

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CORRECTIVE ACTION REQUEST

CAR No: 96-01

Associated AR, SR, NCR No: CNWRA AR 96-01

PART A: DESCRIPTION OF CONDITION ADVERSE TO QUALITY

TOP-018 was not complied with in several instances for code related to TSPA.
(See Page 2 of 2.)

Initiated by: Randolph W. Folck *RWF*

Date: 7/26/96

PART B: PROPOSED ACTION

Responsible EM: R. Baca/R. Janetzke
Response Due: 8/15/96

1) Extent of Condition: See attached.

2) Root Cause: See attached.

3) Remedial Action: See attached.

Proposed Completion Date:

4) Corrective Action to Preclude Recurrence: See attached.

Proposed Completion Date:

Element Manager: *R. Baca*Date: 8/30/96 *RJ*PART C: APPROVAL
Comments/Instructions

*Reviewed and discussed with Center and
DWF 9/12/96*

Director of QA: *Samuel Malin*

Date: 8/30/96

PART D: VERIFICATION OF CORRECTIVE ACTION IMPLEMENTATION

*SEE ATTACHED April 18, 1997 memo
To CAR 96-01 File closing CAR. Corrective
actions and remedial actions completed.*

Verified by: *Samuel Malin*

Date: 4/18/97

Distribution: R. Baca
B. Sagar
W. Patrick

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TOP-018, "Development and Control of Scientific and Engineering Software."

1. Reference 5.3.3

The Software Requirements Description for the FAULTING modules was drafted but has not been approved. Code development was initiated May 22, 1996.

2. Reference 5.6.1 and 5.7.4

The configuration management package for Total Performance Assessment (TPA), Version 2.0 code, dated July 16, 1996, is incomplete. Evidence of installation testing for the Sun platform is not available. A tape in the configuration management package was not identified.

3. Reference 5.7.1

The TPA, Version 2.0 code was being maintained under configuration control on the INEL Cray computer up to about January/February, 1996. The TPA, Version 2.0 code was placed under configuration control at the CNWRA on July 16, 1996.

The TPA, Version 2.0 code was used in the development of the "Total System Performance Assessment 1995 Audit Review," Intermediate Milestone 5708-761-630, report dated May, 1996. It is unclear as to the configuration status of the TPA, Version 2.0 code during this time period.

4. Reference 5.8.1

Changes have been made to the TPA, Version 2.0 code to allow the code to run on the Sun platform. A Software Problem/Change Report was not initiated.

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CAR No. 96-01

PART B: PROPOSED ACTION

1) Extent of Condition:

1.
The following 8 codes were investigated: 3DSTRESS 1.2, BREATH 1.2, SUFLAT 1.0, MULTIFLO 1.0, PVHVIEW 1.0, TPA 3.0, EBSPAC 1.0, and SEISM 1.x. Of these BREATH 1.2 is a minor modification of code existing before the current version of TOP-018 and SUFLAT 1.0 is not under development, so neither require an SRD at this time*. Also, 3DSTRESS, MULTIFLO, and EBSPAC have an SRD on file, TPA and PVHVIEW have an SRD in draft form, and SEISM does not have an SRD.

* They will need an SRD if they are developed further.

2.
During the Quality Planning Process in early March, 1996, it was felt that the effort to place TPA version 2.0 under control was not justified since it was not anticipated to be used again, but rather that version 3 would be used instead. A complete documentation package for TPA version 2.0 was not attempted. The statement that TPA version 2.0 was released on July 16, 1996 was in error. No other software was treated in this manner.

3.
The TPA code is the only one that was developed before TOP-018 procedures were in place and that subsequently underwent minor modifications for unanticipated use (see 2 above).

4.
Of the six codes under development, three represent a version beyond the baseline. None of these have an SPCR for the current version.

2) Root Cause:

1.
The developers are not familiar with the TOP-018 and the timing and content of the SRD. Also, the SRD is not routinely placed on a list of milestones or otherwise scheduled.

2.
TPA version 2 was never considered for grandfathering because it was never under TOP-018 procedures and version 3 was under development. This is a one time occurrence since version 3 will be under TOP-018 guidelines.

3.
The user was unaware that the TPA code was to be placed under configuration control in a manner other than that performed on the CRAY.

4.
The utility of the SPCR needs to be reconsidered. If the functionality of scientific and engineering software is changed, then an SPCR should be generated. If not then no SPCR is required. Functionality is defined here to include, the input/output procedures, computational algorithms, complement of subroutines that make up the code, any external libraries required for linking, and the class of problems for which the code may be applied.

3) Remedial Action:

1.
SRDs will be prepared as needed and submitted to the SCB for approval.

2.
None necessary.

3.
None necessary. No changes were made to the existing code, additional code was added to provide SUN compatibility thereby giving the code both CRAY and SUN functionality.

4.
Clarify the requirement for the SPCR (see 4 below).

Proposed Completion Date:

Sept. 30, 1996

4) Corrective Action to Preclude Recurrence:

1.
The CCL should be used to track the SRD's. Developers shall be trained in TOP-018 requirements for the timing of SRD preparation.

2.
None. This condition is limited to unique events at the start of implementing TOP-018 revision 4 for the CNWRA.

3.
None. Multi-platform codes will be treated as separate configuration items.

4.
The SPCR requirement should be clarified in the TOP-018 procedure, or by some other method.

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Proposed Completion Date:

November 15, 1996

6/18

To: Ronald Janetzke at CNWRA-SUN
To: Budhi Sagar
CC: Robert Brient
CC: Robert Baca
CC: Linda Hearon
CC: Henry Garcia
From: Bruce Mabrito
Subject: Corrective Action Request 96-01 - Delay in the Response Date
08-15-96 08:21 PM

This note is to acknowledge that Ron Janetzke has responded to the Corrective Action Request 96-01 by the 8/15/96 response date. The response was reviewed and approved by Bob Baca, the cognizant Element Manager.

A discussion involving Budhi Sagar and Bruce Mabrito took place following the submission of the response. To further assist in determining the Extent of Condition on CAR 96-01, it was agreed that R. Janetzke should investigate the condition/status of two additional pieces of scientific and engineering software. The two suggested were BREATH and SUFLAT.

Therefore, the response due date is being extended to August 23, 1996 for CAR 96-01.

A copy of this CC:Mail message will be printed and put in the CAR 96-01 folder.



Bruce Mabrito

To: Robert Baca
To: Budhi Sagar
To: Asadul Chowdhury
To: Ronald Janetzke at CNWRA-SUN
CC: Robert Brient
CC: Linda Hearon
CC: Henry Garcia
From: Bruce Mabrito
Subject: Corrective Action Requests 96-01 and 96-02
08-23-96 06:58 PM

This E-mail note is to acknowledge that work has proceeded on Corrective Action Requests (CARs) 96-01 and 96-02 during the past week, but that not all such work has been completed.

Specifically, CAR 96-01 has been the focus of work led by Ron Janetzke with the assistance of Bob Brient. Discussions were held with Bob Baca and Budhi Sagar to ensure a sufficient population of scientific and engineering software were checked to determine the extend of condition of the CAR.

In the case of CAR 96-02, discussions were held with Asad Chowdhury on his earlier response and he was provided other options which had been discussed by B. Sagar, R. Brient and B. Mabrito. He is reviewing his earlier response.

Based on the actions taken to date, it appears progress is being made; however the response date of August 23, 1996 is clearly not going to be met and the response date is being extended to August 30, 1996.

A copy of this CC:Mail message will be printed and put in CAR Folders 96-01 and 96-02.

Bruce Mabrito


CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

8/18

MEMORANDUM

September 30, 1996

TO: QA Records Corrective Action Request 96-01 File

FROM: Bruce Mabrito, Director of Quality Assurance 

SUBJECT: Status of Corrective Actions on CAR 96-01 as of 9/30/96

REFERENCE: CAR 96-01, From Annual CNWRA QA Audit

This memorandum to the CAR 96-01 file is to document progress to date to complete corrective actions.

The proposed completion date for Remedial Action on CAR 96-01 was September 30, 1996. Of four (4) Items in the Remedial Action, two (2) were determined to be not necessary. Of the remaining two Items, Item 1 stated that Software Requirements Descriptions (SRD) will be prepared as needed and submitted to the Software Control Board for approval, and Item 4 was to clarify the requirement for the Software Problem Change Report (referenced in the Corrective Action to Preclude Recurrence). In discussions with R. Janetzke of the CNWRA PA Element regarding Item 1, it was determined that the SRD referred to Version 3.0 of the TPA software, not Version 2.0 (see the response to CAR 96-01, Root Cause, Item 2).

R. Janetzke is providing background material and descriptions for TPA Version 2.0 at the request of CNWRA QA staff. The clarification of the requirement for the SPCR will occur during the change to Technical Operating Procedure-018 which is taking place because of reduced funding to the CNWRA and modification of the organizational structure of the CNWRA. Therefore, it is appropriate to extend the proposed completion date for the Remedial Action to coincide with the proposed completion date of the Corrective Action to Preclude Recurrence, that being November 15, 1996.

There have been numerous meetings within the CNWRA regarding actions required to bring all the identified scientific and engineering software documentation of the CNWRA up to a consistent and acceptable level. More such meetings will take place to ensure full documentation is available in the CNWRA scientific and engineering software folders inside the QA Records Room.

The proposed completion date for the Remedial Actions for CAR 96-01 is hereby extended to November 15, 1996.

If there are any questions regarding this change, please contact me at ext. 5149.


CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

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MEMORANDUM

November 15, 1996

TO: QA Records Corrective Action Request 96-01 File

FROM: Bruce Mabrito, Director of Quality Assurance 

SUBJECT: Status of Corrective Actions on CAR 96-01 as of 11/15/96

REFERENCE: CAR 96-01, From Annual CNWRA QA Audit

This memorandum to the CAR 96-01 file is to document progress to date to complete corrective actions.

The proposed completion date for Remedial Action and Corrective Action to Preclude Recurrence on CAR 96-01 was November 15, 1996. There has been progress to date, specifically several Software Requirement Descriptions have been prepared, submitted through the CNWRA review process, and delivered to the QA Records Room. The documentation for these codes is available for review and version control has taken place on each of pieces of Scientific and Engineering software. But, due to the travel of key individuals, Technical Operating Procedure-018 has not yet been changed as of this date, and the Software Problem/Change Report requirement has not been clarified. Additionally, there has been a reduction in funding from the U.S. NRC and a change in the organization of the CNWRA, with the elimination of the Director of Information Management Services position. This has had an impact on the CNWRA methods of conducting business and further modification of TOP-018 is required.

It is appropriate to extend the proposed completion date for the Remedial Action and Corrective Action to Preclude Recurrence due to the above factors.

There have been several meetings within the CNWRA regarding specific actions required to bring all identified scientific and engineering software documentation of the CNWRA up to a consistent and acceptable level. Additional meetings are planned to occur to ensure full documentation is available in CNWRA scientific and engineering software folders inside the QA Records Room.

The proposed completion date for the Remedial Actions for CAR 96-01 is hereby extended to January 17, 1997.

If there are any questions regarding this change, please contact me at ext. 5149.


CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

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MEMORANDUM

January 17, 1997

TO: QA Records Corrective Action Request 96-01 File

FROM: Bruce Mabrito, Director of Quality Assurance 

SUBJECT: Status of Corrective Actions on CAR 96-01 as of 1/17/97

REFERENCE: CAR 96-01, From Annual CNWRA QA Audit

Memorandum to CAR 96-01 file to document progress in completing corrective and remedial actions.

The proposed completion date for Remedial Action and Corrective Action to Preclude Recurrence on CAR 96-01 was January 17, 1997. There has been considerable progress to date, specifically several more Software Requirement Descriptions are being prepared and submitted through the CNWRA review process, and will be delivered to the QA Records Room. Additionally, the EBSPAC Version 1.0 scientific and engineering software package is completed and the released Version 1.0 software will be sent to the key contact at the U.S. NRC. Similar documentation for several of the CNWRA codes is available for review and version control has taken place. However, due to the press of other CNWRA activities, the change to Technical Operating Procedure-018 has not been completed and the Software Problem/Change Report requirement has not been clarified. There have been discussions with the CNWRA Technical Director and others on the CNWRA technical staff to solicit input and reach a final decision on several points. Additionally, due to the reduction in funding and the elimination of the CNWRA Director of Information Management Services position, progress in resolving this CAR has not been as planned. Several internal meetings regarding specific actions required to bring all identified CNWRA scientific and engineering software documentation to a consistent/acceptable level have taken place so that an integrated approach to resolve this CAR is applied.

It seems appropriate to extend the proposed completion date for the Remedial Action and Corrective Action to Preclude Recurrence due to the above factors. The proposed completion date for the Remedial Actions for CAR 96-01 is hereby extended to February 28, 1997.

If there are any questions regarding this change, please contact me at ext. 5149.


CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

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MEMORANDUM

February 28, 1997

TO: QA Records Corrective Action Request 96-01 File

FROM: Bruce Mabrito, Director of Quality Assurance 

SUBJECT: Status of Corrective Actions on CAR 96-01 as of 2/28/97

REFERENCE: CAR 96-01 from Annual CNWRA QA Audit

Memorandum to CAR 96-01 file to document progress in completing corrective and remedial actions.

The proposed completion date for Remedial Action and Corrective Action to Preclude Recurrence on CAR 96-01 was February 28, 1997. There has been substantial progress to date, specifically several more Software Requirement Descriptions have been prepared and submitted through the CNWRA review process, and have been delivered to the QA Records Room. Additionally, documentation for the TPA Version 3.0 scientific and engineering software package is being completed. Similar documentation for several other CNWRA codes is available for review and version control has taken place. The change or revision of Technical Operating Procedure-018 has not been completed because of extensive Technical and Quality Assurance review comments which may have impact on the documenting of scientific and engineering software activities. The issue of the Software Problem/Change Report requirement has now been clarified and the SPCR will only be used on unplanned changes to CNWRA scientific and engineering software. There have been discussions with the CNWRA Technical Director and others on the CNWRA Technical staff to solicit input and reach a final decision on key points. Due to the reduction in funding and the elimination of the CNWRA Director of Information Management Services position, progress in resolving this CAR has not been as prompt as anticipated. Internal meetings regarding specific actions required to bring the identified CNWRA scientific and engineering software documentation to a consistent/acceptable level have continued to take place.

It is appropriate to extend the proposed completion date for the Remedial Action and Corrective Action to Preclude Recurrence due to the above factors. The proposed completion date for the Remedial Actions for CAR 96-01 is hereby extended to April 11, 1997.

If there are any questions regarding this change, please contact me at ext. 5149.

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To: Budhi Sagar
To: Robert Baca
To: English Pearcy at CNWRA
CC: Henry Garcia
CC: Wesley Patrick
BCC: Bruce Mabrito
BCC: Linda Hearon
BCC: rbrient@swri.edu at Internet
From: Bruce Mabrito
Subject: Overdue Condition on Corrective Action Requests 96-01/96-03
04-11-97 07:51 PM

April 11, 1997 was the proposed completion date for two Corrective Action Requests, 96-01 regarding TOP-018 compliance, and 96-03, regarding scientific notebook entries. As of this date, the full corrective actions have not been accomplished.

Both CARs have been open since the 1996 QA Audit which was completed 7/26/96. There have been numerous extensions provided and, although considerable progress has been made over the months in both the areas, the full Corrective Action process is not yet complete. I have signed a quarterly quality trend analysis which identifies that our corrective action process has not received attention and priority to correct the conditions. A Corrective Action Request 97-01 has been provided to B. Sagar on the subject of corrective actions not appearing to have been given the priority needed for prompt correction. The CAR requires addressing (i) the extent of the condition, (ii) root cause, (iii) remedial action, and (iv) corrective action to preclude recurrence.

A copy of this e-mail message will be put in the respective CAR folders. Bruce Mabrito

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TO Mail List:#SA-WO TECH STAFF
To: Mikko Ahola at CNWRA-SUN
To: Amit Armstrong at CNWRA-SUN
To: Charles Connor at CNWRA
To: Mike Conway at CNWRA
To: David Ferrill at CNWRA
To: Amitava Ghosh at CNWRA-SUN
To: Ronald Green at CNWRA-SUN
To: Simon Hsiung at CNWRA-SUN
To: Ronald Janetzke at CNWRA-SUN
To: Mark Jarzempa at CNWRA
To: Peter Lichtner at CNWRA-SUN
To: Randall Manteufel at CNWRA
To: Ronald Martin at CNWRA-SUN
To: Sitakanta Mohanty at CNWRA
To: William Murphy at CNWRA
To: Goodluck Ofoegbu at CNWRA-SUN
To: Roberto Pabalan at CNWRA
To: David Pickett at CNWRA
To: James Prikryl at CNWRA
To: John Stamatakis at CNWRA
To: Stuart Stothoff at CNWRA-SUN
To: James Weldy at CNWRA-SUN
To: Jim Winterle at CNWRA-SUN
To: Gordon Wittmeyer at CNWRA-SUN
CC Mail List:#DIRS-MGRS
CC: Larry McKague at CNWRA
CC: English Percy at CNWRA
BCC: Bruce Mabrito
BCC: Linda Hearon
BCC: Pat Starkweather at CNWRA-SUN
BCC: EBass@swri.edu at Internet
From: Bruce Mabrito
Subject: Reminder Regarding SRDs and/or SPCRs
04-17-97 10:08 PM

This is a reminder that the first step in the development or modification of CNWRA software is the preparation of the Software Requirements Description. The SRD is the basis for software development and "shall be prepared prior to significant development or modification of computer codes," quoting from TOP-018.

Since the procedure states "significant development or modification," lesser changes to CNWRA software can be initiated through a Software Problem Change Report wherein all changes requested are rolled into one SPCR.


For more information, consult Revision 5 to TOP-018 which has been widely distributed recently. Please contact me if you plan to issue a new version of your software so that we can coordinate either the SRD or SPCR. Your Element Manager obviously needs to be involved in such work even before QA is contacted. Bruce x 5149

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES 14/18

MEMORANDUM

April 18, 1997

TO: QA Records Corrective Action Request 96-01 File

FROM: Bruce Mabrito, Director of Quality Assurance 

SUBJECT: Closure of CAR 96-01 as of 4/18/97

REFERENCE: CAR 96-01 from Annual CNWRA QA Audit

The purpose of this memorandum is to document the close out of Corrective Action Request (CAR) 96-01.

The final two actions required to close out CAR 96-01 have now taken place.

First, Technical Operating Procedure (TOP)-018, Development and Control of Scientific and Engineering Software, has been through the required reviews and the effectivity page signed. TOP-018 was distributed the week of April 15, 1997 to appropriate CNWRA and NRC staff members. Revision 5 to TOP-018 re-emphasizes the need to submit in a timely manner the Software Requirements Description when performing CNWRA scientific and engineering software activities. It also states that an SRD shall be prepared prior to significant development or modification of computer codes, allowing some flexibility for other changes to be made by using the Software Problem Change Report form. Other modifications to TOP-018 include use of the Quality Requirements Application Matrix instead of the Software Control Board to better track development and modification of scientific and engineering software, and improved definitions more applicable to the work of the CNWRA (letter transmitting TOP-018 to NRC attached).

Second, the action allowing closure of this CAR was locating of the 1995 CRAY installation test and the acceptable performance/comparison of the SUN operation of TPA Version 2 compared to the original CRAY files. This activity had been an agreement between the PA Element Manager and the Director of Quality Assurance and is documented in a April 16, 1997 memorandum from R. Janetzke to B. Mabrito and R. Baca (attached).

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Center for Nuclear Waste Regulatory Analyses

6220 CULEBRA ROAD • P.O. DRAWER 28510 • SAN ANTONIO, TEXAS, U.S.A. 78228-0510
(210) 522-5160 • FAX (210) 522-5184

April 15, 1997
Contract No. NRC-02-93-005
Account No. 20-5708-159

U.S. Nuclear Regulatory Commission
ATTN: Ms. Barbara Stiltenspole
Program Assistant
Program Management, Policy Development and Analysis Staff
Office of Nuclear Material Safety and Safeguards
TWFN, Mail Stop 8A-23
Washington, DC 20555

Subject: Transmittal of the Center for Nuclear Waste Regulatory Analyses
(CNWRA) Technical Operating Procedure-018, Development and Control
of Scientific and Engineering Software, Revision 5

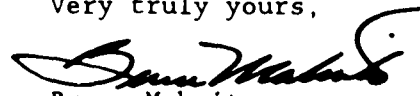
Dear Ms. Stiltenspole:

Enclosed are controlled and uncontrolled copies of the CNWRA Technical Operating Procedure-018, Development and Control of Scientific and Engineering Software, Revision 5. We have coordinated the distribution to NRC staff through your office.

This revision to TOP-018 brings together changes suggested by CNWRA staff for more effective application of the procedure to scientific and engineering software. Specifically, modifications were made to reflect the Information Management System organization change at the CNWRA, use of the Quality Requirements Application Matrix to better track development and modification of scientific and engineering software, improved alignment of definitions with applicable NUREGs, and modifications in language and format to make the procedure more understandable and readable.

Please distribute the enclosed procedures. Contact me at (210) 522-5149 if you have any questions.

Very truly yours,


Bruce Mabrito
Director
Quality Assurance

BEM/lh
q:\bruce\TOP-018.1tr
Enclosure

cc: See Attached List

W/O Enclosure
W. Patrick
CNWRA Directors
CNWRA EMs
S. Rowe



Washington Office • Twinbrook Metro Plaza, #210 • 12300 Twinbrook Parkway • Rockville, Maryland 20852-1606

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES 16/18

MEMORANDUM

April 16, 1997

TO: B. Mabrito
R. Baca

FROM: R. Janetzke *RJ*

SUBJECT: CAR 96-01

This report is to notify you that the installation test runs performed in 1995 have been located and documented in the TPA scientific notebook. These files indicate an acceptable performance of the SUN instance of TPA version 2 when compared to the original CRAY files. The ccdf output plots are attached to this memo for comparison purposes.

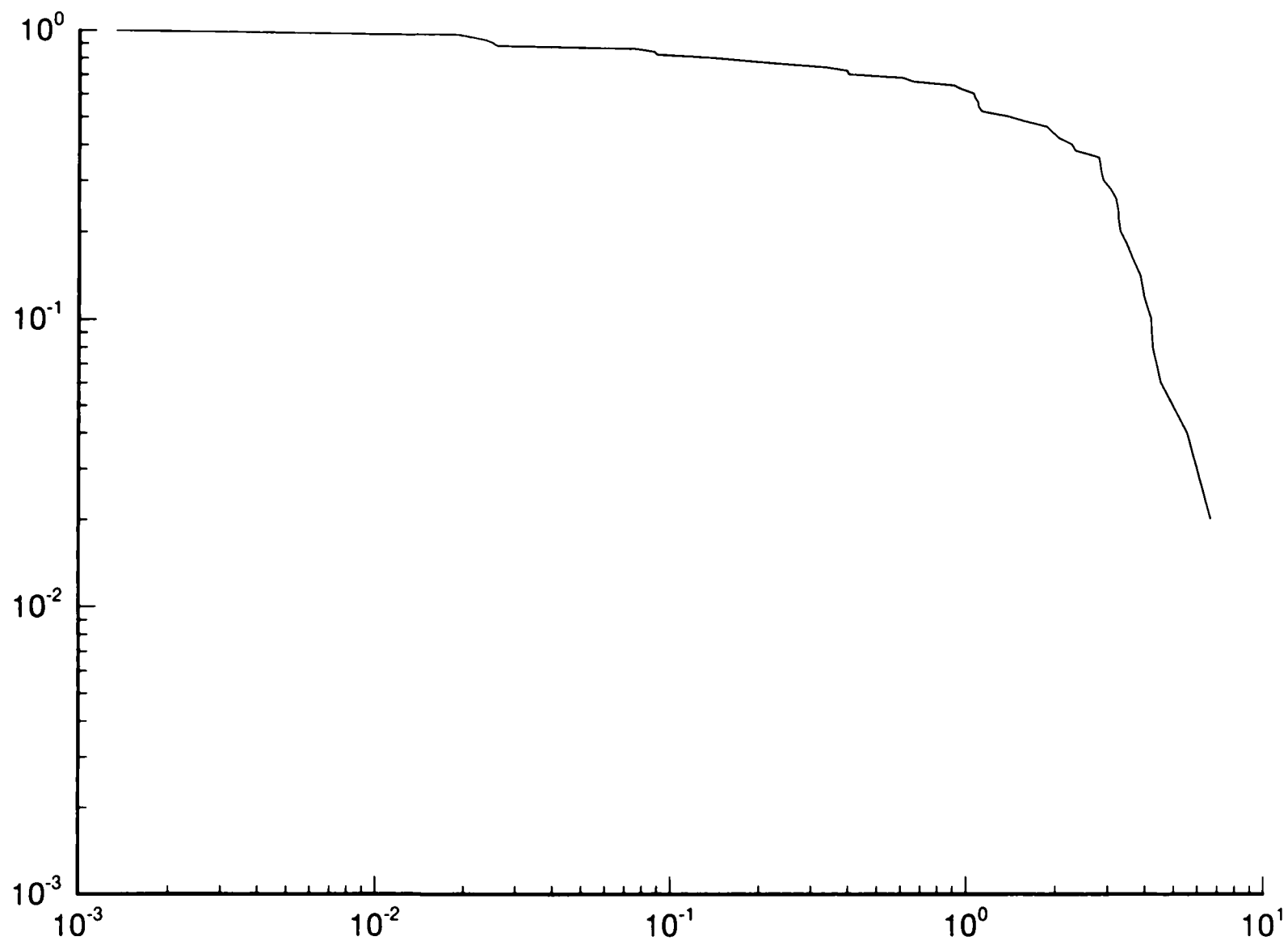
This constitutes completion of the corrective action request.

Enclosures
SUN ccdf plot
CRAY ccdf plot

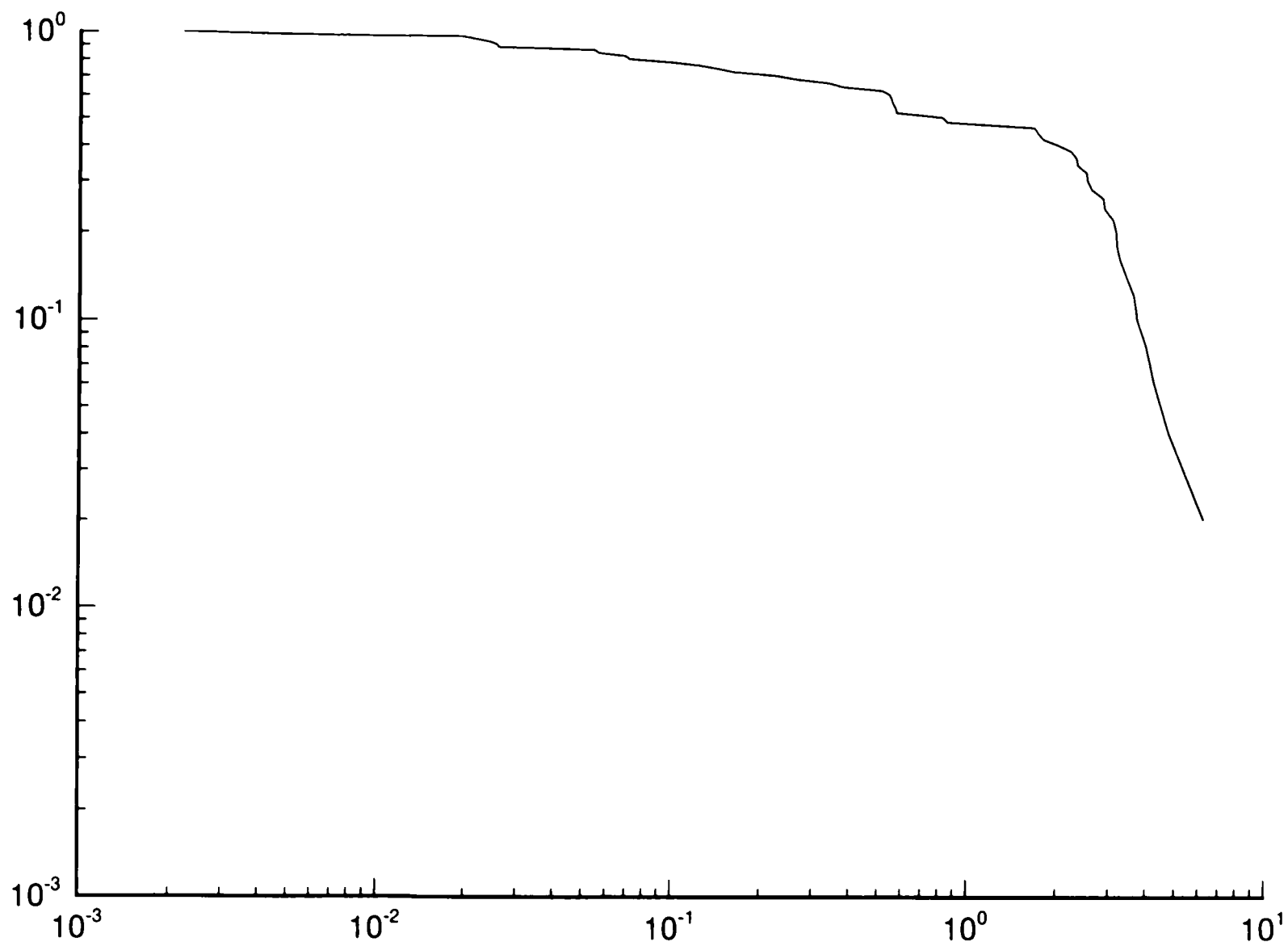
We have compared the graphical results and find that they are sufficiently close to ensure the code on the SUN workstation is functioning in the same manner as the code run on the CRAY supercomputer.

R. G. Baca 4/16/97

(2D) || Print || 16 Apr 1997 || ccdf.plt || Scenario CCDF for oooo20n2v case, SUN test.



(2D) || Print || 16 Apr 1997 || ccdf50v.plt || Scenario CCDF for 4/23 oooo20n50v case, DITTY food run, DOSIRR=0.



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