**CACIE Tool #16.0a –** **Source by Site-Year *(******src\_by\_siteyr.exe)***

***CACIE Tool #16.0b –*** ***Compare Source by Site-Year (******comp\_src\_input\_siteyr.exe)***

***CACIE Tool #16.0c – Modify Source Locations (******srcloc\_modify.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.

Three executables:

1. src\_by\_siteyr.exe: read Source Card input from STOMP input file and output in a year-by-year format.
2. comp\_src\_input\_siteyr.exe: read output of src\_by\_siteyr.exe for two source files and compare by site/year.
3. srcloc\_modify.exe: read src card input from Mark's script and adjust locations of selected source nodes (input file - "src\_node\_changes.dat").
4. **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 Source by Site-Year tool are as follows:

FR-1a: read in infile (arg1)

FR-2a: get Source Card information (site, aqueous, solute)

FR-3a: aqueous: rate2-rate1 > 1E-20 or year2 > 2071—identify problem

FR-4a: for years 1944 to 2071 do something?

FR-5a: solute: get rad name; rate2-rate1 > 1E-20 or year2 > 2071—identify problem

FR-6a: for years 1944 to 2071 do something?

FR-7a: generate output file: arg1 + “\_by\_siteyr.dat”

The functional requirements for the Compare Source by Site-Year tool are as follows:

FR-1b: read in both source files (arg1 and arg2)

FR-2b: for each site and radionuclide: calculate the difference between the two source files for cell ? and total ? by year

FR-3b: generate output file: “comp\_” + arg1 + arg2 + “.dat” that summarized the calculated differences

The functional requirements for the Modify Source Locations tool are as follows:

FR-1c: read in input.top file

FR-2c: get inod,jnod,knod values

FR-3c: read in src\_node\_changes.dat

….

1. **Software Requirements Specifications**

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

1. FORTRAN
2. **Software Design Description**
3. 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.

08a – Source by Site-Year —  
Arguments:  
input file [arg(1)]

Input:  
arg(1) file

Output:  
arg(1)\_by\_siteyr.dat

08b – Compare Source by Site-Year —  
Arguments:  
input file [arg(1)]  
input file [arg(2)]

Output:  
comp\_arg1\_arg\_2.dat

08c – Modify Source Locations —  
Arguments:  
input file [arg(1)]

Input:  
arg(1) file  
input.top  
src\_nod\_changes.dat

Output:  
arg(1)\_mod.card

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 Source by Site-Year tool.

| **Table 1. Source by Site-Year Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1a |  |  |
| FR-2a |  |  |
| FR-3a |  |  |
| FR-4a |  |  |
| FR-5a |  |  |
| FR-6a |  |  |
| FR-7a |  |  |

Table 2 presents the requirements traceability matrix for the Compare Source by Site-Year tool.

| **Table 2. Compare Source by Site-Year Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1b |  |  |
| FR-2b |  |  |
| FR-3b |  |  |

Table 3 presents the requirements traceability matrix for the Modify Source Locations tool.

| **Table 3. Modify Source Locations Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1c |  |  |
| FR-2c |  |  |
| FR-3c |  |  |
| … |  |  |

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 Source by Site-Year tool is as follows.

| **Table 4. Source by Site-Year Tool Test Plan** | | |
| --- | --- | --- |
| **TEST ID** | **Test Case** | **Test Result (Pass/Fail)** |
| IT-1 | Installation Test |  |
| ATC-X |  |  |
| ATC-X |  |  |

The test plan for the Compare Source by Site-Year tool is as follows.

| **Table 5. Compare Source by Site-Year Tool Test Plan** | | |
| --- | --- | --- |
| **TEST ID** | **Test Case** | **Test Result (Pass/Fail)** |
| IT-1 | Installation Test |  |
| ATC-X |  |  |
| ATC-X |  |  |

The test plan for the Modify Source Locations tool is as follows.

| **Table 6. Modify Source Locations Tool Test Plan** | | |
| --- | --- | --- |
| **TEST ID** | **Test Case** | **Test Result (Pass/Fail)** |
| IT-1 | Installation Test |  |
| ATC-X |  |  |
| ATC-X |  |  |

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.