

Case pra2\_c3\_1a

Figure A 84: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1a, containment node 8)



Figure A 85: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1a, containment node 10)

> Node 23 flame acceleration limit 1 Node 23 oxygen conc Node 23 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 86: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1a, containment node 23)



Figure A 87: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1c, containment node 1)



Case pra2\_c3\_1c

Figure A 88: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1c, containment node 3)



Figure A 89: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1,c containment node 5)



Case pra2\_c3\_1c

Figure A 90: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1c, containment node 6)

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Figure A 91: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1c, containment node 7)



Figure A 92: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1c, containment node 8)



Case pra2\_c3\_1c

Figure A 93: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1c, containment node 10)

![](_page_10_Figure_2.jpeg)

Figure A 94: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1c, containment node 23)

![](_page_11_Figure_2.jpeg)

Figure A 95: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1d, containment node 1)

![](_page_12_Figure_2.jpeg)

Figure A 96: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1d, containment node 3)

![](_page_13_Figure_2.jpeg)

Figure A 97: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1d, containment node 5)

![](_page_14_Figure_2.jpeg)

Figure A 98: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1d, containment node 6)

![](_page_15_Figure_2.jpeg)

Figure A 99: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1d, containment node 7)

![](_page_16_Figure_2.jpeg)

Figure A 100: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1d, containment node 8)

![](_page_17_Figure_2.jpeg)

Figure A 101: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1d, containment node 10)

![](_page_18_Figure_2.jpeg)

Figure A 102: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1d, containment node 23)

![](_page_19_Figure_2.jpeg)

Figure A 103: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_2, containment node 1)

![](_page_20_Figure_2.jpeg)

Figure A 104: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_2, containment node 3)

![](_page_21_Figure_2.jpeg)

Figure A 105: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_2, containment node 5)

![](_page_22_Figure_2.jpeg)

Figure A 106: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_2, containment node 6)

![](_page_23_Figure_2.jpeg)

Case pra2\_c3\_2

Figure A 107: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_2, containment node 7)

![](_page_24_Figure_2.jpeg)

Figure A 108: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_2, containment node 8)

![](_page_25_Figure_2.jpeg)

Figure A 109: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_2, containment node 10)

![](_page_26_Figure_2.jpeg)

Figure A 110: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_2, containment node 23)

![](_page_27_Figure_2.jpeg)

Figure A 111: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_4, containment node 1)

> Node 3 flame acceleration limit 1 Node 3 oxygen conc Node 3 steam conc 0.8 0.6 0.4 0.2 0 50000 150000 200000 100000 250000 0

Figure A 112: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_4, containment node 3)

![](_page_28_Figure_5.jpeg)

![](_page_29_Figure_2.jpeg)

![](_page_29_Figure_3.jpeg)

![](_page_30_Figure_2.jpeg)

Figure A 114: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_4, containment node 10)

> Case pra2\_c3\_4 Node 23 flame acceleration limit 1 Node 23 oxygen conc Node 23 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 115: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_4, containment node 23)

> Node 1 flame acceleration limit 1 Node 1 oxygen conc Node 1 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 116: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_6, containment node 1)

> Node 3 flame acceleration limit 1 Node 3 oxygen conc Node 3 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 117: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_6, containment node 3)

![](_page_33_Figure_5.jpeg)

![](_page_34_Figure_2.jpeg)

Case pra2\_c3\_6

Figure A 118: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_6, containment node 5)

![](_page_35_Figure_2.jpeg)

Figure A 119: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_6, containment node 6)

> Node 7 flame acceleration limit 1 Node 7 oxygen conc Node 7 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 120: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_6, containment node 7)

![](_page_36_Figure_5.jpeg)

> Node 8 flame acceleration limit 1 Node 8 oxygen conc Node 8 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 121: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_6, containment node 8)

> Node 10 flame acceleration limit 1 Node 10 oxygen conc Node 10 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 122: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_6, containment node 10)

> Node 23 flame acceleration limit 1 Node 23 oxygen conc Node 23 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 123: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_6, containment node 23)

![](_page_39_Figure_5.jpeg)

![](_page_40_Figure_2.jpeg)

Figure A 124: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_7, containment node 1)

> Case pra2\_c3\_7 Node 5 flame acceleration limit Node 5 oxygen conc Node 5 steam conc

![](_page_41_Figure_3.jpeg)

Figure A 125: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_7, containment node 5)

0.8

0.6

0.4

0.2

0

0

50000

![](_page_42_Figure_2.jpeg)

Case pra2\_c3\_7

![](_page_42_Figure_4.jpeg)

150000

200000

250000

100000

![](_page_43_Figure_2.jpeg)

Figure A 127: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_7, containment node 23)

![](_page_44_Figure_2.jpeg)

Figure A 128: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_8, containment node 1)

![](_page_45_Figure_2.jpeg)

Figure A 129: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_8, containment node 5)

![](_page_46_Figure_2.jpeg)

Figure A 130: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_8, containment node 8)

![](_page_47_Figure_2.jpeg)

Figure A 131: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_8, containment node 10)

![](_page_48_Figure_2.jpeg)

Figure A 132: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_8, containment node 23)

![](_page_49_Figure_2.jpeg)

Figure A 133: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_13, containment node 1)

![](_page_50_Figure_2.jpeg)

Figure A 134: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_13, containment node 3)

![](_page_51_Figure_2.jpeg)

Figure A 135: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_13, containment node 5)

![](_page_52_Figure_2.jpeg)

Figure A 136: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_13, containment node 7)

> Case pra2\_c3\_13 Node 8 flame acceleration limit 1 Node 8 oxygen conc Node 8 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 137: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_13, containment node 8)

![](_page_54_Figure_2.jpeg)

Case pra2\_c3\_13

Figure A 138: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_1,3 containment node 10)

![](_page_55_Figure_2.jpeg)

Figure A 139: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_13, containment node 23)

![](_page_56_Figure_2.jpeg)

Figure A 140: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_16, containment node 1)

![](_page_57_Figure_2.jpeg)

Case pra2\_c3\_16

Figure A 141: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_16, containment node 5)

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![](_page_58_Figure_2.jpeg)

Case pra2\_c3\_16

Figure A 142: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_16, containment node 8)

> Case pra2\_c3\_16 Node 10 flame acceleration limit 1 Node 10 oxygen conc Node 10 steam conc 0.8 0.6 0.4 0.2 0 50000 100000 150000 200000 250000 0

Figure A 143: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_16, containment node 10)

![](_page_60_Figure_2.jpeg)

Figure A 144: Oxygen and steam concentrations (dimensionless) versus time (seconds) cross-plotted with calculated hydrogen concentration limit for flame acceleration (case c3\_16, containment node 23)

![](_page_61_Figure_2.jpeg)

Figure A 145: Hydrogen and hydrogen + carbon monoxide concentrations (dimensionless) versus time (seconds) crossplotted with calculated hydrogen concentration limit for flame acceleration (case c1\_1, containment node 3)

![](_page_62_Figure_2.jpeg)

Figure A 146: Hydrogen and hydrogen + carbon monoxide concentrations (dimensionless) versus time (seconds) crossplotted with calculated hydrogen concentration limit for flame acceleration (case c1\_1, containment node 5)

![](_page_63_Figure_2.jpeg)

Figure A 147: Hydrogen and hydrogen + carbon monoxide concentrations (dimensionless) versus time (seconds) crossplotted with calculated hydrogen concentration limit for flame acceleration (case c1\_1, containment node 8)

![](_page_64_Figure_2.jpeg)

Case pra2\_c1\_1e

Figure A 148: Hydrogen and hydrogen + carbon monoxide concentrations (dimensionless) versus time (seconds) crossplotted with calculated hydrogen concentration limit for flame acceleration (case c1\_1e, containment node 3)