DATA FOR COMPARTMENT FIRE MODELING

ROOM NUMBER (1) USE Hallway - LR

SIZE (USE DIAGRAMS IF POSSIBLE)
LENGTH 355"
WIDTH 36"
HEIGHT 96"

WALL/FLOOR/CEILING CONSTRUCTION
2X4 Framing w/ ½" Sheet Rock Liners
Wood Hollow Core Doors

LINING MATERIALS (THAT REPRESENT OVER 10% OF ROOM LINING (Include thickness, density, & other material characteristics if known)

WALL MATERIAL	% OF WALLS OR AREA INVOLVED
½" Sheet Rock - Painted	

CEILING MATERIAL
½" Sheet Rock w/ Spray on Coating

FLOOR OR FLOOR COVERING MATERIAL
Carpet over padding over underlayment

DOORS WINDOWS AND OTHER OPENINGS (Enter all heights as distance above floor. If door sill is at floor enter zero (0).)

	OPENING	TO	TOP	SILL	WIDTH	CHANGED DURING FIRE (HOW?)[1]
(1)	Door Open		80"	0	60"	1" thick louvered door Wood
(2)	OPEN		80"	0	30"	1 3/8" Hollow Core Wood Door
(3)	OPEN		80	0	30"	1 3/8" Hollow Core Wood Door
(4)	OPEN		80	0	30"	1 3/8" Hollow Core Wood Door
(5)	OPEN		80"	0	26"	1 3/8" Hollow Core Wood Door

HEATING VENTILATING & AIR CONDITIONING (HVAC) Include air flows from HVAC systems. Give rates and positions of supply and return or exhaust in this room. Also sizes & types of ducts/deffusers.
19" X 11½" Air Return duct on Eastern Hall wall 6" above floor

TIGHTNESS OF WALLS, CLOSED WINDOWS, DOOR FITS, ETC. (Unless fit is very loose, classify fit as tight, average, or loose. If fit is very loose try to get size, number & location of cracks, ets.)
DOORS
WINDOWS
INSIDE WALLS
EXTERIOR WALLS

[1]. For example: "Window broke at 10:33" or "Door was closed untill opened by escaping occupant, then left open - Ext. time 1030" Door #1 - Utility Washer Dryer Closet Door
Door #2 West Bedroom North Side Wall
Door #3 Spare Bedroom North Side Wall
Door #4 Master Bedroom Door
Door #5 [illegible]

Run 4

/

FIRE SIMULATOR

[VER 3.20]

Input data used for run of: 10-20-1995 14:46:31

Data file used: TOOL-IN.IN as of 10/20/95 14:45:52

Run title: kitchen/living room/part hall 10-20-1995

LOTUS file name: TOOL.WKS

Heat of combustion:	19000 BTU/lb	44148 KJ/Kg
Specific extinction coefficient:	0.1	
Flashover temperature:	1112 F	600 C
Oxygen starvation threshold:	10.0 % by volume	
Radiant energy fraction (from flame):	0.60	
Maximum pre flashover energy loss:	0.95	

There is no Sprinkler/Heat detector defined

There is no Smoke detector defined

There is no initial inside opening defined

Spacial dimensions of room:

Room height:	8.0 ft	2.4 m
Room floor area:	400.0 ft^2	37.2 m^2
Room wall perimeter:	93.0 ft	28.3 m

Room is not rectangular

Description of ceiling materials:

100% GYPSUM BOARD	0.5 in	13 mm

Description of wall materials:

100% GYPSUM BOARD	0.5 in	13 mm

There is no HVAC defined

Fire height: 0.0 ft 0.0 m

ultra fast fire at 1 second intervals to 600
Fire description used came from firefile: ufast.FIR 01-12-1989

A halt flag is set for time = 10 Sec
Data file is TOOL.WKS 10-20-1995 14:46:35

TIME	TEMP		LAYER		FIRE	
sec	F	C	ft	m	kW	BTU/sec
0	70	21	8.0	2.4	0.1	0.1

Vision distance (smoke layer) = 3000.0 m 9842.5 ft
Smoke gases : Oxygen = 21.0 % : CO = 0.0000 : CO2 = 0.0000 %

10	77	25	7.7	2.4	18.7	17.8

Vision distance (smoke layer) = 81.1 m 266.1 ft
Smoke gases : Oxygen = 20.9 % : CO = 0.0000 : CO2 = 0.0560 %

Currently there is no outside opening in the room.

Combustion efficiency for air from HVAC system: 0.5%
Ventilation rate (air changes/hour): 5

10	77	25	7.7	2.4	18.7	17.8

Vision distance (smoke layer) = 81.1 m 266.1 ft
Smoke gases : Oxygen = 20.9 % : CO = 0.0000 : CO2 = 0.0641 %

20	91	33	7.1	2.2	75.0	71.1

Vision distance (smoke layer) = 29.1 m 95.5 ft
Smoke gases : Oxygen = 20.7 % : CO = 0.0000 : CO2 = 0.1516 %

30	112	45	6.4	1.9	168.7	160.0

Vision distance (smoke layer) = 15.7 m 51.4 ft
Smoke gases : Oxygen = 20.4 % : CO = 0.0000 : CO2 = 0.2816 %

40	141	60	5.5	1.7	299.8	284.4

Vision distance (smoke layer) = 9.9 m 32.5 ft
Smoke gases : Oxygen = 20.1 % : CO = 0.0000 : CO2 = 0.4526 %

******** HAZARD WARNING *********
At 46 seconds the Carbon dioxide at head level reached .5788%.

46	162	72	5.0	1.5	396.5	376.1

Vision distance (smoke layer) = 7.9 m 25.9 ft
Smoke gases : Oxygen = 19.8 % : CO = 0.0001 : CO2 = 0.5788 %

50	178	81	4.6	1.4	468.5	444.4

Vision distance (smoke layer) = 6.9 m 22.5 ft
Smoke gases : Oxygen = 19.6 % : CO = 0.0001 : CO2 = 0.6743 %

******** HAZARD WARNING *********
At 54 seconds the vision dropped to 19.7 ft 6.01m

54	195	91	4.2	1.3	546.5	518.3

Vision distance (smoke layer) = 6.0 m 19.7 ft
Smoke gases : Oxygen = 19.4 % : CO = 0.0001 : CO2 = 0.7799 %

60	226	108	3.7	1.1	674.6	639.9

Vision distance (smoke layer) = 5.0 m 16.4 ft
Smoke gases : Oxygen = 19.0 % : CO = 0.0003 : CO2 = 0.9590 %

******** HAZARD WARNING *********
At 64 seconds the vision dropped to 14.7 ft 4.47 m

64	249	120	3.3	1.0	767.6	728.1

Vision distance (smoke layer) = 4.5 m 14.7 ft
Smoke gases : Oxygen = 18.7 % : CO = 0.0004 : CO2 = 1.0937 %

70	287	142	2.8	0.8	918.3	871.0

Vision distance (smoke layer) = 3.8 m 12.5 ft
Smoke gases : Oxygen = 18.3 % : CO = 0.0006 : CO2 = 1.3217 %

80	366	185	1.8	0.6	1199.4	1137.6

Vision distance (smoke layer) = 3.0 m 9.8 ft
Smoke gases : Oxygen = 17.3 % : CO = 0.0015 : CO2 = 1.7819 %

90	463	240	0.9	0.3	1517.9	1439.8

Vision distance (smoke layer) = 2.4 m 7.9 ft

100 579 304 0.0 0.0 1874.0 1777.5
Vision distance (smoke layer) = 2.0 m 6.5 ft
Smoke gases : Oxygen = 14.6 % : CO = 0.0070 : CO2 = 3.0902 %

******** HAZARD WARNING *********
At 105 seconds the Carbon monoxide at head level reached .0101 %.

105 645 340 0.0 0.0 2066.1 1959.7
Vision distance (smoke layer) = 1.7 m 5.6 ft
Smoke gases : Oxygen = 13.2 % : CO = 0.0101 : CO2 = 3.7252 %

110 722 383 0.0 0.0 2267.5 2150.8
Vision distance (smoke layer) = 1.5 m 4.9 ft
Smoke gases : Oxygen = 11.7 % : CO = 0.0150 : CO2 = 4.4671 %

******** HAZARD WARNING *********
At 115 seconds the Oxygen at head level reached 10.%.

115 814 435 0.0 0.0 2478.4 2350.7
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0226 : CO2 = 5.3359 %

120 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5280 %

130 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5298 %

140 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5315 %

150 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5333 %

160 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5351 %

170 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5369 %

173 824 440 0.0 0.0 5608.7 5319.8
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

After 173 seconds the burning rate and resulting upper level temperature is limited by the ventilation capacity of the room openings. From this pointon the amount of energy that can be released within the room is limited to 2.2 kW. Room temperature may continue to rise.

180 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

190 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft

200 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

210 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

220 824 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

230 823 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

240 823 440 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

250 823 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

260 823 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

270 823 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

280 823 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

290 822 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

300 822 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

310 822 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

320 822 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

330 822 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

340 822 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

350 821 439 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

340 821 439 0.0 0.0 2.2 2.1

Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

370 821 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

380 821 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

390 821 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

400 821 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

410 820 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

420 820 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

430 820 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

440 820 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

450 820 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

460 820 438 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

470 819 437 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

480 819 437 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

490 819 437 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

500 819 437 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

510 819 437 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

520 819 437 0.0 0.0 2.2 2.1
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.9 % : CO = 0.0245 : CO2 = 5.5374 %

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   530        818        437          0.0          0.0          2.2          2.1
Vision distance (smoke layer)  =        1.3  m          4.2 ft
Smoke gases : Oxygen =   9.9 % : CO =    0.0245 : CO2 =    5.5374 %

   540        818        437          0.0          0.0          2.2          2.1
Vision distance (smoke layer)  =        1.3  m          4.2 ft
Smoke gases : Oxygen =   9.9 % : CO =    0.0245 : CO2 =    5.5374 %

   550        818        437          0.0          0.0          2.2          2.1
Vision distance (smoke layer)  =        1.3  m          4.2 ft
Smoke gases : Oxygen =   9.9 % : CO =    0.0245 : CO2 =    5.5374 %

   560        818        437          0.0          0.0          2.2          2.1
Vision distance (smoke layer)  =        1.3  m          4.2 ft
Smoke gases : Oxygen =   9.9 % : CO =    0.0245 : CO2 =    5.5374 %

   570        818        437          0.0          0.0          2.2          2.1
Vision distance (smoke layer)  =        1.3  m          4.2 ft
Smoke gases : Oxygen =   9.9 % : CO =    0.0245 : CO2 =    5.5374 %

   580        818        436          0.0          0.0          2.2          2.1
Vision distance (smoke layer)  =        1.3  m          4.2 ft
Smoke gases : Oxygen =   9.9 % : CO =    0.0245 : CO2 =    5.5374 %

   590        817        436          0.0          0.0          2.2          2.1
Vision distance (smoke layer)  =        1.3  m          4.2 ft
Smoke gases : Oxygen =   9.9 % : CO =    0.0245 : CO2 =    5.5374 %

   600        817        436          0.0          0.0          2.2          2.1
Vision distance (smoke layer)  =        1.3  m          4.2 ft
Smoke gases : Oxygen =   9.9 % : CO =    0.0245 : CO2 =    5.5374 %

-------------------------------END OF INPUT FIRE--------------------------------
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Run 0

7

FIRE SIMULATOR

[VER 3.20]

Input data used for run of: 10-20-1995 14:27:29

Data file used: TOOL-IN.IN as of 10/20/95 14:26:44

Run title: wholehouse run 10-20-1995

LOTUS file name: TOOL.WKS

Heat of combustion:	19000 BTU/lb	44148 KJ/Kg
Specific extinction coefficient:	0.1	
Flashover temperature:	1112 F	600 C
Oxygen starvation threshold:	10.0 % by volume	
Radiant energy fraction (from flame):	0.60	
Maximum pre flashover energy loss:	0.90	

There is no Sprinkler/Heat detector defined

There is no Smoke detector defined

There is no initial inside opening defined

Spacial dimensions of room:

Room height:	8.0 ft	2.4 m
Room floor area:	1200.0 ft^2	111.5 m^2
Room wall perimeter:	186.0 ft	56.7 m

Room is not rectangular

Description of ceiling materials:

100% GYPSUM BOARD	0.5 in	13 mm

Description of wall materials:

84% GYPSUM BOARD	0.5 in	13 mm
16% PLYWOOD	0.1 in	3 mm

There is no HVAC defined

Fire height: 0.0 ft 0.0 m

ultra fast fire at 1 second intervals to 600
Fire description used came from firefile: ufast.FIR 01-12-1989

A halt flag is set for time = 10 Sec
Data file is TOOL.WKS 10-20-1995 14:27:31

TIME	TEMP		LAYER		FIRE	
sec	F	C	ft	m	kW	BTU/sec
0	70	21	8.0	2.4	0.1	0.1
Vision distance (smoke layer) = 3000.0 m 9842.5 ft						
Smoke gases : Oxygen = 21.0 % : CO = 0.0000 : CO2 = 0.0000 %						
10	74	23	7.9	2.4	18.7	17.8
Vision distance (smoke layer) = 82.3 m 270.1 ft						
Smoke gases : Oxygen = 20.9 % : CO = 0.0000 : CO2 = 0.0551 %						

There is no inside opening in the room.

Currently there is no outside opening in the room.

Combustion efficiency for air from HVAC system: 0.5%
Ventilation rate (air changes/hour): 5

10	74	23	7.9	2.4	18.7	17.8

Vision distance (smoke layer) = 82.3 m 270.1 ft
Smoke gases : Oxygen = 20.9 % : CO = 0.0000 : CO2 = 0.0628 %

20	84	29	7.7	2.3	75.0	71.1

Vision distance (smoke layer) = 31.2 m 102.4 ft
Smoke gases : Oxygen = 20.7 % : CO = 0.0000 : CO2 = 0.1433 %

30	98	37	7.4	2.3	168.7	160.0

Vision distance (smoke layer) = 17.6 m 57.8 ft
Smoke gases : Oxygen = 20.5 % : CO = 0.0000 : CO2 = 0.2523 %

40	116	46	7.0	2.1	299.8	284.4

Vision distance (smoke layer) = 11.7 m 38.5 ft
Smoke gases : Oxygen = 20.2 % : CO = 0.0000 : CO2 = 0.3812 %

50	137	59	6.6	2.0	468.5	444.4

Vision distance (smoke layer) = 8.6 m 28.1 ft
Smoke gases : Oxygen = 19.9 % : CO = 0.0001 : CO2 = 0.5309 %

60	163	73	6.1	1.9	674.6	639.9

Vision distance (smoke layer) = 6.6 m 21.6 ft
Smoke gases : Oxygen = 19.6 % : CO = 0.0002 : CO2 = 0.7038 %

70	193	90	5.6	1.7	918.3	871.0

Vision distance (smoke layer) = 5.3 m 17.3 ft
Smoke gases : Oxygen = 19.2 % : CO = 0.0003 : CO2 = 0.9029 %

80	228	109	5.1	1.5	1199.4	1137.6

Vision distance (smoke layer) = 4.3 m 14.2 ft
Smoke gases : Oxygen = 18.7 % : CO = 0.0007 : CO2 = 1.1322 %

******** HAZARD WARNING *********
At 82 seconds the Carbon dioxide at head level reached %1.1820%.

82	236	113	5.0	1.5	1260.1	1195.2

Vision distance (smoke layer) = 4.2 m 13.7 ft
Smoke gases : Oxygen = 18.6 % : CO = 0.0008 : CO2 = 1.1820-%

******** HAZARD WARNING *********
At 82 seconds the vision dropped to 13.7 ft 4.17 m

82	236	113	5.0	1.5	1260.1	1195.2

Vision distance (smoke layer) = 4.2 m 13.7 ft
Smoke gases : Oxygen = 18.6 % : CO = 0.0008 : CO2 = 1.1820 %

******** HAZARD WARNING *********
At 82 seconds the vision dropped to 13.7 ft 4.17m

82	236	113	5.0	1.5	1260.1	1195.2

Vision distance (smoke layer) = 4.2 m 13.7 ft
Smoke gases : Oxygen = 18.6 % : CO = 0.0008 : CO2 = 1.1820 %

Smoke gases : Oxygen = 18.1 % : CO = 0.0013 : CO2 = 1.3963 %

100 316 158 3.9 1.2 1874.0 1777.5
Vision distance (smoke layer) = 3.1 m 10.2 ft
Smoke gases : Oxygen = 17.5 % : CO = 0.0024 : CO2 = 1.7012 %

110 370 188 3.3 1.0 2267.5 2150.8
Vision distance (smoke layer) = 2.7 m 8.8 ft
Smoke gases : Oxygen = 16.8 % : CO = 0.0041 : CO2 = 2.0539 %

120 432 222 2.6 0.8 2698.6 2559.6
Vision distance (smoke layer) = 2.3 m 7.7 ft
Smoke gases : Oxygen = 16.0 % : CO = 0.0070 : CO2 = 2.4628 %

******** HAZARD WARNING *********
At 128 seconds the Carbon monoxide at head level reached .0104 %.

128 487 253 2.1 0.7 3070.4 2912.2
Vision distance (smoke layer) = 2.1 m 6.9 ft
Smoke gases : Oxygen = 15.2 % : CO = 0.0104 : CO2 = 2.8371 %

130 502 261 2.0 0.6 3167.1 3004.0
Vision distance (smoke layer) = 2.1 m 6.7 ft
Smoke gases : Oxygen = 15.0 % : CO = 0.0115 : CO2 = 2.9380 %

140 580 304 1.4 0.4 3673.0 3483.9
Vision distance (smoke layer) = 1.8 m 6.0 ft
Smoke gases : Oxygen = 13.9 % : CO = 0.0186 : CO2 = 3.4912 %

150 675 357 0.7 0.2 4216.5 3999.4
Vision distance (smoke layer) = 1.6 m 5.4 ft
Smoke gases : Oxygen = 12.6 % : CO = 0.0296 : CO2 = 4.1068 %

160 787 420 0.0 0.0 4797.4 4550.4
Vision distance (smoke layer) = 1.5 m 4.8 ft
Smoke gases : Oxygen = 11.1 % : CO = 0.0463 : CO2 = 4.7860 %

******** HAZARD WARNING *********
At 165 seconds the Oxygen at head level reached 10.%.

165 852 455 0.0 0.0 5102.0 4839.2
Vision distance (smoke layer) = 1.3 m 4.4 ft
Smoke gases : Oxygen = 9.8 % : CO = 0.0583 : CO2 = 5.4160 %

170 859 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.8 % : CO = 0.0611 : CO2 = 5.5511 %

180 859 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.8 % : CO = 0.0611 : CO2 = 5.5529 %

190 859 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.8 % : CO = 0.0611 : CO2 = 5.5547 %

200 859 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.8 % : CO = 0.0611 : CO2 = 5.5565 %

210 859 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft

```
   220        859        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.8 % : CO =   0.0611 : CO2 =   5.5602 %

   230        859        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.8 % : CO =   0.0611 : CO2 =   5.5620 %

   240        859        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5638 %

   250        859        459          0.0          0.0      11712.5      11109.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5656 %

After   250  seconds the burning rate and resulting upper level
temperature is limited by the ventilation capacity of the room
openings.  From this pointon the amount of energy that can be
released within the room is limited to       6.7 kW.  Room temperature

may continue to rise.
   250        859        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5656 %

   260        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5656 %

   270        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5657 %

   280        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5657 %

   290        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5657 %

   300        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5657 %

   310        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5657 %

   320        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5657 %

   330        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5657 %

   340        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
Smoke gases : Oxygen =   9.7 % : CO =   0.0611 : CO2 =   5.5657 %

   350        858        459          0.0          0.0          6.7          6.3
Vision distance (smoke layer)  =      1.3  m        4.3 ft
```

360 858 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

370 858 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

380 858 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

390 858 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

400 858 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

410 858 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

420 858 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

430 858 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

440 857 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

450 857 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

460 857 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

470 857 459 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

480 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

490 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

500 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

510 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

530 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

540 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

550 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

560 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

570 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

580 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

590 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

600 857 458 0.0 0.0 6.7 6.3
Vision distance (smoke layer) = 1.3 m 4.3 ft
Smoke gases : Oxygen = 9.7 % : CO = 0.0611 : CO2 = 5.5657 %

----------END OF INPUT FIRE----------

Run 1
No HVAC

13

FIRE SIMULATOR

[VER 3.20]

Input data used for run of: 10-20-1995 12:13:54

Data file used: TOOL-IN.IN as of 10/20/95 12:13:08

Run title:
2104 Brandon Station Living Room/Dining-Kitchen/Hallway 10-20-1995 NO HVAC

LOTUS file name: BRAND2.WKS

Heat of combustion:	19000 BTU/lb	44148 KJ/Kg	
Specific extinction coefficient:	0.1		
Flashover temperature:	1112 F	600 C	
Oxygen starvation threshold:	10.0 % by volume		
Radiant energy fraction (from flame):	0.60		
Maximum pre flashover energy loss:	0.95		

There is no Sprinkler/Heat detector defined

There is no Smoke detector defined

There is no initial inside opening defined

Spacial dimensions of room:

Room height:	8.0 ft	2.4 m
Room floor area:	444.0 ft^2	41.2 m^2
Room wall perimeter:	123.5 ft	37.6 m
Room is not rectangular		

Description of ceiling materials:

100% GYPSUM BOARD	0.5 in	13 mm

Description of wall materials:

84% GYPSUM BOARD	0.5 in	13 mm
16% PLYWOOD	0.1 in	3 mm

There is no HVAC defined

Fire height: 0.0 ft 0.0 m

ultra fast fire at 1 second intervals to 600
Fire description used came from firefile: ufast.FIR 01-12-1989
Data file is BRAND2.WKS 10-20-1995 12:13:56

TIME	------TEMP------		------LAYER------		------FIRE------	
sec	F	C	ft	m	kW	BTU/sec
0	70	21	8.0	2.4	0.1	0.1

Vision distance (smoke layer) = 3000.0 m 9842.5 ft
Oxygen = 21.0 % : CO = 0.0000 : CO2 = 0.0000 %

10 77 25 7.7 2.4 18.7 17.8
Vision distance (smoke layer) = 81.3 m 266.7 ft
Smoke gases : Oxygen = 20.9 % : CO = 0.0000 : CO2 = 0.0559 %

20 91 33 7.2 2.2 75.0 71.1
Vision distance (smoke layer) = 28.7 m 94.1 ft
Smoke gases : Oxygen = 20.7 % : CO = 0.0000 : CO2 = 0.1504 %

30 111 44 6.5 2.0 168.7 160.0
Vision distance (smoke layer) = 15.5 m 51.0 ft
Smoke gases : Oxygen = 20.4 % : CO = 0.0000 : CO2 = 0.2775 %

40 138 59 5.7 1.7 299.8 284.4
Vision distance (smoke layer) = 9.9 m 32.5 ft
Smoke gases : Oxygen = 20.1 % : CO = 0.0000 : CO2 = 0.4428 %

******** HAZARD WARNING *********
At 49 seconds the Carbon dioxide at head level reached .6312%.

49 168 76 4.9 1.5 449.9 426.8
Vision distance (smoke layer) = 7.1 m 23.4 ft
Smoke gases : Oxygen = 19.7 % : CO = 0.0001 : CO2 = 0.6312 %

50 172 78 4.9 1.5 468.5 444.4
Vision distance (smoke layer) = 6.9 m 22.6 ft
Smoke gases : Oxygen = 19.6 % : CO = 0.0001 : CO2 = 0.6548 %

******** HAZARD WARNING *********
At 54 seconds the vision dropped to 19.9 ft 6.05m

54 188 87 4.5 1.4 546.5 518.3
Vision distance (smoke layer) = 6.1 m 19.9 ft
Smoke gases : Oxygen = 19.4 % : CO = 0.0001 : CO2 = 0.7550 %

60 215 102 4.0 1.2 674.6 639.9
Vision distance (smoke layer) = 5.1 m 16.6 ft
Smoke gases : Oxygen = 19.1 % : CO = 0.0002 : CO2 = 0.9243 %

******** HAZARD WARNING *********
At 64 seconds the vision dropped to 14.8 ft 4.52 m

64 236 113 3.6 1.1 767.6 728.1
Vision distance (smoke layer) = 4.5 m 14.8 ft
Smoke gases : Oxygen = 18.8 % : CO = 0.0003 : CO2 = 1.0513 %

70 270 132 3.1 1.0 918.3 871.0
Vision distance (smoke layer) = 3.9 m 12.7 ft
Smoke gases : Oxygen = 18.4 % : CO = 0.0006 : CO2 = 1.2652 %

80 338 170 2.3 0.7 1199.4 1137.6
Vision distance (smoke layer) = 3.0 m 10.0 ft
Smoke gases : Oxygen = 17.5 % : CO = 0.0014 : CO2 = 1.6946 %

90 421 216 1.4 0.4 1517.9 1439.8
Vision distance (smoke layer) = 2.4 m 8.0 ft
Smoke gases : Oxygen = 16.4 % : CO = 0.0030 : CO2 = 2.2341 %

100 520 271 0.6 0.2 1874.0 1777.5
Vision distance (smoke layer) = 2.0 m 6.6 ft
Smoke gases : Oxygen = 15.0 % : CO = 0.0061 : CO2 = 2.9095 %

At 108 seconds the Carbon monoxide at head level reached .0107 %.

108	612	322	0.0	0.0	2185.8	2073.3
Vision distance (smoke layer) =		1.7 m			5.6 ft	
Smoke gases : Oxygen =	13.5 %	: CO =	0.0107	: CO2 =	3.5973 %	
110	639	337	0.0	0.0	2267.5	2150.8
Vision distance (smoke layer) =		1.6 m			5.3 ft	
Smoke gases : Oxygen =	13.0 %	: CO =	0.0123	: CO2 =	3.8587 %	

******** HAZARD WARNING *********
At 120 seconds the Oxygen at head level reached 10.%.

120	807	430	0.0	0.0	2698.6	2559.6
Vision distance (smoke layer) =		1.2 m			4.1 ft	
Smoke gases : Oxygen =	9.7 %	: CO =	0.0260	: CO2 =	5.4364 %	
120	807	430	0.0	0.0	2698.6	2559.6
Vision distance (smoke layer) =		1.2 m			4.1 ft	
Smoke gases : Oxygen =	9.7 %	: CO =	0.0260	: CO2 =	5.4364 %	
130	816	436	0.0	0.0	0.0	0.0
Vision distance (smoke layer) =		1.2 m			4.0 ft	
Smoke gases : Oxygen =	9.7 %	: CO =	0.0281	: CO2 =	5.6228 %	
140	816	436	0.0	0.0	0.0	0.0
Vision distance (smoke layer) =		1.2 m			4.0 ft	
Smoke gases : Oxygen =	9.7 %	: CO =	0.0281	: CO2 =	5.6228 %	
150	816	436	0.0	0.0	0.0	0.0
Vision distance (smoke layer) =		1.2 m			4.0 ft	
Smoke gases : Oxygen =	9.7 %	: CO =	0.0281	: CO2 =	5.6228 %	
160	816	436	0.0	0.0	0.0	0.0
Vision distance (smoke layer) =		1.2 m			4.0 ft	
Smoke gases : Oxygen =	9.7 %	: CO =	0.0281	: CO2 =	5.6228 %	
170	816	436	0.0	0.0	0.0	0.0
Vision distance (smoke layer) =		1.2 m			4.0 ft	
Smoke gases : Oxygen =	9.7 %	: CO =	0.0281	: CO2 =	5.6228 %	
180	816	436	0.0	0.0	6071.8	5759.1
Vision distance (smoke layer) =		1.2 m			4.0 ft	
Smoke gases : Oxygen =	9.7 %	: CO =	0.0281	: CO2 =	5.6228 %	

At 180 Sec. all available oxygen has been consumed. Since no openings or HVAC were specified, it is expected that the fire will quickly go into a smoldering state, leakage of air through small openings may sustain some fire.

Run 5
16

FIRE SIMULATOR

[VER 3.20]

Input data used for run of: 10-20-1995 11:20:10

Data file used: LIVROOM.IN as of 10/20/95 11:19:30

Run title:
.04 Brandon Station Court Pleasant Garden, NC Run 1 10-20-1995

LOTUS file name: BRAND1.WKS

Heat of combustion:	15000 BTU/lb	34854 KJ/Kg
Specific extinction coefficient:	0.1	
Flashover temperature:	1112 F	600 C
Oxygen starvation threshold:	10.0 % by volume	
Radiant energy fraction (from flame):	0.60	
Maximum pre flashover energy loss:	0.95	

There is no Sprinkler/Heat detector defined

There is no Smoke detector defined

There is no initial inside opening defined

Spacial dimensions of room:

Room height:	8.0 ft	2.4 m
Room floor area:	262.0 ft^2	24.3 m^2
Room wall perimeter:	85.0 ft	25.9 m

Room is not rectangular

Description of ceiling materials:

100% GYPSUM BOARD	0.5 in	13 mm

Description of wall materials:

100% GYPSUM BOARD	0.5 in	13 mm

There is no HVAC defined

Fire height: 0.0 ft 0.0 m

ultra fast fire at 1 second intervals to 600
Fire description used came from firefile: ufast.FIR 01-12-1989

A halt flag is set for time = 1 Sec
Data file is BRAND1.WKS 10-20-1995 11:20:13

TIME	TEMP		LAYER		FIRE	
sec	F	C	ft	m	kW	BTU/sec
0	70	21	8.0	2.4	0.1	0.1

Vision distance (smoke layer) = 3000.0 m 9842.5 ft
Smoke gases : Oxygen = 21.0 % : CO = 0.0000 : CO2 = 0.0000 %

There is no inside opening in the room.

Combustion efficiency for air from HVAC system: 50.0%
Ventilation rate (air changes/hour): 3

1 70 21 8.0 2.4 0.2 0.2
Vision distance (smoke layer) = 1121.6 m 3679.9 ft
Smoke gases : Oxygen = 21.0 % : CO = 0.0000 : CO2 = 0.0047 %

10 78 25 7.6 2.3 18.7 17.8
Vision distance (smoke layer) = 64.2 m 210.6 ft
Smoke gases : Oxygen = 20.9 % : CO = 0.0000 : CO2 = 0.0568 %

20 94 35 6.7 2.0 75.0 71.1
Vision distance (smoke layer) = 21.8 m 71.6 ft
Smoke gases : Oxygen = 20.7 % : CO = 0.0000 : CO2 = 0.1585 %

30 119 48 5.7 1.7 168.7 160.0
Vision distance (smoke layer) = 11.3 m 37.1 ft
Smoke gases : Oxygen = 20.4 % : CO = 0.0000 : CO2 = 0.3058 %

******** HAZARD WARNING *********
At 37 seconds the Carbon dioxide at head level reached .4429%.

37 142 61 4.9 1.5 256.6 243.3
Vision distance (smoke layer) = 7.9 m 26.0 ft
Smoke gases : Oxygen = 20.1 % : CO = 0.0000 : CO2 = 0.4429 %

40 153 67 4.6 1.4 299.8 284.4
Vision distance (smoke layer) = 6.9 m 22.7 ft
Smoke gases : Oxygen = 19.9 % : CO = 0.0001 : CO2 = 0.5119 %

******** HAZARD WARNING *********
At 43 seconds the vision dropped to 19.9 ft 6.08m

43 166 74 4.3 1.3 346.5 328.7
Vision distance (smoke layer) = 6.1 m 19.9 ft
Smoke gases : Oxygen = 19.8 % : CO = 0.0001 : CO2 = 0.5877 %

50 200 94 3.5 1.1 468.5 444.4
Vision distance (smoke layer) = 4.6 m 15.2 ft
Smoke gases : Oxygen = 19.3 % : CO = 0.0002 : CO2 = 0.7941 %

******** HAZARD WARNING *********
At 51 seconds the vision dropped to 14.6 ft 4.46 m

51 206 97 3.4 1.0 487.4 462.3
Vision distance (smoke layer) = 4.5 m 14.6 ft
Smoke gases : Oxygen = 19.3 % : CO = 0.0002 : CO2 = 0.8274 %

60 264 129 2.5 0.8 674.6 639.9
Vision distance (smoke layer) = 3.3 m 10.8 ft
Smoke gases : Oxygen = 18.6 % : CO = 0.0006 : CO2 = 1.1745 %

70 348 176 1.4 0.4 918.3 871.0
Vision distance (smoke layer) = 2.4 m 8.0 ft
Smoke gases : Oxygen = 17.5 % : CO = 0.0016 : CO2 = 1.6806 %

80 456 235 0.4 0.1 1199.4 1137.6
Vision distance (smoke layer) = 1.9 m 6.2 ft
Smoke gases : Oxygen = 16.1 % : CO = 0.0040 : CO2 = 2.3461 %

90 586 308 0.0 0.0 1517.9 1439.8

******** HAZARD WARNING *********
At 91 seconds the Carbon monoxide at head level reached .0106 %.

91	602	316	0.0	0.0	1551.9	1471.9

Vision distance (smoke layer) = 1.4 m 4.4 ft
Smoke gases : Oxygen = 13.6 % : CO = 0.0106 : CO2 = 3.5595 %

100	770	410	0.0	0.0	1874.0	1777.5

Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 10.2 % : CO = 0.0251 : CO2 = 5.1582 %

******** HAZARD WARNING *********
At 101 seconds the Oxygen at head level reached 10.%.

101	793	423	0.0	0.0	1911.7	1813.2

Vision distance (smoke layer) = 1.0 m 3.2 ft
Smoke gases : Oxygen = 9.8 % : CO = 0.0276 : CO2 = 5.3705 %

110	794	424	0.0	0.0	87.4	82.9

Vision distance (smoke layer) = 1.0 m 3.1 ft
Smoke gases : Oxygen = 9.6 % : CO = 0.0305 : CO2 = 5.6739 %

120	802	428	0.0	0.0	87.4	82.9

Vision distance (smoke layer) = 0.9 m 3.1 ft
Smoke gases : Oxygen = 9.4 % : CO = 0.0305 : CO2 = 5.7781 %

130	810	432	0.0	0.0	87.4	82.9

Vision distance (smoke layer) = 0.9 m 3.1 ft
Smoke gases : Oxygen = 9.2 % : CO = 0.0305 : CO2 = 5.8829 %

140	818	437	0.0	0.0	87.4	82.9

Vision distance (smoke layer) = 0.9 m 3.0 ft
Smoke gases : Oxygen = 8.9 % : CO = 0.0306 : CO2 = 5.9884 %

150	826	441	0.0	0.0	87.4	82.9

Vision distance (smoke layer) = 0.9 m 3.0 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0306 : CO2 = 6.0945 %

154	828	442	0.0	0.0	4444.4	4215.5

Vision distance (smoke layer) = 0.9 m 3.0 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0306 : CO2 = 6.1372 %

After 154 seconds the burning rate and resulting upper level temperature is limited by the ventilation capacity of the room openings. From this pointon the amount of energy that can be released within the room is limited to 87.4 kW. Room temperature may continue to rise.

160	734	390	0.0	0.0	87.4	82.9

Vision distance (smoke layer) = 0.9 m 3.0 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0307 : CO2 = 6.1371 %

170	611	322	0.0	0.0	87.4	82.9

Vision distance (smoke layer) = 0.9 m 2.9 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0307 : CO2 = 6.1371 %

180	522	272	0.0	0.0	87.4	82.9

Vision distance (smoke layer) = 0.9 m 2.9 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0307 : CO2 = 6.1371 %

190	455	235	0.0	0.0	87.4	82.9

200 403 206 0.0 0.0 87.4 82.9
Vision distance (smoke layer) = 0.9 m 2.9 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0308 : CO2 = 6.1370 %

210 363 184 0.0 0.0 87.4 82.9
Vision distance (smoke layer) = 0.9 m 2.8 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0308 : CO2 = 6.1370 %

220 331 166 0.0 0.0 87.4 82.9
Vision distance (smoke layer) = 0.9 m 2.8 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0308 : CO2 = 6.1369 %

230 304 151 0.0 0.0 87.4 82.9
Vision distance (smoke layer) = 0.8 m 2.8 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1369 %

240 283 140 0.0 0.0 87.4 82.9
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1369 %

250 265 130 0.0 0.0 87.4 82.9
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1369 %

260 251 122 0.0 0.0 87.4 82.9
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1369 %

At 267 Sec. the oxygen level has dropped below that needed for combustion. As long as this condition exists the calculation assumes there is no effective burning in the smoke layer. The energy release rate within the room will be limited to a value based on the specified rate of heat release, the heat release rate possible from the air entrained below the smoke interface, or (if the ventilation limit has been reached) the heat release rate attainable from the air induced through the room openings. Where the specified rate of heat release exceeds the rate used, the excess is considered unburned fuel in the smoke and gases.

267 243 117 0.0 0.0 13359.6 12671.5
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

270 242 117 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

280 242 117 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

290 242 117 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

300 242 117 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

310 242 117 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

320 242 116 0.0 0.0 0.0 0.0

Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

330 241 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

340 241 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

350 241 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

360 241 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

370 241 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

380 241 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

390 241 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

400 241 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

410 240 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

420 240 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

430 240 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

440 240 116 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

450 240 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

460 240 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

470 240 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

480 239 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

500 239 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

510 239 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

520 239 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

530 239 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

540 239 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

550 238 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

560 238 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

570 238 115 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

580 238 114 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

590 238 114 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

600 238 114 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 0.8 m 2.7 ft
Smoke gases : Oxygen = 8.7 % : CO = 0.0309 : CO2 = 6.1368 %

----------END OF INPUT FIRE----------

Run 6
22

FIRE SIMULATOR

[VER 3.20]

Input data used for run of: 10-20-1995 12:03:41

Data file used: TOOL-IN.IN as of 10/20/95 12:03:02

Run title:
2104 Brandon Station Living Room/Dining-Kitchen/Hallway 10-20-1995

LOTUS file name: BRAND2.WKS

Heat of combustion:	19000 BTU/lb	44148 KJ/Kg
Specific extinction coefficient:	0.1	
Flashover temperature:	1112 F	600 C
Oxygen starvation threshold:	10.0 % by volume	
Radiant energy fraction (from flame):	0.60	
Maximum pre flashover energy loss:	0.95	

There is no Sprinkler/Heat detector defined

There is no Smoke detector defined

There is no initial inside opening defined

Spacial dimensions of room:

Room height:	8.0 ft	2.4 m
Room floor area:	444.0 ft^2	41.2 m^2
Room wall perimeter:	123.5 ft	37.6 m

Room is not rectangular

Description of ceiling materials:

100% GYPSUM BOARD	0.5 in	13 mm

Description of wall materials:

84% GYPSUM BOARD	0.5 in	13 mm
16% PLYWOOD	0.1 in	3 mm

There is no HVAC defined

Fire height: 0.0 ft 0.0 m

ultra fast fire at 1 second intervals to 600
Fire description used came from firefile: ufast.FIR 01-12-1989

A halt flag is set for time = 10 Sec
Data file is BRAND2.WKS 10-20-1995 12:03:47

TIME	TEMP		LAYER		FIRE	
sec	F	C	ft	m	kW	BTU/sec
0	70	21	8.0	2.4	0.1	0.1

Vision distance (smoke layer) = 3000.0 m 9842.5 ft
Smoke gases : Oxygen = 21.0 % : CO = 0.0000 : CO2 = 0.0000 %

10	77	25	7.7	2.4	18.7	17.8

Vision distance (smoke layer) = 81.3 m 266.7 ft
Smoke gases : Oxygen = 20.9 % : CO = 0.0000 : CO2 = 0.0559 %

There is no inside opening in the room.

Currently there is no outside opening in the room.

Combustion efficiency for air from HVAC system: 50.0%
Ventilation rate (air changes/hour): 5

10	77	25	7.7	2.4	18.7	17.8

Vision distance (smoke layer) = 81.3 m 266.7 ft
Smoke gases : Oxygen = 20.9 % : CO = 0.0000 : CO2 = 0.0639 %

20	91	33	7.2	2.2	75.0	71.1

Vision distance (smoke layer) = 29.4 m 96.4 ft
Smoke gases : Oxygen = 20.7 % : CO = 0.0000 : CO2 = 0.1504 %

30	110	44	6.5	2.0	168.7	160.0

Vision distance (smoke layer) = 15.9 m 52.2 ft
Smoke gases : Oxygen = 20.4 % : CO = 0.0000 : CO2 = 0.2772 %

40	137	58	5.7	1.7	299.8	284.4

Vision distance (smoke layer) = 10.1 m 33.2 ft
Smoke gases : Oxygen = 20.1 % : CO = 0.0000 : CO2 = 0.4420 %

******** HAZARD WARNING *********
At 49 seconds the Carbon dioxide at head level reached .6297%.

49	167	75	4.9	1.5	449.9	426.8

Vision distance (smoke layer) = 7.3 m 23.9 ft
Smoke gases : Oxygen = 19.7 % : CO = 0.0001 : CO2 = 0.6297 %

50	170	77	4.9	1.5	468.5	444.4

Vision distance (smoke layer) = 7.0 m 23.1 ft
Smoke gases : Oxygen = 19.6 % : CO = 0.0001 : CO2 = 0.6532 %

******** HAZARD WARNING *********
At 55 seconds the vision dropped to 19.7 ft 6.00m

55	191	88	4.4	1.3	566.9	537.7

Vision distance (smoke layer) = 6.0 m 19.7 ft
Smoke gases : Oxygen = 19.4 % : CO = 0.0001 : CO2 = 0.7794 %

60	213	101	4.0	1.2	674.6	639.9

Vision distance (smoke layer) = 5.2 m 17.0 ft
Smoke gases : Oxygen = 19.1 % : CO = 0.0002 : CO2 = 0.9214 %

******** HAZARD WARNING *********
At 65 seconds the vision dropped to 14.8 ft 4.50 m

65	239	115	3.6	1.1	791.8	751.0

Vision distance (smoke layer) = 4.5 m 14.8 ft
Smoke gases : Oxygen = 18.8 % : CO = 0.0004 : CO2 = 1.0810 %

70	267	131	3.1	1.0	918.3	871.0

Vision distance (smoke layer) = 3.9 m 13.0 ft
Smoke gases : Oxygen = 18.4 % : CO = 0.0006 : CO2 = 1.2601 %

80	334	168	2.2	0.7	1199.4	1137.6

Vision distance (smoke layer) = 3.1 m 10.2 ft
Smoke gases : Oxygen = 17.5 % : CO = 0.0013 : CO2 = 1.6859 %

90	41A	214	1.4	0.4	1517.9	1439.8

Smoke gases : Oxygen = 15.1 % : CO = 0.0060 : CO2 = 2.8865 %

100 513 267 0.5 0.2 1874.0 1777.5
Vision distance (smoke layer) = 2.1 m 6.8 ft
Smoke gases : Oxygen = 15.1 % : CO = 0.0060 : CO2 = 2.8865 %

******** HAZARD WARNING *********
At 108 seconds the Carbon monoxide at head level reached .0105 %.

108 602 317 0.0 0.0 2185.8 2073.3
Vision distance (smoke layer) = 1.7 m 5.7 ft
Smoke gases : Oxygen = 13.6 % : CO = 0.0105 : CO2 = 3.5688 %

110 629 332 0.0 0.0 2267.5 2150.8
Vision distance (smoke layer) = 1.7 m 5.4 ft
Smoke gases : Oxygen = 13.0 % : CO = 0.0121 : CO2 = 3.8280 %

******** HAZARD WARNING *********
At 120 seconds the Oxygen at head level reached 10.%.

120 791 422 0.0 0.0 2698.6 2559.6
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.8 % : CO = 0.0255 : CO2 = 5.3892 %

120 791 422 0.0 0.0 2698.6 2559.6
Vision distance (smoke layer) = 1.3 m 4.2 ft
Smoke gases : Oxygen = 9.8 % : CO = 0.0255 : CO2 = 5.3892 %

130 794 423 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.2 m 4.0 ft
Smoke gases : Oxygen = 9.5 % : CO = 0.0277 : CO2 = 5.7287 %

140 807 430 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.2 m 4.0 ft
Smoke gases : Oxygen = 9.1 % : CO = 0.0278 : CO2 = 5.9024 %

150 820 438 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.2 m 3.9 ft
Smoke gases : Oxygen = 8.8 % : CO = 0.0280 : CO2 = 6.0780 %

160 833 445 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.2 m 3.8 ft
Smoke gases : Oxygen = 8.4 % : CO = 0.0282 : CO2 = 6.2553 %

170 846 452 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.1 m 3.8 ft
Smoke gases : Oxygen = 8.0 % : CO = 0.0283 : CO2 = 6.4344 %

180 859 460 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.1 m 3.7 ft
Smoke gases : Oxygen = 7.7 % : CO = 0.0285 : CO2 = 6.6153 %

186 866 463 0.0 0.0 6483.3 6149.4
Vision distance (smoke layer) = 1.1 m 3.7 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0286 : CO2 = 6.7247 %

After 186 seconds the burning rate and resulting upper level temperature is limited by the ventilation capacity of the room openings. From this pointon the amount of energy that can be released within the room is limited to 246.8 kW. Room temperature

may continue to rise.
190 772 411 0.0 0.0 246.8 234.1

200 660 349 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.1 m 3.6 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0289 : CO2 = 6.7245 %

210 573 300 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.1 m 3.5 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0290 : CO2 = 6.7244 %

220 507 264 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.1 m 3.5 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0292 : CO2 = 6.7242 %

230 456 235 0.0 0.0 246.9 234.1
Vision distance (smoke layer) = 1.0 m 3.4 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0293 : CO2 = 6.7241 %

240 416 213 0.0 0.0 246.8 234.1
Vision distance (smoke layer) = 1.0 m 3.4 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0294 : CO2 = 6.7239 %

At 247 Sec. the oxygen level has dropped below that needed for combustion. As long as this condition exists the calculation assumes there is no effective burning in the smoke layer. The energy release rate within the room will be limited to a value based on the specified rate of heat release, the heat release rate possible from the air entrained below the smoke interface, or (if the ventilation limit has been reached) the heat release rate attainable from the air induced through the room openings. Where the specified rate of heat release exceeds the rate used, the excess is considered unburned fuel in the smoke and gases.

247 395 202 0.0 0.0 11433.1 10844.3
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

250 394 201 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

260 394 201 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

270 394 201 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

280 394 201 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

290 393 201 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

300 393 201 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

310 393 201 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

320 393 201 0.0 0.0 0.0 0.0

330 393 201 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

340 393 201 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

350 393 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

360 393 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

370 393 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

380 393 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

390 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

400 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

410 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

420 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

430 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

440 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

450 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

460 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

470 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

480 392 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

500 391 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

510 391 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

520 391 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

530 391 200 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

540 391 199 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

550 391 199 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

560 391 199 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

570 391 199 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

580 391 199 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

590 391 199 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

600 390 199 0.0 0.0 0.0 0.0
Vision distance (smoke layer) = 1.0 m 3.3 ft
Smoke gases : Oxygen = 7.5 % : CO = 0.0295 : CO2 = 6.7239 %

----------END OF INPUT FIRE----------

Brandon Station Living Room/Dining-Kitchen/Hallway 10-20-1995 10-20-1995

0 Time 600

Run 2

29

10-20-1995
FPETOOL V3.2

ASETBX

Run title: hallway and living room combined square foot

Heat loss fraction = 0.9
Fire height = 0.0 ft 0.0 m
Room height = 8.0 ft 2.4 m
Room area = 262.0 sq ft 24.3 sq m

TIME sec	TEMP F	TEMP C	LAYER ft	LAYER m	FIRE kW	FIRE BTU/s
0	70	21.2	8.0	2.4	0.1	0.1
10	73	22.5	7.5	2.3	18.7	17.8
20	77	25.1	6.6	2.0	75.0	71.1
30	84	29.1	5.5	1.7	168.7	160.0
40	95	34.8	4.5	1.4	299.8	284.4
50	109	42.8	3.6	1.1	468.5	444.4
60	129	54.0	2.8	0.9	674.6	639.9
70	156	69.0	2.1	0.6	918.3	871.0
80	192	89.1	1.4	0.4	1199.4	1137.6
90	240	115.7	0.7	0.2	1517.9	1439.8
100	302	150.1	0.1	0.0	1874.0	1777.5
110	382	194.7	0.0	0.0	2267.5	2150.8
120	490	254.4	0.0	0.0	2698.6	2559.6
130	635	334.8	0.0	0.0	3167.1	3004.0
140	832	444.2	0.0	0.0	3673.0	3483.9

The drop of the upper level to the top of the burning item and the rise in the upper level temp. indicate vitiation of the combustion air with fire products. It is likely that the burning rate will be depressed possibly smothered.

150	1103	595.0	0.0	0.0	4216.5	3999.4
160	1484	806.6	0.0	0.0	4797.4	4550.4

Upper level temp. indicates that flashover has probably occurred.

Run 2

30

10-20-1995
FPETOOL V3.2
---ASETBX---

Run title: Slow fire living room and hallway combined

Heat loss fraction = 0.9
Fire height = 0.0 ft 0.0 m
Room height = 8.0 ft 2.4 m
Room area = 262.0 sq ft 24.3 sq m

TIME sec	TEMP F	TEMP C	LAYER ft	LAYER m	FIRE kW	FIRE BTU/s
0	70	21.2	8.0	2.4	0.1	0.1
10	70	21.3	7.8	2.4	0.9	0.8
20	71	21.5	7.4	2.3	1.8	1.7
30	71	21.6	7.1	2.2	2.6	2.5
40	71	21.8	6.7	2.0	5.3	5.0
50	72	22.1	6.2	1.9	7.9	7.5
60	72	22.3	5.8	1.8	10.5	10.0
70	73	22.7	5.4	1.6	14.9	14.2
80	74	23.1	5.0	1.5	19.3	18.3
90	75	23.6	4.6	1.4	23.7	22.5
100	76	24.2	4.2	1.3	29.9	28.3
110	77	24.9	3.8	1.2	36.0	34.2
120	78	25.6	3.5	1.1	42.2	40.0
130	80	26.5	3.2	1.0	50.1	47.5
140	81	27.4	3.0	0.9	58.0	55.0
150	83	28.5	2.7	0.8	65.9	62.5
160	86	29.7	2.5	0.8	75.6	71.7
170	88	31.1	2.3	0.7	85.3	80.9
180	91	32.6	2.1	0.6	94.9	90.0
190	94	34.3	1.9	0.6	106.4	100.9
200	97	36.1	1.7	0.5	117.8	111.7
210	101	38.2	1.5	0.5	129.2	122.6
220	105	40.4	1.4	0.4	142.4	135.1
230	109	42.8	1.2	0.4	155.6	147.6
240	114	45.5	1.1	0.3	168.8	160.1
250	119	48.4	1.0	0.3	183.7	174.2
260	125	51.5	0.8	0.3	198.7	188.4
270	131	54.9	0.7	0.2	213.6	202.6
280	138	58.6	0.6	0.2	230.3	218.4
290	145	62.6	0.5	0.2	247.0	234.3
300	152	66.9	0.4	0.1	263.7	250.1
310	161	71.6	0.3	0.1	282.2	267.6
320	170	76.6	0.1	0.0	300.6	285.1
330	179	81.9	0.0	0.0	319.1	302.6
340	190	87.6	0.0	0.0	339.3	321.8
350	201	93.8	0.0	0.0	359.5	341.0
360	213	100.4	0.0	0.0	379.7	360.2
370	226	107.5	0.0	0.0	401.7	381.0
380	239	115.2	0.0	0.0	423.7	401.9
390	254	123.5	0.0	0.0	445.7	422.7
400	270	132.4	0.0	0.0	469.4	445.2
410	287	141.9	0.0	0.0	493.1	467.7
420	306	152.2	0.0	0.0	516.9	490.2
430	326	163.3	0.0	0.0	542.3	514.4
440	347	175.2	0.0	0.0	567.8	538.6
450	370	187.9	0.0	0.0	593.3	562.8
460	395	201.7	0.0	0.0	620.6	588.6
470	422	216.5	0.0	0.0	647.8	614.5
480	450	232.5	0.0	0.0	675.1	640.3

510	551	288.1	0.0	0.0	762.1	722.8
520	589	309.6	0.0	0.0	792.9	752.0
530	631	332.9	0.0	0.0	823.6	781.2
540	676	358.0	0.0	0.0	854.4	810.4

The drop of the upper level to the top of the burning item and the rise in the upper level temp. indicate vitiation of the combustion air with fire products. It is likely that the burning rate will be depressed possibly smothered.

550	725	385.2	0.0	0.0	886.9	841.2
560	778	414.7	0.0	0.0	919.4	872.1
570	836	446.5	0.0	0.0	952.0	902.9
580	898	481.1	0.0	0.0	986.2	935.4
590	966	518.7	0.0	0.0	1020.5	968.0
600	1039	559.5	0.0	0.0	1054.8	1000.5
610	1119	603.9	0.0	0.0	1090.8	1034.7

Upper level temp. indicates that flashover has probably occurred.

10-20-1995
FPETOOL V3.2

ASETBX

Run title: Living room sq ft + hallway sq foot combined

Heat loss fraction = 0.9
Fire height = 0.0 ft 0.0 m
Room height = 8.0 ft 2.4 m
Room area = 262.0 sq ft 24.3 sq m

TIME sec	TEMP F	TEMP C	LAYER ft	LAYER m	FIRE kW	FIRE BTU/s
0	70	21.2	8.0	2.4	0.1	0.1
15	75	23.7	7.1	2.2	42.2	40.0
30	84	29.1	5.5	1.7	168.7	160.0
45	101	38.5	4.0	1.2	379.5	359.9
60	129	54.0	2.8	0.9	674.6	639.9
75	173	78.4	1.7	0.5	1054.1	999.8
90	240	115.7	0.7	0.2	1517.9	1439.8
105	339	170.8	0.0	0.0	2066.1	1959.7
120	490	254.4	0.0	0.0	2698.6	2559.6
135	725	385.2	0.0	0.0	3415.4	3239.5

The drop of the upper level to the top of the burning item and the rise in the upper level temp. indicate vitiation of the combustion air with fire products. It is likely that the burning rate will be depressed possibly smothered.

150	1103	595.0	0.0	0.0	4216.5	3999.4
165	1731	944.1	0.0	0.0	5102.0	4839.2

Upper level temp. indicates that flashover has probably occurred.

180	2827	1552.5	0.0	0.0	6071.8	5759.1
195	4845	2673.9	0.0	0.0	7125.9	6758.9
210	8813	4878.3	0.0	0.0	8264.3	7838.7
225	%17201	9538.1	0.0	0.0	9487.1	8998.5
240	%36414	%20212.5	0.0	0.0	10794.2	10238
255	%84466	%46907.5	0.0	0.0	12185.7	11558
270	%216618	%120325.5	0.0	0.0	13661.5	129
285	%619169	%343964.8	0.0	0.0	15221.6	144
300	%1986837	%1103780.8	0.0	0.0	16866.0	1
315	%7205481	%4003027.3	0.0	0.0	18594.8	1
330	%29723074	%16512802.0	0.0	0.0	20407.9	
345	% 140E+06	%77966704.0	0.0	0.0	22305.3	
360	% 763E+06	% 424.0E+06	0.0	0.0	24287.0	
375	% 481E+07	% 267.2E+07	0.0	0.0	26353.1	
390	% 354E+08	% 196.4E+08	0.0	0.0	28503.5	
405	% 305E+09	% 169.4E+09	0.0	0.0	30738.3	
420	% 311E+10	% 172.6E+10	0.0	0.0	33057.4	

450	% 545E+12	% 302.6E+12	0.0	0.0	37948.5
465	% 949E+13	% 527.4E+13	0.0	0.0	40520.6
480	% 200E+15	% 111.3E+15	0.0	0.0	43177.0
495	% 516E+16	% 286.6E+16	0.0	0.0	45917.7
510	% 163E+18	% 905.4E+17	0.0	0.0	48742.7
525	% 636E+19	% 353.3E+19	0.0	0.0	51652.1
540	% 309E+21	% 171.4E+21	0.0	0.0	54645.8
555	% 187E+23	% 104.1E+23	0.0	0.0	57723.9
570	% 143E+25	% 796.5E+24	0.0	0.0	60886.3
585	% 139E+27	% 773.3E+26	0.0	0.0	64133.0
600	% 173E+29	% 959.0E+28	0.0	0.0	67464.0

Run 84
34

10-20-1995
FPETOOL V3.2

Thomas' Flashover correlation

Flashover is expected in a space 21.0 x 3.0 x 8.0 ft high
with an opening that is 3.00 ft wide and 8.00 ft high when
a fire burning at a rate of: 1815 kW occurs
Door loss = 1431 kW Wall loss = 384 kW

10-20-1995
FPETOOL V3.2

Thomas' Flashover correlation

Flashover is expected in a space 38.0 x 3.0 x 8.0 ft high
with an opening that is 3.00 ft wide and 8.00 ft high when
a fire burning at a rate of: 2111 kW occurs
Door loss = 1431 kW Wall loss = 680 kW

FIRE SIMULATOR

EVER 3.20J

Input data used for run of: 10-20-1995 11:15:51

Data file used: LIVROOM.IN as of 10/20/95 11:15:08

Run title:

LOTUS file name: BRAND1.WKS

Heat of combustion: 15000 BTU/lb 34854 KJ/Kg
Specific extinction coefficient: 0.1
Flashover temperature: 1112 F 600 C
Oxygen starvation threshold: 10.0 % by volume
Radiant energy fraction (from flame): 0.60
Maximum pre flashover energy loss: 0.95

There is no Sprinkler/Heat detector defined

There is no Smoke detector defined

Description of initial inside opening:
Height of opening: 8.0 ft 2.4 m
Width of opening: 12.0 ft 3.7 m
Height of sill above floor: 0.0 ft 0.0 m

Spacial dimensions of room:
Room height: 8.0 ft 2.4 m
Room floor area: 262.0 ft^2 24.3 m^2
Room wall perimeter: 85.0 ft 25.9 m
Room is not rectangular

Description of ceiling materials:
100% GYPSUM BOARD 0.5 in 13 mm

Description of wall materials:
100% GYPSUM BOARD 0.5 in 13 mm

Description of HVAC:
Combustion efficiency of HVAC air: 50 %
Air changes per hour: %1500

Fire height: 0.0 ft 0.0 m

ultra fast fire at 1 second intervals to 600
Fire description used came from firefile: ufast.FIR 01-12-1989

A halt flag is set for time = 2 Sec
Data file is BRAND1.WKS 10-20-1995 11:15:56

TIME	TEMP		LAYER		FIRE	
sec	F	C	ft	m	kW	BTU/sec
0	70	21	8.0	2.4	0.1	0.1

Vision distance (smoke layer) = 3000.0 m 9842.5 ft
Smoke gases : Oxygen = 21.0 % : CO = 0.0000 : CO2 = 0.0000 %
Smoke vent rate is 0.0 cfm 0.0 cms
Enthalpy (Heat content) 0.0 btu/sec 0.0 kW
Inside flow 0.0 BTU/SEC 0.0 kW

The top of the current inside opening is
0.0 ft 0.0m above the floor.
The width is 12.0 FT 3.7m
And the sill is at the floor.

The top of the current outside opening is
6.9 ft 2.1m above the floor.
The width is 3.0 ft 0.9m
And the sill is at the floor.

Combustion efficiency for air from HVAC system: 50.0%
Ventilation rate (air changes/hour): %1500

2 70 21 7.9 2.4 0.7 0.7
Vision distance (smoke layer) = 3000.0 m 9842.5 ft
Smoke gases : Oxygen = 21.0 % : CO = 0.0000 : CO2 = 0.0064 %
Smoke vent rate is 0.9 cfm 0.0 cms
Enthalpy (Heat content) 0.0 btu/sec 0.0 kW
Inside flow 0.0 BTU/SEC 0.0 kW

15 72 22 7.9 2.4 42.2 40.0
Vision distance (smoke layer) = 172.6 m 566.2 ft
Smoke gases : Oxygen = 20.7 % : CO = 0.0000 : CO2 = 0.1437 %
Smoke vent rate is 3.1 cfm 0.0 cms
Enthalpy (Heat content) 0.0 btu/sec 0.0 kW
Inside flow 0.0 BTU/SEC 0.0 kW

30 82 28 7.9 2.4 168.7 160.0
Vision distance (smoke layer) = 6.0 m 19.6 ft
Smoke gases : Oxygen = 20.2 % : CO = 0.0000 : CO2 = 0.3786 %
Smoke vent rate is 8.6 cfm 0.0 cms
Enthalpy (Heat content) 0.0 btu/sec 0.0 kW
Inside flow 0.0 BTU/SEC 0.0 kW

45 96 35 7.9 2.4 379.5 359.9
Vision distance (smoke layer) = 1.0 m 3.4 ft
Smoke gases : Oxygen = 19.7 % : CO = 0.0002 : CO2 = 0.6174 %
Smoke vent rate is 12.4 cfm 0.0 cms
Enthalpy (Heat content) 0.1 btu/sec 0.1 kW
Inside flow 0.0 BTU/SEC 0.0 kW

60 101 39 7.9 2.4 674.6 639.7
Vision distance (smoke layer) = 0.4 m 1.3 ft
Smoke gases : Oxygen = 19.2 % : CO = 0.0007 : CO2 = 0.8828 %
Smoke vent rate is 13.8 cfm 0.0 cms
Enthalpy (Heat content) 0.1 btu/sec 0.1 kW
Inside flow 0.0 BTU/SEC 0.0 kW

75 122 50 7.9 2.4 1054.1 999.8
Vision distance (smoke layer) = 0.2 m 0.6 ft
Smoke gases : Oxygen = 18.8 % : CO = 0.0015 : CO2 = 1.0868 %
Smoke vent rate is 17.7 cfm 0.0 cms
Enthalpy (Heat content) 0.2 btu/sec 0.3 kW
Inside flow 0.0 BTU/SEC 0.0 kW

90 164 73 7.9 2.4 1517.9 1439.8
Vision distance (smoke layer) = 0.1 m 0.3 ft
Smoke gases : Oxygen = 18.2 % : CO = 0.0027 : CO2 = 1.3257 %
Smoke vent rate is 23.9 cfm 0.0 cms
Enthalpy (Heat content) 0.6 btu/sec 0.6 kW
Inside flow 0.0 BTU/SEC 0.0 kW

105 180 82 7.9 2.4 2066.1 1959.7
Vision distance (smoke layer) = 0.1 m 0.2 ft
Smoke gases : Oxygen = 17.8 % : CO = 0.0044 : CO2 = 1.5955 %
Smoke vent rate is 25.8 cfm 0.0 cms
Enthalpy (Heat content) 0.7 btu/sec 0.7 kW
Inside flow 0.0 BTU/SEC 0.0 kW

120 204 96 7.9 2.4 2698.6 2559.6
Vision distance (smoke layer) = 0.0 m 0.1 ft
Smoke gases : Oxygen = 17.3 % : CO = 0.0067 : CO2 = 1.8298 %
Smoke vent rate is 28.5 cfm 0.0 cms
Enthalpy (Heat content) 0.9 btu/sec 0.9 kW
Inside flow 0.0 BTU/SEC 0.0 kW

Vision distance (smoke layer) = 0.0 m 0.1 ft
Smoke gases : Oxygen = 16.8 % : CO = 0.0098 : CO2 = 2.0709 %
Smoke vent rate is 31.9 cfm 0.0 cms
Enthalpy (Heat content) 1.2 btu/sec 1.3 kW
Inside flow 0.0 BTU/SEC 0.0 kW

150 275 135 7.9 2.4 4216.5 3999.4
Vision distance (smoke layer) = 0.0 m 0.1 ft
Smoke gases : Oxygen = 16.3 % : CO = 0.0137 : CO2 = 2.3263 %
Smoke vent rate is 35.3 cfm 0.0 cms
Enthalpy (Heat content) 1.5 btu/sec 1.6 kW
Inside flow 0.0 BTU/SEC 0.0 kW

165 317 158 7.9 2.4 5102.0 4839.2
Vision distance (smoke layer) = 0.0 m 0.0 ft
Smoke gases : Oxygen = 15.7 % : CO = 0.0186 : CO2 = 2.5941 %
Smoke vent rate is 38.7 cfm 0.0 cms
Enthalpy (Heat content) 1.9 btu/sec 2.0 kW
Inside flow 0.0 BTU/SEC 0.0 kW

180 362 183 7.9 2.4 6071.8 5759.1
Vision distance (smoke layer) = 0.0 m 0.0 ft
Smoke gases : Oxygen = 15.2 % : CO = 0.0247 : CO2 = 2.8751 %
Smoke vent rate is 42.1 cfm 0.0 cms
Enthalpy (Heat content) 2.3 btu/sec 2.5 kW
Inside flow 0.0 BTU/SEC 0.0 kW

195 412 211 7.9 2.4 7125.9 6758.9
Vision distance (smoke layer) = 0.0 m 0.0 ft
Smoke gases : Oxygen = 14.6 % : CO = 0.0321 : CO2 = 3.1714 %
Smoke vent rate is 45.6 cfm 0.0 cms
Enthalpy (Heat content) 2.8 btu/sec 2.9 kW
Inside flow 0.0 BTU/SEC 0.0 kW

210 466 241 7.9 2.4 8264.3 7838.7
Vision distance (smoke layer) = 0.0 m 0.0 ft
Smoke gases : Oxygen = 13.9 % : CO = 0.0411 : CO2 = 3.4850 %
Smoke vent rate is 49.0 cfm 0.0 cms
Enthalpy (Heat content) 3.3 btu/sec 3.4 kW
Inside flow 0.0 BTU/SEC 0.0 kW

225 525 274 7.9 2.4 9487.1 8998.5
Vision distance (smoke layer) = 0.0 m 0.0 ft
Smoke gases : Oxygen = 13.2 % : CO = 0.0519 : CO2 = 3.8180 %
Smoke vent rate is 52.6 cfm 0.0 cms
Enthalpy (Heat content) 3.8 btu/sec 4.0 kW
Inside flow 0.0 BTU/SEC 0.0 kW

240 589 309 7.9 2.4 10794.2 10238.3
Vision distance (smoke layer) = 0.0 m 0.0 ft
Smoke gases : Oxygen = 12.5 % : CO = 0.0647 : CO2 = 4.1724 %
Smoke vent rate is 56.1 cfm 0.0 cms
Enthalpy (Heat content) 4.3 btu/sec 4.5 kW
Inside flow 0.0 BTU/SEC 0.0 kW

255 658 348 7.9 2.4 12185.7 11558.1
Vision distance (smoke layer) = 0.0 m 0.0 ft
Smoke gases : Oxygen = 11.7 % : CO = 0.0800 : CO2 = 4.5502 %
Smoke vent rate is 59.7 cfm 0.0 cms
Enthalpy (Heat content) 4.9 btu/sec 5.1 kW
Inside flow 0.0 BTU/SEC 0.0 kW

270 732 389 7.9 2.4 13661.5 12957.9
Vision distance (smoke layer) = 0.0 m 0.0 ft

```
Enthalpy (Heat content)              5.5 btu/sec                5.8 kW
Inside flow            0.0 BTU/SEC              0.0 kW

   285       812       433         7.9        2.4   15221.6     14437.6
Vision distance (smoke layer)  =      0.0  m        0.0 ft
Smoke gases : Oxygen =    9.9 % : CO =    0.1192 : CO2 =    5.3765 %
Smoke vent rate is        67.1 cfm          0.0 cms
Enthalpy (Heat content)              6.1 btu/sec                6.4 kW
Inside flow            0.0 BTU/SEC              0.0 kW

   300       892       478         7.9        2.4   16866.0     15997.4
Vision distance (smoke layer)  =      0.0  m        0.0 ft
Smoke gases : Oxygen =    8.8 % : CO =    0.1458 : CO2 =    5.9385 %
Smoke vent rate is        70.6 cfm          0.0 cms
Enthalpy (Heat content)              6.7 btu/sec                7.0 kW
Inside flow            0.0 BTU/SEC              0.0 kW

   315       974       523         7.9        2.4   18594.8     17637.1
Vision distance (smoke layer)  =      0.0  m        0.0 ft
Smoke gases : Oxygen =    7.4 % : CO =    0.1780 : CO2 =    6.5537 %
Smoke vent rate is        74.1 cfm          0.0 cms
Enthalpy (Heat content)              7.2 btu/sec                7.6 kW
Inside flow            0.0 BTU/SEC              0.0 kW

   330      1056       569         7.9        2.4   20407.9     19356.9
Vision distance (smoke layer)  =      0.0  m        0.0 ft
Smoke gases : Oxygen =    6.0 % : CO =    0.2169 : CO2 =    7.2542 %
Smoke vent rate is        77.4 cfm          0.0 cms
Enthalpy (Heat content)              7.8 btu/sec                8.2 kW
Inside flow            0.0 BTU/SEC              0.0 kW

   341      1117       603         7.9        2.4   21791.1     20668.8
Vision distance (smoke layer)  =      0.0  m        0.0 ft
Smoke gases : Oxygen =    4.8 % : CO =    0.2506 : CO2 =    7.8275 %
Smoke vent rate is        79.5 cfm          0.0 cms
Enthalpy (Heat content)              8.2 btu/sec                8.6 kW
Inside flow            0.0 BTU/SEC              0.0 kW


UPPER LEVEL TEMP. INDICATES THAT FLASHOVER HAS PROBABLY OCCURRED
BY    341 SEC.
   341      1117       603         7.9        2.4   21791.1     20668.8
Vision distance (smoke layer)  =      0.0  m        0.0 ft
Smoke gases : Oxygen =    4.8 % : CO =    0.2506 : CO2 =    7.8275 %
Smoke vent rate is        79.5 cfm          0.0 cms
Enthalpy (Heat content)              8.2 btu/sec                8.6 kW
Inside flow            0.0 BTU/SEC              0.0 kW


==========RUN TERMINATED==========
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10-20-1995
FPETOOL V3.2

--ASETBX--

Run title: Living room and hallway Fast fire

Heat loss fraction = 0.9
Fire height = 0.0 ft 0.0 m
Room height = 8.0 ft 2.4 m
Room area = 262.0 sq ft 24.3 sq m

TIME sec	TEMP F	TEMP C	LAYER ft	LAYER m	FIRE kW	FIRE BTU/s
0	70	21.2	8.0	2.4	0.1	0.1
10	71	21.7	7.7	2.3	4.7	4.4
20	73	22.6	7.0	2.1	16.6	17.7
30	75	23.9	6.3	1.9	41.9	39.8
40	78	25.7	5.5	1.7	74.6	70.7
50	83	28.1	4.8	1.5	116.5	110.5
60	88	31.2	4.1	1.2	167.8	159.1
70	95	35.1	3.5	1.1	228.3	216.6
80	104	40.0	2.9	0.9	298.2	282.9
90	115	46.2	2.4	0.7	377.5	358.0
100	129	53.7	2.0	0.6	466.0	442.0
110	145	62.9	1.6	0.5	563.9	534.8
120	165	74.0	1.2	0.4	671.0	636.5
130	189	87.3	0.8	0.2	787.5	747.0
140	216	103.1	0.4	0.1	913.4	866.3
150	251	121.8	0.0	0.0	1048.5	994.5
160	291	143.9	0.0	0.0	1193.0	1131.5
170	339	170.3	0.0	0.0	1346.7	1277.4
180	396	202.0	0.0	0.0	1509.8	1432.1
190	464	240.2	0.0	0.0	1682.3	1595.6
200	547	286.2	0.0	0.0	1864.0	1768.0
210	647	341.9	0.0	0.0	2055.1	1949.2
220	769	409.5	0.0	0.0	2255.4	2139.3

The drop of the upper level to the top of the burning item and the rise in the upper level temp. indicate vitiation of the combustion air with fire products. It is likely that the burning rate will be depressed possibly smothered.

230	918	492.2	0.0	0.0	2465.1	2338.2
240	1101	593.7	0.0	0.0	2684.2	2545.9
250	1327	719.5	0.0	0.0	2912.5	2762.5

Upper level temp. indicates that flashover has probably occurred.