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DuPont Personal Protection

AFS Business Center
5401 Jefferson Davis Highway
Richmond, VA 23234

Date: December 10, 2004
To: Glen Denhard, Field Safety Officer, Manitoba Hydro
From: Laura Russell, DuPont Personal Protection
Subject: Thermo-Man® Test Results for Nomex® Coveralls

Dear Glen:

Yesterday we tested your new and laundered Nomex® coveralls on Thermo-Man® at an exposure time of 3.0 seconds. Carolyn Black asked me to send you the results directly. The predicted burn injury for both garments was 14%. Included in this packet is a DVD of the exposures and the following Thermo-Man® data printouts:

- Test Summary
- Manikin Burn Injury Picture
- Graph: % Predicted Burn Injury vs. Time
- Graph: Survivability vs. Age

Feel free to contact me if you need help interpreting the printouts.

Sincerely,

A handwritten signature in cursive script that reads "Laura Russell".

Laura Russell
Thermo-Man® Technologist

THERMO-MAN®
THERMAL PROTECTION EVALUATION SYSTEM
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TEST SPECIFICATIONS

File Name	R0412090
System Identification	SPRUANCE
Run Identification	Manitoba Hydro Test
Time of Test	Thu 09-Dec-04 16:42
Garment Identification	New Nomex Cov
Exposure Time	3 sec
Exposure Heat Flux	2 cal/(cm²*sec)
Scan Interval	.5 sec
Acquisition Time	60 sec

Garment/Fabric Comments

Nomex IIIA Coverall, 5.92 opsy actual BW, orange with reflector tape, size XL
New - Not Laundered
100% cotton T-shirt and Briefs
R041209F: 1.76 (Range 1.75-1.85)

Test Remarks/Pre-Test Comments

Temp: 51F Wind: 0mph Hum: 89% Bar: 30.32

Exposure Remarks/Post-Test Comments

3.0 seconds slight surface afterflame.

PROTECTION EVALUATION SUMMARY
MANIKIN BURN INJURY PREDICTION

2nd DEGREE BURN	7 %
3rd DEGREE BURN	7 %
TOTAL PREDICTED BURN INJURY. . . .	14 %

For further information, contact:

E. I. du Pont de Nemours & Co. (Inc.)
NOMEX® Business Center
5401 Jefferson Davis Highway
Richmond, VA 23234 USA
800 453-8527



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BURN INJURY SURVIVAL

3 SECOND FLASH FIRE; 14% PREDICTED BODY BURN
Manitoba Hydro Test -- Laundered Nomex Cov



RS-41289N

Source: American Burn Association
1991-1993 Study



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BURN INJURY PREDICTION

Manitoba Hydro Test
New Nomex Cov

EXPOSURE TIME = 3.0 sec

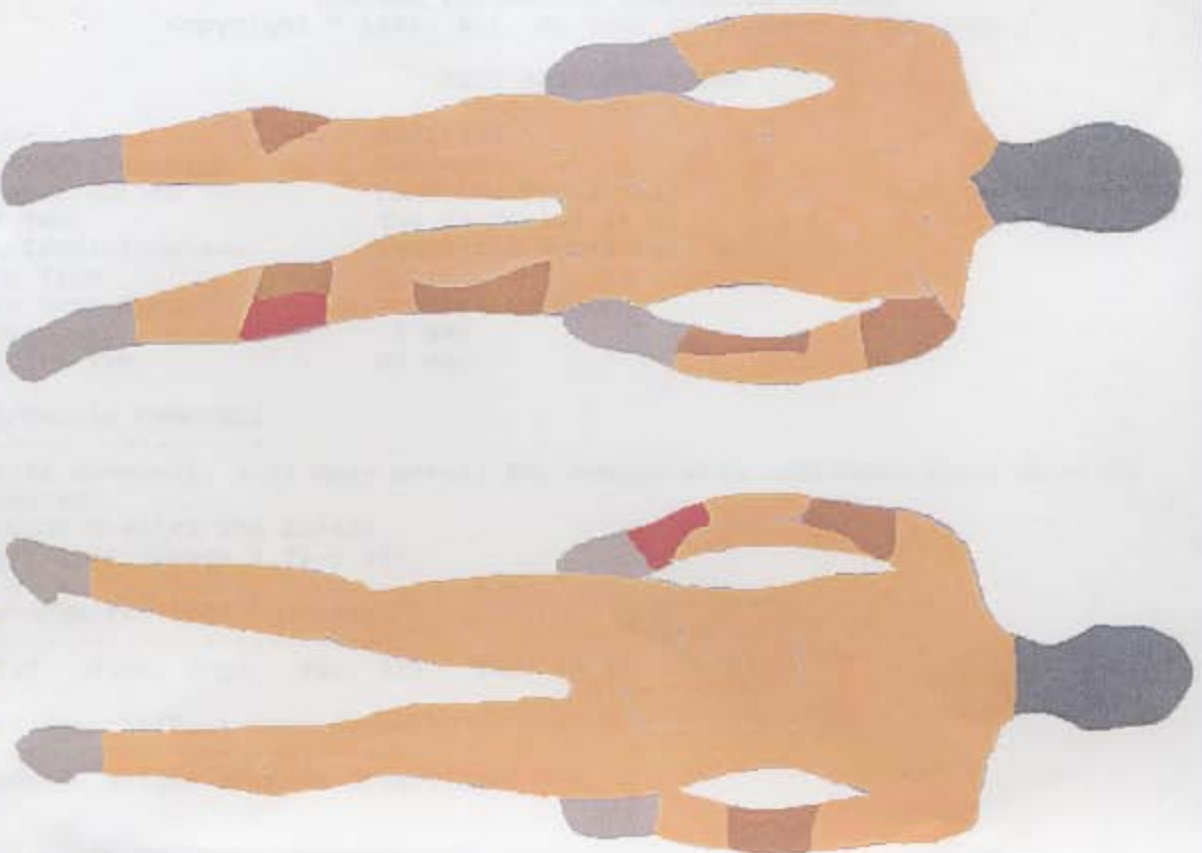
■ 2nd DEGREE BURN = 7%
■ UNPROTECTED

■ 3rd DEGREE BURN = 7%
■ UNPROTECTED

■ NO INFORMATION

TOTAL BURN INJURY

14%



FRONT

REAR

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TEST SPECIFICATIONS

File Name	R041209N
System Identification	SPRUANCE
Run Identification	Manitoba Hydro Test
Time of Test	Thu 09-Dec-04 16:27
Garment Identification	Laundered Nomex Cov
Exposure Time	3 sec
Exposure Heat Flux	2 cal/(cm²*sec)
Scan Interval	.5 sec
Acquisition Time	60 sec

Garment/Fabric Comments

Nomex IIIA Coverall, 6.20 opsy actual BW, orange with reflector tape, size XL
Laundered 15X
100% cotton T-shirt and Briefs
R041209F: 1.76 (Range 1.75-1.85)

Test Remarks/Pre-Test Comments

Temp: 51F Wind: 0mph Hum: 89% Bar: 30.32

Exposure Remarks/Post-Test Comments

3.6 seconds slight surface afterflame.

PROTECTION EVALUATION SUMMARY
MANIKIN BURN INJURY PREDICTION

2nd DEGREE BURN	7 %
3rd DEGREE BURN	7 %
TOTAL PREDICTED BURN INJURY.	14 %

For further information, contact:

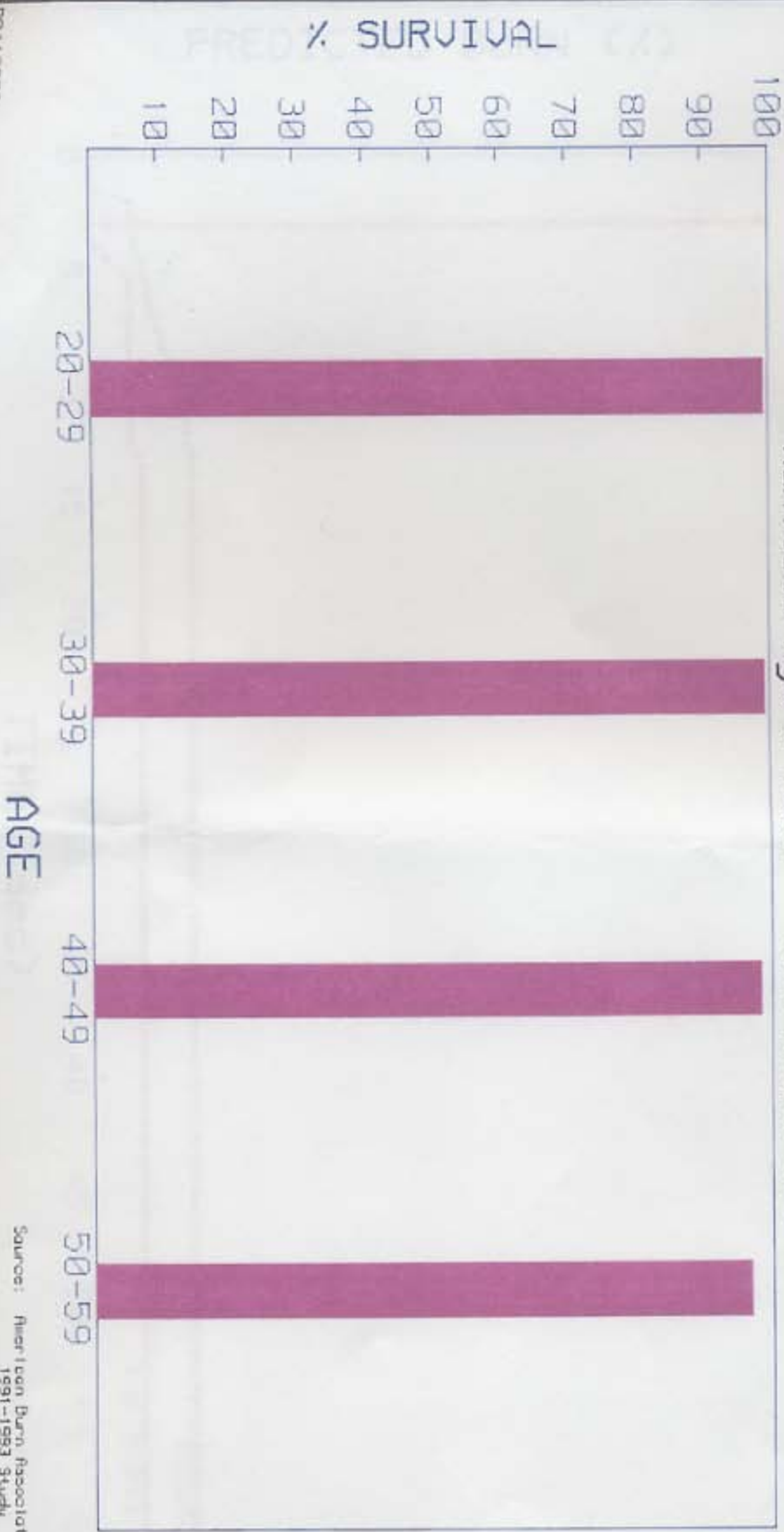
E. I. du Pont de Nemours & Co. (Inc.)
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BURN INJURY SURVIVAL

3 SECOND FLASH FIRE; 14% PREDICTED BODY BURN
Manitoba Hydro Test -- New Nomex Cov



RB-112890

Source: American Burn Association
1991-1993 Study



100, V. 1, 191, 8, 10, 191

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BURN INJURY vs. TIME RESULTING FROM 3 SECOND FLASH FIRE

Manitoba Hydro Test --- Laundered Nomex Cov



RG41289N



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THE THERMAL PROTECTION
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BURN INJURY PREDICTION

Manitoba Hydro Test
Laundered Nomex Cov

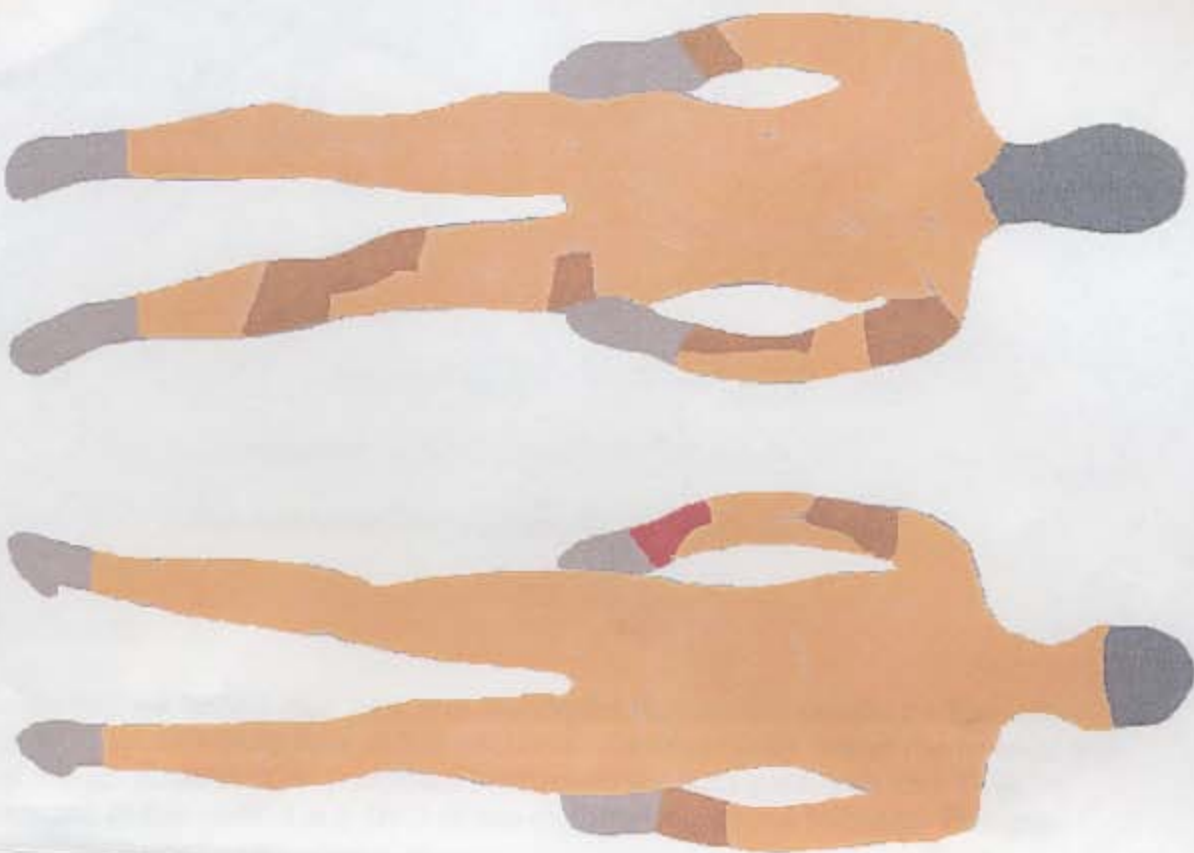
EXPOSURE TIME = 3.0 sec

■ 2nd DEGREE BURN = 7%
■ UNPROTECTED

■ 3rd DEGREE BURN = 7%
■ UNPROTECTED

■ NO INFORMATION

TOTAL BURN INJURY
14%



FRONT

REAR