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**TASK COMPLETION REPORT FOR INVESTIGATING WHY OUTPUT
SIGNAL-VARIABLE VALUES DIFFER FROM THEIR OUTPUT
COMPONENT-PARAMETER VALUES IN TEST**

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VALUES IN TEST PROBLEM MST2**

by

Robert G. Steinke

September 10, 1997

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TASK COMPLETION REPORT FOR INVESTIGATING WHY OUTPUT SIGNAL-VARIABLE VALUES DIFFER FROM THEIR OUTPUT COMPONENT-PARAMETER VALUES IN TEST PROBLEM MST2

Robert G. Steinke

ABSTRACT

Signal-variable values and their component-parameter values differ in an end-of-timestep edit to the TRCOUT and TRCGRF files because signal variables have beginning-of-timestep values, and component parameters have end-of-timestep values. Oscillatory divergence in the MST2 standard test problem after 9000 s occurs because of TRAC-P's numerical evaluation at a 1000 material Courant number. The magnitude of that divergence has diminished by a factor of 3.5 from Version 5.3.01 to 5.4.15 and by a factor of 25 from Version 5.4.15 to 5.4.28. That divergence can be eliminated by evaluating MST2 with a maximum material Courant number of 500.

1.0. INTRODUCTION

Knolls Atomic Power Laboratory (KAPL) reported for standard test problem MST2 that TRAC-P Version 5.4.15 signal-variable values differ from their component-data values output to the TRCOUT and TRCGRF files. The signal variables that were investigated have their additional signal-variable input data for file MST2 shown in Table I. On graphics parameter-vs-time plots, the signal-variable values lead their component-data values initially. At end-of-problem times 9300 to 10,000 s, the plotted signal-variable values were shown to diverge from their component-data values for the gas volume fraction, phasic and mixture mass flows, and phasic velocities. Los Alamos was asked to investigate why this difference exists between signal-variable values and their component-data values in the TRCOUT and TRCGRF files of TRAC-P.

2.0. TESTING

Looking at the plotted results, we suspected the signal-variable values lead their component-data values because the signal variables are defined at the beginning of the timestep, and the component-data values are defined at the end of the timestep for a given end-of-timestep problem time output edit. This would cause the observed difference between values. The observed divergence between the signal variable values and their component-data values at the end of the problem could be due to this beginning/end-of-timestep defining difference, plotting only even- or odd-numbered timestep results and timestep oscillatory divergence in the numerical solution after being evaluated with a timestep of ~100 s at a material Courant number of 1000 for >8000 s of problem time.

TABLE I
SIGNAL-VARIABLE INPUT DATA ADDED TO THE TRACIN FILE FOR TEST
PROBLEM MST2

*	IDSV	ISVN	ICLN	ICN1	ICN2	
	401	21	4	1	0	* Pressure PIPE 4, Cell 1
	402	22	4	1	0	* Vapor Temperature PIPE 4, Cell 1
	403	23	4	1	0	* Liquid Temperature PIPE 4, Cell 1
	404	27	4	1	0	* Gas Volume Fraction PIPE 4, Cell 1
	405	29	4	1	0	* Gas Mass Flow PIPE 4, Interface 1
	406	32	4	1	0	* Liquid Mass Flow PIPE 4, Interface 1
	407	35	4	1	0	* Gas Velocity PIPE 4, Interface 1
	408	38	4	1	0	* Liquid Velocity PIPE 4, Interface 1
	409	69	4	1	0	* Mixture Mass Flow PIPE 4, Interface 1
	415	29	4	2	0	* Gas Mass Flow PIPE 4, Interface 2
	416	32	4	2	0	* Liquid Mass Flow PIPE 4, Interface 2
	417	35	4	2	0	* Gas Velocity PIPE 4, Interface 2
	418	38	4	2	0	* Liquid Velocity PIPE 4, Interface 2
	419	69	4	2	0	* Mixture Mass Flow PIPE 4, Interface 2

These suspicions were verified by evaluating the MST2 test problem with output edits to the TRCOUT and TRCGRF files every timestep for timesteps 1 (0.0 s) to 25 (0.0477 s), and 315 (9023.1 s) to 325 (10024.7 s). The signal-variable and component 4 data output to the TRCOUT file for timesteps 5 to 12, 20 to 25, and 315 to 325 is shown in Appendix A. The parameter values of interest are shown in bold type in the timestep 5 output. These values for timesteps 5 to 12, 20 to 25, and 315 to 325 are tabulated in Table II for signal variables 401 to 408 and their corresponding component 4 data.

Note that in Table II all beginning-of-timestep signal-variable values for a given timestep are the same as their end-of-timestep component-data values from the previous timestep. Their values are consistent for the same point in time. The TRCGRF file plots signal variables at the end-of-timestep time even though they are defined at the beginning-of-timestep time. This causes their values to be shifted one timestep forward making them appear to be inconsistent with their component data.

The MST2 test problem was evaluated a second time with TRCGRF-file graphic edits every timestep for problem times 0 s to 4 s and 7000 s to 10,000 s. Figures 1 to 7 show the one timestep advance of the signal-variable values in the plotted graphics output from TRAC-P. If the signal-variable values were shifted back one timestep in time, their plotted values would be the same as their component-data values.

Plotting parameter values from every timestep for problem times 7000 to 10,000 s shows oscillatory timestep divergence in Figs. 4 to 7 for the gas volume fraction, phasic and total mass flows, and phasic velocities. If only even- or odd-numbered timesteps were plotted, divergence between the signal-variable and component-data values would appear to be occurring. Again, the signal variables would have the same values as their component data in these lower-half plots if the signal-variable

values were shifted back one timestep in time. Their plotted values that should be the same are slightly different because of round-off error in the component-data values that are packed four values per storage word vs signal-variable values that are stored one value per storage word in the TRCGRF file.

It is interesting to note that the magnitude of the Cray-evaluated oscillatory timestep divergence evaluated at KAPL on Version 5.4.15 of TRAC-P is 25 times larger than that which was evaluated on an Ultra SUN workstation with Version 5.4.28. Is this due to machine dependence or to corrections and improvements made to TRAC-P between these two versions? To determine if the oscillatory divergence is due to recent changes to TRAC-P, the MST2 test problem, with added signal variables and consecutive timestep edits, was evaluated on a Cray YMP computer with TRAC-P Version 5.3.01 (dated 8/11/92). Figures 8 to 12 show the end-of-problem oscillatory timestep divergence that was evaluated for the gas volume fraction, phasic mass flows, and phasic velocities. Its oscillatory-divergence magnitude is 3.5 times greater than the Cray-evaluated oscillatory divergence at KAPL. Thus, this oscillatory timestep divergence evaluated at a material Courant number of 1000 in test problem MST2 has existed since TRAC-PF1/MOD2 Version 5.3. Its magnitude is believed to have decreased because of corrections and improvements made to TRAC.

A standard test problem should not have oscillatory divergence in its numerical solution. The oscillatory divergence can be eliminated by changing the MST2 test problem end time from 10,000 to 7000 s or less. It also can be eliminated by evaluating TRAC-P with a maximum material Courant number <1000 . The later was demonstrated with the DPTCON update in TRAC-P Version 5.4.28 by inputting a one-dimensional maximum material Courant number of 500 and evaluating the MST2 test problem for 50,000 s. This reduced the timestep size from ~ 100 to ~ 50 s, and the steady-state solution converged to a constant condition without oscillation or divergence.

3.0. CONCLUSIONS

TRAC-P outputs signal variables and their component data to the TRCOUT and TRCGRF files with beginning-of-timestep values for the signal variables and end-of-timestep values for the component data at the end-of-timestep edit time. This shifts the signal-variable values forward in time by one timestep making their values inconsistent with their component-data values in a specific-time output edit. This inconsistency was noted at KAPL and explained in this report by the above statement. Further divergence of signal-variable values and their component-data values after 9000 s in standard test problem MST2 also was observed at KAPL. This was explained as being due to oscillatory timestep divergence of the numerical solution evaluated with a material Courant number of 1000 when plotted at only even- or odd-numbered timesteps. The oscillatory behavior in problem MST2 was shown to exist in TRAC-PF1/MOD2 Version 5.3.01 as well as in TRAC-P Versions 5.4.15 and 5.4.28. The magnitude of the oscillatory divergence was 25 times greater in Version 5.4.15, and 87 (25×3.5) times greater in Version 5.3.01 than in the current Version 5.4.28 of TRAC-P. Reducing the maximum material Courant number from 1000 to 500 eliminated the oscillatory-divergence behavior of the numerical-solution in the MST2 test problem.

ACKNOWLEDGMENT

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TABLE II

TEST PROBLEM MST2 PARAMETER VALUES DEFINED BY COMPONENT 4 IN
CELL OR INTERFACE 1 AND BY SIGNAL VARIABLES AT TIMESTEPS 5-12,
20-25, AND 315-325

Time- step Number	Time (s)	--- Pressure (MPa) ---		- Gas Temperature (K) -	
		Sig. Var. 401	Comp. 4 Cell 1	Sig. Var. 402	Comp. 4 Cell 1
5	0.0055	1.064938	1.06527	460.6876	460.4
6	0.0068	1.065269	1.06533	460.3781	460.0
7	0.0081	1.065332	1.06532	460.0459	459.7
8	0.0095	1.065317	1.06528	459.7122	459.4
9	0.0110	1.065280	1.06524	459.3839	459.1
10	0.0126	1.065236	1.06519	459.0634	458.8
11	0.0142	1.065189	1.06514	458.7519	458.5
12	0.0159	1.065142	1.06510	458.4506	458.2
20	0.0331	1.064787	1.06473	456.4773	456.3
21	0.0357	1.064732	1.06467	456.2895	456.1
22	0.0385	1.064674	1.06461	456.1152	456.0
23	0.0414	1.064611	1.06454	455.9539	455.8
24	0.0445	1.064540	1.06446	455.8054	455.7
25	0.0477	1.064461	1.06437	455.6690	455.5
315	9023.1	1.108477	1.10848	456.6253	456.6
316	9123.3	1.108477	1.10848	456.6253	456.6
317	9223.4	1.108477	1.10848	456.6253	456.6
318	9323.6	1.108477	1.10848	456.6253	456.6
319	9423.7	1.108477	1.10848	456.6253	456.6
320	9523.9	1.108477	1.10848	456.6253	456.6
321	9624.0	1.108477	1.10848	456.6253	456.6
322	9724.2	1.108477	1.10848	456.6253	456.6
323	9824.4	1.108477	1.10848	456.6253	456.6
324	9924.5	1.108477	1.10848	456.6253	456.6
325	10024.7	1.108477	1.10848	456.6253	456.6

TABLE II (Cont)

TEST PROBLEM MST2 PARAMETER VALUES DEFINED BY COMPONENT 4 IN
CELL OR INTERFACE 1 AND BY SIGNAL VARIABLES AT TIMESTEPS 5-12,
20-25, AND 315-325

Time- step Number	Time (s)	-Liquid Temperature (K) -		- Gas Volume Fraction (-) -	
		Sig. Var. 403	Comp. 4 Cell 1	Sig. Var. 404	Comp. 4 Cell 1
5	0.0055	454.8754	454.9	0.5002954	0.5003
6	0.0068	454.8727	454.9	0.5003280	0.5004
7	0.0081	454.8705	454.9	0.5003681	0.5004
8	0.0095	454.8684	454.9	0.5004169	0.5005
9	0.0110	454.8663	454.9	0.5004752	0.5005
10	0.0126	454.8641	454.9	0.5005437	0.5006
11	0.0142	454.8619	454.9	0.5006229	0.5007
12	0.0159	454.8596	454.9	0.5007135	0.5008
20	0.0331	454.8415	454.8	0.5019179	0.5021
21	0.0357	454.8391	454.8	0.5021377	0.5024
22	0.0385	454.8367	454.8	0.5023751	0.5026
23	0.0414	454.8341	454.8	0.5026315	0.5029
24	0.0445	454.8314	454.8	0.5029090	0.5032
25	0.0477	454.8286	454.8	0.5032107	0.5035
315	9023.1	456.4913	456.5	0.3328429	0.3328
316	9123.3	456.4913	456.5	0.3328388	0.3328
317	9223.4	456.4913	456.5	0.3328440	0.3328
318	9323.6	456.4913	456.5	0.3328373	0.3328
319	9423.7	456.4913	456.5	0.3328459	0.3328
320	9523.9	456.4913	456.5	0.3328349	0.3328
321	9624.0	456.4913	456.5	0.3328490	0.3328
322	9724.2	456.4913	456.5	0.3328310	0.3329
323	9824.4	456.4913	456.5	0.3328540	0.3328
324	9924.5	456.4913	456.5	0.3328247	0.3329
325	10024.7	456.4913	456.5	0.3328622	0.3328

TABLE II (Cont)

TEST PROBLEM MST2 PARAMETER VALUES DEFINED BY COMPONENT 4 IN
CELL OR INTERFACE 1 AND BY SIGNAL VARIABLES AT TIMESTEPS 5-12,
20-25, AND 315-325

Time- step Number	Time (s)	- Gas Mass Flow (kg/s) -		- Liquid Mass Flow (kg/s) -	
		Sig. Var. 405	Comp. 4 Cell 1	Sig. Var. 406	Comp. 4 Cell 1
5	0.0055	-0.4128925	-0.4431	-23.79867	-31.54
6	0.0068	-0.4430732	-0.4694	-31.54327	-39.29
7	0.0081	-0.4693900	-0.4953	-39.29019	-47.05
8	0.0095	-0.4953126	-0.5215	-47.04938	-54.84
9	0.0110	-0.5215492	-0.5475	-54.83852	-62.66
10	0.0126	-0.5475279	-0.5722	-62.66484	-70.52
11	0.0142	-0.5722365	-0.5944	-70.52449	-78.41
12	0.0159	-0.5944209	-0.6124	-78.40673	-86.30
20	0.0331	-0.6808401	-0.7213	-143.2853	-151.8
21	0.0357	-0.7213369	-0.7681	-151.7519	-160.5
22	0.0385	-0.7680551	-0.8230	-160.4573	-169.6
23	0.0414	-0.8230028	-0.8884	-169.5725	-179.3
24	0.0445	-0.8884351	-0.9662	-179.3224	-190.0
15	0.0477	-0.9661574	-1.057	-189.9507	-201.7
315	9023.1	2.543331	2.544	701.7245	702.0
316	9123.3	2.544103	2.543	701.9616	701.7
317	9223.4	2.543116	2.544	701.6583	702.0
318	9323.6	2.544378	2.543	702.0461	701.6
319	9423.7	2.542764	2.545	701.5502	702.2
320	9523.9	2.544828	2.542	702.1843	701.4
321	9624.0	2.542189	2.546	701.3735	702.4
322	9724.2	2.545563	2.541	702.4103	701.1
323	9824.4	2.541249	2.547	701.0844	702.8
324	9924.5	2.546764	2.540	702.7797	700.6
325	10024.7	2.539711	2.549	700.6117	703.4

TABLE II (Cont)

TEST PROBLEM MST2 PARAMETER VALUES DEFINED BY COMPONENT 4 IN
CELL OR INTERFACE 1 AND BY SIGNAL VARIABLES AT TIMESTEPS 5-12,
20-25, AND 315-325

Time- step Number	Time (s)	-- Gas Velocity (m/s) --		-- Liquid Velocity (m/s) --	
		Sig. Var. 407	Comp. 4 Cell 1	Sig. Var. 408	Comp. 4 Cell 1
5	0.0055	-0.1609021	-0.1724	-0.05380208	-0.07131
6	0.0068	-0.1724383	-0.1825	-0.07131485	-0.08884
7	0.0081	-0.1824792	-0.1924	-0.08883642	-0.1064
8	0.0095	-0.1923560	-0.2023	-0.1063903	-0.1240
9	0.0110	-0.2023375	-0.2122	-0.1240176	-0.1417
10	0.0126	-0.2122001	-0.2216	-0.1417360	-0.1595
11	0.0142	-0.2215521	-0.2299	-0.1595379	-0.1774
12	0.0159	-0.2299100	-0.2366	-0.1774005	-0.1953
20	0.0331	-0.2612941	-0.2766	-0.3249693	-0.3443
21	0.0357	-0.2765786	-0.2942	-0.3443223	-0.3642
22	0.0385	-0.2942200	-0.3150	-0.3642474	-0.3851
23	0.0414	-0.3149800	-0.3397	-0.3851366	-0.4075
24	0.0445	-0.3397118	-0.3691	-0.4075069	-0.4319
25	0.0477	-0.3690922	-0.4033	-0.4319201	-0.4588
315	9023.1	1.350955	1.351	1.212017	1.212
316	9123.3	1.351365	1.351	1.212427	1.212
317	9223.4	1.350841	1.352	1.211903	1.213
318	9323.6	1.351511	1.351	1.212573	1.212
319	9423.7	1.350654	1.352	1.211716	1.213
320	9523.9	1.351750	1.350	1.212811	1.211
321	9624.0	1.350349	1.352	1.211411	1.213
322	9724.2	1.352141	1.350	1.213202	1.211
323	9824.4	1.349849	1.353	1.210912	1.214
324	9924.5	1.352779	1.349	1.213840	1.210
325	10024.7	1.349032	1.354	1.210095	1.215

Fig. 1. Pressure vs time (0 to 4 s and 7000 to 10000 s) in component 4, cell 1 and as defined by signal variable 401.

Fig. 2. Gas temperature vs time (0 to 4 s and 7000 to 10000 s) in component 4, cell 1 and as defined by signal variable 402.

Fig. 3. Liquid temperature vs time (0 to 4 s and 7000 to 10000 s) in component 4, cell 1 and as defined by signal variable 403.

Fig. 4. Gas volume fraction vs time (0 to 4 and 7000 to 10000 s) in component 4, cell 1 and as defined by signal variable 404.

Fig. 5. Mass flows vs time (0 to 4 s and 7000 to 10000 s) at component 4, interface 1 and as defined by signal variables 405 and 406.

Fig. 6. Gas velocity vs time (0 to 4 s and 7000 to 10000 s) at component 4, interface 1 and as defined by signal variable 407.

Fig. 7. Liquid velocity vs time (0 to 4 s and 7000 to 10000 s) at component 4, interface 1 and as defined by signal variable 408.

Fig. 8. Gas volume fraction vs time in component 4, cell 1, and as defined by signal variable 404 for Version 5.3.01.

Fig. 9. Gas mass flow vs time in component 4, interface 1 and as defined by signal variable 405 for Version 5.3.01.

Fig. 10. Liquid mass flow vs time in component 4, interface 1 and as defined by signal variable 406 for Version 5.3.01.

Fig. 11. Gas velocity vs time in component 4, interface 1 and as defined by signal variable 407 for Version 5.3.01.

Fig. 12. Liquid velocity vs time in component 4, interface 1 and as defined by signal variable 408 for Version 5.3.01.

Appendix A

Test problem MST2

Large edits every timestep from timesteps 5 to 12, 20 to 25 and 315 to 325.

```

3191 trac large edit
3192
3193 problem time is 5.525631E-03 s, time-step size is 1.2155E-03 s, time-step number is 5, outer-iteration number is 2
3194
3217 ***** signal-variable values at time 0.00431 s *****
3218
3219 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
3220
3221 1 4.310125E-03 401 1.064938E+06 402 4.606876E+02 403 4.548754E+02 404 5.002954E-01
3222 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
3223 405 -4.128925E-01 406 -2.379867E+01 407 -1.609021E-01 408 -5.380208E-02 409 -2.421156E+01
3224 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
3225 415 -8.134135E-02 416 -9.445481E+00 417 -6.339693E-02 418 -4.270380E-02 419 -9.526822E+00
3226 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
3227
3259 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
3260
3261 ncd-gas
3262
3263 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
3264 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
3265 1 1.06527E+06 0.00000E+00 5.003E-01 4.548E+02 4.549E+02 4.604E+02 8.852E+02 5.136E+00 -7.131E-02 -1.724E-01 8.092E-03
3266 2 -5.495E-02 -7.873E-02 1.335E-01
3267
3268 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
3269 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
3270 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.032E-01 3.332E+05 -3.154E+01 -4.431E-01 -7.195E-02 -1.782E-01 8.092E-03
3271 2 1.000E+05 -1.215E+01 -1.011E-01 -5.490E-02 -7.692E-02 1.335E-01
3272
3273 pipe component total coolant mass is 4.44903E+02 kg, total coolant energy is 3.46380E+08 w*s, and
3274 computed initial total coolant mass is 4.44938E+02 kg

4018 trac large edit
4019
4020 problem time is 6.801913E-03 s, time-step size is 1.2763E-03 s, time-step number is 6, outer-iteration number is 2
4021
4044 ***** signal-variable values at time 0.00553 s *****
4045
4046 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
4047
4048 1 5.525631E-03 401 1.065269E+06 402 4.603781E+02 403 4.548727E+02 404 5.003280E-01
4049 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
4050 405 -4.430732E-01 406 -3.154327E+01 407 -1.724383E-01 408 -7.131485E-02 409 -3.198634E+01
4051 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
4052 415 -1.011488E-01 416 -1.215406E+01 417 -7.873496E-02 418 -5.495000E-02 419 -1.225521E+01
4053 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
4054
4086 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
4087
4088 ncd-gas
4089
4090 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
4091 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
4092 1 1.06533E+06 0.00000E+00 5.004E-01 4.549E+02 4.549E+02 4.600E+02 8.852E+02 5.141E+00 -8.884E-02 -1.825E-01 7.672E-03
4093 2 -6.788E-02 -9.407E-02 1.331E-01
4094
4095 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
4096 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
4097 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.549E+02 1.041E-01 3.331E+05 -3.929E+01 -4.694E-01 -8.967E-02 -1.901E-01 7.672E-03
4098 2 1.000E+05 -1.501E+01 -1.210E-01 -6.782E-02 -9.243E-02 1.331E-01
4099
4100 pipe component total coolant mass is 4.44879E+02 kg, total coolant energy is 3.46361E+08 w*s, and
4101 computed initial total coolant mass is 4.44938E+02 kg

4845 trac large edit
4846
4847 problem time is 8.142008E-03 s, time-step size is 1.3401E-03 s, time-step number is 7, outer-iteration number is 2
4848
4871 ***** signal-variable values at time 0.00680 s *****
4872
4873 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
4874
4875 1 6.801913E-03 401 1.065332E+06 402 4.600459E+02 403 4.548705E+02 404 5.003681E-01
4876 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
4877 405 -4.693900E-01 406 -3.929019E+01 407 -1.824792E-01 408 -8.883642E-02 409 -3.975958E+01
4878 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
4879 415 -1.209759E-01 416 -1.501296E+01 417 -9.406994E-02 418 -6.787593E-02 419 -1.513394E+01
4880 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
4881
4913 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
4914
4915 ncd-gas
4916
4917 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
4918 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
4919 1 1.06532E+06 0.00000E+00 5.004E-01 4.549E+02 4.549E+02 4.597E+02 8.852E+02 5.146E+00 -1.064E-01 -1.924E-01 7.368E-03
4920 2 -8.152E-02 -1.099E-01 1.328E-01
4921
4922 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
4923 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
4924 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.549E+02 1.051E-01 3.331E+05 -4.705E+01 -4.953E-01 -1.072E-01 -1.998E-01 7.368E-03
4925 2 1.000E+05 -1.803E+01 -1.414E-01 -8.146E-02 -1.082E-01 1.328E-01
4926

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4927 pipe component total coolant mass is 4.44848E+02 kg , total coolant energy is 3.46336E+08 w*s, and
4928 computed initial total coolant mass is 4.44938E+02 kg

5672 trac large edit
5673
5674 problem time is 9.549109E-03 s, time-step size is 1.4071E-03 s, time-step number is 8, outer-iteration number is 2
5675
5698 ***** signal-variable values at time 0.00814 s *****
5699
5700 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
5701
5702 1 8.142008E-03 401 1.065317E+06 402 4.597122E+02 403 4.548684E+02 404 5.004169E-01
5703 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
5704 405 -4.953126E-01 406 -4.704938E+01 407 -1.923560E-01 408 -1.063903E-01 409 -4.754469E+01
5705 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
5706 415 -1.414088E-01 416 -1.803024E+01 417 -1.098516E-01 418 -8.151818E-02 419 -1.817165E+01
5707 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
5740
5741 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
5742
5743 ncd-gas
5744 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
5745 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
5746 1 1.06528E+06 0.00000E+00 5.005E-01 4.549E+02 4.549E+02 4.594E+02 8.852E+02 5.150E+00 -1.240E-01 -2.023E-01 7.133E-03
5747 2 -9.592E-02 -1.263E-01 1.325E-01
5748
5749 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq velt.gas wf.gas
5750 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
5751 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.549E+02 1.061E-01 3.330E+05 -5.484E+01 -5.215E-01 -1.248E-01 -2.097E-01 7.133E-03
5752 2 1.000E+05 -2.122E+01 -1.627E-01 -9.585E-02 -1.247E-01 1.325E-01
5753
5754 pipe component total coolant mass is 4.44809E+02 kg , total coolant energy is 3.46305E+08 w*s, and
5755 computed initial total coolant mass is 4.44938E+02 kg

6499 trac large edit
6500
6501 problem time is 1.102656E-02 s, time-step size is 1.4775E-03 s, time-step number is 9, outer-iteration number is 2
6502
6525 ***** signal-variable values at time 0.00955 s *****
6526
6527 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
6528
6529 1 9.549109E-03 401 1.065280E+06 402 4.593839E+02 403 4.548663E+02 404 5.004752E-01
6530 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
6531 405 -5.215492E-01 406 -5.483852E+01 407 -2.023375E-01 408 -1.240176E-01 409 -5.536007E+01
6532 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
6533 415 -1.627152E-01 416 -2.121515E+01 417 -1.262848E-01 418 -9.591856E-02 419 -2.137786E+01
6534 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
6567
6568 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
6569
6570 ncd-gas
6571 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
6572 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
6573 1 1.06524E+06 0.00000E+00 5.005E-01 4.548E+02 4.549E+02 4.591E+02 8.852E+02 5.155E+00 -1.417E-01 -2.122E-01 6.943E-03
6574 2 -1.111E-01 -1.435E-01 1.323E-01
6575
6576 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq velt.gas wf.gas
6577 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
6578 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.072E-01 3.329E+05 -6.266E+01 -5.475E-01 -1.425E-01 -2.197E-01 6.943E-03
6579 2 1.000E+05 -2.458E+01 -1.850E-01 -1.110E-01 -1.418E-01 1.323E-01
6580
6581 pipe component total coolant mass is 4.44761E+02 kg , total coolant energy is 3.46267E+08 w*s, and
6582 computed initial total coolant mass is 4.44938E+02 kg

7326 trac large edit
7327
7328 problem time is 1.257789E-02 s, time-step size is 1.5513E-03 s, time-step number is 10, outer-iteration number is 2
7329
7352 ***** signal-variable values at time 0.01103 s *****
7353
7354 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
7355
7356 1 1.102656E-02 401 1.065236E+06 402 4.590634E+02 403 4.548641E+02 404 5.005437E-01
7357 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
7358 405 -5.475279E-01 406 -6.266484E+01 407 -2.122001E-01 408 -1.417360E-01 409 -6.321237E+01
7359 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
7360 415 -1.850206E-01 416 -2.457766E+01 417 -1.434655E-01 418 -1.111223E-01 419 -2.476268E+01
7361 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
7394
7395 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
7396
7397 ncd-gas
7398 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
7399 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
7400 1 1.06519E+06 0.00000E+00 5.006E-01 4.548E+02 4.549E+02 4.588E+02 8.852E+02 5.159E+00 -1.595E-01 -2.216E-01 6.784E-03
7401 2 -1.272E-01 -1.614E-01 1.321E-01
7402
7403 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq velt.gas wf.gas
7404 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
7405 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.084E-01 3.329E+05 -7.052E+01 -5.722E-01 -1.603E-01 -2.295E-01 6.784E-03
7406 2 1.000E+05 -2.813E+01 -2.084E-01 -1.271E-01 -1.598E-01 1.321E-01
7407
7408 pipe component total coolant mass is 4.44704E+02 kg , total coolant energy is 3.46222E+08 w*s, and
7409 computed initial total coolant mass is 4.44938E+02 kg

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8153 trac large edit
8154
8155 problem time is 1.420679E-02 s, time-step size is 1.6289E-03 s, time-step number is 11, outer-iteration number is 2
8156
8179 ***** signal-variable values at time 0.01258 s *****
8180
8181 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
8182
8183 1 1.257789E-02 401 1.065189E+06 402 4.587519E+02 403 4.548619E+02 404 5.006229E-01
8184 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
8185 405 -5.722365E-01 406 -7.052449E+01 407 -2.215521E-01 408 -1.595379E-01 409 -7.109672E+01
8186 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
8187 415 -2.083926E-01 416 -2.812828E+01 417 -1.614451E-01 418 -1.271770E-01 419 -2.833667E+01
8188 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
8221
8222 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
8223
8224 ncd-gas
8225 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
8226 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
8227 1 1.06514E+06 0.00000E+00 5.007E-01 4.548E+02 4.549E+02 4.585E+02 8.852E+02 5.164E+00 -1.774E-01 -2.299E-01 6.649E-03
8228 2 -1.441E-01 -1.803E-01 1.319E-01
8229
8230 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
8231 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
8232 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.096E-01 3.327E+05 -7.841E+01 -5.944E-01 -1.782E-01 -2.387E-01 6.649E-03
8233 2 1.000E+05 -3.188E+01 -2.329E-01 -1.440E-01 -1.786E-01 1.319E-01
8234
8235 pipe component total coolant mass is 4.44638E+02 kg, total coolant energy is 3.46170E+08 w*s, and
8236 computed initial total coolant mass is 4.44938E+02 kg

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8980 trac large edit
8981
8982 problem time is 1.591713E-02 s, time-step size is 1.7103E-03 s, time-step number is 12, outer-iteration number is 2
8983
9006 ***** signal-variable values at time 0.01421 s *****
9007
9008 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
9009
9010 1 1.420679E-02 401 1.065142E+06 402 4.584506E+02 403 4.548596E+02 404 5.007135E-01
9011 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
9012 405 -5.944209E-01 406 -7.840673E+01 407 -2.299100E-01 408 -1.774005E-01 409 -7.900115E+01
9013 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
9014 415 -2.328753E-01 416 -3.187786E+01 417 -1.802572E-01 418 -1.441319E-01 419 -3.211073E+01
9015 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
9048
9049 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
9050
9051 ncd-gas
9052 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
9053 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
9054 1 1.06510E+06 0.00000E+00 5.008E-01 4.548E+02 4.549E+02 4.582E+02 8.852E+02 5.168E+00 -1.953E-01 -2.366E-01 6.531E-03
9055 2 -1.620E-01 -1.999E-01 1.318E-01
9056
9057 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
9058 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
9059 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.109E-01 3.326E+05 -8.630E+01 -6.124E-01 -1.961E-01 -2.466E-01 6.531E-03
9060 2 1.000E+05 -3.584E+01 -2.585E-01 -1.619E-01 -1.984E-01 1.318E-01
9061
9062 pipe component total coolant mass is 4.44561E+02 kg, total coolant energy is 3.46110E+08 w*s, and
9063 computed initial total coolant mass is 4.44938E+02 kg

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15596 trac large edit
15597
15598 problem time is 3.306595E-02 s, time-step size is 2.5270E-03 s, time-step number is 20, outer-iteration number is 2
15599
15622 ***** signal-variable values at time 0.03054 s *****
15623
15624 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
15625
15626 1 3.053900E-02 401 1.064787E+06 402 4.564773E+02 403 4.548415E+02 404 5.019179E-01
15627 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
15628 405 -6.808401E-01 406 -1.432853E+02 407 -2.612941E-01 408 -3.249693E-01 409 -1.439661E+02
15629 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
15630 415 -4.745230E-01 416 -7.033894E+01 417 -3.651855E-01 418 -3.180977E-01 419 -7.081346E+01
15631 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
15664
15665 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
15666
15667 ncd-gas
15668 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
15669 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
15670 1 1.06473E+06 0.00000E+00 5.021E-01 4.548E+02 4.548E+02 4.563E+02 8.852E+02 5.194E+00 -3.443E-01 -2.766E-01 5.931E-03
15671 2 -3.457E-01 -3.943E-01 1.310E-01
15672
15673 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
15674 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
15675 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.249E-01 3.310E+05 -1.518E+02 -7.213E-01 -3.443E-01 -2.810E-01 5.931E-03
15676 2 1.000E+05 -7.643E+01 -5.127E-01 -3.455E-01 -3.927E-01 1.310E-01
15677
15678 pipe component total coolant mass is 4.43525E+02 kg, total coolant energy is 3.45305E+08 w*s, and
15679 computed initial total coolant mass is 4.44938E+02 kg

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16423 trac large edit
16424
16425 problem time is 3.571925E-02 s, time-step size is 2.6533E-03 s, time-step number is 21, outer-iteration number is 2
16426
16449 ***** signal-variable values at time 0.03307 s *****
16450
16451 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
16452
16453 1 3.306595E-02 401 1.064732E+06 402 4.562895E+02 403 4.548391E+02 404 5.021377E-01
16454 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
16455 405 -7.213369E-01 406 -1.517519E+02 407 -2.765786E-01 408 -3.443223E-01 409 -1.524732E+02
16456 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
16457 415 -5.127007E-01 416 -7.642972E+01 417 -3.943390E-01 418 -3.456604E-01 419 -7.694242E+01
16458 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
16459
16492 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
16493
16494 ncd-gas
16495 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
16496 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
16497 1 1.06467E+06 0.00000E+00 5.024E-01 4.548E+02 4.548E+02 4.561E+02 8.852E+02 5.196E+00 -3.642E-01 -2.942E-01 5.879E-03
16498 2 -3.748E-01 -4.251E-01 1.309E-01
16499
16500 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq velt.gas wf.gas
16501 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
16502 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.272E-01 3.307E+05 -1.605E+02 -7.681E-01 -3.646E-01 -2.967E-01 5.879E-03
16503 2 1.000E+05 -8.287E+01 -5.530E-01 -3.746E-01 -4.234E-01 1.309E-01
16504
16505 pipe component total coolant mass is 4.43334E+02 kg, total coolant energy is 3.45157E+08 w*s, and
16506 computed initial total coolant mass is 4.44938E+02 kg

17250 trac large edit
17251
17252 problem time is 3.850521E-02 s, time-step size is 2.7860E-03 s, time-step number is 22, outer-iteration number is 2
17253
17276 ***** signal-variable values at time 0.03572 s *****
17277
17278 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
17279
17280 1 3.571925E-02 401 1.064674E+06 402 4.561152E+02 403 4.548367E+02 404 5.023751E-01
17281 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
17282 405 -7.680551E-01 406 -1.604573E+02 407 -2.942200E-01 408 -3.642474E-01 409 -1.612253E+02
17283 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
17284 415 -5.530478E-01 416 -8.286943E+01 417 -4.251396E-01 418 -3.748077E-01 419 -8.342248E+01
17285 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
17286
17319 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
17320
17321 ncd-gas
17322 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
17323 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
17324 1 1.06461E+06 0.00000E+00 5.026E-01 4.548E+02 4.548E+02 4.560E+02 8.852E+02 5.198E+00 -3.851E-01 -3.150E-01 5.830E-03
17325 2 -4.057E-01 -4.577E-01 1.308E-01
17326
17327 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq velt.gas wf.gas
17328 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
17329 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.297E-01 3.304E+05 -1.696E+02 -8.230E-01 -3.851E-01 -3.150E-01 5.830E-03
17330 2 1.000E+05 -8.968E+01 -5.958E-01 -4.054E-01 -4.559E-01 1.308E-01
17331
17332 pipe component total coolant mass is 4.43128E+02 kg, total coolant energy is 3.44997E+08 w*s, and
17333 computed initial total coolant mass is 4.44938E+02 kg

18077 trac large edit
18078
18079 problem time is 4.143048E-02 s, time-step size is 2.9253E-03 s, time-step number is 23, outer-iteration number is 2
18080
18103 ***** signal-variable values at time 0.03851 s *****
18104
18105 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
18106
18107 1 3.850521E-02 401 1.064611E+06 402 4.559539E+02 403 4.548341E+02 404 5.026315E-01
18108 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
18109 405 -8.230028E-01 406 -1.695725E+02 407 -3.149800E-01 408 -3.851366E-01 409 -1.703955E+02
18110 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
18111 415 -5.957680E-01 416 -8.968241E+01 417 -4.577432E-01 418 -4.056514E-01 419 -9.027818E+01
18112 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
18113
18146 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
18147
18148 ncd-gas
18149 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
18150 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
18151 1 1.06454E+06 0.00000E+00 5.029E-01 4.548E+02 4.548E+02 4.558E+02 8.852E+02 5.200E+00 -4.075E-01 -3.397E-01 5.781E-03
18152 2 -4.383E-01 -4.923E-01 1.307E-01
18153
18154 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq velt.gas wf.gas
18155 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
18156 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.323E-01 3.301E+05 -1.793E+02 -8.884E-01 -4.071E-01 -3.369E-01 5.781E-03
18157 2 1.000E+05 -9.690E+01 -6.411E-01 -4.381E-01 -4.903E-01 1.307E-01
18158
18159 pipe component total coolant mass is 4.42905E+02 kg, total coolant energy is 3.44824E+08 w*s, and
18160 computed initial total coolant mass is 4.44938E+02 kg

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18904 trac large edit
18905
18906 problem time is 4.450200E-02 s, time-step size is 3.0715E-03 s, time-step number is 24, outer-iteration number is 2
18907
18930 ***** signal-variable values at time 0.04143 s *****
18931
18932 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
18933
18934 1 4.143048E-02 401 1.064540E+06 402 4.558054E+02 403 4.548314E+02 404 5.029090E-01
18935 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
18936 405 -8.734351E-01 406 -1.793224E+02 407 -3.397118E-01 408 -4.075069E-01 409 -1.802109E+02
18937 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
18938 415 -6.411084E-01 416 -9.689693E+01 417 -4.923388E-01 418 -4.383217E-01 419 -9.753803E+01
18939 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
18972
18973 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
18974
18975 ncd-gas
18976 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
18977 cell pa pa - k k k kg/m3 kg/m3 m/s m/s m/s -
18978 1 1.06446E+06 0.00000E+00 5.032E-01 4.548E+02 4.548E+02 4.557E+02 8.852E+02 5.202E+00 -4.319E-01 -3.691E-01 5.734E-03
18979 2 -4.730E-01 -5.291E-01 1.307E-01
18980
18981 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
18982 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s m/s -
18983 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.352E-01 3.297E+05 -1.900E+02 -9.662E-01 -4.310E-01 -3.634E-01 5.734E-03
18984 2 1.000E+05 -1.045E+02 -6.893E-01 -4.727E-01 -5.268E-01 1.307E-01
18985
18986 pipe component total coolant mass is 4.42663E+02 kg, total coolant energy is 3.44637E+08 w*s, and
18987 computed initial total coolant mass is 4.44938E+02 kg

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19731 trac large edit
19732
19733 problem time is 4.772710E-02 s, time-step size is 3.2251E-03 s, time-step number is 25, outer-iteration number is 2
19734
19757 ***** signal-variable values at time 0.04450 s *****
19758
19759 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
19760
19761 1 4.450200E-02 401 1.064461E+06 402 4.556690E+02 403 4.548286E+02 404 5.032107E-01
19762 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
19763 405 -9.661574E-01 406 -1.899507E+02 407 -3.690922E-01 408 -4.319201E-01 409 -1.909168E+02
19764 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
19765 415 -6.893493E-01 416 -1.045461E+02 417 -5.291398E-01 418 -4.729714E-01 419 -1.052354E+02
19766 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
19799
19800 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
19801
19802 ncd-gas
19803 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
19804 cell pa pa - k k k kg/m3 kg/m3 m/s m/s m/s -
19805 1 1.06437E+06 0.00000E+00 5.035E-01 4.548E+02 4.548E+02 4.555E+02 8.853E+02 5.203E+00 -4.588E-01 -4.033E-01 5.685E-03
19806 2 -5.098E-01 -5.684E-01 1.306E-01
19807
19808 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
19809 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s m/s -
19810 1 0.00E+00 0.00E+00 1.000 1.000E+05 4.548E+02 1.382E-01 3.293E+05 -2.017E+02 -1.057E+00 -4.576E-01 -3.952E-01 5.685E-03
19811 2 1.000E+05 -1.127E+02 -7.408E-01 -5.094E-01 -5.657E-01 1.306E-01
19812
19813 pipe component total coolant mass is 4.42400E+02 kg, total coolant energy is 3.44433E+08 w*s, and
19814 computed initial total coolant mass is 4.44938E+02 kg

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23307 trac large edit
23308
23309 problem time is 9.023112E+03 s, time-step size is 1.0015E+02 s, time-step number is 315, outer-iteration number is 1
23310
23333 ***** signal-variable values at time 8922.95740 s *****
23334
23335 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
23336
23337 1 8.922957E+03 401 1.108477E+06 402 4.566253E+02 403 4.564913E+02 404 3.328429E-01
23338 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
23339 405 2.543331E+00 406 7.017245E+02 407 1.350955E+00 408 1.212017E+00 409 7.042678E+02
23340 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
23341 415 2.295304E+00 416 7.019725E+02 417 2.539081E+00 418 2.381991E+00 419 7.042678E+02
23342 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
23375
23376 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
23377
23378 ncd-gas
23379 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
23380 cell pa pa - k k k kg/m3 kg/m3 m/s m/s m/s -
23381 1 1.10848E+06 0.00000E+00 3.328E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.212E+00 1.351E+00 4.836E-03
23382 2 2.383E+00 2.540E+00 1.045E-01
23383
23384 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
23385 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s m/s -
23386 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.020E+02 2.544E+00 1.213E+00 1.352E+00 4.836E-03
23387 2 1.000E+05 7.022E+02 2.296E+00 2.383E+00 2.540E+00 1.045E-01
23388
23389 pipe component total coolant mass is 5.91208E+02 kg, total coolant energy is 4.61636E+08 w*s, and
23390 computed initial total coolant mass is 4.44938E+02 kg

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24154 trac large edit
24155
24156 problem time is 9.123267E+03 s, time-step size is 1.0015E+02 s, time-step number is 316, outer-iteration number is 1
24157
24180 ***** signal-variable values at time 9023.11224 s *****
24181
24182 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
24183
24184 1 9.023112E+03 401 1.108477E+06 402 4.566253E+02 403 4.564913E+02 404 3.328388E-01
24185 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
24186 405 2.544103E+00 406 7.01916E+02 407 1.351365E+00 408 1.212427E+00 409 7.045057E+02
24187 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
24188 415 2.295992E+00 416 7.022097E+02 417 2.539872E+00 418 2.382782E+00 419 7.045057E+02
24189 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
24222
24223 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
24224
24225 ncd-gas
24226 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
24227 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
24228 1 1.10848E+06 0.00000E+00 3.328E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.212E+00 1.351E+00 4.836E-03
24229 2 2.382E+00 2.539E+00 1.045E-01
24230
24231 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq velt.gas wf.gas
24232 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
24233 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.017E+02 2.543E+00 1.211E+00 1.350E+00 4.836E-03
24234 2 1.000E+05 7.019E+02 2.295E+00 2.382E+00 2.539E+00 1.045E-01
24235
24236 pipe component total coolant mass is 5.91211E+02 kg, total coolant energy is 4.61639E+08 w*s, and
24237 computed initial total coolant mass is 4.44938E+02 kg

24983 trac large edit
24984
24985 problem time is 9.223422E+03 s, time-step size is 1.0015E+02 s, time-step number is 317, outer-iteration number is 1
24986
25009 ***** signal-variable values at time 9123.26708 s *****
25010
25011 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
25012
25013 1 9.123267E+03 401 1.108477E+06 402 4.566253E+02 403 4.564913E+02 404 3.328440E-01
25014 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
25015 405 2.543116E+00 406 7.016583E+02 407 1.350841E+00 408 1.211903E+00 409 7.042015E+02
25016 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
25017 415 2.295112E+00 416 7.019064E+02 417 2.538861E+00 418 2.381771E+00 419 7.042015E+02
25018 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
25052
25053 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
25054
25055 ncd-gas
25056 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
25057 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
25058 1 1.10848E+06 0.00000E+00 3.328E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.213E+00 1.352E+00 4.836E-03
25059 2 2.383E+00 2.540E+00 1.045E-01
25060
25061 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq velt.gas wf.gas
25062 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
25063 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.020E+02 2.544E+00 1.213E+00 1.352E+00 4.836E-03
25064 2 1.000E+05 7.023E+02 2.296E+00 2.383E+00 2.540E+00 1.045E-01
25065
25066 pipe component total coolant mass is 5.91207E+02 kg, total coolant energy is 4.61636E+08 w*s, and
25067 computed initial total coolant mass is 4.44938E+02 kg

25812 trac large edit
25813
25814 problem time is 9.323577E+03 s, time-step size is 1.0015E+02 s, time-step number is 318, outer-iteration number is 1
25815
25838 ***** signal-variable values at time 9223.42192 s *****
25839
25840 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
25841
25842 1 9.223422E+03 401 1.108477E+06 402 4.566253E+02 403 4.564913E+02 404 3.328373E-01
25843 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
25844 405 2.544378E+00 406 7.020461E+02 407 1.351511E+00 408 1.212573E+00 409 7.045905E+02
25845 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
25846 415 2.296237E+00 416 7.022942E+02 417 2.540154E+00 418 2.383063E+00 419 7.045905E+02
25847 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
25880
25881 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
25882
25883 ncd-gas
25884 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
25885 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
25886 1 1.10848E+06 0.00000E+00 3.328E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.212E+00 1.351E+00 4.836E-03
25887 2 2.381E+00 2.539E+00 1.045E-01
25888
25889 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq velt.gas wf.gas
25890 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
25891 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.016E+02 2.543E+00 1.211E+00 1.350E+00 4.836E-03
25892 2 1.000E+05 7.018E+02 2.295E+00 2.381E+00 2.538E+00 1.045E-01
25893
25894 pipe component total coolant mass is 5.91213E+02 kg, total coolant energy is 4.61640E+08 w*s, and
25895 computed initial total coolant mass is 4.44938E+02 kg

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26641 trac large edit
26642
26643 problem time is 9.423732E+03 s, time-step size is 1.0015E+02 s, time-step number is 319, outer-iteration number is 1
26644
26667 ***** signal-variable values at time 9323.57676 s *****
26668
26669 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
26670
26671 1 9.323577E+03 401 1.108477E+06 402 4.566253E+02 403 4.564913E+02 404 3.328459E-01
26672 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
26673 405 2.542764E+00 406 7.015502E+02 407 1.350654E+02 408 1.211716E+00 409 7.040930E+02
26674 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
26675 415 2.294798E+00 416 7.017983E+02 417 2.538500E+00 418 2.381411E+00 419 7.040931E+02
26676 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
26677
26709 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
26710
26711 ncd-gas
26712 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
26713 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
26714 1 1.10848E+06 0.00000E+00 3.328E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.213E+00 1.352E+00 4.836E-03
26715 2 2.384E+00 2.541E+00 1.045E-01
26716
26717 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
26718 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
26719 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.022E+02 2.545E+00 1.214E+00 1.353E+00 4.836E-03
26720 2 1.000E+05 7.024E+02 2.297E+00 2.384E+00 2.541E+00 1.045E-01
26721
26722 pipe component total coolant mass is 5.91205E+02 kg, total coolant energy is 4.61634E+08 w*s, and
26723 computed initial total coolant mass is 4.44938E+02 kg
26724

27470 trac large edit
27471
27472 problem time is 9.523886E+03 s, time-step size is 1.0015E+02 s, time-step number is 320, outer-iteration number is 1
27473
27496 ***** signal-variable values at time 9423.73160 s *****
27497
27498 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
27499
27500 1 9.423732E+03 401 1.108477E+06 402 4.566253E+02 403 4.564912E+02 404 3.328349E-01
27501 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
27502 405 2.544828E+00 406 7.021843E+02 407 1.351750E+00 408 1.212811E+00 409 7.047292E+02
27503 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
27504 415 2.296639E+00 416 7.024324E+02 417 2.540615E+00 418 2.383524E+00 419 7.047291E+02
27505 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
27506
27539 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
27540
27541 ncd-gas
27542 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
27543 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
27544 1 1.10848E+06 0.00000E+00 3.328E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.211E+00 1.350E+00 4.836E-03
27545 2 2.381E+00 2.538E+00 1.045E-01
27546
27547 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
27548 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
27549 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.014E+02 2.542E+00 1.210E+00 1.349E+00 4.836E-03
27550 2 1.000E+05 7.016E+02 2.294E+00 2.381E+00 2.538E+00 1.045E-01
27551
27552 pipe component total coolant mass is 5.91215E+02 kg, total coolant energy is 4.61642E+08 w*s, and
27553 computed initial total coolant mass is 4.44938E+02 kg

28299 trac large edit
28300
28301 problem time is 9.624041E+03 s, time-step size is 1.0015E+02 s, time-step number is 321, outer-iteration number is 1
28302
28325 ***** signal-variable values at time 9523.88644 s *****
28326
28327 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
28328
28329 1 9.523886E+03 401 1.108477E+06 402 4.566253E+02 403 4.564914E+02 404 3.328490E-01
28330 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
28331 405 2.542189E+00 406 7.013735E+02 407 1.350349E+00 408 1.211411E+00 409 7.039157E+02
28332 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
28333 415 2.294285E+00 416 7.016215E+02 417 2.537911E+00 418 2.380822E+00 419 7.039158E+02
28334 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mf (kg/s)
28335
28368 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
28369
28370 ncd-gas
28371 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
28372 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
28373 1 1.10848E+06 0.00000E+00 3.328E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.213E+00 1.352E+00 4.836E-03
28374 2 2.384E+00 2.541E+00 1.045E-01
28375
28376 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
28377 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
28378 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.024E+02 2.546E+00 1.216E+00 1.354E+00 4.836E-03
28379 2 1.000E+05 7.027E+02 2.297E+00 2.384E+00 2.541E+00 1.045E-01
28380
28381 pipe component total coolant mass is 5.91202E+02 kg, total coolant energy is 4.61632E+08 w*s, and
28382 computed initial total coolant mass is 4.44938E+02 kg

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29128 trac large edit
29129
29130 problem time is 9.724196E+03 s, time-step size is 1.0015E+02 s, time-step number is 322, outer-iteration number is 1
29131
29154 ***** signal-variable values at time 9624.04128 s *****
29155
29156 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
29157
29158 1 9.624041E+03 401 1.108477E+06 402 4.566253E+02 403 4.564912E+02 404 3.328310E-01
29159 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
29160 405 2.545563E+00 406 7.024103E+02 407 1.352141E+00 408 1.213202E+00 409 7.049558E+02
29161 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
29162 415 2.297294E+00 416 7.026584E+02 417 2.541369E+00 418 2.384276E+00 419 7.049557E+02
29163 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
29196
29197 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
29198
29199 ncd-gas
29200 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
29201 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
29202 1 1.10848E+06 0.00000E+00 3.329E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.211E+00 1.350E+00 4.835E-03
29203 2 2.380E+00 2.537E+00 1.045E-01
29204
29205 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
29206 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
29207 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.011E+02 2.541E+00 1.208E+00 1.347E+00 4.835E-03
29208 2 1.000E+05 7.013E+02 2.293E+00 2.380E+00 2.537E+00 1.045E-01
29209
29210 pipe component total coolant mass is 5.91218E+02 kg, total coolant energy is 4.61644E+08 w*s, and
29211 computed initial total coolant mass is 4.44938E+02 kg

29957 trac large edit
29958
29959 problem time is 9.824351E+03 s, time-step size is 1.0015E+02 s, time-step number is 323, outer-iteration number is 1
29960
29983 ***** signal-variable values at time 9724.19612 s *****
29984
29985 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
29986
29987 1 9.724196E+03 401 1.108477E+06 402 4.566253E+02 403 4.564914E+02 404 3.328540E-01
29988 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
29989 405 2.541249E+00 406 7.010844E+02 407 1.349849E+00 408 1.210912E+00 409 7.036257E+02
29990 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
29991 415 2.293446E+00 416 7.013324E+02 417 2.536947E+00 418 2.379859E+00 419 7.036259E+02
29992 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
30025
30026 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
30027
30028 ncd-gas
30029 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
30030 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
30031 1 1.10848E+06 0.00000E+00 3.328E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.214E+00 1.353E+00 4.836E-03
30032 2 2.386E+00 2.543E+00 1.045E-01
30033
30034 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
30035 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
30036 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.028E+02 2.547E+00 1.218E+00 1.357E+00 4.836E-03
30037 2 1.000E+05 7.030E+02 2.298E+00 2.385E+00 2.543E+00 1.045E-01
30038
30039 pipe component total coolant mass is 5.91198E+02 kg, total coolant energy is 4.61629E+08 w*s, and
30040 computed initial total coolant mass is 4.44938E+02 kg

30786 trac large edit
30787
30788 problem time is 9.924506E+03 s, time-step size is 1.0015E+02 s, time-step number is 324, outer-iteration number is 1
30789
30812 ***** signal-variable values at time 9824.35097 s *****
30813
30814 id sig.var. id sig.var. id sig.var. id sig.var. id sig.var.
30815
30816 1 9.824351E+03 401 1.108477E+06 402 4.566253E+02 403 4.564911E+02 404 3.328247E-01
30817 time (s) pressure (pa) gas temp (k) liq temp (k) void fraction
30818 405 2.546764E+00 406 7.027797E+02 407 1.352779E+00 408 1.213840E+00 409 7.053264E+02
30819 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
30820 415 2.298367E+00 416 7.030278E+02 417 2.542601E+00 418 2.385507E+00 419 7.053262E+02
30821 z vp mf (kg/s) z lq mf (kg/s) z gs vel (m/s) z lq vel (m/s) z m mfw (kg/s)
30854
30855 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
30856
30857 ncd-gas
30858 pressure pressure void fr. temp.sat. temp.liq. temp.gas den.liq. den.vap. vel.liq. vel.gas wf.liq.
30859 cell pa pa - k k k kg/m3 kg/m3 m/s m/s -
30860 1 1.10848E+06 0.00000E+00 3.329E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.210E+00 1.349E+00 4.835E-03
30861 2 2.378E+00 2.535E+00 1.045E-01
30862
30863 dis.sol. p.o.sol. fr.new if.drag temp.ss. evap. cond. mfw.liq. mfw.vap. velt.liq. velt.gas wf.gas
30864 cell ratio kg/m3 - kg/m4 k w/k w/k kg/s kg/s m/s m/s -
30865 1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.006E+02 2.540E+00 1.205E+00 1.344E+00 4.835E-03
30866 2 1.000E+05 7.009E+02 2.292E+00 2.378E+00 2.535E+00 1.045E-01
30867
30868 pipe component total coolant mass is 5.91224E+02 kg, total coolant energy is 4.61649E+08 w*s, and
30869 computed initial total coolant mass is 4.44938E+02 kg

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31615 trac large edit
31616
31617 problem time is 1.002466E+04 s, time-step size is 1.0015E+02 s, time-step number is 325, outer-iteration number is 1
31618
31641 ***** signal-variable values at time 9924.50581 s *****
31642
31643      id      sig.var.      id      sig.var.      id      sig.var.      id      sig.var.      id      sig.var.
31644
31645      1  9.924506E+03      401  1.108477E+06      402  4.566253E+02      403  4.564915E+02      404  3.328622E-01
31646      time (s)      pressure (pa)      gas temp (k)      liq temp (k)      void fraction
31647      405  2.529711E+00      406  7.006117E+02      407  1.349032E+00      408  1.210095E+00      409  7.031514E+02
31648      z vp mf (kg/s)      z lq mf (kg/s)      z gs vel (m/s)      z lq vel (m/s)      z m mfw (kg/s)
31649      415  2.292073E+00      416  7.008596E+02      417  2.535370E+00      418  2.378284E+00      419  7.031517E+02
31650      z vp mf (kg/s)      z lq mf (kg/s)      z gs vel (m/s)      z lq vel (m/s)      z m mfw (kg/s)
31651
31683 the component type is a pipe, component number is 4, first junction number is 4, and second junction number is 8
31684
31685      ncd-gas
31686      pressure      pressure      void fr. temp.sat. temp.liq. temp.gas      den.liq. den.vap.      vel.liq.      vel.gas      wf.liq.
31687      cell      pa      pa      -      k      k      k      kg/m3      kg/m3      m/s      m/s      -
31688      1 1.10848E+06 0.00000E+00 3.328E-01 4.566E+02 4.565E+02 4.566E+02 8.834E+02 5.432E+00 1.215E+00 1.354E+00 4.837E-03
31689      2
31690      2.388E+00 2.545E+00 1.045E-01
31691
31692      dis.sol. p.o.sol. fr.new if.drag      temp.ss.      evap.      cond.      mfw.liq.      mfw.vap.      velt.liq      velt.gas      wf.gas
31693      cell ratio      kg/m3      -      kg/m4      k      w/k      w/k      kg/s      kg/s      m/s      m/s      -
31694      1 0.00E+00 0.00E+00 0.000 1.000E+05 4.566E+02 3.663E+06 1.003E+06 7.034E+02 2.549E+00 1.221E+00 1.360E+00 4.837E-03
31695      2
31696      1.000E+05
31697      7.036E+02 2.300E+00 2.387E+00 2.545E+00 1.045E-01
31697 pipe component total coolant mass is 5.91191E+02 kg , total coolant energy is 4.61623E+08 w*s, and
31698 computed initial total coolant mass is 4.44938E+02 kg

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