LENCO ARMORED VEHICLES

Protecting Our Nation's Defenders™

December 27, 2019

Naperville Police Department
1350 Aurora Avenue
Naperville, IL 60540

Re: Lenco Sole Source for the Lenco BearCat®

To Whom it May Concern,

This letter is to inform you that Lenco Armored Vehicles is the **Sole Source Manufacturer** for the **Lenco BearCat®** or the equivalent.

- We employ secret and proprietary processes in the design and manufacture of the Lenco BearCat to provide superior ballistic performance at a lighter weight than any competitive vehicles.
- We employ a patented, zero gravity counter balanced roof hatch system which enhances operator safety and security.
- We have developed secret engineering processes to offer a turning radius of 17' 8", which is shorter than the overall length of the vehicle, thereby providing enhanced tactical maneuverability.
- We employ secret and proprietary processes to modify the vehicle chassis to re-distribute the armor, chassis and occupant weights proportionately between the front & rear axles.

We are the **only manufacturer**, distributor, authorized dealer or supplier of this product or its equivalent.

Expanded explanations on the above Sole Source statements:

1. With regard to the secret and proprietary process to provide superior ballistic performance at a lighter weight, the Lenco BearCat armor is made with ½ inch thick Mil Spec steel. Specifically, the walls are 1 piece solid through, and they extend from the front bumper to the rear bumper as one solid contiguous unit. This process is not done by any other armored vehicle manufacturer. Other armored vehicle companies utilize sections, which increases the number of vulnerable areas through the excessive use of seams, welds, and overlaps; also making the vehicle heavier. Other manufacturers also use layered armor systems, such as 2 layers of ¼ inch connected by tubular framing. This process reduces their vehicle's ability to repel even medium caliber rifle rounds on their outer shell and also dramatically increases total weight, thereby making the vehicle less responsive.

2. With regard to the zero gravity counter balanced roof hatch, this Lenco exclusive option is critical in that during a gun battle or other emergency, should the roof hatch need to be rapidly closed to protect occupants from gun fire, the zero gravity system prevents unnecessary overpull, commonly seen in lesser vehicles that use gas rods for holding the hatch open. Gas rods resist closure up until the 50% aperture, then completely release all pressure, commonly causing head and/or facial injuries.

3. The Lenco BearCat is the only armored rescue vehicles with a 131" wheelbase, allowing it to have an inside turning radius of 17'8". All other armored vehicle manufacturers use the OEM wheel base of 145 inches. Being able to turn the vehicle around in a city street with one quick revolution, without having to make a three point turn is critical in tactical response, especially against a potential terror threat that may be actively terrorizing a community, as was the case in San Bernardino, CA.

Further to the point above, the shorter wheel base allows for overhang/cantilever weight off the back end, assisting in the braking process. Armored vehicles that do not have enough rear end weight extending past the rear tires have dangerous braking attributes. The Lenco process also reduces forward pressure on the front axle and front brakes, which are the primary components to all safe braking distances.

4. Attached is U.S. Army Aberdeen Performance testing demonstrating our braking capability along with many other useful characteristics, such as tilt table strengths. No other commercial armored vehicle builder has conducted U.S. Army Aberdeen performance testing.

Sole Source References:

Burbank Police Department	Lt. Mike Albanese	805-857-9243
Illinois State Police	Captain Robert Haley	217-557-1278
Massachusetts State Police	Major Rich Prior	617-590-1453
Rhode Island State Police	Tom Chabot	401-474-5164
St. Charles County Sheriff's Office	Captain David Todd	636-949-3001
Oklahoma Highway Patrol	Lance Schroyer	918-304-9021

Sincerely,

James J. Massery

SWORN TO AND SUBSCRIBED BEFORE ME,
This 27th day of December, 2019

Carrie A. MacKinnon
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
June 29, 2023

CARRIE A. MACKINNON
A NOTARY PUBLIC IN & FOR
The State of Massachusetts/County of Berkshire
Commission Exp. 06/29/2023

U.S. ARMY ABERDEEN TEST CENTER
ABERDEEN PROVING GROUND, MARYLAND 21005-5059
TEST RECORD

21 MAY 2007

ATEC Project No.: 2007-DT-ATC-AFSPT-D2979
Test Type and Title: Armored Vehicle Roll-Over Test

Dates of Test: 13 November 2006 through 1 March 2007

Authority: ATEC Decision Support System 14 September 2006

Test Record No.: AD-V-25-07

TEST ITEM

One Ballistic Engineered Armored Response Counter Attack Truck (BearCat), vehicle identification number (VIN) 1FDA57P76EC11173, was provided by Lenco Industries of Pittsfield, Massachusetts, for testing at the U.S. Army Aberdeen Test Center (ATC), Aberdeen Proving Ground (APG), Maryland.

The Lenco BearCat is an armored personnel carrier constructed on a commercially available Ford Motor Company F-550 Chassis with modifications by Lenco Industries providing seating capacity for ten passengers. Modifications include a shortened wheelbase, a one-piece armor hull constructed of 1.27 centimeter (cm) (0.5 inches (in.)) thick high-hard certified ballistic steel, ballistic glass, nine gunports and a myriad of other available options. The U.S. Air Force Space Command, Directorate of Security Forces, intends to utilize the BearCat as a standardized security vehicle at Peterson Air Force Base, Colorado, in replacement of their current High Mobility Multi-purpose Wheeled Vehicle (HMMWV) fleet.

SUPPORTING FACILITIES AND INSTRUMENTATION

a. Facilities

(1) ATC Engineering Test Facility (Building 436)

(2) ATC Tilt Table

(3) ATC Munson Test Area (MTA)

(4) ATC Perryman Test Area (PTA)

(5) ATC Churchville Test Area (CTA)

(6) Philips Army Airfield (PAAF)

TABLE 9. AVERAGE MAXIMUM EFFORT BRAKE STOP RESULTS OF THE BEARCAT AT GCW, PAVED SURFACE

Speed at Brake Apply		Normalized Measurement			
		Stopping Distance		Deceleration	
kph	mph	m	ft	m/sec^2	ft/sec^2
32	20	8.2	27.1	4.9	16.0
48	30	15.5	50.7	5.8	19.1
64	40	29.6	97.1	5.4	17.7
80	50	43.7	143.3	5.7	18.8
97	60	70.1	229.9	5.2	17.0
113	70	102.0	334.8	4.8	15.8

(2) Secondary Road. Additional brake testing was conducted at PTA "A" course, an improved secondary road, in order to assess the braking ability and vehicle stability while operating on secondary roads. The braking capabilities of the BearCat were determined by measuring the distance required to stop from road speeds of 32 kph (20 mph) to a maximum speed of 56 kph (35 mph) using maximum pedal effort to apply the service brakes. The results of the secondary road brake testing are presented in Table 10.

TABLE 10. AVERAGE MAXIMUM EFFORT BRAKE STOP RESULTS OF THE BEARCAT AT GCW, SECONDARY ROAD

Speed at Brake Apply		Normalized Measurement			
		Stopping Distance		Deceleration	
kph	mph	m	ft	m/sec^2	ft/sec^2
32	20	8.2	27.1	4.9	16.0
48	30	15.5	50.7	5.8	19.1
56	35	25.2	82.7	4.9	15.9

l. Steering and Handling. TOP 2-2-609, Steering, was used as a general guide for determining the steering and handling characteristics of the BearCat.

Test Record No. AD-V-25-07

DISTRIBUTION LIST

Addressee	No. of Copies
Commander U.S. Army Developmental Test Command ATTN: CSTE-DTC-TM-T (Mr. David Zupko) 314 Longs Corner Road Aberdeen Proving Ground, MD 21005-5055	1
HQ Air Force Space Command Directorate of Security Forces ATTN: A7SXF (Mr. John Barrows) 150 Vandenberg Street, Suite 1105 Peterson AFB, CO 80914-4560	5
HQ Air Force Security Forces Center ATTN: SMSgt Justin Banks 1517 Billy Mitchell Blvd, Bldg 954 Lackland AFB, TX 78236-0119	1
HQ Air Force Space Command Directorate of Logistics ATTN: A4RMM (Mrs. Peggy Hill) 150 Vandenberg Street, Suite 1105 Peterson AFB, CO 80914-4560	1
Commander U.S. Army Aberdeen Test Center ATTN: CSTE-DTC-AT-AD-V (Mr. Bill Mullis) 400 Colleran Road Aberdeen Proving Ground, MD 21005-5059	3

Secondary distribution is controlled by HQ Air Force Space Command, ATTN: Mr. John Barrows.

Figure 4. The BearCat ascending the 60-percent longitudinal grade.

Figure 5. The BearCat descending the 60-percent longitudinal grade.

g. Tilt Table. The static rollover threshold of the BearCat at GCW was measured using the ATC Tilt Table. Maximum side slope angle (accuracy ±0.2 degree of reading) and simulated lateral acceleration (accuracy ±0.01 degree of reading) were determined with both the left and right side of the vehicle positioned upslope. Static rollover results are presented in Table 7. A photograph of the BearCat on the Tilt Table is shown in Figure 6.

TABLE 7. STATIC ROLLOVER THRESHOLD RESULTS OF THE BEARCAT

Vehicle Side Upslope	Wheel Location	Rollover Measurement			
		VCW		GCW	
		Side Slope, degree	Simulated Lateral Acceleration, *g*	Side Slope, degree	Simulated Lateral Acceleration, *g*
Driver side	Axle 2 outside	37.0	0.75	36.4	0.74
	Axle 2 inside	37.7	0.77	36.8	0.75
	Axle 1	37.9	0.78	36.8	0.75
Curb side	Axle 2 outside	36.8	0.75	36.4	0.74
	Axle 2 inside	37.7	0.77	37.6	0.77
	Axle 1	38.2	0.79	37.6	0.77

Figure 6. BearCat on the Tilt Table at rollover threshold.

h. Side Slope Operation. The ability of the BearCat to traverse the 20 percent, 30 percent and 40 percent side slope was tested at MTA. The BearCat successfully negotiated the 20 percent, 30 percent and 40 percent side slopes with each side upslope while performing a sinusoidal steering pattern the length of the course at a speed of approximately 8 kilometers per hour (kph) (5 miles per hour (mph)). A photograph of the BearCat traversing the 40 percent side slope is presented in Figure 7.

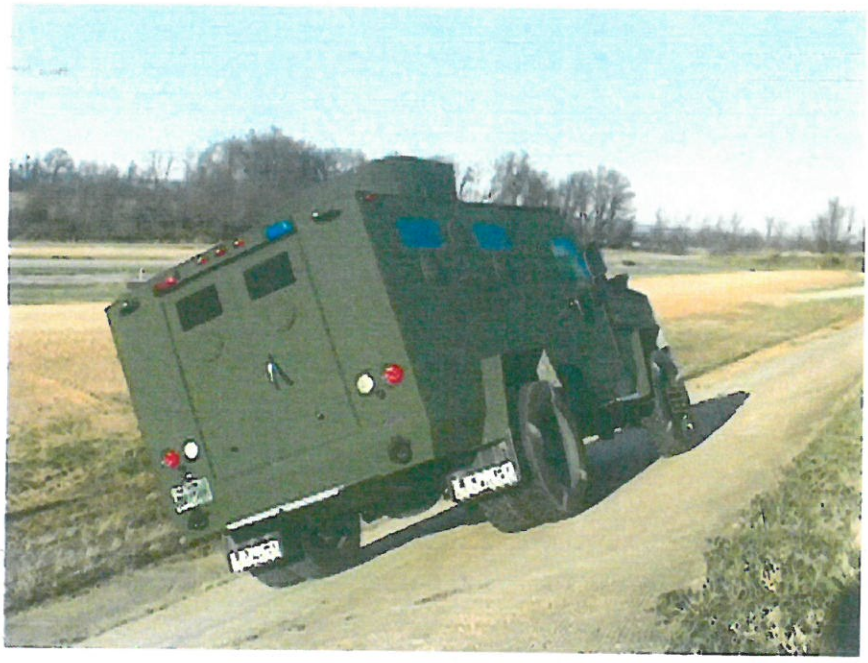

Figure 7. The BearCat negotiating the 40-percent side slope.

i. Standard Obstacles. TOP 2-2-611, Standard Obstacles, was used as a general guide for conducting this test.

(1) Vertical Wall. The ability of the vehicle to negotiate a 45.7 cm (18 in.) vertical wall in the forward and reverse direction in both the ascending and descending directions was assessed with the vehicle at GCW. The BearCat was unable to successfully negotiate the 45.7 cm (18 in.) vertical wall in the forward direction when approaching the obstacle at a perpendicular attitude. The vehicle was able to negotiate the wall only after the rear axle was positioned at an oblique angle, allowing each read wheel to climb independently. No problems were noted while performing this task in the descending direction. A photograph of the BearCat climbing the 45.7 cm (18 in.) vertical wall in this manner is shown in Figure 8. The vehicle was not able to climb the vertical wall in the reverse direction due to interference between the fuel tank armor and the top of the wall. As a result, the vehicle was not able to navigate the wall in the descending direction due to the same interference. A photograph of the interference between the fuel tank armor of the BearCat and the top of the vertical wall is shown in Figure 9.