FUGRO SEISMIC IMAGING PTY LTD

SEISMIC DATA PROCESSING REPORT

FOR

SANTOS LIMITED

Location : Cape Sorell
Survey : 2004 SS04 2D Processing

Date : July 2005

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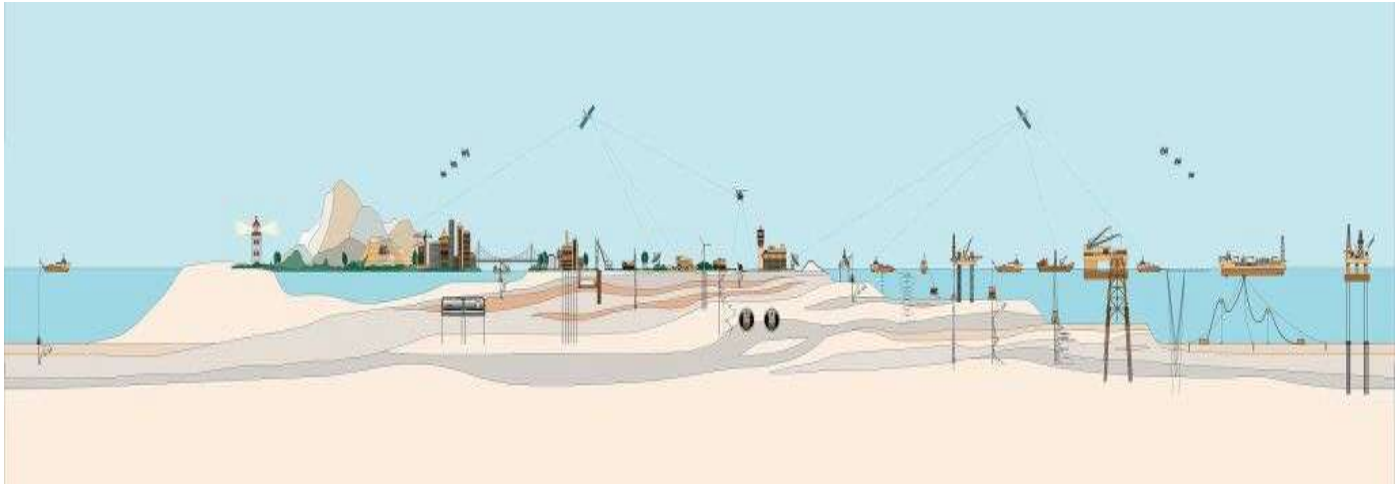

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1 INTRODUCTION

The SS04 Survey recorded T/36P consisted of 16 lines totalling 680kms. These lines in-filled the existing 2D data that was reprocessed during the 3rd quarter 2004. Processing began in February and was completed in July 2005.

The SS04 Survey, acquired with a longer cable has different geometry from the Repro.. Processing paremeters and sequence, though quite similar to the Repro. were tested to confirm they are suitable for this geometry. Lines nominated by Santos for testing are SS04-006 and SS04-009.

1.1 PERSONNEL

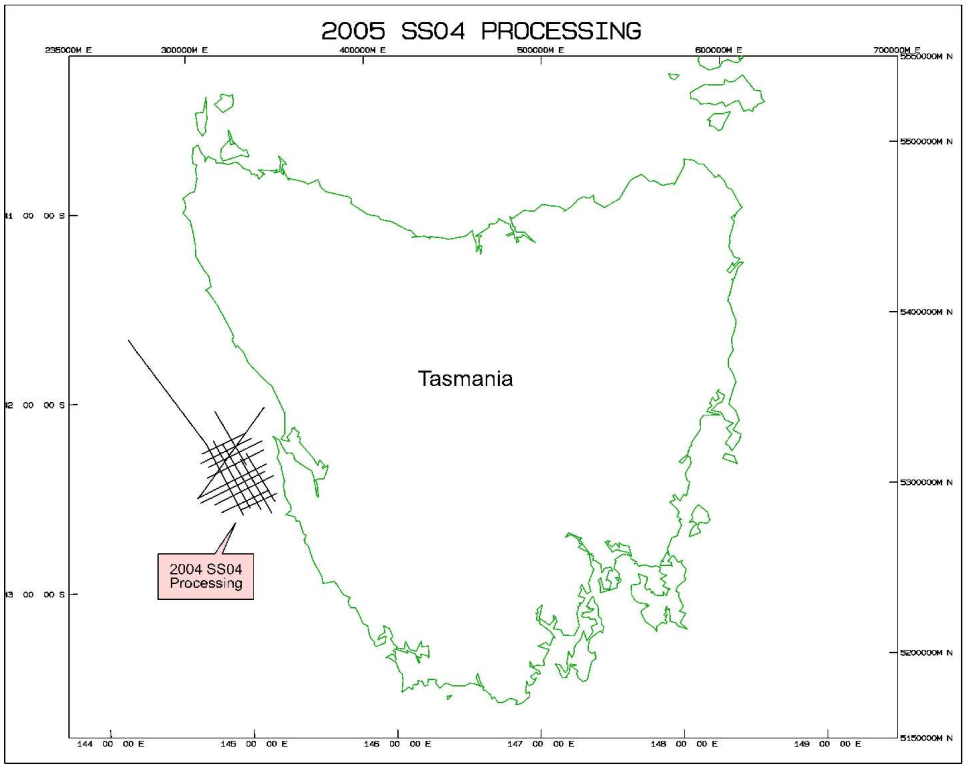
Fugro Seismic Imaging Pty Ltd

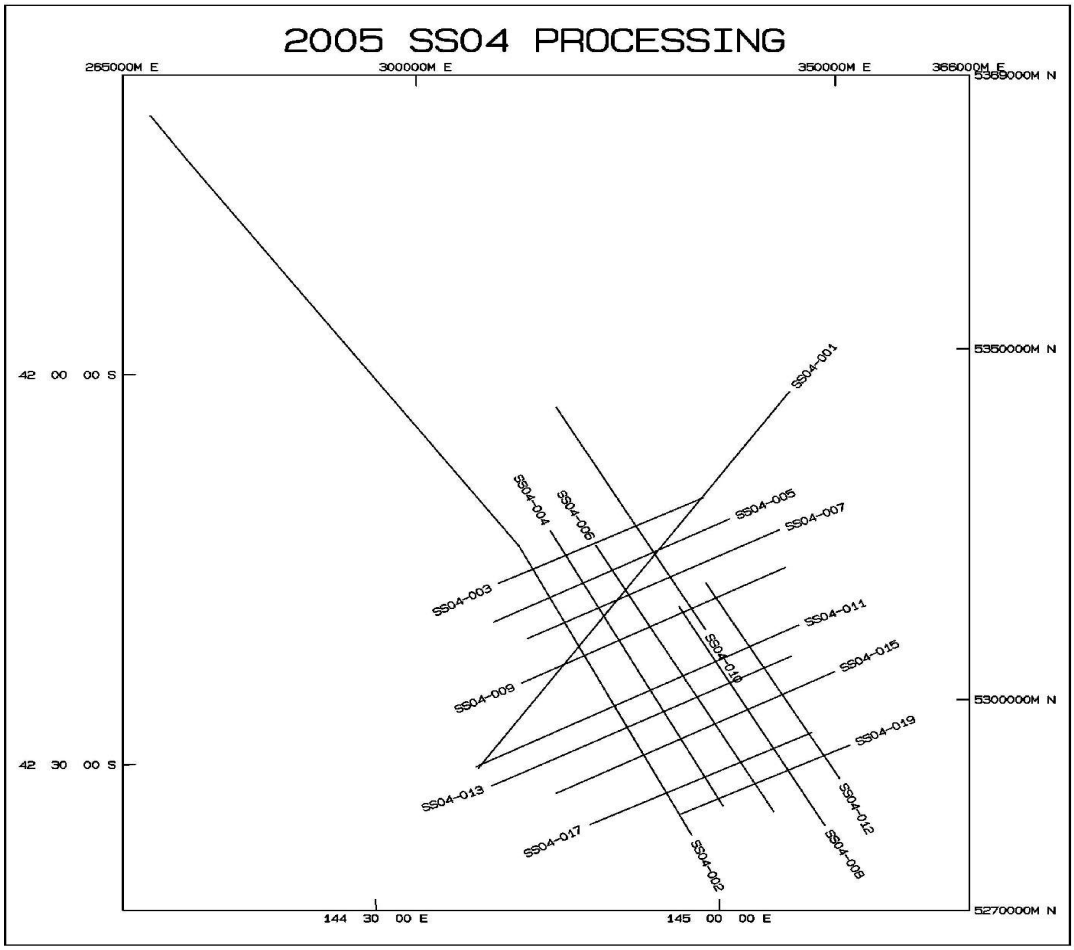
Simon Stewart	Marine 2D Manager
Choo Foo	Geophysicist

Santos Limited

Stuart Brew	Senior Staff Geophysicist

1.2 LOCATION MAP





2 PARAMETER TESTING

Lines nominated by Santos for testing :
SS04-006 and SS04-009

The following table provides the list of tests performed:

Description	***Format***
Raw displays	Shot
F-K analysis	Shot
Gain recovery	Shot
FK filter	Shot/Receiver/Stack
Linear Tau-P Noise Removal	Shot/Stack
Tau-P Deconvolution	Shot/Stack
Signature Deconvolution	Shot/Stack
F-K and Radon demultiple	Gather/Stack
Predictive deconvolution before stack	Gather/Stack
Pre stack migration velocity field smoothing	Velocity profile
Pre stack migration aperture	Stack
Stack mutes (outer and inner trace)	Gather/Stack
Pre stack scaling	Gather/Stack
Predictive deconvolution after stack	Stack
Relative amplitude	Stack
Zero Phasing	Stack
Post stack scaling	Stack

Parameter tests were presented as paper displays, or ftp'd to Santos in SEGY format for evaluation on screen.

3 COMMENTS & CONCLUSION

The objectives of the survey are to delineate prospective targets previously identified from the reprocessing and to identify further opportunities within the Central and South West portions of the permit.

A symmetrical velocity (+/-2000m/s) filter was designed in the F-K domain to preserve the primary reflection signal and to discriminate against coherent dipping noise trains. NMO corrections were applied before filtering to preserve amplitudes of far offset primary data.
In addition, linear noise removal in the Tau-P domain was applied to attenuate strong linear noise on the far offsets.

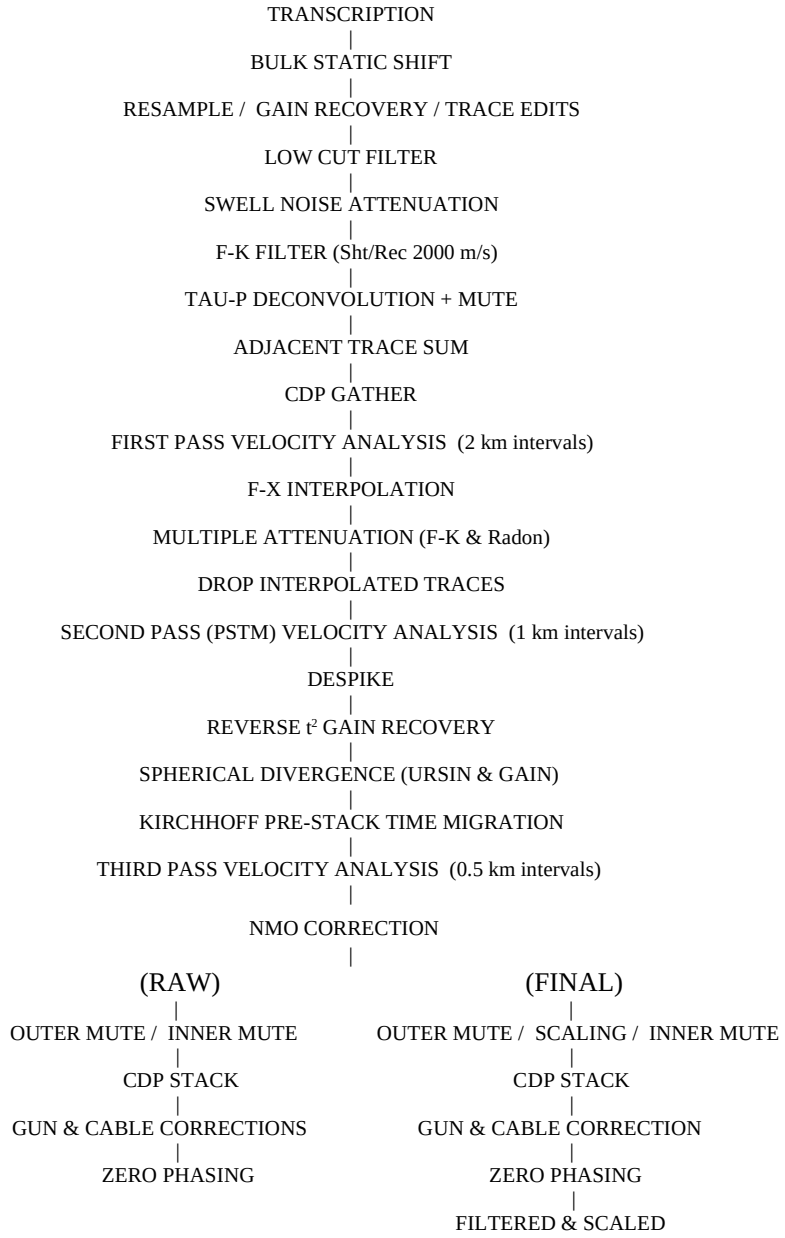
Multiple attenuation was achieved in two passes. Firstly the seafloor multiples were targeted using predictive deconvolution in the Tau-P domain. Gap length was set to follow the water depth, no wavelet shaping took place. Secondly the data was interpolated prior to RADON demultiple to reduce any aliasing in the CDP domain. Slow multiple energy was targeted in this pass using a 2km velocity field. F-K demultiple was also employed to target multiples in the shallow region where RADON does not handle effectively. Residual RADON was tested but only applied to the archive of the final PSTM gathers.

Pre-stack Kirchhoff time migration was used which collapsed all diffraction energy and more correctly positioned the data. This allowed for more accurate velocity analysis as the interference from diffraction and miss-positioned energy were eliminated.

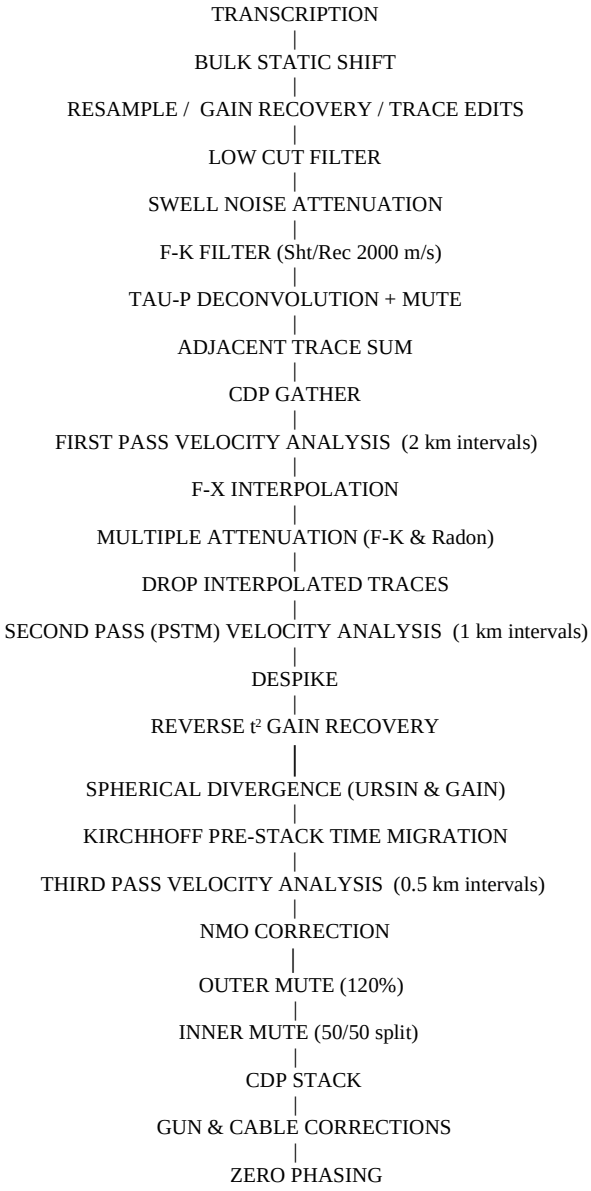
Final archived data were phase rotated by 180 degrees to show water bottom as trough which is consistent with the 2004 T/36P Repro..

4 PROCESSING SEQUENCE

4.1 PSTM STACK (RAW AND FINAL)



4.2 PSTM NEAR & FAR ANGLE STACKS (RAW)



4.3 PSTM GATHERS

TRANSCRIPTION
|
BULK STATIC SHIFT
|
RESAMPLE / GAIN RECOVERY / TRACE EDITS
|
LOW CUT FILTER
|
SWELL NOISE ATTENUATION
|
F-K FILTER (Sht/Rec 2000 m/s)
|
TAU-P DECONVOLUTION + MUTE
|
ADJACENT TRACE SUM
|
CDP GATHER
|
FIRST PASS VELOCITY ANALYSIS (2 km intervals)
|
F-X INTERPOLATION
|
MULTIPLE ATTENUATION (F-K & Radon)
|
DROP INTERPOLATED TRACES
|
SECOND PASS (PSTM) VELOCITY ANALYSIS (1 km intervals)
|
DESPIKE
|
REVERSE t^2 GAIN RECOVERY
|
SPHERICAL DIVERGENCE (URSIN & GAIN)
|
KIRCHHOFF PRE-STACK TIME MIGRATION
|
THIRD PASS VELOCITY ANALYSIS (0.5 km intervals)
|
NMO CORRECTION
|
GUN & CABLE CORRECTIONS
|
ZERO PHASING

5 PROCESSING DESCRIPTION

5.1 TRANSCRIPTION

Field data were converted to F.S.I's internal format (UNISEIS) which is trace sequential with samples stored as 32 bit IEEE floating point. At intermediate processing stages the data are stored on disk in sixteen-bit integer with a gain ranging scalar for each trace.,

5.2 STATICS

A -50ms static shift was applied to the data to compensate for the recording delay.

5.3 RESAMPLE

Resampled from 2ms to a 4ms sample period.

5.4 GAIN RECOVERY

A t^2 gain correction was applied to the data as an initial approximate compensation for spherical spreading amplitude losses.

5.5 TRACE EDITS

Noisy and bad traces were identified from both observers logs and near trace displays / shot displays, and were removed prior to further processing.

5.6 LOW-CUT FILTER

A low-cut filter of 5/18 Hz/dB/Octave was applied.

5.7 SWELL NOISE ATTENUATION

Swell noise attenuation is achieved by shaping the amplitude spectra of selected "swell noise affected" traces.

Analysis and attenuation are performed in the FX domain, processing one source position at a time. For analysis, the amplitude spectra are normalised, considering only the higher frequency range which is less influenced by swell noise. After normalisation the swell noise traces are recognised by their relatively high amplitude, low frequency component. The shallow portion of each shot record is muted before analysis, removing the high amplitude shallow reflections and direct arrivals.

The user nominates a frequency range for analysis, and for spectral scaling. Typically this frequency range is from 0 to 32 Hz. Scalars are calculated to shape the spectra of individual swell noise affected traces to the mean of the non swell noise affected traces. The scalars are fully applied from 0 to one half the defined frequency range, after which the scalars are tapered to zero application at the maximum defined frequency. No modification is made to other traces.

The mechanism of swell noise recognition is not influenced by change in source energy, or by systematic variation in trace amplitude levels. Shots not affected by swell noise will not present any traces for swell noise attenuation.

The swell noise attenuation is monitored by recording the number of channels flagged as being affected by swell noise.

After application of swell noise attenuation, some high frequency noise was evident on the shot records. These spikes were attenuated with a mild 'despike' process. Amplitudes were measured in windows of 80ms length. The matrix was composed of seven consecutive time windows across 39 adjacent channels. The amplitude of the centre window is compared to the rest of the matrix and the centre window is defined as containing a spike if the peak to median ratio is greater than 10, or if the centre window median value exhibits more than 5.5 units of standard deviation from the average median. Spike affected windows are scaled to the mean of the matrix.

Despike was only performed in deeper parts of the shot record – commencing at seafloor two way time plus 3 seconds on the nearest offset, and with despike start times following a 1500m.s^{-1} parabolic 'NMO' curve on longer offsets.

5.8 MULTI CHANNEL FILTER (SHOT & RECEIVER DOMAIN)

A symmetrical “velocity” filter was designed in the F-K domain to preserve the primary reflection signal and to discriminate against coherent dipping noise trains. The filter employs a cosine-squared taper from k = 0 to the velocity intercept at each frequency. Filtering was applied in both the short and receiver domains. The input data was conditioned with a 300ms AGC, and the scalars preserved for removal subsequent to the application of the F-K filter. A cut off velocity of +/- 2000 m/sec was used for both the shot and receiver F-K in the filter design and NMO was applied before and removed after the filter.

5.9 TAU-P DECONVOLUTION

The data was transformed into the Tau-P domain using the linear transform. Transform limits of -2500ms to 4200ms at an increment of 10ms (671 ptraces) were used.
Predictive deconvolution was performed in Tau-P space to target water layer reverberations. Design windons varied according to the water bottom. A 360ms operator with gap length varied by wb -40ms.
Application of the Tau-P deconvolution varied according to the apparent seafloor slope. In areas of steep slope the deconvolution was only applied for water bottom times of less than 400ms and tapered off at 600ms.

5.10 TAU-P LINEAR NOISE REMOVAL

While in Tau-P space linear noise may be removed by the application of scaling of or muting sections of the transformed data that represent the noise energy. Careful design can preserve the long offset primary data from being attenuated. For these data the following mutes were applied.

Water bottom 100ms

Delt	-2500	-1600	-1350	-700	800	1100	1700	2000	2600	3500	4200
Time	4300	5000	6500	16408	16408	7500	6000	5500	5250	4750	4500

Water bottom 700ms

Delt	-2500	-1600	-1350	-700	800	1100	1700	2000	2600	3500	4200
Time	4500	5000	6500	16408	16408	8000	6500	6250	5500	5000	4600

Water bottom 1200ms

Delt	-2500	-1600	-1350	-700	800	1100	1700	2000	2600	3500	4200
Time	5100	5800	6500	16408	16408	9000	7000	6300	6000	5500	5000

Water bottom 1900ms

Delt	-2500	-1600	-1350	-700	800	1100	1700	2000	2600	3500	4200
Time	5100	5800	7000	16408	16408	10000	7500	7250	7000	6250	5500

Water bottom 2400ms

Delt	-2500	-1600	-1350	-700	800	1100	1700	2000	2600	3500	4200
Time	5100	5800	8000	16408	16408	10000	8500	8000	7500	6500	6000

5.11 ADJACENT TRACE SUM

A 2:1 trace decimation was applied to the data after performing array simulation using a trace mix on NMO corrected shot records with first pass velocity function.

Summation details:

Vintage	*Input Traces*	*Input Trace Interval*	*Output Traces*	*Output Trace Interval*
SS04	480	12.5m	240	25m

Trace Mix Details:

Time (ms)	*Trace Mix*	*Time (ms)*	*Trace Mix*	*Time (ms)*	*Trace Mix*
0	1 – 2 - 1	3000	1 – 2 - 1	8000	1 – 2 – 3 – 2 - 1

5.12 CDP GATHER

Shot records were sorted into 120-fold common depth point gathers.

5.13 FIRST PASS VELOCITY ANALYSIS

First pass velocities were determined using F.S.I.'s "MGIVA" interactive velocity analysis program. Each velocity analysis comprised a semblance display, a 21 CDP stacked panel repeated 14 times with a suite of velocity functions, and a central CDP gather. The suite of functions were generated using 0%, +/-4 %, +/-8%, +/-12%, +/-18%, +/-24%, +/-30%, and +40% increments from a central velocity function. The central function was derived from a brute velocity that varied according to water depth.

The velocity analysis incorporated a map of all velocity locations, and the semblance display included functions from proximate lines. This enabled the velocities to be picked with knowledge of a real velocity trend. Velocity QC could be performed more effectively when discordant velocities could be recognised on the map.

5.14 F-X INTERPOLATION

Common channel domain trace interpolation was applied in order to increase the spatial sampling and thus minimise any resulting aliasing prior to demultiple. The fold was doubled. The interpolated traces were dropped after demultiple.

5.15 RADON MULTIPLE ATTENUATION

Attenuation of multiples was achieved by modelling and subtraction using a least squares, parabolic Radon transform. Normal moveout corrections were performed using the first pass velocities, and the CDP gathers transformed into the parabolic Tau-P domain. The segment of the Tau-P domain corresponding to primary reflections is muted, leaving the multiple energy to be transformed back into the T-X domain and subtracted from the original CDP gather.

Reference offset	6089m
Frequency range	4-90 Hz
Minimum p	-1000 *(parabolic moveout, Delta-t, at reference offset)*
Maximum p	+3500
Number of p traces	451
Multiple p cut	0ms/200;1000ms/200;2000ms/75;8000ms/50
Demultiple start time	Watbot 100ms starts 800ms Watbot 1000ms starts 1300ms Watbot 2000ms starts 2200ms

5.16 FK MULTIPLE ATTENUATION

F-K demultiple was used to attenuate a strong multiple train evident in the near surface. Normal moveout correction was performed using the picked first pass velocities, slowed by the percentages listed below. When NMO corrections are performed with these slowed velocities the primary events are over corrected and show negative dip, and the multiples will have positive dip. After FK transform the multiples and primaries will appear in different quadrants. Multiple attenuation can then be effected by filtering the positive quadrant before applying the inverse transform. Full application of FK demultiple is listed below.

Velocity reduction:

Time (ms)	***Velocity %***
0	94
800	94
3500	90
8000	85

Full application of FK demultiple:

Water bottom (ms)	***Full application***
100	800 ms
1000	1300ms

Water bottom (ms)	*Full application*
2000	2200ms

Application times are with respect to gathers without NMO corrections.
A 300ms AGC was applied before the FK transform, and the scalars preserved for later removal. All interpolated traces were dropped after demultiple.

5.17 SECOND PASS VELOCITY ANALYSIS

Second pass velocity analysis was performed on Pre-stack migrated gathers. The first pass velocity field was used as centre functions for F.S.I.'s interactive velocity analysis package, MGIVA.

Analysis was performed at 1 km intervals. A suite of 14 pre computed stack panels were displayed with +0%, +/-3%, +/-6%, +/-10%, +/-15%, +/-20%, +/-25% and +/-30% velocity variation from the central function. The MGIVA velocity analysis is a 'map driven' package, where the user can instantly see modifications to the velocity field in map or section view. Neighbouring velocity functions are superimposed on the current location for easy recognition of velocity trends. Velocity interpretation is performed on the pre-computed stack suite, or on a colour contoured semblance display. Semblance interpretation is assisted with markers illustrating the position of potential water layer peg-leg multiples, and with an interval velocity curve.

5.18 DESPIKE

Despike was performed on all data. Amplitudes were measured in a matrix of time windows of 80ms length. The matrix was composed of seven consecutive time windows across 39 adjacent channels. The amplitude of the centre window is compared to the rest of the matrix and the centre window is defined as containing a spike if the peak to median ratio is greater than 10, or if the centre window median value exhibits more than 5.5 units of standard deviation from the average median. Spike affected windows are scaled to the mean of the matrix.

5.19 REVERSING OF GAIN RECOVERY

The t^2 gain correction applied in section 5.4 to compensate for spherical spreading amplitude losses was reversed for both vintages.

5.20 SPHERICAL DIVERGENCE (URSIN & GAIN)

With the previously applied t^2 gain function removed, it was then replaced with an offset and velocity dependent spherical divergence approximation as described by Bjorn Ursin (GEOPHYSICS Vol.55 No.4, pp492-496 1990).
Where T0 is the two way travel time, V is the RMS velocity at T0, and V0 is the velocity in the first layer. Although this method is applicable to uncorrected data as a moveout tracking divergence correction, for algorithmic ease it is applied to NMO corrected CDP gathers.

$$\sqrt{\frac{T0\times V^4}{V0^2}+\left(2\times\left(\frac{V}{V0}\right)^2-1\right)\times X^2+\frac{X^4\times\left(\frac{1}{V0^2}-\frac{1}{V^2}\right)}{t0^2}}$$

5.21 KIRCHHOFF PRE STACK MIGRATION

Full Pre-Stack Kirchhoff migration was applied using the azimuth cognizant migration algorithm in straight ray mode, with a 7500m half aperture. Apertures were muted with a 50% stretch mute to avoid operator aliasing. The velocity field was constructed by smoothing the second pass velocities. Migration was performed on all offset planes.

5.22 THIRD PASS VELOCITY ANALYSIS

The third pass velocity analysis was performed on the Pre-stack migrated gathers. The second pass velocity field was used as centre functions for F.S.I.'s interactive velocity analysis package, MGIVA.

Analysis were performed at 500m intervals. A suite of 14 pre computed stack panels were displayed with +0%, +/-2%, +/-4%, +/-6%, +/9%, +/-12%, +/-15% and +/-20% velocity variation from the central function.

With 4th order NMO applied, the long offset data was not fully flattened. This was attributed to anisotrophy in the over lying sediments. To correct for this Eta picking was conducted for every 2nd location (1km interval)

5.23 NMO CORRECTION

NMO correction was performed using the third pass (final) PSTM velocities with Eta corrections.

5.24 OUTER TRACE MUTE

A post NMO outer trace mute was applied to remove any coherent noise on the outer traces and to reduce contamination from the effect of NMO stretch on the far offsets. Muting parameters were spatially varied according to seafloor two way time.

Watbot = 200ms;

Offset (m)	127	427	527	1127	6100
Time (ms)	150	150	350	1050	4350

Watbot = 1000ms;

Offset (m)	127	927	1027	1227	6100
Time (ms)	900	900	1400	2000	4450

Watbot = 1500ms;

Offset (m)	127	1027	1177	1427	6100
Time (ms)	1400	1400	1950	2300	4800

Watbot = 2000ms;

Offset (m)	127	1077	1427	1777	6100
Time (ms)	1900	1900	2800	3200	5400

Watbot = 2400ms;

Offset (m)	127	1127	1327	2527	6100
Time (ms)	2300	2300	3200	3900	5900

5.25 PRE-STACK SCALING

Amplitude balance was performed with a two window AGC with control over the strength of application.

Window Lengths	400ms / 1200ms
Equalisation	60%

Note: Scaling was only applied to the Final Filtered and Scaled PSTM stack datasets. No pre-stack scaling was applied to the archived Raw PSTM stacks nor the gathers.

5.26 INNER TRACE MUTE

An inner trace mute was designed and applied for each vintage for two main reasons :

1. to remove any coherent noise on the outer traces and
2. to reduce contamination from the effect of NMO stretch on the far offsets.

Watbot = 200ms;
Offset (m) 127 827
Time (ms) 700 2100
Watbot = 1000ms;
Offset (m) 127 827
Time (ms) 2000 2800
Watbot = 1500ms;
Offset (m) 127 827
Time (ms) 2500 3400
Watbot = 2000ms;
Offset (m) 127 827
Time (ms) 2900 3900
Watbot = 2400ms;
Offset (m) 127 827
Time (ms) 3100 4000

5.27 CDP STACK

The traces within each CDP bin were summed using a 1/root(N) stack compensation. The angle stacks were summed using 1/N stack compensation.

5.28 GUN AND CABLE DEPTH CORRECTION

A static compensation for gun and cable depths was applied. The static value was calculated using average gun and cable depths supplied in the observer's reports. Static correction computed is 8ms.

5.29 CONVERSION TO ZERO PHASE

The data was converted from minimum phase data to zero phase, using the Weiner-Levinson double inversion method to derive an operator based on the amplitude spectrum. A 180 degree phase rotation was applied to the data so that the sea floor event appears as a trough.

5.30 FILTER

Unwanted noise that lay outside the frequency range of the desired reflection data was attenuated with application of a series of zero phase time variant filters. These filters employed cosine squared tapers between the limiting frequency pairs.

Water bottom = 100ms

Application time (ms)	*Frequency limits (Hz)*
1000	6 / 10 – 60 \ 70
2000	4 / 8 – 40 \ 50
3000	4 / 6 – 30 \ 40
5000	3 / 5 – 20 \ 30
6000	3 / 5 – 15 \ 25

Water bottom = 2000ms

Application time (ms)	*Frequency limits (Hz)*
2000	6 / 10 – 60 \ 70
3000	4 / 8 – 40 \ 50
4000	4 / 6 – 30 \ 40
6000	3 / 5 – 20 \ 30
7000	3 / 5 – 15 \ 25

5.31 POST STACK SCALING

Amplitude balance was performed with a two window AGC with control over the strength of application.

Window Lengths	400ms / 1200ms
Equalisation	60%

Note: Scaling was only applied to the Final Filtered and Scaled PSTM stack datasets. No post-stack scaling was applied to the Raw PSTM stacks that were archived nor the gathers.

5.32 ANGLE STACKS

Using the full inner trace mute and 120% of the outer trace mutes, the remaining 'live' data was split 50% / 50% to produce near and far angle stacks on both the raw and the filtered/scaled PSTM data.

6 APPENDICES

6.1 LINE LISTING

LINE	First SP	Last SP	Shot Int	CDP	KMS
SS04-001	1001	3610	25	5458	65.25
SS04-002	1001	5860	25	9958	121.5
SS04-003	1001	2092	25	2422	27.3
SS04-004	1001	2771	25	3780	44.28
SS04-005	1001	2270	25	2778	31.75
SS04-006	1001	2737	25	3712	43.43
SS04-007	1001	2352	25	2942	33.8
SS04-008	1001	2429	25	3096	35.73
SS04-009	1001	2419	25	3076	35.48
SS04-010	1001	2450	25	3138	36.25
SS04-011	1001	2739	25	3716	43.48
SS04-012	1001	2286	25	2810	32.15
SS04-013	1001	2610	25	3458	40.25
SS04-015	1001	2497	25	3232	37.43
SS04-017	1001	2183	25	2604	29.58
SS04-019	1001	1906	25	2050	22.65

Total Kms	680.28

6.2 ACQUISITION PARAMETERS

Vintage: SS04	
DESCRIPTION	***DETAILS***
Data recorded by:	Multiwave
Date recorded:	January 2005
Vessel:	M/V Pacific Titan
Seismic source:-	
Type	Air gun
Volume	3040 Cubic In
Pressure:	2000 psi +/- 10%
Depth:	5 m +/- 1.0m
Shot interval:	25 m
Gun Delay	0 ms
Recording system:-	
Format:	SEGD 8085
Record length:	8 s
Sample interval:	2 ms
Number of Channels	501 (1-480 Data channels)
Near Channel	1
Delay	50 ms
Filters: Low	OUT
High	200 Hz @ 370 dB/octave
Receivers:-	
Centre near group to centre far group:	6000 m
Streamer depth:	7 m +/- 1.0m
Number of groups:	480
Group interval:	12.5 m
Centre source to center near group:	114m
Centre source to Nav mast	166m

6.3 DELIVERABLES

Item	*Format*	*Media*	*Tape No.*
Raw and Final Migration Raw Near/Far Migration(Original)	SEGY	DVD	390FM023DVD
Raw and Final Migration Raw Near /Far Migration(copy 1)	SEGY	DVD	390FM024DVD
Raw and Final Migration (copy 2)	SEGY	DVD	390FM025DVD
Report,Stacking velocities, line summary, CMP coordinates ,sp/cdp relationship (Original)	ASCII	CD	390FV028CD
Report,Stacking velocities, line summary, CMP coordinates ,sp/cdp relationship (copy 1)	ASCII	CD	390FV029CD
Report,Stacking velocities, line summary, CMP coordinates ,sp/cdp relationship (copy 2)	ASCII	CD	390FV030CD
PSTM gathers (SS04-001,2,3,4,5,6,7,8)	SEGY	DLT	390FG026L
PSTM gathers (SS04-009,10,11,12,13,15,17,19)	SEGY	DLT	390FG027L
Processing Report	3 x hard copies		

6.4 SEGY TRACE HEADERS (STACK)

C 1 SANTOS LTD
C 2 LINE NAME: {LINE_NAME}
C 3 Final PSTM stack (Full), Revised, 180 phase rotation
C 4
C 5 ACQUISITION PARAMETERS: DATE SHOT: JAN 2005 DIR: {COMPASS} DEGREES
C 6 ACQUIRED BY: Multiwave VESSEL: M/V Pacific Titan TMAX: 8.0s
C 7 SAMPLE PERIOD: 2msec SHOT INTERVAL: 25m GROUP INT: 12.5m
C 8 NO. OF GROUPS: 480
C 9
C10 DATA PROCESSED BY FUGRO SEISMIC IMAGING DURING FEB/MARCH 2005
C11 PROC. SEQUENCE:
C12 TRANSCRIPTION / -50ms bulk shift / GAIN (TxT) / LOW CUT 5/18dB
C13 SWELL ATTENUATION / RESAMPLE / CRUDE FOR VEL1
C14 NMO / SHOT_fk2000 / RECEIVER_fk2000 / REVNMO
C15 TAUP TRANSFORM / DECON + MUTE
C16 NMO / ADJACENT TRACE SUM (12.5m to 25m Group) / REVNMO / CDP SORT
C17 FXINT / RADON DEMULTIPLES / FKFILT / PSTM1 / VEL2
C18 REPLACED T2 GAIN WITH URSIN GAIN / PSTM2 / VEL3
C19 NMO / OUTER MUTE / PRE-STACK SCALING / INNER MUTE / STACK
C20 GUN CABLE DEPTH CORRECTION / ZERO PHASE CONVERSION
C21 BANDPASS FILTER / SCALING / Phase rotation 180
C22
C29 TRACE HEADER DEFINITION
C30 ITEM BYTES FORMAT
C31 SHOTPOINT 017 - 020 INTEGER
C32 CDP 021 - 024 INTEGER
C33 Easting 193 - 196 INTEGER
C34 Northing 197 - 200 INTEGER
C35
C36 SP/CDP RELATIONSHIP: CDP {CONV_CDP} = SP {SPNO1}
C37 CDP POSITION CDP {{CONV_CDP}+400} = SP {{SPNO1}+{400/{CONV_INC}}}
C38 SP RANGE : {SPNO1} TO {SPNON}
C39 CDP RANGE : {CDP1} TO {CDPN}
C40 END OF EBCDIC HEADER

6.5 SEGY TRACE HEADERS (GATHER)

C 1 SANTOS LTD
C 2 LINE NAME: {LINE_NAME}
C 3 PSTM GATHERS, ZERO PHASE
C 4
C 5 ACQUISITION PARAMETERS: DATE SHOT: JAN 2005 DIR: {COMPASS} DEGREES
C 6 ACQUIRED BY: Multiwave VESSEL: M/V Pacific Titan TMAX: 8.0s
C 7 SAMPLE PERIOD: 2msec SHOT INTERVAL: 25m GROUP INT: 12.5m
C 8 NO. OF GROUPS: 480
C 9
C10 DATA PROCESSED BY FUGRO SEISMIC IMAGING DURING FEB/MARCH 2005
C11 PROC. SEQUENCE:
C12 TRANSCRIPTION / -50ms bulk shift / GAIN (TxT) / LOW CUT 5/18dB
C13 SWELL ATTENUATION / RESAMPLE / CRUDE FOR VEL1
C14 NMO / SHOT_fk2000 / RECEIVER_fk2000 / REVNMO
C15 TAUP TRANSFORM / DECON + MUTE
C16 NMO / ADJACENT TRACE SUM (12.5m to 25m Group) / REVNMO / CDP SORT
C17 FXINT / RADON DEMULTIPLE / FKFILT / PSTM1 / VEL2
C18 REPLACED T2 GAIN WITH URSIN GAIN / PSTM2 / VEL3 / RADON DEMULTIPLE
C19 NMO / 4TH ORDER AND ETA / GUN CABLE DEPTH CORRECTION
C19 ZERO PHASE CONVERSION / 180DEG PHASE ROTATION
C20
C21
C22
C29 TRACE HEADER DEFINITION
C30 ITEM BYTES FORMAT
C31 SHOTPOINT 017 - 020 INTEGER
C32 CDP 021 - 024 INTEGER
C33 Easting 193 - 196 INTEGER
C34 Northing 197 - 200 INTEGER
C35
C36 SP/CDP RELATIONSHIP: CDP {CONV_CDP} = SP {SPNO1}
C37 CDP POSITION CDP {{CONV_CDP}+400} = SP {{SPNO1}+{400/{CONV_INC}}}
C38 SP RANGE : {SPNO1} TO {SPNON}
C39 CDP RANGE : {CDP1} TO {CDPN}
C40 END OF EBCDIC HEADER