

Jesusita-Spyglass Accident Web Gear Analysis



May 29, 2009

Tom Foley, Deputy Chief Operations, CAL FIRE
Kevin Gains, Battalion Chief, CAL FIRE

Re: Web Gear / Line Pack Heat Exposure Analysis

Thank you for taking the time to meet with me at the Courtyard Oxnard Ventura Hotel on Monday May 18, 2009. Subsequently, I also met with Ventura County Fire Battalion Chief Dave Chovanec at the Ventura County Fire Fleet Maintenance facility on Thursday May 21, 2009. The scope of these meetings were an attempt to ascertain an understanding of the potential temperatures that the Wolfpack Gear Low Profile Hydration Pack and Accessory Bags (Pack System) worn by [REDACTED] were exposed to during the Jesusita-Spyglass burn over accident. As you know, the second Wolfpack Gear pack system worn by [REDACTED] was discarded during the incident and was destroyed in the fire. Thus only one pack system was inspected.

It is important to understand that this inspection is a quick visual inspection of the system and some key components of [REDACTED] personal protective equipment. Any assumptions or conclusions made in this report are solely based on the comparison of the condition of [REDACTED] pack system against similar conditions found in previous testing performed by Wolfpack Gear. General assumptions can be made based on the condition of the pack system and the contents of the bags that allow for good estimations of exposure temperatures and durations. Actual exposure temperatures may never be known.

Mike Oberndorfer, President
Wolfpack Gear, Inc.

Observations

The Wolfpack Gear hydration pack and accessory bags worn by [REDACTED] during the Jesusita-Spyglass burn over accident and the contents of the accessory bags were removed from an evidence bag that was stored in BC Gaines' vehicle. General assumptions are that the pack system and contents are presented as they were found within Engine 54 and that nothing had been removed from the accessory pockets or that the running end of the flagging tape had not been tampered with. The Self Contained Breathing Apparatus (SCBA) worn over the top of the pack system and the wildland pant and jacket were briefly inspected to confirm placement of components and confirmation of similar damage to those items.

The pack system is presented as complete with no missing parts and appears to have significant damage to the left side outer fabric of the Low Profile hydration pocket. The damage in this area affects the 1050 Ballistic Nylon outer fabric, the YKK nylon zipper and the PVC Wolfpack Gear Label. The damage does not extend to the exposed foam inner panel, webbing or seam binding. Minor damage is noted to the hook and loop of both the glove keeper and the fire shelter case. Again the damage does not extend beyond the hook and loop. Each component of the pack system is listed separately below as damage appears to be significantly different to each item.

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The contents of the bag are undamaged.



Fire Shelter Case from a Detachable Day pack
SKU: DDP-HR-2400-BK
Lot #: Undetermined

The Fire Shelter Case is a component of an NFPA 1977, 2005 edition compliant Detachable Day Pack. The Fire Shelter Case is designed to be mounted on the rear center of the waist belt and can be used independent of the main compartment of the Detachable Day Pack. The fire shelter case was mounted on the rear center of the waist belt and found with the fire shelter and the plastic liner removed. The contents of the bag were not present or inspected.



The shelter case is intact with the cover flap partially open. Minor damage is noted to the loop material at the opening.



A clear line is visible indicating the position of the cover flap at the time of exposure. The damage to the loop material that was exposed is consistent with exposure to temperatures of 450 degrees and above for short periods of time. The bag did not ignite or drip.

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The damage sustained to the fabric on the left side of the hydration pocket is unique and inconsistent in a couple of ways. First, the damage appears to be very severe to the 1050 Denier Ballistic Nylon which has a higher mass and melting temperature than the foam panel behind it. Similarly, the seam binding in close proximity does not appear to be affected to the degree that the fabric is. Secondly, similar assemblies have failed during testing and the result is usually a transfer of melted plastic to the protective clothing and any equipment that may have come into contact with it.



Mannequin test results at the University of Alberta.

Note that the fabric has melted onto the protective garment and the damage to the underlying foam panel.

Conversely, [REDACTED] PPE shows no sign of material transfer on either his Nomex jacket or the SCBA.

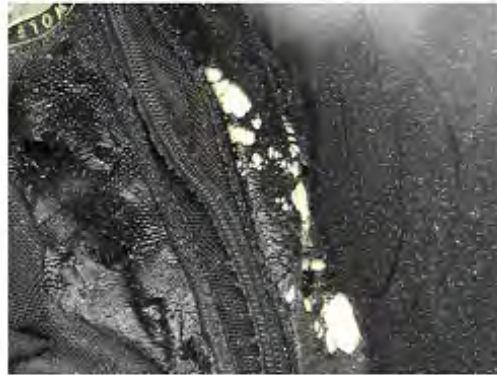


Nomex Jacket and pack system worn by [REDACTED]

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During the inspection of photographs taken at the accident site [REDACTED] pack system is seen in the right rear passenger compartment of E54 with the SCBA worn during the event. These items were discarded by [REDACTED] after seeking refuge in E54. The pack system is situated between the SCBA and the rear of the engine cover. Upon closer inspection the pack system at the point of damage to the hydration pocket is in contact with the engine cover and a melting to the cover.



An inspection of the engine cover revealed that small pieces of the melted fabric remained on the engine cover after the removal of the pack system.



This is consistent with the earlier observation that creases, wrinkling and matting of the fabric indicate that the material was in contact with a relatively flat surface while at or very close to its melting temperature. The lack of melted material transfer to either the Nomex jacket or SCBA indicates that the melting most likely did not occur until the pack was removed and discarded in E54.

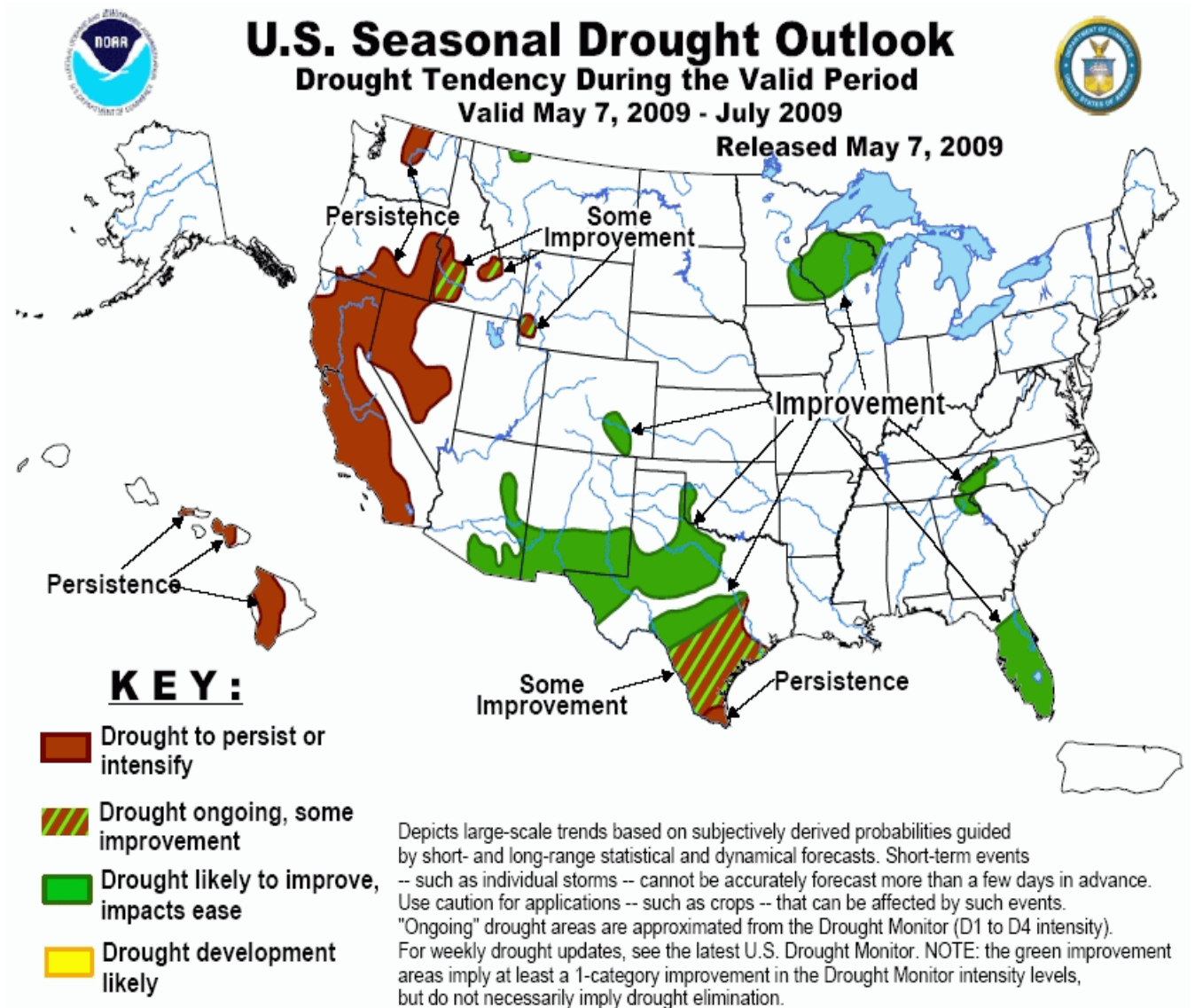
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In summary, the damage observed to the Wolfpack Gear Hydration Pack System is consistent with exposures to temperatures of 450 to 500 degrees that could have been sustained for abnormally long periods of time due to the respiratory protection afforded by the use of the SCBA. Damage to the plastic buckle and the curling of webbings are usually seen during oven tests where temperatures of 475 to 500 degrees are sustained for periods of time up to 3-5 minutes. The visible damage to the hydration pocket is consistent with the outer fabric on the left side being exposed to radiant heat temperatures of 475 to 500 degrees for an extended period of time. It is also plausible that the left side of the pack system was exposed to radiant heat in the range of 800 plus degrees and possibly direct flame contact for brief periods of time, probably less than 2 seconds. It would be my conclusion that the material was very close to failing but did not fail during [REDACTED] run to E54. At the point the pack system and SCBA were discarded, the left side of the pack system came to rest against the engine cover thus insulating that portion of the bag and allowing the bag to retain its heat. This event in combination with the preheating of the fabric to temperatures very near or at its melting temperature caused the fabric to degrade by shrinking, deforming and sticking to objects it came into contact with. This would also explain why the interior foam panel did not sustain damage and its appearance that it was protected during the event.

Wolfpack Gear, Inc. as part of its continuing commitment to pack safety will perform more detailed testing and analysis in the future based on the conditions reported during this incident that may or may not alter conclusions found in this report. If we can be of any other assistance please feel free to contact:

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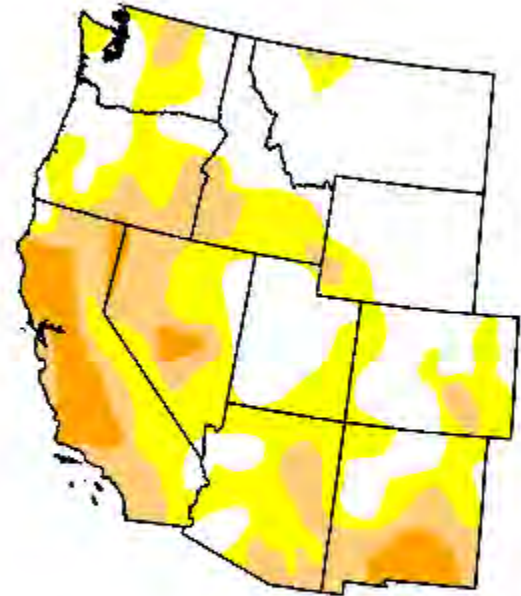


U.S. Drought Monitor West

May 12, 2009
 Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	43.3	56.7	26.2	7.3	0.0	0.0
Last Week (05/05/2009 map)	38.8	61.2	24.6	6.9	0.0	0.0
3 Months Ago (02/17/2009 map)	37.6	62.4	24.4	10.1	2.2	0.0
Start of Calendar Year (01/06/2009 map)	37.4	62.6	28.9	8.8	0.4	0.0
Start of Water Year (10/07/2008 map)	41.3	58.7	28.6	10.4	0.1	0.0
One Year Ago (05/13/2008 map)	33.4	66.6	35.8	6.2	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

<http://drought.unl.edu/dm>



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