Software Release Notice
Developed or Modified Software

1. Software Name: **FLOW-3D® YMUZ2**	Version: 1.0

2. Software Function: To model in-drift heat transfer processes related to radiation and moisture transport specific to the Yucca Mountain drift*

3. Summary of Actions:
❏ New Software   ■ Update to Existing Software   ❏ Software Retirement

4. Software Development

4a. Software Requirements Description (SRD)   Date Approved:1/19/06_____
4b. Software Development Plan (SDP)§   Date Approved:§
4c. Software Change Report (SCR) Nos:

_____

4d. User's Guide ¶   Date TBD ¶ (see remarks)
                                    Approved_____
4e. Enclosed: ❏ Copy of Program Title Block
                              ■ Sample Source Code Header Block (Enclosure 1)

Developer: Steve Green (Div. 18) C. Manepally (Div. 20 contact)	Date:10/12/06

Remarks:
*Radiation and Moisture Transport Modules were added to **FLOW3D®** Version 9.0 and the modified software is now called **FLOW-3D® YMUZ2.**
§ Scientific Notebook 536E - See Enclosure 2
¶User's Guide will be completed in FY07.

5. Software Installation

5a. Computer Platform(s):   5b. Operating System(s):   5c. Programming Language(s):
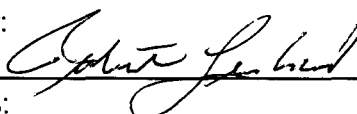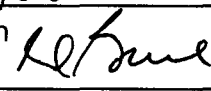Desktop PC   Windows XP   FORTRAN

5d. Installation Testing: ■ Passed+   Testing Performed on: Windows XP
Description of Testing Performed:

5e. Archive Copy: ■ Enclosed+   ❏ Not Available, Why:

Installation Performed by: S. Green (Div. 18)	Date: Unknown

Remarks: + The validation report, Green and Manepally (2006), provides evidence of installation and acceptance testing for the **FLOW-3D® YMUZ2** version. See Enclosure 3.

6. Software Assessment

6a. Acceptance Testing:
    ❑ Enclosed   ☑ Documented in Scientific Notebook No. _SJ6E_
                          ❑ Documented in SCRs (see above)_____

6b. Validation Status:
    ■ Full Validation*   ❑ Limited Validation   Date of Validation: _8/2006_
    ❑ Not Validated, Explain:

Software Developer: S. Green (Div. 18) C. Manepally (Div. 20 contact)	Date: 10/24/06

Remarks:
*Validation of the modules (Radiation and Moisture Transport Modules) added to the commercial version of *FLOW3D*® Version 9.0 is described in Chapter 7 and 8 of Green and Manepally, (2006). In Green and Manepally (2006), *FLOW-3D*® *YMUZ2* is referred to as the modified version of *FLOW3D*® version 9.0.
Green, S. and C. Manepally. "Software Validation Report for FLOW-3D® Version 9.0." San Antonio: CNWRA. 2006.

7. Approval

Manager:	Date 10/23/2006
Remarks:	

7. QA Verification

SRN Number: _408_

Software Custodian	Date: 10/24/2004
Remarks:	

TOP–6–2 (12/2004)

The modified and new subroutines, INCLUDE files and modules have a header block as follows:

```
c MOIST RADIATION MOIST RADIATION MOIST RADIATION MOIST RADIATION MOIST
RADIATION
c  This routine has been modified from the FLOW-3D Version 9.0 standard release
c  for the purposes of the MOISTURE TRANSPORT MODULE and RADIATION MODULE
c
c  Project Number 20.06002.01.262
c  Customer: Center for Nuclear Waste Regulatory Analysis
c  Requirements Description Document:
c      SOFTWARE REQUIREMENTS DESCRIPTION FOR THE MODIFICATION OF FLOW-3D
YMUZ2
c      January, 2006
c
c
c  Software Description Document:
c      Description of the Moisture Transport Module and Radiation Module
c      for FLOW-3D YMUZ2.
c
c  Summary:
c      This routine is a modified version of the cbusr.f file packaged with
c      the standard release of FLOW-3D Version 9.0 to be used in FLOW-3D YMUZ2.
c      The original filename is retained
c      because thes code segments are 'INCLUDEd' into the pertinent FLOW-3D version 9.0
c      subroutines.
c
c
c      Steve Green
c      October 2006
c
c  Revision History
c    DATE      AUTHOR        DESCRIPTION
c  October 2006   S. T. Green    Initial release
c
```

-----Original Message-----
From: Robert Brient [mailto:rbrient@cnwra.swri.edu]
Sent: Monday, October 23, 2006 12:53 PM
To: 'Chandrika Manepally'
Subject: FW: FLOW-3D YMUZ2

1. Chandrika:

You can refer to the notebook on the Software Release Notice when it asks about the SDP.

Bob Brient

Director, Quality Assurance

Geosciences and Engineering Division

Southwest Research Institute

(210) 522-5537

(210) 522-6081 fax

-----Original Message-----
From: Steve Green [mailto:steve.green@swri.org]
Sent: Monday, October 23, 2006 10:38 AM
To: cmanepally@cnwra.swri.edu; rbrient@cnwra.swri.edu; 'Randolph Folck'
Cc: 'Steve Green'; 'Maria Padilla'; 'Robert Lenhard'
Subject: RE: FLOW-3D YMUZ2

All: Randy Folck visited with me last Friday, Oct 20, 2006 about this issue. SN#536E contains a description of the foundations and the development of this software. Randy indicated that this notebook may serve as a plan as well as a record of the development process.

Steve Green
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Southwest Research Institute
6220 Culebra Rd.
P.O. BOx 28510
San Antonio, Texas 78228
210-522-3519 (voice)
210-681-9661 (fax)

ENCLOSURE 3

-----Original Message-----
From: Robert Brient [mailto:rbrient@cnwra.swri.edu]
Sent: Monday, October 16, 2006 7:29 AM
To: cmanepally@cnwra.swri.edu
Subject: RE: Flow 3D

Chandrika:

You can claim that the validation report provides evidence of installation and acceptance testing for the YMUZ2 version. You might note that when the validation report refers to the odified version of Flow 3D version 9.0, it is the same as YMUZ2.

Bob Brient

Director, Quality Assurance

Geosciences and Engineering Division

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(210) 522-5537

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-----Original Message-----
From: Chandrika Manepally [mailto:cmanepally@cnwra.swri.edu]
Sent: Friday, October 13, 2006 6:25 PM
To: rbrient@cnwra.swri.edu
Subject: RE: Flow 3D

Bob

I need your assistance in filling out the SRN. Please review the attached document.

I'm not sure of the installation and acceptance test (Items 5d and 6a). As you know, 2 additional modules were added to commercial version (**FLOW3D** version 9.0)and now we are calling the new version **FLOW3D-YMUZ2**. We did not perform installation and acceptance test separately for the new modules. We have documentation for installation and acceptance testing for **FLOW3D** version 9.0.

We may have some discussion in Steve Green's scientific notebook (536E) that discusses the installation procedure, but nothing specifically that is describes these tests.

Thank you in advance,

Chandrika