

9 Appendix

FDS Input Code for Case Study 1 (No Fire – SED only)

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&HEAD CHID='20220305_sedcorner_MV_SED11_18_2cms_3pts_med'/
&TIME T_END=900.0/
&DUMP NFRAMES=180/
&RADI RADIATION=.FALSE./

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  FUEL='REAC_FUEL',
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  H=1.7,
  O=0.3,
  N=0.08,
  AUTO_IGNITION_TEMPERATURE=0.0,
  CO_YIELD=0.042,
  SOOT_YIELD=0.03,
  HEAT_OF_COMBUSTION=2.5E4,
  RADIATIVE_FRACTION=0.3/
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  CONDUCTIVITY=1.8,
  DENSITY=2280.0/
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  FYI='Drysdale, Intro to Fire Dynamics - ATF NIST Multi-Floor Validation',
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  CONDUCTIVITY=45.8,
  DENSITY=7850.0,
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&BNDF QUANTITY='RADIATIVE HEAT FLUX'/

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&TAIL /

FDS Input Code for Case Study 2 (No SED, Fire only)

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  N=0.08,
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&DEVC ID='EA02M', QUANTITY='MASS FLOW', XB=26.2,27.6,-2.1,-2.1,3.0,4.4/
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  FYI='NBSIR 88-3752 - ATF NIST Multi-Floor Validation',
  SPECIFIC_HEAT=1.04,
  CONDUCTIVITY=1.8,
  DENSITY=2280.0/
&MATL ID='STEEL',
  FYI='Drysdale, Intro to Fire Dynamics - ATF NIST Multi-Floor Validation',
  SPECIFIC_HEAT=0.46,
  CONDUCTIVITY=45.8,
  DENSITY=7850.0,
  EMISSIVITY=0.95/
&SURF ID='Wall',
  RGB=204,102,0,
  BACKING='VOID',
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  MATL_MASS_FRACTION(1,1)=1.0,
  THICKNESS(1)=0.4/
&SURF ID='Fire',
  COLOR='RED',
  HRRPUA=225.0,
  TMP_FRONT=300.0/
&SURF ID='SED',
  RGB=146,202,166,
  BACKING='VOID',
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  MATL_MASS_FRACTION(1,1)=1.0,
  THICKNESS(1)=0.1/

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&BNDF QUANTITY='BACK WALL TEMPERATURE'/

&BNDF QUANTITY='CONVECTIVE HEAT FLUX'/

&BNDF QUANTITY='GAS TEMPERATURE'/

&BNDF QUANTITY='RADIATIVE HEAT FLUX'/

&BNDF QUANTITY='WALL TEMPERATURE'/

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&SLCF QUANTITY='TEMPERATURE', PBY=-1.3/
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&SLCF QUANTITY='VELOCITY', VECTOR=.TRUE., PBY=-46.3/
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&SLCF QUANTITY='PRESSURE', PBX=6.8/
&SLCF QUANTITY='PRESSURE', PBX=46.6/
&SLCF QUANTITY='PRESSURE', PBY=-1.3/
&SLCF QUANTITY='VELOCITY', VECTOR=.TRUE., PBZ=2.0/
&SLCF QUANTITY='VISIBILITY', PBZ=2.0/
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&TAIL /

FDS Input Code for Case Study 3 (Base Case Scenario)

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&DUMP NFRAMES=180/  
&RADI RADIATION=.FALSE./
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&BNDF QUANTITY='BACK WALL TEMPERATURE'/
&BNDF QUANTITY='CONVECTIVE HEAT FLUX'/

&BNDF QUANTITY='GAS TEMPERATURE'/
&BNDF QUANTITY='RADIATIVE HEAT FLUX'/
&BNDF QUANTITY='WALL TEMPERATURE'/
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&TAIL /

FDS Input Code for Scenario with Mutiple SED (Sensitivity Study sample)

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  N=0.08,  
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  CO_YIELD=0.042,  
  SOOT_YIELD=0.03,  
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  RADIATIVE_FRACTION=0.3/
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&TAIL /