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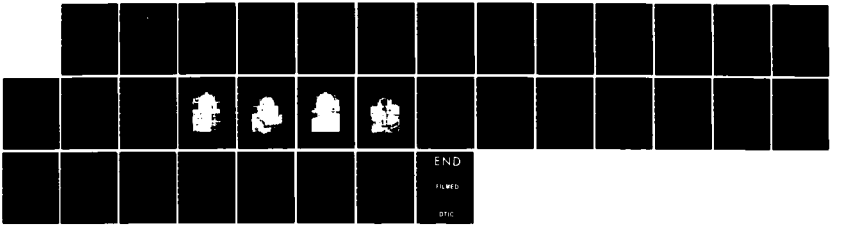

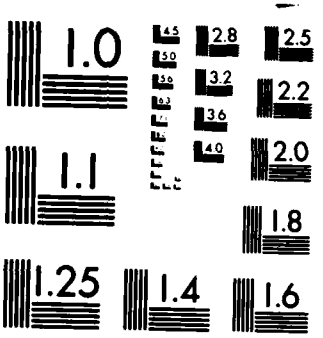

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FIRE PIT TESTS OF BLUE FLIGHT COVERALL PROGRAM

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Twelve test garments of the Blue Flight Coverall Program were tested for fire protection in the NADC Fuel Fire Test Facility. Manikins with their surfaces sensored for temperature and dressed in the Coverall were passed through the flames fueled by JP-4 for two second intervals. The mean percentage body burned was 26.83% with a range of 4.0 to 49.5%. These results are discussed in terms of the total "system of protection" available to the fully clothed airman.

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BLUE FLIGHT COVERALL – FIRE PROTECTION

The Blue Flight Coverall Program has been described previously (1), as providing a supplement to the present sage green CWU-27/P Coverall which is worn as an outer garment with various protection under - garments. The Blue Flight Coverall would be worn on certain missions, as desired by the Squadron Commanding Officer. The tests to be described are concerned specifically with the fire protection of Blue (Nomex) Flight Coverall (BNFC) in the situation of the open fuel fire.

METHOD

The tests were carried out at the NADC Fuel Fire Test Facility by procedures that have been described previously (2). A manikin dressed in the BNFC was carried through the flames on a rotary crane that has a two second traverse over the fire pit. The fire pit measures 20' x 30' and is 8" deep. It is filled with water to just below the height of a grid of aluminum angle that divides the surface into 20 cells. Each cell has a fuel nozzle through which fuel is pumped. The procedure is that fuel is pumped, it rises to the surface, and spreads in the cells. About 20 seconds later it is ignited and the flames allowed to reach maximum height, temperature and sound, when the manikin is sent through. The operation is controlled from behind a concrete block wall so that the passage through the flames is not seen by the operators. The fuel was JP-4.

The manikins were dressed in summer underwear, shorts and T-shirt, and the Blue Nomex Flight Coverall. The manikin surface was provided with 26 sensor sites containing seven sensor strips each by which the temperature was measured. These strips were fabricated to change color at the temperature printed on its face. The temperatures were 220, 230, 240, 250, 260, 270, and 280 degrees F and they were mounted on leather patches that were placed at the 26 sites. These sites are shown in Table I and were distributed ten to the torso, eight to the arms and eight to the legs, a distribution that covers 81% of the total body surface.

Heat flux was measured by a transducer that was carried through the flames at the manikins' waist and the signal was printed on a strip chart recorder. The heat flux was obtained by integrating the trace with a planimeter.

Viewing the emergence of the manikin from the flames beyond the wall are two movie cameras. One running at normal speed (24 frames/sec) has a 50mm focal length lens so that it gives a closeup of the manikin. The other camera has a 10mm lens and it runs at slow motion speed (100 frames/sec). A hand-held TV camera picked up the manikin as it came from behind the wall. The manikin is then viewed front, back and side by the TV camera, zooming in and out for detail (focal length 11mm-70mm). Still photographs were also made of these views at this time. Still photographs and TV views are also made of front, back and side of the dressed manikin before the exposure. All cameras are slated with an identifying test number which contains eleven digits and is coded as follows:

XXXX	XXXX	XXX
Identifying Code	Julian Date	Serial Number

The percentage body burned was calculated based on data for the division of body surface by Hardy (3). The data allocates 35% of the body surface to the torso and since there were ten sensors on the torso in these tests, each would be worth 35/10, or 3.5% of the body surface. In the same manner, the arms having eight sensors are allocated 14%, therefore 14/8 or 1.75% for each arm sensor and the legs having eight sensors are allocated 32%, and 32/8 or 4% for a leg sensor. In these tests the sensors were evaluated at 250 degrees F for a third degree burn.

RESULTS

The sensor data are shown in Table II. Sites are represented by rows with the seven temperatures. If a sensor got hot enough to be triggered (changes color) the temperature is written out, if not a zero appears. Heat flux in Cal/cm appears on the line with the identification. The results of calculations for percentage body burned for the three body areas, torso, arms and legs and the total for each test are shown in Table III. The total body burned along with the flux is shown in Table IV. Observations from the photography and TV coverage are shown in Table V. Figures 1 and 3 show the front and back views respectively, of the Blue Flight Coverall uniform before the fire tests. Figure 2 shows the front view of the Blue Flight Coverall after passing through the 2 sec fuel fire. Similarly, Figure 4 shows the back view of the coverall after the test. The beige patches indicate the areas affected by the heat.

DISCUSSION

As shown by the movie footage, all but one of the suits was flaming as it emerged from the pit and all quickly self-extinguished, but smoked for next few seconds. The heat caused a dramatic color change from Royal Blue to light beige. Thus it was possible to visually determine those parts of the suit that were heated. Although the light beige progressed to a darker beige when ashing took place, the first color change seemed not to have affected the integrity of the material as indicated by its resistance to ripping by hand. It was not possible to tear it in the light beige state. In the next stage, darker beige, it was brittle and would disintegrate with light squeezing. (This ashing was limited to small areas of some of the coveralls in these tests). This observation raises the question as to what was burning in the flaming and since the fabric appears unaffected and the dye is absent, the implication is that it well may be the dye.

The mean of percent body burned at 250 degrees F for the 12 flight suits was 26.83, with a range of 4.0 to 49.5. The suit would offer average if not desirable protection from fuel fires. The flight suit is only one part of the overall protection from fire that the airman wears. Since it is usually covered by any number of additional pieces of equipment and outer garment the actual protection would be the result of the entire "system of protection" which would certainly be greater than that offered by the suit alone. The percentage body burned of the clothing assemblies drawn in the 6.7 manual (NAVAIR 13-1-6.7) would be a proper approach to the question of how much protection the airman has with this or any flight coverall.

TABLE I. SENSOR SITES

Current

1. UT2F Upper Torso 2 Front, left breast
2. UT2B Upper Torso 2 Back
3. UT3F Upper Torso 3 Front, right breast
4. UT3B Upper Torso 3 Back
5. UT6F Upper Torso 6 Front, naval
6. UT6B Upper Torso 6 Back
7. LT1F Lower Torso 1 Front, pelvic area right
8. LT1B Lower Torso 1 Back
9. LT2F Lower Torso 2 Front, pelvic area left
10. LT2B Lower Torso 2 Back
11. RA1F Right Arm Upper 1 Front
12. RA1B Right Arm Upper 1 Back
13. RA2F Right Arm Lower 2 Front
14. RA2B Right Arm Lower 2 Back
15. LA1F Left Arm Upper 1 Front
16. LA1B Left Arm Upper 1 Back
17. LA2F Left Arm Lower 2 Front
18. LA2B Left Arm Lower 2 Back
19. RL1F Right Leg 1 Front, thigh
20. RL1B Right Leg 1 Back
21. RL3F Right Leg 3 Front, lower leg
22. RL3B Right Leg 3 Back
23. LL1F Left Leg 1 Front, thigh
24. LL1B Left Leg 1 Back
25. LL3F Left Leg 3 Front, lower leg
26. LL3B Left Leg 3 Back

TABLE II. ACCUMULATED RUN DATA

BNFC3263249 2 SEC 4.64CAL/CM2

	1	2	3	4	5	6	7
TORSO							
UT2F	0	0	0	0	0	0	0
UT2B	0	0	0	0	0	0	0
UT3F	0	0	0	0	0	0	0
UT3B	0	0	0	0	0	0	0
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	220	230	240	250	260	270	280
RA1B	0	0	0	0	0	0	0
RA2F	220	230	0	0	0	0	0
RA2B	0	0	0	0	0	0	0
LA1F	0	0	0	0	0	0	0
LA1B	0	0	0	0	0	0	0
LA2F	220	230	240	250	0	0	0
LA2B	0	0	0	0	0	0	0
LEGS							
RL1F	220	230	240	250	0	0	0
RL1B	0	0	0	0	0	0	0
RL3F	0	0	0	0	0	0	0
RL3B	220	0	0	0	0	0	0
LL1F	0	0	0	0	0	0	0
LL1B	0	0	0	0	0	0	0
LL3F	0	0	0	0	0	0	0
LL3B	220	230	0	0	0	0	0

BNFC3263250 2 SEC 8.07CAL/CM2

	1	2	3	4	5	6	7
TORSO							
UT2F	0	0	0	0	0	0	0
UT2B	0	0	0	0	0	0	0
UT3F	0	0	0	0	0	0	0
UT3B	0	0	0	0	0	0	0
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	220	230	240	250	260	270	280
RA1B	220	230	240	250	260	270	280
RA2F	220	230	240	250	260	270	280
RA2B	220	230	240	250	260	270	280
LA1F	0	0	0	0	0	0	0
LA1B	0	0	0	0	0	0	0
LA2F	220	230	240	250	260	270	0
LA2B	0	0	0	0	0	0	0
LEGS							
RL1F	220	230	0	0	0	0	0
RL1B	220	230	240	250	260	270	280
RL3F	220	230	240	250	0	0	0
RL3B	0	0	0	0	0	0	0
LL1F	220	230	240	250	260	0	0
LL1B	220	230	240	250	260	270	280
LL3F	220	230	240	250	0	0	0
LL3B	220	0	0	0	0	0	0

BNFC3263251 2 SEC 5.29CAL/CM2

	1	2	3	4	5	6	7
TORSO							
UT2F	0	0	0	0	0	0	0
UT2B	0	0	0	0	0	0	0
UT3F	0	0	0	0	0	0	0
UT3B	0	0	0	0	0	0	0
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	220	230	240	250	0	0	0
ARMS							
RA1F	220	230	240	250	260	270	280
RA1B	0	0	0	0	0	0	0
RA2F	220	230	240	250	260	270	0
RA2B	0	0	0	0	0	0	0
LA1F	0	0	0	0	0	0	0
LA1B	0	0	0	0	0	0	0
LA2F	220	230	240	250	260	270	0
LA2B	0	0	0	0	0	0	0
LEGS							
RL1F	0	0	0	0	0	0	0
RL1B	0	0	0	0	0	0	0
RL3F	220	230	240	250	260	270	280
RL3B	0	0	0	0	0	0	0
LL1F	220	230	240	250	260	270	280
LL1B	0	0	0	0	0	0	0
LL3F	220	230	240	250	0	0	0
LL3B	220	230	0	0	0	0	0

THE SEVEN NUMBERED COLUMNS REPRESENT THE SEVEN SENSORS AT EACH SITE. IF ZERO, ITS TEMPERATURE WAS NOT REACHED

UT UPPER TORSO
LT LOWER TORSO
RA RIGHT ARM
LA LEFT ARM
RL RIGHT LEG
LL LEFT LEG
F FRONT
B BACK

TABLE II. ACCUMULATED RUN DATA (Continued)

BNFC3263252 2 SEC 4.49CAL/CM2							
TORSO							
UT2F	0	0	0	0	0	0	0
UT2B	0	0	0	0	0	0	0
UT3F	220	230	0	0	0	0	0
UT3B	0	0	0	0	0	0	0
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	0	0	0	0	0	0	0
RA1B	0	0	0	0	0	0	0
RA2F	220	230	240	250	260	270	0
RA2B	220	230	240	250	260	270	280
LA1F	0	0	0	0	0	0	0
LA1B	0	0	0	0	0	0	0
LA2F	220	230	240	250	0	0	0
LA2B	220	230	240	250	260	270	280
LEGS							
RL1F	220	230	240	250	0	0	0
RL1B	0	0	0	0	0	0	0
RL3F	220	230	240	250	260	270	280
RL3B	220	230	240	250	260	270	280
LL1F	220	230	240	250	260	270	280
LL1B	0	0	0	0	0	0	0
LL3F	220	230	240	250	260	270	280
LL3B	220	230	240	250	260	270	280

BNFC3263253 2 SEC 5.08CAL/CM2							
TORSO							
UT2F	0	0	0	0	0	0	0
UT2B	220	230	0	0	0	0	0
UT3F	0	0	0	0	0	0	0
UT3B	220	230	0	0	0	0	0
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	220	230	240	0	0	0	0
RA1B	0	0	0	0	0	0	0
RA2F	0	0	0	0	0	0	0
RA2B	220	0	0	0	0	0	0
LA1F	220	230	0	0	0	0	0
LA1B	220	230	240	250	260	270	280
LA2F	220	230	240	250	260	270	280
LA2B	220	230	240	0	0	0	0
LEGS							
RL1F	0	0	0	0	0	0	0
RL1B	0	0	0	0	0	0	0
RL3F	220	230	240	250	260	270	280
RL3B	220	230	240	250	260	270	280
LL1F	0	0	0	0	0	0	0
LL1B	220	230	240	250	260	270	280
LL3F	220	230	240	250	260	270	280
LL3B	0	0	0	0	0	0	0

BNFC3263254 2 SEC 7.36CAL/CM2							
TORSO							
UT2F	220	230	0	0	0	0	0
UT2B	220	230	240	250	260	270	280
UT3F	220	0	0	0	0	0	0
UT3B	220	230	240	250	260	270	280
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	220	230	240	250	260	270	280
RA1B	220	230	240	0	0	0	0
RA2F	220	230	240	250	260	0	0
RA2B	220	230	240	250	260	270	280
LA1F	220	230	240	250	260	270	280
LA1B	220	230	0	0	0	0	0
LA2F	220	230	240	250	260	270	280
LA2B	220	230	240	250	260	270	280
LEGS							
RL1F	220	230	240	250	260	270	280
RL1B	220	230	240	250	260	270	280
RL3F	220	230	240	250	260	270	280
RL3B	220	230	240	250	260	270	280
LL1F	220	230	240	250	260	270	280
LL1B	220	230	240	250	260	270	280
LL3F	220	230	240	250	260	270	280
LL3B	220	230	240	250	260	270	0

THE SEVEN NUMBERED COLUMNS REPRESENT THE SEVEN SENSORS AT EACH SITE. IF ZERO, ITS TEMPERATURE WAS NOT REACHED

UT	UPPER TORSO
LT	LOWER TORSO
RA	RIGHT ARM
LA	LEFT ARM
RL	RIGHT LEG
LL	LEFT LEG
F	FRONT
B	BACK

TABLE II. ACCUMULATED RUN DATA (Continued)

BNFC3263255 2 SEC 5.85CAL/CM2							
TORSO							
UT2F	0	0	0	0	0	0	0
UT2B	0	0	0	0	0	0	0
UT3F	0	0	0	0	0	0	0
UT3B	0	0	0	0	0	0	0
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	220	230	240	250	0	0	0
RA1B	220	230	240	250	0	0	0
RA2F	220	230	240	250	260	270	280
RA2B	220	230	240	250	260	0	0
LA1F	220	0	0	0	0	0	0
LA1B	220	230	240	250	0	0	0
LA2F	220	230	240	250	260	270	280
LA2B	220	230	240	250	260	270	280
LEGS							
RL1F	220	230	0	0	0	0	0
RL1B	220	230	240	250	0	0	0
RL3F	220	230	240	250	260	270	280
RL3B	220	230	240	0	0	0	0
LL1F	220	230	240	250	260	270	280
LL1B	220	230	240	250	260	270	280
LL3F	0	0	0	0	0	0	0
LL3B	220	230	0	0	0	0	0

BNFC3263256 2 SEC 7.53CAL/CM2							
TORSO							
UT2F	0	0	0	0	0	0	0
UT2B	0	0	0	0	0	0	0
UT3F	0	0	0	0	0	0	0
UT3B	0	0	0	0	0	0	0
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	220	230	240	250	0	0	0
RA1B	220	230	0	0	0	0	0
RA2F	220	230	240	250	260	270	280
RA2B	220	230	240	250	260	270	280
LA1F	220	230	240	250	0	0	0
LA1B	0	0	0	0	0	0	0
LA2F	220	230	240	250	0	0	0
LA2B	220	230	240	250	260	0	0
LEGS							
RL1F	0	0	0	0	0	0	0
RL1B	220	230	240	250	0	0	0
RL3F	220	230	0	0	0	0	0
RL3B	220	230	240	250	0	0	0
LL1F	220	230	240	250	260	0	0
LL1B	0	0	0	0	0	0	0
LL3F	0	0	0	0	0	0	0
LL3B	220	230	0	0	0	0	0

BNFC3263257 2 SEC 6 7. 1/CM2							
TORSO							
UT2F	0	0	0	0	0	0	0
UT2B	0	0	0	0	0	0	0
UT3F	0	0	0	0	0	0	0
UT3B	0	0	0	0	0	0	0
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	220	230	240	250	260	270	280
RA1B	220	0	0	0	0	0	0
RA2F	220	230	240	250	260	0	0
RA2B	220	230	240	250	260	270	280
LA1F	220	230	240	250	260	270	280
LA1B	0	0	0	0	0	0	0
LA2F	220	230	240	250	0	0	0
LA2B	0	0	0	0	0	0	0
LEGS							
RL1F	220	230	240	250	260	270	280
RL1B	220	230	0	0	0	0	0
RL3F	0	0	0	0	0	0	0
RL3B	0	0	0	0	0	0	0
LL1F	220	230	240	250	260	270	280
LL1B	220	230	240	250	260	0	0
LL3F	220	230	240	250	260	270	280
LL3B	220	230	240	250	260	270	280

THE SEVEN NUMBERED COLUMNS REPRESENT THE SEVEN SENSORS AT EACH SITE. IF ZERO, ITS TEMPERATURE WAS NOT REACHED.

UT	UPPER TORSO
LT	LOWER TORSO
RA	RIGHT ARM
LA	LEFT ARM
RL	RIGHT LEG
LL	LEFT LEG
F	FRONT
B	BACK

TABLE II. ACCUMULATED RUN DATA (Continued)

BNFC3263258 2 SEC 5.66CAL/CM2							
TORSO							
UT2F	220	230	0	0	0	0	0
UT2B	220	230	240	250	260	270	280
UT3F	0	0	0	0	0	0	0
UT3B	220	230	240	250	260	270	280
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	220	230	240	250	0	0	0
RA1B	220	230	240	250	260	270	0
RA2F	220	230	240	250	260	0	0
RA2B	220	230	240	250	260	270	280
LA1F	220	230	240	0	0	0	0
LA1B	0	0	0	0	0	0	0
LA2F	220	230	240	250	260	270	280
LA2B	0	0	0	0	0	0	0
LEGS							
RL1F	0	0	0	0	0	0	0
RL1B	0	0	0	0	0	0	0
RL3F	220	230	240	250	260	270	280
RL3B	220	0	0	0	0	0	0
LL1F	220	230	240	250	260	270	280
LL1B	220	230	240	0	0	0	0
LL3F	220	230	240	250	260	270	280
LL3B	220	230	240	250	0	0	0

BNFC3263259 2 SEC 9.86CAL/CM2							
TORSO							
UT2F	220	230	240	250	0	0	0
UT2B	220	230	240	0	0	0	0
UT3F	0	0	0	0	0	0	0
UT3B	220	230	240	250	260	270	280
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	0	0	0	0	0	0	0
RA1B	220	230	240	250	260	270	280
RA2F	0	0	0	0	0	0	0
RA2B	220	230	240	250	260	270	280
LA1F	0	0	0	0	0	0	0
LA1B	220	230	240	250	260	270	280
LA2F	0	0	0	0	0	0	0
LA2B	220	230	240	250	260	270	280
LEGS							
RL1F	220	230	240	0	0	0	0
RL1B	220	230	240	250	260	270	280
RL3F	220	230	240	250	0	0	0
RL3B	220	230	240	0	0	0	0
LL1F	220	230	240	250	260	270	280
LL1B	220	230	0	0	0	0	0
LL3F	220	230	240	250	0	0	0
LL3B	0	0	0	0	0	0	0

BNFC3263260 2 SEC 3.45CAL/CM2							
TORSO							
UT2F	0	0	0	0	0	0	0
UT2B	0	0	0	0	0	0	0
UT3F	0	0	0	0	0	0	0
UT3B	0	0	0	0	0	0	0
UT6F	0	0	0	0	0	0	0
UT6B	0	0	0	0	0	0	0
LT1F	0	0	0	0	0	0	0
LT1B	0	0	0	0	0	0	0
LT2F	0	0	0	0	0	0	0
LT2B	0	0	0	0	0	0	0
ARMS							
RA1F	0	0	0	0	0	0	0
RA1B	0	0	0	0	0	0	0
RA2F	0	0	0	0	0	0	0
RA2B	0	0	0	0	0	0	0
LA1F	0	0	0	0	0	0	0
LA1B	0	0	0	0	0	0	0
LA2F	0	0	0	0	0	0	0
LA2B	0	0	0	0	0	0	0
LEGS							
RL1F	0	0	0	0	0	0	0
RL1B	0	0	0	0	0	0	0
RL3F	220	230	240	250	0	0	0
RL3B	0	0	0	0	0	0	0
LL1F	0	0	0	0	0	0	0
LL1B	0	0	0	0	0	0	0
LL3F	220	230	240	0	0	0	0
LL3B	0	0	0	0	0	0	0

THE SEVEN NUMBERED COLUMNS REPRESENT THE SEVEN SENSORS AT EACH SITE. IF ZERO, ITS TEMPERATURE WAS NOT REACHED.

UT	UPPER TORSO
LT	LOWER TORSO
RA	RIGHT ARM
LA	LEFT ARM
RL	RIGHT LEG
LL	LEFT LEG
F	FRONT
B	BACK

TABLE III. PERCENT BODY BURNED AT 250 F

TESTS BY SOURCE, 26 SITE TESTS

IDENTIFICATION	FLUX	PERCENT BODY BURNED			
		TORSO	ARMS	LEGS	TOTAL
BNFC 3263 249	4.64	0.0	3.5	4.0	7.5
BNFC 3263 250	8.07	0.0	8.8	20.0	28.8
BNFC 3263 251	5.29	3.5	5.3	12.0	20.8
BNFC 3263 252	4.49	0.0	7.0	24.0	31.0
BNFC 3263 253	5.08	0.0	3.5	16.0	19.5
BNFC 3263 254	7.36	7.0	10.5	32.0	49.5
BNFC 3263 255	5.85	0.0	12.3	16.0	28.3
BNFC 3263 256	7.53	0.0	10.5	12.0	22.5
BNFC 3263 257	6.72	0.0	8.8	20.0	28.8
BNFC 3263 258	*5.66*	*7.0*	*8.8*	*16.0*	*31.8*
BNFC 3263 259	9.86	7.0	7.0	16.0	30.0
BNFC 3263 260	3.45	0.0	0.0	4.0	4.0
MEAN & STD DEV	6.07 1.27				26.83 10.79

TABLE IV. HEAT FLUX AND TOTAL PERCENT BODY BURNED

IDENTIFICATION	FLUX CAL/CM2	% BOD.BURN.	IDENTIFICATION	FLUX CAL/CM2	% BOD.BURN.	IDENTIFICATION	FLUX CAL/CM2	% BOD.BURN.
BNFC3263249	4.64	7.5	BNFC3263250	8.07	28.8	BNFC3263251	5.29	20.8
BNFC3263252	4.49	31.0	BNFC3263253	5.08	19.5	BNFC3263254	7.36	49.5
BNFC3263255	5.85	28.3	BNFC3263256	7.53	22.5	BNFC3263257	6.72	28.8
BNFC3263258	5.66	31.8	BNFC3263259	9.86	30.0	BNFC3263260	3.45	4.0

MEAN & STD DEV OF FLUX 6.07 1.27

MEAN & STD DEV OF P.BOD.BURN. 26.83 10.79

TABLE V. BLUE NOMEX FLIGHT COVERALL

IDENTIFICATION	FLUX	TOTAL%B.B.	FLAMING RESULTS					REMARKS
			AFSE	AFPO	AFGL	FFL	COL.C	
BNFC3263249	4.64	7.5					X	COLOR CHANGE ON BACK, SMOKED SLIGHTLY
BNFC3263250	8.07	28.8	X				X	COMPLETELY AFLAME, BUT SELF - EXTINGUISHED QUICKLY
BNFC3263251	5.29	20.8	X				X	FRONT LEGS AND ALL OF THE BACK ASHED
BNFC3263252	4.49	31.0	X				X	FLAMED BACK + BACK OF LEGS
BNFC3263253	5.08	19.5	X				X	SOME OF THE BURNT SECTIONS TEAR EASILY
BNFC3263254	7.36	49.5	X				X	TOTAL COVERALL ASHED, SHRUNK
BNFC3263255	5.85	28.3	X				X	ASHED FRONT AND BACK
BNFC3263256	7.53	22.5	X				X	ASHED FRONT AND BACK, LEGS SHRUNK
BNFC3263257	6.72	28.8	X				X	ASHED FROM WAIST DOWN, LEGS SHRUNK
BNFC3263258	5.66	31.8	X				X	ASHED FRONT AND BACK
BNFC3263259	9.86	30.0	X				X	ASHED FRONT AND BACK, SHRUNK ALL OVER
BNFC3263260	3.45	4.0						SINGED ONLY AT ENDS OF LEGS (FLUX ONLY 2.8)

AFSE AFTER FLAMING, SELF-EXTINGUISHED

AFPO AFTER FLAMING, MANUALLY EXTINGUISHED

AFGL AFTER GLOW

FFL FURTHER FLAMING (FROM AFTER GLOW)

COL.C COLOR CHANGE: BLUE TO BEIGE

Figure 1. Blue Nomex Flight Coverall (front, before)

Figure 2. Blue Nomex Flight Coverall (front, after)

Figure 3. Blue Nomex Flight Coverall (back, before)

Figure 4. Blue Nomex Flight Coverall (back, after)

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