MAIN/JIW/th
6250

JUN 2 6 1980

From: Commanding General
To: Commanding General, 2d Force Service Support Group (Rein), FMFLant, Camp Lejeune, North Carolina 28542 (Attn: 2d Medical Battalion)

Subj: Entomology Research Project

Ref: (a) CO 2dMedBn ltr 1/GCB/stw 3900 of 6 Jun 1980

1. Reference (a) requested entomological field research aboard base over the next three years and is hereby approved.

2. In an effort to insure base forestry operations and insect vector control operations not interfere with the research effort, it is requested dialogue be established with Mr. Kenneth Harrison, Natural Resources and Environmental Affairs Division, extension 2195, and Mr. Carl Jones, Insect Vector Control, extension 5761.

T. R. BAISLEY
By direction

ROUTING SLIP JUN 1 6 1980

	ACTION	INFO	INITIAL
BMO		✓	[illegible]
ABMO		✓	BCR
ADMIN			
ENVIRON AFF	✓		
F&A BRANCH			
MAINT NCO			
M&R			
OPNS			
PROP			
TELE			
UMACS			
SECRETARY			

COMMENTS:

Reply needed

NREA - Coordinate with Insect Vector.

BCR

NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS DIVISION
BASE MAINTENANCE DEPARTMENT
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

16 June 80

From: Director, NREA Division
To: Director, M & R Div
Subj:

1. Fred,

NREAD has no problem with attached request. There needs to be some coordination with the Forestry Branch due to possible logging operations.

Julian

UNITED STATES MARINE CORPS
2D FORCE SERVICE SUPPORT GROUP (REIN)
FLEET MARINE FORCE, ATLANTIC
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO
HSU-7/JLK/res
3900
10 JUN 80

FIRST ENDORSEMENT on 2d Medical Battalion ltr 1/GCB/stw, over 3900, dtd 6 JUN 80

From: Commanding General
To: Commanding General, Marine Corps Base, Camp Lejeune, North Carolina 28542

Subj: Entomolgy Research Projects; request of approval for

1. Forwarded, recommending approval.

J. L. KUBAL
By direction

UNITED STATES MARINE CORPS
2d Medical Battalion
2d Force Service Support Group (Rein)
Fleet Marine Force, Atlantic
Camp Lejeune, North Carolina 28542

1/GCB/stw
3900
6 JUN 1980

From: Commanding Officer
To: Commanding General, Marine Corps Base, Camp Lejeune, North Carolina 28542
Via: Commanding General, Second Force Service Support Group (Rein), FMFLant, Camp Lejeune, North Carolina 28542

Subj: Entomology Research Projects; request of approval for

Ref: (a) CG, MCB, CLNC ltr 1100 to Liaison Officer, DOD/USDA of 14 Feb 77

Encl: (1) Descriptions of three entomology field research projects proposed for the Camp Lejeune area

1. The Medical Entomologist, LT Gary C. Breeden, MSC, USN of this Command has a PhD in entomology and holds additional duty orders to the Navy Disease Vector Ecology and Control Center, Jacksonville, FL (NDVECCJAX) for the purpose of conducting entomological field research beneficial to the health and well-being of USMC troops. In keeping with those orders, enclosure (1) describes three research projects which would be under the direct supervision of LT Breeden proposed for the Camp Lejeune area over the next three years.

2. Approval is respectfully requested to conduct these projects at Camp Lejeune. Two of the projects are new and the third would be a continuation of a previously approved study (reference (a)) begun in 1978.

3. All the projects would be conducted in cooperation with NDVECCJAX, Entomology Program Manager for USMC, and the sponsoring agency, the USDA Research Laboratory for Insects Affecting Man and Animal, Gainsville, FL. These projects are part of an ongoing cooperative program by the USDA and the DOD as monitored by the Armed Forces Pest Management Board (AFPMB) to improve military entomology capabilities to protect operating forces in the field from disease vectors and other noxious biting arthropods (insects, ticks and chiggers). All necessary research supplies would be provided by either the USDA or NDVECCJAX. The limited amount of short-term transportation and personnel support required can be provided by this Command. All three projects have direct military significance and the potential to considerably improve military entomology capabilities.

4. Every effort would be made to contact and secure the approval

1/GCB/stw
3900
6 JUN 1980

Subj: Entomology Research Projects; request of approval for

and cooperation of any affected commands or personnel. The below listed commands/offices have already been contacted by phone and have no objection to the subject research projects:

a. Chief of Staff, Marine Corps Base, Camp Lejeune, NC

b. Assistant Chief of Staff Training, Marine Corps Base, Camp Lejeune, NC

c. Assistant Chief of Staff Facilities, Marine Corps Base, Camp Lejeune, North Carolina

d. Commanding Officer, USMC Infantry Training School, Marine Corps Base, Camp Lejeune, NC

R. R. COTE

Copy to: CG, 2d MARDIV
BUMED Code MED-31412
NDVECCJAX
AFPMB Liason Officer DOD/USDA

DESCRIPTION OF THREE ENTOMOLOGY FIELD RESEARCH
PROJECTS PROPOSED FOR THE CAMP LEJEUNE AREA

1. Impregnated Uniform Project

a. Introduction: This research would involve the use of human volunteers to test a new compound as a clothing impregnant to serve as personal protection against biting arthropods (insects, ticks and chiggers). The compound, permethrin, is a broad spectrum toxicant with a very low mammalian toxicity and is effective against arthropods at concentrations far too low to cause any mammalian toxicity problems. In this regard, permethrin via oral or dermal application has a lower level of mammalian toxicity than like amounts of common table salt. However, before being considered as a candidate compound for clothing impregnation, permethrin was the subject of an exhaustive toxilogical evaluation by the U. S. Army Environmental Hygiene Agency. That agency concluded that it would be safe to utilize human subjects in the evaluation of permethrin as a clothing impregnant. Since that study, this proposed research has also obtained the approval of two medical review committees for the protection of human research subjects (Univ. of Fla. Med School, Gainsville and Naval Regional Medical Center, Camp Lejeune) and subsequently the approval of the USN Bureau of Medicine and Surgery.

b. Basic Research Protocol

(1) The basic research protocol calls for impregnating ordinary camouflage uniforms with permethrin at the rate of 0.125 milligrams per square centimeter (mg/cm^2). The personal protection afforded against biting arthropods by these uniforms would be compared to that of uniforms impregnated with M-1960 the arthropod repellent currently registered for military clothing impregnation at the rate of 3.88 mg/cm^2. These impregnated uniforms would then be worn for a two to four hour period each evaluation day at locations onboard the Camp Lejeune complex. It is not anticipated that the same individual would wear a permethrin impregnated uniform more than three times. The study would be conducted at various intermittent dates throughout the arthropod biting seasons of 1980, 1981 and 1982. The primary objective of this project is to evaluate the personal protection afforded by the permethrin impregnation against ticks and chiggers. However, other biting arthropods might also be included in the evaluation if time permits.

(2) Only volunteers can be used in this project as they must sign a consent agreement as well as an appropriate privacy act statement. It is the intent of the investigators to utilize those volunteers who would already have field exposure to biting arthropods because of their jobs or participation in local training exercises. Because of this, it was thought that personnel assigned to the Infantry Training School, MCB might be likely volunteers because of their exposure to large populations of ticks, chiggers and other biting arthropods during training exercises in the Verona Loop area.

c. Potential Advantages

(1) The use of permethrin as a clothing impregnant has tremendous potential for improving military entomology capabilities. Preliminary research by the USDA indicates that not only does the permethrin impregnation provide personal protection equal to or exceeding that of standard arthropod repellants but also kills the arthropods after only momentary contact with the impregnated clothing. Indeed, it is the toxicity which provides the protection not a repellancy. However, it was also discovered that when permethrin impregnated clothing is worn in conjunction with skin applications of the standard insect repellant, deet (off, cutter's, etc.), to exposed areas (arms, hands, face, etc.), the protection time afforded by the deet applications is somehow doubled. The permethrin impregnation was also found to be nonstaining, nonodorous and long lasting. It resists weathering, washing and light induced chemical breakdown. The permethrin impregnation retained its toxic capabilities after a one month exposure to outdoor weathering and through 33 cold water rinses or two soapy washes.

(2) Other than improved morale, the toxic capabilities of the permethrin impregnation may not be significant in the case of only a few individual wearers. However, in large field exercises involving MAU or MAB size forces all wearing impregnated uniforms, the potential for reducing the local biting arthropod populations is tremendous and may be the most successful method yet for controlling disease vectors and other biting arthropods during actual military campaigns.

2. Deer Fly Control with Attractant Panels

a. Introduction: A new type of plastic, alsonite, has been found to be very attractive to certain species of day-biting flies when sunlight is refracted through translucent panels of the plastic. Preliminary research by the USDA with these panels indicates that stable flies and possibly other day-biting flies may be effectively controlled by treating the panels with a quick-acting insecticide. The possibility of controlling deer flies was suggested when large numbers of deer fly species were found to be attracted to alsonite panels being used to survey stable fly populations.

b. Basic Research Protocol: The degree of attractiveness as well as the species of deer flies attracted would first be determined by comparing the panels with standard deer fly sampling devices and techniques. If the results of the attractiveness evaluation prove worthwhile, then the panels would be treated with insecticides and tested as control devices. The study would be conducted at various times throughout the deer fly seasons of 1980, 1981 and 1982.

c. Potential Advantages: Treated alsonite panels could prove to be very valuable tools in controlling deer flies. Like most biting insects, deer flies are attracted to man by the heat he gives off and the carbon dioxide he exhales. However, deer flies also rely very heavily on visual orientation and have developed evolutionarily to fly in search of their hosts along natural pathways and roadways shunning denser vegetation in

favor of open flyways. Using this knowledge and their attraction to man, treated alsonite panels could be appropriately placed around and/or in encampments. In this manner, only a few well-placed panels could effectively control these disease vectors and persistent and painful biters.

3. Evaluation of New Candidate Compounds for Area Tick and Chigger Control

a. Introduction: New compounds with pesticidal properties are being constantly developed and need evaluation for efficacy under field conditions. In addition, pesticides presently registered for other uses also need field testing for efficacy against different pests. Camp Lejeune offers accessibility to many wilderness areas with very high populations of ticks and chiggers. Similar studies previously approved for study at Camp Lejeune have proven very successful over the last two years.

b. Basic Research Protocol: Several small area plots (75' x 75') with high tick and chigger populations would be treated with differing rates of various pesticides. The populations of ticks and chiggers would be monitored before treatment and for several weeks after treatment. These tests are performed to determine which pesticides are the most effective, what the minimum effective dosage rate would be and the length of residual control. The study would be conducted during the tick and chigger seasons of 1980, 1981 and 1982.