Technical Report No. LWL-11B71

LEATHER SUBSTITUTE FOR MILITARY DOG EQUIPMENT

Final Report

by
E. Scott Tomlinson
Biological Sciences Branch

May 1973

U. S. ARMY LAND WARFARE LABORATORY
Aberdeen Proving Ground, Maryland 21005

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ABSTRACT

Reinforced poromeric material (Corfam) in industrial-grade thicknesses was evaluated as a leather substitute for fabrication of military dog equipment.

User evaluations indicate that industrial-grade Corfam substrate, alone or laminated with polyurethane-coated substrate, possesses physical/comfort qualities of equivalent grade leathers.

Poromeric materials are not subject to biological degradation nor do they absorb water. These properties greatly reduce the required maintenance while increasing the life expectancy of the equipment. The ultimate cost of Corfam equipment is probably at least competitive with that of leather.

FOREWORD

The work herein described was undertaken under the following USALWL Tasks: 14-BA-68, Lightweight Weather Resistant Dog Harness; 02-BA-70, Weather Resistant Durable Dog Muzzle; 10-BA-71, Corfam Dog Equipment; and 11-B-71, Leather Substitute Equipment for Military Dogs.

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INTRODUCTION

From the time man domesticated the dog as a working animal, leather has been one of the basic materials in the fabrication of equipment for restraint and control. In today's Armed Forces dog programs this equipment includes a harness, collar, leash and muzzle as the major items.

The properties which led to the use of leather for fabricating dog equipment are strength, pliability, and softness. These properties, however, are to be found only under temperate environmental conditions. Leather is a biological by-product, subject, especially in a hot-wet climate, to degradation through decomposition, rot, mildew, abrasion, and flexing. In cold weather leather becomes rigid and is subject to cracking. The life span of leather in any environment is directly related to its maintenance and care. To increase the life expectancy and at the same time reduce the required maintenance of military dog equipment, it is necessary to change or improve the basic raw material from which it is fabricated.

An attempt to change or improve the quality of the leather *per se* was made by substituting russet leather for raw or regular leather. The life span of russet leather dog equipment in the Handler's School at the Military Working Dog Center, Lackland Air Force Base, Texas, is approximately eight months as compared with six months for regular leather.

Nylon webbing and cord were also evaluated by the Armed Forces as a basic material for dog equipment. Neither of these two leather substitutes was found acceptable.

Another approach to the problem is to find a true leather substitute -- a material with the same general characteristics and properties as leather, but superior in durability and maintenance requirements. The only materials presently available that appear to meet these specifications are so-called poromerics. The present report describes work that was undertaken to evaluate reinforced, industrial-grade, poromeric materials as a replacement for leather dog equipment.

CONCLUSION

Military dog equipment fabricated from industrial-grade, poromeric substrate and polyurethane-coated substrate are comparable to leather dog equipment with respect to "wearability" and strength under temperate environmental conditions. Under hot-wet conditions, poromeric materials are not subject to biological degradation and they are superior to leather at low temperatures where moisture plus freezing render leather unserviceable. Under all environmental conditions, poromeric materials require minimal maintenance and care.

The increased life span of military dog equipment fabricated from poromeric materials will reduce the overall cost, even though there may be a slight increase in the initial cost of the equipment compared with the cost of leather equipment.

MATERIALS AND GENERAL PROCEDURES

Materials.

The poromeric material known as Corfam was used in the present evaluation.[1] Corfam substrate is a coriaceous, non-woven sheet made of urethane polymer base reinforced with polyester. Several types of industrial-grade Corfam, utilizing reinforced substrate have been marketed.

An investigation of all known manufacturers of poromeric materials showed that industrial-grade Corfam was the only poromeric commercially available in thicknesses comparable to the leather used to fabricate military dog equipment. Accordingly, only industrial grades of Corfam were considered as a leather substitute in this investigation.

Industrial-grade Corfams were available in the following categories:

a. Unreinforced substrate.

b. Substrate impregnated with polyurethane: 69-001, 69-002, 69-003, decreasing in hardness.

c. Substrate single-coated with polyurethane: 69-101.

d. Substrate single-coated with nitrile rubber compound: 29-101.

e. Substrate single-coated with silicone: 49-101.

f. Substrate impregnated with Teflon TFE-fluorocarbon resin: 99-001.

g. Substrate single-coated with Teflon TFE-fluorocarbon resin: 99-101.

All materials were available in the following thicknesses: .045 inch, .075 inch, .125 inch; additionally, 69-101 was available in thicknesses of .150 inch and .175 inch.

Corfam 69-101, 69-001, 69-003, 29-101 and unreinforced dyed substrate were employed in this investigation. Each material was fabricated into dog equipment in accordance with existing military specifications for the equipment.

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[1]Corfam is a trade name of the poromeric material manufactured by E.I. DuPont de Nemours & Co., Wilmington, Del. In 1972 Corfam rights were sold to George Newman & Co., Boston, Mass., who market the substrate as N-360.

Prototype equipment was sent to various military dog units for field evaluations that extended from 30 days to eight months.

Procedures.

An initial prototype harness was fabricated from Corfam 69-001 (substrate impregnated with polyurethane). This material is stiff and inflexible; however, it is extremely resistant to abrasion. The Military Working Dog Center, Lackland Air Force Base, Texas, and HQ Detachment, Scout Dog, Fort Benning, Georgia, were tasked as user evaluators. Each agency was requested to evaluate several pieces of dog equipment fabricated from Corfam 69-001. Subsequently, four muzzles made of 69-001 were sent to MWDC and four harnesses plus one muzzle were sent to the U. S. Army Scout Dog Detachment. At the end of a thirty-day evaluation, both of these users indicated that they would prefer a softer, more pliable material (see Appendix A). The Air Force evaluators suggested, in addition, changing from copper rivets to semi-tubular, cadmium-plated steel rivets with caps. See Appendix B.

Based on the results of the initial evaluation, several muzzles were fabricated from .075 inch, 69-101 Corfam single-coated with polyurethane. These muzzles proved to be too thin and flexible. The Corfam, being only .075 inch thick and 5/8 inch wide, stretched sufficiently to allow the material to pull loose around the rivet heads.

An investigation was initiated to find a better reinforcing material or combination of reinforced substrates which would provide the strength and durability required for military dog equipment, yet still be flexible and soft for the dog's comfort. After various combinations of reinforced Corfam had been tested, the following selections were made for further user evaluation:

a. Collar:

(1) Two layers of 69-003 Corfam, .125 inch thick.

(2) Two layers of Corfam unreinforced substrate, .125 inch thick.

b. Leash: One layer of Corfam substrate, .125 inch thick.

c. Muzzle: One layer of substrate, .075 inch thick, laminated with one layer of 69-101 Corfam .075 inch thick.

d. Harness: One layer 69-002 Corfam .075 inch thick laminated with one layer of Corfam substrate, .125 inch thick.

e. Holder: One layer of 29-101 Corfam, .075 inch thick.

Twenty-four sets of equipment were hand-fabricated and distributed in June 1971 for field evaluation. Twelve sets of Corfam equipment were sent to the 212th MP Co., Long Binh, Republic of Vietnam. Twelve sets were sent to the Directorate of Security Police, USAF. The twelve sets sent to USAF were to be distributed as follows: one set to Washington, D. C., Metro Police; one set to Military Police, Military District of Washington; two sets to the Canine Training Group, U. S. Military Police School, Fort Gordon, Georgia; three sets to Europe; three sets to Southeast Asia; and one set retained in Air Force Headquarters.

The evaluation by the 212th MP Co., was abbreviated due to excessive stretching of one leash, and tearing/breaking of another leash at the rivet, near the snap. It was also discovered that collars fabricated from Corfam 69-003 tend to crack on the surface under constant flexing and strain.

The six-months evaluation by the Air Force indicated that the collar fabricated from dyed Corfam substrate and the harness were acceptable. The muzzle received both favorable and unfavorable comments. Some handlers found that it was too stiff, with sharp edges on the straps, while others reported that it did "break in" with time and was comfortable for the dog. See Appendix C.

The elasticity of Corfam substrate leashes created initial problems for all handlers. When a dog would lunge forward, the leash, instead of restraining him, would stretch and then retract, snapping the dog back. Even though several handlers learned to use this unique property of Corfam leashes to their advantage, the Corfam substrate leash was discontinued and replaced by a Dacron webbing leash.

To provide a more thorough evaluation by the Army, the USAIS Military Dog Detachment, Fort Benning, Georgia, was requested to evaluate six sets of equipment as follows:

a. Collar: Two layers of Corfam dyed substrate, .125 inch thick.

b. Harness: One layer of Corfam 69-101, .125 inch thick, laminated and sewn to one layer of Corfam dyed substrate, .125 inch thick.

c. Muzzle: One layer of Corfam 69-101, .075 inch thick, laminated and sewn to one layer of Corfam dyed substrate.

d. Holder: One layer of Corfam 69-101, .125 inch thick (new design 3-3/4 inches wide).[2]

e. Leash: One-inch Dacron webbing with a one-inch wide handle of Corfam 69-101, .125 inch thick.

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[2]At the time of this evaluation of Corfam material the U. S. Army was evaluating a new design for the equipment holder. The holder contains multi-snaps and D-rings and is increased in width to 3-3/4 inches.

At the conclusion of an eight-months evaluation in March 1973, the Military Dog Detachment reported minimal wear and/or deterioration of the Corfam equipment. No discomfort to the dog was reported. The Dacron leash, fabricated from an untreated webbing, did fray due to snagging on bushes and general wear, but did not become unserviceable (see Appendix D).

DISCUSSION

Cost of Corfam Compared with That of Leather.

The present cost of Corfam (substrate undyed) is as follows:[3]

150 mil - $1.75 per square foot.
110 mil - $1.27 per square foot.
100 mil - $1.19 per square foot.
75 mil - $1.00 per square foot.

Substrate, single-coated with polyurethane, is available at a cost of approximately $.25 per square foot more than the price of the plain substrate.[4]

While the cost of the base material required to fabricate a piece of dog equipment may be twice that of leather, the purchase price of the completed Corfam item would probably not be more than 25 percent greater. This results from the fact that the same basic methods used to fabricate a piece of equipment from leather can be used to fabricate the equipment from Corfam. For example, the present cost of a leather military dog harness is $3.69. The cost of 100 square inches of tanned leather required to produce this harness is approximately $.96, while the cost of Corfam needed to make a harness (100 square inches of substrate and 100 square inches of 69-101) totals $1.90. However, the cost of a Corfam harness to the Government would be approximately $4.62.

Life Expectancy.

The Corfam equipment evaluated by the U. S. Army and the U. S. Air Force remained serviceable with apparently minimal wear or deterioration, for a longer period of time than the leather equipment used by the Handler School of the Military Working Dog Center. The eight months during which the Corfam equipment was evaluated by the Military Dog Detachment exceeds the normal life span of russet leather equipment.

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[3]George Newman & Co. prices for N-360 substrate.

[4]George Newman produces the N-360 substrate which is then sent to E.I. DuPont to be single coated with polyurethane and forwarded to the customer.

An accurate estimate of the life expectancy of Corfam dog equipment cannot yet be determined due to the fact that the equipment used for evaluation has not been reported unserviceable. It is fair to assume that most of this equipment remains in continuous use.

Maintenance.

Corfam equipment requires minimal maintenance. While the substrate will stain, most dirt can be removed by normal cleaning. Poromeric materials do not absorb water; therefore, Corfam does not require oiling or softening agents to retain its flexibility.

APPENDIX A

Thirty-Day Evaluation by U. S. Army of Polyurethane Impregnated Poromeric Harnesses and Muzzles.

DEPARTMENT OF THE ARMY
United States Army Infantry Center
Headquarters Detachment Scout Dog US Army
Fort Benning, Georgia 31905

14 July 1969

Mr. E. Scott Tomlinson Jr.
Biological Sciences Branch
US Army Limited War Laboratory
Aberdeen Proving Ground, Maryland 21005

Dear Mr. Tomlinson:

This letter is the informal evaluation you requested concerning the corfam and nylon harnesses. The harnesses and muzzles minus the one corfam harness are being sent under separate cover.

The nylon harnesses will be discussed first. Generally the nylon had the following results.

1. "D" rings too light and pulled out.

2. Snaps held real well but as can be seen were pulling out of the webbing.

3. The harnesses were too small for the average german shepard. The chest straps were too short.

4. The nylon, as can be seen, was hard to clean thoroughly. Also retained odor of dog.

5. There was no real difference between the width of the straps for the chest strap.

The corfam muzzles and harness will now be discussed.

1. Overall, they held up real well. They are more durable than the leather type and require less maintenance.

2. The harness and muzzles are too stiff. This causes problems in rubbing or chafing the dogs. This stiffness also causes a problem of discomfort to the handler when he is wearing all his web and field equipment.

14 July 1969

3. These particular muzzles were large enough , however the harness was too small. Again, the chest strap should be longer.

4. The one corfam harness, after being tested and turned in to supply, disappeared. I apologize for this.

5. It is felt if the corfam can be made more pliable it would be better all around as far as maintenance and longevity. The stiffness is the big drawback at the present time. Of course, sizing can be accomplished with no problem.

If further evaluation or comments are needed, please contact the unit.

George M Massey

GEORGE M. MASSEY
Major, Infantry
Commanding

APPENDIX B

Thirty-Day Evaluation by U. S. Air Force of Polyurethane Impregnated Poromeric Harnesses and Muzzles.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS SAN ANTONIO AIR MATERIEL AREA (AFLC)
KELLY AIR FORCE BASE, TEXAS 78241

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REPLY TO ATTN OF: SASFC

6 May 1969

SUBJECT: Dog Muzzle Evaluation

TO: CRDLWL-7C
Department of the Army
Attn: Mr. E. Scott Tomlinson, Jr.
U. S. Army Limited War Laboratory
Aberdeen Proving Ground, Maryland 21005

1. As requested by your letter of 19 March 1969, the two corfam muzzles provided by your organization were tested by Handlers assigned to this organization.

2. The following observations are forwarded for your information:

a. Material: The stiffness of the material caused some difficulty. While the basket held its shape quite well, considerable difficulty was experienced while buckling the straps. This was most noticeable since muzzles were used on numerous dogs and required constant adjustment.

b. Construction: Rivets used were unsatisfactory. Rivet heads tended to bend, producing sharp edges. Rivet edges did cause lesions on face and muzzle of some dogs.

c. Durability: Muzzles were extremely durable during use. There seems to be little or no evidence of wear and tear on the corfam surfaces. One muzzle was constantly dipped in disinfectant solution and did not lose its shape or become saturated. One wet muzzle was deliberately frozen with no appreciable effect.

3. The following recommended improvements are submitted for your consideration:

a. Rivets: Recommend use of cadmium plated steel, semi tubular rivets with caps. Caps placed on outside of muzzle.

b. Construction: Vertical straps and nose strap should be skived where joined by rivets. Skiving most critical at end of vertical straps in order to lower rivet heads and provide additional clearance under dog's jaw.

c. Material: A lighter grade of corfam should be considered in order to give muzzle more flexibility.

4. The subject muzzles, modified as recommended, would be considered satisfactory for use by this facility. Test results indicate a considerable increase in the serviceable life of a muzzle with particular value in large scale clinical operations where muzzles are subjected to constant moisture.

R. M. SULLIVAN, CAPT, USAF
Commander, Military Working Dog Center
Det 37, Hq SAAMA (AFLC)

APPENDIX C

Ninety-Day Evaluation of Dog Equipment Fabricated from Poromeric Materials.

DEPARTMENT OF THE ARMY
212th Military Police Company (Sentry Dog)
APO San Francisco 96491

AVBGE-H-M

3 August 1971

SUBJECT: Interim Report on CORFAM Dog Equipment

THRU: ~~Commanding Officer~~ 12-4-71
720th Military Police Battalion
APO 96491

~~Commanding Officer~~ 5 Aug 71
89th Military Police Group
APO 96491

TO: Commanding General
18th Military Police Brigade
ATTN: AVBGC-P
APO 96491

1. Reference 18th MP Bde correspondence 9 July 71 concerning a request that we conduct a six month evaluation of eleven sets of Corfam dog equipment.

2. The Corfam equipment was issued 19 July 71 with a like amount of new leather equipment. On 23 July 71 during agitation training one of the leashes broke close to the snap end. The dog weighed 86 pounds. There were no injuries sustained. On 2 Aug 71 during obedience training a dog handler was making a correction and the metal snap broke. The dog weighed 81 pounds. There were no injuries sustained.

3. In general the leashes have begun to loosen around the rivets and the collars are cracking. It appears that this equipmant does not meet the standards that it was reputed to.

4. As serious injury can result from faults in this Corfam dog equipment, I recommend that it be recalled and further tested as to it's durability and reliability.

Charles R Wells

CHARLES R. WELLS
1LT, MPC
Commanding

AVBGC-P (3 Aug 71) 1st Ind CPT REASS/rdl/926-5124
SUBJECT: CORFAM Dog Equipment

DA, Headquarters, 18th Military Police Brigade, APO 96491

17 AUG 1971

TO: Commanding General, USARV, ATTN: ACTIV, APO 96384

1. Basic correspondence points out problems that have arisen in the utilization of the CORFAM Dog Equipment which was received by this headquarters.

2. This headquarters concurs with the recommendation of the basic correspondence that the 212th MP Company (SD) evaluation of the CORFAM Dog Equipment be terminated.

3. In the interim this headquarters has advised the 212th MP Company (SD) to suspend utilization of the CORFAM Dog Equipment for safety reasons.

FOR THE COMMANDER:

T. W. Pauling

T. W. PAULING
1LT, AGC
Asst Adjutant

Incl 1

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DEPARTMENT OF THE ARMY
ARMY CONCEPT TEAM IN VIETNAM
APO SAN FRANCISCO 96384

IN REPLY REFER TO:

AVIB-RD

31 AUG 1971

Subject: Evaluation of Corfam Dog Equipment

Commanding Officer
US Army Land Warfare Laboratory
Aberdeen Proving Ground, Maryland 21005

1. On 19 July 1971, eleven sets of Corfam dog equipment were made available to the 18th Military Police Brigade for evaluation purposes. This equipment consisted of leashes, collars, and harnesses.

2. As indicated in the attached report, Inclosure 1, there were several major deficiencies noted. These were: the material of one leash separated, one snap-clasp broke, rivets failed to hold the Corfam material in a loop, the material is cracking, and a five foot leash was stretched a total of 13 inches.

3. In view of the type and number of deficiencies of the equipment, the unit has been advised to terminate the evaluation. All equipment is being returned to your laboratory.

4. It is recommended that an analysis be conducted on the Corfam equipment to ascertain the reasons for failure as indicated in para 2 above. Further recommend that effort be continued to develop an improved set of dog equipment to satisfy the existing requirement.

David H. Thomas

1 Incl
as

DAVID H. THOMAS
Colonel, ADA
Commanding

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCES IN EUROPE
APO NEW YORK 09633

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REPLY TO ATTN OF: IGSR

3 MAR 1972

SUBJECT: Evaluation of Corfam Dog Equipment (Your ltr, 7 Jul 71)

TO: USAF/IGSM

Attached for your evaluation are two completed questionnaires concerning use of Corfam dog equipment. These questionnaires were completed by handlers following six months usage.

FOR THE COMMANDER IN CHIEF

TOMMY L. DOUGLAS, Colonel, USAF
Director, Security Police, IG

2 Atch
1, 2. Handlers' Questionnaires

APPENDIX A
HANDLER'S QUESTIONNAIRE
LEATHER SUBSTITUTE EQUIPMENT FOR MILITARY DOGS

I. General Information.

A. Grade Sgt. AFSC ~~MOS~~ 81150 A

B. Unit 50 TFW, APO N.Y. 09109 Date 15 JAN 72

C. Total service in armed forces 3yr 1 month

D. Total length of time as dog handler 2yr 8 months

E. Length of time in Vietnam 10 months

F. Unit mission Patrol SAS and QRA

G. Operational situation(s) in which equipment used:

1. Sentry post ✓
2. Scouting
3. Tracking
4. Other (describe)

H. Frequency of use:

1. Harness
   a. Daily
   b. Intermittently (explain) Training
2. Muzzle
   a. Daily
   b. Intermittently (explain) When Medicating Dog
3. Collar
   a. Daily
   b. Intermittently (explain) Never

4. Leash

a. Daily On Post
b. Intermittently (explain)_____

5. Leash holder

a. Daily On Post
b. Intermittently (explain)_____

II. Performance.

A. Compared with leather the corfam equipment is:

1. Not as good _____
2. About the same _____
3. Better ✓

If 1 or 3 above are checked, explain: Does not absorb water and become slick. Easier to care for and keeps original shape

B. Condition of the corfam equipment at end of evaluation period (6 months), or after 6 (months, weeks, etc.):

1. Excellent ✓
2. Good _____
3. Fair (usable) _____
4. Poor (unusable) _____

C. Describe as best you can the condition of any of the corfam equipment rated either fair (usable) or poor (unusable):

_____

_____

D. Summarize very briefly how you think the corfam equipment compares with leather as to:

1. Suitability for regular daily use Comfortable after edges are taken down.

2. Durability under severe conditions of weather and use Stands up well to cold weather without becoming brittle.

★ Additional comments on other side

1. The loop on the leash is too large. This could be corrected by moving the brad up about one inch. This would take up enough slack to make the loop small enough not to slip over the hand as easily.

2. If both ends of the leash were stitched it would be a little safer. The way it is now, if a brad would break you wouldn's have much left to restrain your dog with.

3. If it would be possible to trim down the width of the leash, it would be more comfortable. An eighth to one quarter of an inch would be plenty.

4. The harness is too stiff. The way it is now if worn very much the strap under the dogs legs can rub him raw.

5. Once you have gotten used to the leash stretching, it is a very comfortable one to use. I would much rather use this type of gear than to use leather.

APPENDIX A
HANDLER'S QUESTIONNAIRE
LEATHER SUBSTITUTE EQUIPMENT FOR MILITARY DOGS

I. General Information.

A. Grade A1C ~~MOS~~ 81150 A

B. Unit TUSLOG Det 193 (Incirlik) Date 29 Feb. 1972

C. Total service in armed forces 26 months

D. Total length of time as dog handler 12 months

E. Length of time in Vietnam None

F. Unit mission SAS and QRA security guard.

G. Operational situation(s) in which equipment used:

1. Sentry post ✓
2. Scouting
3. Tracking
4. Other (describe)

H. Frequency of use:

1. Harness – Wears well and retains it strength
   a. Daily
   b. Intermittently (explain) Two Times per week or AS training required
2. Muzzle
   a. Daily ✓
   b. Intermittently (explain) ~~it making it comfortable for the dog~~ Normal wear makes it soft and pliable
3. Collar – Lighter than leather collar
   a. Daily ✓
   b. Intermittently (explain)

4. Leash Metal rivets that hold the metal snap broke After 3 months of normal use

   a. Daily ✓
   b. Intermittently (explain)_____

5. Leash holder

   a. Daily ✓
   b. Intermittently (explain)_____

II. Performance.

A. Compared with leather the corfam equipment is:

1. Not as good _____
2. About the same _____
3. Better ✓

If 1 or 3 above are checked, explain: Easier to clean

B. Condition of the corfam equipment at end of evaluation period (6 months), or after _____ (months, weeks, etc.):

1. Excellent ✓
2. Good _____
3. Fair (usable) _____
4. Poor (unusable) _____

C. Describe as best you can the condition of any of the corfam equipment rated either fair (usable) or poor (unusable):

Only fault has been the leash. Loop too large And leash is very wide. Recommend that the leash be stitched at the fold to support the rivets

D. Summarize very briefly how you think the corfam equipment compares with leather as to:

1. Suitability for regular daily use Stronger then leather and retains its strength. Neats foot and saddle soap not needed, therefore cutting down on expense.
2. Durability under severe conditions of weather and use Unknown

It is lighter and allows for easy handling Corfam does not rot or become hard when wet. It is strong and twice as durable compared with leather

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.
20314

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REPLY TO ATTN OF: IGSM

15 MAR 1972

SUBJECT: Evaluation of Corfam Dog Equipment

TO: Army Land Warfare Laboratory (RDLWADB)
Aberdeen Proving Ground
Aberdeen, Maryland

1. The evaluation of Corfam dog equipment fabricated by your activity has been completed by our field units. Their findings are attached.

2. While the comments of the users indicated a mixed reaction to the benefits of Corfam, it is apparent that some items such as collars and harnesses have an economical potential. This headquarters remains interested in the development of such equipment and will be happy to provide continued assistance in this area.

FOR THE CHIEF OF STAFF

Frederick P. Geier

FREDERICK P. GEIER, Colonel, USAF
Chief, Resources Management Div
Directorate of Security Police, TIG

1 Atch
Handler Evaluations

24

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS STRATEGIC AIR COMMAND
OFFUTT AIR FORCE BASE, NEBRASKA, 68113

25 JAN 1972

DIV CHIEF	
DEPUTY	
ACTION	
INFO	Resuse

REPLY TO ATTN OF: IGSM

SUBJECT: Evaluation of Corfam Dog Equipment (Your Ltr, 7 July 71)

TO: HQ USAF/IGSM

The attached completed questionnaires are submitted to your office for evaluation. Two reports are submitted for each set of equipment tested.

FOR THE COMMANDER IN CHIEF

L. R. SIMPSON, Colonel, USAF
Chief, Security Police Division
Inspector General

2 Atch
1. 2AF/IGS Ltr, 1 Nov 71, w/2 Atch
2. 2AF/IGS Ltr, 18 Jan 72, w/2 Atch

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS SECOND AIR FORCE (SAC)
BARKSDALE AIR FORCE BASE, LOUISIANA 71110

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REPLY TO ATTN OF: IGS

1 November 1971

SUBJECT: Evaluation of Corfam Dog Equipment

TO: CINCSAC/IGSM

The attached interim test reports are forwarded in accordance with your 12 July 1971 letter.

FOR THE COMMANDER

ALBERT FELDMAN, Colonel, USAF
Chief, Security Police Division
Inspector General

2 Atch
1. 2BW/SP Ltr, 21 Oct 71, w/1 Atch (2 cys)
2. 380SAW/SP Ltr, 26 Oct 71, w/1 Atch (2 cys)

Peace . . . . is our Profession

APPENDIX A
HANDLER'S QUESTIONNAIRE
LEATHER SUBSTITUTE EQUIPMENT FOR MILITARY DOGS

I. General Information.

A. Grade SSgt MOS AFSC 81150A

B. Unit 2 SPS Date 18 Oct 71

C. Total service in armed forces 8 years

D. Total length of time as dog handler 4 years

E. Length of time in Vietnam 1 year

F. Unit mission Security and Law Enforcement

G. Operational situation(s) in which equipment used:

1. Sentry post No

2. Scouting Yes

3. Tracking Yes

4. Other (describe) Law Enforcement duties - patrol, building checks, etc.

H. Frequency of use:

1. Harness

a. Daily
b. Intermittently (explain) During training

2. Muzzle

a. Daily
b. Intermittently (explain) When taking patrol dog to Vet.

3. Collar

a. Daily X
b. Intermittently (explain)

4. Leash

a. Daily X
b. Intermittently (explain)_____

5. Leash holder **Not Applicable**

a. Daily_____
b. Intermittently (explain)_____

II. Performance.

A. Compared with leather the corfam equipment is:

1. Not as good _____
2. About the same _____
3. Better X

If 1 or 3 above are checked, explain: **Corfam requires less maintenance and upkeep but performs the same function as leather.**

B. Condition of the corfam equipment at end of evaluation period (6 months), or after _____ (months, weeks, etc.):

1. Excellent X
2. Good_____
3. Fair (usable)_____
4. Poor (unusable)_____

C. Describe as best you can the condition of any of the corfam equipment rated either fair (usable) or poor (unusable):

N/A

D. Summarize very briefly how you think the corfam equipment compares with leather as to:

1. Suitability for regular daily use **So far the Corfam shows a great deal better suitability because less maintenance is required, it is unaffected by changes in weather and functions as well as leather.**
2. Durability under severe conditions of weather and use **Shows no strain or damage under any conditions**

APPENDIX A
HANDLER'S QUESTIONNAIRE
LEATHER SUBSTITUTE EQUIPMENT FOR MILITARY DOGS

I. General Information.

A. Grade A1C MOS 81150A

B. Unit 380th S.P.S. Plattsburgh AFB, N.Y. Date 26 October 1971

C. Total service in armed forces 1 Year 8 Months

D. Total length of time as dog handler 1 Year 4 Months

E. Length of time in Vietnam N/A

F. Unit mission Provide Security & Support for the FB 111 and KC 135 mission assigned to this station.

G. Operational situation(s) in which equipment used:

1. Sentry post X

2. Scouting X

3. Tracking

4. Other (describe)

H. Frequency of use:

1. Harness

a. Daily

b. Intermittently (explain) During Daily Dog Training Periods in tracking problems. This Item seems to be very durable.

2. Muzzle

a. Daily X

b. Intermittently (explain)

3. Collar

a. Daily

b. Intermittently (explain) When Dog is staked out during kennel care periods. This item seems very durable.

4. Leash

a. Daily Utilized on all Swing & Midnight Shifts in addition to daily dog training periods.
b. Intermittently (explain)_____

5. Leash holder (None Received)

a. Daily_____
b. Intermittently (explain)_____

II. Performance.

A. Compared with leather the corfam equipment is:

1. Not as good X
2. About the same _____
3. Better_____

If 1 or 3 above are checked, explain: Leash utilized for a 40 day period gave way and broke just above the leash hasp. Also it was noted that the rivets which hold the hasp in place at the end of the leash work their way loose through the Corform when tension is applied. This item of equipment was tested on a 90 pound Patrol Dog

B. Condition of the corfam equipment at end of evaluation period (6 months), or after 3 (months, ~~weeks~~, ~~etc~~.):

1. Excellent _____
2. Good Harness/Muzzle/Collar
3. Fair (usable)_____
4. Poor (unusable) Leash

C. Describe as best you can the condition of any of the corfam equipment rated either fair (usable) or poor (unusable):

See Item #2a, above

D. Summarize very briefly how you think the corfam equipment compares with leather as to:

1. Suitability for regular daily use In a three month period I find that some equipment will give under tension and daily use one of the weak areas is the type of rivets used they seem to work their way through the Corfam material in places.
2. Durability under severe conditions of weather and use The equipment seems to hold up under present weather conditions although it has not been tested in severe weather as of yet.

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS SECOND AIR FORCE (SAC)
BARKSDALE AIR FORCE BASE, LOUISIANA 71110

REPLY TO
ATTN OF: IGS

18 January 1972

SUBJECT: Evaluation of Corfam Dog Equipment

TO: CINCSAC/IGSM

Attached final test reports are forwarded in accordance with your 12 July 1971 letter.

FOR THE COMMANDER

ALBERT FELDMAN, Colonel, USAF
Chief, Security Police Division
Inspector General

2 Atch
1. 2BW/SP Ltr,
13 Jan 1972, w/1 Atch
(2 cys)
2. 380CSG/SP Ltr,
14 Jan 1972, w/1 Atch
(2 cys)

APPENDIX A
HANDLER'S QUESTIONNAIRE
LEATHER SUBSTITUTE EQUIPMENT FOR MILITARY DOGS

I. General Information.

A. Grade SSgt MOS AFSC 81150A

B. Unit 2SPS Date 6 Jan 72

C. Total service in armed forces 8 years

D. Total length of time as dog handler 4 years

E. Length of time in Vietnam 1 year

F. Unit mission Security and Law Enforcement

G. Operational situation(s) in which equipment used:

1. Sentry post No

2. Scouting Yes

3. Tracking Yes

4. Other (describe) Law Enforcement Duties, i.e., building checks and Narcotics Investigation

H. Frequency of use:

1. Harness

a. Daily
b. Intermittently (explain) Once a week during training classes

2. Muzzle

a. Daily
b. Intermittently (explain) During Vet's treatment and exam.

3. Collar

a. Daily X
b. Intermittently (explain)

4. Leash

a. Daily X
b. Intermittently (explain)_____

5. Leash holder

a. Daily None issued
b. Intermittently (explain)_____

II. Performance.

A. Compared with leather the corfam equipment is:

1. Not as good _____
2. About the same _____
3. Better X

If 1 or 3 above are checked, explain: With simple washing, it returns to "like new" condition; shows very letter wear after six months use.

B. Condition of the corfam equipment at end of evaluation period (6 months), or after _____ (months, weeks, etc.):

1. Excellent X
2. Good
3. Fair (usable)
4. Poor (unusable)

C. Describe as best you can the condition of any of the corfam equipment rated either fair (usable) or poor (unusable):

D. Summarize very briefly how you think the corfam equipment compares with leather as to:

1. Suitability for regular daily use Corfam shows less wear and is easier to use.

2. Durability under severe conditions of weather and use It is unaffected by any extreme weather change.

APPENDIX A
HANDLER'S QUESTIONNAIRE
LEATHER SUBSTITUTE EQUIPMENT FOR MILITARY DOGS

I. General Information.

A. Grade A1C MOS 81150A

B. Unit 380th S.P.S, Plattsburgh AFB, N.Y. Date 24 January 1972

C. Total service in armed forces 2 Years 5 Months

D. Total length of time as dog handler 1 Year 5 Months

E. Length of time in Vietnam N/A

F. Unit mission Provide Security and Support for the FB 111 and KC 135 Mission assigned to this station

G. Operational situation(s) in which equipment used:

1. Sentry post X
2. Scouting X
3. Tracking X
4. Other (describe)

H. Frequency of use:

1. Harness

a. Daily
b. Intermittently (explain) During daily dog training periods in tracking problems. This item is very durable.

2. Muzzle

a. Daily X As necessary for vet medical treatment
b. Intermittently (explain)

3. Collar

a. Daily When Dog is staked out during kennel care periods
b. ~~Intermittently (explain)~~ This Item seems very durable and well made to stand pull or tention.

4. Leash

   a. Daily Utilized on all Swing and Midnight Shifts in addition to all daily dog training periods.
   b. Intermittently (explain) ________

5. Leash holder (None Received)

   a. Daily N/A
   b. Intermittently (explain) N/A

II. Performance.

A. Compared with leather the corfam equipment is:

   1. Not as good X
   2. About the same ________
   3. Better ________

   If 1 or 3 above are checked, explain: Leash on first 3 month ~~xxxxx~~ trial was unusable after approximately 40 day period as stated in first evaluation dated 26 October 1971.

B. Condition of the corfam equipment at end of evaluation period (6 months), ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~

   1. Excellent ________
   2. Good Harness/Muzzle/Collar
   3. Fair (usable) ________
   4. Poor (unusable) Leash

C. Describe as best you can the condition of any of the corfam equipment rated either fair (usable) or poor (unusable):

   See Item # 2a,1 above

D. Summarize very briefly how you think the corfam equipment compares with leather as to:

   1. Suitability for regular daily use In a six month period I find that out of the four pieces of equipment used for evaluation at this station, The leash is the only item that was found to be unusable after tension is applied by daily ~~xxxx~~ use of dog when on post.
   2. Durability under severe conditions of weather and use All other equipment but the leash seem to hold out under daily use in present weather conditions, although items have not been tested in severe weather conditions as of this time

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS PACIFIC AIR FORCES
APO SAN FRANCISCO 96553

35

28 FEB 1972

REPLY TO ATTN OF: IGS

SUBJECT: Evaluation of Corfam Dog Equipment (Your Ltr, 7 Jul 71)

TO: HQ USAF/IGSM

1. The three sets of Corfam Dog Equipment provided were evaluated at Kadena.

2. This headquarters recommends no further procurement or use of subject equipment for reasons cited in attached letter. Staff members from this headquarters observed use of equipment and concur in evaluation.

FOR THE COMMANDER IN CHIEF

JOHN A. TAYLOR, Colonel, USAF
Director of Security Police
Office of the Inspector General

1 Atch
HQ 313 Air Div/SPD Ltr, 22 Feb 72, w/1 Atch

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 313TH AIR DIVISION (PACAF)
APO SAN FRANCISCO 96239

36

REPLY TO ATTN OF: SPD (MSgt Geist/40277) 22 February 1972

SUBJECT: Evaluation of Corfam Dog Equipment

TO: CINCPACAF (IGS)

1. In reference to PACAF (IGS) letter, dated 12 Jul 1971, subject; Evaluation of Corfam Dog Equipment, three (3) sets of equipment were tested by the PACAF Military Working Dog Training Center. Two (2) sets were tested by the NCOIC of Training and the other by a kennel support handler. The following comments are provided on equipment tested.

a. Equipment stretches and pulls free of rivets. However, this flaw can be overcome by stitching.

b. Contrary to Corfam performance specifications, the corfam collar is water absorbent.

c. As stated in the Corfam Care and Maintenance Letter, corfam "does not lose its flexibility" nor does it "break in or soften." It is extremely difficult to maintain a safety leash with corfam as it loosens on the wrists unless constant pressure is applied. Further, the Corfam leash will stretch from 12" to 15" when pulled by a 65 to 70lb dog. The stretching of the leash could cause serious injury to a handler should it be necessary for him to "string a dog up" to keep from being attacked.

d. Most military working dogs adjust to a soft pliable leather muzzle, but constantly fight the corfam muzzle due to its non-flexibility.

e. The corfam harness is considered equal to a leather harness, with the exception that corfam will not soften, making it more uncomfortable for the dog.

2. Properly treated leather equipment is considered superior to corfam for use on military working dogs.

FOR THE COMMANDER

Edward R. Barker Jr.

EDWARD R. BARKER JR., Major, USAF
Director of Security Police

1 Atch
Questionnaire

APPENDIX A
HANDLER'S QUESTIONNAIRE
LEATHER SUBSTITUTE EQUIPMENT FOR MILITARY DOGS

I. General Information.

A. Grade_____ MOS_____

B. Unit METROPLITAN POLICE DEPARTMENT Date_____

C. Total service in armed forces_____

D. Total length of time as dog handler_____

E. Length of time in Vietnam_____

F. Unit mission_____

G. Operational situation(s) in which equipment used:

1. Sentry post_____

2. Scouting_____

3. Tracking IN TRAINING

4. Other (describe) TRAINING

_____

H. Frequency of use:

1. Harness

a. Daily FROM 7-6-71 to 9-15-71 9-15-71 to 1-21-72

b. Intermittently (explain)_____

2. Muzzle

a. Daily NOT USED

b. Intermittently (explain)_____

3. Collar

a. Daily Used almost daily 7-6-71 to 1-21-72

b. Intermittently (explain) DURING PERIODS WHEN DOGS NECKS ARE RAW

4. Leash

a. Daily FROM 7-2-71 to 9-15-71 9-15-71 to 1-21-72
b. Intermittently (explain)_____

5. Leash holder

a. Daily NOT USED
b. Intermittently (explain)_____

II. Performance.

A. Compared with leather the corfam equipment is:

1. Not as good _____
2. About the same XXXXX
3. Better XX

If 1 or 3 above are checked, explain:_____

#3 REQUIRES LESS CARE....

 # 1 Note snap is heavy for use on newer dogs.....

B. Condition of the corfam equipment at end of evaluation period (6 months), or after _____ (months, weeks, etc.):

1. Excellent XXXXXXX 7-2-71 to 9-15-71 9-15-71 to 1-21-72
2. Good_____
3. Fair (usable)_____
4. Poor (unusable)_____

C. Describe as best you can the condition of any of the corfam equipment rated either fair (usable) or poor (unusable):

D. Summarize very briefly how you think the corfam equipment compares with leather as to:

1. Suitability for regular daily use AS GOOD OR BETTER
For hot and humid weather should last much better than leather..

2. Durability under severe conditions of weather and use_____

UNKNOWN

APPENDIX D

Eight-Month Evaluation by USAIS Dog Committee of Poromeric Fabricated Dog Equipment.

DEPARTMENT OF THE ARMY
United States Army Infantry School
Fort Benning, Georgia 31905

ATSIN-C 26 JAN 1973

SUBJECT: Evaluation of the Leather Substitute Equipment for Military Dogs, LWL Task 11-B-71

Commander
US Army Land Warfare Laboratory
Aberdeen Proving Ground, Maryland 21005

1. References:

a. LWL Task 11-B-71, Leather Substitute Equipment for Military Dogs.

b. Special Operational Report- Lessons Learned, HQ 18th MP Bde, RCS CSFOR-65(R2), 2 July 1970.

c. Letter, RDLW-MOM, dated 3 August 1972, subject as above.

2. In accordance with reference C, the Military Dog Detachment, Company Operations Department, United Infantry School, Fort Benning, Georgia, has evaluated the industrial grade Corfam dog equipment. This evaluation indicated that the Corfam dog equipment:

a. Is safe in operation. There were no problems with dogs breaking a leash or slipping their heads out of their collars. The main problem with the leash is that the nylon has a tendency to unravel after extended usage.

b. Has acceptable reliability.

c. Is maintainable.

d. Requires only normal support.

ATSIN-C 26 JAN 1973

SUBJECT: Evaluation of the Leather Substitute Equipment for Military Dogs, LWL Task 11-B-71

e. Has low technical risks.

f. Is acceptable for operational use.

g. Satisfies all requirements of this organization. Based upon its performance in this operational environment, industrial grade Corfam dog equipment item should be considered for adoption Army-wide. Recommend change in existing materiel specifications.

3. Dogs used for this test were German Shepherds, average weight 70 pounds. The 5-foot leashes are used only to transport dogs from one location to another. Collars were used for tracker exercises, and the harness was used for scouting and mine/tunnel detection. Muzzles were used for protection while medical treatment was being ministered and for transporting dogs to and from the field. During these times the Corfam muzzles were much easier to use than leather muzzles.

4. Five completed Handler's Questionnaires are inclosed at Tab A.

FOR THE COMMANDANT:

SIGNED

1 Tab
as

MICHAEL A. TRYON
Major, Infantry
Assistant Secretary

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E. Scott Tomlinson

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13. ABSTRACT

Reinforced poromeric material (Corfam) in industrial-grade thicknesses was evaluated as a leather substitute for fabrication of military dog equipment.

User evaluations indicate that industrial-grade Corfam substrate, alone or laminated with polyurethane-coated substrate, possesses physical/comfort qualities of equivalent grade leathers.

Poromeric materials are not subject to biological degradation nor do they absorb water. These properties greatly reduce the required maintenance while increasing the life expectancy of the equipment. The ultimate cost of Corfam equipment is probably at least competitive with that of leather.

DD FORM 1 NOV 68 1473 REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

UNCLASSIFIED
Security Classification