

Nylon Highway Issue #60



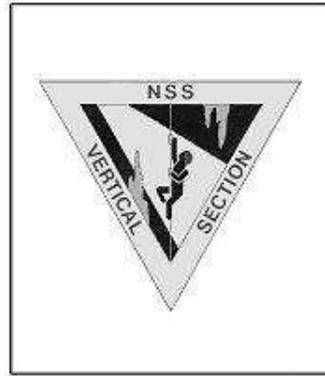
... especially for the Vertical Caver



#60

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ISSN

**Years 2015 & 2016
ISSUE #60**

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United States Department of Agriculture

Effects of Pathogen Decontamination on the Strength of Climbing Rope and Harness Equipment



Forest Service

National Technology & Development Program

1734-2801-NTDP
Forest Health Protection

January 2017

Cover photo—A caver prepares to survey a cave, Grant County, WV.
—*Photo courtesy of Ed Devine*

Effects of Pathogen Decontamination on the Strength of Climbing Rope and Harness Equipment

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Project Leader

**U.S. Department of Agriculture, Forest Service
National Technology and Development Program**

3E32004 – Material Deterioration Testing

January 2017

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Acknowledgments

The National Technology and Development Program would like to thank:

- Cynthia Sandeno, program leader, U.S. Department of Agriculture, Forest Service, Eastern Region, Threatened, Endangered, and Sensitive Species Program, for photos and input to and review of this report.
- Dave Richards, Holloway Houston, Inc., for testing the rope samples.
- Scott Newell, BlueWater Ropes, for testing the harnesses.
- Chris Welsh, Philip Schuchardt, and Will Good for permission to use their images.



A caver completing a 120-foot drop, Bland County, VA. —*Photo courtesy of Ed Devine*

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Abstract

Decontaminating caving gear is important for reducing the spread of pathogens such as the fungus that causes white-nose syndrome in bats. The U.S. Department of Agriculture, Forest Service, National Technology and Development Program (NTDP), evaluated the effect of the current decontamination protocol on the strength of popular models of ropes and harnesses. The decontamination procedure had minimal effects on the strength of ropes or harnesses that NTDP tested.



A little brown bat with white-nose syndrome, Windsor County, VT. —
Photo courtesy of Marvin Moriarty, U.S. Fish and Wildlife Service

Introduction

White-nose syndrome is a fungal disease that has devastated hibernating bat populations in the United States and Canada. To reduce the risk of human-assisted transmission of *Pseudogymnoascus destructans* (Pd), the fungus that causes this disease, cavers and bat researchers may be required to decontaminate ropes and harnesses between caves or research sites. The strength of ropes and harnesses is critical to the safety of the users, so it is important to know how decontamination affects equipment strength (figure 1).

Although there are several applications and products with demonstrated efficacy against Pd, one of the preferred methods is submersion in hot water (hotter than 55 °C for 20 minutes). The U.S. Department of

Agriculture, Forest Service, National Technology and Development Program (NTDP), tested the effects of this method, as prescribed in the current “National White-Nose Syndrome Decontamination Protocol—Version 4.12.2016,” on the strength of selected ropes and harnesses. Test results indicated that treated rope samples had about 0.2 percent to 2.0 percent less strength than untreated ropes. Tests showed that all of the treated ropes had actual breaking strengths well above the minimum breaking strength advertised by the rope manufacturer. All harnesses (treated and untreated) passed the 3,372 pound-force (lbf) test (European Standard EN 12277). There was no evidence that the decontamination procedure affected the performance of the harnesses.



Figure 1—A caver using climbing rope and harness equipment, Grant County, WV.

Equipment Tested

Funding and time constraints made it impossible for NTDP to test every type of rope or harness available to cavers. We consulted with the project proposer and a leading caving supply shop to determine some of the most common equipment used by cavers. NTDP purchased the following models of rope and harnesses for testing:

Ropes

- PMI Pit Max 11-millimeter rope
- PMI EZ Bend Sport 11-millimeter rope
- PMI EZ Bend Sport 10-millimeter rope

Harnesses

- PMI Pit Viper
- Petzl Fractio
- On Rope 1 Goliath Frog

NTDP purchased spools of the 3 models of rope, cut 10 rope samples into 12-foot-long segments (30 rope samples total), and attached a printed label with an identifying number on both ends of each rope sample. We purchased 10 harnesses of each model (30 harnesses total), inscribed the identification number on a tag, and sewed the tag to the end of one of the adjustment straps.

For the evaluation, we left five samples of each type of rope and harness untreated. We used these as controls to determine the baseline breaking strength of the equipment. We treated five samples of each type of equipment using one of the standard protocols for decontaminating caving equipment according to section V of the “National White-Nose Syndrome Decontamination Protocol—Version 04.12.2016” (WNS Decontamination Team, Disease Management Working Group 2016). Based on this protocol, cavers can decontaminate their equipment by submerging it in hot water (equal to or hotter than 55 °C) for at least 20 minutes, and then allowing it to dry.

Pretest Treatment of the Test Samples

NTDP used an ANOVA W-22 waterbath to heat the water to 55 °C (figure 2). When the water reached this temperature, we placed the samples in the waterbath and used two stainless steel bars to hold the samples under water. We set the metal cover on the waterbath and allowed the samples to soak for at least 20 minutes. We then removed the samples from the waterbath, placed them on a rack, and allowed them to air dry overnight (figure 3). NTDP personnel replaced the water in the waterbath with fresh tapwater after treating each batch of the same rope or harness type. This prevented contaminating the next batch of samples with any chemicals that may have leached out of the previous samples. We subjected each sample to the decontamination procedure 30 times.



Figure 2—The National Technology and Development Program (NTDP) applied the decontamination protocol to half of the test equipment samples. NTDP soaked the samples in a 55 °C waterbath for 20 minutes or longer.

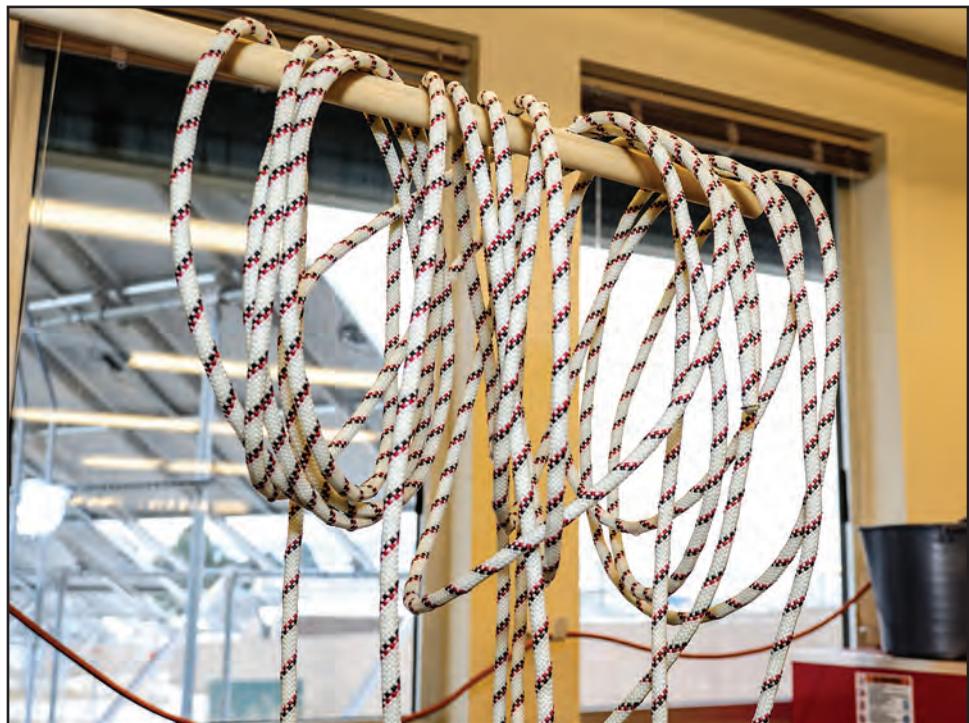


Figure 3—The National Technology and Development Program allowed the treated samples to air dry overnight.

Rope Testing

NTDP sent the rope samples to Holloway Houston, Inc., for strength testing. They recorded rope strength and elongation data as a test machine pulled the rope samples (figures 4 and 5). The machine pulled each sample until it broke. Holloway Houston, Inc., tested in accordance with the requirements of the minimum breaking strength test of Cordage Institute CI-1801 (2007: Section 9.2).



Figure 4—Holloway Houston, Inc., pull-tested rope samples until the samples broke.

Certificate Of Test

Performed By:

Holloway Houston Inc.



HHI #	USFS 020816-1-11mm-11EZ06	WLL	0 Lbf
Customer	US FOREST SERVICE - MISSOULA M	Factor (*)	1.00
Description	11mm EZ BEND TREATED	Test Load	0 Lbf
Description2		Max Load	7105 Lbf
Test Type	BREAK IAW CI 1801-07	Max Displacement	34.896 Inches
Serial #		Hold Time	0.39 Minutes
Part #			
P.O. #	VBL WESLEY THROOP		
Dwg #			



This certifies the item(s) described has been loaded to the specified test load. Load measuring instruments are accurate +/- 1% of reading as specified by ASTM E4. Certificates on file. Upon conclusion of testing no obvious defects were noted.

Disclaimer: No other tests, inspections, or certifications have been made or implied on this document. The owner and/or end-user is responsible for the use and suitability for any task.

Tested By: Dave Richards Witnessed By: _____

Report Printed: 2/10/2016
 Test Equipment: 20k Load cell SN 98025-2
 DasyLab ID#:

Report Time: 8:37:31 AM

Figure 5—A certificate of test for a treated 11-millimeter EZ Bend rope sample. The red line and y-axis values indicate pound-force (lbf) applied to the rope. The green line and y-axis values indicate the amount of stretch or displacement of the rope in inches.

Harness Testing

NTDP sent the harnesses to BlueWater Ropes for testing. They conducted harness tests in accordance with European Standard EN 12277:2007. They fitted each harness to a specially-designed, rigid test dummy (figure 6) and attached the dummy to a test machine. The machine applied a load of 3,372 lbf to the dummy and harness (Section 5.2.6.3 of EN 12277). The standard indicates that a harness fails if any of the following occurs during testing:

- The webbing tears
- Parts of the harness breaks
- The test dummy releases from the harness
- Load bearing buckles or adjusting devices slip more than 20 millimeters during the test

As a secondary test, we asked BlueWater Ropes to test the harnesses to failure. BlueWater Ropes could not test to failure. They retested harnesses using the same criteria as earlier tests, but they applied increasing weight loads to a maximum of about 5,000 lbf, the limits of their testing machine.

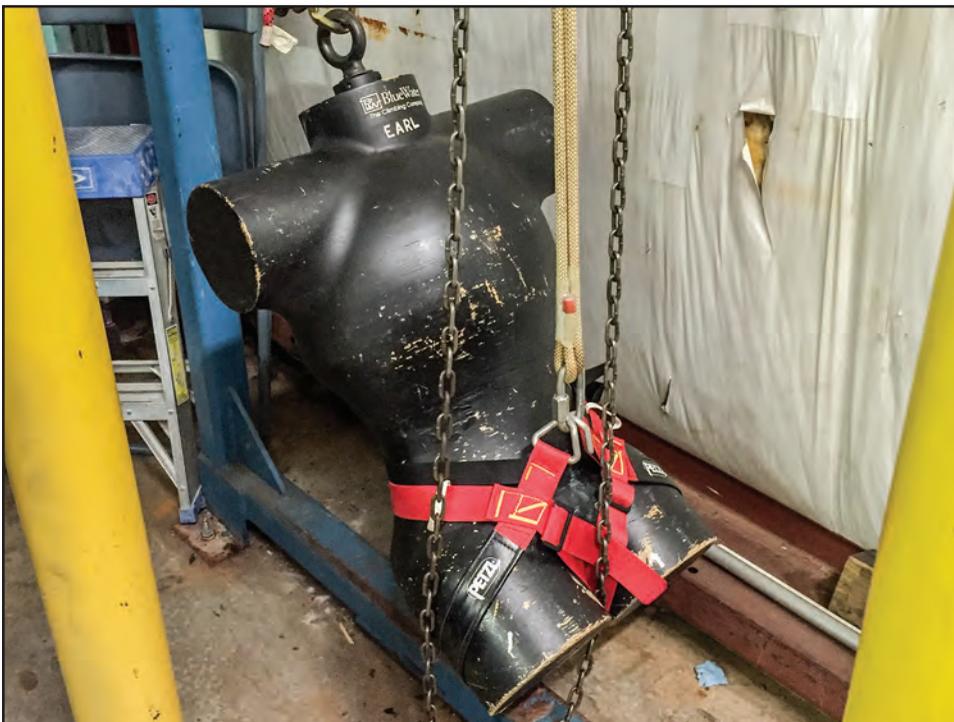


Figure 6—A dummy and test apparatus setup ready for a harness pull test.

Rope Test Results

In general, testing showed that the average breaking strength of the treated rope samples was slightly less than the average breaking strength of the untreated samples for all rope types tested. Even the lowest recorded breaking strengths for the treated samples were well above the manufacturer's advertised minimum breaking strengths. Appendix A provides results of the rope testing.

PMI Pit Max 11-millimeter rope has an advertised minimum breaking strength of 6,430 lbf. The tested breaking strength of the five untreated samples ranged from 6,892 lbf to 7,218 lbf, and averaged 7,100 lbf. The tested breaking strength of the treated samples ranged from 7,042 lbf to 7,237 lbf, and averaged 7,089 lbf. Treated samples had about a 0.16 percent lower average maximum strength compared to untreated samples.

PMI EZ Bend 11-millimeter rope has an advertised minimum breaking strength of 6,542 lbf. The tested breaking strength of the five untreated samples ranged from 7,055 lbf to 7,293 lbf, and averaged 7,145 lbf. The tested breaking strength of the treated samples ranged from 6,948 to 7,130 lbf, and averaged 7,026 lbf. Treated samples had about a 1.67 percent lower average maximum strength compared to untreated samples.

PMI EZ Bend 10-millimeter rope has an advertised minimum breaking strength of 5,710 lbf. The tested breaking strength of the five untreated samples ranged from 6,509 lbf to 6,641 lbf, and averaged 6,568 lbf. The tested breaking strength of the treated specimens ranged from 6,610 lbf to 6,509 lbf, and averaged 6,556 lbf. Treated samples had about a 0.19 percent lower average maximum strength compared to untreated samples.

Harness Test Results

None of the harnesses (treated or untreated) failed with an applied load of 3,372 lbf (per the EN 12277 standard). At this load, the testing facility did not report any tearing of webbing, damage to seams, or failure of any harness components. They also did not observe any test dummies released from the harness, and load bearing buckles or adjusting devices did not slip more than 20 millimeters. They recorded a maximum slip of 7 millimeters. When the testing facility increased the maximum load (up to 5,000 lbf), they observed damage to a portion of the harnesses. Furthermore, the test dummy released from over half of the Petzl Fractio harnesses. Appendix B provides results from the harness testing.

PMI Pit Viper harnesses passed the EN 12277 standard test. The amount of slip at load bearing buckles or adjusting devices ranged from 0 to 7 millimeters. None of the test dummies released from harnesses during the maximum load (up to 5,000 lbf) test. However, the test facility recorded some seam failures on three of the decontaminated (treated) harnesses during the maximum load test. They did not observe any failures on the untreated harnesses.

Petzl Fractio harnesses passed the EN 12277 standard test. The amount of slip at load bearing buckles or adjusting devices ranged from 0 to 6 millimeters. The test facility recorded slightly more slipping on the untreated harness. Six test dummies released from the harnesses (four from untreated and two from treated harnesses) during the maximum load (up to 5,000 lbf) test. The testing facility did not observe any seam failures, but they did note torn webbing and D-ring failures on all but two of the treated harnesses during the maximum load test (figure 7).

On Rope 1 Goliath Frog harnesses passed the EN 12277 standard test. The amount of slip at load bearing buckles or adjusting devices ranged from 0 to 4 millimeters. The test facility recorded more slipping on the treated harnesses. None of the test dummies released from harnesses during the maximum load (up to 5,000 lbf) test. The test facility did observe some seam failures (right leg loop) on three of the untreated harnesses during the maximum load test (figure 8). They did not note any failures on the treated harnesses.



Figure 7—Some webbing failures occurred during the 5,000 pound-force test.

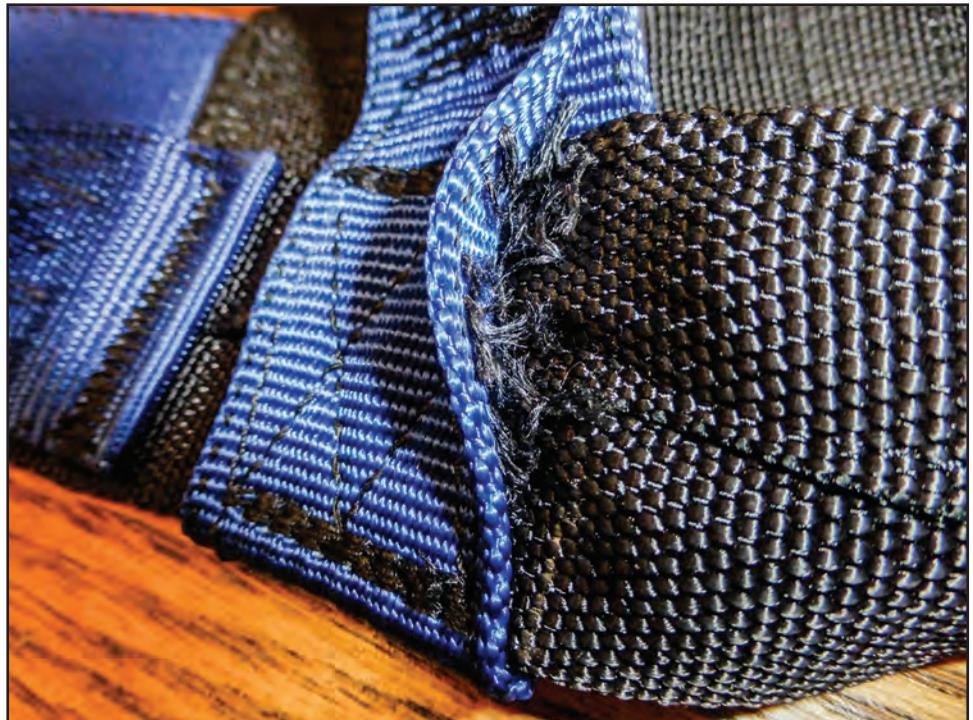


Figure 8—Some seam failures occurred during the 5,000 pound-force test.

Conclusions

In general, decontamination of ropes and harnesses selected for this testing had minimal effects on the strength of this equipment. All rope samples passed the minimum breaking strength test of Cordage Institute CI-1801 (2007: Section 9.2).

The rope samples that NTDP subjected to the submersion in hot water procedure only had 0.2 percent to 2.0 percent less strength than untreated ropes.

All the decontaminated harnesses passed the European Standard EN 12277 test at the required 3,372 lbf load. Our results did not provide any evidence that the decontamination procedure affected the performance of the harnesses. With the maximum applied load (5,000 lbf), the On Rope 1 Goliath Frog harness sustained the least amount of damage during testing, and the Petzl Fractio was the only harness to release the dummy.

NTDP acknowledges that the conclusions from these test results may not apply to other brands or models of ropes and harnesses. However, the ropes and harnesses that we did test did not show any major degradation or loss of strength due to the decontamination process.

References

Cordage Institute. 2007. [Rope standard CI-1801 – Low stretch/static kernmantle safety rope](http://www.ropecord.com/cart/cartpubs.asp). Available at <<http://www.ropecord.com/cart/cartpubs.asp>>.

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Appendix A—Testing Rope Breaking Strength

Holloway Houston, Inc., tested rope samples for breaking strength. They used the following rope number identification: the first two digits denoted the rope diameter in millimeters, the letters denoted the rope model, and the last two digits denoted the sample number. The U.S. Department of Agriculture, Forest Service, National Technology and Development Program (NTDP), soaked treated ropes (five samples of each rope model) in a 55 °C hot waterbath for at least 20 minutes and air dried them according to the National White-Nose Syndrome Decontamination Protocol—Version 04.12.2016 (WNS Decontamination Team, Disease Management Working Group 2016). NTDP repeated this decontamination procedure 30 times for each treated sample. Tables A-1 through A-3 show rope breaking strength results.

Table A-1—PMI Pit Max 11-millimeter rope test (advertised breaking strength of 6,430 pound-force).

Rope number	Maximum tested strength (pound-force)
Untreated	
11PIT01	7,218
11PIT02	7,036
11PIT03	6,892
11PIT04	7,180
11PIT05	7,174
Treated	
11PIT06	7,080
11PIT07	7,237
11PIT08	7,017
11PIT09	7,042
11PIT10	7,067

Table A-2—PMI EZ Bend 11-millimeter rope test (advertised breaking strength of 6,542 pound-force).

Rope number	Maximum tested strength (pound-force)
Untreated	
11EZ01	7,055
11EZ02	7,061
11EZ03	7,186
11EZ04	7,293
11EZ05	7,130
Treated	
11EZ06	7,105
11EZ07	6,948
11EZ08	6,973
11EZ09	7,130
11EZ10	6,973

Table A-3—PMI EZ Bend 10-millimeter rope test (advertised breaking strength of 5,710 pound-force).

Rope number	Maximum tested strength (pound-force)
Untreated	
10EZ01	6,553
10EZ02	6,509
10EZ03	6,641
10EZ04	6,553
10EZ05	6,584
Treated	
10EZ06	6,515
10EZ07	6,572
10EZ08	6,572
10EZ09	6,509
10EZ10	6,610

Appendix B—Testing Harness Failure

BlueWater Ropes tested harnesses for several failure criteria. The testing facility applied 3,372 pound-force (lbf) (per the EN 12277 standard) to the dummy and harness setup for slippage tests. Slippage test results are the number of millimeters the straps slipped at various locations on the harness (for example, left leg, right leg, and waist). The testing facility applied increasing lbf (up to a maximum of 5,000 lbf) to the dummy and harness for harness failure tests. Harness failure test results are the number of lbf at failure and the failure mode(s). BlueWater Ropes used the following harness number identification: the letters denoted the type of harness and the numerical digits denoted the sample number. The U.S. Department of Agriculture, Forest Service, National Technology and Development Program (NTDP), soaked treated harnesses (five samples of each harness model) in a 55 °C hot waterbath for at least 20 minutes and air dried them according to the “National White-Nose Syndrome Decontamination Protocol—Version 04.12.2016” (WNS Decontamination Team, Disease

Management Working Group 2016). NTDP repeated this decontamination procedure 30 times for each harness. Tables B–1 through B–6 show harness slippage and failure test results.

Table B–1—PMI Pit Viper harness slippage test.

Harness number	Harness location slip distance		
	Left leg (millimeters)	Right leg (millimeters)	Waist (millimeters)
Untreated			
PV01	0	5	0
PV02	0	5	3
PV03	4	4	0
PV04	5	0	0
PV05	6	7	0
Treated			
PV06	0	0	0
PV07	0	0	6
PV08	3	4	0
PV09	0	4	0
PV10	1	4	0

Table B–2—PMI Pit Viper harness failure test. The tester noted seam rips in sheath as specified in the “Other” column, but stated the rips did not compromise the integrity of the harness.

Harness number	Maximum applied force (pound-force)	Failure mode					
		Excess slippage	Seam failure	Webbing failure	Buckle failure	Dummy released	Other
Untreated							
PV01	4,834	No	No	No	No	No	None
PV02	4,929	No	No	No	No	No	Right leg loop seam rip in sheath
PV03	4,829	No	No	No	No	No	None
PV04	4,847	No	No	No	No	No	None
PV05	4,856	No	No	No	No	No	Right leg loop seam rip in sheath, left leg rip in sheath seam
Treated							
PV06	4,909	No	Yes, left leg loop, at 4,902 pound-force	No	No	No	Left leg loop seam rip in sheath, right leg rip in sheath seam
PV07	4,890	No	No	No	No	No	None
PV08	4,935	No	Yes, right leg loop, at 3,372 pound-force	No	No	No	None
PV09	4,912	No	No	No	No	No	None
PV10	4,923	No	Yes, right leg loop at 4,923 pound-force	No	No	No	None

Table B-3—Petzl Fractio harness slippage test.

Harness number	Harness location slip distance			
	Left leg (millimeters)	Right leg (millimeters)	Upper waist (millimeters)	Lower waist (millimeters)
Untreated				
FRC01	6	4	0	0
FRC02	5	6	0	0
FRC03	3	6	0	1
FRC04	4	5	0	4
FRC05	4	5	0	1
Treated				
FRC06	4	5	0	0
FRC07	No data	No data	No data	No data
FRC08	2	4	1	0
FRC09	3	5	0	2
FRC10	0	0	0	0

Table B-4—Petzl Fractio harness failure test.

Harness number	Maximum applied force (pound-force)	Failure mode					
		Excess slippage	Seam failure	Webbing failure	Buckle failure	Dummy released	Other
Untreated							
FRC01	4,722	No	No	No	No	No	None
FRC02	4,547	No	No	Right leg webbing tore three-quarters of the way across	No	Yes	Left D-ring fail
FRC03	4,602	No	No	Left leg webbing tore at buckle	No	Yes	Right D-ring fail
FRC04	4,348	No	No	No	No	Yes	Right D-ring fail
FRC05	4,215	No	No	Right leg webbing tore slightly and melted some at buckle	No	Yes	Left D-ring fail
Treated							
FRC06	4,739	No	No	No	No	No	None
FRC07	No data	No data	No data	No data	No data	No data	No data
FRC08	4,739	No	No	Right leg webbing tore slightly and melted at buckle	No	Yes	Left D-ring fail
FRC09	4,761	No	No	Left leg webbing tore some at buckle	No	Yes	Right D-ring fail
FRC10	4,700	No	No	Right leg webbing tore slightly at buckle	No	No	None

Table B-5—On Rope 1 Goliath Frog harness slippage test.

Harness number	Harness location slip distance		
	Left leg (millimeters)	Right leg (millimeters)	Waist (millimeters)
Untreated			
FROG01*	0	0	0
FROG02	0	0	0
FROG03	0	0	0
FROG04	0	0	0
FROG05	3	0	0
Treated			
FROG06	0	2	0
FROG07	3	2	2
FROG08	0	0	0
FROG09	0	0	0
FROG10	4	2	3

*Right gear loop bottom span was broken before testing.

Table B-6—On Rope 1 Goliath Frog harness failure test.

Harness number	Maximum applied force (pound-force)	Failure mode					
		Excess slippage	Seam failure	Webbing failure	Buckle failure	Dummy released	Other
Untreated							
FROG01	4,949	No	No	No	No	No	None
FROG02	4,841	No	Right leg loop rip	No	No	No	None
FROG03	4,866	No	No	No	No	No	None
FROG04	4,894	No	Right leg loop rip	No	No	No	None
FROG05	4,896	No	Right leg loop rip	No	No	No	None
Treated							
FROG06	4,934	No	No	No	No	No	None
FROG07	4,881	No	No	No	No	No	None
FROG08	4,939	No	No	No	No	No	None
FROG09	4,921	No	No	No	No	No	None
FROG10	4,825	No	No	No	No	No	None

About the Authors

Wesley Throop (retired) was a project engineer at the National Technology and Development Program from 1999 to 2016. He previously worked at the Idaho National Laboratory's Advanced Test Reactor and on shipboard weapon-handling systems at the Puget Sound Naval Shipyard.

Gary Kees joined the National Technology and Development Program in 2002 as a project leader. He works in the Reforestation and Nursery, Forest Health, Facilities, Fire, and Global Positioning System (GPS) Programs. His current projects involve all-terrain vehicle and backpack sprayers, nursery equipment, and GPS accuracy testing. Kees, who has a degree in mechanical engineering from the University of Idaho, worked for 10 years as a mechanical and structural engineer, project manager, and engineering group leader for Monsanto Co., in Soda Springs, ID.

Library Card

Throop, W.; Kees, G. 2016. Effects of pathogen decontamination on the strength of climbing rope and harness equipment. 1734-2801-NTDP. Tech. Rep. Missoula, MT: U.S. Department of Agriculture, Forest Service, National Technology and Development Program. 16 p.

Decontaminating caving gear is important for reducing the spread of pathogens such as the fungus that causes white-nose syndrome in bats. The U.S. Department of Agriculture, Forest Service, National Technology and Development Program (NTDP), evaluated the effect of the current decontamination protocol on the strength of popular models of ropes and harnesses. The decontamination procedure had minimal effects on the strength of the ropes and harnesses that NTDP tested.

Keywords: caving, climbing harness, climbing rope, decontaminate, decontamination, EN 12277:2007, hot waterbath, white-nose syndrome

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[Search MTDC](http://fsweb.mtdc.wo.fs.fed.us/search/) <<http://fsweb.mtdc.wo.fs.fed.us/search/>>

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—Photo courtesy of Marvin Moriarty, U.S. Fish and Wildlife Service

Produced by the
U.S. Department of Agriculture, Forest Service
National Technology and Development Program
1734-2801-NTDP

Vertical Section Executive Committee Meeting

July 12, 2015

Alliance Inn and Suites, Waynesville, Missouri.

1. The meeting was called to order at 7:00 pm by Chairman Terry Mitchell. VSEC Members present were Chairman Terry Mitchell, Secretary-Treasurer Ray Sira, Member-at-Large Bill Boehle, and Vertical Techniques Workshop Coordinator Kurt Waldron. Also present were Webmaster-Rebelay Workshop Coordinator Gary Bush, Interim Contest Coordinator Peter Hertl, and JSS Representative Zach Schudrowitz. The Chairman announced that he held proxies for absent members Bruce Smith and Miriam Cuddington, so the required quorum of 5 has been met. EC members absent without proxies were Bill Cuddington, Mike Rusin, and Tim White.

2. **Reports**

A. **Chairman** - Terry Mitchell had all in attendance sign staff liability waivers. He reported the Rebelay Workshop was listed wrong in the Convention program, the Vertical Contest ending time was also wrong, and the Contest Awards ending time on Friday was wrong. Gary Bush said that he had already submitted a correction to the daily bulletin concerning the Rebelay Workshop, and Terry said that he would submit correction notices for the other two events.

B. **Secretary Treasurer** - Ray Sira distributed minutes from the 2014 Convention meetings, the Treasurers report and membership report. Ray reported that we were still owed a \$523 refund from the 2014 convention but that he is having difficulty getting it paid to the VS. Gary Bush said he would speak with Carol Tiderman about that and try to get that done.

C. **Symbolic Items** - Bill Boehle submitted a written report of SI income and expenses for the past year, and reported no items need to be restocked at this time.

D. **Awards Committee** - Bruce Smith was not present. Terry said that Bruce told him there have been no awards considered or presented during the past year.

E. **Education Coordinator** - Bruce Smith was not present. It was stated he is working on updates to the Vertical Training Courses.

F. **Rebelay Workshop** - Gary Bush. Gary Bush, John Woods and Bill Boehle looked at the gym and the setup looks good.

G. **Vertical Techniques Workshop Coordinator** - Kurt Waldron. The workshop gear has been inventoried and rated as good, useful, or poor. Anti heel-hang straps are needed as well as ropes longer than 200 feet. When to retire gear was discussed, and a sign up sheet for instructors was passed around.

- H. **Editor** - Tim White was not present. Gary Bush has sent him materials for NH #60.
 - I. **Webmaster** - Gary Bush. NH #59 is on the web and he is working on NH #60.
 - J. **Outreach** - Jon Schow was not present. No report and no response to emails. (Note: Terry received an emailed report from Jon the next day, July 13th)
3. **Old Business.** None.
4. **New Business.**
- A. Approval of meeting minutes. The minutes of the VSEC meetings from the past year were approved as published by unanimous consent.
 - B. JSS Request. Zach Schudrowitz requested that 13-17 year old JSS members be allowed to shadow VS members during the Vertical Contest. Kurt Waldron moved to allow the JSS to use the Vertical Workshop ropes on Wednesday July 15th. Bill Boehle Seconded. All approved.
 - C. Climbing Contest. Bill and Miriam Cuddington are not in attendance at this year's convention. Peter Hertl was asked to coordinate the Climbing Contest and has agreed. Jim Hall has brought the contest gear to the convention. There was discussion about how we would purchase the prizes and get the award certificates prepared.
5. **Adjournment.** The meeting was adjourned at 8:30 pm.
6. Following Adjournment, Ray Sira showed a video created by John Woods to consider for showing to participants at the beginning of the Vertical Techniques Workshop on Thursday. This updated video was well received and Kurt Waldron said he would use it on Thursday.

Minutes respectfully submitted by Ray Sira, Vertical Section Secretary-Treasurer June 26, 2016.

2015 Vertical Section Business Meeting

July 15, 2015

Waynesville High School, Waynesville, MO

Call to Order: VS Chairman Terry Mitchell called the meeting to order at 10:07 am in room 23. The number of members present was 16.

Approval of minutes from last year's meeting - July 16 2014. Approved as published.

1) Officer Reports.

- a) **Chairman's Report:** Terry Mitchell. Terry introduced the members of the VS Executive Committee and reported that unlike the past two years, the VSEC had not conducted any official business over the past 12 months.
- b) **Treasurer's Report:** Ray Sira reported the VS has 3 bank accounts with a total of \$11,334.12. Payment for the 2014 Vertical Workshop is still pending. A full report was available at the meeting and will be published in the Nylon Highway.
- c) **Secretary's Report:** Ray Sira reported we have 228 members. He sent out 133 emails to people whose membership had expired. 15 addresses bounced and 40 people renewed their membership.
- d) **Editor's Report:** Tim White was not present. Bruce Smith reported that Tim is willing to be reappointed as Editor for another term. Gary Bush said that Nylon Highway #59 is on the VS web page, and NH #60 has been started. Bill Boehle is working to convert more old issues of NH to .pdf files.

2) Committee Reports.

- a) **Climbing Contest:** Peter Hertl. There was a general discussion about the contest results and the current tasks of purchasing prizes and preparing the certificates for presentation at Friday's Contest Awards ceremony.
- b) **Vertical Techniques Workshop:** Kurt Waldron. 25 people are pre registered. *(13 of these ended up being no shows.)* The convention staff will give us a list. Kurt said the ropes and equipment are ready, but he is not totally sure of all his instructors.
- c) **Education:** Bruce Smith. No report. Looking into "tweaking" the basic course.
- d) **Awards:** Bruce Smith. No awards were presented this year.
- e) **Bylaws:** Terry Mitchell. No Bylaw changes were considered this year.
- f) **Symbolic Items:** Bill Boehle's report is included in the Treasurer's report. We had a total of about \$455 in sales income this past year. He is looking into new items.
- g) **Web Page:** Gary Bush reported that everything is up to date. The NSS has its own computer servers now. Peter Hertl suggested putting the Vertical Workshop power point presentation on the website.
- h) **Out Reach Committee:** Jon Schow was not present. Terry read an emailed report from Jon. The VS Facebook page has 547 likes. He is looking for people to share trip reports or any other vertical stories on Facebook. Ray Sira suggested sending an email to contest participants. Peter Hertl suggested we may be able to do a mass email through the NSS.

- 3) **Old Business:** None
- 4) **New Business:**
 - a) Dick Mitchell asked Bruce Smith about the NCRC Manual of U.S. Cave Rescue Techniques, and if there are any conflicts with what the Vertical Section teaches.
 - b) Ray Sira told us he is the self-appointed "VS Statistician" and has produced an historical record of the previous Climbing Contest data; contestants, times, etc., which he will show during the follow-on Vertical Session.
- 5) **Elections:**
 - a) **Secretary-Treasurer (1-year term):** Ray Sira was nominated for another term. There were no other nominations. A motion was made and carried to suspend the rules, and Ray Sira was elected by unanimous consent.
 - b) **Two "At-Large" Executive Committee Members (2-year terms):** Bill Boehle and Miriam Cuddington were nominated for the two positions. Peter Hertl was nominated but declined. The rules were again suspended, then Bill and Miriam were re-elected by unanimous consent.
- 6) **The VS Business Meeting adjourned at 11:09 am.** The Chairman asked everyone to reconvene in 10 minutes for the **Vertical Session**.

The Vertical Session began at 11:25 am, 7/15/2015 in room 23 of Waynesboro High School.

- 1) **Opening Remarks.** Chairman Terry Mitchell reported that during the break the elected members of the Executive Committee, consisting of himself, Mike Rusin, Bill Boehle, Miriam Cuddington (represented by proxy), and Ray Sira had met briefly to elect the coming year's Chairman, Vice Chairman, and the Appointed Positions on the EC. These are all 1-year terms of office. Terry said that he has been re-elected to another term as Chairman, and Miriam Cuddington has been re-elected as Vice Chairman. Bill Cuddington was re-appointed as Contest Coordinator, Bruce Smith was re-appointed as Education Coordinator, Kurt Waldron was re-appointed as Vertical Techniques Workshop Coordinator, and Tim White was reappointed as Editor.
- 2) **The Vertical Session.**
 - a) **Ray Sira - Climbing Contest database.** Ray has compiled all available climb times from the Vertical Contest and created a spreadsheet. Graphs were presented showing overall winning times from 1969 through 2014 and Bill and Miriam Cuddington's times over the years.
 - b) **Vertical Techniques Workshop:** The new power point presentation for the workshop was viewed.
- 3) **The Vertical Session Adjourned at Noon.**

Minutes respectfully submitted by Ray Sira, Vertical Section Secretary-Treasurer June 26, 2016.

NSS Vertical Section

Secretary's Report

07/09/2016

By Raymond Sira

Number of Current Members as of 06/30/2016.....	226
Number of Subscribers as of 06/30/2016.....	8
Number of Expired Memberships 2015.....	35
Number of Memberships due to Expire 2016.....	15
Number of Annual Volumes Paid for 2016.....	3
Number of Complementary Subscriptions.....	2

Member Exp Date Comps	Members	Subscribers	Annual Volume
2016	15	0	3
2017	24	2	2
2018	51	1	0
2019	88	5	0
2020	42	0	0
2021	06	0	0

Total Members 226

I still need to email the 35 people whose membership expired in 2015.

5 copies of Nylon Highway #59 were mailed to members who paid for a subscription in addition to 2 complimentary copies to the NSS.

NSS VERTICAL SECTION
TREASURER'S REPORT (through 6/30/2016)

By Raymond Sira

INCOME:

2014 Convention Workshop Registration	\$850.00
2015 Convention Workshop Registration	\$1,125.00
Symbolic Item Sales	\$502.67
Bank Interest (Ally) June 2015 – June 2016	<u>\$72.06</u>

TOTAL INCOME: **\$2,549.73**

Expenses:

Shipping Costs	\$12.92
Printing Nylon Highway.....	\$30.24
NSS – website hosting fees (2015)	\$12.00
2015 Vertical Workshop Transportation Expense Subsidy (Kurt Waldrun)	\$297.40
2015 Climbing Contest Prizes	\$200.29
Vertical Workshop Gear Repair (On Rope 1).....	\$627.08
Climbing Contest Record Boards (2015 update)	\$63.67
Bill's Symbolic Items Expenses.....	<u>\$35.92</u>

TOTAL EXPENSES: **\$1,279.52**

ACCOUNT BALLANCES:

TD Bank (NJ) (Bill's account including cash on hand as of 6/30/2016)	\$2,614.09
Well Fargo (Ray's account as of 6/30/2016)	\$2,146.10
ALLY Demand Notes (as of 06/30/2016)	<u>\$7,787.63</u>

TOTAL 6/30/2016: **\$12,547.82**

2015 Total \$11,334.12

Symbolic Items Report (7/1/2015 to 6/30/2016) – 2016 NSS Convention

INCOME:

Symbolic Item Sales	474.00
Nylon Highway Back Issue Sales	0.00
Shipping/Postage Charges	12.75
Donations	0.00
Petty Cash used for expenses	15.92

TOTAL INCOME: \$502.67

EXPENSES:

	check	cash
Shipping/Postage Costs	15.47	0 15.47
Symbolic Items Restocking (T-shirts, sweats)	0.00	
Symbolic Items Restocking (pins)	0.00	
Climbing Contest Record Boards (updates)	63.67	
Photocopying/Supplies	0.45	0 0.45
Petty Cash withdrawn for expenses	20.00	
TD Bank(NJ) new check charge	0.00	

TOTAL EXPENSES: \$99.59

ACCOUNT BALANCES: (as of 6/30/2016)

TD Bank(NJ)

Opening Balance from last period:	\$2,200.90
INCOME this period:	\$502.67
EXPENSES this period:	-\$99.59
Closing Balance for this period:	\$2,603.98

Petty Cash for expenses on hand: \$10.11

TD Bank(NJ) and Cash on Hand: \$2,614.09

Minutes of the

NSS Vertical Section Executive Committee / Board of Trustees E-Meeting
June 8-10, 2016

Announcement. This e-meeting was announced on June 8, 2016 by Chairman Terry Mitchell, with a request for any objections to suspending by Unanimous Consent the Rule of Order for e-meetings that requires a 5-day discussion period after a motion has been seconded.

Purpose. The purpose of this e-meeting was to approve a corporate resolution that is required by Ally Demand Notes as we update our financial account records with them.

Attendance. Seven of the eight members of the Board replied "present" by email or telephone, and no one objected to suspending the Rules of Order. Member Tim White did not respond. The quorum of five was met, so the Chairman called the meeting to order on June 9.

New Business. Bill Boehle moved that ***“The Executive Committee (board) authorizes the Secretary/Treasurer and Chairman as Authorized Persons to effect transactions with respect to Ally Demand Notes and also authorizes the Secretary/Treasurer to certify from time to time the names and titles of Authorized Person(s) when changes in office or authority occur and to certify to Ally Demand Notes that this authority has been duly adopted by the board.”***

The motion was seconded by Terry Mitchell. He then announced that without objection, the Rule of Order for e-meetings requiring a 5-day discussion period was suspended by Unanimous Consent, and that there would be a shorter discussion period ending at Noon the next day, June 10.

Discussion. Bill Boehle wrote: ***“I kept the resolution generic so we should only have to have the Secretary/Treasurer send in a new Change form in the future.”*** There was no further discussion.

Vote & Adjournment. At 12:14pm on June 10, the Chairman closed the discussion period and called for the vote. At 6:58pm that day Terry announced that all seven votes had been received, the motion was approved unanimously, and the e-meeting was adjourned.

Respectfully submitted 6-12-2016
Terry Mitchell, Chairman

Vertical Section Executive Committee Meeting

July 17, 2016

La Quinta Inn & Suites, Ely, Nevada.

1. The meeting was called to order at 7:02 pm by Chairman Terry Mitchell. VSEC Members present were Chairman Terry Mitchell, Secretary-Treasurer Ray Sira, Member-at-Large Bill Boehle, Member at Large Mike Rusin, and Vertical Techniques Workshop Coordinator Kurt Waldron. Also present was Webmaster-Rebelay Workshop Coordinator Gary Bush. The Chairman announced that he held proxies for absent member Miriam Cuddington, so the required quorum of 5 has been met. EC members absent without proxies were Bill Cuddington, and Tim White.

2. **Reports**
 - A. **Chairman** - Terry Mitchell had all in attendance sign staff liability waivers. He Reported the Climbing contest coordinator Bill Cuddington would not be attending this year's convention. Peter Hertl (who ran last year's contest) will also not be at the convention. A group effort will be used to organize this year's contest.

 - B. **Secretary Treasurer** - Ray Sira distributed minutes from the 2015 Convention meetings, the Treasurers report and membership report. The names and address for the Ally account have been changed.

 - C. **Symbolic Items** - Bill Boehle submitted a written report of SI income and expenses for the past year.

 - D. **Awards Committee** - Bruce Smith was not present. An E-meeting was held earlier to approve a Lifetime Achievement award for Bruce Smith. Previous recipients have been Charlie Gibbs, Dick Mitchell and John Cole. A plaque will be presented to Bruce during the convention.

 - E. **Education Coordinator** - Bruce Smith was not present. Bruce Smith has resigned from his position as Education Coordinator. Terry has been talking to people about a replacement coordinator. The Terry Mitchell and Kurt Waldron have volunteered to be an education committee until a replacement coordinator can be found. A possible train the trainer program was discussed.

 - F. **Rebelay Workshop** - Gary Bush. More scaffolding is needed for the Rebelay course. More should be delivered by Monday morning. More copies of the release form are needed.

 - G. **Vertical Techniques Workshop Coordinator** - Kurt Waldron. The workshop gear has been fixed and is ready to use. An ad will be placed in the daily news letter for volunteers to help with the workshop. We may not have a way to display the workshop video. Ray has a friend

in Ely who may loan us a large monitor. Jenny Clark may be available for administrative help during the workshop. The EC will meet again on Wednesday night to write guidelines for the different stations.

H. **Editor** - Tim White was not present. No report

I. **Webmaster** - Gary Bush. PDF of NH60 is needed. No response from Tim White. Bill Boehle has videos of some historic climbs. Bill Boehle has PDF's of old Nylon Highways. More need to be scanned.

J. **Outreach** - Jon Schow was not present. Jon will not be at the convention this year. The VS Facebook page has 786 likes. Gary Bush will look into find someone who can post to Facebook live during the convention.

3. **Old Business.** None.

4. **New Business.**

A. Approval of meeting minutes. The minutes of the VSEC meetings from the past year were approved as published by unanimous consent.

B. Climbing Contest. Bill and Miriam Cuddington are not in attendance at this year's convention. Ray Sira and Gary Bush will look into printing the award certificates. Bill Boehle and Mike Rusin volunteered to shop for prizes.

5. **Adjournment.** The meeting was adjourned at 8:51 pm.

Minutes respectfully submitted by Ray Sira, Vertical Section Secretary-Treasurer May 29th 2017.