SES Pipe #3 (Winmar #7)

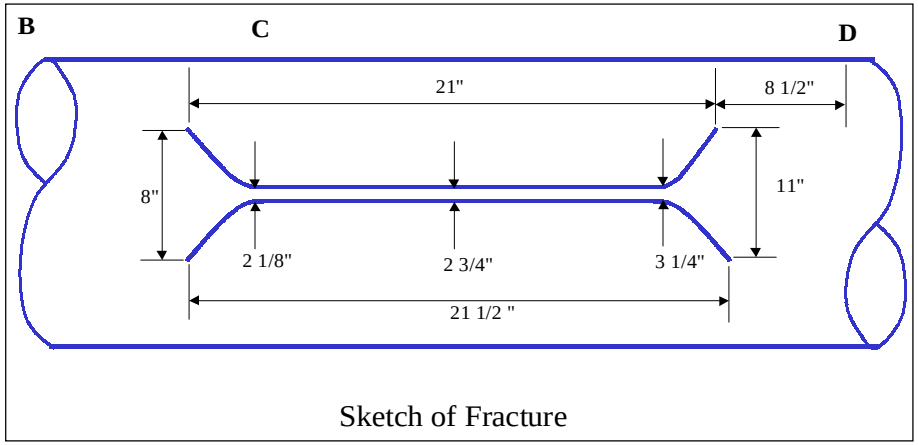
This pipe is from an unknown location in the line.

	End Closest to Fracture								End Furthest From Fracture		
	0 ft	2 ft	4 ft	6 ft	8 ft	10 ft	12 ft	14 ft	16 ft	18 ft	20 ft
Pipe 3	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Wall thickness 1 (inches)	0.485	0.428	0.409	0.435	0.469	0.491	0.442	0.415	0.404	0.438	0.472
Wall thickness 2 (inches)	0.377	0.393	0.417	0.468	0.435	0.423	0.376	0.361	0.441	0.449	0.468
Wall thickness 3 (inches)	0.405	0.471	0.493	0.457	0.425	0.404	0.436	0.465	0.494	0.465	0.415
Wall thickness 4 (inches)	0.478	0.471	0.469	0.409	0.436	0.454	0.482	0.481	0.443	0.445	0.411
Average Wall Thickness (in	0.436	0.441	0.447	0.442	0.441	0.443	0.434	0.431	0.446	0.449	0.442
Max. Dia. (inches)	9.05	8.88	see notes	8.950	9.080	9.160	9.060	9.110	9.010	8.930	8.980
Min. Dia (inches)	8.97	8.87	see notes	8.94	8.94	9.09	9.03	9.11	9	8.88	8.92
% Ovality	0.9	0.1		0.1	1.6	0.8	0.3	0.0	0.1	0.6	0.7

Notes
Between E and F, 1 inch from E, the diameter is 9 inches
Between H and I, 3 inches from H the diameter is 9.18 inches, 6 inches from H the diameter is 9.14 inches
Between G and H, 3 inches from H the diameter is 9.04 inches, 6 inches from H the diameter is 8.99 inches

The fracture was a brittle fracture.

$$Ovality = \frac{2(D_{max} - D_{min})}{(D_{max} + D_{min})}$$



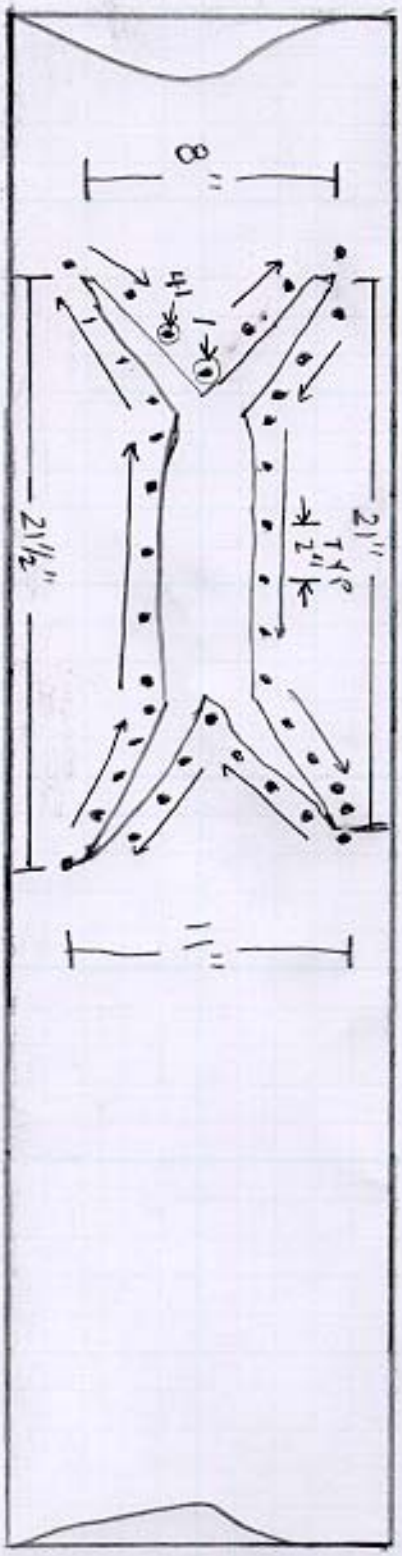
Sketch of Fracture

Measurements Around Fracture

Pipe 3	B+12 in	B+15 in	B+18 in	B+21 in	C	C+3 in	C+6 in	C+9 in	C + 12 in	C + 15 in	C + 18 in	C + 21 in
Max. Dia. (inches)	8.99	8.98	9.05	8.870	9.650	9.810	9.900	9.880	9.720	9.080	9.030	8.950
Min. Dia (inches)	8.93	8.97	8.87	9.45	NA	NA	NA	NA	9.08	9.3	9.16	9.05
% Ovality	0.7	0.1		-6.3	NA	NA	NA	NA	6.8	-2.4	-1.4	-1.1

Client	Project No.	Page No.	By	Date
WINMAR	1017039CRA	1 of 1	DF	10-16-01
Subject			Checked By	Date
FRACTURED AREA of Pipe #3				

1. .417
2. .430
3. .430
4. .446
5. .436
6. .426
7. .416
8. .408
9. .375
10. .355
11. .349
12. .352
13. .393
14. .420
15. .447
16. .484
17. .490
18. .493
19. .459
20. .422
21. .379
22. .398
23. .406
24. .417
25. .425
26. .389
27. .374
28. .344
29. .369
30. .363
31. .360
32. .359
33. .362
34. .370
35. .393
36. .428
37. .461
38. .470
39. .481
40. .471
41. .447



Pipe 3 View 1

Pipe 3 View 2

SES Pipe #1 (none)

This pipe is from an unknown location in the line.

End B End C

	0 ft	2 ft	4 ft	6 ft	8 ft	10 ft	12 ft	14 ft	16 ft	18 ft	20 ft	22 ft	24 ft
Pipe 1	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
Wall thickness 1 (inches)	0.378	0.438	0.453	0.464	0.478	0.442	0.452	0.492	0.491	0.485	0.450	0.426	0.470
Wall thickness 2 (inches)	0.461	0.486	0.489	0.429	0.525	0.465	0.508	0.489	0.804	0.487	0.520	0.502	0.505
Wall thickness 3 (inches)	0.507	0.448	0.44	0.444	0.478	0.513	0.499	0.493	0.500	0.489	0.523	0.470	0.511
Wall thickness 4 (inches)	0.461	0.427	0.43	0.485	0.454	0.524	0.493	0.506	0.485	0.500	0.473	0.485	0.497
Average Wall Thickness (in)	0.452	0.450	0.453	0.456	0.484	0.486	0.488	0.495	0.570	0.490	0.492	0.471	0.496
Max. Dia. (inches)	9.08	8.99	8.95	8.820	8.710	8.720	8.720	8.71	8.640	8.630	8.630	8.660	8.720
Min. Dia (inches)	8.95	8.96	8.95	8.81	8.62	8.63	8.63	8.63	8.63	8.61	8.63	8.66	8.71
% Ovality	1.4	0.3	0.0	0.1	1.0	1.0	1.0	0.9	0.1	0.2	0.0	0.0	0.1

Notes

Between locations C and D, 6 inches from C, the maximum and minimum diameters were 9.05 inches and 8.97 inches (0.9 % ovality)

$$Ovality = \frac{2(D_{max} - D_{min})}{(D_{max} + D_{min})}$$

Pipe 1 View 1

Pipe 1 View 2

SES Pipe #2 (none)

The pipe is from an unknown location in the line.

End A End C

	0 ft	2 ft	4 ft	6 ft	8 ft	10 ft	12 ft	14 ft	16 ft	18 ft	20 ft	22 ft	24 ft
Pipe 2	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
Wall thickness 1 (inches)	0.497	0.51	0.493	0.462	0.491	0.487	0.481	0.497	0.500	0.492	0.479	0.509	0.478
Wall thickness 2 (inches)	0.515	0.504	0.502	0.484	0.474	0.440	0.470	0.464	0.469	0.480	0.517	0.511	0.493
Wall thickness 3 (inches)	0.448	0.447	0.493	0.533	0.481	0.493	0.491	0.475	0.476	0.480	0.494	0.466	0.501
Wall thickness 4 (inches)	0.441	0.464	0.496	0.512	0.510	0.523	0.508	0.511	0.498	0.506	0.462	0.483	0.481
Average Wall Thickness (in	0.475	0.481	0.496	0.498	0.489	0.486	0.488	0.487	0.486	0.490	0.488	0.492	0.488
Max. Dia. (inches)	8.76	8.75	8.72	8.710	8.680	8.680	8.700	8.69	8.670	8.710	8.690	8.690	8.710
Min. Dia (inches)	8.74	8.74	8.71	8.69	8.68	8.68	8.7	8.69	8.7	8.62	8.69	8.69	8.63
% Ovality	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	-0.3	1.0	0.0	0.0	0.9

$$Ovality = \frac{2(D_{max} - D_{min})}{(D_{max} + D_{min})}$$

Pipe 2 View 1

Pipe 2 View 2

Attachment C
Material Test Results

Bodycote MATERIALS TESTING
METAL TECHNOLOGY

ACCREDITED CERTIFICATE 1293.01

Bodycote Omnitest Inc., Omni Laboratory, 4302 Dayco Street, Houston, Texas, 77092
Tel: 7139398690, Fax: 7139390249

Test Certificate

STRESS ENGINEERING SERVICES
13800 WESTFAIR EAST DRIVE
HOUSTON, TX

77041-1101

Attn: GEORGE ROSS

REF No 0108975 : Issue 1
Ord No 1007039

Date Tested 10/12/01
Date Reported 10/12/01

Item - 22 1/4" LG X 8 3/4" OD X 1/2" THK
9C: CRA/GRR

Specification - Not Applicable

Tensile Test - ASTM E 8

	Dimensions [in]	Area [in^2]	GL [in]	0.2%YS [psi]	UTS [psi]	%El	%RA	Comments
001:Longitudinal	0.7120x 0.4970	0.3539	2.00	46200	79300	26.0	N/A	Nil
002:Longitudinal	0.7410x 0.4880	0.3616	2.00	49500	80400	30.5	N/A	Nil
003:Longitudinal	0.7400x 0.4890	0.3619	2.00	46000	80300	32.5	N/A	Nil

Charpy Test - ASTM E 23

	Position	Dimensions [mm]	Denomination	Test Temp [°F]	Energy Absorbed [ft.lbf]	Average [ft.lbf]	Comments
004:Longitudinal	N/A	10x10x2V	N/A	R/T	46, 51, 75	57.3	See Below
Item 04: % SHEAR: 50, 60, 90 / MILS LAT EXP: 48, 55, 73							

Approved By J. Blevins

J. Blevins
For and on authority of
Bodycote Omnitest Inc.

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These results pertain only to the item(s) tested as sampled by the client unless otherwise indicated.

Bodycote MATERIALS TESTING
METAL TECHNOLOGY

Bodycote Omnitest Inc., Omni Laboratory, 4302 Dayco Street, Houston, Texas, 77092
Tel: 7139398690, Fax: 7139390249

ACCREDITED CERTIFICATE 1263.01

Test Certificate

STRESS ENGINEERING SERVICES
13800 WESTFAIR EAST DRIVE
HOUSTON. TX

77041-1101

Attn: GEORGE ROSS

REF No 0108976 : Issue 1
Ord No 1007039

Date Tested 10/10/01
Date Reported 10/10/01

Item - CHEMISTRY SAMPLE
7039 CRA-GRR ID 9C

Specification - Not Applicable

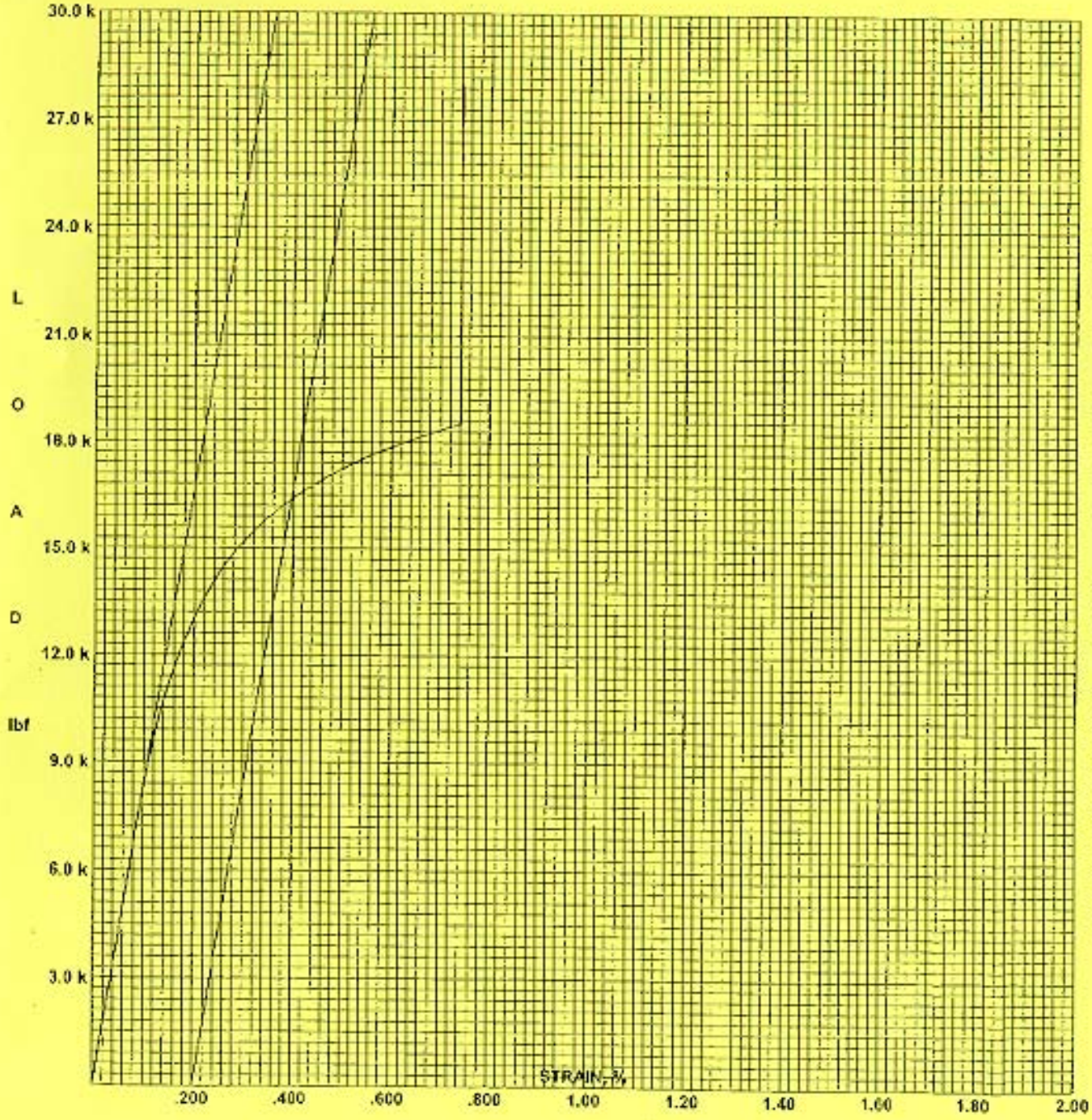
Chemical Analysis - OES

	C [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Al [%]	V [%]	Comments
001:	.26	.97	.015	.013	.25	.01	.02	.01	.03	.052	<.01	Nil
	Nb [%]	Ti [%]										Comments
001:	<.01	<.01										Nil

Approved By J. Blevins

J. Blevins
For and on authority of
Bodycote Omnitest Inc.

This certificate should not be reproduced other than in full, without the written approval of Bodycote Materials Testing Inc.
These results pertain only to the item(s) tested as sampled by the client unless otherwise indicated.

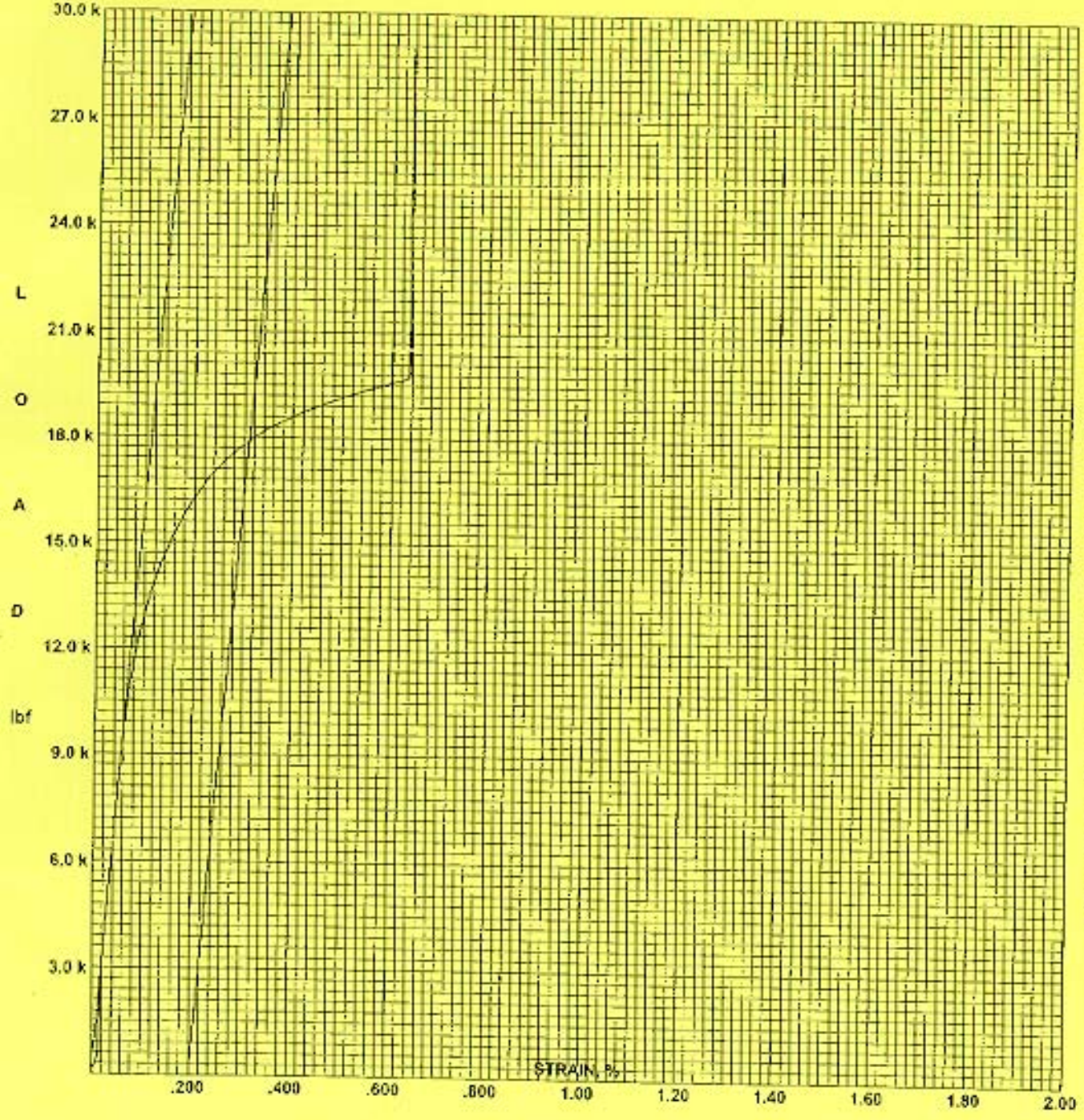


Bodycote Omnitest
4302 Dayco
Houston, TX 77092

E8 ASTM Report
Program #181,465-R4

BMT#:	108975
CLIENT ID:	
MATERIAL:	
OPERATOR:	JW
COMMENTS:	
Machine Serial #:	179520
Caliper Serial #:	OM74
Load Range:	30000 lbf
X-Axis Ranges:	2 %/<Removed>
Print Date:	October 12,2001
CLIENT:	STRESS ENG
Test Module:	Metals Tensile
Sample #:	954
Sample # :	**954**
Width, in:	**0.712**
CS Area, in²:	**.353864**
OFS @ .2, lbf:	**16365.4**
OFS @ .2, psi:	**46247.8**
EUL @ .5, lbf:	**17235.8**
EUL @ .5, psi:	**48707.3**
Ultimate, lbf:	**28066.**
Ultimate, psi:	**79312.9**
Red Area, %:	**54.3**
TE (Man), %:	**26**
Date:	**10/12/2001**
Time:	**01:30:47**

Specimen Break
Oct 12, 2001 1:30:48 AM

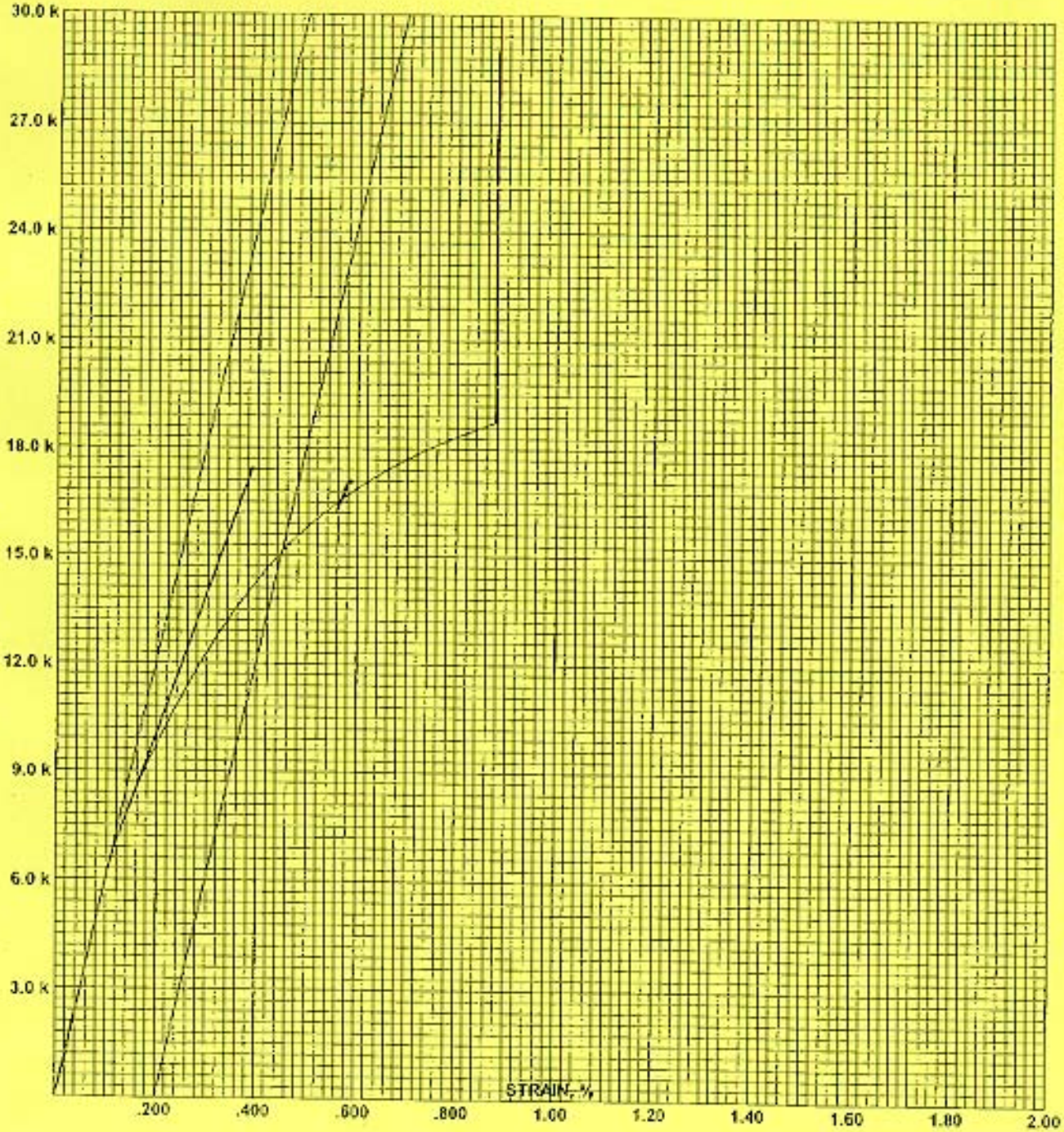


Bodycote Omnitest
4302 Dayco
Houston, TX 77092

E8 ASTM Report
Program #181,465-R4

BMT#:	108975
CLIENT ID:	
MATERIAL:	
OPERATOR:	JW
COMMENTS:	
Machine Serial #:	179520
Caliper Serial #:	OM74
Load Range:	30000 lbf
X-Axis Ranges:	2 %/<Removed>
Print Date:	October 12,2001
CLIENT:	STRESS ENG
Test Module:	Metals Tensile
Sample #:	955
Sample # :	**955**
Width, in:	**0.741**
CS Area, in²:	**.361608**
OFS @ .2, lbf:	**17896.6**
OFS @ .2, psi:	**49491.8**
EUL @ .5, lbf:	**19149.**
EUL @ .5, psi:	**52955.2**
Ultimate, lbf:	**29063.6**
Ultimate, psi:	**80373.3**
Red Area, %:	**54.1**
TE (Man), %:	**30.5**
Date:	**10/12/2001**
Time:	**01:36:52**

Specimen Break
Oct 12, 2001 1:36:54 AM



Bodycote Omnitest
4302 Dayco
Houston, TX 77092

E8 ASTM Report
Program #181.465-R4

BMT#:	108975
CLIENT ID:	
MATERIAL:	
OPERATOR:	JW
COMMENTS:	
Machine Serial #:	179520
Caliper Serial #:	OM74
Load Range:	30000 lbf
X-Axis Ranges:	2 %/<Removed>
Print Date:	October 12,2001
CLIENT:	STRESS ENG
Test Module:	Metals Tensile
Sample #:	956
Sample # :	**956**
Width, in:	**0.74**
CS Area, in²:	**.36186**
OFS @ .2, lbf:	**16650**
OFS @ .2, psi:	**46000**
EUL @ .5, lbf:	**15809.4**
EUL @ .5, psi:	**43689.2**
Ultimate, lbf:	**29055.2**
Ultimate, psi:	**80294.1**
Red Area, %:	**54.5**
TE (Man), %:	**32.5**
Date:	**10/12/2001**
Time:	**01:42:40**

Specimen Break
Oct 12, 2001 1:42:41 AM

TOTAL P.04

Bodycote MATERIALS TESTING
METAL TECHNOLOGY

Bodycote Omnitest Inc., Omni Laboratory, 4302 Dayco Street, Houston, Texas, 77092
Tel: 7139398690, Fax: 7139390249

ACCREDITED CERTIFICATE 1283.01

Test Certificate

STRESS ENGINEERING SERVICES
13800 WESTFAIR EAST DRIVE
HOUSTON, TX

77041-1101

Attn: DWAYNE FONTAINE

REF No 0109320 : Issue 1
Ord No 7039CRA

Date Tested 10/26/01
Date Reported 10/30/01

Item - 9" DIA PIPE SAMPLE
PIPE# 3 SECTION# 3D-E

Specification - Not Applicable

Tensile Test - ASTM E 8

	Dimensions [in]	Area [in^2]	GL [in]	0.2%YS [psi]	UTS [psi]	%El	%RA	Comments
001:Longitudinal	0.2520	0.0499	1.00	53700	72200	26.0	63.6	Nil
002:Longitudinal	0.2480	0.0483	1.00	50500	68700	28.0	62.9	Nil
003:Longitudinal	0.2470	0.0479	1.00	50300	69700	29.0	59.6	Nil

Approved By J. Blevins

J. Blevins
For and on authority of
Bodycote Omnitest Inc.

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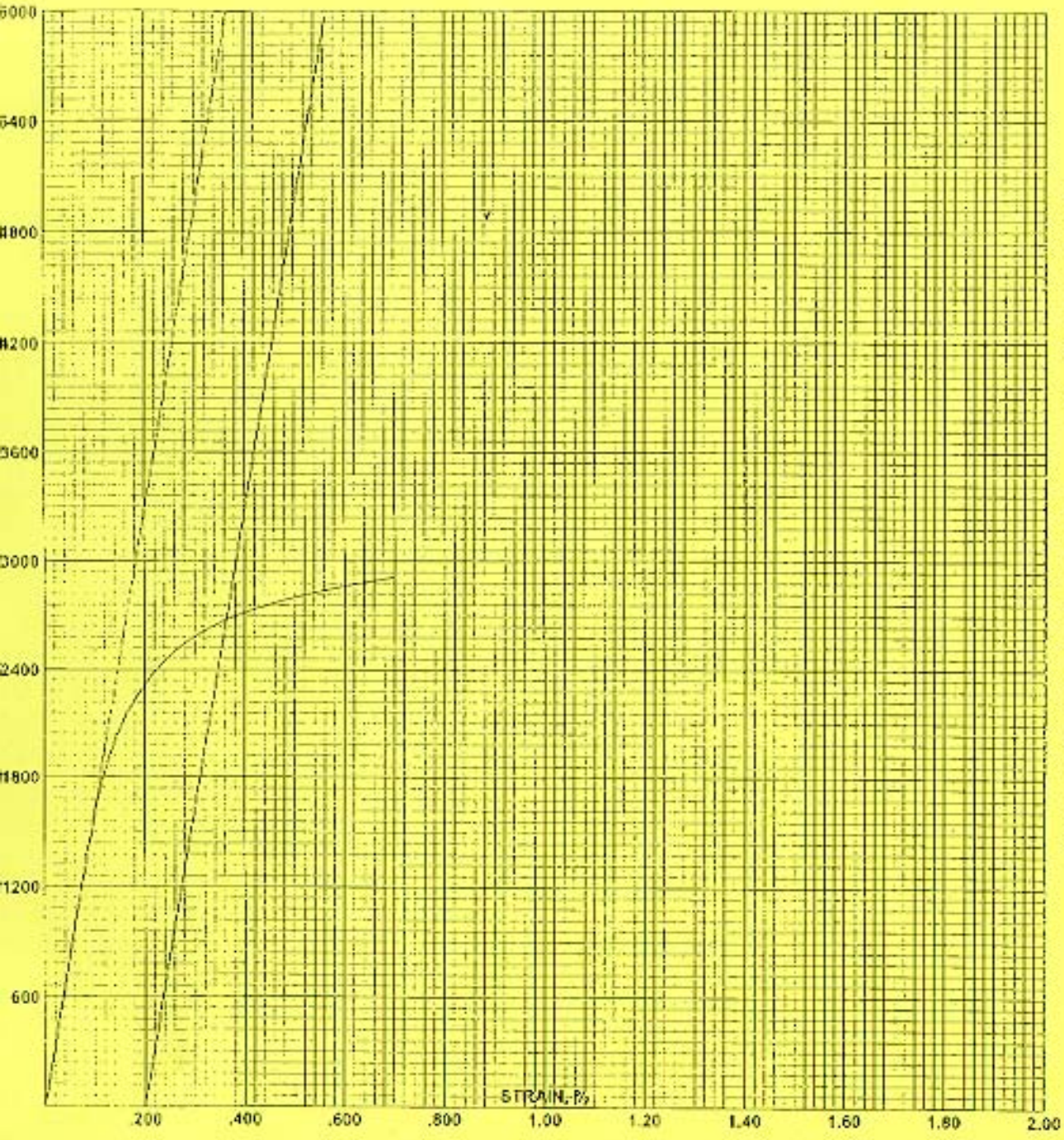


Bodycote Omnitest
4302 Dayco
Houston, TX 77092

E8 ASTM Report

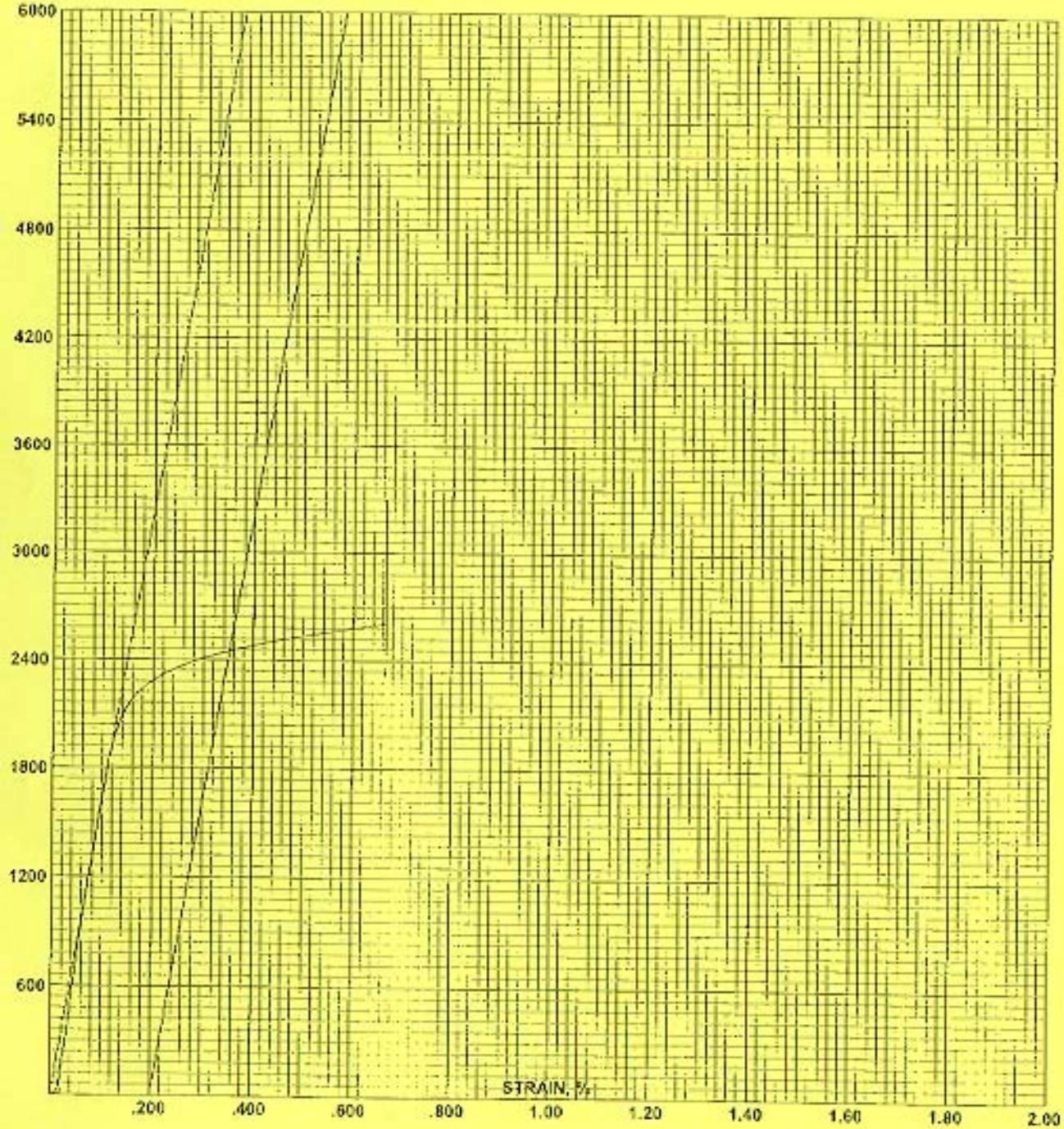
Program #161,465-R4

BMT#:	109320
Client:	stress
Operator:	jb
Machine s/n:	179520
Extensometer s/n:	13
Caliper s/n:	76
Sample #:	199
Print Date:	October 30,2001
Test Module:	Metals Tensile

Diameter, in:	**0.252**
CS Area, in²:	**.04987593**
Fin Area, in²:	**0.01815**
Modulus, psi:	**32878070.0**
OFS @ .2, lbf:	**2679.**
OFS @ .2, psi:	**53713.9**
EUL @ .5, lbf:	**2800.8**
EUL @ .5, psi:	**56155.6**
Ultimate, lbf:	**3603.2**
Ultimate, psi:	**72242.6**
Red Area, %:	**63.6**
TE (Man), %:	**26**
Date:	**10/30/2001**
Time:	**09:01:52**

Specimen Break
Oct 30, 2001 9:01:54 AM

OCT-30-2001 11:05 OMNI 7133398690 P.02/08



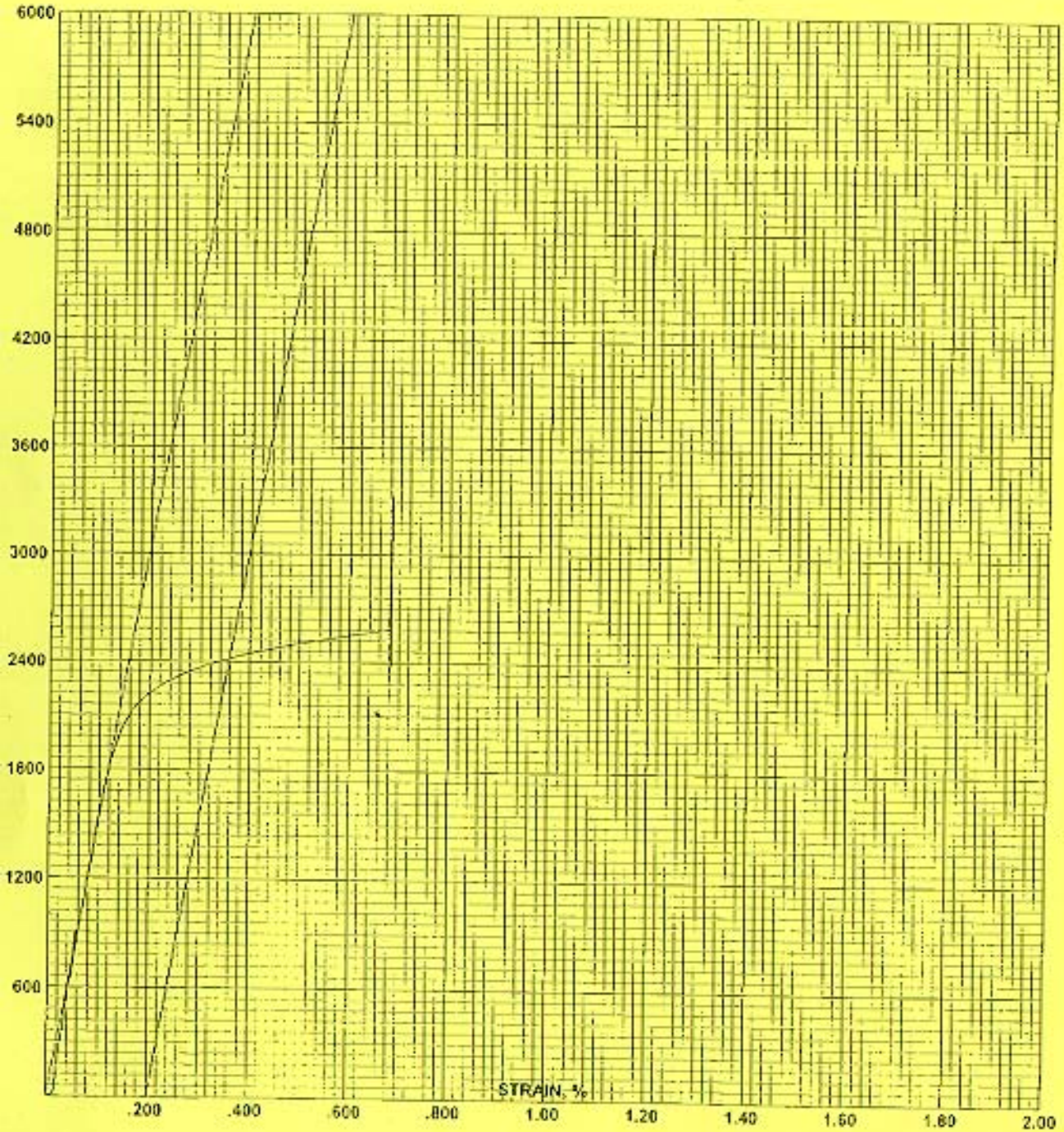
Bodycote Omnitest
4302 Dayco
Houston, TX 77092

E8 ASTM Report
Program #181,465-R4

BMT#:	109320
Client:	stress
Operator:	jb
Machine s/n:	179520
Extensometer s/n:	13
Caliper s/n:	76
Sample #:	200
Print Date:	October 25,2001
Test Module:	Metals Tensile
Diameter, in:	**0.248**
CS Area, in²:	**.04830513**
Fin Area, in²:	**0.01791**
Modulus, psi:	**33435620.0**
OFS @ .2, lbf:	**2438.6**
OFS @ .2, psi:	**50482.8**
EUL @ .5, lbf:	**2534.4**
EUL @ .5, psi:	**52466.4**
Ultimate, lbf:	**3316.6**
Ultimate, psi:	**68660.4**
Red Area, %:	**62.9**
TE (Man), %:	**28**
Date:	**10/25/2001**
Time:	**15:56:38**

Specimen Break
Oct 25, 2001 3:56:40 PM

OCT-30-2001 11:05 OMNI 7133338690 P.03/08



Bodycote Omnitest
4302 Dayco
Houston, TX 77092

E8 ASTM Report
Program #181,465-R4

BMT#:	109320
Client:	stress
Operator:	jb
Machine s/n:	179520
Extensometer s/n:	13
Caliper s/n:	76
Sample #:	201
Print Date:	October 25,2001
Test Module:	Metals Tensile

Diameter, in:	**0.247**
CS Area, in²:	**.04791635**
Fin Area, in²:	**0.01936**
Modulus, psi:	**31920930.0**
OFS @ .2, lbf:	**2406.3**
OFS @ .2, psi:	**50218.2**
EUL @ .5, lbf:	**2503.6**
EUL @ .5, psi:	**52249.2**
Ultimate, lbf:	**3340.8**
Ultimate, psi:	**69720.8**
Red Area, %:	**59.6**
TE (Man), %:	**29**
Date:	**10/25/2001**
Time:	**16:04:50**

Specimen Break
Oct 25, 2001 4:04:51 PM

OCT-30-2001 11:06 OMNI 7139398690 P.04/08

Bodycote MATERIALS TESTING
METAL TECHNOLOGY

ACCREDITED CERTIFICATE 1183.01

Bodycote Omnitest Inc., Omni Laboratory, 4302 Dayco Street, Houston, Texas, 77092
Tel: 7139398690, Fax: 7139390249

Test Certificate

STRESS ENGINEERING SERVICES
13800 WESTFAIR EAST DRIVE
HOUSTON, TX

77041-1101

Attn: DWAYNE FONTAINE

REF No 0109319 : Issue 1
Ord No 7039CRA

Date Tested 10/30/01
Date Reported 10/30/01

Item - 9" DIA PIPE SAMPLE
PIPE# 3 SECTION# 3A-B

Specification - Not Applicable

Tensile Test - ASTM E 8

	Dimensions [in]	Area [in^2]	GL [in]	0.20%YS [psi]	UTS [psi]	%El	%RA	Comments
001:Longitudinal	0.2470	0.0479	1.00	57200	74100	27.0	64.1	Nil
002:Longitudinal	0.2470	0.0479	1.00	56600	73600	26.0	63.1	Nil
003:Longitudinal	0.2480	0.0483	1.00	53100	71500	29.0	65.3	Nil

Approved By J. Blevins

J. Blevins
For and on authority of
Bodycote Omnitest Inc.

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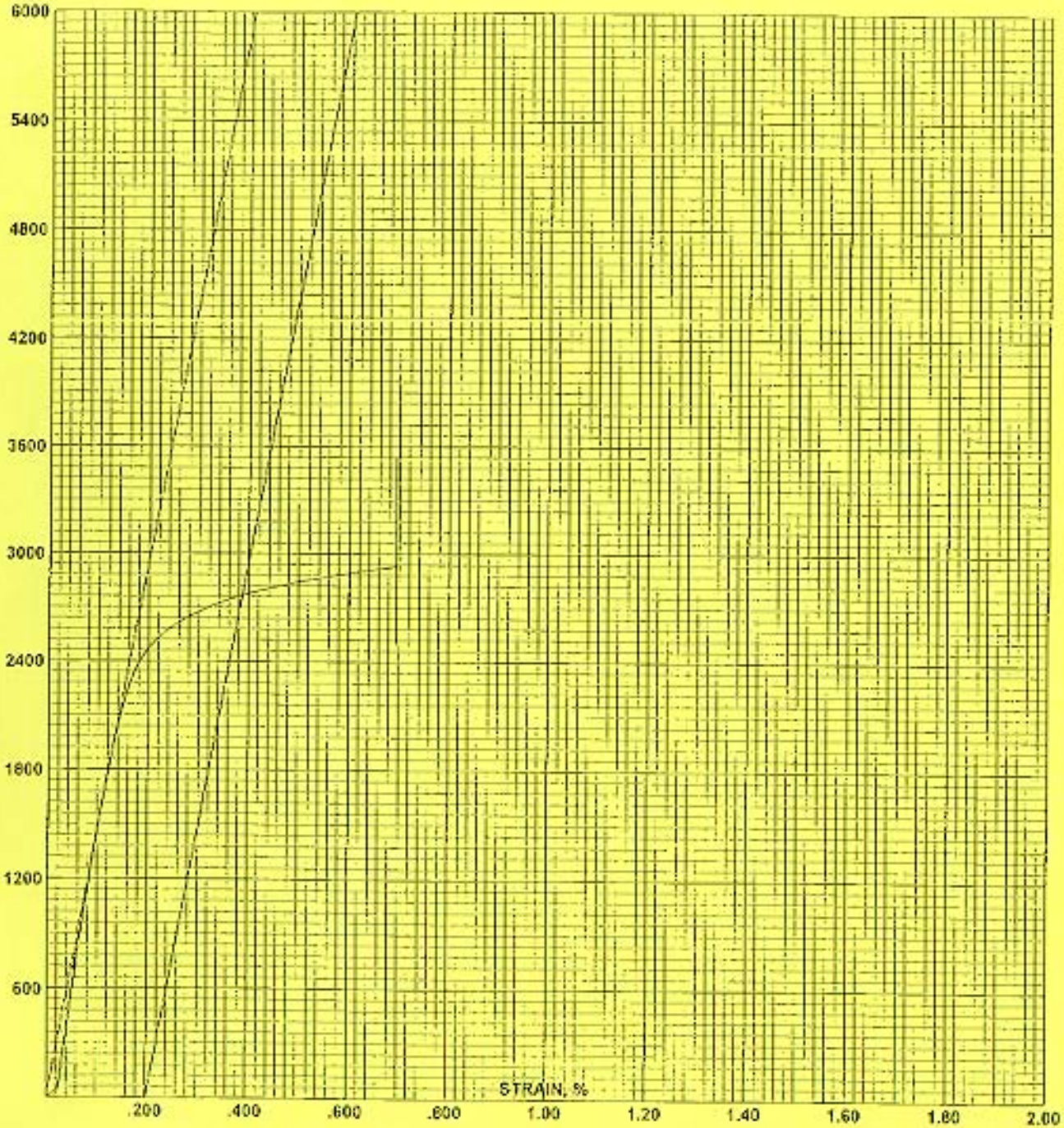


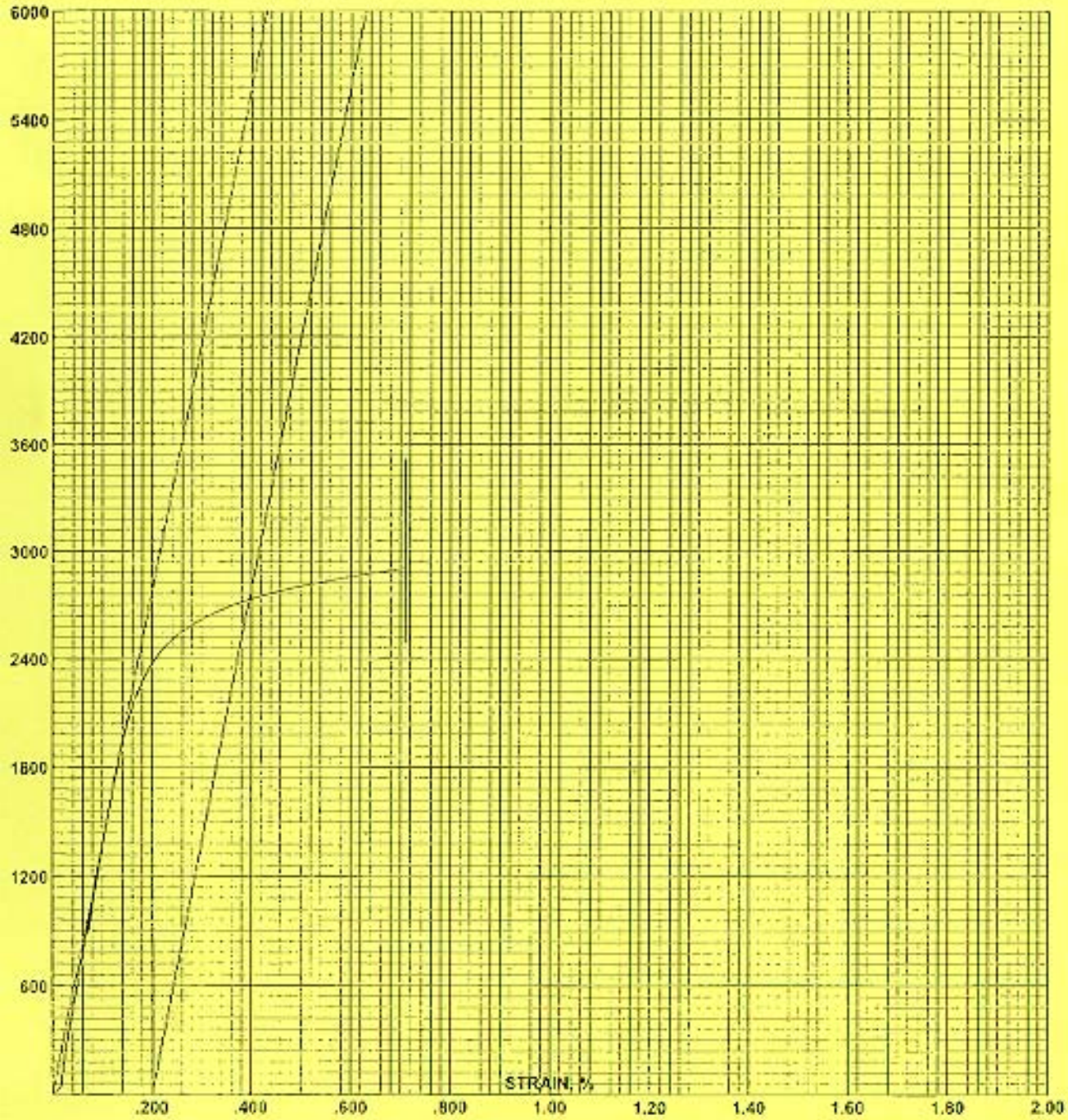
Bodycote Omnitest
4302 Dayco
Houston, TX 77092

E8 ASTM Report
Program #181,465-R4

BMT#:	109319
Client:	stress
Operator:	jb
Machine s/n:	179520
Extensometer s/n:	13
Caliper s/n:	76
Sample #:	193
Print Date:	October 26,2001
Test Module:	Metals Tensile
Diameter, in:	**0.247**
CS Area, in²:	**.04791635**
Fin Area, in²:	**0.0172**
Modulus, psi:	**30893140.0**
OFS @ .2, lbf:	**2741.9**
OFS @ .2, psi:	**57223.6**
EUL @ .5, lbf:	**2844.3**
EUL @ .5, psi:	**59359.7**
Ultimate, lbf:	**3548.4**
Ultimate, psi:	**74053.5**
Red Area, %:	**64.1**
TE (Man), %:	**27**
Date:	**10/26/2001**
Time:	**15:01:45**

Specimen Break
Oct 26, 2001 3:01:46 PM

OCT-30-2001 11:07 OMNI 7139358690 P.06/08



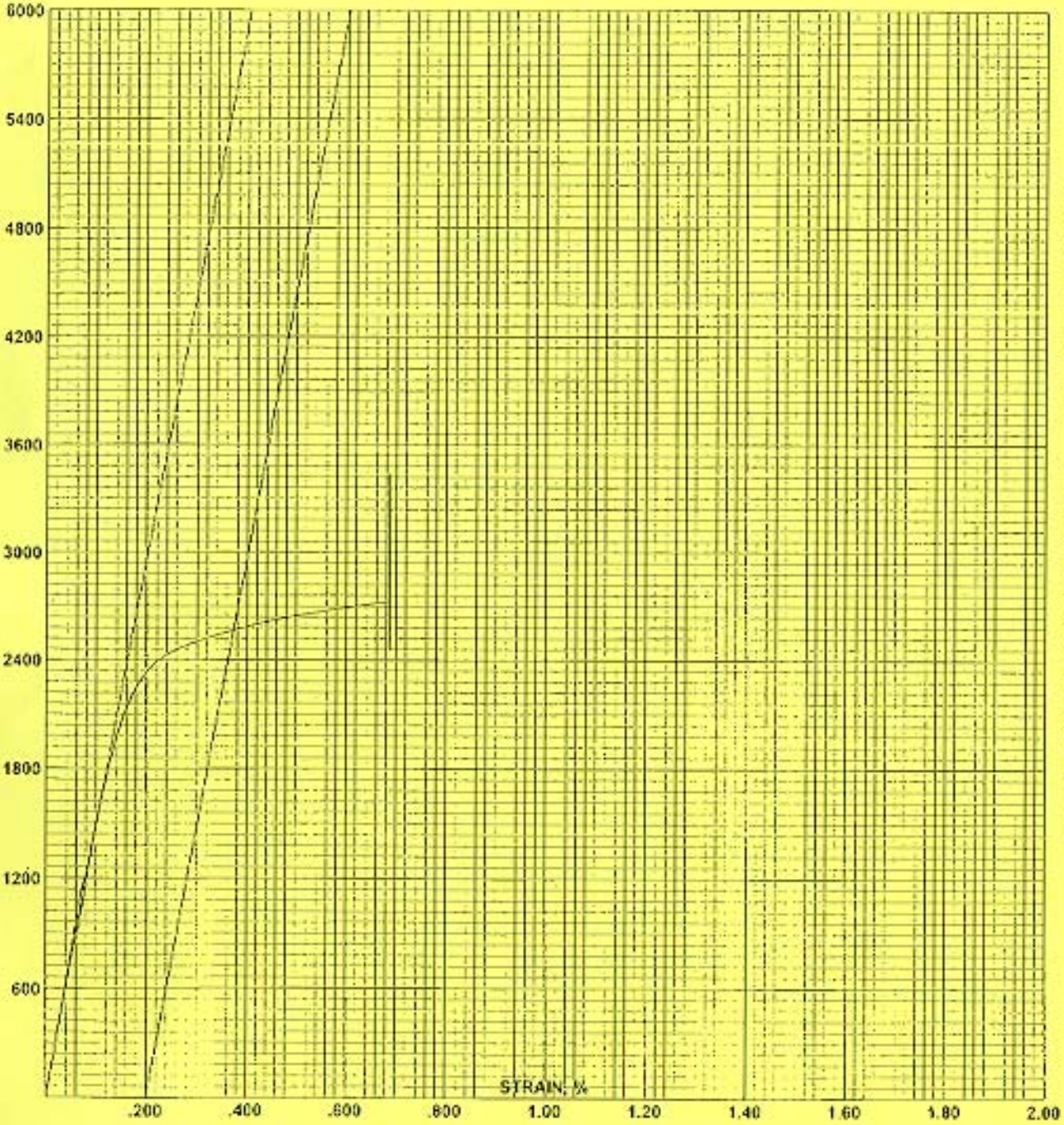
Bodycote Omnitest
4302 Dayco
Houston, TX 77092

E8 ASTM Report
Program #181,465-R4

BMT#:	109319
Client:	stress
Operator:	jb
Machine s/n:	179520
Extensometer s/n:	13
Caliper s/n:	76
Sample #:	194
Print Date:	October 26,2001
Test Module:	Metals Tensile
Diameter, in:	**0.247**
CS Area, in²:	**.04791635**
Fin Area, in²:	**0.01767**
Modulus, psi:	**29087170.0**
OFS @ .2, lbf:	**2713.1**
OFS @ .2, psi:	**56621.5**
EUL @ .5, lbf:	**2804.**
EUL @ .5, psi:	**58518.4**
Ultimate, lbf:	**3524.2**
Ultimate, psi:	**73548.8**
Red Area, %:	**63.1**
TE (Man), %:	**26**
Date:	**10/26/2001**
Time:	**15:04:55**

Specimen Break
Oct 26, 2001 3:04:56 PM

OCT-30-2001 11:07 OMNI 7139398690 P.07/08



Bodycote Omnitest
4302 Dayco
Houston, TX 77092

E8 ASTM Report
Program #181,465-R4

BMT#:	109319
Client:	stress
Operator:	jb
Machine s/n:	179520
Extensometer s/n:	13
Caliper s/n:	76
Sample #:	195
Print Date:	October 26,2001
Test Module:	Metals Tensile
Diameter, in:	**0.248**
CS Area, in²:	**.04830513**
Fin Area, in²:	**0.01674**
Modulus, psi:	**30726560.0**
OFS @ .2, ibf:	**2565.4**
OFS @ .2, psi:	**53108.4**
EUL @ .5, lbf:	**2646.6**
EUL @ .5, psi:	**54788.9**
Ultimate, lbf:	**3453.1**
Ultimate, psi:	**71484.9**
Red Area, %:	**65.3**
TE (Man), %:	**29**
Date:	**10/26/2001**
Time:	**15:07:46**

Specimen Break
Oct 26, 2001 3:07:47 PM

OCT-30-2001 11:08 OMNI 7139398690 P.03/03

Houston Metallurgical Laboratory Inc.

TELECOPIER COVER LETTER

TO: George Ross DATE: 11-5-01

FROM: Ron Richter

PHONE NUMBER: 713-688-2777

FAX:NO.: 713-688-2818 EMAIL ADDRESS: houmet@swbell.net

5 PAGES ARE BEING TRANSMITTED
(INCLUDING THIS COVER LETTER).

Houston Metallurgical Laboratory Inc.

TO: Stress Engineering Services
12800 Westfair East Drive
Houston, Texas 77041-1101
Attn: Dwayne Fontaine

TEST NO: 795-01
P.O. NO:
DATE 11-2--01

DATE OF TEST: 11-2-01
REPORT OF TENSILE TEST

MATERIAL / DESCRIPTION: One (1) piece 9" O.D. x 24" long x 7/16" wall
IDENTIFICATION: # 0109319 Section 3A-B
DATE RECEIVED: 10-30-01
SPECIFICATIONS: Client Instructions
TEST EQUIPMENT: T.O. S/N 120990-1

TECHNICIAN: Ronald R. Richter
PROCEDURE: HML-TTM-1-94 Rev. 1
COMPLIANCE: N/A

TENSILE TEST RESULTS

SPECIMEN NO.	DIAMETER IN.	YIELD STRENGTH PSI .2% OFFSET	TENSILE STRENGTH PSI	% ELONGATION IN 2 IN.	%ROA
795-01 Transverse	.241	61,400	69,100	23.7	49.7

* No flattening was performed

REVIEWED BY: Brenda K. Arp

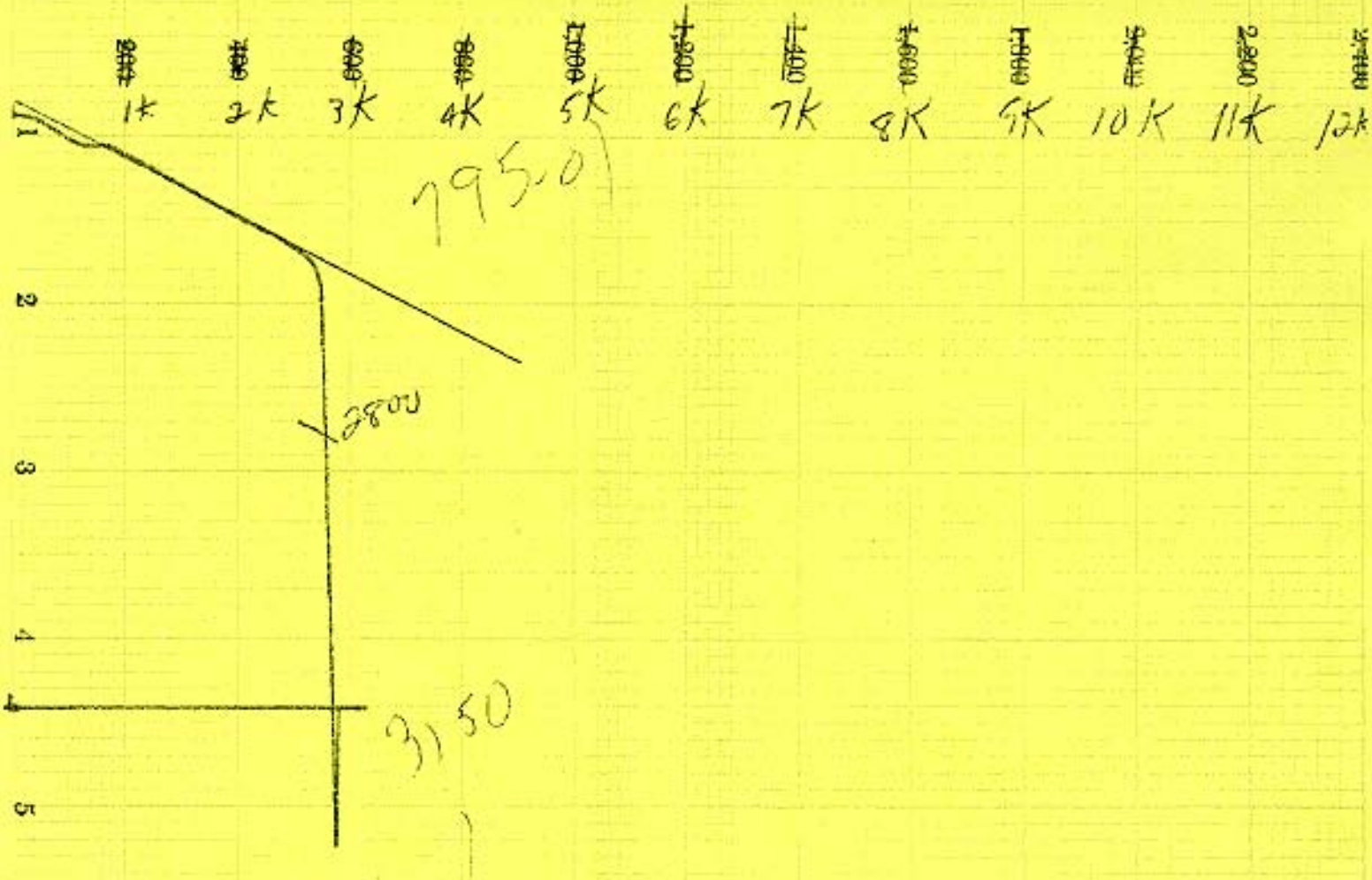
RONALD R. RICHTER
PRINCIPAL/QA MANAGER

HML letters / reports are for the exclusive use of the client to whom they are addressed and apply only to the sample tested and/or inspected. Letters/reports are not necessarily indicative of the qualities of apparently identical or similar products.

Test No.....Size.....Area.....Yield Point Lbs. Sq. In.....Ultimate Str. Lbs. Sq. In.....

Elongation } In.....Inches.....Per Cent. Elongation.....Per Cent. Reduced Area.....Date.....
Compression }

LOAD IN POUNDS



ELONGATION-COMPRESSION

Houston Metallurgical Laboratory Inc.

TO: Stress Engineering Services
12800 Westfair East Drive
Houston, Texas 77041-1101
Attn: Dwayne Fontaine

TEST NO: 796-01
P.O. NO:
DATE 11-2--01

DATE OF TEST: 11-2-01
REPORT OF TENSILE TEST

MATERIAL / DESCRIPTION: One (1) piece 9" O.D. x 16" long x 7/16" wall
IDENTIFICATION: # 0109320 Section 3D & E
DATE RECEIVED: 10-30-01
SPECIFICATIONS: Client Instructions
TEST EQUIPMENT: T.O. S/N 120990-1

TECHNICIAN: Ronald R. Richter
PROCEDURE: HML-TTM-1-94 Rev. 1
COMPLIANCE: N/A

TENSILE TEST RESULTS

SPECIMEN NO.	DIAMETER IN.	YIELD STRENGTH PSI .2% OFFSET	TENSILE STRENGTH PSI	% ELONGATION IN 2 IN.	%ROA
796-01 Transverse	.247	58,700	69,700	29.5	60.1

* No flattening was performed

REVIEWED BY: Brenda K. Arp

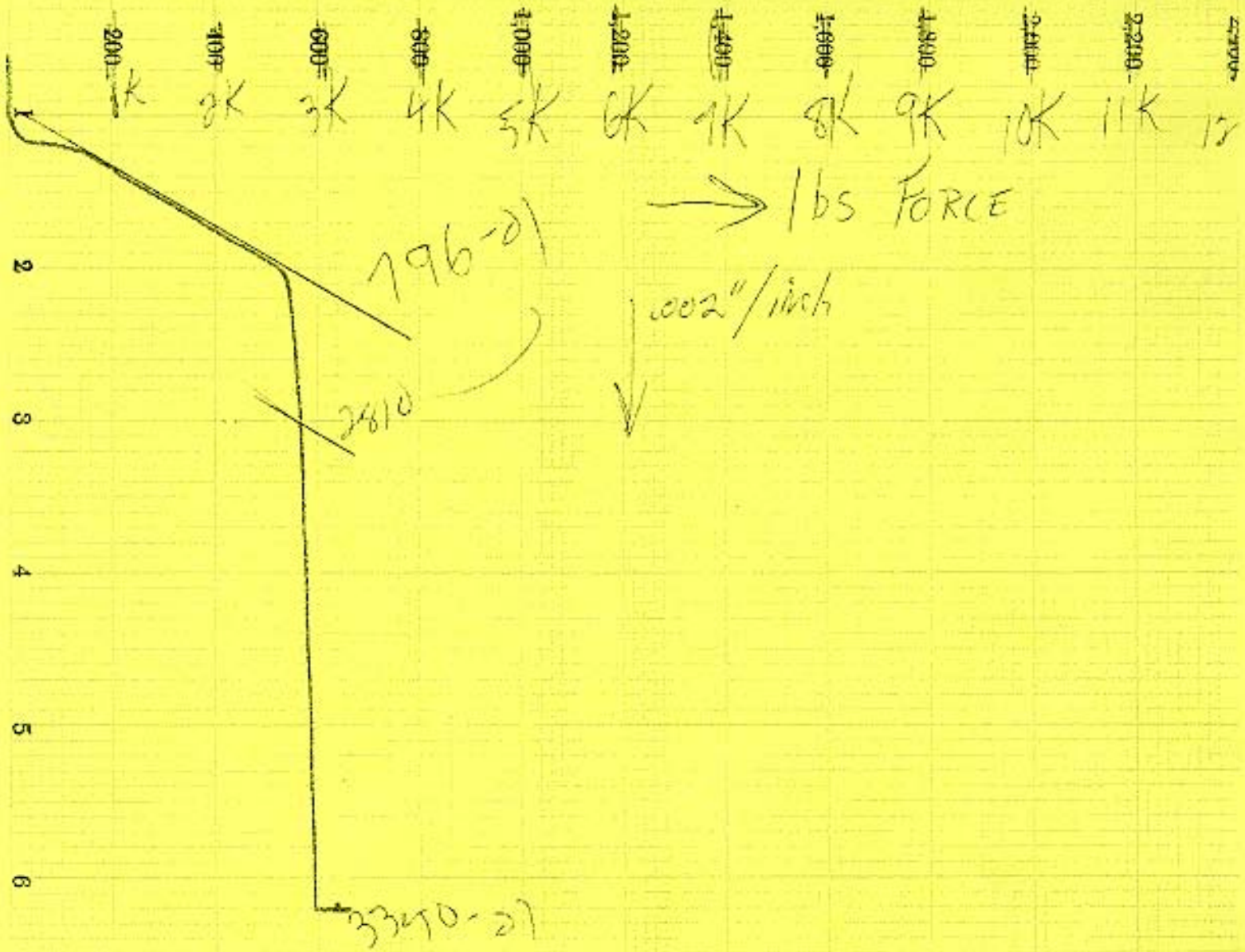
RONALD R. RICHTER
PRINCIPAL/QA MANAGER

HML letters / reports are for the exclusive use of the client to whom they are addressed and apply only to the sample tested and/or inspected. Letters/reports are not necessarily indicative of the qualities of apparently identical or similar products.

Test No..... Size..... Area..... Yield Point Lbs. Sq. In..... Ultimate Str. Lbs. Sq. In.....

Elongation / Compression { In..... Inches..... Per Cent. Elongation..... Per Cent. Reduced Area..... Date.....

LOAD IN POUNDS



ELONGATION-COMPRESSION