CONTRACTOR	BAKER ATLAS
SURVEY DATE	01-11-04
SURVEY UNITS	M
DATUM ELEVATION	0.00 M ABOVE SEA LEVEL
KB ELEVATION	21.50 M ABOVE SEA LEVEL
RCVR REF. ELEVATION	21.50 M ABOVE DATUM REF
WELL ELEVATION	21.50 M ABOVE DATUM REF
DATUM CORRECT. VELOCITY	1500.00 M /SEC
SOURCE TYPE	ZVSP
GEOPHONE TYPE	AWS 1300 GM
SAMPLE RATE	1.00 MSEC
WELL CASING	

9. SOURCE / RECEIVER GEOMETRY TABLE

SANTOS & PARTNERS
WELL : MARTHA-1

SOURCE / RECEIVER GEOMETRY TABLE

RECEIVER REFERENCE ELEVATION = 21.50 M ABOVE DATUM REF.
SOURCE / RECEIVER COORDINATES ARE REFERENCED TO WELLHEAD
SOURCE / RECEIVER (S-R) OFFSET IS PLAN VIEW

----- RECEIVER -----				----- SOURCE -----				OFFSET
MEASURED DEPTH (DGM) (M)	VERT. DEPTH (M)	X COORD. (M)	Y COORD. (M)	ELEV (ES) (M)	DEPTH (DS) (M)	X COORD. (M)	Y COORD. (M)	(S-R) (M)
75.0	75.0	0.2	-0.1	0.0	5.0	-24.5	39.3	46.5
90.0	90.0	0.2	-0.1	0.0	5.0	-24.5	39.3	46.6
105.0	105.0	0.3	-0.2	0.0	5.0	-24.5	39.3	46.6
120.0	120.0	0.3	-0.2	0.0	5.0	-24.5	39.3	46.6
135.0	135.0	0.4	-0.2	0.0	5.0	-24.5	39.3	46.7
150.0	150.0	0.4	-0.2	0.0	5.0	-24.5	39.3	46.7
165.0	165.0	0.4	-0.3	0.0	5.0	-24.5	39.3	46.8
180.0	180.0	0.5	-0.3	0.0	5.0	-24.5	39.3	46.8
195.0	195.0	0.5	-0.3	0.0	5.0	-24.5	39.3	46.8
210.0	210.0	0.6	-0.3	0.0	5.0	-24.5	39.3	46.9
225.0	225.0	0.6	-0.4	0.0	5.0	-24.5	39.3	46.9
240.0	240.0	0.6	-0.4	0.0	5.0	-24.5	39.3	47.0
255.0	255.0	0.7	-0.4	0.0	5.0	-24.5	39.3	47.0
270.0	270.0	0.7	-0.4	0.0	5.0	-24.5	39.3	47.1
285.0	285.0	0.8	-0.5	0.0	5.0	-24.5	39.3	47.1
300.0	300.0	0.8	-0.5	0.0	5.0	-24.5	39.3	47.1
315.0	315.0	0.8	-0.5	0.0	5.0	-24.5	39.3	47.2
330.0	330.0	0.9	-0.5	0.0	5.0	-24.5	39.3	47.2
345.0	345.0	0.9	-0.6	0.0	5.0	-24.5	39.3	47.3
360.0	360.0	1.0	-0.6	0.0	5.0	-24.5	39.3	47.3
375.0	375.0	1.0	-0.6	0.0	5.0	-24.5	39.3	47.4
390.0	390.0	1.0	-0.6	0.0	5.0	-24.5	39.3	47.4
405.0	405.0	1.1	-0.7	0.0	5.0	-24.5	39.3	47.4
420.0	420.0	1.1	-0.7	0.0	5.0	-24.5	39.3	47.5
435.0	435.0	1.2	-0.7	0.0	5.0	-24.5	39.3	47.5
450.0	450.0	1.2	-0.7	0.0	5.0	-24.5	39.3	47.6
465.0	465.0	1.2	-0.8	0.0	5.0	-24.5	39.3	47.6
480.0	480.0	1.3	-0.8	0.0	5.0	-24.5	39.3	47.7
495.0	495.0	1.3	-0.8	0.0	5.0	-24.5	39.3	47.7
510.0	510.0	1.4	-0.8	0.0	5.0	-24.5	39.3	47.7
525.0	525.0	1.4	-0.9	0.0	5.0	-24.5	39.3	47.8
540.0	540.0	1.4	-0.9	0.0	5.0	-24.5	39.3	47.8
555.0	555.0	1.5	-0.9	0.0	5.0	-24.5	39.3	47.9
570.0	570.0	1.5	-0.9	0.0	5.0	-24.5	39.3	47.9
585.0	585.0	1.6	-1.0	0.0	5.0	-24.5	39.3	48.0
600.0	600.0	1.6	-1.0	0.0	5.0	-24.5	39.3	48.0
615.0	615.0	1.6	-1.0	0.0	5.0	-24.5	39.3	48.0
630.0	630.0	1.7	-1.0	0.0	5.0	-24.5	39.3	48.1
645.0	645.0	1.7	-1.1	0.0	5.0	-24.5	39.3	48.1
660.0	660.0	1.8	-1.1	0.0	5.0	-24.5	39.3	48.2
675.0	675.0	1.8	-1.1	0.0	5.0	-24.5	39.3	48.2

----- RECEIVER -----				----- SOURCE -----				OFFSET
MEASURED DEPTH (DGM) (M)	VERT. DEPTH (M)	X COORD. (M)	Y COORD. (M)	ELEV (ES) (M)	DEPTH (DS) (M)	X COORD. (M)	Y COORD. (M)	(S-R) (M)
690.0	690.0	1.9	-1.2	0.0	5.0	-24.5	39.3	48.3
705.0	705.0	2.0	-1.3	0.0	5.0	-24.5	39.3	48.4
720.0	720.0	2.1	-1.3	0.0	5.0	-24.5	39.3	48.6
735.0	735.0	2.2	-1.4	0.0	5.0	-24.5	39.3	48.7
750.0	750.0	2.2	-1.5	0.0	5.0	-24.5	39.3	48.8
765.0	765.0	2.3	-1.6	0.0	5.0	-24.5	39.3	48.9
780.0	780.0	2.3	-1.7	0.0	5.0	-24.5	39.3	48.9
795.0	795.0	2.2	-1.7	0.0	5.0	-24.5	39.3	49.0
810.0	810.0	2.2	-1.8	0.0	5.0	-24.5	39.3	49.0
825.0	825.0	2.2	-1.8	0.0	5.0	-24.5	39.3	49.0
840.0	840.0	2.2	-1.9	0.0	5.0	-24.5	39.3	49.1
855.0	855.0	2.2	-1.9	0.0	5.0	-24.5	39.3	49.1
930.0	930.0	1.9	-2.7	0.0	5.0	-24.5	39.3	49.6
945.0	945.0	1.9	-2.9	0.0	5.0	-24.5	39.3	49.7
960.0	960.0	1.8	-3.1	0.0	5.0	-24.5	39.3	49.9
975.0	975.0	1.7	-3.4	0.0	5.0	-24.5	39.3	50.1
990.0	990.0	1.6	-3.8	0.0	5.0	-24.5	39.3	50.4
1005.0	1005.0	1.4	-4.2	0.0	5.0	-24.5	39.3	50.6
1020.0	1020.0	1.3	-4.6	0.0	5.0	-24.5	39.3	50.9
1035.0	1034.9	0.9	-5.0	0.0	5.0	-24.5	39.3	51.1
1050.0	1049.9	0.6	-5.5	0.0	5.0	-24.5	39.3	51.3
1065.0	1064.9	0.2	-6.0	0.0	5.0	-24.5	39.3	51.6
1080.0	1079.9	-0.1	-6.5	0.0	5.0	-24.5	39.3	51.9
1095.0	1094.9	-0.5	-7.1	0.0	5.0	-24.5	39.3	52.2
1110.0	1109.9	-0.8	-7.6	0.0	5.0	-24.5	39.3	52.5
1125.0	1124.9	-1.1	-8.1	0.0	5.0	-24.5	39.3	52.9
1140.0	1139.9	-1.4	-8.7	0.0	5.0	-24.5	39.3	53.2
1155.0	1154.8	-1.8	-9.3	0.0	5.0	-24.5	39.3	53.6
1170.0	1169.8	-2.1	-9.9	0.0	5.0	-24.5	39.3	54.0
1185.0	1184.8	-2.5	-10.5	0.0	5.0	-24.5	39.3	54.4
1200.0	1199.8	-2.9	-11.1	0.0	5.0	-24.5	39.3	54.8
1215.0	1214.8	-3.3	-11.8	0.0	5.0	-24.5	39.3	55.3
1230.0	1229.7	-3.7	-12.5	0.0	5.0	-24.5	39.3	55.8
1245.0	1244.7	-4.2	-13.2	0.0	5.0	-24.5	39.3	56.3
1260.0	1259.7	-4.7	-14.0	0.0	5.0	-24.5	39.3	56.8
1275.0	1274.7	-5.2	-14.8	0.0	5.0	-24.5	39.3	57.4
1290.0	1289.6	-5.7	-15.6	0.0	5.0	-24.5	39.3	58.0
1305.0	1304.6	-6.2	-16.4	0.0	5.0	-24.5	39.3	58.6
1320.0	1319.6	-6.7	-17.2	0.0	5.0	-24.5	39.3	59.2
1335.0	1334.5	-7.2	-17.9	0.0	5.0	-24.5	39.3	59.7
1350.0	1349.5	-7.8	-18.6	0.0	5.0	-24.5	39.3	60.3
1365.0	1364.5	-8.3	-19.3	0.0	5.0	-24.5	39.3	60.8
1380.0	1379.5	-8.8	-20.0	0.0	5.0	-24.5	39.3	61.3
1395.0	1394.4	-9.3	-20.6	0.0	5.0	-24.5	39.3	61.8
1410.0	1409.4	-9.8	-21.3	0.0	5.0	-24.5	39.3	62.3
1425.0	1424.4	-10.3	-21.9	0.0	5.0	-24.5	39.3	62.8
1440.0	1439.4	-10.8	-22.5	0.0	5.0	-24.5	39.3	63.3
1455.0	1454.4	-11.3	-23.1	0.0	5.0	-24.5	39.3	63.8
1470.0	1469.3	-11.8	-23.7	0.0	5.0	-24.5	39.3	64.3
1485.0	1484.3	-12.3	-24.3	0.0	5.0	-24.5	39.3	64.7
1500.0	1499.3	-12.8	-24.8	0.0	5.0	-24.5	39.3	65.2
1515.0	1514.3	-13.3	-25.4	0.0	5.0	-24.5	39.3	65.6
1530.0	1529.3	-13.7	-25.9	0.0	5.0	-24.5	39.3	66.0
1545.0	1544.3	-14.2	-26.4	0.0	5.0	-24.5	39.3	66.4
1560.0	1559.2	-14.6	-26.9	0.0	5.0	-24.5	39.3	66.9
1575.0	1574.2	-15.0	-27.3	0.0	5.0	-24.5	39.3	67.3

----- RECEIVER -----				----- SOURCE -----				OFFSET
MEASURED DEPTH (DGM) (M)	VERT. DEPTH (M)	X COORD. (M)	Y COORD. (M)	ELEV (ES) (M)	DEPTH (DS) (M)	X COORD. (M)	Y COORD. (M)	(S-R) (M)
1590.0	1589.2	-15.5	-27.8	0.0	5.0	-24.5	39.3	67.7
1605.0	1604.2	-15.9	-28.3	0.0	5.0	-24.5	39.3	68.1
1620.0	1619.2	-16.3	-28.8	0.0	5.0	-24.5	39.3	68.5
1635.0	1634.2	-16.7	-29.2	0.0	5.0	-24.5	39.3	68.9
1650.0	1649.2	-17.1	-29.6	0.0	5.0	-24.5	39.3	69.3
1665.0	1664.2	-17.5	-30.1	0.0	5.0	-24.5	39.3	69.7
1680.0	1679.1	-18.0	-30.5	0.0	5.0	-24.5	39.3	70.1
1695.0	1694.1	-18.4	-30.9	0.0	5.0	-24.5	39.3	70.5
1710.0	1709.1	-18.9	-31.4	0.0	5.0	-24.5	39.3	70.9
1725.0	1724.1	-19.3	-31.8	0.0	5.0	-24.5	39.3	71.3
1740.0	1739.1	-19.7	-32.3	0.0	5.0	-24.5	39.3	71.7
1755.0	1754.1	-20.1	-32.8	0.0	5.0	-24.5	39.3	72.2
1770.0	1769.1	-20.6	-33.3	0.0	5.0	-24.5	39.3	72.7
1785.0	1784.0	-21.0	-33.9	0.0	5.0	-24.5	39.3	73.2

10. TIME / DEPTH INFORMATION TABLE

SANTOS & PARTNERS

WELL : MARTHA-1

TIME / DEPTH INFORMATION TABLE

ALL TIMES ARE ONE-WAY TIMES

* = NOT USED IN VELOCITY COMPUTATIONS

DATUM ELEVATION 0.00 M ABOVE SEA LEVEL
 DATUM CORRECT. VELOCITY 1500.00 M /SEC

MEASURED GEOPHONE DEPTH (DGM)	VERTICAL GEOPHONE DEPTH (M)	RAW TIME PICK (MS)	SRC-REC DIST. PLAN-VIEW (SRC_REC)	COS (I)	TIME CORRECTION COS	CORRECTION DATUM (MS)	VERTICAL TIME (TGD) (MS)
75.0	75.0	39.4	46.5	0.722	-10.9	3.3	31.7
90.0	90.0	46.2	46.6	0.806	-8.9	3.3	40.6
105.0	105.0	51.6	46.6	0.860	-7.2	3.3	47.7
120.0	120.0	57.1	46.6	0.895	-6.0	3.3	54.4
135.0	135.0	62.3	46.7	0.919	-5.1	3.3	60.5
150.0	150.0	69.7	46.7	0.935	-4.5	3.3	68.5
165.0	165.0	76.7	46.8	0.947	-4.0	3.3	76.0
180.0	180.0	82.5	46.8	0.957	-3.6	3.3	82.2
195.0	195.0	90.4	46.8	0.963	-3.3	3.3	90.4
210.0	210.0	98.9	46.9	0.969	-3.1	3.3	99.2
225.0	225.0	106.8	46.9	0.973	-2.9	3.3	107.3
240.0	240.0	112.7	47.0	0.977	-2.6	3.3	113.4
255.0	255.0	119.0	47.0	0.979	-2.4	3.3	119.9
270.0	270.0	125.2	47.1	0.982	-2.3	3.3	126.3
285.0	285.0	131.7	47.1	0.984	-2.1	3.3	132.9
300.0	300.0	138.0	47.1	0.985	-2.0	3.3	139.3
315.0	315.0	144.8	47.2	0.987	-1.9	3.3	146.2
330.0	330.0	151.7	47.2	0.988	-1.8	3.3	153.2
345.0	345.0	158.9	47.3	0.989	-1.7	3.3	160.6
360.0	360.0	165.0	47.3	0.990	-1.6	3.3	166.6
375.0	375.0	171.2	47.4	0.991	-1.6	3.3	173.0
390.0	390.0	178.4	47.4	0.992	-1.5	3.3	180.2
405.0	405.0	184.6	47.4	0.992	-1.4	3.3	186.5
420.0	420.0	191.5	47.5	0.993	-1.4	3.3	193.5
435.0	435.0	199.0	47.5	0.993	-1.3	3.3	201.0
450.0	450.0	205.4	47.6	0.994	-1.3	3.3	207.5
465.0	465.0	212.3	47.6	0.994	-1.2	3.3	214.4
480.0	480.0	219.0	47.7	0.995	-1.2	3.3	221.1
495.0	495.0	225.5	47.7	0.995	-1.2	3.3	227.6
510.0	510.0	233.1	47.7	0.995	-1.1	3.3	235.3
525.0	525.0	239.5	47.8	0.995	-1.1	3.3	241.7
540.0	540.0	247.3	47.8	0.996	-1.1	3.3	249.6
555.0	555.0	253.9	47.9	0.996	-1.0	3.3	256.2
570.0	570.0	260.8	47.9	0.996	-1.0	3.3	263.1
585.0	585.0	267.5	48.0	0.996	-1.0	3.3	269.8
600.0	600.0	274.5	48.0	0.997	-1.0	3.3	276.9
615.0	615.0	281.5	48.0	0.997	-0.9	3.3	283.9
630.0	630.0	288.0	48.1	0.997	-0.9	3.3	290.5
645.0	645.0	294.7	48.1	0.997	-0.9	3.3	297.1

MEASURED GEOPHONE DEPTH (DGM)	VERTICAL GEOPHONE DEPTH	RAW TIME PICK	SRC-REC DIST. PLAN-VIEW (SRC_REC)	COS (I)	TIME CORRECTION COS	CORRECTION DATUM	VERTICAL TIME (TGD)
(M)	(M)	(MS)	(M)		(MS)	(MS)	(MS)
660.0	660.0	300.7	48.2	0.997	-0.9	3.3	303.1
675.0	675.0	305.9	48.2	0.997	-0.8	3.3	308.4
690.0	690.0	310.7	48.3	0.997	-0.8	3.3	313.2
705.0	705.0	316.4	48.4	0.997	-0.8	3.3	318.9
720.0	720.0	322.2	48.6	0.998	-0.8	3.3	324.8
735.0	735.0	327.3	48.7	0.998	-0.8	3.3	329.8
750.0	750.0	333.3	48.8	0.998	-0.8	3.3	335.9
765.0	765.0	339.2	48.9	0.998	-0.7	3.3	341.8
780.0	780.0	345.0	48.9	0.998	-0.7	3.3	347.6
795.0	795.0	350.6	49.0	0.998	-0.7	3.3	353.3
810.0	810.0	356.8	49.0	0.998	-0.7	3.3	359.5
825.0	825.0	362.2	49.0	0.998	-0.7	3.3	364.9
840.0	840.0	367.5	49.1	0.998	-0.7	3.3	370.2
855.0	855.0	372.7	49.1	0.998	-0.7	3.3	375.4
930.0	930.0	398.6	49.6	0.998	-0.6	3.3	401.3
945.0	945.0	403.5	49.7	0.999	-0.6	3.3	406.2
960.0	960.0	408.3	49.9	0.999	-0.6	3.3	411.1
975.0	975.0	413.4	50.1	0.999	-0.6	3.3	416.2
990.0	990.0	418.6	50.4	0.999	-0.6	3.3	421.4
1005.0	1005.0	423.8	50.6	0.999	-0.6	3.3	426.6
1020.0	1020.0	429.0	50.9	0.999	-0.6	3.3	431.8
1035.0	1034.9	433.4	51.1	0.999	-0.6	3.3	436.2
1050.0	1049.9	438.3	51.3	0.999	-0.6	3.3	441.0
1065.0	1064.9	443.1	51.6	0.999	-0.5	3.3	445.9
1080.0	1079.9	448.2	51.9	0.999	-0.5	3.3	451.0
1095.0	1094.9	453.2	52.2	0.999	-0.5	3.3	456.0
1110.0	1109.9	458.9	52.5	0.999	-0.5	3.3	461.7
1125.0	1124.9	464.7	52.9	0.999	-0.5	3.3	467.5
1140.0	1139.9	470.2	53.2	0.999	-0.5	3.3	473.0
1155.0	1154.8	475.5	53.6	0.999	-0.5	3.3	478.3
1170.0	1169.8	480.8	54.0	0.999	-0.5	3.3	483.6
1185.0	1184.8	486.1	54.4	0.999	-0.5	3.3	488.9
1200.0	1199.8	491.1	54.8	0.999	-0.5	3.3	493.9
1215.0	1214.8	496.2	55.3	0.999	-0.5	3.3	499.0
1230.0	1229.7	501.4	55.8	0.999	-0.5	3.3	504.2
1245.0	1244.7	506.7	56.3	0.999	-0.5	3.3	509.5
1260.0	1259.7	512.2	56.8	0.999	-0.5	3.3	515.0
1275.0	1274.7	517.7	57.4	0.999	-0.5	3.3	520.5
1290.0	1289.6	523.5	58.0	0.999	-0.6	3.3	526.2
1305.0	1304.6	528.9	58.6	0.999	-0.6	3.3	531.7
1320.0	1319.6	534.2	59.2	0.999	-0.6	3.3	537.0
1335.0	1334.5	539.3	59.7	0.999	-0.6	3.3	542.1
1350.0	1349.5	544.5	60.3	0.999	-0.6	3.3	547.3
1365.0	1364.5	549.8	60.8	0.999	-0.6	3.3	552.6
1380.0	1379.5	554.9	61.3	0.999	-0.6	3.3	557.6
1395.0	1394.4	559.9	61.8	0.999	-0.6	3.3	562.7
1410.0	1409.4	565.3	62.3	0.999	-0.6	3.3	568.1
1425.0	1424.4	570.8	62.8	0.999	-0.6	3.3	573.6
1440.0	1439.4	576.4	63.3	0.999	-0.6	3.3	579.1
1455.0	1454.4	581.8	63.8	0.999	-0.6	3.3	584.6
1470.0	1469.3	587.3	64.3	0.999	-0.6	3.3	590.0
1485.0	1484.3	592.9	64.7	0.999	-0.6	3.3	595.6
1500.0	1499.3	598.4	65.2	0.999	-0.6	3.3	601.1
1515.0	1514.3	603.5	65.6	0.999	-0.6	3.3	606.2
1530.0	1529.3	608.4	66.0	0.999	-0.6	3.3	611.2
1545.0	1544.3	613.4	66.4	0.999	-0.6	3.3	616.2

MEASURED GEOPHONE DEPTH (DGM)	VERTICAL GEOPHONE DEPTH	RAW TIME PICK	SRC-REC DIST. PLAN-VIEW (SRC_REC)	COS (I)	TIME CORRECTION COS	CORRECTION DATUM	VERTICAL TIME (TGD)
(M)	(M)	(MS)	(M)		(MS)	(MS)	(MS)
1560.0	1559.2	618.6	66.9	0.999	-0.6	3.3	621.3
1575.0	1574.2	623.4	67.3	0.999	-0.6	3.3	626.2
1590.0	1589.2	628.2	67.7	0.999	-0.6	3.3	630.9
1605.0	1604.2	632.9	68.1	0.999	-0.6	3.3	635.7
1620.0	1619.2	637.5	68.5	0.999	-0.6	3.3	640.3
1635.0	1634.2	642.2	68.9	0.999	-0.6	3.3	644.9
1650.0	1649.2	646.7	69.3	0.999	-0.6	3.3	649.5
1665.0	1664.2	651.3	69.7	0.999	-0.6	3.3	654.1
1680.0	1679.1	655.8	70.1	0.999	-0.6	3.3	658.5
1695.0	1694.1	660.2	70.5	0.999	-0.6	3.3	663.0
1710.0	1709.1	664.9	70.9	0.999	-0.6	3.3	667.7
1725.0	1724.1	669.6	71.3	0.999	-0.6	3.3	672.3
1740.0	1739.1	674.3	71.7	0.999	-0.6	3.3	677.1
1755.0	1754.1	679.0	72.2	0.999	-0.6	3.3	681.7
1770.0	1769.1	683.5	72.7	0.999	-0.6	3.3	686.3
1785.0	1784.0	687.9	73.2	0.999	-0.6	3.3	690.6

11. VELOCITY TABLE

SANTOS & PARTNERS
WELL : MARTHA-1

VELOCITY TABLE

RECEIVER REFERENCE ELEVATION = 21.50 M ABOVE DATUM REF.
DATUM ELEVATION = 0.00 M ABOVE SEA LEVEL
DATUM CORRECT. VELOCITY = 1500.00 M /SEC

MEASURED GEOPHONE DEPTH	DEPTH CORR. TO DATUM (DGD)	1-TIME CORR. TO DATUM (TGD)	2-TIME CORR. TO DATUM (2TGD)	AVERAGE VELOCITY	RMS VELOCITY	INTERVAL DEPTH (DELDGD)	INTERVAL TIME (DELDGT)	INTERVAL VELOCITY
(M)	(M)	(MS)	(MS)	(M /SEC)	(M /SEC)	(M)	(MS)	(M /SEC)
						53.50	31.73	1685.86
75.00	53.50	31.73	63.47	1685.86	1685.86	15.00	8.87	1690.61
90.00	68.50	40.61	81.21	1686.90	1686.90	15.00	7.17	2091.88
105.00	83.50	47.78	95.55	1747.68	1753.66	15.00	6.74	2227.13
120.00	98.50	54.51	109.02	1806.92	1818.84	15.00	6.13	2448.37
135.00	113.50	60.64	121.28	1871.73	1891.98	15.00	7.93	1892.48
150.00	128.50	68.56	137.13	1874.12	1892.04	15.00	7.50	1999.23
165.00	143.50	76.07	152.14	1886.46	1902.88	15.00	6.24	2402.64
180.00	158.50	82.31	164.62	1925.61	1945.29	15.00	8.16	1838.57
195.00	173.50	90.47	180.94	1917.77	1935.91	15.00	8.75	1715.02
210.00	188.50	99.22	198.43	1899.89	1917.46	15.00	8.15	1840.36
225.00	203.50	107.37	214.73	1895.37	1911.71	15.00	6.08	2467.41
240.00	218.50	113.45	226.89	1926.03	1945.52	15.00	6.49	2312.99
255.00	233.50	119.93	239.86	1946.95	1967.15	15.00	6.39	2346.78
270.00	248.50	126.32	252.64	1967.18	1988.10	15.00	6.58	2279.35
285.00	263.50	132.90	265.81	1982.64	2003.52	15.00	6.46	2320.71
300.00	278.50	139.37	278.73	1998.32	2019.33	15.00	6.88	2180.57
315.00	293.50	146.25	292.49	2006.89	2027.20	15.00	7.04	2131.63
330.00	308.50	153.28	306.56	2012.62	2032.11	15.00	7.30	2056.19
345.00	323.50	160.58	321.15	2014.60	2033.21	15.00	6.10	2457.43
360.00	338.50	166.68	333.36	2030.81	2050.30			

MEASURED GEOPHONE DEPTH (DGM) (M)	DEPTH CORR. TO DATUM (DGD) (M)	1-TIME CORR. TO DATUM (TGD) (MS)	2-TIME CORR. TO DATUM (2TGD) (MS)	AVERAGE VELOCITY (M /SEC)	RMS VELOCITY (M /SEC)	INTERVAL DEPTH (DELDGD) (M)	INTERVAL TIME (DELDGT) (MS)	INTERVAL VELOCITY (M /SEC)
375.00	353.50	173.05	346.10	2042.75	2062.31	15.00	6.37	2355.02
390.00	368.50	180.26	360.52	2044.25	2063.03	15.00	7.21	2080.31
405.00	383.50	186.55	373.09	2055.77	2074.74	15.00	6.29	2386.06
420.00	398.50	193.52	387.04	2059.19	2077.53	15.00	6.97	2150.80
435.00	413.50	201.01	402.02	2057.08	2074.78	15.00	7.49	2002.55
450.00	428.50	207.51	415.02	2064.95	2082.50	15.00	6.50	2308.40
465.00	443.50	214.39	428.77	2068.69	2085.74	15.00	6.88	2181.45
480.00	458.50	221.14	442.28	2073.35	2090.02	15.00	6.75	2221.41
495.00	473.50	227.66	455.31	2079.87	2096.35	15.00	6.52	2301.05
510.00	488.50	235.28	470.56	2076.23	2092.31	15.00	7.62	1967.56
525.00	503.50	241.76	483.52	2082.64	2098.59	15.00	6.48	2315.19
540.00	518.50	249.63	499.25	2077.10	2092.82	15.00	7.87	1906.95
555.00	533.50	256.22	512.44	2082.16	2097.67	15.00	6.60	2273.65
570.00	548.50	263.13	526.26	2084.50	2099.63	15.00	6.91	2171.17
585.00	563.50	269.85	539.71	2088.16	2103.01	15.00	6.72	2231.33
600.00	578.50	276.91	553.81	2089.14	2103.62	15.00	7.05	2126.93
615.00	593.50	283.87	567.74	2090.74	2104.88	15.00	6.96	2154.08
630.00	608.50	290.47	580.94	2094.88	2108.85	15.00	6.60	2273.05
645.00	623.50	297.14	594.27	2098.36	2112.11	15.00	6.67	2249.83
660.00	638.50	303.13	606.27	2106.31	2120.48	15.00	6.00	2500.20
675.00	653.50	308.38	616.75	2119.15	2135.24	15.00	5.24	2862.06
690.00	668.50	313.18	626.37	2134.51	2153.75	15.00	4.81	3119.29
705.00	683.49	318.93	637.86	2143.09	2162.84	15.00	5.74	2611.16
720.00	698.49	324.78	649.55	2150.70	2170.76	15.00	5.85	2565.72
735.00	713.49	329.86	659.72	2163.02	2184.87	15.00	5.08	2949.78
750.00	728.49	335.92	671.83	2168.68	2190.48	15.00	6.06	2476.79
765.00	743.49	341.82	683.63	2175.12	2197.03	15.00	5.90	2541.96
						15.00	5.80	2584.40

MEASURED GEOPHONE DEPTH	DEPTH CORR. TO DATUM (DGD)	1-TIME CORR. TO DATUM (TGD)	2-TIME CORR. TO DATUM (2TGD)	AVERAGE VELOCITY	RMS VELOCITY	INTERVAL DEPTH (DELDGD)	INTERVAL TIME (DELDGT)	INTERVAL VELOCITY
(M)	(M)	(MS)	(MS)	(M /SEC)	(M /SEC)	(M)	(MS)	(M /SEC)
780.00	758.49	347.62	695.24	2181.95	2204.05	-----		
						15.00	5.66	2649.82
795.00	773.49	353.28	706.56	2189.45	2211.90	-----		
						15.00	6.20	2417.51
810.00	788.49	359.49	718.97	2193.39	2215.61	-----		
						15.00	5.40	2778.34
825.00	803.49	364.89	729.77	2202.04	2224.98	-----		
						15.00	5.28	2838.23
840.00	818.49	370.17	740.34	2211.12	2234.92	-----		
						15.00	5.25	2855.55
855.00	833.49	375.42	750.85	2220.14	2244.79	-----		
						74.99	25.89	2896.89
930.00	908.48	401.31	802.62	2263.80	2292.45	-----		
						15.00	4.94	3037.74
945.00	923.48	406.25	812.49	2273.20	2302.96	-----		
						15.00	4.85	3090.11
960.00	938.48	411.10	822.20	2282.85	2313.82	-----		
						15.00	5.10	2941.35
975.00	953.48	416.20	832.40	2290.91	2322.53	-----		
						15.00	5.18	2894.00
990.00	968.47	421.38	842.76	2298.33	2330.41	-----		
						14.99	5.23	2864.37
1005.00	983.46	426.62	853.23	2305.27	2337.70	-----		
						14.99	5.18	2893.18
1020.00	998.46	431.80	863.59	2312.33	2345.14	-----		
						14.99	4.42	3394.28
1035.00	1013.45	436.21	872.43	2323.28	2358.10	-----		
						14.99	4.84	3095.97
1050.00	1028.43	441.05	882.11	2331.76	2367.45	-----		
						14.99	4.85	3090.14
1065.00	1043.42	445.90	891.81	2340.01	2376.50	-----		
						14.99	5.08	2948.66
1080.00	1058.41	450.99	901.97	2346.87	2383.71	-----		
						14.99	5.04	2975.17
1095.00	1073.40	456.02	912.05	2353.81	2391.04	-----		
						14.99	5.67	2642.97
1110.00	1088.38	461.70	923.39	2357.36	2394.30	-----		
						14.99	5.79	2587.11
1125.00	1103.37	467.49	934.98	2360.21	2396.78	-----		
						14.99	5.56	2697.43
1140.00	1118.36	473.04	946.09	2364.17	2400.53	-----		
						14.99	5.24	2861.90
1155.00	1133.34	478.28	956.56	2369.62	2406.06	-----		
						14.98	5.33	2810.12
1170.00	1148.33	483.61	967.22	2374.48	2410.88	-----		
						14.98	5.33	2809.09
1185.00	1163.31	488.95	977.89	2379.22	2415.58	-----		
						14.98	4.98	3006.54
1200.00	1178.29	493.93	987.86	2385.55	2422.26	-----		
						14.98	5.12	2926.49
1215.00	1193.27	499.05	998.10	2391.10	2427.97	-----		
						14.98	5.21	2876.94
1230.00	1208.25	504.25	1008.51	2396.11	2433.03	-----		
						14.98	5.23	2862.48
1245.00	1223.22	509.49	1018.97	2400.90	2437.82	-----		

MEASURED GEOPHONE DEPTH (DGM) (M)	DEPTH CORR. TO DATUM (DGD) (M)	1-TIME CORR. TO DATUM (TGD) (MS)	2-TIME CORR. TO DATUM (2TGD) (MS)	AVERAGE VELOCITY (M /SEC)	RMS VELOCITY (M /SEC)	INTERVAL DEPTH (DELDGD) (M)	INTERVAL TIME (DELDGT) (MS)	INTERVAL VELOCITY (M /SEC)
1260.00	1238.19	515.04	1030.08	2404.07	2440.74	14.97	5.55	2695.21
1275.00	1253.16	520.47	1040.95	2407.74	2444.24	14.97	5.43	2755.41
1290.00	1268.13	526.27	1052.53	2409.68	2445.82	14.97	5.79	2584.24
1305.00	1283.10	531.70	1063.40	2413.21	2449.18	14.97	5.43	2755.21
1320.00	1298.07	537.03	1074.07	2417.11	2452.97	14.97	5.34	2805.43
1335.00	1313.05	542.12	1084.25	2422.03	2458.01	14.97	5.09	2941.38
1350.00	1328.02	547.30	1094.59	2426.52	2462.52	14.97	5.17	2896.42
1365.00	1343.00	552.57	1105.15	2430.44	2466.37	14.98	5.28	2837.22
1380.00	1357.97	557.66	1115.32	2435.13	2471.15	14.98	5.09	2945.24
1395.00	1372.95	562.68	1125.37	2440.00	2476.16	14.98	5.03	2979.82
1410.00	1387.93	568.10	1136.20	2443.11	2479.09	14.98	5.41	2766.54
1425.00	1402.91	573.60	1147.20	2445.79	2481.53	14.98	5.50	2722.46
1440.00	1417.88	579.16	1158.31	2448.19	2483.68	14.98	5.55	2696.35
1455.00	1432.86	584.60	1169.20	2451.01	2486.30	14.98	5.45	2750.91
1470.00	1447.84	590.04	1180.08	2453.81	2488.91	14.98	5.44	2754.28
1485.00	1462.82	595.65	1191.30	2455.85	2490.68	14.98	5.61	2670.90
1500.00	1477.81	601.15	1202.30	2458.31	2492.92	14.98	5.50	2724.05
1515.00	1492.79	606.23	1212.46	2462.41	2497.07	14.98	5.08	2947.69
1530.00	1507.77	611.17	1222.34	2467.04	2501.89	14.99	4.94	3035.55
1545.00	1522.76	616.20	1232.41	2471.20	2506.13	14.99	5.04	2976.13
1560.00	1537.74	621.33	1242.66	2474.92	2509.84	14.99	5.13	2921.58
1575.00	1552.73	626.18	1252.36	2479.68	2514.84	14.99	4.85	3089.77
1590.00	1567.72	630.94	1261.88	2484.73	2520.23	14.99	4.76	3149.28
1605.00	1582.70	635.70	1271.41	2489.69	2525.50	14.99	4.76	3147.04
1620.00	1597.69	640.31	1280.61	2495.20	2531.50	14.99	4.60	3255.25
1635.00	1612.68	644.95	1289.91	2500.45	2537.17	14.99	4.65	3225.03
1650.00	1627.67	649.48	1298.95	2506.12	2543.41	14.99	4.52	3314.54
						14.99	4.60	3259.27

MEASURED GEOPHONE DEPTH	DEPTH CORR. TO DATUM (DGD)	1-TIME CORR. TO DATUM (TGD)	2-TIME CORR. TO DATUM (2TGD)	AVERAGE VELOCITY	RMS VELOCITY	INTERVAL DEPTH (DELDGD)	INTERVAL TIME (DELDGT)	INTERVAL VELOCITY
(M)	(M)	(MS)	(MS)	(M /SEC)	(M /SEC)	(M)	(MS)	(M /SEC)
1665.00	1642.65	654.07	1308.15	2511.42	2549.14	-----		
						14.99	4.49	3340.70
1680.00	1657.64	658.56	1317.12	2517.07	2555.36	-----		
						14.99	4.45	3368.52
1695.00	1672.63	663.01	1326.02	2522.78	2561.68	-----		
						14.99	4.68	3204.78
1710.00	1687.62	667.69	1335.37	2527.56	2566.75	-----		
						14.99	4.68	3201.25
1725.00	1702.60	672.37	1344.74	2532.25	2571.70	-----		
						14.99	4.70	3187.60
1740.00	1717.59	677.07	1354.14	2536.80	2576.49	-----		
						14.99	4.68	3201.54
1755.00	1732.57	681.75	1363.50	2541.36	2581.30	-----		
						14.99	4.52	3313.74
1770.00	1747.56	686.27	1372.54	2546.45	2586.80	-----		
						14.98	4.34	3454.42
1785.00	1762.54	690.61	1381.22	2552.16	2593.16	-----		

12. DATA INTERPOLATED EVERY 10.00 M BELOW DATUM

SANTOS & PARTNERS
WELL : MARTHA-1

DATUM ELEVATION 0.00 M ABOVE SEA LEVEL
DATUM CORRECT. VELOCITY 1500.00 M /SEC

DATA INTERPOLATED EVERY 10.00 M BELOW DATUM
THIS INTERPOLATION BASED ON CALIBRATED ACOUSTIC LOG

DATUM	-----	TIME	-----	-----	VELOCITY	-----
DEPTH	1 WAY	2 WAY	AVERAGE	INTERVAL	RMS	
(DGD)	(TGD)					
10.00	5.93	11.86	1685.86	1685.86	1685.86	
20.00	11.86	23.73	1685.86	1685.86	1685.86	
30.00	17.80	35.59	1685.86	1685.86	1685.86	
40.00	23.73	47.45	1685.86	1685.86	1685.86	
50.00	29.66	59.32	1685.86	1685.86	1685.86	
60.00	35.58	71.16	1686.38	1688.95	1686.38	
70.00	41.32	82.65	1693.93	1740.72	1694.04	
80.00	46.10	92.21	1735.19	2091.88	1739.52	
90.00	50.70	101.39	1775.29	2177.86	1783.66	
100.00	55.13	110.25	1814.05	2257.75	1826.31	
110.00	59.21	118.42	1857.81	2448.37	1875.85	
120.00	64.07	128.15	1872.84	2055.81	1890.12	
130.00	69.32	138.63	1875.48	1907.77	1891.46	
140.00	74.32	148.64	1883.81	1999.23	1898.90	
150.00	78.77	157.55	1904.19	2244.20	1920.09	
160.00	83.13	166.25	1924.76	2296.86	1941.64	
170.00	88.57	177.13	1919.47	1838.57	1935.47	
180.00	94.26	188.52	1909.61	1756.31	1925.12	
190.00	100.03	200.06	1899.41	1732.74	1914.55	
200.00	105.46	210.93	1896.36	1840.36	1910.79	
210.00	110.00	220.00	1909.08	2204.62	1923.80	
220.00	114.09	228.19	1928.23	2442.92	1944.82	
230.00	118.42	236.84	1942.28	2313.00	1959.48	
240.00	122.70	245.40	1955.98	2334.85	1973.79	
250.00	126.98	253.96	1968.80	2336.40	1987.09	
260.00	131.37	262.74	1979.17	2279.35	1997.54	
270.00	135.70	271.41	1989.62	2306.07	2008.13	
280.00	140.05	280.11	1999.22	2298.52	2017.78	
290.00	144.64	289.28	2004.97	2180.56	2023.14	
300.00	149.30	298.59	2009.44	2148.50	2027.17	
310.00	154.01	308.02	2012.82	2119.95	2030.07	
320.00	158.88	317.75	2014.15	2056.19	2030.88	
330.00	163.22	326.45	2021.78	2300.42	2038.52	
340.00	167.32	334.64	2032.05	2441.47	2049.33	
350.00	171.56	343.13	2040.04	2355.02	2057.44	
360.00	176.18	352.35	2043.41	2168.80	2060.43	
370.00	180.89	361.78	2045.44	2121.15	2062.04	
380.00	185.08	370.16	2053.15	2386.06	2069.94	
390.00	189.57	379.14	2057.28	2227.62	2073.81	
400.00	194.27	388.54	2058.97	2127.14	2075.11	
410.00	199.27	398.53	2057.56	2002.54	2073.33	
420.00	203.83	407.66	2060.56	2191.36	2076.04	
430.00	208.20	416.40	2065.34	2288.38	2080.72	
440.00	212.78	425.57	2067.84	2181.46	2082.94	
450.00	217.31	434.63	2070.75	2207.27	2085.61	

DATUM	-----	TIME	-----	-----	VELOCITY	-----
DEPTH	1 WAY	2 WAY	AVERAGE	INTERVAL	RMS	
(DGD)	(TGD)					
460.00	221.79	443.58	2074.02	2233.03	2088.69	
470.00	226.14	452.27	2078.39	2301.06	2092.98	
480.00	230.96	461.92	2078.26	2072.60	2092.55	
490.00	235.93	471.86	2076.89	2013.00	2090.91	
500.00	240.25	480.50	2081.17	2315.20	2095.15	
510.00	245.17	490.34	2080.19	2032.24	2093.91	
520.00	250.29	500.57	2077.62	1954.34	2091.15	
530.00	254.68	509.37	2081.01	2273.65	2094.43	
540.00	259.22	518.44	2083.19	2205.94	2096.44	
550.00	263.80	527.61	2084.87	2180.00	2097.92	
560.00	268.29	536.57	2087.32	2231.33	2100.22	
570.00	272.91	545.82	2088.59	2162.30	2101.28	
580.00	277.60	555.21	2089.31	2130.96	2101.79	
590.00	282.25	564.49	2090.37	2154.09	2102.66	
600.00	286.73	573.46	2092.56	2230.00	2104.71	
610.00	291.67	583.34	2091.42	2025.48	2103.39	
620.00	295.63	591.26	2097.22	2524.36	2109.59	
630.00	299.64	599.29	2102.50	2490.84	2115.15	
640.00	303.27	606.53	2110.36	2761.13	2124.03	
650.00	306.85	613.69	2118.32	2792.78	2133.04	
660.00	309.48	618.96	2132.61	3797.82	2152.64	
670.00	313.19	626.37	2139.30	2696.98	2159.89	
680.00	317.11	634.22	2144.37	2549.23	2165.13	
690.00	321.11	642.21	2148.83	2503.09	2169.66	
700.00	325.05	650.11	2153.50	2532.97	2174.44	
710.00	328.66	657.33	2160.27	2769.79	2181.86	
720.00	332.64	665.28	2164.49	2513.17	2186.12	
730.00	336.62	673.23	2168.64	2516.53	2190.31	
740.00	340.52	681.04	2173.16	2562.72	2194.94	
750.00	344.84	689.68	2174.91	2313.26	2196.46	
760.00	348.47	696.94	2180.96	2755.84	2203.02	
770.00	352.32	704.63	2185.54	2599.69	2207.73	
780.00	356.29	712.59	2189.20	2513.50	2211.38	
790.00	359.85	719.69	2195.37	2814.88	2218.14	
800.00	363.40	726.79	2201.45	2817.86	2224.78	
810.00	367.07	734.13	2206.68	2723.88	2230.32	
820.00	370.75	741.50	2211.73	2715.12	2235.66	
830.00	373.91	747.83	2219.76	3160.83	2245.08	
840.00	377.18	754.36	2227.06	3063.00	2253.44	
850.00	380.62	761.24	2233.19	2905.33	2260.17	
860.00	384.28	768.55	2237.97	2735.84	2265.17	
870.00	387.90	775.80	2242.85	2759.62	2270.29	
880.00	391.63	783.25	2247.05	2684.38	2274.58	
890.00	395.34	790.69	2251.20	2688.83	2278.83	
900.00	398.71	797.41	2257.30	2974.18	2285.58	
910.00	401.99	803.98	2263.73	3044.84	2292.80	
920.00	405.07	810.14	2271.21	3246.12	2301.54	
930.00	408.30	816.60	2277.75	3099.33	2308.93	
940.00	411.52	823.04	2284.23	3105.59	2316.22	
950.00	414.83	829.65	2290.12	3023.32	2322.71	
960.00	418.26	836.52	2295.21	2909.48	2328.14	
970.00	421.69	843.38	2300.28	2919.48	2333.54	
980.00	425.27	850.55	2304.39	2787.79	2337.74	
990.00	428.69	857.37	2309.38	2931.05	2343.06	
1000.00	432.01	864.02	2314.75	3007.31	2348.89	
1010.00	434.90	869.80	2322.38	3463.34	2358.03	
1020.00	438.33	876.66	2327.02	2915.46	2362.90	
1030.00	441.29	882.59	2334.04	3372.34	2371.12	
1040.00	444.40	888.80	2340.23	3218.80	2378.09	
1050.00	447.84	895.69	2344.56	2903.91	2382.58	

DATUM	-----	TIME	-----	-----	VELOCITY	-----
DEPTH	1 WAY	2 WAY	AVERAGE	INTERVAL	RMS	
(DGD)	(TGD)					
1060.00	451.43	902.86	2348.10	2790.19	2386.09	
1070.00	454.93	909.87	2351.98	2852.17	2390.03	
1080.00	458.56	917.11	2355.22	2761.76	2393.19	
1090.00	462.14	924.28	2358.60	2791.83	2396.53	
1100.00	466.02	932.04	2360.40	2574.40	2398.07	
1110.00	469.85	939.70	2362.45	2611.00	2399.88	
1120.00	473.57	947.15	2365.00	2687.80	2402.28	
1130.00	477.06	954.13	2368.66	2864.26	2405.98	
1140.00	480.66	961.32	2371.74	2781.45	2409.01	
1150.00	484.33	968.65	2374.44	2727.53	2411.58	
1160.00	488.02	976.03	2376.97	2709.51	2413.97	
1170.00	491.43	982.86	2380.80	2927.99	2417.92	
1180.00	494.65	989.30	2385.52	3106.59	2423.03	
1190.00	498.19	996.37	2388.67	2828.29	2426.15	
1200.00	501.65	1003.29	2392.12	2889.08	2429.64	
1210.00	505.24	1010.48	2394.91	2784.90	2432.35	
1220.00	508.75	1017.51	2398.01	2843.90	2435.43	
1230.00	512.37	1024.75	2400.60	2763.79	2437.91	
1240.00	516.08	1032.15	2402.75	2700.51	2439.89	
1250.00	519.63	1039.26	2405.57	2814.93	2442.65	
1260.00	523.44	1046.88	2407.15	2623.29	2444.02	
1270.00	527.27	1054.54	2408.64	2611.41	2445.27	
1280.00	530.77	1061.54	2411.60	2858.69	2448.23	
1290.00	534.34	1068.68	2414.19	2799.30	2450.74	
1300.00	537.78	1075.56	2417.33	2904.96	2453.92	
1310.00	541.12	1082.25	2420.89	2993.60	2457.61	
1320.00	544.54	1089.09	2424.04	2922.48	2460.81	
1330.00	548.03	1096.07	2426.86	2866.54	2463.60	
1340.00	551.55	1103.10	2429.51	2842.27	2466.20	
1350.00	555.01	1110.02	2432.38	2889.39	2469.06	
1360.00	558.43	1116.87	2435.38	2922.17	2472.09	
1370.00	561.82	1123.64	2438.49	2951.86	2475.26	
1380.00	565.37	1130.73	2440.90	2822.01	2477.59	
1390.00	568.96	1137.92	2443.06	2784.17	2479.64	
1400.00	572.65	1145.30	2444.78	2709.04	2481.19	
1410.00	576.31	1152.61	2446.61	2733.95	2482.88	
1420.00	579.96	1159.91	2448.46	2740.49	2484.58	
1430.00	583.49	1166.97	2450.78	2831.61	2486.83	
1440.00	587.11	1174.21	2452.71	2763.60	2488.63	
1450.00	590.77	1181.55	2454.41	2725.85	2490.17	
1460.00	594.57	1189.15	2455.54	2632.35	2491.10	
1470.00	598.31	1196.63	2456.90	2672.89	2492.28	
1480.00	601.70	1203.41	2459.69	2951.27	2495.10	
1490.00	605.10	1210.19	2462.41	2945.81	2497.86	
1500.00	608.48	1216.97	2465.14	2953.08	2500.62	
1510.00	611.56	1223.12	2469.09	3249.44	2504.95	
1520.00	614.92	1229.83	2471.89	2981.57	2507.79	
1530.00	618.30	1236.60	2474.52	2953.08	2510.45	
1540.00	621.61	1243.21	2477.45	3025.78	2513.47	
1550.00	624.96	1249.92	2480.17	2983.14	2516.22	
1560.00	628.20	1256.40	2483.29	3086.31	2519.49	
1570.00	631.56	1263.12	2485.91	2975.72	2522.14	
1580.00	634.67	1269.34	2489.48	3213.81	2525.99	
1590.00	637.74	1275.47	2493.19	3261.73	2530.04	
1600.00	640.77	1281.54	2496.99	3294.92	2534.21	
1610.00	643.74	1287.47	2501.03	3373.83	2538.71	
1620.00	646.78	1293.56	2504.72	3285.93	2542.74	
1630.00	649.81	1299.62	2508.42	3298.50	2546.79	
1640.00	652.89	1305.78	2511.91	3246.61	2550.54	
1650.00	655.90	1311.80	2515.63	3322.99	2554.62	

DATUM	TIME		VELOCITY		
DEPTH	1 WAY	2 WAY	AVERAGE	INTERVAL	RMS
(DGD)	(TGD)				
1660.00	658.87	1317.73	2519.48	3371.54	2558.88
1670.00	661.84	1323.67	2523.28	3366.69	2563.07
1680.00	664.96	1329.93	2526.45	3197.19	2566.42
1690.00	668.15	1336.29	2529.39	3143.03	2569.47
1700.00	671.32	1342.65	2532.31	3145.27	2572.50
1710.00	674.51	1349.02	2535.18	3141.59	2575.49
1720.00	677.66	1355.31	2538.16	3175.87	2578.60
1730.00	680.80	1361.59	2541.14	3184.33	2581.72
1740.00	683.82	1367.65	2544.52	3304.49	2585.36
1750.00	686.70	1373.41	2548.41	3471.77	2589.71
1760.00	689.82	1379.64	2551.40	3211.23	2592.85

13. DATA INTERPOLATED EVERY 2.00 MS BELOW DATUM

SANTOS & PARTNERS
WELL : MARTHA-1

DATUM ELEVATION 0.00 M ABOVE SEA LEVEL
DATUM CORRECT. VELOCITY 1500.00 M /SEC

DATA INTERPOLATED EVERY 2.00 MS BELOW DATUM
THIS INTERPOLATION BASED ON CALIBRATED ACOUSTIC LOG

-----	TIME	-----	DATUM	-----	VELOCITY	-----
2 WAY		1 WAY	DEPTH	AVERAGE	INTERVAL	RMS
		(TGD)	(DGD)			
	2.00	1.00	1.69	1685.86	1685.86	1685.86
	4.00	2.00	3.37	1685.86	1685.86	1685.86
	6.00	3.00	5.06	1685.86	1685.86	1685.86
	8.00	4.00	6.74	1685.86	1685.86	1685.86
	10.00	5.00	8.43	1685.86	1685.86	1685.86
	12.00	6.00	10.12	1685.86	1685.86	1685.86
	14.00	7.00	11.80	1685.86	1685.86	1685.86
	16.00	8.00	13.49	1685.86	1685.86	1685.86
	18.00	9.00	15.17	1685.86	1685.86	1685.86
	20.00	10.00	16.86	1685.86	1685.86	1685.86
	22.00	11.00	18.54	1685.86	1685.86	1685.86
	24.00	12.00	20.23	1685.86	1685.86	1685.86
	26.00	13.00	21.92	1685.86	1685.86	1685.86
	28.00	14.00	23.60	1685.86	1685.86	1685.86
	30.00	15.00	25.29	1685.86	1685.86	1685.86
	32.00	16.00	26.97	1685.86	1685.86	1685.86
	34.00	17.00	28.66	1685.86	1685.86	1685.86
	36.00	18.00	30.35	1685.86	1685.86	1685.86
	38.00	19.00	32.03	1685.86	1685.86	1685.86
	40.00	20.00	33.72	1685.86	1685.86	1685.86
	42.00	21.00	35.40	1685.86	1685.86	1685.86
	44.00	22.00	37.09	1685.86	1685.86	1685.86
	46.00	23.00	38.77	1685.86	1685.86	1685.86
	48.00	24.00	40.46	1685.86	1685.86	1685.86
	50.00	25.00	42.15	1685.86	1685.86	1685.86
	52.00	26.00	43.83	1685.86	1685.86	1685.86
	54.00	27.00	45.52	1685.86	1685.86	1685.86
	56.00	28.00	47.20	1685.86	1685.86	1685.86
	58.00	29.00	48.89	1685.86	1685.86	1685.86
	60.00	30.00	50.58	1685.86	1685.86	1685.86
	62.00	31.00	52.26	1685.86	1685.86	1685.86
	64.00	32.00	53.95	1685.90	1687.13	1685.90
	66.00	33.00	55.64	1686.05	1690.61	1686.05
	68.00	34.00	57.33	1686.18	1690.61	1686.18
	70.00	35.00	59.02	1686.31	1690.61	1686.31
	72.00	36.00	60.71	1686.43	1690.61	1686.43
	74.00	37.00	62.40	1686.54	1690.61	1686.54
	76.00	38.00	64.09	1686.65	1690.61	1686.65
	78.00	39.00	65.78	1686.75	1690.61	1686.75
	80.00	40.00	67.47	1686.84	1690.61	1686.85
	82.00	41.00	69.32	1690.79	1848.44	1690.97
	84.00	42.00	71.41	1700.34	2091.87	1701.61
	86.00	43.00	73.51	1709.44	2091.88	1711.70
	88.00	44.00	75.60	1718.13	2091.87	1721.27

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY (TGD)	DEPTH (DGD)	AVERAGE	INTERVAL	RMS
90.00	45.00	77.69	1726.44	2091.88	1730.37
92.00	46.00	79.78	1734.38	2091.87	1739.03
94.00	47.00	81.87	1741.99	2091.87	1747.28
96.00	48.00	84.00	1749.91	2122.01	1755.90
98.00	49.00	86.22	1759.64	2227.13	1766.78
100.00	50.00	88.45	1768.99	2227.13	1777.15
102.00	51.00	90.68	1777.98	2227.13	1787.06
104.00	52.00	92.90	1786.62	2227.13	1796.54
106.00	53.00	95.13	1794.93	2227.13	1805.62
108.00	54.00	97.36	1802.93	2227.13	1814.32
110.00	55.00	99.69	1812.61	2335.03	1825.11
112.00	56.00	102.14	1823.96	2448.37	1838.09
114.00	57.00	104.59	1834.91	2448.37	1850.54
116.00	58.00	107.04	1845.49	2448.37	1862.47
118.00	59.00	109.49	1855.71	2448.38	1873.93
120.00	60.00	111.94	1865.59	2448.37	1884.94
122.00	61.00	114.18	1871.85	2247.57	1891.44
124.00	62.00	116.08	1872.18	1892.48	1891.46
126.00	63.00	117.97	1872.50	1892.48	1891.47
128.00	64.00	119.86	1872.82	1892.49	1891.49
130.00	65.00	121.75	1873.12	1892.48	1891.51
132.00	66.00	123.65	1873.41	1892.48	1891.52
134.00	67.00	125.54	1873.70	1892.48	1891.53
136.00	68.00	127.43	1873.97	1892.48	1891.55
138.00	69.00	129.37	1874.91	1938.93	1892.24
140.00	70.00	131.37	1876.69	1999.24	1893.81
142.00	71.00	133.37	1878.42	1999.22	1895.34
144.00	72.00	135.37	1880.09	1999.22	1896.82
146.00	73.00	137.37	1881.73	1999.24	1898.26
148.00	74.00	139.37	1883.31	1999.22	1899.66
150.00	75.00	141.36	1884.86	1999.24	1901.02
152.00	76.00	143.36	1886.36	1999.22	1902.35
154.00	77.00	145.74	1892.71	2375.35	1909.24
156.00	78.00	148.14	1899.25	2402.63	1916.37
158.00	79.00	150.54	1905.62	2402.65	1923.30
160.00	80.00	152.95	1911.84	2402.65	1930.02
162.00	81.00	155.35	1917.90	2402.63	1936.56
164.00	82.00	157.75	1923.81	2402.65	1942.92
166.00	83.00	159.77	1924.89	2013.85	1943.79
168.00	84.00	161.60	1923.86	1838.58	1942.57
170.00	85.00	163.44	1922.86	1838.58	1941.38
172.00	86.00	165.28	1921.88	1838.58	1940.21
174.00	87.00	167.12	1920.92	1838.56	1939.08
176.00	88.00	168.96	1919.99	1838.58	1937.96
178.00	89.00	170.80	1919.07	1838.58	1936.88
180.00	90.00	172.64	1918.18	1838.58	1935.81
182.00	91.00	174.41	1916.58	1772.99	1934.10
184.00	92.00	176.12	1914.39	1715.01	1931.85
186.00	93.00	177.84	1912.25	1715.01	1929.65
188.00	94.00	179.55	1910.15	1715.03	1927.49
190.00	95.00	181.27	1908.10	1715.01	1925.37
192.00	96.00	182.98	1906.08	1715.03	1923.30
194.00	97.00	184.70	1904.11	1715.01	1921.27
196.00	98.00	186.41	1902.19	1715.03	1919.28
198.00	99.00	188.13	1900.29	1715.01	1917.32
200.00	100.00	189.94	1899.43	1813.35	1916.31
202.00	101.00	191.78	1898.84	1840.36	1915.57
204.00	102.00	193.62	1898.27	1840.36	1914.85
206.00	103.00	195.46	1897.71	1840.36	1914.14

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY	DEPTH	AVERAGE	INTERVAL	RMS
	(TGD)	(DGD)			
208.00	104.00	197.30	1897.15	1840.36	1913.44
210.00	105.00	199.14	1896.61	1840.36	1912.76
212.00	106.00	200.98	1896.08	1840.36	1912.09
214.00	107.00	202.83	1895.56	1840.35	1911.43
216.00	108.00	205.06	1898.73	2237.96	1914.71
218.00	109.00	207.53	1903.95	2467.41	1920.51
220.00	110.00	210.00	1909.07	2467.42	1926.18
222.00	111.00	212.47	1914.10	2467.41	1931.73
224.00	112.00	214.93	1919.04	2467.41	1937.17
226.00	113.00	217.40	1923.89	2467.41	1942.50
228.00	114.00	219.78	1927.91	2381.74	1946.78
230.00	115.00	222.09	1931.26	2312.99	1950.26
232.00	116.00	224.41	1934.55	2312.99	1953.68
234.00	117.00	226.72	1937.78	2313.00	1957.03
236.00	118.00	229.03	1940.96	2312.99	1960.31
238.00	119.00	231.35	1944.09	2312.99	1963.54
240.00	120.00	233.66	1947.18	2315.35	1966.73
242.00	121.00	236.01	1950.49	2346.79	1970.18
244.00	122.00	238.36	1953.74	2346.79	1973.55
246.00	123.00	240.70	1956.93	2346.79	1976.87
248.00	124.00	243.05	1960.07	2346.79	1980.13
250.00	125.00	245.40	1963.17	2346.79	1983.33
252.00	126.00	247.74	1966.21	2346.79	1986.48
254.00	127.00	250.04	1968.85	2301.06	1989.15
256.00	128.00	252.32	1971.28	2279.34	1991.58
258.00	129.00	254.60	1973.66	2279.34	1993.97
260.00	130.00	256.88	1976.02	2279.36	1996.32
262.00	131.00	259.16	1978.33	2279.36	1998.64
264.00	132.00	261.44	1980.61	2279.33	2000.91
266.00	133.00	263.72	1982.89	2283.39	2003.18
268.00	134.00	266.04	1985.41	2320.71	2005.74
270.00	135.00	268.37	1987.89	2320.71	2008.25
272.00	136.00	270.69	1990.34	2320.71	2010.73
274.00	137.00	273.01	1992.75	2320.71	2013.16
276.00	138.00	275.33	1995.13	2320.71	2015.56
278.00	139.00	277.65	1997.47	2320.71	2017.92
280.00	140.00	279.88	1999.14	2231.87	2019.53
282.00	141.00	282.06	2000.43	2180.57	2020.72
284.00	142.00	284.24	2001.70	2180.57	2021.89
286.00	143.00	286.42	2002.95	2180.57	2023.04
288.00	144.00	288.60	2004.18	2180.57	2024.18
290.00	145.00	290.78	2005.40	2180.57	2025.30
292.00	146.00	292.96	2006.60	2180.57	2026.40
294.00	147.00	295.11	2007.53	2143.62	2027.22
296.00	148.00	297.24	2008.37	2131.65	2027.94
298.00	149.00	299.37	2009.20	2131.62	2028.66
300.00	150.00	301.50	2010.01	2131.62	2029.36
302.00	151.00	303.63	2010.82	2131.65	2030.06
304.00	152.00	305.77	2011.61	2131.62	2030.74
306.00	153.00	307.90	2012.40	2131.62	2031.42
308.00	154.00	309.97	2012.82	2077.45	2031.72
310.00	155.00	312.03	2013.10	2056.18	2031.88
312.00	156.00	314.09	2013.38	2056.18	2032.03
314.00	157.00	316.14	2013.65	2056.21	2032.19
316.00	158.00	318.20	2013.92	2056.18	2032.34
318.00	159.00	320.26	2014.18	2056.18	2032.49
320.00	160.00	322.31	2014.45	2056.18	2032.64
322.00	161.00	324.54	2015.76	2225.95	2033.90
324.00	162.00	326.99	2018.49	2457.43	2036.78

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY	DEPTH	AVERAGE	INTERVAL	RMS
	(TGD)	(DGD)			
326.00	163.00	329.45	2021.18	2457.46	2039.63
328.00	164.00	331.91	2023.84	2457.43	2042.44
330.00	165.00	334.37	2026.47	2457.43	2045.20
332.00	166.00	336.82	2029.06	2457.43	2047.94
334.00	167.00	339.25	2031.43	2424.74	2050.40
336.00	168.00	341.60	2033.36	2355.01	2052.34
338.00	169.00	343.96	2035.26	2355.01	2054.27
340.00	170.00	346.31	2037.14	2355.01	2056.16
342.00	171.00	348.67	2039.00	2355.04	2058.04
344.00	172.00	351.02	2040.84	2355.01	2059.89
346.00	173.00	353.38	2042.66	2355.01	2061.72
348.00	174.00	355.47	2042.95	2094.09	2061.90
350.00	175.00	357.55	2043.17	2080.32	2062.01
352.00	176.00	359.63	2043.38	2080.29	2062.11
354.00	177.00	361.71	2043.59	2080.32	2062.22
356.00	178.00	363.79	2043.79	2080.32	2062.32
358.00	179.00	365.88	2044.00	2080.32	2062.42
360.00	180.00	367.96	2044.20	2080.29	2062.52
362.00	181.00	370.26	2045.65	2306.43	2063.95
364.00	182.00	372.65	2047.52	2386.05	2065.85
366.00	183.00	375.03	2049.37	2386.05	2067.74
368.00	184.00	377.42	2051.20	2386.08	2069.60
370.00	185.00	379.81	2053.01	2386.05	2071.44
372.00	186.00	382.19	2054.80	2386.05	2073.26
374.00	187.00	384.47	2056.00	2279.51	2074.42
376.00	188.00	386.62	2056.50	2150.79	2074.83
378.00	189.00	388.77	2057.00	2150.79	2075.24
380.00	190.00	390.92	2057.50	2150.82	2075.65
382.00	191.00	393.07	2057.98	2150.79	2076.05
384.00	192.00	395.23	2058.47	2150.82	2076.44
386.00	193.00	397.38	2058.95	2150.79	2076.83
388.00	194.00	399.46	2059.05	2079.80	2076.85
390.00	195.00	401.46	2058.76	2002.53	2076.48
392.00	196.00	403.46	2058.48	2002.56	2076.10
394.00	197.00	405.46	2058.19	2002.53	2075.74
396.00	198.00	407.47	2057.91	2002.56	2075.37
398.00	199.00	409.47	2057.63	2002.53	2075.02
400.00	200.00	411.47	2057.36	2002.56	2074.66
402.00	201.00	413.47	2057.09	2002.53	2074.31
404.00	202.00	415.78	2058.31	2304.87	2075.51
406.00	203.00	418.09	2059.54	2308.41	2076.72
408.00	204.00	420.40	2060.76	2308.41	2077.92
410.00	205.00	422.70	2061.97	2308.38	2079.11
412.00	206.00	425.01	2063.17	2308.41	2080.28
414.00	207.00	427.32	2064.35	2308.41	2081.44
416.00	208.00	429.57	2065.23	2246.12	2082.27
418.00	209.00	431.75	2065.78	2181.43	2082.75
420.00	210.00	433.93	2066.33	2181.46	2083.23
422.00	211.00	436.11	2066.88	2181.46	2083.71
424.00	212.00	438.29	2067.42	2181.46	2084.18
426.00	213.00	440.47	2067.96	2181.46	2084.65
428.00	214.00	442.66	2068.49	2181.43	2085.11
430.00	215.00	444.86	2069.12	2206.02	2085.69
432.00	216.00	447.08	2069.83	2221.41	2086.34
434.00	217.00	449.30	2070.53	2221.41	2086.98
436.00	218.00	451.53	2071.22	2221.41	2087.62
438.00	219.00	453.75	2071.91	2221.41	2088.25
440.00	220.00	455.97	2072.59	2221.44	2088.87
442.00	221.00	458.19	2073.26	2221.41	2089.49

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY (TGD)	DEPTH (DGD)	AVERAGE	INTERVAL	RMS
444.00	222.00	460.48	2074.24	2290.07	2090.44
446.00	223.00	462.78	2075.25	2301.06	2091.43
448.00	224.00	465.08	2076.26	2301.06	2092.41
450.00	225.00	467.38	2077.26	2301.06	2093.39
452.00	226.00	469.68	2078.25	2301.03	2094.35
454.00	227.00	471.99	2079.23	2301.06	2095.30
456.00	228.00	474.17	2079.70	2186.58	2095.71
458.00	229.00	476.14	2079.21	1967.56	2095.17
460.00	230.00	478.11	2078.73	1967.56	2094.63
462.00	231.00	480.07	2078.25	1967.56	2094.10
464.00	232.00	482.04	2077.77	1967.59	2093.57
466.00	233.00	484.01	2077.30	1967.56	2093.05
468.00	234.00	485.98	2076.83	1967.56	2092.53
470.00	235.00	487.95	2076.36	1967.56	2092.01
472.00	236.00	490.16	2076.96	2217.74	2092.56
474.00	237.00	492.48	2077.97	2315.19	2093.55
476.00	238.00	494.79	2078.96	2315.19	2094.53
478.00	239.00	497.11	2079.95	2315.19	2095.50
480.00	240.00	499.42	2080.93	2315.22	2096.46
482.00	241.00	501.74	2081.90	2315.19	2097.42
484.00	242.00	503.96	2082.46	2216.89	2097.93
486.00	243.00	505.86	2081.74	1906.95	2097.18
488.00	244.00	507.77	2081.02	1906.95	2096.43
490.00	245.00	509.68	2080.31	1906.92	2095.69
492.00	246.00	511.58	2079.61	1906.95	2094.96
494.00	247.00	513.49	2078.91	1906.95	2094.23
496.00	248.00	515.40	2078.22	1906.98	2093.51
498.00	249.00	517.30	2077.53	1906.92	2092.79
500.00	250.00	519.35	2077.40	2044.43	2092.60
502.00	251.00	521.62	2078.18	2273.62	2093.36
504.00	252.00	523.90	2078.95	2273.68	2094.10
506.00	253.00	526.17	2079.72	2273.62	2094.84
508.00	254.00	528.44	2080.49	2273.68	2095.58
510.00	255.00	530.72	2081.24	2273.62	2096.30
512.00	256.00	532.99	2082.00	2273.68	2097.03
514.00	257.00	535.18	2082.43	2193.97	2097.41
516.00	258.00	537.36	2082.77	2171.14	2097.70
518.00	259.00	539.53	2083.12	2171.20	2097.99
520.00	260.00	541.70	2083.45	2171.14	2098.28
522.00	261.00	543.87	2083.79	2171.20	2098.56
524.00	262.00	546.04	2084.12	2171.14	2098.84
526.00	263.00	548.21	2084.46	2171.14	2099.12
528.00	264.00	550.44	2084.98	2223.45	2099.61
530.00	265.00	552.67	2085.53	2231.38	2100.12
532.00	266.00	554.90	2086.08	2231.32	2100.63
534.00	267.00	557.13	2086.63	2231.32	2101.13
536.00	268.00	559.36	2087.17	2231.32	2101.64
538.00	269.00	561.59	2087.70	2231.32	2102.13
540.00	270.00	563.81	2088.18	2216.06	2102.57
542.00	271.00	565.93	2088.32	2126.89	2102.66
544.00	272.00	568.06	2088.46	2126.95	2102.75
546.00	273.00	570.19	2088.60	2126.89	2102.83
548.00	274.00	572.32	2088.74	2126.95	2102.92
550.00	275.00	574.44	2088.88	2126.95	2103.01
552.00	276.00	576.57	2089.02	2126.89	2103.10
554.00	277.00	578.70	2089.17	2129.52	2103.19
556.00	278.00	580.85	2089.40	2154.05	2103.38
558.00	279.00	583.01	2089.63	2154.11	2103.56
560.00	280.00	585.16	2089.86	2154.05	2103.75

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY	DEPTH	AVERAGE	INTERVAL	RMS
	(TGD)	(DGD)			
562.00	281.00	587.32	2090.09	2154.11	2103.93
564.00	282.00	589.47	2090.32	2154.05	2104.11
566.00	283.00	591.62	2090.54	2154.05	2104.29
568.00	284.00	593.79	2090.82	2169.68	2104.52
570.00	285.00	596.07	2091.46	2273.01	2105.14
572.00	286.00	598.34	2092.09	2273.07	2105.75
574.00	287.00	600.61	2092.73	2273.07	2106.35
576.00	288.00	602.89	2093.35	2273.01	2106.95
578.00	289.00	605.16	2093.97	2273.07	2107.55
580.00	290.00	607.43	2094.59	2273.07	2108.14
582.00	291.00	608.58	2091.35	1151.98	2105.60
584.00	292.00	610.85	2091.96	2268.55	2106.18
586.00	293.00	613.17	2092.74	2320.56	2106.95
588.00	294.00	615.80	2094.56	2627.75	2108.94
590.00	295.00	618.50	2096.62	2703.74	2111.24
592.00	296.00	620.87	2097.53	2365.42	2112.15
594.00	297.00	623.21	2098.35	2341.43	2112.96
596.00	298.00	625.43	2098.74	2215.27	2113.31
598.00	299.00	628.19	2100.96	2761.54	2115.81
600.00	300.00	631.11	2103.72	2926.94	2119.03
602.00	301.00	633.42	2104.37	2302.19	2119.67
604.00	302.00	635.93	2105.73	2513.18	2121.09
606.00	303.00	639.18	2109.50	3250.06	2125.80
608.00	304.00	642.23	2112.61	3054.99	2129.53
610.00	305.00	644.91	2114.47	2679.81	2131.56
612.00	306.00	647.82	2117.06	2904.17	2134.54
614.00	307.00	650.50	2118.89	2679.75	2136.54
616.00	308.00	654.35	2124.53	3855.41	2144.36
618.00	309.00	658.17	2130.00	3815.67	2151.86
620.00	310.00	661.85	2135.00	3681.52	2158.54
622.00	311.00	664.56	2136.85	2707.89	2160.53
624.00	312.00	667.02	2137.89	2463.38	2161.57
626.00	313.00	669.54	2139.12	2521.55	2162.81
628.00	314.00	671.99	2140.10	2448.73	2163.78
630.00	315.00	674.49	2141.24	2499.08	2164.93
632.00	316.00	677.10	2142.71	2603.39	2166.46
634.00	317.00	679.73	2144.26	2634.03	2168.09
636.00	318.00	682.19	2145.26	2461.91	2169.08
638.00	319.00	684.64	2146.20	2445.98	2170.00
640.00	320.00	687.22	2147.57	2584.84	2171.42
642.00	321.00	689.72	2148.65	2495.85	2172.51
644.00	322.00	692.29	2149.96	2567.81	2173.84
646.00	323.00	694.82	2151.15	2536.56	2175.06
648.00	324.00	697.28	2152.09	2455.57	2175.98
650.00	325.00	699.86	2153.42	2583.74	2177.35
652.00	326.00	702.38	2154.55	2520.20	2178.49
654.00	327.00	705.00	2155.97	2618.84	2179.97
656.00	328.00	708.02	2158.61	3022.83	2183.03
658.00	329.00	711.01	2161.13	2987.98	2185.93
660.00	330.00	713.61	2162.44	2594.48	2187.28
662.00	331.00	716.03	2163.22	2419.13	2188.02
664.00	332.00	718.50	2164.15	2474.18	2188.94
666.00	333.00	720.87	2164.77	2370.73	2189.51
668.00	334.00	723.42	2165.92	2548.58	2190.67
670.00	335.00	725.97	2167.08	2553.96	2191.84
672.00	336.00	728.59	2168.42	2616.82	2193.23
674.00	337.00	730.92	2168.90	2330.93	2193.65
676.00	338.00	733.84	2171.13	2922.06	2196.16
678.00	339.00	736.40	2172.26	2553.16	2197.30

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY	DEPTH	AVERAGE	INTERVAL	RMS
	(TGD)	(DGD)			
680.00	340.00	738.75	2172.80	2356.45	2197.79
682.00	341.00	741.16	2173.48	2405.09	2198.42
684.00	342.00	743.60	2174.27	2443.97	2199.18
686.00	343.00	746.04	2175.05	2442.75	2199.93
688.00	344.00	748.24	2175.12	2197.45	2199.93
690.00	345.00	750.35	2174.93	2109.68	2199.67
692.00	346.00	752.85	2175.87	2501.65	2200.60
694.00	347.00	755.99	2178.65	3139.65	2203.88
696.00	348.00	758.71	2180.21	2720.34	2205.54
698.00	349.00	761.42	2181.72	2709.41	2207.15
700.00	350.00	764.00	2182.85	2575.81	2208.29
702.00	351.00	766.57	2183.97	2575.26	2209.42
704.00	352.00	769.20	2185.23	2626.83	2210.72
706.00	353.00	771.78	2186.34	2578.55	2211.85
708.00	354.00	774.32	2187.36	2545.72	2212.86
710.00	355.00	776.79	2188.15	2468.44	2213.62
712.00	356.00	779.26	2188.92	2462.65	2214.36
714.00	357.00	781.79	2189.90	2538.51	2215.34
716.00	358.00	784.43	2191.15	2637.02	2216.63
718.00	359.00	787.50	2193.59	3066.53	2219.44
720.00	360.00	790.42	2195.61	2924.07	2221.71
722.00	361.00	793.11	2196.98	2687.74	2223.14
724.00	362.00	795.98	2198.85	2875.61	2225.20
726.00	363.00	798.82	2200.62	2840.21	2227.13
728.00	364.00	801.73	2202.57	2909.24	2229.29
730.00	365.00	804.39	2203.82	2658.51	2230.58
732.00	366.00	807.06	2205.07	2663.15	2231.88
734.00	367.00	809.81	2206.57	2756.71	2233.47
736.00	368.00	812.61	2208.17	2795.23	2235.19
738.00	369.00	815.35	2209.62	2740.36	2236.71
740.00	370.00	818.02	2210.87	2672.85	2238.01
742.00	371.00	820.68	2212.08	2659.85	2239.25
744.00	372.00	823.80	2214.52	3120.54	2242.09
746.00	373.00	827.13	2217.52	3333.19	2245.72
748.00	374.00	830.26	2219.95	3128.17	2248.54
750.00	375.00	833.42	2222.45	3155.82	2251.45
752.00	376.00	836.42	2224.51	2997.25	2253.76
754.00	377.00	839.44	2226.62	3020.32	2256.14
756.00	378.00	842.48	2228.79	3048.10	2258.60
758.00	379.00	845.43	2230.70	2949.52	2260.70
760.00	380.00	848.27	2232.29	2836.79	2262.41
762.00	381.00	851.09	2233.82	2816.47	2264.04
764.00	382.00	853.85	2235.21	2763.37	2265.49
766.00	383.00	856.53	2236.38	2683.11	2266.68
768.00	384.00	859.25	2237.64	2720.52	2267.98
770.00	385.00	861.89	2238.69	2640.99	2269.03
772.00	386.00	864.53	2239.72	2638.43	2270.06
774.00	387.00	867.23	2240.91	2696.96	2271.27
776.00	388.00	870.29	2243.01	3057.80	2273.65
778.00	389.00	873.06	2244.38	2776.49	2275.08
780.00	390.00	875.69	2245.36	2626.89	2276.05
782.00	391.00	878.30	2246.28	2605.35	2276.96
784.00	392.00	881.08	2247.64	2779.85	2278.38
786.00	393.00	883.80	2248.86	2725.22	2279.63
788.00	394.00	886.51	2250.02	2707.03	2280.81
790.00	395.00	889.11	2250.91	2600.95	2281.68
792.00	396.00	891.81	2252.05	2701.05	2282.84
794.00	397.00	894.81	2253.93	2999.51	2284.93
796.00	398.00	897.74	2255.63	2928.71	2286.77

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY	DEPTH	AVERAGE	INTERVAL	RMS
	(TGD)	(DGD)			
798.00	399.00	900.93	2257.97	3191.71	2289.49
800.00	400.00	904.03	2260.08	3102.97	2291.88
802.00	401.00	907.07	2262.02	3034.55	2294.03
804.00	402.00	910.03	2263.75	2959.29	2295.92
806.00	403.00	913.11	2265.79	3084.84	2298.22
808.00	404.00	916.41	2268.34	3298.16	2301.23
810.00	405.00	919.76	2271.02	3353.94	2304.42
812.00	406.00	922.93	2273.22	3160.95	2306.92
814.00	407.00	925.98	2275.13	3052.31	2309.05
816.00	408.00	929.08	2277.15	3099.91	2311.32
818.00	409.00	932.19	2279.19	3110.53	2313.61
820.00	410.00	935.27	2281.16	3085.82	2315.80
822.00	411.00	938.41	2283.23	3134.77	2318.15
824.00	412.00	941.50	2285.18	3086.18	2320.32
826.00	413.00	944.53	2287.00	3033.87	2322.31
828.00	414.00	947.50	2288.65	2971.31	2324.10
830.00	415.00	950.53	2290.43	3027.77	2326.05
832.00	416.00	953.47	2291.99	2941.59	2327.73
834.00	417.00	956.42	2293.57	2947.75	2329.41
836.00	418.00	959.24	2294.82	2818.85	2330.70
838.00	419.00	962.19	2296.39	2951.97	2332.38
840.00	420.00	965.16	2298.00	2971.25	2334.11
842.00	421.00	968.04	2299.38	2880.68	2335.56
844.00	422.00	970.87	2300.65	2834.72	2336.87
846.00	423.00	973.74	2302.00	2869.63	2338.27
848.00	424.00	976.47	2302.99	2724.43	2339.26
850.00	425.00	979.23	2304.07	2762.76	2340.35
852.00	426.00	982.10	2305.41	2872.13	2341.74
854.00	427.00	984.88	2306.51	2777.04	2342.85
856.00	428.00	987.92	2308.23	3040.34	2344.72
858.00	429.00	990.89	2309.77	2969.79	2346.37
860.00	430.00	993.69	2310.90	2795.84	2347.52
862.00	431.00	996.61	2312.32	2922.55	2349.01
864.00	432.00	999.96	2314.72	3348.57	2351.82
866.00	433.00	1003.63	2317.85	3669.07	2355.71
868.00	434.00	1007.40	2321.20	3774.90	2359.96
870.00	435.00	1010.29	2322.50	2884.09	2361.30
872.00	436.00	1013.11	2323.65	2825.01	2362.47
874.00	437.00	1015.94	2324.80	2827.21	2363.63
876.00	438.00	1018.97	2326.42	3034.67	2365.38
878.00	439.00	1022.30	2328.70	3324.65	2368.01
880.00	440.00	1025.42	2330.50	3120.48	2369.99
882.00	441.00	1028.96	2333.24	3540.77	2373.30
884.00	442.00	1032.25	2335.41	3292.24	2375.78
886.00	443.00	1035.89	2338.36	3642.82	2379.40
888.00	444.00	1038.88	2339.82	2984.50	2380.94
890.00	445.00	1041.70	2340.90	2822.51	2382.02
892.00	446.00	1044.53	2342.00	2830.57	2383.12
894.00	447.00	1047.31	2342.98	2778.56	2384.08
896.00	448.00	1050.46	2344.78	3151.73	2386.07
898.00	449.00	1053.30	2345.87	2834.59	2387.16
900.00	450.00	1056.10	2346.88	2798.83	2388.15
902.00	451.00	1058.81	2347.70	2715.94	2388.93
904.00	452.00	1061.59	2348.64	2775.76	2389.85
906.00	453.00	1064.59	2350.08	2999.63	2391.37
908.00	454.00	1067.41	2351.12	2819.95	2392.40
910.00	455.00	1070.18	2352.05	2776.00	2393.31
912.00	456.00	1072.96	2352.98	2777.22	2394.22
914.00	457.00	1075.74	2353.91	2776.37	2395.12

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY (TGD)	DEPTH (DGD)	AVERAGE	INTERVAL	RMS
916.00	458.00	1078.48	2354.77	2748.54	2395.95
918.00	459.00	1081.15	2355.44	2662.72	2396.56
920.00	460.00	1083.93	2356.38	2786.62	2397.48
922.00	461.00	1086.77	2357.41	2832.76	2398.51
924.00	462.00	1089.61	2358.46	2839.72	2399.55
926.00	463.00	1092.35	2359.30	2748.05	2400.36
928.00	464.00	1094.80	2359.48	2445.92	2400.46
930.00	465.00	1097.32	2359.83	2519.04	2400.72
932.00	466.00	1099.93	2360.37	2612.79	2401.20
934.00	467.00	1102.62	2361.07	2685.55	2401.84
936.00	468.00	1105.10	2361.32	2479.98	2402.01
938.00	469.00	1107.81	2362.06	2708.25	2402.71
940.00	470.00	1110.39	2362.53	2581.30	2403.10
942.00	471.00	1113.03	2363.11	2638.31	2403.62
944.00	472.00	1115.66	2363.69	2636.60	2404.14
946.00	473.00	1118.35	2364.37	2683.35	2404.77
948.00	474.00	1121.23	2365.46	2883.54	2405.88
950.00	475.00	1124.04	2366.40	2809.08	2406.80
952.00	476.00	1126.90	2367.43	2857.91	2407.83
954.00	477.00	1129.82	2368.59	2920.29	2409.02
956.00	478.00	1132.65	2369.57	2837.77	2410.00
958.00	479.00	1135.42	2370.40	2769.17	2410.80
960.00	480.00	1138.15	2371.15	2729.74	2411.51
962.00	481.00	1140.88	2371.90	2728.88	2412.21
964.00	482.00	1143.59	2372.59	2706.18	2412.86
966.00	483.00	1146.38	2373.45	2787.60	2413.70
968.00	484.00	1149.13	2374.24	2757.81	2414.46
970.00	485.00	1151.85	2374.94	2714.11	2415.12
972.00	486.00	1154.57	2375.66	2722.90	2415.79
974.00	487.00	1157.21	2376.20	2639.65	2416.27
976.00	488.00	1159.95	2376.95	2741.09	2416.98
978.00	489.00	1162.79	2377.90	2840.09	2417.92
980.00	490.00	1165.69	2378.95	2896.00	2418.99
982.00	491.00	1168.72	2380.29	3034.67	2420.41
984.00	492.00	1171.68	2381.46	2954.22	2421.61
986.00	493.00	1174.79	2382.95	3118.77	2423.23
988.00	494.00	1177.92	2384.46	3125.85	2424.86
990.00	495.00	1181.04	2385.94	3120.00	2426.46
992.00	496.00	1183.99	2387.09	2953.86	2427.64
994.00	497.00	1186.70	2387.72	2703.49	2428.23
996.00	498.00	1189.47	2388.49	2769.17	2428.96
998.00	499.00	1192.35	2389.48	2883.54	2429.95
1000.00	500.00	1195.26	2390.53	2911.99	2431.01
1002.00	501.00	1198.06	2391.33	2792.36	2431.79
1004.00	502.00	1200.98	2392.40	2929.57	2432.88
1006.00	503.00	1203.75	2393.14	2766.11	2433.59
1008.00	504.00	1206.49	2393.83	2738.77	2434.23
1010.00	505.00	1209.31	2394.68	2824.34	2435.07
1012.00	506.00	1212.15	2395.56	2837.40	2435.93
1014.00	507.00	1214.93	2396.30	2774.66	2436.64
1016.00	508.00	1217.80	2397.25	2876.22	2437.59
1018.00	509.00	1220.68	2398.20	2880.00	2438.53
1020.00	510.00	1223.54	2399.09	2854.49	2439.42
1022.00	511.00	1226.26	2399.72	2720.34	2440.00
1024.00	512.00	1229.00	2400.40	2745.97	2440.63
1026.00	513.00	1231.73	2401.04	2731.57	2441.24
1028.00	514.00	1234.50	2401.75	2765.75	2441.91
1030.00	515.00	1237.18	2402.29	2677.49	2442.39
1032.00	516.00	1239.79	2402.70	2613.53	2442.73

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY	DEPTH	AVERAGE	INTERVAL	RMS
	(TGD)	(DGD)			
1034.00	517.00	1242.67	2403.62	2882.57	2443.66
1036.00	518.00	1245.55	2404.55	2880.98	2444.58
1038.00	519.00	1248.32	2405.24	2764.16	2445.23
1040.00	520.00	1251.06	2405.88	2739.99	2445.84
1042.00	521.00	1253.59	2406.12	2527.59	2445.99
1044.00	522.00	1256.13	2406.38	2544.31	2446.19
1046.00	523.00	1258.91	2407.09	2776.37	2446.86
1048.00	524.00	1261.44	2407.34	2537.48	2447.04
1050.00	525.00	1263.88	2407.39	2434.33	2447.01
1052.00	526.00	1266.45	2407.69	2566.16	2447.25
1054.00	527.00	1269.22	2408.39	2778.56	2447.92
1056.00	528.00	1272.10	2409.29	2880.13	2448.81
1058.00	529.00	1275.04	2410.28	2935.55	2449.82
1060.00	530.00	1277.86	2411.07	2825.07	2450.58
1062.00	531.00	1280.64	2411.76	2780.03	2451.24
1064.00	532.00	1283.40	2412.41	2759.89	2451.86
1066.00	533.00	1286.17	2413.07	2764.04	2452.48
1068.00	534.00	1289.03	2413.92	2864.50	2453.32
1070.00	535.00	1291.90	2414.76	2864.14	2454.15
1072.00	536.00	1294.74	2415.55	2838.26	2454.92
1074.00	537.00	1297.67	2416.52	2938.11	2455.91
1076.00	538.00	1300.70	2417.66	3026.73	2457.10
1078.00	539.00	1303.74	2418.81	3036.99	2458.30
1080.00	540.00	1306.68	2419.77	2940.31	2459.28
1082.00	541.00	1309.63	2420.76	2953.49	2460.28
1084.00	542.00	1312.59	2421.75	2958.25	2461.29
1086.00	543.00	1315.57	2422.79	2984.38	2462.36
1088.00	544.00	1318.45	2423.62	2874.88	2463.18
1090.00	545.00	1321.31	2424.42	2861.94	2463.97
1092.00	546.00	1324.20	2425.27	2885.01	2464.81
1094.00	547.00	1327.03	2426.01	2832.15	2465.53
1096.00	548.00	1329.90	2426.83	2875.12	2466.34
1098.00	549.00	1332.88	2427.83	2977.91	2467.37
1100.00	550.00	1335.73	2428.60	2846.68	2468.11
1102.00	551.00	1338.48	2429.18	2752.32	2468.66
1104.00	552.00	1341.31	2429.91	2828.12	2469.36
1106.00	553.00	1344.21	2430.77	2906.37	2470.22
1108.00	554.00	1346.99	2431.38	2771.00	2470.79
1110.00	555.00	1349.96	2432.36	2976.20	2471.80
1112.00	556.00	1352.98	2433.42	3020.75	2472.89
1114.00	557.00	1355.85	2434.21	2872.68	2473.67
1116.00	558.00	1358.73	2435.00	2877.20	2474.45
1118.00	559.00	1361.63	2435.83	2896.73	2475.27
1120.00	560.00	1364.54	2436.67	2906.98	2476.11
1122.00	561.00	1367.46	2437.54	2921.88	2476.97
1124.00	562.00	1370.55	2438.70	3090.94	2478.20
1126.00	563.00	1373.60	2439.79	3053.71	2479.34
1128.00	564.00	1376.33	2440.31	2732.54	2479.81
1130.00	565.00	1379.01	2440.73	2679.32	2480.18
1132.00	566.00	1381.74	2441.25	2730.71	2480.65
1134.00	567.00	1384.49	2441.79	2747.80	2481.14
1136.00	568.00	1387.29	2442.42	2802.00	2481.74
1138.00	569.00	1390.12	2443.09	2822.63	2482.38
1140.00	570.00	1392.86	2443.61	2740.97	2482.86
1142.00	571.00	1395.51	2443.98	2651.86	2483.17
1144.00	572.00	1398.23	2444.46	2719.85	2483.60
1146.00	573.00	1400.97	2444.98	2740.72	2484.07
1148.00	574.00	1403.67	2445.41	2697.14	2484.46
1150.00	575.00	1406.38	2445.88	2714.72	2484.88

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY	DEPTH	AVERAGE	INTERVAL	RMS
	(TGD)	(DGD)			
1152.00	576.00	1409.14	2446.43	2761.96	2485.39
1154.00	577.00	1411.92	2447.00	2773.56	2485.92
1156.00	578.00	1414.68	2447.54	2762.45	2486.42
1158.00	579.00	1417.39	2447.99	2706.30	2486.82
1160.00	580.00	1420.12	2448.49	2737.18	2487.27
1162.00	581.00	1422.99	2449.22	2870.00	2487.98
1164.00	582.00	1425.87	2449.95	2878.30	2488.70
1166.00	583.00	1428.66	2450.53	2787.72	2489.25
1168.00	584.00	1431.40	2451.03	2738.65	2489.69
1170.00	585.00	1434.13	2451.50	2727.91	2490.12
1172.00	586.00	1436.85	2451.97	2725.95	2490.54
1174.00	587.00	1439.70	2452.64	2849.85	2491.20
1176.00	588.00	1442.53	2453.28	2824.71	2491.80
1178.00	589.00	1445.24	2453.72	2715.70	2492.20
1180.00	590.00	1447.92	2454.11	2680.54	2492.53
1182.00	591.00	1450.62	2454.51	2694.70	2492.89
1184.00	592.00	1453.32	2454.93	2698.97	2493.25
1186.00	593.00	1455.98	2455.27	2658.94	2493.54
1188.00	594.00	1458.52	2455.42	2544.56	2493.63
1190.00	595.00	1461.16	2455.72	2635.74	2493.87
1192.00	596.00	1463.90	2456.21	2744.14	2494.31
1194.00	597.00	1466.54	2456.51	2635.99	2494.56
1196.00	598.00	1469.14	2456.75	2599.73	2494.74
1198.00	599.00	1471.80	2457.09	2662.96	2495.03
1200.00	600.00	1474.65	2457.75	2851.81	2495.66
1202.00	601.00	1478.04	2459.30	3388.67	2497.42
1204.00	602.00	1480.85	2459.89	2813.35	2497.97
1206.00	603.00	1483.84	2460.77	2990.97	2498.87
1208.00	604.00	1486.81	2461.61	2967.53	2499.72
1210.00	605.00	1489.71	2462.33	2901.25	2500.44
1212.00	606.00	1492.61	2463.05	2896.24	2501.14
1214.00	607.00	1495.52	2463.78	2906.13	2501.86
1216.00	608.00	1498.50	2464.64	2988.28	2502.74
1218.00	609.00	1501.70	2465.85	3196.66	2504.04
1220.00	610.00	1504.90	2467.04	3196.78	2505.33
1222.00	611.00	1508.14	2468.32	3245.73	2506.72
1224.00	612.00	1511.28	2469.41	3138.43	2507.88
1226.00	613.00	1514.20	2470.15	2922.24	2508.61
1228.00	614.00	1517.22	2471.04	3015.38	2509.52
1230.00	615.00	1520.25	2471.96	3034.67	2510.47
1232.00	616.00	1523.21	2472.75	2959.72	2511.26
1234.00	617.00	1526.12	2473.45	2903.44	2511.95
1236.00	618.00	1529.10	2474.27	2979.61	2512.77
1238.00	619.00	1532.09	2475.10	2991.94	2513.62
1240.00	620.00	1535.04	2475.88	2957.03	2514.40
1242.00	621.00	1538.01	2476.67	2968.63	2515.20
1244.00	622.00	1541.24	2477.87	3224.12	2516.50
1246.00	623.00	1544.23	2478.70	2993.53	2517.33
1248.00	624.00	1547.17	2479.44	2940.92	2518.07
1250.00	625.00	1550.12	2480.20	2950.56	2518.82
1252.00	626.00	1553.14	2481.06	3020.63	2519.70
1254.00	627.00	1556.27	2482.09	3129.88	2520.79
1256.00	628.00	1559.40	2483.12	3127.08	2521.88
1258.00	629.00	1562.41	2483.96	3009.52	2522.73
1260.00	630.00	1565.35	2484.68	2941.77	2523.45
1262.00	631.00	1568.34	2485.49	2993.29	2524.26
1264.00	632.00	1571.33	2486.28	2982.91	2525.05
1266.00	633.00	1574.41	2487.22	3079.59	2526.02
1268.00	634.00	1577.81	2488.66	3402.47	2527.64

----- TIME -----		DATUM	----- VELOCITY -----		
2 WAY	1 WAY (TGD)	DEPTH (DGD)	AVERAGE	INTERVAL	RMS
1270.00	635.00	1581.07	2489.87	3259.77	2528.96
1272.00	636.00	1584.30	2491.04	3234.99	2530.23
1274.00	637.00	1587.54	2492.21	3232.30	2531.48
1276.00	638.00	1590.89	2493.56	3352.29	2532.98
1278.00	639.00	1594.24	2494.90	3352.78	2534.47
1280.00	640.00	1597.49	2496.07	3245.61	2535.74
1282.00	641.00	1600.77	2497.30	3278.93	2537.06
1284.00	642.00	1604.12	2498.63	3351.20	2538.54
1286.00	643.00	1607.52	2500.03	3399.29	2540.10
1288.00	644.00	1610.89	2501.38	3372.68	2541.61
1290.00	645.00	1614.15	2502.56	3260.62	2542.88
1292.00	646.00	1617.41	2503.73	3257.57	2544.14
1294.00	647.00	1620.74	2505.01	3332.40	2545.55
1296.00	648.00	1624.04	2506.23	3295.78	2546.87
1298.00	649.00	1627.28	2507.37	3248.66	2548.10
1300.00	650.00	1630.63	2508.66	3342.65	2549.52
1302.00	651.00	1633.90	2509.83	3273.80	2550.79
1304.00	652.00	1637.15	2510.96	3244.87	2552.00
1306.00	653.00	1640.35	2512.01	3199.34	2553.11
1308.00	654.00	1643.60	2513.15	3254.64	2554.33
1310.00	655.00	1646.98	2514.48	3382.81	2555.80
1312.00	656.00	1650.33	2515.75	3347.41	2557.20
1314.00	657.00	1653.69	2517.04	3362.30	2558.61
1316.00	658.00	1657.08	2518.35	3385.01	2560.07
1318.00	659.00	1660.45	2519.65	3375.00	2561.50
1320.00	660.00	1663.81	2520.93	3359.86	2562.90
1322.00	661.00	1667.16	2522.18	3348.88	2564.27
1324.00	662.00	1670.55	2523.49	3388.18	2565.72
1326.00	663.00	1673.86	2524.68	3310.55	2567.00
1328.00	664.00	1677.03	2525.64	3166.87	2568.01
1330.00	665.00	1680.11	2526.48	3083.62	2568.87
1332.00	666.00	1683.20	2527.33	3091.31	2569.73
1334.00	667.00	1686.43	2528.38	3227.91	2570.84
1336.00	668.00	1689.55	2529.26	3117.31	2571.75
1338.00	669.00	1692.70	2530.19	3153.32	2572.72
1340.00	670.00	1695.88	2531.16	3178.22	2573.73
1342.00	671.00	1698.98	2532.01	3100.22	2574.59
1344.00	672.00	1702.07	2532.84	3089.84	2575.43
1346.00	673.00	1705.23	2533.78	3165.41	2576.41
1348.00	674.00	1708.36	2534.65	3121.70	2577.30
1350.00	675.00	1711.59	2535.69	3233.15	2578.40
1352.00	676.00	1714.77	2536.64	3178.71	2579.39
1354.00	677.00	1717.93	2537.56	3163.82	2580.35
1356.00	678.00	1721.09	2538.48	3160.28	2581.30
1358.00	679.00	1724.35	2539.54	3255.74	2582.43
1360.00	680.00	1727.50	2540.44	3150.63	2583.35
1362.00	681.00	1730.64	2541.33	3146.73	2584.27
1364.00	682.00	1733.89	2542.36	3244.14	2585.36
1366.00	683.00	1737.20	2543.49	3312.62	2586.58
1368.00	684.00	1740.60	2544.73	3397.09	2587.95
1370.00	685.00	1744.26	2546.37	3664.55	2589.84
1372.00	686.00	1747.74	2547.73	3477.05	2591.36
1374.00	687.00	1750.95	2548.69	3211.18	2592.37
1376.00	688.00	1754.16	2549.66	3211.18	2593.38
1378.00	689.00	1757.37	2550.61	3211.18	2594.38
1380.00	690.00	1760.59	2551.57	3211.30	2595.38

14. DIRECTIONAL SURVEY

SANTOS & PARTNERS

WELL : MARTHA-1

DIRECTIONAL SURVEY

CONTRACTOR

BAKER ATLAS

SURVEY DATE

01-11-04

REFERENCE ELEVATION

21.50 M ABOVE DATUM REF.

MEASURED DEPTH	INCLINATION ANGLE	AZIMUTH ANGLE (FROM NORTH)	VERTICAL DEPTH	N/S COORD. NORTH = +	E/W COORD. EAST = +
(M)	(DEG)	(DEG)	(M)	(M)	(M)
672.92	0.36	121.6	672.92	0.00	0.00
731.00	0.56	135.4	731.00	-0.30	0.35
759.74	0.35	171.4	759.74	-0.48	0.47
846.09	0.12	248.9	846.09	-0.78	0.42
872.68	0.05	166.1	872.68	-0.80	0.40
960.62	1.59	200.7	960.60	-1.98	-0.02
989.35	1.27	184.6	989.33	-2.67	-0.19
1017.99	2.00	214.1	1017.95	-3.40	-0.49
1046.87	2.46	218.6	1046.81	-4.30	-1.16
1075.51	2.33	211.0	1075.43	-5.28	-1.85
1104.15	2.36	211.1	1104.04	-6.28	-2.45
1132.60	2.43	210.4	1132.47	-7.30	-3.06
1161.23	2.65	210.3	1161.07	-8.40	-3.70
1189.87	2.78	210.7	1189.68	-9.57	-4.39
1218.57	3.07	212.2	1218.34	-10.82	-5.15
1247.39	3.46	212.5	1247.11	-12.20	-6.03
1276.08	3.78	212.7	1275.75	-13.73	-7.01
1304.67	3.60	212.6	1304.28	-15.28	-8.00
1333.52	3.43	215.6	1333.07	-16.75	-8.99
1362.11	3.23	216.6	1361.61	-18.09	-9.97
1390.88	3.10	219.1	1390.34	-19.34	-10.94
1419.53	3.12	219.4	1418.95	-20.55	-11.92
1448.27	3.07	219.3	1447.65	-21.75	-12.91
1476.85	2.88	220.3	1476.19	-22.89	-13.86
1505.48	2.74	223.3	1504.78	-23.93	-14.79
1591.58	2.35	219.6	1590.80	-26.79	-17.33
1620.36	2.20	220.2	1619.56	-27.67	-18.06
1649.36	2.43	227.3	1648.53	-28.51	-18.87
1678.05	2.32	225.4	1677.20	-29.33	-19.73
1706.72	2.40	224.3	1705.84	-30.17	-20.56
1735.43	2.43	221.5	1734.53	-31.05	-21.39
1763.96	2.56	220.1	1763.03	-31.99	-22.20
1785.46	2.69	214.8	1784.51	-32.78	-22.79
1800.00	2.69	214.8	1799.03	-33.34	-23.18

15. PHASE MATCHING EXERCISE

Introduction

The processed VSP data is generally accepted to be zero phase, within the deterministic deconvolution design window, and therefore provides a good control of the surface seismic data.

Santos has requested that a phase matching exercise be performed to compare the phase and time differences between the VSP data recorded at Martha-1 and the surface seismic data recorded in this area. The surface seismic Inline 7416 was provided by Santos.

Program Overview

This process will compute the phase and time shifts needed to shape the *input data* to the *auxiliary dataset*. The program requires two input files; the primary input data to shape, and an auxiliary input dataset. The primary data to shape will be the dataset that will have the phase and time corrections applied to it; (surface seismic). The auxiliary input dataset can be thought of as the desired output dataset; it is the dataset that the primary input will be shaped to; (VSP).

Phase/Time Shift Methodology

The algorithm that this program employs to compute the linked phase and phase induced time shift is described by T. N. Bishop and A. G. Nunns (Geophysics, June 1994).

The user defines a series of iso-time windows on the input and auxiliary input datasets. The start time of the first window on the input dataset does not have to be equal to the start time of the first window on the auxiliary input dataset.

The data within the first time window on the input data to shape and the auxiliary input data are cross-correlated. The amplitude envelope and the instantaneous phase for each cross-correlation function is computed using the Hilbert transform technique of Taner et al (1979).

The peak value of the correlation envelope is found using parabolic interpolation. The instantaneous phase value at the peak time gives the derived phase rotation. This peak time gives the optimum time lag, which is the phase induced time shift. The computed time shift is the difference between the lag of the cross-correlation function and the phase induced time shift between the two windows.

This is done for all subsequent cross-correlation window pairs. The mean of the phase and time shift differences that have correlation coefficient values above a user set threshold is computed and can be applied to the input.

For a single frequency signal, a shift in time is equivalent to a shift in phase; the variables are dependent. Since seismic data is made up of many frequencies, there is only one combination

of time and phase shift that gives an optimum fit between the traces where the Hilbert transform envelope of the cross-correlation envelope is at a maximum.

A positive phase shift represents a phase lag, a negative phase shift represents a phase lead.

Data Preparation

In order to proceed with the phase matching, it was necessary to choose good quality traces from the VSP data sets and compare them with equivalent traces from the surface seismic data.

Rig Source VSP

The rig source survey was recorded over 110 levels, from 75m to 1875m TVD RT, (53.5m to 1762.54m TVD MSL). This equates to a two-way time of 63.5ms to 1381.2ms below MSL. The VSP trace used in this exercise was the 'Corridor Stack trace' as this trace best represents the reflectivity sequence at the borehole. It has been filtered down to 40Hz in order that it better matches the frequency content of the surface seismic data. It is a single trace but for display purposes it is displayed here as a 10 trace repeat.

Surface Seismic Data

Santos has supplied the surface seismic Inline 7416 for this phase matching. The Martha-1 wellhead is located at CDP 3290:

In order to improve on the reliability of the results it was first necessary to improve the signal to noise ratio, this was achieved by stacking together five consecutive traces from the surface seismic data sets before comparison.

The synthetic, VSP and selected surface seismic data is displayed in Fig 1. The VSP data is shown spliced into the surface seismic data at the appropriate well location in Fig 2.

Phase Matching Tests

The following phase matching test was conducted.

Results Fig.

VSP to Inline 7416 (stack CDP 3288-3292).....3

Data analysis window:	500-1500ms
Correlation Window Length:	100ms
Window Step:	50ms

Results

The results indicate an overall average phase shift of +21.2 degrees and an average time shift of -5.12ms for the Inline 7416. It should be noted that these values are average values, computed within the analysis window where the correlation coefficient of 0.6 or more is achieved, whilst the individual values within each 100ms window are rather scattered and lack consistency (see Figure 3).

In order to achieve reliable results from this process it is necessary to achieve 'Correlation Coefficients' values in the order of 0.9+. This value is achieved at a TWT of 1000ms and 1350ms and at these times a phase shift of approximately +20 degrees is indicated. This would seem to support and verify the overall average value of +21.2 degrees that has been used.

Application of Phase Matching Results

The overall average phase shift (+21.2 degrees) and time shift (-5.12ms) values have been applied to a selection of surface seismic data line 7416 around the well location, CDP's 3192-3390. These results are displayed in Figure 4.

These data and the results are included in the following figures:

..... **FIGURES**

Figure 1. Synthetic, VSP and Seismic Data

Figure 2. VSP and Seismic Data

Figure 3. VSP and Inline Phase Match Result

Figure 4. Surface Seismic after Phase Rotation

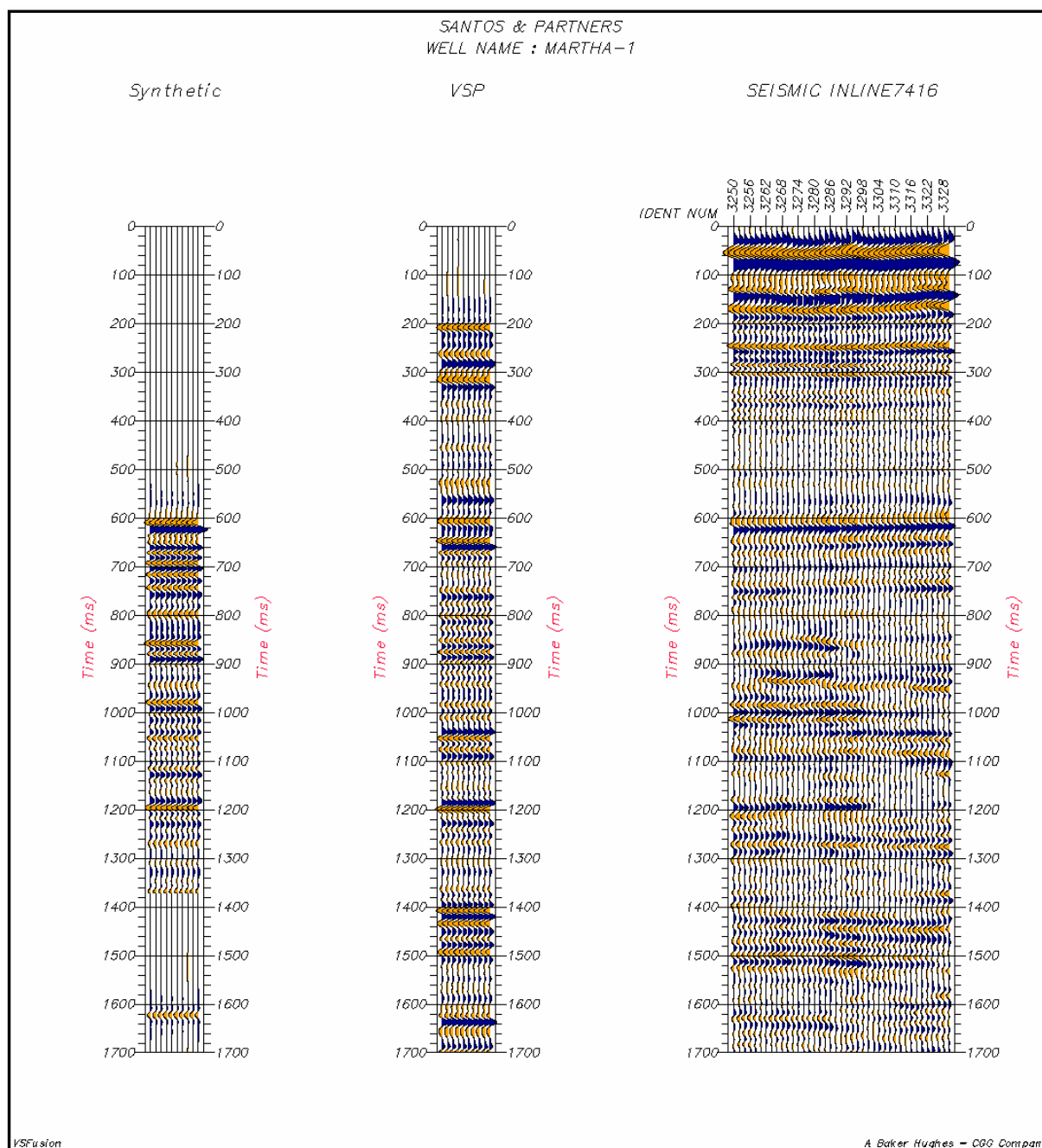


Figure1

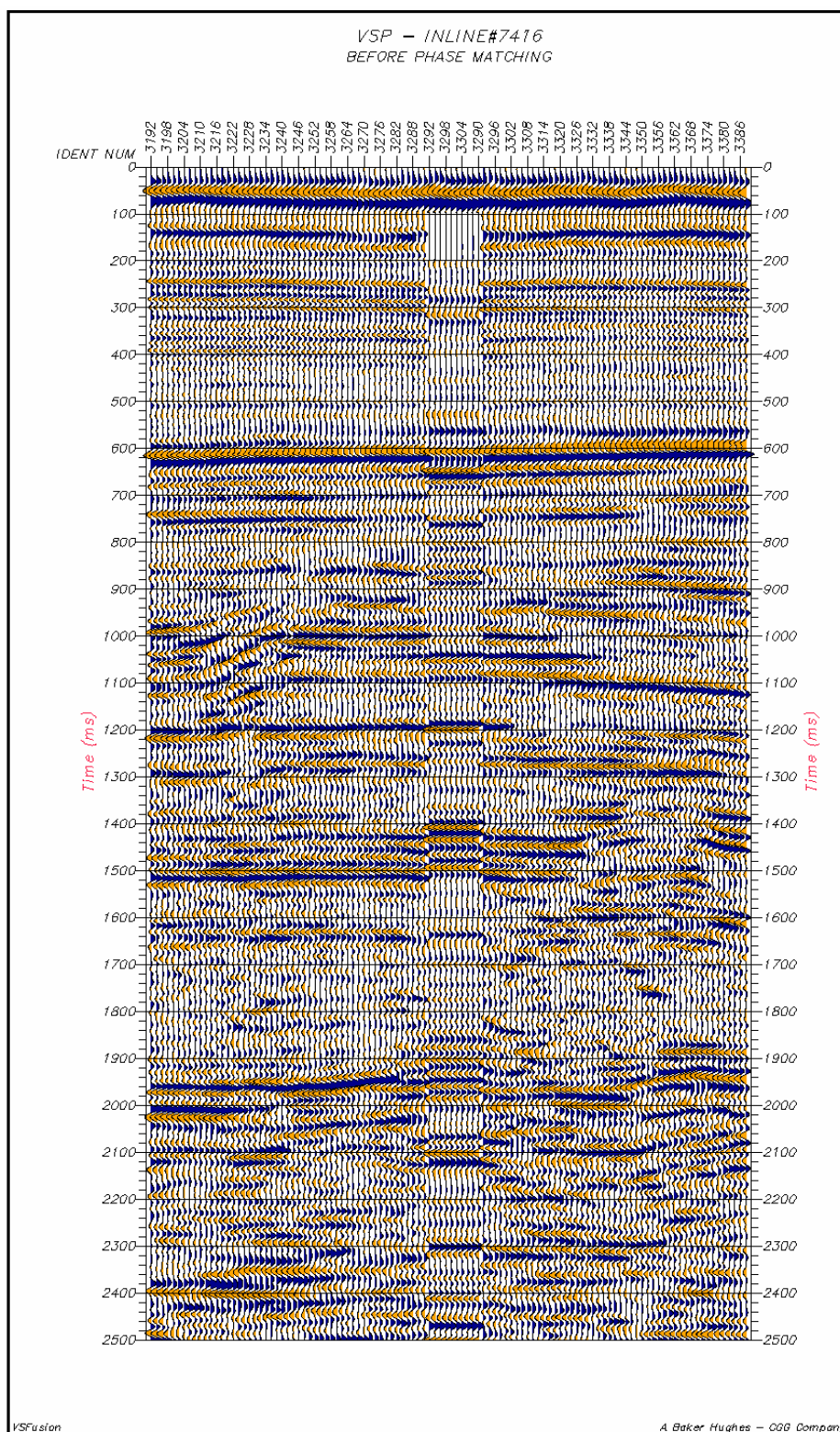


Figure 2

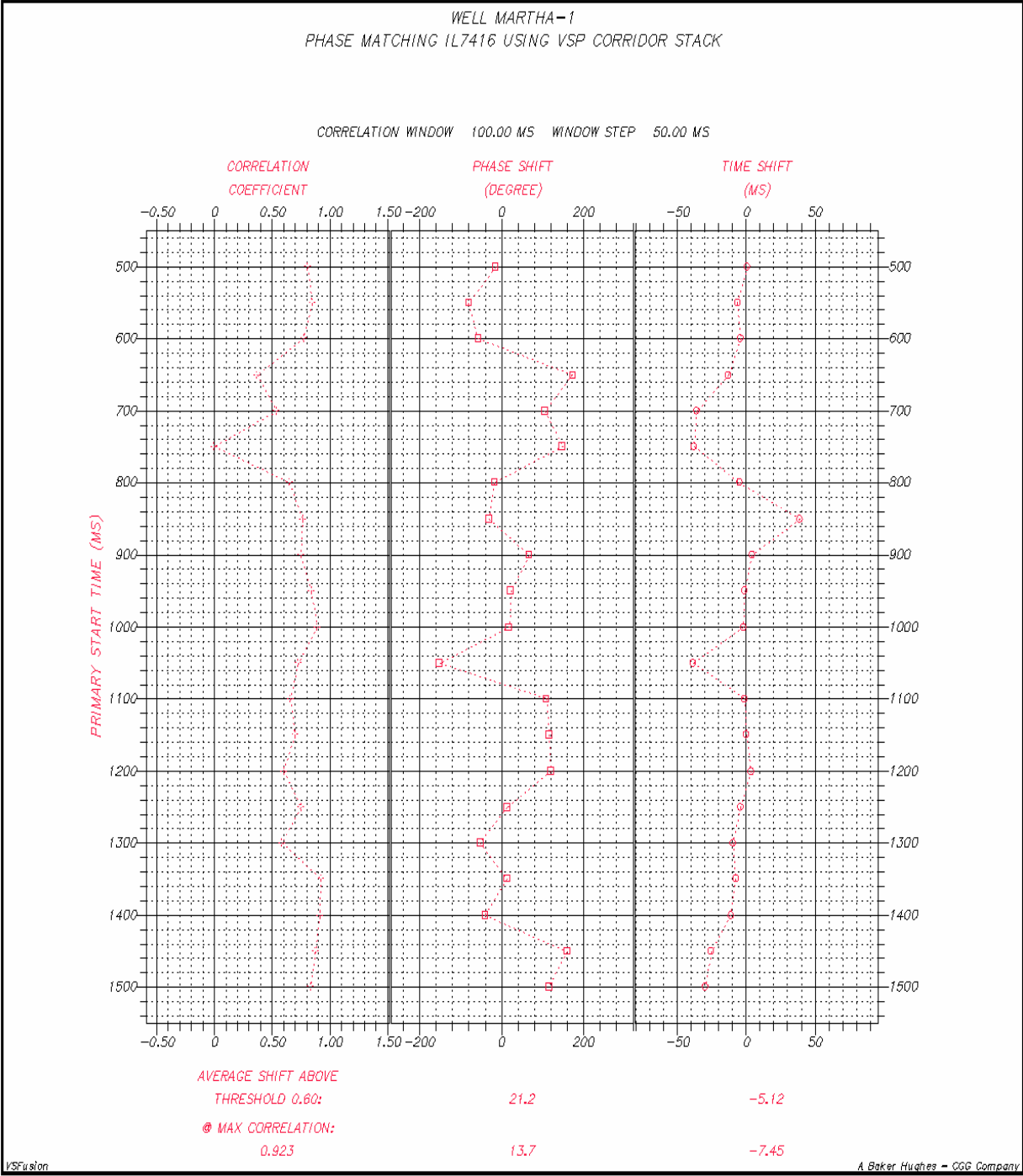


Figure 3

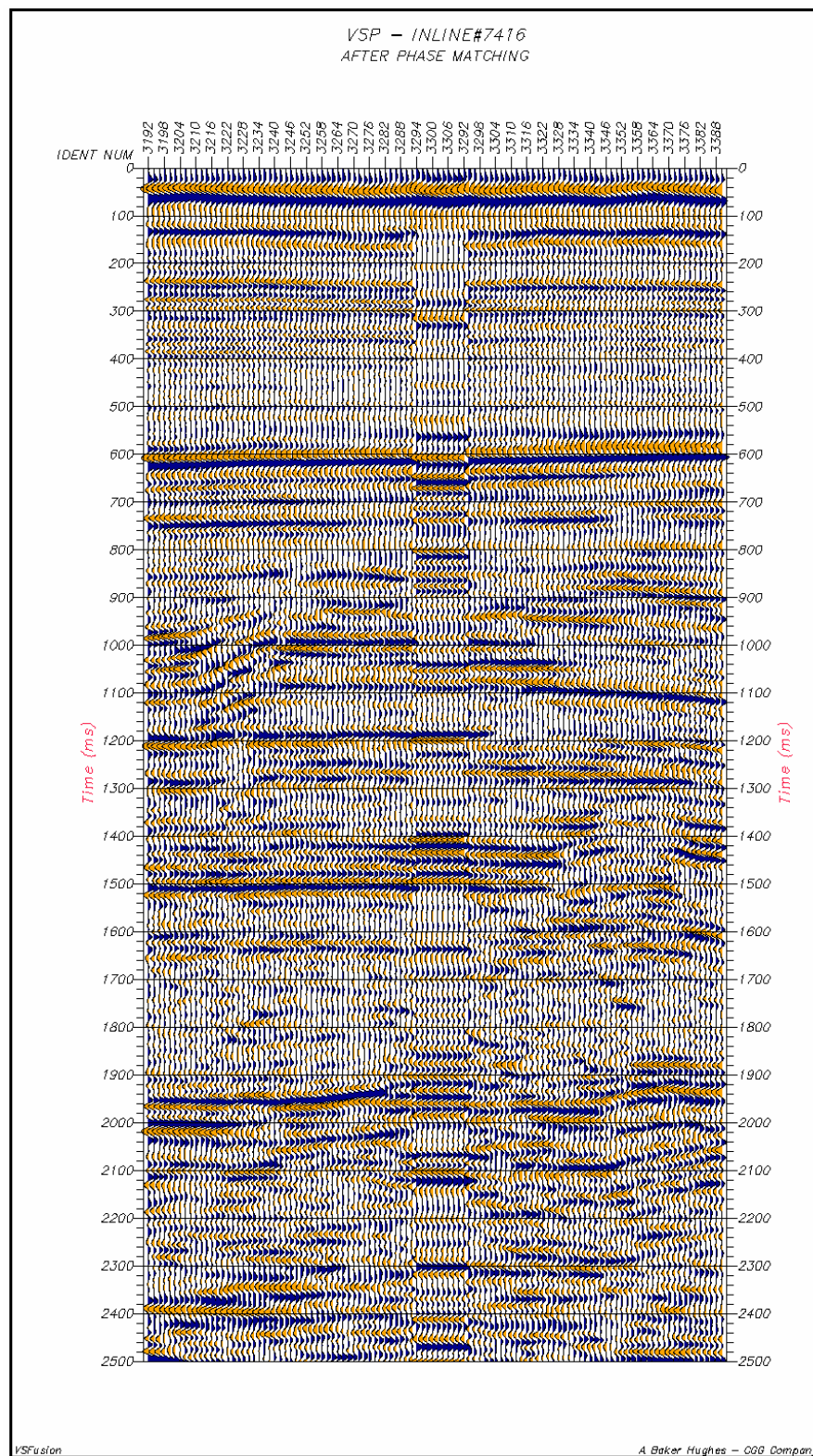
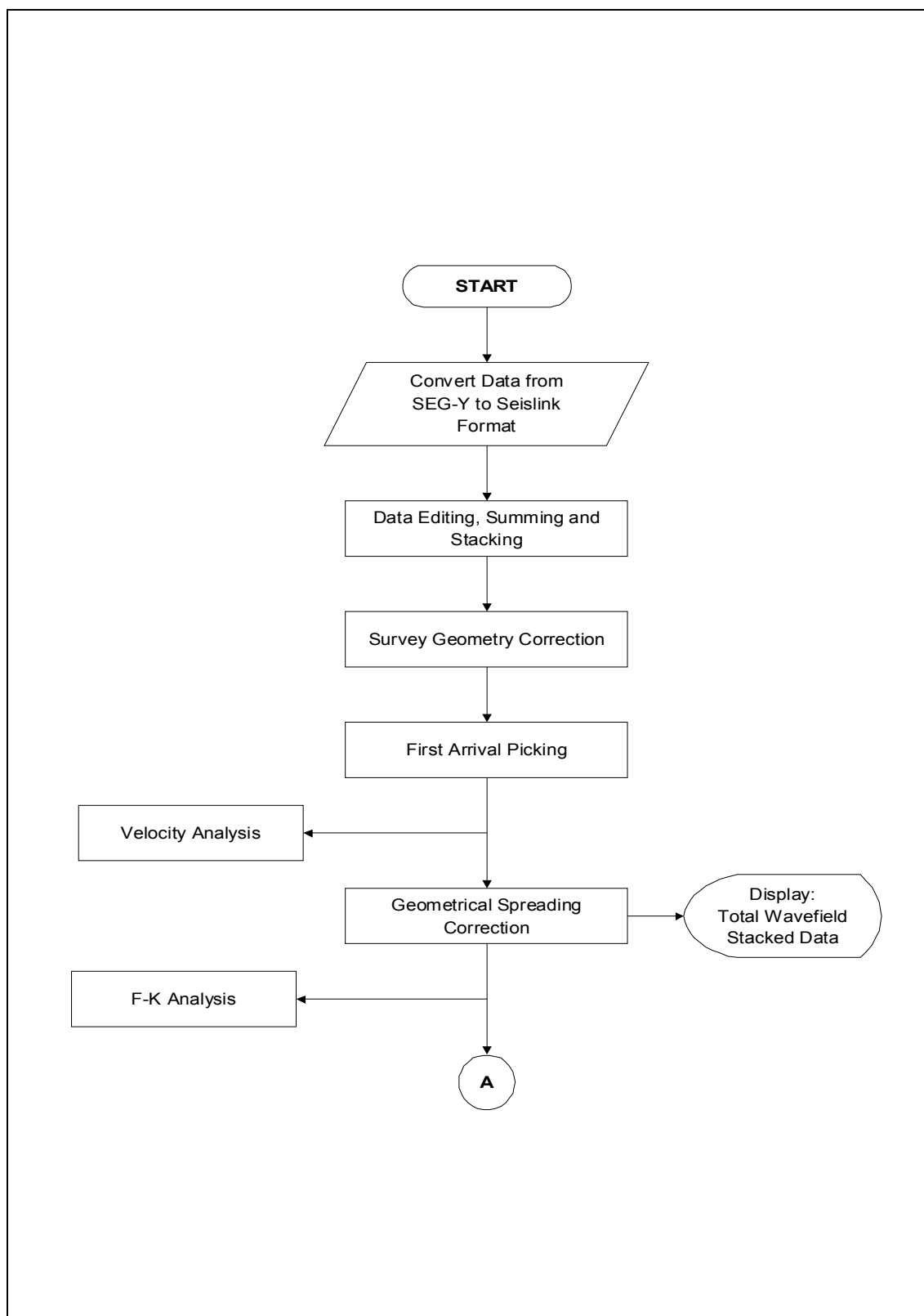
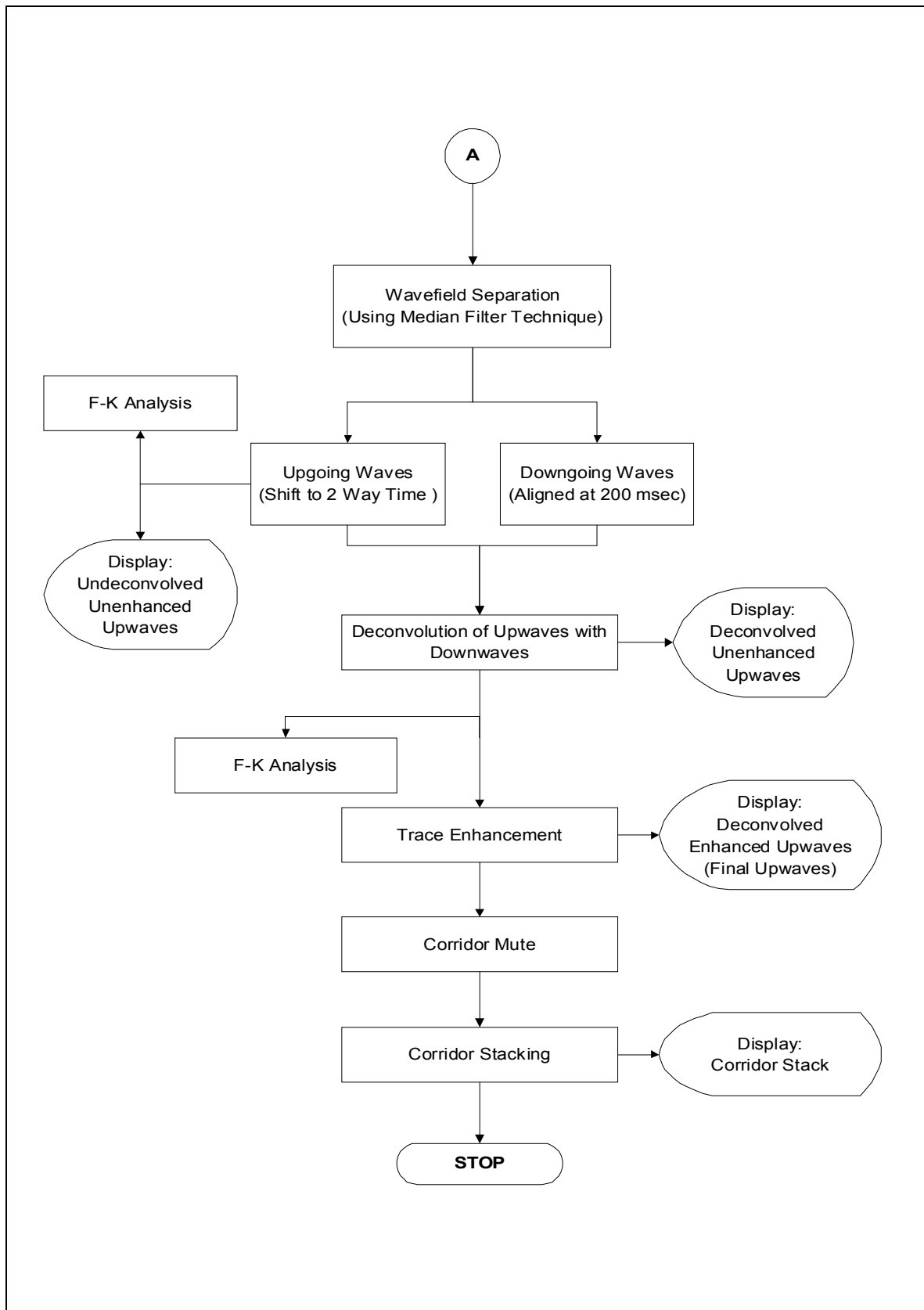
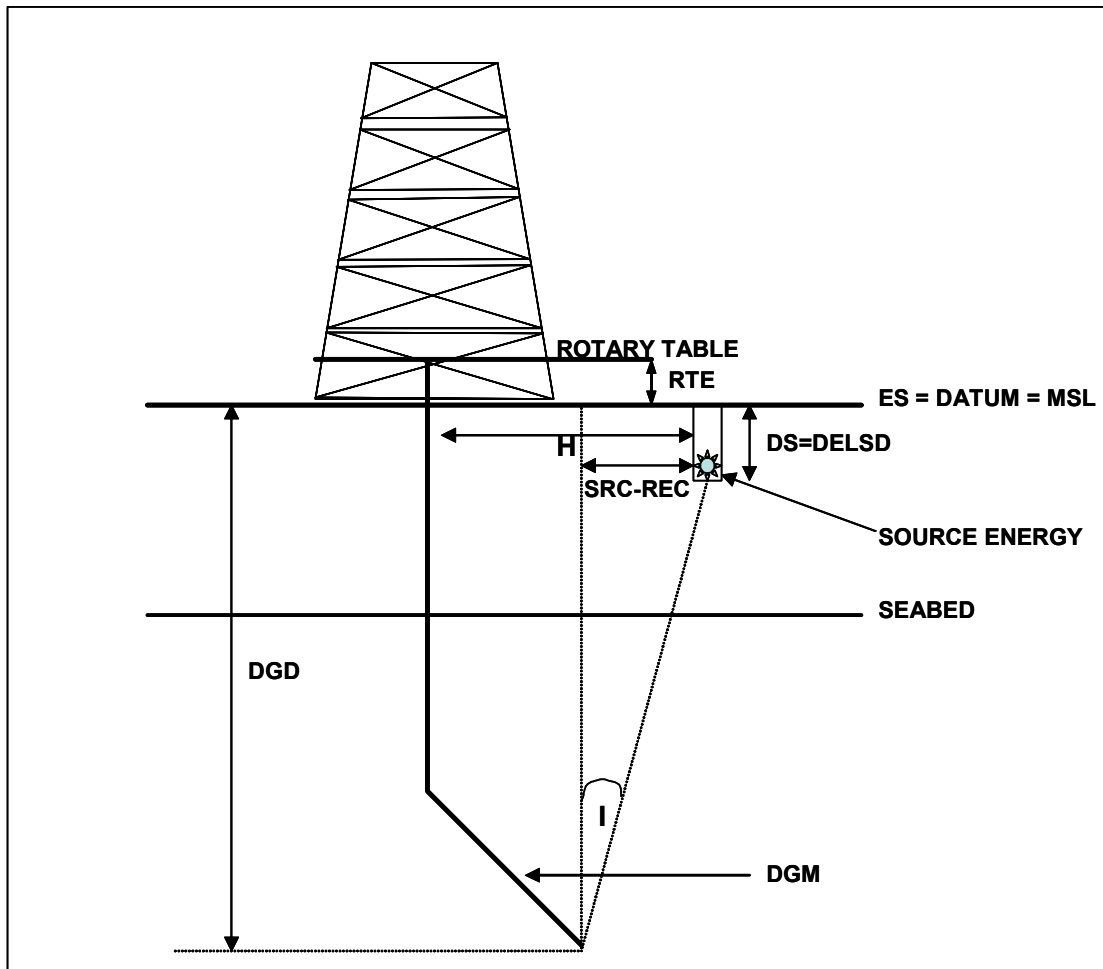


Figure 4

APPENDIX : ZVSP PROCESSING FLOWCHART



**Figure 1. NOMENCLATURE CHART
OFFSHORE SURVEY**



RTE	= Rotary Table Elevation
ES	= Source Elevation = Datum = MSL or LAT
DS	= Source Depth below MSL
H	= Source Well Head Horizontal Distance
DELS	= DS
DGM	= Geophone Measured Depth (Measured from RT along Borehole)
DGD	= Geophone True vertical Depth (TVD measured from MSL)
TGD	= One-Way Corrected Time to MSL
2 TGD	= Two-Way Corrected Time to MSL
VE	= Elevation Correction Velocity
SRC-REC	= Source Receiver Horizontal Distance
DELDGD	= Interval Vertical Depth
DELDGT	= Interval Time
$\cos I$	= $(DGD - DELSD) / \sqrt{(SRC - REC)^2 + (DGD - DELSD)^2}$

FIGURE 2. DRIFT TIME BEFORE CALIBRATION

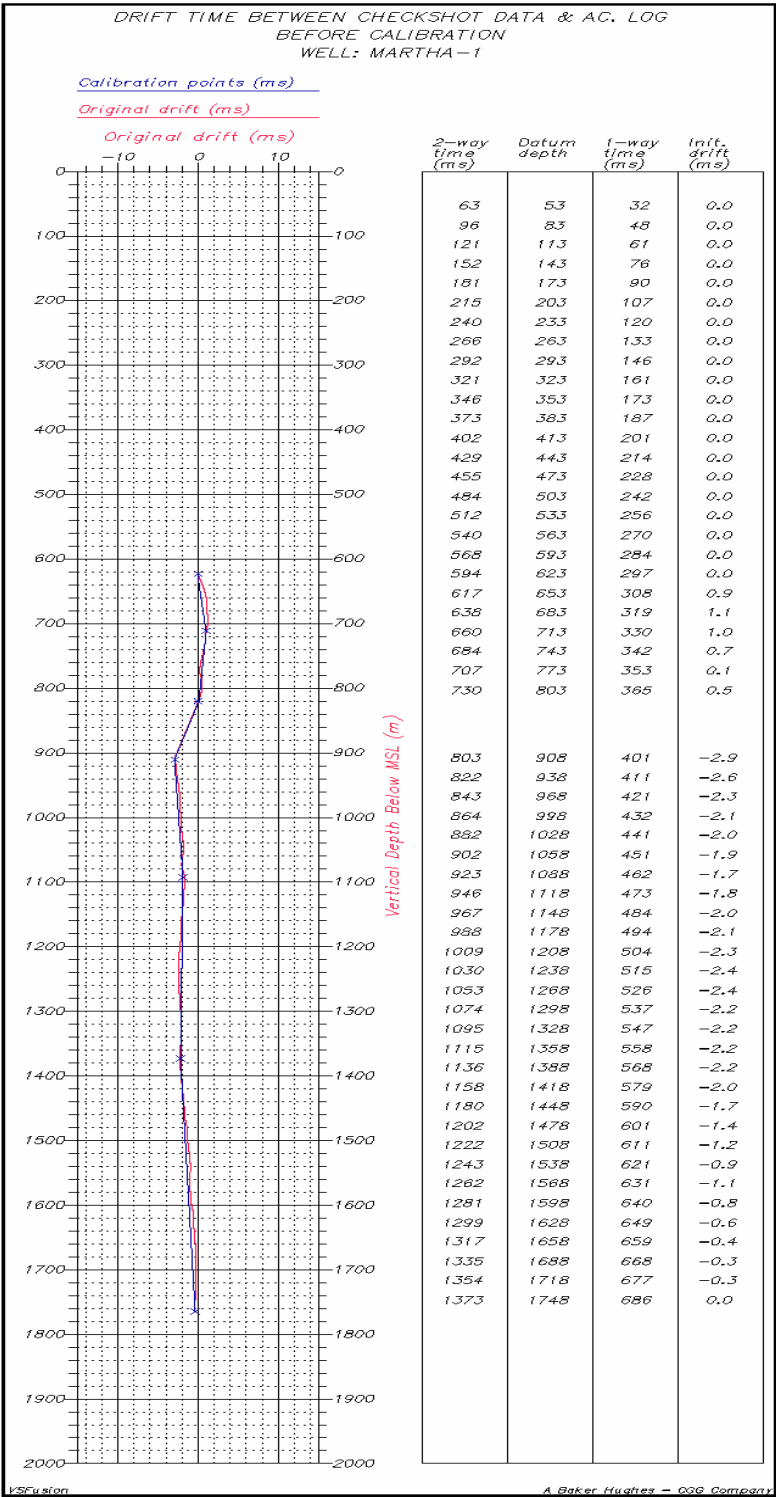


FIGURE 3. DRIFT TIME AFTER CALIBRATION

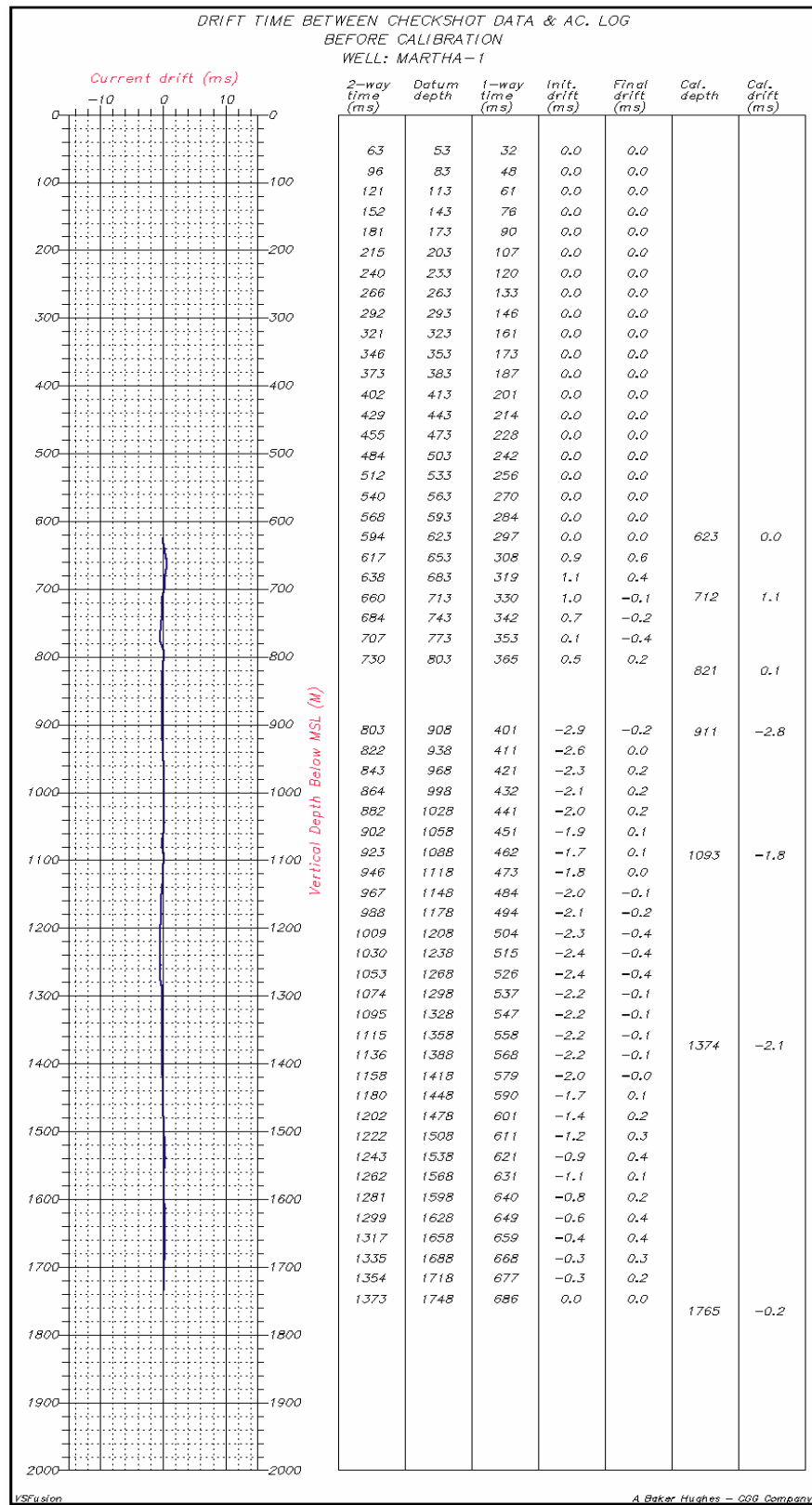


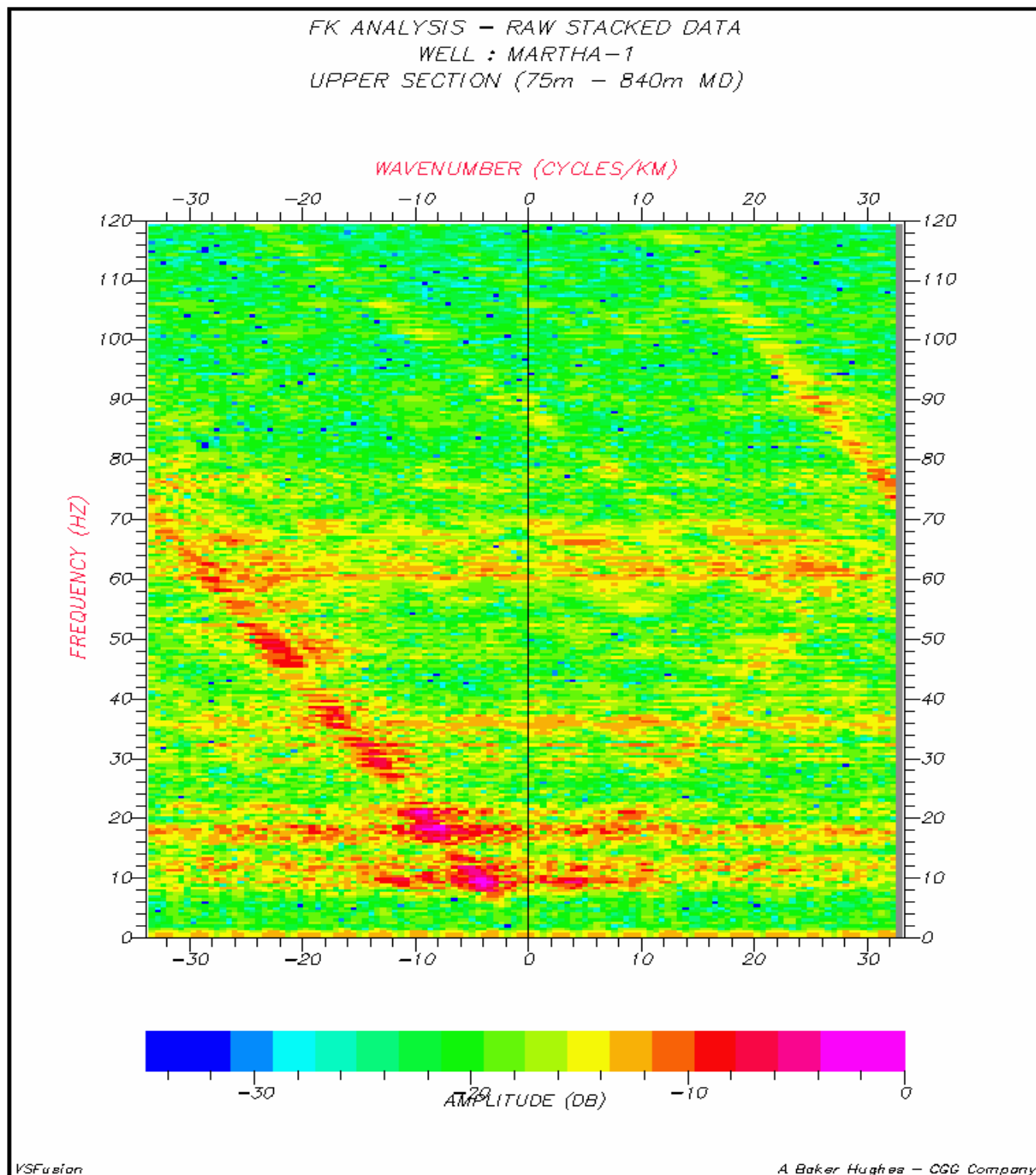
Figure 4. FK ANALYSIS – ZVSP STACKED DATA – UPER SECTION

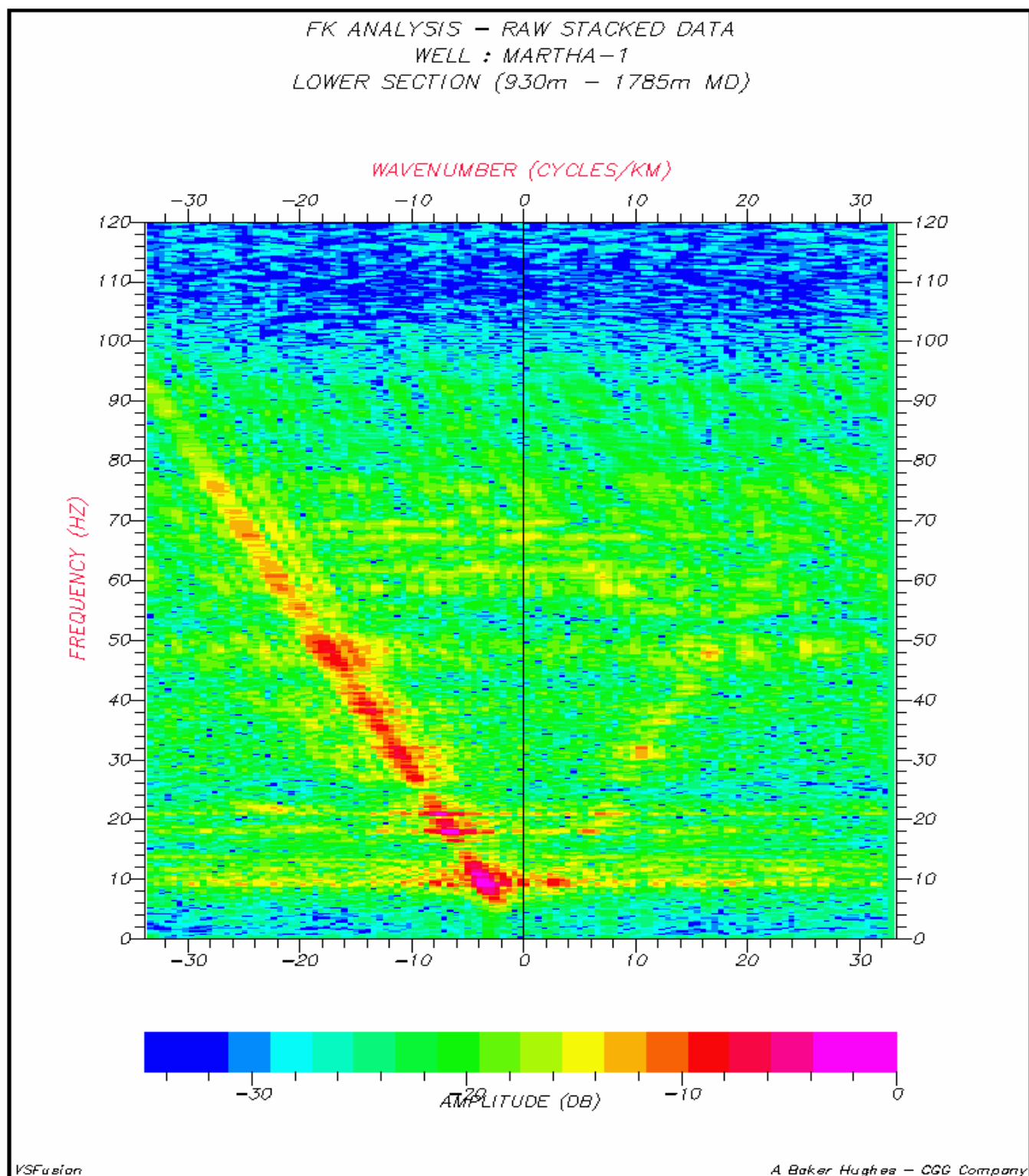
Figure 5. FK ANALYSIS – ZVSP STACKED DATA – LOWER SECTION

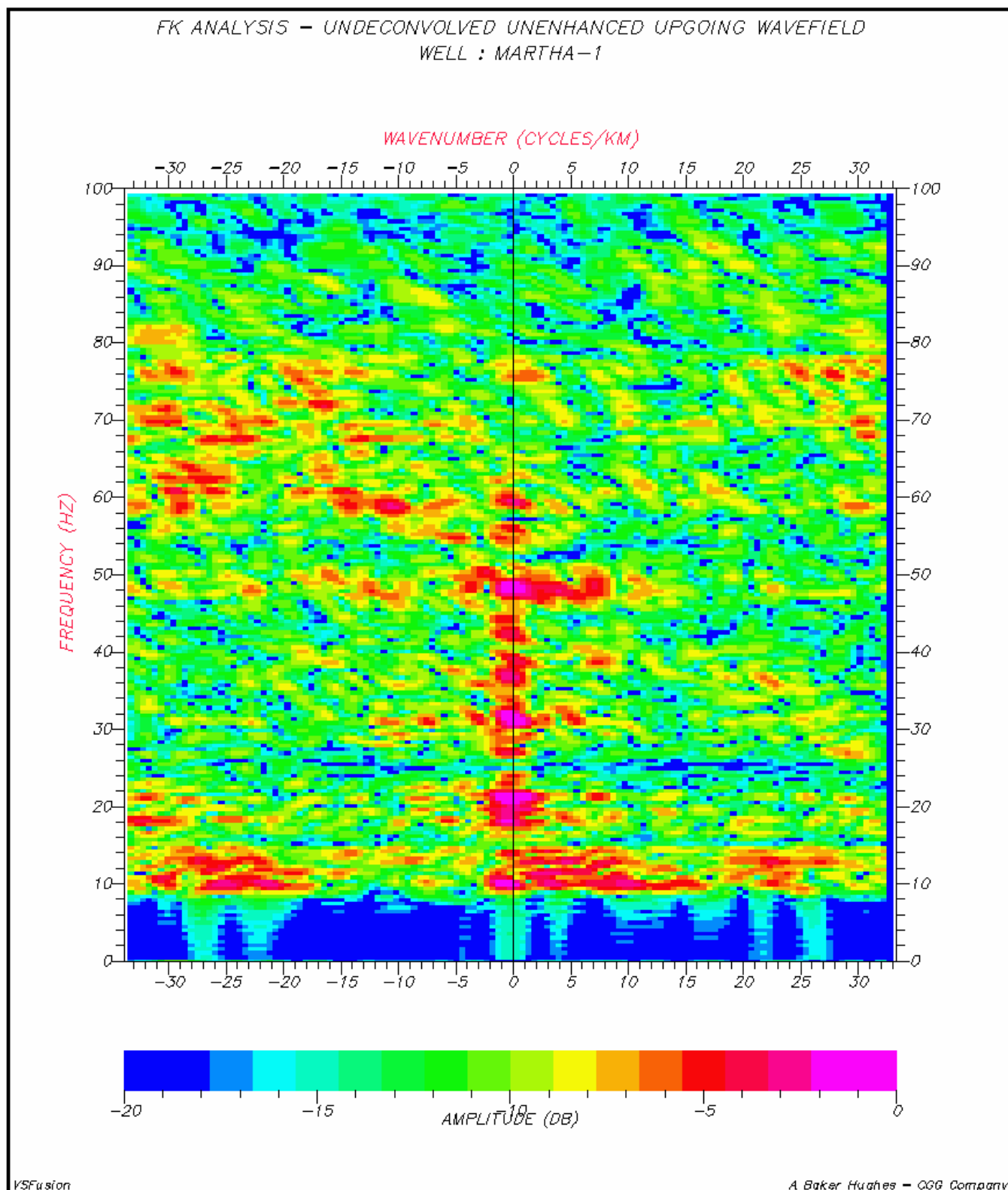
FIGURE 6. FK ANALYSIS – UNDECONVOLVED UNENHANCED UPWAVES

FIGURE 7. FK ANALYSIS – DECONVOLVED UNENHANCED UPWAVES