**CACIE Tool #10.0 & #11.0 & #18.2** – ***Rad Output Control Card (OC\_rad\_gen.exe & OC\_rad\_cie\_gen.exe)***

**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 Rad Output Control Card tool generates the output control card for the rad transport simulations.

**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 rad output control card tool are as follows:

FR-1: Get command line arguments

FR-2: Open input files

FR-2: Determine grid and quadrant center coordinates (minimum and maximum x, minimum and maximum y (input.sij); calculate left, mid and right x and bottom, mid and top y)

FR-3: Get source site list (rads1-src.ref)

FR-4: Get source site centroids (ehsit\_01122018\_centroid.prn)—log to Output\_Control\_check.dat

FR-5: Match ehsite XYs to site XYs if applicable

FR-6: Get model x,y values (input.nij) and calculate i,j values for centroids and log to Output\_Control\_check.dat

FR-7: Log to Output\_Control\_check.dat if site not included in ehsite list

FR-8: Check centroid relative to closest i,j; log to Output\_Control\_check.dat if greater than tolerance limit

FR-9: Calculate left, center, and right i; calculate bottom, center, and top j

FR-10: Get top active layer node (k) for model (input.top)—NOTE: some type of adjustments are made depending on if remainder of elevations/20 <0.01

FR-11: Read plot times (plot\_times.txt)

FR-12: Write to Output Control Card (\_Output\_Control.dat)

FR-13: Write to Mass Balance Run Output Control Card (\_Mass\_Balance\_Output\_Control.dat)

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:  
model name [arg1]  
switch for rad1/rad2 [arg2]

Input files:   
../sources/rads1-src.ref  
../../commondata/ehsit\_01122018\_centroid.prn  
../build/input.nij  
../build/input.top  
plot\_times.txt  
../build/input.sij

Output files:  
[arg2]//\_Output\_Control\_check.dat   
[arg2]//\_Output\_Control.dat  
[arg2]//\_Mass\_Balance\_Output\_Control.dat

.sh: runTR\_OC.sh

* ../../tools/ca-radoccard/OC\_rad\_cie\_gen.exe $1 $2
* Command line variable 1 is model name. Used in comments only.
* Command line variable 2 is rad/cie group (1 = rads1, 2 = rads2, 3 = cie).

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 Rad Output Control Card tool.

| **Table 1. Rad Output Control Card Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1 |  |  |
| FR-2 |  |  |
| FR-3 |  |  |
| FR-4 |  |  |
| FR-5 |  |  |
| FR-6 |  |  |
| FR-7 |  |  |
| FR-8 |  |  |
| FR-9 |  |  |
| FR-10 |  |  |
| FR-11 |  |  |
| FR-12 |  |  |

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 Rad Output Control Card tool is as follows.

| **Table 2. Rad Output Control Card 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.