

Extended Ground-Based Visibility Evaluation Everything Tactical (E/T) Lights

E/T Lights completed testing at November 27th, 2018. Over an activation period of 0 to 72 hours the E/T lights had a better visual performance than the top 4 leading competitors:

- Lazer-Brite
- Night Ize
- V-Light
- Bright-Strike

The following test in an extension of the report titled “In-Situ Evaluation of the Southwest Synergistic Solutions E/T (Emergency/Tactical) Light” previously completed as a part of the Defense to Response (D2R) Program. Stage II of this report evaluated the ground-based visibility of the E/T Light against several brands of chemical lights. The following test report re-created the variables of the first, but with a distance comparison of the top four competing products to the E/T Light. Please refer to the included testing document for all details regarding the first phase of product testing.

This test extension was executed on November 27th, 2018 evaluation, occurred at night at a remote, rural site in College Station, Texas. This location, a construction site for a new roadway, was selected due its flat, straight-line visibility with minimal ambient light. Figure 1 shows a picture of the selected site during the daylight.



Figure 1

Summary of Results

The testing conclusively determined firefighters were able to see the Ladder Light equipped ladder much faster and more confidently than a standard ladder in both the roof and interior second floor testing. Recognition time on the roof scenario was 23% faster with Ladder Lights. Recognition time during the smoke-filled second floor scenario was 85% faster with the Ladder Lights, a dramatic difference in both the data and the responses from the participants positively in favor of using Ladder Lights over unlighted standard ladders in that scenario.

Evaluation Process

In order to evaluate the Southwest Synergistic Solutions E/T Light, observation of product performance under realistic settings and conditions occurred, along with collection of end-user feedback and comparison of performance with other competing products on the market. The goal of this evaluation was to assess the visibility of the light on the ground at different distances to compare product performance with other competing products on the market. This evaluation included both “fresh” products (i.e., both LED lights that were newly turned on/activated) as well as “expiring” products (i.e., LED lights that had been turned on/activated for 3 different durations of time), and the evaluation included several different colors. To accomplish this, observers assembled at the previously discussed evaluation site. This location was selected due to its remote, rural location and straight-line visibility with minimal ambient light. The evaluation occurred late at night (i.e., beginning at 8:00 PM and ending at 11:00 PM) to avoid outside interference.

7 observers remained at a fixed location to assess light visibility while a second group served as range staff in staging and activating the lights at incremental, measured distances from the fixed observers. Using a

measuring wheel, light tests were conducted at four distances from the observers: 300 feet, 900 feet, 1,320 feet, and 2,640 feet. The two groups communicated with one another and coordinated each step of the evaluation process using portable radios. The light observers varied in age, gender, and corrective vision (i.e., glasses, contacts, and no corrective vision) to allow diversity in the measurements obtained. Two main areas were assessed, including:

Is the light visible at 0° – blind test of brand new lights (i.e., including LED lights in several different colors) at specified distances. This test was performed by holding each competitor at a position where the longest portion of the light was parallel to the plane of the ground. Figure 2 shows orientation.

Is the light visible at 90° – blind test of brand new lights (i.e., including LED lights in several different colors) at specified distances. This test was performed by holding each competitor at a position where the longest portion of the light was perpendicular to the plane of the ground. Figure 2 shows orientation.



Figure 2

Figure 3: Layout of Prop 56



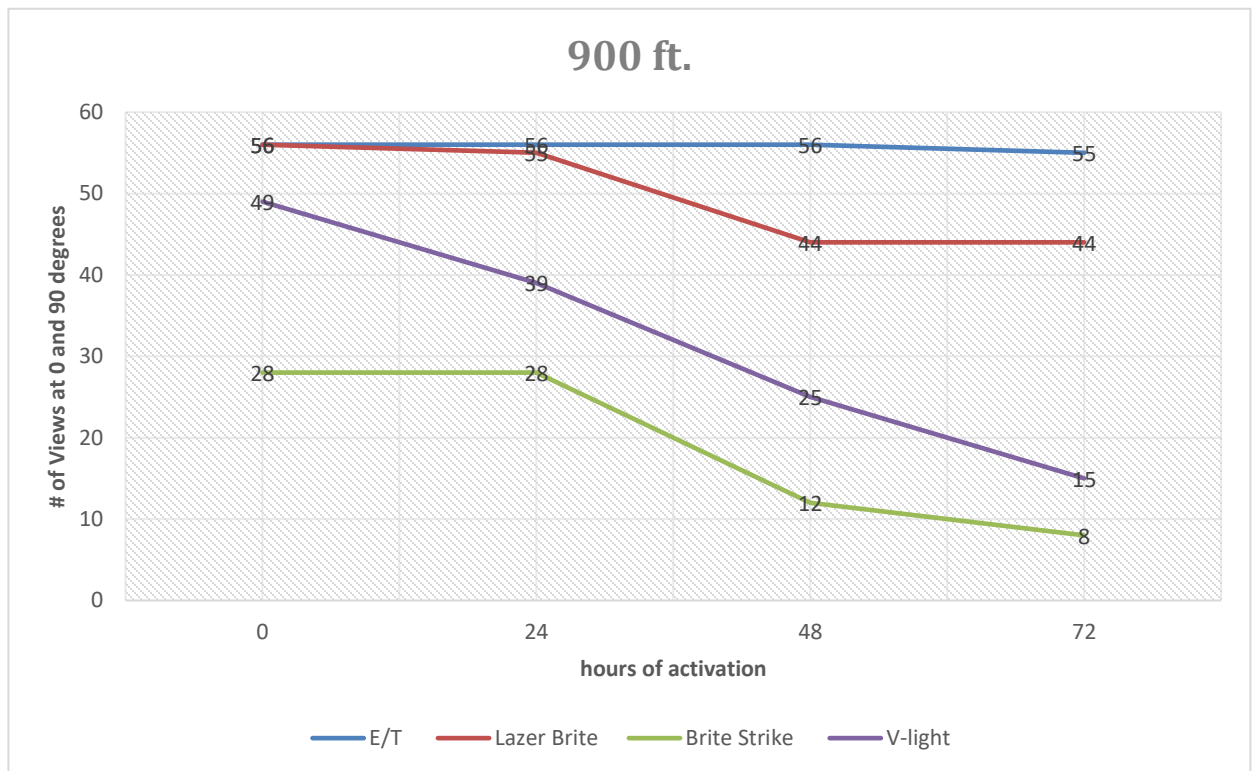
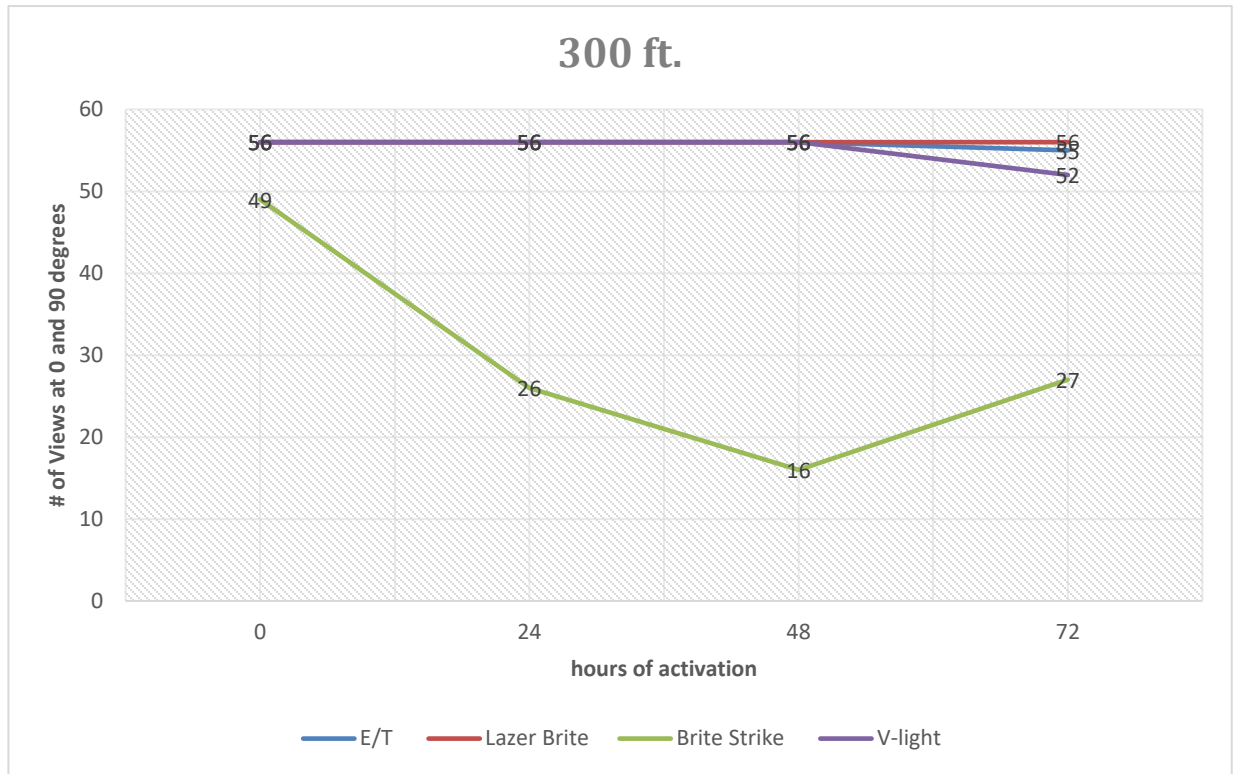
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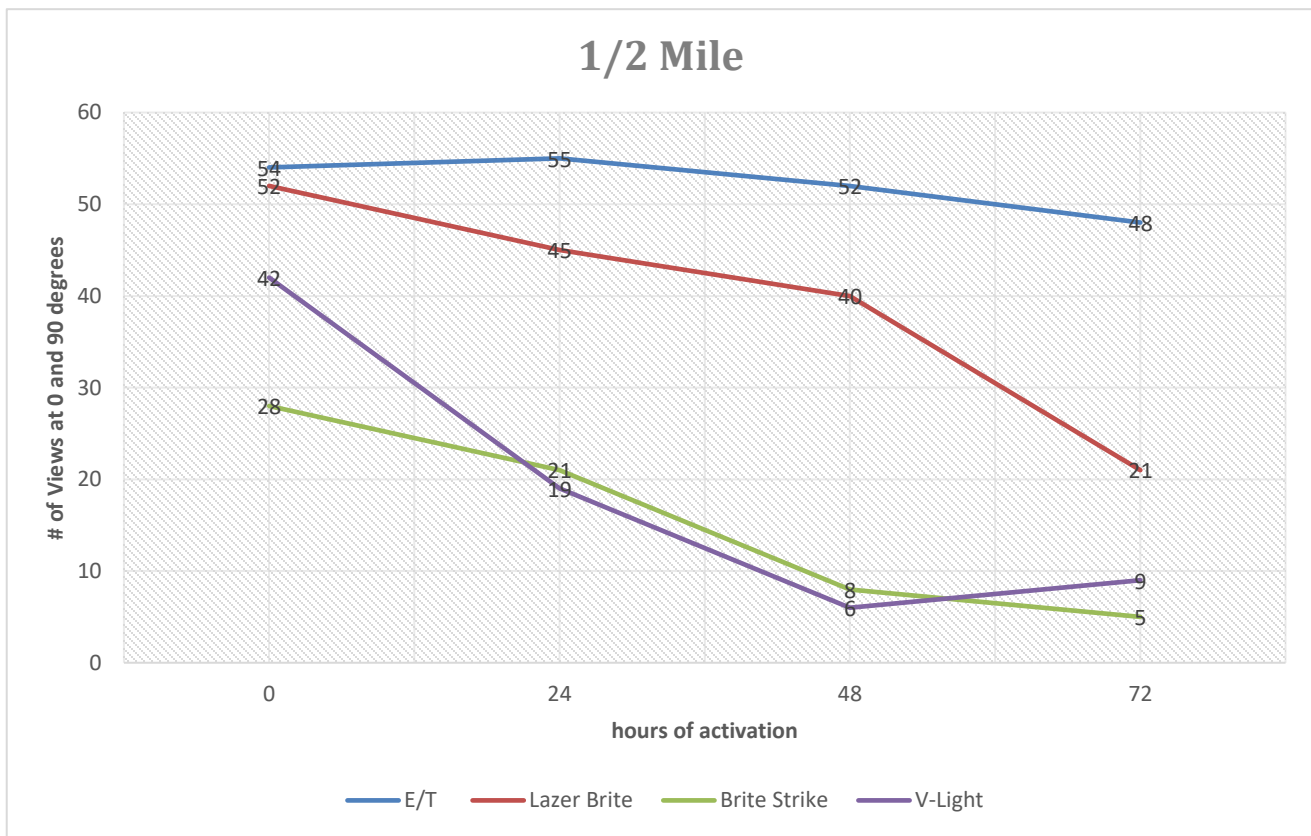
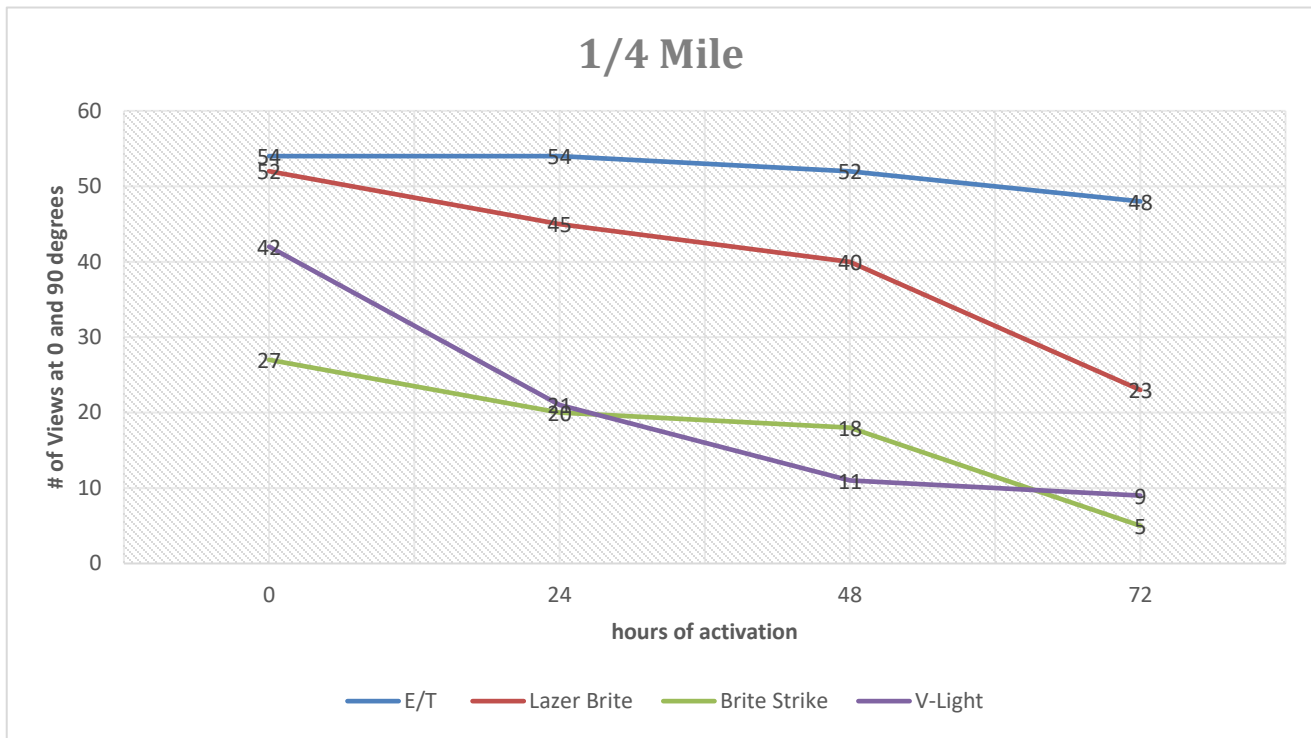
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Southwest Synergistic Solutions
Project Report
November 17, 2018

Evaluation Process

The following is the compiled data of the test results.





		Initial Activation									
300 FT	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite		Nite Ize		
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
Red	7	7	7	7	7	7	7	7	1	7	
White	7	7	7	7	7	7	7	7	6	7	
Green	7	7	7	7	7	7	7	7	7	7	
Blue	7	7	7	7	0	7	7	7	2	1	
	28	28	28	28	21	28	28	28	16	22	
		56		56		49		56		38	
		24 Hours									
300 FT	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	7	7	2	7	7	7			
White	7	7	7	7	3	7	7	7			
Green	7	7	7	7	0	7	7	7			
Blue	7	7	7	7	0	0	7	7			
	28	28	28	28	5	21	28	28			
		56		56		26		56			
		48 Hours									
300 FT	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	7	7	0	2	7	7			
White	7	7	7	7	0	7	7	7			
Green	7	7	7	7	0	7	7	7			
Blue	7	7	7	7	0	0	7	7			
	28	28	28	28	0	16	28	28			
		56		56		16		56			
		72 Hours									
300 FT	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0	90°	0°	90°			
Red	7	7	7	7	0	7	7	7			
White	7	7	7	7	0	7	7	7			
Green	7	7	7	7	0	7	6	6			
Blue	7	6	7	7	0	6	6	6			
	28	27	28	28	0	27	26	26			
		55		56		27		52			

		Initial Activation									
900 FT	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite		Nite Ize		
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
Red	7	7	7	7	0	7	7	7			
White	7	7	7	7	0	7	7	7			
Green	7	7	7	7	0	7	7	7			
Blue	7	7	7	7	0	7	4	3			
	28	28	28	28	0	28	25	24	0	0	
		56		56		28		49		0	
		24 Hours									
900 FT	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	7	7	0	7	6	7			
White	7	7	7	7	0	7	6	7			
Green	7	7	7	7	0	7	6	7			
Blue	7	7	7	6	0	7	0	0			
	28	28	28	27	0	28	18	21			
		56		55		28		39			
		48 Hours									
900 FT	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	7	7	0	3	0	6			
White	7	7	7	7	0	6	2	7			
Green	7	7	7		0	3	4	6			
Blue	7	7	5	4	0	0	0	0			
	28	28	26	18	0	12	6	19			
		56		44		12		25			
		72 Hours									
900 FT	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	6	7	0	0	0	0			
White	7	7	7	7	0	7	1	0			
Green	7	7	7	6	0	1	7	7			
Blue	7	6	3	1	0	0	0	0			
	28	27	23	21	0	8	8	7			
		55		44		8		15			

		Initial Activation									
1/4 Mil	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite		Nite Ize		
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
Red	7	7	7	6	0	7	7	7	0	0	
White	7	7	7	7	0	7	7	7	0	0	
Green	7	7	7	6	0	7	6	7	1	1	
Blue	7	5	6	6	0	6	0	1	1	0	
	28	26	27	25	0	27	20	22	2	1	
		54		52		27		42		3	
24 Hours											
1/4 Mil	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	7	7	0	7	0	2			
White	7	7	7	7	0	7	2	5			
Green	7	7	6	7	0	6	6	6			
Blue	6	6	2	2	0	0	0	0			
	27	27	22	23	0	20	8	13			
		54		45		20		21			
48 Hours											
1/4 Mil	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	7	7	0	5	0	0			
White	7	7	6	7	0	7	0	0			
Green	7	7	6	7	0	6	6	5			
Blue	6	4	0	0	0	0	0	0			
	27	25	19	21	0	18	6	5			
		52		40		18		11			
72 Hours											
1/4 Mil	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	0	0	0	0	0	0			
White	7	7	6	6	0	5	0	0			
Green	7	7	6	5	0	0	6	3			
Blue	5	1	0	0	0	0	0	0			
	26	22	12	11	0	5	6	3			
		48		23		5		9			

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		Initial Activation									
1/2 Mil	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite		Nite Ize		
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
Red	7	7	7	6	1	7	7	7	0	0	
White	7	7	7	7	0	7	7	7	0	0	
Green	7	7	7	6	0	7	6	7	1	1	
Blue	7	5	6	6	0	6	0	1	1	0	
	28	26	27	25	1	27	20	22	2	1	
		54		52		28		42		3	
		24 Hours									
1/2 Mil	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	7	7	1	7	0	2			
White	7	7	7	7	0	7	0	5			
Green	7	7	6	7	0	6	6	6			
Blue	7	6	2	2	0	0	0	0			
	28	27	22	23	1	20	6	13			
		55		45		21		19			
		48 Hours									
1/2 Mil	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	7	7	0	0	0	0			
White	7	7	6	7	0	7	0	0			
Green	7	7	6	7	0	1	6	0			
Blue	6	4	0	0	0	0	0	0			
	27	25	19	21	0	8	6	0			
		52		40		8		6			
		72 Hours									
1/2 Mil	E/T Lights		Lazer-Brite		Brite-Strike		V-Lite				
	0°	90°	0°	90°	0°	90°	0°	90°			
Red	7	7	0	0	0	0	0	0			
White	7	7	5	5	0	5	0	0			
Green	7	7	6	5	0	0	6	3			
Blue	5	1	0	0	0	0	0	0			
	26	22	11	10	0	5	6	3			
		48		21		5		9			

Conclusions

For all colors the E/T Lights overall had more positive visibility identifications than the competitors tested against it. This was especially evident at greater distances and longer activation times.

E/T Light- It can be seen from each chart that the E/T light is able to maintain slope value closest to zero of all the competitors, meaning that as the E/T Light is left on for up to 72 hours it remains visible.

E/T Light Slope	
300ft	-0.0125
900ft	-0.0125
1/4 Mile	-0.08333
1/2 Mile	-0.0875

Lazer Brite – Lazer Brite came in second for positive visibility identifications and remained competitive to the E/T light when first activated, however as the Lazer Brite was left activated for periods up to 72 hours, its visibility was reduced significantly.

Lazer Brite Slope	
300ft	0
900ft	-0.19583
1/4 Mile	-0.38333
1/2 Mile	-0.40833

V-Light – V-Light came in third for positive visibility identifications and was only competitive with the E/T Light at 300ft. The visibility was reduced at increased distances and as the V-Light was left activated for periods up to 72 hours. With the most negative slope, the V-light had the worst performance of all competitors when left on for any period of time.

V-Light Slope	
300ft	-0.05

900ft	-0.48333
1/4 Mile	-0.45417
1/2 Mile	-0.46667

Brite Strike – Brite Strike performed the poorest overall of all the competitors tested. Even at immediate activation and at the shortest distance Bright Strike still had negative visibility by some observers.

Bright Strike Slope

300ft	-0.31667
900ft	-0.31667
1/4 Mile	-0.28333
1/2 Mile	-0.28333