May 13, 2004

NRC 2004-0051
10 CFR 50.55a(a)(3)(i)
10 CFR 50.55a(g)(5)(iii)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266
License Nos. DPR-24
Reactor Vessel Closure Head Penetration Repair and Flaw Characterization
Relief Requests MR 02-018-1, Revision 1 and MR 02-018-2, Revision 1

Reference:
(1) Letter from NMC to NRC dated August 28, 2002 (NRC 2002-0073)
(2) Letter from NMC to NRC dated April 10, 2003 (NRC 2003-0034)
(3) Letter from NMC to NRC dated July 31, 2003 (NRC 2003-0067)
(4) NRC Safety Evaluation dated September 10, 2003
(5) NRC Safety Evaluation dated September 24, 2003

In accordance with 10 CFR 50.55a(a)(3)(i) and 10 CFR 50.55a(g)(5)(iii), Nuclear Management Company (NMC) LLC, licensee for Point Beach Nuclear Plant (PBNP), is requesting revision to the relief, granted in references 4 and 5, pertaining to reactor vessel closure head (RVCH) penetration repair and flaw characterization.

In reference 1, NMC submitted Relief Requests MR 02-018-1 and MR 02-018-2 for PBNP Unit 1 (TAC Nos. MB6184 and MB6185). Relief Request MR 02-018-1 pertained to use of an alternative repair technique. Relief Request MR 02-018-2 pertained to relief from the requirement to characterize flaws that may exist in the remnants of the control rod drive mechanism (CRDM) nozzle J-groove welds after the repair.

References 2 and 3 provided additional information in support of the relief requests and expanded their applicability to PBNP Unit 2. Enclosed with references 2 and 3 were copies of supporting calculation packages prepared by Framatome ANP, LLC ("FRA-ANP").

In references 4 and 5, NRC granted the requested relief (TAC Nos. MB6184, MB6185, MB8436 and MB8438). The NRC letters stated that relief was not granted for situations where the portions of the new pressure boundary weld overlap onto portions of the remnant J-groove weld.

This submittal provides technical justification for the repair and flaw characterization where portions of the new pressure boundary weld overlap onto portions of the remnant

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J-groove weld. The enclosures to this letter provide the requests for revised relief containing the technical justification and supporting calculations. The submitted information forms the basis for the request to revise the relief granted in references 4 and 5, such that it extends to situations where the portions of the pressure boundary weld overlap onto portions of the remnant J-groove weld.

NMC requests NRC review and approval of these relief requests by May 18, 2004. Approval is required in support of returning the RVCH to service and the subsequent Unit 1 reactor startup. If necessary, NMC personnel will be available to meet with your staff to discuss any concerns you may have.

This submittal contains no new or revised regulatory commitments.

/RA/

Gary D. Van Middlesworth
Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC

Enclosures: I - Request for Revised Relief, MR 02-018-1
II - Request for Revised Relief, MR 02-018-2
III - Structural Integrity Associates (SIA) Calculation PBCH-09Q-302

cc: Project Manager, Point Beach Nuclear Plant, NRR, USNRC
Regional Administrator, Region III, USNRC
NRC Resident Inspector - Point Beach Nuclear Plant
PSCW

**ENCLOSURE I**

**REQUEST FOR REVISED RELIEF MR 02-018-1**

**POINT BEACH NUCLEAR PLANT, UNIT 1**

**Relief Request No. MR 02-018-1, Revision 1, Alternate Repair Technique – Reactor Vessel Closure Head Penetrations**

Pursuant to 10 CFR 50.55a(a)(3)(i), Nuclear Management Company (NMC) requests revision to the relief, granted in NRC Safety Evaluation dated September 24, 2003 (reference 5), pertaining to reactor vessel closure head (RVCH) penetration alternative repair techniques. The revision is specifically to extend the relief granted in reference 5, such that it applies to situations where the portions of the pressure boundary weld overlap onto portions of the remnant J-groove weld.

IDENTIFICATION

Point Beach Unit 1
RVCH Penetrations, Class A (Class 1)

CODE REQUIREMENT

As stated in the original relief request dated August 28, 2002 (reference 1):

Point Beach Unit 1 is currently in the fourth inspection interval using the 1998 Edition of ASME Section XI with all addenda through 2000. ASME Section XI, paragraph IWA-4221, stipulates the following:

(a) "An item to be used for repair/replacement activities shall meet the applicable Owner's Requirements..."
(b) "An item to be used for repair/replacement activities shall meet the Construction Code specified..."
(c) "As an alternative to (b) above, the item may meet all or portions of the requirements of different Editions and Addenda of the Construction Code ... All or portions of later different Construction Codes may be used..."

The Construction Code for the Point Beach Unit 1 RVCH is ASME Section III, 1965 Edition. The Design Specification for Point Beach Unit 1 RVCH is Westinghouse equipment specification G-676243.

For the proposed repairs to the RVCH penetrations, paragraph N-528.2 of the 1965 Edition of Section III requires repairs be post weld heat treated (PWHT) in accordance with paragraph N-532. The PWHT requirements set forth therein are not possible or practical to attain on a RVCH in containment without distortion of the head.

The proposed repairs will be conducted in accordance with the 1998 Edition of ASME Section XI, 2000 Addenda (as applicable), the 1989 Edition of Section III, no Addenda, and alternative requirements discussed below.

## REVISED RELIEF REQUESTED

NMC requests revised relief to use an ambient temperature temper bead method of repair, for situations where the portions of the pressure boundary weld overlap onto portions of the remnant J-groove weld, as an alternative to the requirements of the 1989 Edition of ASME Section III, NB-4453, NB-4622, NB-5245, and NB-5330. The requirements of paragraph QW-256 of ASME Section IX, and IWA-4000 of the 1998 Edition, 2000 Addenda of Section XI, are also applicable to the proposed repairs. Approval is requested to use filler material Alloy 52 AWS Class ERNiCrFe-7/UNS No. 06052, which is endorsed by Code Case 2142-1, for the weld repair.

Portions of Code Case N-638, as described herein, have also been used as a template for this appication. As an alternative to the above requirements, the requirements of Code Case N-638, "Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique," will be used. Therefore, relief is also requested to implement Code Case N-638 for use with SA-302 Grade B material as an alternative to the requirements of ASME Section XI. Code Case N-638 specifies applicability for all P-No. 3 base materials except SA-302 Grade B.

## BASIS FOR REVISED RELIEF

The basis stated in references 1, 2 and 3 remains applicable to this request.

Additionally, repairs on the uphill side of penetrations in the outer ring of the RVCH, such as penetration #26, cannot physically be performed without overlapping the new pressure boundary weld onto portions of the remnant J-groove weld due to the high curvature of the RVCH in this area. Westinghouse 2-loop plants, such as PBNP, have a higher head curvature than most plants due to the reactor vessel diameter being smaller (132 inches).

During the Unit 1 spring 2004 refueling outage, a large ultrasonic (UT) signal was detected at the weld root downhill location (180°) of penetration #26. This signal was attributed to a fabrication weld repair performed during construction of the vessel head. Several confirmatory liquid penetrant tests (PT) revealed J-groove surface indications at the 90° and 270° locations of nozzle 26. A decision was conservatively made to repair this nozzle due to the high radiation doses involved with flaw excavation. Owing to the small diameter RVCH, the Alloy 52 repair weld will come into contact with the existing Alloy 182 J-groove weld.

Separation via grinding was considered, but determined to not be appropriate due to the high radiation doses to personnel that would be incurred during such an activity.

## ALTERNATIVE DOCUMENTATION AND REQUIREMENTS

The alternatives stated in references 1, 2 and 3 remains applicable to this request.

NMC will implement Code Case N-638, for the repair of the Point Beach Unit 1 Reactor Vessel Closure Head for use with SA-302 Grade B material, as an alternative to the requirements of ASME Section XI.

## JUSTIFICATION OF REVISED RELIEF

The justification stated in references 1, 2 and 3 remains applicable to this request.

An evaluation of the repair to be performed on Unit 1 RVCH penetration #26 included measurement of the Alloy 52 to Alloy 82/182 overlap and weld ligament dimensions. The weld ligament will be 0.5 inch. The weld ligament is defined as the worst-case (smallest) portion of the new Alloy 52 pressure boundary weld that is not overlapping with the original J-groove weld (Alloy 82/182). Refer to figure 1 below.

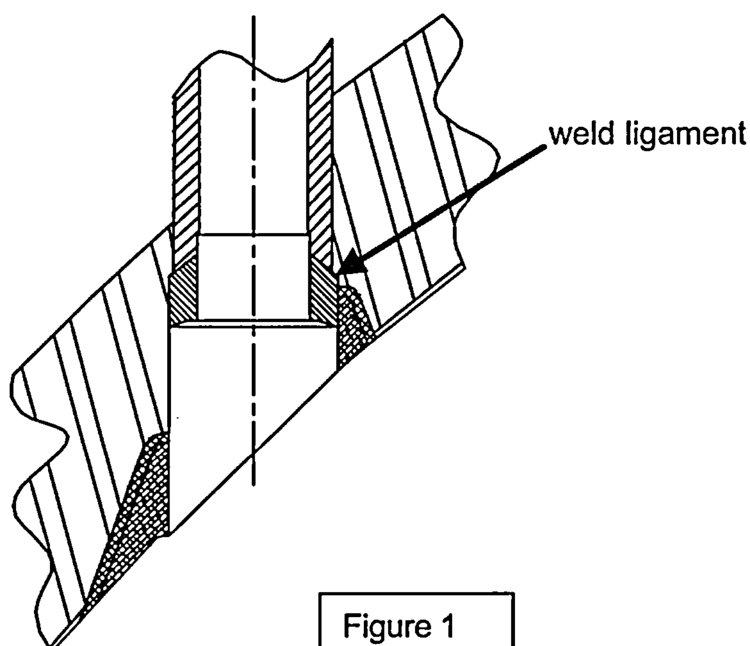


Figure 1

This measurement was performed to support analysis of a worst-case flaw in the Alloy 82/182 material growing through the Alloy 52 Heat Affected Zone (HAZ) of the new pressure boundary weld. Crack growth rates in Alloy 52 material are very low. The analysis therefore conservatively assumed very high Alloy 600 crack growth rates as documented in EPRI MRP-55, "Materials Reliability Program (MRP) Crack Growth Rates for Evaluating Primary Water Stress Corrosion Cracking (PWSCC) of Thick-Wall Alloy 600 Material.

Bounding analyses demonstrated that a worst-case flaw in the Alloy 82/182 weld would take in excess of 1.5 effective full power years (EFPY) to go through the remaining Alloy 52 weld (weld ligament) of 0.26 inches. Since the actual weld ligament is 0.5 inch, revised calculations (Enclosure II) demonstrate that the worst-case flaw would require over two years to pass through the Alloy 52 HAZ ligament.

These analytical methods were discussed with NRC staff during public meetings on October 6, 2003 and February 19, 2004.

References 1, 2 and 3 did not explicitly address the relationship of Code Case N-638 when applied to SA-302 Grade B base material. Therefore, the following information regarding the RVCH construction material is provided.

The Point Beach RVCH plate is constructed of SA-302 Grade B, P-No. 3, base material, which was provided by Lukens Steel (Heat No. B-4762 Slab 2) as firebox (pressure vessel) quality, electric furnace melted, silicon killed fine grain melting practice and vacuum degassed. The plate was 165-1/2" x 165-1/2" x 5-3/4" T after rolling at the mill. The plate was subsequently quenched and tempered by B&W after forming the closure head dome. This material was manufactured similar to SA-533 Grade A which is covered by Code Case N-638.

As discussed above, SA-302 Grade B material is excluded from Code Case N-638. A single member on the ASME Main Committee objected to the inclusion of SA-302 Grade B base material applicability due to concerns relevant to HAZ toughness levels as a result of welding without use of a full post weld heat treatment (stress relief). The exclusion of SA-302 Grade B material was therefore incorporated to obtain unanimous approval for Code Case N-638.

UT of the production weld and its HAZ, to the extent practical, is planned to be performed after 48 hours at ambient temperature to verify weld quality and no hydrogen cracking has occurred in the HAZ.

PT of the production weld and the exposed portion of its HAZ is planned to be performed after 48 hours at ambient temperature to verify weld quality and no hydrogen cracking has occurred in the exposed portion of the HAZ.

There are no exclusions of the use of any of the approved temper bead processes using preheat on SA-302 Grade B material. Based on the above there is no technical basis for exclusion of welding on this material using qualified ambient temperature temper bead machine GTAW processes.

## IMPLEMENTATION SCHEDULE

The revised relief requested is intended to cover repair activities as a result of RVCH inspection activities occurring during the Unit 1 spring refueling outage that began in April 2004.

## ENCLOSURE II

## REQUEST FOR REVISED RELIEF MR 02-018-2

## POINT BEACH NUCLEAR PLANT, UNIT 1

**Relief Request No. MR 02-018-2, Revision 1, Characterization of Remaining Flaws – Reactor Vessel Closure Head Penetrations**

Pursuant to 10 CFR 50.55a(g)(5)(iii), NMC requests revision to the relief, granted in NRC Safety Evaluation dated September 10, 2003 (reference 4), pertaining to ASME XI IWA-3300(b), IWB-3142.4 and IWB-3420, which would require characterization of a flaw existing in the remnant of the J-groove weld that will be left on the Point Beach Unit 1 Reactor Vessel Closure Head (RVCH) if a Control Rod Drive (CRDM) nozzle must be partially removed. The revision is specifically to extend the relief granted in reference 4, such that it applies to situations where the portions of the pressure boundary weld overlap onto portions of the remnant J-groove weld.

IDENTIFICATION

Point Beach Unit 1
RVCH Penetrations, Class A (Class 1)

CODE REQUIREMENT

As stated in the original relief request dated August 28, 2002 (reference 1):

Point Beach Unit 1 is currently in the fourth inspection interval using the 1998 Edition of ASME Section XI with all addenda through 2000. IWB-2500, Examination Category B-P, "All Pressure Retaining Components," Item B15.10, is applicable to the inservice examination of the RVCH to penetration welds. IWA-3300, IWB-3142.4, IWB-3420, are applicable to any flaws discovered during inservice inspection. Specifically:

1. Subarticle IWA-3300(b) contains a requirement for flaws characterization.

2. Sub-subparagraph IWB-3142.4 allows for analytical evaluation to demonstrate that a component is acceptable for continued service. It also requires that components found acceptable for continued service by analytical evaluation be subsequently examined in accordance with IWB-2420(b) and (c).

3. Paragraph IWB-3420 requires the characterization of flaws in accordance with the rules of IWA-3300.

The Construction Code for the Point Beach Unit 1 RVCH is ASME Section III, 1965 Edition.

## REVISED RELIEF REQUESTED

NMC requests revised relief, for situations where the portions of the pressure boundary weld overlap onto portions of the remnant J-groove weld, from ASME XI IWA-3300(b), IWB-3142.4 and IWB-3420, which would require characterization of a flaw existing in the remnant of the J-groove weld that will be left on the Point Beach Unit 1 RVCH if a CRDM nozzle must be partially removed.

## BASIS FOR REVISED RELIEF

The basis stated in references 1, 2 and 3 remains applicable to this request.

Repairs performed on the uphill side of penetrations in the outer ring of the RVCH, such as penetration #26, would require overlapping the new pressure boundary weld onto portions of the remnant J-groove weld due to the high curvature of the RVCH in this area.

## ALTERNATIVE DOCUMENTATION AND REQUIREMENTS

As stated in references 1, 2 and 3.

## JUSTIFICATION OF REVISED RELIEF

The justification stated in references 1, 2 and 3 remains applicable to this request.

The additional justification provided in Relief Request MR 02-018-1, above, applies to this request.

## IMPLEMENTATION SCHEDULE

The revised relief requested is intended to cover repair activities as a result of RVCH inspection activities occurring during the Unit 1 spring refueling outage that began in April 2004.

ENCLOSURE III

STRUCTURAL INTEGRITY ASSOCIATES (SIA) CALCULATION PBCH-09Q-302
PWSCC CRACK GROWTH CORRELATIONS AND FATIGUE CRACK GROWTH
CALCULATIONS FOR POINT BEACH UNIT 1

REGARDING REQUEST FOR REVISED RELIEF
MR 02-018-1 AND MR 02-018-2

POINT BEACH NUCLEAR PLANT, UNIT 1

| STRUCTURAL INTEGRITY Associates, Inc. | CALCULATION PACKAGE | FILE No.: PBCH-09Q-302<br>PROJECT No.: PBCH-09Q |
|---|---|---|

**PROJECT NAME:** Point Beach Unit 1 CRDM Top Head Analysis

**CLIENT:** NMC Point Beach Nuclear Plant

**CALCULATION TITLE:** PWSCC Crack Growth Correlations and Fatigue Crack Growth Calculations for Point Beach Unit 1

| Document Revision | Affected Pages | Revision Description | Project Mgr. Approval Signature & Date | Preparer(s) & Checker(s) Signatures & Date |
|---|---|---|---|---|
| 0 | 1-6<br>A1 – A19 | Original Issue | H. L. GUSTIN<br>2/17/04 | H. L. GUSTIN<br>2/17/04<br>G. L. STEVENS<br>2/17/04 |
| 1 | 1-7<br>A1-A19 | Incorporates actual overlap measurements for nozzle 26. Appendix A is not affected. | H. L. GUSTIN<br>[signature]<br>5/12/04 | H. L. GUSTIN<br>[signature]<br>5/12/04<br>MING QIN<br>[signature]<br>5/12/04 |
| | | | | |

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## 1.0 STATEMENT OF PROBLEM

In order to evaluate repair options for the Point Beach Unit 1 Top Head CRDM penetrations, it is necessary to evaluate growth of hypothetical flaws in the proposed weld repair fusion line with the low alloy steel base material. The industry Materials Reliability Program (MRP) has prepared a document that predicts PWSCC growth in components such as the CRDM penetration tubes [1]. This approach has been presented to the NRC, and has generally been accepted. The MRP correlation of available crack growth data is normalized in [1] to a service temperature of 617 °F. The reported top head temperature for Point Beach Unit 1 is 592 °F [2]. The crack growth rate is a strong function of temperature, and so to reasonably represent the Point Beach condition, it is necessary to adjust the MRP crack growth correlation for the lower temperature.

In the following, a temperature-adjusted crack growth correlation is developed. This correlation is then used to predict the crack growth of bounding assumed flaws as a function of time.

One repair will actually be applied during the Spring 2004 outage. This repair is to Nozzle 26. Crack growth results for this specific nozzle are also presented.

## 2.0 METHODOLOGY

MRP-55 [1, page 13] presents a general form of the PWSCC crack growth correlation, based on the data collected:

$$da/dt = \exp[-Q_g/R\,(1/T - 1/T_{ref})]\ \alpha(K-K_{th})^{\beta}$$

where:

| | |
|---|---|
| $da/dt$ | = crack growth rate at temperature T in in/yr |
| $Q_g$ | = thermal activation for crack growth |
| | = 31.0 kcal/mole |
| $R$ | = universal gas constant |
| | = $1.103 \times 10^{-3}$ kcal/mole °R |
| $T$ | = absolute operating temperature at location of crack. °R |
| $T_{ref}$ | = absolute reference temperature used to normalize data |
| | = 598.15 K (1076.67 °R) |
| $\alpha$ | = crack growth amplitude |
| | = $3.69 \times 10^{-3}$ at 617 °F for da/dt in units of in/yr and K in units of ksi-√in |
| $K$ | = crack tip stress intensity factor |
| $K_{th}$ | = crack tip stress intensity factor threshold |
| | = 8.19 ksi-√in |

$\beta$ = exponent = 1.16

To adjust this correlation for Point Beach 1 operating conditions, the operating temperature of 592°F (1051.67 °R) [2] is used for the operating temperature T, above. This gives a plant specific PWSCC growth correlation of:

$$da/dt = 1.98 \times 10^{-3} \ (K-K_{th})^{1.16} \text{ in/yr}$$
$$= 2.26 \times 10^{-7} \ (K-K_{th})^{1.16} \text{ in/hour}$$

The above rates assume that the plant is operating 100% of the time (8760 hours/year).

This correlation is applicable to evaluating the growth of ID connected axial flaws in the CRDM penetration tube material.

## 3.0 CRACK GROWTH CALCULATIONS

The objective of the calculation is to determine the time that would be required for a crack at the interface of the Alloy 52 repair material, the low alloy steel head material, and the underlying J-groove material to propagate parallel to the repair weld by a PWSCC mechanism through a distance defined by the repair weld ligament. If the time for such propagation is greater than the remaining service life of the head, no penetration of the pressure boundary due to such a crack would be predicted.

The above crack growth correlation was used with the SI program pc-CRACK [3] to perform PWSCC crack growth calculations. Two hypothetical flaw types were considered, which represent the bounds on geometries that may be encountered. These were:

1. A flaw in the axial-radial plane, across the entire remaining J-groove + butter. Such a flaw would be opened by hoop stresses, resulting in a tunnel crack under the repair weld.
2. A flaw in the axial-circumferential plane, parallel to tube wall, which would be opened by radial stresses (which are comparatively small). The resulting crack would be "laminar", or parallel to the tube OD.

PWSCC is driven by both applied and weld residual stresses. Based on analyses performed by Dominion Engineering [2], as summarized in another SI calculation [4], the normal operating stresses plus the weld residual stresses in the hoop direction can reasonably be represented by a constant through wall stress intensity factor of 57 ksi - √inch, at the junction of the Alloy 52 repair weld and the low alloy steel head material.

The analysis assumed that the entire remaining J-groove weld material was degraded (cracked), so no credit was taken for any flaw initiation or growth time in the remaining J-groove material. Because a constant applied K is assumed, starting flaw size has no effect on crack growth. For the purpose of this analysis, an arbitrary starting flaw depth of 0.01 inch is used, and a final depth of 0.278 inch represents growth through the assumed minimum remaining ligament (0.268 inch) for this repair. This minimum ligament corresponds to the maximum weld overlap on the worst case nozzle configuration.

The flaw located in the axial-radial plane (opened by hoop stresses) was determined to be the governing flaw case, since the applied plus residual stresses in the hoop direction are greater than those in the radial direction by a factor of two to four at the location of the postulated crack, based upon review of Dominion results [2] for nodes in this location. As a result, crack growth in this plane would be slower by a comparable factor.

Nozzle 26 is actually being repaired during the Spring 2004 outage. The repair for this nozzle has a minimum remaining ligament of 0.5 inch [5], versus the bounding value of 0.268 inch discussed above. The repair may also contain a weld root defect of 0.1 inch based on Framatome analyses. Both cases (with and without root defect) are considered here, with pc-CRACK results contained in Appendix A. Both cases also assume the arbitrary starting J-groove flaw of 0.01 inch, as discussed above.

## 3.1 Fatigue crack growth

Fatigue crack growth is driven by cyclic stresses. For the present case, the stress state for the assumed flaws is dominated by weld residual stresses (conservatively estimated as a constant 60 ksi) which are steady state secondary stresses. These residual stresses will not vary with heat-up/cooldown and other plant cycles, and will therefore have only a limited effect on fatigue crack growth (that is, they will have some effect on R-ratio, but none on cyclic delta K values due to cyclic plant operation. For the limited period of remaining plant operation with the current vessel head (estimated at less than 100 heat-up/cooldown cycles, producing a cyclic stress of 20 ksi), propagation of the hypothetical cracks considered herein by a fatigue mechanism is estimated at approximately 0.0002 inch, and is therefore considered negligible compared to PWSCC propagation. An initial flaw size of 0.1 inch was assumed for this case. The pc-CRACK fatigue crack growth results are attached as Appendix A.

## 4.0 RESULTS

The above bounding analysis produces the following results. These assume that an initial flaw of an arbitrary 0.01 inch deep is present in the J-groove weld, for calculational convenience. The growth is then calculated for the indicated remaining ligament lengths.

1. An axial-radial crack tunnel would propagate through the worst case (maximum overlap) remaining ligament (0.268 inch) in about 1.5 EFPY (13,000 EFPH).
2. An axial-radial crack tunnel would propagate through the best estimate (nominal overlap) remaining ligament (0.62 inch) in about 3.44 EFPY (30100 EFPH).
3. An axial-radial crack tunnel would propagate through the best case (minimum overlap) remaining ligament (0.782 inch) in 4.33 EFPY (38000 EFPH).
4. A laminar (axial-circumferential plane) crack would propagate through the worst case remaining ligament in more than twice the time, since the corresponding stresses are about a factor of 2 lower.

For the nozzle 26 repair (remaining ligament = 0.5 inch without root defect, or 0.4 inch with root defect), the time required for the type 1 flaw to propagate through the remaining ligament is 2.77 EFPY (24300 EFPH) for the no root defect case, and 2.23 EFPY (19500 EFPH) for the root defect case.

A crack would have to propagate through the remaining ligament before leakage and possible wastage could occur. It is anticipated that using the as-found weld measurements will demonstrate that no leakage will occur.

## 5.0 REFERENCES


1. Materials Reliability Program (MRP), "Crack Growth Rates for Evaluating Primary Water Stress Corrosion Cracking (PWSCC) of Thick-Wall Alloy 600 Material", MRP-55. EPRI Proprietary.

2. Dominion Engineering , "Point Beach Unit 1 CRDM Nozzle Repair Weld Analysis" Calculation C-4430-00-2, Revision 1, SI File PBCH-09Q-204.

3. Structural Integrity Associates, **pc-CRACK™ for Windows**, version 3.1-98348.

4. SI Calculation, "Fracture Mechanics Evaluation of Point Beach Unit 1 Top Head CRDM 43.5 Degree Azimuth Penetration Weld Repair," PBCH-09Q-301, Revision 0.

5. E-mail from Brian Kemp (NMC) to Hal Gustin (SI) 5/12/04

APPENDIX A
FLAW GROWTH CALCULATIONS: PC-CRACK OUTPUT

tm
pc-CRACK for Windows
Version 3.1-98348
(C) Copyright '84 - '98
Structural Integrity Associates, Inc.
3315 Almaden Expressway, Suite 24
San Jose, CA 95118-1557

Linear Elastic Fracture Mechanics

Date: Mon Feb 09 14:31:53 2004
Input Data and Results File: PWSCFINE.LFM

Title: PBCH-09Q: PWSCC Calculation

Load Cases:

Case ID: PWSCC --- K vs a

| Depth | K |
|---|---|
| 0.0000 | 57.0000 |
| 0.5000 | 57.0000 |
| 2.0000 | 57.0000 |

| Case ID | Stress Coefficients C0 | C1 | C2 | C3 | Type |
|---|---|---|---|---|---|
| PWSCC | 0 | 0 | 0 | 0 | K vs a |

Crack Model: User Input K Versus Crack Size

Crack Parameters:
Max. crack size: 1.0000

-------------------Stress Intensity Factor-------------------

| Crack Size | Case PWSCC |
|---|---|
| 0.0200 | 57 |
| 0.0400 | 57 |
| 0.0600 | 57 |

| | |
|---|---|
| 0.0800 | 57 |
| 0.1000 | 57 |
| 0.1200 | 57 |
| 0.1400 | 57 |
| 0.1600 | 57 |
| 0.1800 | 57 |
| 0.2000 | 57 |
| 0.2200 | 57 |
| 0.2400 | 57 |
| 0.2600 | 57 |
| 0.2800 | 57 |
| 0.3000 | 57 |
| 0.3200 | 57 |
| 0.3400 | 57 |
| 0.3600 | 57 |
| 0.3800 | 57 |
| 0.4000 | 57 |
| 0.4200 | 57 |
| 0.4400 | 57 |
| 0.4600 | 57 |
| 0.4800 | 57 |
| 0.5000 | 57 |
| 0.5200 | 57 |
| 0.5400 | 57 |
| 0.5600 | 57 |
| 0.5800 | 57 |
| 0.6000 | 57 |
| 0.6200 | 57 |
| 0.6400 | 57 |
| 0.6600 | 57 |
| 0.6800 | 57 |
| 0.7000 | 57 |
| 0.7200 | 57 |
| 0.7400 | 57 |
| 0.7600 | 57 |
| 0.7800 | 57 |
| 0.8000 | 57 |
| 0.8200 | 57 |
| 0.8400 | 57 |
| 0.8600 | 57 |
| 0.8800 | 57 |
| 0.9000 | 57 |
| 0.9200 | 57 |
| 0.9400 | 57 |
| 0.9600 | 57 |
| 0.9800 | 57 |
| 1.0000 | 57 |

Crack Growth Laws:

Law ID: PWSCC
Type: Fatigue
Model: Paris

da/dN = c * (dK)^n
where
dK = Kmax - Kmin
dK > Kthres
Kmax < K1c

Material parameters:
c = 2.2600e-007
n = 1.1600
Kthres = 8.1900

Material Fracture Toughness KIc:

Material ID: Alloy 52

| Depth | KIc |
|---|---|
| 0.0000 | 200.0000 |
| 0.5000 | 200.0000 |
| 2.0000 | 200.0000 |

Initial crack size= 0.0100
Max. crack size= 1.0000

Number of blocks= 1
Print increment of block= 1

| Subblock | Cycles /Time | Calc. incre. | Print incre. | Crk. Grw. Law | Mat. K1c |
|---|---|---|---|---|---|
| PWSCC | 40000 | 100 | 100 | PWSCC | Alloy 52 |

| Subblock | Kmax Case ID | Kmax Scale Factor | Kmin Case ID | Kmin Scale Factor |
|---|---|---|---|---|
| PWSCC | PWSCC | 1.0000 | PWSCC | 0.1400 |

Crack growth results:

| Total Cycles /Time | Subblock Cycles /Time | Kmax | Kmin | DeltaK | R | DaDn /DaDt | Da | a | a/thk |
|---|---|---|---|---|---|---|---|---|---|
| Block: 1 | | | | | | | | | |
| 100 | 100 | 4.03e+001 | 5.64e+000 | 3.47e+001 | 0.14 | 1.38e-005 | 1.38e-003 | 0.01138 | 0.00 |
| 200 | 200 | 4.30e+001 | 6.02e+000 | 3.70e+001 | 0.14 | 1.49e-005 | 1.49e-003 | 0.01287 | 0.00 |
| 300 | 300 | 4.57e+001 | 6.40e+000 | 3.93e+001 | 0.14 | 1.60e-005 | 1.60e-003 | 0.01447 | 0.00 |
| 400 | 400 | 4.85e+001 | 6.79e+000 | 4.17e+001 | 0.14 | 1.71e-005 | 1.71e-003 | 0.01618 | 0.00 |
| 500 | 500 | 5.13e+001 | 7.18e+000 | 4.41e+001 | 0.14 | 1.83e-005 | 1.83e-003 | 0.01801 | 0.00 |
| 600 | 600 | 5.41e+001 | 7.57e+000 | 4.65e+001 | 0.14 | 1.94e-005 | 1.94e-003 | 0.01995 | 0.00 |
| 700 | 700 | 5.69e+001 | 7.97e+000 | 4.90e+001 | 0.14 | 2.06e-005 | 2.06e-003 | 0.02201 | 0.00 |
| 800 | 800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.02408 | 0.00 |
| 900 | 900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.02614 | 0.00 |
| 1000 | 1000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.02821 | 0.00 |
| 1100 | 1100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.03027 | 0.00 |
| 1200 | 1200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.03234 | 0.00 |
| 1300 | 1300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.0344 | 0.00 |
| 1400 | 1400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.03647 | 0.00 |
| 1500 | 1500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.03853 | 0.00 |
| 1600 | 1600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.0406 | 0.00 |
| 1700 | 1700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.04266 | 0.00 |
| 1800 | 1800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.04473 | 0.00 |
| 1900 | 1900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.04679 | 0.00 |
| 2000 | 2000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.04886 | 0.00 |
| 2100 | 2100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.05092 | 0.00 |
| 2200 | 2200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.05299 | 0.00 |
| 2300 | 2300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.05505 | 0.00 |
| 2400 | 2400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.05712 | 0.00 |
| 2500 | 2500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.05918 | 0.00 |
| 2600 | 2600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.06125 | 0.00 |
| 2700 | 2700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.06332 | 0.00 |
| 2800 | 2800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.06538 | 0.00 |
| 2900 | 2900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.06745 | 0.00 |
| 3000 | 3000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.06951 | 0.00 |
| 3100 | 3100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.07158 | 0.00 |
| 3200 | 3200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.07364 | 0.00 |
| 3300 | 3300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.07571 | 0.00 |
| 3400 | 3400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.07777 | 0.00 |
| 3500 | 3500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.07984 | 0.00 |
| 3600 | 3600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.0819 | 0.00 |
| 3700 | 3700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.08397 | 0.00 |
| 3800 | 3800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.08603 | 0.00 |
| 3900 | 3900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.0881 | 0.00 |
| 4000 | 4000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.09016 | 0.00 |
| 4100 | 4100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.09223 | 0.00 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 4200 | 4200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.09429 | 0.00 |
| 4300 | 4300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.09636 | 0.00 |
| 4400 | 4400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.09842 | 0.00 |
| 4500 | 4500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1005 | 0.00 |
| 4600 | 4600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1026 | 0.00 |
| 4700 | 4700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1046 | 0.00 |
| 4800 | 4800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1067 | 0.00 |
| 4900 | 4900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1087 | 0.00 |
| 5000 | 5000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1108 | 0.00 |
| 5100 | 5100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1129 | 0.00 |
| 5200 | 5200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1149 | 0.00 |
| 5300 | 5300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.117 | 0.00 |
| 5400 | 5400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1191 | 0.00 |
| 5500 | 5500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1211 | 0.00 |
| 5600 | 5600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1232 | 0.00 |
| 5700 | 5700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1253 | 0.00 |
| 5800 | 5800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1273 | 0.00 |
| 5900 | 5900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1294 | 0.00 |
| 6000 | 6000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1315 | 0.00 |
| 6100 | 6100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1335 | 0.00 |
| 6200 | 6200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1356 | 0.00 |
| 6300 | 6300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1377 | 0.00 |
| 6400 | 6400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1397 | 0.00 |
| 6500 | 6500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1418 | 0.00 |
| 6600 | 6600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1439 | 0.00 |
| 6700 | 6700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1459 | 0.00 |
| 6800 | 6800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.148 | 0.00 |
| 6900 | 6900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.15 | 0.00 |
| 7000 | 7000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1521 | 0.00 |
| 7100 | 7100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1542 | 0.00 |
| 7200 | 7200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1562 | 0.00 |
| 7300 | 7300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1583 | 0.00 |
| 7400 | 7400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1604 | 0.00 |
| 7500 | 7500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1624 | 0.00 |
| 7600 | 7600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1645 | 0.00 |
| 7700 | 7700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1666 | 0.00 |
| 7800 | 7800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1686 | 0.00 |
| 7900 | 7900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1707 | 0.00 |
| 8000 | 8000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1728 | 0.00 |
| 8100 | 8100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1748 | 0.00 |
| 8200 | 8200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1769 | 0.00 |
| 8300 | 8300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.179 | 0.00 |
| 8400 | 8400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.181 | 0.00 |
| 8500 | 8500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1831 | 0.00 |
| 8600 | 8600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1852 | 0.00 |
| 8700 | 8700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1872 | 0.00 |
| 8800 | 8800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1893 | 0.00 |
| 8900 | 8900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1914 | 0.00 |
| 9000 | 9000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1934 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|
| 9100 | 9100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1955 | 0.00 |
| 9200 | 9200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1975 | 0.00 |
| 9300 | 9300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.1996 | 0.00 |
| 9400 | 9400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2017 | 0.00 |
| 9500 | 9500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2037 | 0.00 |
| 9600 | 9600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2058 | 0.00 |
| 9700 | 9700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2079 | 0.00 |
| 9800 | 9800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2099 | 0.00 |
| 9900 | 9900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.212 | 0.00 |
| 10000 | 10000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2141 | 0.00 |
| 10100 | 10100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2161 | 0.00 |
| 10200 | 10200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2182 | 0.00 |
| 10300 | 10300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2203 | 0.00 |
| 10400 | 10400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2223 | 0.00 |
| 10500 | 10500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2244 | 0.00 |
| 10600 | 10600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2265 | 0.00 |
| 10700 | 10700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2285 | 0.00 |
| 10800 | 10800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2306 | 0.00 |
| 10900 | 10900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2327 | 0.00 |
| 11000 | 11000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2347 | 0.00 |
| 11100 | 11100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2368 | 0.00 |
| 11200 | 11200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2388 | 0.00 |
| 11300 | 11300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2409 | 0.00 |
| 11400 | 11400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.243 | 0.00 |
| 11500 | 11500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.245 | 0.00 |
| 11600 | 11600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2471 | 0.00 |
| 11700 | 11700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2492 | 0.00 |
| 11800 | 11800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2512 | 0.00 |
| 11900 | 11900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2533 | 0.00 |
| 12000 | 12000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2554 | 0.00 |
| 12100 | 12100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2574 | 0.00 |
| 12200 | 12200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2595 | 0.00 |
| 12300 | 12300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2616 | 0.00 |
| 12400 | 12400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2636 | 0.00 |
| 12500 | 12500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2657 | 0.00 |
| 12600 | 12600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2678 | 0.00 |
| 12700 | 12700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2698 | 0.00 |
| 12800 | 12800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2719 | 0.00 |
| 12900 | 12900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.274 | 0.00 |
| 13000 | 13000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.276 | 0.00 |
| 13100 | 13100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2781 | 0.00 |
| 13200 | 13200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2802 | 0.00 |
| 13300 | 13300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2822 | 0.00 |
| 13400 | 13400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2843 | 0.00 |
| 13500 | 13500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2863 | 0.00 |
| 13600 | 13600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2884 | 0.00 |
| 13700 | 13700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2905 | 0.00 |
| 13800 | 13800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2925 | 0.00 |
| 13900 | 13900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2946 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|
| 14000 | 14000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2967 | 0.00 |
| 14100 | 14100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.2987 | 0.00 |
| 14200 | 14200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3008 | 0.00 |
| 14300 | 14300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3029 | 0.00 |
| 14400 | 14400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3049 | 0.00 |
| 14500 | 14500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.307 | 0.00 |
| 14600 | 14600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3091 | 0.00 |
| 14700 | 14700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3111 | 0.00 |
| 14800 | 14800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3132 | 0.00 |
| 14900 | 14900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3153 | 0.00 |
| 15000 | 15000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3173 | 0.00 |
| 15100 | 15100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3194 | 0.00 |
| 15200 | 15200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3215 | 0.00 |
| 15300 | 15300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3235 | 0.00 |
| 15400 | 15400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3256 | 0.00 |
| 15500 | 15500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3276 | 0.00 |
| 15600 | 15600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3297 | 0.00 |
| 15700 | 15700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3318 | 0.00 |
| 15800 | 15800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3338 | 0.00 |
| 15900 | 15900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3359 | 0.00 |
| 16000 | 16000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.338 | 0.00 |
| 16100 | 16100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.34 | 0.00 |
| 16200 | 16200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3421 | 0.00 |
| 16300 | 16300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3442 | 0.00 |
| 16400 | 16400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3462 | 0.00 |
| 16500 | 16500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3483 | 0.00 |
| 16600 | 16600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3504 | 0.00 |
| 16700 | 16700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3524 | 0.00 |
| 16800 | 16800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3545 | 0.00 |
| 16900 | 16900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3566 | 0.00 |
| 17000 | 17000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3586 | 0.00 |
| 17100 | 17100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3607 | 0.00 |
| 17200 | 17200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3628 | 0.00 |
| 17300 | 17300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3648 | 0.00 |
| 17400 | 17400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3669 | 0.00 |
| 17500 | 17500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3689 | 0.00 |
| 17600 | 17600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.371 | 0.00 |
| 17700 | 17700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3731 | 0.00 |
| 17800 | 17800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3751 | 0.00 |
| 17900 | 17900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3772 | 0.00 |
| 18000 | 18000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3793 | 0.00 |
| 18100 | 18100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3813 | 0.00 |
| 18200 | 18200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3834 | 0.00 |
| 18300 | 18300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3855 | 0.00 |
| 18400 | 18400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3875 | 0.00 |
| 18500 | 18500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3896 | 0.00 |
| 18600 | 18600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3917 | 0.00 |
| 18700 | 18700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3937 | 0.00 |
| 18800 | 18800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3958 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|
| 18900 | 18900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3979 | 0.00 |
| 19000 | 19000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.3999 | 0.00 |
| 19100 | 19100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.402 | 0.00 |
| 19200 | 19200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4041 | 0.00 |
| 19300 | 19300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4061 | 0.00 |
| 19400 | 19400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4082 | 0.00 |
| 19500 | 19500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4103 | 0.00 |
| 19600 | 19600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4123 | 0.00 |
| 19700 | 19700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4144 | 0.00 |
| 19800 | 19800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4164 | 0.00 |
| 19900 | 19900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4185 | 0.00 |
| 20000 | 20000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4206 | 0.00 |
| 20100 | 20100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4226 | 0.00 |
| 20200 | 20200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4247 | 0.00 |
| 20300 | 20300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4268 | 0.00 |
| 20400 | 20400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4288 | 0.00 |
| 20500 | 20500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4309 | 0.00 |
| 20600 | 20600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.433 | 0.00 |
| 20700 | 20700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.435 | 0.00 |
| 20800 | 20800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4371 | 0.00 |
| 20900 | 20900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4392 | 0.00 |
| 21000 | 21000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4412 | 0.00 |
| 21100 | 21100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4433 | 0.00 |
| 21200 | 21200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4454 | 0.00 |
| 21300 | 21300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4474 | 0.00 |
| 21400 | 21400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4495 | 0.00 |
| 21500 | 21500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4516 | 0.00 |
| 21600 | 21600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4536 | 0.00 |
| 21700 | 21700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4557 | 0.00 |
| 21800 | 21800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4577 | 0.00 |
| 21900 | 21900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4598 | 0.00 |
| 22000 | 22000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4619 | 0.00 |
| 22100 | 22100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4639 | 0.00 |
| 22200 | 22200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.466 | 0.00 |
| 22300 | 22300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4681 | 0.00 |
| 22400 | 22400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4701 | 0.00 |
| 22500 | 22500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4722 | 0.00 |
| 22600 | 22600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4743 | 0.00 |
| 22700 | 22700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4763 | 0.00 |
| 22800 | 22800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4784 | 0.00 |
| 22900 | 22900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4805 | 0.00 |
| 23000 | 23000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4825 | 0.00 |
| 23100 | 23100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4846 | 0.00 |
| 23200 | 23200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4867 | 0.00 |
| 23300 | 23300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4887 | 0.00 |
| 23400 | 23400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4908 | 0.00 |
| 23500 | 23500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4929 | 0.00 |
| 23600 | 23600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4949 | 0.00 |
| 23700 | 23700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.497 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|
| 23800 | 23800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.4991 | 0.00 |
| 23900 | 23900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5011 | 0.00 |
| 24000 | 24000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5032 | 0.00 |
| 24100 | 24100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5052 | 0.00 |
| 24200 | 24200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5073 | 0.00 |
| 24300 | 24300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5094 | 0.00 |
| 24400 | 24400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5114 | 0.00 |
| 24500 | 24500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5135 | 0.00 |
| 24600 | 24600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5156 | 0.00 |
| 24700 | 24700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5176 | 0.00 |
| 24800 | 24800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5197 | 0.00 |
| 24900 | 24900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5218 | 0.00 |
| 25000 | 25000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5238 | 0.00 |
| 25100 | 25100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5259 | 0.00 |
| 25200 | 25200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.528 | 0.00 |
| 25300 | 25300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.53 | 0.00 |
| 25400 | 25400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5321 | 0.00 |
| 25500 | 25500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5342 | 0.00 |
| 25600 | 25600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5362 | 0.00 |
| 25700 | 25700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5383 | 0.00 |
| 25800 | 25800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5404 | 0.00 |
| 25900 | 25900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5424 | 0.00 |
| 26000 | 26000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5445 | 0.00 |
| 26100 | 26100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5465 | 0.00 |
| 26200 | 26200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5486 | 0.00 |
| 26300 | 26300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5507 | 0.00 |
| 26400 | 26400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5527 | 0.00 |
| 26500 | 26500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5548 | 0.00 |
| 26600 | 26600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5569 | 0.00 |
| 26700 | 26700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5589 | 0.00 |
| 26800 | 26800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.561 | 0.00 |
| 26900 | 26900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5631 | 0.00 |
| 27000 | 27000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5651 | 0.00 |
| 27100 | 27100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5672 | 0.00 |
| 27200 | 27200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5693 | 0.00 |
| 27300 | 27300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5713 | 0.00 |
| 27400 | 27400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5734 | 0.00 |
| 27500 | 27500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5755 | 0.00 |
| 27600 | 27600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5775 | 0.00 |
| 27700 | 27700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5796 | 0.00 |
| 27800 | 27800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5817 | 0.00 |
| 27900 | 27900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5837 | 0.00 |
| 28000 | 28000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5858 | 0.00 |
| 28100 | 28100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5879 | 0.00 |
| 28200 | 28200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5899 | 0.00 |
| 28300 | 28300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.592 | 0.00 |
| 28400 | 28400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.594 | 0.00 |
| 28500 | 28500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5961 | 0.00 |
| 28600 | 28600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.5982 | 0.00 |

| Revision | 0 | 1 | | |
|---|---|---|---|---|
| Preparer/Date | HLG 2/17/04 | HLG 5/12/04 | | |
| Checker/Date | GLS 2/17/04 | MQ 5/12/04 | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 28700 | 28700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6002 | 0.00 | |
| 28800 | 28800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6023 | 0.00 | |
| 28900 | 28900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6044 | 0.00 | |
| 29000 | 29000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6064 | 0.00 | |
| 29100 | 29100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6085 | 0.00 | |
| 29200 | 29200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6106 | 0.00 | |
| 29300 | 29300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6126 | 0.00 | |
| 29400 | 29400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6147 | 0.00 | |
| 29500 | 29500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6168 | 0.00 | |
| 29600 | 29600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6188 | 0.00 | |
| 29700 | 29700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6209 | 0.00 | |
| 29800 | 29800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.623 | 0.00 | |
| 29900 | 29900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.625 | 0.00 | |
| 30000 | 30000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6271 | 0.00 | |
| 30100 | 30100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6292 | 0.00 | |
| 30200 | 30200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6312 | 0.00 | |
| 30300 | 30300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6333 | 0.00 | |
| 30400 | 30400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6353 | 0.00 | |
| 30500 | 30500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6374 | 0.00 | |
| 30600 | 30600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6395 | 0.00 | |
| 30700 | 30700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6415 | 0.00 | |
| 30800 | 30800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6436 | 0.00 | |
| 30900 | 30900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6457 | 0.00 | |
| 31000 | 31000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6477 | 0.00 | |
| 31100 | 31100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6498 | 0.00 | |
| 31200 | 31200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6519 | 0.00 | |
| 31300 | 31300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6539 | 0.00 | |
| 31400 | 31400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.656 | 0.00 | |
| 31500 | 31500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6581 | 0.00 | |
| 31600 | 31600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6601 | 0.00 | |
| 31700 | 31700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6622 | 0.00 | |
| 31800 | 31800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6643 | 0.00 | |
| 31900 | 31900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6663 | 0.00 | |
| 32000 | 32000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6684 | 0.00 | |
| 32100 | 32100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6705 | 0.00 | |
| 32200 | 32200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6725 | 0.00 | |
| 32300 | 32300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6746 | 0.00 | |
| 32400 | 32400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6767 | 0.00 | |
| 32500 | 32500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6787 | 0.00 | |
| 32600 | 32600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6808 | 0.00 | |
| 32700 | 32700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6828 | 0.00 | |
| 32800 | 32800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6849 | 0.00 | |
| 32900 | 32900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.687 | 0.00 | |
| 33000 | 33000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.689 | 0.00 | |
| 33100 | 33100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6911 | 0.00 | |
| 33200 | 33200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6932 | 0.00 | |
| 33300 | 33300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6952 | 0.00 | |
| 33400 | 33400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6973 | 0.00 | |
| 33500 | 33500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.6994 | 0.00 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 33600 | 33600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7014 | 0.00 |
| 33700 | 33700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7035 | 0.00 |
| 33800 | 33800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7056 | 0.00 |
| 33900 | 33900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7076 | 0.00 |
| 34000 | 34000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7097 | 0.00 |
| 34100 | 34100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7118 | 0.00 |
| 34200 | 34200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7138 | 0.00 |
| 34300 | 34300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7159 | 0.00 |
| 34400 | 34400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.718 | 0.00 |
| 34500 | 34500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.72 | 0.00 |
| 34600 | 34600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7221 | 0.00 |
| 34700 | 34700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7241 | 0.00 |
| 34800 | 34800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7262 | 0.00 |
| 34900 | 34900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7283 | 0.00 |
| 35000 | 35000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7303 | 0.00 |
| 35100 | 35100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7324 | 0.00 |
| 35200 | 35200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7345 | 0.00 |
| 35300 | 35300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7365 | 0.00 |
| 35400 | 35400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7386 | 0.00 |
| 35500 | 35500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7407 | 0.00 |
| 35600 | 35600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7427 | 0.00 |
| 35700 | 35700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7448 | 0.00 |
| 35800 | 35800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7469 | 0.00 |
| 35900 | 35900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7489 | 0.00 |
| 36000 | 36000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.751 | 0.00 |
| 36100 | 36100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7531 | 0.00 |
| 36200 | 36200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7551 | 0.00 |
| 36300 | 36300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7572 | 0.00 |
| 36400 | 36400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7593 | 0.00 |
| 36500 | 36500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7613 | 0.00 |
| 36600 | 36600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7634 | 0.00 |
| 36700 | 36700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7655 | 0.00 |
| 36800 | 36800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7675 | 0.00 |
| 36900 | 36900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7696 | 0.00 |
| 37000 | 37000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7716 | 0.00 |
| 37100 | 37100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7737 | 0.00 |
| 37200 | 37200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7758 | 0.00 |
| 37300 | 37300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7778 | 0.00 |
| 37400 | 37400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7799 | 0.00 |
| 37500 | 37500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.782 | 0.00 |
| 37600 | 37600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.784 | 0.00 |
| 37700 | 37700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7861 | 0.00 |
| 37800 | 37800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7882 | 0.00 |
| 37900 | 37900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7902 | 0.00 |
| 38000 | 38000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7923 | 0.00 |
| 38100 | 38100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7944 | 0.00 |
| 38200 | 38200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7964 | 0.00 |
| 38300 | 38300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.7985 | 0.00 |
| 38400 | 38400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8006 | 0.00 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 38500 | 38500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8026 | 0.00 |
| 38600 | 38600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8047 | 0.00 |
| 38700 | 38700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8068 | 0.00 |
| 38800 | 38800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8088 | 0.00 |
| 38900 | 38900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8109 | 0.00 |
| 39000 | 39000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8129 | 0.00 |
| 39100 | 39100 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.815 | 0.00 |
| 39200 | 39200 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8171 | 0.00 |
| 39300 | 39300 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8191 | 0.00 |
| 39400 | 39400 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8212 | 0.00 |
| 39500 | 39500 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8233 | 0.00 |
| 39600 | 39600 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8253 | 0.00 |
| 39700 | 39700 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8274 | 0.00 |
| 39800 | 39800 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8295 | 0.00 |
| 39900 | 39900 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8315 | 0.00 |
| 40000 | 40000 | 5.70e+001 | 7.98e+000 | 4.90e+001 | 0.14 | 2.07e-005 | 2.07e-003 | 0.8336 | 0.00 |

End of pc-CRACK Output

tm
pc-CRACK for Windows
Version 3.1-98348
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Structural Integrity Associates, Inc.
3315 Almaden Expressway, Suite 24
San Jose, CA 95118-1557

Linear Elastic Fracture Mechanics

Date: Mon Feb 09 10:59:19 2004
Input Data and Results File: PB1FCG.LFM

Title: PBCH-09Q-302: Point Beach Unit 1 Fatigue Crack Growth

Load Cases:

| Case ID | Stress Coefficients C0 | C1 | C2 | C3 | Type |
|---|---|---|---|---|---|
| Residual | 60 | 0 | 0 | 0 | Coeff |
| Operating | 20 | 0 | 0 | 0 | Coeff |

------Through Wall Stresses for Load Cases With Stress Coeff-------

| Wall Depth | Case Residual | Case Operating |
|---|---|---|
| 0.0000 | 60 | 20 |
| 0.1000 | 60 | 20 |
| 0.2000 | 60 | 20 |
| 0.3000 | 60 | 20 |
| 0.4000 | 60 | 20 |
| 0.5000 | 60 | 20 |
| 0.6000 | 60 | 20 |
| 0.7000 | 60 | 20 |
| 0.8000 | 60 | 20 |
| 0.9000 | 60 | 20 |
| 1.0000 | 60 | 20 |

Crack Model: Single Edge Cracked Plate

Crack Parameters:
Plate width: 2.0000

Max. crack size: 1.0000

| Crack Size | Stress Intensity Factor Case Residual | Case Operating |
|---|---|---|
| 0.0200 | 16.2806 | 5.42685 |
| 0.0400 | 23.1837 | 7.7279 |
| 0.0600 | 28.5895 | 9.52983 |
| 0.0800 | 33.2379 | 11.0793 |
| 0.1000 | 37.4133 | 12.4711 |
| 0.1200 | 41.2605 | 13.7535 |
| 0.1400 | 44.8649 | 14.955 |
| 0.1600 | 48.2816 | 16.0939 |
| 0.1800 | 51.5488 | 17.1829 |
| 0.2000 | 54.6939 | 18.2313 |
| 0.2200 | 58.4858 | 19.4953 |
| 0.2400 | 62.2586 | 20.7529 |
| 0.2600 | 66.021 | 22.007 |
| 0.2800 | 69.7794 | 23.2598 |
| 0.3000 | 73.5391 | 24.513 |
| 0.3200 | 77.3044 | 25.7681 |
| 0.3400 | 81.0788 | 27.0263 |
| 0.3600 | 84.8651 | 28.2884 |
| 0.3800 | 88.6656 | 29.5552 |
| 0.4000 | 92.4824 | 30.8275 |
| 0.4200 | 97.0061 | 32.3354 |
| 0.4400 | 101.582 | 33.8605 |
| 0.4600 | 106.209 | 35.4029 |
| 0.4800 | 110.888 | 36.9626 |
| 0.5000 | 115.618 | 38.5394 |
| 0.5200 | 120.4 | 40.1334 |
| 0.5400 | 125.234 | 41.7446 |
| 0.5600 | 130.118 | 43.3727 |
| 0.5800 | 135.054 | 45.0179 |
| 0.6000 | 140.04 | 46.6799 |
| 0.6200 | 146.332 | 48.7773 |
| 0.6400 | 152.715 | 50.9049 |
| 0.6600 | 159.186 | 53.0621 |
| 0.6800 | 165.746 | 55.2486 |
| 0.7000 | 172.392 | 57.464 |
| 0.7200 | 179.124 | 59.7079 |
| 0.7400 | 185.94 | 61.98 |
| 0.7600 | 192.84 | 64.2799 |
| 0.7800 | 199.822 | 66.6073 |
| 0.8000 | 206.886 | 68.9619 |
| 0.8200 | 216.919 | 72.3064 |

| | | |
|---|---|---|
| 0.8400 | 227.102 | 75.7008 |
| 0.8600 | 237.433 | 79.1444 |
| 0.8800 | 247.91 | 82.6366 |
| 0.9000 | 258.53 | 86.1767 |
| 0.9200 | 269.292 | 89.7641 |
| 0.9400 | 280.195 | 93.3982 |
| 0.9600 | 291.235 | 97.0783 |
| 0.9800 | 302.412 | 100.804 |
| 1.0000 | 313.724 | 104.575 |

Crack Growth Laws:

Law ID: Alloy 52
Model: ASME Section XI - austenitic stainless steel in air environment

da/dN = C * 10^F * S * dK^3.3
where
S = 1.0 for R < 0
= 1.0 + 1.8 * R for 0 < R < 0.79
= -43.5 + 57.97 * R for 0.79 < R < 1
F = code specified function of temperature
dK = Kmax - Kmin
R = Kmin / Kmax
where:
C * 10^F = 1.9352e-010
is for the currently selected units of:
force: kip
length: inch
temperature: 592.0000 Fahrenheit

Material Fracture Toughness KIc:

Material ID: Alloy 52

| Depth | KIc |
|---|---|
| 0.0000 | 200.0000 |
| 0.5000 | 200.0000 |
| 2.0000 | 200.0000 |

Initial crack size= 0.1000
Max. crack size= 1.0000

Number of blocks= 1

Print increment of block= 1

| Subblock | Cycles /Time | Calc. incre. | Print incre. | Crk. Grw. Law | Mat. K1c |
|---|---|---|---|---|---|
| FCG | 1000 | 10 | 10 | Alloy 52 | Alloy 52 |

| Subblock | Kmax Case ID | Kmax Scale Factor | Kmin Case ID | Kmin Scale Factor |
|---|---|---|---|---|
| FCG | Residual | 1.0000 | Residual | 1.0000 |
| | Operating | 1.0000 | | |

Crack growth results:

| Total Cycles /Time | Subblock Cycles /Time | Kmax | Kmin | DeltaK | R | DaDn /DaDt | Da | a | a/thk |
|---|---|---|---|---|---|---|---|---|---|
| Block: 1 | | | | | | | | | |
| 10 | 10 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.88e-006 | 1.88e-005 | 0.1 | 0.05 |
| 20 | 20 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.88e-006 | 1.88e-005 | 0.1 | 0.05 |
| 30 | 30 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.88e-006 | 1.88e-005 | 0.1001 | 0.05 |
| 40 | 40 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.88e-006 | 1.88e-005 | 0.1001 | 0.05 |
| 50 | 50 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.88e-006 | 1.88e-005 | 0.1001 | 0.05 |
| 60 | 60 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.88e-006 | 1.88e-005 | 0.1001 | 0.05 |
| 70 | 70 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.88e-006 | 1.88e-005 | 0.1001 | 0.05 |
| 80 | 80 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.88e-006 | 1.88e-005 | 0.1002 | 0.05 |
| 90 | 90 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1002 | 0.05 |
| 100 | 100 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1002 | 0.05 |
| 110 | 110 | 4.99e+001 | 3.74e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1002 | 0.05 |
| 120 | 120 | 4.99e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1002 | 0.05 |
| 130 | 130 | 4.99e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1002 | 0.05 |
| 140 | 140 | 4.99e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1003 | 0.05 |
| 150 | 150 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1003 | 0.05 |
| 160 | 160 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1003 | 0.05 |
| 170 | 170 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1003 | 0.05 |
| 180 | 180 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1003 | 0.05 |
| 190 | 190 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1004 | 0.05 |
| 200 | 200 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1004 | 0.05 |
| 210 | 210 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1004 | 0.05 |
| 220 | 220 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1004 | 0.05 |
| 230 | 230 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1004 | 0.05 |
| 240 | 240 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.89e-006 | 1.89e-005 | 0.1005 | 0.05 |
| 250 | 250 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1005 | 0.05 |
| 260 | 260 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1005 | 0.05 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 270 | 270 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1005 | 0.05 |
| 280 | 280 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1005 | 0.05 |
| 290 | 290 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1005 | 0.05 |
| 300 | 300 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1006 | 0.05 |
| 310 | 310 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1006 | 0.05 |
| 320 | 320 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1006 | 0.05 |
| 330 | 330 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1006 | 0.05 |
| 340 | 340 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1006 | 0.05 |
| 350 | 350 | 5.00e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1007 | 0.05 |
| 360 | 360 | 5.01e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1007 | 0.05 |
| 370 | 370 | 5.01e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1007 | 0.05 |
| 380 | 380 | 5.01e+001 | 3.75e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1007 | 0.05 |
| 390 | 390 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1007 | 0.05 |
| 400 | 400 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1008 | 0.05 |
| 410 | 410 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.90e-006 | 1.90e-005 | 0.1008 | 0.05 |
| 420 | 420 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1008 | 0.05 |
| 430 | 430 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1008 | 0.05 |
| 440 | 440 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1008 | 0.05 |
| 450 | 450 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1009 | 0.05 |
| 460 | 460 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1009 | 0.05 |
| 470 | 470 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1009 | 0.05 |
| 480 | 480 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1009 | 0.05 |
| 490 | 490 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1009 | 0.05 |
| 500 | 500 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1009 | 0.05 |
| 510 | 510 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.101 | 0.05 |
| 520 | 520 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.101 | 0.05 |
| 530 | 530 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.101 | 0.05 |
| 540 | 540 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.101 | 0.05 |
| 550 | 550 | 5.01e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.101 | 0.05 |
| 560 | 560 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1011 | 0.05 |
| 570 | 570 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.91e-006 | 1.91e-005 | 0.1011 | 0.05 |
| 580 | 580 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1011 | 0.05 |
| 590 | 590 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1011 | 0.05 |
| 600 | 600 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1011 | 0.05 |
| 610 | 610 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1012 | 0.05 |
| 620 | 620 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1012 | 0.05 |
| 630 | 630 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1012 | 0.05 |
| 640 | 640 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1012 | 0.05 |
| 650 | 650 | 5.02e+001 | 3.76e+001 | 1.25e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1012 | 0.05 |
| 660 | 660 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1013 | 0.05 |
| 670 | 670 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1013 | 0.05 |
| 680 | 680 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1013 | 0.05 |
| 690 | 690 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1013 | 0.05 |
| 700 | 700 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1013 | 0.05 |
| 710 | 710 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1014 | 0.05 |
| 720 | 720 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1014 | 0.05 |
| 730 | 730 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.92e-006 | 1.92e-005 | 0.1014 | 0.05 |
| 740 | 740 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1014 | 0.05 |
| 750 | 750 | 5.02e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1014 | 0.05 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 760 | 760 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1014 | 0.05 |
| 770 | 770 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1015 | 0.05 |
| 780 | 780 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1015 | 0.05 |
| 790 | 790 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1015 | 0.05 |
| 800 | 800 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1015 | 0.05 |
| 810 | 810 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1015 | 0.05 |
| 820 | 820 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1016 | 0.05 |
| 830 | 830 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1016 | 0.05 |
| 840 | 840 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1016 | 0.05 |
| 850 | 850 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1016 | 0.05 |
| 860 | 860 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1016 | 0.05 |
| 870 | 870 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1017 | 0.05 |
| 880 | 880 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1017 | 0.05 |
| 890 | 890 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.93e-006 | 1.93e-005 | 0.1017 | 0.05 |
| 900 | 900 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1017 | 0.05 |
| 910 | 910 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1017 | 0.05 |
| 920 | 920 | 5.03e+001 | 3.77e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1018 | 0.05 |
| 930 | 930 | 5.03e+001 | 3.78e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1018 | 0.05 |
| 940 | 940 | 5.03e+001 | 3.78e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1018 | 0.05 |
| 950 | 950 | 5.03e+001 | 3.78e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1018 | 0.05 |
| 960 | 960 | 5.03e+001 | 3.78e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1018 | 0.05 |
| 970 | 970 | 5.04e+001 | 3.78e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1019 | 0.05 |
| 980 | 980 | 5.04e+001 | 3.78e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1019 | 0.05 |
| 990 | 990 | 5.04e+001 | 3.78e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1019 | 0.05 |
| 1000 | 1000 | 5.04e+001 | 3.78e+001 | 1.26e+001 | 0.75 | 1.94e-006 | 1.94e-005 | 0.1019 | 0.05 |

End of pc-CRACK Output