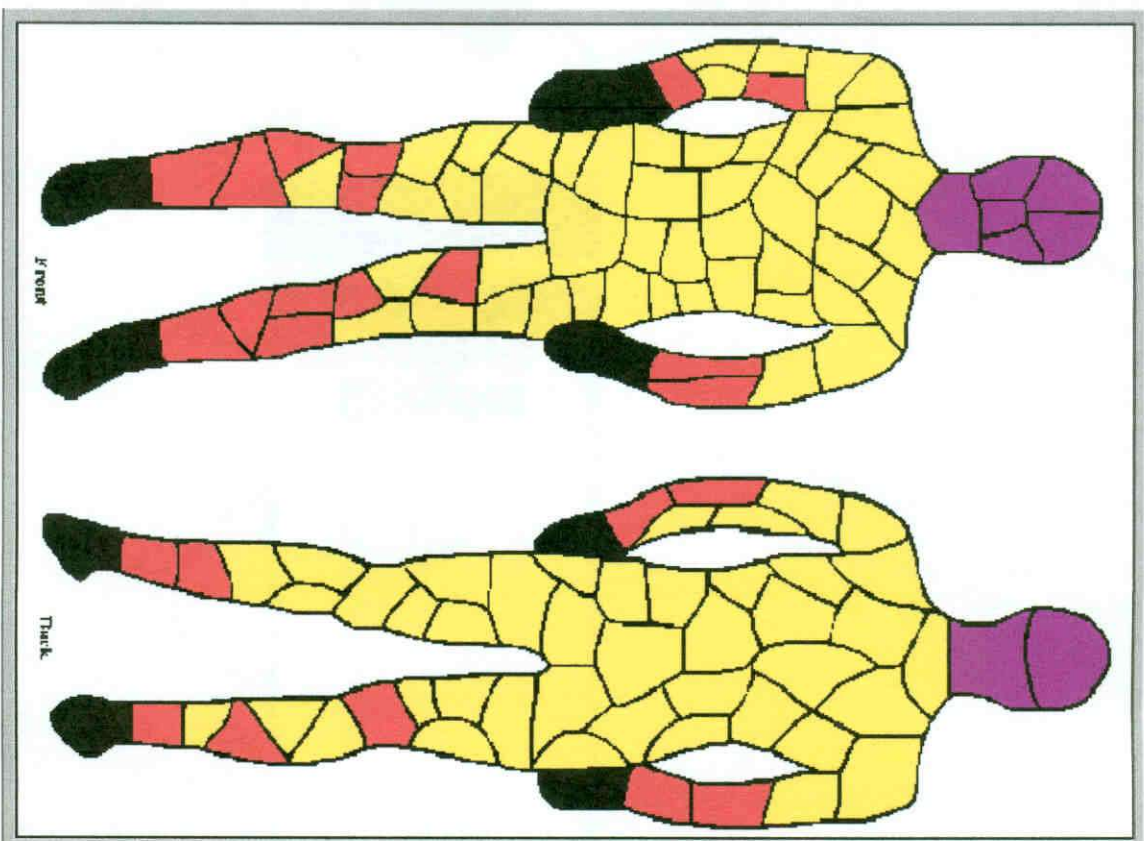


NCSU PyroMan™

3-Layer Skin Model

Thermal Protective Clothing Analysis System

Burn Injury Prediction



INSECT SHIELD

INSECT SHIELD FR WORKWEAR-4.50Z COVERALL, REP #1

Exposure Time (s) DAQ Time (s) Time Step (s)

% 2nd Degree Burns	<input type="text" value="19.672"/>	% Total Burn	<input type="text" value="26.23"/>
% 3rd Degree Burns	<input type="text" value="6.557"/>		

Invalid Sensor	<input type="checkbox"/>	<input type="checkbox"/>
No Burn	<input type="checkbox"/>	<input type="checkbox"/>
2nd Degree Burn	<input type="checkbox"/>	<input type="checkbox"/>
3rd Degree Burn	<input type="checkbox"/>	<input type="checkbox"/>

Legend: Black, Yellow, Red, Purple

110928D

PyroMan™

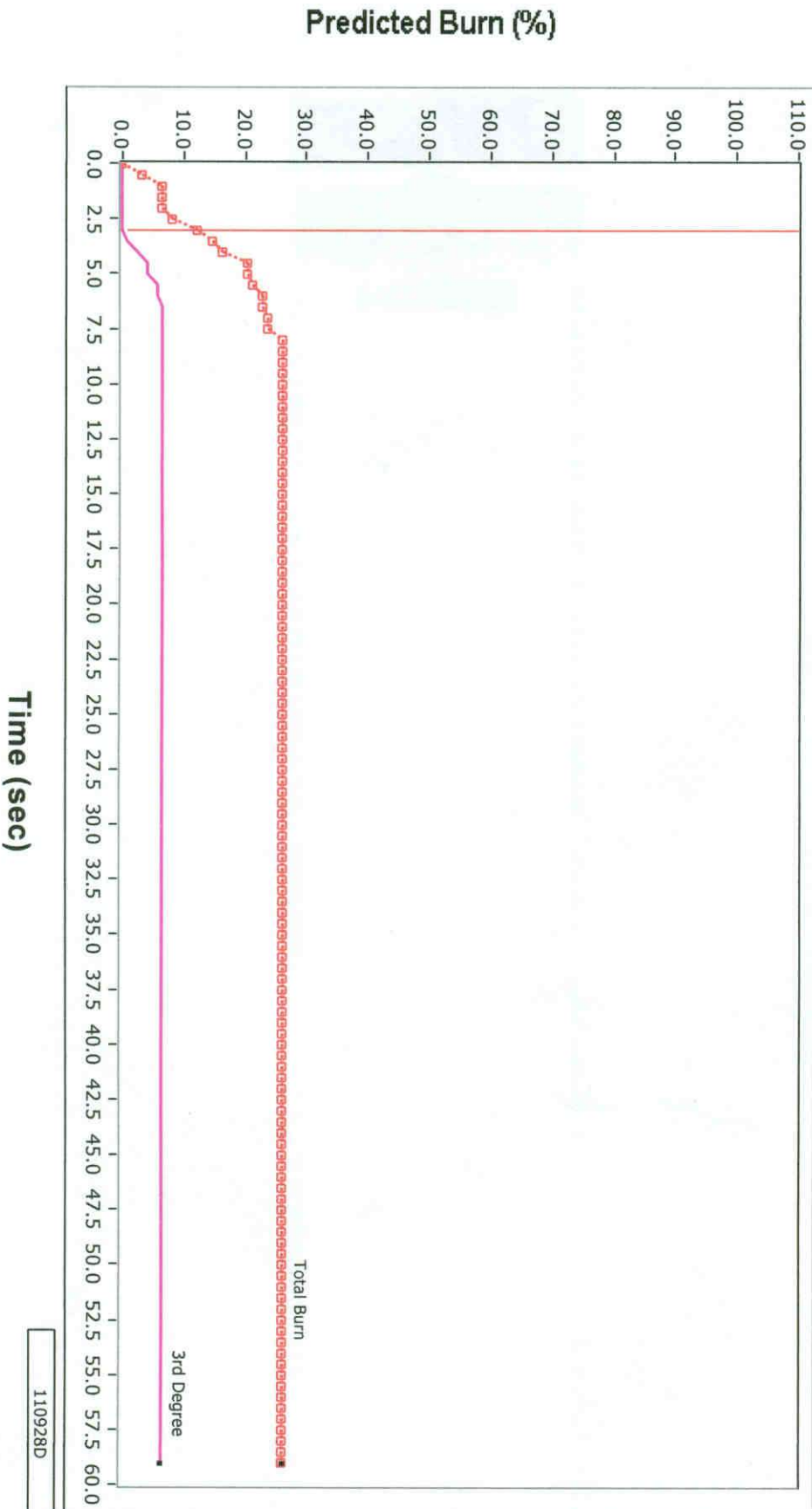
Thermal Protective Clothing Analysis System

3-Layer Skin Model

INSECT SHIELD

INSECT SHIELD FR WORKWEAR-4.50Z COVERALL, REP #1

Burn Injury vs. Time
Resulting from 3.00 second Flash Fire



110928D

Thermal Protective Clothing Analysis

3-Layer Skin Model

File Name	110928D			Test Time	Wed, Sep 28, 2011 8:46 AM		
System Identification	PyroMan™			Sponsor	INSECT SHIELD		
Garment Identification	INSECT SHIELD FR WORKWEAR-4.5OZ COVERALL, REP #1						
Garment size	44R						
N Washes	1	(-1 = Unknown)	<input checked="" type="checkbox"/>	100% Cotton Underwear & Tshirt			
Garment/Fabric Comments	LAYER 1: COTTONT-SHIRT AND BRIEFS LAYER 2: INSECT SHIELD FR WORKWEAR-4.5OZ COVERALL, NOMEX IIIA						▲▼
Pre Test Comments							▲▼
Post Test Comments	AfterFlame: 2.42						▲▼
Smoke Generation	Shrinkage	Break-Open	Embrittlement	Start Room Temp (oC)	25		
Light ▼	Severe ▼	None ▼	Durable ▼	Start Avg Sens. Temp (oC)	32		
Vaisala RH (%)	65	Vaisala Temp (oF)	81	Grains of Water/ lb. Mass of Dry Air	104		
Total DAQ time (s)	60	Avg Expos. Heat Flux (cal/(cm^2*sec)	2.00	Scan Interval (s)	0.50		
Exposure Time (s)	3.00	Torches Used	ALL	ALL, or those used, separated by commas			

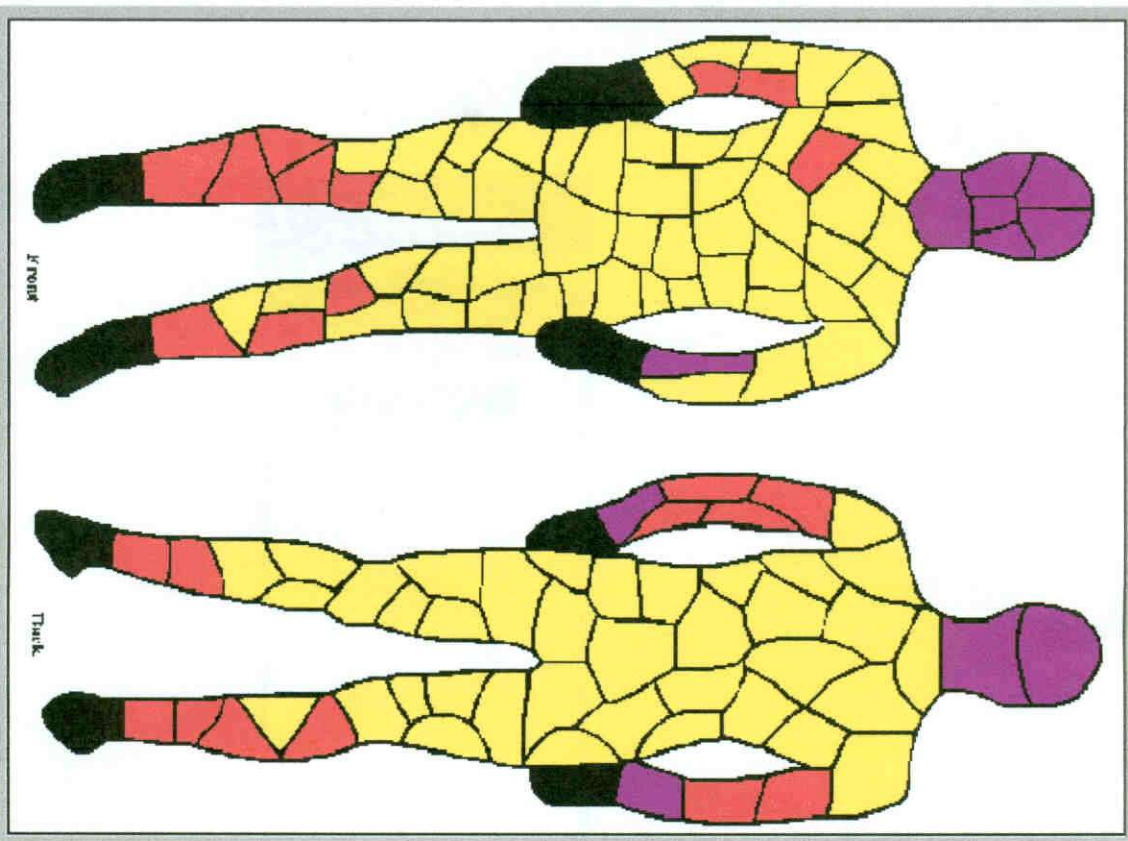
% 2nd Degree Burns 19.672
% 3rd Degree Burns 6.557

% Total Burn 26.23

For More Information Contact:
 North Carolina State University
 College of Textiles
 Textile Protection and Comfort Center
 P.O. Box 8301
 Raleigh, NC 27965-6577 USA

Thermal Protective Clothing Analysis System

Burn Injury Prediction



INSECT SHIELD

INSECT SHIELD FR WORKWEAR-4.5 OZ COVERALL, REP #2

Exposure Time (s) DAQ Time (s) Time Step (s)

% 2nd Degree Burns % Total Burn
% 3rd Degree Burns

Invalid Sensor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No Burn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2nd Degree Burn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3rd Degree Burn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

110928F

PyroMan™

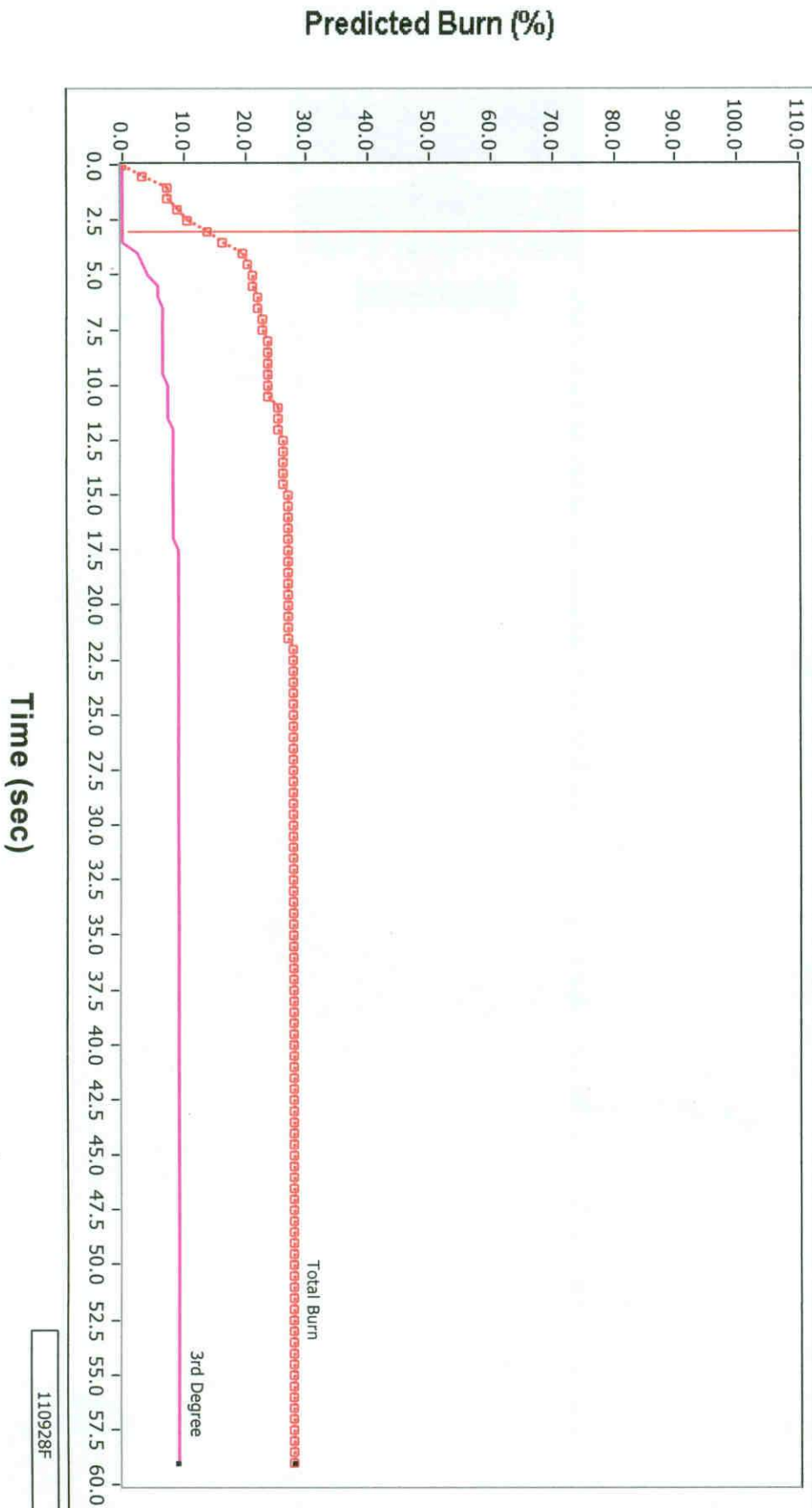
Thermal Protective Clothing Analysis System

3-Layer Skin Model

INSECT SHIELD

INSECT SHIELD FR WORKWEAR-4.5 OZ COVERALL, REP #2

Burn Injury vs. Time
Resulting from 3.00 second Flash Fire



110928F

Thermal Protective Clothing Analysis

3-Layer Skin Model

File Name	110928F		Test Time	Wed, Sep 28, 2011 9:10 AM	
System Identification	PyroMan™		Sponsor	INSECT SHIELD	
Garment Identification	INSECT SHIELD FR WORKWEAR-4.5 OZ COVERALL, REP #2				
Garment size	44R				
N Washes	1	(-1 = Unknown)	<input checked="" type="checkbox"/>	100% Cotton Underwear & Tshirt	
Garment/Fabric Comments	LAYER 1: COTTONT-SHIRT AND BRIEFS LAYER 2: INSECT SHIELD FR WORKWEAR-4.5 OZ COVERALL, NOMEX IIIA				
Pre Test Comments	GARMENTS CONDITIONED GREATER THAN 24 HOURS GARMENTS STORED IN CONDITIONED SPACE PRIOR TO TESTING GARMENTS UNDERWENT ONE WASH/DRY CYCLE				
Post Test Comments	AfterFlame: 2.17				
Smoke Generation	Shrinkage	Break-Open	Embrittlement	Start Room Temp (oC)	25
Light	Severe	None	Durable	Start Avg Sens. Temp (oC)	34
Vaisala RH (%)	65	Vaisala Temp (oF)	80	Grains of Water/ lb. Mass of Dry Air	100
Total DAQ time (s)	60	Avg Expos. Heat Flux (cal/(cm^2*sec)	2.00	Scan Interval (s)	0.50
Exposure Time (s)	3.00	Torches Used	ALL	ALL, or those used, separated by commas	

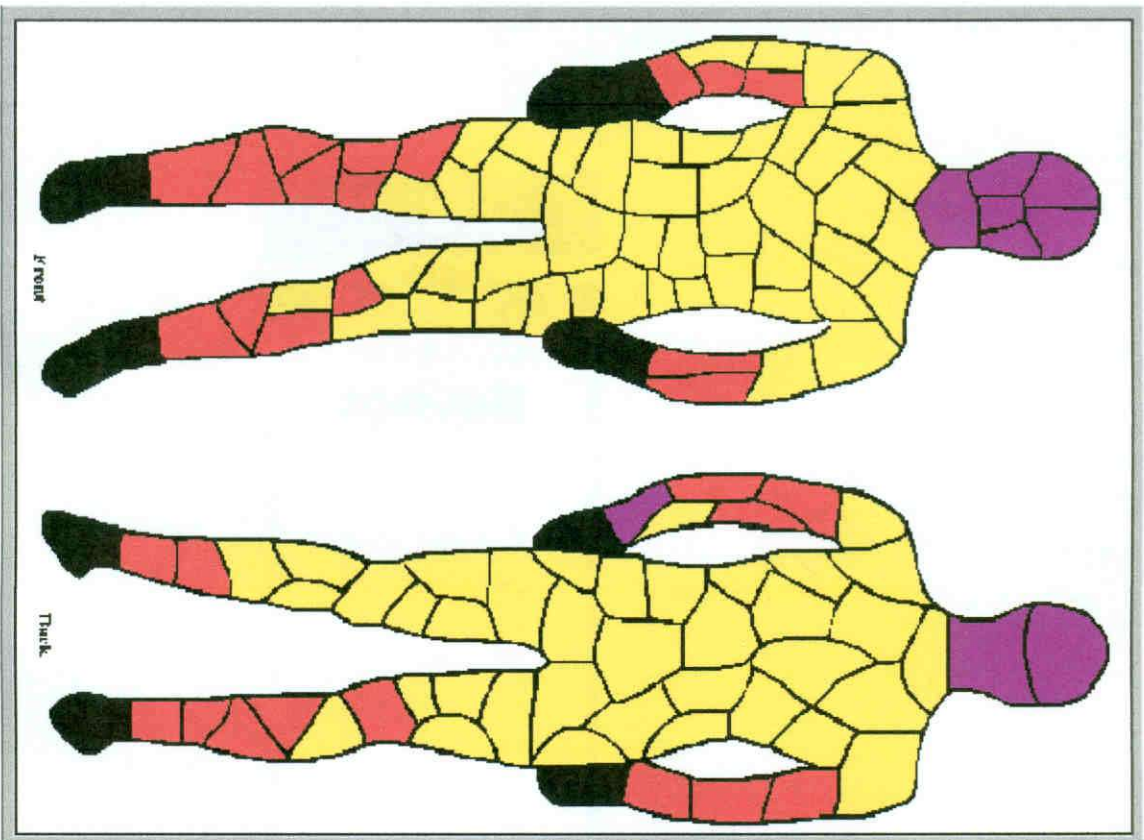
% 2nd Degree Burns **18.852**
 % 3rd Degree Burns **9.016**

% Total Burn 27.87

For More Information Contact:
 North Carolina State University
 College of Textiles
 Textile Protection and Comfort Center
 P.O. Box 8301
 Raleigh, NC 27965-6577 USA

Thermal Protective Clothing Analysis System

Burn Injury Prediction



INSECT SHIELD

INSECT SHIELD FR WORKWEAR-4.5 OZ COVERALL, REP #3

Exposure Time (s) DAQ Time (s) Time Step (s)

% 2nd Degree Burns % Total Burn
% 3rd Degree Burns

Invalid Sensor	<input type="checkbox"/>	<input type="checkbox"/>
No Burn	<input type="checkbox"/>	<input type="checkbox"/>
2nd Degree Burn	<input type="checkbox"/>	<input type="checkbox"/>
3rd Degree Burn	<input type="checkbox"/>	<input type="checkbox"/>

110928H

PyroMan™

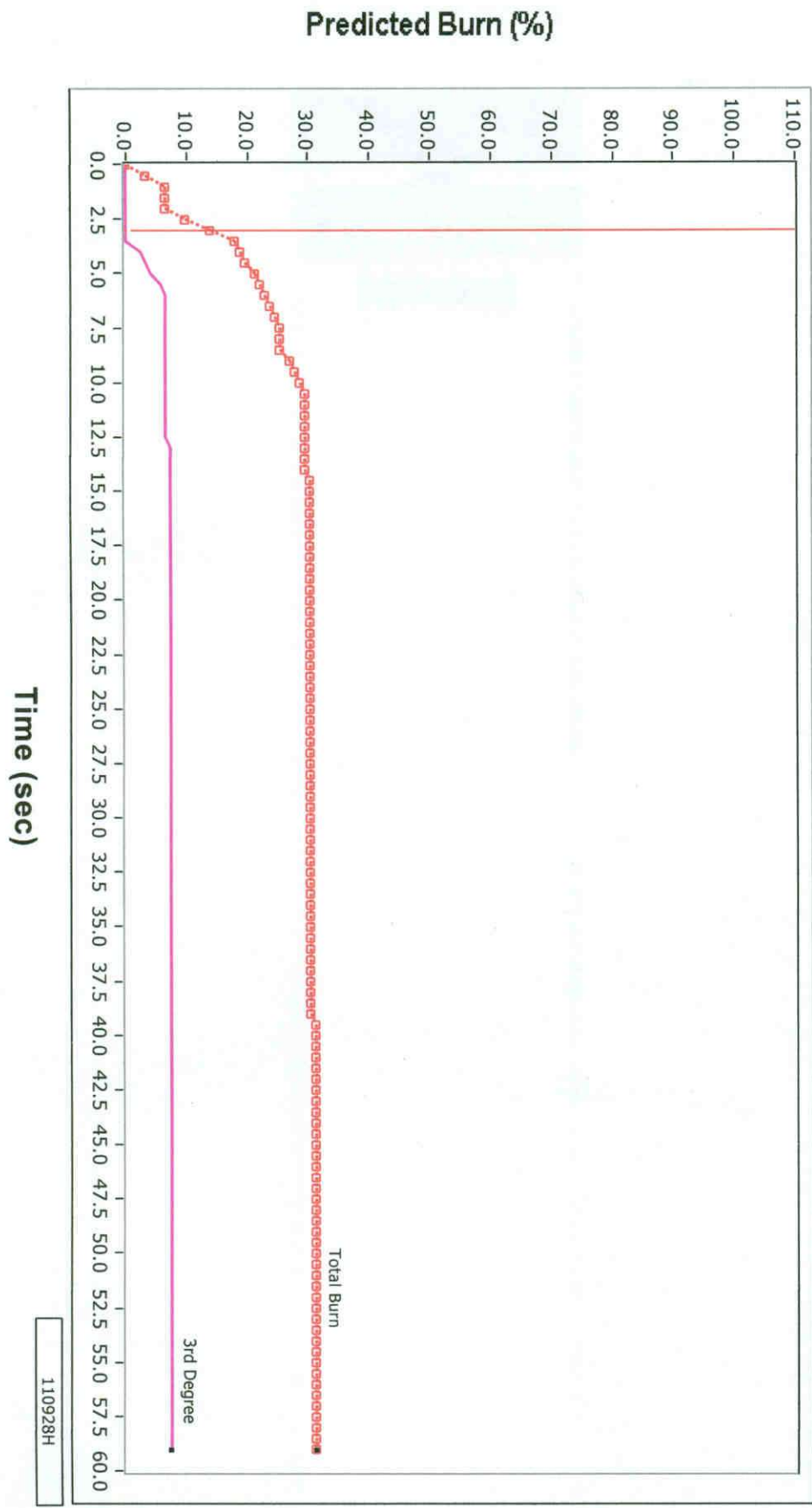
Thermal Protective Clothing Analysis System

3-Layer Skin Model

INSECT SHIELD

INSECT SHIELD FR WORKWEAR-4.5 OZ COVERALL, REP #3

Burn Injury vs. Time
Resulting from 3.00 second Flash Fire



110928H

Thermal Protective Clothing Analysis

3-Layer Skin Model

File Name	110928H	Test Time	Wed, Sep 28, 2011 9:36 AM
System Identification	PyroMan™	Sponsor	INSECT SHIELD
Garment Identification	INSECT SHIELD FR WORKWEAR-4.5 OZ COVERALL, REP #3		
Garment size	44R		
N Washes	1	(-1 = Unknown)	<input checked="" type="checkbox"/> 100% Cotton Underwear & Tshirt
Garment/Fabric Comments	LAYER 1: COTTONT-SHIRT AND BRIEFS LAYER 2: INSECT SHIELD FR WORKWEAR-4.5 OZ COVERALL, NOMEX IIIA		
Pre Test Comments	GARMENTS CONDITIONED GREATER THAN 24 HOURS GARMENTS STORED IN CONDITIONED SPACE PRIOR TO TESTING GARMENTS UNDERWENT ONE WASH/DRY CYCLE		
Post Test Comments	AfterFlame: 3.17		
Smoke Generation	Shrinkage	Break-Open	Embrittlement
Light	Severe	None	Durable
Start Room Temp (oC)	26		Start Avg Sens. Temp (oC)
Vaisala RH (%)		64	Vaisala Temp (oF)
		79	Grains of Water/ lb. Mass of Dry Air
		99	
Total DAQ time (s)	60	Avg Expos. Heat Flux (cal/(cm^2*sec))	2.00
		Scan Interval (s)	0.50
Exposure Time (s)	3.00	Torches Used	ALL
		ALL, or those used, separated by commas	

% 2nd Degree Burns **23.770**
 % 3rd Degree Burns **7.377**

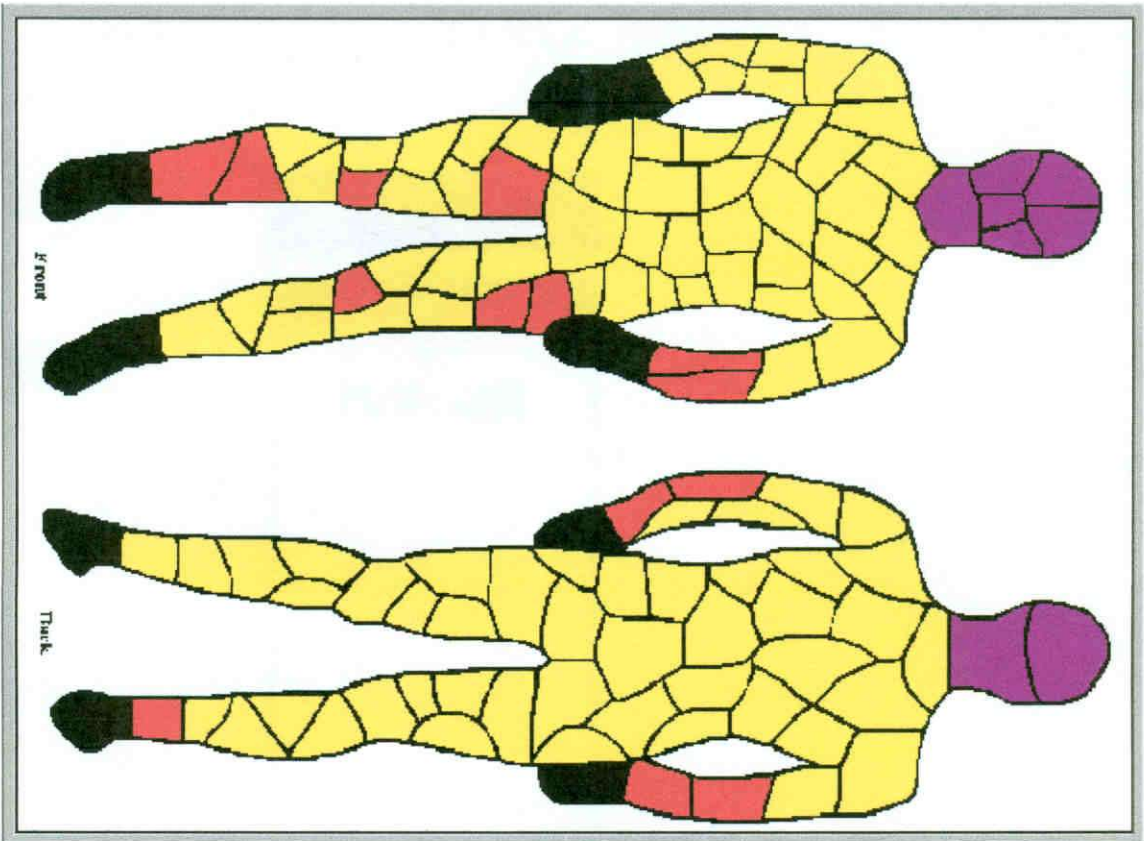
% Total Burn 31.15

For More Information Contact:
 North Carolina State University
 College of Textiles
 Textile Protection and Comfort Center
 P.O. Box 8301
 Raleigh, NC 27965-6577 USA

NCSU **PyroMan™**
3-Layer Skin Model

Thermal Protective Clothing Analysis System

Burn Injury Prediction



INSECT SHIELD

INSECT SHIELD FR WORKWEAR-60Z COVERALL, REP #1

Exposure Time (s) DAQ Time (s) Time Step (s)

% 2nd Degree Burns % Total Burn
% 3rd Degree Burns

Invalid Sensor	<input type="checkbox"/>
No Burn	<input type="checkbox"/>
2nd Degree Burn	<input type="checkbox"/>
3rd Degree Burn	<input type="checkbox"/>

110928E

PyroMan™

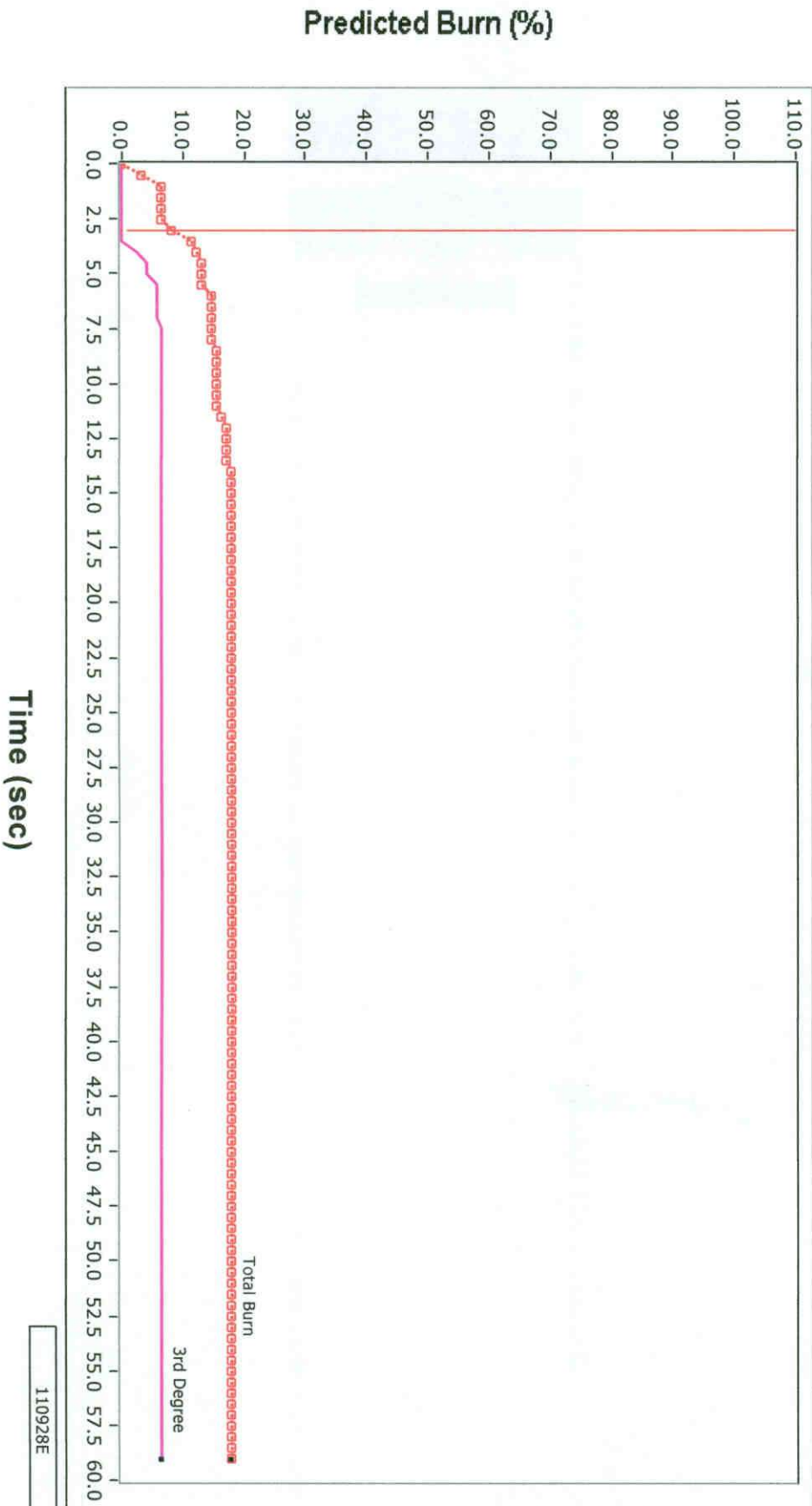
Thermal Protective Clothing Analysis System

3-Layer Skin Model

INSECT SHIELD

INSECT SHIELD FR WORKWEAR-6OZ COVERALL, REP #1

Burn Injury vs. Time
Resulting from 3.00 second Flash Fire



110928E

Thermal Protective Clothing Analysis

3-Layer Skin Model

File Name	110928E	Test Time	Wed, Sep 28, 2011 9:01 AM
System Identification	PyroMan™	Sponsor	INSECT SHIELD
Garment Identification	INSECT SHIELD FR WORKWEAR-6OZ COVERALL, REP #1		
Garment size	44R		
N Washes	1	(-1 = Unknown)	<input checked="" type="checkbox"/> 100% Cotton Underwear & Tshirt
Garment/Fabric Comments	LAYER 1: COTTONT-SHIRT AND BRIEFS LAYER 2: INSECT SHIELD FR WORKWEAR-6OZ COVERALL, NOMEX IIIA		
Pre Test Comments			
Post Test Comments	AfterFlame: 2.45		
Smoke Generation	Shrinkage	Break-Open	Embrittlement
Light	Moderate	None	Durable
Start Room Temp (oC)	26		
Start Avg Sens. Temp (oC)	33		
Vaisala RH (%)	64	Vaisala Temp (oF)	80
Grains of Water/ lb. Mass of Dry Air	99		
Total DAQ time (s)	60	Avg Expos. Heat Flux (cal/(cm^2*sec)	2.00
Scan Interval (s)	0.50		
Exposure Time (s)	3.00	Torches Used	ALL
ALL, or those used, separated by commas			

% 2nd Degree Burns **11.475**
 % 3rd Degree Burns **6.557**

% Total Burn 18.03

For More Information Contact:
 North Carolina State University
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NCSU PyroMan™ 3-Layer Skin Model

Thermal Protective Clothing Analysis System

Burn Injury Prediction

INSECT SHIELD

INSECT SHIELD FR WORKWEAR-6 OZ COVERALL, REP #2

Exposure Time (s) DAQ Time (s) Time Step (s)

% 2nd Degree Burns

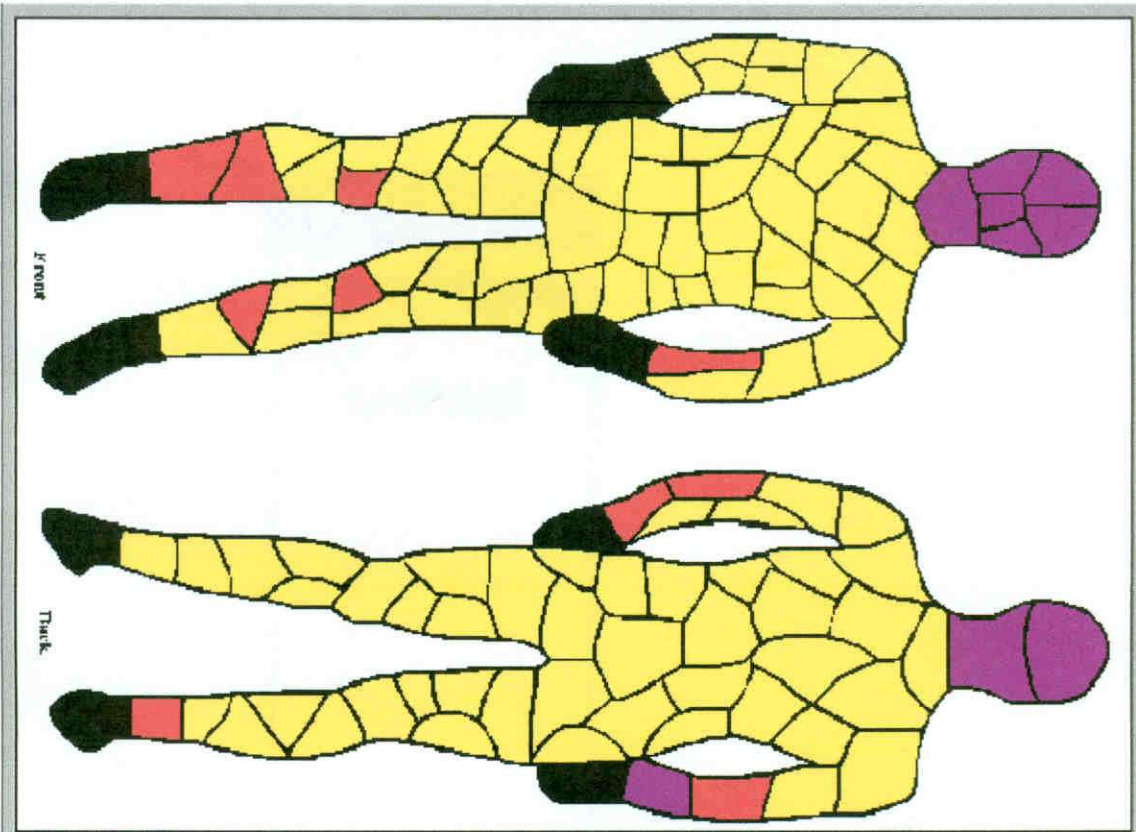
% 3rd Degree Burns

% Total Burn

Invalid Sensor	<input type="checkbox"/>
No Burn	<input type="checkbox"/>
2nd Degree Burn	<input type="checkbox"/>
3rd Degree Burn	<input type="checkbox"/>

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

110928G



PyroMan™

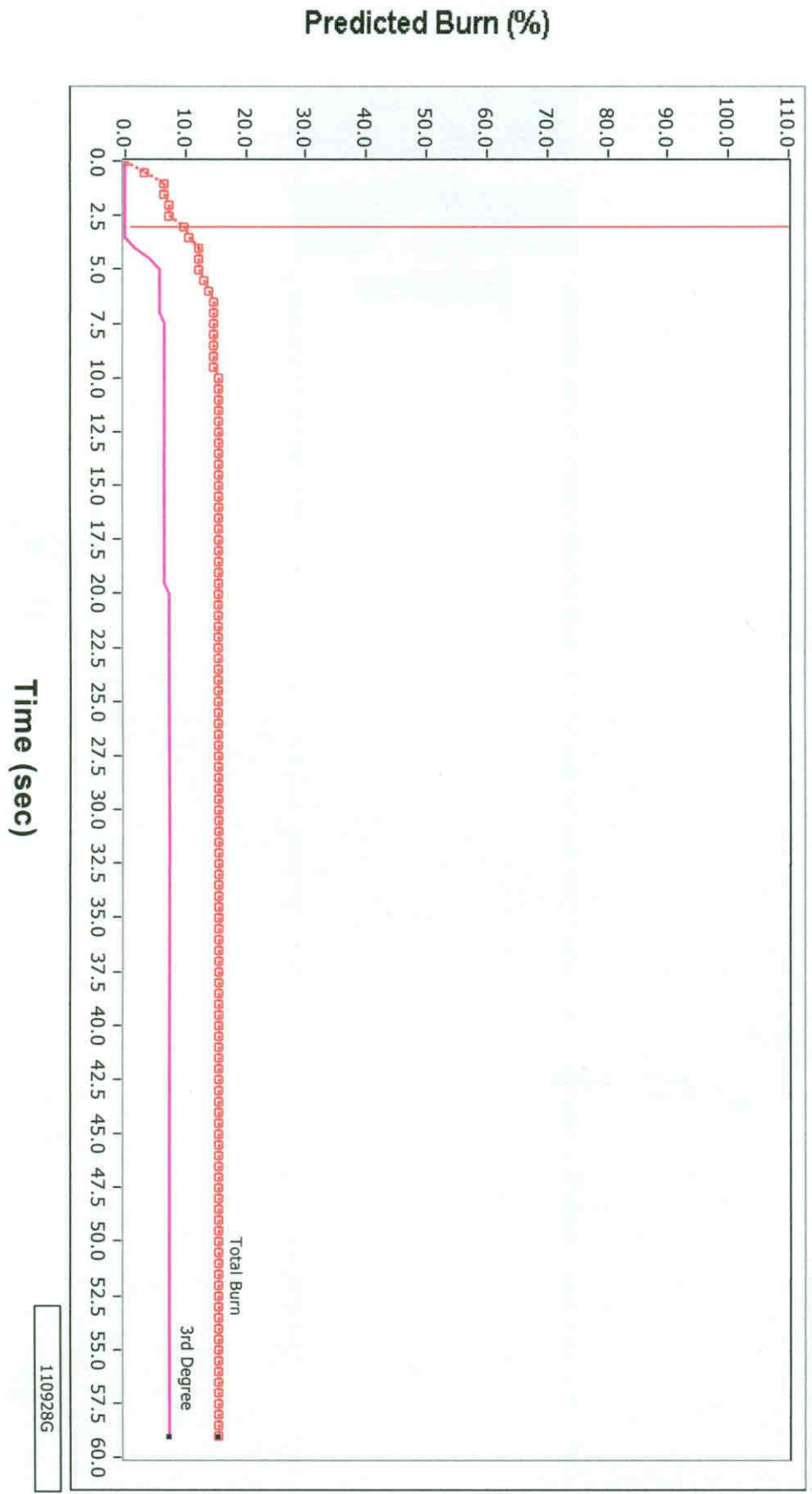
Thermal Protective Clothing Analysis System

3-Layer Skin Model

INSECT SHIELD

INSECT SHIELD FR WORKWEAR-6 OZ COVERALL, REP #2

Burn Injury vs. Time
Resulting from 3.00 second Flash Fire



1109286

Thermal Protective Clothing Analysis

3-Layer Skin Model

File Name	110928G	Test Time	Wed, Sep 28, 2011 9:23 AM
System Identification	PyroMan™	Sponsor	INSECT SHIELD
Garment Identification	INSECT SHIELD FR WORKWEAR-6 OZ COVERALL, REP #2		
Garment size	44R		
N Washes	1	(-1 = Unknown)	<input checked="" type="checkbox"/> 100% Cotton Underwear & Tshirt
Garment/Fabric Comments	LAYER 1: COTTONT-SHIRT AND BRIEFS LAYER 2: INSECT SHIELD FR WORKWEAR-6 OZ COVERALL, NOMEX IIIA		
Pre Test Comments	GARMENTS CONDITIONED GREATER THAN 24 HOURS GARMENTS STORED IN CONDITIONED SPACE PRIOR TO TESTING GARMENTS UNDERWENT ONE WASH/DRY CYCLE		
Post Test Comments	AfterFlame: 2.52		
Smoke Generation	Shrinkage	Break-Open	Embrittlement
Light	Moderate	None	Durable
Start Room Temp (oC)	26		Start Avg Sens. Temp (oC)
34		Vaisala RH (%)	66
Vaisala Temp (oF)	79	Grains of Water/ lb. Mass of Dry Air	98
Total DAQ time (s)	60	Avg Expos. Heat Flux (cal/(cm^2*sec)	2.00
Scan Interval (s)	0.50		
Exposure Time (s)	3.00	Torches Used	ALL
ALL, or those used, separated by commas			

% 2nd Degree Burns **8.197**
 % 3rd Degree Burns **7.377**

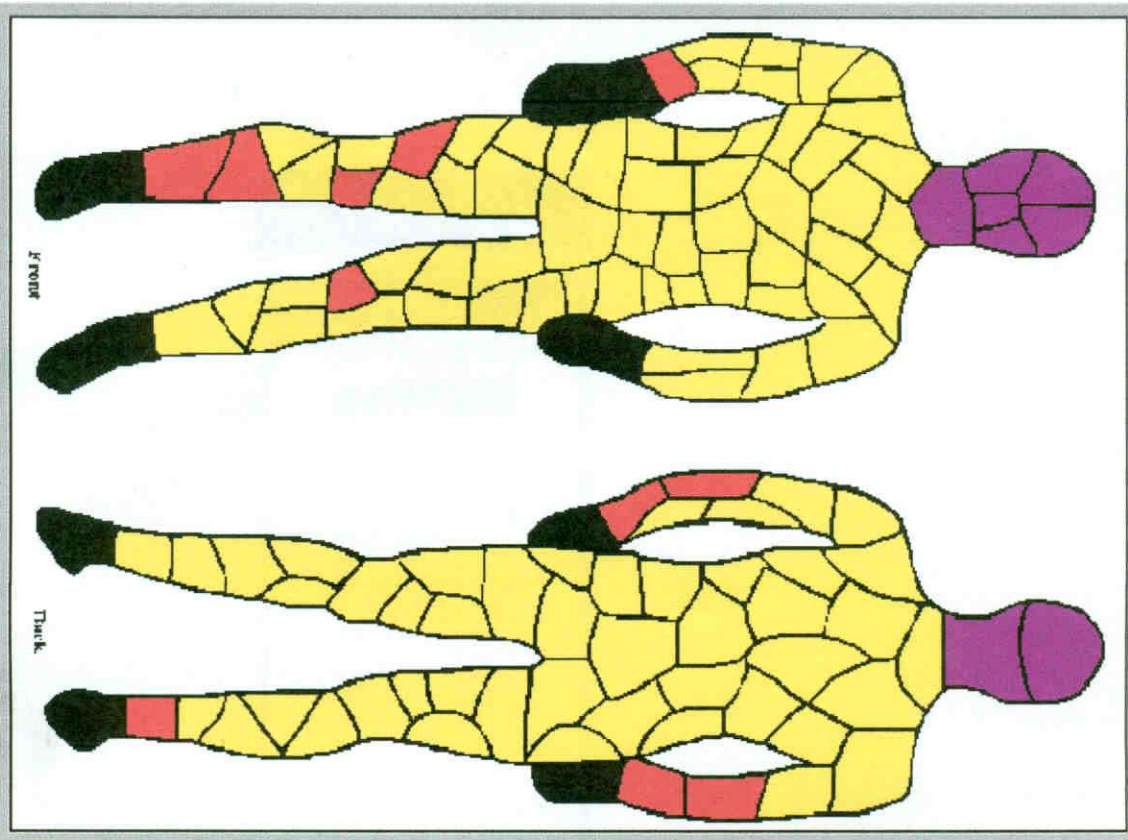
% Total Burn 15.57

For More Information Contact:
 North Carolina State University
 College of Textiles
 Textile Protection and Comfort Center
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 Raleigh, NC 27965-6577 USA

NCSU Pyroman™ 3-Layer Skin Model

Thermal Protective Clothing Analysis System

Burn Injury Prediction



INSECT SHIELD

INSECT SHIELD FR WORKWEAR-6 OZ COVERALL, REP #3

Exposure Time (s) DAQ Time (s) Time Step (s)

% 2nd Degree Burns
% 3rd Degree Burns % Total Burn

Invalid Sensor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No Burn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2nd Degree Burn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3rd Degree Burn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

INSECT SHIELD

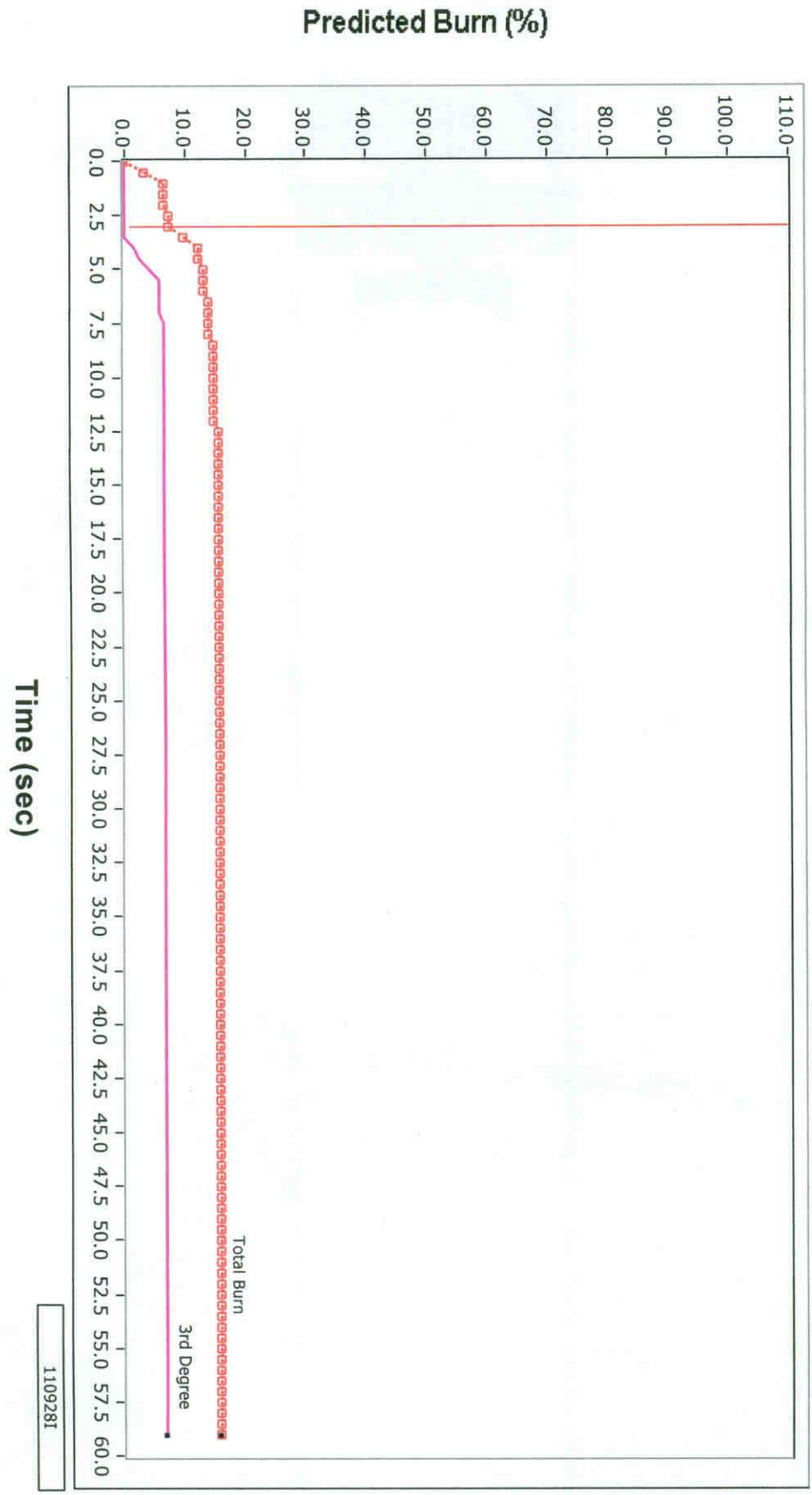
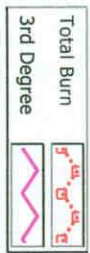
INSECT SHIELD FR WORKWEAR-6 OZ COVERALL, REP #3

PyroMan™

Thermal Protective Clothing Analysis System

3-Layer Skin Model

Burn Injury vs. Time
Resulting from 3.00 second Flash Fire



1109281

Thermal Protective Clothing Analysis

3-Layer Skin Model

File Name	110928I	Test Time	Wed, Sep 28, 2011 9:50 AM
System Identification	PyroMan™	Sponsor	INSECT SHIELD
Garment Identification	INSECT SHIELD FR WORKWEAR-6 OZ COVERALL, REP #3		
Garment size	44R		
N Washes	1	(-1 = Unknown)	<input checked="" type="checkbox"/> 100% Cotton Underwear & Tshirt
Garment/Fabric Comments	LAYER 1: COTTONT-SHIRT AND BRIEFS LAYER 2: INSECT SHIELD FR WORKWEAR-6 OZ COVERALL, NOME X IIIA		
Pre Test Comments	GARMENTS CONDITIONED GREATER THAN 24 HOURS GARMENTS STORED IN CONDITIONED SPACE PRIOR TO TESTING GARMENTS UNDERWENT ONE WASH/DRY CYCLE		
Post Test Comments	AfterFlame: 2.66		
Smoke Generation	Shrinkage	Break-Open	Embrittlement
Light	Moderate	None	Durable
Start Room Temp (oC)	26		
Start Avg Sens. Temp (oC)	33		
Vaisala RH (%)	61	Vaisala Temp (oF)	80
Grains of Water/ lb. Mass of Dry Air	102		
Total DAQ time (s)	60	Avg Expos. Heat Flux (cal/(cm^2*sec)	2.00
Scan Interval (s)	0.50		
Exposure Time (s)	3.00	Torches Used	ALL
ALL, or those used, separated by commas			

% 2nd Degree Burns **9.016**
% 3rd Degree Burns **6.557**

% Total Burn **15.57**

For More Information Contact:

North Carolina State University
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Textile Protection and Comfort Center
P.O. Box 8301
Raleigh, NC 27965-6577 USA