***CACIE Tool #10.2c* & #11.2c*– Xprt-mb Input Generator (******xprt-mb\_input\_gen.f)***

**Version** **1.0**

**QA**: **TEST** or **NA** or **QA**

1. **Description and Purpose**

One or two paragraphs describing the tool’s function and purpose.

The Xprt-mb Input Generator tool reads an SS input file and modifies it for the Rad mass balance simulation

1. **Functional Requirements**

The functional requirements of the tool will be documented in this section. Each requirement will have an ID, such as: FR-N, where N starts at 1 and increments for each Functional Requirement. Each of the Functional Requirement IDs will have a corresponding test ID listed in the RTM.

The functional requirements for the Xprt-mb Input Generator tool are as follows:

FR-1: read in arguments [irad] and [ibuff]

FR-2: find last year for rad sources from rads[1 / 2]-src.card

FR-3: read in SS input file and revise for rad MB input

FR-4: add Solute/Fluid and Solute/Porous Media Cards

FR-5: replace Initial Conditions Card

FR-6: replace SS RET with transient RET

FR-7: replace SS output control with rad MB output control

FR-8: replace SS surface flux with rad MB surface flux

FR-9: get number of sources

FR-10: add radionuclide sources

FR-11: add aqueous-only sources

FR-12: generate input\_XPRT\_MB[1 / 2]\_[with\_buffer / no\_buffer] file

1. **Software Requirements Specifications**

The software requirements specification of the tool will be documented in this section.

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1. **Software Design Description**

The software design description of the tool will be documented in this section. The results of a Code Walkthrough with an independent third party will be summarized in this section.

Arguments:  
argv1: rad group [irad]  
argv2: buffer switch [ibuff] (if included [i.e., two arguments], ibuff = 1 and aqueous-only buffer will be read; if not included [only one argument], aqueous-only buffer will not be read)

Inputs:  
/ss/input\_SS  
../ret/ca\_tr\_boundary\_card.dat  
../sources/buffer-aq-src.card

if irad == 1:  
rad1\_Mass\_Balance\_Output\_Control.dat  
rad1\_surface\_flux.txt  
../sources/rads1-src.card

if irad == 2:  
rad2\_Mass\_Balance\_Output\_Control.dat  
rad2\_surface\_flux.txt  
../sources/rads2-src.card

Outputs:  
if irad == 1 and ibuff ==1:  
input\_XPRT-MB1\_with\_buffer

if irad ==1 and ibuff == “”:  
input\_XPRT-MB1\_no\_buffer

if irad == 2 and ibuff ==1:  
input\_XPRT-MB2\_with\_buffer

if irad ==2 and ibuff == “”:  
input\_XPRT-MB2\_no\_buffer"

.sh: create\_rad\_MB\_input\_file.sh

* ../../tools/ca-modinput/xprt-mb\_input\_gen.exe $1 $2
* Command line variable 1 is rad group (1 or 2).
* Command line variable 2 is included only if there is an aqueous-only buffer for the model. If so, enter the keyword "buffer".

1. **Requirements Traceability Matrix**

A requirements traceability matrix for the tool will be documented in this section. At a minimum, the matrix will include IDs of: Functional Requirements and the corresponding Acceptance Test, along with an indication of the test result (Pass/Fail).

Table 1 presents the requirements traceability matrix for the Xprt-mb Input Generator tool.

| **Table 1 Xprt-mb Input Generator Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1 |  |  |
| FR-2 |  |  |
| FR-3 |  |  |
| FR-4 |  |  |
| FR-5 |  |  |
| FR-1 |  |  |
| FR-2 |  |  |
| FR-3 |  |  |
| FR-4 |  |  |
| FR-5 |  |  |

1. **Test Plan and Cases**

The test plan for the tool will be documented in this section. Each test will have a unique ID and criteria for determining if the test result is pass or fail. The TEST ID will be referenced in the RTM and ATR. An installation test, labeled **IT-1**, will be used by the Tool Runner to confirm the version of the tool being used is running correctly before launching it with the user’s parameters.

The Unit Testing done on the tool will be documented here, also.

The test plan for the Xprt-mb Input Generator tool is as follows.

| **Table 7. Xprt-mb Input Generator Tool Test Plan** | | |
| --- | --- | --- |
| **TEST ID** | **Test Case** | **Test Result (Pass/Fail)** |
| IT-1 | Installation Test |  |
| ATC-X |  |  |
| ATC-X |  |  |

See attachments for the acceptance test case test logs.

1. **Acceptance Test Report**

The test report will state whether the tool is qualified for use, summarize test case results, and report all resolved incidents and resolution of unresolved incidents.

1. **User Guide**

A guide for using the tool will be documented in this section.

xprt-mb\_input\_gen.f: