Vibra-Tech

June , 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 ~~June~~ May 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.

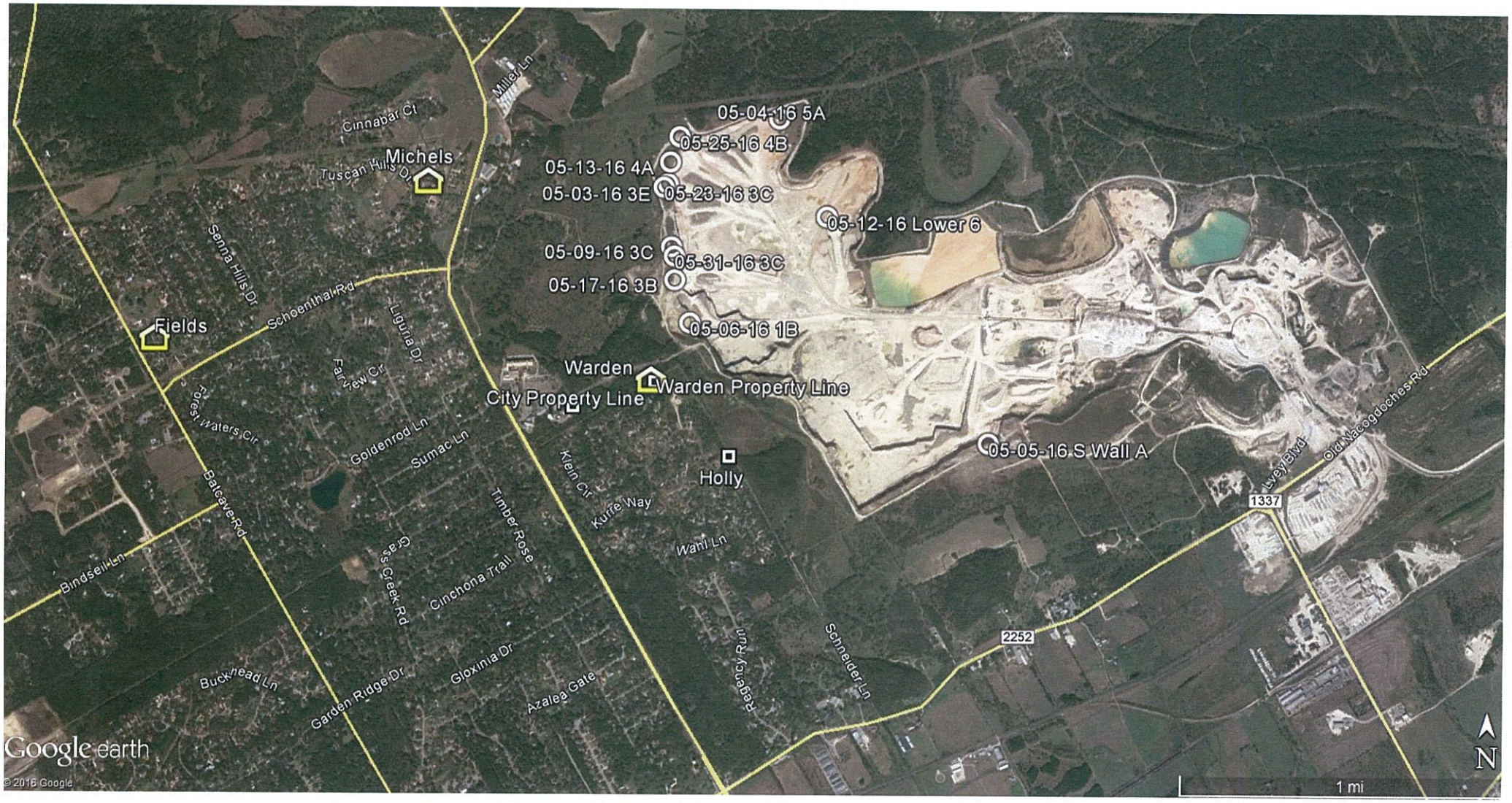
If there are any additional questions, please contact the Quarry Commission, Mike Shands at 210-257-0868, or attend the Quarry Commission meeting held the 2nd Monday of each month at 7:00 p.m.

Respectfully submitted,

VIBRA-TECH, INC.

Geoffrey Rigsby
Southwest Regional Manager

cc: Jacob Scherer, Hanson – Servtex


05-04-16 5A
05-25-16 4B
05-13-16 4A
05-03-16 3E
05-23-16 3C
05-12-16 Lower 6
05-09-16 3C
05-31-16 3C
05-17-16 3B
05-06-16 1B
05-05-16 S Wall A
Michels
Fields
Warden
Warden Property Line
City Property Line
Holly
Cinnabar Ct
Tuscan Hills Dr
Miller Ln
Senna Hills Dr
Schoenthal Rd
Liguria Dr
Fairview Cir
Forest Waters Cir
Goldenrod Ln
Sumac Ln
Balcave Rd
Bindseil Ln
Klein Cir
Kurfe Way
Wahl Ln
Timber Rose
Grass Creek Rd
Cinchona Trail
Buckhead Ln
Garden Ridge Dr
Gloxinia Dr
Azalea Gate
Regency Run
Schneider Ln
Levy Blvd
Old Nacogdoches Rd
1337
2252
Google earth
© 2016 Google
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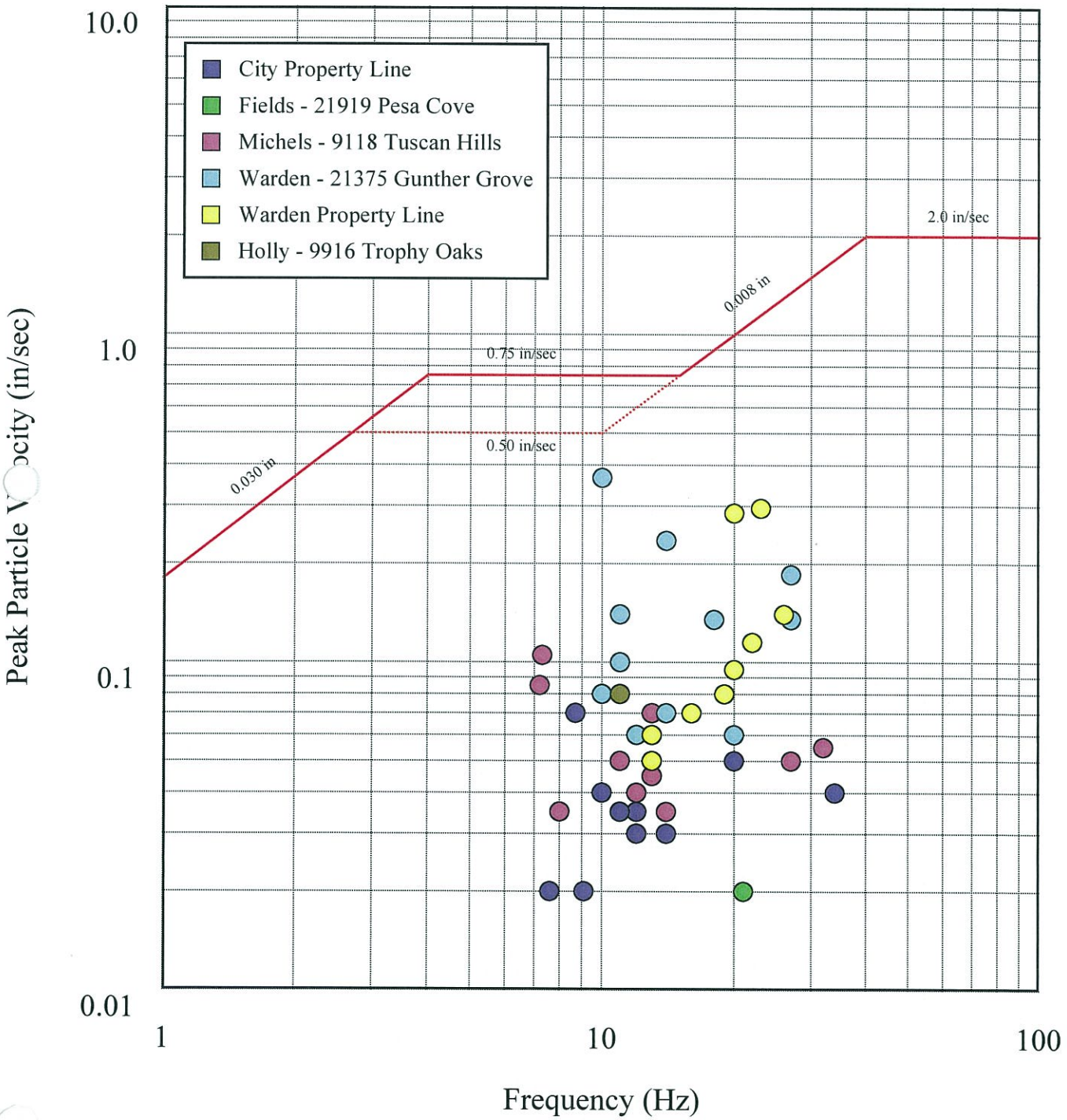
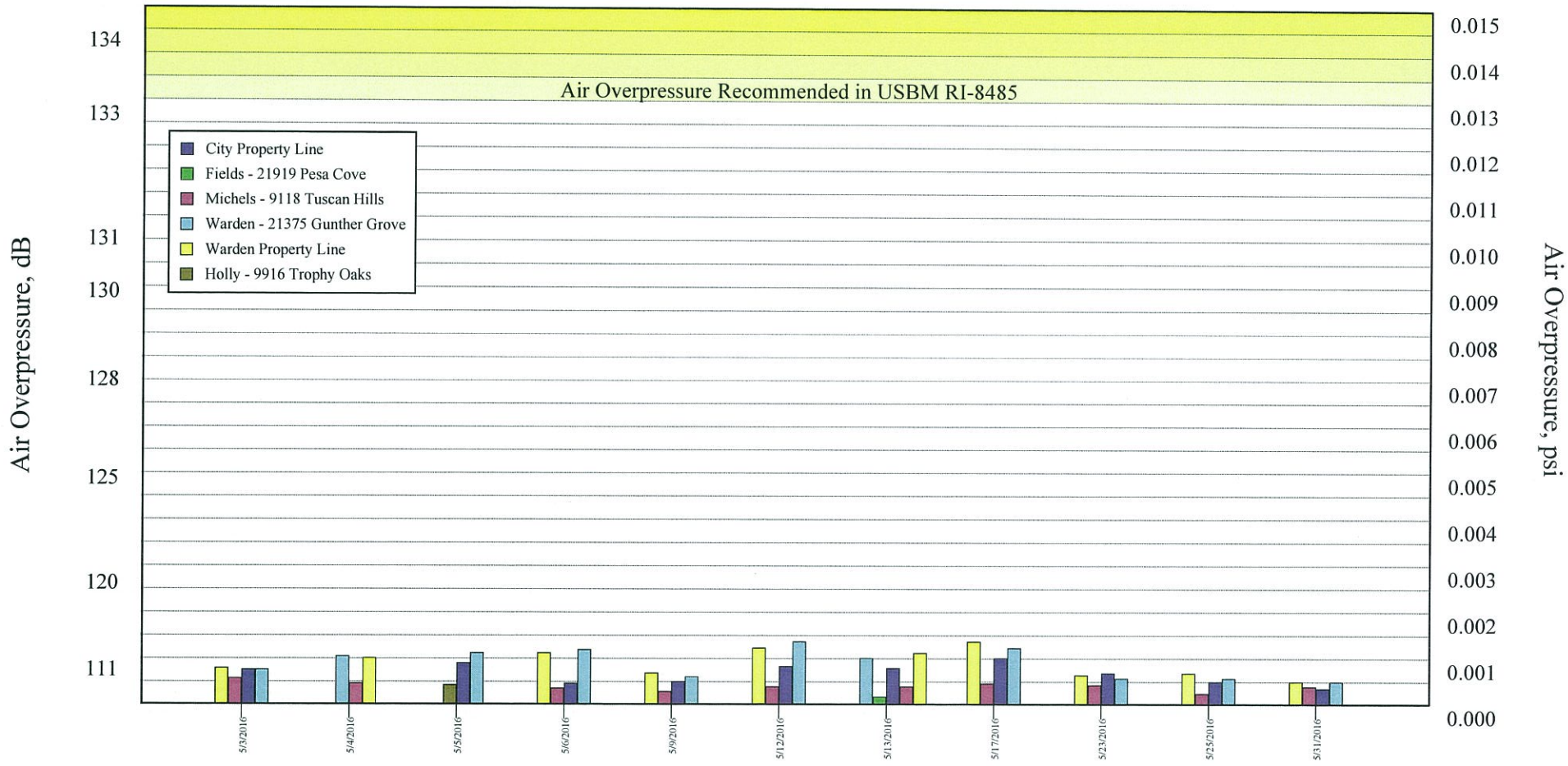
Comparison of Measured Blast Vibrations to Current U.S. Bureau of Mines Recommendations
Quarry Commission
Garden Ridge
May 2016



Air Overpressure Levels from
Quarry Commission
Garden Ridge
May 2016



GARDEN RIDGE QUARRY COMMISSION
GARDEN RIDGE, TEXAS
MONTH OF MAY 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
05/03/16	05-03-16 3E	N 29° 38' 54.9" W 098° 17' 37.2"	CLEAR 65° NE 12	11:46	0.030	12.0	108.4	400	793.00	3,588	City Property Line
05/03/16	05-03-16 3E	N 29° 38' 54.9" W 098° 17' 37.2"	CLEAR 65° NE 12	11:46	NT	NT	NT	400	793.00	8,308	Fields - 21919 Pesa Cove
05/03/16	05-03-16 3E	N 29° 38' 54.9" W 098° 17' 37.2"	CLEAR 65° NE 12	11:46	0.045	13.0	106.0	400	793.00	3,730	Michels - 9118 Tuscan Hills
05/03/16	05-03-16 3E	N 29° 38' 54.9" W 098° 17' 37.2"	CLEAR 65° NE 12	11:46	0.060	12.0	108.4	400	793.00	3,242	Warden - 21375 Gunther Grove
05/03/16	05-03-16 3E	N 29° 38' 54.9" W 098° 17' 37.2"	CLEAR 65° NE 12	11:46	0.035	11.0	108.8	400	793.00	3,034	Warden Property Line
05/04/16	05-04-16 5A	N 29° 39' 04.8" W 098° 17' 17.8"	PT CLOUDY 81° W 9	12:28	NT	NT	NT	912	663.00	5,330	City Property Line
05/04/16	05-04-16 5A	N 29° 39' 04.8" W 098° 17' 17.8"	PT CLOUDY 81° W 9	12:28	NT	NT	NT	912	663.00	10,256	Fields - 21919 Pesa Cove
05/04/16	05-04-16 5A	N 29° 39' 04.8" W 098° 17' 17.8"	PT CLOUDY 81° W 9	12:28	0.040	12.0	104.2	912	663.00	5,580	Michels - 9118 Tuscan Hills
05/04/16	05-04-16 5A	N 29° 39' 04.8" W 098° 17' 17.8"	PT CLOUDY 81° W 9	12:28	0.080	10.0	111.2	912	663.00	4,665	Warden - 21375 Gunther Grove
05/04/16	05-04-16 5A	N 29° 39' 04.8" W 098° 17' 17.8"	PT CLOUDY 81° W 9	12:28	0.060	13.0	110.9	912	663.00	4,444	Warden Property Line
05/05/16	05-05-16 S Wall A	N 29° 38' 15.9" W 098° 16' 40.9"	CLEAR 84° SE 5	12:42	0.020	7.6	109.9	1050	962.00	6,472	City Property Line
05/05/16	05-05-16 S Wall A	N 29° 38' 15.9" W 098° 16' 40.9"	CLEAR 84° SE 5	12:42	NT	NT	NT	1050	962.00	12,897	Fields - 21919 Pesa Cove
05/05/16	05-05-16 S Wall A	N 29° 38' 15.9" W 098° 16' 40.9"	CLEAR 84° SE 5	12:42	0.080	11.0	103.5	1050	962.00	3,973	Holly - 9916 Trophy Oaks
05/05/16	05-05-16 S Wall A	N 29° 38' 15.9" W 098° 16' 40.9"	CLEAR 84° SE 5	12:42	NT	NT	NT	1050	962.00	9,417	Michels - 9118 Tuscan Hills
05/05/16	05-05-16 S Wall A	N 29° 38' 15.9" W 098° 16' 40.9"	CLEAR 84° SE 5	12:42	0.060	20.0	111.8	1050	962.00	5,225	Warden - 21375 Gunther Grove
05/06/16	05-06-16 1B	N 29° 38' 33.9" W 098° 17' 33.2"	CLEAR 78° SE 7	11:21	0.035	12.0	104.2	496	225.00	2,157	City Property Line

NT = No Trigger, <0.020 ips.
NT = No Trigger, <122dB

GARDEN RIDGE QUARRY COMMISSION
GARDEN RIDGE, TEXAS
MONTH OF MAY 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
05/06/16	05-06-16 1B	N 29° 38' 33.9" W 098° 17' 33.2"	CLEAR 78° SE 7	11:21	NT	NT	NT	496	225.00	8,242	Fields - 21919 Pesa Cove
05/06/16	05-06-16 1B	N 29° 38' 33.9" W 098° 17' 33.2"	CLEAR 78° SE 7	11:21	0.035	8.0	101.9	496	225.00	4,465	Michels - 9118 Tuscan Hills
05/06/16	05-06-16 1B	N 29° 38' 33.9" W 098° 17' 33.2"	CLEAR 78° SE 7	11:21	0.235	14.0	112.3	496	225.00	1,256	Warden - 21375 Gunther Grove
05/06/16	05-06-16 1B	N 29° 38' 33.9" W 098° 17' 33.2"	CLEAR 78° SE 7	11:21	0.285	20.0	111.8	496	225.00	1,037	Warden Property Line
05/09/16	05-09-16 3C	N 29° 38' 45.4" W 098° 17' 36.5"	CLOUDY 76° SW 13	12:05	0.050	20.0	104.9	660	1001.00	2,782	City Property Line
05/09/16	05-09-16 3C	N 29° 38' 45.4" W 098° 17' 36.5"	CLOUDY 76° SW 13	12:05	NT	NT	NT	660	1001.00	8,115	Fields - 21919 Pesa Cove
05/09/16	05-09-16 3C	N 29° 38' 45.4" W 098° 17' 36.5"	CLOUDY 76° SW 13	12:05	0.085	7.2	100.0	660	1001.00	3,837	Michels - 9118 Tuscan Hills
05/09/16	05-09-16 3C	N 29° 38' 45.4" W 098° 17' 36.5"	CLOUDY 76° SW 13	12:05	0.185	27.0	106.5	660	1001.00	2,301	Warden - 21375 Gunther Grove
05/09/16	05-09-16 3C	N 29° 38' 45.4" W 098° 17' 36.5"	CLOUDY 76° SW 13	12:05	0.115	22.0	107.5	660	1001.00	2,089	Warden Property Line
05/12/16	05-12-16 Lower 6	N 29° 38' 50.1" W 098° 17' 09.4"	CLOUDY 78° NE 10	12:23	0.020	9.1	109.2	610	470.00	4,812	City Property Line
05/12/16	05-12-16 Lower 6	N 29° 38' 50.1" W 098° 17' 09.4"	CLOUDY 78° NE 10	12:23	NT	NT	NT	610	470.00	10,546	Fields - 21919 Pesa Cove
05/12/16	05-12-16 Lower 6	N 29° 38' 50.1" W 098° 17' 09.4"	CLOUDY 78° NE 10	12:23	0.035	14.0	102.8	610	470.00	6,170	Michels - 9118 Tuscan Hills
05/12/16	05-12-16 Lower 6	N 29° 38' 50.1" W 098° 17' 09.4"	CLOUDY 78° NE 10	12:23	0.135	18.0	113.5	610	470.00	3,848	Warden - 21375 Gunther Grove
05/12/16	05-12-16 Lower 6	N 29° 38' 50.1" W 098° 17' 09.4"	CLOUDY 78° NE 10	12:23	0.095	20.0	112.6	610	470.00	3,642	Warden Property Line
05/13/16	05-13-16 4A	N 29° 38' 58.2" W 098° 17' 36.8"	PT CLOUDY 85° E 7	13:38	0.040	34.0	108.8	1157	700.00	3,909	City Property Line
05/13/16	05-13-16 4A	N 29° 38' 58.2" W 098° 17' 36.8"	PT CLOUDY 85° E 7	13:38	0.020	21.0	95.9	1157	700.00	8,454	Fields - 21919 Pesa Cove

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GARDEN RIDGE QUARRY COMMISSION
GARDEN RIDGE, TEXAS
MONTH OF MAY 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
05/13/16	05-13-16 4A	N 29° 38' 58.2" W 098° 17' 36.8"	PT CLOUDY 85° E 7	13:38	0.070	13.0	102.8	1157	700.00	3,806	Michels - 9118 Tuscan Hills
05/13/16	05-13-16 4A	N 29° 38' 58.2" W 098° 17' 36.8"	PT CLOUDY 85° E 7	13:38	0.140	11.0	110.9	1157	700.00	3,578	Warden - 21375 Gunther Grove
05/13/16	05-13-16 4A	N 29° 38' 58.2" W 098° 17' 36.8"	PT CLOUDY 85° E 7	13:38	0.080	19.0	111.8	1157	700.00	3,370	Warden Property Line
05/17/16	05-17-16 3B	N 29° 38' 40.4" W 098° 17' 35.9"	CLOUDY 75° E 7	13:07	0.070	8.7	110.9	1118	598.00	2,403	City Property Line
05/17/16	05-17-16 3B	N 29° 38' 40.4" W 098° 17' 35.9"	CLOUDY 75° E 7	13:07	NT	NT	NT	1118	598.00	8,075	Fields - 21919 Pesa Cove
05/17/16	05-17-16 3B	N 29° 38' 40.4" W 098° 17' 35.9"	CLOUDY 75° E 7	13:07	0.105	7.3	104.2	1118	598.00	4,009	Michels - 9118 Tuscan Hills
05/17/16	05-17-16 3B	N 29° 38' 40.4" W 098° 17' 35.9"	CLOUDY 75° E 7	13:07	0.365	10.0	112.6	1118	598.00	1,800	Warden - 21375 Gunther Grove
05/17/16	05-17-16 3B	N 29° 38' 40.4" W 098° 17' 35.9"	CLOUDY 75° E 7	13:07	0.295	23.0	113.5	1118	598.00	1,584	Warden Property Line
05/23/16	05-23-16 3C	N 29° 38' 54.4" W 098° 17' 37.9"	CLOUDY 82° SE 11	13:38	0.030	14.0	107.5	460	819.00	3,517	City Property Line
05/23/16	05-23-16 3C	N 29° 38' 54.4" W 098° 17' 37.9"	CLOUDY 82° SE 11	13:38	NT	NT	NT	460	819.00	8,234	Fields - 21919 Pesa Cove
05/23/16	05-23-16 3C	N 29° 38' 54.4" W 098° 17' 37.9"	CLOUDY 82° SE 11	13:38	0.050	27.0	103.5	460	819.00	3,665	Michels - 9118 Tuscan Hills
05/23/16	05-23-16 3C	N 29° 38' 54.4" W 098° 17' 37.9"	CLOUDY 82° SE 11	13:38	0.100	11.0	106.0	460	819.00	3,187	Warden - 21375 Gunther Grove
05/23/16	05-23-16 3C	N 29° 38' 54.4" W 098° 17' 37.9"	CLOUDY 82° SE 11	13:38	0.070	16.0	107.0	460	819.00	2,981	Warden Property Line
05/25/16	05-25-16 4B	N 29° 39' 02" W 098° 17' 35.2"	CLOUDY 81° S 14	11:08	0.035	11.0	104.9	632	767.00	4,319	City Property Line
05/25/16	05-25-16 4B	N 29° 39' 02" W 098° 17' 35.2"	CLOUDY 81° S 14	11:08	NT	NT	NT	632	767.00	8,727	Fields - 21919 Pesa Cove
05/25/16	05-25-16 4B	N 29° 39' 02" W 098° 17' 35.2"	CLOUDY 81° S 14	11:08	0.055	32.0	98.8	632	767.00	4,024	Michels - 9118 Tuscan Hills

NT = No Trigger, <0.020 ips.
NT = No Trigger, <122dB

GARDEN RIDGE QUARRY COMMISSION
GARDEN RIDGE, TEXAS
MONTH OF MAY 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
05/25/16	05-25-16 4B	N 29° 39' 02" W 098° 17' 35.2"	CLOUDY 81° S 14	11:08	0.070	14.0	106.0	632	767.00	3,975	Warden - 21375 Gunther Grove
05/25/16	05-25-16 4B	N 29° 39' 02" W 098° 17' 35.2"	CLOUDY 81° S 14	11:08	0.050	13.0	107.5	632	767.00	3,764	Warden Property Line
05/31/16	05-31-16 3C	N 29° 38' 44" W 098° 17' 36"	CLOUDY 85° SE 15	13:19	0.040	10.0	101.9	968	540.00	2,682	City Property Line
05/31/16	05-31-16 3C	N 29° 38' 44" W 098° 17' 36"	CLOUDY 85° SE 15	13:19	NT	NT	NT	968	540.00	8,128	Fields - 21919 Pesa Cove
05/31/16	05-31-16 3C	N 29° 38' 44" W 098° 17' 36"	CLOUDY 85° SE 15	13:19	0.050	11.0	102.8	968	540.00	3,909	Michels - 9118 Tuscan Hills
05/31/16	05-31-16 3C	N 29° 38' 44" W 098° 17' 36"	CLOUDY 85° SE 15	13:19	0.135	27.0	104.9	968	540.00	2,157	Warden - 21375 Gunther Grove
05/31/16	05-31-16 3C	N 29° 38' 44" W 098° 17' 36"	CLOUDY 85° SE 15	13:19	0.140	26.0	104.9	968	540.00	1,943	Warden Property Line

NT = No Trigger, <0.020 ips.
NT = No Trigger, <122dB

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date May 3, 2016 Blast No. 05-03-16 3E Time 11:46

Exact Blast Location 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

N: 29° 38' 54.9"
W: 98° 17' 37.2"

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 3538 ft.

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

Peak Particle Velocity .030 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/3/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 11:46:46 May 3, 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
Range	Geo :10.00 in/s	**Calibration**	July 16, 2015 by Vibra-Tech Inc.
Record Time	10.0 sec at 1024 sps	**File Name**	H191GCRC.PY1

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

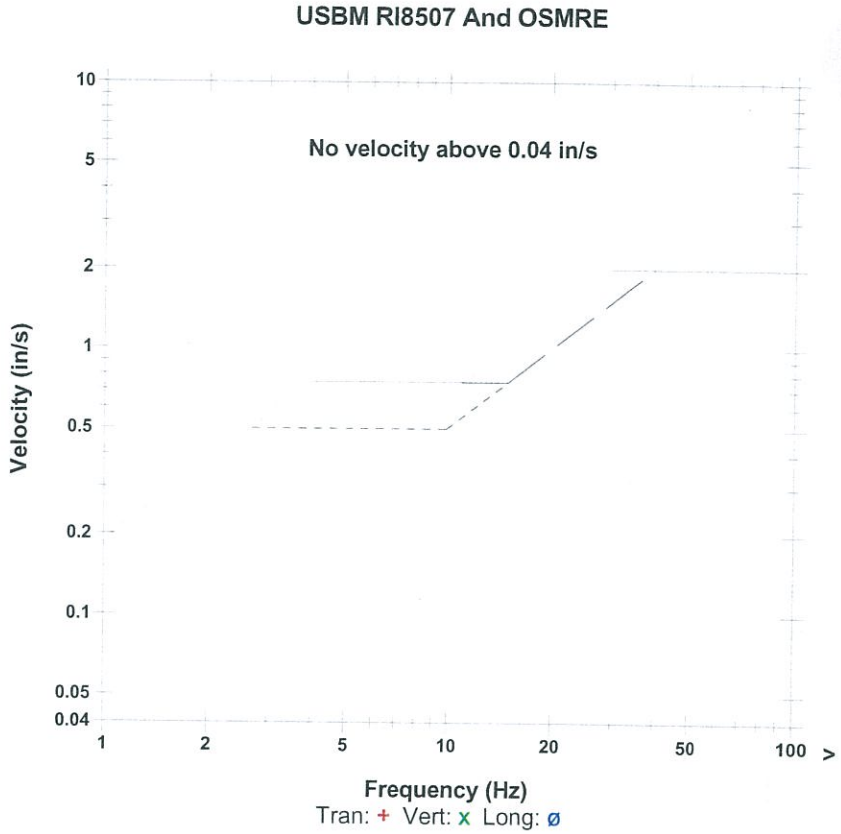
Extended Notes

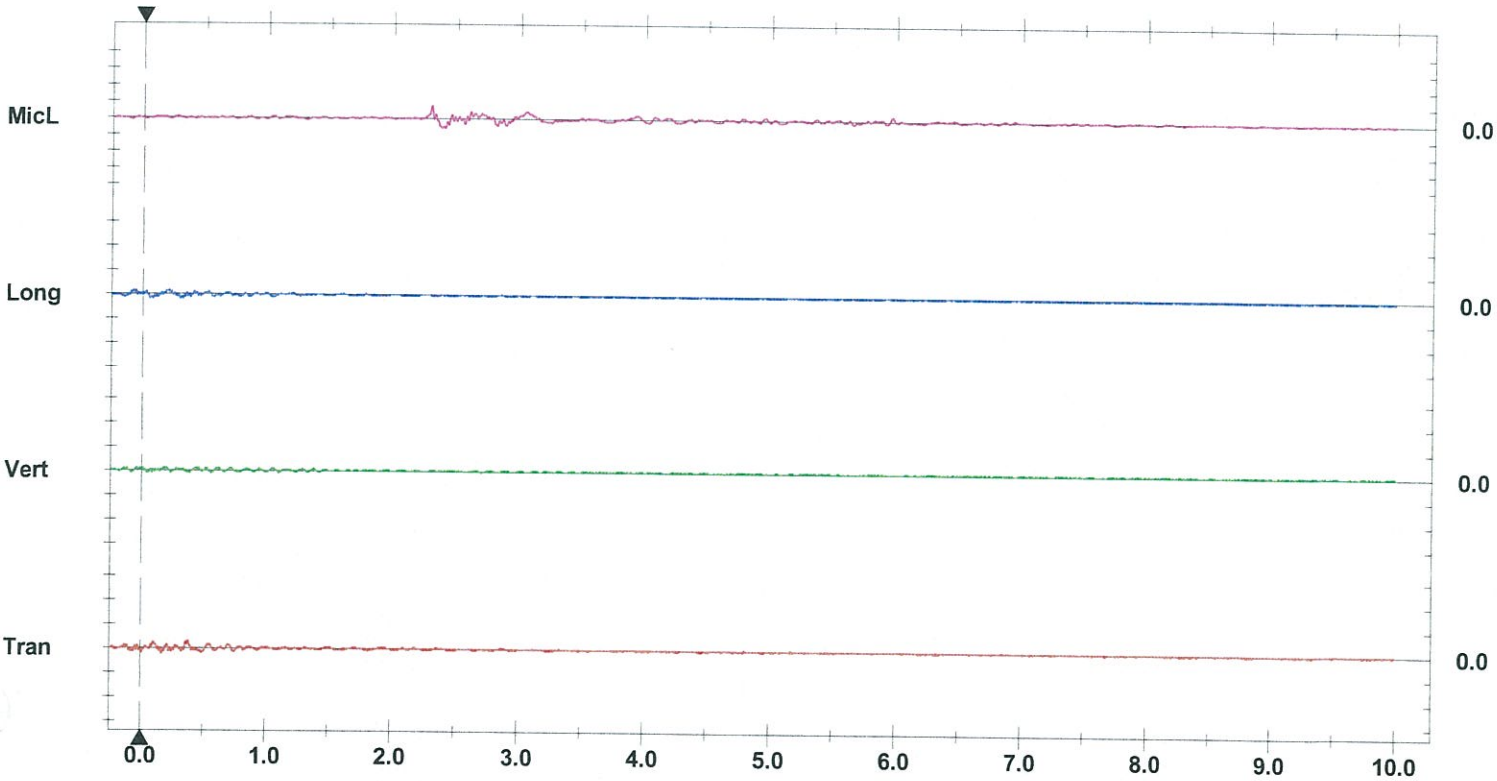
Post Event Notes
City Property Line
3588 ft.

Microphone Linear Weighting
PSPL 108.4 dB(L) at 2.295 sec
ZC Freq 7.8 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 581 mv)

	Tran	Vert	Long	
PPV	0.0300	0.01000	0.0200	in/s
ZC Freq	12	>100	12	Hz
Time (Rel. to Trig)	0.375	-0.142	0.054	sec
Peak Acceleration	0.0133	0.0265	0.0265	g
Peak Displacement	0.00039	0.00008	0.00031	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0320 in/s at 0.375 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 May 3, 2016 Blast No. 05-03-16 3E Time 11:46 AM

Exact Blast Location 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

N: 29° 38' 54.9"
W: 98° 17' 37.2"

MONITOR GPS

N 29° 38' 28.71"
W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 8308 ft.

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

Peak Particle Velocity NT ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/3/16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 3 '16 10:05:09		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 3 '16 10:05:12	May 3 '16 10:05:22	Event recorded. Trigger Vert: 0.0200 in/s
May 3 '16 10:05:22	May 3 '16 12:40:14	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Hanson Servtex 05-03-16 3E
Fields Residence
Non-Trigger
Shot at 11:46 am

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date May 3, 2016 Blast No. 05-03-16 3E Time 11:46 AM

Exact Blast Location 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

N: 29° 38' 54.9"
W: 98° 17' 37.2"

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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3730 ft.

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

Peak Particle Velocity .045 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/3/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:46:46 May 3, 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	L626GCRC.PY1

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

Extended Notes

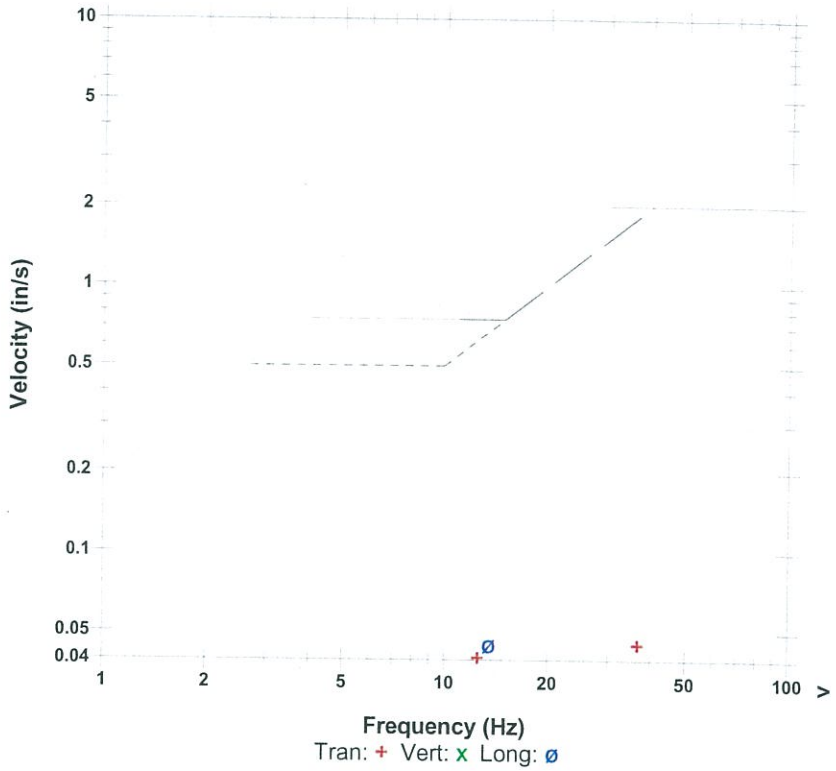
Post Event Notes
Michels Residence
3730 ft

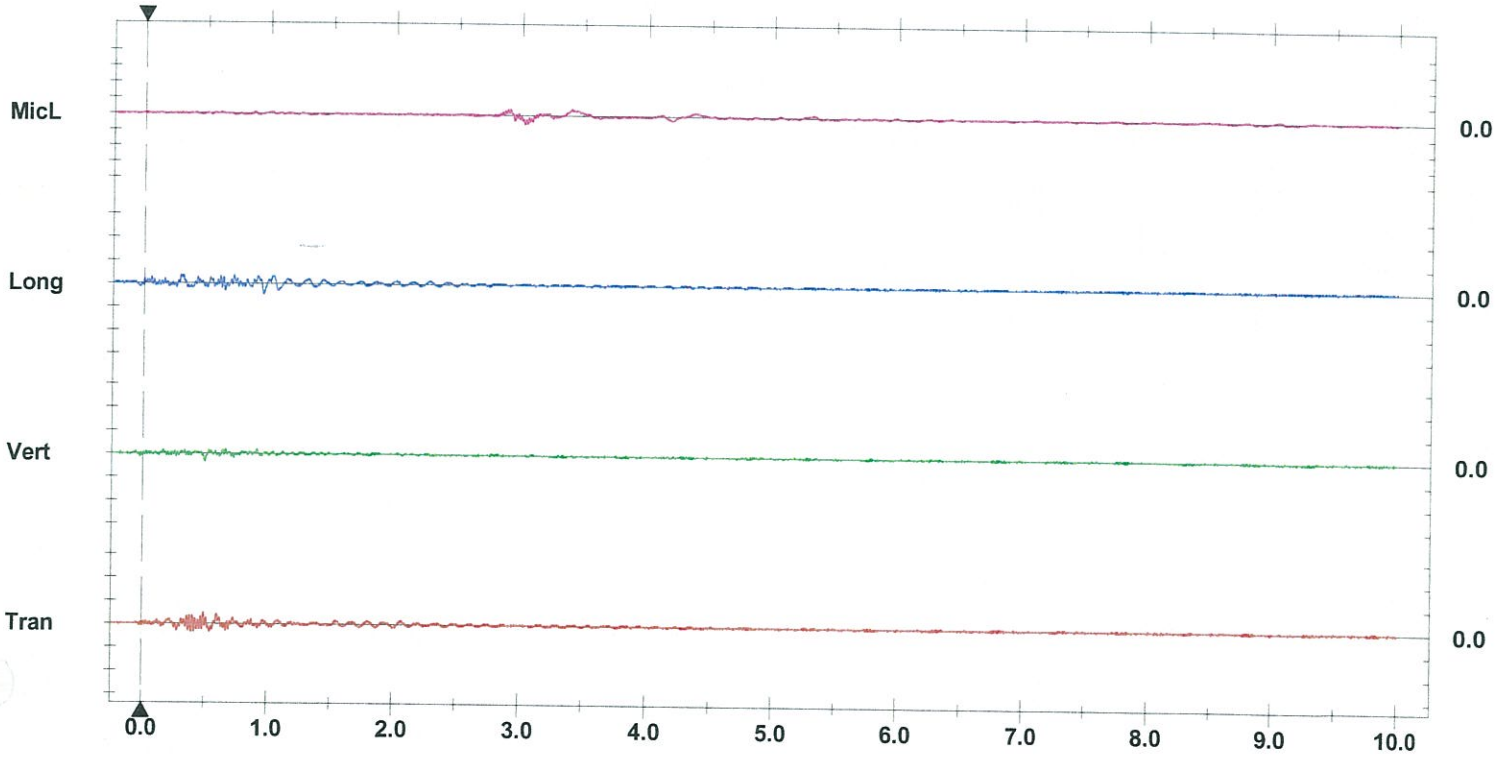
Microphone	Linear Weighting
PSPL	106.0 dB(L) at 3.015 sec
ZC Freq	4.3 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 680 mv)

	Tran	Vert	Long	
PPV	0.0450	0.0350	0.0450	in/s
ZC Freq	37	15	13	Hz
Time (Rel. to Trig)	0.495	0.495	0.954	sec
Peak Acceleration	0.0398	0.0265	0.0265	g
Peak Displacement	0.00047	0.00030	0.00050	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0579 in/s at 0.497 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 May 3, 2016 Blast No. 05-03-16 3E Time 11:46 AM

Exact Blast Location 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

N: 29° 38' 54.9"
W: 98° 17' 37.2"

MONITOR GPS

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

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 3242 ft.

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

Peak Particle Velocity .060 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/3/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 11:46:47 May 3, 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	BF13138 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	February 23, 2016 by Vibra-Tech Inc.
File Name	O138GCRC.PZ1

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

Extended Notes

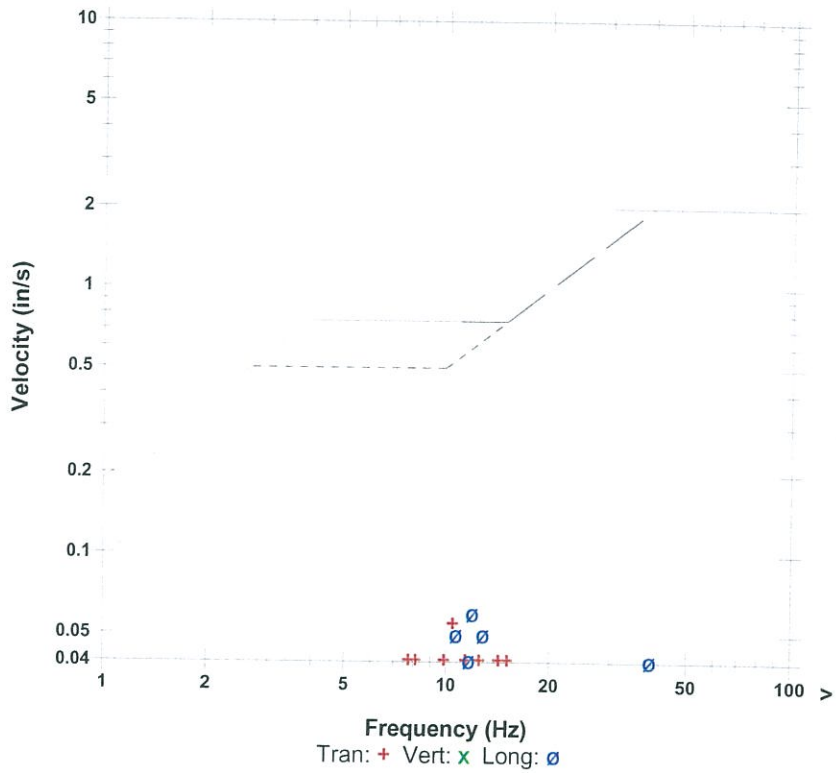
Post Event Notes
Warden Residence
3242 ft.

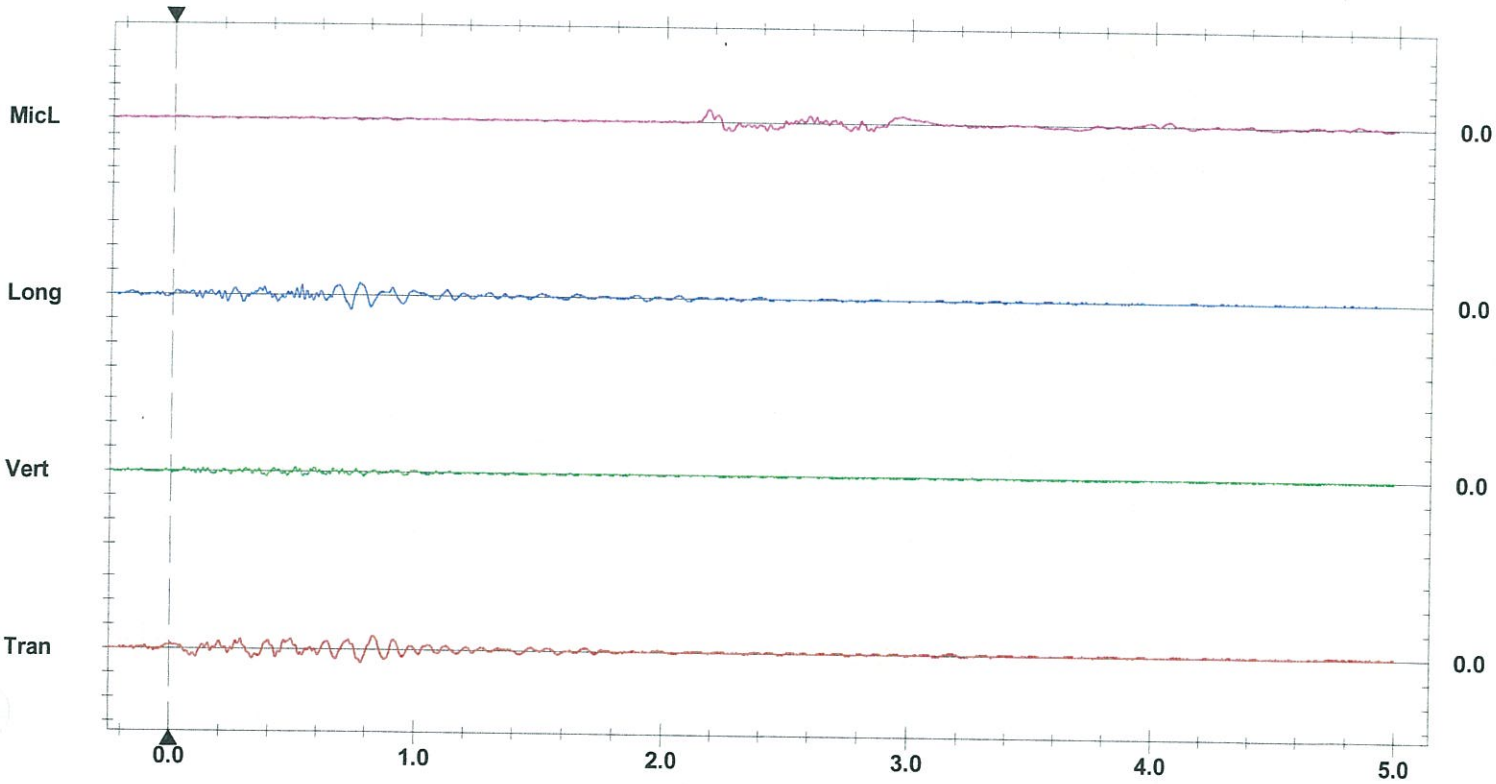
Microphone	Linear Weighting
PSPL	108.4 dB(L) at 2.172 sec
ZC Freq	5.8 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 567 mv)

	Tran	Vert	Long	
PPV	0.0550	0.0200	0.0600	in/s
ZC Freq	10	16	12	Hz
Time (Rel. to Trig)	0.778	0.384	0.724	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00086	0.00021	0.00076	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0711 in/s at 0.724 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 May 3, 2016 Blast No. 05-03-16 3E Time 11:46

Exact Blast Location 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

N: 29° 38' 54.9"
W: 98° 17' 37.2"

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 3034 ft.

Peak Overpressure 108.8 dB Scaled Distance ------

Peak Particle Velocity 0.035 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/7/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:46:46 May 3, 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	O922GCRC.PY1

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

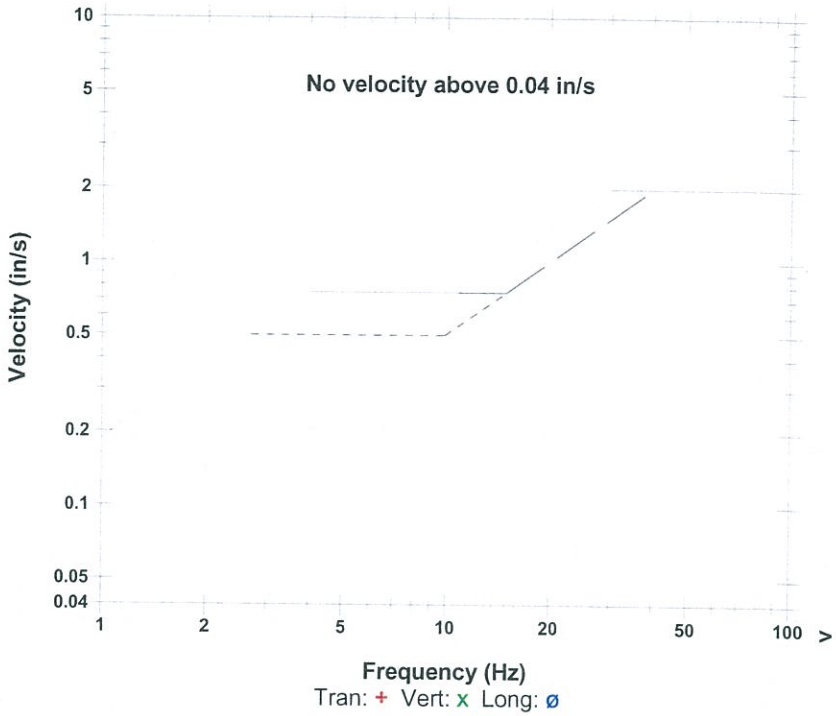
Post Event Notes
Warden Property Line
3034 ft.

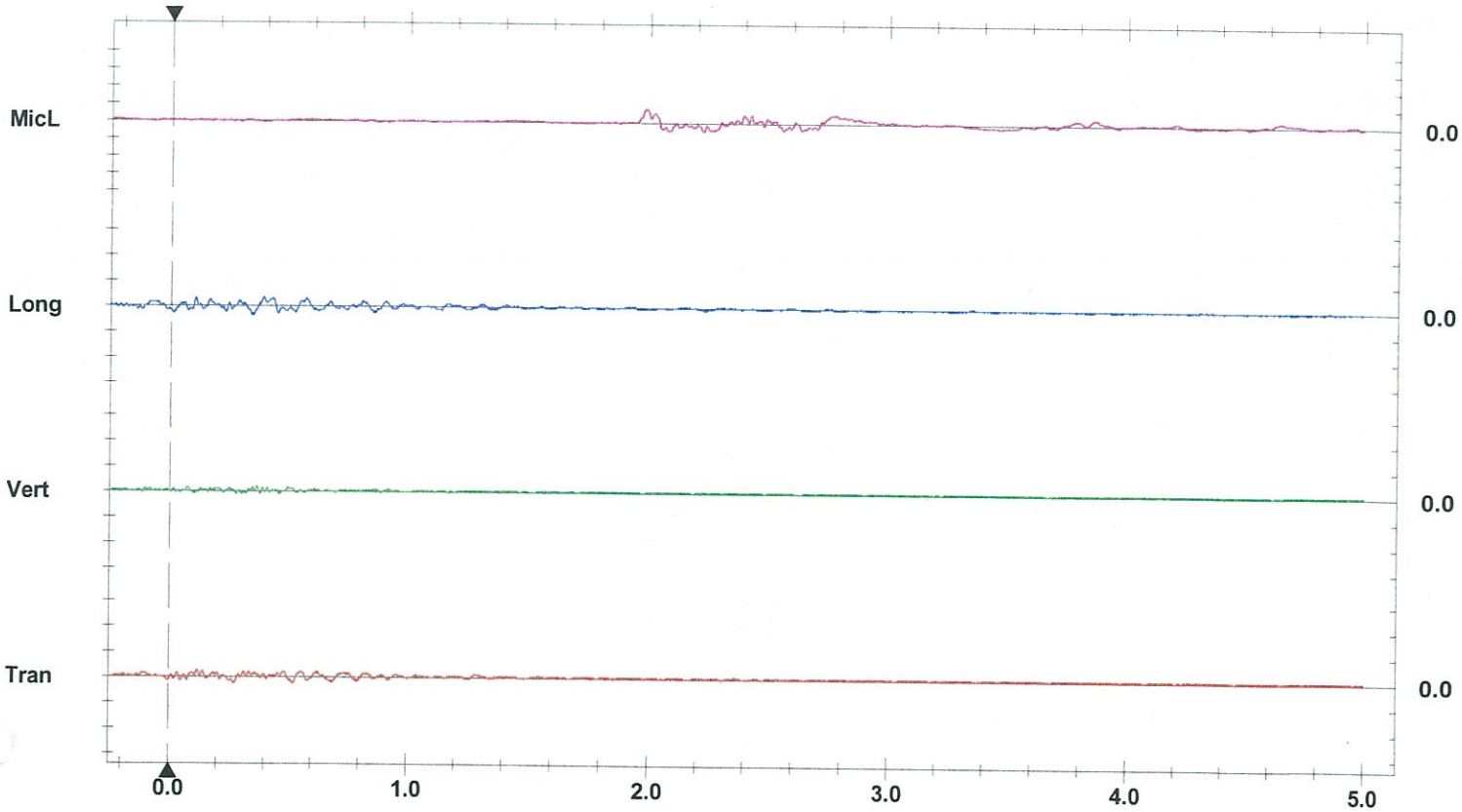
Microphone	Linear Weighting
PSPL	108.8 dB(L) at 1.978 sec
ZC Freq	5.6 Hz
Channel Test	Passed (Freq = 20.5 Hz Amp = 521 mv)

	Tran	Vert	Long	
PPV	0.0250	0.0200	0.0350	in/s
ZC Freq	27	43	11	Hz
Time (Rel. to Trig)	0.117	0.365	0.336	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00034	0.00015	0.00070	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0403 in/s at 0.336 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 May 4, 2016 Blast No. 05 04 16 5A Time 12:28

Exact Blast Location 5A

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' 04.8"
W: 98° 17' 17.8"

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 5330 ft.

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

Peak Particle Velocity NT ips Operator Clayford Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/4/16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BD6191
May 4 '16 10:04:53		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 4 '16 10:04:55	May 4 '16 10:05:05	Event recorded. Trigger Vert: 0.0200 in/s
May 4 '16 10:05:05	May 4 '16 13:02:11	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Hanson Servtex 05-04-16 SH
Shot at 12:28
City Property Line - 5330 ft.
Non-Trigger

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date May 4, 2016 Blast No. 05 04 16 5A Time 12:28

Exact Blast Location 5A

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' 04.8"
W: 98° 17' 17.8"

MONITOR GPS

N 29° 38' 28.71"
W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 10256 ft

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

Peak Particle Velocity NT ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/4/16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 4 '16 10:17:13		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 4 '16 10:17:17	May 4 '16 10:17:27	Event recorded. Trigger Vert: 0.0200 in/s
May 4 '16 10:17:27	May 4 '16 12:45:17	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Hanson Servtex 05-04-16 5A
Shot at 12:28
Fields Residence - 10256 ft.
Non-Trigger

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date May 4, 2016 Blast No. 05 04 16 TH Time 12:28

Exact Blast Location TH

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' 04.8"

W: 98° 17' 17.8"

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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 5530 ft.

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

Peak Particle Velocity 0.040 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/4/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:28:01 May 4, 2016	**Serial Number**	BB10626 V 7.04-8.0 EVERLERT III
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	July 21, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	L626GCT9.AP1
Record Time	10.0 sec at 1024 sps		
Job Number:	1		

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

Extended Notes

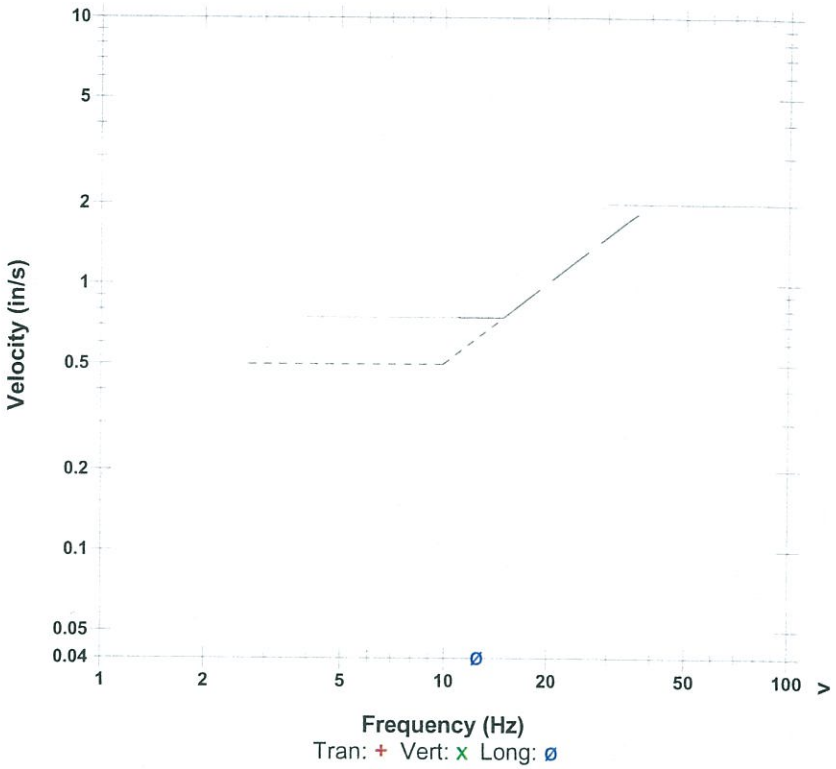
Post Event Notes
Michels Residence
5580 ft to Blast

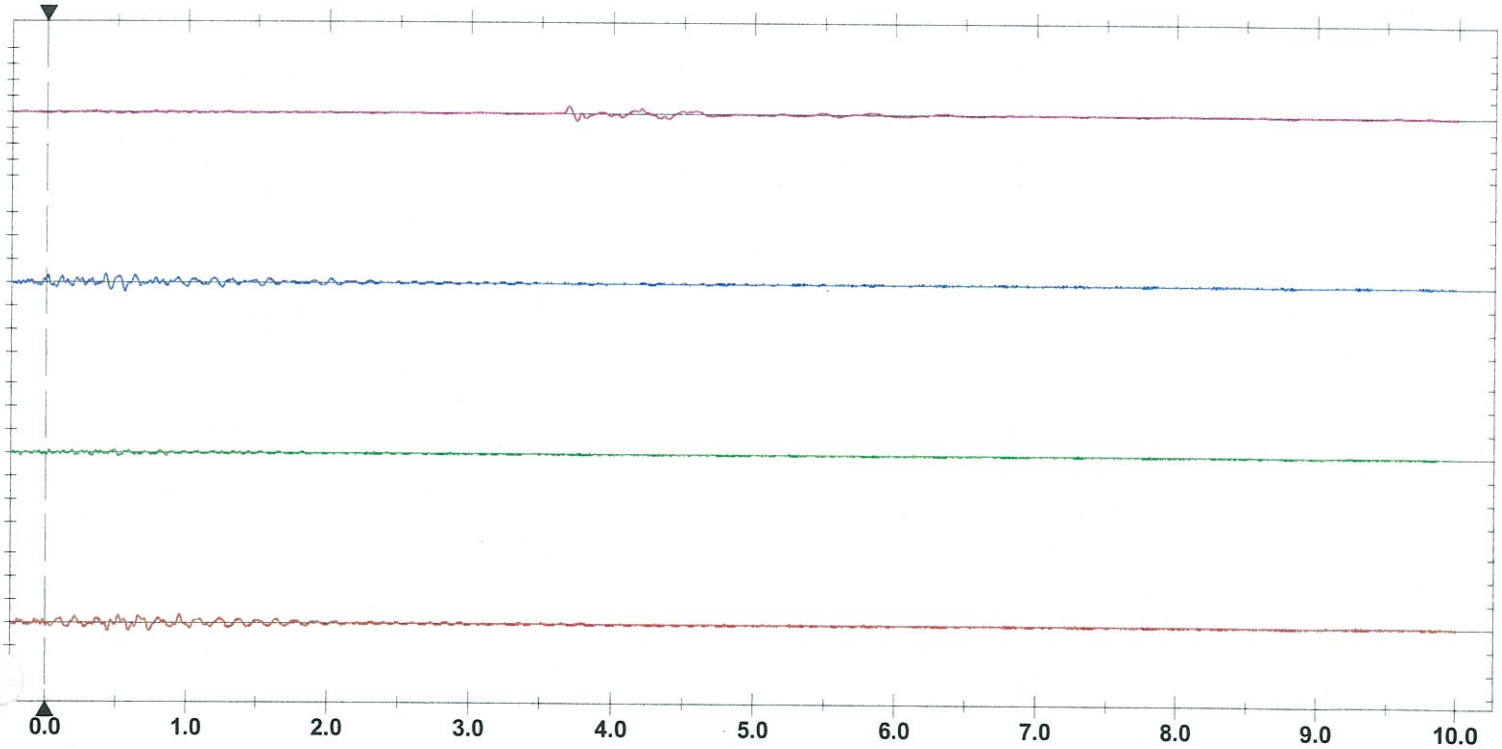
Microphone Linear Weighting
PSPL 104.2 dB(L) at 3.688 sec
ZC Freq 9.0 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 713 mv)

	Tran	Vert	Long	
PPV	0.0350	0.0150	0.0400	in/s
ZC Freq	17	43	12	Hz
Time (Rel. to Trig)	0.433	-0.182	0.551	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00057	0.00020	0.00052	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0433 in/s at 0.442 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 May 4, 2016 Blast No. 050416 5A Time 12:28

Exact Blast Location 5A

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' 04.8"
W: 98° 17' 17.8"

MONITOR GPS

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

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 4665 ft.

Peak Overpressure 111.2 dB Scaled Distance ------

Peak Particle Velocity 0.080 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/4/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:28:00 May 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	BF13138 V 7.04-8.0 MultiSeis Plus
Battery Level	6.4 Volts
Calibration	February 23, 2016 by Vibra-Tech Inc.
File Name	O138GCT9.AO1

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

Extended Notes

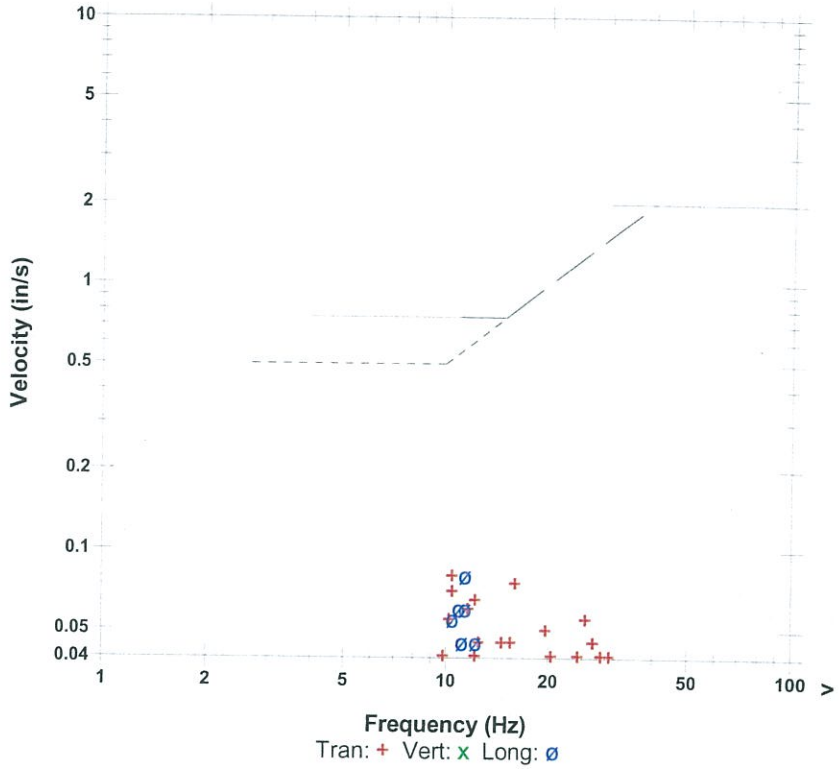
Post Event Notes
Warden Residence
4665 ft to Blast

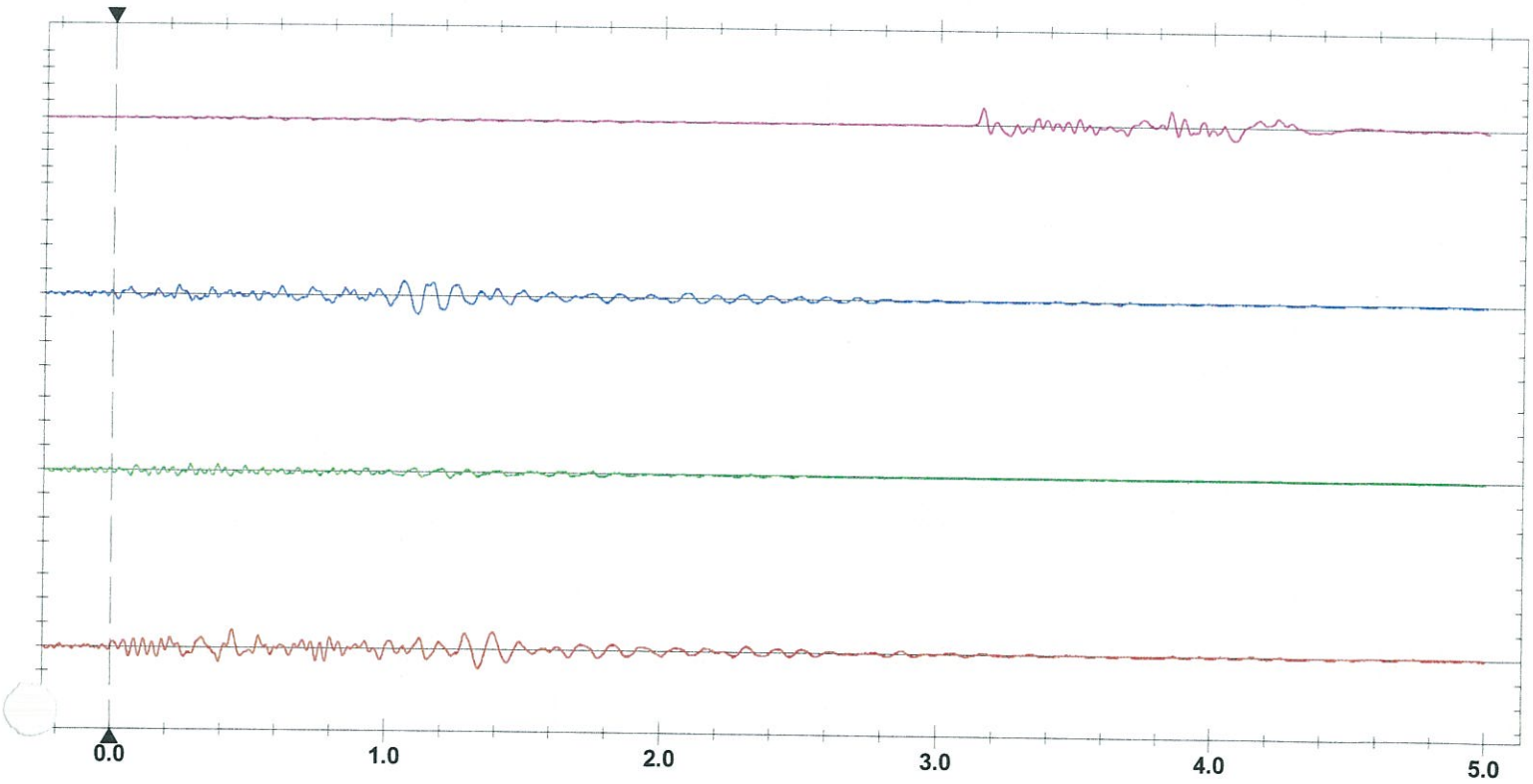
Microphone	Linear Weighting
PSPL	111.2 dB(L) at 3.153 sec
ZC Freq	12 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 530 mv)

	Tran	Vert	Long	
PPV	0.0800	0.0250	0.0800	in/s
ZC Freq	10	27	11	Hz
Time (Rel. to Trig)	1.337	0.064	1.108	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00123	0.00032	0.00118	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0838 in/s at 1.337 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 May 4, 2016 Blast No. 050416 5A Time 12:28

Exact Blast Location 5A

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' 04.8"
W: 98° 17' 17.8"

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 4444 ft

Peak Overpressure 110.9 dB Scaled Distance ----

Peak Particle Velocity 0.060 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/4/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:28:00 May 4, 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
Range	Geo :10.00 in/s	**Calibration**	November 22, 2015 by Vibra-Tech Inc.
Record Time	5.0 sec at 1024 sps	**File Name**	O922GCT9.AO1

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

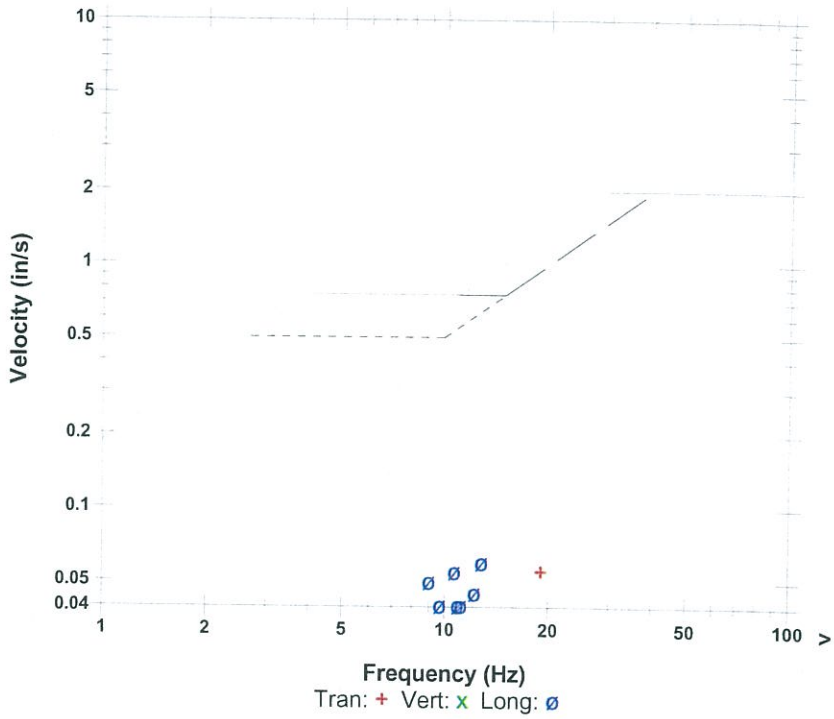
Post Event Notes
Warden Property Line
4444 ft to Blast

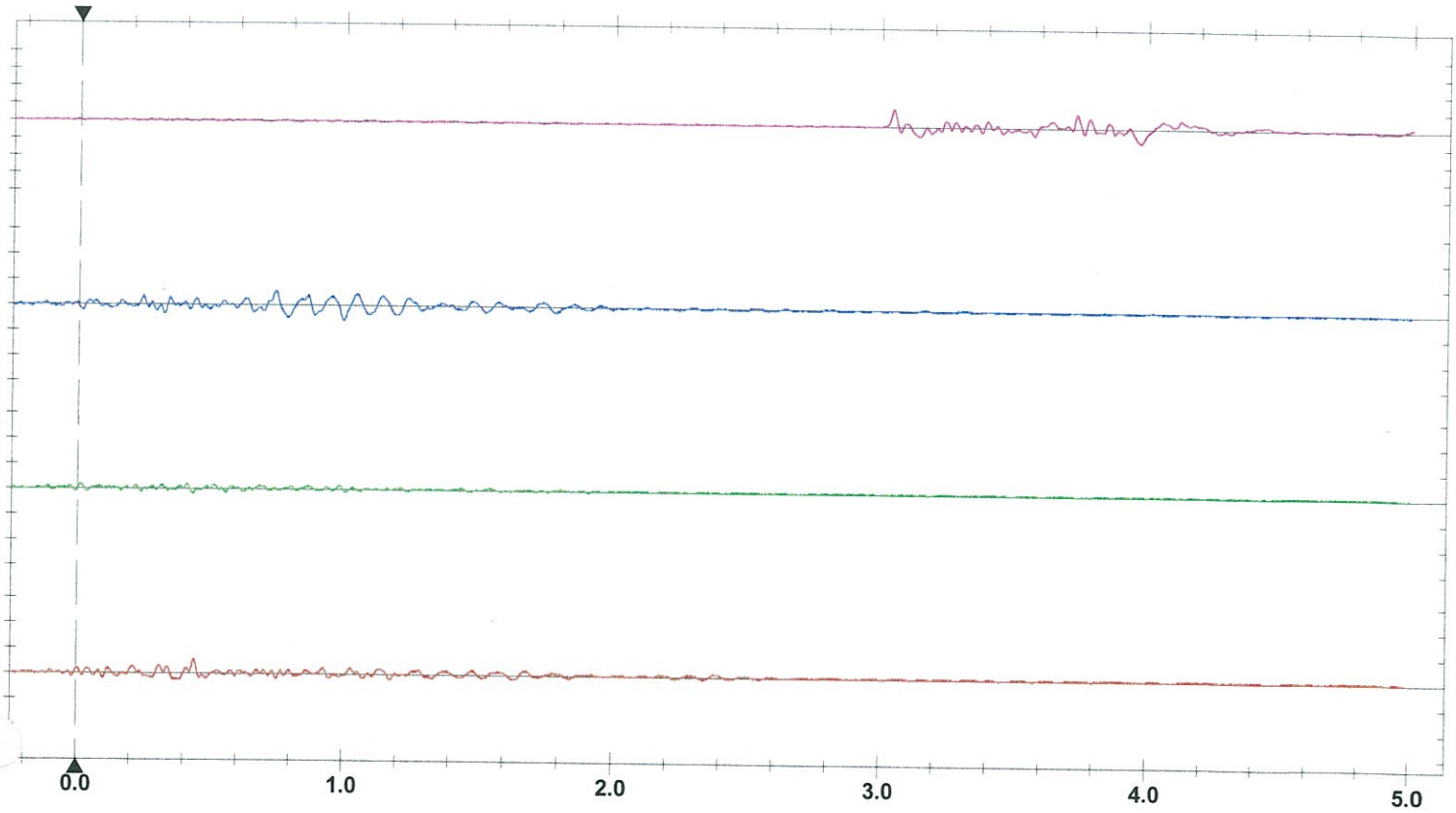
Microphone Linear Weighting
PSPL 110.9 dB(L) at 3.043 sec
ZC Freq 10 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 519 mv)

	Tran	Vert	Long	
PPV	0.0550	0.0200	0.0600	in/s
ZC Freq	19	27	13	Hz
Time (Rel. to Trig)	0.440	0.007	0.992	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00045	0.00017	0.00086	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0610 in/s at 0.992 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 5-5-16 Blast No. 5-5-16 S. WALL A Time 12:42

Exact Blast Location SOUTH WALL 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

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 15.9

W 98° 16 40.9

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 6,472'

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

Peak Particle Velocity 1.020 ips Operator DAVID GARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: D. [illegible] Date: 5-5-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:42:50 May 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	6.4 Volts
Calibration	July 16, 2015 by Vibra-Tech Inc.
File Name	H191GCV4.NE1

Notes

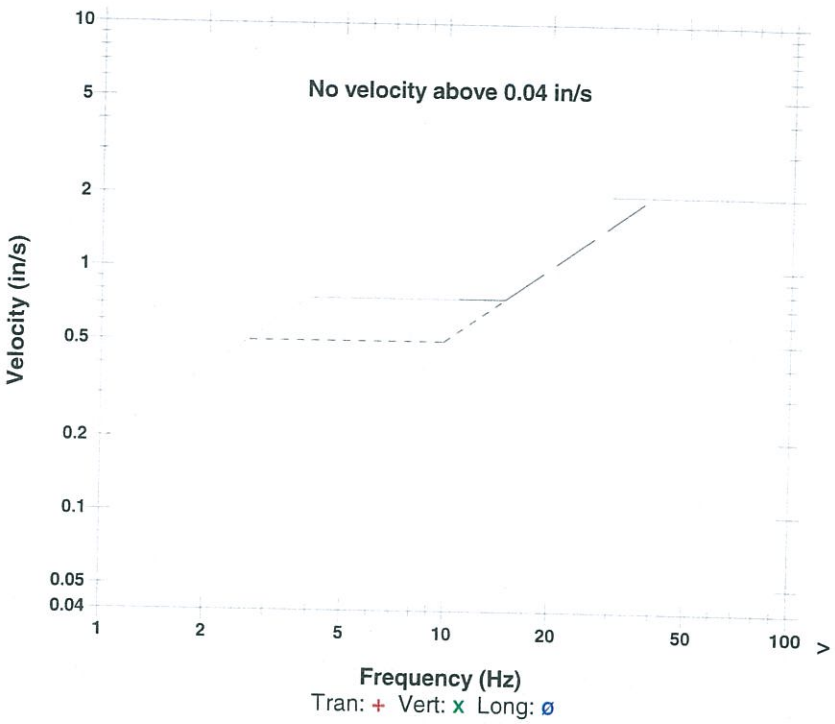
Post Event Notes
City Prop Line: 6,472'

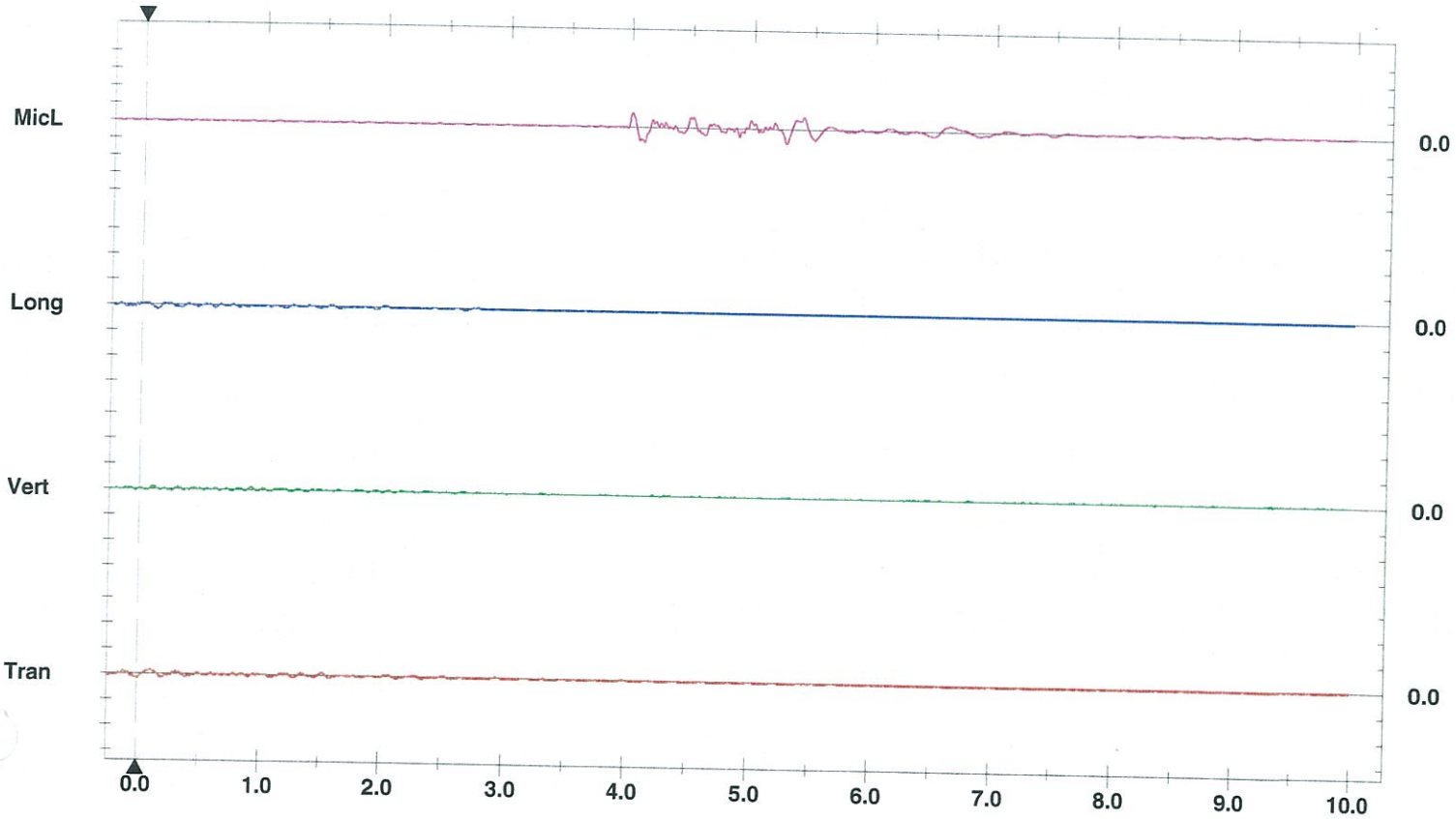
Microphone	Linear Weighting
PSPL	109.9 dB(L) at 4.107 sec
ZC Freq	4.5 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 601 mv)

	Tran	Vert	Long	
PPV	0.0200	0.01000	0.0200	in/s
ZC Freq	7.8	>100	7.6	Hz
Time (Rel. to Trig)	0.000	-0.038	0.113	sec
Peak Acceleration	0.0133	0.0133	0.0133	g
Peak Displacement	0.00045	0.00009	0.00043	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0269 in/s at 0.113 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: May 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 5-5-16 Blast No. 5-5-16 S. WALL A Time 12:42

Exact Blast Location SOUTH WALL 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

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 15.9
W 98° 16 40.9

MONITOR GPS

N 29° 38' 28.71"
W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 12,897

Peak Overpressure NA dB Scaled Distance ------

Peak Particle Velocity NT ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: D. [signature] Date: 5.5.16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 5 '16 11:12:53		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 5 '16 11:12:55	May 5 '16 11:13:05	Event recorded. Trigger Vert: 0.0200 in/s
May 5 '16 11:13:05	May 5 '16 13:06:30	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

FIELDS RES

5-5-16 S. WALL A

@ 12:42

NO TRIGGER

@ 12.847

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 5-5-16 Blast No. 5-5-16 S.WALL A Time 12:42

Exact Blast Location SOUTH WALL 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

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 15.9
W 98° 16 40.9

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 3,973'

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

Peak Particle Velocity .080 ips Operator DAVID LAENER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

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

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:42:15 May 5, 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**	L562GCV4.MF1
Record Time	5.0 sec at 1024 sps		

Notes

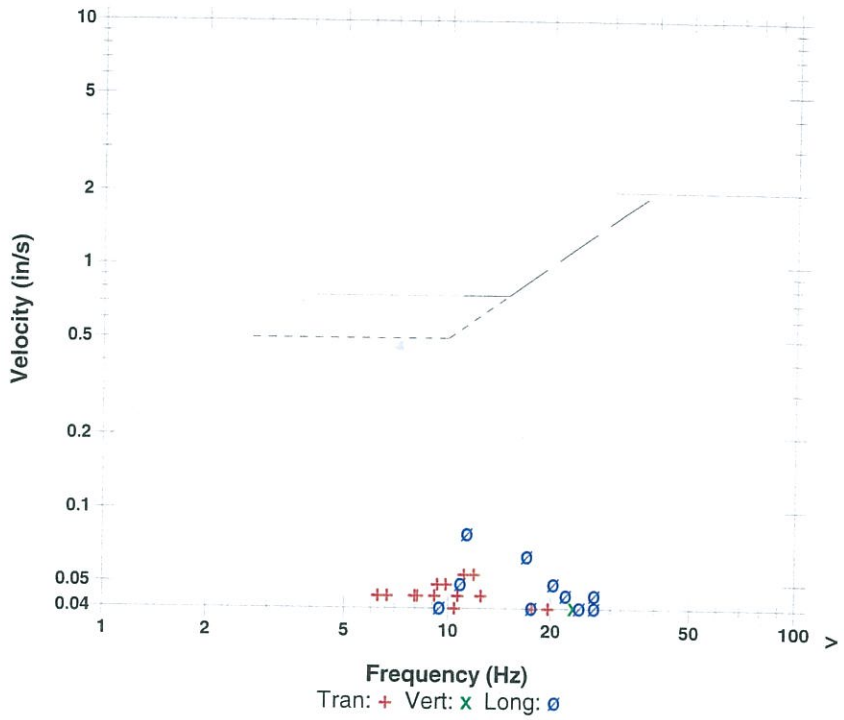
Post Event Notes
Holly Res: 3,973'

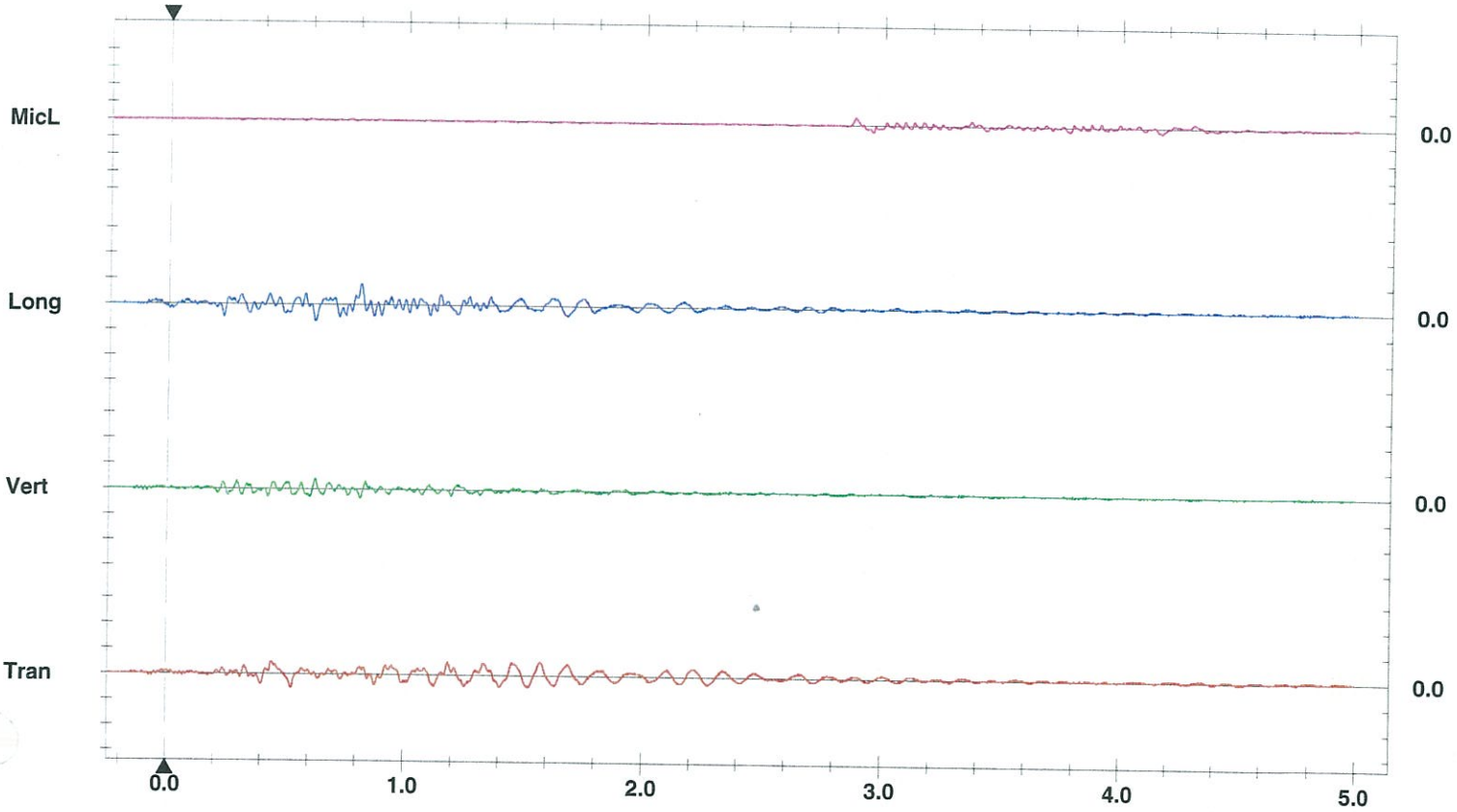
Microphone	Linear Weighting
PSPL	103.5 dB(L) at 2.874 sec
ZC Freq	14 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 551 mv)

	Tran	Vert	Long	
PPV	0.0550	0.0400	0.0800	in/s
ZC Freq	12	23	11	Hz
Time (Rel. to Trig)	0.527	0.621	0.808	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00088	0.00037	0.00092	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0896 in/s at 0.812 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 5·5·16 Blast No. 5·5·16 S.WALL A Time 12:42

Exact Blast Location SOUTH WALL 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

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 15.9

W 98° 16 40.9

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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 9,417'

Peak Overpressure NA dB Scaled Distance ------

Peak Particle Velocity NT ips Operator DAVID GARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

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

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BB10626
May 5 '16 11:04:37		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 5 '16 11:04:42	May 5 '16 11:04:52	Event recorded. Trigger Tran: 0.0200 in/s
May 5 '16 11:04:52	May 5 '16 13:12:59	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

MICHELS RES.

5-5-16 S. WALL A

@ 12:42

NO TRIGGER

@ 9,417

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 5-5-16 Blast No. 5-5-16 S.WALL A Time 12:42

Exact Blast Location SOUTH WALL 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

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' 23"
W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 5,225'

Peak Overpressure 111.8 dB Scaled Distance ------

Peak Particle Velocity .060 ips Operator DAVID LAPENETZ

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: D. [signature] Date: 5-5-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:42:53 May 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	BF13138 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	February 23, 2016 by Vibra-Tech Inc.
File Name	O138GCV4.NH1

Notes

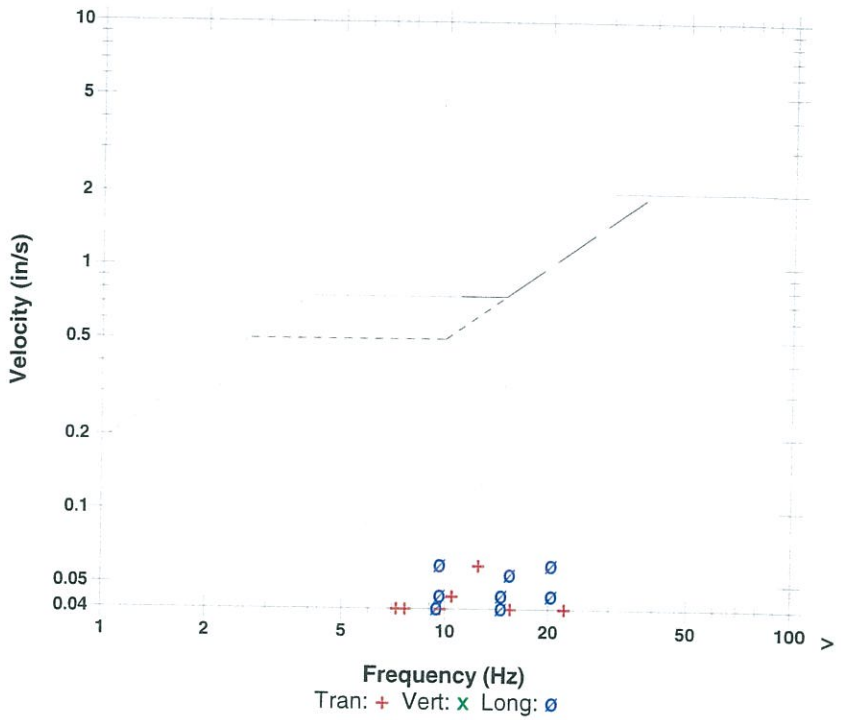
Post Event Notes
Warden Res: 5,225'

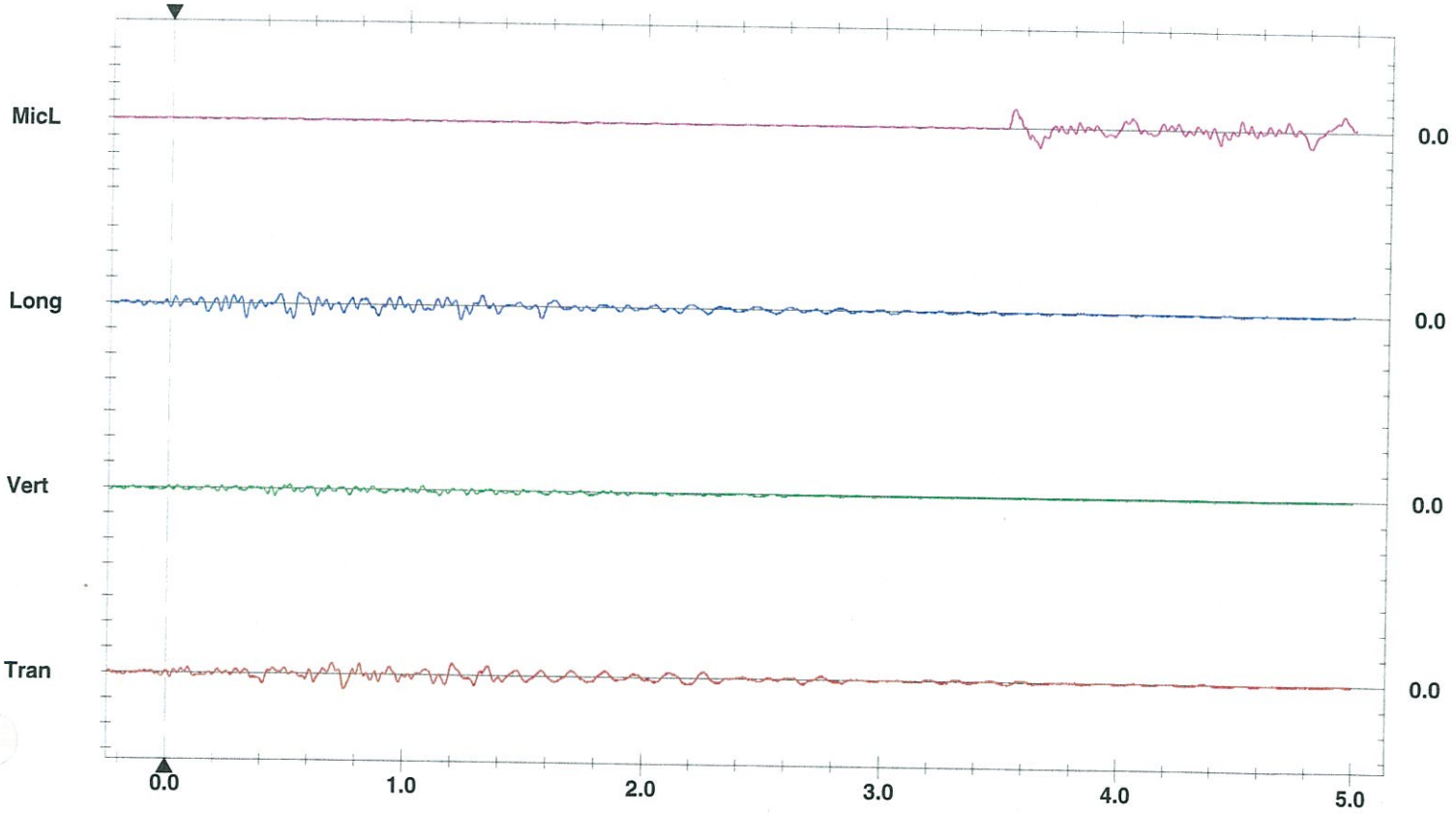
Microphone	Linear Weighting
PSPL	111.8 dB(L) at 3.653 sec
ZC Freq	4.7 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 562 mv)

	Tran	Vert	Long	
PPV	0.0600	0.0300	0.0600	in/s
ZC Freq	12	22	20	Hz
Time (Rel. to Trig)	0.750	0.450	0.319	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00077	0.00023	0.00090	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0616 in/s at 0.756 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: May 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 May 6, 2016 Blast No. 05 06 16 1B Time 11:21

Exact Blast Location 1B

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' 33.9'
W: 98° 17' 33.2"

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 2157'

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

Peak Particle Velocity 0.035 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by _____ Date: 5/6/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:21:23 May 6, 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**	H191GCWV.JN1
Record Time	10.0 sec at 1024 sps		

Notes

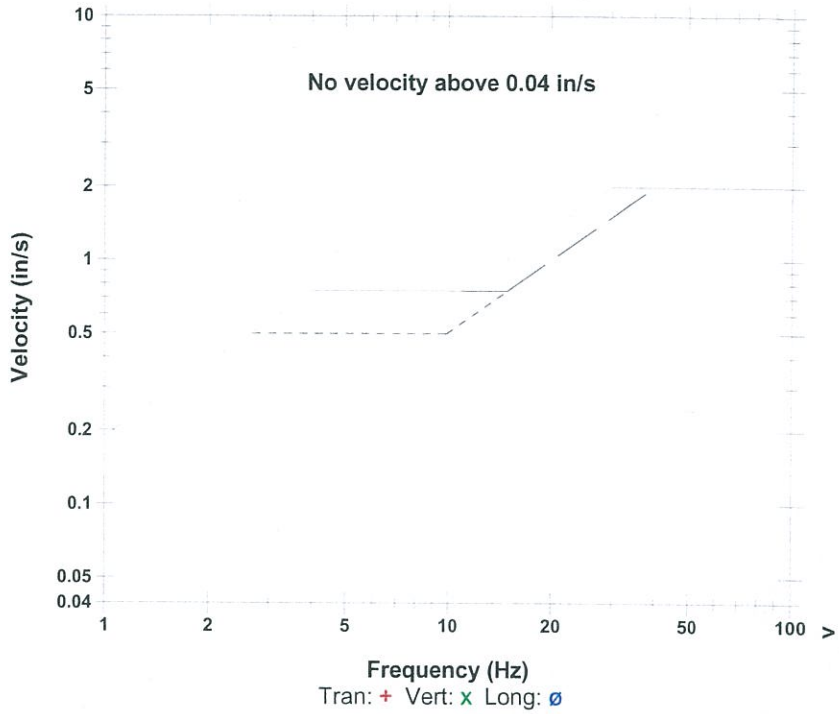
Post Event Notes
City Property Line
2157 ft to Blast

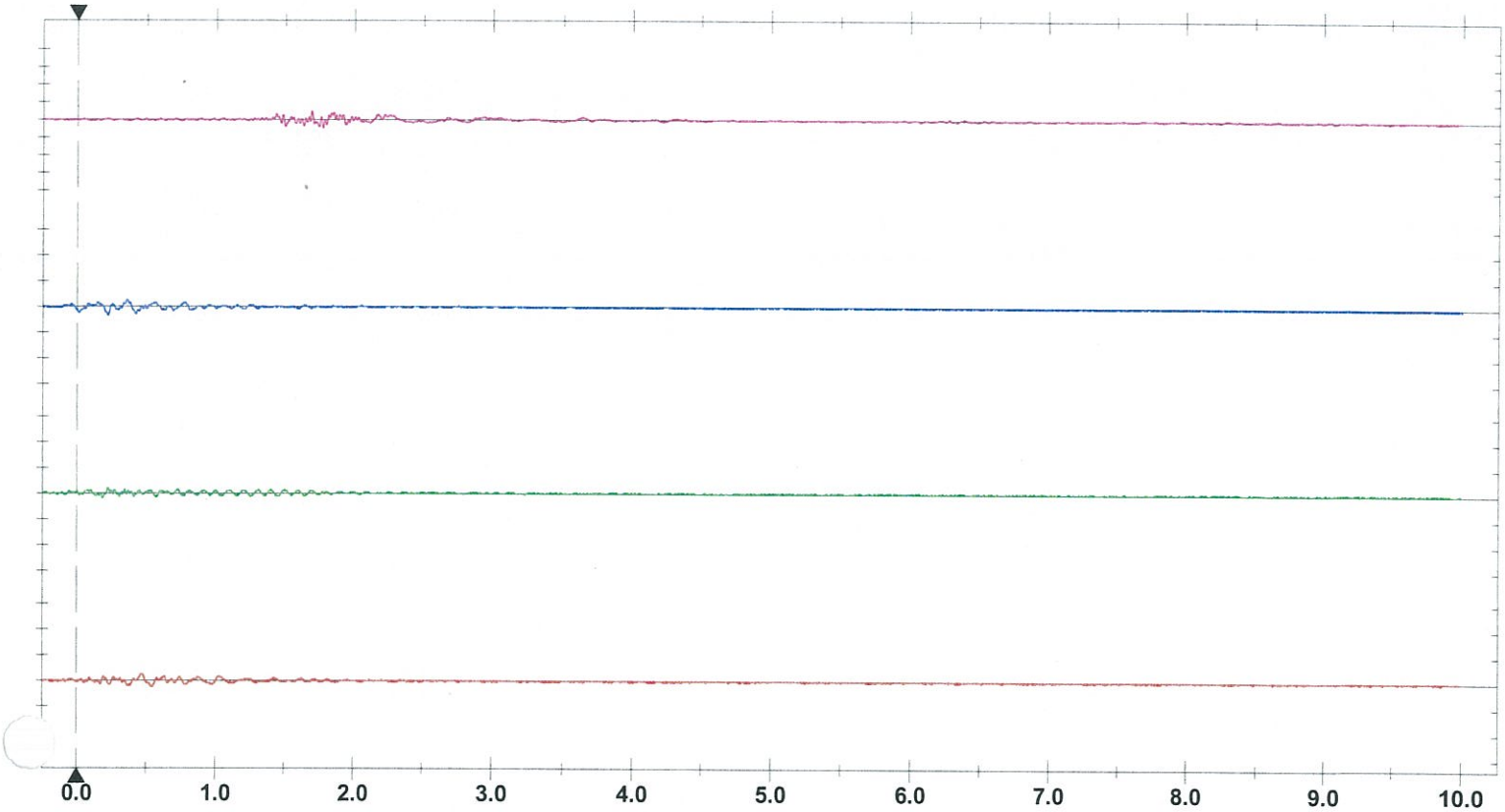
Microphone	Linear Weighting
PSPL	104.2 dB(L) at 1.687 sec
ZC Freq	28 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 591 mv)

	Tran	Vert	Long	
PPV	0.0250	0.0200	0.0350	in/s
ZC Freq	11	27	12	Hz
Time (Rel. to Trig)	0.464	0.185	0.217	sec
Peak Acceleration	0.0133	0.0133	0.0133	g
Peak Displacement	0.00046	0.00018	0.00058	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0403 in/s at 0.220 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 May 6, 2016 Blast No. 05-06-16 1B Time 11:21

Exact Blast Location 1B

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' 33.9"

W: 98° 17' 33.2"

MONITOR GPS

N 29° 38' 28.71"

W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 8242'

Peak Overpressure NT dB Scaled Distance ----

Peak Particle Velocity NT ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/6/16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 6 '16 10:37:09		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 6 '16 10:37:12	May 6 '16 10:37:22	Event recorded. Trigger Tran: 0.0200 in/s
May 6 '16 10:37:22	May 6 '16 12:16:07	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Hanson Servtex | 05-06-16 | 11:21 AM
Non Trigger
Fields Residence - 8242 ft.

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date May 6, 2016 Blast No. 05-06-16 1B Time 11:21

Exact Blast Location 1B

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' 33.9"
W: 98° 17' 33.2"

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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 4465

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

Peak Particle Velocity 0.035 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 5/6/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 11:21:23 May 6, 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	L626GCWV.JN1

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

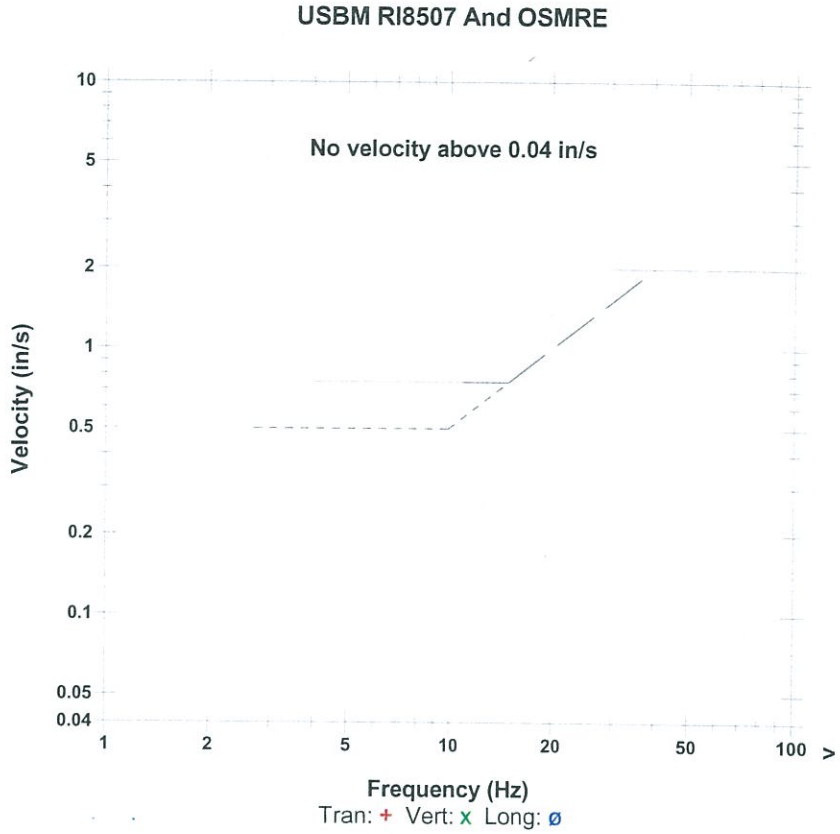
Extended Notes

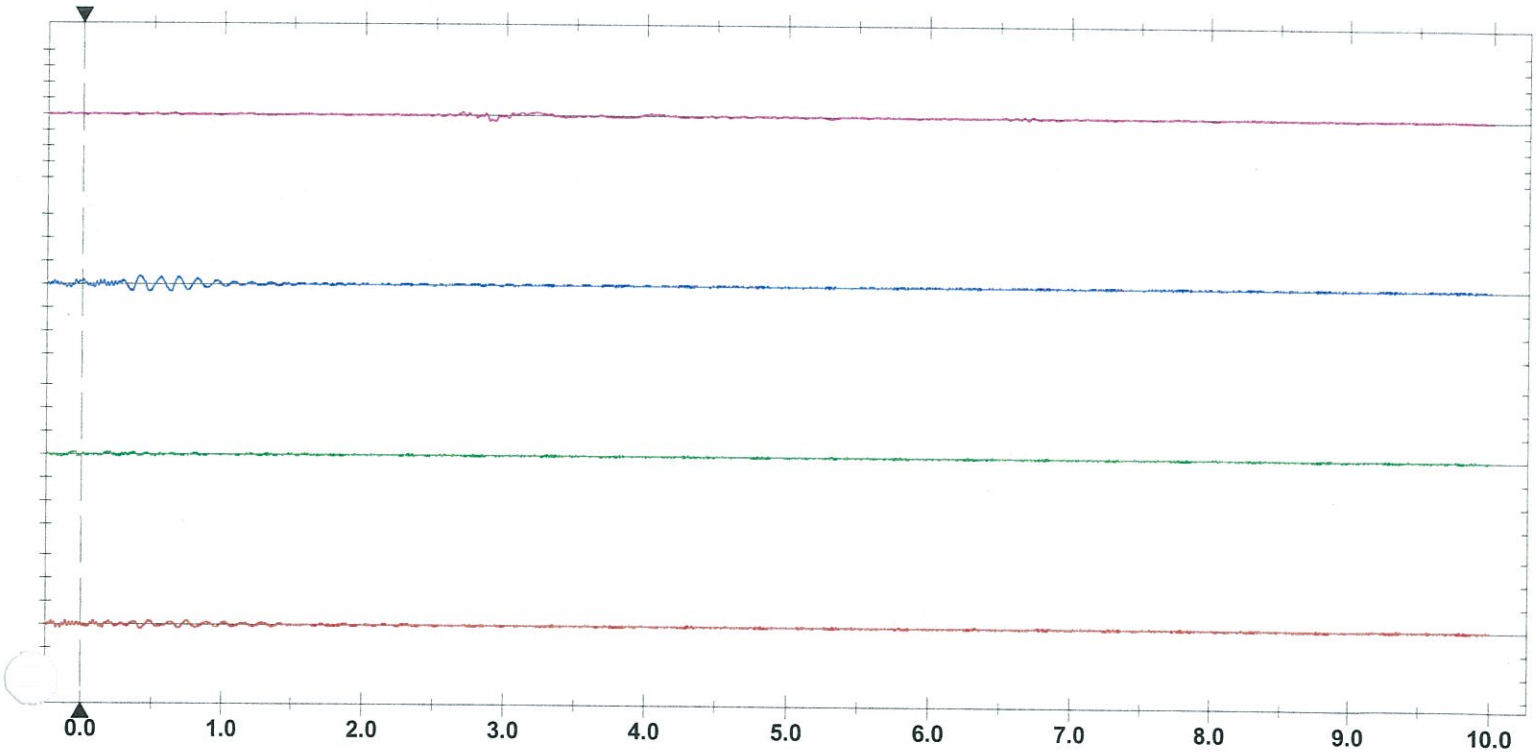
Post Event Notes
Michels Residence
4465 ft to Blast

Microphone	Linear Weighting
PSPL	101.9 dB(L) at 2.881 sec
ZC Freq	6.5 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 720 mv)

	Tran	Vert	Long	
PPV	0.0200	0.01000	0.0350	in/s
ZC Freq	14	>100	8.0	Hz
Time (Rel. to Trig)	0.412	-0.173	0.396	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00027	0.00008	0.00075	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0384 in/s at 0.407 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 May 6, 2016 Blast No. 05-06-16 #1B Time 11:21

Exact Blast Location 1B

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' 33.9"
W: 98° 17' 33.2"

MONITOR GPS

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

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 1256'

Peak Overpressure 112.3 dB Scaled Distance ------

Peak Particle Velocity 0.23 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/6/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 11:21:23 May 6, 2016	**Serial Number**	BF13138 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.3 Volts
		Calibration	February 23, 2016 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O138GCWV.JN1
Record Time	5.0 sec at 1024 sps		

Notes

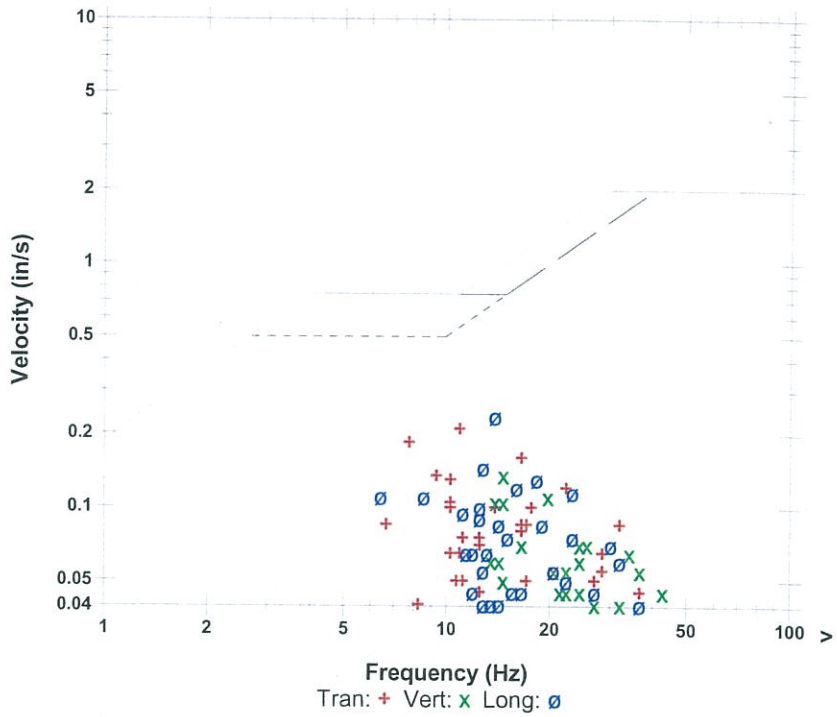
Post Event Notes
Warden Residence
1256 ft to Blast

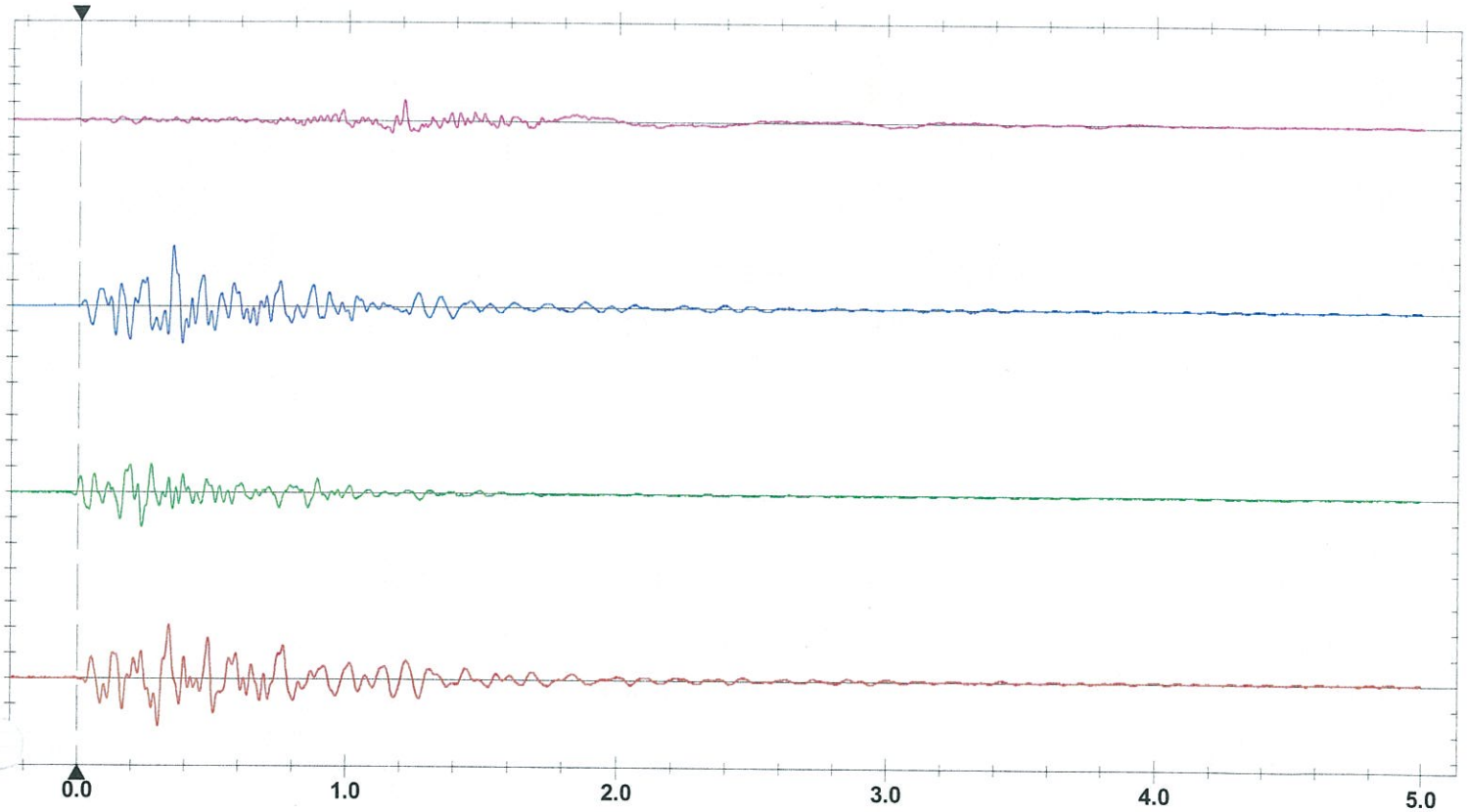
Microphone Linear Weighting
PSPL 112.3 dB(L) at 1.204 sec
ZC Freq 21 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 518 mv)

	Tran	Vert	Long	
PPV	0.210	0.135	0.235	in/s
ZC Freq	11	15	14	Hz
Time (Rel. to Trig)	0.341	0.233	0.350	sec
Peak Acceleration	0.0663	0.0530	0.0795	g
Peak Displacement	0.00278	0.00136	0.00260	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.265 in/s at 0.349 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 May 6, 2016 Blast No. 05-06-15 1B Time 11:21

Exact Blast Location 1B

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' 33.9"
W: 98° 17' 33.2"

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 1037'

Peak Overpressure 111.9 dB Scaled Distance ------

Peak Particle Velocity 0.28 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/6/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 11:21:22 May 6, 2016	**Serial Number**	BF13922 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.4 Volts
	Mic: 122 dB(L)	**Calibration**	November 22, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O922GCWV.JM1
Record Time	5.0 sec at 1024 sps		

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

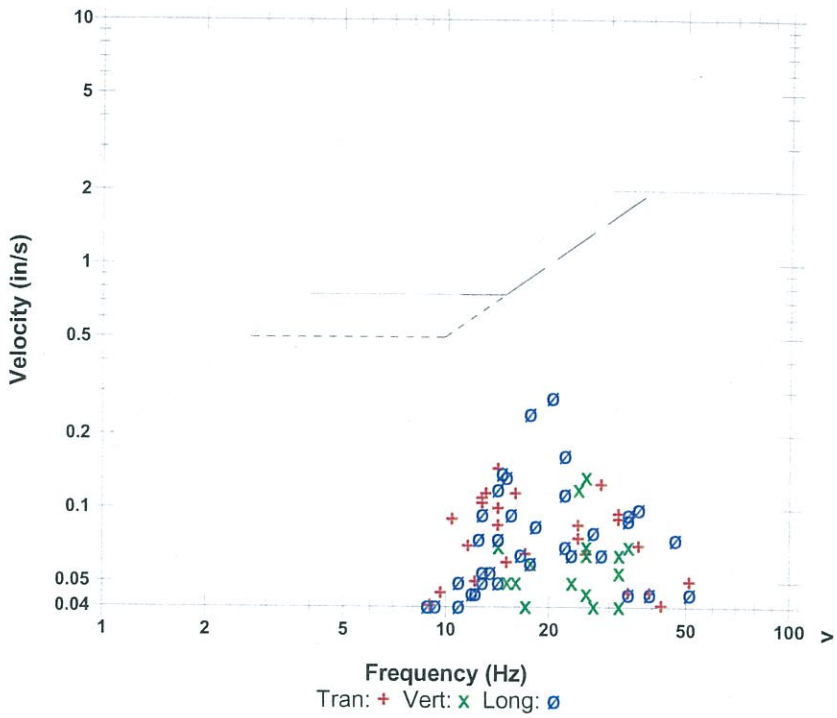
Post Event Notes
Warden Property Line
1037 ft to Blast

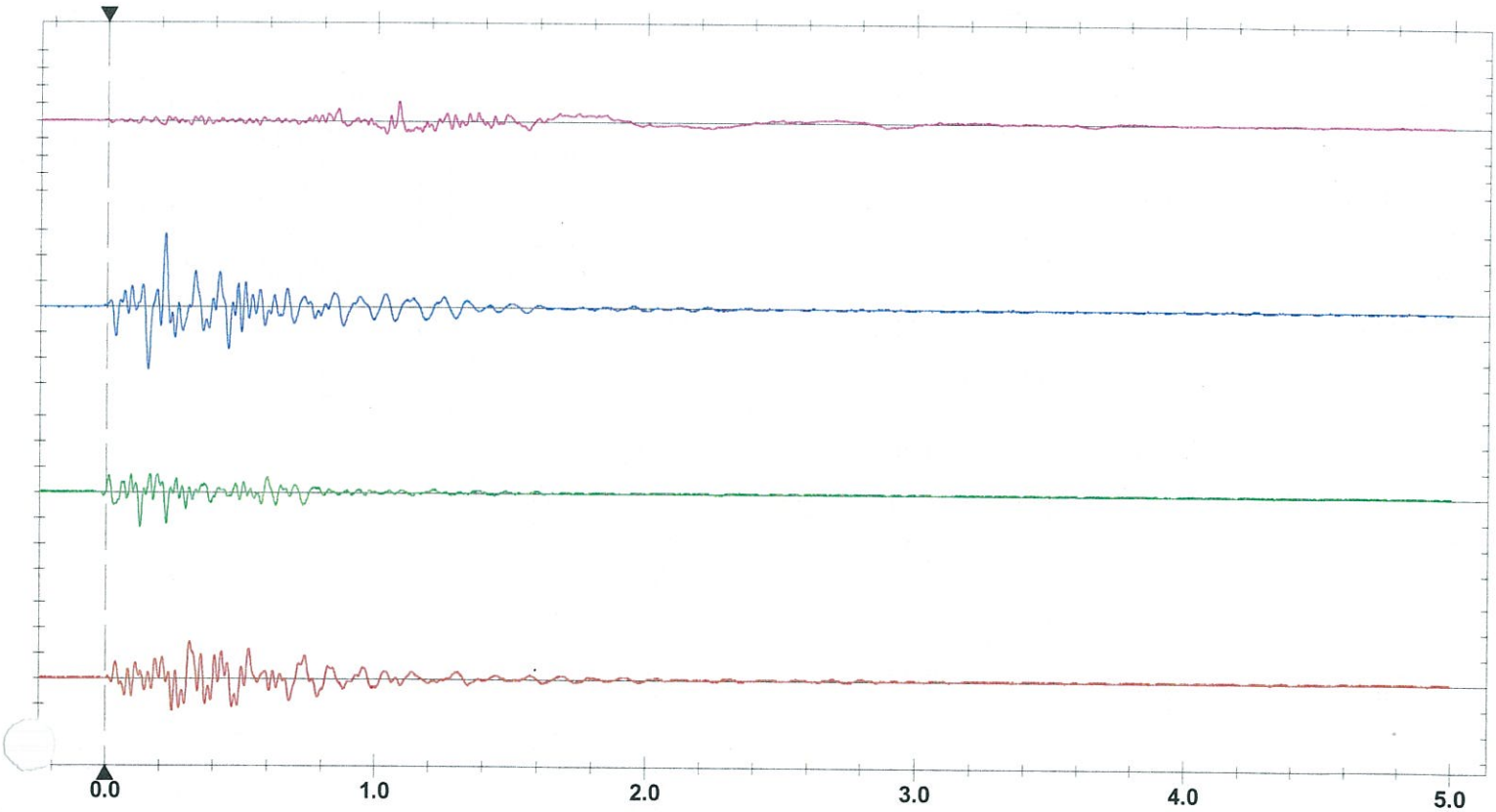
Microphone Linear Weighting
PSPL 111.8 dB(L) at 1.078 sec
ZC Freq 24 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 523 mv)

	Tran	Vert	Long	
PPV	0.145	0.135	0.285	in/s
ZC Freq	14	26	20	Hz
Time (Rel. to Trig)	0.311	0.123	0.214	sec
Peak Acceleration	0.0663	0.0530	0.0928	g
Peak Displacement	0.00162	0.00077	0.00201	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.291 in/s at 0.214 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 5/9/16 Blast No. 5-9-16 3C Time 12:05

Exact Blast Location _____

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' 45.4"
W 98° 17' 36.5"

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 2782'

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

Peak Particle Velocity .050 ips Operator Nate Rigsby

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/9/16

VIBRA-TECH
The Vibration Monitoring Experts

Vibration Event Report

Date/Time	Long at 12:05:39 May 9, 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**	H191GD2H.LF1
Record Time	10.0 sec at 1024 sps		

Notes

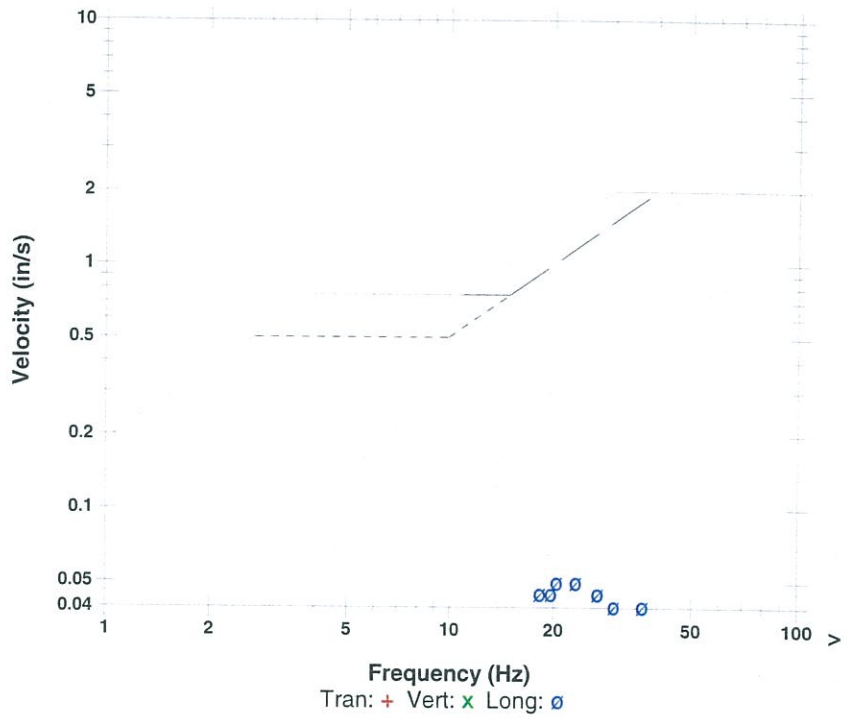
Post Event Notes
City Property Line - 2782'

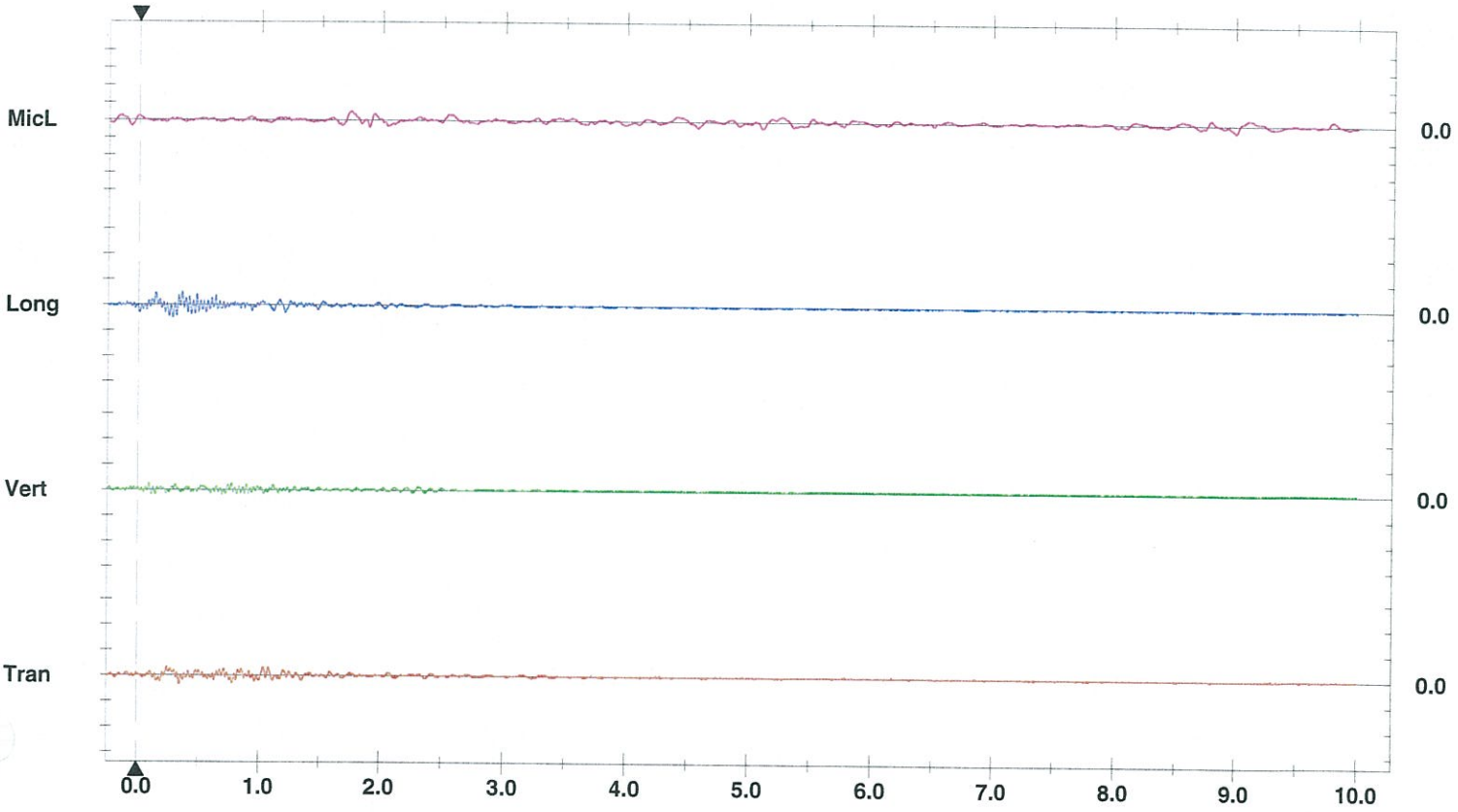
Microphone	Linear Weighting
PSPL	104.9 dB(L) at 1.732 sec
ZC Freq	4.8 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 583 mv)

	Tran	Vert	Long	
PPV	0.0350	0.0250	0.0500	in/s
ZC Freq	21	30	20	Hz
Time (Rel. to Trig)	0.344	0.091	0.274	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00068	0.00027	0.00042	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0568 in/s at 0.274 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 5/9/16 Blast No. 5-9-16 3C Time 12:05

Exact Blast Location _____

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' 45.4"
W 98° 17' 36.5"

MONITOR GPS

N 29° 38' 28.71"
W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 8115'

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

Peak Particle Velocity NT ips Operator Nate Rigsby

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/9/16

Vibration Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 9 '16 10:46:52		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 9 '16 10:46:59	May 9 '16 10:47:09	Event recorded. Trigger Long: 0.0200 in/s
May 9 '16 10:47:09	May 9 '16 12:38:45	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Fields Residence - Distance 8115'

No Trigger at the time of 12:05

Hanson Scrutex 05-09-16 3C

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 5/9/16 Blast No. 5-9-16 3C Time 12:05

Exact Blast Location _____

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' 45.4"
W 98° 17' 36.5"

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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3837'

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

Peak Particle Velocity .085 ips Operator Nate Rigsby

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 5/9/16

VIBRA-TECH
The Vibration Monitoring Experts

Vibration Event Report

Date/Time	Long at 12:05:39 May 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	L626GD2H.LF1

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

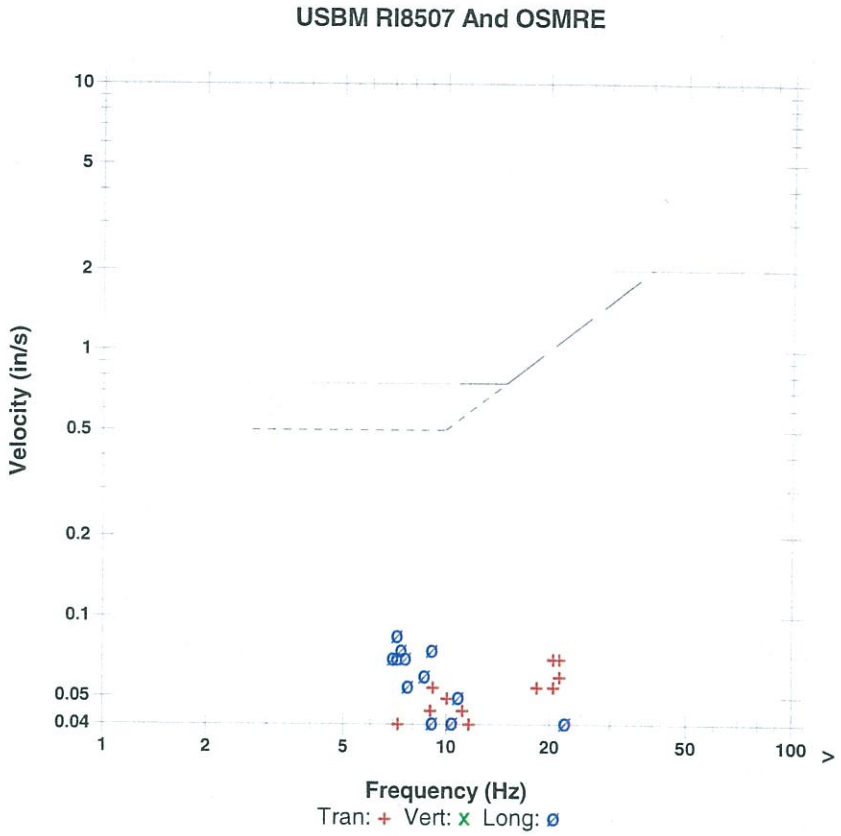
Extended Notes

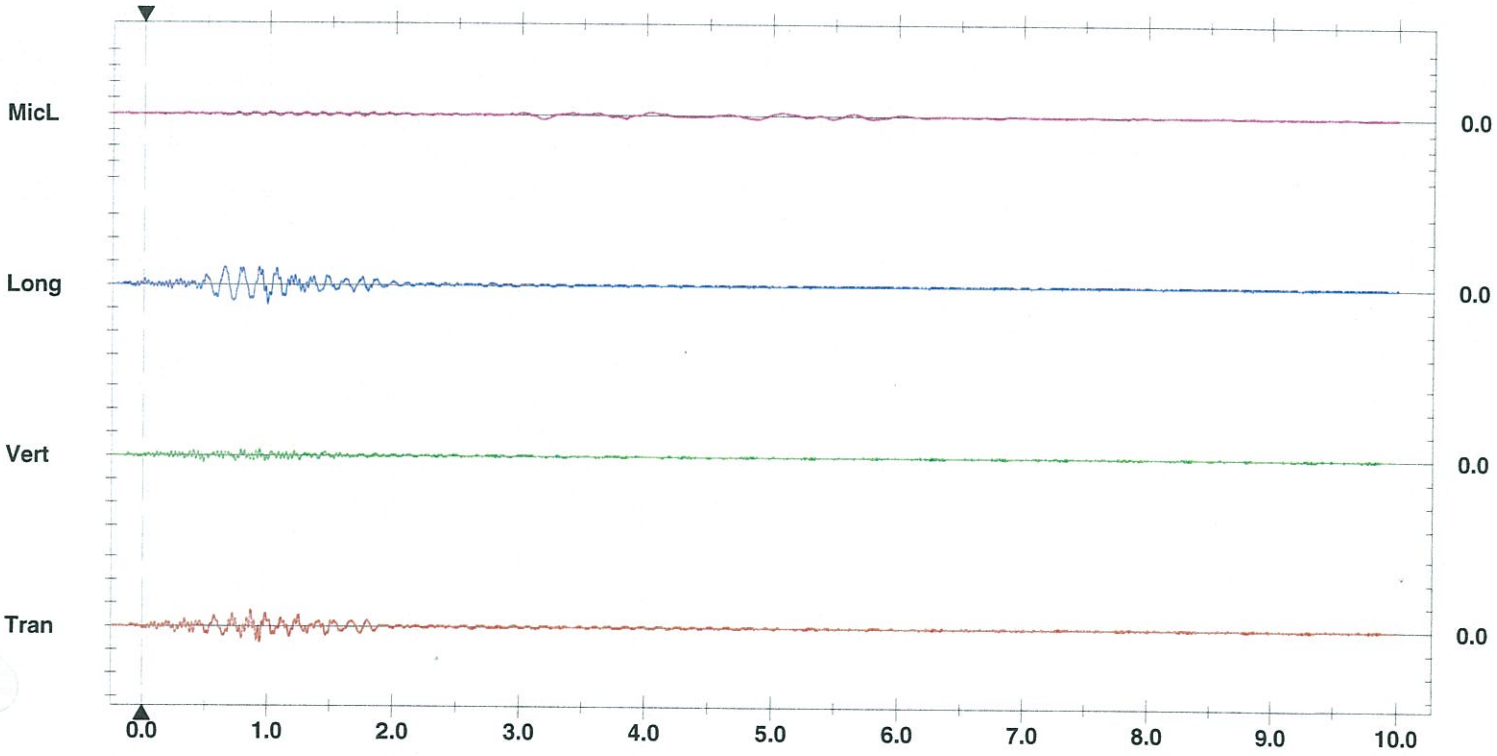
Post Event Notes
Michel Residence - 3837'

Microphone	Linear Weighting
PSPL	100.0 dB(L) at 3.152 sec
ZC Freq	3.5 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 667 mv)

	Tran	Vert	Long	
PPV	0.0700	0.0300	0.0850	in/s
ZC Freq	21	28	7.2	Hz
Time (Rel. to Trig)	0.865	0.482	0.990	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00081	0.00020	0.00162	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0921 in/s at 0.990 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 5/9/16 Blast No. 5-9-16 3C Time 12:05

Exact Blast Location _____

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' 45.4"
W 98° 17' 36.5"

MONITOR GPS

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

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 2301'

Peak Overpressure 106.5 dB Scaled Distance ------

Peak Particle Velocity .18 ips Operator Nate Rigsby

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/9/16

VIBRA-TECH
The Vibration Monitoring Experts

Vibration Event Report

Date/Time	Vert at 12:05:39 May 9, 2016	**Serial Number**	BF13138 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.3 Volts
		Calibration	February 23, 2016 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O138GD2H.LF1
Record Time	5.0 sec at 1024 sps		

Notes

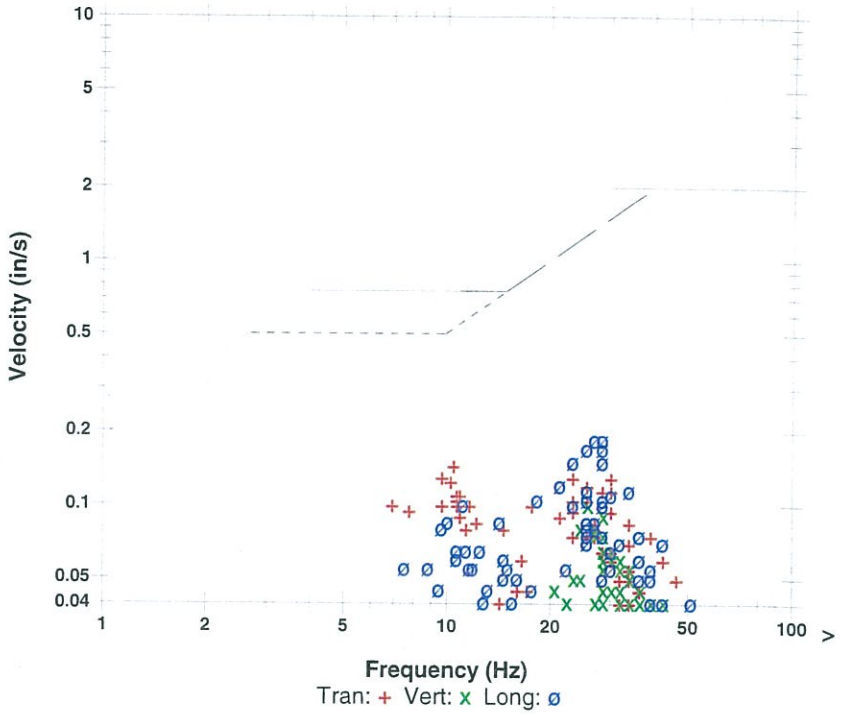
Post Event Notes
Warden Residence - 2301'

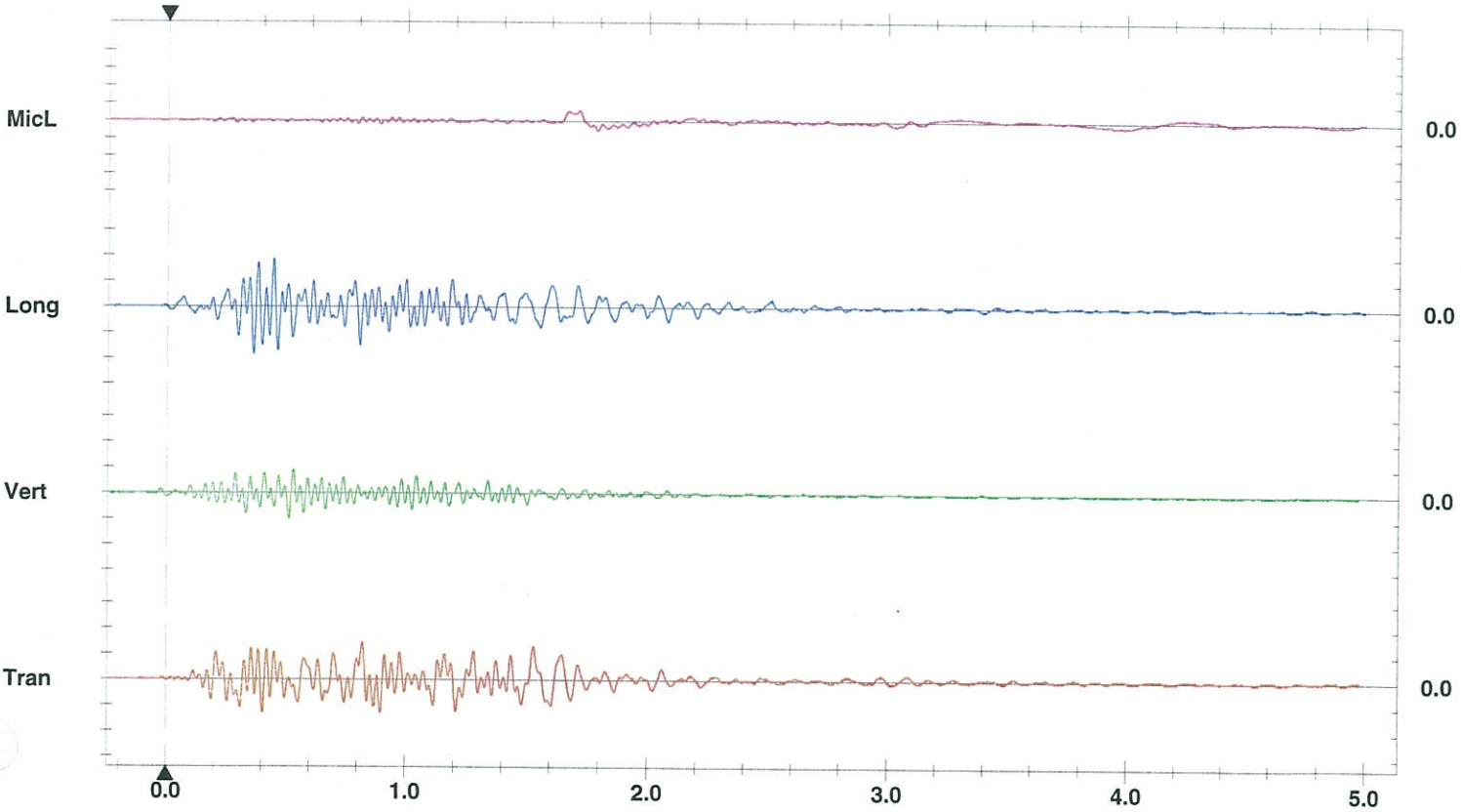
Microphone	Linear Weighting
PSPL	106.5 dB(L) at 1.712 sec
ZC Freq	5.8 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 554 mv)

	Tran	Vert	Long	
PPV	0.145	0.1000	0.185	in/s
ZC Freq	10	26	27	Hz
Time (Rel. to Trig)	0.822	0.509	0.359	sec
Peak Acceleration	0.0663	0.0530	0.0928	g
Peak Displacement	0.00186	0.00061	0.00135	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.214 in/s at 0.358 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 5/9/16 Blast No. 5-9-16 3C Time 12:05

Exact Blast Location _____

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' 45.4"
W 98° 17' 36.5"

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 2089'

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

Peak Particle Velocity .11 ips Operator Nate Rigsby

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/9/16

VIBRA-TECH
The Vibration Monitoring Experts

Vibration Event Report

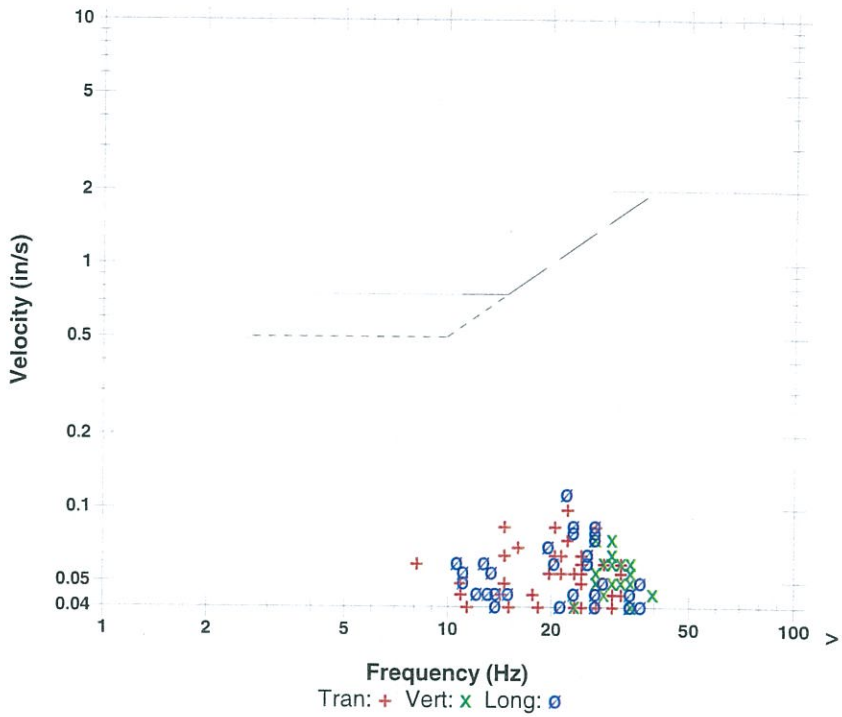
Date/Time	Tran at 12:05:39 May 9, 2016
Trigger Source	Geo: 0.0200 in/s
	Mic: 122 dB(L)
Range	Geo :10.00 in/s
Record Time	5.0 sec at 1024 sps

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	O922GD2H.LF1

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

Post Event Notes
Warden Property Line - 2089'

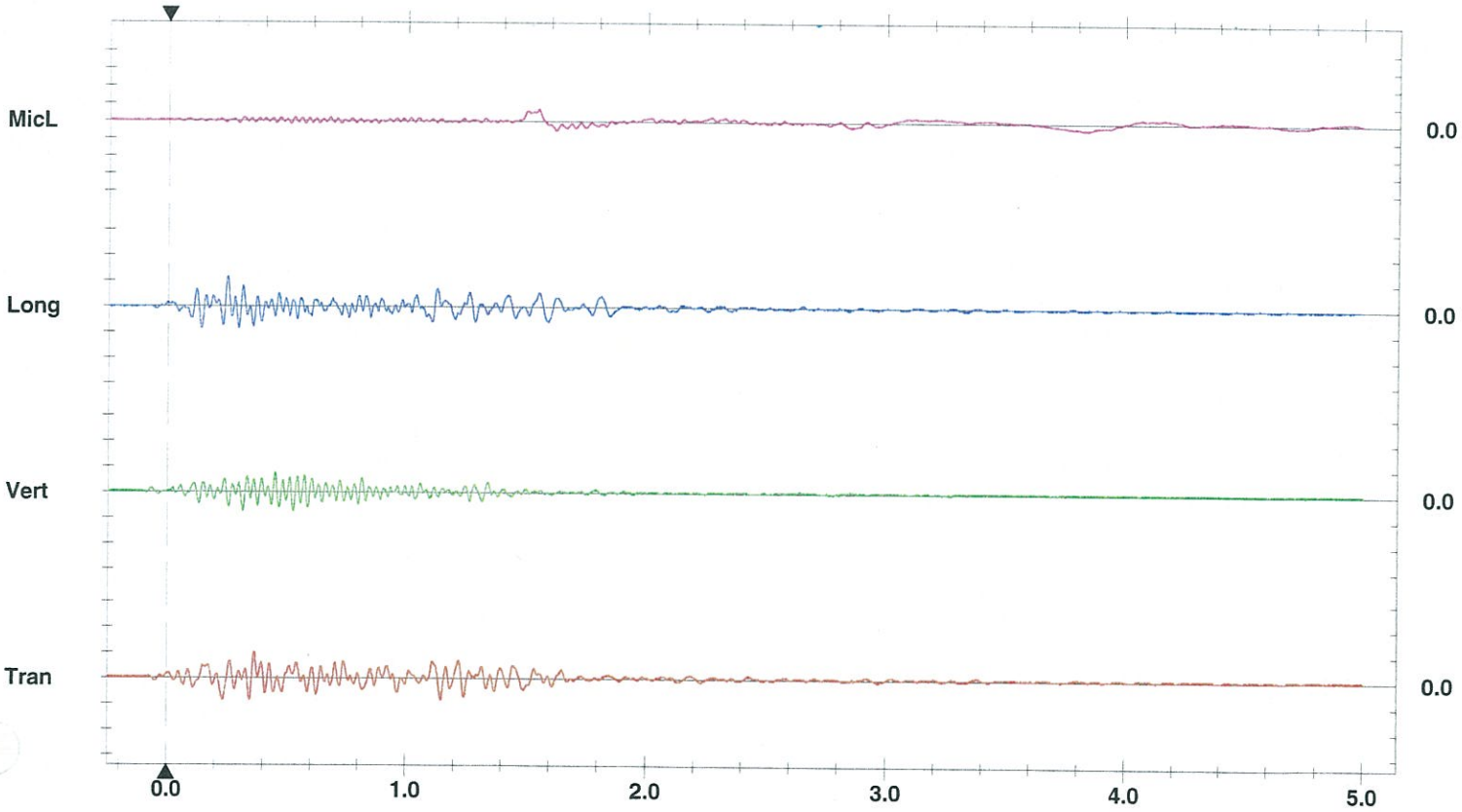
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	107.5 dB(L) at 1.542 sec
ZC Freq	4.9 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 541 mv)

	Tran	Vert	Long	
PPV	0.1000	0.0750	0.115	in/s
ZC Freq	22	27	22	Hz
Time (Rel. to Trig)	0.364	0.314	0.245	sec
Peak Acceleration	0.0398	0.0530	0.0530	g
Peak Displacement	0.00095	0.00042	0.00085	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.120 in/s at 0.245 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 5-12-16 Blast No. 5-12-16 LOWER 6 Time 12:23

Exact Blast Location FACE 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' 50.1"

W 98° 17' 9.4"

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 4,812'

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

Peak Particle Velocity .020 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5-12-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:23:49 May 12, 2016	**Serial Number**	BD6191 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	July 16, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	H191GD82.FP1
Record Time	10.0 sec at 1024 sps		

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

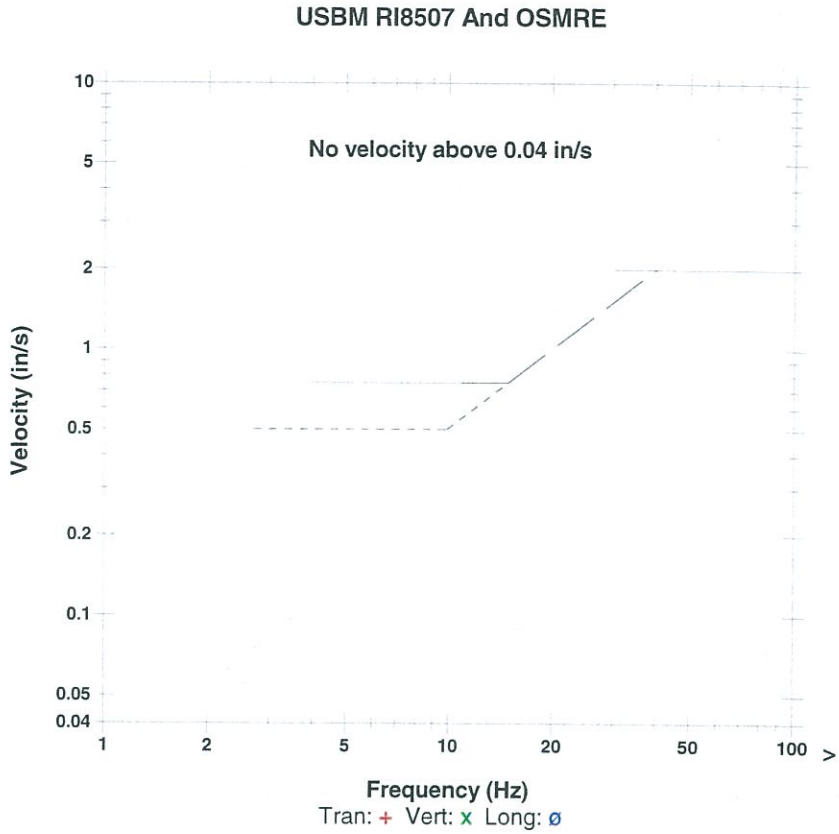
Extended Notes

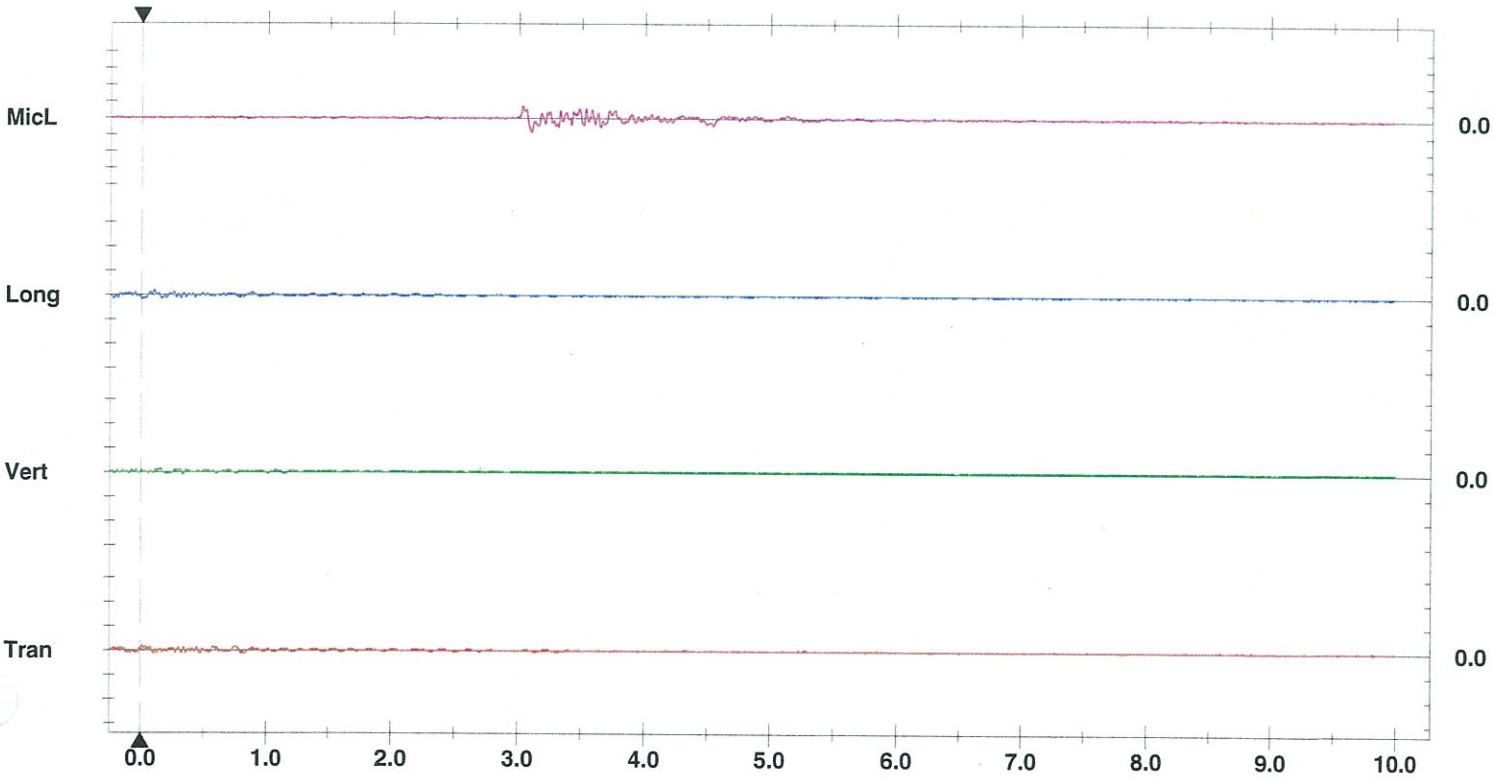
Post Event Notes
City Prop Line: 4,812'

Microphone Linear Weighting
PSPL 109.2 dB(L) at 3.101 sec
ZC Freq 5.2 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 602 mv)

	Tran	Vert	Long	
PPV	0.0200	0.0150	0.0200	in/s
ZC Freq	37	18	9.1	Hz
Time (Rel. to Trig)	0.013	0.152	0.000	sec
Peak Acceleration	0.0133	0.0133	0.0265	g
Peak Displacement	0.00026	0.00014	0.00035	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0250 in/s at 0.013 sec





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

Format Copyrighted 1996-2003 Instantel Inc.

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 5-12-16 Blast No. 5-12-16 LOWER 6 Time 12:27

Exact Blast Location FACE 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' 50.1"
W 98° 17' 9.4"

MONITOR GPS

N 29° 38' 28.71"
W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 10,546'

Peak Overpressure NA dB Scaled Distance ------

Peak Particle Velocity NT ips Operator DANIEL GARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5-12-16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 12 '16 10:37:22	May 12 '16 12:33:29	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

FIELDS RESIDENCE

NO TRIGGER @ 10,546'

at 12:23

05-12-16 LOWER 6

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 5-12-16 Blast No. 5-12-16 LOWER 6 Time 12:23

Exact Blast Location FACE 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' 50.1"
W 98° 17' 9.4"

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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 6,170'

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

Peak Particle Velocity .035 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5-12-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 12:23:48 May 12, 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	L626GD82.FO1

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

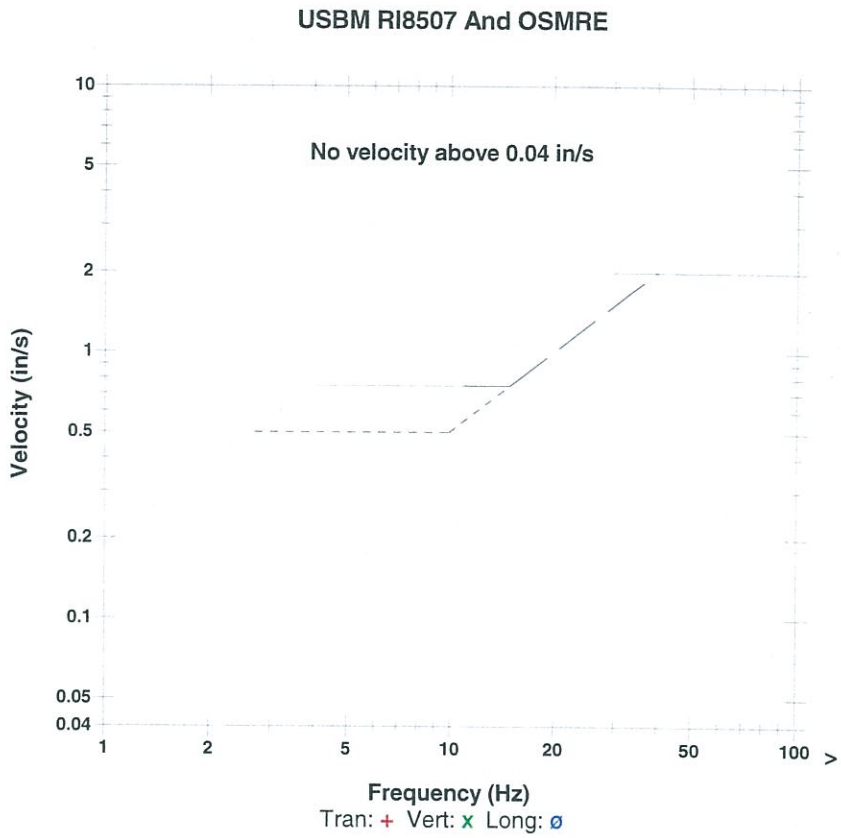
Extended Notes

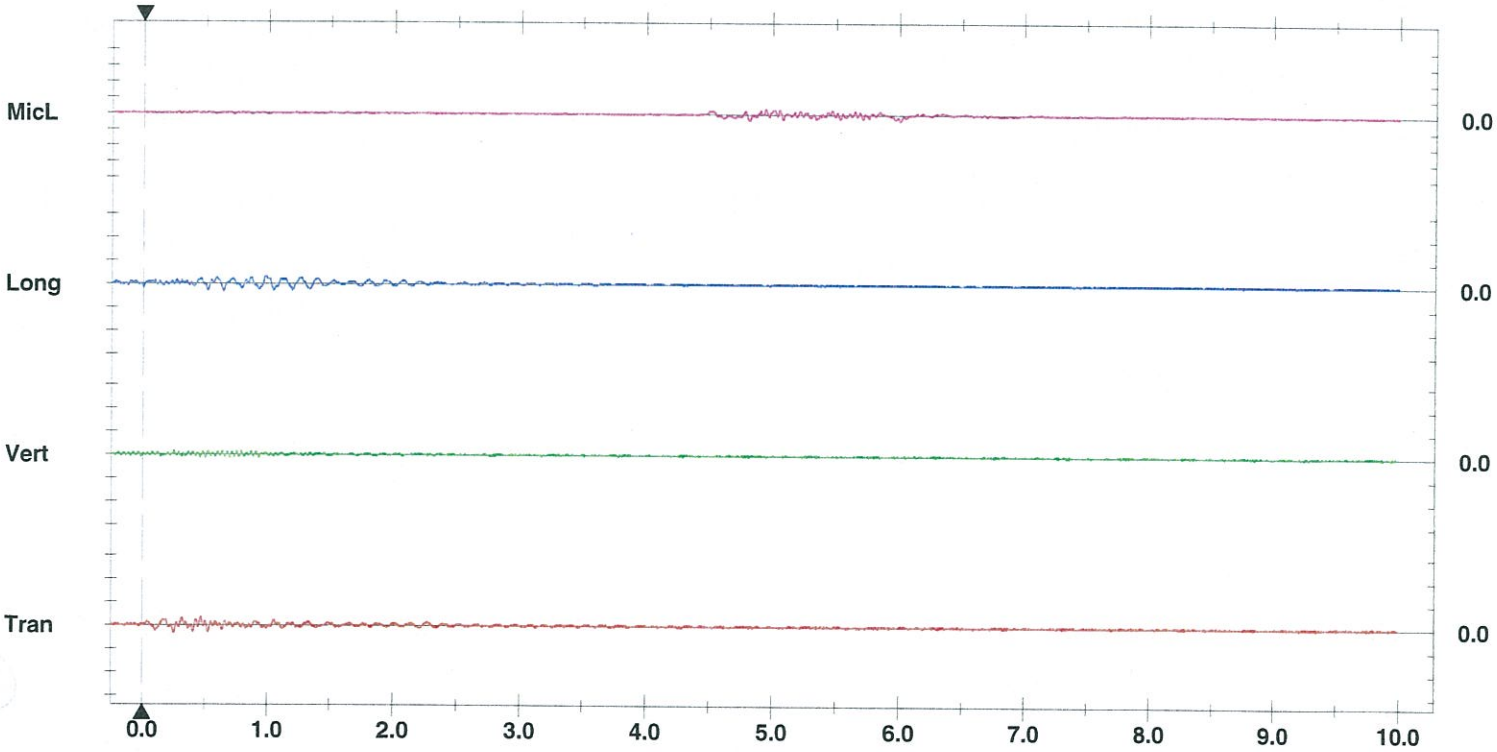
Post Event Notes
Michels Res: 6,170'

Microphone	Linear Weighting
PSPL	102.8 dB(L) at 6.001 sec
ZC Freq	4.6 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 699 mv)

	Tran	Vert	Long	
PPV	0.0350	0.0150	0.0350	in/s
ZC Freq	18	34	14	Hz
Time (Rel. to Trig)	0.247	0.243	0.638	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00044	0.00008	0.00064	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0418 in/s at 0.520 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 5-12-16 Blast No. 5-12-16 LOWER 6 Time 12:23

Exact Blast Location FACE 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' 50.1"
W 98° 17' 9.4"

MONITOR GPS

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

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 3,848'

Peak Overpressure 113.5 dB Scaled Distance ------

Peak Particle Velocity .13 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: D. Larner Date: 5-12-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:23:54 May 12, 2016	**Serial Number**	BF13138 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	February 23, 2016 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O138GD82.FU1
Record Time	5.0 sec at 1024 sps		

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

Extended Notes

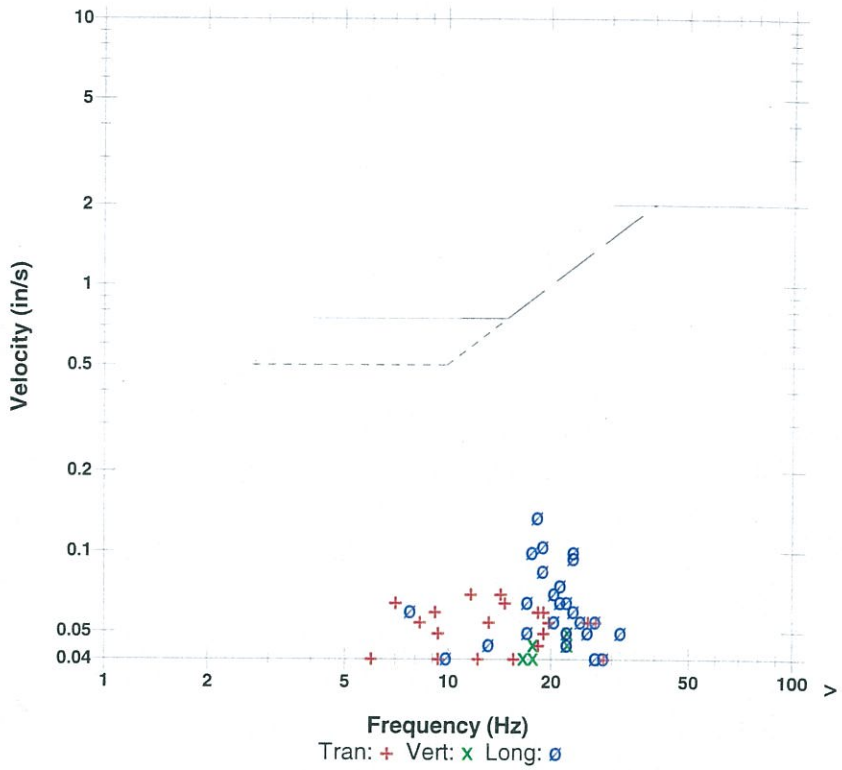
Post Event Notes
Warden Res: 3,848'

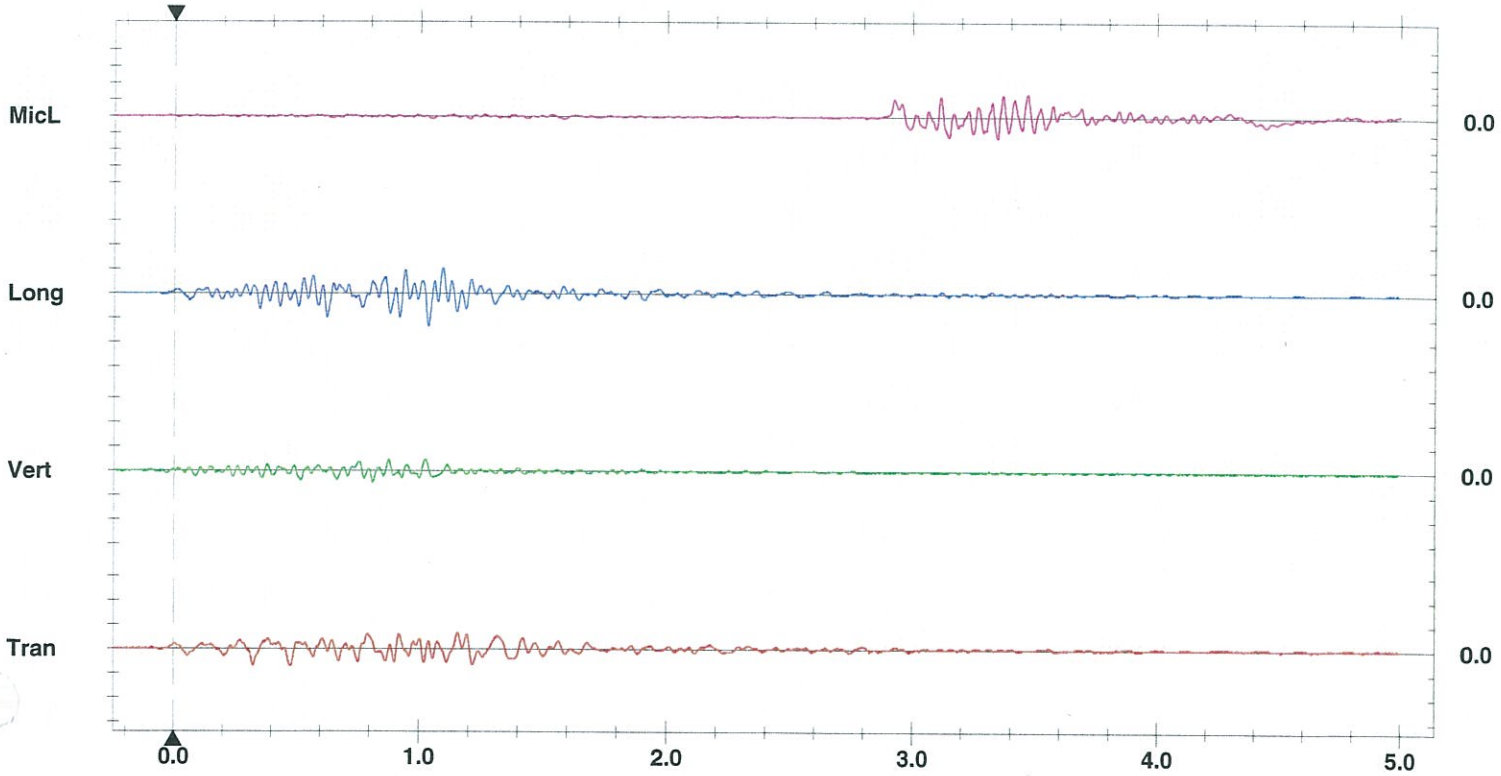
Microphone Linear Weighting
PSPL 113.5 dB(L) at 3.466 sec
ZC Freq 17 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 511 mv)

	Tran	Vert	Long	
PPV	0.0700	0.0500	0.135	in/s
ZC Freq	12	22	18	Hz
Time (Rel. to Trig)	0.325	0.811	1.032	sec
Peak Acceleration	0.0265	0.0265	0.0398	g
Peak Displacement	0.00108	0.00050	0.00113	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.138 in/s at 1.032 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 5-12-16 Blast No. 5-12-16 LOWER 6 Time 12:23

Exact Blast Location FACE 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

N29° 38' 50.1"
W 98° 17' 9.4"

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 3,642'

Peak Overpressure 112.6 dB Scaled Distance ------

Peak Particle Velocity .095 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: D. Fan Date: 5-12-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 12:23:50 May 12, 2016	**Serial Number**	BF13922 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.4 Volts
	Mic: 122 dB(L)	**Calibration**	November 22, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O922GD82.FQ1
Record Time	5.0 sec at 1024 sps		

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

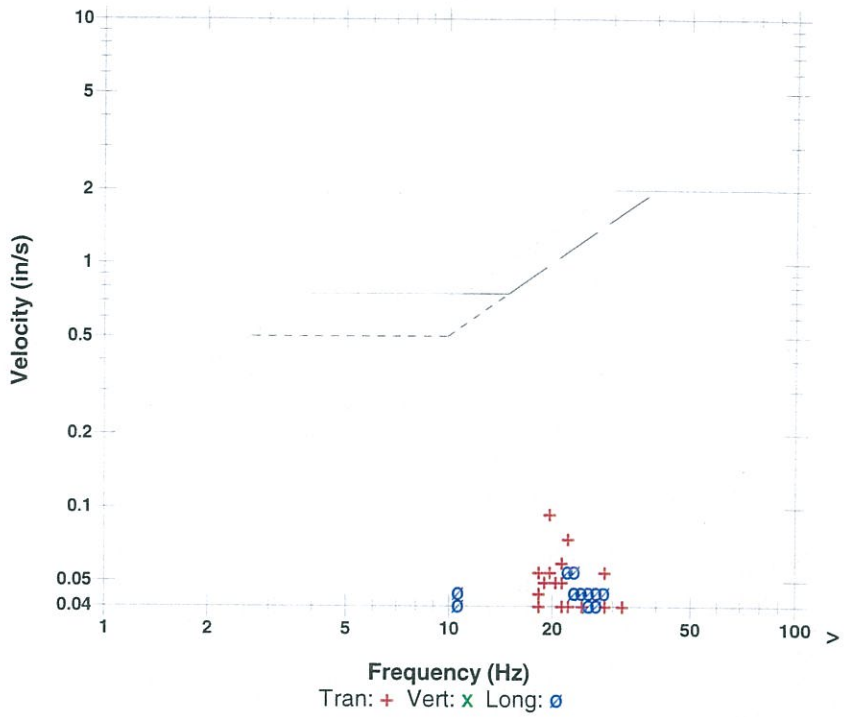
Post Event Notes
Warden Prop Line: 3,642'

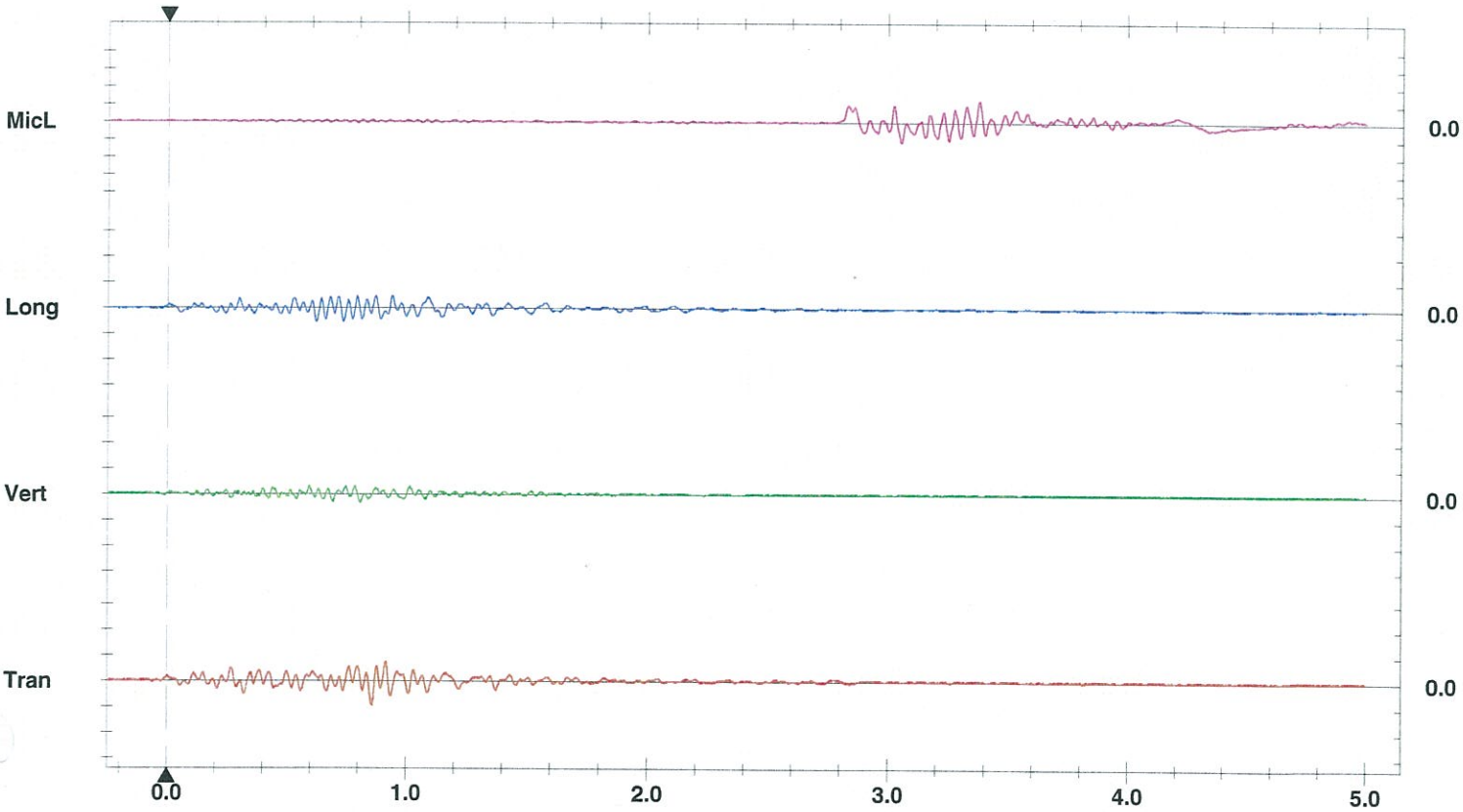
Microphone Linear Weighting
PSPL 112.6 dB(L) at 3.376 sec
ZC Freq 17 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 489 mv)

	Tran	Vert	Long	
PPV	0.0950	0.0350	0.0550	in/s
ZC Freq	20	21	22	Hz
Time (Rel. to Trig)	0.859	0.809	0.618	sec
Peak Acceleration	0.0530	0.0265	0.0265	g
Peak Displacement	0.00075	0.00026	0.00058	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0987 in/s at 0.861 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 5-13-16 Blast No. 5-13-16 4A Time 13:38

Exact Blast Location FACE 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

N 29° 38' 58.2"

W 98° 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 3,909'

Peak Overpressure 108.8 dB Scaled Distance ------

Peak Particle Velocity .040 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 5-13-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 13:38:03 May 13, 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**	H191GDA0.JF1
Record Time	10.0 sec at 1024 sps		

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

Extended Notes

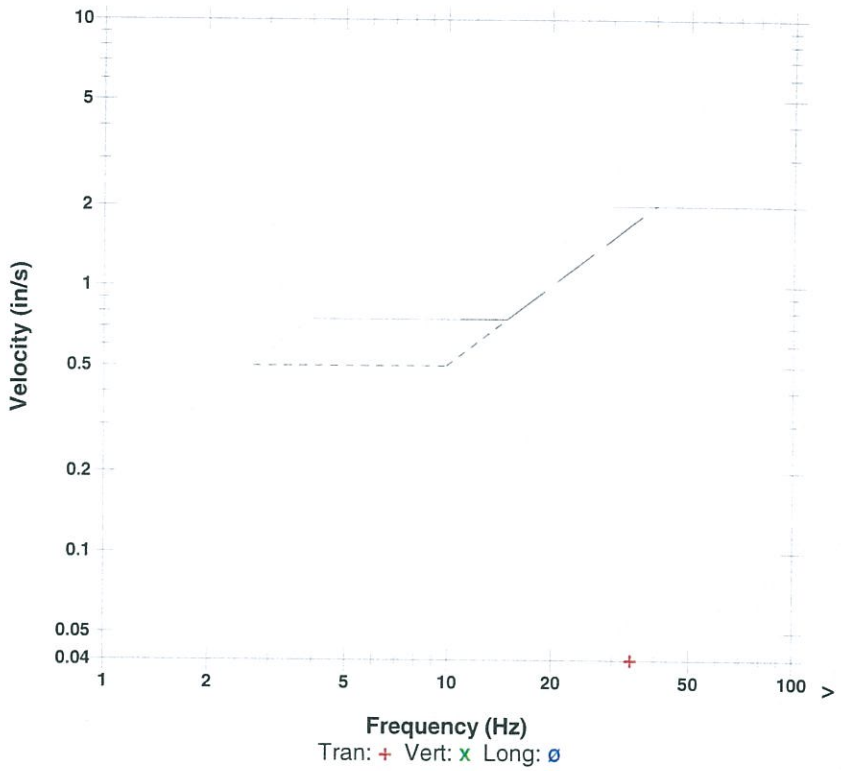
Post Event Notes
City Prop Line: 3,909'

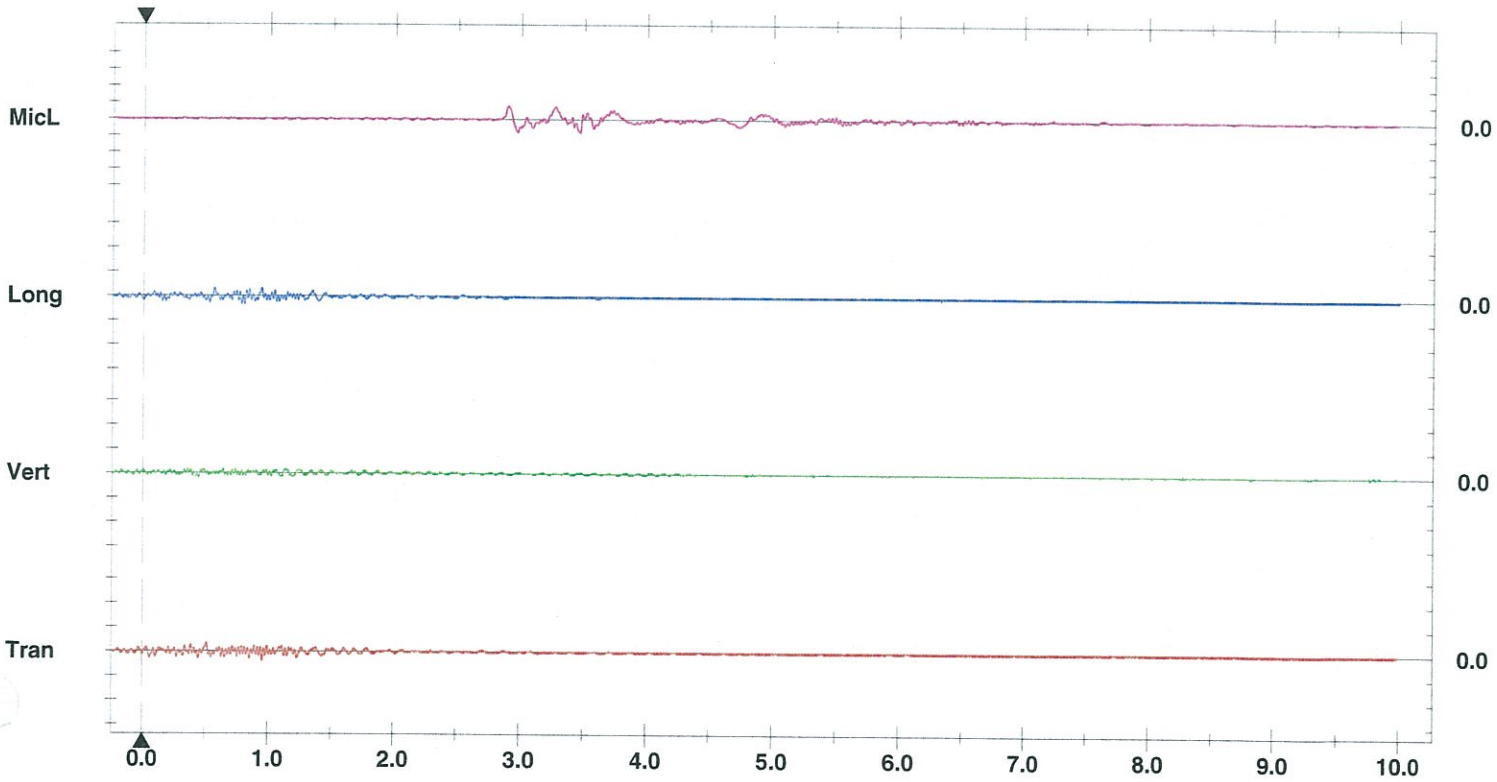
Microphone Linear Weighting
PSPL 108.8 dB(L) at 2.890 sec
ZC Freq 6.4 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 582 mv)

	Tran	Vert	Long	
PPV	0.0400	0.0200	0.0350	in/s
ZC Freq	34	32	30	Hz
Time (Rel. to Trig)	0.956	0.427	0.780	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00038	0.00020	0.00037	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0415 in/s at 0.956 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 5-13-16 Blast No. 5-13-16 4A Time 13:38

Exact Blast Location FACE 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

N 29° 38' 58.2"

W 98° 17' 36.8"

MONITOR GPS

N 29° 38' 28.71"

W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 8,454'

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

Peak Particle Velocity .020 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: D. Larner Date: 5-13-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 13:38:06 May 13, 2016	**Serial Number**	BF8949 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	July 16, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	J949GDA0.JI1
Record Time	10.0 sec at 1024 sps		

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

Extended Notes

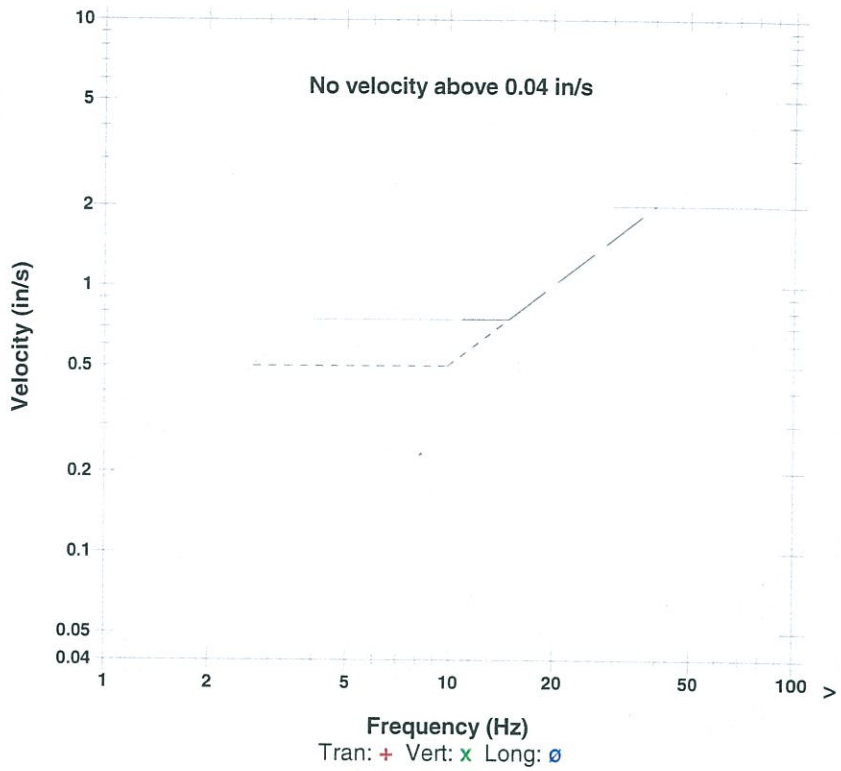
Post Event Notes
Fields Res. 8,454'

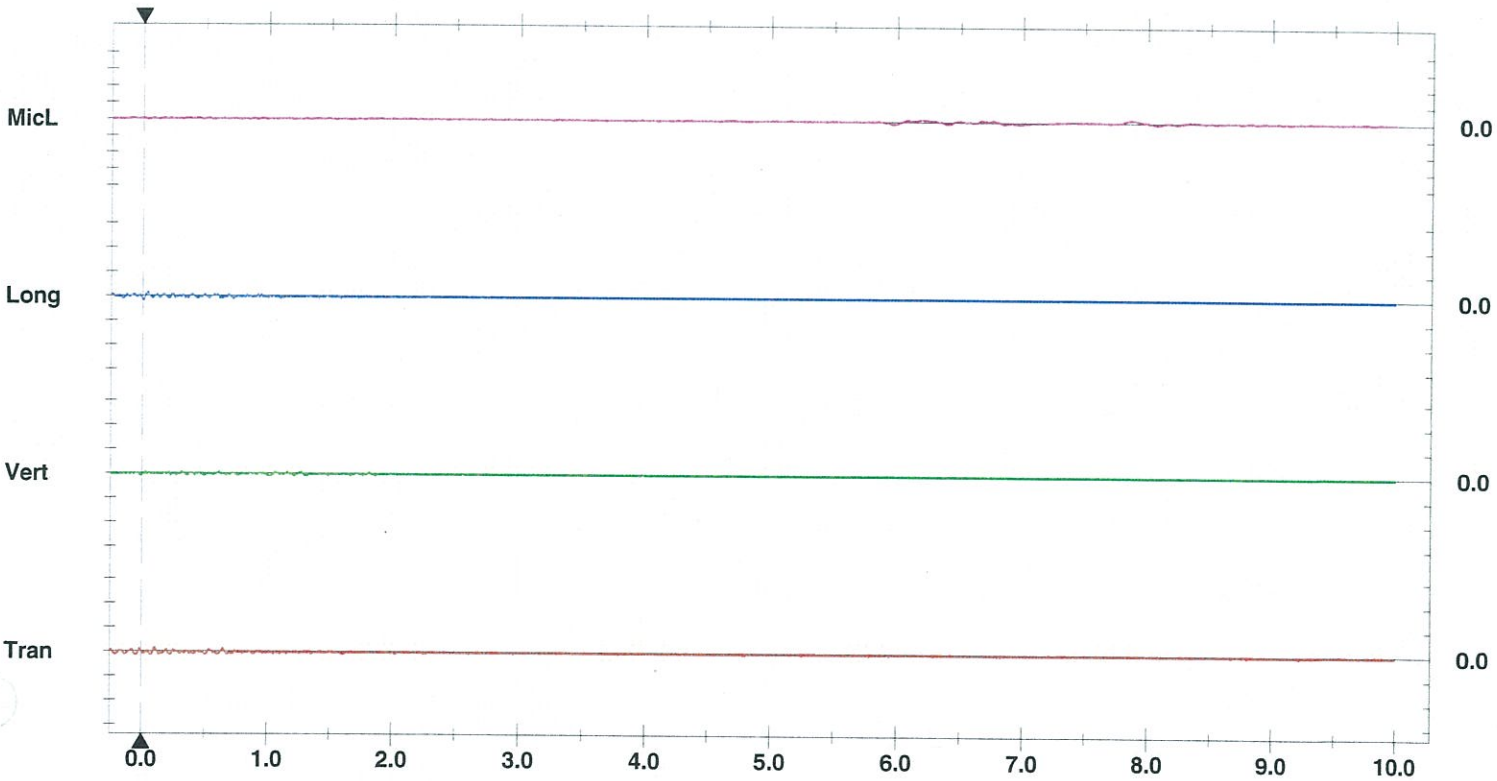
Microphone Linear Weighting
PSPL 95.9 dB(L) at 7.853 sec
ZC Freq 4.2 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 523 mv)

	Tran	Vert	Long	
PPV	0.0150	0.01000	0.0200	in/s
ZC Freq	16	>100	21	Hz
Time (Rel. to Trig)	-0.210	-0.099	0.000	sec
Peak Acceleration	0.0265	0.0133	0.0133	g
Peak Displacement	0.00019	0.00012	0.00017	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0224 in/s at 0.007 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 5-13-16 Blast No. 5-13-16 4A Time 13:38

Exact Blast Location FACE 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

N 29° 38' 58.2"
W 98° 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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3,806'

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

Peak Particle Velocity .070 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: David Larner Date: 5-13-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 13:38:03 May 13, 2016	**Serial Number**	BB10626 V 7.04-8.0 EVERLERT III
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	July 21, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	L626GDA0.JF1
Record Time	10.0 sec at 1024 sps		
Job Number:	1		

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

Extended Notes

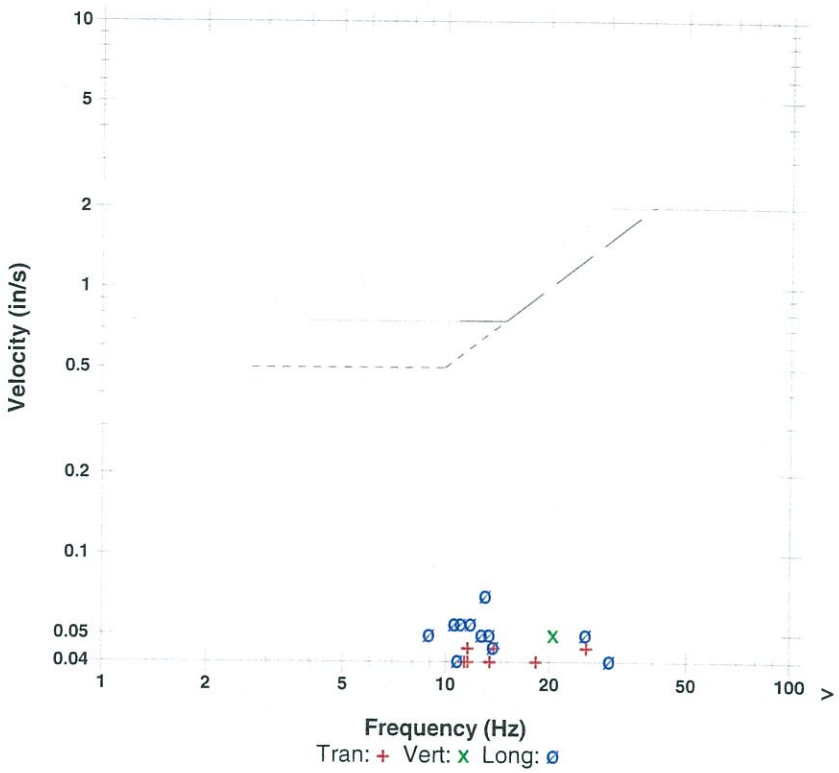
Post Event Notes
Michels Res: 3,806'

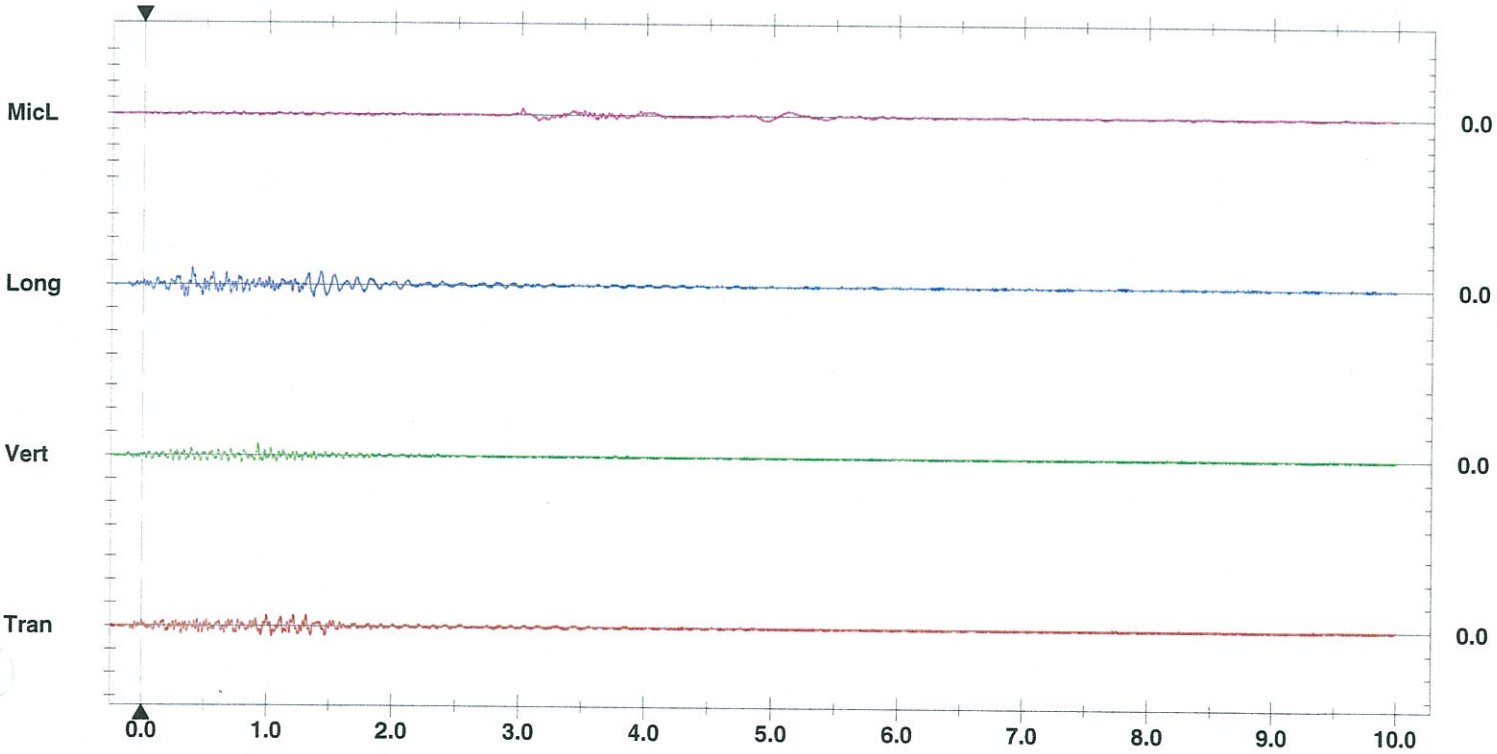
Microphone Linear Weighting
PSPL 102.8 dB(L) at 3.007 sec
ZC Freq 12 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 695 mv)

	Tran	Vert	Long	
PPV	0.0450	0.0500	0.0700	in/s
ZC Freq	12	20	13	Hz
Time (Rel. to Trig)	1.000	0.921	0.393	sec
Peak Acceleration	0.0398	0.0265	0.0398	g
Peak Displacement	0.00052	0.00033	0.00085	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0750 in/s at 0.393 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 5-13-16 Blast No. 5-13-16 4A Time 13:38

Exact Blast Location FACE 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

N 29° 38' 58.2"

W 98° 17' 36.8"

MONITOR GPS

N 29 38' 23"

W 98 17' 40"

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 3,578'

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

Peak Particle Velocity .14 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5-13-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Long at 13:38:12 May 13, 2016	**Serial Number**	BF13138 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	February 23, 2016 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O138GDA0.JO1
Record Time	5.0 sec at 1024 sps		

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

Extended Notes

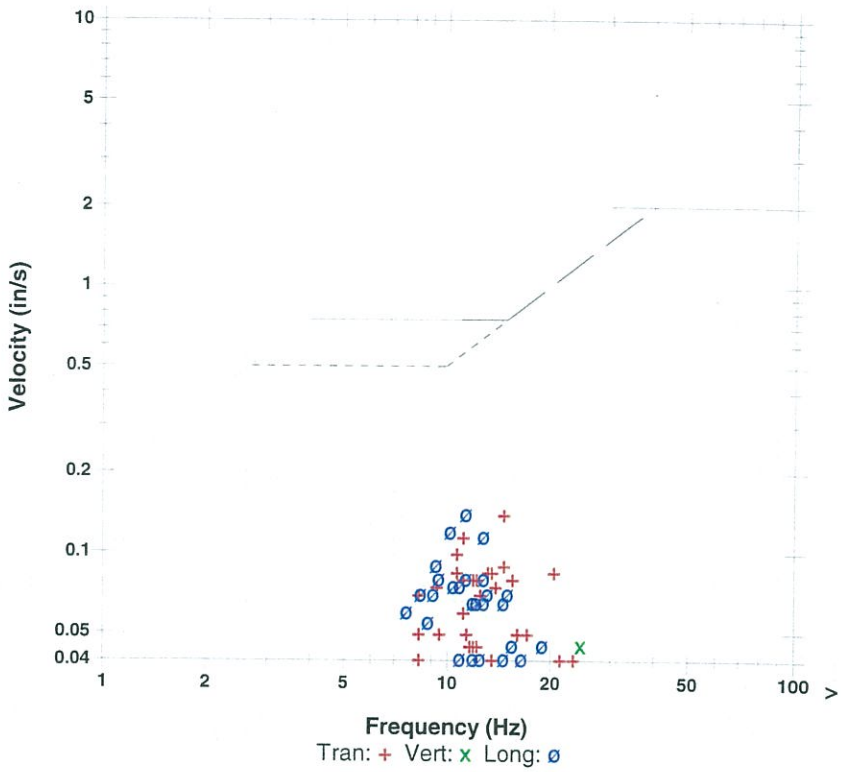
Post Event Notes
Warden Res: 3,578'

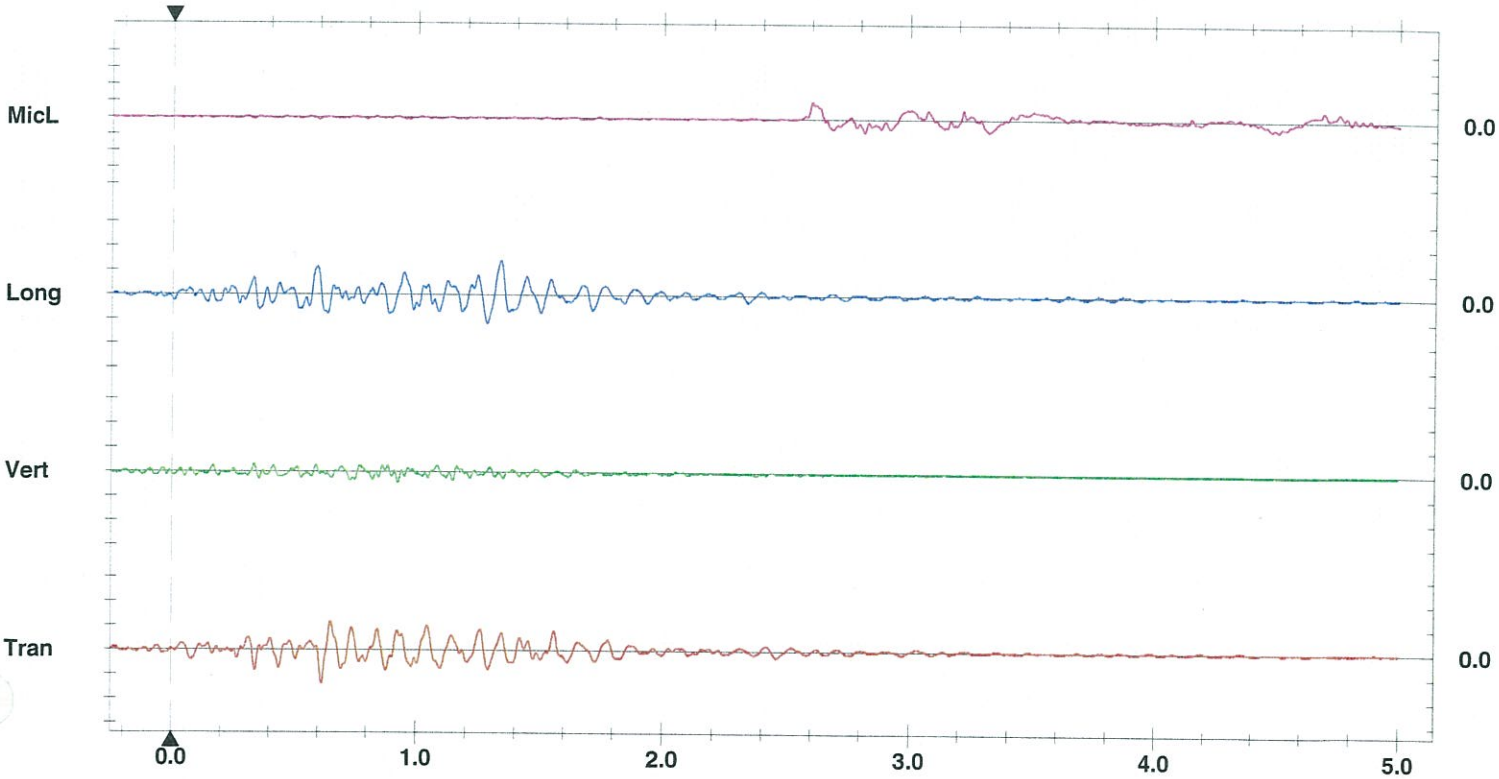
Microphone Linear Weighting
PSPL 110.9 dB(L) at 2.598 sec
ZC Freq 5.7 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 517 mv)

	Tran	Vert	Long	
PPV	0.140	0.0450	0.140	in/s
ZC Freq	15	24	11	Hz
Time (Rel. to Trig)	0.617	0.922	1.336	sec
Peak Acceleration	0.0398	0.0265	0.0398	g
Peak Displacement	0.00143	0.00052	0.00194	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.152 in/s at 0.617 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 5-13-16 Blast No. 5-13-16 4A Time 13:38

Exact Blast Location FACE 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

N 29° 38' 58.2"
W 98° 17' 36.8"

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 3,370'

Peak Overpressure 111.8 dB Scaled Distance ------

Peak Particle Velocity .080 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: D. Fan Date: 5-13-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Tran at 13:38:06 May 13, 2016	**Serial Number**	BF13922 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.3 Volts
		Calibration	November 22, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O922GDA0.JI1
Record Time	5.0 sec at 1024 sps		

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

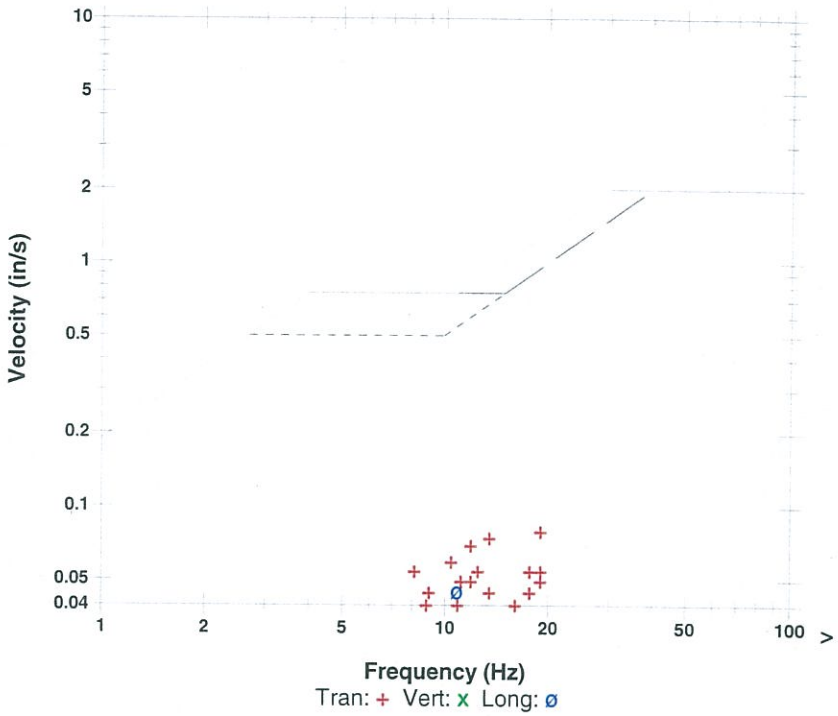
Post Event Notes
Warden Prop Line: 3,370'

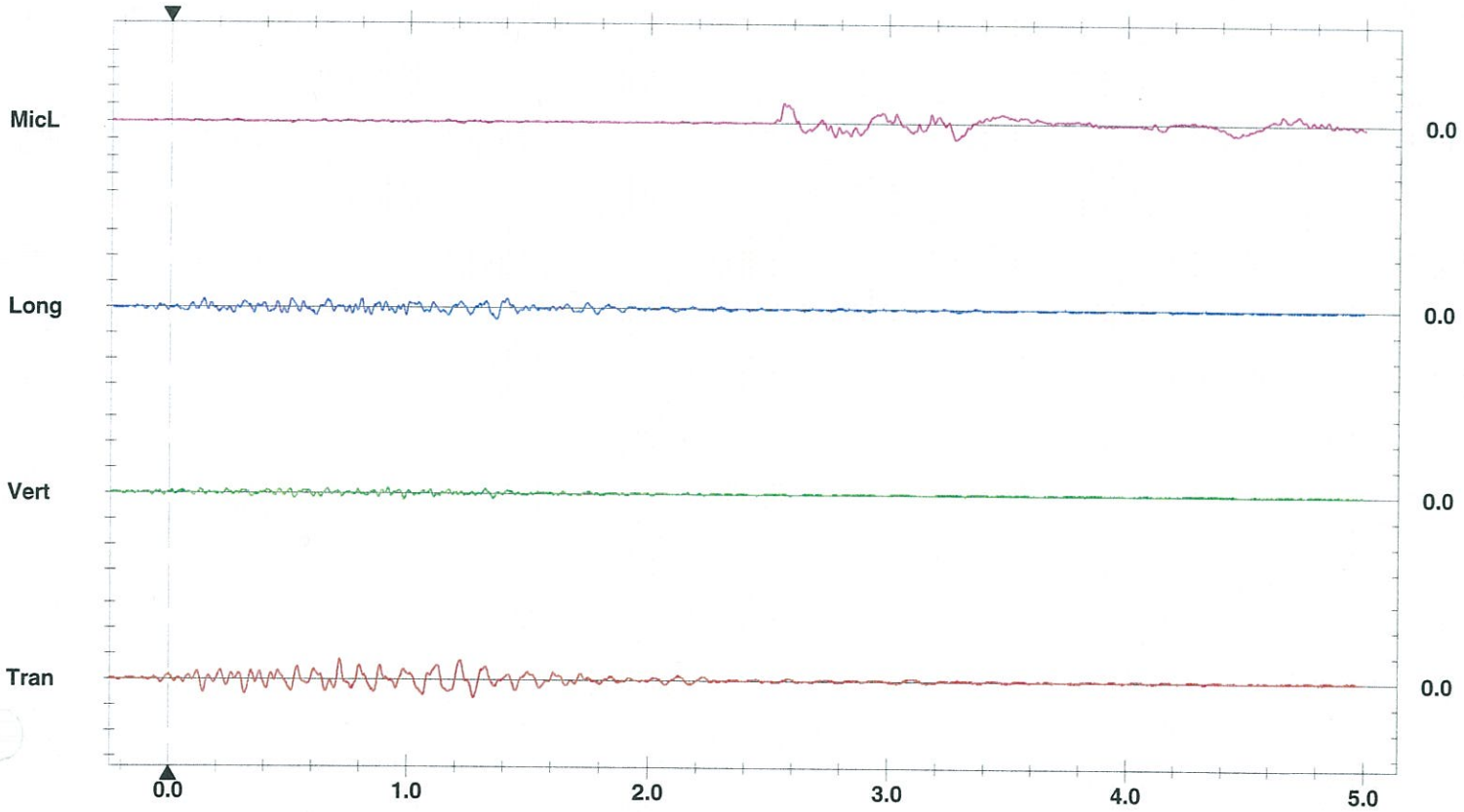
Microphone Linear Weighting
PSPL 111.8 dB(L) at 2.558 sec
ZC Freq 5.3 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 500 mv)

	Tran	Vert	Long	
PPV	0.0800	0.0250	0.0450	in/s
ZC Freq	19	32	11	Hz
Time (Rel. to Trig)	0.720	0.981	1.360	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00105	0.00014	0.00069	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0806 in/s at 0.720 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 5/17/16 Blast No. 5-17-16 3B Time 1:07

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 40.4
W 98 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 2403'

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

Peak Particle Velocity .07 ips Operator Jack Stockberger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockberger Date: 5/17/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

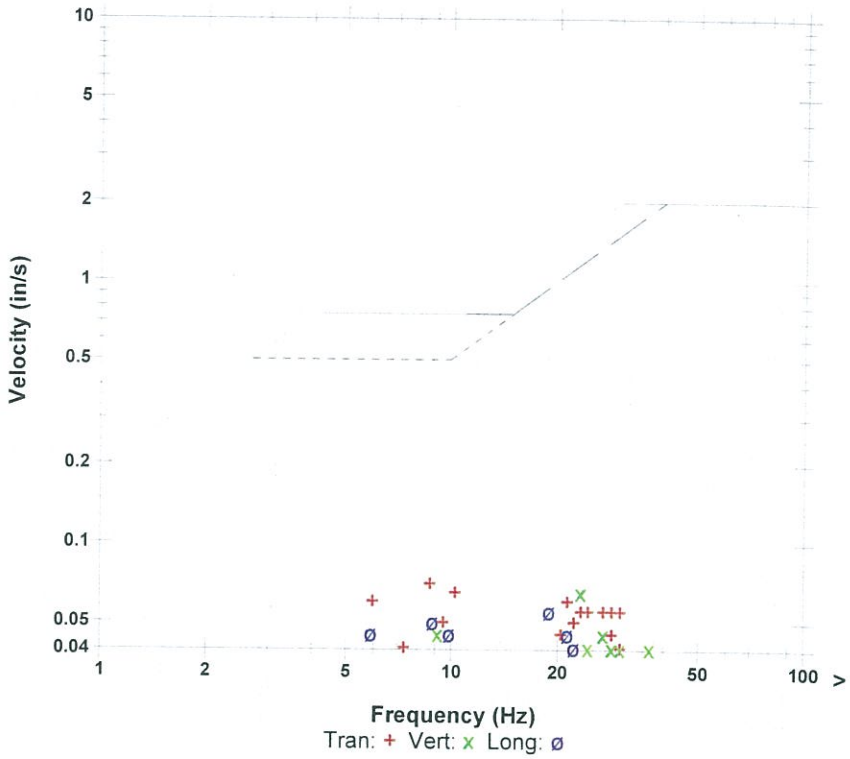
Date/Time	Long at 13:07:08 May 17, 2016	**Serial Number**	BD6191 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	July 16, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	H191GDHD.RW1
Record Time	10.0 sec at 1024 sps		

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

Extended Notes

Post Event Notes
City Property line- 2403'

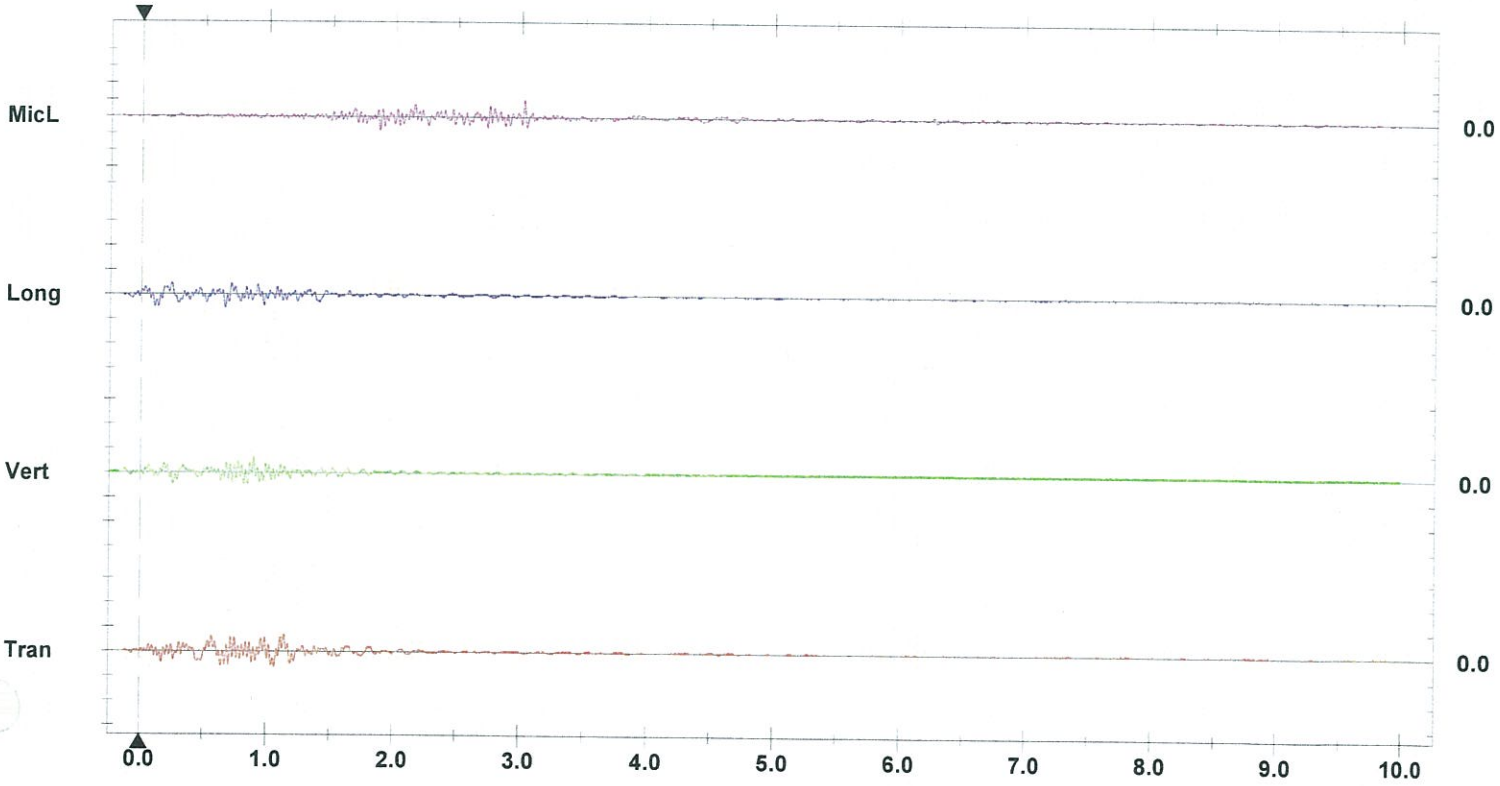
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	110.9 dB(L) at 3.021 sec
ZC Freq	22 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 577 mv)

	Tran	Vert	Long	
PPV	0.0700	0.0650	0.0550	in/s
ZC Freq	8.7	23	19	Hz
Time (Rel. to Trig)	1.140	0.896	0.661	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00127	0.00069	0.00109	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0743 in/s at 1.140 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 5/17/16 Blast No. 5-17-16 3B Time 1:07

Exact Blast Location 3 B

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 40.4
W 98 17 35.9

MONITOR GPS

N 29° 38' 28.71"
W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 8,075'

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

Peak Particle Velocity N/T ips Operator Jack Stockburger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockburger Date: 5/17/16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 17 '16 12:09:01	May 17 '16 13:16:31	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

FIELDS RESIDENCE @ 8,075 - DISTANCE

NO TRIGGER @ 13:07

05-17-16 3B @ 13:07 SHOT TIME

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 5/17/16 Blast No. 5-17-16 3B Time 1:07

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 40.4
W 98 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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 4,009'

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

Peak Particle Velocity .10 ips Operator Jack Stockleyer

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockleyer Date: 5/17/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time Long at 13:07:07 May 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
Job Number: 1

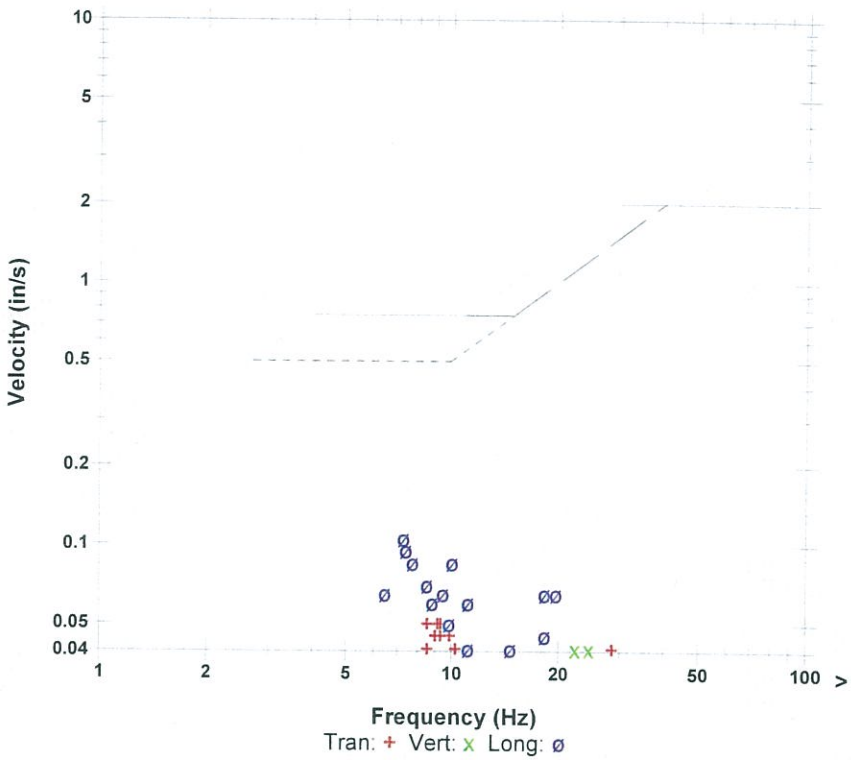
Serial Number BB10626 V 7.04-8.0 EVERLERT III
Battery Level 6.3 Volts
Calibration July 21, 2015 by Vibra-Tech Inc.
File Name L626GDHD.RV1

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

Extended Notes

Post Event Notes
Michels- 4,009'

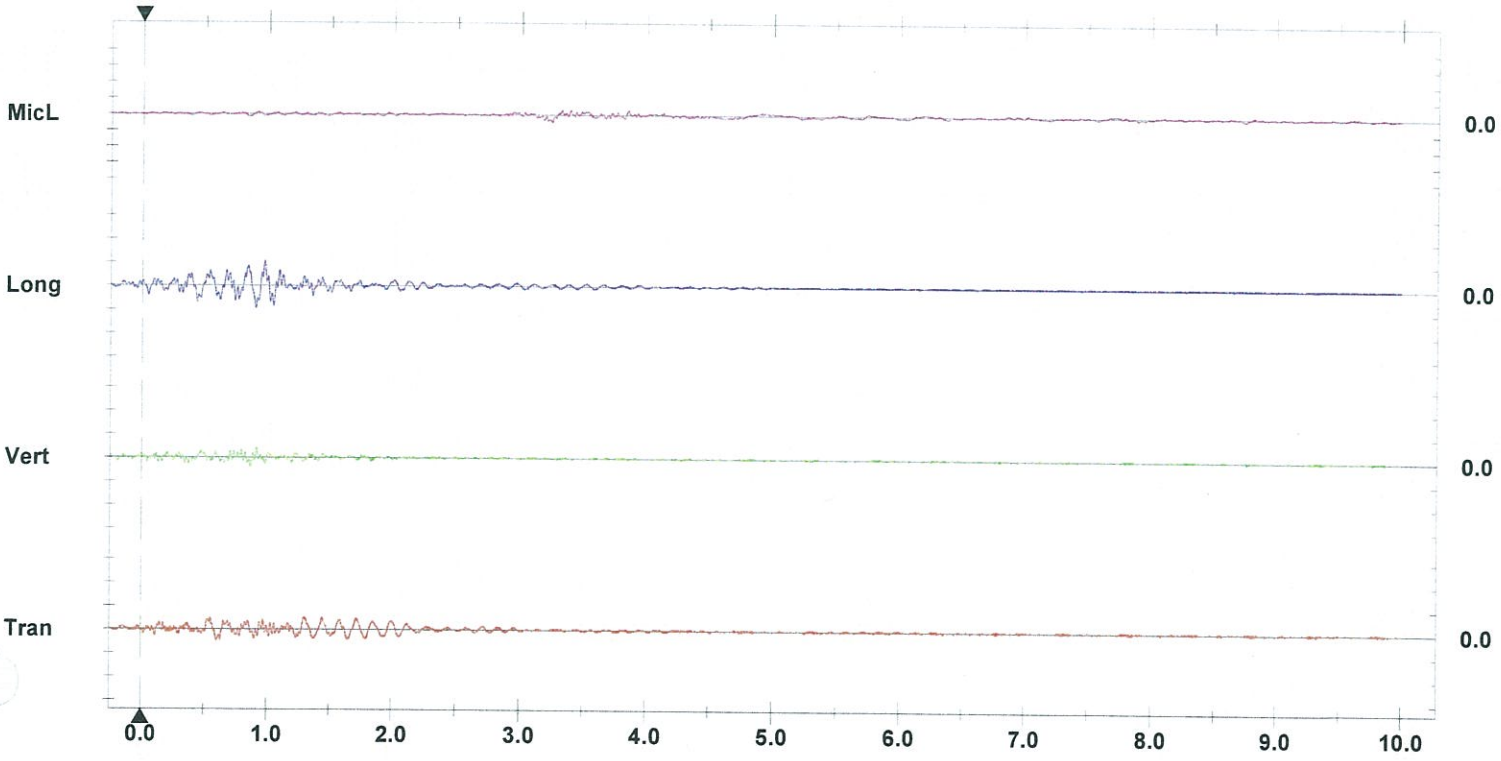
USBM RI8507 And OSMRE



Microphone Linear Weighting
PSPL 104.2 dB(L) at 3.239 sec
ZC Freq 4.1 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 662 mv)

	Tran	Vert	Long	
PPV	0.0500	0.0400	0.105	in/s
ZC Freq	9.1	22	7.3	Hz
Time (Rel. to Trig)	0.603	0.864	0.968	sec
Peak Acceleration	0.0265	0.0265	0.0398	g
Peak Displacement	0.00092	0.00047	0.00181	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.113 in/s at 0.971 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 5/17/16 Blast No. 5-17-16 3B Time 1:07

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 40.4
W 98 17 35.9

MONITOR GPS

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

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 1800'

Peak Overpressure 112.6 dB Scaled Distance ------

Peak Particle Velocity .36 ips Operator Jack Stockinger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockinger Date: 5/17/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 13:07:24 May 17, 2016	**Serial Number**	BF13138 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	February 23, 2016 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O138GDHD.SC1
Record Time	5.0 sec at 1024 sps		

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

Extended Notes

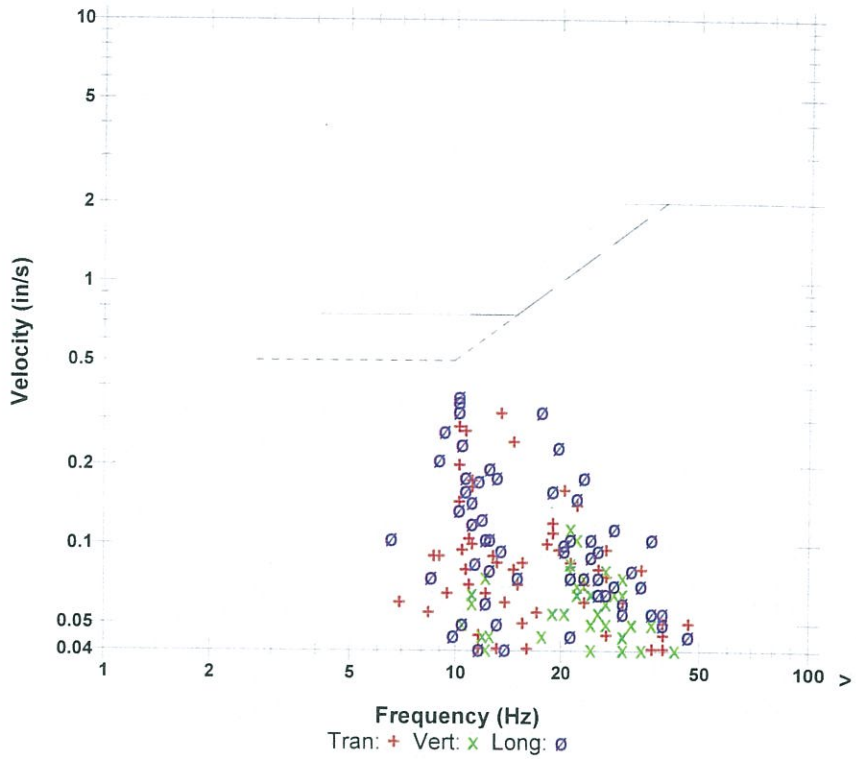
Post Event Notes
Warden Res. - 1800'

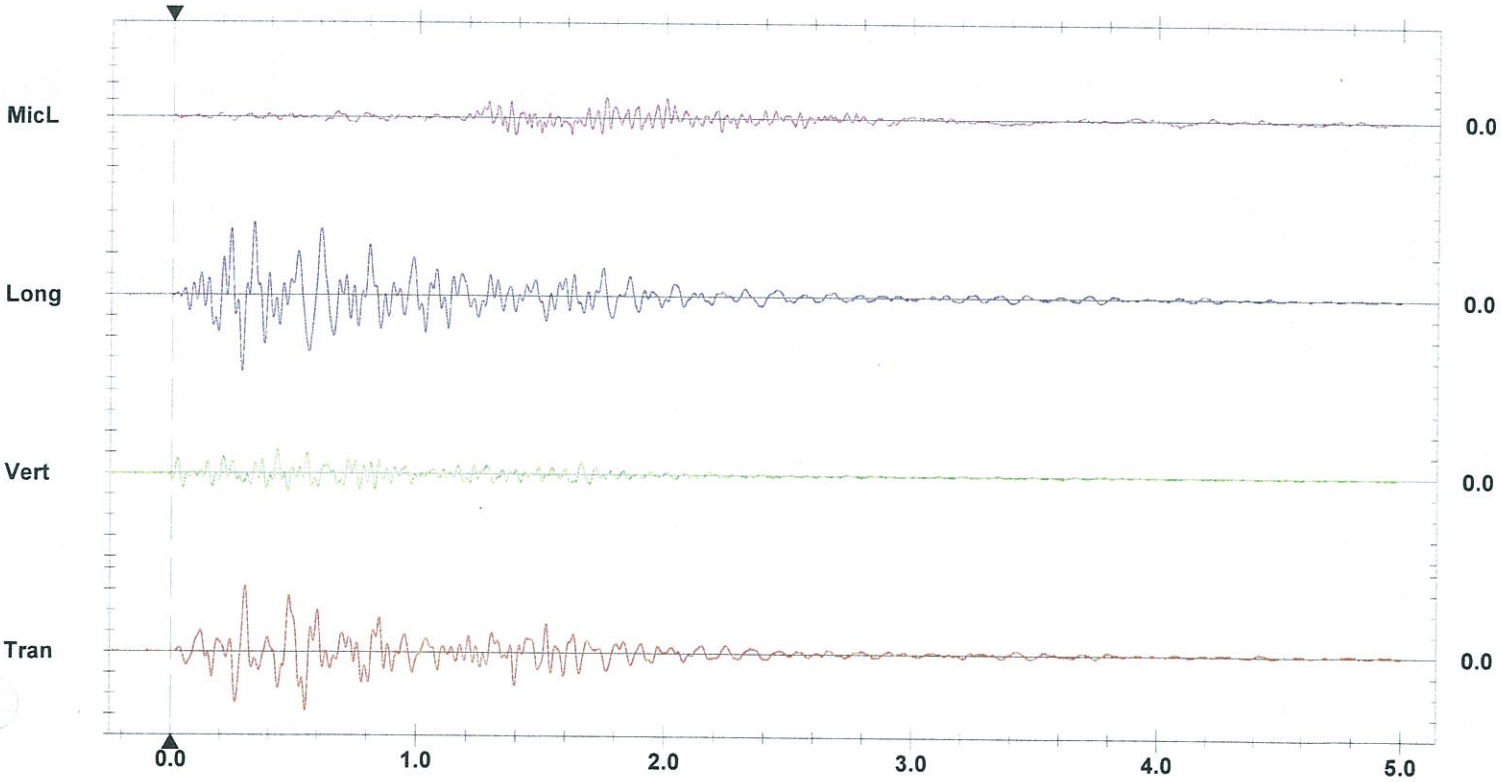
Microphone Linear Weighting
PSPL 112.6 dB(L) at 1.759 sec
ZC Freq 23 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 527 mv)

	Tran	Vert	Long	
PPV	0.315	0.115	0.365	in/s
ZC Freq	13	21	10	Hz
Time (Rel. to Trig)	0.305	0.432	0.287	sec
Peak Acceleration	0.0795	0.0398	0.0928	g
Peak Displacement	0.00391	0.00097	0.00434	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.373 in/s at 0.553 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 5/17/16 Blast No. 5-17-16 3B Time 1:07

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 40.4
W 98 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 1584'

Peak Overpressure 113.5 dB Scaled Distance ---

Peak Particle Velocity ~~.36~~ .29 ips Operator Jack Stockburger

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Jack Stockburger Date: 5/17/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

Date/Time	Vert at 13:07:14 May 17, 2016	**Serial Number**	BF13922 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.4 Volts
	Mic: 122 dB(L)	**Calibration**	November 22, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O922GDHD.S21
Record Time	5.0 sec at 1024 sps		

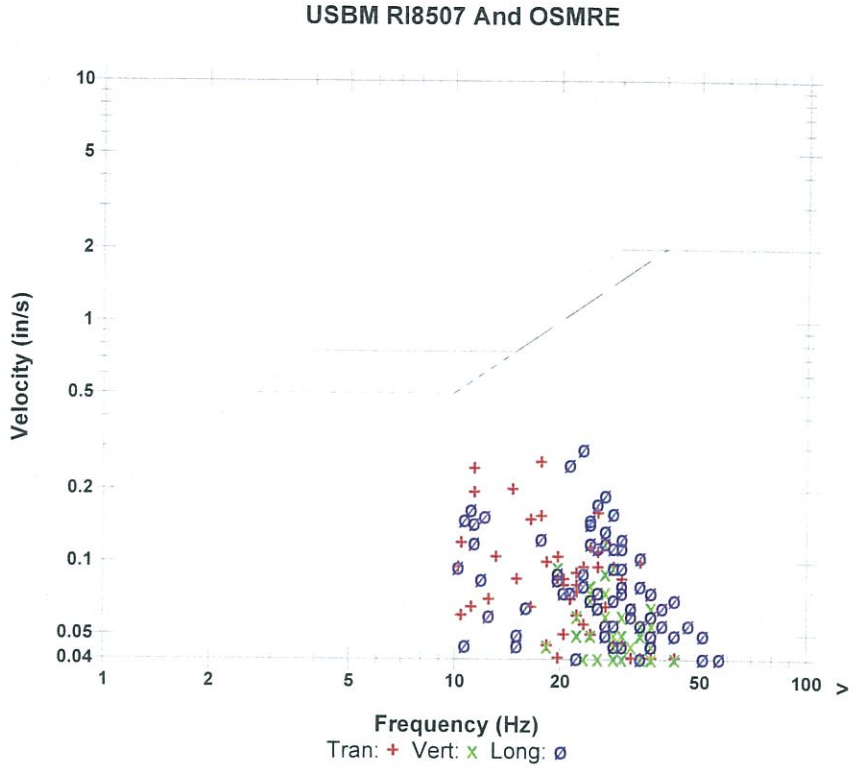
Notes
Location: Garden Ridge, Texas
Client: Hanson Servtex
User Name: Vibra Tech
General:

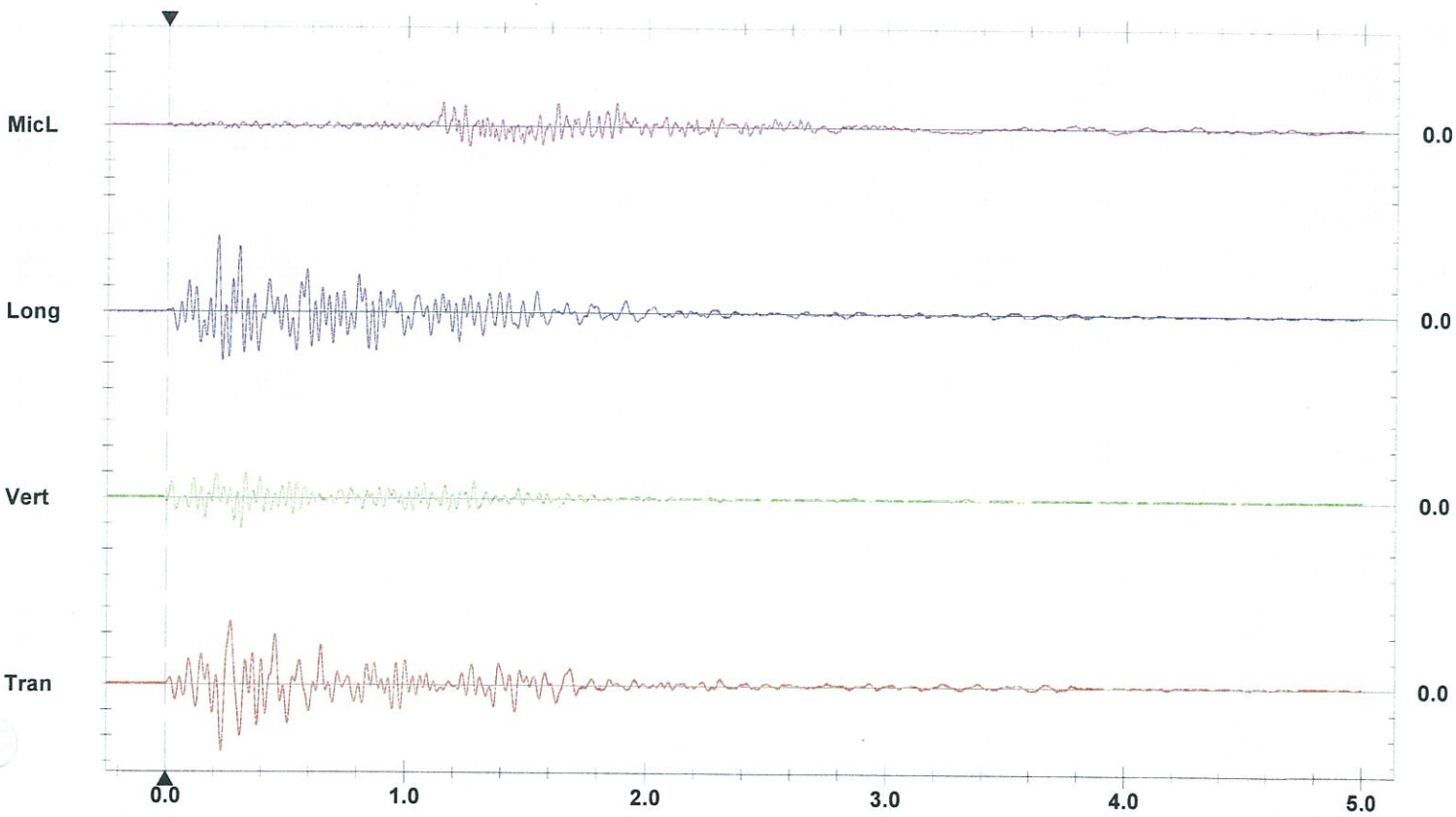
Post Event Notes
Warden Prop. line-1584'

Microphone Linear Weighting
PSPL 113.5 dB(L) at 1.146 sec
ZC Freq 7.2 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 554 mv)

	Tran	Vert	Long	
PPV	0.260	0.120	0.295	in/s
ZC Freq	18	27	23	Hz
Time (Rel. to Trig)	0.231	0.313	0.211	sec
Peak Acceleration	0.0795	0.0530	0.106	g
Peak Displacement	0.00338	0.00073	0.00213	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.321 in/s at 0.231 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 May 23, 2016 Blast No. 05-23-16 3E Time 13:38

Exact Blast Location 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

N: 29° 38' 54.4"

W: 98° 17' 37.9"

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 3517 ft

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

Peak Particle Velocity 0.130 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/23/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Tran at 13:38:53 May 23, 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	H191GDSJ.8T1

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

Extended Notes

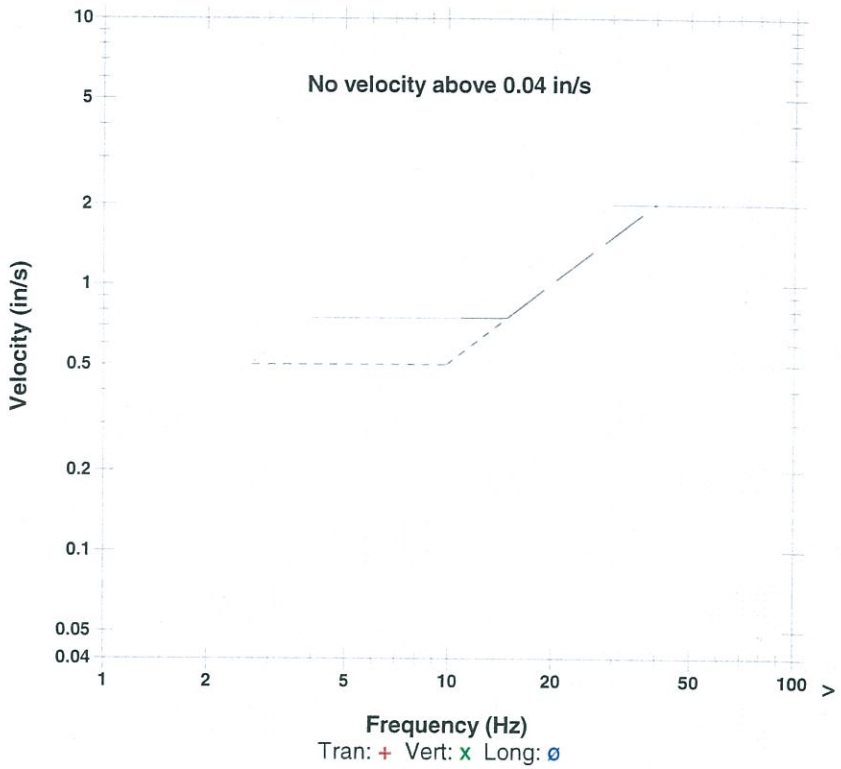
Post Event Notes
City Property Line
3517 ft.

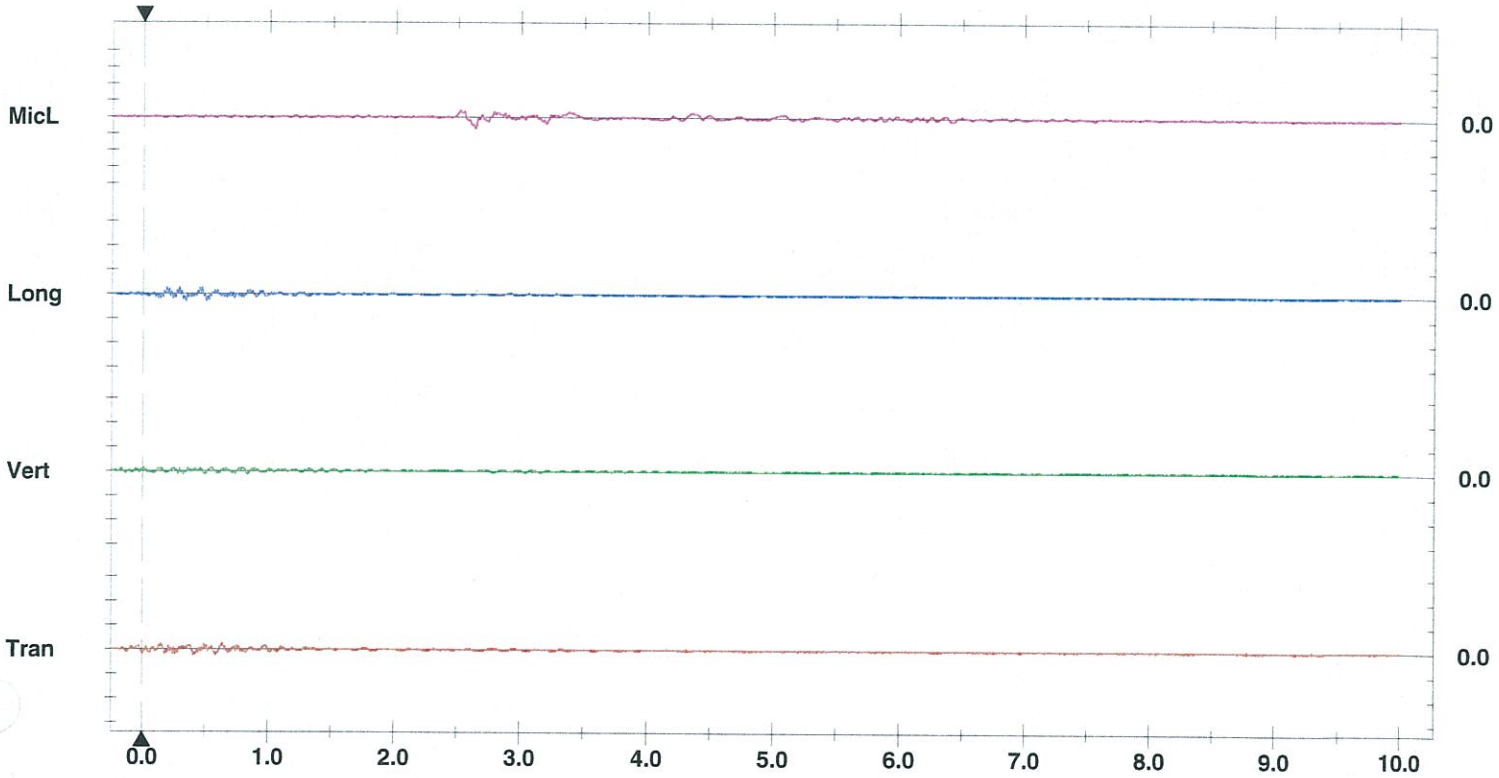
Microphone	Linear Weighting
PSPL	107.5 dB(L) at 2.639 sec
ZC Freq	5.3 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 599 mv)

	Tran	Vert	Long	
PPV	0.0250	0.0150	0.0300	in/s
ZC Freq	16	34	14	Hz
Time (Rel. to Trig)	0.147	0.002	0.337	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00030	0.00013	0.00032	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0316 in/s at 0.337 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 May 23, 2016 Blast No. 05 23 16 3E Time 13:38

Exact Blast Location 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

N: 29° 38' 54.4"

W: 98° 17' 37.9"

MONITOR GPS

N 29° 38' 28.71"

W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 8234 ft.

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

Peak Particle Velocity NT ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/23/16

Freelds Residence 8234 St.

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 17 '16 12:09:01	May 17 '16 13:16:31	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 23 '16 12:28:49		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 23 '16 12:28:52	May 23 '16 12:29:02	Event recorded. Trigger MicL: 122.0 dB(L)
May 23 '16 12:29:02		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 23 '16 12:29:03	May 23 '16 12:29:13	Event recorded. Trigger MicL: 122.0 dB(L)
May 23 '16 12:29:13		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 23 '16 14:11:27	May 23 '16 14:11:37	Event recorded. (Keyboard Exit) Trigger MicL: 122.0 dB(L)

Hanson Servtex 05-23-16 3E
Shot at 13:38
Non Trigger

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date May 23, 2016 Blast No. 05-23-16 3E Time 13:38

Exact Blast Location 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

N: 29° 38' 54.4"
W: 98° 17' 37.9"

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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3665 ft.

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

Peak Particle Velocity 0.050 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/23/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Long at 13:38:52 May 23, 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	L626GDSJ.8S1

Notes

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

Extended Notes

Post Event Notes

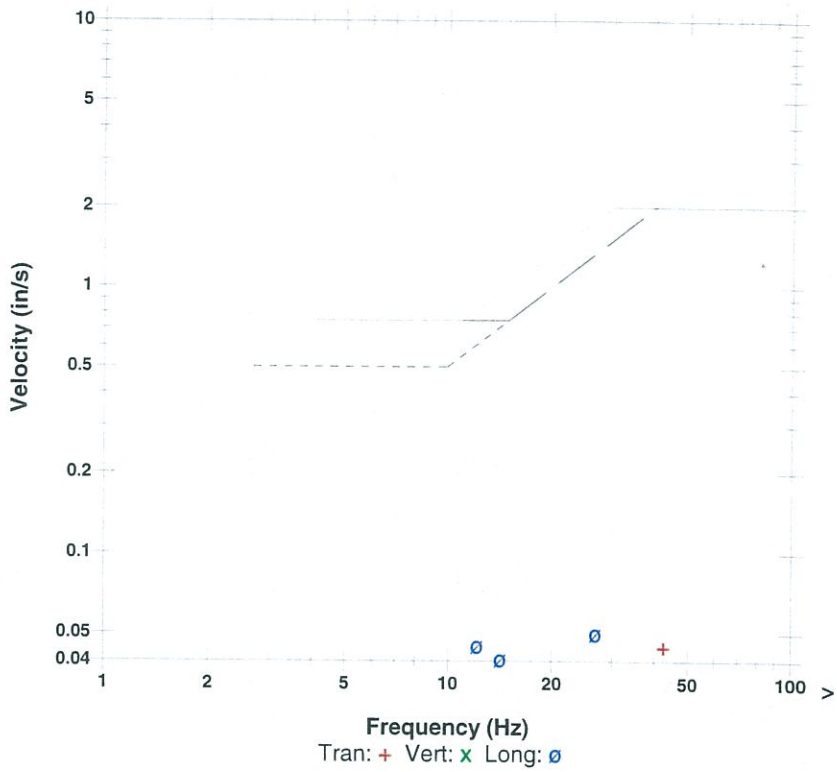
Michels Residence
3665 ft.

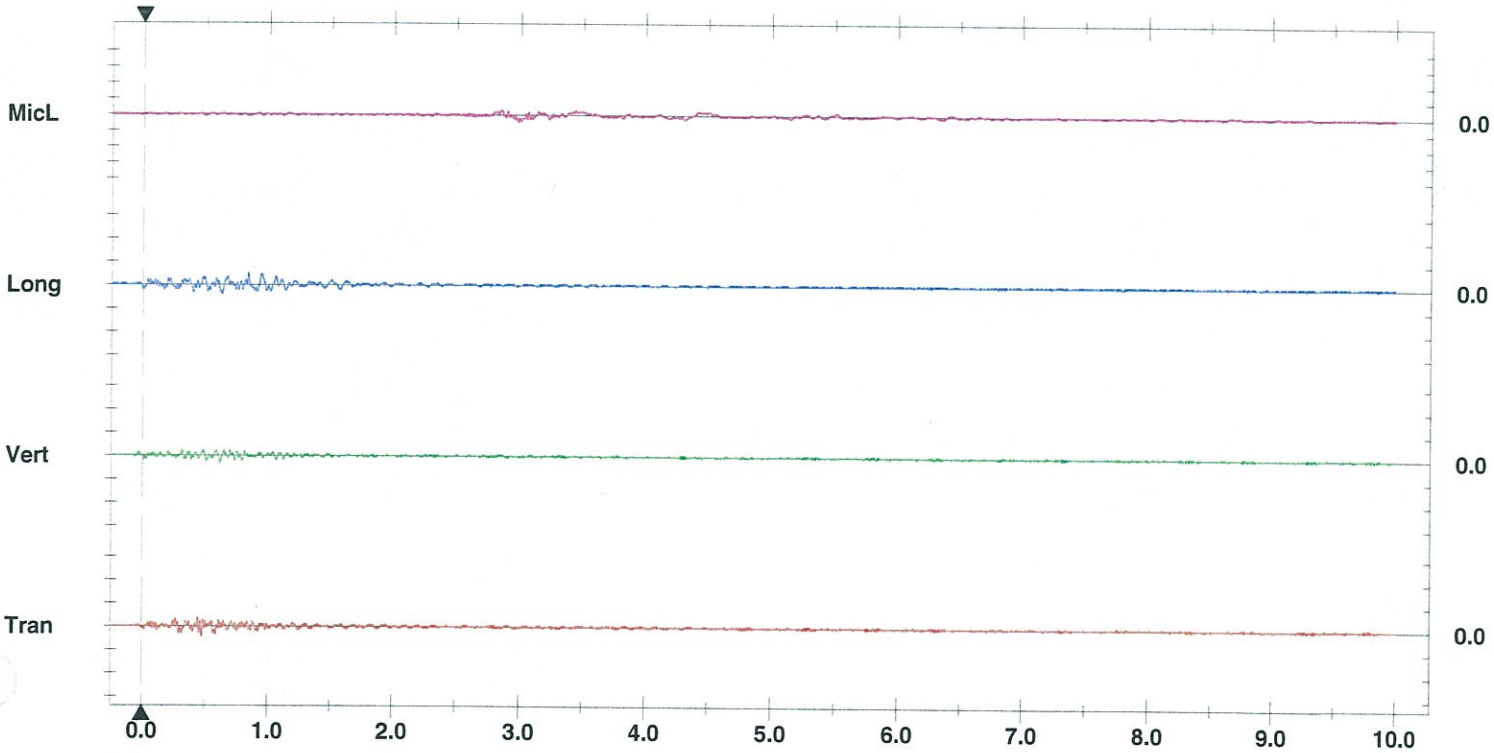
Microphone	Linear Weighting
PSPL	103.5 dB(L) at 2.980 sec
ZC Freq	4.3 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 713 mv)

	Tran	Vert	Long	
PPV	0.0450	0.0300	0.0500	in/s
ZC Freq	43	20	27	Hz
Time (Rel. to Trig)	0.472	0.607	0.832	sec
Peak Acceleration	0.0398	0.0265	0.0265	g
Peak Displacement	0.00033	0.00023	0.00059	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0536 in/s at 0.472 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 May 23, 2016 Blast No. 05-23-16 3E Time 13:38

Exact Blast Location 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

N: 29° 38' 54.4"
W: 98° 17' 37.9"

MONITOR GPS

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

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 3187 ft.

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

Peak Particle Velocity 0.100 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/23/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Long at 13:38:52 May 23, 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	BF13138 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	February 23, 2016 by Vibra-Tech Inc.
File Name	O138GDSJ.8S1

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

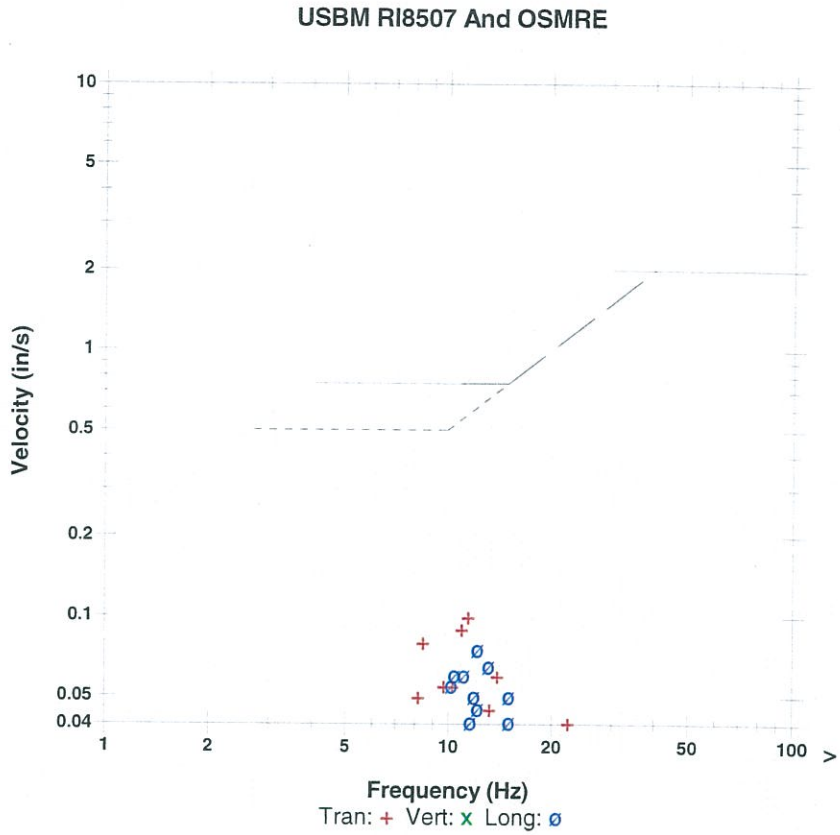
Extended Notes

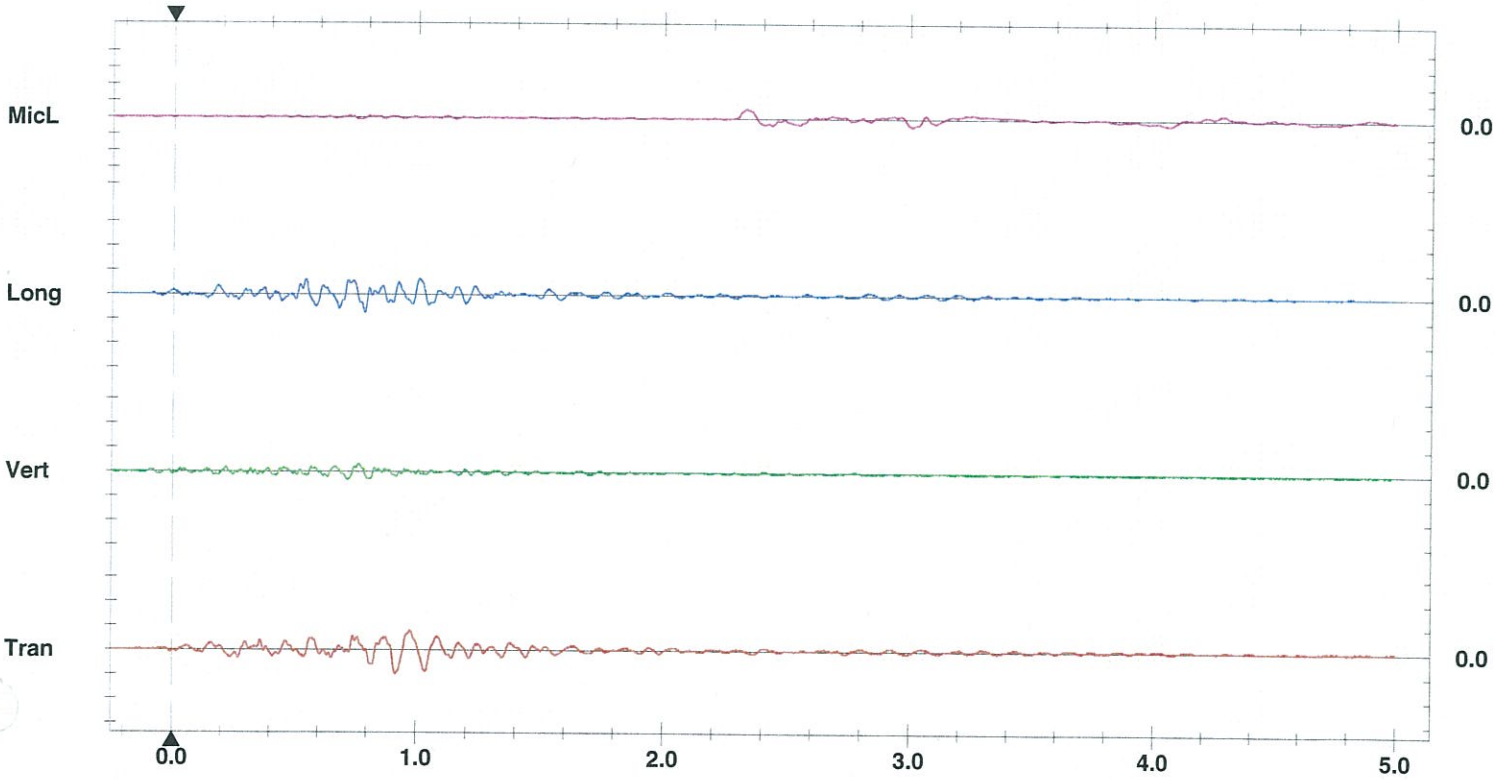
Post Event Notes
Warden Residence
3187 ft.

Microphone	Linear Weighting
PSPL	106.0 dB(L) at 2.327 sec
ZC Freq	6.6 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 531 mv)

	Tran	Vert	Long	
PPV	0.1000	0.0350	0.0750	in/s
ZC Freq	11	11	12	Hz
Time (Rel. to Trig)	0.914	0.719	0.785	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00150	0.00046	0.00105	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.106 in/s at 0.914 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 May 23, 2016 Blast No. 05-23-16 3E Time 13:38

Exact Blast Location 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

N: 29° 38' 54.4"
W: 98° 17' 37.9"

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 2981 ft.

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

Peak Particle Velocity 0.070 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/23/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Long at 13:38:54 May 23, 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	O922GDSJ.8U1

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

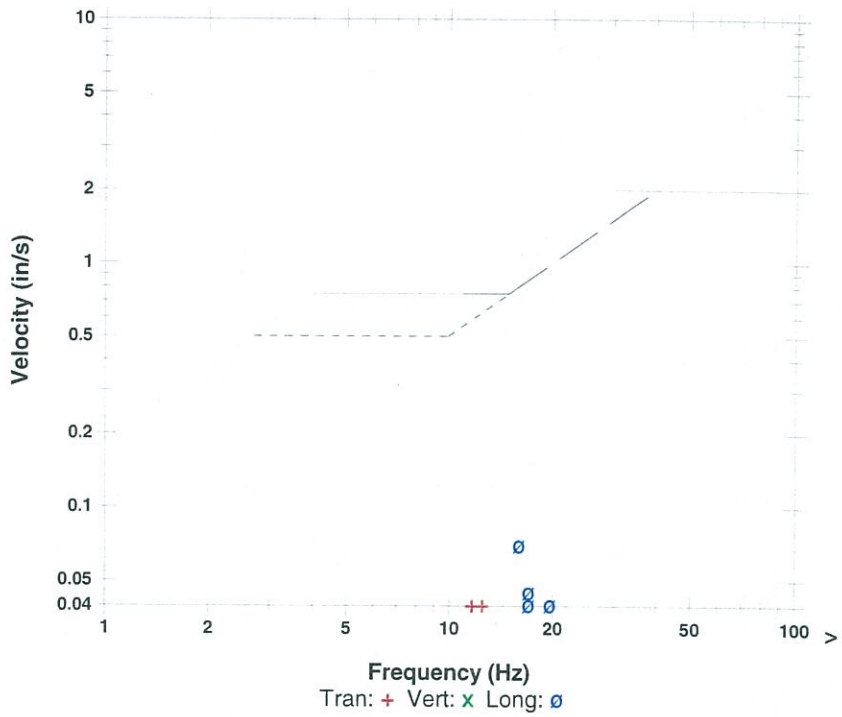
Post Event Notes
Warden Property Line
2981 Ft.

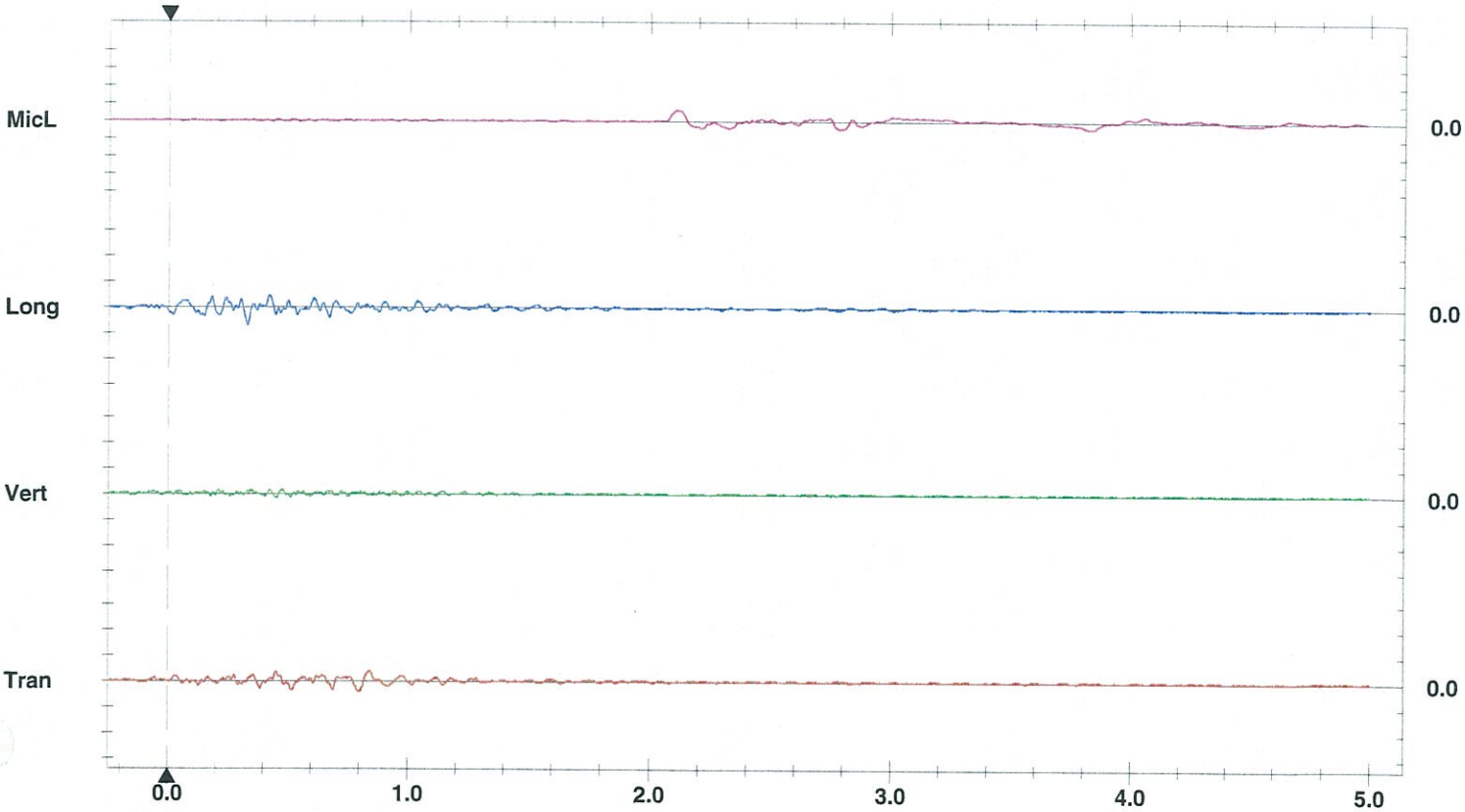
Microphone	Linear Weighting
PSPL	107.0 dB(L) at 2.107 sec
ZC Freq	6.3 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 482 mv)

	Tran	Vert	Long	
PPV	0.0400	0.0200	0.0700	in/s
ZC Freq	12	22	16	Hz
Time (Rel. to Trig)	0.793	0.478	0.328	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00059	0.00014	0.00067	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0716 in/s at 0.331 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 5-25-16 Blast No. 5-25-16 4B Time 11:08

Exact Blast Location FACE 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' 02"

W 98° 17' 35.2"

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 4,319'

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

Peak Particle Velocity .035 ips Operator DAVID GARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5-25-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Tran at 11:08:30 May 25, 2016	**Serial Number**	BD6191 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	July 16, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	H191GDW1.M61
Record Time	10.0 sec at 1024 sps		

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

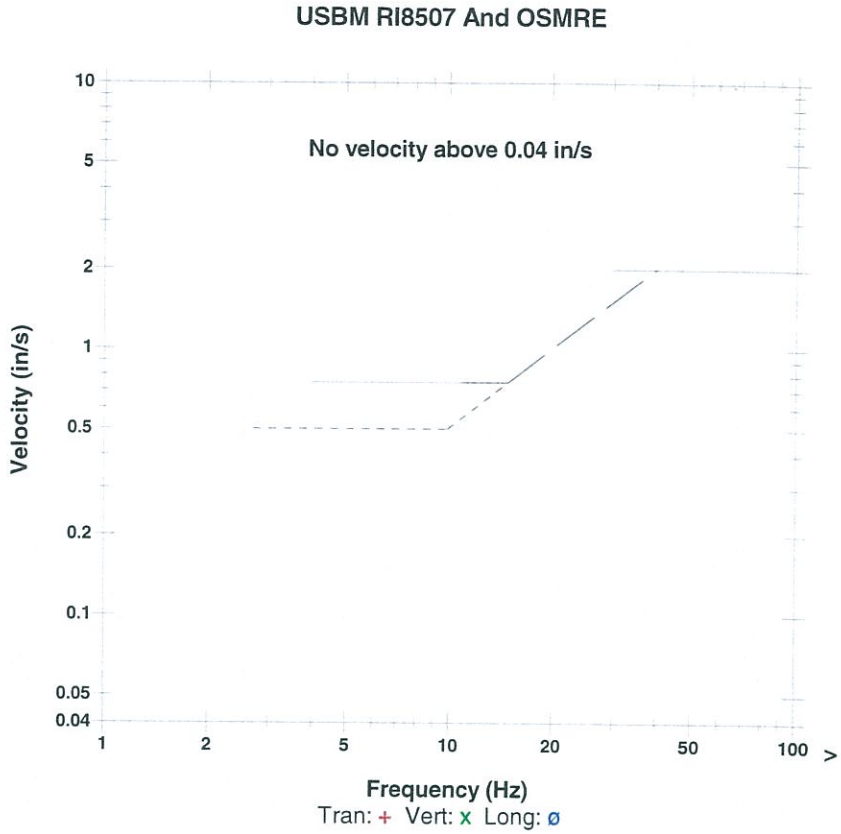
Extended Notes

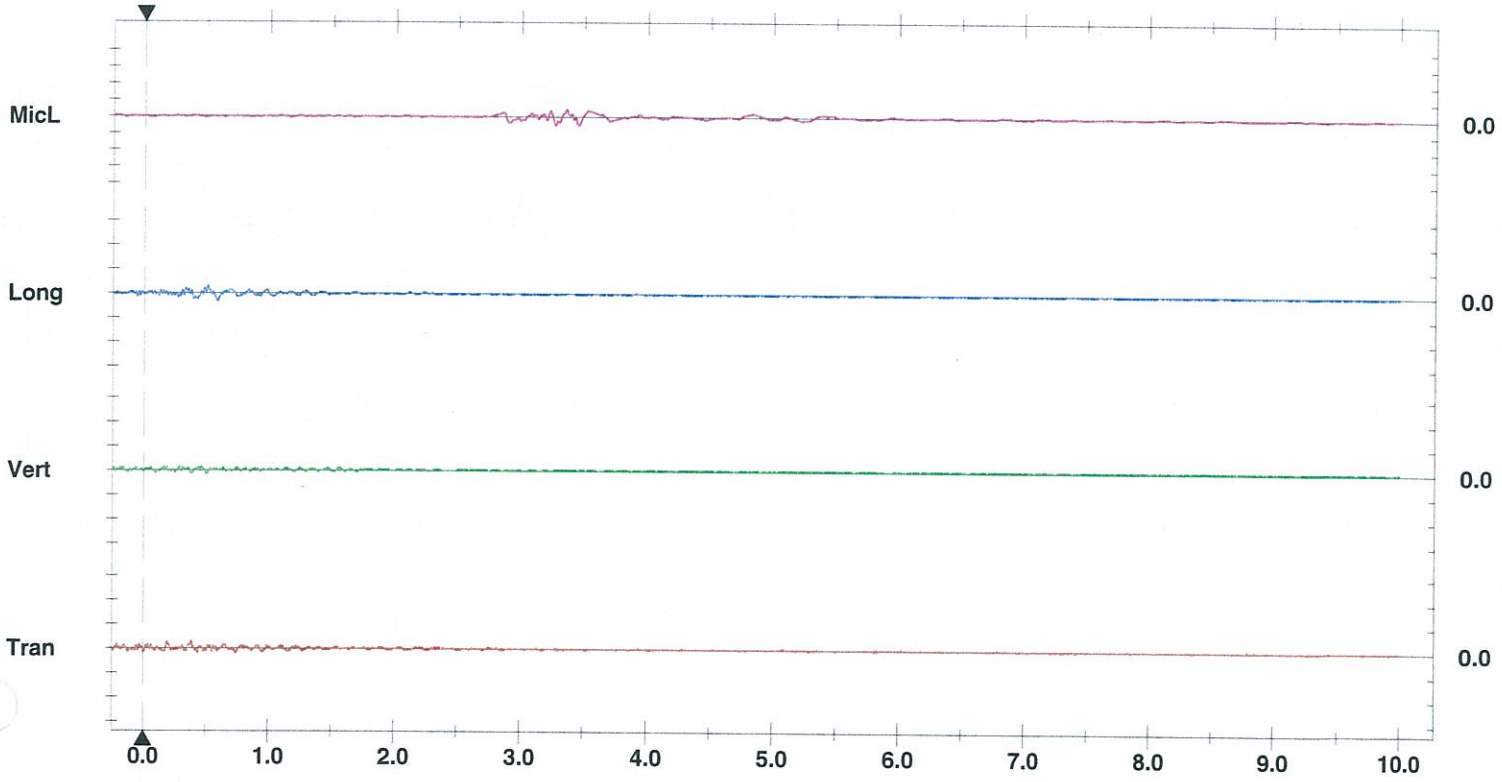
Post Event Notes
City Property Line: 4,319'

Microphone Linear Weighting
PSPL 104.9 dB(L) at 3.267 sec
ZC Freq 7.4 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 588 mv)

	Tran	Vert	Long	
PPV	0.0300	0.0150	0.0350	in/s
ZC Freq	13	30	11	Hz
Time (Rel. to Trig)	0.386	0.153	0.585	sec
Peak Acceleration	0.0265	0.0133	0.0133	g
Peak Displacement	0.00031	0.00012	0.00059	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0357 in/s at 0.585 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 5-25-16 Blast No. 5-25-16 4B Time 11:08

Exact Blast Location FACE 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' 02"
W 98° 17' 35.2"

MONITOR GPS

N 29° 38' 28.71"
W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 8,727'

Peak Overpressure NA dB Scaled Distance ------

Peak Particle Velocity NT ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5-25-16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 25 '16 10:46:06		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 25 '16 10:46:11	May 25 '16 10:46:21	Event recorded. Trigger Vert: 0.0200 in/s
May 25 '16 10:46:21	May 25 '16 11:51:35	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

FIELD'S RESIDENCE

NO TRIGGER @ 11:08

DISTANCE = 8,727'

05-25-16 4D SHOT @ 11:08

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date 5-25-16 Blast No. 5-25-16 4B Time 11:08

Exact Blast Location FACE 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' 02"

W 98° 17' 35.2"

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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 4,024'

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

Peak Particle Velocity .055 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5-25-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Long at 11:08:29 May 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	L626GDW1.M51

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

Extended Notes

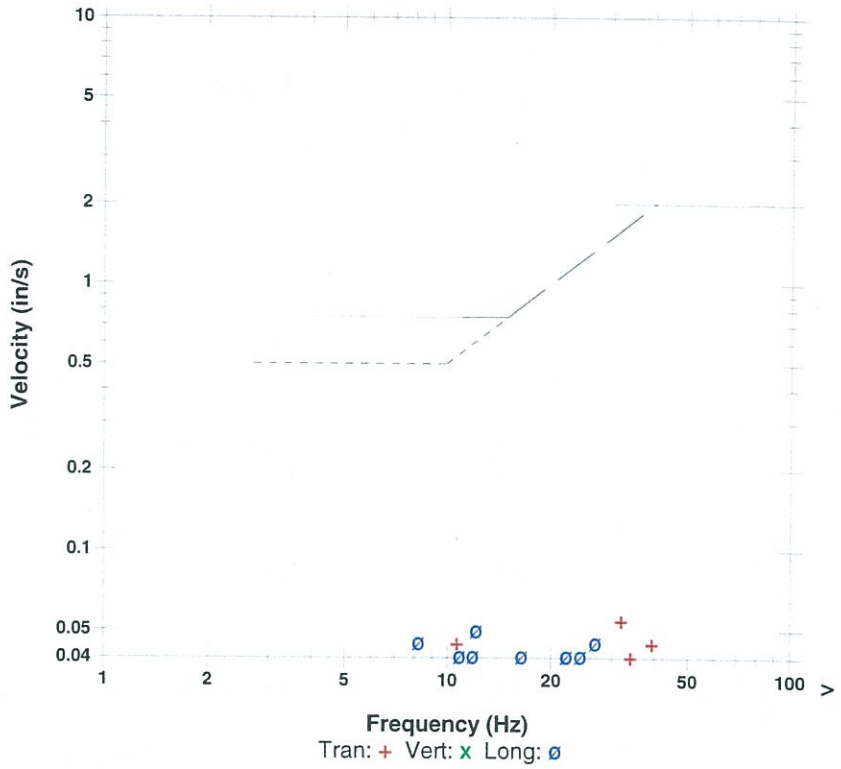
Post Event Notes
Michels Residence: 4,024'

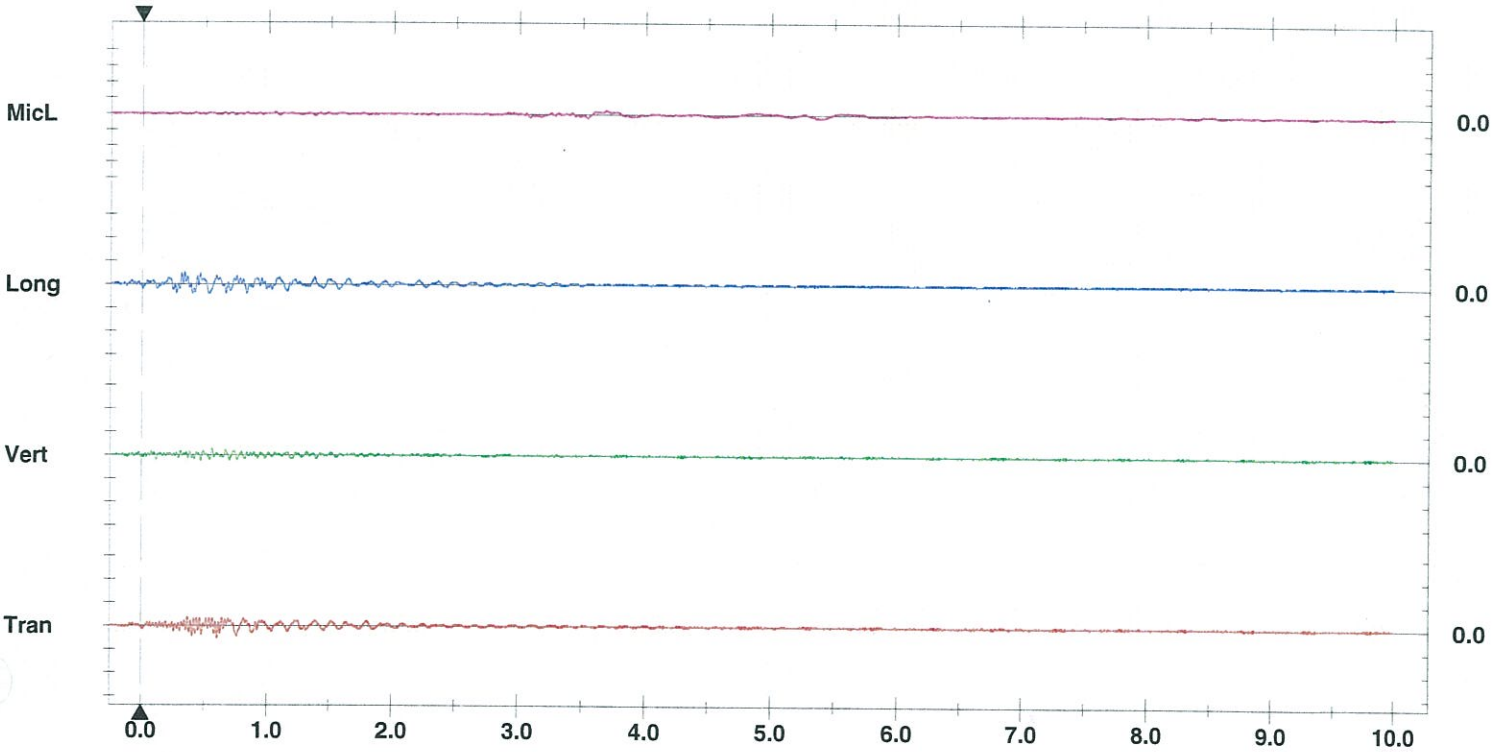
Microphone	Linear Weighting
PSPL	98.8 dB(L) at 3.535 sec
ZC Freq	8.4 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 696 mv)

	Tran	Vert	Long	
PPV	0.0550	0.0250	0.0500	in/s
ZC Freq	32	30	12	Hz
Time (Rel. to Trig)	0.604	0.466	0.333	sec
Peak Acceleration	0.0398	0.0265	0.0265	g
Peak Displacement	0.00064	0.00020	0.00066	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0585 in/s at 0.604 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 5-25-16 Blast No. 5-25-16 4B Time 11:08

Exact Blast Location FACE 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' 02"
W 98° 17' 35.2"

MONITOR GPS

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

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 3,975'

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

Peak Particle Velocity .070 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5-25-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Tran at 11:08:34 May 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

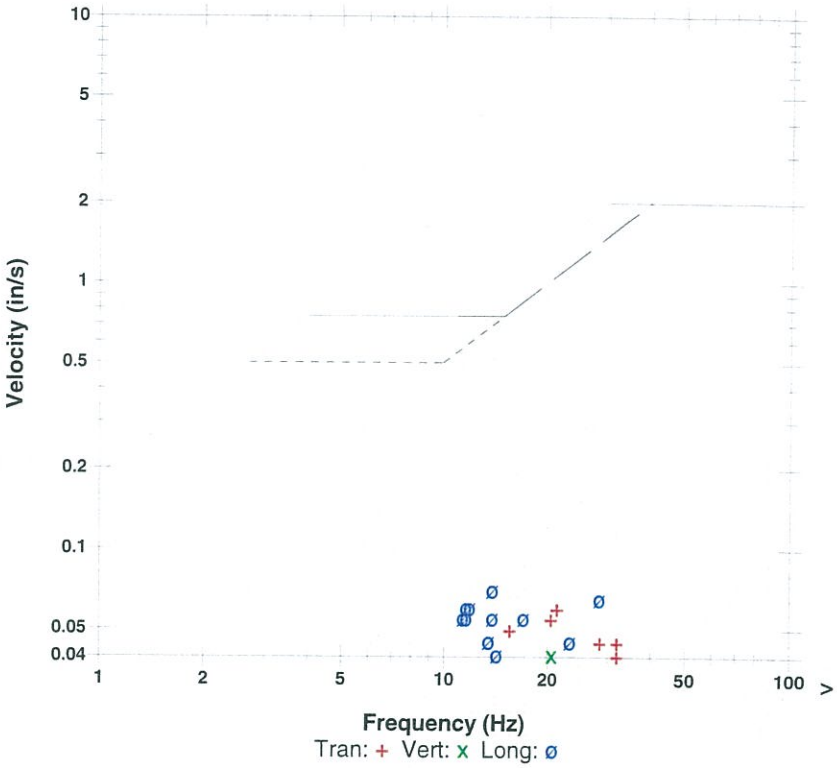
Serial Number	BF13138 V 7.04-8.0 MultiSeis Plus
Battery Level	6.3 Volts
Calibration	February 23, 2016 by Vibra-Tech Inc.
File Name	O138GDW1.MA1

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

Extended Notes

Post Event Notes
Warden Residence: 3,975'

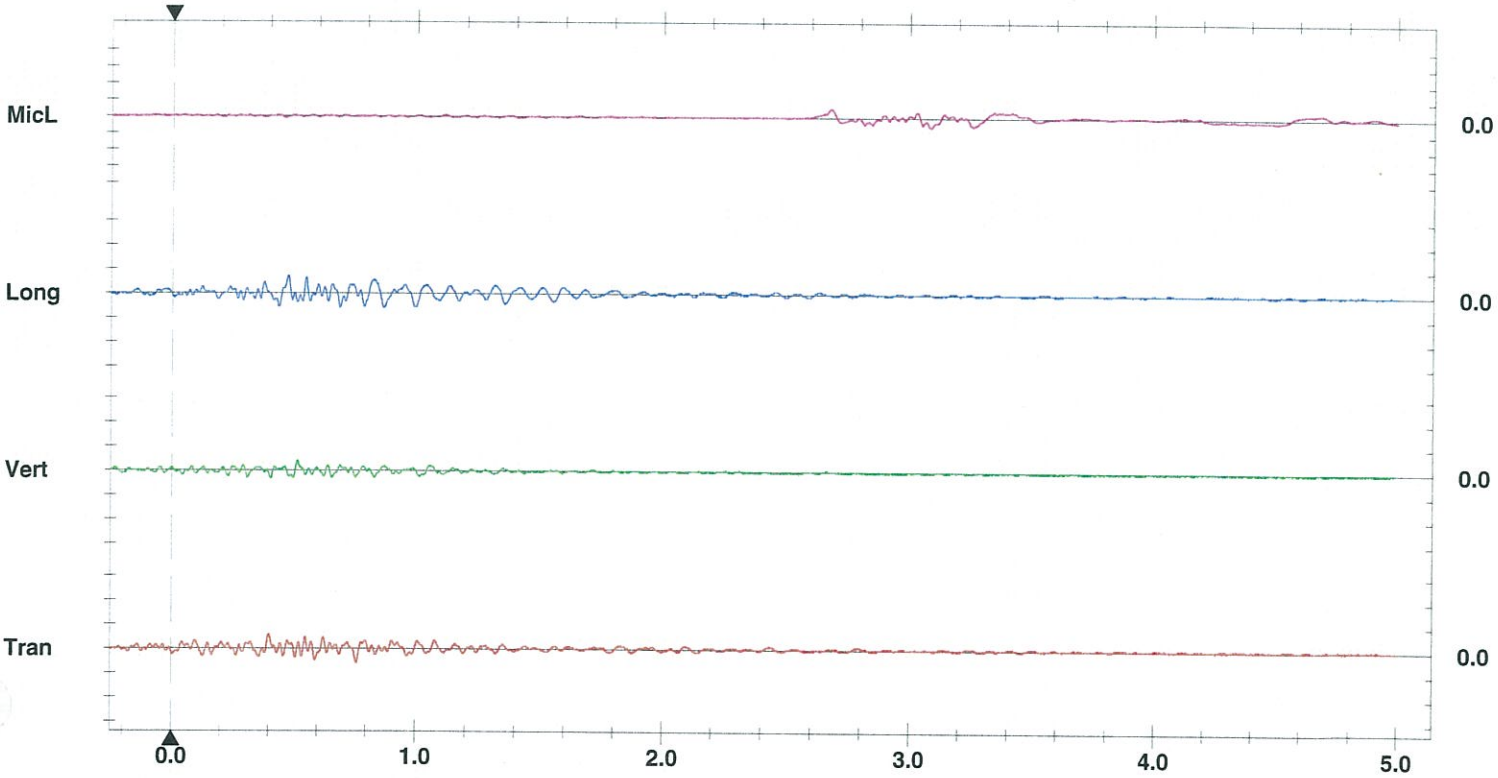
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	106.0 dB(L) at 3.083 sec
ZC Freq	6.0 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 548 mv)

	Tran	Vert	Long	
PPV	0.0600	0.0400	0.0700	in/s
ZC Freq	21	20	14	Hz
Time (Rel. to Trig)	0.761	0.514	0.473	sec
Peak Acceleration	0.0265	0.0265	0.0398	g
Peak Displacement	0.00043	0.00036	0.00081	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0815 in/s at 0.549 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 5-25-16 Blast No. 5-25-16 4B Time 11:08

Exact Blast Location FACE 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' 02"
W 98° 17' 35.2"

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 3,764'

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

Peak Particle Velocity .050 ips Operator DAVID LARNER

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5-25-16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Tran at 11:08:32 May 25, 2016	**Serial Number**	BF13922 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.4 Volts
	Mic: 122 dB(L)	**Calibration**	November 22, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O922GDW1.M81
Record Time	5.0 sec at 1024 sps		

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

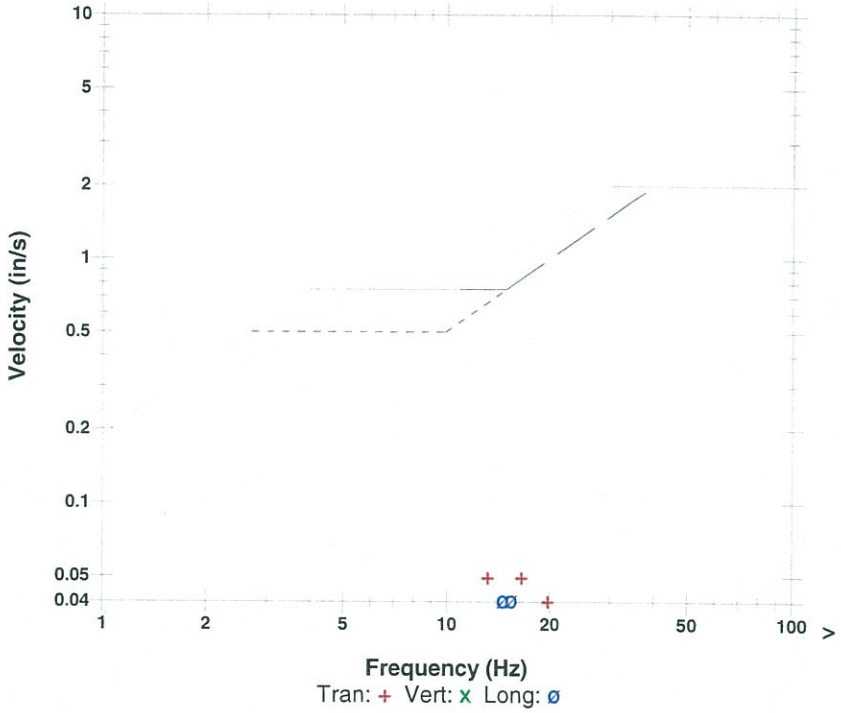
Post Event Notes
Warden Property Line: 3,764'

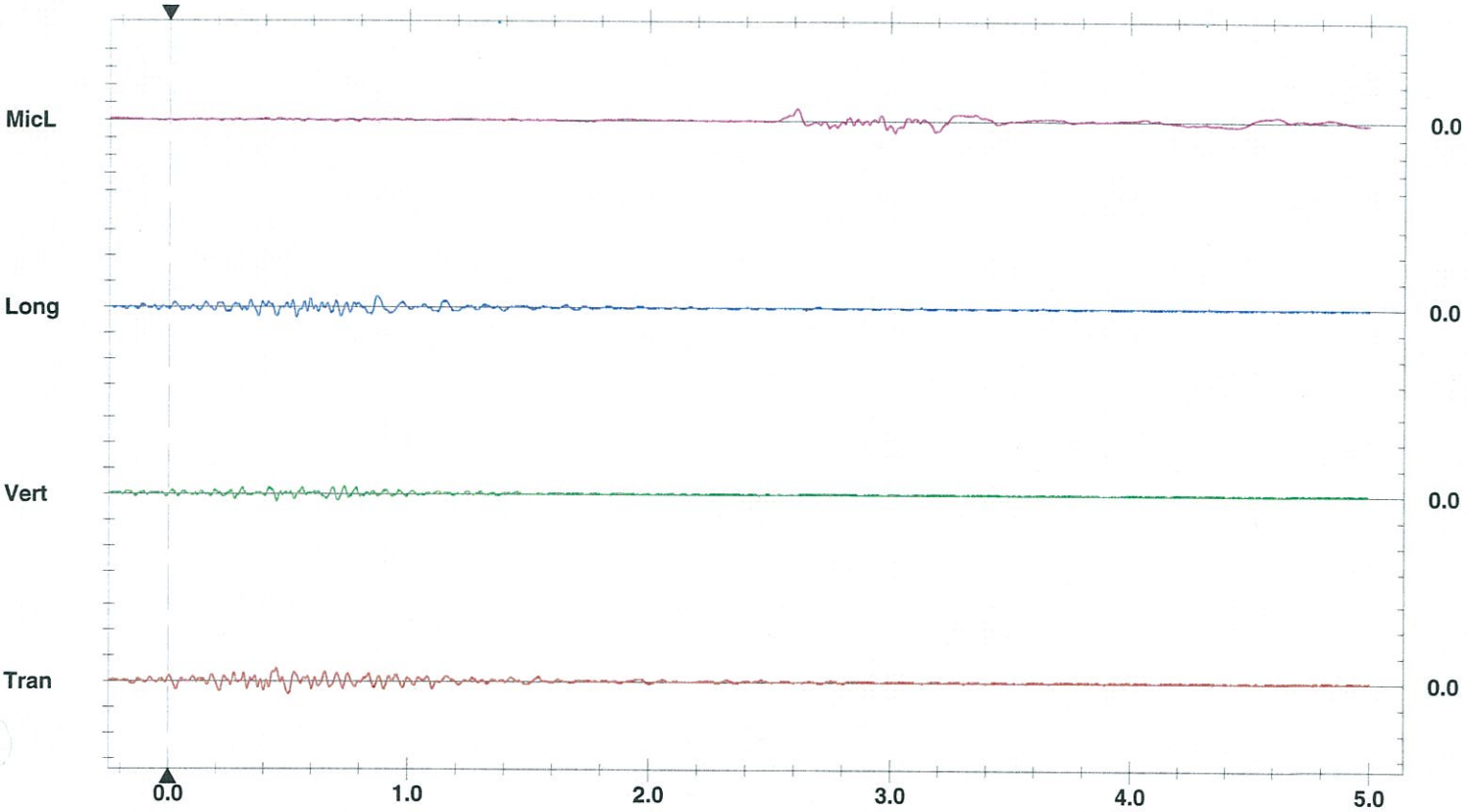
Microphone Linear Weighting
PSPL 107.5 dB(L) at 2.607 sec
ZC Freq 5.2 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 521 mv)

	Tran	Vert	Long	
PPV	0.0500	0.0300	0.0400	in/s
ZC Freq	13	30	16	Hz
Time (Rel. to Trig)	0.454	0.453	0.531	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00062	0.00024	0.00048	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0660 in/s at 0.454 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 May 31, 2016 Blast No. 053116 3C Time 13:19

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

N: 29° 38' 44"
W: 98° 17' 36"

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 2682'

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

Peak Particle Velocity 0.040 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: Clayton Smith Date: 5/31/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Long at 13:19:21 May 31, 2016	**Serial Number**	BD6191 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	July 16, 2015 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	H191GE7B.O91
Record Time	10.0 sec at 1024 sps		

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

Extended Notes

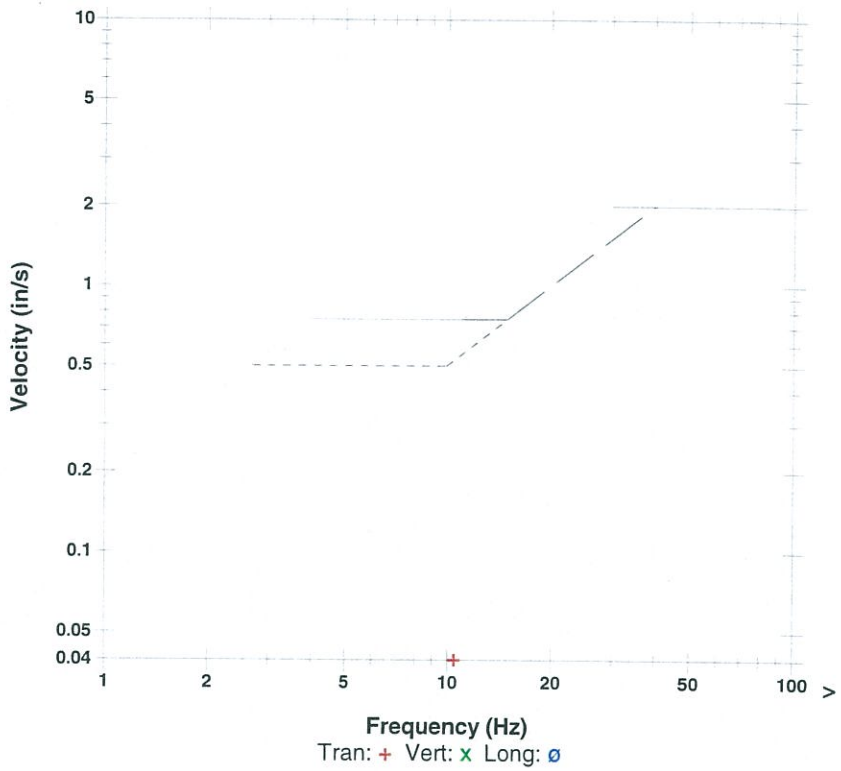
Post Event Notes
City Property Line
2682 ft

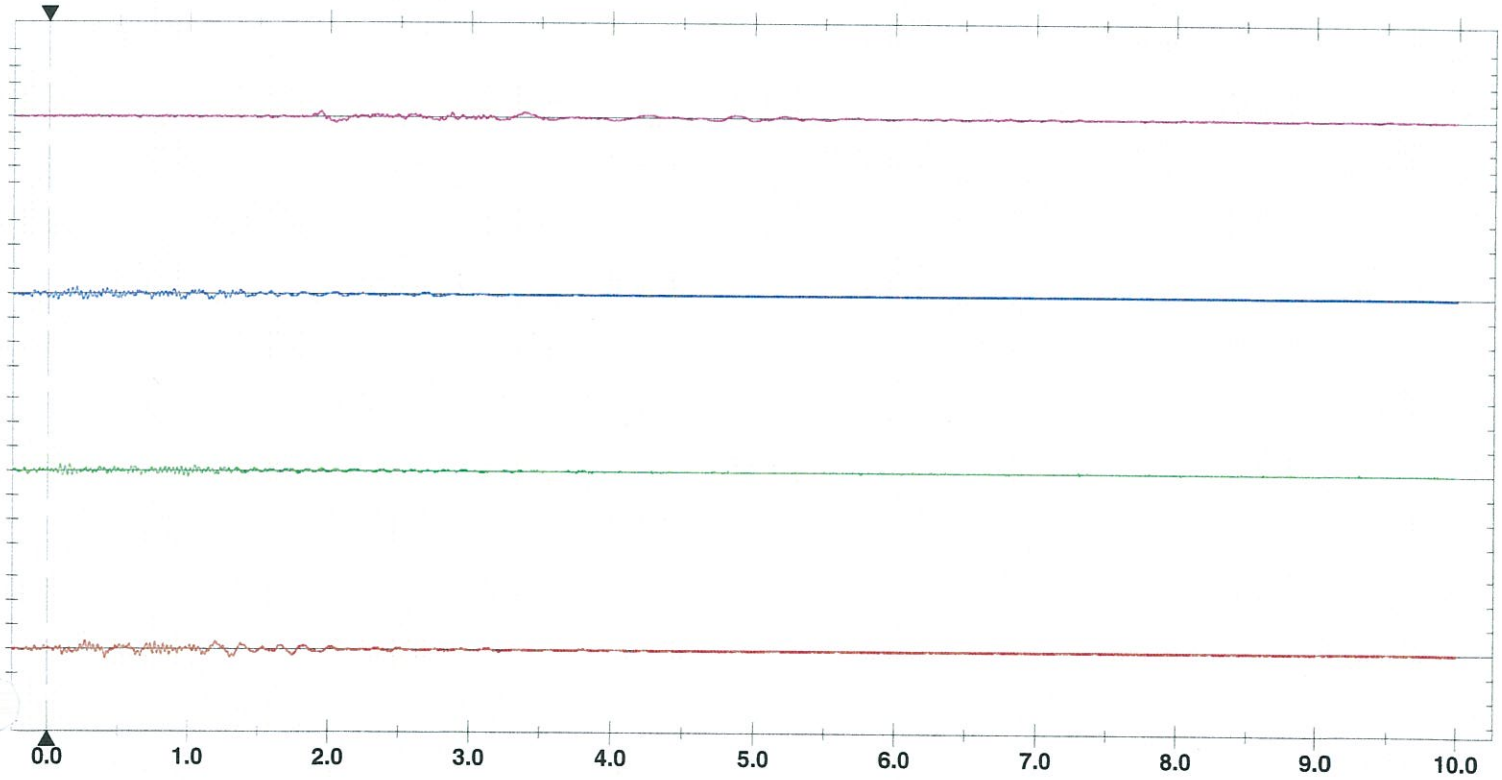
Microphone Linear Weighting
PSPL 101.9 dB(L) at 2.038 sec
ZC Freq 3.5 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 586 mv)

	Tran	Vert	Long	
PPV	0.0400	0.0250	0.0250	in/s
ZC Freq	10	34	24	Hz
Time (Rel. to Trig)	0.411	0.090	0.066	sec
Peak Acceleration	0.0265	0.0133	0.0265	g
Peak Displacement	0.00085	0.00014	0.00052	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0450 in/s at 0.414 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 May 31, 2016 Blast No. 053116 3C Time 13:19

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

N: 29° 38' 44"

W: 98° 17' 36"

MONITOR GPS

N 29° 38' 28.71"

W 98° 19' 06.59"

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 Fields Residence – 21919 Pesa Cove – Georg Ranch Subdivision 10 ft S of SE corner about 5 feet from black gate corner

Seismograph Distance from Blast 3128'

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

Peak Particle Velocity NT ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/31/16

Event Report: Monitor Log

Start Time	End Time	Status
---	---	SERIAL NUMBER: BF8949
May 31 '16 10:51:15		Start Monitoring Trigger Level: Geo: 0.0200 in/s Mic: 122.0 dB(L)
May 31 '16 10:51:22	May 31 '16 10:51:32	Event recorded. Trigger MicL: 122.0 dB(L)
May 31 '16 10:51:32	May 31 '16 13:45:40	No events recorded. (Keyboard Exit) Trigger Geo: 0.0200 in/s Mic: 122.0 dB(L)

Hanson Servtex 05-31-16 3C
Non Trigger - Shot at 13:19
Fields Residence
8128 ft.

VIBRA-TECH BLAST AND SEISMOGRAPHIC REPORT

BLAST DATA

Client HANSON SERVTEX

Job Location GARDEN RIDGE, TEXAS QUARRY

Date May 31, 2016 Blast No. 053116 3C Time 13:19

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

N: 29° 33' 44"
W: 98° 17' 36"

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 Michels Residence: 9118 Tuscan Hills Drive, Georg Ranch Subdivision

10' E of NE corner of house

Seismograph Distance from Blast 3909'

Peak Overpressure 102.0 dB Scaled Distance ------

Peak Particle Velocity 0.050 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 5/31/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Long at 13:19:21 May 31, 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

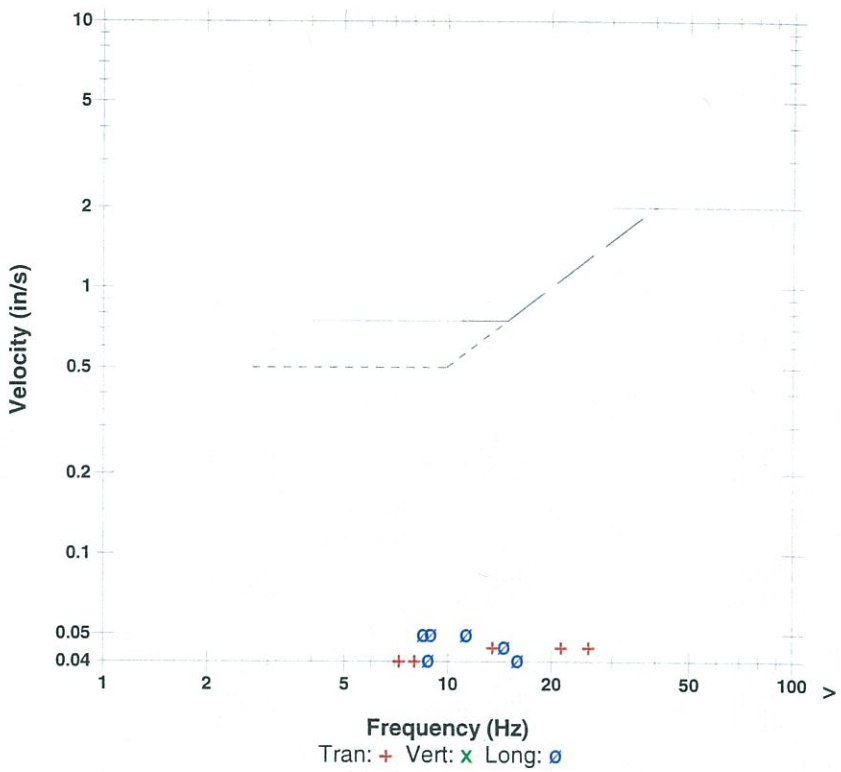
Serial Number	BB10626 V 7.04-8.0 EVERLERT III
Battery Level	6.3 Volts
Calibration	July 21, 2015 by Vibra-Tech Inc.
File Name	L626GE7B.O91

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

Extended Notes

Post Event Notes
Michels Residence
3909 ft

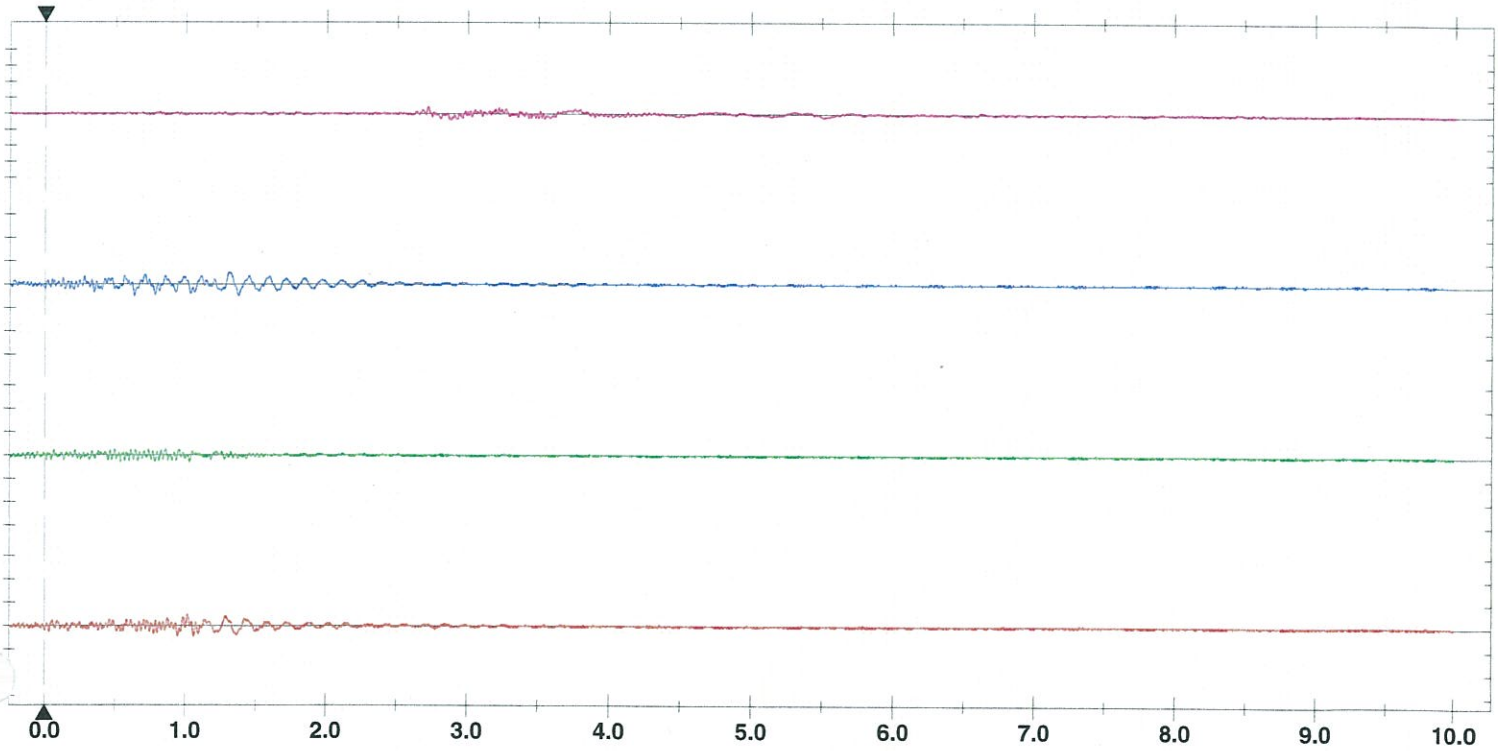
USBM RI8507 And OSMRE



Microphone	Linear Weighting
PSPL	102.8 dB(L) at 2.717 sec
ZC Freq	20 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 725 mv)

	Tran	Vert	Long	
PPV	0.0450	0.0300	0.0500	in/s
ZC Freq	13	43	11	Hz
Time (Rel. to Trig)	0.951	0.538	0.634	sec
Peak Acceleration	0.0265	0.0265	0.0265	g
Peak Displacement	0.00083	0.00019	0.00097	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.0628 in/s at 1.373 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 May 31, 2016 Blast No. 053116 3C Time 13:19

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

N: 29° 38' 44"
W: 98° 17' 36"

MONITOR GPS

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

SEISMOGRAPH DATA

Seismograph No. 13138 Range Setting 10.00 ips Trigger Level 0.020 ips

Date of last: Geophone Calibration 02-23-16 Microphone Calibration 02-23-16

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 2157'

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

Peak Particle Velocity 0.13 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: _____ Date: 5/31/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Tran at 13:19:21 May 31, 2016	**Serial Number**	BF13138 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s	**Battery Level**	6.3 Volts
	Mic: 122 dB(L)	**Calibration**	February 23, 2016 by Vibra-Tech Inc.
Range	Geo :10.00 in/s	**File Name**	O138GE7B.O91
Record Time	5.0 sec at 1024 sps		

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

Extended Notes

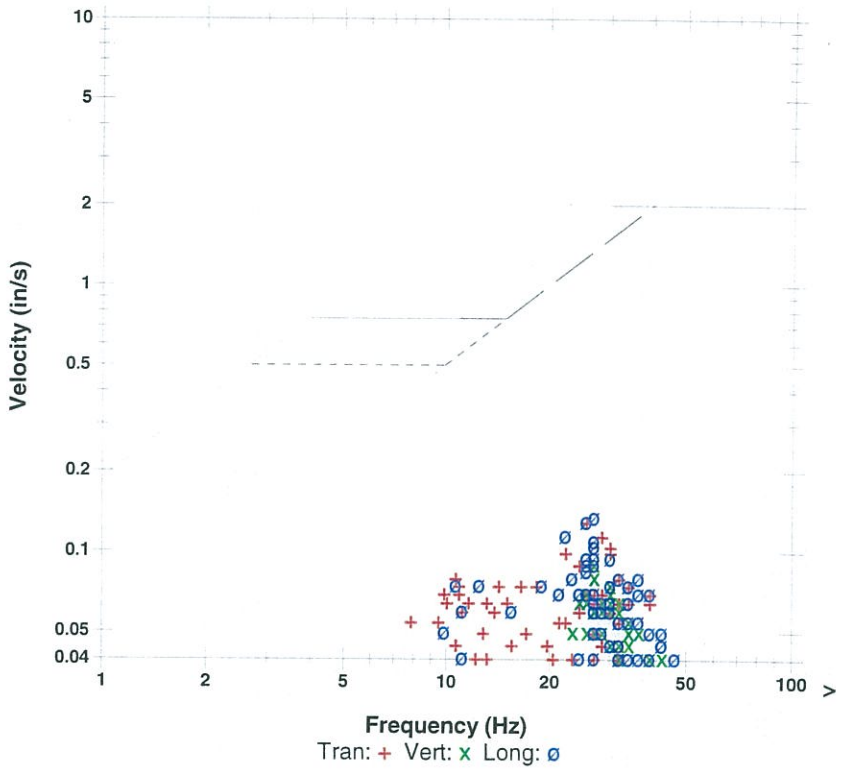
Post Event Notes
Warden Residence
2157 ft

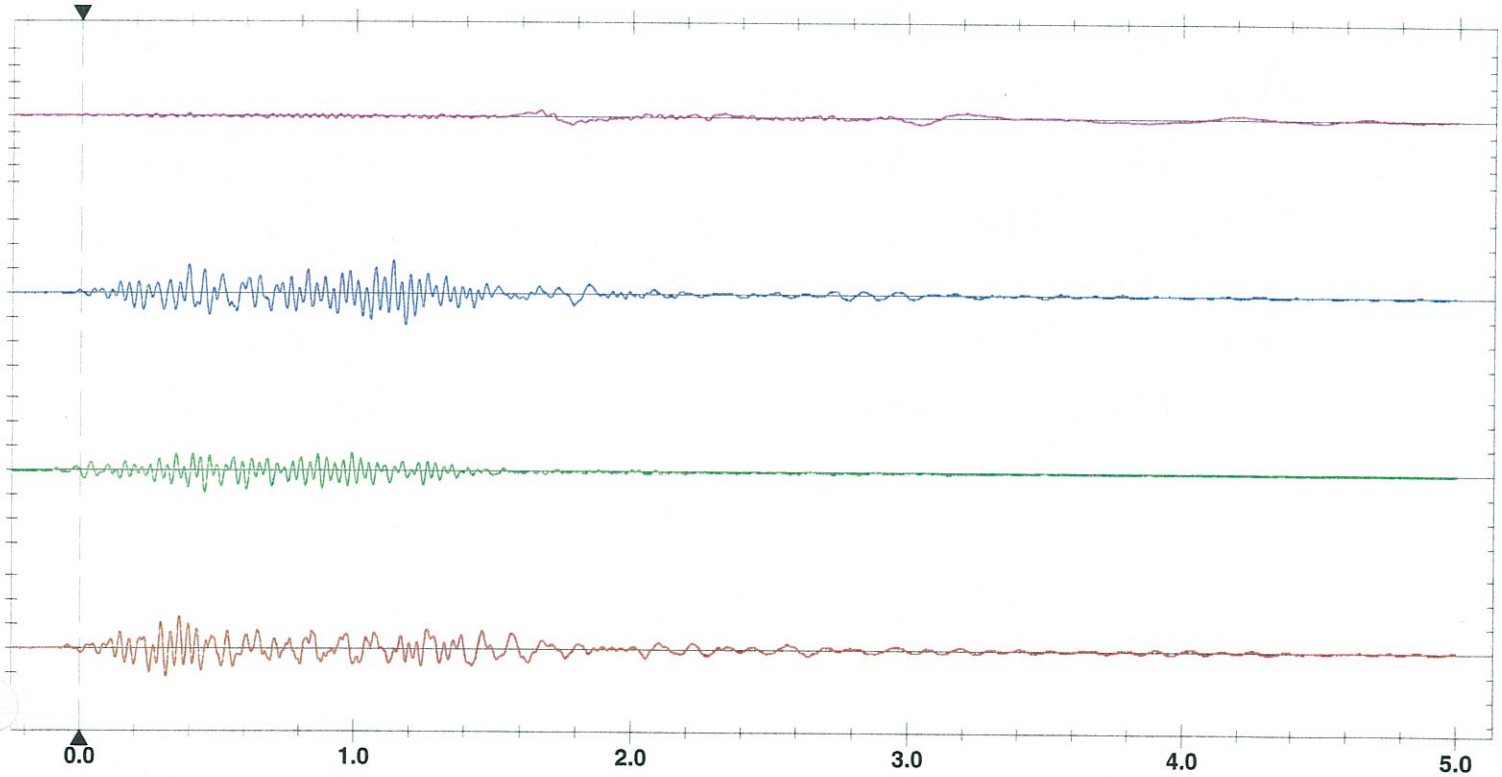
Microphone Linear Weighting
PSPL 104.9 dB(L) at 1.780 sec
ZC Freq 2.0 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 548 mv)

	Tran	Vert	Long	
PPV	0.130	0.0900	0.135	in/s
ZC Freq	26	27	27	Hz
Time (Rel. to Trig)	0.363	0.451	1.135	sec
Peak Acceleration	0.0530	0.0530	0.0663	g
Peak Displacement	0.00116	0.00054	0.00115	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.158 in/s at 0.394 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 May 31, 2016 Blast No. 053116 3C Time 13:19

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

N: 29° 38' 44"
W: 98° 17' 36"

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 1943'

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

Peak Particle Velocity 0.14 ips Operator Clayton Smith

Remarks: GEOPHONE SPIKED AND SANDBAGGED

Vibration Analysis by: [signature] Date: 5/31/16

VIBRA-TECH
The Vibration Monitoring Experts

Event Report

VIBRA-TECH
The Vibration Monitoring Experts

Date/Time	Tran at 13:19:21 May 31, 2016	**Serial Number**	BF13922 V 7.04-8.0 MultiSeis Plus
Trigger Source	Geo: 0.0200 in/s Mic: 122 dB(L)	**Battery Level**	6.3 Volts
Range	Geo :10.00 in/s	**Calibration**	November 22, 2015 by Vibra-Tech Inc.
Record Time	5.0 sec at 1024 sps	**File Name**	O922GE7B.O91

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

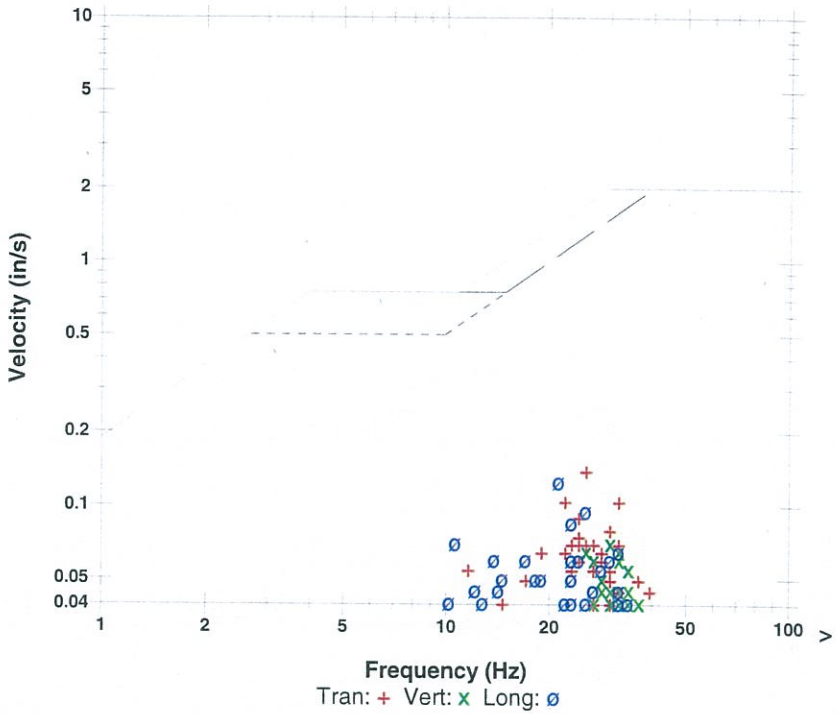
Post Event Notes
Warden Property Line
1943 ft

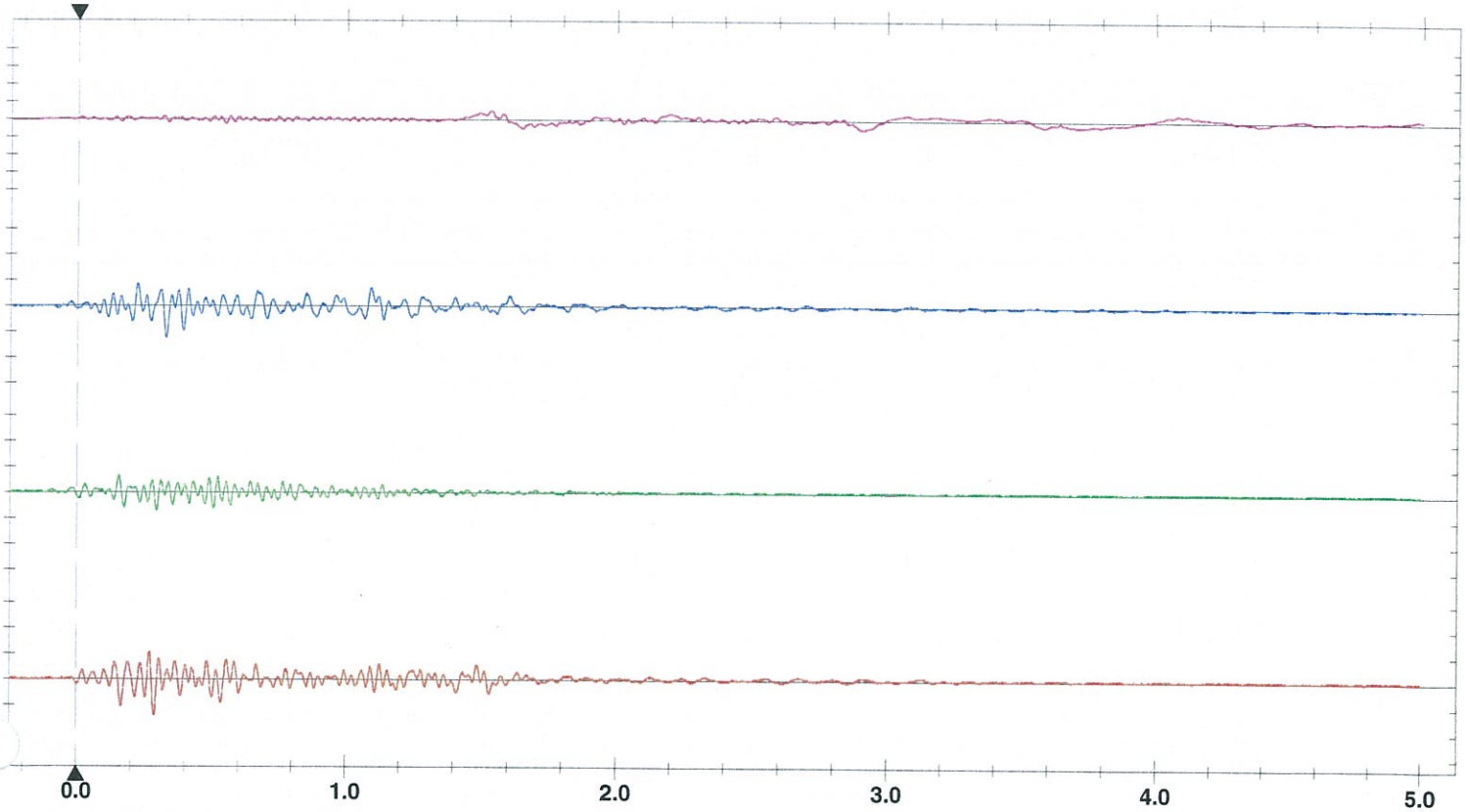
Microphone Linear Weighting
PSPL 104.9 dB(L) at 1.529 sec
ZC Freq 3.0 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 508 mv)

	Tran	Vert	Long	
PPV	0.140	0.0700	0.125	in/s
ZC Freq	26	30	21	Hz
Time (Rel. to Trig)	0.286	0.293	0.326	sec
Peak Acceleration	0.0663	0.0398	0.0398	g
Peak Displacement	0.00087	0.00040	0.00090	in
Dynamic Geo Cal.	Passed	Passed	Passed	

Peak Vector Sum 0.146 in/s at 0.288 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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