

SOFTWARE RELEASE NOTICE

01. SRN Number: PA-SRN-141		
02. Project Title: Support Revision of the EPA & NRC Rule Technical Assistance		Project No. 20-5708-771
03. SRN Title: MAGNUM-2D Version 3.2		
04. Originator/Requestor: B. Mabrito		Date: 12/12/96
05. Summary of Actions		
<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Release of new software</li> <li><input type="checkbox"/> Release of modified software: <ul style="list-style-type: none"> <li><input type="checkbox"/> Enhancements made</li> <li><input type="checkbox"/> Corrections made</li> </ul> </li> <li><input type="checkbox"/> Change of access software</li> <li><input checked="" type="checkbox"/> Software Retirement <i>AW 11/30/2001</i></li> </ul>		
06. Persons Authorized Access		
Name	RO/RW	A/C/D
Robert Baca Robert Rice Gordon Wittmeyer	RW RW RW	
07. Element Manager Approval: <i>26 Baca</i>		Date: <i>12/13/96</i>
08. Remarks:		



# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

## SOFTWARE CONTROL CHECKLIST

3/10

Name of Software: MAGNUM Version: 3.2

Primary User: Robert Baca

<input type="checkbox"/>	SOFTWARE REQUIREMENTS DESCRIPTION Documentation	<input type="checkbox"/>
<input type="checkbox"/>	DESIGN AND DEVELOPMENT Documentation (Scientific Notebook)	<input type="checkbox"/>
<input type="checkbox"/>	DESIGN VERIFICATION Computer runs uniquely identified Software analysis tools have been applied and discrepancies resolved Design Verification Report	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	INSTALLATION TESTING Installation test documentation Discrepancy resolution	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	CONFIGURATION CONTROL Software Summary Form User's Manual Technical Description Source Code Version Control Software Release Notice	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	SOFTWARE PROBLEM REPORTING AND RESOLUTION Software Problem and Change Request	<input type="checkbox"/>
<input checked="" type="checkbox"/>	SOFTWARE VALIDATION Software Validation Test Plan Software Validation Test Report Software Validation Review	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/>	SOFTWARE RETIREMENT Software Release Notice	<input type="checkbox"/>

4/10

Author: Pat Starkweather at CNWRA-SUN  
Subject: Version Control: Magnum-2d  
Date: 12/13/96 Time: 09:46:37  
To: Bruce Mabrito at CNWRA-OS2  
Cc: Linda Hearon at CNWRA-OS2  
Cc: Robert Brient at CNWRA-OS2  
Cc: Henry Garcia at CNWRA-OS2

\*\*\*\*\* MESSAGE CONTENTS \*\*\*\*\*

Mr. Mabrito;

Herewith notification that an S&E Software code has been placed under Version Control in accordance with TOP-018.

Details

Program Name: **Magnum-2D**  
Date Entered: 13 December 1996  
Control Method: SCCS  
Location: mammoth:/lan/rcs/magnum2d

This code included only one source code file, "magnum.f".

Pat Starkweather  
x-5238


# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

5/10

## MEMORANDUM

December 30, 1996

**TO:** CNWRA Element Managers

**FROM:** Bruce Mabrito, Director of Quality Assurance 

**SUBJECT:** Software Control Board Meeting

**REFERENCE:** Technical Operating Procedure-018, Paragraph 4.5

---

A CNWRA Software Control Board (SCB) Meeting took place December 30, 1996 in Conference Room A237 with the following individuals in attendance: English Percy, GHGC Element Manager; Larry McKague, GLGP Element Manager; Narasi Sridhar, EBS Element Manager; Asad Chowdhury, RDCO Element Manager; Mark Jarzempa (representing Robert Baca as) acting PA Element Manager; Budhi Sagar, Technical Director; Henry Garcia, Director of Administration; Wesley Patrick, President of CNWRA; and Bruce Mabrito, Director of Quality Assurance. The purpose of the SCB meeting was to review documentation for two pieces of scientific and engineering software: MAGNUM-2D, Version 3.2 and CHAINT, Version 2.3.

The two notebooks with MAGNUM-2D and CHAINT objective evidence (meeting TOP-018 requirements) were shown to the SCB and copies of the respective Software Summary Forms, Software Release Notices, and notification that each code had been placed under version control was distributed to each of the SCB members present. There was discussion of how MAGNUM-2D and CHAINT both fit into the overall PA approach and that they will not become a direct integral part of the TPA software. There was agreement that MAGNUM-2D and CHAINT should be controlled as CNWRA scientific and engineering software and they will be added to the CNWRA Master List of Scientific and Engineering Software.

No other issues were discussed at this CNWRA SCB meeting. If there are any questions, please contact me at ext. 5149.

cc: W. Patrick  
CNWRA Directors  
P. Starkweather  
L. Hearon/QA Records 305

To: Bruce Mabrito at CNWRA-OS2  
CC: Linda Hearon at CNWRA-OS2  
CC: Robert Brient at CNWRA-OS2  
CC: Henry Garcia at CNWRA-OS2  
From: Pat Starkweather  
Subject: Version Control: Magnum-2d  
12-13-96 09:46 AM

Mr. Mabrito;

Herewith notification that an S&E Software code has been placed under Version Control in accordance with TOP-018.

**Details**

Program Name: Magnum-2D  
Date Entered: 13 December 1996  
Control Method: SCCS  
Location: mammoth:/lan/rcs/magnum2d

This code included only one source code file, "magnum.f".

Pat Starkweather  
x-5238

```

###  ###  ###  ####  ###  #  #  #  ###  ###
#  #  #  #  ##  ##  #  #  #  #  #  #  #
#  ##  ##  ##  #  #  ##  #  #  #  ##  ##
#  ###  #  #  #  ##  #  #  #  #  #  ##  #
#  #  #  #####  #  #  #  ##  #  #  #  #  #
#  #  #  #  ##  ##  #  #  #  #  #  #  #
#  #  ##  ##  ####  #  ##  #####  #  #

```

VERSION 3.2 (REVISION 1.)

USER = BACA

I.D. = 1408961411

1 MAGNUM PARAMETER VALUES

parameter	value	explanation
maxe	11000	max number of elements
maxp	30000	max number of nodes
maxmat	25	max materials types
nmax	300	dimension for eq array
ntt	25	max time intervals
maxh	225	max heat source elements
maxt	50	max thermal load data points
maxsr	15	max source file per binary i/o file
mipf	5	max input binary files

MAGNUM - Test case for slanted material boundaries

TABLE 1. - PRINCIPAL PROBLEM SPECIFICATIONS

SIMULATION MODE (0-TIME VARYING, .NE.0-STEADY STATE).....	1
HEAT TRANSPORT (0-ISOTHERMAL, .NE.0-NONISOTHERMAL).....	0

8/10

```

GROUNDWATER FLOW (0-HYDROSTATIC, 1-NEUTRAL FLUID FLOW)..... 1
NUMBER OF NODES..... 6086
NUMBER OF ELEMENTS..... 1971
NUMBER OF ROCK TYPES..... 2
INITIAL CONDITION INPUTS (0-UNIFORM, 1-SPATIALLY VARYING) 0
INPUT DATA PRINT CONTROL (0-PARTIAL ECHO, 1-TOTAL ECHO... 0
DIAGNOSTIC PRINTOUT (0-NO ACTION,1-CONVERGENCE INFO)..... 0
VELOCITY PRINT CONTROL (0-SUPPRESS PRINT,1-PRINT VEL).... 1
RESULTS FILE WRITE CONTROL (0-AT TIME STEP,1-AT PRT FREQ) 1
COORD SYSTEM (0-CARTESIAN, 1-AXISYMMETRIC ABOUT X=0.).... 0

INPUT RESTART FILE (LU)..... 0
RESULTS FILE (LU)..... 13
OUTPUT RESTART FILE (LU)..... 0
INPUT GEOMETRY FILE (LU)..... 10
OUTPUT GEOMETRY FILE (LU)..... 0
STREAM/PATHLINE DATA FILE (LU)..... 12
TEMPERATURE INPUT FILE (TEMPERATURE INACTIVE)..... 0
INITIAL CONDITION OUTPUT FILE (FORMATTED)..... 0
SCALE FACTOR FOR X COORDINATES..... 1.00
SCALE FACTOR FOR Y COORDINATES..... 1.00
LEFT BOUNDARY FOR QUAD ELEMENTS..... 0.00
RIGHT BOUNDARY FOR QUAD ELEMENTS..... 0.00
TOP BOUNDARY FOR QUAD ELEMENTS..... 0.00
BOTTOM BOUNDARY FOR QUAD ELEMENTS..... 0.00
START TIME (YEARS)..... 0.00
WEIGHTING FACTOR..... 1.8
DENSITY/VISCOSITY REFERENCE TEMP (>0.05 TO IMPLEMENT).... 20.0

```

TIME CONTROL AND RUN SPECIFICATIONS

NUMBER OF TIME STEPS	PRINT INTERVAL	TIME STEP	TIME(YEARS)
1	1	1000.	1000.

MAGNUM2D, VERSION 3.2, THE RUN I.D. IS 1408961411, THE USER IS BACA , PAGE 2

TABLE 5. - SPECIFIED BOUNDARY CONDITIONS

NUMBER OF SPECIFIED BOUNDARY NODES 148

NODE TYPE	T(C)	H(M)
6082 (01)	20.000	0.000
6083 (01)	20.000	0.000
6084 (01)	20.000	0.000
6086 (01)	20.000	0.000
6073 (01)	20.000	0.000
6074 (01)	20.000	0.000



9/10

6075 (01)	20.000	0.000
6077 (01)	20.000	0.000
6078 (01)	20.000	0.000
6080 (01)	20.000	0.000
6055 (01)	20.000	0.000
6056 (01)	20.000	0.000
6057 (01)	20.000	0.000
6059 (01)	20.000	0.000
6060 (01)	20.000	0.000
6062 (01)	20.000	0.000
6063 (01)	20.000	0.000
6065 (01)	20.000	0.000
6034 (01)	20.000	0.000
6035 (01)	20.000	0.000
6036 (01)	20.000	0.000
6038 (01)	20.000	0.000
6039 (01)	20.000	0.000
6041 (01)	20.000	0.000
6004 (01)	20.000	0.000
6005 (01)	20.000	0.000
6006 (01)	20.000	0.000
6008 (01)	20.000	0.000
6009 (01)	20.000	0.000
6011 (01)	20.000	0.000
5968 (01)	20.000	0.000
5969 (01)	20.000	0.000
5970 (01)	20.000	0.000
5972 (01)	20.000	0.000
5973 (01)	20.000	0.000
5975 (01)	20.000	0.000
5926 (01)	20.000	0.000
5927 (01)	20.000	0.000
5928 (01)	20.000	0.000
5930 (01)	20.000	0.000
5931 (01)	20.000	0.000
5933 (01)	20.000	0.000
5878 (01)	20.000	0.000
5879 (01)	20.000	0.000
5880 (01)	20.000	0.000
5882 (01)	20.000	0.000
5883 (01)	20.000	0.000
5885 (01)	20.000	0.000
5824 (01)	20.000	0.000
5825 (01)	20.000	0.000

TABLE 5. - SPECIFIED BOUNDARY CONDITIONS

NODE TYPE	T(C)	H(M)
5826 (01)	20.000	0.000
5828 (01)	20.000	0.000
5829 (01)	20.000	0.000
5831 (01)	20.000	0.000
5764 (01)	20.000	0.000
5765 (01)	20.000	0.000
5766 (01)	20.000	0.000
5768 (01)	20.000	0.000
5769 (01)	20.000	0.000
5771 (01)	20.000	0.000

5701 (01)	20.000	0.000
5702 (01)	20.000	0.000
5703 (01)	20.000	0.000
5705 (01)	20.000	0.000
5629 (01)	20.000	0.000
5630 (01)	20.000	0.000
5631 (01)	20.000	0.000
5633 (01)	20.000	0.000
5634 (01)	20.000	0.000
5636 (01)	20.000	0.000
5557 (01)	20.000	0.000
5558 (01)	20.000	0.000
5559 (01)	20.000	0.000
5561 (01)	20.000	0.000
5482 (01)	20.000	0.000
73 (01)	20.000	0.500
72 (01)	20.000	0.500
71 (01)	20.000	0.500
70 (01)	20.000	0.500
69 (01)	20.000	0.500
68 (01)	20.000	0.500
67 (01)	20.000	0.500
66 (01)	20.000	0.500
65 (01)	20.000	0.500
64 (01)	20.000	0.500
63 (01)	20.000	0.500
62 (01)	20.000	0.500
61 (01)	20.000	0.500
60 (01)	20.000	0.500
59 (01)	20.000	0.500
58 (01)	20.000	0.500
57 (01)	20.000	0.500
56 (01)	20.000	0.500
55 (01)	20.000	0.500
54 (01)	20.000	0.500
53 (01)	20.000	0.500
52 (01)	20.000	0.500
51 (01)	20.000	0.500
50 (01)	20.000	0.500
49 (01)	20.000	0.500

10/10