302 N. Belt East, Swansea, IL 62226

(618) 277-0329

TESTING MACHINE CALIBRATION DATA AND REPORT

 Customer
 University of Arkasas

 Location
 Civil Engineering

 Fayetteville, AR 72701

 Manufacturer
 TMI
 Model CM-5000GB2

 Serial No.
 100317
 Capacity 500,000 lbf

 Resolution
 10 lbf / DIV

Auxiliary Equipment: w/ Admet GB2 Digital R/O #GB2-1004302

w/ Dynisco P/T #04-08-10323273

Report #: <u>VN# 7693-001</u> Page 1 of 2

 Date of Service
 11/20/12

 Customer Order No.
 Verbal

 Order Date
 11/06/12

 Temp.
 59° F

 Date Last Done
 12/14/11

Method of Verification Set the Force

Applied Force	*	Indicated Force	Error	%	Applied Force	*	Indicated Force	Error	%
Run #1		"As Found" Condition			Run #2		"As Left" Condition		
500,000lbf Range	*	10lbf / DIV			500,000lbf Range	*	10lbf / DIV		
0	6C	0	0	0.00	0	6C	0	0	0.00
5,000	6C	4,990	-10	0.20	5,000	6C	5,000	0	0.00
10,000	7	9,990	-10	0.10	10,000	7	9,990	-10	0.10
20,000	7	19,980	-20	0.10	20,000	7	19,970	-30	0.15
40,000	8	39,960	-40	0.10	40,000	8	39,960	-40	0.10
60,000	8	59,950	-50	0.08	60,000	8	59,940	-60	0.10
80,000	8	79,870	-130	0.16	80,000	8	79,890	-110	0.14
100,000	8	99,880	-120	0.12	100,000	8	99,870	-130	0.13
150,000	8	149,870	-130	0.09	150,000	8	149,880	-120	0.08
200,000	8	199,880	-120	0.06	200,000	8	199,870	-130	0.07
250,000	8	249,850	-150	0.06	250,000	8	249,830	-170	0.07
300,000	8	299,720	-280	0.09	300,000	8	299,760	-240	0.08
400,000	8	399,920	-80	0.02	400,000	8	399,930	-70	0.02
500,000	14	499,910	-90	0.02	500,000	14	499,920	-80	0.02
0	14	0	-20	0.00	0	14	0	-20	0.00

Notes:

Calibration in accordance with ASTM E4-10, and Calser Corporation Procedure # 1-01, Rev 1.

*CALIBRATION EQUIPMENT

All verification equipment-including dead weights, proving rings, load cells, etc, is calibrated and traceable to the latest procedures stipulated by the National Institute of Standards and Technology (NIST) and ASTM E74-06. All equipment is traceable under guidelines set forth in ISO/IEC 17025. All instrument readings have been corrected for

ACCURACY SUMMARY

Verification Equipment

Capacity Range	Loading Range	Max. Error	Manufacturer	* L/C	Range	Verification Agency
Run 1			and Serial #		and uncertainty	and Date
500,000lbf Range	5,000 - 500,000	0.20 %	Interface	6C	112.40 - 10,000 lbf	Morehouse
			426017A		0.281 lbf	11/06/12
			Strainsense	7	8,655.27 lbf - 100,000 lbf	Morehouse
Run 2			090716(LO)		21.638 lbf	09/14/12
500,000lbf Range	5,000 - 500,000	0.15 %	Strainsense	8	39,291.24 - 400,000 lbf	Morehouse
			090716(HI)		98.228 lbf	09/14/12
			Strainsense	14	110,926.77 - 1,000,000 lbf	Morehouse
		•	870815A		277.317 lbf	07/27/12

This report shall not be copied except in its entirety without express written approval of Calser Corp.

CALSER CORPORATION 302 N. BELT EAST SWANSEA, IL 62226 (618)277-0329

TESTING MACHINE CERTIFICATE OF CALIBRATION

Owner:University of ArkasasReport # : VN# 7693-001Location:Civil EngineeringPage : 2 of 2

Fayetteville, AR 72701

Date of Service: 11/20/12

Manufacturer: TMI Model: CM-5000GB2

Serial No.: 100317 **Capacity**: 500,000 lbf

Auxillary Equip: w/ Admet GB2 Digital R/O #GB2-1004302

w/ Dynisco P/T #04-08-10323273

This is to certify that the testing machine listed above has been calibrated by Calser Corporation personnel.

The method of verification and listed data are in accordance with ASTM E 4-10.

Accuracy of all calibration devices is traceable to the National Institute of Standards and Technology (NIST)

and all calculations have been corrected for temperature where applicable.

Capacity Range	Loading Range	Max. Error
Run 1 500,000lbf Range	5,000 - 500,000	0.20 %
Run 2 500,000lbf Range	5,000 - 500,000	0.15 %

VERIFICATION EQUIPMENT							
Manufacturer <u>& Serial #</u>	Load <u>Cell #</u>	Range & <u>Uncertainty</u>	Verification Agency & Date	Digital <u>Serial #</u>			
Interface 426017A	6C	112.40 - 10,000 lbf 0.281 lbf	Morehouse 11/06/12	GB-9911092			
Strainsense 090716(LO)	7	8,655.27 lbf - 100,000 lbf 21.638 lbf	Morehouse 09/14/12	GB-9911092			
Strainsense 090716(HI)	8	39,291.24 - 400,000 lbf 98.228 lbf	Morehouse 09/14/12	GB-9911092			
Strainsense 870815A	14	110,926.77 - 1,000,000 lbf 277.317 lbf	Morehouse 07/27/12	GBC-0702261			

This certificate is issued as a statement of the fact that on the above date the listed testing machine has an accuracy as indicated. It should not be construed or regarded as a Guarantee or Warranty of any kind (in favor of the client, the client's customers, or the public at large) that the testing machine will continue to retain the same percentage (%) of accuracy or efficiency as determined on the date when the calibration, and adjustments if required, was performed and reported by "Calser Corporation" since the calibrator has absolutely no control over the future operation, damage, maintenance, repairs, and overall condition of the testing machine and hereby expressly disclaims any and all liability for damage or loss sustained by all parties arising or resulting from the deterioration, obsolescence, malfunction or substandard performance of said testing machine; which shall remain the sole responsibility of the machine's regular custodian, owner, and/or user. This certificate shall not be reporoduced except in full, without the written approval of Calser Corporation.

CALSER CORPORATION

Quality Control Director

Thomas R. Gagen

TESTING MACHINE CALIBRATION DATA AND REPORT

Customer University of Arkasas Location Civil Engineering Fayetteville, AR 72701 Manufacturer Forney Model QC-400F-LC1

Serial No. 95037 Capacity _ 400,000 lbf Resolution 10 lbf / DIV

Auxiliary Equipment: w/ Admet GB2 Digital R/O #GB2-107721-2

w/ Dynisco P/T

Report #: VN# 7693-002 Page 1 of 2

Date of Service 11/20/12 Customer Order No. Verbal **Order Date** 11/06/12 Temperature 59° F **Date Last Done** 12/14/11

Method of Verification Set the Force

Applied Force	*	Indicated Force	Error	%	*	Indicated Force	Error	%	*	Indicated Force	Error	%
Run #1		Run #1	"As Found"	Condition		Run #2	"As Left" C	ondition		Run #3	"As Left"	Condition
400,000lbf Range	*	10lbf / DIV			*				*			
0	6C	0	0	0.00	6C	0	0	0.00	6C	0	0	0.00
5,000	6C	5,000	0	0.00	6C	5,000	0	0.00	6C	4,990	-10	0.20
10,000	7	10,000	0	0.00	7	9,990	-10	0.10	7	10,000	0	0.00
20,000	7	20,010	10	0.05	7	19,970	-30	0.15	7	19,980	-20	0.10
40,000	8	40,010	10	0.03	8	39,930	-70	0.18	8	39,950	-50	0.13
60,000	8	60,090	90	0.15	8	59,920	-80	0.13	8	59,980	-20	0.03
80,000	8	80,030	30	0.04	8	80,010	10	0.01	8	80,010	10	0.01
100,000	8	100,170	170	0.17	8	100,020	20	0.02	8	100,030	30	0.03
150,000	8	150,100	100	0.07	8	149,970	-30	0.02	8	150,020	20	0.01
200,000	8	200,090	90	0.05	8	200,100	100	0.05	8	200,110	110	0.06
250,000	8	249,760	-240	0.10	8	250,210	210	0.08	8	250,170	170	0.07
300,000	8	299,490	-510	0.17	8	300,040	40	0.01	8	300,080	80	0.03
350,000	8	349,030	-970	0.28	8	350,020	20	0.01	8	350,040	40	0.01
400,000	8	398,790	-1,210	0.30	8	399,980	-20	0.01	8	400,010	10	0.00
0	8	0	-20	0.00	8	0	30	0.00	8	0	10	0.00
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Notes:

Calibration in accordance with ASTM E4-10, and Calser Corporation Procedure # 1-01, Rev 1.

*CALIBRATION EQUIPMENT

All verification equipment-including dead weights, proving rings, load cells, etc, is calibrated and traceable to the latest procedures stipulated by the National Institute of Standards and Technology (NIST) and ASTM E74-06. All equipment is traceable under guidelines set forth in ISO/IEC 17025 . All instrument readings have been corrected for temperature where necessary.

ACCURACY SUMMARY

Capacity Range	Loading Range	Max. Error
Run 1		
400,000lbf Range	5,000 - 400,000	0.30 %
Run 2		
400,000lbf Range	5,000 - 400,000	0.18 %
Run 3		
400,000lbf Range	5,000 - 400,000	0.20 %

VERIFICATION EQUIPMENT

Manufacturer & Serial #	* L/C	Class A Range (in LBs) and Uncertainty (LBF)	Agency & Date
Interface	6C	112.40 - 10,000 lbf	Morehouse
426017A		0.281 lbf	11/06/12
Strainsense	7	8,655.27 lbf - 100,000 lbf	Morehouse
090716(LO)		21.638 lbf	09/14/12
Strainsense	8	39,291.24 - 400,000 lbf	Morehouse
090716(HI)		98.228 lbf	09/14/12

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CALSER CORPORATION 302 N. BELT EAST SWANSEA, IL 62226 (618)277-0329

TESTING MACHINE CERTIFICATE OF CALIBRATION

Owner : University of Arkasas Report #: VN# 7693-002

Location : Civil Engineering

Fayetteville, AR 72701 Page: 2 of 2

Manufacturer: Forney Model: QC-400F-LC1 Date of Service: 11/20/12

Serial No. : 95037 **Capacity:** 400,000 lbf

Auxillary Equip: w/ Admet GB2 Digital R/O #GB2-107721-2

w/ Dynisco P/T

This is to certify that the testing machine listed above has been calibrated by Calser Corporation personnel.

The method of verification and listed data are in accordance with ASTM E 4-10.

Accuracy of all calibration devices is traceable to the National Institute of Standards and Technology (NIST) and all calculations have been corrected for temperature where applicable.

Capacity Range	Loading Range	Max. Error
Run 1 400,000lbf Range	5,000 - 400,000	0.30 %
Run 2 400,000lbf Range	5,000 - 400,000	0.18 %
Run 3 400,000lbf Range	5,000 - 400,000	0.20 %

Verification Equipment Used:						
Manufacturer <u>& Serial #</u>	Load <u>Cell #</u>	Range & <u>Uncertainty</u>	Verification Agency & Date	Digital <u>Serial #</u>		
Interface 426017A	6C	112.40 - 10,000 lbf 0.281 lbf	Morehouse 11/06/12	GB-9911092		
Strainsense 090716(LO)	7	8,655.27 lbf - 100,000 lbf 21.638 lbf	Morehouse 09/14/12	GB-9911092		
Strainsense 090716(HI)	8	39,291.24 - 400,000 lbf 98.228 lbf	Morehouse 09/14/12	GB-9911092		

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CALSER CORPORATION

Quality Control Director

Thomas R. Gagen

Form # 104-01-Rev4