# FAX Transmission

GRAY ✦ STAR

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Q-2

37-30804-02

03036239

To: Harold Gray
Company: US NRC
Fax Phone: 610.337.5320
Date: 08.07.03
Time: 9:26am
Pages: 2 (including this one)

Message:

From Russell Stein.

132825

NMSS/RGNI MATERIALS-002

"Value through Excellence"

215-723-7284 FAX: 215-723-9115
WWW.CHLSYSTEMS.COM

| | |
|---|---|
| To: | Harold Gray, cc: Sharon Turner, Russell Stein |
| Company: | NRC |
| Phone: | |
| Fax: | (610) 337-5320 (215) 529-6514 (973) 398-8310 |
| From: | Rick Keiper (215-723-7284) |
| Date: | 8-7-03 |
| Pages (incl. cover): | 2 |

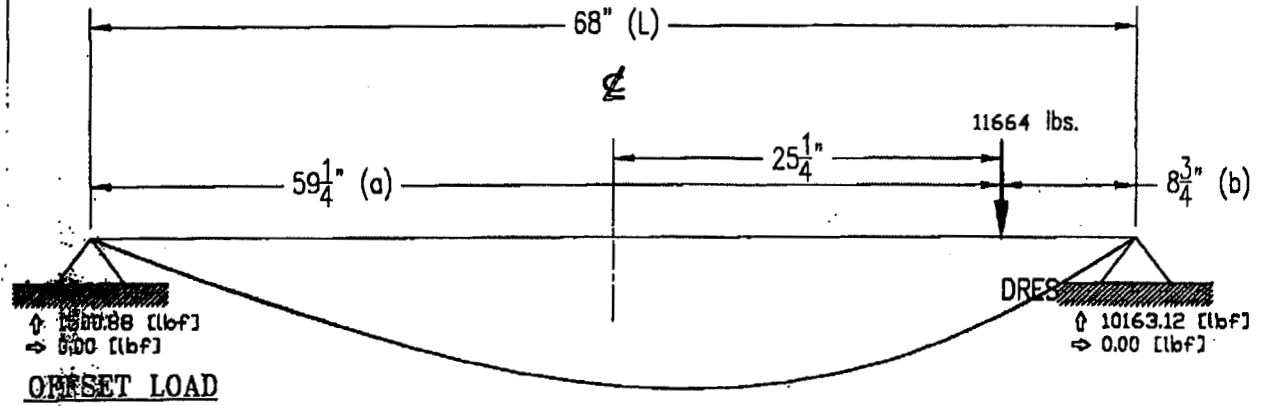
**Message:**

Harold,

Here is the calculation sheet showing the load carrying capacity of the lock bar for the two scenarios we discussed in our meeting yesterday.

The figures presented in the meeting were based on conservative approximations. These calculations use the actual material strength of the bar and use the actual moment of inertia of the bar instead of approximations. Because of that the actual load carrying capacities are higher than the approximate numbers that were presented at the meeting.

Rick Keiper
Rick Keiper
Sr. Engr.
CHL Systems, Inc.



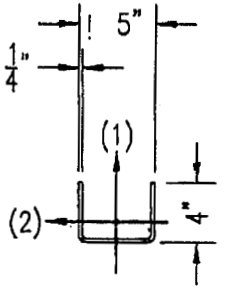

## OFFSET LOAD

$$Max\_Load = \frac{Y_{yield} I_2 L}{abS_t}$$

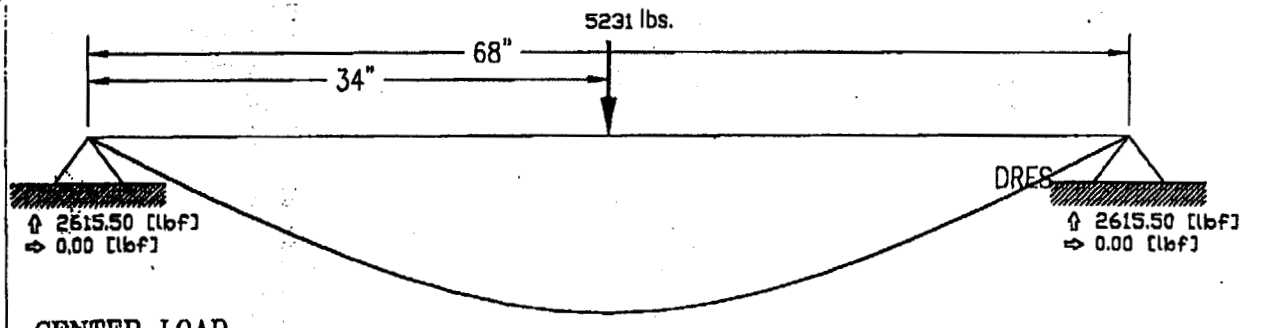
$$Max\_Stress = \frac{Mc}{I_2} = \frac{PabS_t}{LI_2}$$

$Y_{yield}$ : Material Yield Strength/Stretch Limit (PSI)
$I_2$ : Moment of Inertia about axis 2 (in.$^4$)
L : Beam Length (in.)
$S_t$ : Distant from neutral axis to outside edge of bar (in.)

| | | |
|---|---|---|
| MOMENT OF INERTIA I1 | [INCH^4] | 12.706 |
| MOMENT OF INERTIA I2 | [INCH^4] | 5.069 |
| MOMENT OF INERTIA IEFF | [INCH^4] | 5.0690 |
| MAX. BORDER DIST. | [INCH] | 2.642 |
| STRETCH LIMITS | [PSI] | 46350 |
| E-MODULUS | [PSI] | 29000000 |
| MATERIAL | | 304 S/S |
| MAX.DEFLECTION D1 | [INCH] | 0.200851 |
| MAX.BENDING MOMENT MB1 | [LBF IN] | 88927. |
| MAX.DEFLECTION D2 | [INCH] | 0 |
| MAX.BENDING MOMENT MB2 | [LBF IN] | 0 |
| MAX.STRESS RES. | [PSI] | 46349. |
| MAX.DEFLECTION DRES | [INCH] | 0.200851 |
| MAX.BENDING MOMENT MBRES | [LBF IN] | 88927. |
| SCALE FOR DEFL. LINE | | 50:1 |
| SCALE FOR BENDING MOM. LINE | | |




| X-SECTION PROP. | |
|---|---|
| $I_1$ [INCH^4] | 12.706 |
| $I_2$ [INCH^4] | 5.069 |
| $S_c$ [INCH] | 1.3588 |
| $S_t$ [INCH] | 2.642 |
| A [INCH^2] | 3.044 |




## CENTER LOAD

$$Max\_Load = \frac{4Y_{yield} I_2}{LS_t}$$

$$Max\_Stress = \frac{Mc}{I_2} = \frac{PLS_t}{4I_2}$$

$Y_{yield}$ : Material Yield Strength/ Stretch Limit (PSI)
$I_2$ : Moment of Inertia about axis 2 (in.$^4$)
L : Beam Length (in.)
$S_t$ : Distant from neutral axis to outside edge of bar (in.)
P : Max load (lbs.)

| | | |
|---|---|---|
| MOMENT OF INERTIA I1 | [INCH^4] | 12.706 |
| MOMENT OF INERTIA I2 | [INCH^4] | 5.069 |
| MOMENT OF INERTIA IEFF | [INCH^4] | 5.0690 |
| MAX. BORDER DIST. | [INCH] | 2.642 |
| STRETCH LIMITS | [PSI] | 46350 |
| E-MODULUS | [PSI] | 29000000 |
| MATERIAL | | 304 SS |
| MAX.DEFLECTION D1 | [INCH] | 0.233104 |
| MAX.BENDING MOMENT MB1 | [LBF IN] | 88927 |
| MAX.DEFLECTION D2 | [INCH] | 0 |
| MAX.BENDING MOMENT MB2 | [LBF IN] | 0 |
| MAX.STRESS RES. | [PSI] | 46349. |
| MAX.DEFLECTION DRES | [INCH] | 0.233104 |
| MAX.BENDING MOMENT MBRES | [LBF IN] | 88927 |
| SCALE FOR DEFL. LINE | | 50:1 |
| SCALE FOR BENDING MOM. LINE | | |

| IDENTIFICATION | | DATE |
|---|---|---|
| Drawn | T.L. | 08-06-03 |
| Engineer | T.L. | 08-06-03 |
| Approved | | |
| Checked | | |
| Issued | | |


CLAYTON H. LANDIS COMPANY INC.
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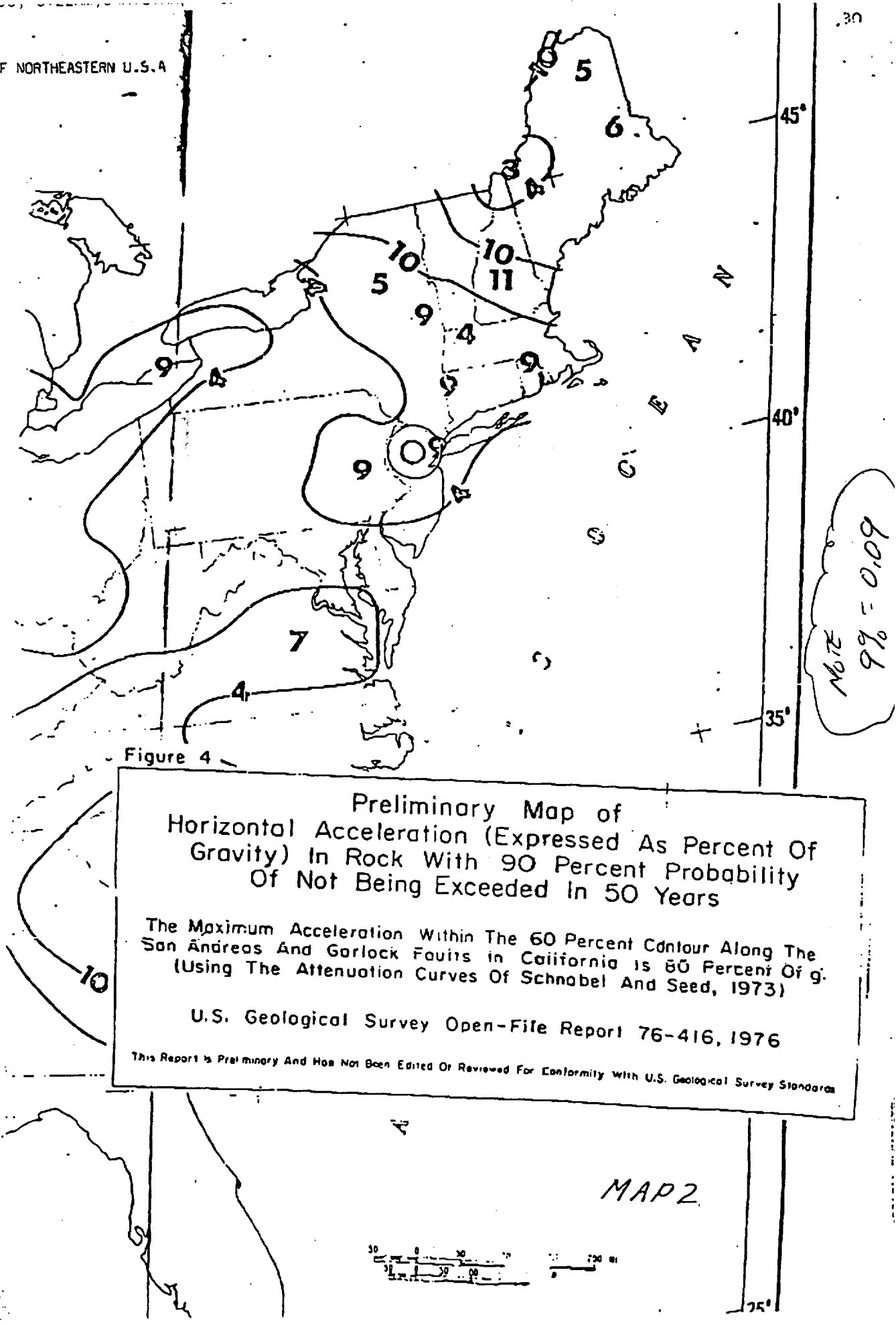
Customer: GRAY * STAR, Inc.
Title: THE GENESIS I IRRADIATOR PART 33248-205-242 STRUCTURE ANALYSIS
Ref. Dwg.
Dwg. No.: 33248-205-242-001
Rev.: 1
Job Number: 33248
Size: A
Scale
Unless Noted Otherwise
Sheet: 1 OF 1

MAP 9/10-8

SURVEY MAP OF NORTHEASTERN U.S.A




NOTE
99% = 0.09

Figure 4

Preliminary Map of
Horizontal Acceleration (Expressed As Percent Of Gravity) In Rock With 90 Percent Probability Of Not Being Exceeded In 50 Years

The Maximum Acceleration Within The 60 Percent Contour Along The San Andreas And Garlock Faults In California Is 60 Percent Of g. (Using The Attenuation Curves Of Schnabel And Seed, 1973)

U.S. Geological Survey Open-File Report 76-416, 1976

This Report Is Preliminary And Has Not Been Edited Or Reviewed For Conformity With U.S. Geological Survey Standards

MAP 2