ROUTING AND TRANSMITTAL SLIP 15 November 1988

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. PROCUREMENT MANAGEMENT STAFF/OL		
2.		
3.		
4.		
5.		

Action	File	Note and Return
Approval	For Clearance	Per Conversation
As Requested	For Correction	Prepare Reply
Circulate	For Your Information	See Me
Comment	Investigate	Signature
Coordination	Justify	

REMARKS

#1 FOR ACTION: PLEASE PROVIDE APPROPRIATE RESPONSE WITH DROP COPY TO DDA AND DDCI.

SUSPENSE: 28 NOVEMBER 1988

cc: D/OS

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

STAT

	Room No.—Bldg.
	Phone No.

5041-102

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

☆ GPO: 1983 O - 381-529 (232)

EXECUTIVE SECRETARIAT
ROUTING SLIP

TO:		ACTION	INFO	DATE	INITIAL
1	DCI				
2	DDCI		X		
3	EXDIR				
4	D/ICS				
5	DDI				
6	DDA	X			
7	DDO				
8	DDS&T				
9	Chm/NIC				
10	GC				
11	IG				
12	Compt				
13	D/OCA				
14	D/PAO				
15	D/PERS				
16	D/Ex Staff				
17					
18					
19					
20					
21					
22					
	SUSPENSE		Date		

Remarks To # 6: Direct response, with info to DDCI, please.

STAT

ER 88-4214X

Executive Secretary
9 Nov '88
Date

3637 (10-81)

Executive Registry
88-4214X

American Eagle Security Corporation

1700 Wyatt Drive, Suite 1
Santa Clara, CA 95054
(408) 496-1256
FAX: (408) 496-0358

OS REGISTRY
1-1-TEC-CR
16 NOV 1988

DDA/REG LOGGED

DDA – This guy approached me at a recent Air Force gathering – claiming he had been unable to get a hearing from us. Over to you. RG

DATE: 1 November 1988

ORGANIZATION: CIA

LOCATION: Box 1925

ATTENTION: Mr. Robert Gates, DDCI

SUBJECT: Integrated Electronic/Information Security

Dear Mr. Gates:

May I take this opportunity to gratefully "Thank You" for granting me a few moments of your valuable time.

Speaking with you for those few moments was and is truely an honor that I will never forget.

As was mentiuoned during those brief moments, American Eagle Security has previously submitted material, through the designated pipeline, for purusai.

If I may seem so bold; we have enclosed information on a product that is unique to the described situations.

This product, at present, is solely available through us. If after you and or your designated personnel puruse this feel that a formal presentation would be in order, we will be more than happy to arrange same.

Again, "Thank You" for the opportunity of speaking with you.

Sincerely,

John D. Gumm
Manager Special Projects

FIBER OPTIC SENSING AS APPLIED TO INTRUSION DETECTION SYSTEMS

Fiber optics as a viable technology is relatively new, being approximately thirteen years old.

Fiber optic sensing of physical effects has been pursued by a number of different groups over the past ten years. The appeal for this technology is drawn from the inherent properties of light guided in fiber. The light is completely immune to electro-magnetic interference and can travel greater distances with negligible power loss. Technical advances in fiber manufacturing allows fiber to be configured to meet almost any form factor while maintaining strength, durability, and long life.

Fiber interferometric sensors developed for vibration, acoustic, thermal, rotational, and frequency detection have shown superior performance to conventional technologies in recent years. Efforts by a number of manufacturers to produce sensors for industry applications have been hampered for the following reasons:

1- **High cost of fiber.**
2- **Short lifespan and high cost of fiber components, i.e. power splitters, interconnects, and semiconductor light sources.**
3- **The complexity of fiber configuration to produce superior performance.**

The recent "boom" in the telecommunications industry utilizing fiber for information distribution has eliminated the first two areas of concern through refined designs and mass production. In most cases, the third item still exist due to requirements for specialized fiber components for high performance interferometric sensors. These specialized components are required to maintain a constant state of polarization of light traveling through the fiber components. Current polarization preserving components have marginal reliability and life expectancies and are significantly higher in cost (up to 50 times more expensive) than their telecommunications counterparts. As a result, most fiber interferometric sensors remain research laboratory experiments.

In January of 1988, a corporation utilizing a group of fiber optic engineers developed a fiber configuration for interferometric(acoustic, vibration and motion) sensors which could utilize standard telecommunications grade fiber and components with no requirements for optical polarization preservation. This technique has a patent pending through this corporation. This corporation is currently developing a number of products in the security and telecommunications industry utilizing this technique and has initiated production of one such product.

A by-product of this research and product development addresses the utilization of this technology as an **Intrusion Detection Sensor** for perimeter systems.

A fiber optic sensor system deployed for this purpose has many advantages over the current available technologies utilized in today's perimeter detection systems. These advantages include, but are not limited to the following:

1- **Remote deployment** - up to 30 km distance per zone.
2- **EMI** - sensitivity adjustable.
3- **Tamper proof** - generates a distance adjustable signal prior to physical contact with the fiber cable.
4- **Single-line sensor** - can be installed as an open cable or in conduit with the ability to interrogate point of intrusion within 1 cm.
5- **Commercially available** - all components except the transducer(sensing element) are off-the-self.
6- **Programmable** - sensitivity both during construction and after deployment is programmable, up to two orders of magnitude which may be used to fine tune the sensing with respect to false/nuisance alarms.
7- **Multiple sensing** - acoustic, thermal, vibration/seismic, frequency, etc.
8- **Environmental** - virtually unaffected by wind, rain, snow, hail, soil conditions, lightening, salt, water, vegetation, etc.
9- **Application** - single-line sensor(up to 30 km) or a mat configuration(300ft x 15/30ft).
10- **System interfaces** - RS 232, RS 485, 20 mil, etc.
11- **Cost effective** - considerable cost savings in product cost, installation cost, training cost, maintenance cost, spare parts cost, etc,.
12- **Transportable** - when used in conjunction with a RF device, this system can be moved easily from site to site(land, air or sea).

Proceeding with these advantages in mind, the current development program involves the utilization of this technology to provide intrusion detection sensors on and around perimeters that maintain a NAR/FAR of zero and a probability of detection of 100. The development involved is only relevant to the criteria specified for the transducer verses development of an entire system. While the fiber optic cable itself provides specific sensing qualities to circumvent tampering of the cable, the transducer unit(s) actually identifies the parameters to which the sensor will respond; i.e. the sensitivity level for detection, the distance of that detection, the types of detection, and those parameters which are undesirable to detect.

There are two products currently available for perimeter intrusion detection. The first is a **single-line** sensor that utilizes a fiber optic cable and a transducer per zone which can be installed on a fence in conduit, PVC, or a special jacketed configuration. This single-line sensor can also be installed on/in the ground and inside or outside the protected area.

The second product is a **mat configuration** that is designed to premanufactured lengths and widths to facilitate ease of installation. The mat is constructed in a porous chicken wire type pattern with a special outer fabric over fiber optic cabling. For applications on a fence, the mat would be installed on the inside of the fence with conventional fasteners to secure the mat to the fence on a zone by zone basis. For applications on the ground either side of the fence, the mat can be constructed such that is could be rolled-off the back of a truck directly onto the ground. In this particular application, the mat is extremely conducive to high security applications where **non-stationary** and **transportability** are issues.

Beyond the perimeter usage, research and development continues for product use in areas where the **identification of emissions** is critical. Additional development addresses the use of this technology as a viable biometric device in the security industry. The furtherance of sensor technology research required to respond to the rapidly changing and growing demands of the security community coupled with improved manufacturing capabilities will produce a more cost effective and flexible product.