**CACIE Tool #39**– **CIE 2018 STOMP Input File Generator Tool**

**xprt\_2018\_input\_gen\_cie.f**

**Version** **1.0**

**QA**: **QA**

# Description and Purpose

The CIE 2018 STOMP Input File Generator Tool generates the 1943-2018 STOMP transport input file. A STOMP input file contains several cards, each providing specific information on components needed to execute a flow and transport simulation. For instance, the Initial Conditions Card provides initial primary variable and solute concentration values for each grid cell, and the Boundary Conditions Card provides these values at the boundaries of the computational domain. Typically, the data sets used to build the individual cards included in the generated STOMP transport input file are extracted from different source files. The CIE 2018 STOMP Input File Generator Tool accesses information from the following files:

* input\_cie\_SS in the /ss/ directory
* cie\_tr\_boundary\_card.dat in the /ret/ directory
* cie\_Output\_Control.dat in the /trOCcards/ directory
* cie\_surface\_flux.txt in the /trsurfcards/ directory
* cie-src.card in the /sources/ directory
* buffer-aq-src.card in the /sources/ directory (if the model has a buffer zone)
* Material properties for the 200 West Area
* Material properties for the 200 East Area
* Solute properties for the CIE radionuclides and chemicals (H-3, I-129, Sr-90, Tc-99, U, Cr, NO3, CN)

The STOMP input file generated by this tool is ***input\_CIE\_XPRT\_2018\_XX\_buffer***, where ***XX*** is “with” if the model has a buffer zone or “no” is the model does not have a buffer zone.

# Functional Requirements

The following are the functional requirements (FR) of the CIE 2018 STOMP Input File Generator Tool:

FR-1: Parse the following command line arguments: model area (200E or 200W), buffer zone switch (buffer if the model has a buffer zone, nobuffer if not) and material and solute transport property file locations/names.

FR-2: Parse the text corresponding to the Simulation Title Card from the ***input\_cie\_SS*** file (generated by the CIE Steady State STOMP Input File Generator tool and located in the /ss/ directory), replacing the second Simulation Note Line (“Steady-state simulation”) with ”CIE Transport Simulation (1943-2018)” and write text to the output file.

FR-3: Generate the Solution Control Card as follows:

* Determine the first source year (XXXX) and the end source year (YYYY) of aqueous source input for the model from /sources/cie-src.card and /sources/buffer-aq-src.card (if the model has a buffer zone).
* If the end source year is prior to 2018 (YYYY < 2018), write the following text to the Solution Control Card in the output file:

Restart File, ../ss/restart,

Water w/ Patankar Vadose Transport Courant,1.0,

3,

1943,year,XXXX,year,1.0E-08,year,0.1,year,1.25,16,1.0E-6,

XXXX,year,YYYY,year,1.0E-08,year,0.01,year,1.25,16,1.0E-6,

YYYY,year,2018,year,1.0E-08,year,0.1,year,1.25,16,1.0E-6,

1000000,

0,

* If the end source year is 2018 or later (YYYY ≥ 2018), write the following text to the Solution Control Card in the output file:

Restart File, ../ss/restart,

Water w/ Patankar Vadose Transport Courant,1.0,

2,

1943,year,XXXX,year,1.0E-08,year,0.1,year,1.25,16,1.0E-6,

XXXX,year,2018,year,1.0E-08,year,0.01,year,1.25,16,1.0E-6,

1000000,

0,

* If there are no aqueous source inputs between 1943 and 2018, write the following text to the Solution Control Card in the output file:

Restart File, ../ss/restart,

Water w/ Patankar Vadose Transport Courant,1.0,

1,

1943,year,2018,year,1.0E-08,year,0.1,year,1.25,16,1.0E-6,

1000000,

0,

FR-4: Parse the text corresponding to the following cards from the ***input\_cie\_SS*** file (generated by the CIE Steady State STOMP Input File Generator tool and located in the /ss/ directory) and write the text to the output file:

* Grid Card
* Inactive Nodes Card
* Rock Soil Zonation Card
* Mechanical Properties Card
* Hydraulic Properties Card
* Saturation Function Card
* X-Aqueous Relative Permeability Card
* Y-Aqueous Relative Permeability Card
* Z-Aqueous Relative Permeability Card

FR-5: Generate the Solute/Fluid Interaction Card using data from the CIE solute transport properties file. The location and name of this file are read as a command line argument.

FR-6: Generate the Solute/Porous Media Interaction Card using data from two files: 1) the material transport properties file for the 200 East area if the model is in 200 East or the 200 West area if the model is in 200 West and 2) the CIE solute transport properties file. The locations and names of these files are read as command line arguments.

* There are two equations to calculate gravel corrections, based on solute Kd values.

*Kd*(gc) = (1-f) *Kd*(<2 mm) + (*f*) 0.23 *Kd*(<2 mm)

Equation 1 – Equation for solutes with Kd values greater than or equal to 10 mL/g

*Kd*(gc) = (1-*f*) *Kd*(<2 mm)

Equation 2 – Equation for solutes with Kd values less than 10 mL/g

where *Kd*(gc) is the gravel-corrected *Kd* value, *f* is the weight fraction of gravel, and *Kd*(<2 mm) is the *Kd* value determined using <2 mm material.

FR-7: The significant figures displayed for the dispersivity values in the Solute/Porous Media Interaction Card are consistent with significant figures in the source data file, i.e.,

* Formation, X.XX, m, X.XXX, m

FR-8: Generate the Initial Conditions Card with zero initial conditions.

FR-9: Generate the Boundary Conditions Card from the /ret/cie\_tr\_boundary\_card.dat file. The Boundary Conditions Card will be identical to cie\_tr\_boundary\_card.dat except for increasing the number of boundary conditions by one and adding the following lines at the end of the Boundary Conditions Card:

file, input.bot, Dirichlet Aqueous, outflow, outflow, outflow, outflow, outflow, outflow, outflow, outflow,

1,

1943,year,101325,Pa,,,,,,,,,,,,,,,,,

FR-10: Insert Output Control Card from /trOCcards/cie\_Output\_Control.dat, replacing No Restart with Final Restart.

FR-11: Generate the Surface Flux Card as follows:

* Insert /trsurfcards/cie\_surface\_flux.txt.

FR-12: Generate Source Card as follows:

* Read number of source domains in /sources/cie-src.card.
* Read number of source domains in /sources/buffer-aq-src.card (if the model has a buffer zone).
* Insert /sources/cie-src.card, replacing the number of source domains with the sum of source domains in the source and buffer (if included) zones.
* Insert /sources/buffer-aq-src.card (if the model has a buffer zone).

FR-13. Save the output file (i.e., the complete STOMP transport input file, which includes all the required cards).

# Software Requirements Specifications

FORTRAN, Linux Intel(R) Fortran Intel(R) 64 Compiler

Compiler Options: -o OutputFileName

Special Considerations: None

# Software Design Description

Flow:

The CIE 2018 STOMP Input File Generator Tool performs the following steps:

1. Declare variables – Character and array variables are declared.
2. Read command line arguments – See the list defined below.
3. Assign input files – Based on the first two command line arguments, assign the input files needed for code execution.
4. Open the output file.
5. Read material properties – Read material properties for either the 200 East or 200 West HSUs (based on the Area Command Line Argument).
6. Read solute properties – Read solute properties for the CIE radionuclides and chemicals.
7. Determine times – Find first and last years for sources (both aqueous and solute), first for the model source domain, followed by the model buffer, if the model has a buffer.
8. Open the input\_cie\_SS file – Portions of this file will be copied to the output file generated by the CIE 2018 STOMP Input File Generator Tool (see list in FR-4).
9. Write Simulation Title Card – All lines except the last line are from input\_cie\_SS; the last line identifies the simulation (CIE Transport Simulation and model years).
10. Write Solution Control Card – Determine the number of execution time periods based on first and last years for aqueous source inputs and write the Solution Control Card.
11. Write the following cards, which are copied from input\_cie\_ss:
    1. Grid Card
    2. Inactive Nodes Card
    3. Rock/Soil Zonation Card
    4. Mechanical Properties Card
    5. Hydraulic Properties Card
    6. Saturation Function Card
    7. X-Aqueous Relative Permeability Card
    8. Y-Aqueous Relative Permeability Card
    9. Z-Aqueous Relative Permeability Card
12. Write Solute/Fluid Interaction Card – Generate Solute/Fluid Interaction Card lines using solute properties read in Step 6.
13. Write Solute/Porous Media Interaction Card – Calculate gravel-corrected Kd values and generate Solute/Porous Media Interaction Card lines using material properties read in Step 5 and solute properties read in Step 6.
14. Write Initial Conditions Card – Zero initial conditions.
15. Write Boundary Conditions Card – Copy lines from the cie\_tr\_boundary\_card.dat file, increasing the number of boundary conditions by one. Then add the boundary condition for the base of the model.
16. Write Output Control Card – Copy lines from the cie\_Output\_Control.dat, replacing the last line with Final Restart, ,
17. Write Surface Flux Card – Copy lines from the cie\_surface\_flux.txt.
18. Determine number of source domains – Read number of source domains from cie-src.card. If the model has a buffer area, read the number of source domains from buffer-aq-src.card and add to the number of source domains from the source area.
19. Write Source Card – Copy lines from cie-src.card, replacing the number of source domains with the total value calculated in Step 18. If the model has a buffer area, copy lines from buffer-aq-src.card.

Arguments:

Area – Area identifier (200E or 200W). Specifies whether the model is in 200 East or 200 West.

BufferSwitch – If there is an aqueous-only buffer for the model, enter the keyword buffer; otherwise enter the keyword nobuffer.

WMATTR – Path to the file that contains transport properties for 200 West hydrostratigraphic units.

EMATTR – Path to the file that contains transport properties for 200 East hydrostratigraphic units.

SOLTR – Path to the file that contains transport properties for the CIE radionuclides and chemicals (H-3, I-129, Sr-90, Tc-99, U, Cr, NO3, CN).

Input Files:

* input\_cie\_SS (/ss/ directory) – Steady state STOMP input file generated by the CIE Steady State STOMP Input File Generator tool.
* cie\_tr\_boundary\_card.dat (/ret/ directory) – RET transient boundary conditions.
* cie\_Output\_Control.dat (/trOCcards/ directory) – Output Control Card for the transport simulations.
* cie\_surface\_flux.txt (/trsurfcards/ directory) – Surface Flux Card for the transport simulations.
* cie-src.card (/sources/ directory) – Source Card lines for the model source zone.
* buffer-aq-src.card (/sources/ directory) – Source Card lines for the model buffer zone (applicable only if the model has a buffer zone).
* Material properties for the 200 West Area (path read as Command Line Argument 3) – Transport properties for 200W hydrostratigraphic units.
* Material properties for the 200 East Area (path read as Command Line Argument 4) – Transport properties for 200E hydrostratigraphic units.
* Solute properties *(*path read as Command Line Argument 5) – Transport properties for the CIE radionuclides and chemicals.

Output Files:

The output file generated by this tool is a STOMP input for transport modeling for 1943 through 2018. There are two possible output file names depending on whether a model has a buffer zone:

input\_CIE\_XPRT\_2018\_with\_buffer – Model includes a buffer zone

input\_CIE\_XPRT\_2018\_no\_buffer – No buffer zone

Execution:

The following is the shell script configuration that will be passed as an argument to the Tool Runner for qualified runs:

{directory path to repository}/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe Area BufferSwitch WMATTR EMATTR SOLTR

Where:

Area = 200E or 200W  
BufferSwitch = buffer or nobuffer  
WMATTR – Path and filename for transport properties for 200 West hydrostratigraphic units  
EMATTR – Path and filename for transport properties for 200 East hydrostratigraphic units.  
SOLTR – Path and filename for transport properties for the CIE radionuclides and chemicals.

Code Review:

A code review was performed by Sara Lindberg on 8/26/2020. No impacts to other repository tools or library dependencies were identified for the CIE 2018 STOMP Input File Generator tool.

# Requirements Traceability Matrix

The requirements traceability matrix for the CIE 2018 STOMP Input File Generator tool is presented in Table 1.

| Table 1  Requirements Traceability Matrix | | |
| --- | --- | --- |
| **Functional Requirement ID** | **Acceptance Test ID** | **Test Case** |
| QA Level | CACIE-xprt\_2018\_input\_gen\_cie-IT-1 | Installation Test |
| All | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | Check input formats for all STOMP Cards against the STOMP User Guide. |
| All | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | Copy and Paste the generated input file as ***input*** in the same directory. Modify the Simulation Title Card in the ***input*** file to run STOMP for only one-time step. This test ensures the ***input*** file will pass the STOMP syntax check. |
| FR-1 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | Check the screen output from this tool to see that the model area and the buffer zone switch were read correctly from the command line input. |
| FR-2 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | ~Simulation Title Card:   * Check that all lines except the last are identical to those in /ss/input\_cie\_SS. * Check that the last line is CIE Transport Simulation (1943-2018). |
| FR-3 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | ~Solution Control Card:   * Check that the Solution Control Card matches the format described in Functional Requirement FR-3. * Check that the first source year and end of aqueous source input date are correct for the test model. |
| FR-4 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | ~Grid Card, ~Inactive Nodes Card, ~Rock/Soil Zonation Card, ~Mechanical Properties Card, ~Hydraulic Properties Card, ~Saturation Function Card, ~X-Aqueous Relative Permeability Card, ~Y-Aqueous Relative Permeability Card, ~Z-Aqueous Relative Permeability Card:   * Check that these Cards are identical to those in /ss/input\_cie\_SS. |
| FR-1  FR-5  FR-6 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | ~Solute/Fluid Interaction Card, ~Solute/Porous Media Interaction Card:   * Check these Cards were populated correctly |
| FR-7 | CACIE-xprt\_2018\_input\_gen\_cie -AT1 through AT-2 | The significant figures displayed for the dispersivity values in the Solute/Porous Media Interaction Card are consistent with significant figures in the source data file, i.e.,  Formation, X.XX, m, X.XXX, m |
| FR-8 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | ~Initial Conditions Card:   * Check that the number of initial conditions is zero. |
| FR-9 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | ~Boundary Conditions Card:   * Check that these Cards are identical to those in /ret/cie\_tr\_boundary\_card.datexcept for number of boundary conditions and addition of a bottom pressure boundary. * Check that the number of boundary conditions is equal to the number of boundary conditions in /ret/cie\_tr\_boundary\_card.dat plus one. * Check that the bottom pressure boundary condition (as shown in Functional Requirement FR-8) is included. |
| FR-10 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | ~Output Control Card:   * Check that the Output Control Card is identical to cie\_Output\_Control.dat, except Final Restart instead of No Restart on the last line. |
| FR-11 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | ~Surface Flux Card:   * Check the Surface Flux Card (cie\_surface\_flux.txt) was inserted. |
| FR-12 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | ~Source Card:   * Check that the number of source domains is equal to the number of the source domains in the source zone if the model does not have a buffer zone, or equal to the number of source domains in the source zone plus the number of source domains in the buffer zone if the model has a buffer zone. * Check that the Source Card includes the lines from cie-src.card, except for number of source domains. * Check that the Source Card includes the lines from buffer-aq-src.card, except for number of source domains, if the model includes a buffer zone. |
| FR-13 | CACIE-xprt\_2018\_input\_gen\_cie -AT-1 through AT-2 | Check that the following cards are included in the generated STOMP transport input file:   * Simulation Title Card * Solution Control Card * Grid Card * Inactive Nodes Card * Rock Soil Zonation Card * Mechanical Properties Card * Hydraulic Properties Card * Saturation Function Card * X-Aqueous Relative Permeability Card * Y-Aqueous Relative Permeability Card * Z-Aqueous Relative Permeability Card * Solute/Fluid Interaction Card * Solute/Porous Media Interaction Card * Initial Conditions Card * Boundary Conditions Card * Output Control Card * Surface Flux Card * Source Card |

# Installation Test Plan and Acceptance Test Plan Cases

The installation test plan for CIE 2018 STOMP Input File Generator is presented in Table 2 and the acceptance test plan cases for CIE 2018 STOMP Input File Generator are presented in Table 3 and Table 4.

| Table 2  **CIE 2018 STOMP Input File Generator Installation Test Plan** | | | |
| --- | --- | --- | --- |
| **CIE 2018 STOMP Input File Generator Installation Testing**  **CACIE-CIE 2018 STOMP Input File Generator – IT-1** | | **Date:** | |
| **Tool Runner File Location for this test:**  **[PUT LINK TO THE DIRECTORY HERE]** | | **Test Performed By: [FIRST & LAST NAME]** | |
| **Testing Directory: [PROVIDE LINK TO TESTING DIRECTORY]** | | | |
| **Test Step** | **Test Instruction** | **Expected Result** | **Test Result  (Pass/Fail)** |
| Tools Code Repository Directory: | | | |
| Navigate to the testing directory | | | |
| 1 | Invoke Tool runner and test installation of the tool:  *./CACIE\_xprt\_2018\_input\_gen\_cie\_IT-1.sh* | | |
| 2 | Verify Tool Runner is invoked and executed. | Tool runner log file is generated (***xprt\_2018\_input\_cie\_install\_test.log***) |  |
| 3 | Verify tool is invoked and executed. | ***input\_CIE\_XPRT\_2018\_with\_buffer*** file is generated   Note: this file will be empty for install test |  |

| Table 3  **CIE 2018 STOMP Input File Generator Acceptance Test Plan Case 1** | | | |
| --- | --- | --- | --- |
| **CIE 2018 STOMP Input File Generator Acceptance Testing**  **CACIE-CIE 2018 STOMP Input File Generator – AT-1** | | **Date:** | |
| **Tool Runner File Location for this test:**  //olive/backups/CAVE/v4-4Test/ afarms\_xprt\_2018\_at1/cie-xprt-2018 | | **Test Performed By:** | |
| **Testing Directory:** //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at1 | | | |
| **Test Step** | **Test Instruction** | **Expected Result** | **Test Result  (Pass/Fail)** |
| 1 | Ensure the following files are in testing directory, as they are needed for the execution of the CIE 2018 STOMP Input File Generator tool:   * input\_cie\_SS in the /ss/ directory * cie\_tr\_boundary\_card.dat in the /ret/ directory * cie\_Output\_Control.dat in the /trOCcards/ directory * cie\_surface\_flux.txt in the /trsurfcards/ directory * cie-src.card in the /sources/ directory * buffer-aq-src.card in the /sources/ directory * The solute properties (***c*ie*\_solute\_transport\_props.prn***) are present in //olive/backups/CAVE/v4-4Test/matprops/ * Both 200W (CA\_***200W\_material\_transport\_props.prn***, in S:\PSC\!HANFORD\ICF\Prod\2WMATTR\v1.0\data) and 200E (CA\_***200E\_material\_transport\_props.prn***, in S:\PSC\!HANFORD\ICF\Prod\2EMATTR\v1.0\data) material property files are present in the appropriate directories   Other files to complete the Acceptance Test:   * The ***input.bot***, ***input.zone*** and ***estomp-run.sh*** files are present in the /cie-xprt-2018/ directory | The expected files are present in the listed directories. |  |
| 2 | Execute, using a Linux terminal, the shell script ***create\_cie\_xprt\_2018\_input.sh*** located in /cie-xprt-2018/ subdirectory of the testing directory. | Script executes. |  |
| 3 | Confirm the following file was generated by ***create\_cie\_xprt\_2018\_input.sh*** in the same directory:   * ***input\_CIE\_XPRT\_2018\_with\_buffer***   Other files generated in the same directories that are not a functional requirement are as follows:   * ***cie-xprt-2018\_afarms.log*** – A Farms log file * ***cie\_afarms\_input\_screen.log*** – A Farms screenout log file | The files were generated in the corresponding directories. |  |
| 4 | Using an application, such as DiffMerge, compare the provided ***input\_cie\_SS*** file with ***input\_CIE\_XPRT\_2018\_with\_buffer*** to determine the following: | | |
| 4.1 | Simulation Title Card:   * All lines except the last must be identical in both files * The last line of ***input\_CIE\_XPRT\_2018\_with\_buffer*** must read *CIE Transport Simulation (1943-2018),* | All but the last line of the Simulation Title Card in both files will be identical. The last line of ***input\_CIE\_XPRT\_2018\_with\_buffer*** must reads *CIE Transport Simulation (1943-2018),* |  |
| 4.2 | The following cards will be identical in both files:   * Grid Card * Inactive Nodes Card * Rock Soil Zonation Card * Mechanical Properties Card * Hydraulic Properties Card * Saturation Function Card * X-Aqueous Relative Permeability Card * Y-Aqueous Relative Permeability Card * Z-Aqueous Relative Permeability Card | All listed cards are identical in both the ***input\_cie\_SS*** file and the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. |  |
| 5 | Navigate to the Solution Control Card in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. | | |
| 5.1 | Ensure the first two lines of the Solution Control Card read as follows:   * *Restart File, ../ss/restart,* * *Water w/ Patankar Vadose Transport Courant,1.0,* | The first two lines of the Solution Control Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file match these lines. |  |
| 5.2 | Navigate to /sources/ to open ***cie-src.card*** and ***buffer-aq-src.card*** files in a preferred text editor. For each file, under each *# Site =* line, record:   * The earliest reported year of aqueous source release * The final year of aqueous source release   Take the earliest year (from either file) and the final year (from either file). Use these two years in the next steps. | | |
| 5.3 | Back to the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file from /cie-xprt-2018/. Depending on the last year of aqueous source release, one or more lines in the Solution Control Card detailing the source release timing will be present. Using the earliest and final years of release and details described in Section 2, FR-3, determine if the lines in the Solution Control Card for aqueous source release are correct. | Depending on the first and final aqueous source release years will determine how the identified line(s) of the Solution Control Card will look. Use Section 2, FR-3 to verify these Solution Control Card lines. |  |
| 5.4 | Ensure the last two lines of the Solution Control Card read as follows:   * *1000000,* * *0,* | The last two lines do read as stated. |  |
| 6 | Navigate to the ../../matprops directory and open ***cie\_solute\_transport\_props.prn***. In the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file verify all the solutes and associated values were correctly brought in. Each line template is:  Solute, *Conventional*, Diffusion, *m^2/s*, *continuous*, Half-Life, *yr*, Cutoff Conc (1/m3), *Ci/m^3*,  The final line of the Solute/Fluid Interaction Card should read: *0,* | The Solute/Fluid Interaction Card and the material properties file data match for each solute. |  |
| 7 | These next few steps involve the Solute/Porous Media Interaction Card. To do this open the following files in a text editor:   * The CA\_***200E\_material\_transport\_props.prn*** file in S:\PSC\!HANFORD\ICF\Prod\2EMATTR\v1.0\data\ * The ***cie\_solute\_transport\_props.prn*** file in //olive/backups/CAVE/v4-4Test/matprops/ * Table 13 in the **ECF-HANFORD-19-0121\_ \_Rev\_00.pdf** file in [\\PSC-Amber\DFS\Projects\PSC\!HANFORD\Emma\CHPRC\Applications\ECF-HANFORD-19-0121\rev.0](file:///\\PSC-Amber\DFS\Projects\PSC\!HANFORD\Emma\CHPRC\Applications\ECF-HANFORD-19-0121\rev.0) * The ***input\_CIE\_XPRT\_2018\_with\_buffer*** file in //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/   Navigate to the Solute/Porous Media Interaction Card. | | |
| 7.1 | Ensure that in the Solute/Porous Media Interaction Card in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file each HSU from the Rock/Soil Zonation Card is present with two numerical values and two associated units. Compare the HSU list against the Rock/Soil Zonation Card list. An example is of what each HSU line will look like:   * *Backfill, 0.1, m, 0.01, m,* | In the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file each HSU in the Rock/Soil Zonation Card is present in the Solute/Porous Media Interaction Card. For each HSU in that card there are two numerical values and associated units. |  |
| 7.2 | Verify the first numerical value after each HSU in the Solute/Porous Media Interaction Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches the associated HSU’s *Long. Disp. (m)* column value exactly in the CA\_***200E\_material\_transport\_props.prn*** file. The significant figures should match.  Also verify the units reported are meters, *m*.  For example, Backfill will report a *Long. Disp. (m)* value of 0.15 m:  Backfill, 0.15, m, #.###, m, | The first numerical value on each HSU line in the Solute/Porous Media Interaction Card matches exactly (significant figures and the value) the corresponding *Long. Disp. (m)* value in the material properties file. The reported unit for each value is *m*. |  |
| 7.3 | Verify the second numerical value after each HSU in the Solute/Porous Media Interaction Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches the associated HSU’s *Trans. Disp. (m)* column value exactly in the CA\_***200E\_material\_transport\_props.prn*** file. The significant figures should match.  Also verify the units reported are meters, *m*.  For example, Hf2 will report a *Trans. Disp. (m)* value of 0.025 m:  Hf2, #.##, m, 0.025, m, | The second numerical value on each HSU line in the Solute/Porous Media Interaction Card matches exactly (significant figures and the value) the corresponding *Trans. Disp. (m)* value in the material properties file. The reported unit for each value is *m*. |  |
| 7.4 | In the Solute/Porous Media Interaction Card check beneath each HSU the eight CIE solutes (see Solute/Fluid Interaction Card), gravel-corrected Kd value for that solute, and the associated unit match the values in the **ECF-HANFORD-19-0121 Rev\_00.docx** file. Note, some values will be *0.00E+00, mL/g,,* | The gravel-corrected Kd values for each HSU and solute match the values in the **ECF-HANFORD-19-0121 Rev\_00.docx** file. |  |
| 8 | Ensure the Initial Conditions Card is as follows:  *Gas Pressure, Aqueous Pressure,*  *0,* | The Initial Conditions Card matches this information. |  |
| 9 | Boundary Conditions Card section. | | |
| 9.1 | Navigate to /ret/ directory and count the number of ***group\_#####.dat*** files.    In the upper section of the Boundary Conditions Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file, below the line *#Number of COCs*, ensure the value present equals the number of ***group\_#####.dat*** files PLUS one. | The reported value below the *#Number of COCs* line in the Boundary Conditions Card equals the number of ***group\_#####.dat*** files plus one. |  |
| 9.2 | Navigate to the bottom of the Boundary Conditions Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. Ensure the last three lines of the Boundary Conditions Card is as follows:   * *file, input.bot, Dirichlet Aqueous, outflow, outflow, outflow, outflow, outflow, outflow, outflow, outflow,* * *1,* * *1943,year,101325,Pa,,,,,,,,,,,,,,,,,* | The Boundary Conditions Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches. |  |
| 9.3 | Using an application, such as DiffMerge, compare the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file and the ***cie\_tr\_boundary\_card.dat*** file. Only differences of the boundary condition card should be the number of boundary conditions (difference of one) and the addition of the bottom boundary condition. | Comparing the two files shows the boundary conditions differences are only a) the number of boundary conditions and b) the addition of the bottom boundary condition. |  |
| 10 | Navigate to /trOCcards/ and open ***cie\_Output\_Control.dat*** file in a preferred text editor. Ensure the ***cie\_Output\_Control.dat*** and the Output Control Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file are identical (spaces at the end of line exempt) except the final line in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file, which reads *Final Restart, ,* | The Output Control Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file and the ***cie\_Output\_Control.dat*** file are identical except for the final line.  The final line in the Output Control Card is "Final Restart, ,". |  |
| 11 | Ensure the Surface Flux Card in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches the ***cie\_surface\_flux.txt*** file in the /trsurfcards/ directory. | The Surface Flux Card in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches the ***cie\_surface\_flux.txt*** file in the /trsurfcards/ directory. |  |
| 12 | Verify the contents of the Source Card. | | |
| 12.1 | * Navigate to /sources/ * Open ***cie-src.card*** in a preferred text editor. Record the number of source domains (line 8). * Open ***buffer-aq-src.card*** in a preferred text editor. Record the number of source domains (line 8). * Sum these values. | | |
| 12.2 | Ensure in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file the number of source domains reported in the Source Card is equal to that summed value from 12.1 | The summed value from 12.1 equals the number of source domains reported in the Source Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. |  |
| 12.3 | Ensure the ***cie-src.card*** was inserted into the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file.  Ensure the ***buffer-aq-src.card*** file was inserted into the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. | The appropriate files were inserted into the input file and source definitions are identical except number of source domains. |  |
| 13 | Ensure in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file all the following cards are inserted:   * Simulation Title Card * Solution Control Card * Grid Card * Inactive Nodes Card * Rock Soil Zonation Card * Mechanical Properties Card * Hydraulic Properties Card * Saturation Function Card * X-Aqueous Relative Permeability Card * Y-Aqueous Relative Permeability Card * Z-Aqueous Relative Permeability Card * Solute/Fluid Interaction Card * Solute/Porous Media Interaction Card * Initial Conditions Card * Boundary Conditions Card * Output Control Card * Surface Flux Card * Source Card | All listed cards are present in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. |  |
| 14 | If all the Test Steps above pass, proceed to the next steps.  Navigate to the //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/ directory, make a copy of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. Paste it into the same directory, and rename it ***input*** | | |
| 14.1 | Open the ***input*** file in the //olive/backups/CAVE/ v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/ directory and change the line in the Solution Control Card that reads 1000000, to *1,*. Save the file.  This modifies the time step of the input file so it will only run for one time step. | The ***input*** file was modified successfully to run for a single time step. |  |
| 14.2 | In a Linux terminal navigate to the //olive/backups/CAVE/ v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/ directory and type *sh estomp-run.sh* to run the ***input*** file.  Once the model simulation has completed, open the generated ***output*** file, scroll to the bottom, and verify the last line indicates the simulation completed. | The eSTOMP run executed successfully with the ***input*** file. The ***output*** file indicates the simulation completed. |  |

| Table 4  **CIE 2018 STOMP Input File Generator Acceptance Test Plan Case 2** | | | |
| --- | --- | --- | --- |
| **CIE 2018 STOMP Input File Generator Acceptance Testing**  **CACIE-CIE 2018 STOMP Input File Generator – AT-2** | | **Date:** | |
| **Tool Runner File Location for this test:**  //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018 | | **Test Performed By:** | |
| **Testing Directory:** //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2 | | | |
| **Test Step** | **Test Instruction** | **Expected Result** | **Test Result  (Pass/Fail)** |
| 1 | Ensure the following files are in testing directory, as they are needed for the execution of the CIE 2018 STOMP Input File Generator tool:   * input\_cie\_SS in the /ss/ directory * cie\_tr\_boundary\_card.dat in the /ret/ directory * cie\_Output\_Control.dat in the /trOCcards/ directory * cie\_surface\_flux.txt in the /trsurfcards/ directory * cie-src.card in the /sources/ directory * The solute properties (***c*ie*\_solute\_transport\_props.prn***) are present in //olive/backups/CAVE/v4-4Test/matprops/ * Both 200W (CA\_***200W\_material\_transport\_props.prn***, in S:\PSC\!HANFORD\ICF\Prod\2WMATTR\v1.0\data) and 200E (CA\_***200E\_material\_transport\_props.prn***, in S:\PSC\!HANFORD\ICF\Prod\2EMATTR\v1.0\data) material property files are present in the appropriate directories   Other files to complete the Acceptance Test:   * The ***input.bot***, ***input.zone*** and ***estomp-run.sh*** files are present in the /cie-xprt-2018/ directory | The expected files are present in the listed directories. |  |
| 2 | Execute, using a Linux terminal, the shell script ***create\_cie\_xprt\_2018\_input.sh*** located in /cie-xprt-2018/ subdirectory of the testing directory. | Script executes. |  |
| 3 | Confirm the following file was generated by ***create\_cie\_xprt\_2018\_input.sh*** in the same directory:   * ***input\_CIE\_XPRT\_2018\_no\_buffer***   Other files generated in the same directories that are not a functional requirement are as follows:   * ***cie-xprt-2018\_afarms.log*** – A Farms log file * ***cie\_afarms\_input\_screen.log*** – A Farms screenout log file | The files were generated in the corresponding directories. |  |
| 4 | Using an application, such as DiffMerge, compare the provided ***input\_CIE\_XPRT\_2018\_with\_buffer*** file located at //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/ with the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file at //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ to determine the following: | | |
| 4.1 | Ensure the list of cards below is the same:   * Simulation Title Card * Grid Card * Inactive Nodes Card * Rock/Soil Zonation Card * Mechanical Properties Card * Hydraulic Properties Card * Saturation Function Card * X-Aqueous Relative Permeability Card * Y-Aqueous Relative Permeability Card * Z-Aqueous Relative Permeability Card * Solute/Fluid Interaction Card * Solute/Porous Media Interaction Card * Initial Conditions Card * Boundary Conditions Card * Output Control Card * Surface Flux Card | The listed cards are identical. |  |
| 5 | Navigate to the Solution Control Card in the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file. | | |
| 5.1 | Ensure the first two lines of the Solution Control Card read as follows:   * *Restart File, ../ss/restart,* * *Water w/ Patankar Vadose Transport Courant,1.0,* | The first two lines of the Solution Control Card of the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file match these lines. |  |
| 5.2 | Navigate to /sources/ to open ***cie-src.card*** file in a preferred text editor. Under each *# Site =* line, record:   * The earliest reported year of aqueous source release * The final year of aqueous source release   Take the earliest year and the final year. Use these two years in the next steps. | | |
| 5.3 | Back to the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file from /cie-xprt-2018/. Depending on the last year of aqueous source release, one or more lines in the Solution Control Card detailing the source release timing will be present. Using the earliest and final years of release and details described in Section 2, FR-3, determine if the lines in the Solution Control Card for aqueous source release are correct. | Depending on the first and final aqueous source release years will determine how the identified line(s) of the Solution Control Card will look. Use Section 2, FR-3 to verify these Solution Control Card lines. |  |
| 5.4 | Ensure the last two lines of the Solution Control Card read as follows:   * *1000000,* * *0,* | The last two lines do read as stated. |  |
| 6 | Navigate to the Source Card in the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file in the //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ directory. Compare the contents of the Source Card with the original file the tool pulled from, ***cie-src.card*** in the /sources/ directory. Ensure the data of the Source Card from ***input\_CIE\_XPRT\_2018\_no\_buffer*** and the file ***cie-src.card*** match. | The Source Card of ***input\_CIE\_XPRT\_2018\_no\_buffer*** and the ***cie-src.card*** are identical. |  |
| 7 | If all the Test Steps above pass, proceed to the next steps.  Navigate to the //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ directory, make a copy of the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file. Paste it into the same directory, and rename it ***input*** | | |
| 7.1 | Open the ***input*** file in the //olive/backups/CAVE/ v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ directory and change the line in the Solution Control Card that reads 1000000, to *1,*  This modifies the time step of the input file so it will only run for one time step. | The ***input*** file was modified successfully to run for a single time step. |  |
| 7.2 | In a Linux terminal navigate to the //olive/backups/CAVE/ v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ directory and type *sh estomp-run.sh* to run the ***input*** file.  Once the model simulation has completed, open the generated ***output*** file, scroll to the bottom, and verify the last line indicates the simulation completed. | The eSTOMP run executed successfully with the ***input*** file. The ***output*** file indicates the simulation completed. |  |

# Acceptance Test Report

To complete the Acceptance Testing use Appendix A. The two test cases are described as follows:

* Acceptance Test 1 is in Table A-1 of Appendix A. It is the A Farms Area Model and is checking the ***input\_XPRT-1\_2018\_with\_buffer*** file. This input file is built with a buffer, aqueous, chemical and radionuclide sources, and the sources end after the 2018 end date.
* Acceptance Test 2 is in Table A-2 of Appendix A. It is the A Farms Area Model and is checking the ***input\_XPRT-1\_2018\_no\_buffer*** file. This input file is built without a buffer and has a single aqueous source that ceases before 2018.

Details of these tests, when they were conducted, by whom, and if they Passed or Failed are in each table of Appendix A.

# User Guide

To run this code:

1. You need to have the inputs in the appropriate directory structure, which are specified in Section 4 of this document, under Input Files.
2. From a Linux terminal in the /cie-xprt-2018/ directory of the testing directory execute the tool as specified in Section 4 of this document, under Execution.
3. Check that the ***input\_CIE\_XPRT\_2018\_with\_buffer or input\_CIE\_XPRT\_2018\_no\_buffer*** file was generated.

# Tool Versions

This section details changes incorporated into each version of the CIE 2018 STOMP Input File Generator tool.

* 1.0 – Tool was developed.

# Appendix A

**Completed Acceptance Test Cases**

**Tool Runner Log**

###Executing input generator Tool###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:48 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:48 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:48 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:49 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:49 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:49 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/ss/input\_cie\_SS --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:49 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:49.116079

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/ss/input\_cie\_SS 512dba9c76b8cbd107585c9e1770eefe98976403c7f34d9107a10da1c9804119

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:49 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:49 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:49 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:49 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:49 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:49 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/ret/cie\_tr\_boundary\_card.dat --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:49 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:49.356614

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/ret/cie\_tr\_boundary\_card.dat 926538eccd444eae353a63b8c5b92ba8de73b7acb42af48857df34f2e14fae6e

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:49 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:49 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:49 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:49 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:49 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:49 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/trOCcards/cie\_Output\_Control.dat --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:49 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:49.639540

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/trOCcards/cie\_Output\_Control.dat a7aacd9f33a0022478cbfc847a9376cdcbf636c79a0a85f1447f460fd65b8977

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:49 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:49 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:49 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:49 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:49 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:49 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/trsurfcards/cie\_surface\_flux.txt --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:49 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:49.883135

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/trsurfcards/cie\_surface\_flux.txt a3ce9131e601518481a84126d4d09d3b983743d029de9ad4e3941fe77c5895a9

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:49 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:50 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:50 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:50 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:50 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:50 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/sources/cie-src.card --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:50 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:50.132711

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/sources/cie-src.card f00fb97e9841a92c7358e62c675771931372b02eef48d68f1bd378cdd45aeab0

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:50 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:50 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:50 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:50 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:50 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:50 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/sources/buffer-aq-src.card --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:50 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:50.339494

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/sources/buffer-aq-src.card 7cfdc52c88bf670b6187b116d2c16e7c40b3173e7fbcaba7cf287bdc83622fe9

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:50 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:50 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:50 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:50 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:50 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:50 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /opt/ICF/Prod/2WMATTR/v1.0/data/CA\_200W\_material\_transport\_props.prn --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:50 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:50.600216

/opt/ICF/Prod/2WMATTR/v1.0/data/CA\_200W\_material\_transport\_props.prn b37cc2fca50638edacc45a19d03d59456f4b41b6759f257ee92fd7dda78fda00

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:50 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:50 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:50 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:50 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:50 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:50 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /opt/ICF/Prod/2EMATTR/v1.0/data/CA\_200E\_material\_transport\_props.prn --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:50 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:50.884463

/opt/ICF/Prod/2EMATTR/v1.0/data/CA\_200E\_material\_transport\_props.prn 22c9ab7b0302fa998f0e90947bb975d43298ebf2de3b8dbd23de4eb9ca36b942

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:50 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:50 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:51 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:51 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:51 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:51 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py ../../../v4-2/matprops/cie\_solute\_transport\_props.prn --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:51 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:51.141611

../../../v4-2/matprops/cie\_solute\_transport\_props.prn e76d5c2e02d710295442291bfafdb3713344bce6e150a65be026a3691d7ad14f

###Finished Process###

###Executing input generator###

INFO--09/04/2020 02:39:51 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:51 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:51 PM--Code Version: 99e5218e2673b149200a86d7a889a10daae512c5 Local repo SHA-1 has does not correspond to a remote repo release version: ../../../CA-CIE-Tools-TestRepos/repo\_xprt\_2018\_input\_gen\_cie.f/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe<--d6d9aa2711c8e2920545d1bd97ac1277e17e2395

INFO--09/04/2020 02:39:51 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:51 PM--QA Status: TEST : ../../../CA-CIE-Tools-TestRepos/repo\_xprt\_2018\_input\_gen\_cie.f/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe

INFO--09/04/2020 02:39:51 PM--Invoking Command:"../../../CA-CIE-Tools-TestRepos/repo\_xprt\_2018\_input\_gen\_cie.f/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe" with Arguments:"200E buffer /opt/ICF/Prod/2WMATTR/v1.0/data/CA\_200W\_material\_transport\_props.prn /opt/ICF/Prod/2EMATTR/v1.0/data/CA\_200E\_material\_transport\_props.prn ../../../v4-2/matprops/cie\_solute\_transport\_props.prn"

INFO--09/04/2020 02:39:51 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 02:39:51 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 02:39:51 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 02:39:51 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 02:39:51 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 02:39:51 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 02:39:51 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/input\_CIE\_XPRT\_2018\_with\_buffer --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 02:39:51 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 14:39:51.696883

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/input\_CIE\_XPRT\_2018\_with\_buffer 0c2b963fbcb333f81cb137a3a3ab25bc97f96524d342925298f7dc5ba84716cf

###Finished Process###

| Table A-1  **CIE 2018 STOMP Input File Generator Acceptance Test Plan Case 1** | | | |
| --- | --- | --- | --- |
| **CIE 2018 STOMP Input File Generator Acceptance Testing**  **CACIE-CIE 2018 STOMP Input File Generator – AT-1** | | **Date: 09-04-2020** | |
| **Tool Runner File Location for this test:**  //olive/backups/CAVE/v4-4Test/ afarms\_xprt\_2018\_at1/cie-xprt-2018 | | **Test Performed By: Praveena Allena** | |
| **Testing Directory:** //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at1 | | | |
| **Test Step** | **Test Instruction** | **Expected Result** | **Test Result  (Pass/Fail)** |
| 1 | Ensure the following files are in testing directory, as they are needed for the execution of the CIE 2018 STOMP Input File Generator tool:   * input\_cie\_SS in the /ss/ directory * cie\_tr\_boundary\_card.dat in the /ret/ directory * cie\_Output\_Control.dat in the /trOCcards/ directory * cie\_surface\_flux.txt in the /trsurfcards/ directory * cie-src.card in the /sources/ directory * buffer-aq-src.card in the /sources/ directory * The solute properties (***c*ie*\_solute\_transport\_props.prn***) are present in //olive/backups/CAVE/v4-4Test/matprops/ * Both 200W (CA\_***200W\_material\_transport\_props.prn***, in S:\PSC\!HANFORD\ICF\Prod\2WMATTR\v1.0\data) and 200E (CA\_***200E\_material\_transport\_props.prn***, in S:\PSC\!HANFORD\ICF\Prod\2EMATTR\v1.0\data) material property files are present in the appropriate directories   Other files to complete the Acceptance Test:   * The ***input.bot***, ***input.zone*** and ***estomp-run.sh*** files are present in the /cie-xprt-2018/ directory | The expected files are present in the listed directories. | Pass |
| 2 | Execute, using a Linux terminal, the shell script ***create\_cie\_xprt\_2018\_input.sh*** located in /cie-xprt-2018/ subdirectory of the testing directory. | Script executes. | Pass |
| 3 | Confirm the following file was generated by ***create\_cie\_xprt\_2018\_input.sh*** in the same directory:   * ***input\_CIE\_XPRT\_2018\_with\_buffer***   Other files generated in the same directories that are not a functional requirement are as follows:   * ***cie-xprt-2018\_afarms.log*** – A Farms log file * ***cie\_afarms\_input\_screen.log*** – A Farms screenout log file | The files were generated in the corresponding directories. | pass |
| 4 | Using an application, such as DiffMerge, compare the provided ***input\_cie\_SS*** file with ***input\_CIE\_XPRT\_2018\_with\_buffer*** to determine the following: | | |
| 4.1 | Simulation Title Card:   * All lines except the last must be identical in both files * The last line of ***input\_CIE\_XPRT\_2018\_with\_buffer*** must read *CIE Transport Simulation (1943-2018),* | All but the last line of the Simulation Title Card in both files will be identical. The last line of ***input\_CIE\_XPRT\_2018\_with\_buffer*** must reads *CIE Transport Simulation (1943-2018),* | Pass |
| 4.2 | The following cards will be identical in both files:   * Grid Card * Inactive Nodes Card * Rock Soil Zonation Card * Mechanical Properties Card * Hydraulic Properties Card * Saturation Function Card * X-Aqueous Relative Permeability Card * Y-Aqueous Relative Permeability Card * Z-Aqueous Relative Permeability Card | All listed cards are identical in both the ***input\_cie\_SS*** file and the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. | Pass |
| 5 | Navigate to the Solution Control Card in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. | | |
| 5.1 | Ensure the first two lines of the Solution Control Card read as follows:   * *Restart File, ../ss/restart,* * *Water w/ Patankar Vadose Transport Courant,1.0,* | The first two lines of the Solution Control Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file match these lines. | Pass |
| 5.2 | Navigate to /sources/ to open ***cie-src.card*** and ***buffer-aq-src.card*** files in a preferred text editor. For each file, under each *# Site =* line, record:   * The earliest reported year of aqueous source release * The final year of aqueous source release   Take the earliest year (from either file) and the final year (from either file). Use these two years in the next steps. | | |
| 5.3 | Back to the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file from /cie-xprt-2018/. Depending on the last year of aqueous source release, one or more lines in the Solution Control Card detailing the source release timing will be present. Using the earliest and final years of release and details described in Section 2, FR-3, determine if the lines in the Solution Control Card for aqueous source release are correct. | Depending on the first and final aqueous source release years will determine how the identified line(s) of the Solution Control Card will look. Use Section 2, FR-3 to verify these Solution Control Card lines. | Pass |
| 5.4 | Ensure the last two lines of the Solution Control Card read as follows:   * *1000000,* * *0,* | The last two lines do read as stated. | Pass |
| 6 | Navigate to the ../../matprops directory and open ***cie\_solute\_transport\_props.prn***. In the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file verify all the solutes and associated values were correctly brought in. Each line template is:  Solute, *Conventional*, Diffusion, *m^2/s*, *continuous*, Half-Life, *yr*, Cutoff Conc (1/m3), *Ci/m^3*,  The final line of the Solute/Fluid Interaction Card should read: *0,* | The Solute/Fluid Interaction Card and the material properties file data match for each solute. | Pass |
| 7 | These next few steps involve the Solute/Porous Media Interaction Card. To do this open the following files in a text editor:   * The CA\_***200E\_material\_transport\_props.prn*** file in S:\PSC\!HANFORD\ICF\Prod\2EMATTR\v1.0\data\ * The ***cie\_solute\_transport\_props.prn*** file in //olive/backups/CAVE/v4-4Test/matprops/ * Table 13 in the **ECF-HANFORD-19-0121\_ \_Rev\_00.pdf** file in [\\PSC-Amber\DFS\Projects\PSC\!HANFORD\Emma\CHPRC\Applications\ECF-HANFORD-19-0121\rev.0](file:///\\PSC-Amber\DFS\Projects\PSC\!HANFORD\Emma\CHPRC\Applications\ECF-HANFORD-19-0121\rev.0) * The ***input\_CIE\_XPRT\_2018\_with\_buffer*** file in //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/   Navigate to the Solute/Porous Media Interaction Card. | | |
| 7.1 | Ensure that in the Solute/Porous Media Interaction Card in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file each HSU from the Rock/Soil Zonation Card is present with two numerical values and two associated units. Compare the HSU list against the Rock/Soil Zonation Card list. An example is of what each HSU line will look like:   * *Backfill, 0.1, m, 0.01, m,* | In the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file each HSU in the Rock/Soil Zonation Card is present in the Solute/Porous Media Interaction Card. For each HSU in that card there are two numerical values and associated units. | Pass |
| 7.2 | Verify the first numerical value after each HSU in the Solute/Porous Media Interaction Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches the associated HSU’s *Long. Disp. (m)* column value exactly in the CA\_***200E\_material\_transport\_props.prn*** file. The significant figures should match.  Also verify the units reported are meters, *m*.  For example, Backfill will report a *Long. Disp. (m)* value of 0.15 m:  Backfill, 0.15, m, #.###, m, | The first numerical value on each HSU line in the Solute/Porous Media Interaction Card matches exactly (significant figures and the value) the corresponding *Long. Disp. (m)* value in the material properties file. The reported unit for each value is *m*. | Pass |
| 7.3 | Verify the second numerical value after each HSU in the Solute/Porous Media Interaction Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches the associated HSU’s *Trans. Disp. (m)* column value exactly in the CA\_***200E\_material\_transport\_props.prn*** file. The significant figures should match.  Also verify the units reported are meters, *m*.  For example, Hf2 will report a *Trans. Disp. (m)* value of 0.025 m:  Hf2, #.##, m, 0.025, m, | The second numerical value on each HSU line in the Solute/Porous Media Interaction Card matches exactly (significant figures and the value) the corresponding *Trans. Disp. (m)* value in the material properties file. The reported unit for each value is *m*. | Pass |
| 7.4 | In the Solute/Porous Media Interaction Card check beneath each HSU the eight CIE solutes (see Solute/Fluid Interaction Card), gravel-corrected Kd value for that solute, and the associated unit match the values in the **ECF-HANFORD-19-0121 Rev\_00.docx** file. Note, some values will be *0.00E+00, mL/g,,* | The gravel-corrected Kd values for each HSU and solute match the values in the **ECF-HANFORD-19-0121 Rev\_00.docx** file. | Pass |
| 8 | Ensure the Initial Conditions Card is as follows:  *Gas Pressure, Aqueous Pressure,*  *0,* | The Initial Conditions Card matches this information. | Pass |
| 9 | Boundary Conditions Card section. | | |
| 9.1 | Navigate to /ret/ directory and count the number of ***group\_#####.dat*** files.    In the upper section of the Boundary Conditions Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file, below the line *#Number of COCs*, ensure the value present equals the number of ***group\_#####.dat*** files PLUS one. | The reported value below the *#Number of COCs* line in the Boundary Conditions Card equals the number of ***group\_#####.dat*** files plus one. | Pass |
| 9.2 | Navigate to the bottom of the Boundary Conditions Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. Ensure the last three lines of the Boundary Conditions Card is as follows:   * *file, input.bot, Dirichlet Aqueous, outflow, outflow, outflow, outflow, outflow, outflow, outflow, outflow,* * *1,* * *1943,year,101325,Pa,,,,,,,,,,,,,,,,,* | The Boundary Conditions Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches. | Pass |
| 9.3 | Using an application, such as DiffMerge, compare the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file and the ***cie\_tr\_boundary\_card.dat*** file. Only differences of the boundary condition card should be the number of boundary conditions (difference of one) and the addition of the bottom boundary condition. | Comparing the two files shows the boundary conditions differences are only a) the number of boundary conditions and b) the addition of the bottom boundary condition. | Pass |
| 10 | Navigate to /trOCcards/ and open ***cie\_Output\_Control.dat*** file in a preferred text editor. Ensure the ***cie\_Output\_Control.dat*** and the Output Control Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file are identical (spaces at the end of line exempt) except the final line in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file, which reads *Final Restart, ,* | The Output Control Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file and the ***cie\_Output\_Control.dat*** file are identical except for the final line.  The final line in the Output Control Card is "Final Restart, ,". | Pass |
| 11 | Ensure the Surface Flux Card in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches the ***cie\_surface\_flux.txt*** file in the /trsurfcards/ directory. | The Surface Flux Card in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file matches the ***cie\_surface\_flux.txt*** file in the /trsurfcards/ directory. | Pass |
| 12 | Verify the contents of the Source Card. | | |
| 12.1 | * Navigate to /sources/ * Open ***cie-src.card*** in a preferred text editor. Record the number of source domains (line 8). * Open ***buffer-aq-src.card*** in a preferred text editor. Record the number of source domains (line 8). * Sum these values. | | |
| 12.2 | Ensure in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file the number of source domains reported in the Source Card is equal to that summed value from 12.1 | The summed value from 12.1 equals the number of source domains reported in the Source Card of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. | Pass |
| 12.3 | Ensure the ***cie-src.card*** was inserted into the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file.  Ensure the ***buffer-aq-src.card*** file was inserted into the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. | The appropriate files were inserted into the input file and source definitions are identical except number of source domains. | Pass |
| 13 | Ensure in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file all the following cards are inserted:   * Simulation Title Card * Solution Control Card * Grid Card * Inactive Nodes Card * Rock Soil Zonation Card * Mechanical Properties Card * Hydraulic Properties Card * Saturation Function Card * X-Aqueous Relative Permeability Card * Y-Aqueous Relative Permeability Card * Z-Aqueous Relative Permeability Card * Solute/Fluid Interaction Card * Solute/Porous Media Interaction Card * Initial Conditions Card * Boundary Conditions Card * Output Control Card * Surface Flux Card * Source Card | All listed cards are present in the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. | Pass |
| 14 | If all the Test Steps above pass, proceed to the next steps.  Navigate to the //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/ directory, make a copy of the ***input\_CIE\_XPRT\_2018\_with\_buffer*** file. Paste it into the same directory, and rename it ***input*** | | |
| 14.1 | Open the ***input*** file in the //olive/backups/CAVE/ v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/ directory and change the line in the Solution Control Card that reads 1000000, to *1,*. Save the file.  This modifies the time step of the input file so it will only run for one time step. | The ***input*** file was modified successfully to run for a single time step. | Pass |
| 14.2 | In a Linux terminal navigate to the //olive/backups/CAVE/ v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/ directory and type *sh estomp-run.sh* to run the ***input*** file.  Once the model simulation has completed, open the generated ***output*** file, scroll to the bottom, and verify the last line indicates the simulation completed. | The eSTOMP run executed successfully with the ***input*** file. The ***output*** file indicates the simulation completed. | Pass |

**Tool Runner Log**

###Executing input generator Tool###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:22 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:22 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:22 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:22 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:22 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:22 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/ss/input\_cie\_SS --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:22 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:22.613191

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/ss/input\_cie\_SS 512dba9c76b8cbd107585c9e1770eefe98976403c7f34d9107a10da1c9804119

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:22 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:22 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:22 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:22 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:22 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:22 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/ret/cie\_tr\_boundary\_card.dat --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:22 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:22.880248

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/ret/cie\_tr\_boundary\_card.dat 926538eccd444eae353a63b8c5b92ba8de73b7acb42af48857df34f2e14fae6e

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:22 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:22 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:22 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:23 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/trOCcards/cie\_Output\_Control.dat --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:23 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:23.096948

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/trOCcards/cie\_Output\_Control.dat a7aacd9f33a0022478cbfc847a9376cdcbf636c79a0a85f1447f460fd65b8977

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:23 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:23 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/trsurfcards/cie\_surface\_flux.txt --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:23 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:23.258381

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/trsurfcards/cie\_surface\_flux.txt a3ce9131e601518481a84126d4d09d3b983743d029de9ad4e3941fe77c5895a9

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:23 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:23 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/sources/cie-src.card --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:23 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:23.464975

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/sources/cie-src.card 8157a99751ece5bebf2c675d47f6af83e039b7288fcaca537d52e75a717cd438

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:23 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:23 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/sources/buffer-aq-src.card --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:23 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:23.662281

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/sources/buffer-aq-src.card ad4223589253216743d85ab9366c3ee273449f2ba6a08cb1e0af14335b9298b3

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:23 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:23 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /opt/ICF/Prod/2WMATTR/v1.0/data/CA\_200W\_material\_transport\_props.prn --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:23 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:23.826714

/opt/ICF/Prod/2WMATTR/v1.0/data/CA\_200W\_material\_transport\_props.prn b37cc2fca50638edacc45a19d03d59456f4b41b6759f257ee92fd7dda78fda00

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:23 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:23 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:23 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:23 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /opt/ICF/Prod/2EMATTR/v1.0/data/CA\_200E\_material\_transport\_props.prn --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:23 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:23.988974

/opt/ICF/Prod/2EMATTR/v1.0/data/CA\_200E\_material\_transport\_props.prn 22c9ab7b0302fa998f0e90947bb975d43298ebf2de3b8dbd23de4eb9ca36b942

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:24 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:24 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:24 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:24 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:24 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:24 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py ../../../v4-2/matprops/cie\_solute\_transport\_props.prn --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:24 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:24.144710

../../../v4-2/matprops/cie\_solute\_transport\_props.prn e76d5c2e02d710295442291bfafdb3713344bce6e150a65be026a3691d7ad14f

###Finished Process###

###Executing input generator###

INFO--09/04/2020 04:12:24 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:24 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:24 PM--Code Version: 99e5218e2673b149200a86d7a889a10daae512c5 Local repo SHA-1 has does not correspond to a remote repo release version: ../../../CA-CIE-Tools-TestRepos/repo\_xprt\_2018\_input\_gen\_cie.f/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe<--d6d9aa2711c8e2920545d1bd97ac1277e17e2395

INFO--09/04/2020 04:12:24 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:24 PM--QA Status: TEST : ../../../CA-CIE-Tools-TestRepos/repo\_xprt\_2018\_input\_gen\_cie.f/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe

INFO--09/04/2020 04:12:24 PM--Invoking Command:"../../../CA-CIE-Tools-TestRepos/repo\_xprt\_2018\_input\_gen\_cie.f/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe" with Arguments:"200E nobuffer /opt/ICF/Prod/2WMATTR/v1.0/data/CA\_200W\_material\_transport\_props.prn /opt/ICF/Prod/2EMATTR/v1.0/data/CA\_200E\_material\_transport\_props.prn ../../../v4-2/matprops/cie\_solute\_transport\_props.prn"

INFO--09/04/2020 04:12:24 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

###Finished Process###

###Executing Fingerprint Tool###

INFO--09/04/2020 04:12:24 PM--Starting CA-CIE Tool Runner. Logging to "./cie-xprt-2018\_afarms.log"

INFO--09/04/2020 04:12:24 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/04/2020 04:12:24 PM--Code Version: 78efcf372269bf04b6e725f6f84c87a1b2a8276e v5.3: /opt/tools/pylib/fingerprint/fingerprint.py<--e9692a4faec2ee264fe50417b6b6a516ba82b2f6

INFO--09/04/2020 04:12:24 PM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/04/2020 04:12:24 PM--QA Status: QUALIFIED : /opt/tools/pylib/fingerprint/fingerprint.py

INFO--09/04/2020 04:12:24 PM--Invoking Command:"python3.6" with Arguments:"/opt/tools/pylib/fingerprint/fingerprint.py /home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/input\_CIE\_XPRT\_2018\_no\_buffer --output ./cie-xprt-2018\_afarms.log --outputmode a"

INFO--09/04/2020 04:12:24 PM--Username:pallena Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

Fingerprint generated at 2020-09-04 16:12:24.515621

/home/pallena/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/input\_CIE\_XPRT\_2018\_no\_buffer d2fbfdcec2be4aac868ca87f6166fe9570bf5ab5a1283f6a1a344f5a590677dd

###Finished Process###

| Table A-2  **CIE 2018 STOMP Input File Generator Acceptance Test Plan Case 2** | | | |
| --- | --- | --- | --- |
| **CIE 2018 STOMP Input File Generator Acceptance Testing**  **CACIE-CIE 2018 STOMP Input File Generator – AT-2** | | **Date:09-04-2020** | |
| **Tool Runner File Location for this test:**  //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018 | | **Test Performed By: Praveena Allena** | |
| **Testing Directory:** //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2 | | | |
| **Test Step** | **Test Instruction** | **Expected Result** | **Test Result  (Pass/Fail)** |
| 1 | Ensure the following files are in testing directory, as they are needed for the execution of the CIE 2018 STOMP Input File Generator tool:   * input\_cie\_SS in the /ss/ directory * cie\_tr\_boundary\_card.dat in the /ret/ directory * cie\_Output\_Control.dat in the /trOCcards/ directory * cie\_surface\_flux.txt in the /trsurfcards/ directory * cie-src.card in the /sources/ directory * The solute properties (***c*ie*\_solute\_transport\_props.prn***) are present in //olive/backups/CAVE/v4-4Test/matprops/ * Both 200W (CA\_***200W\_material\_transport\_props.prn***, in S:\PSC\!HANFORD\ICF\Prod\2WMATTR\v1.0\data) and 200E (CA\_***200E\_material\_transport\_props.prn***, in S:\PSC\!HANFORD\ICF\Prod\2EMATTR\v1.0\data) material property files are present in the appropriate directories   Other files to complete the Acceptance Test:   * The ***input.bot***, ***input.zone*** and ***estomp-run.sh*** files are present in the /cie-xprt-2018/ directory | The expected files are present in the listed directories. | Pass |
| 2 | Execute, using a Linux terminal, the shell script ***create\_cie\_xprt\_2018\_input.sh*** located in /cie-xprt-2018/ subdirectory of the testing directory. | Script executes. | Pass |
| 3 | Confirm the following file was generated by ***create\_cie\_xprt\_2018\_input.sh*** in the same directory:   * ***input\_CIE\_XPRT\_2018\_no\_buffer***   Other files generated in the same directories that are not a functional requirement are as follows:   * ***cie-xprt-2018\_afarms.log*** – A Farms log file * ***cie\_afarms\_input\_screen.log*** – A Farms screenout log file | The files were generated in the corresponding directories. | Pass |
| 4 | Using an application, such as DiffMerge, compare the provided ***input\_CIE\_XPRT\_2018\_with\_buffer*** file located at //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at1/cie-xprt-2018/ with the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file at //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ to determine the following: | | |
| 4.1 | Ensure the list of cards below is the same:   * Simulation Title Card * Grid Card * Inactive Nodes Card * Rock/Soil Zonation Card * Mechanical Properties Card * Hydraulic Properties Card * Saturation Function Card * X-Aqueous Relative Permeability Card * Y-Aqueous Relative Permeability Card * Z-Aqueous Relative Permeability Card * Solute/Fluid Interaction Card * Solute/Porous Media Interaction Card * Initial Conditions Card * Boundary Conditions Card * Output Control Card * Surface Flux Card | The listed cards are identical. | Pass |
| 5 | Navigate to the Solution Control Card in the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file. | | |
| 5.1 | Ensure the first two lines of the Solution Control Card read as follows:   * *Restart File, ../ss/restart,* * *Water w/ Patankar Vadose Transport Courant,1.0,* | The first two lines of the Solution Control Card of the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file match these lines. | Pass |
| 5.2 | Navigate to /sources/ to open ***cie-src.card*** file in a preferred text editor. Under each *# Site =* line, record:   * The earliest reported year of aqueous source release * The final year of aqueous source release   Take the earliest year and the final year. Use these two years in the next steps. | | |
| 5.3 | Back to the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file from /cie-xprt-2018/. Depending on the last year of aqueous source release, one or more lines in the Solution Control Card detailing the source release timing will be present. Using the earliest and final years of release and details described in Section 2, FR-3, determine if the lines in the Solution Control Card for aqueous source release are correct. | Depending on the first and final aqueous source release years will determine how the identified line(s) of the Solution Control Card will look. Use Section 2, FR-3 to verify these Solution Control Card lines. | Pass |
| 5.4 | Ensure the last two lines of the Solution Control Card read as follows:   * *1000000,* * *0,* | The last two lines do read as stated. | Pass |
| 6 | Navigate to the Source Card in the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file in the //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ directory. Compare the contents of the Source Card with the original file the tool pulled from, ***cie-src.card*** in the /sources/ directory. Ensure the data of the Source Card from ***input\_CIE\_XPRT\_2018\_no\_buffer*** and the file ***cie-src.card*** match. | The Source Card of ***input\_CIE\_XPRT\_2018\_no\_buffer*** and the ***cie-src.card*** are identical. | Pass |
| 7 | If all the Test Steps above pass, proceed to the next steps.  Navigate to the //olive/backups/CAVE/v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ directory, make a copy of the ***input\_CIE\_XPRT\_2018\_no\_buffer*** file. Paste it into the same directory, and rename it ***input*** | | |
| 7.1 | Open the ***input*** file in the //olive/backups/CAVE/ v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ directory and change the line in the Solution Control Card that reads 1000000, to *1,*  This modifies the time step of the input file so it will only run for one time step. | The ***input*** file was modified successfully to run for a single time step. | Pass |
| 7.2 | In a Linux terminal navigate to the //olive/backups/CAVE/ v4-4Test/afarms\_xprt\_2018\_at2/cie-xprt-2018/ directory and type *sh estomp-run.sh* to run the ***input*** file.  Once the model simulation has completed, open the generated ***output*** file, scroll to the bottom, and verify the last line indicates the simulation completed. | The eSTOMP run executed successfully with the ***input*** file. The ***output*** file indicates the simulation completed. | Pass |

# Appendix B

# Completed Installation Test

**Tool Runner Log**

INFO--09/09/2020 08:20:48 AM--Starting CA-CIE Tool Runner. Logging to "./xprt\_2018\_input\_cie\_install\_test.log"

INFO--09/09/2020 08:20:48 AM--Code Version: 0a1106ab56e79ae27221b486af36bff51cf307ab Local repo SHA-1 has does not correspond to a remote repo release version: /opt/tools/pylib/runner/runner.py<--1bcfd6779e9cbdb82673405873a8e5e81514ae27

INFO--09/09/2020 08:20:48 AM--Code Version: 0a1106ab56e79ae27221b486af36bff51cf307ab Local repo SHA-1 has does not correspond to a remote repo release version: /opt/tools/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe<--d6d9aa2711c8e2920545d1bd97ac1277e17e2395

INFO--09/09/2020 08:20:48 AM--QA Status: QUALIFIED : /opt/tools/pylib/runner/runner.py

INFO--09/09/2020 08:20:48 AM--QA Status: QUALIFIED : /opt/tools/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe

INFO--09/09/2020 08:20:48 AM--Invoking Command:"/opt/tools/tools/cie-modinput/linux/xprt\_2018\_input\_gen\_cie\_linux-intel-64.exe" with Arguments:"200E buffer"

INFO--09/09/2020 08:20:48 AM--Username:slindberg Computer:olive Platform:Linux 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016

| Table B-1  **CIE 2018 STOMP Input File Generator Installation Test Plan** | | | |
| --- | --- | --- | --- |
| **CIE 2018 STOMP Input File Generator Installation Testing**  **CACIE-CIE 2018 STOMP Input File Generator – IT-1** | | **Date: 9/9/2020** | |
| **Tool Runner File Location for this test:**  **OLIVE\backups\CAVE\CA-CIE-Tools-TestEnv\CA-CIE-Tools\_cie\_v5.X\_install\_tests\xprt\_2018\_input\_gen\_cie\v1.0** | | **Test Performed By: Sara Lindberg** | |
| **Testing Directory: OLIVE\backups\CAVE\CA-CIE-Tools-TestEnv\CA-CIE-Tools\_cie\_v5.X\_install\_tests\xprt\_2018\_input\_gen\_cie\v1.0** | | | |
| **Test Step** | **Test Instruction** | **Expected Result** | **Test Result  (Pass/Fail)** |
| Tools Code Repository Directory: /opt/tools | | | |
| Navigate to the testing directory | | | |
| 1 | Invoke Tool runner and test installation of the tool:  *./CACIE\_xprt\_2018\_input\_gen\_cie\_IT-1.sh* | | |
| 2 | Verify Tool Runner is invoked and executed. | Tool runner log file is generated (***xprt\_2018\_input\_cie\_install\_test.log***) | *PASS* |
| 3 | Verify tool is invoked and executed. | ***input\_CIE\_XPRT\_2018\_with\_buffer*** file is generated   Note: this file will be empty for install test | *PASS* |

**Appendix C**

**QA Checklist**

