



SEISMOGRAPH CALIBRATION DATA SHEET REV 4/6/06

INSTRUMENT DATA

SYSTEM MFR: OYO	MODEL NO.: 3331A
SERIAL NO.: 19029	CALIBRATION DATE: 4/21/2006
BY: ROBERT STELLER	DUE DATE: 4/21/2007
COUNTER MFR: HEWLETT PACKARD	MODEL NO.: 5335A
SERIAL NO.: 2626A09881	CALIBRATION DATE: 12/9/2005
BY: SCE #S1-01252	DUE DATE: 6/9/2006
FCTN GEN MFR: HEWLETT PACKARD	MODEL NO.: 3325B
SERIAL NO.: 2847A14447	CALIBRATION DATE: 11/3/2005
BY: SCE #S1-03355	DUE DATE: 11/3/2006

SYSTEM SETTINGS:

GAIN:	10
FILTER:	20 KHZ
RANGE:	100 MILLISEC
DELAY:	0
STACK: 1 (STD)	1
PULSE:	1.6
DISPLAY:	NA
SYSTEM: DATE = CORRECT DATE & TIME	4/21/2006, 10:30AM

PROCEDURE:

SET FREQUENCY TO 100.0HZ SQUAREWAVE WITH AMPLITUDE APPROXIMATELY 0.25 VOLT PEAK. RECORD BOTH ON DISK AND PAPER TAPE, IF AVAILABLE. ANALYZE AND PRINT WAVEFORMS FROM ANALYSIS UTILITY. ATTACH PAPER COPIES OF PRINTOUT AND PAPER TAPES, IF AVAILABLE, TO THIS FORM. AVERAGE FREQUENCY MUST BE BETWEEN 99.0 AND 101.0 HZ.

AS FOUND 100.0 AS LEFT 100.0

WAVEFORM	FILE NO	FREQUENCY	TIME FOR 9 CYCLES Hn	TIME FOR 9 CYCLES Hr	TIME FOR 9 CYCLES V	AVERAGE FREQ.
SQUARE	201	100.0	90.0	90.0	90.0	100.0
SQUARE	202	100.0	90.0	90.0	90.0	100.0
SINE	203	100.0	89.9	89.9	89.9	100.1
SINE	204	100.0	90.0	90.0	89.9	100.0

CALIBRATED BY:	ROBERT STELLER	4/21/2006	<i>Rob Steller</i>
	NAME	DATE	SIGNATURE

Seismic recorder/Logger Calibration Data Sheet Rev 1.30 4-6-06

OYO

S/N 1902a

Suspension 170.4.25

ID_NO. : 201
HOLE NO. : 0
DEPTH : 0.0 [m]
DATE : 21/04/06 10:41:08 AM
H-SAMPLE RATE: 100 [μSEC]
V-SAMPLE RATE: 100 [μSEC]
PULSE WIDTH : 1.6 [mSEC]
DELAY TIME : 3 [mSEC]

OYO

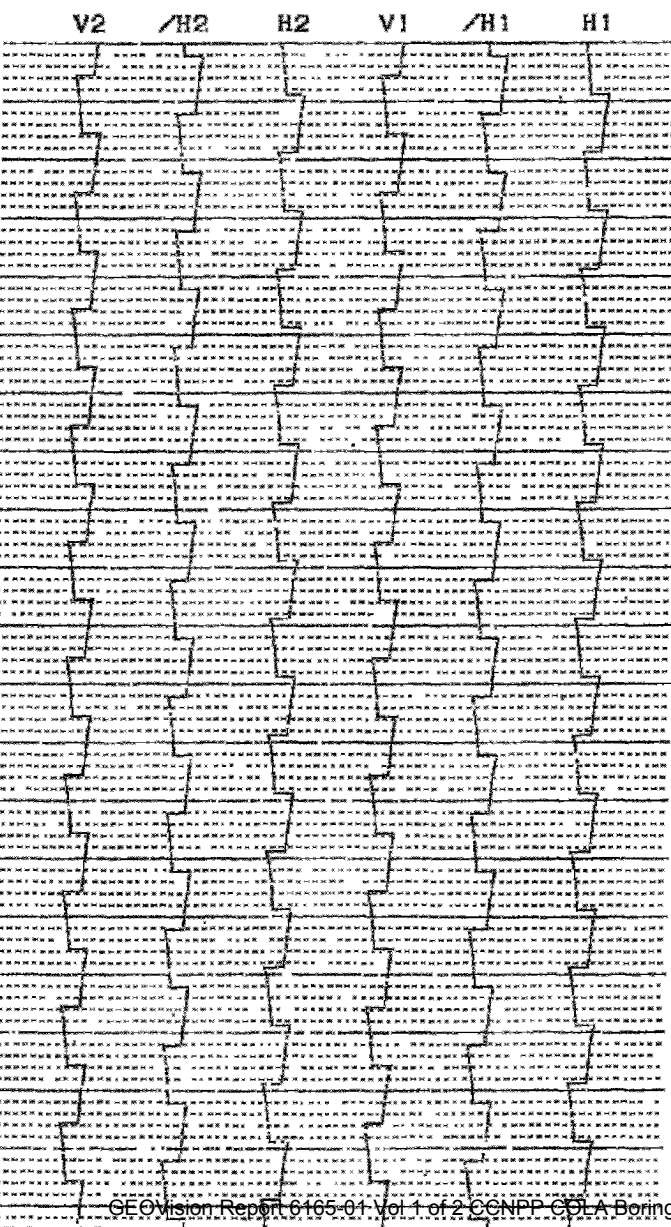
S/N 1902a

Suspension 170.4.25

ID_NO. : 202
HOLE NO. : 0
DEPTH : 0.0 [m]
DATE : 21/04/06 10:45:05 AM
H-SAMPLE RATE: 100 [μSEC]
V-SAMPLE RATE: 100 [μSEC]
PULSE WIDTH : 1.6 [mSEC]
DELAY TIME : 3 [mSEC]

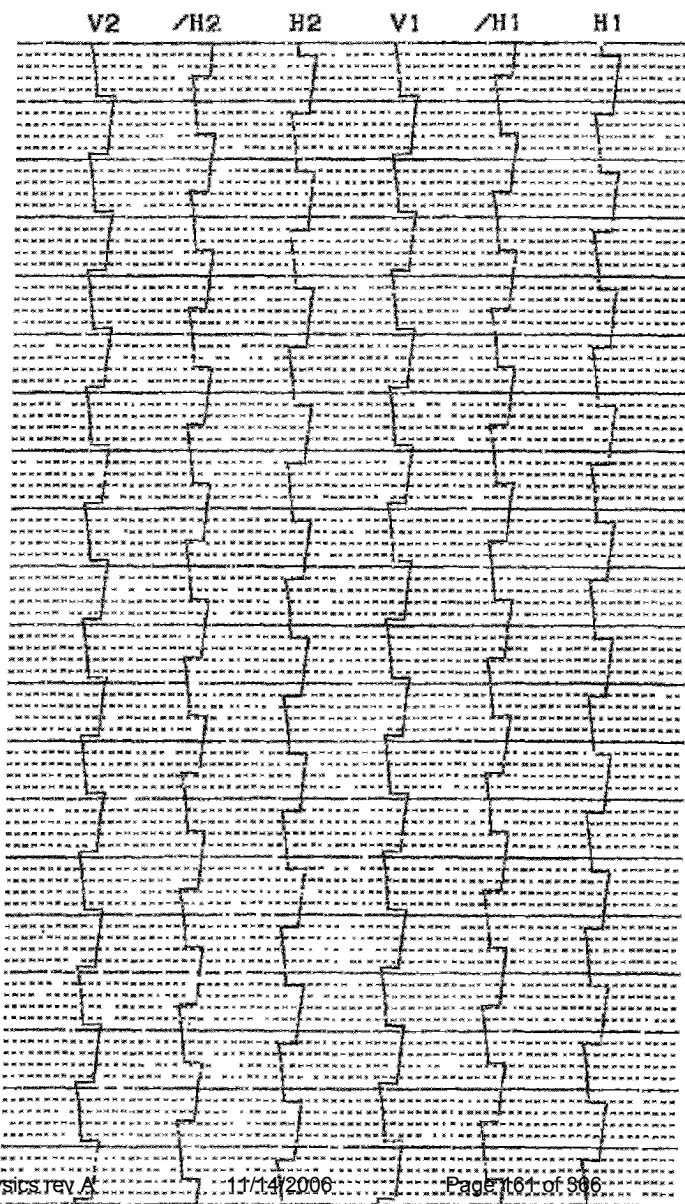
	H1	/H1	V1	H2	/H2	V2
GAIN	:X	10	X	10	X	10
LCF [Hz]	: 5	5	5	5	5	5
HCF [Hz]	: 20K	20K	20K	20K	20K	20K
STACK	: 1	1	1	1	1	1

TRACE SIZE : 1
H-TIME SCALE: 1.00 [mSEC/LINE]
V-TIME SCALE: 1.00 [mSEC/LINE]



	H1	/H1	V1	H2	/H2	V2
GAIN	:X	10	X	10	X	10
LCF [Hz]	: 5	5	5	5	5	5
HCF [Hz]	: 20K	20K	20K	20K	20K	20K
STACK	: 1	1	1	1	1	1

TRACE SIZE : 1
H-TIME SCALE: 1.00 [mSEC/LINE]
V-TIME SCALE: 1.00 [mSEC/LINE]



OYO

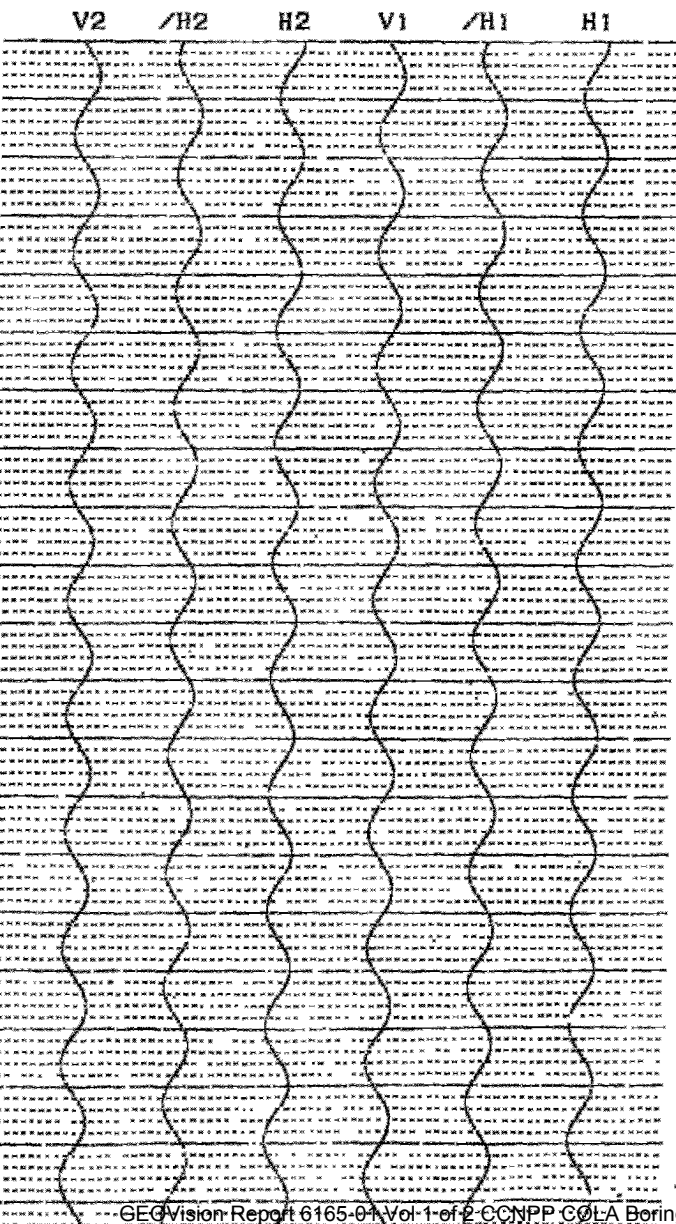
SN 14024

Suspension 170 4.25

ID_NO. : 203
HOLE NO. : 0
DEPTH : 0.0 [m]
DATE : 21/04/06 10:46:15 AM
H-SAMPLE RATE: 100 [μSEC]
V-SAMPLE RATE: 100 [μSEC]
PULSE WIDTH : 1.6 [mSEC]
DELAY TIME : 3 [mSEC]

	H1	/H1	V1	H2	/H2	V2
GAIN	:X	10	X	10	X	10
LCP [Hz]	:	5		5		5
HCF [Hz]	:	20K		20K		20K
STACK	:	1		1		1

TRACE SIZE : 1
H-TIME SCALE: 1.00 [mSEC/LINE]
V-TIME SCALE: 1.00 [mSEC/LINE]



OYO

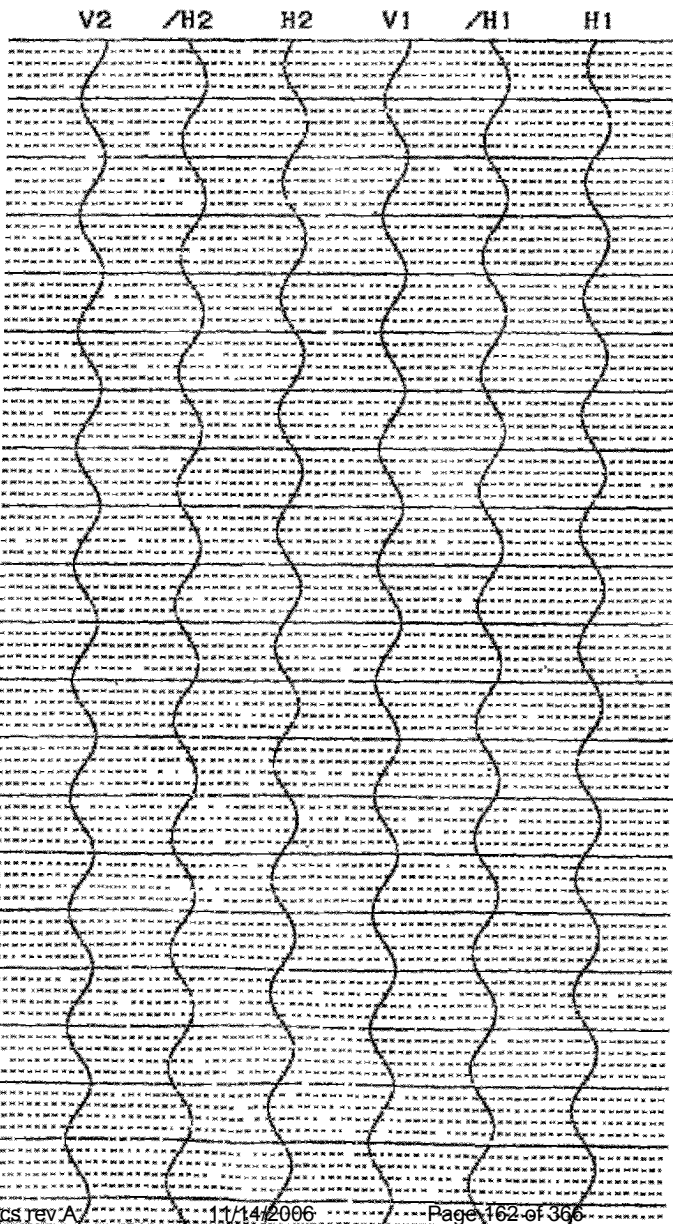
SN 14024

Suspension 170 4.25

ID_NO. : 204
HOLE NO. : 0
DEPTH : 0.0 [m]
DATE : 21/04/06 10:47:47 AM
H-SAMPLE RATE: 100 [μSEC]
V-SAMPLE RATE: 100 [μSEC]
PULSE WIDTH : 1.6 [mSEC]
DELAY TIME : 3 [mSEC]

	H1	/H1	V1	H2	/H2	V2
GAIN	:X	10	X	10	X	10
LCP [Hz]	:	5		5		5
HCF [Hz]	:	20K		20K		20K
STACK	:	1		1		1

TRACE SIZE : 1
H-TIME SCALE: 1.00 [mSEC/LINE]
V-TIME SCALE: 1.00 [mSEC/LINE]





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METROLOGY

7300 Fenwick Lane
Westminster, CA 92683
866-723-2257
edisonmetrology.com

Calibration Report

GEOVision Geophysical Services

1151 Pomona Road, Unit P
Corona, CA 92882
P.O. No.: 6162-060414-01



Manufacturer: Oyo
Model Number: 3403
Description: Unit, Suspension Telemetry,
Asset Number: 160023
Serial Number: 160023

Calibration Date: 04/21/2006
Calibration Due Date: 04/21/2007
Calibration Interval: 12 Months
Condition As Found: In Tolerance
Condition As Left: In Tolerance

Remarks:

The UUT (unit under test) was calibrated using the customer's procedure. The UUT was operated by the customer's personnel and data collection was observed by SCE personnel. The UUT was found to be in tolerance to customer supplied specifications. The reference standards used are in compliance with ISO/IEC 17025:1999 and laboratory accreditation criteria established by NIST/NVLAP under the specific scope of accreditation for lab code 105014-0. Frequency is accredited.
Please see attached data.

Standards Utilized

I.D. No.	Mfg.	Model No.	Description	Cal. Date	Due Date
S1-01252	Hewlett Packard	5335A OPT 010,203040	Counter, Universal	12/09/2005	06/09/2006
S1-03355	Hewlett Packard	3325B OPT 001, 002	Generator, Function, Synthesizer	11/03/2005	11/03/2006
S1-03686	Fluke	910	Standard, Frequency, Controlled, Gps	01/16/2006	01/16/2007

Procedure: Customer
Temperature: 23° C
Humidity: 40% RH
Test No.: 501203

Calibration Performed By:			Quality Reviewer:	
Branson, Craig A	Metrologist	714-895-0714		04-21-06
Name	Title	Phone	Name	Date

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SEISMOGRAPH CALIBRATION DATA SHEET REV 4/6/06

INSTRUMENT DATA

SYSTEM MFR: <u>OYO</u>	MODEL NO.: <u>3403</u>
SERIAL NO.: <u>160023</u>	CALIBRATION DATE: <u>4/21/2006</u>
BY: <u>ROBERT STELLER</u>	DUE DATE: <u>4/21/2007</u>
COUNTER MFR: <u>HEWLETT PACKARD</u>	MODEL NO.: <u>5335A</u>
SERIAL NO.: <u>2626A09881</u>	CALIBRATION DATE: <u>12/9/2005</u>
BY: <u>SCE #S1-01252</u>	DUE DATE: <u>6/9/2006</u>
FCTN GEN MFR: <u>HEWLETT PACKARD</u>	MODEL NO.: <u>3325B</u>
SERIAL NO.: <u>2847A14447</u>	CALIBRATION DATE: <u>11/3/2005</u>
BY: <u>SCE #S1-03355</u>	DUE DATE: <u>11/3/2006</u>

SYSTEM SETTINGS:

GAIN:	<u>2</u>
FILTER:	<u>10 KHZ</u>
RANGE:	<u>100 MILLISEC, 100 MICROSECOND SAMPLE RATE</u>
DELAY:	<u>0</u>
STACK: 1 (STD)	<u>1</u>
PULSE:	<u>1.6</u>
DISPLAY:	<u>NA</u>
SYSTEM: DATE = CORRECT DATE & TIME	<u>4/21/2006, 11:07AM</u>

PROCEDURE:

SET FREQUENCY TO 100.0HZ SQUAREWAVE WITH AMPLITUDE APPROXIMATELY 0.25 VOLT PEAK. RECORD BOTH ON DISK AND PAPER TAPE, IF AVAILABLE. ANALYZE AND PRINT WAVEFORMS FROM ANALYSIS UTILITY. ATTACH PAPER COPIES OF PRINTOUT AND PAPER TAPES, IF AVAILABLE, TO THIS FORM. AVERAGE FREQUENCY MUST BE BETWEEN 99.0 AND 101.0 HZ.

AS FOUND 100.0 AS LEFT 100.0

WAVEFORM	FILE NO	FREQUENCY	TIME FOR 9 CYCLES Hn	TIME FOR 9 CYCLES Hr	TIME FOR 9 CYCLES V	AVERAGE FREQ.
SQUARE	305	100.0	90.0	90.0	90.0	100.0
SQUARE	306	100.0	90.0	90.0	90.0	100.0
SINE	307	100.0	90.0	90.0	90.0	100.0
SINE	308	100.0	90.1	90.0	90.0	100.0

CALIBRATED BY:	<u>ROBERT STELLER</u>	<u>4/21/2006</u>	<u>Rob Steller</u>
	NAME	DATE	SIGNATURE

Calibration Report

GEOVision Geophysical Services

1151 Pomona Road, Unit P
Corona, CA 92882
P.O. No.: 6162-060414-01

METROLOGY

7300 Fenwick Lane
Westminster, CA 92683
866-723-2257
edisonmetrology.com

Manufacturer: Oyo
Model Number: 3403
Description: Unit, Suspension Telemetry,
Asset Number: 160024
Serial Number: 160024

Calibration Date: 04/21/2006
Calibration Due Date: 04/21/2007
Calibration Interval: 12 Months
Condition As Found: In Tolerance
Condition As Left: In Tolerance

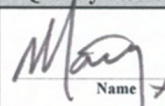
Remarks:

The UUT (unit under test) was calibrated using the customer's procedure. The UUT was operated by the customer's personnel and data collection was observed by SCE personnel. The UUT was found to be in tolerance to customer supplied specifications. The reference standards used are in compliance with ISO/IEC 17025:1999 and laboratory accreditation criteria established by NIST/NVLAP under the specific scope of accreditation for lab code 105014-0. Frequency is accredited.
Please see attached data.

Standards Utilized

I.D. No.	Mfg.	Model No.	Description	Cal. Date	Due Date
S1-01252	Hewlett Packard	5335A OPT 010,203040	Counter, Universal	12/09/2005	06/09/2006
S1-03355	Hewlett Packard	3325B OPT 001, 002	Generator, Function, Synthesizer	11/03/2005	11/03/2006
S1-03686	Fluke	910	Standard, Frequency, Controlled, Gps	01/16/2006	01/16/2007

Procedure: Customer
Temperature: 23° C
Humidity: 40% RH
Test No.: 501204

Calibration Performed By:			Quality Reviewer:	
Branson, Craig A	CAS	Metrologist		04-21-06
Name		Title	Name	Date

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SEISMOGRAPH CALIBRATION DATA SHEET REV 4/6/06

INSTRUMENT DATA

SYSTEM MFR: OYO	MODEL NO.: 3403
SERIAL NO.: 160024	CALIBRATION DATE: 4/21/2006
BY: ROBERT STELLER	DUE DATE: 4/21/2007
COUNTER MFR: HEWLETT PACKARD	MODEL NO.: 5335A
SERIAL NO.: 2626A09881	CALIBRATION DATE: 12/9/2005
BY: SCE #S1-01252	DUE DATE: 6/9/2006
FCTN GEN MFR: HEWLETT PACKARD	MODEL NO.: 3325B
SERIAL NO.: 2847A14447	CALIBRATION DATE: 11/3/2005
BY: SCE #S1-03355	DUE DATE: 11/3/2006

SYSTEM SETTINGS:

GAIN:	2
FILTER:	10 KHZ
RANGE:	100 MILLISEC, 100 MICROSECOND SAMPLE RATE
DELAY:	0
STACK: 1 (STD)	1
PULSE:	1.6
DISPLAY:	NA
SYSTEM: DATE = CORRECT DATE & TIME	4/21/2006, 11:30AM

PROCEDURE:

SET FREQUENCY TO 100.0HZ SQUAREWAVE WITH AMPLITUDE APPROXIMATELY 0.25 VOLT PEAK. RECORD BOTH ON DISK AND PAPER TAPE, IF AVAILABLE. ANALYZE AND PRINT WAVEFORMS FROM ANALYSIS UTILITY. ATTACH PAPER COPIES OF PRINTOUT AND PAPER TAPES, IF AVAILABLE, TO THIS FORM. AVERAGE FREQUENCY MUST BE BETWEEN 99.0 AND 101.0 HZ.

AS FOUND 100.0 AS LEFT 100.0

WAVEFORM	FILE NO	FREQUENCY	TIME FOR 9 CYCLES Hn	TIME FOR 9 CYCLES Hr	TIME FOR 9 CYCLES V	AVERAGE FREQ.
SQUARE	401	100.0	90.0	90.0	90.0	100.0
SQUARE	402	100.0	90.0	90.0	90.0	100.0
SINE	403	100.0	89.9	90.0	90.1	100.0
SINE	404	100.0	90.0	90.1	90.1	99.9

CALIBRATED BY:	ROBERT STELLER	4/21/2006	<i>Rob Steller</i>
	NAME	DATE	SIGNATURE

Seismic recorder/Logger Calibration Data Sheet Rev 1.30 4-6-06

Calibration Report

METROLOGY

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GEOVision Geophysical Services

1151 Pomona Road, Unit P
Corona, CA 92882
P.O. No.: 6162-060414-01

Manufacturer: Geometrics
Model Number: STRATAVIEW
Description: Siesmograph,
Asset Number: 75299
Serial Number: 75299

Calibration Date: 04/21/2006
Calibration Due Date: 04/21/2007
Calibration Interval: 12 Months
Condition As Found: In Tolerance
Condition As Left: In Tolerance

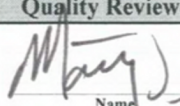
Remarks:

The UUT (unit under test) was calibrated using the customer's procedure. The UUT was operated by the customer's personnel and data collection was observed by SCE personnel. The UUT was found to be in tolerance to customer supplied specifications. The reference standards used are in compliance with ISO/IEC 17025:1999 and laboratory accreditation criteria established by NIST/NVLAP under the specific scope of accreditation for lab code 105014-0. Frequency is accredited.
Please see attached data.

Standards Utilized

I.D. No.	Mfg.	Model No.	Description	Cal. Date	Due Date
S1-01252	Hewlett Packard	5335A OPT 010,203040	Counter, Universal	12/09/2005	06/09/2006
S1-03355	Hewlett Packard	3325B OPT 001, 002	Generator, Function, Synthesizer	11/03/2005	11/03/2006
S1-03686	Fluke	910	Standard, Frequency, Controlled, Gps	01/16/2006	01/16/2007

Procedure: Customer
Temperature: 23° C
Humidity: 40% RH
Test No.: 501205

Calibration Performed By:			Quality Reviewer:	
Branson, Craig A	Metrologist	714-895-0714		04-21-06
Name	Title	Phone	Name	Date

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SEISMOGRAPH CALIBRATION DATA SHEET REV 4/6/06

INSTRUMENT DATA

SYSTEM MFR: GEOMETRICS	MODEL NO.: STRATAVIEW
SERIAL NO.: 75289	CALIBRATION DATE: 4/21/2006
BY: ROBERT STELLER	DUE DATE: 4/21/2007
COUNTER MFR: HEWLETT PACKARD	MODEL NO.: 5335A
SERIAL NO.: 2626A09881	CALIBRATION DATE: 12/9/2005
BY: SCE #S1-01252	DUE DATE: 6/9/2006
FCTN GEN MFR: HEWLETT PACKARD	MODEL NO.: 3325B
SERIAL NO.: 2847A14447	CALIBRATION DATE: 11/3/2005
BY: SCE #S1-03355	DUE DATE: 11/3/2006

SYSTEM SETTINGS:

GAIN:	15 DB
FILTER:	NONE
RANGE:	256 MILLISEC, 31 MICROSECOND SAMPLE RATE
DELAY:	0
STACK: 1 (STD)	1
PULSE:	NA
DISPLAY:	NA
SYSTEM: DATE = CORRECT DATE & TIME	4/21/2006, 12:09PM

PROCEDURE:

SET FREQUENCY TO 100.0HZ SQUAREWAVE WITH AMPLITUDE APPROXIMATELY 0.25 VOLT PEAK. RECORD BOTH ON DISK AND PAPER TAPE, IF AVAILABLE. ANALYZE AND PRINT WAVEFORMS FROM ANALYSIS UTILITY. ATTACH PAPER COPIES OF PRINTOUT AND PAPER TAPES, IF AVAILABLE, TO THIS FORM. AVERAGE FREQUENCY MUST BE BETWEEN 99.0 AND 101.0 HZ.

AS FOUND 100.0 AS LEFT 100.0

WAVEFORM	FILE NO	FREQUENCY	TIME FOR 9 CYCLES Hn	TIME FOR 9 CYCLES Hr	TIME FOR 9 CYCLES V	AVERAGE FREQ.
SQUARE	501	100.0	90.0	90.0	90.0	100.0
SQUARE	502	100.0	90.0	90.0	90.0	100.0
SINE	503	100.0	90.0	90.0	90.0	100.0
SINE	504	100.0	90.0	90.0	90.0	100.0

CALIBRATED BY:	ROBERT STELLER	4/21/2006	<i>Rob Steller</i>
	NAME	DATE	SIGNATURE

Seismic recorder/Logger Calibration Data Sheet Rev 1.30 4-8-06

EOMETRICS

S/N 75299

StrataView

READ FROM 501.DAT

15:14:03 21/APR/2006

LINE NUMBER 00-00

GROUP INTERVAL 3.20

SHOT LOC 1876.72

PHONE 1 LOC 1800.00

PHONE 6 LOC 1815.40

SAMPLE INTERVAL 0.031 ms

RECORD LEN 256 MS

DELAY 0 MS

ACR FILT LO CUT 0HZ

NOTCH 0HZ

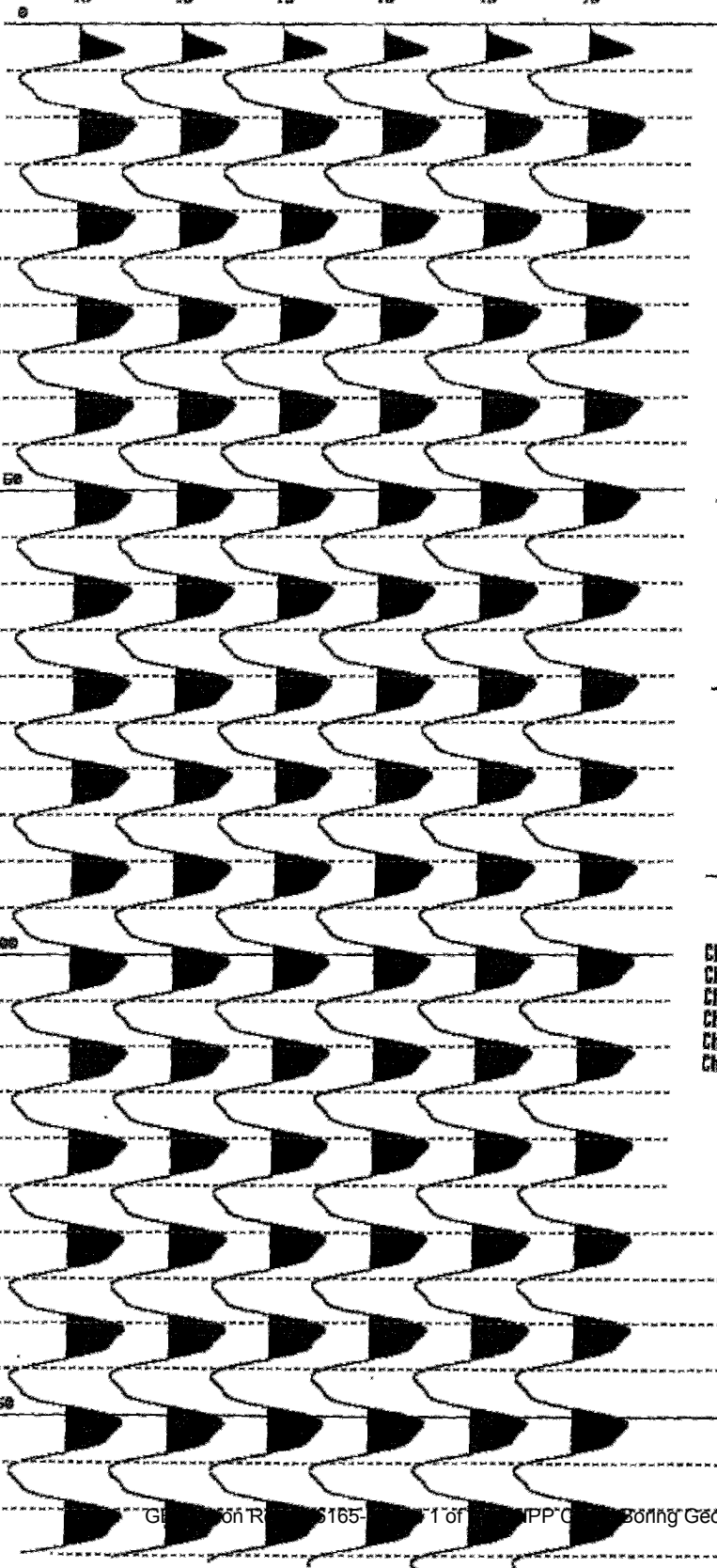
STACKS 1

DISP FILT HI CUT 250HZ

DUT

FIXED GAIN

1 2 3 4 5 6
15 15 15 15 15 15



S/N 75299

SAMPLING 0.031 ms

LENGTH 256 ms

DELAY 0 ms

READ FROM 501.DAT

LO CUT 0HZ

NOTCH 0HZ

DISP FILT

PVIEW STACK 1

1

2

3

4

5

6

6

6

6

6

6

6

6

6

11.00

31.00

51.00

Shot point is 1876.72

Channel 1	Phone location	1800.00	Arrival time	9.8 msec
Channel 2	Phone location	1803.20	Arrival time	9.8 msec
Channel 3	Phone location	1806.56	Arrival time	8.9 msec
Channel 4	Phone location	1809.04	Arrival time	109.0 msec
Channel 5	Phone location	1813.12	Arrival time	108.9 msec
Channel 6	Phone location	1815.40	Arrival time	108.9 msec

GEOMETRICS

StrataView

Page 4 of 6

READ FROM 582.DAT

LINE NUMBER 00-00

SHOT LOC 1876.72

SAMPLE INTERVAL 0.031 us

ACQ FILT LO CUT 0HZ

DISP FILT HI CUT 250HZ

GROUP INTERVAL 3.20

PHONE 1 LOC 1888.00

RECORD LEN 256 MS

NOTCH 0HZ

OUT

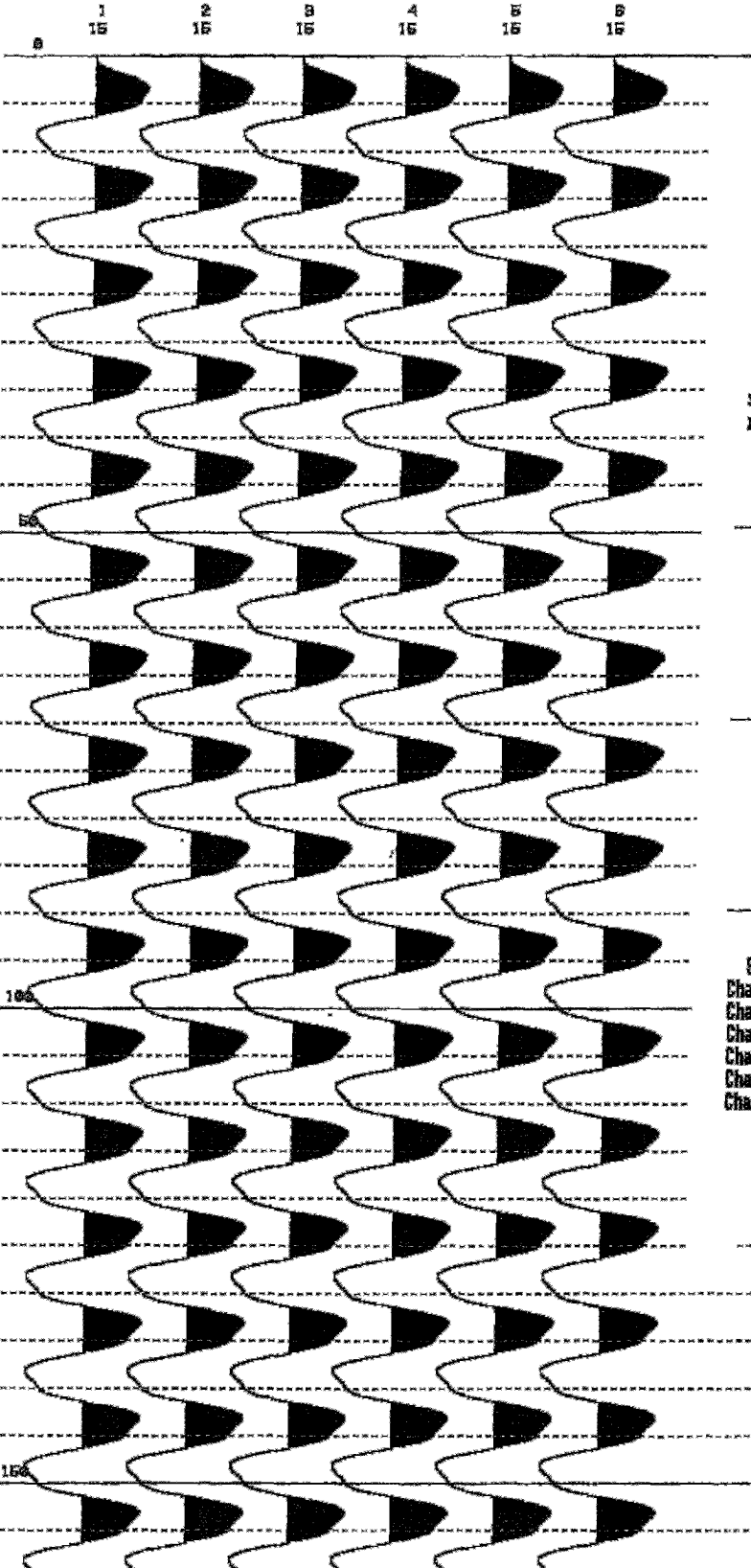
PHONE 6 LOC 1816.40

DELAY 0 MS

STACKS 1

FIXED GAIN

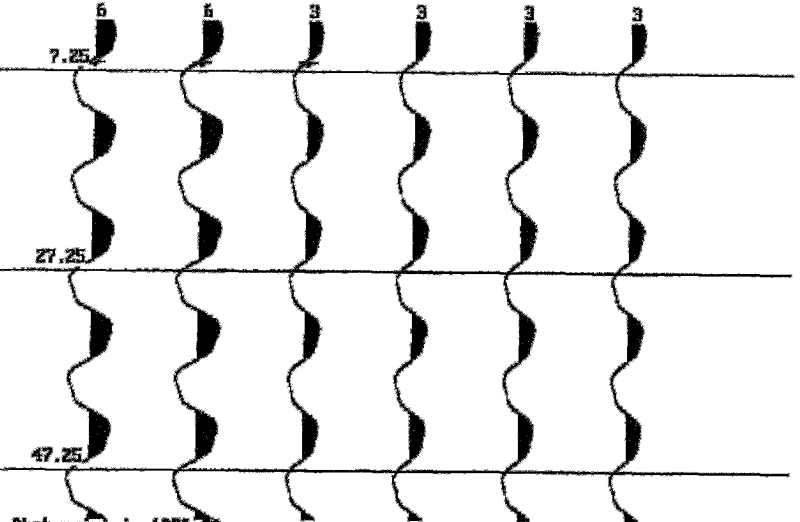
15:15:49 21/APR/2006



S/N 75.249

SAMPLING 0.031 ms LENGTH 256 ms DELAY 0 ms READ FROM 582.DAT

LO CUT 0HZ NOTCH 0HZ DISP FILT PREVIEW STACK 1



Shot point is 1876.72

Channel	Phone location	Arrival time
1	1888.00	6.4 msec
2	1883.20	6.4 msec
3	1886.66	6.4 msec
4	1889.84	96.4 msec
5	1813.12	96.4 msec
6	1816.40	96.4 msec

GEOMETRICS S/N 75299

StrataView

page 5 of 6

READ FROM 503.DAT

LINE NUMBER 00-00

SHOT LOC 1876.72

SAMPLE INTERVAL 0.031 ms

ACA FILT LO CUT 0HZ

DISP FILT HI CUT 250HZ

GROUP INTERVAL 3.20

PHONE 1 LOC 1800.00

RECORD LEN 256 MS

NOTCH 0HZ

OUT

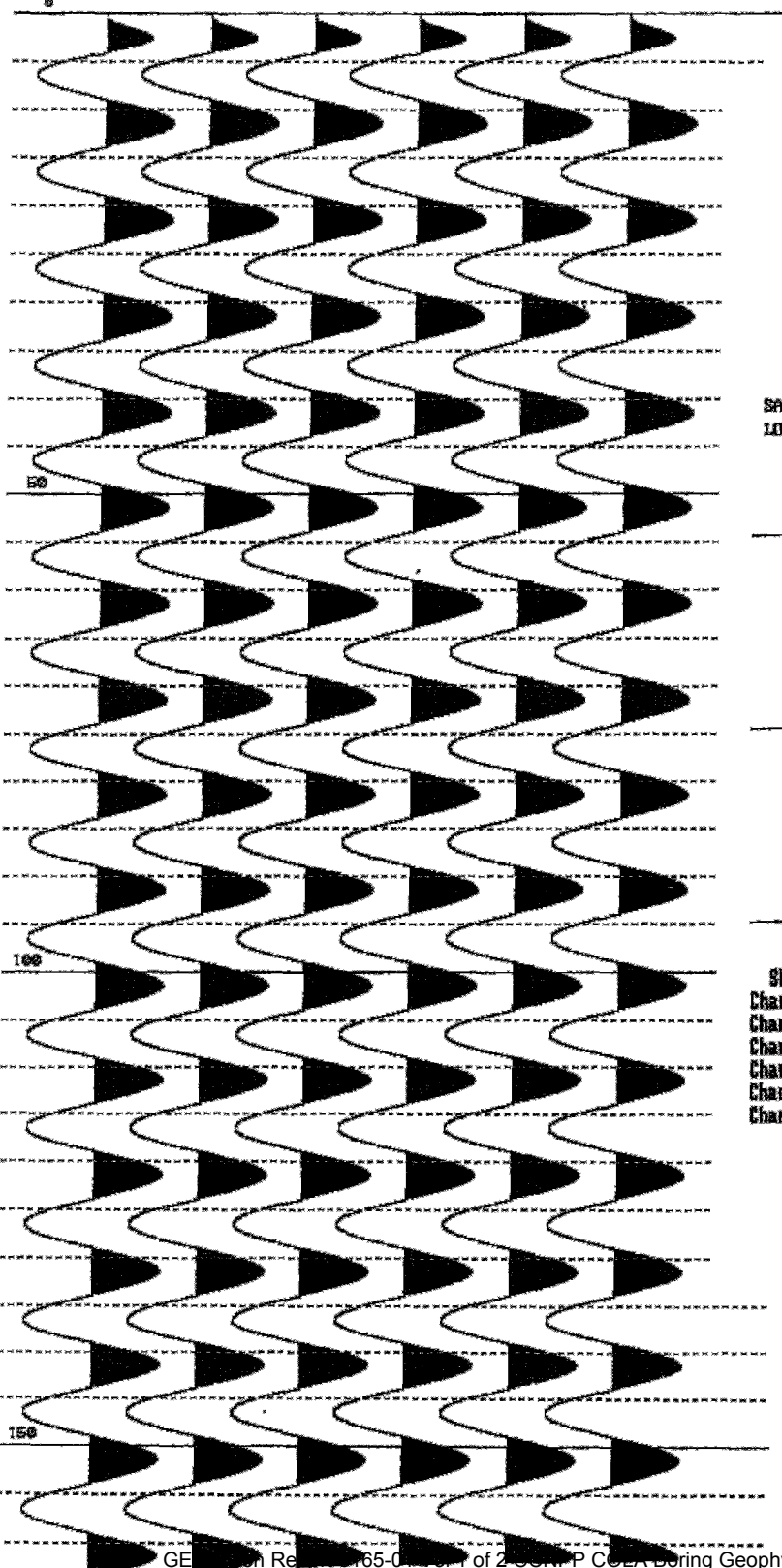
PHONE 5 LOC 1816.40

DELAY 0 MS

STACKS 1

FIXED GAIN

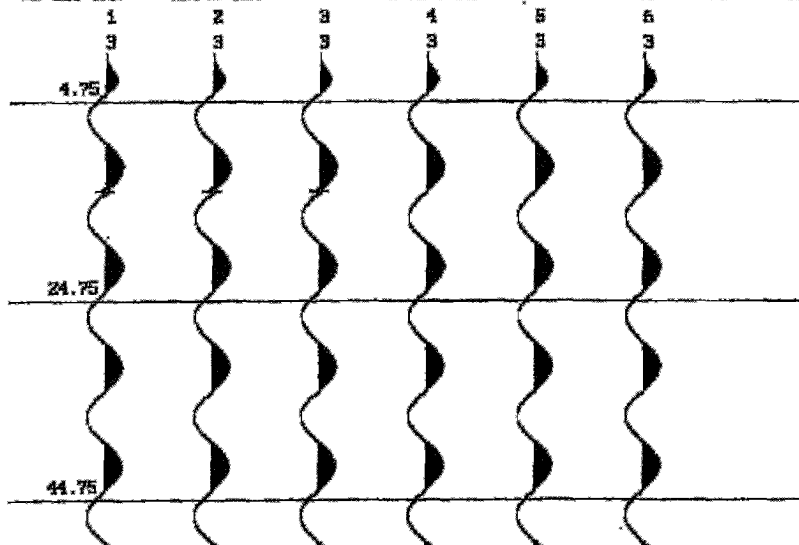
1 2 3 4 5 6
16 16 16 16 16 16



S/N 75299

SAMPLING 0.031 ms LENGTH 256 ms DELAY 0 ms READ FROM 503.DAT

LO CUT 0HZ NOTCH 0HZ DISP FILT PREVIEW STACK 1



Shot point is 1876.72

Channel 1	Phone location 1800.00	Arrival time 13.8 msec
Channel 2	Phone location 1803.28	Arrival time 13.8 msec
Channel 3	Phone location 1806.56	Arrival time 13.8 msec
Channel 4	Phone location 1809.84	Arrival time 103.8 msec
Channel 5	Phone location 1813.12	Arrival time 103.8 msec
Channel 6	Phone location 1816.40	Arrival time 103.8 msec

GEOMETRICS

S/N 75299

StrataView

15:19:34 21/APR/2006

page 6 of 6

READ FROM 504.DAT

LINE NUMBER 84-88

SHOT LOC 1876.72

SAMPLE INTERVAL 831 us

ACQ FILT LO CUT 8KHZ

DISP FILT HI CUT 250KHZ

GROUP INTERVAL 3.20

PHONE 1 LOC 1888.80

RECORD LEN 256 MS

NOTCH 8KHZ

OUT

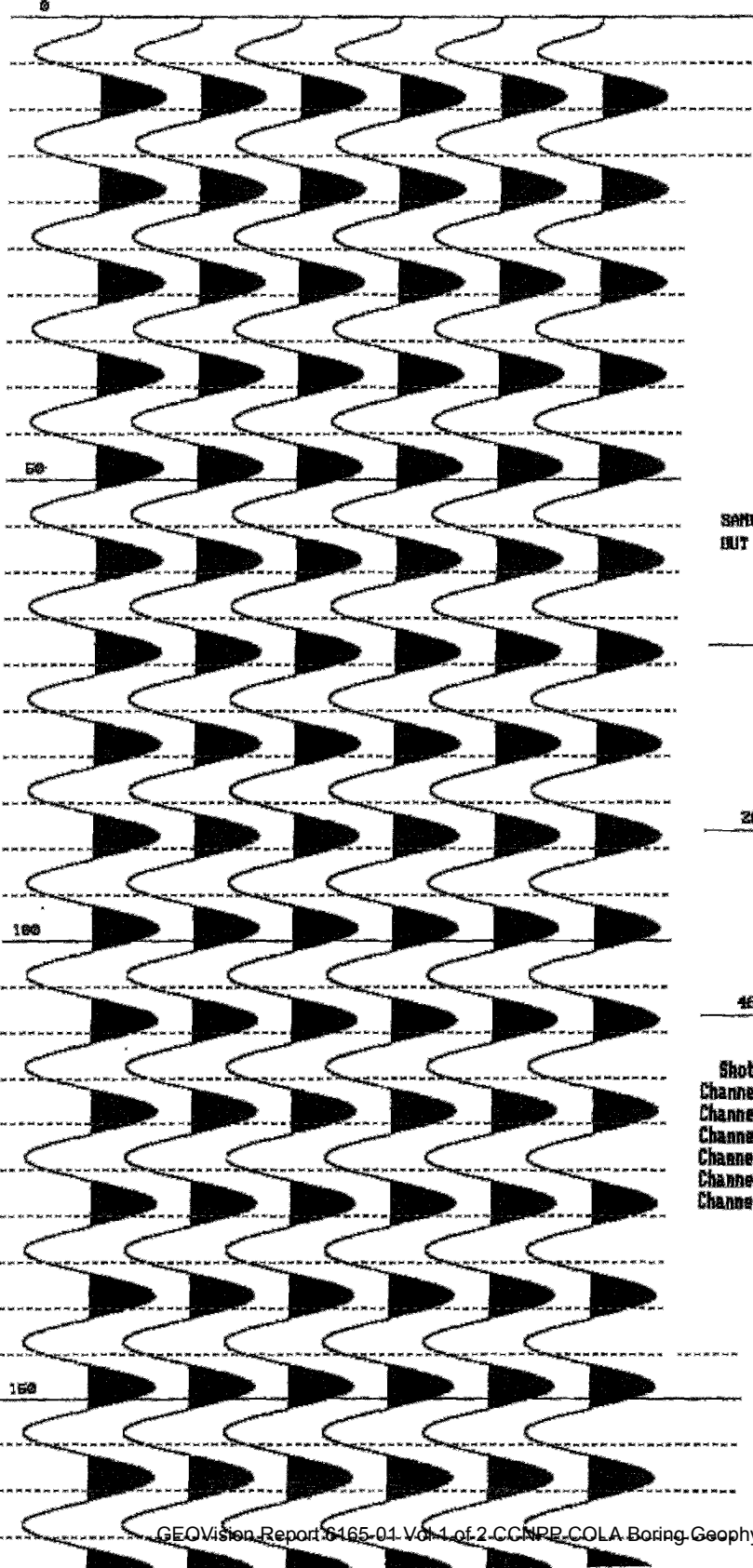
PHONE 6 LOC 1816.40

DELAY 8 MS

STACKS 1

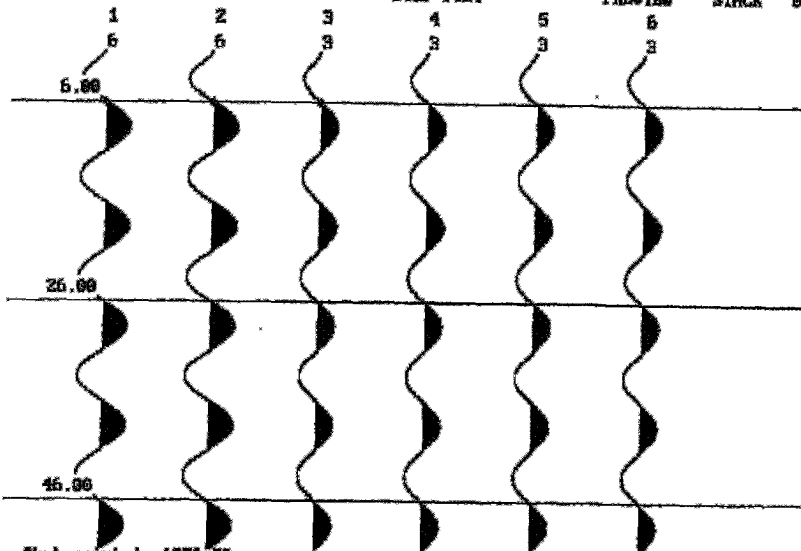
FIXED GAIN

1 2 3 4 5 6
16 16 16 16 16 16



S/N 75299

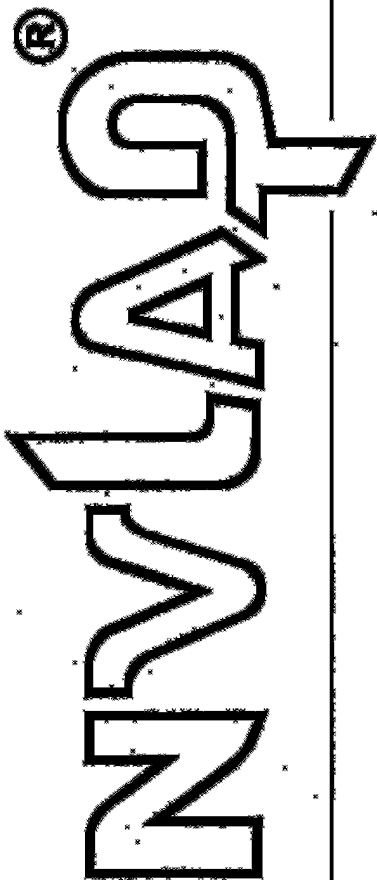
SAMPLING 0.031 ms LENGTH 256 ms DELAY 0 ms
OUT OUT DISP FILT PREVIEW STACK 0



Shot point is 1876.72

Channel	Phone location	Arrival time
1	1888.80	6.0 msec
2	1883.28	6.0 msec
3	1886.86	6.0 msec
4	1889.84	96.0 msec
5	1813.12	96.0 msec
6	1816.40	96.0 msec

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:1999

NVLAP LAB CODE: 105014-0

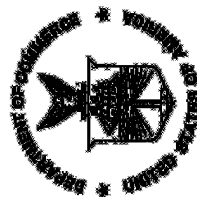
Southern California Edison Company
Westminster, CA

is recognized by the National Voluntary Laboratory Accreditation Program for conformance with criteria set forth in
NIST Handbook 150-2001 and all requirements of ISO/IEC 17025:1999.
Accreditation is granted for specific services, listed on the Scope of Accreditation, for:

CALIBRATION LABORATORIES

2006-04-01 through 2007-03-31

Effective dates



C. D. Yoon

For the National Institute of Standards and Technology



National Voluntary Laboratory Accreditation Program



SCOPE OF ACCREDITATION TO ISO/IEC 17025:1999

Southern California Edison Company
7300 Fenwick Lane
Westminster, CA 92683
Ms. Jennifer E. Smith
Phone: 714-895-0133 Fax: 714-895-0781
E-mail: Jennifer.Smith@scs.com
URL: <http://www.edisonmetrology.com>

CALIBRATION LABORATORIES

NVLAP LAB CODE 105014-0

NVLAP Code: 20/A01

ANSI/NCSL Z540-1-1994; Part 1

Compliant

DIMENSIONAL

NVLAP Code: 20/D03

Gage Blocks

Nominal Length in in

Best Uncertainty ($\pm$) in μ in ^{note 1}

0.01 to <0.05	1.9
0.05 to <0.1	1.7
0.1 to <1.0	1.2
1.0	1.4
2.0	1.8
3.0	2.2
4.0	2.9
5.0	3.4
6.0	3.6
7.0	3.8
8.0	6.0
10.0	6.8
12.0	7.2
16.0	8.1
20.0	9.4

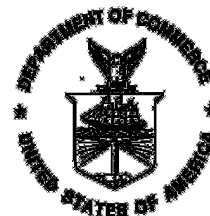
2006-04-01 through 2007-03-31

Effective dates

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Nominal Length in mm

Best Uncertainty ($\pm$) in nm ^{note 1}

0.5 to <1.0	52
1.0 to <2.5	44
2.5 to <25.0	39
25.0	44
50.0	47
75.0	60
100.0	80

NVLAP Code: 20/D11

Spherical Diameter; Ring Gages

Range in inches

Best Uncertainty ($\pm$) in μ m ^{note 1}

Remarks

0.040 to 0.825	6	Comparison to gage blocks
> 0.825 to 1.510	7	Comparison to gage blocks
> 1.510 to 2.510	8	Comparison to gage blocks
> 2.510 to 4.510	12	Comparison to gage blocks
> 4.510 to 6.510	14	Comparison to gage blocks
> 6.510 to 9.010	16	Comparison to gage blocks
> 9.010 to 12.010	19	Comparison to gage blocks
> 12.010 to 13.25	31	Comparison to gage blocks

ELECTROMAGNETICS - DC/LOW FREQUENCY

NVLAP Code: 20/B02

AC Current

Best Uncertainty ($\pm$) in ppm ^{note 1}

Range

Frequency in Hz

	10	20	40	400 to 10 k
10 mA	270	199	127	116
20 mA	270	199	127	116
30 mA	270	199	127	116
50 mA	286	208	141	130
100 mA	270	199	127	116

2006-04-01 through 2007-03-31

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200 mA	270	199	127	116			
300 mA	270	199	127	116			
500 mA	270	208	141	130			
	10	20	40	400 to 5 k	10 k		
1A	270	199	127	116	130		
	10	20	40	400 to 10 k			
2A	271	200	129	118			
3A	271	200	129	118			
	10	20	40	400 to 5 k	10 k		
5A	286	209	142	132	148		
	10	20	40	400	1 k	5 k	10 k
10A	273	233	132	121	121	143	143
							400 to 10 k
20A							144

NVLAP Code: 20/B05
DC Current

Range	Best Uncertainty ($\pm$) in ppm ^{nom}
10 nA	2.9
100 nA	2.3
1 μ A	2.0
10 μ A	2.0
100 μ A	2.0
1 mA	1.9
10 mA	1.9
100 mA	1.9
1 A	10.4
10 A	10.4
30 A	20.6

2006-04-01 through 2007-03-31

C. D. Lawson

Effective dates

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105014-0

DC Resistance

<i>Nominal Value in Ω</i>	<i>Best Uncertainty ($\pm$) in ppm ^{note 1}</i>	<i>Remarks</i>
100 μ	8.20	Automated DC Resistance Calibration System
1 m	5.50	Automated DC Resistance Calibration System
10 m	3.70	Automated DC Resistance Calibration System
100 m	2.10	Automated DC Resistance Calibration System
1	0.40	Automated DC Resistance Calibration System
10	0.40	Automated DC Resistance Calibration System
25	0.50	Automated DC Resistance Calibration System
100	0.50	Automated DC Resistance Calibration System
1 k	0.50	Automated DC Resistance Calibration System
10 k	0.50	Automated DC Resistance Calibration System
100 k	1.50	Automated DC Resistance Calibration System
1 M	2.30	Automated DC Resistance Calibration System
10 M	3.30	Automated DC Resistance Calibration System
100 M	4.00	Automated DC Resistance Calibration System

NVLAP Code: 20/B06

DC Voltage

<i>Range</i>	<i>Best Uncertainty ($\pm$) in ppm ^{notes 1,2}</i>	<i>Remarks</i>
1.018 V	0.80	Automated DC Calibration System
10.00 V	0.20	Automated DC Calibration System
1.000 V	0.80	Automated DC Calibration System
1 mV to 100 mV	1.3 ^{note 3}	Ratiometric Measurement Techniques performed by voltage transfer utilizing a high precision voltage
100 mV	0.7	Ratiometric Measurement Techniques performed by voltage transfer utilizing a high precision voltage
1.0 V	0.3	Ratiometric Measurement Techniques performed by voltage transfer utilizing a high precision voltage

2006-04-01 through 2007-03-31

Effective dates

For the National Institute of Standards and Technology

GEOVision Report 6165-01 Vol 1 of 2 CCNPP COLA Boring Geophysics rev A

11/14/2006

Page 177 of 366



National Voluntary Laboratory Accreditation Program



CALIBRATION LABORATORIES

NVLAP LAB CODE 105014-0

10.0 V	0.3	Ratiometric Measurement Techniques performed by voltage transfer utilizing a high precision voltage
20.0 V	0.5	Ratiometric Measurement Techniques performed by voltage transfer utilizing a high precision voltage
100.0 V	0.3	Ratiometric Measurement Techniques performed by voltage transfer utilizing a high precision voltage
1000.0 V	0.7	Ratiometric Measurement Techniques performed by voltage transfer utilizing a high precision voltage

NVLAP Code: 20/E09
LF AC Voltage

Best Uncertainty ($\pm$) in ppm ^{note 1.3.4}
Frequency in Hz

Range	10	20	40	100	1k	10k	20k	50k	100k	300k	500k	800k	1M
2 mV	448	912	889	969	379	863	1073	405	1131	1265	2116	2393	2938
10 mV	119	230	102	177	245	169	180	220	343	243	676	425	488
20 mV	83	70	67	67	66	76	76	163	261	361	521	372	442
30 mV	134	111	80	78	62	63	71	133	219	343	533	688	791
100 mV	36	72	23	42	34	33	34	43	77	169	220	287	223
190 mV	36	31	22	20	21	26	21	42	80	136	124	264	213
300 mV	46	61	30	32	34	19	28	36	59	116	143	189	203
1 V	120	36	18	10	13	12	11	25	14	87	102	104	98
1.9 V	36	22	22	9	9	9	8	18	11	94	101	85	89
3 V	26	34	23	17	14	14	13	27	14	100	108	95	97
10 V	20	42	19	10	10	9	10	11	16	80	100	111	100
19 V	26	23	20	11	9	9	10	11	16	98	109	82	82
30 V	30	37	26	19	13	16	19	37	44	118			
100 V	140	46	20	16	13	19	11	40	22				
190 V	47	27	20	20	13	13	13	41	26				
300 V			37	29	18	27	23	29	46				
500 V			33	25	17	20	19	38	32				

2006-04-01 through 2007-03-31

C. D. Faison

Effective dates

For the National Institute of Standards and Technology

GEOVision Report 6165-01 Vol 1 of 2 CCNPP COLA Boring Geophysics rev A

11/14/2006

Page 178 of 366



National Voluntary Laboratory Accreditation Program



CALIBRATION LABORATORIES

NVLAP LAB CODE 105014-0

700 V	29	23	18	17	19	44	54
1000 V	22	23	21	19	22		

TIME AND FREQUENCY

NVLAP Code: 20/F01
Frequency Dissemination

Range	Best Uncertainty ($\pm$) ^{note 1}	Remarks
10 MHz	1.2×10^{-12}	GPS Receiver

MECHANICAL

NVLAP Code: 20/M05
Flow Rate

Nominal Flow Rate	Best Uncertainty ($\pm$) in percent ^{notes 1, 2}
(0.8 to 30) L/s	0.3
(0.1 to 800) mL/s	0.4
(0.006 to 0.1) mL/s	0.7

NVLAP Code: 20/M06
Force

Nominal Force in lb	Best Uncertainty ($\pm$) ^{note 1}	Remarks
2 to 200	0.025 %	Dead Weight
> 200 to 300	0.086 lb	Proving Ring
> 300 to 500	0.14 lb	Proving Ring
> 500 to 1000	0.28 lb	Proving Ring
> 1000 to 2000	0.55 lb	Proving Ring
> 2000 to 5000	0.84 lb	Proving Ring
> 5000 to 10 000	1.7 lb	Proving Ring
> 10 000 to 20 000	3.5 lb	Proving Ring
> 20 000 to 35 000	5.8 lb	Proving Ring
> 35 000 to 50 000	13 lb	Proving Ring

2006-04-01 through 2007-03-31

Effective dates

For the National Institute of Standards and Technology

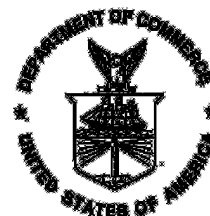
GEOVision Report 6165-01 Vol 1 of 2 CCNPP COLA Boring Geophysics rev A

11/14/2006

Page 179 of 366



National Voluntary Laboratory Accreditation Program



CALIBRATION LABORATORIES

NVLAP LAB CODE 105014-0

> 50 000 to 60 000
> 60 000 to 100 000
> 100 000 to 300 000

16 lb
26 lb
113 lb

Proving Ring
Proving Ring
Proving Ring

NVLAP Code 20/M08
Mass

Range	Best Uncertainty ($\pm$) in mg ^{notes 1,2}	Remarks
10 kg	2.3	Echelon I
5 kg	0.93	Echelon I
3 kg	0.65	Echelon I
2 kg	0.43	Echelon I
1 kg	0.052	Echelon I
500 g	0.043	Echelon I
300 g	0.041	Echelon I
200 g	0.034	Echelon I
100 g	0.020	Echelon I
50 g	0.013	Echelon I
30 g	0.013	Echelon I
20 g	0.0095	Echelon I
10 g	0.0073	Echelon I
5 g	0.0048	Echelon I
3 g	0.0038	Echelon I
2 g	0.0029	Echelon I
1 g	0.0030	Echelon I
500 mg	0.0017	Echelon I
300 mg	0.0013	Echelon I
200 mg	0.0010	Echelon I
100 mg	0.0009	Echelon I
50 mg	0.0007	Echelon I
30 mg	0.0007	Echelon I
20 mg	0.0005	Echelon I
10 mg	0.0005	Echelon I
5 mg	0.0006	Echelon I
3 mg	0.0006	Echelon I

2006-04-01 through 2007-03-31

Effective dates

For the National Institute of Standards and Technology



National Voluntary Laboratory Accreditation Program



CALIBRATION LABORATORIES

NVLAP LAB CODE 105014-0

2 mg	0.0005	Echelon I
1 mg	0.0005	Echelon I
30 kg	56	Echelon II
20 kg	22	Echelon II

THERMODYNAMIC

NVLAP Code: 20/T05

Pressure

Range	Best Uncertainty ($\pm$) in ppm ^{note 1}	Remarks
> 1.5 to 50	20	Gas
> 50 to 1450	45	Gas
> 1450 to 16 000	90	Gas
> 1000 to 10 000	60	Oil
> 10 000 to 30 000	110	Oil
> 30 000 to 50 000	210	Oil

1. Represents an expanded uncertainty using a coverage factor, $k = 2$, at an approximate level of confidence of 95 %.
2. Approximate value. Actual value determined by the test statistics.
3. All ACV measurements performed via AC/DC transfer system.
4. Uncertainties listed are representative of the laboratory's accredited capabilities within the stated ranges. Accreditation is not limited to only those fixed values shown.
5. Dependent upon principle of operation of devices being calibrated and its performance relative to standards at the time of the test.
6. The equation: $\text{uncert.} = (A + B/mVDC)^{0.5}$ (where $A = 0.16$ and $B = 0.013333$) is provided in order for potential customers to calculate approximate uncertainties for values down to 1 mV. Example: uncertainty at 1 mVDC would calculate to approximately ± 115.47 ppm.
7. The laboratory maintains Echelon II capability for ranges 20 kg to 1 mg and separate Echelon III for all ranges.
8. Avondupois mass calibration services are available by comparison to equivalent metric standards. Uncertainties may be appropriately larger.

2006-04-01 through 2007-03-31

Effective dates

For the National Institute of Standards and Technology

GEOVision Report 6165-01 Vol 1 of 2 CCNPP COLA Boring Geophysics rev A

11/14/2006

Page 181 of 366

Calibration Report



12686 Hoover Street, Garden Grove, CA 92841
Ph. (714) 901-5659 Fax (714) 901-5649

Customer: GEOVISION
Corona CA 92882
Account#: 15214
Cust.PO#:
Page 1 of 2

MPC Ctrl#: AM6766
Report#: 199974
Print Date: 041006
MPC Job#: L25384

Instrument: Caliper Calibration Plate

Mfg: Robertson Geo Logging
Model: N/A
Size:
Res.:

Serial#: 201
Cust Ctrl#:
Location:
Department:

Work Performed: Inspected, cleaned, and calibrated.
Parts Replaced: None

Calibration Condition as Received: In tolerance
Calibration Condition as Returned: In tolerance

Functions/Parameters Tested

Actual Values (inch)	As Measured
1.969	1.965
3.937	3.939
8.000	7.995
12.00	11.9965

Unless noted otherwise, Pass/Fail criteria is based on published manufacturer specifications and, unless noted otherwise, this instrument meets these specifications.
Services provided comply with ISO 17025:1999, ISO 9001:2000, MPC QM rev.3, MPC CSD rev.2 and customer purchase order requirements as required.

Calibration standards used for performance testing:

MPC#	Instrument
K3263	Pratt & Whitney C Super Micrometer
I2111	Mitutoyo 516-126 Gage Block Set

Due Date	Traceability
060706	192068
082406	397060

Environmental: 69 Deg / 40% Rh
Accuracy Ratio: 4:1
Cal Procedure: 33K6-4-552-1
Technician: CHRIS SPANGLER

Cal Int.: 12
Cal Date: 040606
Due Date: 040607
Quality Approval: _____



Form Cert 04-25-05