Vibra-Tech

March 4, 2016

4818 E. Ben White Blvd.
Suite 202
Austin, TX 78741

Phone 512.442.6464
Fax 512.442.6552

Mr. Mike Shands
Garden Ridge Quarry Commission
9400 Municipal Parkway
Garden Ridge, Texas 78266

Dear Mr. Shands,

Enclosed is the analysis for the blasting conducted during the month of February 2016 at the Hanson Aggregates Quarry in Garden Ridge, Texas. Please place this information in your 2016 Blast Data Management Book.

At the request of the Garden Ridge Quarry Commission, Vibra-Tech, Inc. personnel used seismographs each day of blasting at various locations.

The attached report contains the original seismograph records obtained from the blasting along with a comparison of the recorded vibrations to the latest recommended U.S. Bureau of Mines (USBM) Variable Partic le Velocity vs. Frequency Limits Report of Investigations (RI)-8507 (Nov. 1980).

The recorded ground vibrations **satisfy** the Variable Particle Velocity vs. Frequency Limits recommended by the USBM RI-8507 (Nov. 1980), and the levels set forth in Garden Ridge City Ordinance 34.

The recorded air-borne effects **satisfy** the recommended levels set forth in the USBM RI-8485 (Nov. 1980), and the levels set forth in Garden Ridge City Ordinance 34.

If there are any additional questions, please contact the Quarry Commission, Mike Shands at 210-257-0868, or attend the Quarry Commission meeting held the 2nd Monday of each month at 7:00 p.m.

Respectfully submitted,

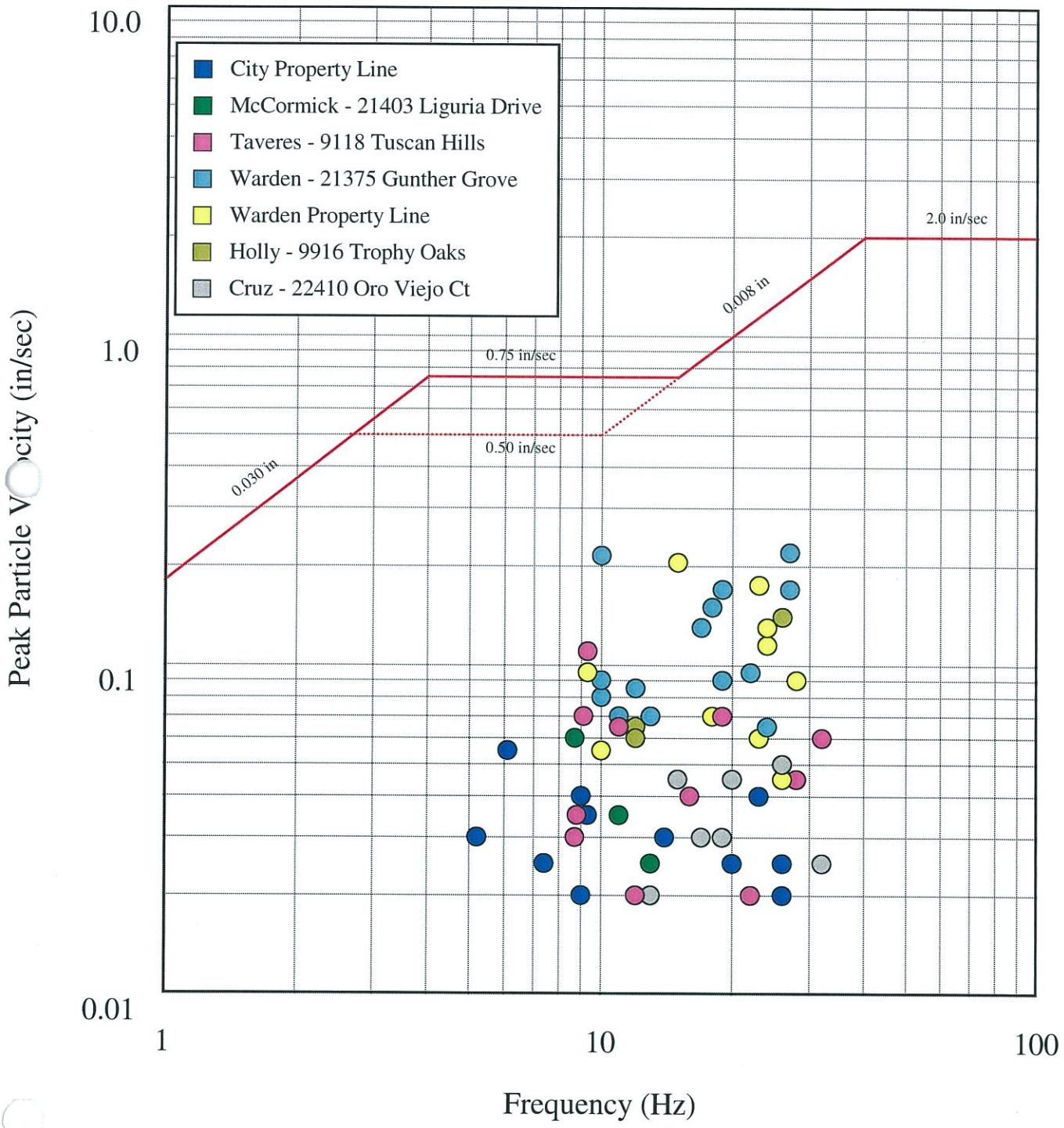
VIBRA-TECH, INC.

Geoffrey Rigsby
Southwest Regional Manager

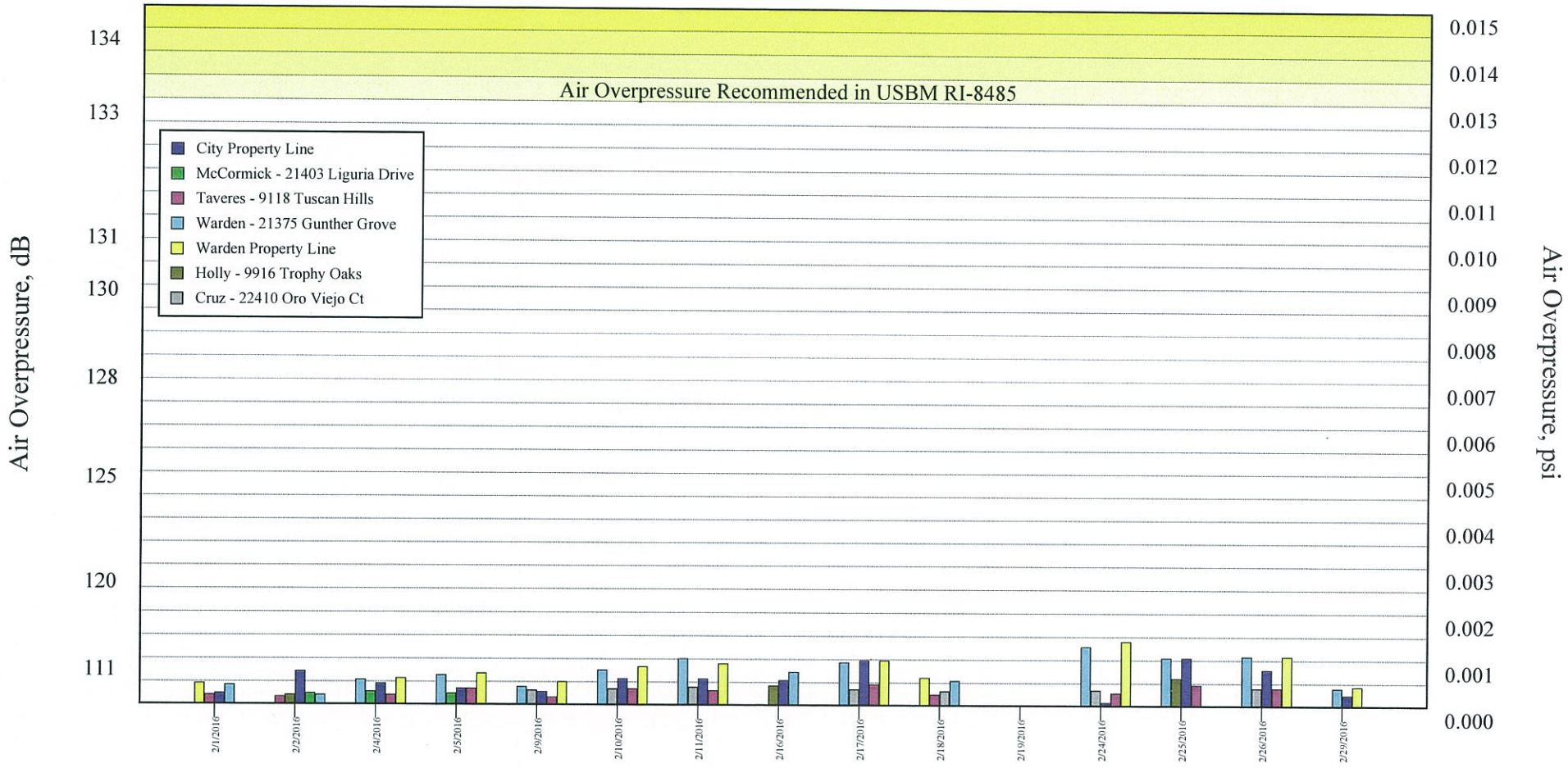
cc: Jacob Scherer, Hanson – Servtex

Cruz
Taveres
McCormick
02-17-16 4B
02-26-16 4A
02-10-16 3E
02-09-16 3D
02-05-16 3C
02-24-16 3C
02-11-16 3B
02-01-16 Lower 3A
02-29-16 Lower 3A
02-04-16 Upper 3A
02-18-16 Lower 6
Warden Property Line
Warden
City Property Line
Holly
02-19-16 S Wall Toe
02-02-16 Base Pit 2A
02-25-16 S Wall D

Comparison of Measured Blast Vibrations to Current U.S. Bureau of Mines Recommendations
Quarry Commission
Garden Ridge
February 2016



Air Overpressure Levels from
Quarry Commission
Garden Ridge
February 2016



GARDEN RIDGE QUARRY COMMISSION
GARDEN RIDGE, TEXAS
MONTH OF FEBRUARY 2016

DATE	SHOT # LOCATION	SHOT LOCATION GPS READING	WEATHER	TIME	PPV (in/sec)	FREQ (Hz)	AIR (dB)	SHOT DURATION (MS)	MAX LBS/ DELAY	DISTANCE FROM BLAST	SEISMOGRAPH LOCATION
02/01/16	02-01-16 Lower 3A	N 29° 38' 38.1" W 098° 17' 33.1"	PT CLOUDY 67° SE 11	12:06	0.020	9.0	98.8	654	225.00	2,416	City Property Line
02/01/16	02-01-16 Lower 3A	N 29° 38' 38.1" W 098° 17' 33.1"	PT CLOUDY 67° SE 11	12:06	NT	NT	NT	654	225.00	4,478	McCormick - 21403 Liguria Drive
02/01/16	02-01-16 Lower 3A	N 29° 38' 38.1" W 098° 17' 33.1"	PT CLOUDY 67° SE 11	12:06	0.030	8.7	97.5	654	225.00	4,316	Taveres - 9118 Tuscan Hills
02/01/16	02-01-16 Lower 3A	N 29° 38' 38.1" W 098° 17' 33.1"	PT CLOUDY 67° SE 11	12:06	0.150	18.0	103.5	654	225.00	1,646	Warden - 21375 Gunther Grove
02/01/16	02-01-16 Lower 3A	N 29° 38' 38.1" W 098° 17' 33.1"	PT CLOUDY 67° SE 11	12:06	0.115	24.0	104.2	654	225.00	1,426	Warden Property Line
02/02/16	02-02-16 Base Pit 2A	N 29° 38' 16.9" W 098° 17' 02.8"	CLEAR 63° NW 18	11:37	0.030	5.2	108.0	756	858.00	4,544	City Property Line
02/02/16	02-02-16 Base Pit 2A	N 29° 38' 16.9" W 098° 17' 02.8"	CLEAR 63° NW 18	11:37	0.140	26.0	97.5	756	858.00	2,052	Holly - 9916 Trophy Oaks
02/02/16	02-02-16 Base Pit 2A	N 29° 38' 16.9" W 098° 17' 02.8"	CLEAR 63° NW 18	11:37	0.025	13.0	98.8	756	858.00	7,261	McCormick - 21403 Liguria Drive
02/02/16	02-02-16 Base Pit 2A	N 29° 38' 16.9" W 098° 17' 02.8"	CLEAR 63° NW 18	11:37	0.020	22.0	95.9	756	858.00	7,628	Taveres - 9118 Tuscan Hills
02/02/16	02-02-16 Base Pit 2A	N 29° 38' 16.9" W 098° 17' 02.8"	CLEAR 63° NW 18	11:37	0.070	11.0	97.5	756	858.00	3,334	Warden - 21375 Gunther Grove
02/04/16	02-04-16 Upper 3A	N 29° 38' 36.4" W 098° 17' 34.6"	CLEAR 51° NE 4	11:01	0.035	9.3	104.2	488	260.00	2,204	City Property Line
02/04/16	02-04-16 Upper 3A	N 29° 38' 36.4" W 098° 17' 34.6"	CLEAR 51° NE 4	11:01	0.035	11.0	100.0	488	260.00	4,325	McCormick - 21403 Liguria Drive
02/04/16	02-04-16 Upper 3A	N 29° 38' 36.4" W 098° 17' 34.6"	CLEAR 51° NE 4	11:01	0.035	8.8	97.5	488	260.00	4,252	Taveres - 9118 Tuscan Hills
02/04/16	02-04-16 Upper 3A	N 29° 38' 36.4" W 098° 17' 34.6"	CLEAR 51° NE 4	11:01	0.215	10.0	105.5	488	260.00	1,439	Warden - 21375 Gunther Grove
02/04/16	02-04-16 Upper 3A	N 29° 38' 36.4" W 098° 17' 34.6"	CLEAR 51° NE 4	11:01	0.170	19.0	106.0	488	260.00	1,219	Warden Property Line

NT = No Trigger, <0.020 ips.
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GARDEN RIDGE QUARRY COMMISSION
GARDEN RIDGE, TEXAS
MONTH OF FEBRUARY 2016

DATE	SHOT # LOCATION	SHOT LOCATION GPS READING	WEATHER	TIME	PPV (in/sec)	FREQ (Hz)	AIR (dB)	SHOT DURATION (MS)	MAX LBS/ DELAY	DISTANCE FROM BLAST	SEISMOGRAPH LOCATION
02/05/16	02-05-16 3C	N 29° 38' 46.6" W 098° 17' 35.6"	CLEAR 54° S 9	12:02	0.055	6.1	101.9	1208	481.00	2,919	City Property Line
02/05/16	02-05-16 3C	N 29° 38' 46.6" W 098° 17' 35.6"	CLEAR 54° S 9	12:02	0.060	8.7	98.8	1208	481.00	4,470	McCormick - 21403 Liguria Drive
02/05/16	02-05-16 3C	N 29° 38' 46.6" W 098° 17' 35.6"	CLEAR 54° S 9	12:02	0.110	9.3	101.9	1208	481.00	3,898	Taveres - 9118 Tuscan Hills
02/05/16	02-05-16 3C	N 29° 38' 46.6" W 098° 17' 35.6"	CLEAR 54° S 9	12:02	0.170	19.0	107.0	1208	481.00	2,423	Warden - 21375 Gunther Grove
02/05/16	02-05-16 3C	N 29° 38' 46.6" W 098° 17' 35.6"	CLEAR 54° S 9	12:02	0.175	23.0	107.5	1208	481.00	2,209	Warden Property Line
02/09/16	02-09-16 3D	N 29° 38' 50.9" W 098° 17' 36.3"	CLEAR 69° W 10	12:10	0.025	20.0	100.0	820	416.00	3,260	City Property Line
02/09/16	02-09-16 3D	N 29° 38' 50.9" W 098° 17' 36.3"	CLEAR 69° W 10	12:10	0.020	13.0	101.0	820	416.00	3,716	Cruz - 22410 Oro Viejo Ct
02/09/16	02-09-16 3D	N 29° 38' 50.9" W 098° 17' 36.3"	CLEAR 69° W 10	12:10	0.045	28.0	95.9	820	416.00	3,799	Taveres - 9118 Tuscan Hills
02/09/16	02-09-16 3D	N 29° 38' 50.9" W 098° 17' 36.3"	CLEAR 69° W 10	12:10	0.085	12.0	102.8	820	416.00	2,846	Warden - 21375 Gunther Grove
02/09/16	02-09-16 3D	N 29° 38' 50.9" W 098° 17' 36.3"	CLEAR 69° W 10	12:10	0.060	23.0	104.9	820	416.00	2,635	Warden Property Line
02/10/16	02-10-16 3E	N 29° 38' 54.4" W 098° 17' 36.8"	CLEAR 61° E 7	11:39	0.020	26.0	106.0	500	819.00	3,557	City Property Line
02/10/16	02-10-16 3E	N 29° 38' 54.4" W 098° 17' 36.8"	CLEAR 61° E 7	11:39	0.025	32.0	101.9	500	819.00	3,612	Cruz - 22410 Oro Viejo Ct
02/10/16	02-10-16 3E	N 29° 38' 54.4" W 098° 17' 36.8"	CLEAR 61° E 7	11:39	0.045	20.0	101.9	500	819.00	3,761	Taveres - 9118 Tuscan Hills
02/10/16	02-10-16 3E	N 29° 38' 54.4" W 098° 17' 36.8"	CLEAR 61° E 7	11:39	0.070	13.0	108.4	500	819.00	3,194	Warden - 21375 Gunther Grove
02/10/16	02-10-16 3E	N 29° 38' 54.4" W 098° 17' 36.8"	CLEAR 61° E 7	11:39	0.045	26.0	109.2	500	819.00	2,986	Warden Property Line

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02/11/16	02-11-16 3B	N 29° 38' 40" W 098° 17' 34.5"	CLEAR 77° SW 12	13:05	0.055	10.0	106.0	1208	663.00	2,457	City Property Line
02/11/16	02-11-16 3B	N 29° 38' 40" W 098° 17' 34.5"	CLEAR 77° SW 12	13:05	0.050	26.0	102.8	1208	663.00	4,239	Cruz - 22410 Oro Viejo Ct
02/11/16	02-11-16 3B	N 29° 38' 40" W 098° 17' 34.5"	CLEAR 77° SW 12	13:05	0.070	9.1	101.0	1208	663.00	4,139	Taveres - 9118 Tuscan Hills
02/11/16	02-11-16 3B	N 29° 38' 40" W 098° 17' 34.5"	CLEAR 77° SW 12	13:05	0.220	27.0	110.9	1208	663.00	1,790	Warden - 21375 Gunther Grove
02/11/16	02-11-16 3B	N 29° 38' 40" W 098° 17' 34.5"	CLEAR 77° SW 12	13:05	0.205	15.0	109.9	1208	663.00	1,571	Warden Property Line
02/16/16	02-16-16 South Wall B	N 29° 38' 15" W 098° 16' 44.6"	CLEAR 76° SW 9	12:32	0.025	7.4	105.5	936	1066.00	6,159	City Property Line
02/16/16	02-16-16 South Wall B	N 29° 38' 15" W 098° 16' 44.6"	CLEAR 76° SW 9	12:32	NT	NT	NT	936	1066.00	9,308	Cruz - 22410 Oro Viejo Ct
02/16/16	02-16-16 South Wall B	N 29° 38' 15" W 098° 16' 44.6"	CLEAR 76° SW 9	12:32	0.065	12.0	103.5	936	1066.00	3,646	Holly - 9916 Trophy Oaks
02/16/16	02-16-16 South Wall B	N 29° 38' 15" W 098° 16' 44.6"	CLEAR 76° SW 9	12:32	NT	NT	NT	936	1066.00	9,154	Taveres - 9118 Tuscan Hills
02/16/16	02-16-16 South Wall B	N 29° 38' 15" W 098° 16' 44.6"	CLEAR 76° SW 9	12:32	0.090	19.0	108.0	936	1066.00	4,946	Warden - 21375 Gunther Grove
02/17/16	02-17-16 4B	N 29° 39' 01.6" W 098° 17' 34.4"	CLEAR 69° SE 6	11:37	0.030	14.0	110.6	680	800.00	4,309	City Property Line
02/17/16	02-17-16 4B	N 29° 39' 01.6" W 098° 17' 34.4"	CLEAR 69° SE 6	11:37	0.045	20.0	101.9	680	800.00	3,806	Cruz - 22410 Oro Viejo Ct
02/17/16	02-17-16 4B	N 29° 39' 01.6" W 098° 17' 34.4"	CLEAR 69° SE 6	11:37	0.060	32.0	104.2	680	800.00	4,082	Taveres - 9118 Tuscan Hills
02/17/16	02-17-16 4B	N 29° 39' 01.6" W 098° 17' 34.4"	CLEAR 69° SE 6	11:37	0.080	10.0	110.2	680	800.00	3,943	Warden - 21375 Gunther Grove
02/17/16	02-17-16 4B	N 29° 39' 01.6" W 098° 17' 34.4"	CLEAR 69° SE 6	11:37	0.055	10.0	110.6	680	800.00	3,731	Warden Property Line

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02/18/16	02-18-16 Lower 6	N 29° 38' 49.4" W 098° 17' 09.1"	PT CLOUDY 56° S 12	11:03	NT	NT	NT	570	470.00	4,826	City Property Line
02/18/16	02-18-16 Lower 6	N 29° 38' 49.4" W 098° 17' 09.1"	PT CLOUDY 56° S 12	11:03	0.030	17.0	101.0	570	470.00	6,100	Cruz - 22410 Oro Viejo Ct
02/18/16	02-18-16 Lower 6	N 29° 38' 49.4" W 098° 17' 09.1"	PT CLOUDY 56° S 12	11:03	0.040	16.0	98.8	570	470.00	6,295	Taveres - 9118 Tuscan Hills
02/18/16	02-18-16 Lower 6	N 29° 38' 49.4" W 098° 17' 09.1"	PT CLOUDY 56° S 12	11:03	0.095	22.0	105.5	570	470.00	3,769	Warden - 21375 Gunther Grove
02/18/16	02-18-16 Lower 6	N 29° 38' 49.4" W 098° 17' 09.1"	PT CLOUDY 56° S 12	11:03	0.070	18.0	106.5	570	470.00	3,646	Warden Property Line
02/19/16	02-19-16 S Wall Toe	N 29° 38' 19.5" W 098° 16' 39.5"	PT CLOUDY 65° SW 5	10:54	NT	NT	NT	588	286.00	6,553	City Property Line
02/19/16	02-19-16 S Wall Toe	N 29° 38' 19.5" W 098° 16' 39.5"	PT CLOUDY 65° SW 5	10:54	NT	NT	NT	588	286.00	9,535	Cruz - 22410 Oro Viejo Ct
02/19/16	02-19-16 S Wall Toe	N 29° 38' 19.5" W 098° 16' 39.5"	PT CLOUDY 65° SW 5	10:54	NT	NT	NT	588	286.00	4,214	Holly - 9916 Trophy Oaks
02/19/16	02-19-16 S Wall Toe	N 29° 38' 19.5" W 098° 16' 39.5"	PT CLOUDY 65° SW 5	10:54	NT	NT	NT	588	286.00	9,422	Taveres - 9118 Tuscan Hills
02/19/16	02-19-16 S Wall Toe	N 29° 38' 19.5" W 098° 16' 39.5"	PT CLOUDY 65° SW 5	10:54	NT	NT	NT	588	286.00	5,311	Warden - 21375 Gunther Grove
02/24/16	02-24-16 3C	N 29° 38' 46.3" W 098° 17' 35.9"	CLEAR 59° NW 10	11:32	0.040	9.0	89.9	1120	500.00	3,092	City Property Line
02/24/16	02-24-16 3C	N 29° 38' 46.3" W 098° 17' 35.9"	CLEAR 59° NW 10	11:32	0.030	19.0	101.8	1120	500.00	3,896	Cruz - 22410 Oro Viejo Ct
02/24/16	02-24-16 3C	N 29° 38' 46.3" W 098° 17' 35.9"	CLEAR 59° NW 10	11:32	0.070	19.0	100.0	1120	500.00	3,936	Taveres - 9118 Tuscan Hills
02/24/16	02-24-16 3C	N 29° 38' 46.3" W 098° 17' 35.9"	CLEAR 59° NW 10	11:32	0.170	27.0	113.0	1120	500.00	2,460	Warden - 21375 Gunther Grove
02/24/16	02-24-16 3C	N 29° 38' 46.3" W 098° 17' 35.9"	CLEAR 59° NW 10	11:32	0.090	28.0	113.7	1120	500.00	2,285	Warden Property Line

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GARDEN RIDGE QUARRY COMMISSION
GARDEN RIDGE, TEXAS
MONTH OF FEBRUARY 2016

DATE	SHOT # LOCATION	SHOT LOCATION GPS READING	WEATHER	TIME	PPV (in/sec)	FREQ (Hz)	AIR (dB)	SHOT DURATION (MS)	MAX LBS/ DELAY	DISTANCE FROM BLAST	SEISMOGRAPH LOCATION
02/25/16	02-25-16 S Wall D	N 29° 38' 11.1" W 098° 16' 51.7"	CLEAR 68° W 3	12:17	0.020	9.0	111.2	825	951.00	3,844	City Property Line
02/25/16	02-25-16 S Wall D	N 29° 38' 11.1" W 098° 16' 51.7"	CLEAR 68° W 3	12:17	NT	NT	NT	825	951.00	3,633	Cruz - 22410 Oro Viejo Ct
02/25/16	02-25-16 S Wall D	N 29° 38' 11.1" W 098° 16' 51.7"	CLEAR 68° W 3	12:17	0.060	12.0	106.5	825	951.00	4,424	Holly - 9916 Trophy Oaks
02/25/16	02-25-16 S Wall D	N 29° 38' 11.1" W 098° 16' 51.7"	CLEAR 68° W 3	12:17	0.020	12.0	104.2	825	951.00	3,856	Taveres - 9118 Tuscan Hills
02/25/16	02-25-16 S Wall D	N 29° 38' 11.1" W 098° 16' 51.7"	CLEAR 68° W 3	12:17	0.065	24.0	111.2	825	951.00	3,429	Warden - 21375 Gunther Grove
02/26/16	02-26-15 4A	N 29° 38' 57.7" W 098° 17' 36.9"	PT CLOUDY 54° E 7	11:47	0.040	23.0	108.8	825	871.00	3,859	City Property Line
02/26/16	02-26-15 4A	N 29° 38' 57.7" W 098° 17' 36.9"	PT CLOUDY 54° E 7	11:47	0.045	15.0	102.8	825	871.00	3,577	Cruz - 22410 Oro Viejo Ct
02/26/16	02-26-15 4A	N 29° 38' 57.7" W 098° 17' 36.9"	PT CLOUDY 54° E 7	11:47	0.065	11.0	102.8	825	871.00	3,789	Taveres - 9118 Tuscan Hills
02/26/16	02-26-15 4A	N 29° 38' 57.7" W 098° 17' 36.9"	PT CLOUDY 54° E 7	11:47	0.090	10.0	111.5	825	871.00	3,527	Warden - 21375 Gunther Grove
02/26/16	02-26-15 4A	N 29° 38' 57.7" W 098° 17' 36.9"	PT CLOUDY 54° E 7	11:47	0.095	9.3	111.5	825	871.00	3,319	Warden Property Line
02/29/16	02-29-16 Lower 3A	N 29° 38' 38.3" W 098° 17' 33.9"	CLOUDY 69° SE 7	11:48	0.025	26.0	98.8	568	250.00	2,376	City Property Line
02/29/16	02-29-16 Lower 3A	N 29° 38' 38.3" W 098° 17' 33.9"	CLOUDY 69° SE 7	11:48	NT	NT	NT	568	250.00	4,366	Cruz - 22410 Oro Viejo Ct
02/29/16	02-29-16 Lower 3A	N 29° 38' 38.3" W 098° 17' 33.9"	CLOUDY 69° SE 7	11:48	NT	NT	NT	568	250.00	4,243	Taveres - 9118 Tuscan Hills
02/29/16	02-29-16 Lower 3A	N 29° 38' 38.3" W 098° 17' 33.9"	CLOUDY 69° SE 7	11:48	0.130	17.0	102.8	568	250.00	1,641	Warden - 21375 Gunther Grove
02/29/16	02-29-16 Lower 3A	N 29° 38' 38.3" W 098° 17' 33.9"	CLOUDY 69° SE 7	11:48	0.130	24.0	103.5	568	250.00	1,421	Warden Property Line

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-1-16 Blast No. 2-1-16 LOWER 3A Time 12:08

Exact Blast Location LOWER 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38′ 38.10″
W 98° 17′ 33.10″

MONITOR GPS

N 29 38′ 22.63
W 98 18′ 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate
30′ from gate at the property line

Seismograph Distance from Blast 2,416′

Peak Overpressure 98.8 dB Scaled Distance ------

Peak Particle Velocity .020 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by Jack Stockberger Date: 2/1/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:08:47 February 1, 2016	**Serial Number**	BD6191 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.3 Volts
		Calibration	July 16, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	H191G810.EN1
Record Time	10.0 sec at 1024 sps		

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

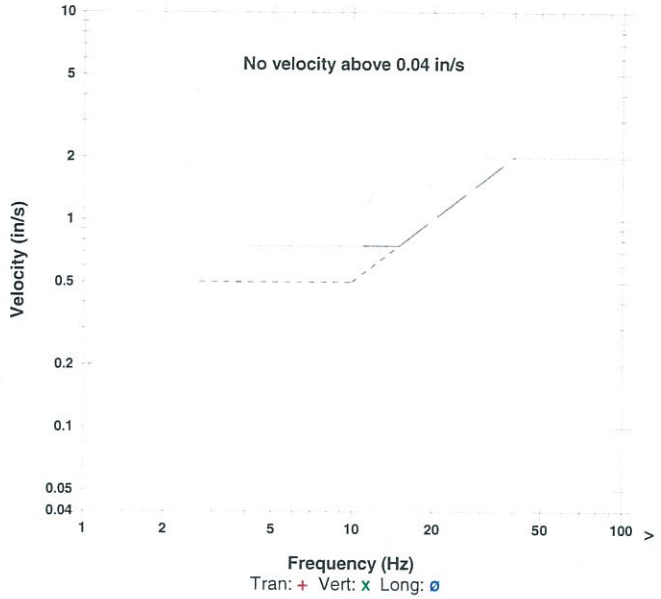
Post Event Notes
City Prop Line: 2,416'

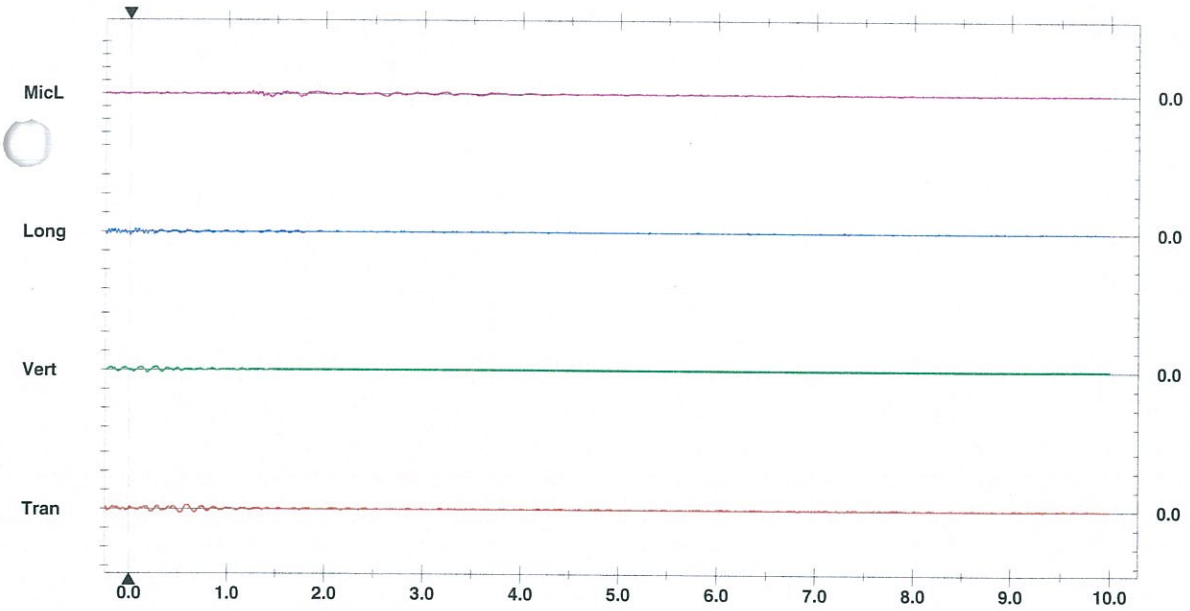
Microphone Linear Weighting
PSPL 98.8 dB(L) at 1.442 sec
ZC Freq 7.6 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 566 mv)

	Tran	Vert	Long	
PPV	0.0200	0.0200	0.0200	in/s
ZC Freq	9.0	9.3	27	Hz
Time (Rel. to Trig)	0.507	0.274	0.000	sec
Peak Acceleration	0.0133	0.0133	0.0133	g
Peak Displacement	0.00049	0.00036	0.00013	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0235 in/s at 0.241 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-1-16 Blast No. 2-1-16 LOWER 3A Time 12:08

Exact Blast Location LOWER 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 38.10"
W 98° 17' 33.10"

MONITOR GPS

N 29 38 31.84
W 98 18 23.43

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location McCormick Residence: 21403 Liguria Drive, George Ranch Subdivision

15' E off NE corner of garage

Seismograph Distance from Blast 4,478'

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/1/16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
Feb 1 '16 10:08:31	Feb 1 '16 12:59:50	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)
Feb 2 '16 10:33:27		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
Feb 2 '16 11:37:37	Feb 2 '16 11:37:47	Event recorded. Trigger Long: 0.0200 in/s
Feb 2 '16 11:37:47	Feb 2 '16 12:20:23	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Mc Cormick Residence

2-1-16 LOWER 3A

@ 12:08

NO TRIGGER @ 4,478'

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-1-16 Blast No. 2-1-16 LOWER 3A Time 12:08

Exact Blast Location LOWER 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 38.10"
W 98° 17' 33.10"

MONITOR GPS

N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 4,316'

Peak Overpressure 97.5 dB Scaled Distance ------

Peak Particle Velocity .030 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/1/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:08:50 February 1, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Event Number:	1

Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G810.EQ1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

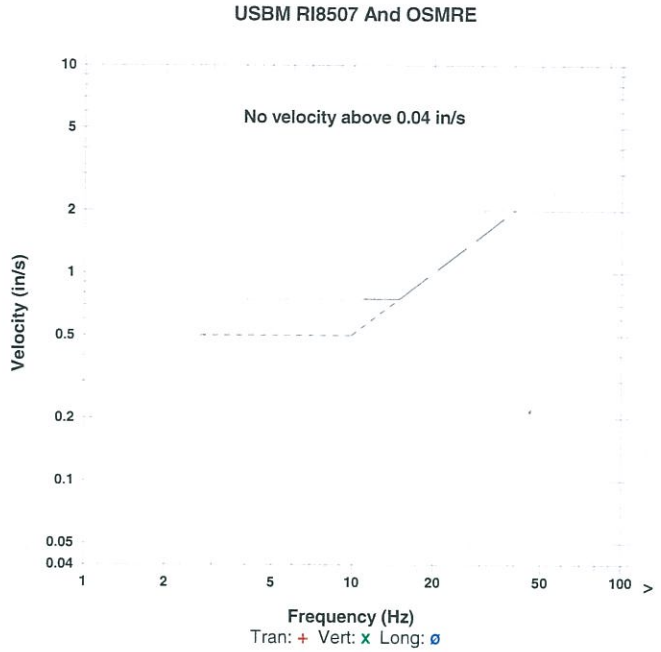
Extended Notes

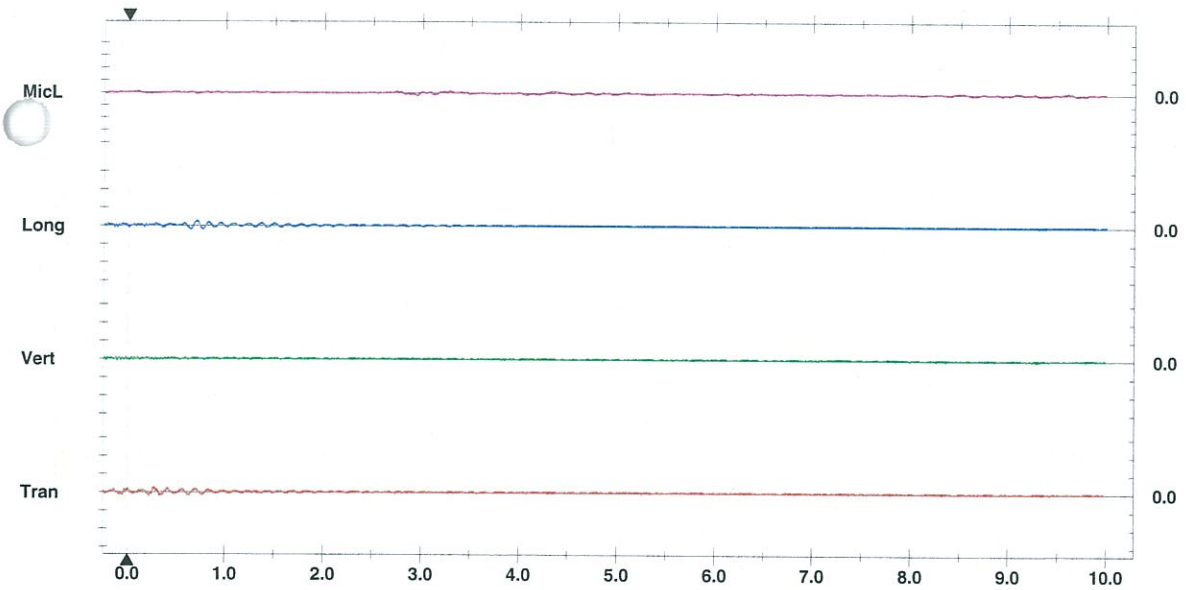
Post Event Notes
Taveres Res: 4,316'

Microphone	Linear Weighting
PSPL	97.5 dB(L) at 2.939 sec
ZC Freq	4.6 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 714 mv)

	Tran	Vert	Long	
PPV	0.0250	0.01000	0.0300	in/s
ZC Freq	9.8	>100	8.7	Hz
Time (Rel. to Trig)	0.262	-0.237	0.698	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00040	0.00005	0.00056	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0339 in/s at 0.698 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-1-16 Blast No. 2-1-16 LOWER 3A Time 12:08

Exact Blast Location LOWER 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 38.10"

W 98° 17' 33.10"

MONITOR GPS

N 29 38' 23"

W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 1,646'

Peak Overpressure 103.5 dB Scaled Distance ------

Peak Particle Velocity .15 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/1/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 12:08:53 February 1, 2016	**Serial Number**	BF13270 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.4 Volts
	Mic: 122 dB(L)	**Calibration**	March 12, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O270G810.ET1
Record Time	5.0 sec at 1024 sps		

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

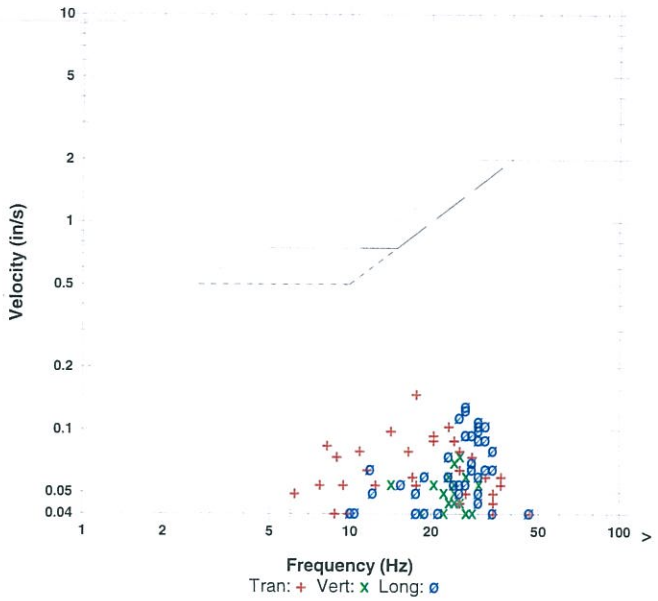
Post Event Notes
Warden Res: 1,646'

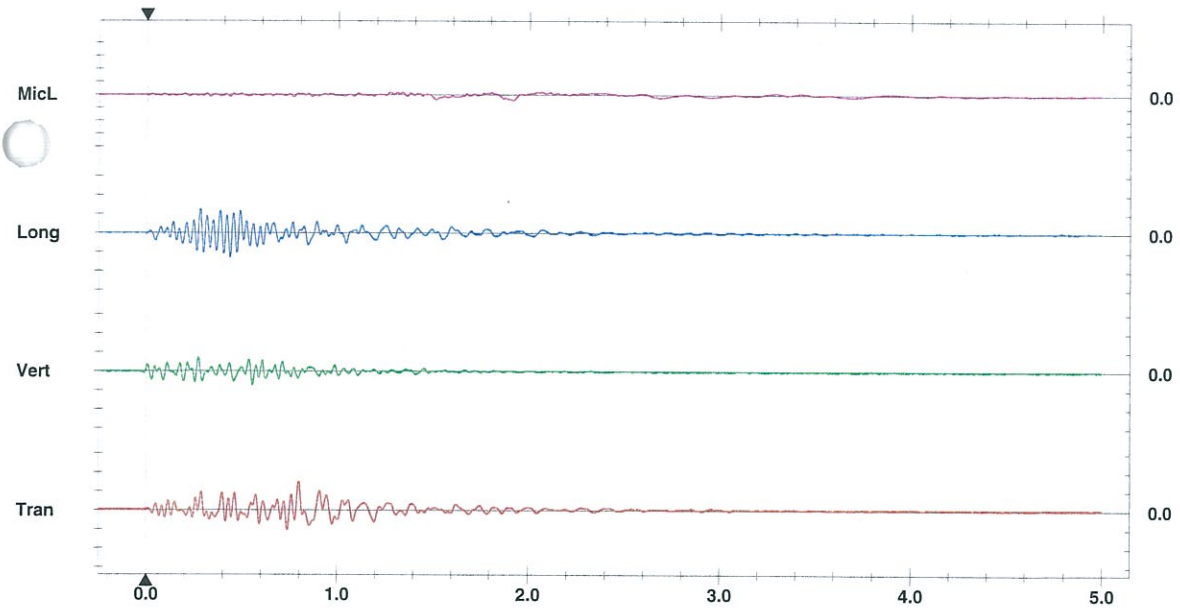
Microphone Linear Weighting
PSPL 103.5 dB(L) at 1.907 sec
ZC Freq 5.0 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 554 mv)

	Tran	Vert	Long	
PPV	0.150	0.0750	0.130	in/s
ZC Freq	18	26	27	Hz
Time (Rel. to Trig)	0.798	0.553	0.435	sec
Peak Acceleration	0.0530	0.0398	0.0663	g
Peak Displacement	0.00152	0.00058	0.00081	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.153 in/s at 0.798 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-1-16 Blast No. 2-1-16 LOWER 3A Time 12:08

Exact Blast Location LOWER 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 38.10"

W 98° 17' 33.10"

MONITOR GPS

N 29 38' 25"

W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 1,426'

Peak Overpressure 104.2 dB Scaled Distance ------

Peak Particle Velocity .115 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/1/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 12:08:53 February 1, 2016	**Serial Number**	BF13922 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.4 Volts
		Calibration	November 22, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O922G810.ET1
Record Time	5.0 sec at 1024 sps		

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

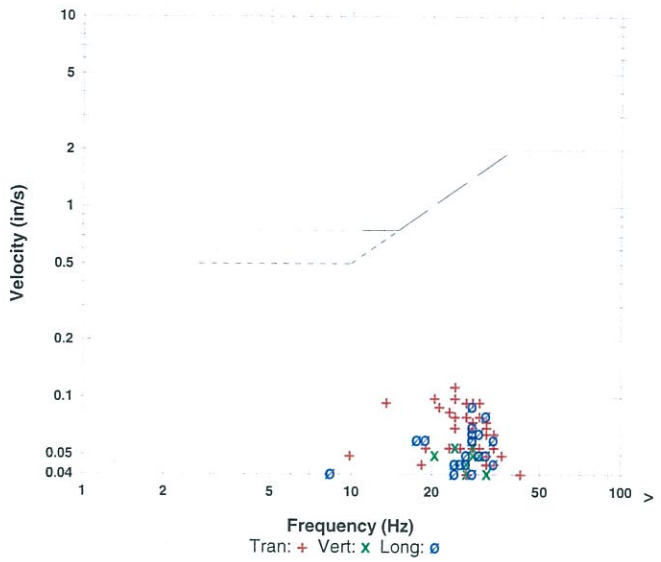
Post Event Notes
Warden Prop Line: 1,426'

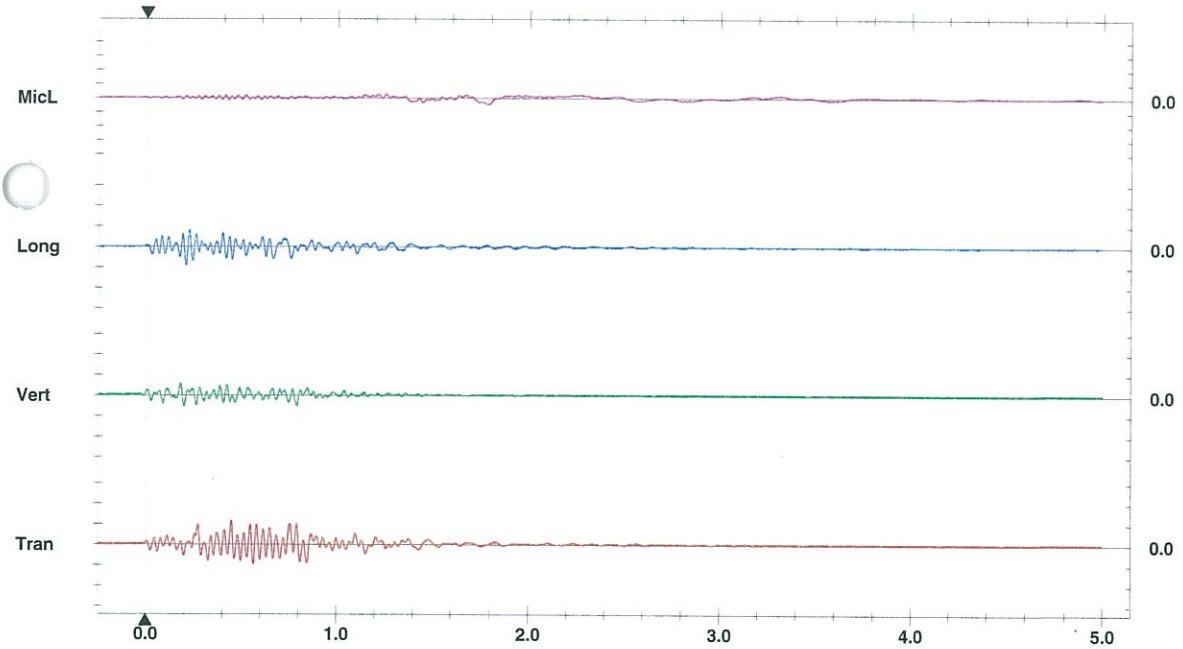
Microphone Linear Weighting
PSPL 104.2 dB(L) at 1.779 sec
ZC Freq 4.8 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 552 mv)

	Tran	Vert	Long	
PPV	0.115	0.0550	0.0900	in/s
ZC Freq	24	24	28	Hz
Time (Rel. to Trig)	0.445	0.177	0.202	sec
Peak Acceleration	0.0530	0.0265	0.0530	g
Peak Displacement	0.00095	0.00042	0.00066	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.132 in/s at 0.446 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

Printed: February 2, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-2-16 Blast No. 2-2-16 B.P. 2A Time 11:37

Exact Blast Location BASE PIT 2A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 16.90"

W 98° 17' 2.80"

MONITOR GPS

N 29 38' 22.63

W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate

30' from gate at the property line

Seismograph Distance from Blast 4,544'

Peak Overpressure 108.0 dB Scaled Distance ------

Peak Particle Velocity .030 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-2-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 11:37:46 February 2, 2016	**Serial Number**	BD6191 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.3 Volts
		Calibration	July 16, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	H191G82T.MY1
Record Time	10.0 sec at 1024 sps		

es
.ation: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

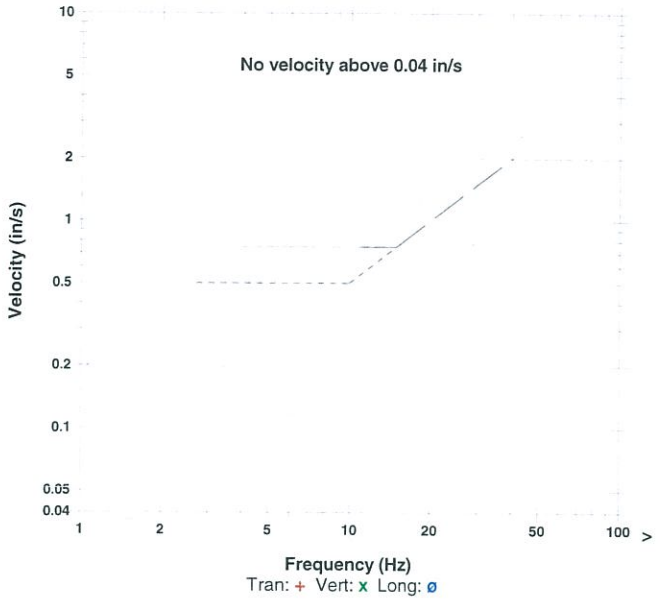
Post Event Notes
City Prop Line: 4,544'

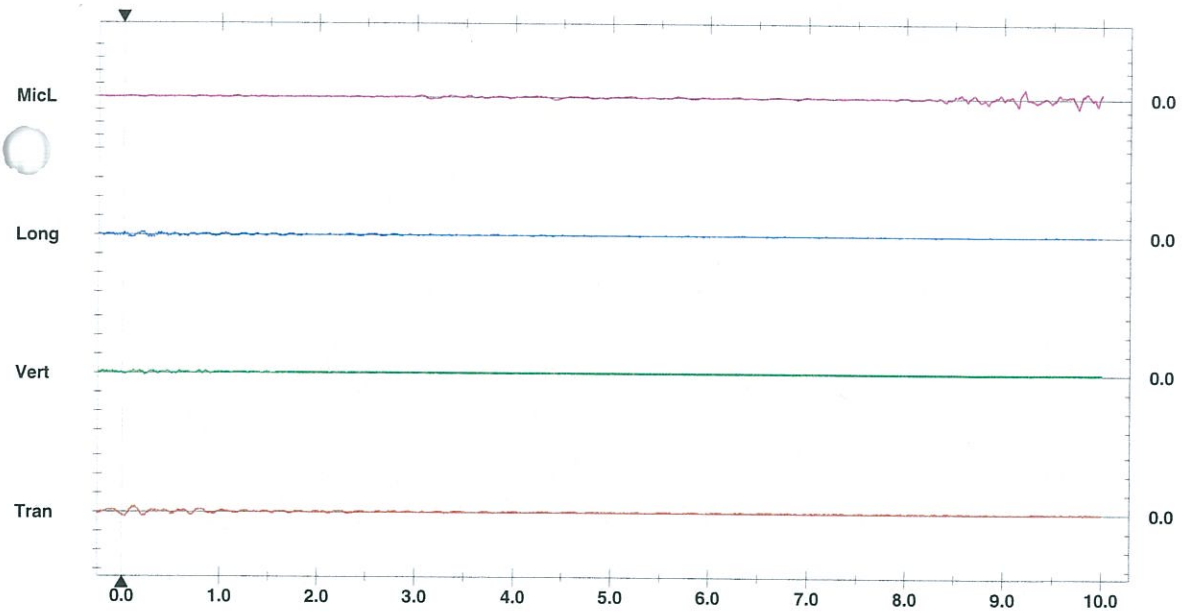
Microphone Linear Weighting
PSPL 108.0 dB(L) at 9.208 sec
ZC Freq 6.8 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 558 mv)

	Tran	Vert	Long	
PPV	0.0300	0.0150	0.0150	in/s
ZC Freq	5.2	24	37	Hz
Time (Rel. to Trig)	0.104	0.109	0.057	sec
Peak Acceleration	0.0133	0.0133	0.0133	g
Peak Displacement	0.00094	0.00011	0.00025	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0350 in/s at 0.110 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

Printed: February 2, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-2-16 Blast No. 2-2-16 B.P.2A Time 11:37

Exact Blast Location BASE PIT 2A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 16.90"
W 98° 17' 2.80"

MONITOR GPS

N 29 38' 15"
W 98 17' 26"

SEISMOGRAPH DATA

Seismograph No. 10562 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 09-13-15 Microphone Calibration 09-13-15

Exact Seismograph Location Holly Residence: 9916 Trophy Oaks Drive, Trophy Oaks Subdivision backyard along the quarry property line at the barbed wire fence

Seismograph Distance from Blast 2,052'

Peak Overpressure 97.5 dB Scaled Distance ------

Peak Particle Velocity .14 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-2-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:37:23 February 2, 2016	**Serial Number**	BF10562 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.3 Volts
		Calibration	September 13, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	L562G82T.MB1
Record Time	5.0 sec at 1024 sps		

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

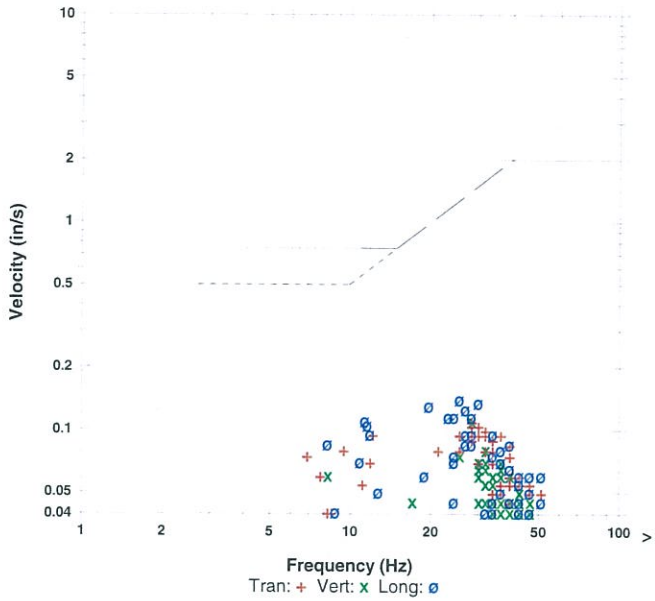
Post Event Notes
Holly Res: 2,052'

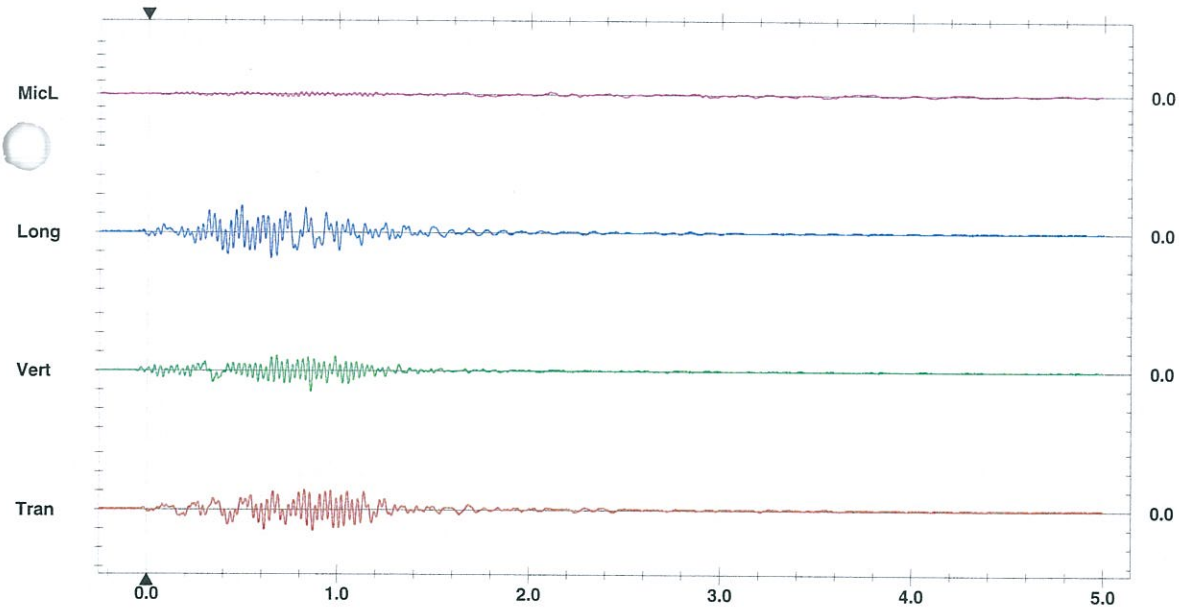
Microphone Linear Weighting
PSPL 97.5 dB(L) at 0.727 sec
ZC Freq 28 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 559 mv)

	Tran	Vert	Long	
PPV	0.110	0.110	0.140	in/s
ZC Freq	28	28	26	Hz
Time (Rel. to Trig)	0.870	0.856	0.488	sec
Peak Acceleration	0.0663	0.0663	0.0795	g
Peak Displacement	0.00151	0.00101	0.00150	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.168 in/s at 0.826 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

Printed: February 2, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-2-16 Blast No. 2-2-16 B.P.-2A Time 11:37

Exact Blast Location BASE PIT 2A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 16.90"
W 98° 17' 2.80"

MONITOR GPS

N 29 38 31.84
W 98 18 23.43

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location McCormick Residence: 21403 Liguria Drive, George Ranch Subdivision

15' E off NE corner of garage

Seismograph Distance from Blast 7,261'

Peak Overpressure 98.8 dB Scaled Distance ------

Peak Particle Velocity .025 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-2-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:37:37 February 2, 2016	**Serial Number**	BF8949 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.2 Volts
		Calibration	July 16, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	J949G82T.MP1
Record Time	10.0 sec at 1024 sps		

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

Extended Notes

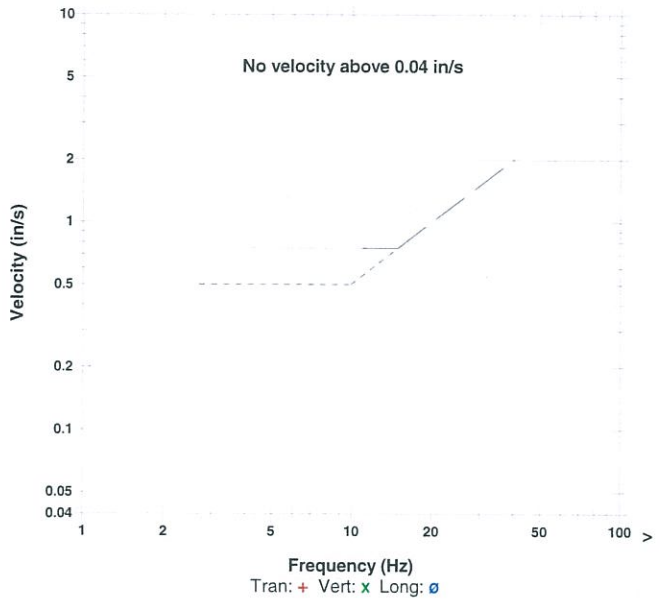
Post Event Notes
McCormick Res: 7,261'

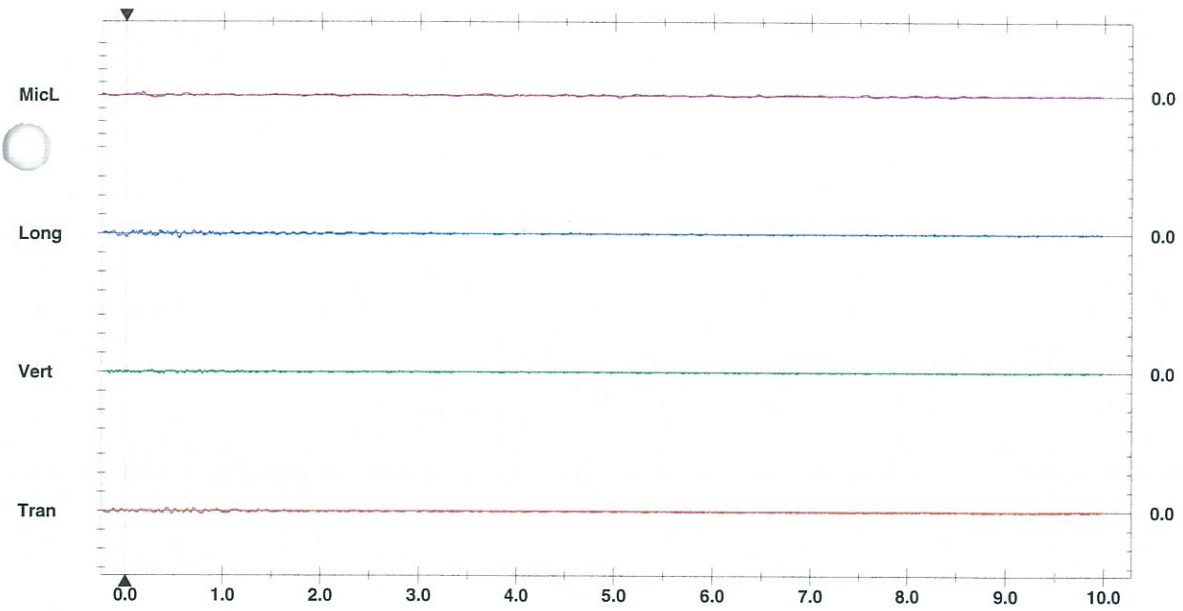
Microphone Linear Weighting
PSPL 98.8 dB(L) at 0.164 sec
ZC Freq 4.1 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 606 mv)

	Tran	Vert	Long	
PPV	0.0150	0.01000	0.0250	in/s
ZC Freq	21	>100	13	Hz
Time (Rel. to Trig)	0.426	-0.173	0.539	sec
Peak Acceleration	0.0265	0.0265	0.0133	g
Peak Displacement	0.00023	0.00003	0.00034	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0260 in/s at 0.539 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

Printed: February 2, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-2-16 Blast No. 2-2-16 B.P. 2A Time 11:37

Exact Blast Location BASE PIT 2A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 16.90"
W 98° 17' 2.80"

MONITOR GPS

N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 7,628'

Peak Overpressure 95.9 dB Scaled Distance ------

Peak Particle Velocity .020 ips Operator DAVID LARLER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-2-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:37:49 February 2, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Job Number:	1

Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G82T.N11

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

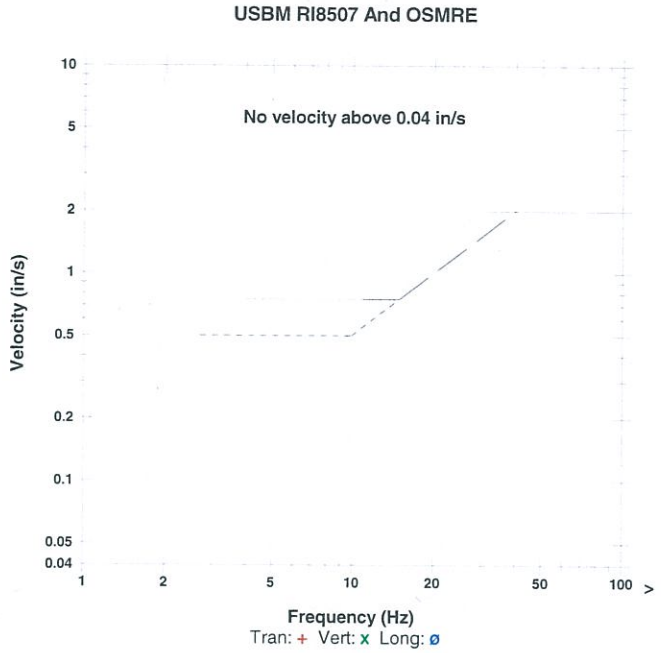
Extended Notes

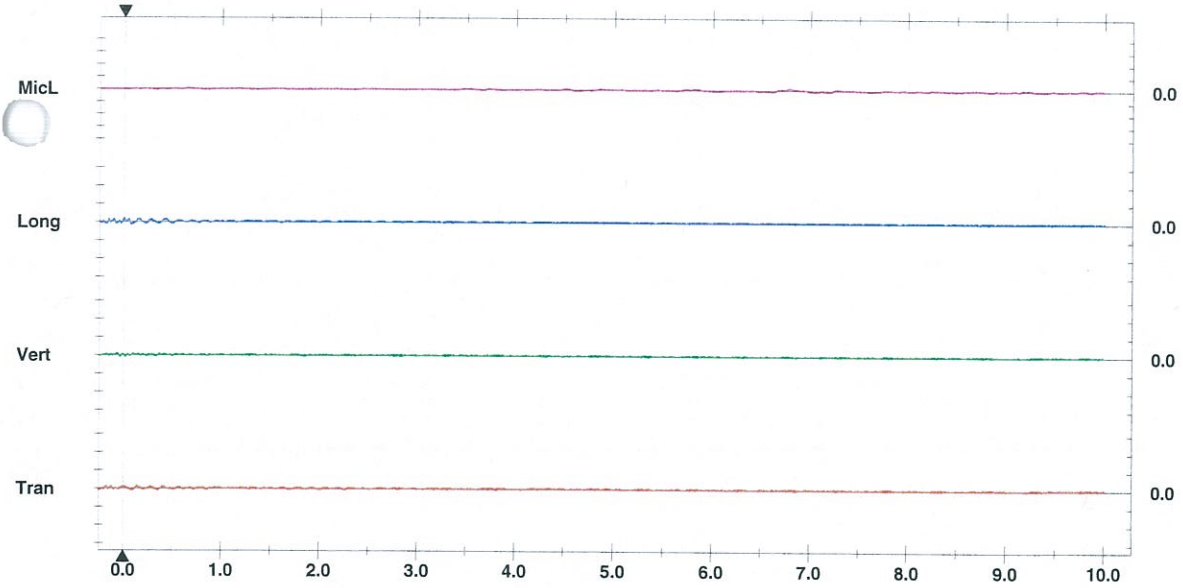
Post Event Notes
Taveres Res: 7,628'

Microphone	Linear Weighting
PSPL	95.9 dB(L) at 6.775 sec
ZC Freq	6.0 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 708 mv)

	Tran	Vert	Long	
PPV	0.0150	0.01000	0.0200	in/s
ZC Freq	21	>100	22	Hz
Time (Rel. to Trig)	0.142	-0.077	0.000	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00012	0.00001	0.00029	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0224 in/s at 0.000 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

Printed: February 2, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-2-16 Blast No. 2-2-16 B.P. 2A Time 11:37

Exact Blast Location BASE PIT 2A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 16.90"

W 98° 17' 2.80"

MONITOR GPS

N 29 38' 23"
W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 3,334'

Peak Overpressure 97.5 dB Scaled Distance ------

Peak Particle Velocity .070 ips Operator WALLY LARMER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-2-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:37:52 February 2, 2016	**Serial Number**	BF13270 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.4 Volts
		Calibration	March 12, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O270G82T.N41
Record Time	5.0 sec at 1024 sps		

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

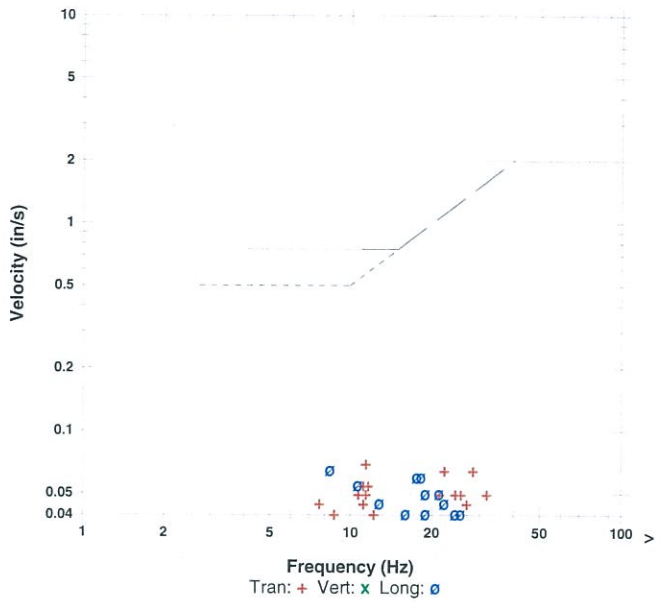
Post Event Notes
Warden Res: 3,334'

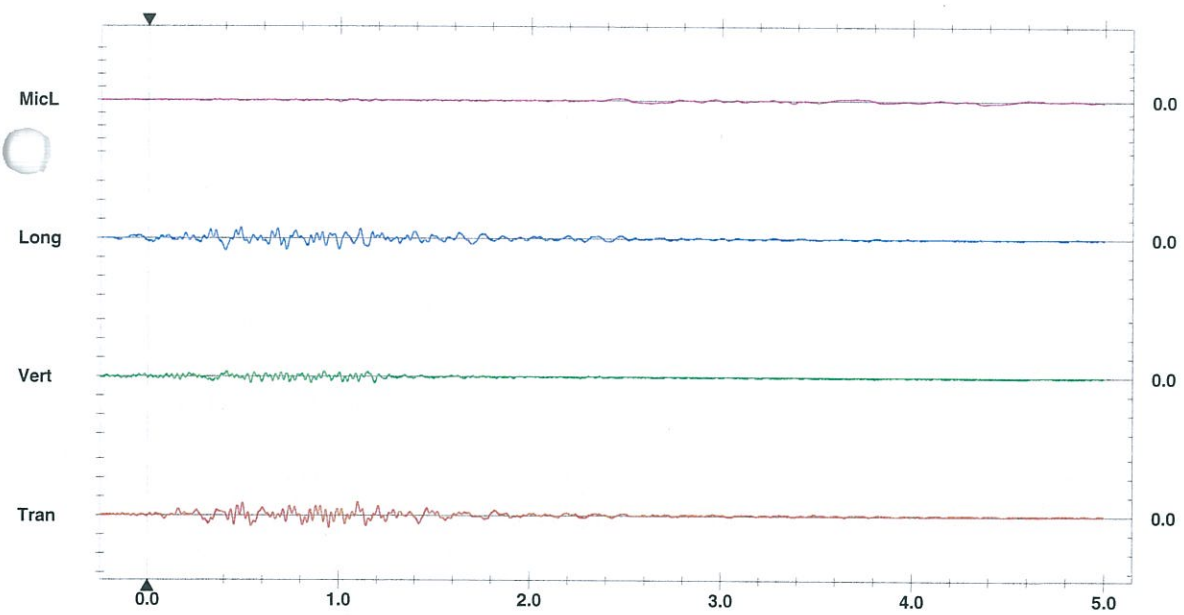
Microphone Linear Weighting
PSPL 97.5 dB(L) at 2.616 sec
ZC Freq 2.3 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 570 mv)

	Tran	Vert	Long	
PPV	0.0700	0.0350	0.0650	in/s
ZC Freq	11	27	8.4	Hz
Time (Rel. to Trig)	1.100	0.534	0.400	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00081	0.00059	0.00104	in
Dynamic Geo Cal.	Passed	Passed	Check	

Peak Vector Sum 0.0844 in/s at 1.103 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

Printed: February 2, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-04-16 Blast No. 02-04-16 Upper 3A Time 11:01

Exact Blast Location Upper 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster Adam Nichols - Orica

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 36.4"
98° 17' 34.6"

MONITOR GPS
29° 38' 36.4"
98° 17' 34.6"

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 7-16-15 Microphone Calibration 7-16-15

Exact Seismograph Location City Property Line - Outside city water tower gate - 30' from gate at prop. line

Seismograph Distance & Direction from Blast ~~BRG:~~ Distance: 2204'

Peak Overpressure 104.2 dB Scaled Distance ------

Peak Particle Velocity 0.035 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-04-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:01:45 February 4, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	H191G86H.AX1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

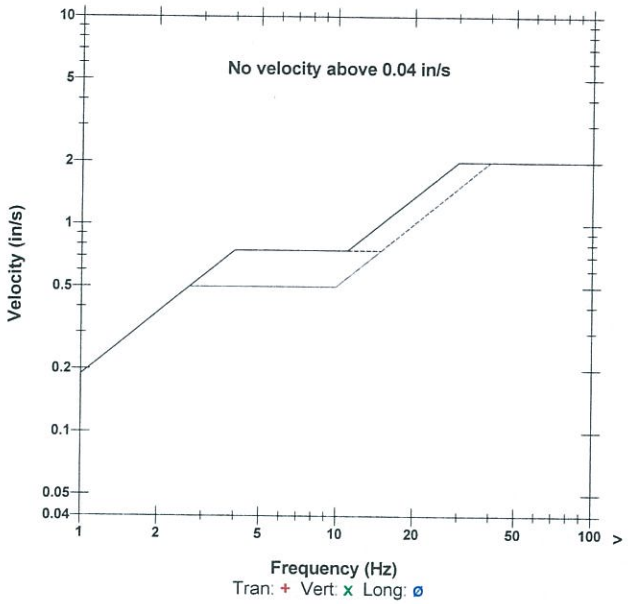
Post Event Notes
City Property Line - Distance: 2,204 ft

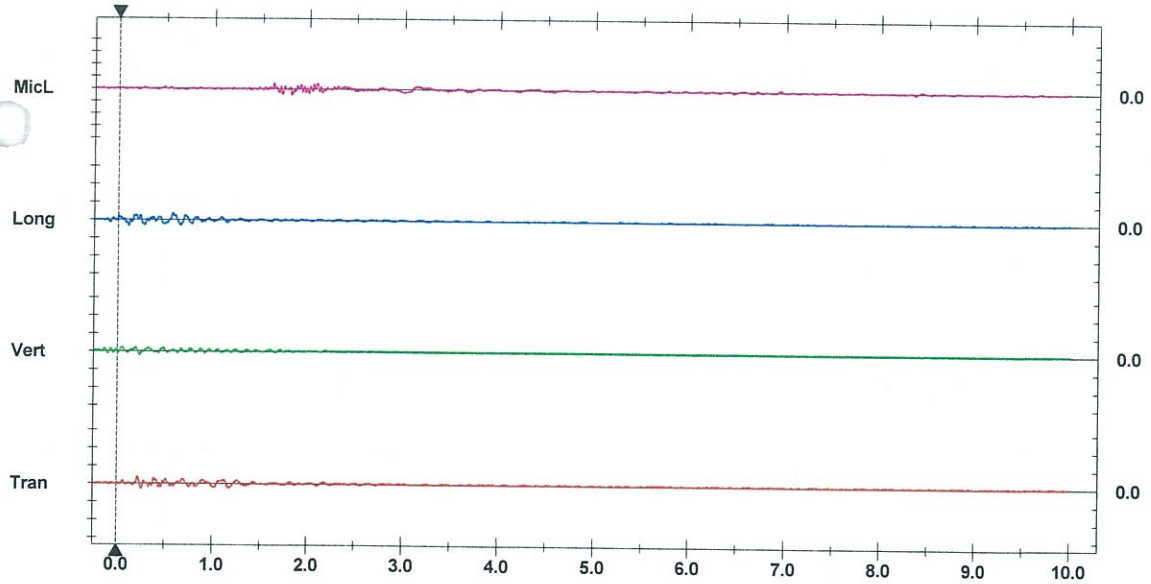
Microphone	Linear Weighting
PSPL	104.2 dB(L) at 1.805 sec
ZC Freq	15 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 602 mv)

	Tran	Vert	Long	
PPV	0.0350	0.0250	0.0350	in/s
ZC Freq	15	13	9.3	Hz
Time (Rel. to Trig)	0.218	0.049	0.112	sec
Peak Acceleration	0.0133	0.0133	0.0133	g
Peak Displacement	0.00066	0.00033	0.00070	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0418 in/s at 0.228 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 4, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-04-16 Blast No. 02-04-16 Upper 3A Time 11:01

Exact Blast Location Upper 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster Adam Nichols - Orica

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 36.4"
98° 17' 34.6"

MONITOR GPS
29° 38' 31.84"
98° 18' 23.43"

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 7-16-15 Microphone Calibration 7-16-15

Exact Seismograph Location McCormick Residence - 21403 liguria dr - 15' E of NE cnr of garage

Seismograph Distance & Direction from Blast ~~BRG:~~ Distance: 4325

Peak Overpressure 100.0 dB Scaled Distance ------

Peak Particle Velocity 0.035 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-04-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 11:01:46 February 4, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BF8949 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	J949G86H.AY1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

Extended Notes

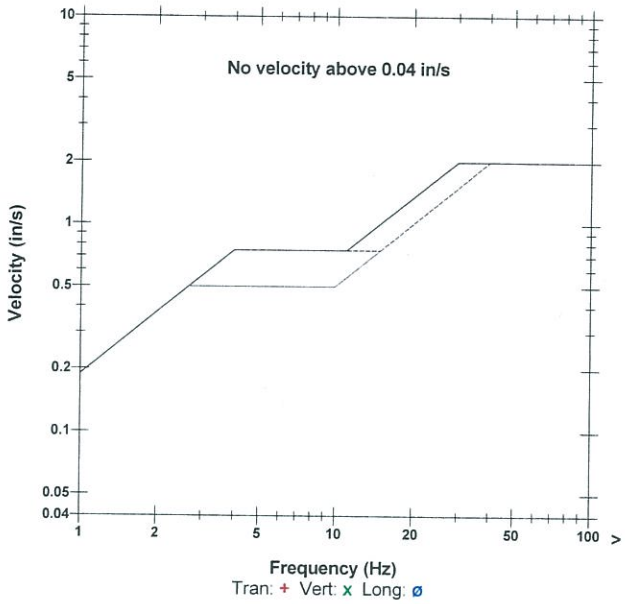
Post Event Notes
McCormick Residence - Distance: 4,325 ft

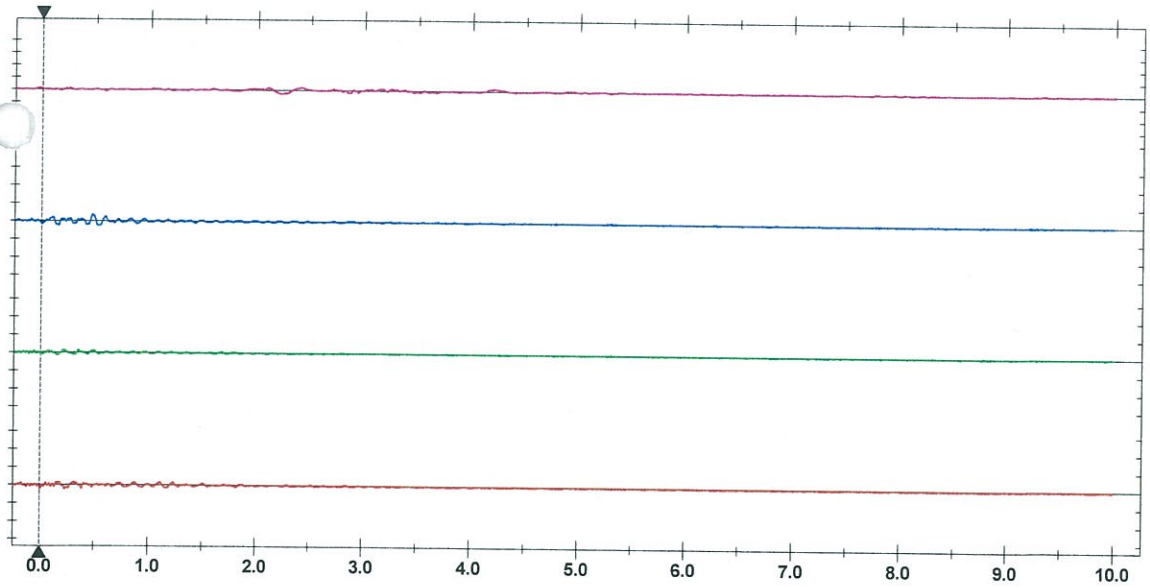
Microphone	Linear Weighting
PSPL	100.0 dB(L) at 2.211 sec
ZC Freq	3.1 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 568 mv)

	Tran	Vert	Long	
PPV	0.0250	0.0150	0.0350	in/s
ZC Freq	9.0	18	11	Hz
Time (Rel. to Trig)	0.231	0.152	0.468	sec
Peak Acceleration	0.0133	0.0265	0.0265	g
Peak Displacement	0.00042	0.00017	0.00057	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0367 in/s at 0.471 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 4, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-04-16 Blast No. 02-04-16 Upper 3A Time 11:01

Exact Blast Location Upper 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster Adam Nichols - Orica

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 36.4"
98° 17' 34.6"

MONITOR GPS
29° 38' 52"
98° 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 7-21-15 Microphone Calibration 7-21-15

Exact Seismograph Location Taveres Residence - 9118 Tuscan Hills dr - 10' E of NE cnr of house

Seismograph Distance & Direction from Blast ~~BRG:~~ Distance: 4252'

Peak Overpressure 97.5 dB Scaled Distance ------

Peak Particle Velocity 0.035 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-04-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:01:45 February 4, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Job Number:	1

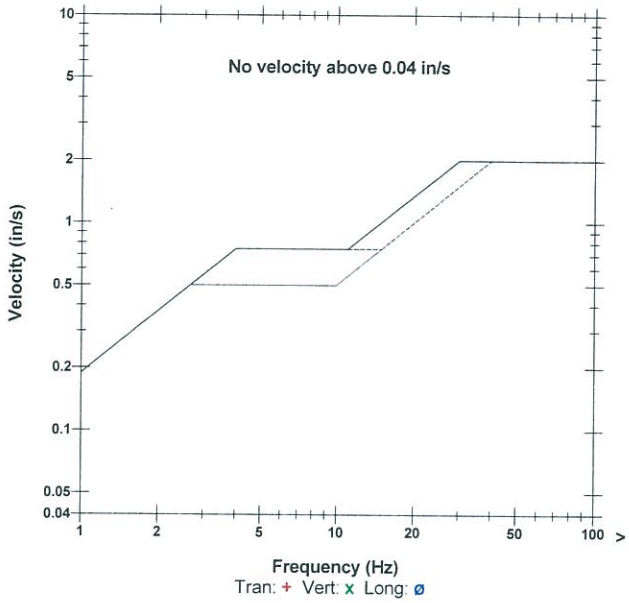
Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G86H.AX1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Taveres Residence - Distance: 4,252 ft

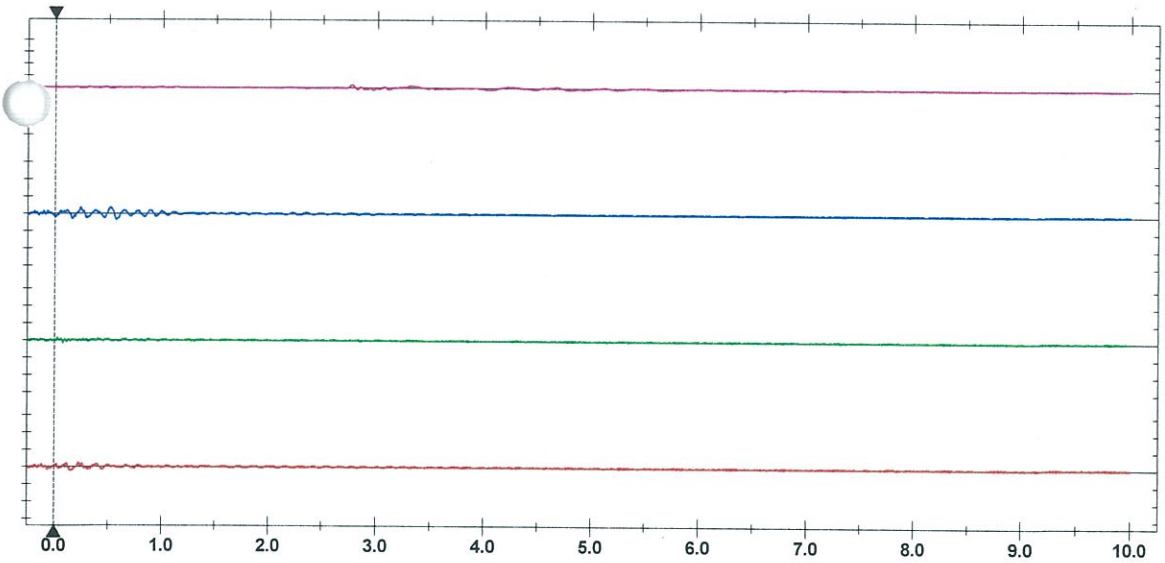
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	97.5 dB(L) at 2.751 sec
ZC Freq	9.0 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 677 mv)

	Tran	Vert	Long	
PPV	0.0250	0.0150	0.0350	in/s
ZC Freq	18	32	8.8	Hz
Time (Rel. to Trig)	0.232	0.028	0.237	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00038	0.00008	0.00071	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0403 in/s at 0.237 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-04-16 Blast No. 02-04-16 Upper 3A Time 11:01

Exact Blast Location Upper 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster Adam Nichols - Orica

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 36.4"
98° 17' 34.6"

MONITOR GPS
29° 38' 23"
98° 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 3-12-15 Microphone Calibration 3-12-15

Exact Seismograph Location Warden Residence - 21375 Gunther Grove - 10' n of NE cnr of pool at rock wall

Seismograph Distance & Direction from Blast ~~BRG~~: Distance: 1439'

Peak Overpressure 105.5 dB Scaled Distance ------

Peak Particle Velocity 0.215 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-04-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 11:01:45 February 4, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

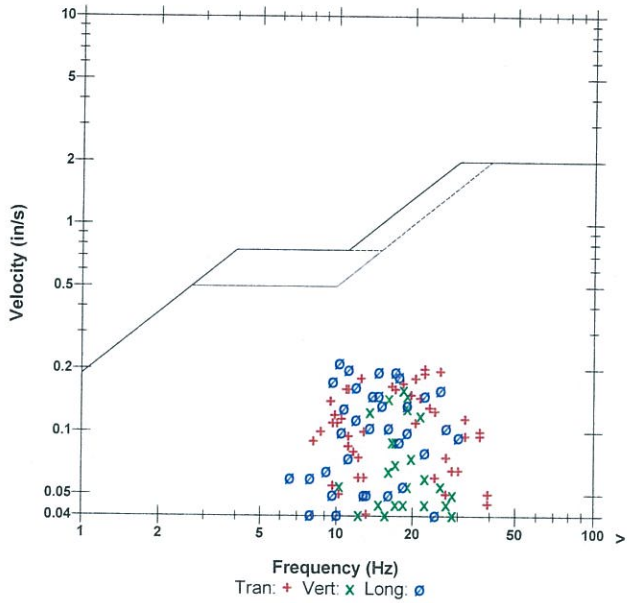
Serial Number	BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	March 12, 2015 by Vibra-Tech Inc.
File Name	O270G86H.AX1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Warden Residence - Distance: 1,439 ft

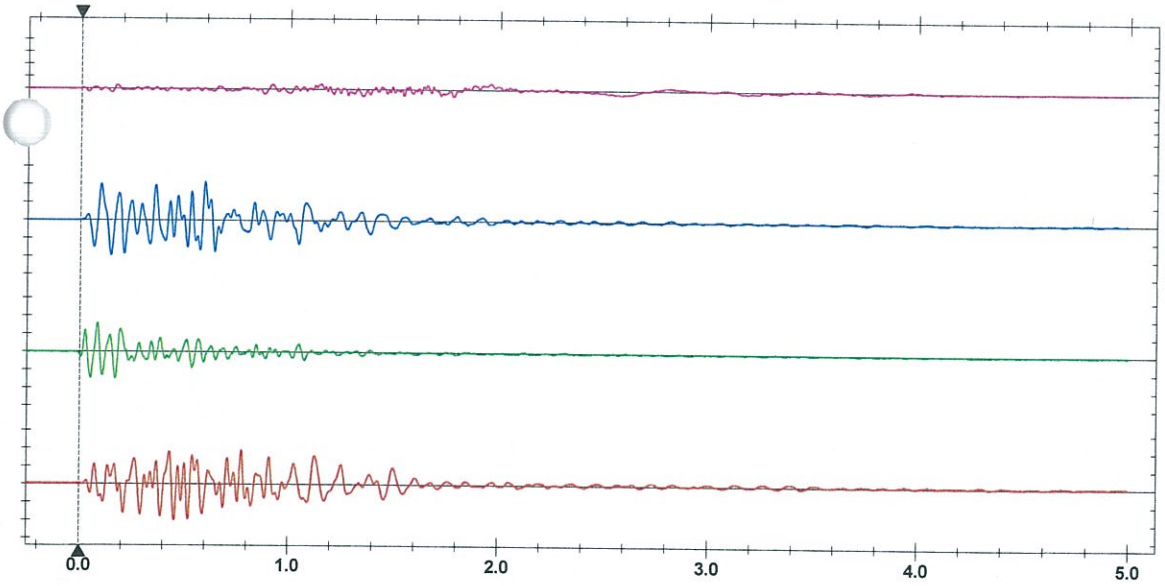
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	105.5 dB(L) at 1.341 sec
ZC Freq	14 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 510 mv)

	Tran	Vert	Long	
PPV	0.200	0.160	0.215	in/s
ZC Freq	22	18	10	Hz
Time (Rel. to Trig)	0.454	0.085	0.594	sec
Peak Acceleration	0.0795	0.0530	0.0795	g
Peak Displacement	0.00230	0.00138	0.00275	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.268 in/s at 0.594 sec



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-04-16 Blast No. 02-04-16 Upper 3A Time 11:01

Exact Blast Location Upper 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster Adam Nichols - Orica

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 36.4"
98° 17' 34.6"

MONITOR GPS
29° 38' 25"
98° 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line - 21375 Gunther Grove - NE cnr of property at pin flag

Seismograph Distance & Direction from Blast ~~BRG:~~ Distance: 1219'

Peak Overpressure 106.0 dB Scaled Distance ------

Peak Particle Velocity 0.170 ips Operator M. Marks.

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-04-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 11:01:45 February 4, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13922 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	November 22, 2015 by Vibra-Tech Inc.
File Name	O922G86H.AX1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

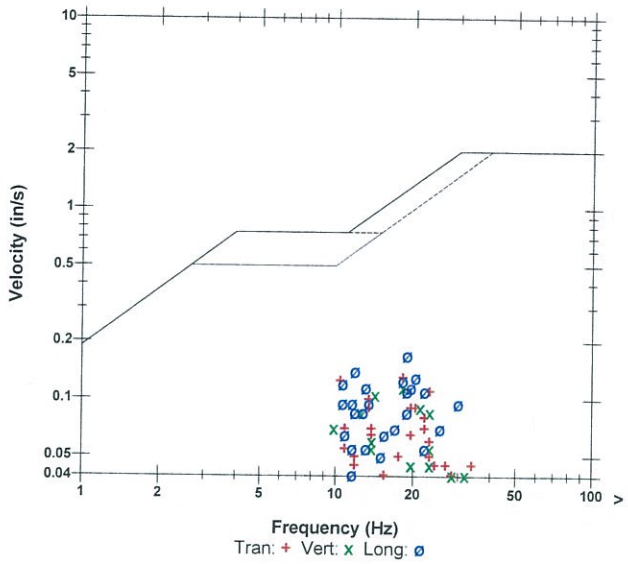
Post Event Notes
Warden Property Line - Distance: 1,219 ft

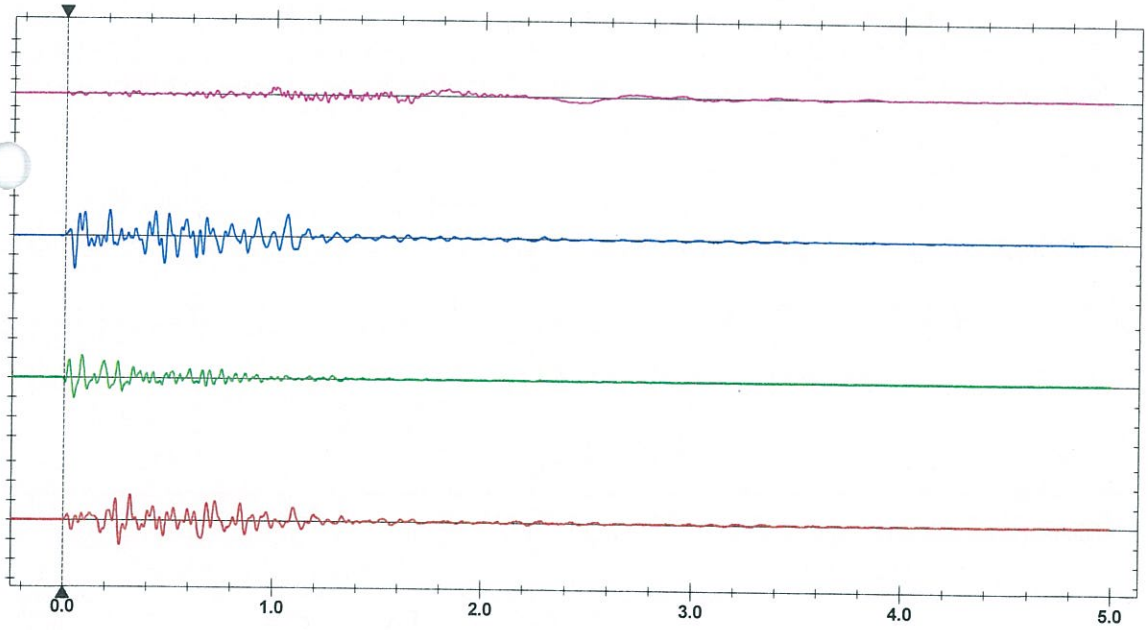
Microphone Linear Weighting
PSPL 106.0 dB(L) at 1.002 sec
ZC Freq 8.0 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 574 mv)

	Tran	Vert	Long	
PPV	0.130	0.115	0.170	in/s
ZC Freq	18	18	19	Hz
Time (Rel. to Trig)	0.318	0.083	0.043	sec
Peak Acceleration	0.0530	0.0398	0.0663	g
Peak Displacement	0.00134	0.00103	0.00169	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.202 in/s at 0.044 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 4, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-5-16 Blast No. 2-5-16 3C Time 12:02

Exact Blast Location FACE 3C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 46.6"
W 98° 17' 35.6"

MONITOR GPS

N 29 38' 22.63
W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate
30' from gate at the property line

Seismograph Distance from Blast 2,919'

Peak Overpressure 101.9 dB Scaled Distance ------

Peak Particle Velocity .055 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-5-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:02:06 February 5, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	H191G88E.RI1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

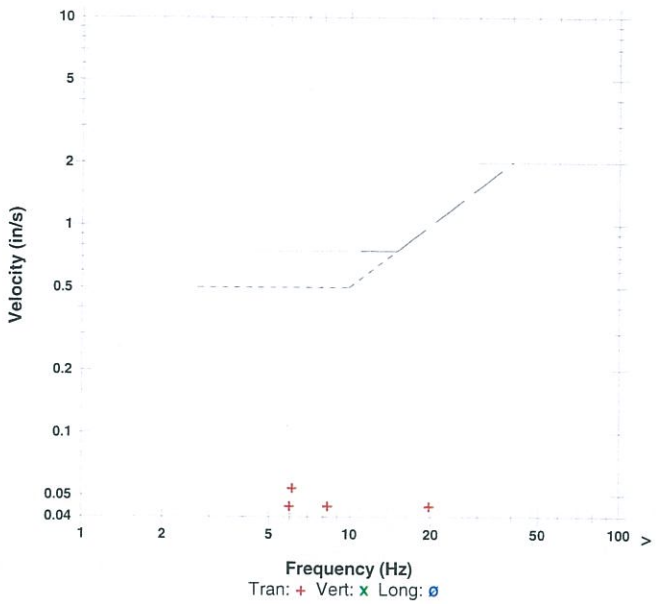
Post Event Notes
City Property Line: 2,919'

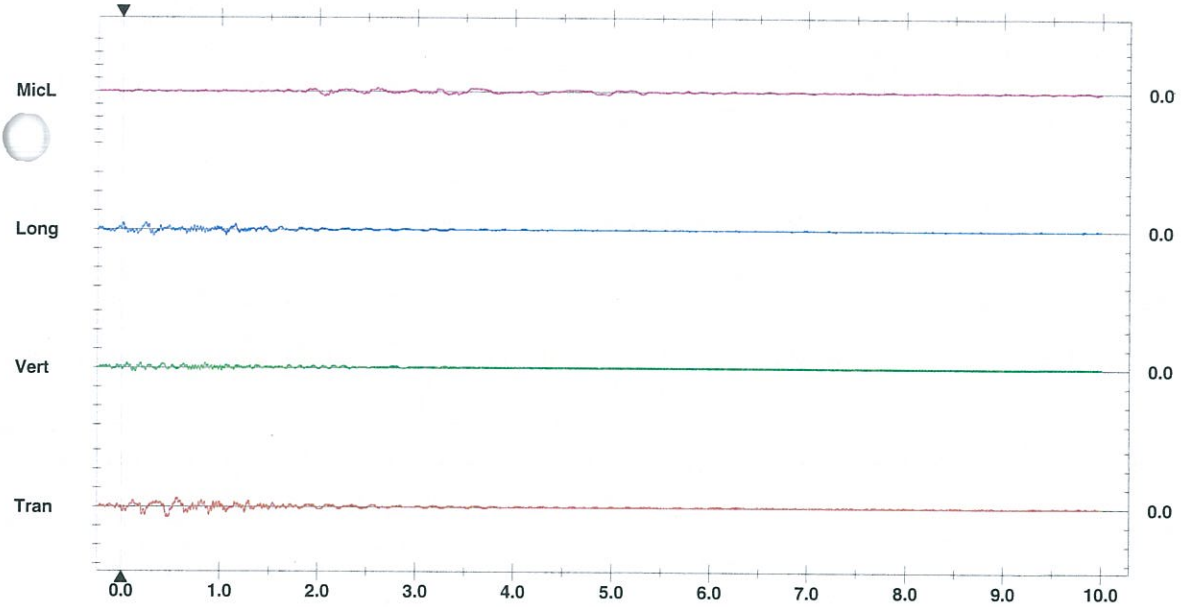
Microphone	Linear Weighting
PSPL	101.9 dB(L) at 2.054 sec
ZC Freq	4.7 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 599 mv)

	Tran	Vert	Long	
PPV	0.0550	0.0250	0.0350	in/s
ZC Freq	6.1	15	20	Hz
Time (Rel. to Trig)	0.455	0.055	0.008	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00138	0.00039	0.00079	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0579 in/s at 0.476 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 5, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-5-16 Blast No. 2-5-16 3C Time 12:02

Exact Blast Location FACE 3C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 46.6"
W 98° 17' 35.6"

MONITOR GPS

N 29 38 31.84
W 98 18 23.43

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location McCormick Residence: 21403 Liguria Drive, George Ranch Subdivision

15' E off NE corner of garage

Seismograph Distance from Blast 4,470'

Peak Overpressure 98.8 dB Scaled Distance ------

Peak Particle Velocity .060 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 2-5-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:02:05 February 5, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BF8949 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	J949G88E.RH1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

Extended Notes

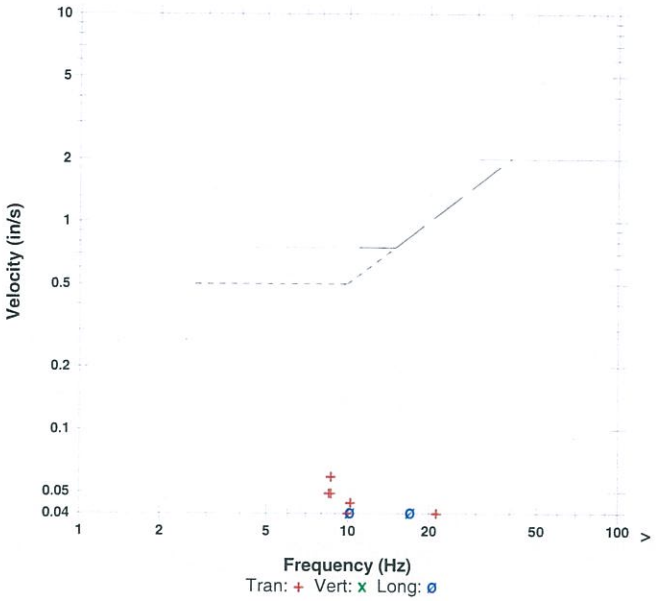
Post Event Notes
McCormick Residence: 4,470'

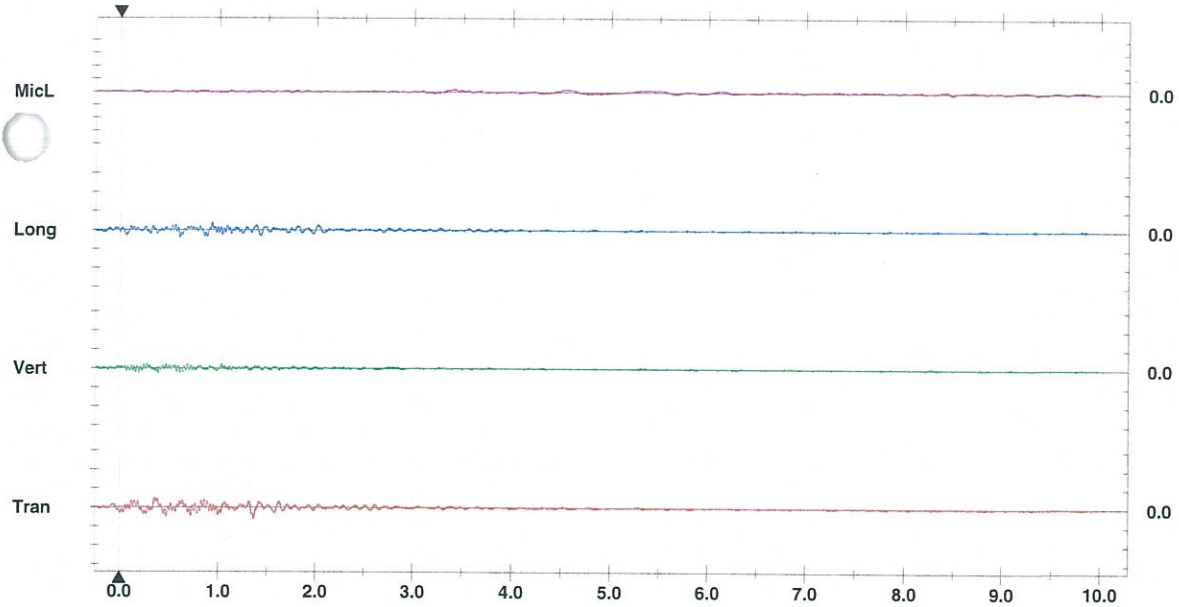
Microphone	Linear Weighting
PSPL	98.8 dB(L) at 3.412 sec
ZC Freq	4.2 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 592 mv)

	Tran	Vert	Long	
PPV	0.0600	0.0250	0.0400	in/s
ZC Freq	8.7	30	10	Hz
Time (Rel. to Trig)	1.363	0.188	0.604	sec
Peak Acceleration	0.0265	0.0265	0.0133	g
Peak Displacement	0.00099	0.00021	0.00063	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0620 in/s at 1.365 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶——◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-5-16 Blast No. 2-5-16 3C Time 12:02

Exact Blast Location FACE 3C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 46.6"
W 98° 17' 35.6"

MONITOR GPS

N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3,898'

Peak Overpressure 101.9 dB Scaled Distance ------

Peak Particle Velocity .11 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: D. Larner Date: 2-5-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:02:05 February 5, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Job Number:	1

Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G88E.RH1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

Extended Notes

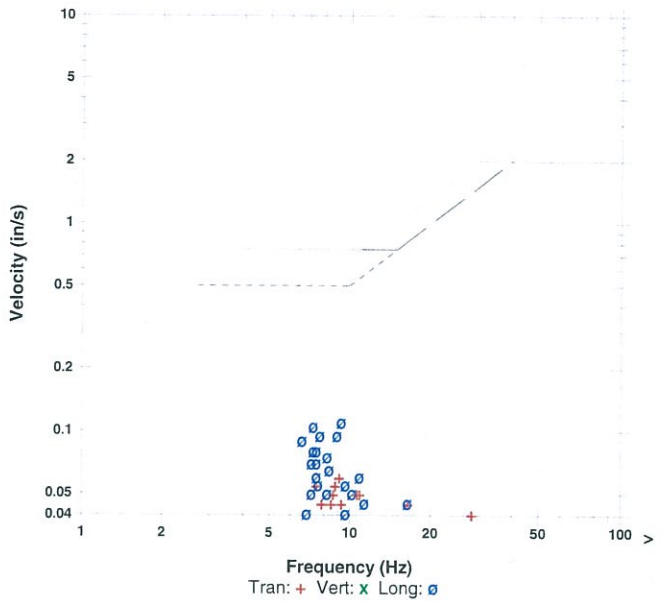
Post Event Notes
Taveres Residence: 3,898'

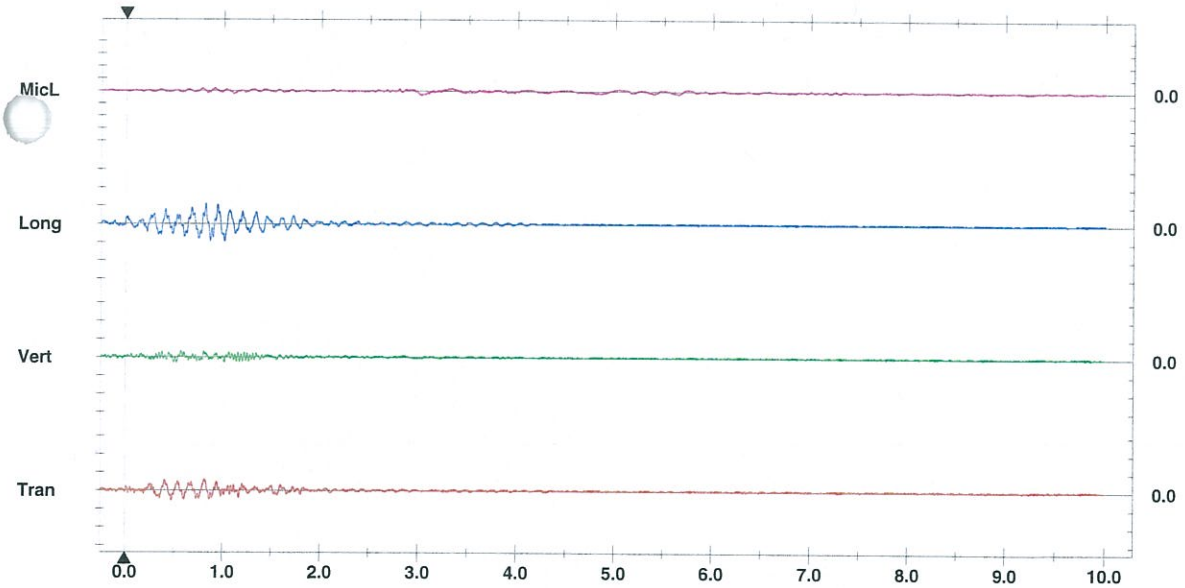
Microphone	Linear Weighting
PSPL	101.9 dB(L) at 3.018 sec
ZC Freq	3.9 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 700 mv)

	Tran	Vert	Long	
PPV	0.0600	0.0300	0.110	in/s
ZC Freq	9.1	28	9.3	Hz
Time (Rel. to Trig)	0.814	0.375	0.818	sec
Peak Acceleration	0.0265	0.0265	0.0398	g
Peak Displacement	0.00105	0.00040	0.00177	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.124 in/s at 0.818 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 5, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-5-16 Blast No. 2-5-16 3C Time 12:02

Exact Blast Location FACE 3C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 46.6"

W 98° 17' 35.6"

MONITOR GPS

N 29 38' 23"

W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 2,423'

Peak Overpressure 107.0 dB Scaled Distance ------

Peak Particle Velocity .17 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-5-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:02:07 February 5, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level	6.5 Volts
Calibration	March 12, 2015 by Vibra-Tech Inc.
File Name	O270G88E.RJ1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

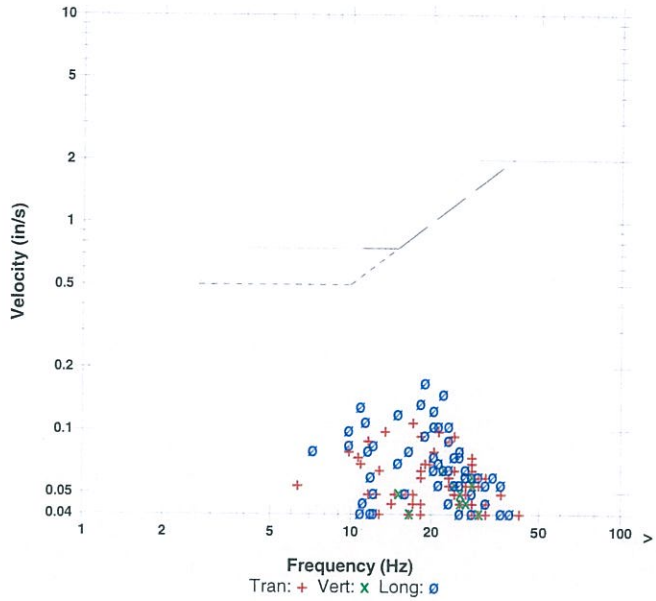
Post Event Notes
Warden Residence: 2,423'

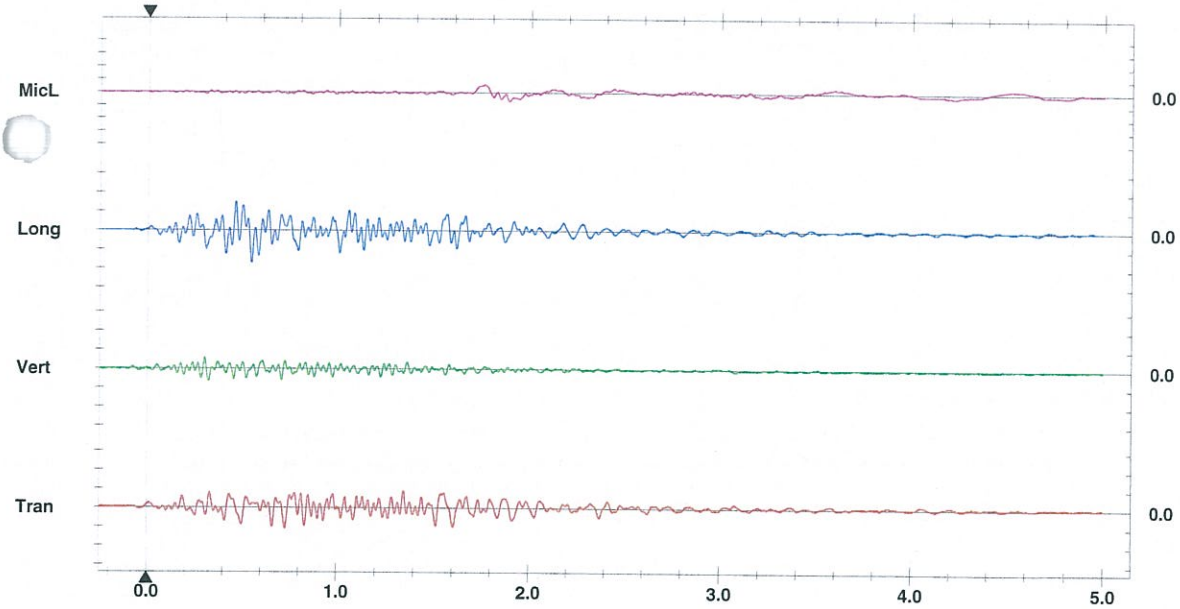
Microphone	Linear Weighting
PSPL	107.0 dB(L) at 1.886 sec
ZC Freq	3.6 Hz
Channel Test	Passed (Freq = 20.5 Hz Amp = 557 mv)

	Tran	Vert	Long	
PPV	0.110	0.0650	0.170	in/s
ZC Freq	17	22	19	Hz
Time (Rel. to Trig)	0.730	0.318	0.543	sec
Peak Acceleration	0.0530	0.0265	0.0530	g
Peak Displacement	0.00137	0.00050	0.00164	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.171 in/s at 0.543 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 5, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-5-16 Blast No. 2-5-16 3C Time 12:02

Exact Blast Location FACE 3C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 46.6"
W 98° 17' 35.6"

MONITOR GPS

N 29 38' 25"
W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 2,209'

Peak Overpressure 107.5 dB Scaled Distance ------

Peak Particle Velocity .17 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by [signature] Date: 2-5-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:02:07 February 5, 2016	**Serial Number**	BF13922 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	November 22, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O922G88E.RJ1
Record Time	5.0 sec at 1024 sps		

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

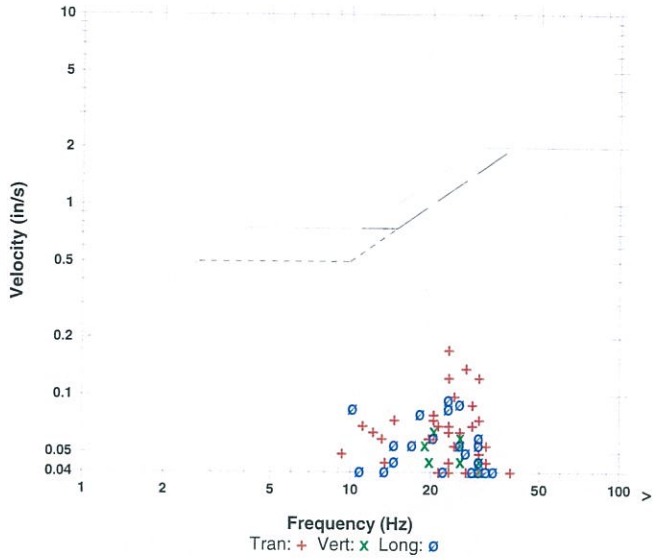
Post Event Notes
Warden Property Line: 2,209'

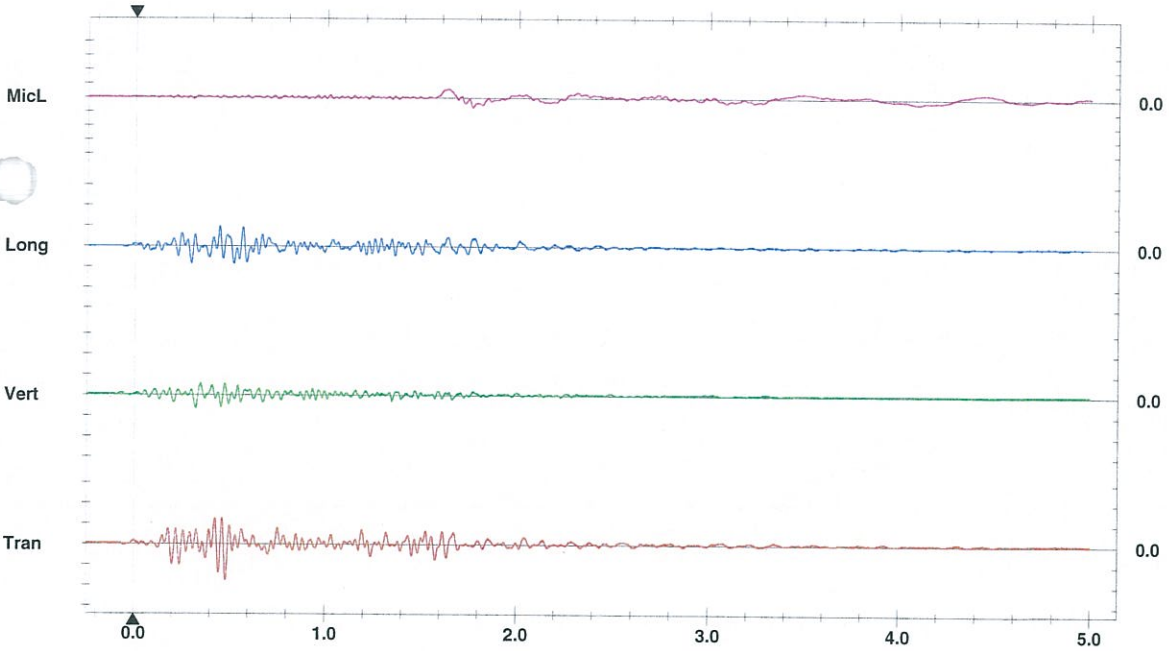
Microphone Linear Weighting
PSPL 107.5 dB(L) at 1.761 sec
ZC Freq 5.3 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 560 mv)

	Tran	Vert	Long	
PPV	0.175	0.0650	0.0950	in/s
ZC Freq	23	20	23	Hz
Time (Rel. to Trig)	0.484	0.323	0.445	sec
Peak Acceleration	0.0663	0.0398	0.0530	g
Peak Displacement	0.00123	0.00050	0.00110	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.184 in/s at 0.485 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 5, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-09-16 Blast No. 02-09-16 3D Time 12:10

Exact Blast Location 3D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N 29° 38' 50.9"
W 98° 17' 36.3"

MONITOR GPS
N 29 38' 22.63
W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate
30' from gate at the property line

Seismograph Distance from Blast 3260'

Peak Overpressure 100.0 dB Scaled Distance ------

Peak Particle Velocity 0.025 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-09-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:10:28 February 9, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	H191G8FT.TG1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

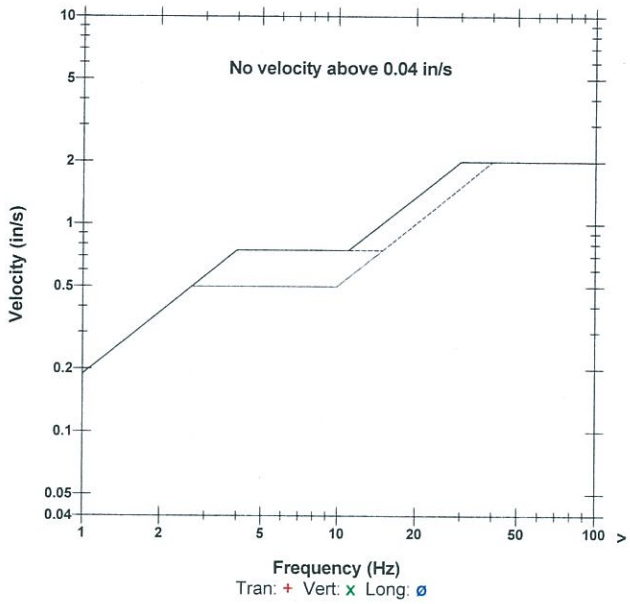
Post Event Notes
City Property Line - Distance: 3260 ft

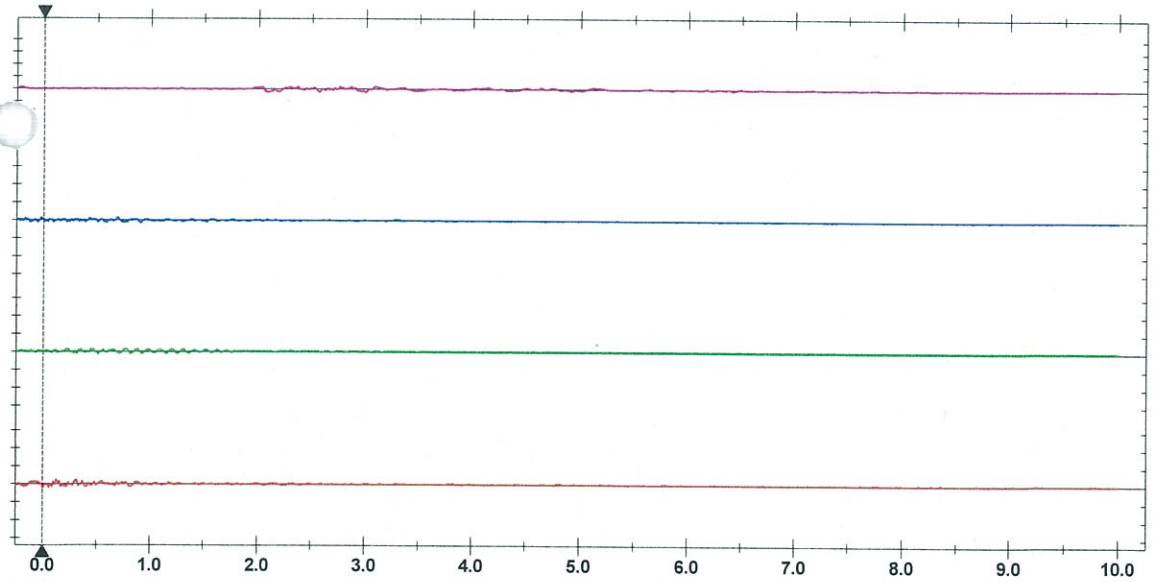
Microphone	Linear Weighting
PSPL	100.0 dB(L) at 2.992 sec
ZC Freq	4.7 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 551 mv)

	Tran	Vert	Long	
PPV	0.0250	0.0150	0.0150	in/s
ZC Freq	20	13	47	Hz
Time (Rel. to Trig)	0.127	0.209	-0.028	sec
Peak Acceleration	0.0265	0.0133	0.0133	g
Peak Displacement	0.00025	0.00027	0.00016	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0269 in/s at 0.312 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 9, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-09-16 Blast No. 02-09-16 3D Time 12:16

Exact Blast Location 3D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 50.9"
W 98° 17' 36.3"

MONITOR GPS

N 29 38 58.8
W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 37[illegible]16

Peak Overpressure 101.0 dB Scaled Distance ------

Peak Particle Velocity 0.020 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-09-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:11:28 February 9, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

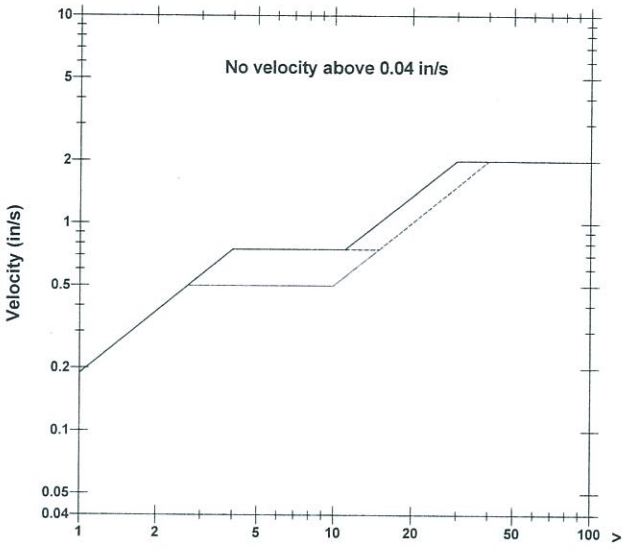
Serial Number	BF8949 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	J949G8FT.V41

otes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

Extended Notes

Post Event Notes
Cruz Residence - Distance: 3716 ft

USBM RI8507 And OSMRE

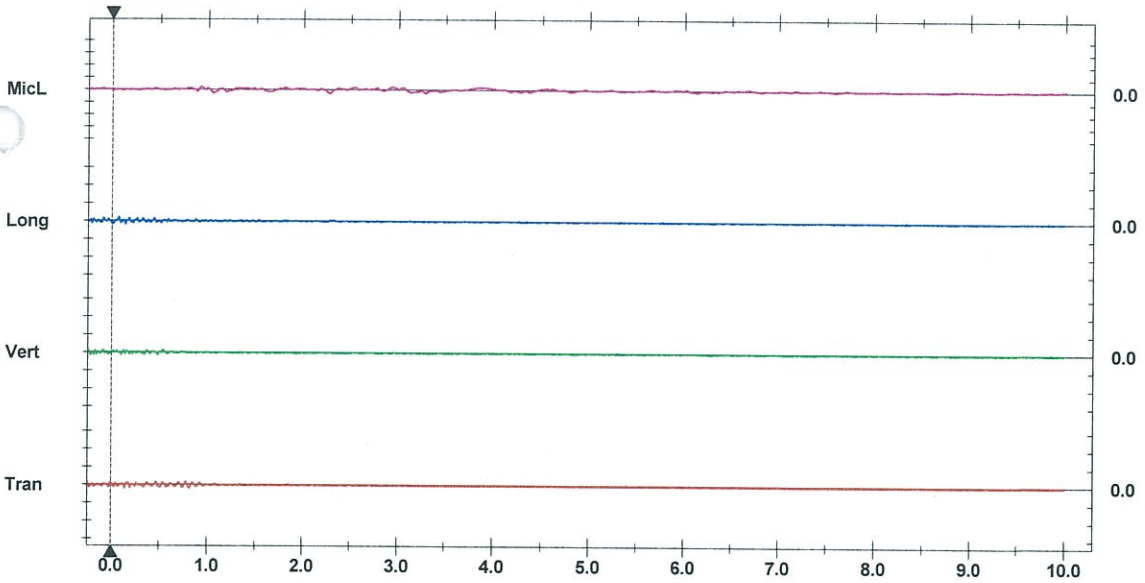


Tran: + Vert: x Long: ø

Microphone	Linear Weighting
PSPL	101.0 dB(L) at 2.272 sec
ZC Freq	6.6 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 553 mv)

	Tran	Vert	Long	
PPV	0.0200	0.0150	0.0200	in/s
ZC Freq	32	30	13	Hz
Time (Rel. to Trig)	0.144	-0.227	0.000	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00020	0.00011	0.00024	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0300 in/s at 0.144 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 9, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-09-16 Blast No. 02-09-16 3D Time 12:10

Exact Blast Location 3D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N 29° 38' 50.9"
W 98° 17' 36.3"

MONITOR GPS
N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3799

Peak Overpressure 95.9 dB Scaled Distance ------

Peak Particle Velocity 0.045 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-09-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:10:27 February 9, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Job Number:	1

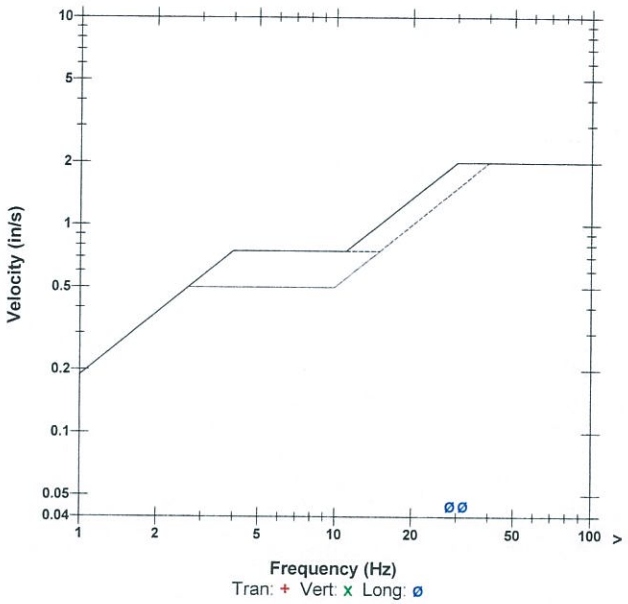
Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G8FT.TF1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Taveres Residence - Distance: 3799 ft

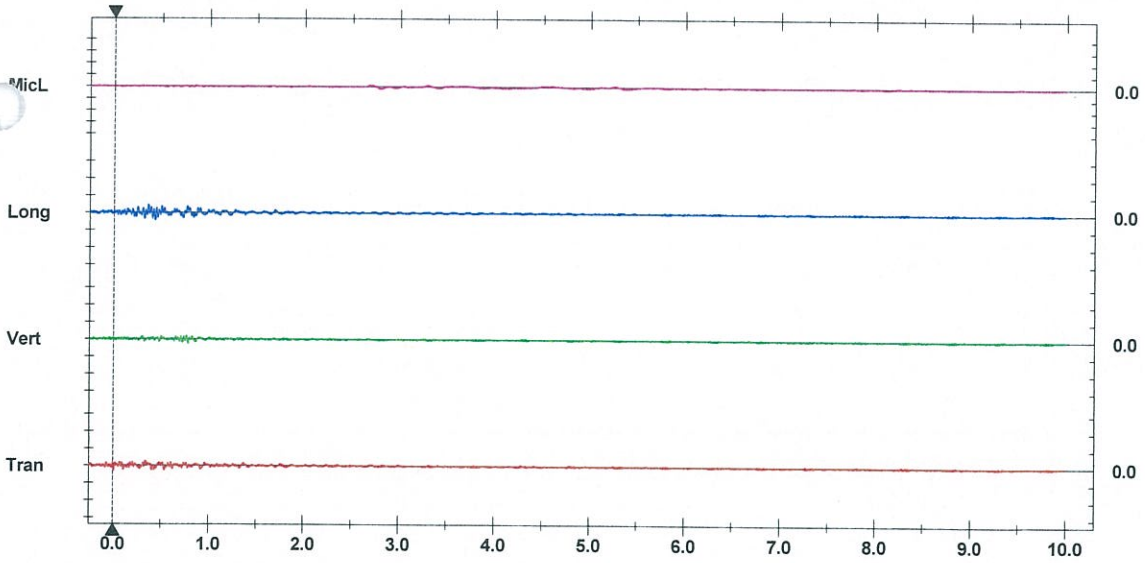
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	95.9 dB(L) at 2.782 sec
ZC Freq	5.5 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 684 mv)

	Tran	Vert	Long	
PPV	0.0300	0.0250	0.0450	in/s
ZC Freq	39	32	28	Hz
Time (Rel. to Trig)	0.003	0.774	0.355	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00022	0.00014	0.00043	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0524 in/s at 0.426 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 9, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-09-16 Blast No. 02-09-16 3D Time 12:10

Exact Blast Location 3D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
n29° 38' 50.9"
w98° 17' 36.3"

MONITOR GPS
N 29 38' 23"
W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision
10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 2846

Peak Overpressure 102.8 dB Scaled Distance ------

Peak Particle Velocity 0.085 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 2-9-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:10:28 February 9, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

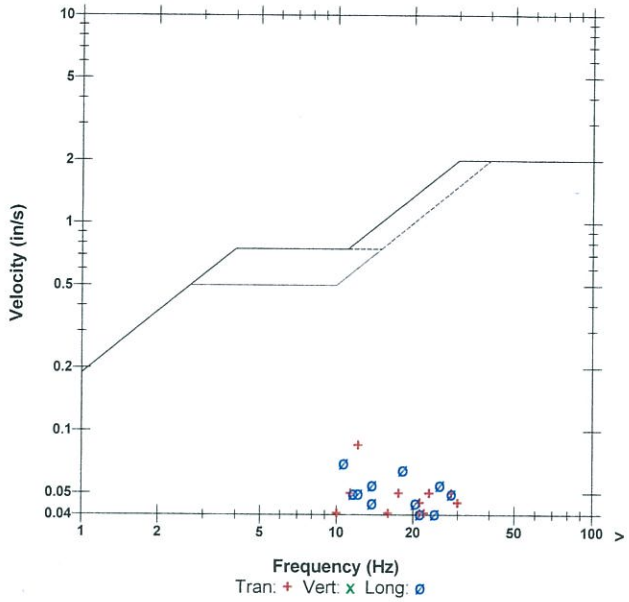
Serial Number	BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	March 12, 2015 by Vibra-Tech Inc.
File Name	O270G8FT.TG1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Warden Residence - Distance: 2846 ft

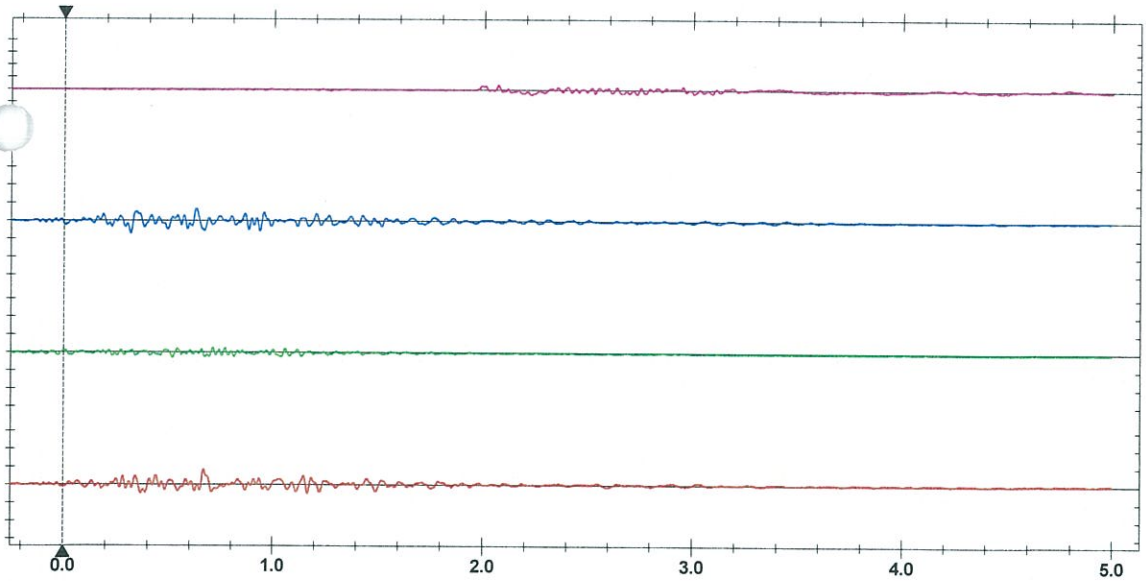
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	102.8 dB(L) at 2.063 sec
ZC Freq	23 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 507 mv)

	Tran	Vert	Long	
PPV	0.0850	0.0300	0.0700	in/s
ZC Freq	12	22	11	Hz
Time (Rel. to Trig)	0.669	0.513	0.314	sec
Peak Acceleration	0.0265	0.0265	0.0398	g
Peak Displacement	0.00101	0.00036	0.00082	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.104 in/s at 0.669 sec



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 9, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-09-16 Blast No. 02-09-16 3D Time 12:10

Exact Blast Location 3D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N 29° 38' 50.9"
W 98° 17' 36.3"

MONITOR GPS
N 29 38' 25"
W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision
North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 2635'

Peak Overpressure 104.9 dB Scaled Distance ------

Peak Particle Velocity 0.060 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 2-9-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

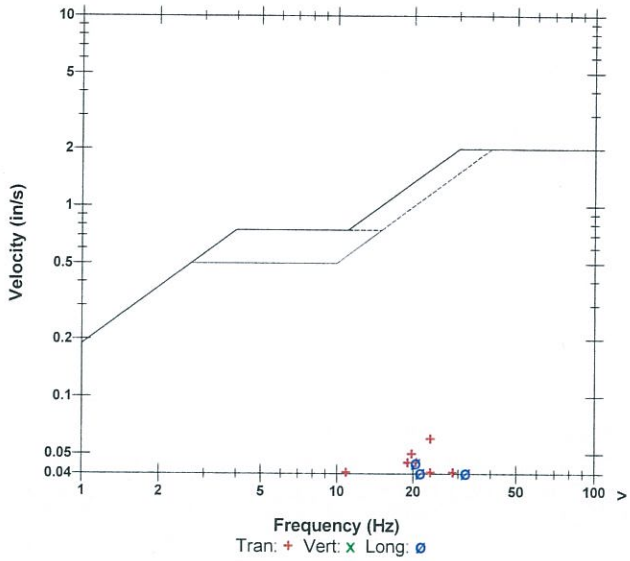
Date/Time	Long at 12:11:27 February 9, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13922 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	November 22, 2015 by Vibra-Tech Inc.
File Name	O922G8FT.V31

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Post Event Notes
Warden Property Line - Distance: 2635 ft

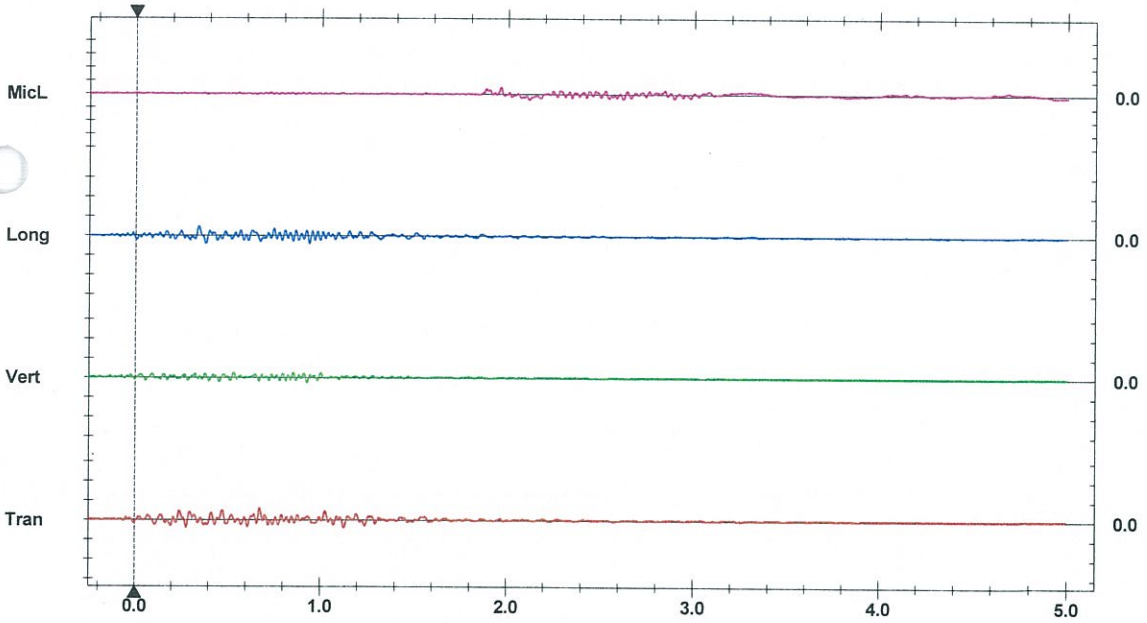
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	104.9 dB(L) at 1.958 sec
ZC Freq	18 Hz
Channel Test	Passed (Freq = 20.5 Hz Amp = 545 mv)

	Tran	Vert	Long	
PPV	0.0600	0.0250	0.0450	in/s
ZC Freq	23	30	20	Hz
Time (Rel. to Trig)	0.674	0.529	0.339	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00053	0.00015	0.00036	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0678 in/s at 0.674 sec



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 9, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-10-16 Blast No. 02-10-16 3E Time 11:39

Exact Blast Location BENCH 3E

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N29 38 54.4
W98 17 36.8

MONITOR GPS
N 29 38' 22.63
W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate
30' from gate at the property line

Seismograph Distance from Blast 3,557

Peak Overpressure 106.0 dB Scaled Distance ------

Peak Particle Velocity .020 ips Operator L. LUMBERS

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-10-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Tran at 11:39:40 February 10, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 10.0 sec at 1024 sps

Serial Number BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level 6.3 Volts
Calibration July 16, 2015 by Vibra-Tech Inc.
File Name H191G8HN.241

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

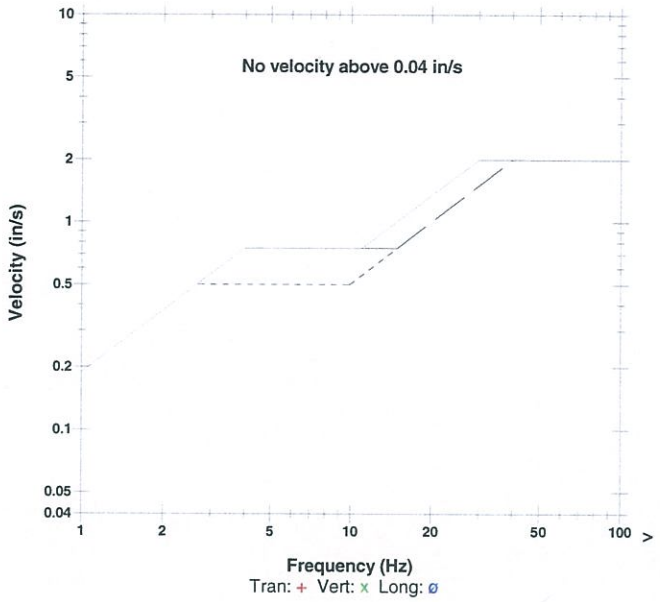
Post Event Notes
City Property Line Dist: 3,557'

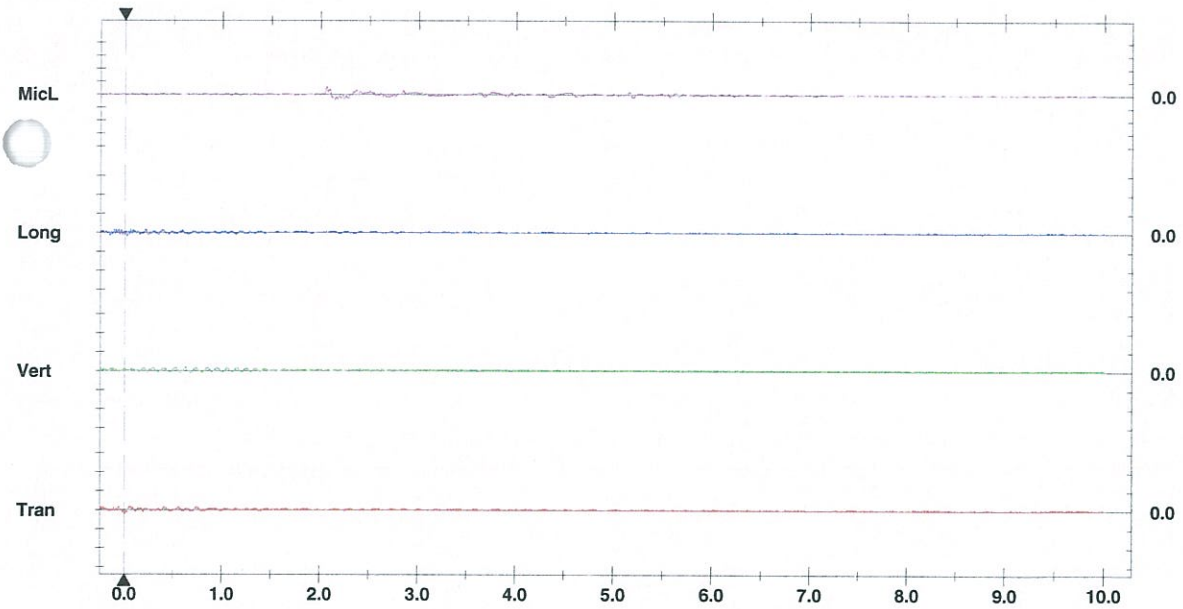
Microphone Linear Weighting
PSPL 106.0 dB(L) at 2.061 sec
ZC Freq 7.5 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 544 mv)

	Tran	Vert	Long	
PPV	0.0200	0.0200	0.0200	in/s
ZC Freq	26	13	37	Hz
Time (Rel. to Trig)	0.000	0.627	0.021	sec
Peak Acceleration	0.0133	0.0133	0.0133	g
Peak Displacement	0.00021	0.00025	0.00011	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0224 in/s at 0.000 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 10, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-10-16 Blast No. 02-10-16 3E Time 11:39

Exact Blast Location BENCH 3E

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS	MONITOR GPS
N 29 38 54.4	N 29 38 58.8
W 98 17 36.8	W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 3,612'

Peak Overpressure 101.9 dB Scaled Distance ------

Peak Particle Velocity .025 ips Operator L. LUMBERS

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-10-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Long at 11:39:40 February 10, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 10.0 sec at 1024 sps

Serial Number BF8949 V 7.04-8.0 MultiSeis Plus
Battery Level 6.3 Volts
Calibration July 16, 2015 by Vibra-Tech Inc.
File Name J949G8HN.241

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

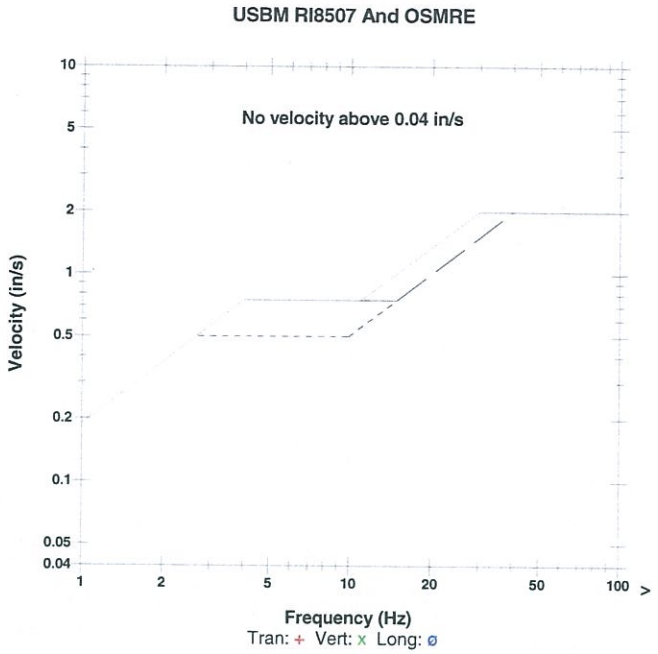
Extended Notes

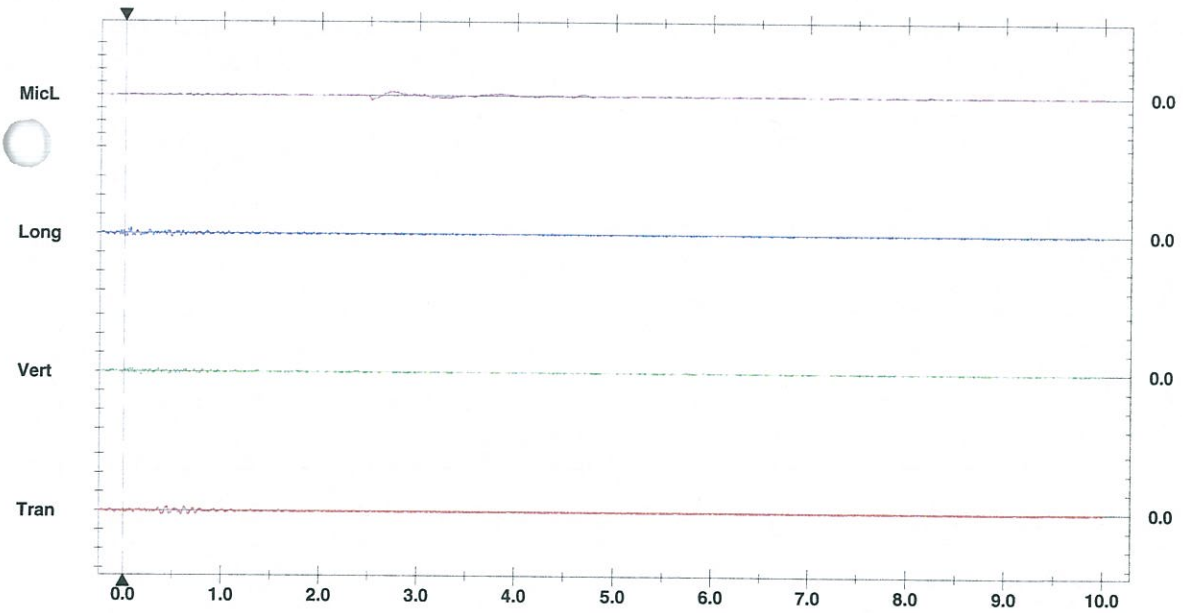
Post Event Notes
Cruz Residence Dist: 3,612'

Microphone Linear Weighting
PSPL 101.9 dB(L) at 2.512 sec
ZC Freq 4.7 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 550 mv)

	Tran	Vert	Long	
PPV	0.0200	0.0200	0.0250	in/s
ZC Freq	13	47	32	Hz
Time (Rel. to Trig)	0.386	0.102	0.061	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00029	0.00013	0.00014	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0296 in/s at 0.063 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-10-16 Blast No. 02-10-16 3E Time 11:39

Exact Blast Location BENCH 3E

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N29 38 54.4
W98 17 36.8

MONITOR GPS
N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3,761'

Peak Overpressure 106.9 dB Scaled Distance ------

Peak Particle Velocity .045 ips Operator L. LUMBERS

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-10-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:39:40 February 10, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Event Number:	1

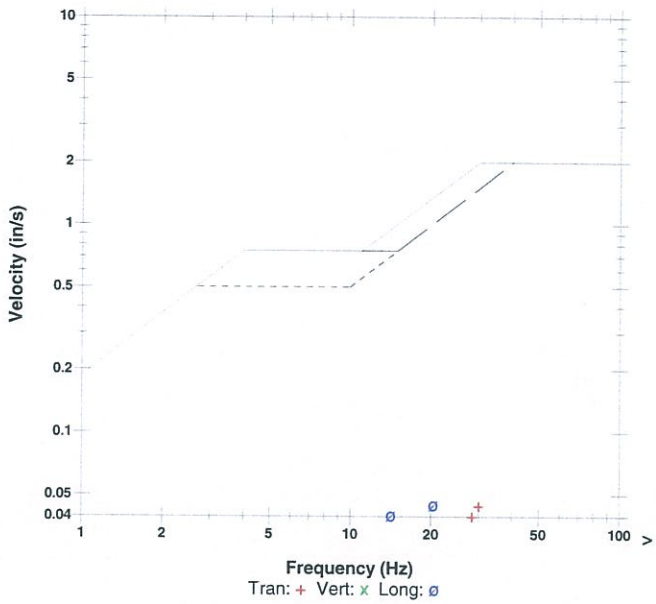
Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G8HN.241

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Taveres Residence Dist: 3,761'

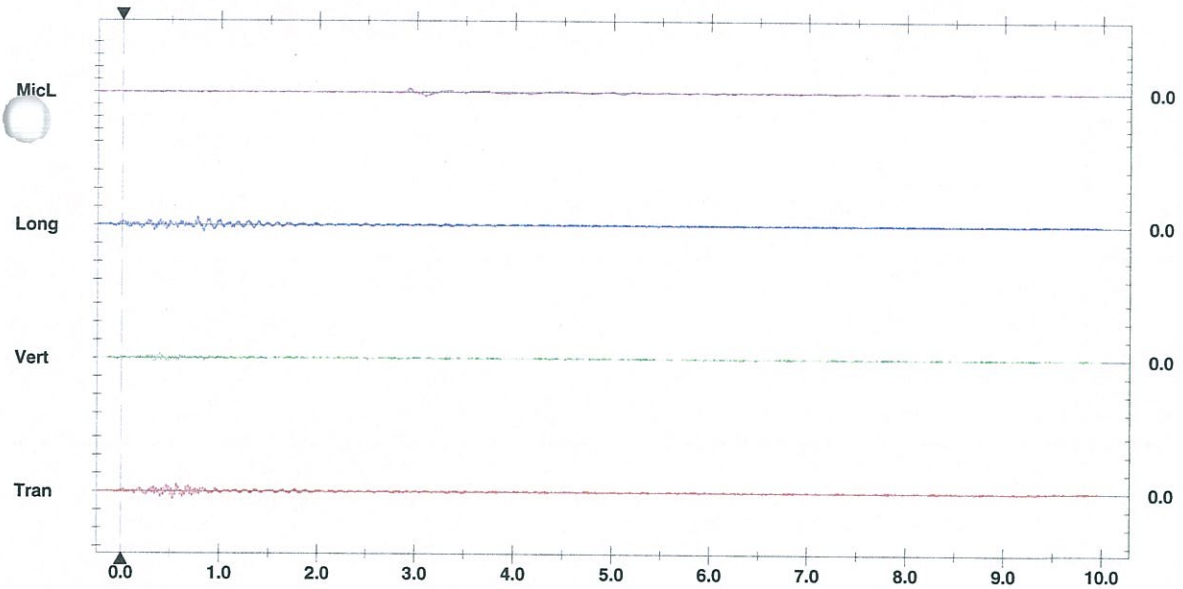
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	101.9 dB(L) at 3.084 sec
ZC Freq	3.6 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 706 mv)

	Tran	Vert	Long	
PPV	0.0450	0.0250	0.0450	in/s
ZC Freq	30	34	20	Hz
Time (Rel. to Trig)	0.525	0.388	0.768	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00026	0.00012	0.00046	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0461 in/s at 0.768 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-10-16 Blast No. 02-10-16 3E Time 11:39

Exact Blast Location BENCH 3E

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N29 38 54.4
W98 17 36.8

MONITOR GPS
N 29 38' 23"
W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision
10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 3,194'

Peak Overpressure 108.4 dB Scaled Distance ------

Peak Particle Velocity .070 ips Operator L. LUMBERS

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-10-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Tran at 11:39:40 February 10, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 5.0 sec at 1024 sps

Serial Number BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level 6.5 Volts
Calibration March 12, 2015 by Vibra-Tech Inc.
File Name O270G8HN.241

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

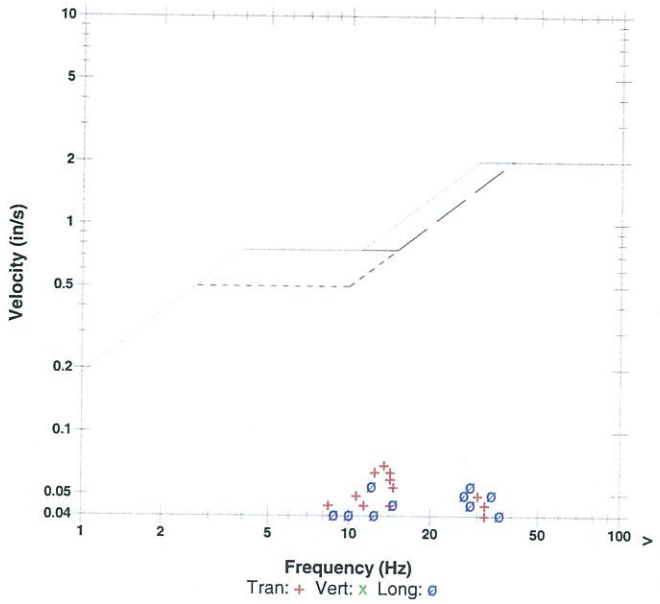
Post Event Notes
Warden Residence Dist: 3,194'

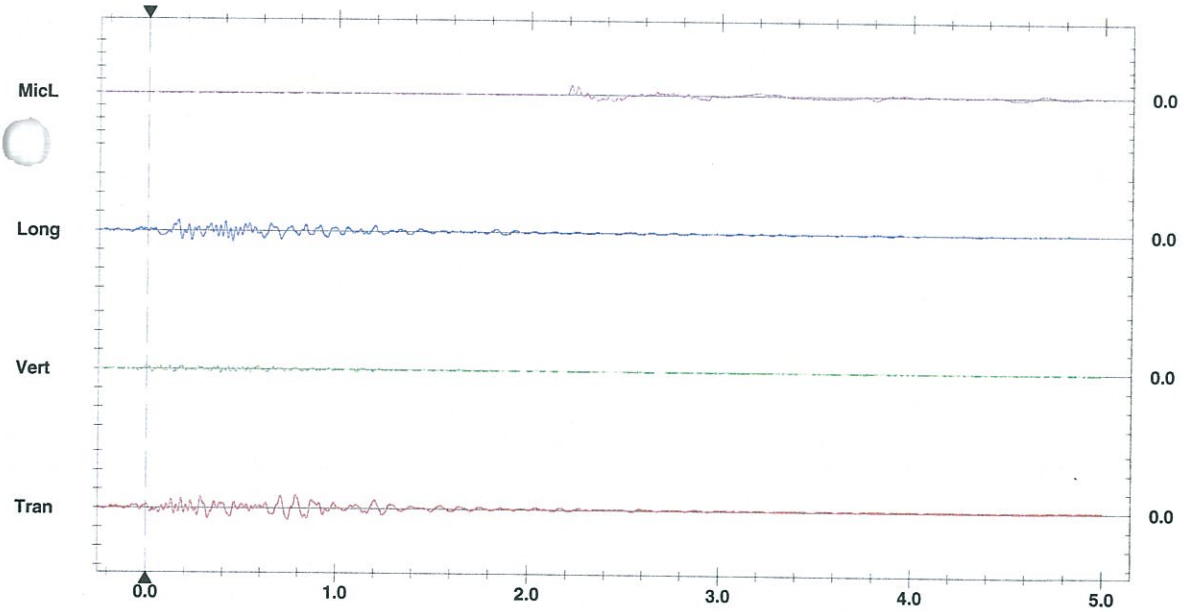
Microphone Linear Weighting
PSPL 108.4 dB(L) at 2.210 sec
ZC Freq 7.6 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 513 mv)

	Tran	Vert	Long	
PPV	0.0700	0.0200	0.0550	in/s
ZC Freq	13	26	12	Hz
Time (Rel. to Trig)	0.787	0.029	0.159	sec
Peak Acceleration	0.0265	0.0265	0.0398	g
Peak Displacement	0.00087	0.00019	0.00067	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0763 in/s at 0.707 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶——◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-10-16 Blast No. 02-10-16 3E Time 11:39

Exact Blast Location BENCH 3E

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29 38 54.4
W98 1736.8'

MONITOR GPS

N 29 38' 25"
W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 2,986'

Peak Overpressure 109.2 dB Scaled Distance ------

Peak Particle Velocity .045 ips Operator L. LUMBERS

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 2-10-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Long at 11:39:41 February 10, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 5.0 sec at 1024 sps

Serial Number BF13922 V 7.04-8.0 MultiSeis Plus
Battery Level 6.4 Volts
Calibration November 22, 2015 by Vibra-Tech Inc.
File Name O922G8HN.251

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

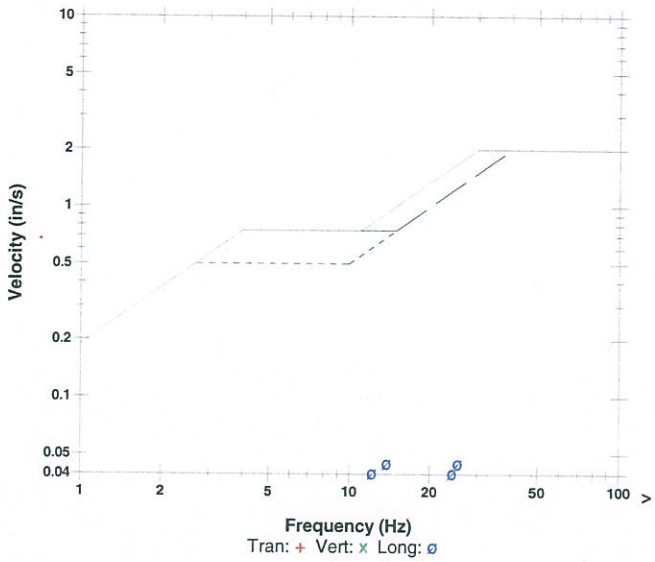
Post Event Notes
Warden Property Line Dist: 2,986'

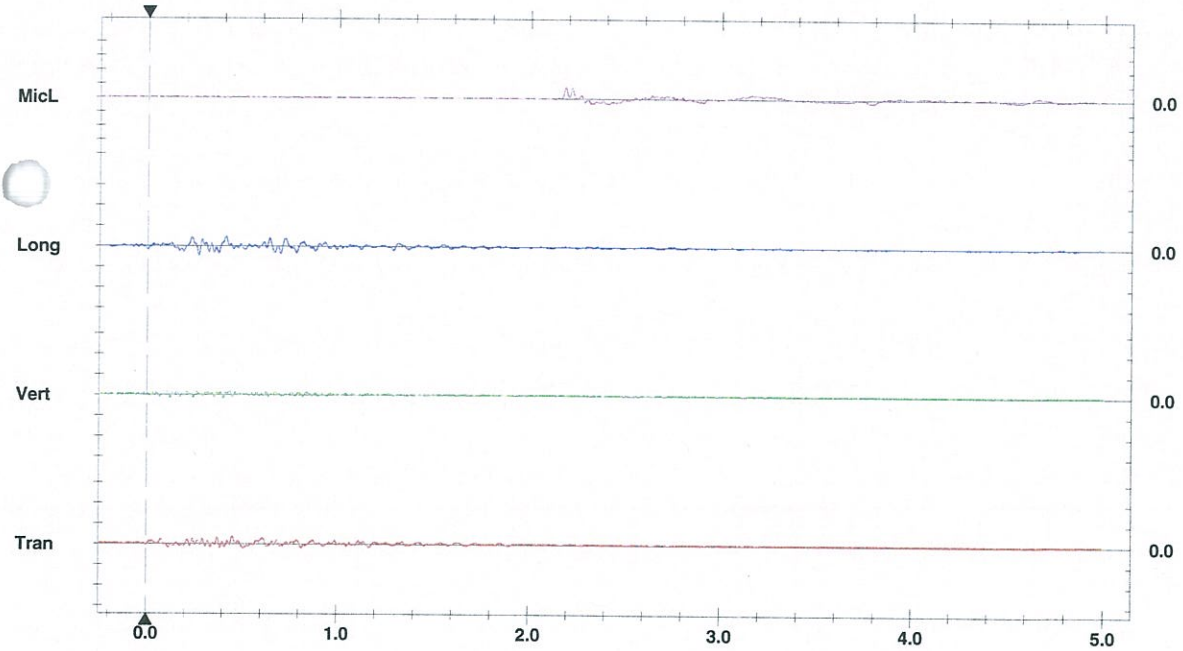
Microphone Linear Weighting
PSPL 109.2 dB(L) at 2.182 sec
ZC Freq 6.9 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 549 mv)

	Tran	Vert	Long	
PPV	0.0350	0.0200	0.0450	in/s
ZC Freq	22	43	26	Hz
Time (Rel. to Trig)	0.450	0.400	0.266	sec
Peak Acceleration	0.0265	0.0265	0.0398	g
Peak Displacement	0.00047	0.00009	0.00046	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0485 in/s at 0.411 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 10, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-11-16 Blast No. 02-11-16 3B Time 13:05

Exact Blast Location 3B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 40"
98° 17' 34.5"

MONITOR GPS
N 29 38' 22.63
W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate
30' from gate at the property line

Seismograph Distance from Blast 2457

Peak Overpressure 106.0 dB Scaled Distance ------

Peak Particle Velocity 0.055 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-11-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 13:05:18 February 11, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	H191G8JL.OU1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

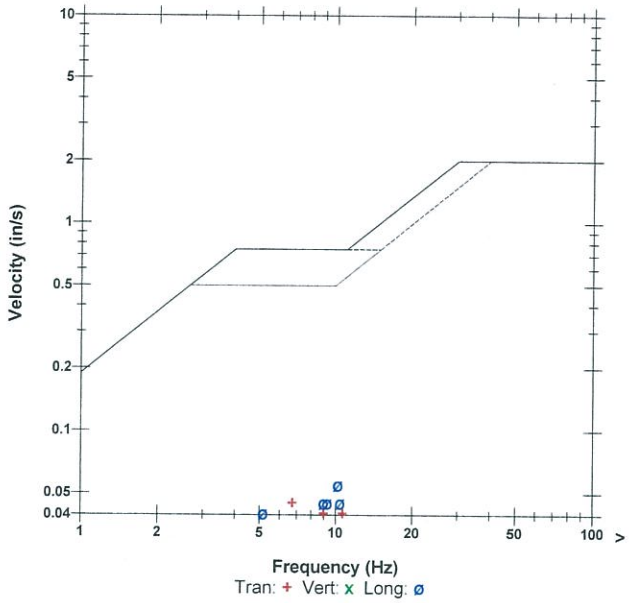
Post Event Notes
City Property Line - Distance: 2457 ft

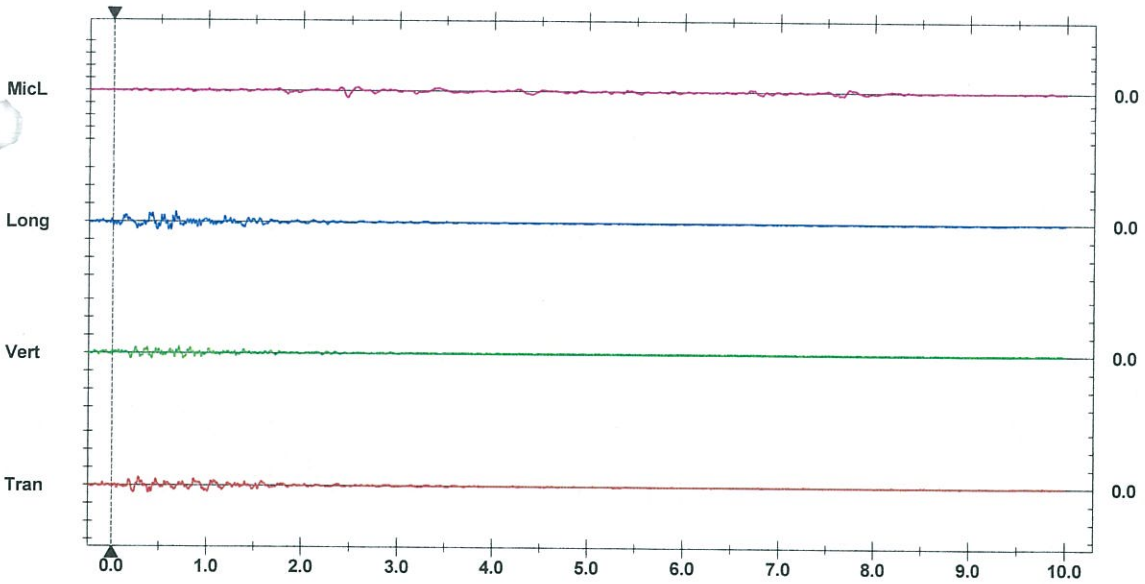
Microphone	Linear Weighting
PSPL	106.0 dB(L) at 2.456 sec
ZC Freq	6.2 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 601 mv)

	Tran	Vert	Long	
PPV	0.0450	0.0350	0.0550	in/s
ZC Freq	6.7	23	10	Hz
Time (Rel. to Trig)	0.281	0.701	0.663	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00091	0.00045	0.00105	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0644 in/s at 0.415 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-11-16 Blast No. 02-11-16 3B Time 13:05

Exact Blast Location 3B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 40''
W 98° 17' 34.5''

MONITOR GPS

N 29 38 58.8
W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 4239

Peak Overpressure 102.8 dB Scaled Distance ------

Peak Particle Velocity 0.050 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-11-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 13:05:19 February 11, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BF8949 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	J949G8JL.OV1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

Extended Notes

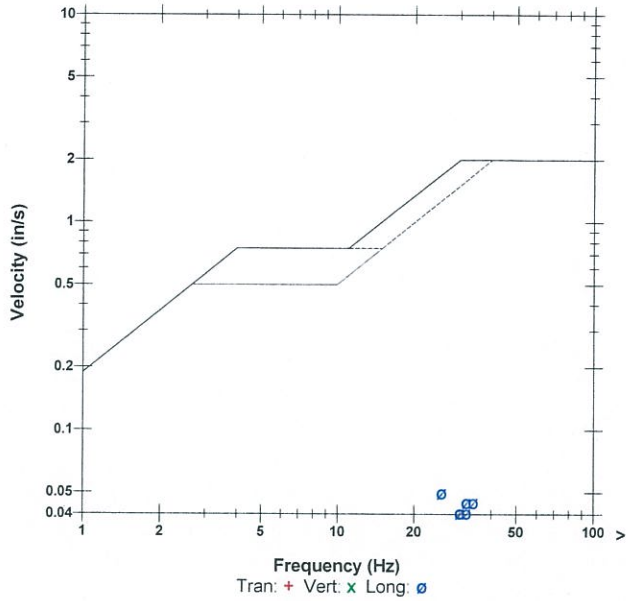
Post Event Notes
Cruz Residence - Distance: 4239 ft

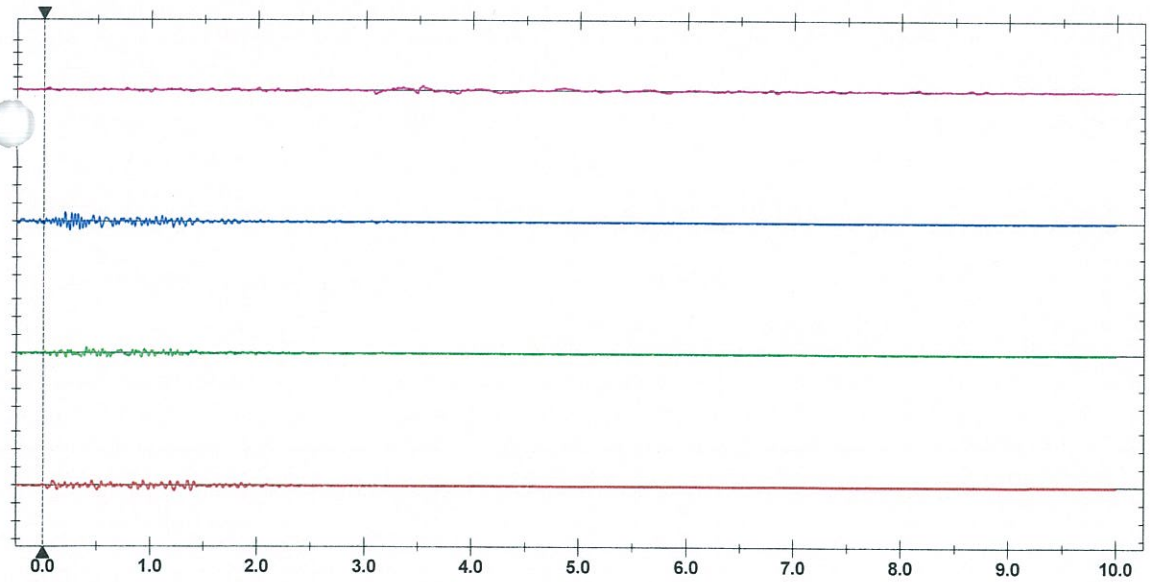
Microphone	Linear Weighting
PSPL	102.8 dB(L) at 3.532 sec
ZC Freq	4.2 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 529 mv)

	Tran	Vert	Long	
PPV	0.0300	0.0300	0.0500	in/s
ZC Freq	16	28	26	Hz
Time (Rel. to Trig)	0.502	0.400	0.199	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00036	0.00033	0.00036	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0543 in/s at 0.201 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 11, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-11-16 Blast No. 02-11-16 3B Time 13:05

Exact Blast Location 3B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 40"
98° 17' 34.5"

MONITOR GPS
N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 4139

Peak Overpressure 101.0 dB Scaled Distance ------

Peak Particle Velocity 0.070 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-11-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 13:05:19 February 11, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Job Number:	1

Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G8JL.OV1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

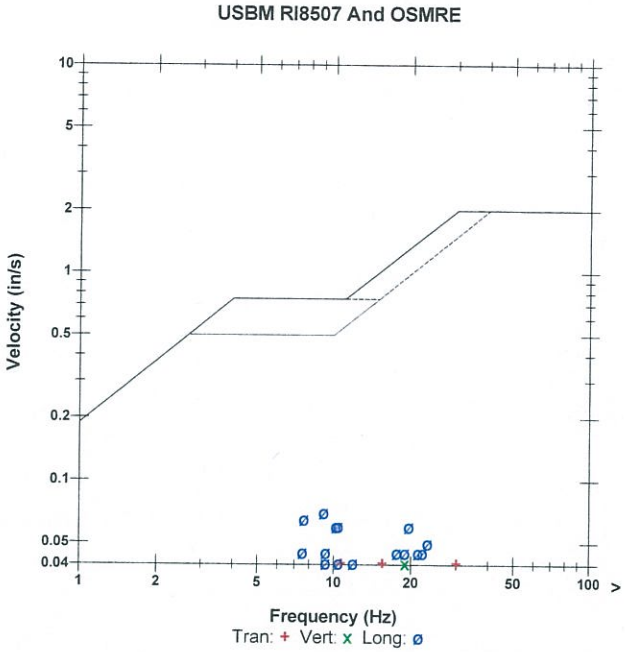
Extended Notes

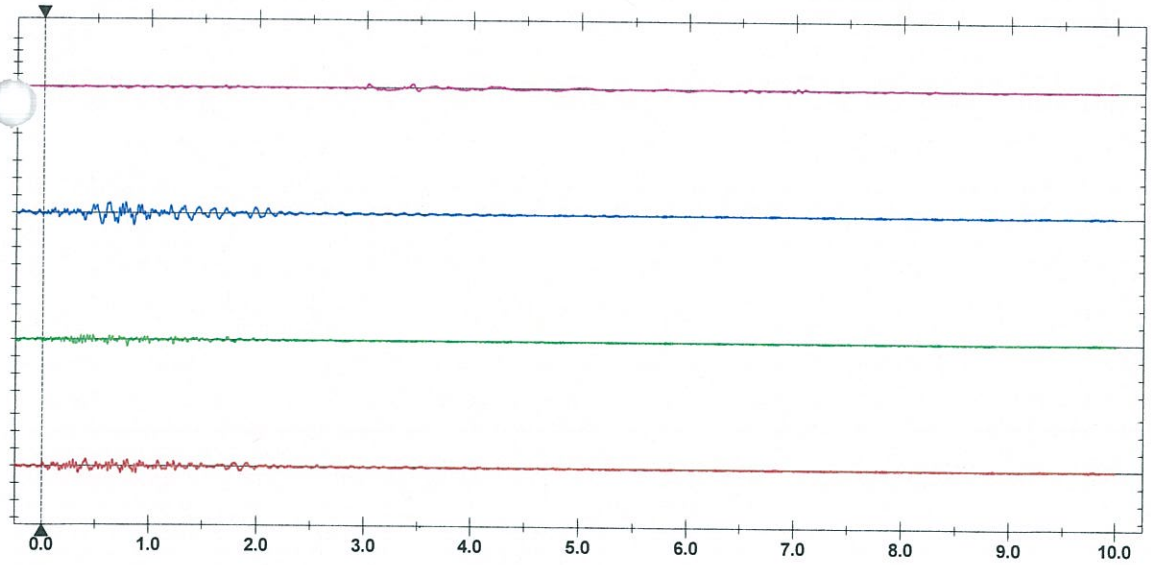
Post Event Notes
Taveres Residence - Distance: 4139 ft

Microphone Linear Weighting
PSPL 101.0 dB(L) at 3.018 sec
ZC Freq 8.1 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 660 mv)

	Tran	Vert	Long	
PPV	0.0400	0.0400	0.0700	in/s
ZC Freq	11	19	9.1	Hz
Time (Rel. to Trig)	0.336	0.793	0.849	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00055	0.00029	0.00122	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0768 in/s at 0.849 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 11, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-11-16 Blast No. 02-11-16 3B Time 13:05

Exact Blast Location 3B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 40"
98° 17' 34.5"

MONITOR GPS
N 29 38' 23"
W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision
10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 1790

Peak Overpressure 110.9 dB Scaled Distance ------

Peak Particle Velocity 0.220 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-11-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 13:05:18 February 11, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level	6.5 Volts
Calibration	March 12, 2015 by Vibra-Tech Inc.
File Name	O270G8JL.OU1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

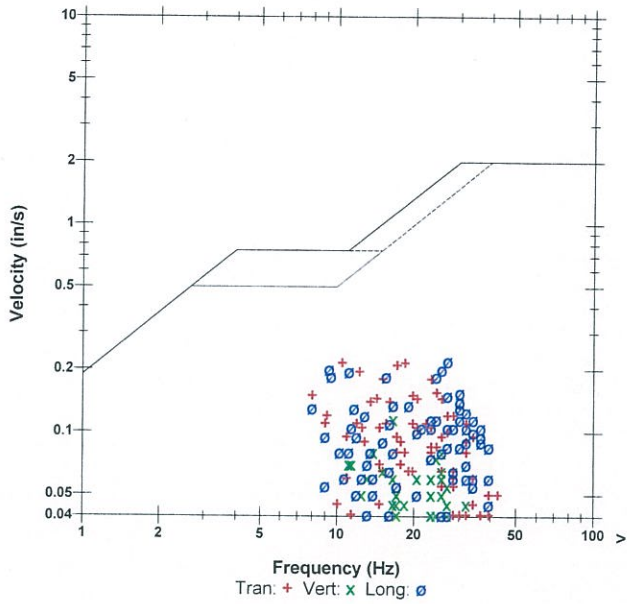
Post Event Notes
Warden Residence - Distance: 1790 ft

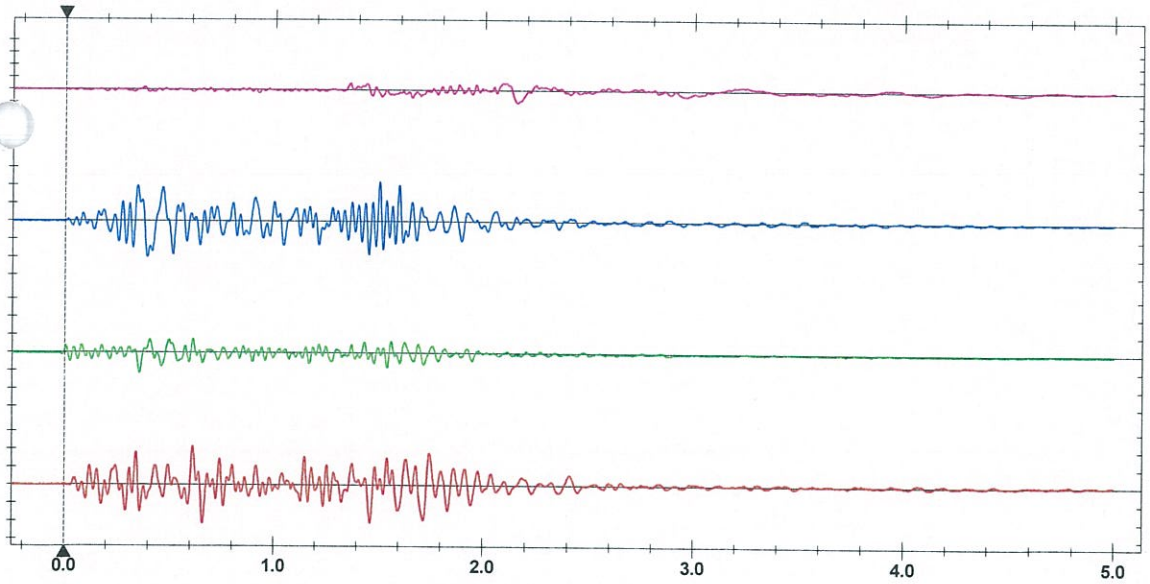
Microphone	Linear Weighting
PSPL	110.9 dB(L) at 2.149 sec
ZC Freq	5.4 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 540 mv)

	Tran	Vert	Long	
PPV	0.215	0.115	0.220	in/s
ZC Freq	10	17	27	Hz
Time (Rel. to Trig)	0.611	0.356	1.502	sec
Peak Acceleration	0.0795	0.0398	0.0928	g
Peak Displacement	0.00260	0.00104	0.00360	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.266 in/s at 0.344 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 11, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-11-16 Blast No. 02-11-16 3B Time 13:05

Exact Blast Location 3B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 40"
98° 17' 34.5"

MONITOR GPS
N 29 38' 25"
W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 1571

Peak Overpressure 109.9 dB Scaled Distance ------

Peak Particle Velocity 0.205 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-11-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 13:05:18 February 11, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13922 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	November 22, 2015 by Vibra-Tech Inc.
File Name	O922G8JL.OU1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

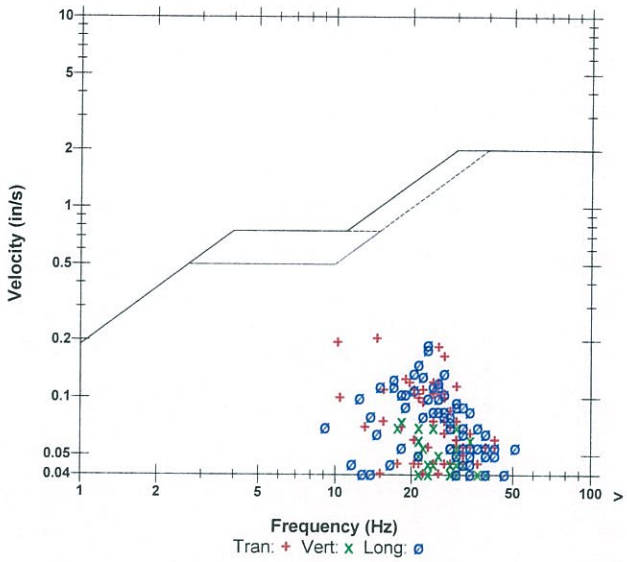
Post Event Notes
Warden Property Line - Distance: 1571 ft

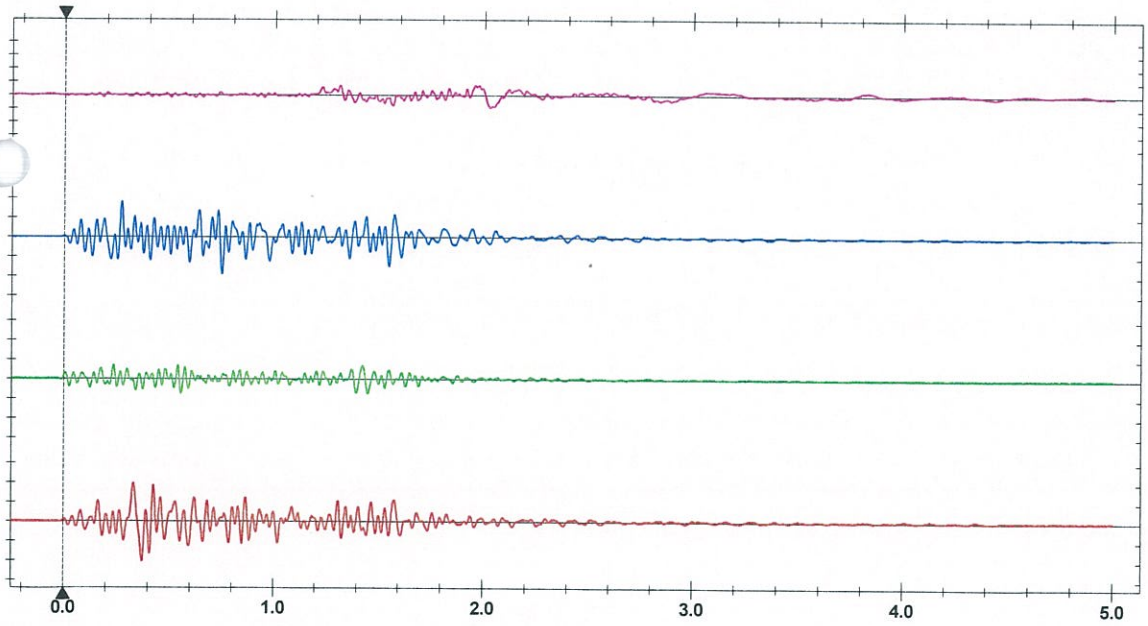
Microphone Linear Weighting
PSPL 109.9 dB(L) at 2.022 sec
ZC Freq 5.6 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 518 mv)

	Tran	Vert	Long	
PPV	0.205	0.0750	0.190	in/s
ZC Freq	15	28	23	Hz
Time (Rel. to Trig)	0.373	0.557	0.747	sec
Peak Acceleration	0.0795	0.0398	0.0795	g
Peak Displacement	0.00218	0.00065	0.00131	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.227 in/s at 0.374 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 11, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-16-16 Blast No. 02-16-16 South Wall B Time 12:32

Exact Blast Location South Wall

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N 29° 38' 15"
W 98° 16' 44.6"

MONITOR GPS
N 29 38' 22.63
W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate

30' from gate at the property line

Seismograph Distance from Blast 6159

Peak Overpressure 105.5 dB Scaled Distance ------

Peak Particle Velocity 0.025 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-16-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Tran at 12:32:55 February 16, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 10.0 sec at 1024 sps

Serial Number BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level 6.3 Volts
Calibration July 16, 2015 by Vibra-Tech Inc.
File Name H191G8ST.IV1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

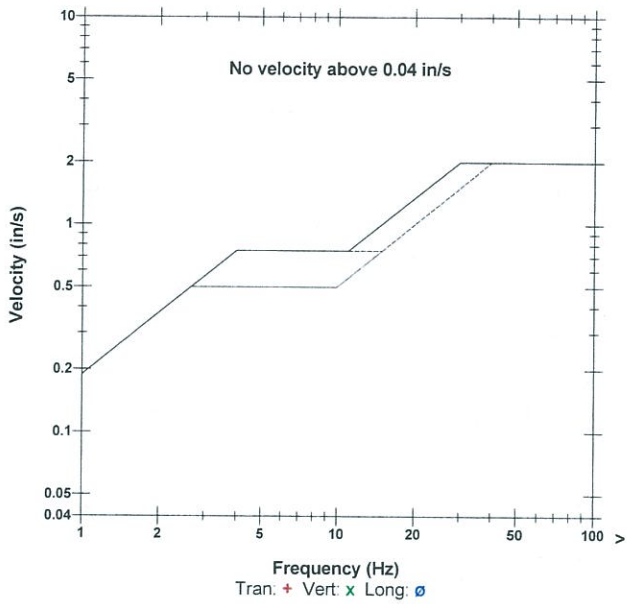
Post Event Notes
City Property Line
Distance - 6159 ft

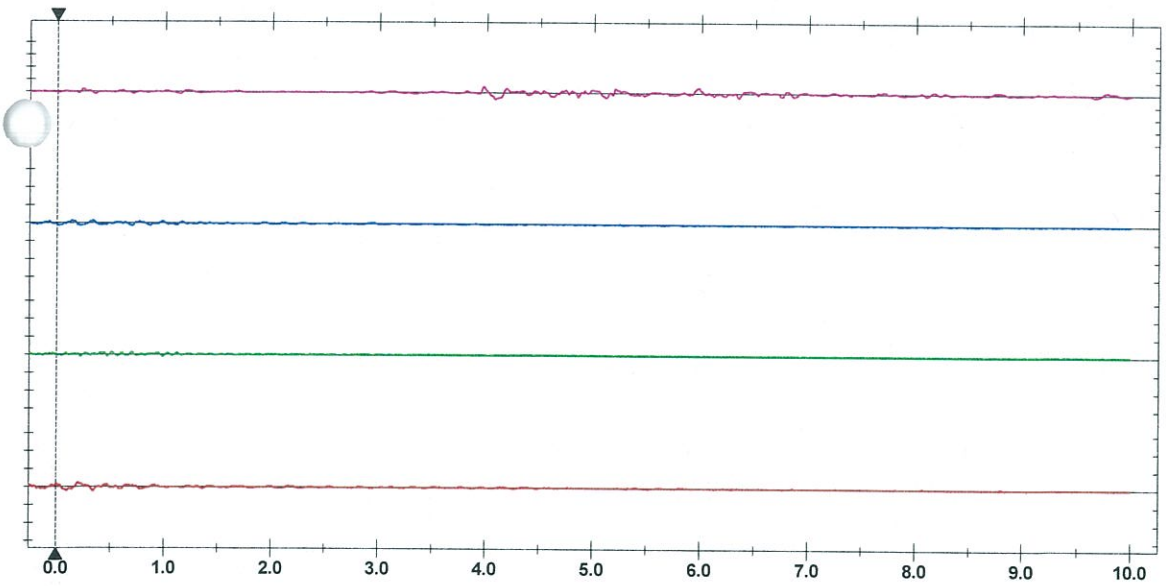
Microphone Linear Weighting
PSPL 105.5 dB(L) at 4.075 sec
ZC Freq 3.8 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 591 mv)

	Tran	Vert	Long	
PPV	0.0250	0.0150	0.0150	in/s
ZC Freq	7.4	18	10	Hz
Time (Rel. to Trig)	0.196	0.505	0.011	sec
Peak Acceleration	0.0133	0.0265	0.0133	g
Peak Displacement	0.00055	0.00018	0.00034	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0296 in/s at 0.335 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 16, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-16-16 Blast No. 02-16-16 South Wall B Time 12:32

Exact Blast Location South Wall

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 15"
W 98° 16' 44.6"

MONITOR GPS

N 29 38 58.8
W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 9308

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-16-16

Event Report: Monitor Log - MultiSeis Plus # BF8949 comp mode

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
Feb 16 '16 11:16:03	Feb 16 '16 13:57:52	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Cruz Residence
Distance - 9308 ft
No Trigger

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-16-16 Blast No. 02-16-16 South Wall B Time 12:32

Exact Blast Location South Wall

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N 29° 38' 15"
W 98° 16' 44.6"

MONITOR GPS
N 29 38' 15"
W 98 17' 26"

SEISMOGRAPH DATA

Seismograph No. 10562 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 09-13-15 Microphone Calibration 09-13-15

Exact Seismograph Location Holly Residence: 9916 Trophy Oaks Drive, Trophy Oaks Subdivision backyard along the quarry property line at the barbed wire fence

Seismograph Distance from Blast 3646

Peak Overpressure 103.5 dB Scaled Distance ------

Peak Particle Velocity 0.065 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-16-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Tran at 12:32:55 February 16, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 5.0 sec at 1024 sps

Serial Number BF10562 V 7.04-8.0 MultiSeis Plus
Battery Level 6.4 Volts
Calibration September 13, 2015 by Vibra-Tech Inc.
File Name L562G8ST.IV1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

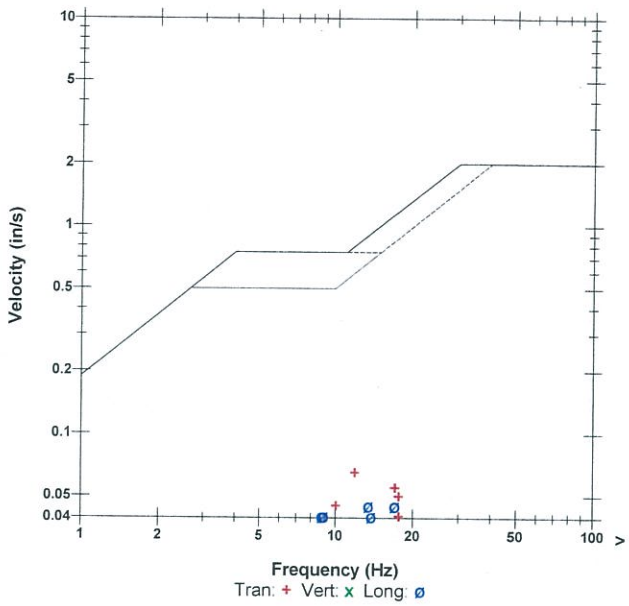
Post Event Notes
Hally Residence
Distance - 3646 ft

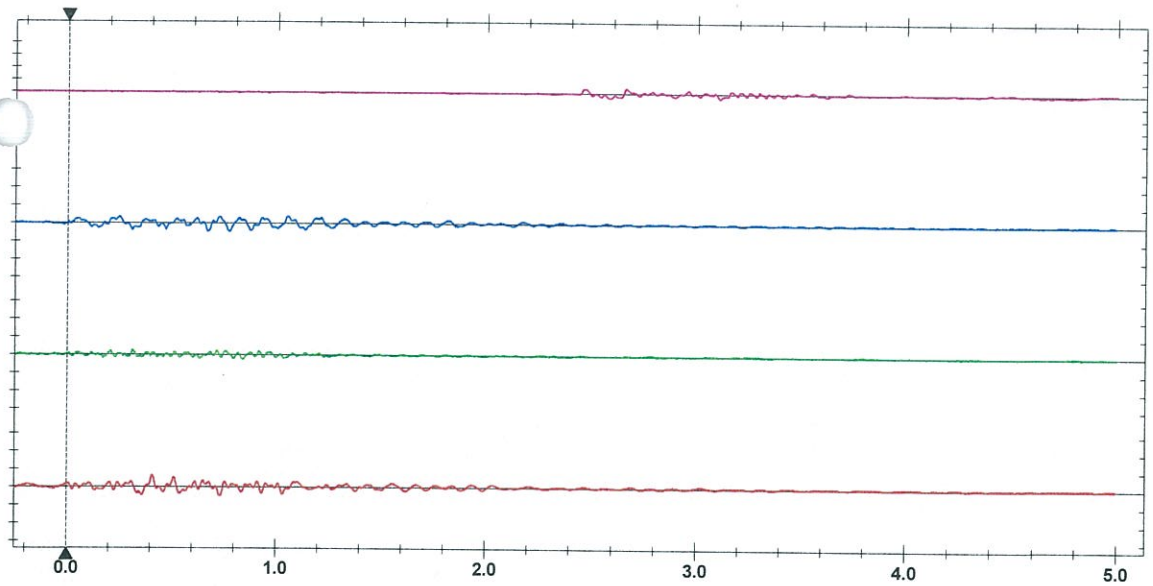
Microphone Linear Weighting
PSPL 103.5 dB(L) at 2.656 sec
ZC Freq 8.5 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 537 mv)

	Tran	Vert	Long	
PPV	0.0650	0.0250	0.0450	in/s
ZC Freq	12	26	17	Hz
Time (Rel. to Trig)	0.409	0.312	0.667	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00074	0.00021	0.00076	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0675 in/s at 0.410 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-16-16 Blast No. 02-16-16 South Wall B Time 12:32

Exact Blast Location South Wall

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29° 38' 15"
98° 16' 44.6"

MONITOR GPS
N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 9154

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-16-16

Event Report: Monitor Log - EVERLERT III # BB10626 comp mode

Start Time	End Time	Status
---	---	SERIAL NUMBER: BB10626
Feb 16 '16 11:11:18	Feb 16 '16 13:52:16	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Taveres Residence
Distance - 9154 ft
No Trigger

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-16-16 Blast No. 02-16-16 South Wall B Time 12:32

Exact Blast Location South Wall

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

29° 38' 15"
98° 16' 44.6"

MONITOR GPS

N 29 38' 23"
W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 4946

Peak Overpressure 106.0 dB Scaled Distance ------

Peak Particle Velocity 0.090 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-16-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Tran at 12:32:55 February 16, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 5.0 sec at 1024 sps

Serial Number BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level 6.5 Volts
Calibration March 12, 2015 by Vibra-Tech Inc.
File Name O270G8ST.IV1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

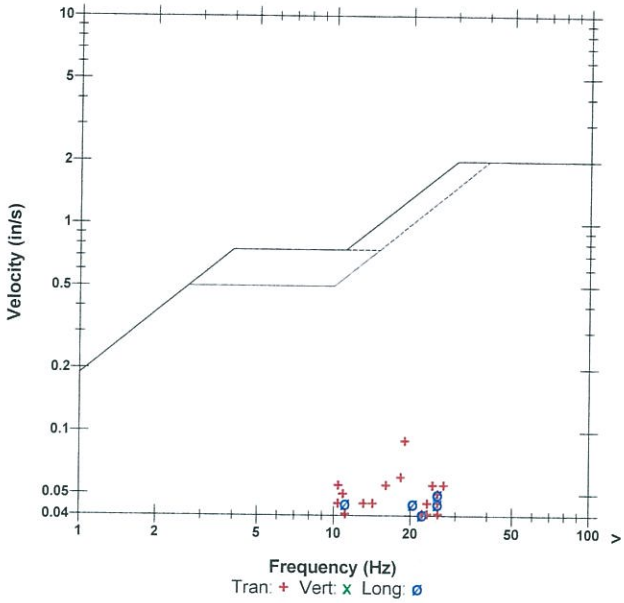
Post Event Notes
Warden Residence
Distance - 4946 ft

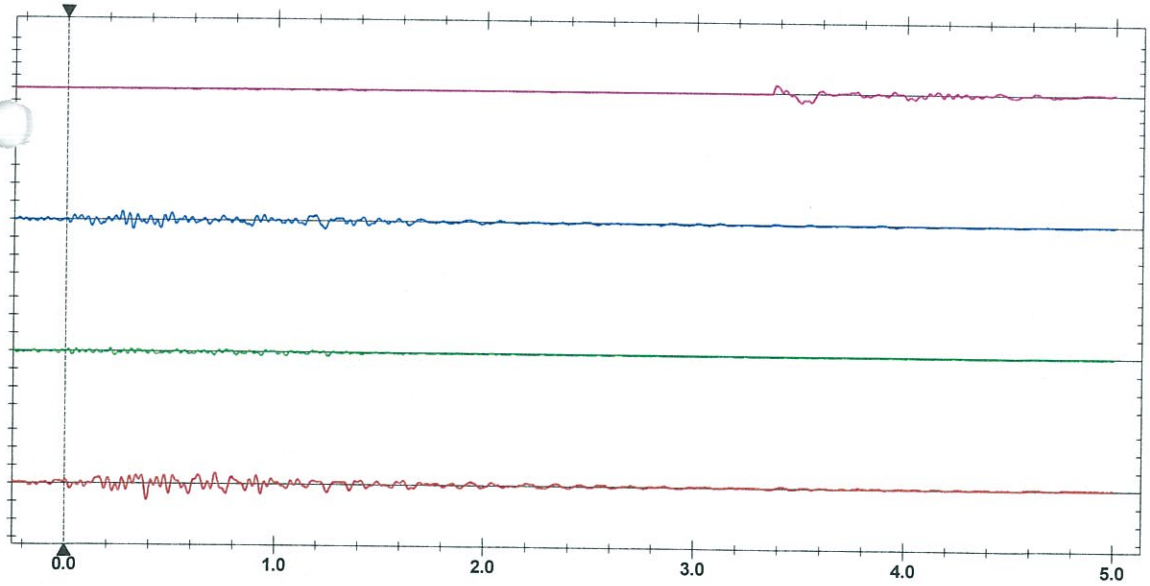
Microphone Linear Weighting
PSPL 108.0 dB(L) at 3.498 sec
ZC Freq 4.0 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 534 mv)

	Tran	Vert	Long	
PPV	0.0900	0.0250	0.0500	in/s
ZC Freq	19	20	26	Hz
Time (Rel. to Trig)	0.388	0.231	0.315	sec
Peak Acceleration	0.0398	0.0265	0.0265	g
Peak Displacement	0.00076	0.00021	0.00064	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0907 in/s at 0.388 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 16, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-17-16 Blast No. 02-17-16 4B Time 11:37

Exact Blast Location BENCH 4B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29 39 01.6

W98 17 34.4

MONITOR GPS

N 29 38' 22.63

W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate

30' from gate at the property line

Seismograph Distance from Blast 4,309'

Peak Overpressure 110.6 dB Scaled Distance ------

Peak Particle Velocity .030 ips Operator L. LUMBERS

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 02-17-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 11:37:43 February 17, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	H191G8UL.MV1

Notes

Location:	Garden Ridge, Texas
Client:	Hanson Servtex
User Name:	Vibra Tech
General:	

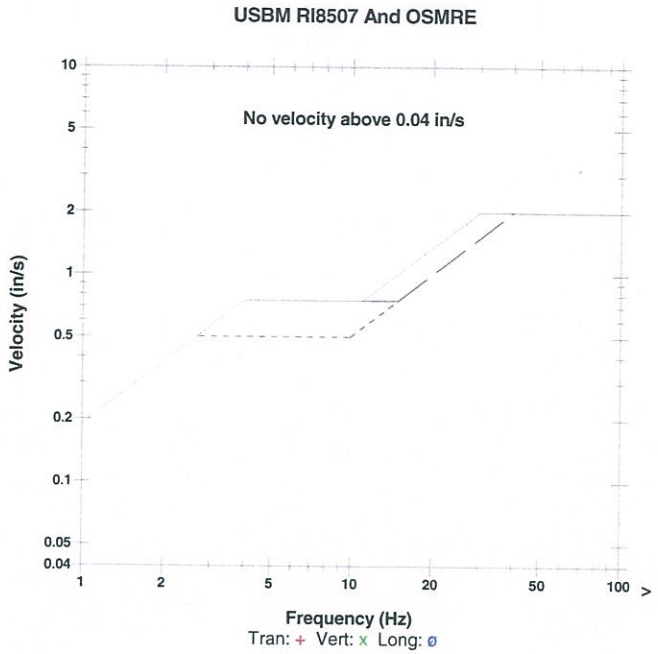
Extended Notes

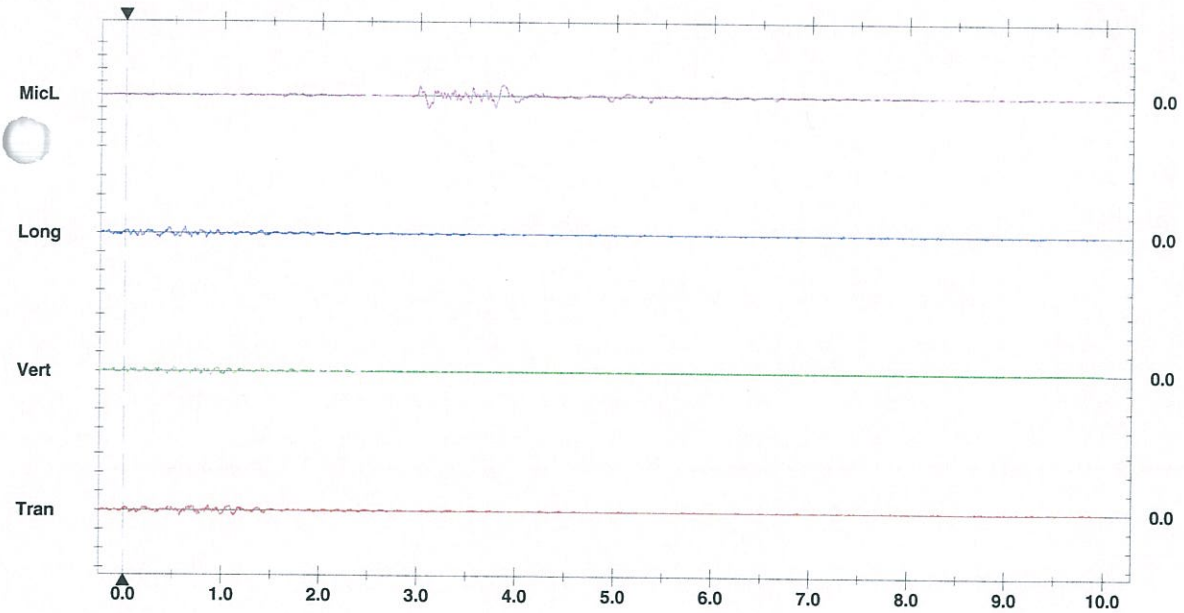
Post Event Notes
City Property Line Dist: 4,309'

Microphone	Linear Weighting
PSPL	110.6 dB(L) at 3.085 sec
ZC Freq	5.8 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 594 mv)

	Tran	Vert	Long	
PPV	0.0300	0.0250	0.0300	in/s
ZC Freq	18	12	14	Hz
Time (Rel. to Trig)	0.573	0.503	0.606	sec
Peak Acceleration	0.0133	0.0133	0.0133	g
Peak Displacement	0.00050	0.00031	0.00043	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0328 in/s at 0.672 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 17, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-17-16 Blast No. 02-17-16 4B Time 11:37

Exact Blast Location BENCH 4B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29 39 01.6
W 98 17 34.4

MONITOR GPS

N 29 38 58.8
W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 3,806'

Peak Overpressure 101.9 dB Scaled Distance ------

Peak Particle Velocity .045 ips Operator L. Lumbers

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 02-17-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:37:42 February 17, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BF8949 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	J949G8UL.MU1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

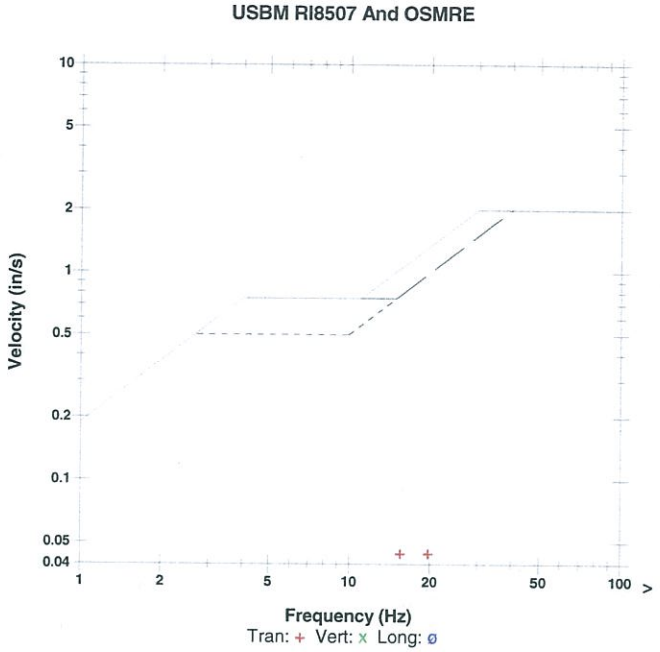
Extended Notes

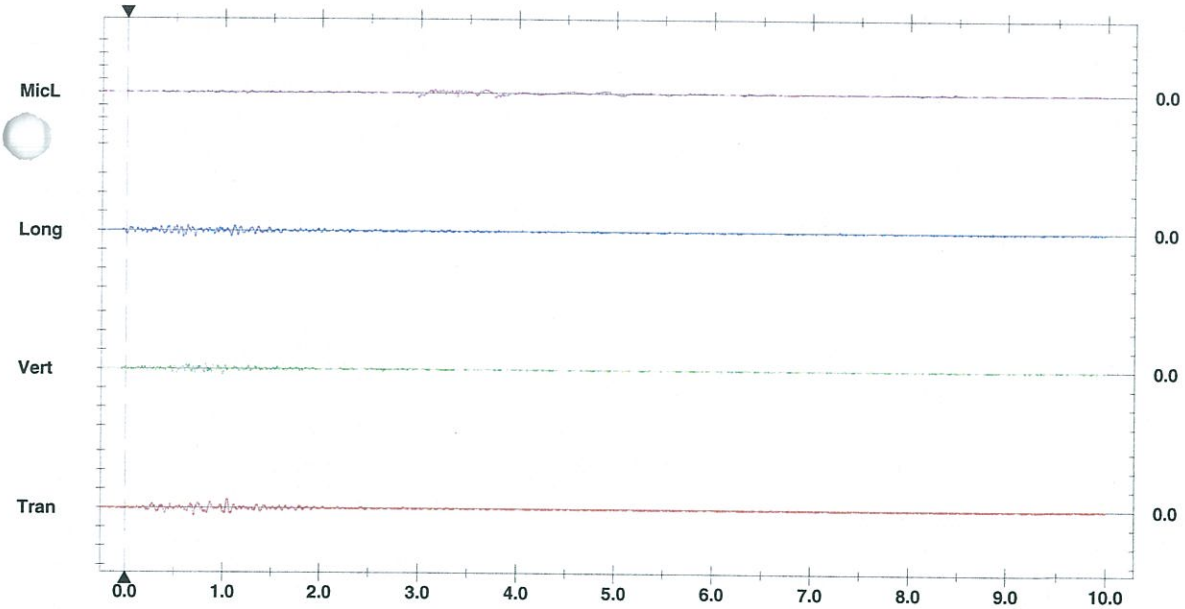
Post Event Notes
Cruz Residence Dist: 3,806'

Microphone	Linear Weighting
PSPL	101.9 dB(L) at 2.979 sec
ZC Freq	5.6 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 538 mv)

	Tran	Vert	Long	
PPV	0.0450	0.0300	0.0350	in/s
ZC Freq	20	34	12	Hz
Time (Rel. to Trig)	0.698	0.702	0.579	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00053	0.00027	0.00038	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0579 in/s at 0.702 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

Printed: February 17, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-17-16 Blast No. 02-17-16 4B Time 11:37

Exact Blast Location BENCH 4B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29 39 01.6

W98 17 34.4

MONITOR GPS

N 29 38' 52"

W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 4,082'

Peak Overpressure 104.2 dB Scaled Distance ------

Peak Particle Velocity .060 ips Operator L. Lumbers

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 02-17-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:37:43 February 17, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Number:	1

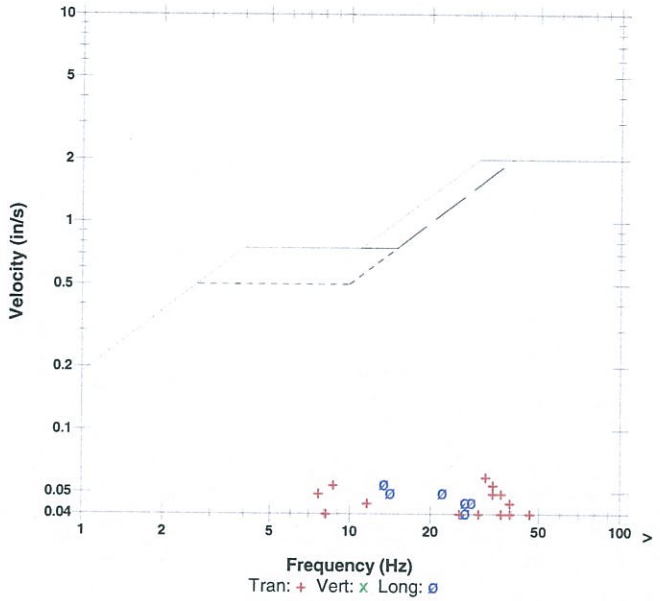
Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G8UL.MV1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Taveres Residence Dist: 4,082'

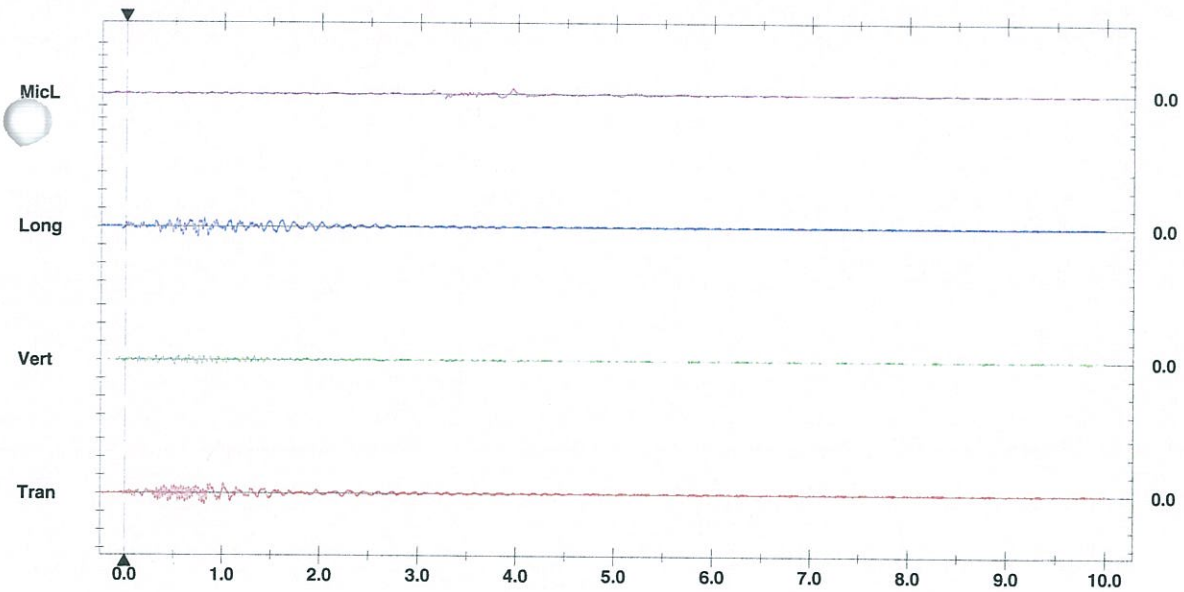
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	104.2 dB(L) at 3.947 sec
ZC Freq	3.8 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 676 mv)

	Tran	Vert	Long	
PPV	0.0600	0.0300	0.0550	in/s
ZC Freq	32	26	13	Hz
Time (Rel. to Trig)	0.819	0.506	0.736	sec
Peak Acceleration	0.0398	0.0265	0.0265	g
Peak Displacement	0.00094	0.00019	0.00065	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0725 in/s at 0.736 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 17, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-17-16 Blast No. 02-17-16 4B Time 11:37

Exact Blast Location BENCH 4B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29 39 01.6

W98 17 34.4

MONITOR GPS

N 29 38' 23"

W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 3,943'

Peak Overpressure 110.7 dB Scaled Distance ------

Peak Particle Velocity .080 ips Operator L. Lumbers

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by [signature] Date: 02-17-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Tran at 11:37:43 February 17, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 5.0 sec at 1024 sps

Serial Number BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level 6.4 Volts
Calibration March 12, 2015 by Vibra-Tech Inc.
File Name O270G8UL.MV1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

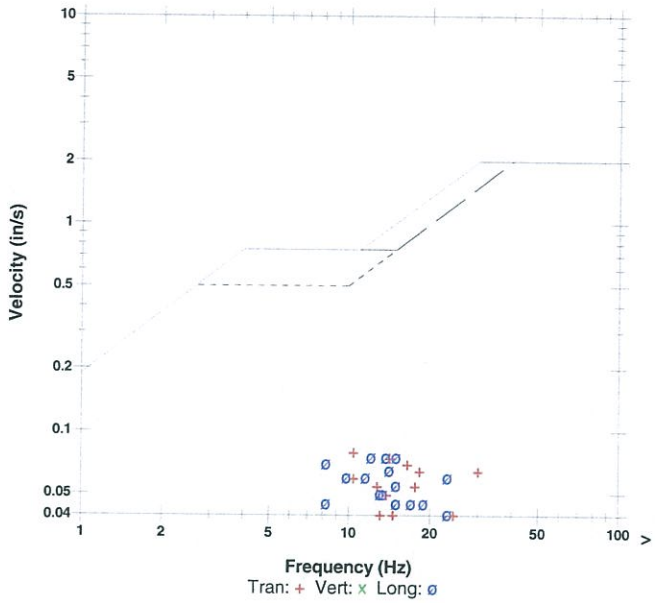
Post Event Notes
Warden Residence Dist: 3,943'

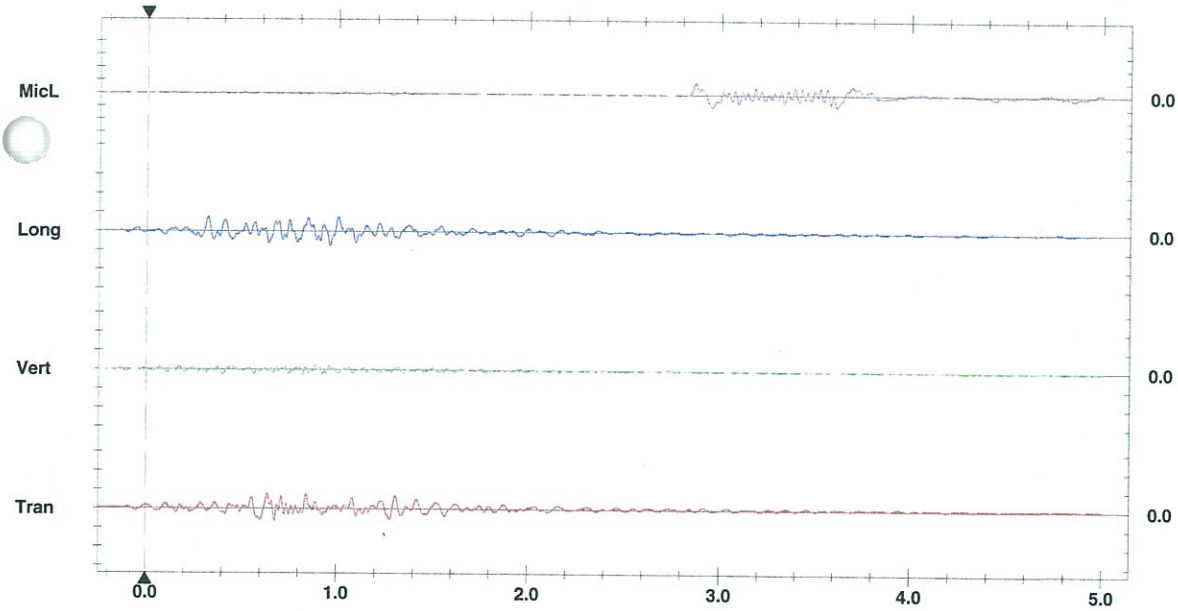
Microphone Linear Weighting
PSPL 110.2 dB(L) at 2.864 sec
ZC Freq 6.0 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 516 mv)

	Tran	Vert	Long	
PPV	0.0800	0.0300	0.0750	in/s
ZC Freq	10	32	15	Hz
Time (Rel. to Trig)	0.639	0.819	0.318	sec
Peak Acceleration	0.0398	0.0133	0.0265	g
Peak Displacement	0.00101	0.00027	0.00104	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.100 in/s at 0.639 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 17, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-17-16 Blast No. 02-17-16 4B Time 11:37

Exact Blast Location BENCH 4B

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29 39 01.6

W98 17 34.4

MONITOR GPS

N 29 38' 25"

W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 3,731'

Peak Overpressure 110.6 dB Scaled Distance ------

Peak Particle Velocity .055 ips Operator L. LUMBERS

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 02-17-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Long at 11:37:43 February 17, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 5.0 sec at 1024 sps

Serial Number BF13922 V 7.04-8.0 MultiSeis Plus
Battery Level 6.3 Volts
Calibration November 22, 2015 by Vibra-Tech Inc.
File Name O922G8UL.MV1

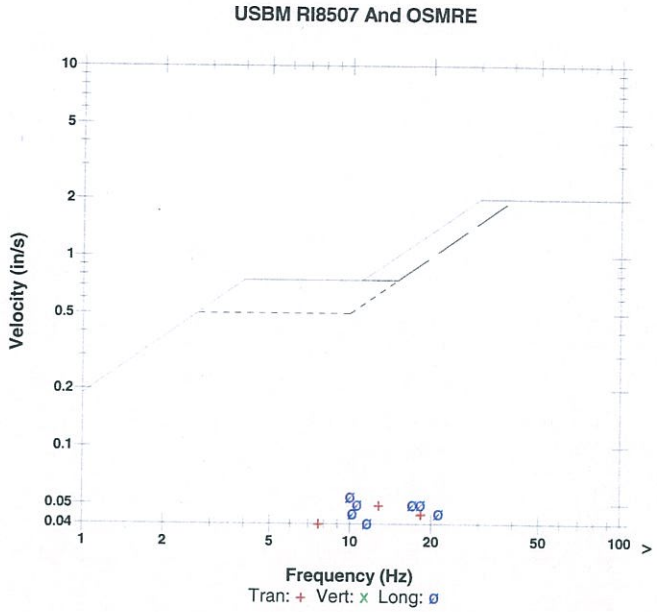
Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

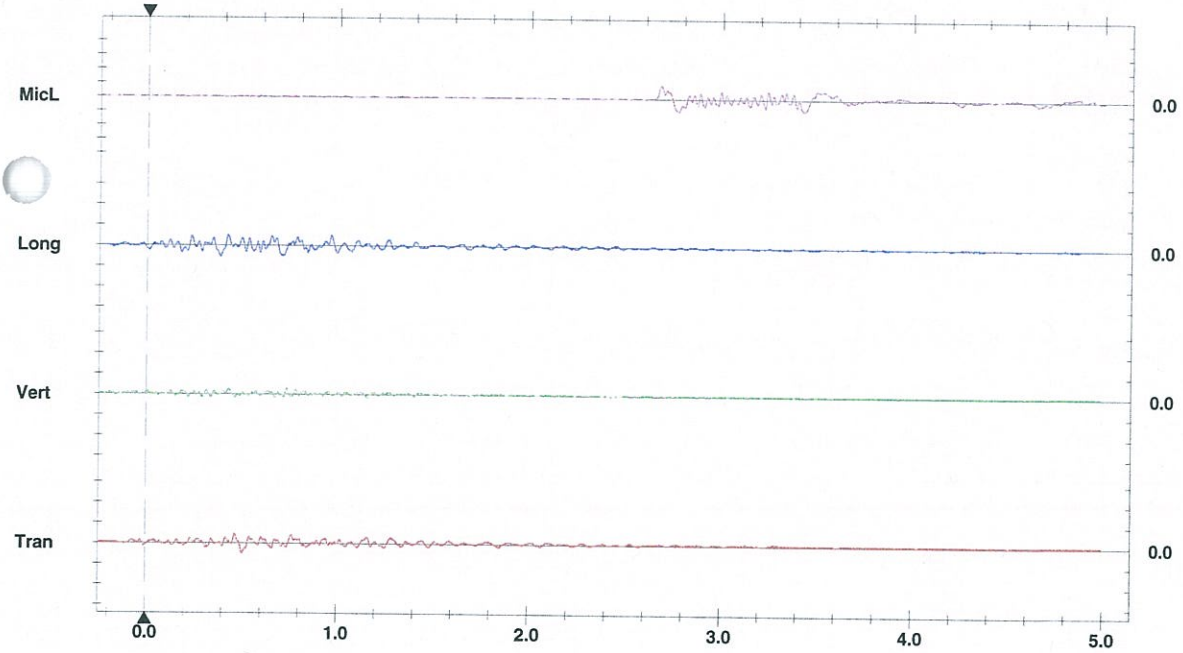
Post Event Notes
Warden Property Line Dist: 3,731'

Microphone Linear Weighting
PSPL 110.6 dB(L) at 2.675 sec
ZC Freq 5.4 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 549 mv)

	Tran	Vert	Long	
PPV	0.0500	0.0300	0.0550	in/s
ZC Freq	13	22	10	Hz
Time (Rel. to Trig)	0.505	0.429	0.382	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00069	0.00022	0.00084	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0602 in/s at 0.421 sec





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶——◀

Printed: February 17, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/18/16 Blast No. 2-18-16 Lower 6 Time 11:03

Exact Blast Location Lower 6

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

29 38 49.4

98 17 09.1

MONITOR GPS

N 29 38' 22.63

W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate

30' from gate at the property line

Seismograph Distance from Blast 4826 ft.

Peak Overpressure N/T dB Scaled Distance ------

Peak Particle Velocity N/T ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/18/16

Event Report: Monitor Log - MultiSeis Plus # BD6191 comp mode

Start Time	End Time	Status
		SERIAL NUMBER: BD6191
Feb 18 '16 08:12:42	Feb 18 '16 11:10:05	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

City Property -
No trigger -
4826 ft.

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/18/16 Blast No. 2-18-16 Lower 6 Time 11:03

Exact Blast Location Lower 6

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29 38 49.4
W 98 17 09.1

MONITOR GPS

N 29 38 58.8
W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 6100 ft.

Peak Overpressure 101 dB Scaled Distance ------

Peak Particle Velocity .03 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/18/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:03:12 February 18, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BF8949 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	J949G8WE.PC1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

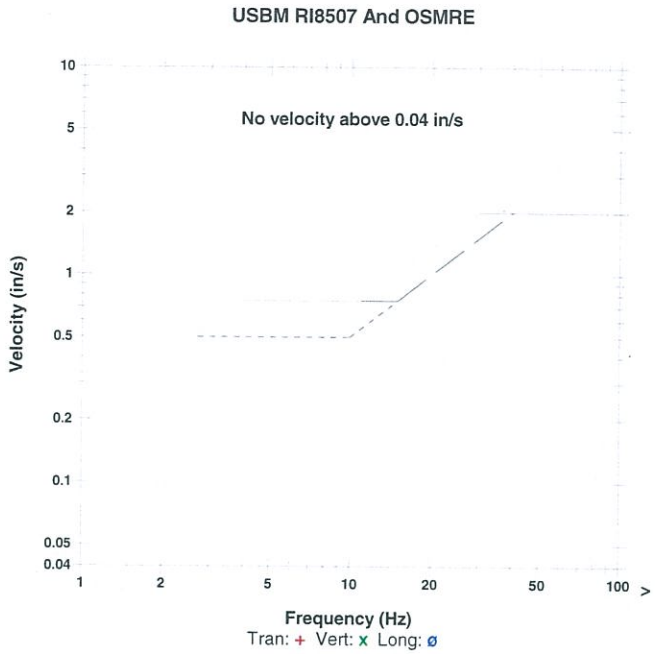
Extended Notes

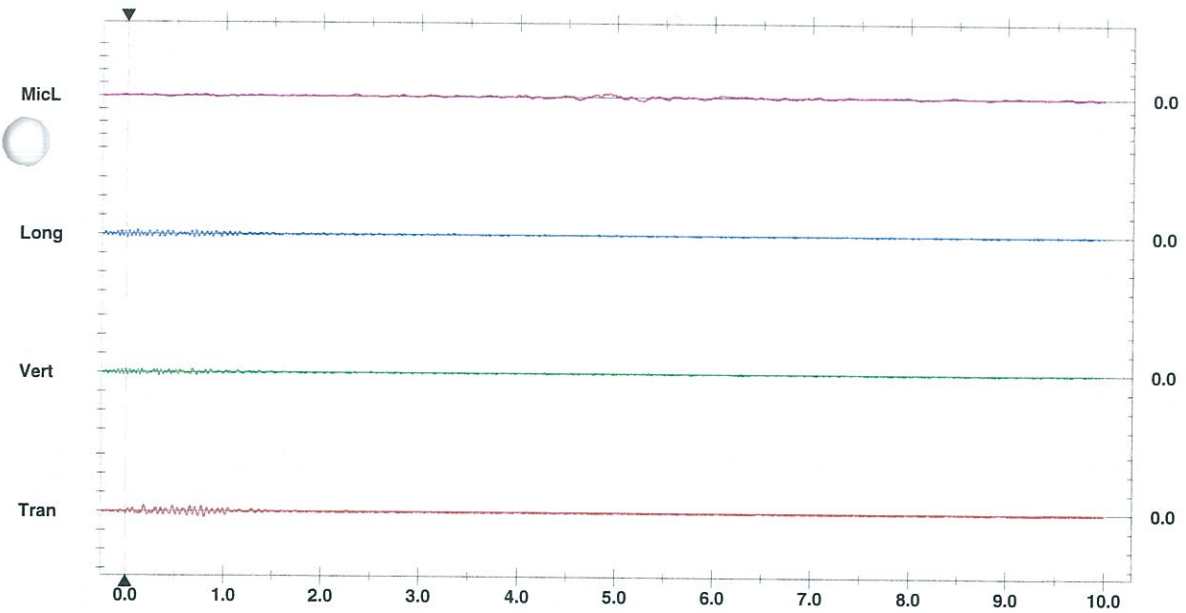
Post Event Notes
Cruz Residence - 6100ft

Microphone	Linear Weighting
PSPL	101.0 dB(L) at 4.922 sec
ZC Freq	3.3 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 561 mv)

	Tran	Vert	Long	
PPV	0.0300	0.0200	0.0200	in/s
ZC Freq	17	32	30	Hz
Time (Rel. to Trig)	0.184	0.332	0.000	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00029	0.00013	0.00015	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0308 in/s at 0.184 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 18, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/18/16 Blast No. 2-18-16 Lower 6 Time 11:03

Exact Blast Location Lower 6

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

29 38 49.4

98 17 09.1

MONITOR GPS

N 29 38' 52"

W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 6295 ft.

Peak Overpressure 98.8 dB Scaled Distance ------

Peak Particle Velocity .04 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/18/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 11:03:14 February 18, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Number:	1

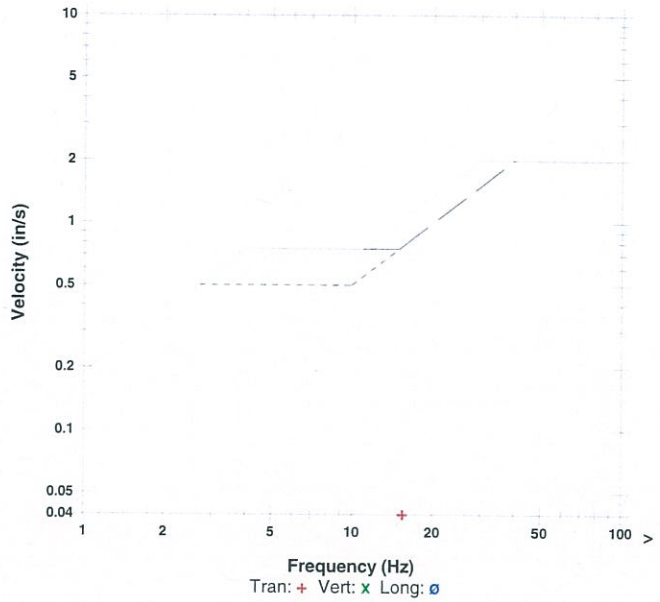
Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G8WE.PE1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Tavares Residence - 6295ft

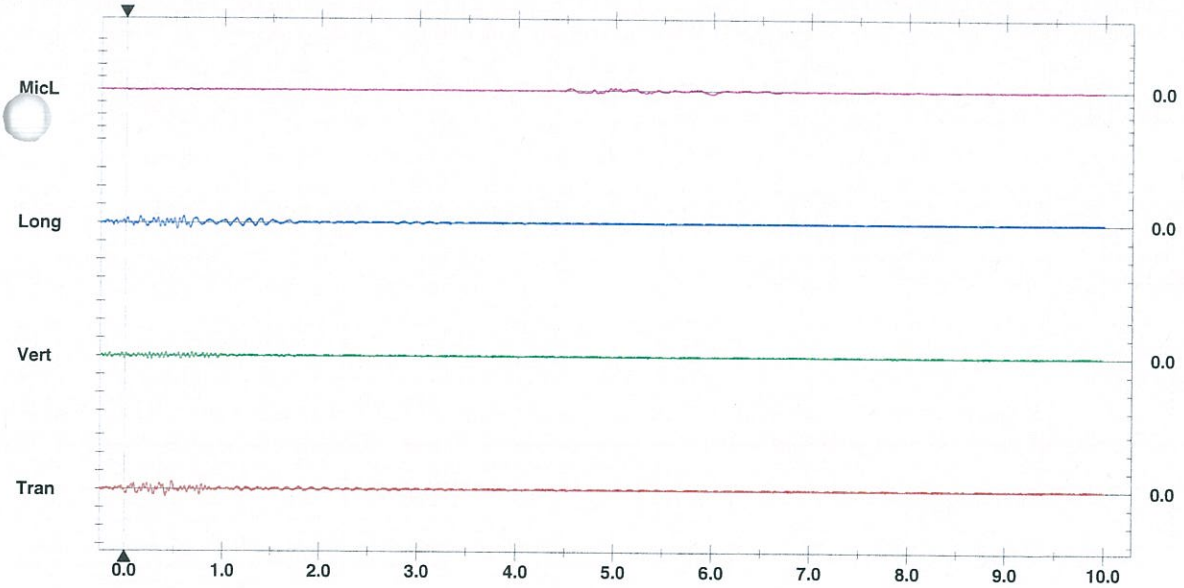
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	98.8 dB(L) at 5.978 sec
ZC Freq	3.7 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 698 mv)

	Tran	Vert	Long	
PPV	0.0400	0.0200	0.0350	in/s
ZC Freq	16	34	16	Hz
Time (Rel. to Trig)	0.415	0.230	0.147	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00052	0.00015	0.00057	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0472 in/s at 0.418 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶—— ——◀

Printed: February 18, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/18/16 Blast No. 2-18-16 Lower 6 Time 11:03

Exact Blast Location Lower 6

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

29 38 49.4

98 17 09.1

MONITOR GPS

N 29 38' 23"

W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 3769 ft.

Peak Overpressure 105.5 dB Scaled Distance ------

Peak Particle Velocity .095 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/18/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 11:03:15 February 18, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	March 12, 2015 by Vibra-Tech Inc.
File Name	O270G8WE.PF1

Notes

Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

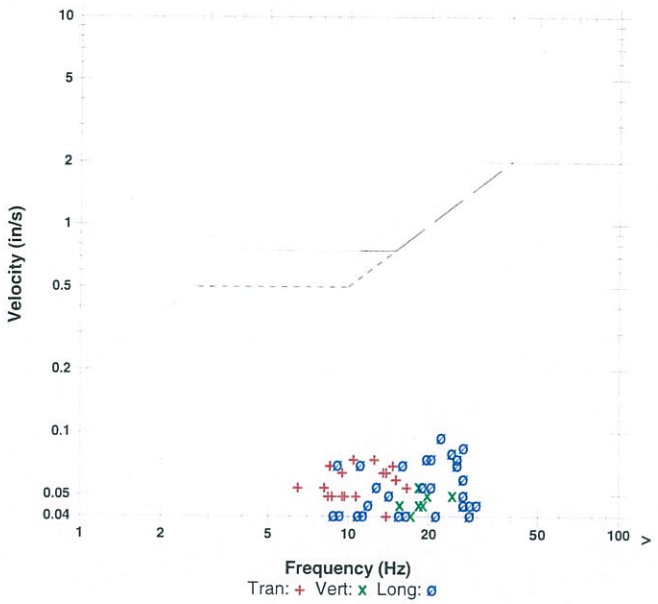
Post Event Notes
Warden Residence - 3769ft

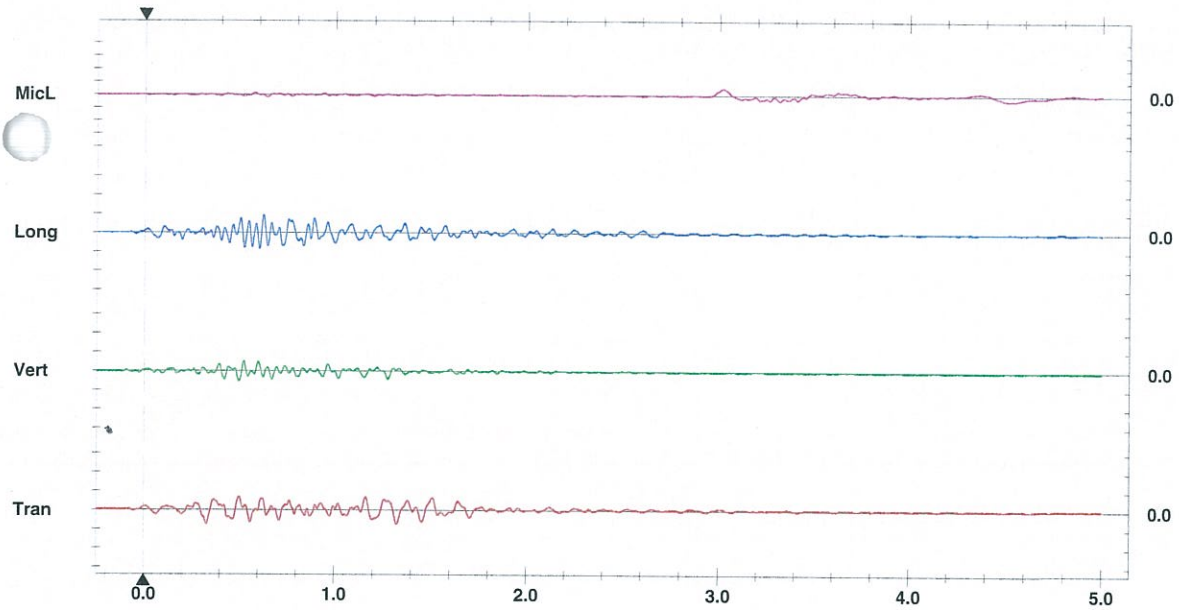
Microphone	Linear Weighting
PSPL	105.5 dB(L) at 3.014 sec
ZC Freq	5.4 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 532 mv)

	Tran	Vert	Long	
PPV	0.0750	0.0550	0.0950	in/s
ZC Freq	10	18	22	Hz
Time (Rel. to Trig)	0.328	0.495	0.623	sec
Peak Acceleration	0.0265	0.0265	0.0398	g
Peak Displacement	0.00124	0.00051	0.00113	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.118 in/s at 0.623 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

Printed: February 18, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/18/16 Blast No. 2-18-16 Lower 6 Time 11:03

Exact Blast Location Lower 6

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

29 38 49.4

98 17 09.1

MONITOR GPS

N 29 38' 25"

W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 3646 ft

Peak Overpressure 106.5 dB Scaled Distance ------

Peak Particle Velocity .07 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/18/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 11:03:15 February 18, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13922 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	November 22, 2015 by Vibra-Tech Inc.
File Name	O922G8WE.PF1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

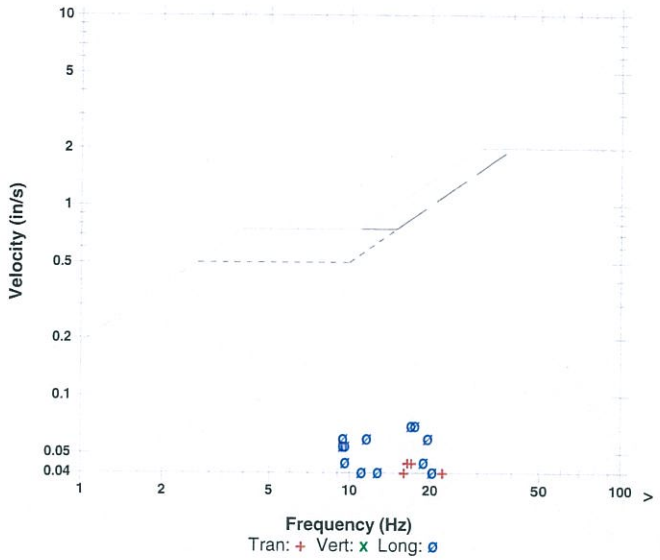
Post Event Notes
Warden Prop. line - 3646ft

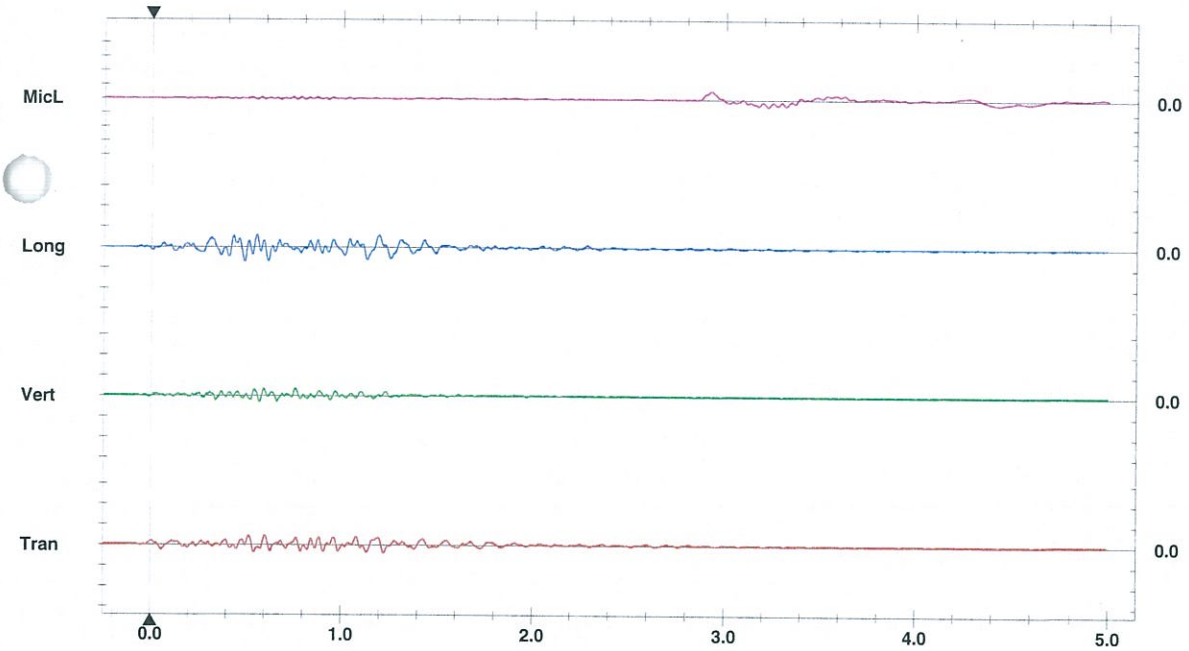
Microphone	Linear Weighting
PSPL	106.5 dB(L) at 2.917 sec
ZC Freq	4.3 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 577 mv)

	Tran	Vert	Long	
PPV	0.0450	0.0350	0.0700	in/s
ZC Freq	17	21	18	Hz
Time (Rel. to Trig)	0.521	0.592	0.490	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00070	0.00030	0.00087	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0763 in/s at 0.610 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger =

Printed: February 18, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-19-16 Blast No. 2-19-16 South Wall Time 10:54

Exact Blast Location South Wall - Toe Shot

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29 38 19.5

W98 16 39.5

MONITOR GPS

N 29 38' 22.63

W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate

30' from gate at the property line

Seismograph Distance from Blast 6553 ft

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator Nick Reitinger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 2-19-16

Event Report: Monitor Log - MultiSeis Plus # BD6191 comp mode

Start Time	End Time	Status
---	---	SERIAL NUMBER: BD6191
Feb 19 '16 08:38:01		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
Feb 19 '16 08:38:22	Feb 19 '16 08:38:32	Event recorded. Trigger Tran: 0.0200 in/s
Feb 19 '16 08:38:32	Feb 19 '16 12:01:44	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

City Property Line - 6553 ft

No Trigger (NT)

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-19-16 Blast No. 2-19-16 SouthWall Time 10:54

Exact Blast Location South Wall - Toe Shot

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29 38 19.5
W 98 16 39.5

MONITOR GPS

N 29 38 58.8
W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 9535 ft

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator Nick Reithinger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 2-19-16

Event Report: Monitor Log - MultiSeis Plus # BF8949 comp mode

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
Feb 19 '16 08:48:07	Feb 19 '16 11:44:26	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Cruz Res - 9535 ft

No Trigger (NT)

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-19-16 Blast No. 2-19-16 South Wall Time 10:54

Exact Blast Location South Wall - Toe Shot

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

MONITOR GPS

N 29 38' 15"
W 98 17' 26"

SEISMOGRAPH DATA

Seismograph No. 10562 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 09-13-15 Microphone Calibration 09-13-15

Exact Seismograph Location Holly Residence: 9916 Trophy Oaks Drive, Trophy Oaks Subdivision backyard along the quarry property line at the barbed wire fence

Seismograph Distance from Blast 4214 ft

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator Nick Reitinger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 2-19-16

Event Report: Monitor Log - MultiSeis Plus # BF10562 comp mode

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF10562
Feb 19 '16 09:21:48	Feb 19 '16 11:16:47	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Holly Res - 4214 ft
No Trigger (NT)

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-19-16 Blast No. 2-19-16 South Wall Time 10:54

Exact Blast Location South Wall - Toe Shot

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29 38 19.5
W98 16 39.5

MONITOR GPS

N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 9422 ft

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator Nick Reitlinger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 2-19-16

Event Report: Monitor Log - EVERLERT III # BB10626 comp mode

Start Time	End Time	Status
---	---	SERIAL NUMBER: BB10626
Feb 19 '16 08:55:10	Feb 19 '16 11:38:28	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Tarveres Res - 9422ft

No Trigger (NT)

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-19-16 Blast No. 2-19-16 South Wall Time 10:54

Exact Blast Location South Wall - Fire Shot

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29 38 19.5

W98 16 39.5

MONITOR GPS

N 29 38' 23"

W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 5311 ft

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator Nick Reitlinger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 2-19-16

Event Report: Monitor Log - MultiSeis Plus # BF13270 comp mode

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF13270
Feb 19 '16 09:37:41	Feb 19 '16 11:03:45	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Warden Res - 5311 ft

No Trigger (NT)

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/24/16 Blast No. 2-24-16 3C Time 11:32

Exact Blast Location 3C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29°38'46.3"

W98°17' 35.9"

MONITOR GPS

N 29 38' 22.63

W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate

30' from gate at the property line

Seismograph Distance from Blast 3092'

Peak Overpressure 89.9 dB Scaled Distance ------

Peak Particle Velocity .04 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/24/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:32:11 February 24, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 0.00365 psi(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

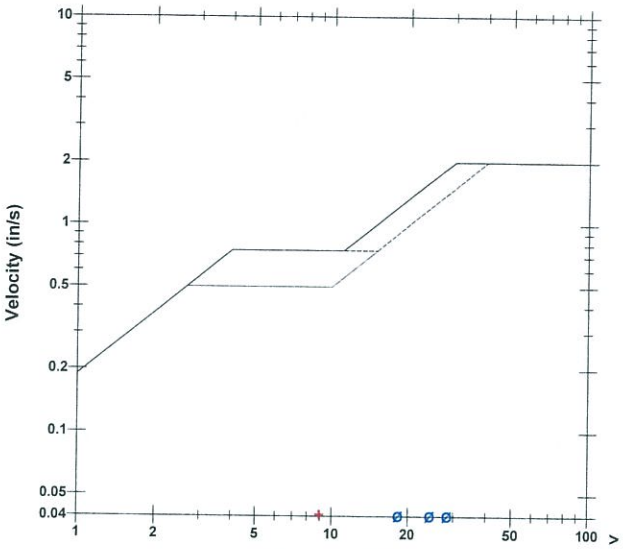
Serial Number	BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	H191G97K.1N1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
City Property Line - 3092'

USBM RI8507 And OSMRE

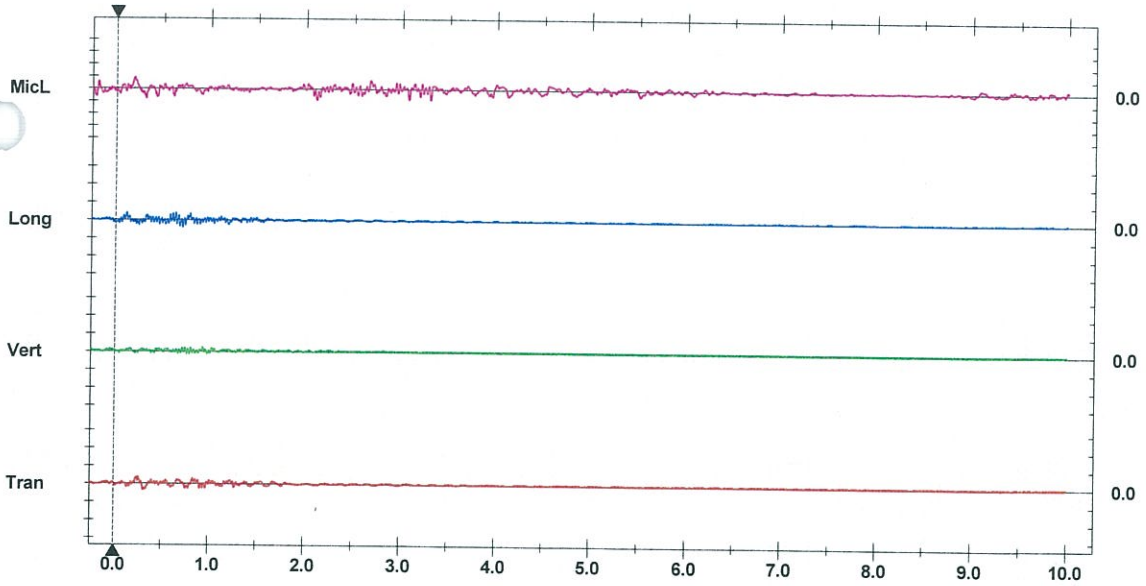


Tran: + Vert: x Long: ø

Microphone	Linear Weighting
PSPL	0.00091 psi(L) at 0.188 sec
ZC Freq	5.7 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 577 mv)

	Tran	Vert	Long	
PPV	0.0400	0.0250	0.0400	in/s
ZC Freq	9.0	26	18	Hz
Time (Rel. to Trig)	0.263	0.927	0.113	sec
Peak Acceleration	0.0133	0.0265	0.0265	g
Peak Displacement	0.00068	0.00021	0.00032	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0472 in/s at 0.708 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 24, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/24/16 Blast No. 2-24-16 3C Time 11:32

Exact Blast Location 3 C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 46.3"

W 98° 17' 35.9"

MONITOR GPS

N 29 38 58.8

W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 3896'

Peak Overpressure 101.8 dB Scaled Distance ------

Peak Particle Velocity .030 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/24/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:32:01 February 24, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 0.00365 psi(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

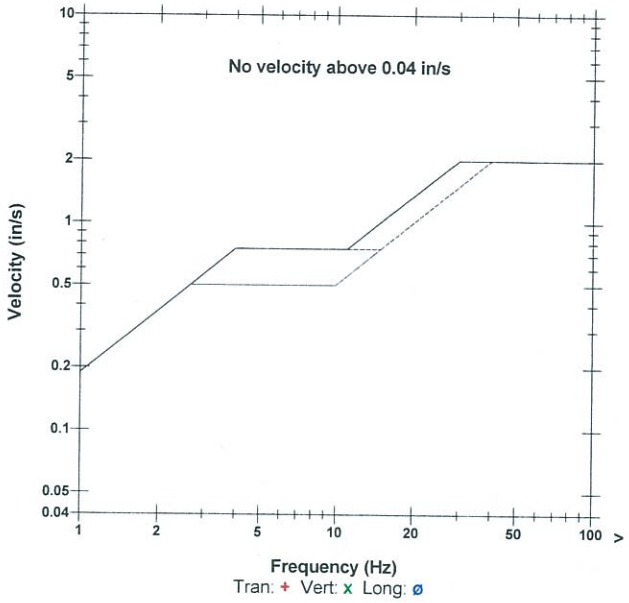
Serial Number	BF8949 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	J949G97K.1D1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

Extended Notes

Post Event Notes
Cruz Residence - 3896'

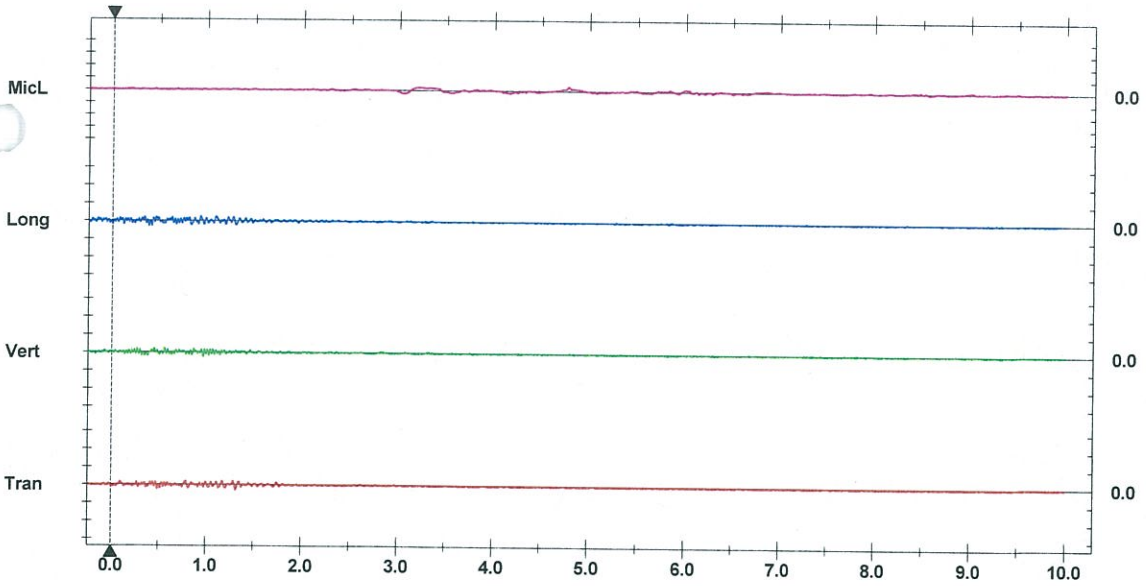
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	0.00036 psi(L) at 4.775 sec
ZC Freq	1.8 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 560 mv)

	Tran	Vert	Long	
PPV	0.0300	0.0250	0.0300	in/s
ZC Freq	19	28	26	Hz
Time (Rel. to Trig)	1.317	0.558	0.384	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00024	0.00016	0.00025	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0350 in/s at 0.384 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/24/16 Blast No. 2-24-16 3C Time 11:32

Exact Blast Location 3C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Spee _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29° 38'46.3"
W98° 17' 35.9"

MONITOR GPS

N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3936'

Peak Overpressure 100.0 dB Scaled Distance ------

Peak Particle Velocity .07 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/24/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

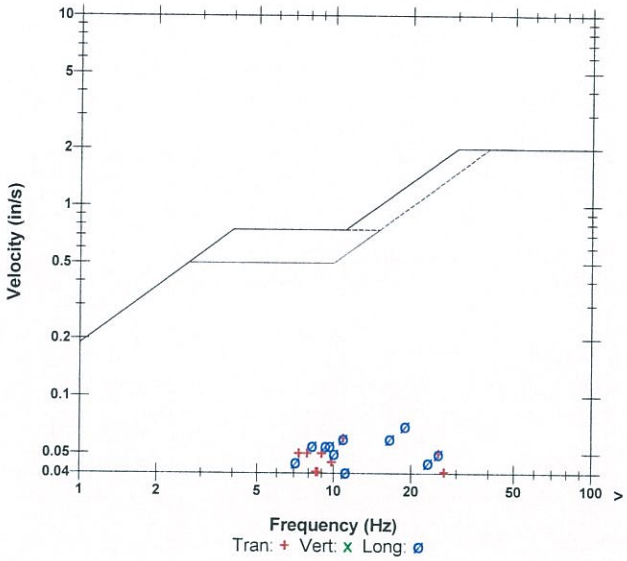
Date/Time	Long at 11:32:02 February 24, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 0.00365 psi(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BF12499 V 7.05-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	July 22, 2015 by Vibra-Tech Inc.
File Name	N499G97K.1E1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Post Event Notes
Tavares Residence - 3936'

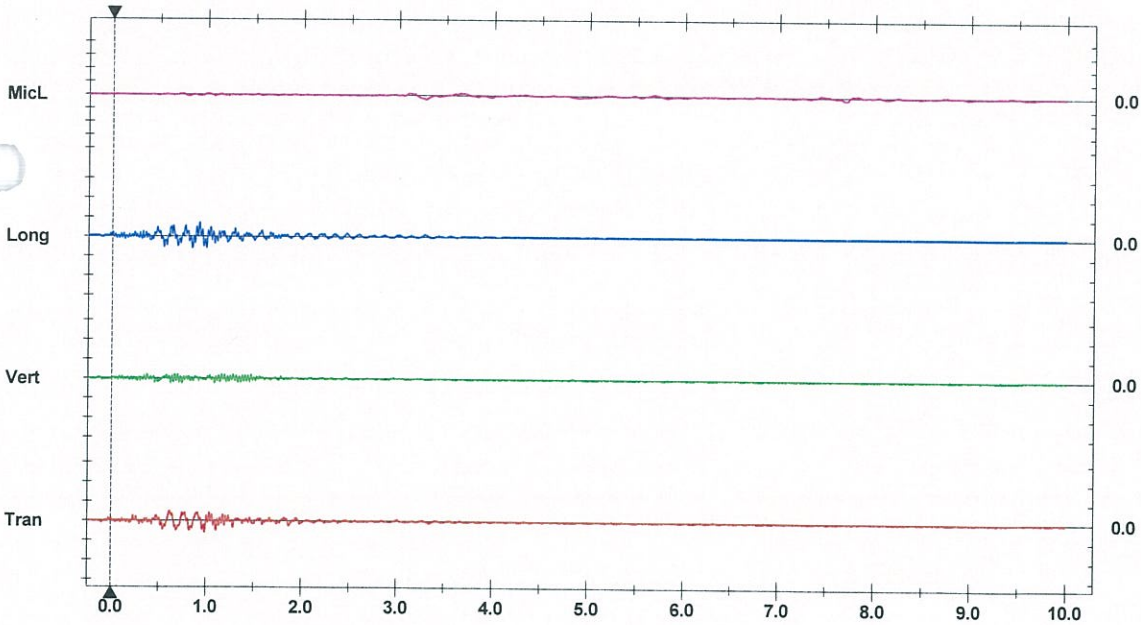
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	0.00029 psi(L) at 3.274 sec
ZC Freq	3.3 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 594 mv)

	Tran	Vert	Long	
PPV	0.0600	0.0250	0.0700	in/s
ZC Freq	11	27	19	Hz
Time (Rel. to Trig)	0.987	0.450	0.913	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00102	0.00020	0.00094	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0820 in/s at 0.988 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 24, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/24/16 Blast No. 2-24-16 3C Time 11:32

Exact Blast Location 3C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Spee. _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS 29 38 46.3
98 17 35.9

MONITOR GPS

N 29 38' 23"
W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision
10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 2460'

Peak Overpressure 113.0 dB Scaled Distance ------

Peak Particle Velocity .170 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/24/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:32:16 February 24, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 0.00365 psi(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

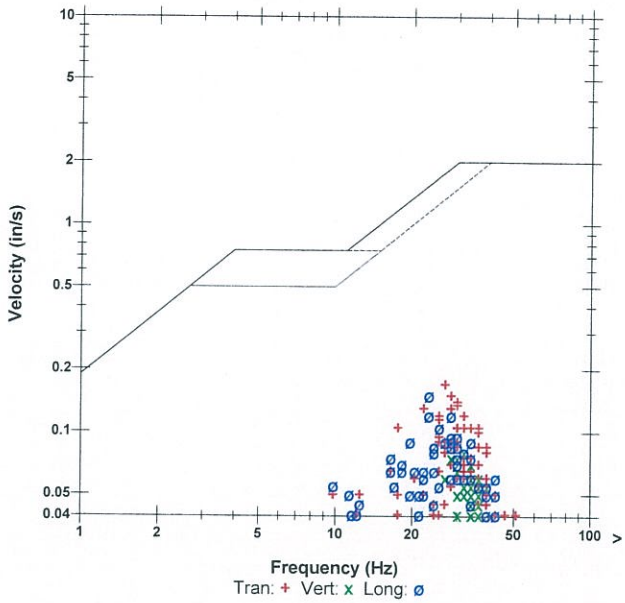
Serial Number	BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	March 12, 2015 by Vibra-Tech Inc.
File Name	O270G97K.1S1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Warden Residence - 2460'

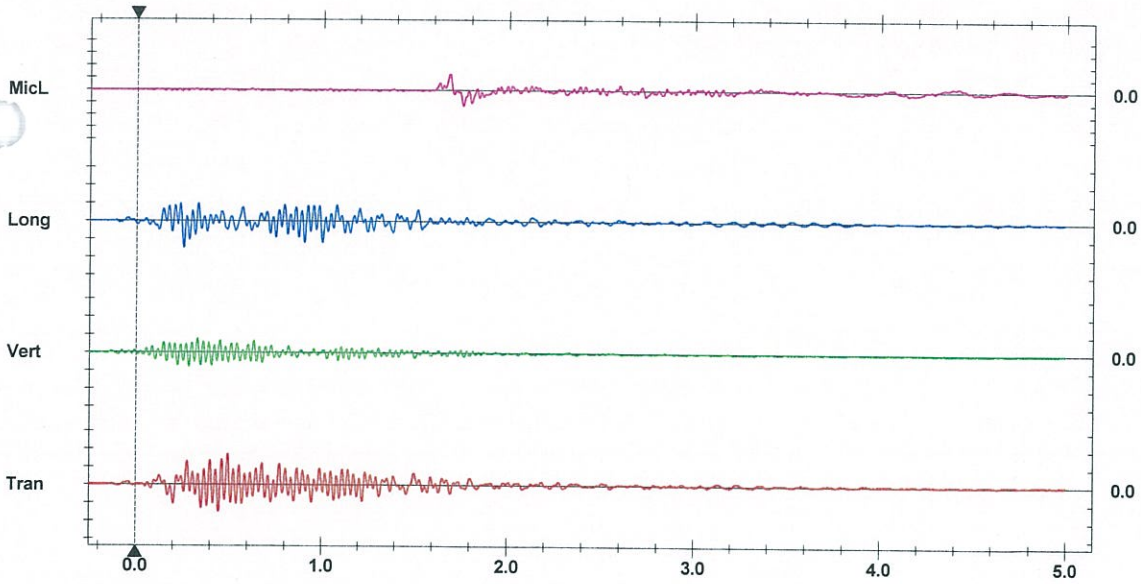
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	0.00131 psi(L) at 1.684 sec
ZC Freq	5.6 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 623 mv)

	Tran	Vert	Long	
PPV	0.170	0.0800	0.150	in/s
ZC Freq	27	32	23	Hz
Time (Rel. to Trig)	0.495	0.284	0.253	sec
Peak Acceleration	0.0795	0.0530	0.0663	g
Peak Displacement	0.00101	0.00042	0.00095	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.179 in/s at 0.496 sec



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/24/16 Blast No. 2-24-16 3C Time 11:32

Exact Blast Location 3 C

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N29° 38' 46.3"
W98° 17' 35.9"

MONITOR GPS

N 29 38' 25"
W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 2285'

Peak Overpressure 113.7 dB Scaled Distance ------

Peak Particle Velocity .090 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/24/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 11:32:16 February 24, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 0.00365 psi(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13922 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	November 22, 2015 by Vibra-Tech Inc.
File Name	O922G97K.1S1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

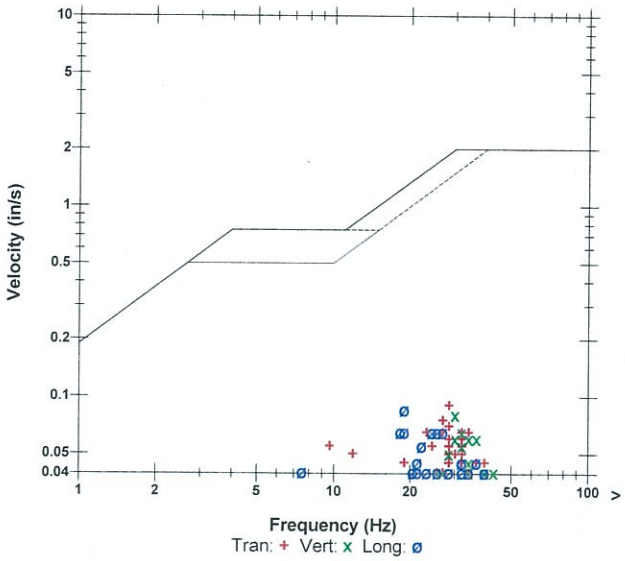
Post Event Notes
Warden Property line - 2285'

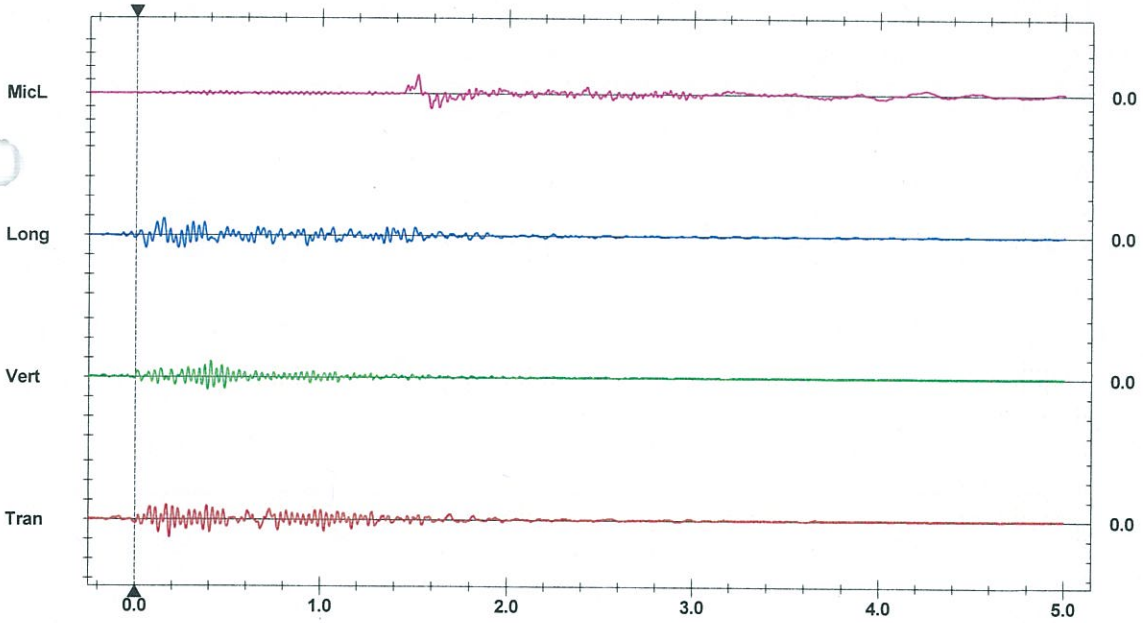
Microphone	Linear Weighting
PSPL	0.00141 psi(L) at 1.516 sec
ZC Freq	5.5 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 569 mv)

	Tran	Vert	Long	
PPV	0.0900	0.0800	0.0850	in/s
ZC Freq	28	30	19	Hz
Time (Rel. to Trig)	0.185	0.405	0.146	sec
Peak Acceleration	0.0530	0.0398	0.0398	g
Peak Displacement	0.00070	0.00042	0.00077	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.100 in/s at 0.405 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 24, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/25/16 Blast No. 2-25-16 South D Time 12:17

Exact Blast Location South Wall D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS 29 38 11.1
98 16 51.7

MONITOR GPS

N 29 38' 22.63
W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate
30' from gate at the property line

Seismograph Distance from Blast 3844'

Peak Overpressure 111.2 dB Scaled Distance ------

Peak Particle Velocity .02 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/25/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Long at 12:17:28 February 25, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 10.0 sec at 1024 sps

Serial Number BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level 6.3 Volts
Calibration July 16, 2015 by Vibra-Tech Inc.
File Name H191G99G.T41

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

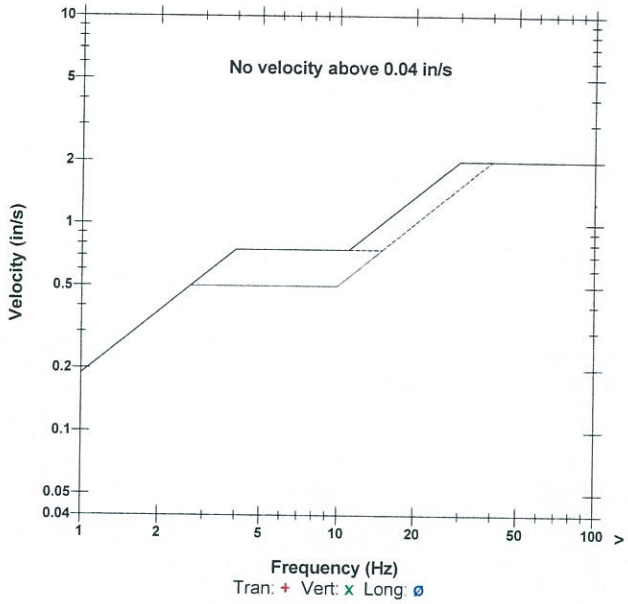
Post Event Notes
City Property Line - 3844'

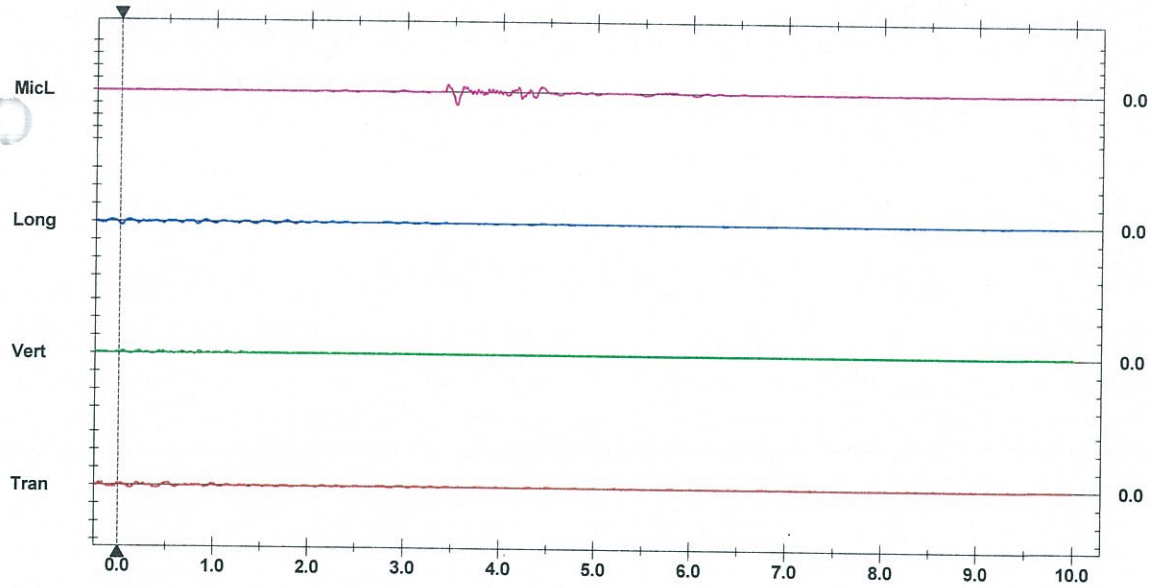
Microphone Linear Weighting
PSPL 111.2 dB(L) at 3.520 sec
ZC Freq 5.4 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 566 mv)

	Tran	Vert	Long	
PPV	0.0150	0.01000	0.0200	in/s
ZC Freq	21	>100	9.0	Hz
Time (Rel. to Trig)	-0.205	0.015	0.000	sec
Peak Acceleration	0.0133	0.0133	0.0265	g
Peak Displacement	0.00037	0.00012	0.00042	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0245 in/s at 0.016 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 25, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/25/16 Blast No. 2-25-16 South D Time 12:17

Exact Blast Location South Wall D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather ___, _____, _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29 38 17.1
W 98 16 51.7

MONITOR GPS

N 29 38 58.8
W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 3633'

Peak Overpressure N/T dB Scaled Distance ------

Peak Particle Velocity N/T ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/25/16

Cruz → NTT 3633'

Event Report: Monitor Log - MultiSeis Plus # BF8949 comp mode

Start Time	End Time	Status
		SERIAL NUMBER: BF8949
Feb 25 '16 08:40:47	Feb 25 '16 12:52:52	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/25/16 Blast No. 2-25-16 South D Time 12:17

Exact Blast Location South wall D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

29 38 11.1

98 16 51.7

MONITOR GPS

N 29 38' 15"

W 98 17' 26"

SEISMOGRAPH DATA

Seismograph No. 10562 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 09-13-15 Microphone Calibration 09-13-15

Exact Seismograph Location Holly Residence: 9916 Trophy Oaks Drive, Trophy Oaks Subdivision backyard along the quarry property line at the barbed wire fence

Seismograph Distance from Blast 4424'

Peak Overpressure 106.5 dB Scaled Distance ------

Peak Particle Velocity .06 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/25/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:17:20 February 25, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF10562 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	September 13, 2015 by Vibra-Tech Inc.
File Name	L562G99G.SW1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

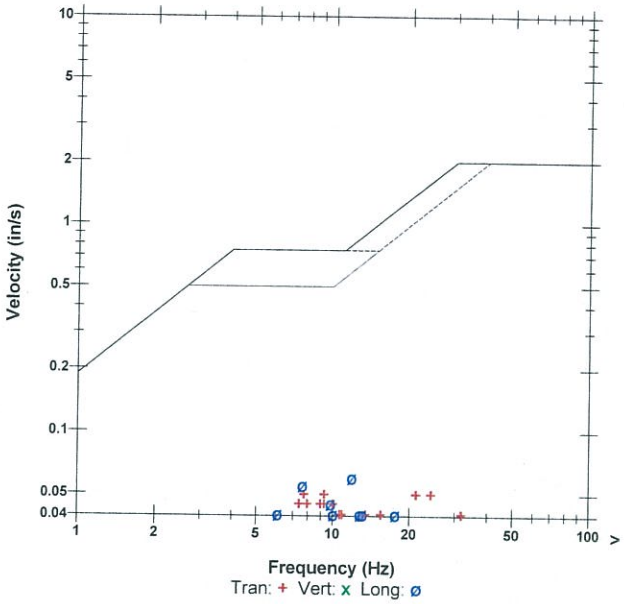
Post Event Notes
Holly Residence - 4424'

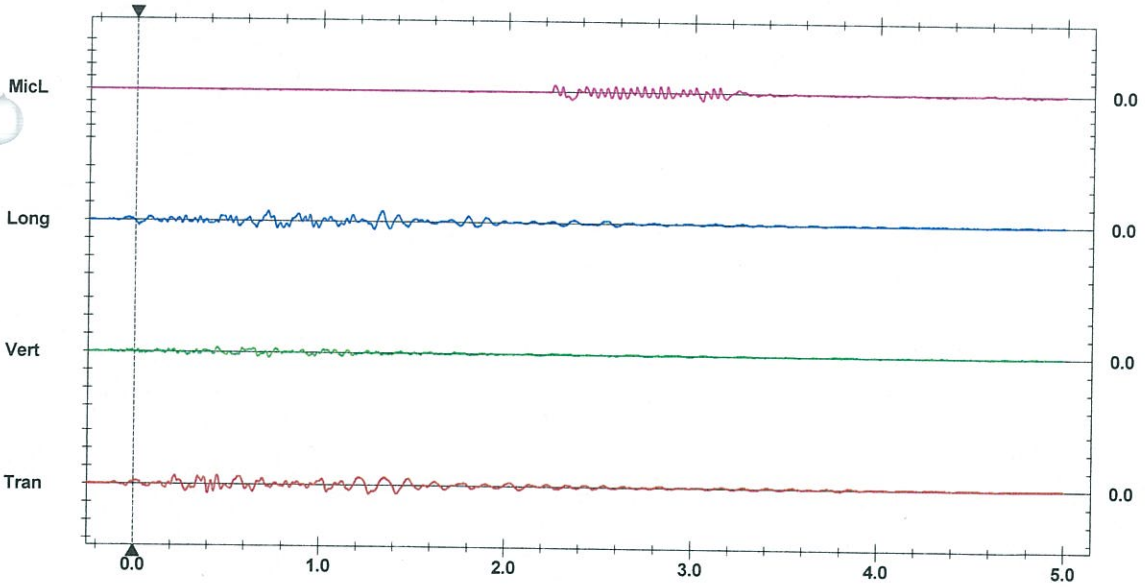
Microphone	Linear Weighting
PSPL	106.5 dB(L) at 2.341 sec
ZC Freq	7.2 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 549 mv)

	Tran	Vert	Long	
PPV	0.0500	0.0300	0.0600	in/s
ZC Freq	9.3	19	12	Hz
Time (Rel. to Trig)	0.225	0.725	1.325	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00101	0.00036	0.00104	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0620 in/s at 1.328 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2-25-16 Blast No. 2-25-16 South D Time 12:17

Exact Blast Location South wall D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

29 38 11.1

98 16 51.7

MONITOR GPS

N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3856'

Peak Overpressure 104.2 dB Scaled Distance ------

Peak Particle Velocity .02 ips Operator Jack Steckberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Steckberger Date: 2/25/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:17:28 February 25, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
Job Number:	1

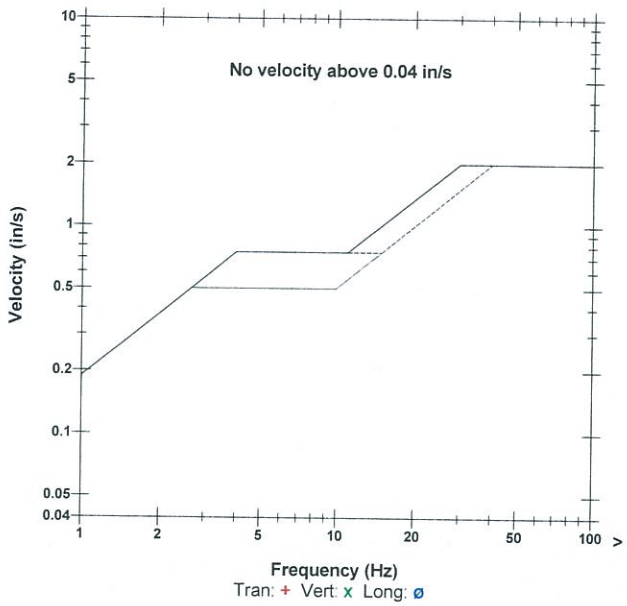
Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G99G.T41

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Taveres Residence - 3856'

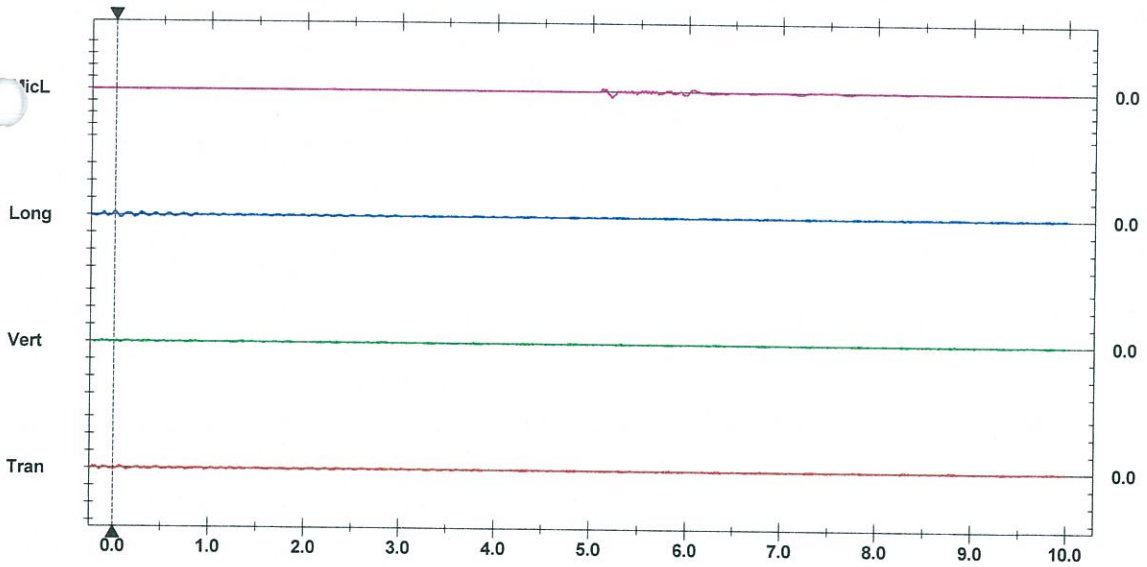
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	104.2 dB(L) at 5.199 sec
ZC Freq	5.3 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 721 mv)

	Tran	Vert	Long	
PPV	0.0150	0.01000	0.0200	in/s
ZC Freq	24	>100	12	Hz
Time (Rel. to Trig)	0.063	0.065	0.000	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00010	0.00000	0.00026	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0218 in/s at 0.063 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/25/16 Blast No. 2-25-16 South D Time 12:17

Exact Blast Location South Wall D

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

29 38 11.1

98 16 51.7

MONITOR GPS

N 29 38' 23"

W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 3429'

Peak Overpressure 111.2 dB Scaled Distance ------

Peak Particle Velocity .065 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/25/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:17:34 February 25, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

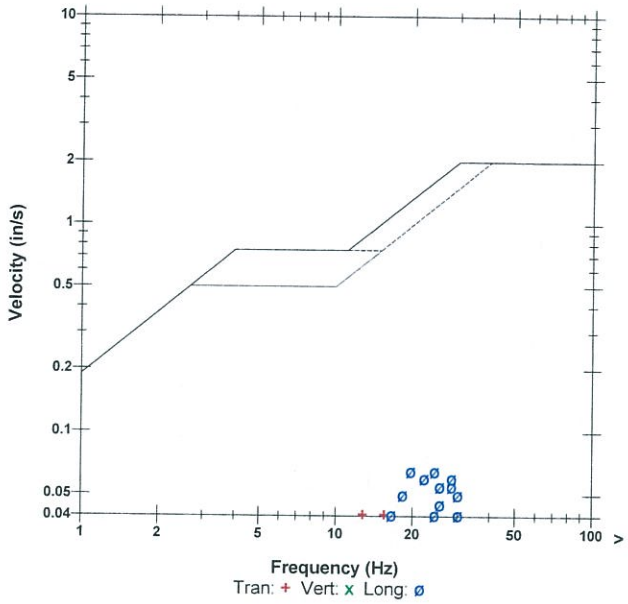
Serial Number	BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	March 12, 2015 by Vibra-Tech Inc.
File Name	O270G99G.TA1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Warden Residence - 3429'

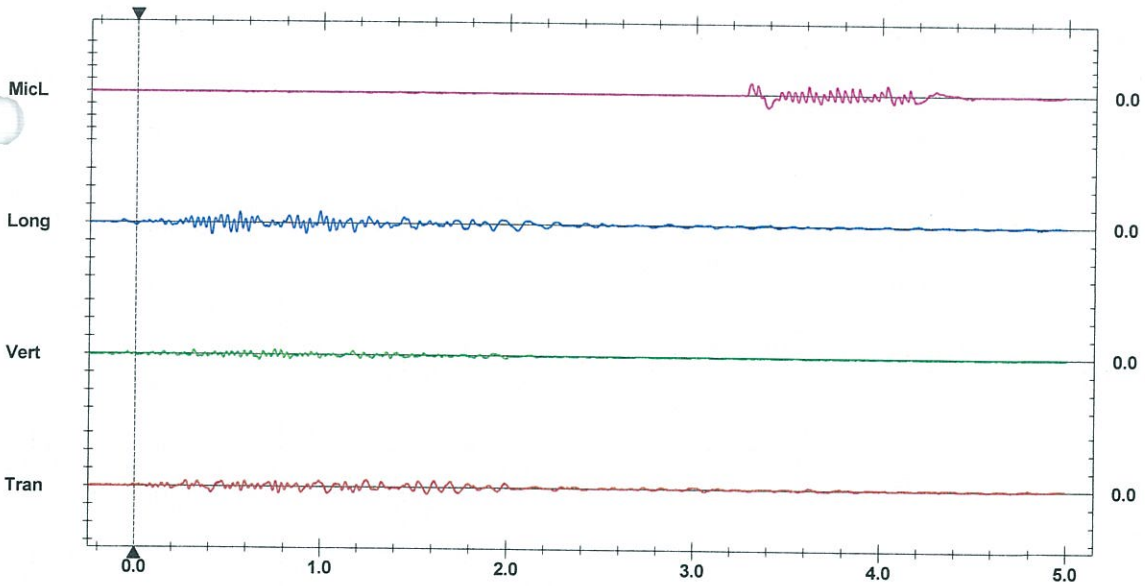
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	111.2 dB(L) at 3.391 sec
ZC Freq	4.9 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 519 mv)

	Tran	Vert	Long	
PPV	0.0400	0.0300	0.0650	in/s
ZC Freq	13	11	24	Hz
Time (Rel. to Trig)	1.248	0.661	0.403	sec
Peak Acceleration	0.0265	0.0265	0.0398	g
Peak Displacement	0.00063	0.00040	0.00065	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0743 in/s at 0.988 sec



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/26/16 Blast No. 2-26-16 4A Time 11:47

Exact Blast Location 4A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

29 38 57.7

98 17 36.9

MONITOR GPS

N 29 38' 22.63

W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate

30' from gate at the property line

Seismograph Distance from Blast 3859'

Peak Overpressure 108.8 dB Scaled Distance ------

Peak Particle Velocity .040 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/26/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 11:47:43 February 26, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

Serial Number	BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	H191G9BA.3J1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

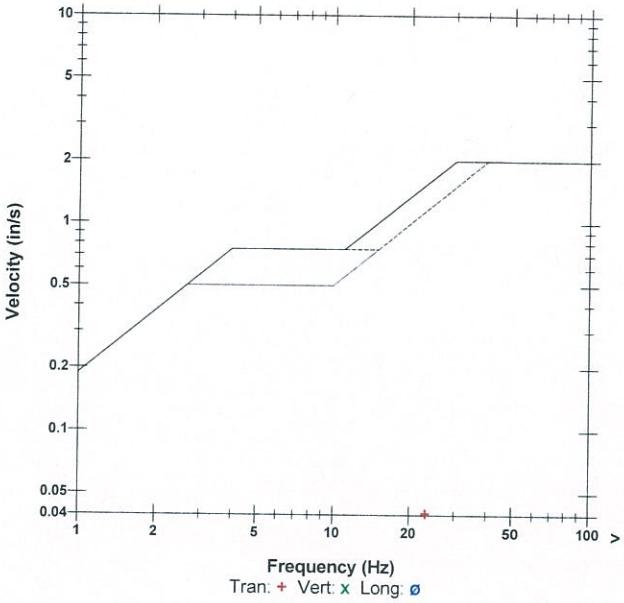
Post Event Notes
City Property Line - 3859'

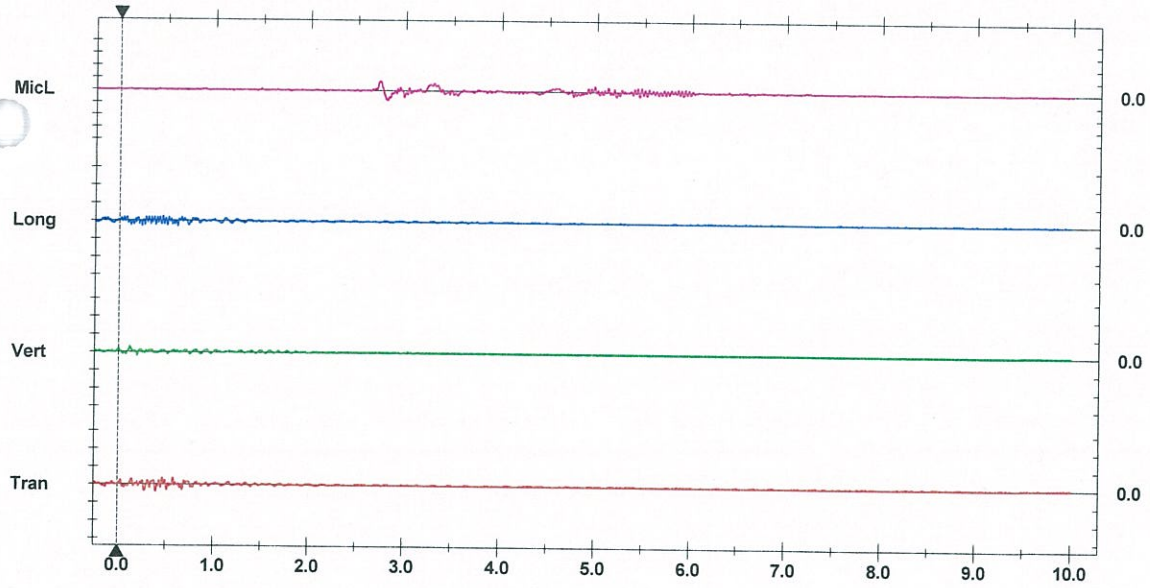
Microphone Linear Weighting
PSPL 108.8 dB(L) at 2.811 sec
ZC Freq 4.4 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 584 mv)

	Tran	Vert	Long	
PPV	0.0400	0.0300	0.0300	in/s
ZC Freq	23	12	37	Hz
Time (Rel. to Trig)	0.398	0.118	0.239	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00033	0.00036	0.00025	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0450 in/s at 0.398 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 26, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/26/16 Blast No. 2-26-16 4A Time 11:47

Exact Blast Location 4A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weathe _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29 38 57.7

W 98 17 36.9

MONITOR GPS

N 29 38 58.8

W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 3577'

Peak Overpressure 102.8 dB Scaled Distance ------

Peak Particle Velocity .045 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/26/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:47:31 February 26, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps

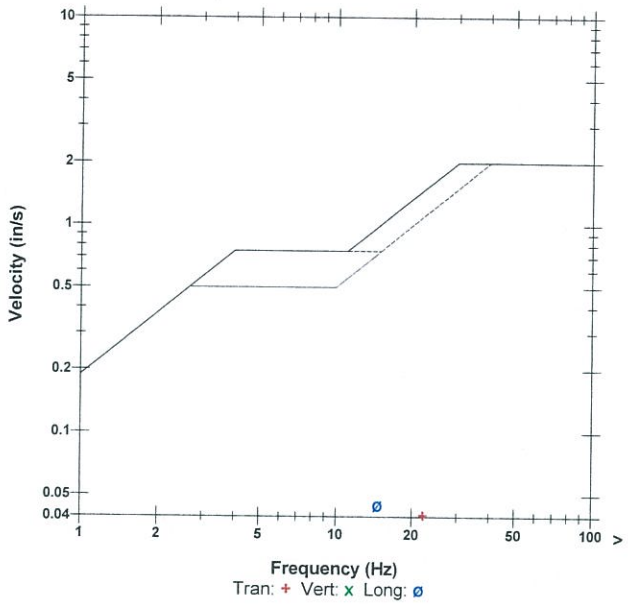
Serial Number	BF8949 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	J949G9BA.371

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra-Tech
General:

Extended Notes

Post Event Notes
Cruz Residence - 3577'

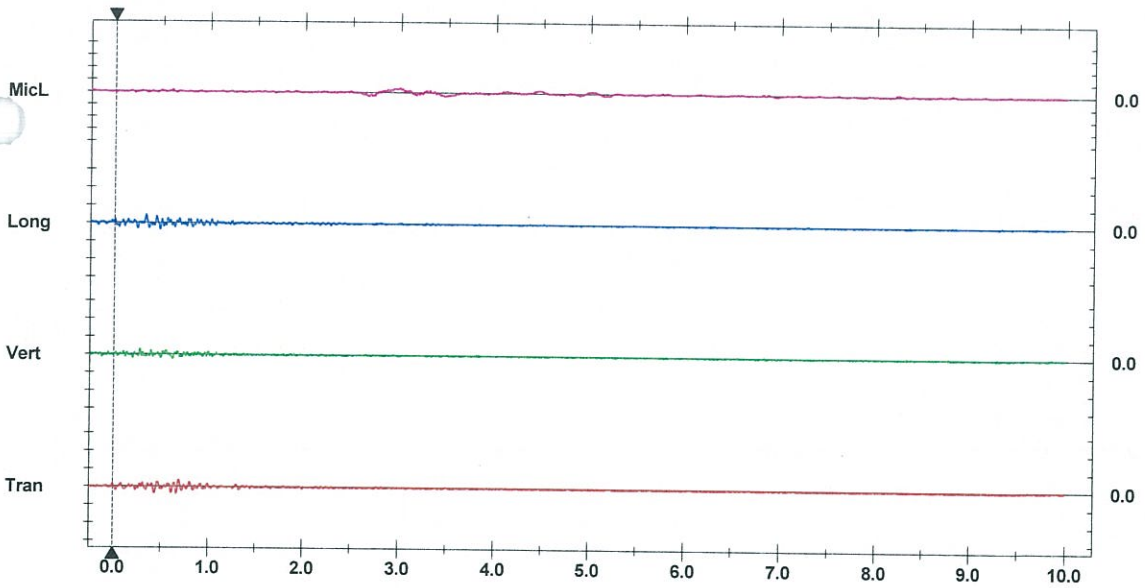
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	102.8 dB(L) at 2.996 sec
ZC Freq	1.7 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 561 mv)

	Tran	Vert	Long	
PPV	0.0400	0.0300	0.0450	in/s
ZC Freq	22	28	15	Hz
Time (Rel. to Trig)	0.663	0.274	0.327	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00037	0.00027	0.00041	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0495 in/s at 0.437 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 26, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/26/16 Blast No. 2-26-16 4A Time 11:47

Exact Blast Location 4A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather

Wind Direction & Speed

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29 38 57.7
98 17 36.9

MONITOR GPS
N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3789'

Peak Overpressure 102.8 dB Scaled Distance ------

Peak Particle Velocity .065 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/26/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 11:47:41 February 26, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	10.0 sec at 1024 sps
ob Number:	1

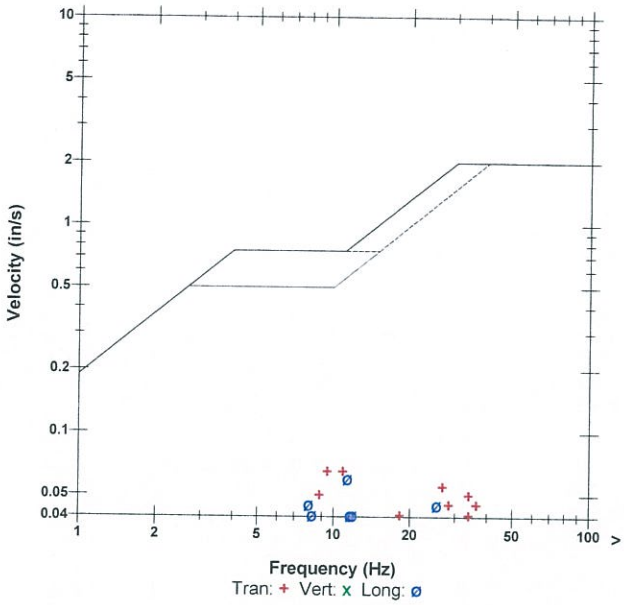
Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626G9BA.3H1

Notes
Location: Garden Ridge, Texas
Client: Hanson ServTex
User Name: Vibra Tech
General:

Extended Notes

Post Event Notes
Taveres Residence - 3789'

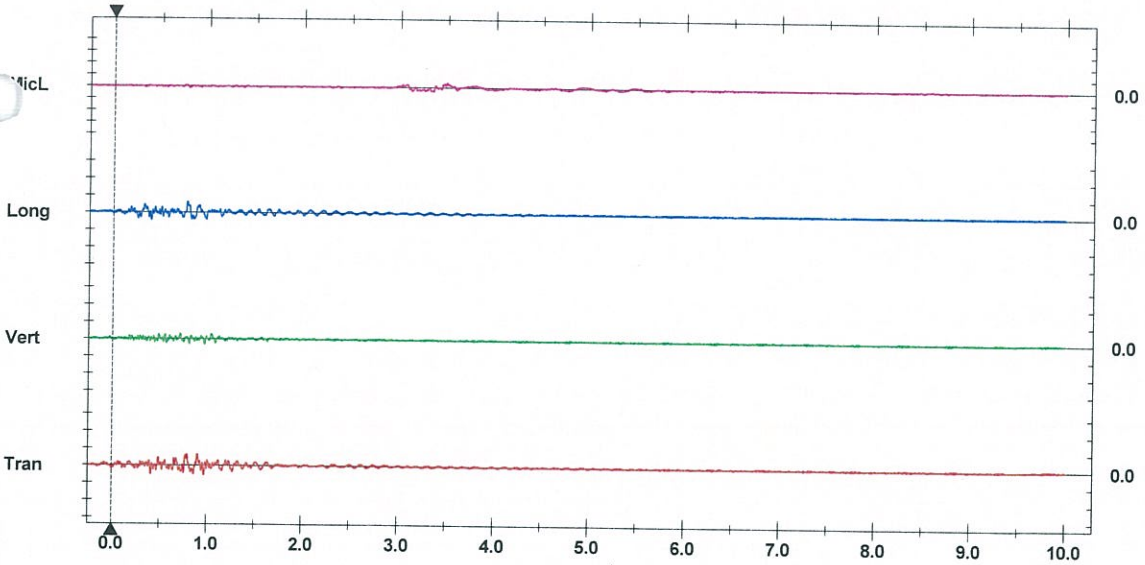
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	102.8 dB(L) at 3.479 sec
ZC Freq	3.8 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 704 mv)

	Tran	Vert	Long	
PPV	0.0650	0.0300	0.0600	in/s
ZC Freq	11	20	11	Hz
Time (Rel. to Trig)	0.794	0.713	0.773	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00091	0.00024	0.00085	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0850 in/s at 0.778 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 26, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/26/16 Blast No. 2-26-16 4A Time 11:47

Exact Blast Location 4 A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weathe

Wind Direction & Speed

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29 38 57.7
98 17 36.9

MONITOR GPS
N 29 38' 23"
W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision
10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 3527'

Peak Overpressure 111.5 dB Scaled Distance ------

Peak Particle Velocity .09 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/26/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Tran at 11:47:50 February 26, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 5.0 sec at 1024 sps

Serial Number BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level 6.5 Volts
Calibration March 12, 2015 by Vibra-Tech Inc.
File Name O270G9BA.3Q1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

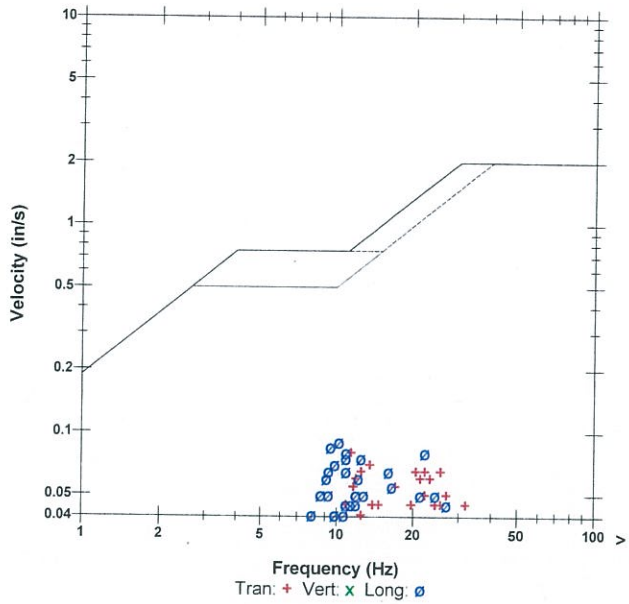
Post Event Notes
Warden Residence - 3527'

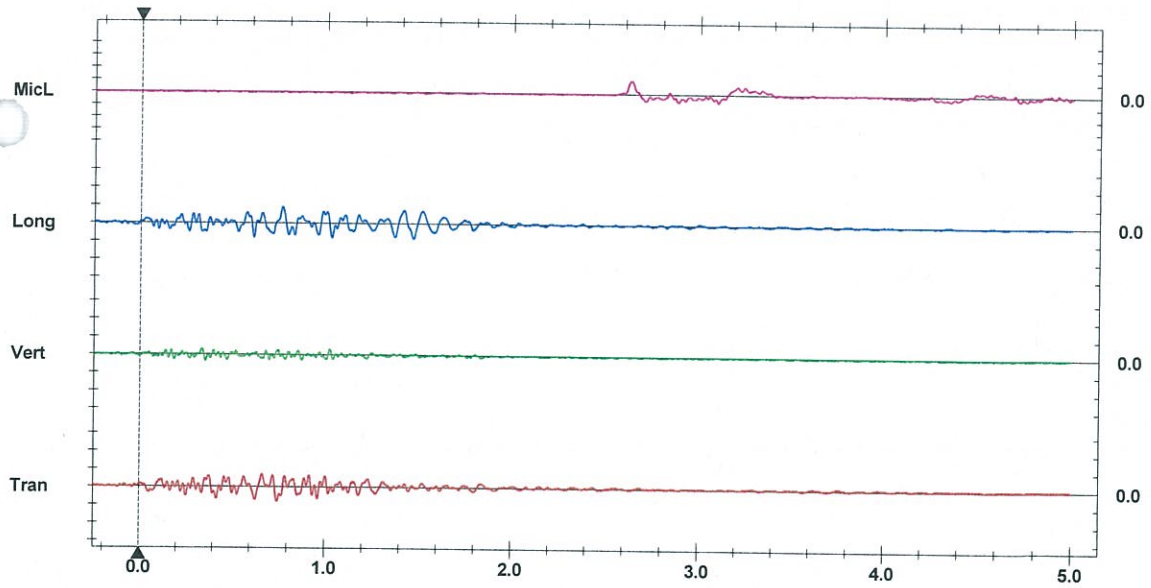
Microphone Linear Weighting
PSPL 111.5 dB(L) at 2.631 sec
ZC Freq 4.4 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 629 mv)

	Tran	Vert	Long	
PPV	0.0800	0.0350	0.0900	in/s
ZC Freq	11	27	10	Hz
Time (Rel. to Trig)	0.745	0.354	0.765	sec
Peak Acceleration	0.0398	0.0265	0.0398	g
Peak Displacement	0.00109	0.00027	0.00123	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.103 in/s at 0.765 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 26, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 2/26/16 Blast No. 2-26-16 4A Time 11:47

Exact Blast Location 4A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
29 38 57.7
98 17 36.9

MONITOR GPS
N 29 38' 25"
W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 3319'

Peak Overpressure 111.5 dB Scaled Distance ------

Peak Particle Velocity .095 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 2/26/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

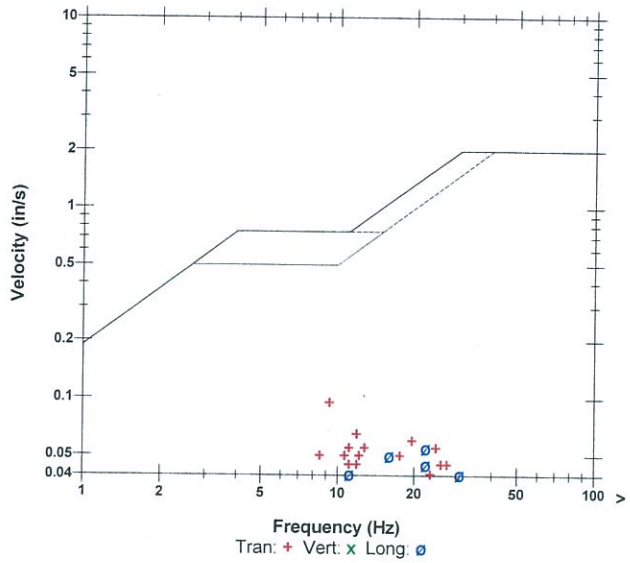
Date/Time	Tran at 11:47:49 February 26, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13922 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	November 22, 2015 by Vibra-Tech Inc.
File Name	O922G9BA.3P1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Post Event Notes
Warden Property Line - 3319'

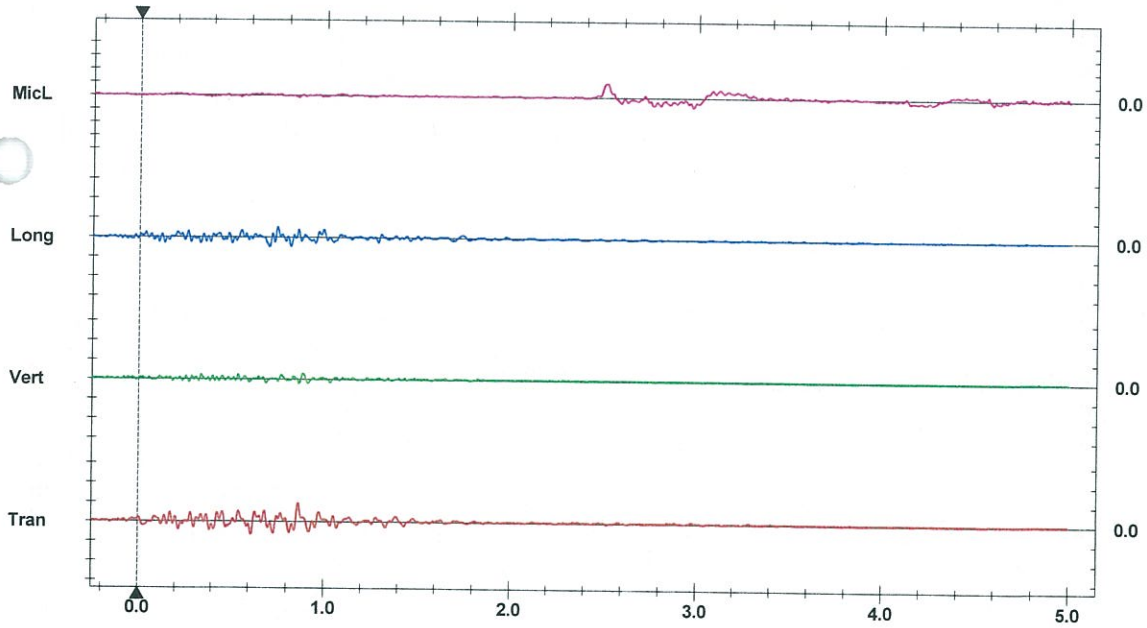
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	111.5 dB(L) at 2.504 sec
ZC Freq	4.1 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 591 mv)

	Tran	Vert	Long	
PPV	0.0950	0.0300	0.0550	in/s
ZC Freq	9.3	21	22	Hz
Time (Rel. to Trig)	0.863	0.881	0.742	sec
Peak Acceleration	0.0398	0.0265	0.0265	g
Peak Displacement	0.00106	0.00026	0.00053	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0973 in/s at 0.867 sec



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 26, 2016 (V 7.03 - 7.01)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-29-16 Blast No. 02-29-16 Lower 3A Time 11:48

Exact Blast Location lower 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 38.3"
W 98° 17' 33.9"

MONITOR GPS

N 29 38' 22.63
W 98 18' 53.97

SEISMOGRAPH DATA

Seismograph No. 6191 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location City Property Line: outside city water tower gate

30' from gate at the property line

Seismograph Distance from Blast 2376'

Peak Overpressure 98.8 dB Scaled Distance ------

Peak Particle Velocity 0.025 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-29-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Tran at 11:48:21 February 29, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 10.0 sec at 1024 sps

Serial Number BD6191 V 7.04-8.0 MultiSeis Plus
Battery Level 6.3 Volts
Calibration July 16, 2015 by Vibra-Tech Inc.
File Name H191G9GU.4L1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

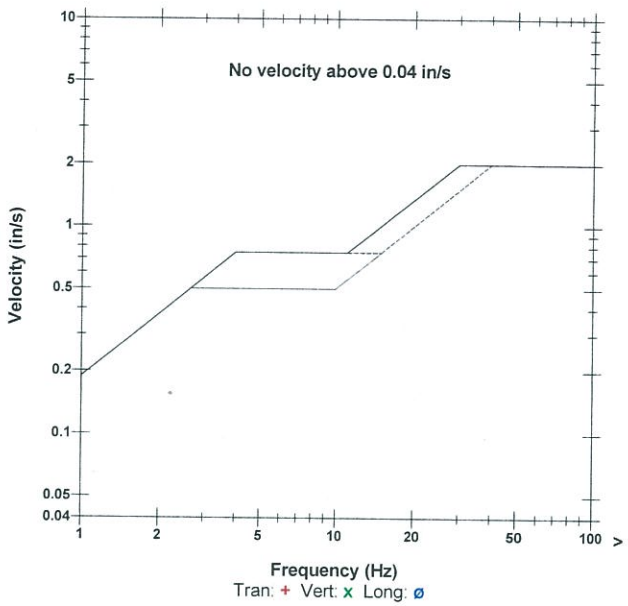
Post Event Notes
City Property Line
Distance - 2376 ft

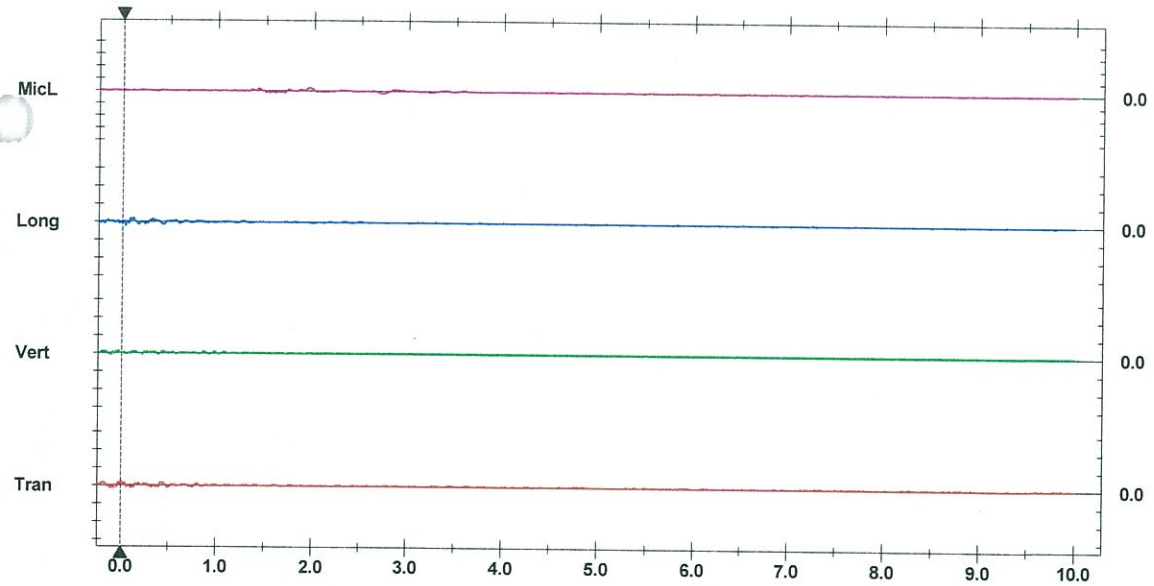
Microphone Linear Weighting
PSPL 98.8 dB(L) at 1.941 sec
ZC Freq 5.1 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 550 mv)

	Tran	Vert	Long	
PPV	0.0200	0.0150	0.0250	in/s
ZC Freq	20	37	26	Hz
Time (Rel. to Trig)	0.000	-0.034	0.029	sec
Peak Acceleration	0.0265	0.0133	0.0133	g
Peak Displacement	0.00030	0.00010	0.00025	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0269 in/s at 0.029 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 29, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-29-16 Blast No. 02-29-16 Lower 3A Time 11:48

Exact Blast Location Lower 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 38.3"
W 98° 17' 33.9"

MONITOR GPS

N 29 38 58.8
W 98 18 17.5

SEISMOGRAPH DATA

Seismograph No. 8949 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-16-15 Microphone Calibration 07-16-15

Exact Seismograph Location Cruz Residence – 22410 Oro Viejo Ct – George Ranch Subdivision

15' E off SE corner of garage at fence

Seismograph Distance from Blast 4366

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-29-16

Cruz Residence
Distance - 4366 ft
No Trigger

Event Report: Monitor Log - MultiSeis Plus # BF8949 comp mode

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
Feb 29 '16 10:18:12	Feb 29 '16 12:18:30	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-29-16 Blast No. 02-29-16 Lower 3A Time 11:48

Exact Blast Location Lower 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N 29° 38' 38.3"
W 98° 17' 33.9"

MONITOR GPS
N 29 38' 52"
W 98 18' 19"

SEISMOGRAPH DATA

Seismograph No. 10626 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 07-21-15 Microphone Calibration 07-21-15

Exact Seismograph Location Taveres Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 4243

Peak Overpressure NT dB Scaled Distance ------

Peak Particle Velocity NT ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-29-16

Taveres Residence
Distance - 4243 ft
No Trigger

Event Report: Monitor Log - EVERLERT III # BB10626 comp mode

Start Time	End Time	Status
---	---	SERIAL NUMBER: BB10626
Feb 29 '16 10:12:27	Feb 29 '16 12:13:12	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-29-16 Blast No. 02-29-16 Lower 3A Time 11:48

Exact Blast Location Lower 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS
N 29° 38' 38.3"
W 98° 17' 33.9"

MONITOR GPS
N 29 38' 23"
W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13270 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 03-12-15 Microphone Calibration 03-12-15

Exact Seismograph Location Warden Residence: 21375 Gunther Grove Drive, Trophy Oaks Subdivision
10' N of NE corner of pool at the rock wall

Seismograph Distance from Blast 1641'

Peak Overpressure 102.8 dB Scaled Distance ------

Peak Particle Velocity 0.130 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-29-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Vert at 11:48:20 February 29, 2016
Trigger Source Geo: 0.0200 in/s
Mic: 122 dB(L)
Range Geo :10.00 in/s
Record Time 5.0 sec at 1024 sps

Serial Number BF13270 V 7.04-8.0 MultiSeis Plus
Battery Level 6.4 Volts
Calibration March 12, 2015 by Vibra-Tech Inc.
File Name O270G9GU.4K1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

Extended Notes

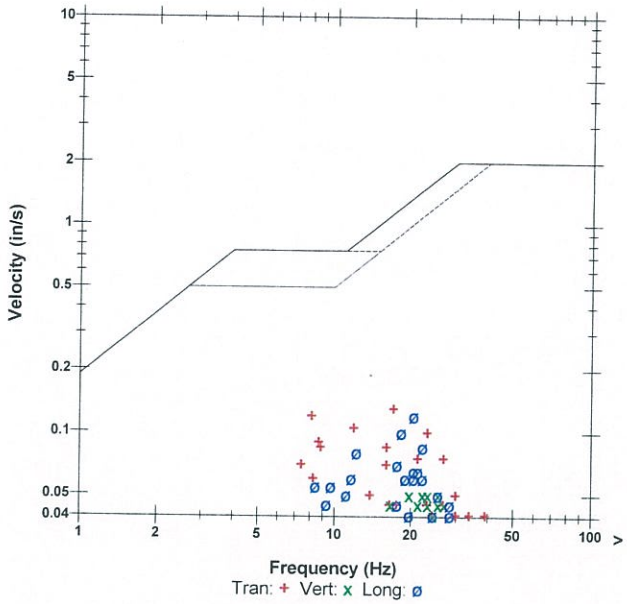
Post Event Notes
Warden Residence
Distance 1641 ft

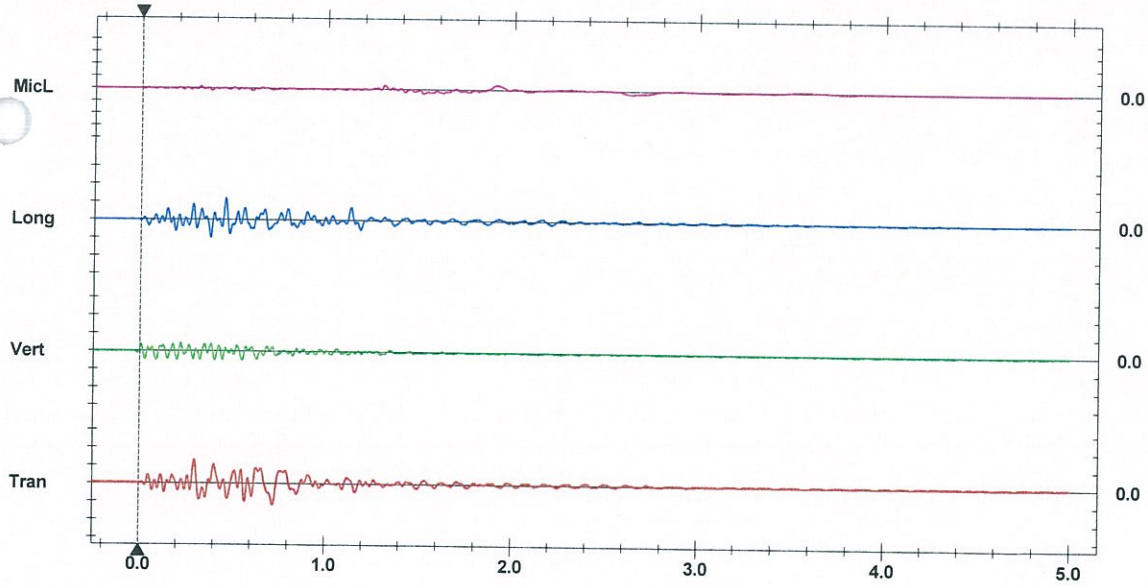
Microphone Linear Weighting
PSPL 102.8 dB(L) at 1.902 sec
ZC Freq 5.1 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 535 mv)

	Tran	Vert	Long	
PPV	0.130	0.0500	0.120	in/s
ZC Freq	17	20	20	Hz
Time (Rel. to Trig)	0.297	0.086	0.454	sec
Peak Acceleration	0.0398	0.0265	0.0398	g
Peak Displacement	0.00195	0.00043	0.00096	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.140 in/s at 0.297 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

Printed: February 29, 2016 (V 7.05 - 7.04)

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VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 02-29-16 Blast No. 02-29-16 lower 3A Time 11:48

Exact Blast Location lower 3A

No. of Holes _____ Diameter _____ in. Avg. Depth _____ Subgrade _____ ft.

Spacing _____ ft. Burden _____ ft. Avg. Stemming _____ ft.

Make & Type of Explosives:

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

_____ _____ lbs.

Total Explosives _____ lbs.

Delay Make _____

Delay Type & Nos. _____

Min. delay period _____ ms.

Max. lbs/delay period _____ lbs.

Blaster: Adam Nichols, ORICA

Weather _____

Wind Direction & Speed _____

BLAST LAYOUT

Detail or Diagram Blast Layout: Number of rows; Number of holes in each row; Number of decks per hole; amount of stemming between powder columns; nominal delay time between decks, holes and rows. (Use reverse side if necessary.)

See attached for blast diagram and above Information

FACE GPS

N 29° 38' 38.3"
W 98° 17' 33.9"

MONITOR GPS

N 29 38' 25"
W 98 17' 39"

SEISMOGRAPH DATA

Seismograph No. 13922 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 11-22-15 Microphone Calibration 11-22-15

Exact Seismograph Location Warden Property Line: 21375 Gunther Grove Drive, Trophy Oaks Subdivision

North East corner of the property, at the pink pin flag

Seismograph Distance from Blast 1421

Peak Overpressure 103.5 dB Scaled Distance ------

Peak Particle Velocity 0.130 ips Operator M. Marks

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: M. Marks Date: 02-29-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 11:48:21 February 29, 2016
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

Serial Number	BF13922 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	November 22, 2015 by Vibra-Tech Inc.
File Name	O922G9GU.4L1

Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

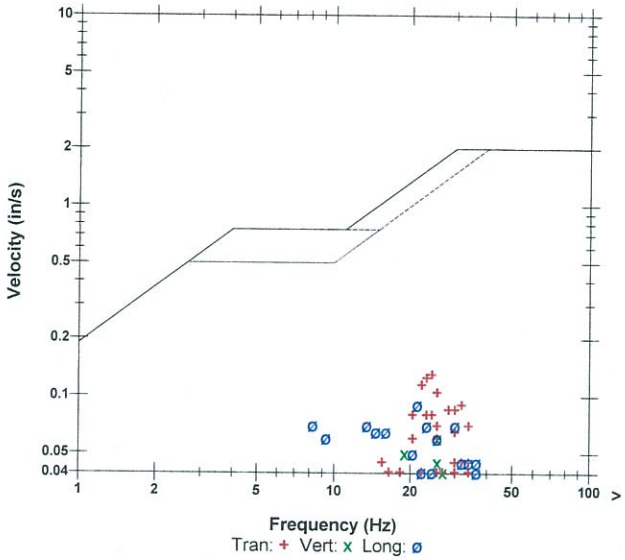
Post Event Notes
Warden Property Line
Distance - 1421 ft

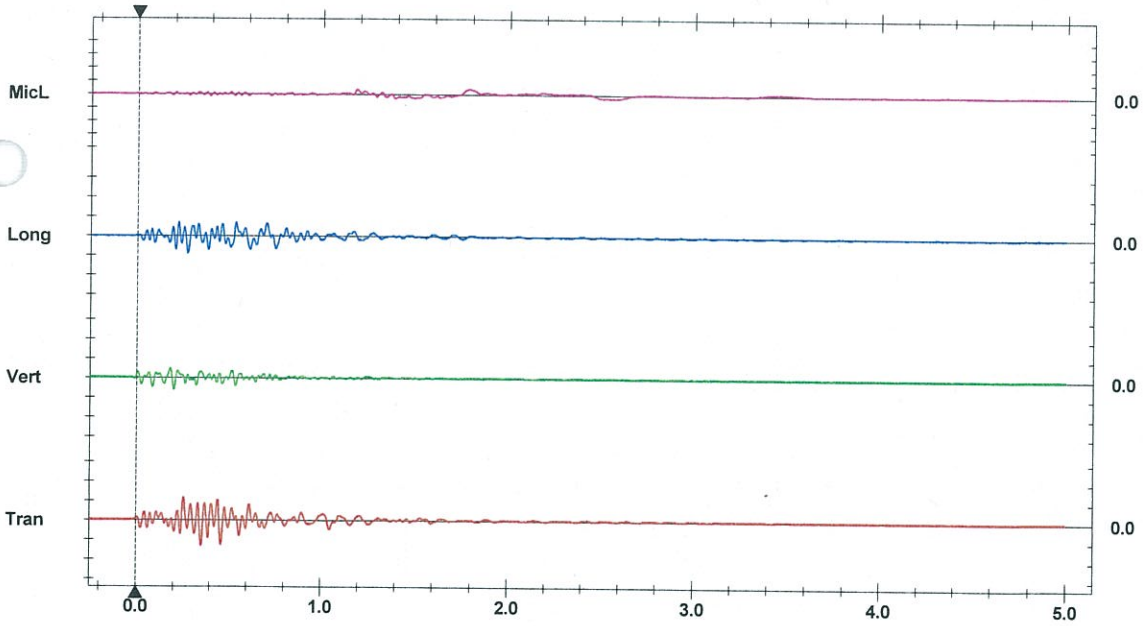
Microphone	Linear Weighting
PSPL	103.5 dB(L) at 1.779 sec
ZC Freq	2.7 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 521 mv)

	Tran	Vert	Long	
PPV	0.130	0.0600	0.0900	in/s
ZC Freq	24	26	21	Hz
Time (Rel. to Trig)	0.354	0.198	0.271	sec
Peak Acceleration	0.0530	0.0265	0.0398	g
Peak Displacement	0.00086	0.00044	0.00113	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.141 in/s at 0.462 sec

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.100 in/s/div Mic: 0.00100 psi(L)/div
Trigger = ▶----------◀

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