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Extracted from 8th Army Historical files.

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CHAPTER 5

SPECIAL PROGRAMS AND EQUIPMENT

I. (C) DMZ DEFOLIATION

A. INTRODUCTION

1. Purpose: To review the progress of defoliation operations and to validate its result to determine if subsequent annual recurring programs should be continued, and to evaluate benefits to be derived from an expanded tactical defoliation program to include limited application within the DMZ.

2. Background: Reference was made to the Eighth United States Army study entitled "Clearance of Vegetation and Foliage in the DMZ Area", dated 1 June 1968 and to the KMAG tests and command wide operations conducted during the period 15 April 1968 thru 31 August 1968. This report covers those tests and operations conducted along and in rear of the DMZ Security fence including specific access roads. Along the DMZ Security Fence, 6240 acres remain to be treated to finish that portion.

B. DISCUSSION

1. General: It is believed that an annual program of vegetation clearance is required on a continuous basis until such time as the growth generated since the Armistice is brought into balance with the present tactical requirements. Areas to the rear of the DMZ Security Fence have been the prime objective area to date. These defoliation operations have indicated that consideration should be given to limited defoliation in front of the DMZ Security Fence and incorporation into subsequent annual recurring programs. Selected herbicides have been used in these operations due either to availability of product or dispensing apparatus on hand. However, this should not confine the defoliation program to only these herbicides but should include other types so that a more selective type operation may be conducted. This is especially true when the problem of erosion and its resulting maintenance difficulties are considered.

2. Political Considerations: Considerable attention has been given to the use of defoliant in this country, particularly in the DMZ area where international repercussions could be ignited. It is assumed that this position has not changed or mitigated and that Department of State approval would be necessary for continuing programs, but definitely would be required if usage within the DMZ was contemplated. The ROK government

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→ Extracted from EUSA Special Study, Reevaluation of DMZ Operations (U), VOLS I & II, 15 Dec 68. (SECRET)

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Auth: 20 May 1974  
1 May 1986  
8th US Army  
Command  
Ltr from C

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1 May 19  
Ltr From  
Zm-ACW  
87m US Air  
Comma

position was indicated in official documents and newspaper articles and a reconfirmation of their position, since completion of last spring's operations, is considered warranted. With the increased knowledge in the effectiveness of herbicides since conducting those operations, their position should be more solidified.

3. Aerial Dispensing:

Aerial dispensing methods have not been authorized for use along the DMZ Security Fence due to flying restrictions and winding configuration of the fence itself; the extreme variations of terrain elevations; the availability of suitable aircraft; and the increased possibility of product drift utilizing this type conveyance. Fixed wing aircraft were expressly determined inappropriate due to their flying patterns; helicopters were objectionable due to the drift considerations; however, helicopters have been employed in Vietnam for this purpose. Certain areas to the rear of the DMZ Security Fence may be conducive to controlled aerial spraying, particular those cleared areas adjacent to roadways which are subject to ambush by infiltrators. Aerial spraying in Vietnam apparently has been successful, however, it should be noted that the density and type of vegetation encountered in that country differs markedly from that found in Korea.

4. Operation Considerations:

a. The primary purpose for vegetation control along and within the DMZ is to improve horizontal visibility, however defoliation control in itself, will provide no better horizontal visibility than is presently experienced during winter conditions. Use of defoliants, in conjunction with manual and mechanical means of vegetation removal is practical, manageable, politically acceptable, and, if appropriate herbicides and associated equipment are supplied, are within current command capabilities. Operationally there is a continued need for vegetation control not only along the DMZ Security Fence but also, through use of appropriate herbicides, beyond the south tape of the DMZ to include the most logical approach routes to and the area in the vicinity of the guard posts.

b. The application of defoliants by manual means is difficult, expensive, time consuming, and requires a large amount of manpower. Exceptionally careful control of aerial application would significantly reduce the time and manpower requirements.

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c. ROKA Forces, who have actually performed the application of defoliants during the operations, have gained valuable field experience in effect and dispersion methods. As of this date there has been no known North Korean objection to the use of herbicides since the defoliant operations of the Spring of 1968.

d. The defoliant operation results indicate that a need for pelletized type herbicides exists and that tests should be conducted to determine the effectiveness and practicability of the type product. TORDON 10 D, a broadleaf herbicide, which does not effect the grasses, has been indicated as the preferred item.

e. The dispersion of herbicides along the roadways indicates that, when the 200 gallon decontamination apparatus was utilized strictly from roads, the narrow strip produced on both sides of the road did not afford enough observation to reduce the possibility of ambush by infiltrators.

f. The use of civilian labor is becoming increasingly important in barrier maintenance activities as well as those activities to the rear of the DMZ. For manual and mechanical means of vegetation control this resource offers many advantages and produces steady progress. This has been an acceptable augmentation to the engineer mission and defoliant operations but, being an 0800-1700 operations with inherent administrative details and delays, it does not give the results that additional engineer troops would provide.

g. Defoliant operations in CY 1968 show that the choice of herbicides to be employed along the DMZ fence trace be a defoliant similar to TORDON 10 K that will be selective and not affect grasses, thereby, minimizing chances of soil erosion. The results of the herbicides test indicate that no one means, whether manual, mechanical, or herbicide can get the job done by itself, but that a combination of any and all means is preferable to obtain the best effects. Manual clearing or burning is almost a necessity to assure complete clearance.

h. The herbicides utilized for the defoliation operations in 1968 included Monuron (granular form), Agent Orange, and Agent Blue. A supply of Monuron (147 tons) due to be shipped from Vietnam is Telvar (wetttable powder form), containing 80% Monuron versus the 22% Monuron used in last year's operations. Equipment is on hand to dispense the granular form but no equipment except the small quantity used by the Post Engineer Entomology Service is available in Korea to dispense the wetttable powder form due to be received from Vietnam.

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20 May 1986  
Auth  
1 May 1986 Ltr from  
IM-AG-R, 8th US  
Army Command

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5. Erosion Effects

The use of defoliants primarily serve the purpose of removing vegetation growth, particularly leafage. Soil applied herbicides react through the root system and will ultimately kill the complete plant. The use of most soil applied herbicides (not including TORDON 10 K) will eventually kill all vegetation including trees and brushy growth but with a resultant erosion ramifications. Information obtained from a visit to Vietnam indicates that their results with Monuron (80% type) was unsatisfactory since it killed everything including the grass causing serious soil erosion problems. The effects of erosion are fairly well known, ie: the creation of ruts, gullies and washouts. To the DMZ Security Fence, pine fields, and fortifications, it would mean an increase in maintenance activity plus the hauling of fill and other substances to replace drainage loss. A soil erosion program of some significance is currently being conducted throughout Korea. Such a program involves fertilizing and reseeding with sheep fescue and white dutch clover. Stateside measures have often times resorted to planting crimson clover to act as a conservation measure. This, in effect, would seem to constitute a two program system - one being to clear the soil for tactical purposes - the other to reseed the soil to deter erosion. Civilian labor could be of increasing importance if such conditions develop, since engineer units are already taxed with a heavy work load. The 2d US Infantry Division is planning to initiate an ENSURE request for 2 each MARDEN B 7 Brush Cutters. This brush cutter is towed, bladed drums, produced commercially by the Marden Manufacturing Company, Auburndale, Florida. This apparatus produces a cutting and mulching effect without inverting the soil and is a device to curb erosion. The use of mechanical saws (gasoline powered chainsaws) proved to be effective and time saving for these units which had them available. Necessary action should be taken to insure that these mechanical saws are available for all DMZ units conducting further defoliation operations.

DECLASSIFIED ON

20 May 1986

Auth:

1 May 1986 Lt. from  
IM-AG-R, 9th US  
Army Command

Extracted from FUSA Special Study, Reevaluation of DMZ Operations (U), VOLS I & II, 15 Dec 68. (SECRET)

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20 May 1986  
1 May 1985  
From 5th US Army

6. Vegetation Control. Good fields of fire and fields of observation are essential to DMZ operations. Various methods including chemicals, mechanical devices and hand labor may be used to clear these fields. Each method is effective, but conditions and location will dictate which should be employed.

a. Chemical defoliants may be applied directly to plant growth in which case the plant which is treated is killed, but the soil is not contaminated to the extent that regrowth will not occur. Application is normally by spray in which case wind drift may cause undesired contamination in adjacent areas. The chemical can also be carried to other areas by streams and rivers and by watershed drainage due to rainfall. Defoliant application requires relatively small amounts of chemicals, costs on the average of \$40 per acre, and would require at least two applications annually to be effective.

b. Plant growth may be killed at the roots through the application of chemical soil sterilants. These soil sterilants may be applied by spray or broadcast in granular form. The effect is relatively long lasting, up to 12 to 24 months. Spray application is subject to the full effect of wind drift while granular application is diffused to a lesser degree. Should heavy rains fall before the sterilants are absorbed by the soil, the problem of undesired contamination caused by run-off could be acute. Soil sterilants are more costly per application than defoliants, but their effects are longer lasting. Depending on the rate of application, an average cost would be \$135 per acre.

c. A method of clearing equally effective as the application of chemical herbicides is by mowing or hand-cutting. This method eliminates the problem of undesired contamination. This method is relatively short lasting and would require two or more cuttings per year. In the heavier types of vegetation, mechanical equipment ranging from a typical farm-type mowing cycle to the heavy duty bulldozer-attached Rome Plow may be used. Each would be more costly than hand-cutting which is by far the most economical, the average cost being about \$3 per acre per cutting. There are certain areas where manpower cannot be utilized, for example, a minefield. In these areas chemical herbicides may be the only practicable method of clearing.

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IAW DoD DIR 5200.10

Extracted from EUSA Study, Analysis of DMZ and Contiguous Operations (U),  
VOLS I & II, 20 Dec 68. (SECRET) NOTE: REFERRED TO AS THE "RICE REPORT."

DOWNGRADED AT 12 YEAR INTERVALS 5.

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20 May 1986  
Auth: [unclear]  
1 May 1986 DR from  
I m-Ag-R  
Comm 201 8th US Army

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(c)  
a. (1) Tests conducted by the 3d Brigade, 2d Infantry Division, favor use of a herbicide called TELVAR MONURO which can be applied by use of the Power-Driven Decontamination Apparatus. Other herbicides were considered either ineffective or creative of undesirable effects outside the area of interest.

(2) If the barrier is not mined, growth control can be accomplished economically by hand labor.

(e) The use of chemical herbicides may cause imagined or real damage to crops and aquatic wildlife outside the boundary of the barrier. Real damage may result due to drifting spray or surface run-off. Blame may be placed on the applicator of herbicides even when damage is in fact due to other causes. Political repercussions may result in either case; as some of the rivers in the DMZ area flow from South Korea into North Korea.

(b) Growth control can be accomplished at a relatively low cost by hand labor. For the approximately 650 acres of the 2d Division barrier, the annual cost of application of TELVAR MONURO is estimated at \$41,500 and approximately 5,000 man-hours. A Korean service contract is estimated to cost no more than \$11,700 for six cuttings and one burning annually.

b. Tests are planned for spraying the wire with waste oil or diesel oil as a preservative. Results remain to be seen.

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IAW DOD DIR 5200.10

Extracted from EUSA Study, Analysis of DMZ and Contiguous Operations (U), VOLS I & II, 20 Dec 66. (SECRET) NOTE: REFERRED TO AS THE "RICE REPORT."

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REC- APPROVED  
20 May 1946  
Auth: 1 May 1986  
Ltr from I M - AC - R  
9th US Army Command

(a) (C) Clearance of Vegetation and Foliage in the DMZ Area.  
Application of herbicides continued along the DMZ in both the I Corps (Gp) and FROKA areas. The application of Monuron to 2,020 acres was completed 22 May. Blue and Orange were applied to 18,425 acres. Effects of application of Monuron were not evident at close of reporting period, as this chemical must permeate to the root system of the vegetation before results can be expected. The Blue and Orange application was evident by the first week of Jun and continued to prove effective throughout the reporting period.

1968

(a) (S) Defoliation Operations. The ROKA decision not to expend funds for the purchase of defoliants during CY 69 reduced the proposed defoliation program considerably. Approximately 3,160 acres were defoliated this year, using defoliants on hand and those redistributed from RVN, as compared to the more than 19,000 acres defoliated last year. Two types of defoliants were used; one was specifically for narrow leaf grasses and the other was a semi-permanent soil sterilant. Application of defoliants began in early May and was completed 30 Jul 69. Several weeks after application, the horizontal visibility had increased in some instances from almost zero (few meters) to as much as 90 percent at 200 meters. The effects varied, depending upon the agent used, from the browning and dying of grasses to the death of all living plants. Some defoliated areas will be burned off this fall, adding to the effectiveness of the defoliation. Acre for acre, the CY 69 program was more effective than the CY 68 program due to knowledge gained during CY 68 and the use of better defoliants.

1969

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RAC 1973-102

JOINT MESSAGE FORM REC. 511		SECURITY CLASSIFICATION	
6 Nov 63 21 38-0		CONFIDENTIAL	
HQ. USAF		USAF COMM CENTER	
PRECEDENCE	TYPE MSG (Check)	ACCOUNTING SYMBOL	ORIG. OR REFERS TO
ACTION ROUTINE	BOOK MULTI SINGLE	AF	
INFO ROUTINE			
FROM:	SPECIAL INSTRUCTIONS		
CSAF	DISTRIBUTION:		
TO:	AFXOPX - 4		
TAC	ARPA - 5		
PACAF	AFXPDR		
INFO: OACSFOR CBR DIR USARMY	AFXPDPJ } 3		
EUSA SEOUL KOREA	AFKOPL - 1		
	ARMY - 2		
	15		
CONF AFXOP D	69363		
THIS MESSAGE IN THREE PARTS: PART I: FOR ALL: Commanding General, Eighth U.S. Army, has requested technical assistance in determining feasibility of conducting defoliation operations along DMZ. Subject operations, if effective, should (a) Improve capability of UN forces to detect and apprehend infiltrators, (b) Provide prominent delineation of southern boundary of DMZ to insure against accidental overflight by friendly aircraft, and (c) Reduce amount of troop labor required to maintain cleared area immediately south of DMZ. PART II: FOR TAC: Request one officer with experience in C-123 defoliation spray operations proceed Korea for approximately 15 days TDY. Officer to report to Colonel V. L. Ruwet, IIS Army, EUSA NLT 16 Nov, to conduct feasibility study.			
DATE	TIME		
6			
MONTH	YEAR		
Nov	1963		
SYMBOL	SIGNATURE		
AFAOPI	<i>Howard E. Kreidler</i>		
TYPED NAME AND TITLE (Signature, if required)	TYPED (or stamped) NAME AND TITLE		
Major <i>bc</i>	HOWARD E. KREIDLER		
PHONE 59071	PAGE NR 1	NR. OF PAGES 2	
SECURITY CLASSIFICATION	CONFIDENTIAL		

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JOINT MESSAGEFORM - CONTINUATION SHEET

SECURITY CLASSIFICATION

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FROM

CSAF

outlined in Part I. On return, officer to report to PACAF and provide copies of study recommendations. This project discussed by Major G. B. Coe, Hq US Army with Capt. [redacted] Hq TAC. Request Capt. [redacted] be made available for this TDY if no command objection. Fund Citation: 21X4992.655s 18035 CC 007-352. For MATS: CIC-2XX-4992-655-18035. Two copies of orders with fund citations included to be forwarded to C.O. Edgewood Arsenal, Edgewood, Maryland, Attn: SMUEA-OC-FA.

PART III. FOR PACAF: Above is to meet requirement outlined in USARPAC letter, GPPCP-CM, dated 11 Oct 63, Subject, Defoliation, to OACSFOR, US Army. Cp-4

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PAGE NR 2

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INITIALS

DD FORM 173-1 MAY 55

U. S. GOVERNMENT PRINTING OFFICE: 1955-844744

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Report-Publ.

DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS PACIFIC AIR FORCES  
APO SAN FRANCISCO 96353



REPLY TO  
ATTN OF: DCEMU

8 January 1968

SUBJECT: Report of Staff Visit (Japan and Korea)

TO: 5AF (DCEMP) (10)

1. Attached is a report of the staff visit to Japan and Korea conducted by a civil engineering representative from this headquarters during the period from 28 November 1967 to 18 December 1967.
2. A reply to the attached report is not required unless exception is taken to the recommendations contained therein.

FOR THE COMMANDER IN CHIEF

*Alfred Kaufman*

ALFRED KAUFMAN, Colonel, USAF  
Director of Operations & Maintenance  
DCS/Civil Engineering

1 Atch  
Rprt of Staff Visit (Japan  
and Korea

Cy to: HQ USAF (AFOCEGC)  
AFBCB  
6314 Spt Wg (BCE/BSA)

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



REPLY TO  
ATTN OF: DCEMU

8 January 1968

SUBJECT: Report of Staff Visit (Japan and Korea)

TO: DCE

1. During the period from 28 November 1967 to 18 December 1967, a staff assistance visit was made to the following units and locations:

- a. Fuchu AS, Japan  
Headquarters Fifth Air Force
- b. Itazuke AB, Japan  
348th Combat Support Group
- c. Tachikawa AB, Japan  
6100th Support Wing
- d. Osan AB, Korea  
6314th Support Wing

2. Member conducting the visit was Mr. [REDACTED] Command Agronomist. b6

3. Attached is a report of this visit:

- a. Item #1, Herbicide Program
- b. Item #2, Golf Course
- c. Item #3, Vegetation Control in Potable Water Reservoirs
- d. Item #4, Vegetation Control Equipment
- e. Item #5, Herbicides in Supply
- f. Item #6, Tree Transplanting
- g. Item #7, Mosulpo Airstrip
- h. Item #8, Land Management Plan

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i. Item #9, Herbicide Training and Certification

j. Item #10, Elementary School Playground



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GS-13

Command Agronomist  
Facilities Division

1 Atch  
Rprt of Staff Visit (Japan  
and Korea)

APPROVED:

A handwritten signature in cursive script, circled in black.

ALFRED KAUFMAN, Colonel, USAF  
Director of Operations & Maintenance  
DCS/Civil Engineering

Item #1: (Unclassified) (Osan AB, Korea)

SUBJECT: Herbicide Program

DISCUSSION:

1. The recent increase of infiltrators and acts of sabotage on the air base have placed an additional vegetation control requirement on the BCE. The lush vegetation growing in and along the extensive surface drainage system and perimeter fence provides excellent cover for the entrance and hiding of these infiltrators. To economically control this extensive vegetation, a chemical control program is required. The topography, soil, drainage system and adjacent desirable vegetation are important factors affecting such a program. The majority of vegetation is grass, either an annual or a perennial. To obtain the desired control over these grasses, two herbicides were selected - a selective systemic and a nonselective soil sterilant. The selective herbicide is to be applied as a spray and the soil sterilant in a granular form. Both herbicides have a low oral toxicity but nevertheless are dangerous if improperly handled and used.

2. The following outline for vegetation control by chemicals is presented for implementation at Osan AB.

a. Area Survey

(1) Do not use the soil sterilant in areas subject to erosion or over 0.1 per cent grade. In addition, do not use the soil sterilant along fence lines where drainage is directly off base. The chemical spray is recommended for these areas.

(2) Locate all desirable vegetation on and off base, i. e. agriculture crops, flowers, trees and shrubs.

(3) Determine areas for selective spraying and those for granular materials (sterilization).

(4) Compute the total acreage to be treated by each herbicide. (All areas subject to erosion should be sprayed with the selective herbicide.)

b. Equipment Required

(1) One trailer mounted tank power sprayer, adjustable height booms, 50 feet of low pressure hose. Adjustable hand guns, flood type nozzles and pressure gauge. FSN 3740-515-5064, TA 479, Part A.

(2) Two 3 to 5-gallon capacity compressed air knapsack type sprayers.

(3) Two 18-inch to 24-inch hand push type fertilizer spreaders. TA 008 1 September 1966, No. 3750-286-4475.

c. Equipment Calibration

(1) Review calibration procedures for all types equipment. Reference pages 30 and 31 of the Agriculture Handbook 269 USDA "Herbicide Manual"

(2) Calibrate all hand and power equipment, new and on hand, before use.

d. Recommended Materials

(1) Trade Name "Dowpon" Active Ingredient

2,2 Dichloropropionic Acid, Sodium Salt - 85%

Dalapon (2,2 Dichloropropionic Acid Equivalent, 74%)

Inert Ingredient - 15%

USDA Registration No. 464-164

FSN 6840-577-4204

Manufactured by the Dow Chemical Company, Midland, Michigan

(2) Trade Name Simazine 4G 4% Granular, Active Ingredient

2-Chloro-4, 6-bis(ethylamino)-S-Triazine - 4%

Inert Ingredients - 96%

USDA Registration No. 100-435

Manufactured by Geigy Agricultural Chemicals, Saw Mill Road, Ardsley, N. Y.

e. Method of Application

(1) Dowpon, a systemic herbicide, is applied in a liquid spray form. It can be applied with a spray boom, hand gun or knapsack type sprayer.

(2) Simazine 4G, a soil sterilant, is applied to the soil surface in a granular form. This can be applied by hand, using a plastic spoon or with a small hand push type fertilizer spreader.

(3) The two herbicides should be applied with previously recommended application equipment. Coverage of the soil by chemical sterilant and vegetation by the spray should be uniform.

f. Rate of Application

(1) Dowpon: Apply 20 pounds of Dowpon mixed in 100 gallons of water per acre. Repeat applications in 2 to 4 weeks or as needed, depending on initial results. The purpose of this herbicide is not to kill out the vegetation and create erosion problems but to maintain a limited 6 to 10-inch growth. Following initial application, the concentration can be reduced to 10 pounds per 100 gallons, depending upon the rate of growth. A certain amount of personal on-site judgement is required. If in doubt, try small experimental areas and observe results. All herbicide results will vary with the soil and climatic conditions encountered.

(2) Simazine 4G: Apply 50 pounds per acre or approximately 1 pound per 1000 square feet.

g. Time of Application

(1) Dowpon: Apply when grass is growing vigorously but before seed stalks develop. Do not apply when vegetation is wet or less than one hour before rain.

(2) Simazine 4G: Apply to soil surface just prior to or during weed emergence, once per year.

h. Hazards

(1) Drift



(a) Apply Dowpon only in a no wind condition, using smoke to determine this.

(b) Apply spray at no more than 20 to 25 psi, using a flat fan type nozzle.

(c) Hold nozzles or lower boom as close to vegetation as possible while spraying.

(d) Do not spray adjacent to susceptible vegetation, i. e., tomatoes or grapes.

(2) Leaching: Do not apply Simazine 4G during periods of heavy rains. This will preclude washing away or excess leaching of the chemical before it can become incorporated in the soil.

(3) Follow all directions and general information on labels for mixing, handling and use. In addition, consult the herbicide manual pertaining to the use of these chemicals.

#### i. General Information

(1) Review the herbicide manual and follow the directions for cleaning and storage of equipment as outlined on pages 31 and 32. Storage of herbicides should conform to the directions shown on the herbicide label and in the herbicide manual, page 24.

(2) AFR 126-4 requires that all personnel be certified as competent for the supervision, handling and use of herbicides. The procedure established for this certification by Hq PACAF should be followed.

(3) Two copies of the "Herbicide Manual", Agriculture Handbooks No. 269 were provided the BCE. This manual is the basic reference for herbicide certification and use.

#### RECOMMENDATIONS:

1. Implement chemical vegetation control program as outlined.
2. Procure all required equipment and materials.
3. Certify the necessary personnel for herbicide use.
4. Request PACAF assistance when herbicide program is to be initiated.

ACTION: BCE

Item #2: (Unclassified) (Osan AB, Korea)

SUBJECT: Golf Course

DISCUSSION: Fertilizer recommendations for the golf course were requested by the BCE. To date, lack of funds have limited the required amounts of fertilizer to properly maintain the turf. Soil samples were taken throughout the golf course. These will be analyzed in Hawaii and recommendations will be forwarded.

RECOMMENDATION: Comply with the fertilizer recommendations.

ACTION: HQ PACAF and BCE.

Item #3: (Unclassified) (Osan AB, Korea)

SUBJECT: Vegetation Control in Potable Water Reservoirs

DISCUSSION:

1. To control the algae and rooted submersed aquatic species in slowly moving water of the potable water reservoir, use copper sulfate and apply continuously. Maintain .06 to 1.0 ppm concentration in the water during the growing season. Provide an initial concentration of 1.0 ppm early in the season and reduce it gradually after mid summer to as low as 0.6 ppm late in the growing season. These rates are well below the maximum permitted concentration of 3.0 ppm copper ion or 7.5 ppm copper sulfate in potable water supplies as established by the U.S. Public Health Service. Copper sulfate can be distributed by any one of four methods:

- a. Drag a burlap bag of crystals across the water behind a boat.
- b. Dissolve crystals in water and sprinkle or spray on the water.
- c. Release solution underneath the surface from either shore.
- d. Broadcast crystals from shore or boat.

2. To determine the volume of water in the reservoir and the amount of chemical needed, use the following: Average depth of water (in feet) X surface acreage X 43,560 = volume water in cubic feet, or Average depth

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water (in feet) X surface area (in square feet) = volume water in cubic feet. One ppm = 2.716 per acre foot (43,560 square feet) pounds chemical = ppm X acre foot X 2.7.

RECOMMENDATION: Use copper sulfate as required.

ACTION: BCE

Item #4: (Unclassified) (Osan AB, Korea)

SUBJECT: Vegetation Control Equipment

DISCUSSION: At the present, an agreement is in effect whereby the vegetation in the airfield and other areas of the base is cut by adjacent land owners at no cost to the Air Force. This grass is cut in the airfield area once a year when it has reached heights of 3 to 4 feet. Although this arrangement is economically advantageous, it has some undesirable aspects. Many of these areas are poorly drained providing excellent breeding grounds for mosquitoes. They cannot be properly treated for larvae due to the heavy vegetation, thus constituting a health hazard. In addition, this is a contributing factor to the recent encephalitis outbreak. The grass is good cover for infiltrators, a fire hazard when the vegetation dries and impedes drainage during the rainy season. Mowing should be accomplished and drainage provided to reduce these hazards. To accomplish this and more effectively carry out the present scope of vegetation control, the following equipment would be required:

- a. 2-7 feet flail type mowers 3750-905-9313 TA008.
- b. 1-15 Feet rotary type mower 3770-802-4734.
- c. 2-5 feet sickle type mowers
- d. 1 vertical, flexible sickle type mower - (Motrim)

The sickle and vertical type mowers are not listed in the TA. Information on these is attached.

RECOMMENDATIONS:

1. Mow all areas in accordance with AFM 85-6, Chapter 6, and the approved land management plan which defines responsibilities, mowing heights and frequencies.

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2. Request PACAF entomologist assistance, if needed.
3. Procure recommended equipment.

ACTION: HQ PACAF, BCE

- 2 Atch  
1. Motrim Mower  
2. Sickle Mower

Item #5: (Unclassified) (Osan AB, Korea)

SUBJECT: Disposition of Herbicides in Storage

DISCUSSION: Recommendations were requested for the use of the two herbicides, Polyester Chlorate and Ureabor, presently in base Supply. These herbicides are soil sterilants and are safe, if used correctly. Precautions, as outlined in Item 1, and directions found on the labels for the use of soil sterilants should be followed.

RECOMMENDATION: If herbicides are not used, make them available to other AF facilities within the 5AF command.

ACTION: BCE

Item #6: (Unclassified) (Osan AB, Korea)

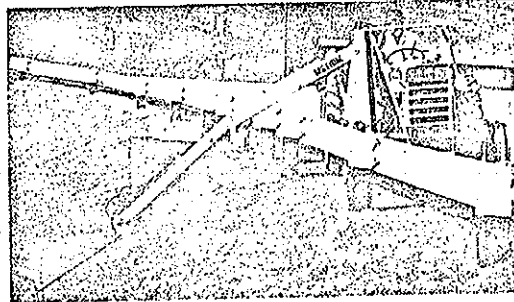
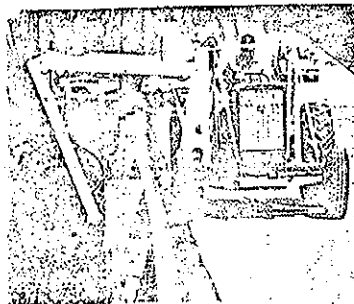
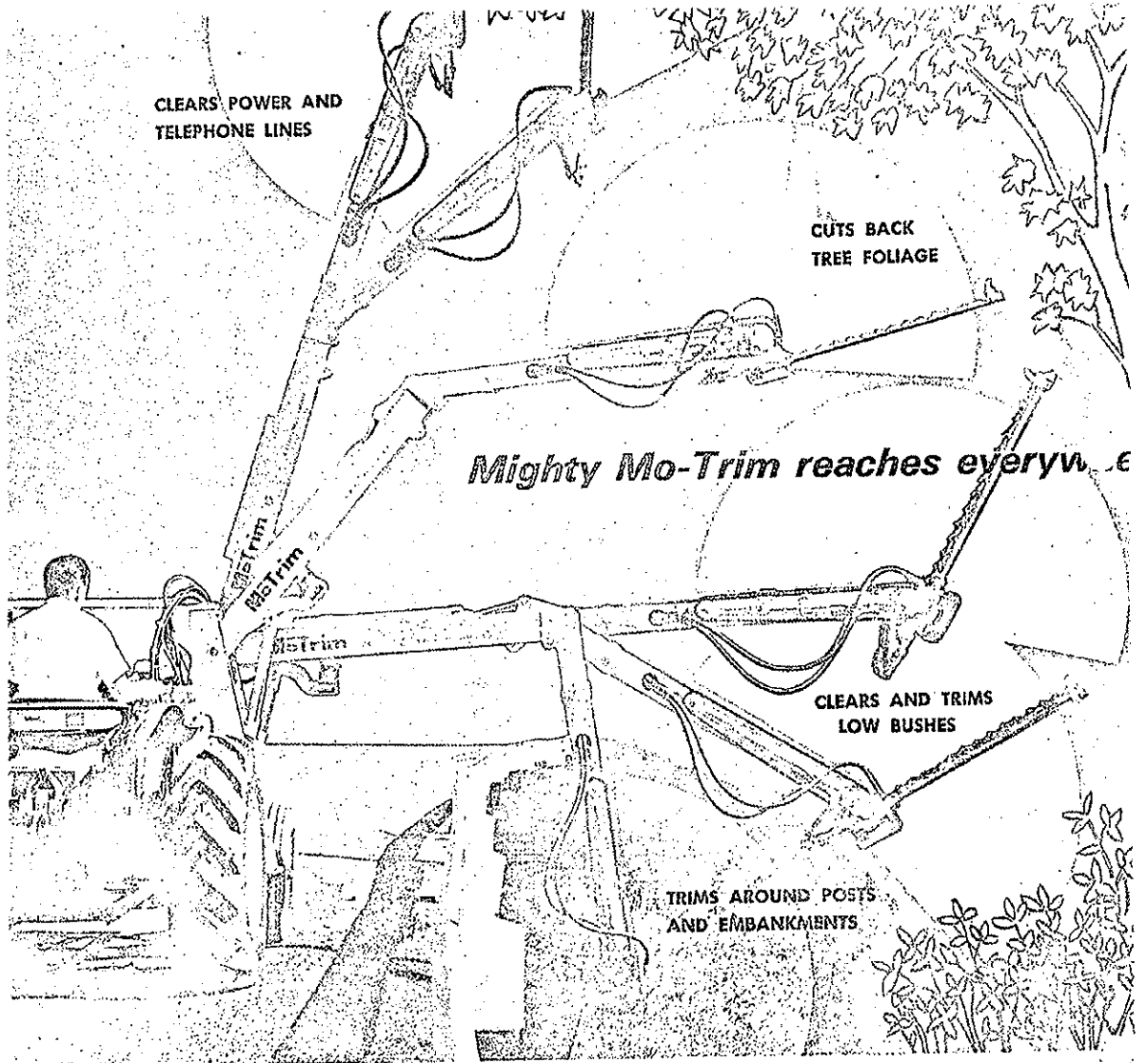
SUBJECT: Transplanting Pine Trees

DISCUSSION: Several areas on the air base were planted with young pine trees which are from 10 to 15 feet in height. These trees are presently growing too close together. They should be thinned out, and those removed transplanted in other areas. Transplanting should be undertaken either in the fall before the first frost or in the spring before trees start to bud. In transplanting, it is important that care be used to prevent the tree from dying. Reference AFM 85-6, Chapter 8-4, for details in balling and moving trees. Spacing of the trees should be on a 12 foot spacing to obtain optimum growth. Additional information on transplanting and pruning is available in AFM 85-6, Chapter 8-2.

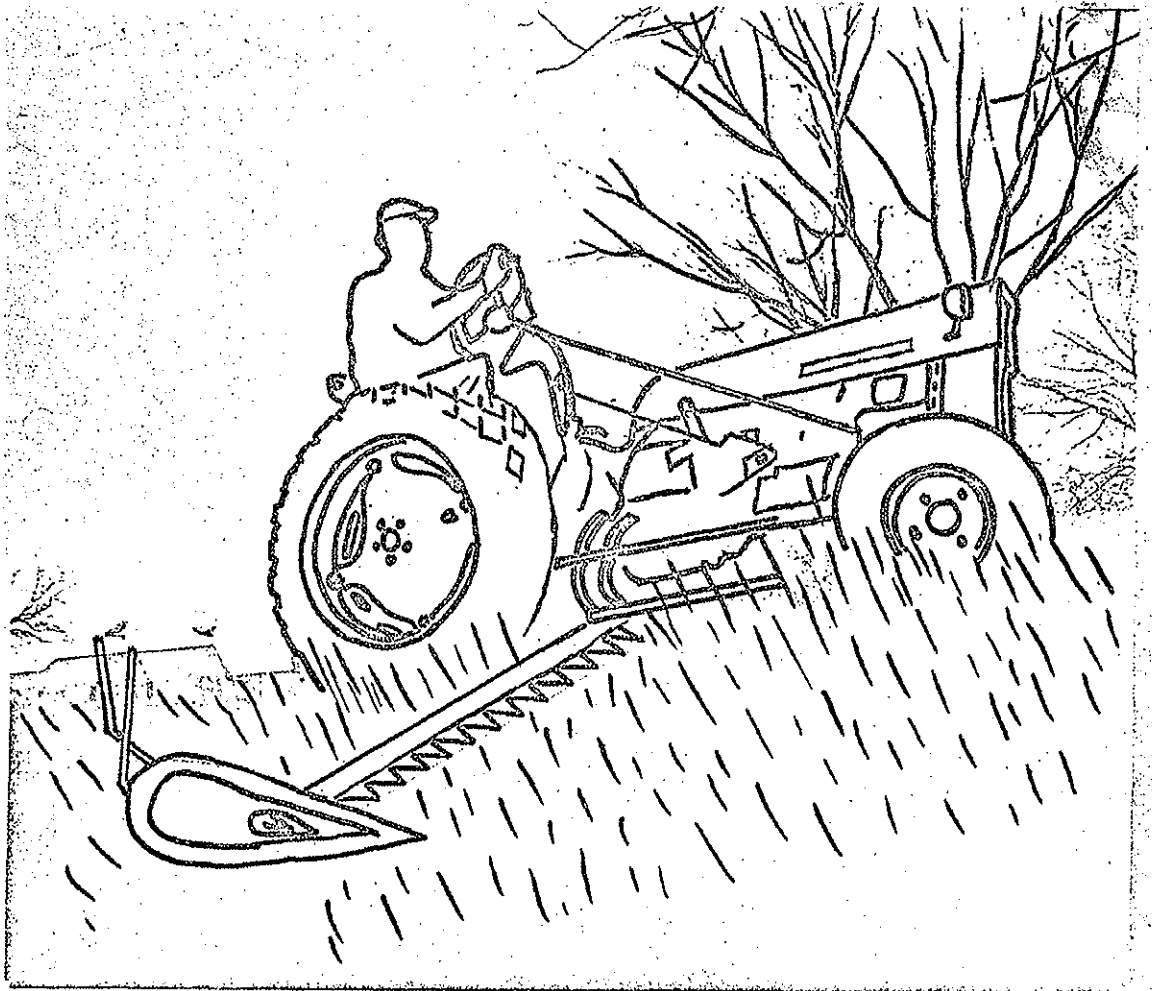
RECOMMENDATION: Thin out and transplant pine trees.

ACTION: BCE

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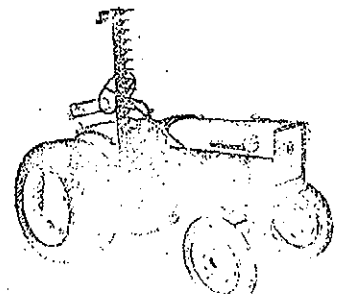
6182



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**Low Cost, High Dependability**

For economical mowing you can't beat the International 105 Mower. Its balanced head design and exclusive wrist-action drive give it all the performance and durability advantages of its big brother—the 110. Mount it with an International Cub, Cub Lo-Boy, or 140 tractor and watch the operating costs of mowing dwindle.

International also offers the 105 on the Customized Lo-Boy, a special tractor-mower combination designed for top economy and high capacity day-in-day-out mowing. You get peak cutting power, easy handling with a 7½-foot turning radius, low center of gravity for maximum safety on hills, top flotation on soft ground. You'll slash mowing costs.



Customized Cub Lo-Boy includes such extras as dual rear wheels, adjustable front axle, heavy-duty steering components, helper spring, and front wheel weights—plus the many industry-leading features of the Cub Lo-Boy.

Att. 105

Item #7: (Unclassified) (Osan AB, Korea)

SUBJECT: Mosulpo Airstrip

DISCUSSION:

1. At the request of Flight Safety (BSA), a staff visit was made to the Mosulpo Airstrip on Chejo Do Island. The purpose of this visit was to determine possible ways to improve the present grass cover and surface condition of the airstrip. This airstrip is operated and maintained by the ROKAF. The present condition of the airstrip is a serious flight hazard. The original area cleared and used for landing was approximately 3,500 ft x 400 ft. At the present, the landing area has diminished to 3,100 ft x 150 ft. The reduction in length is due to loss of real estate to land owners and deterioration of the ends of the runway. These approaches have become rough, rutted, rocky and weedy. The decrease in width resulted from an attempt to improve the strip, by grading and filling. Those areas that were filled are very rough and unsafe for use. The natural topography of the strip is very undulating with some very high and low areas. Drainage of the field is virtually nonexistent, either natural or artificial. All rainfall either collects in the low areas or drains through the soil. This results in a wet and soft soil condition in many areas. Climatology data obtained indicates that this condition is prevalent for extended periods of time. The parent material of the soil is volcanic. This, combined with a high organic matter content increases the water holding capacity of the soil. The predominant grass growing on the airstrip, a native rye grass, provides a poor turf cover for a landing strip. This type of grass will not withstand much traffic. A stolon or rhizome type of grass would be more desirable. Soil samples were taken throughout the area for a fertility analysis. Recommendations will be forwarded as soon as available. Deep ruts, 12 or more inches in depth, have developed 400 to 600 ft in from either end of the strip. These have been caused by landing of heavy type aircraft such as the C130. Rock outcroppings are appearing in several areas of the strip; the exposed portions of which are very sharp and jagged. These rock outcroppings are appearing due to sheet erosion and traffic. At the present, the only equipment available for maintenance or repair is a heavy roller. This is used to periodically roll the rutted areas when moisture conditions are optimum.

2. There is no easy or inexpensive solution to the present airstrip condition. Three suggested courses of action to either allow continued use of the strip or improve it are as follows:

a. Maintenance of present airstrip.

(1) Continue the present practice of rolling the rutted areas smooth,

(2) Replace the present sod cover with a more desirable turf such as Zoysia Tenuifolia. Fertilize and maintain this grass so as to produce a good sod cover.

(3) Continue the present practice of keeping rock outcroppings removed until a good turf can be established.

(4) Limit airstrip to lightweight aircraft only.

b. Construct a new grass airstrip (including leveling, grading drainage, suitable subsurface fill, top soil and recommended turf).

c. Construct an asphalt airstrip.

RECOMMENDATION:

1. Construct either a completely new grass strip or an asphalt strip.

2. The concept of a new strip should be reviewed with the PACAF pavements engineer.

ACTION: BSA



Item #8: (Unclassified) (Itazuke AB, Japan)

SUBJECT: Land Management Plans

DISCUSSION:

1. A visit to Itazuke AB was not possible due to the herbicide seminar and transportation schedules. Instead, a two-day meeting was arranged at Hq 5AF with BCEM and BCEPR personnel from Itazuke AB.
2. Land management plans for Itazuke and its satellite bases were reviewed and assistance extended in those areas desired. In addition, ground maintenance problems confronting the BCE in these areas were discussed. A herbicide program is required at Yamada Ammo Storage Annex and at the Itazuke AB. Recommendations for control of the Pine Bark Beetle were also requested at the Hakata Admin Annex and Yamada Ammo Storage Annex.
3. A fifty-foot fire break surrounding the Yamada Ammo Storage Annex has a continuing vegetation control problem. This same requirement exists around the upper and lower bomb storage area at Itazuke AB. A somewhat different vegetation control requirement exists in the drainage ditches and POL areas at Itazuke AB. The vegetation in the fire break areas consists of bamboo, trees and woody shrubs. The herbicides that would control this vegetation cannot safely be used in such close proximity to privately owned land. Machinery that could control this vegetation is also precluded due to the extreme steep and rough topography. It is recommended that the fire break areas be leveled sufficiently so that machinery can be used. The flail type mower is recommended for use in these areas and in the overrun areas of the Itazuke AB. The vegetation along the drainage ditch areas on the base can be controlled with the herbicide, Dowpon, as outlined in Item 1. At the present time, no spray equipment other than three-gallon back pack sprayers is available. The same equipment as recommended in Item #3 should be procured.
4. The present controls used for control of the Pine Bark Beetle are carried out by the Japanese Forestry Department. These consist solely of cutting and removing the dead trees. In addition, ground spraying with 5% Lindane, water emulsion, sprayed to the point of run off is recommended. This control should be incorporated into the base pest control plan.

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RECOMMENDATIONS:

1. Procure spray, vegetation control equipment and herbicides.
2. Certify all personnel using herbicides.
3. Use .5% Lindane water emulsion as a spray control of the Pine Bark Beetle.
4. Remove and destroy trees heavily infested with the Pine Bark Beetle.

Item #9: (Unclassified) (Tachikawa AB, Japan)

SUBJECT: Herbicide Training Seminar

DISCUSSION:

1. A two-day seminar on herbicide use was held at Tachikawa AB. Grounds superintendents from the surrounding Air Force facilities attended this training class. The herbicide certification test was given at the conclusion of this seminar.
2. Several problems exist which will complicate certification of those people actually applying and working with herbicides. One is the language, and the other is the effect this certification will have with labor unions on the classification of these people. If no solution to this problem is possible, herbicide use will have to be either performed by contract or by US personnel.
3. The increased need, use and misuse of herbicides by the USAF, requires that all personnel supervising or using these be trained in their use. The use of herbicides is not an exact science, and as such results cannot be always predetermined. This is increasingly so due to the many new herbicides continually being placed on the market. Requirements and results will be determined by such variables as climatology, vegetation, soil chemistry, drainage and proximity to desirable plants and animal life. The misuse of herbicides has had and could have many ramifications involving the US Government.
4. The present procedure for certification as established by PACAF should be complied with.

RECOMMENDATION: Certify all personnel supervising or using herbicides.

ACTION: Hq 5AF.

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Item #10: (Unclassified) (Kanto Mura Housing, Japan)

SUBJECT: Elementary School Playground

DISCUSSION:

1. Muddy soil conditions have developed in high density traffic areas of the playground. These areas are most prevalent in and around playground equipment, paths and waiting areas. An asphalt covering for the playground area would create more serious problems than the present condition. Asphalt is only recommended for walks, waiting or the bus loading areas.
2. The soil around the playground equipment should be replaced with 12 inches of sand.
3. The denuded areas found in other areas of the playground should be resodded with *Zoysia Tenuifolia*.

RECOMMENDATIONS:

1. Use asphalt only in walk, waiting or bus loading areas.
2. Use sand around playground equipment.
3. Resod in all other areas.

ACTION: BCE

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THE ARMED FORCES  
RESERVED  
JAN 15 1954  
U.S. AIR FORCE  
RECEIVED CONTROL BOARD

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207

*US Navy - Nav. Med. Field Res. Lab.  
Camp Lejeune*

7009 5

NAVAL MEDICAL FIELD RESEARCH LABORATORY  
CAMP LEJEUNE, NORTH CAROLINA 28542

NMFRL-032-hjp  
3900.3  
1 August 1970

From: Commanding Officer, Naval Medical Field Research Laboratory, Camp Lejeune, North Carolina 28542

To: Distribution List

Subj: Pesticides and Pest Control Equipment; information concerning

Ref: (a) CO NMFRL ltr NMFRL-032-hjp 3900.3 of 1 September 1969, Subj: Pesticides and Pest Control Equipment; information concerning  
 (b) Marine Corps Order 6250.6A of 2 February 1970, Subj: Pest Control Program  
 (c) Table of Authorized Materiel, U. S. Marine Corps, NAVMC 1017, Revision No. 1, 20 April 1970

Encl: (1) Review of Information Concerning Federal Standard Stock Pesticides (primarily FSC 6840) and Equipment for Pest Control and Pesticide Dispersal (primarily FSC 3740)

1. Reference (a) is superseded by this letter with the information contained in enclosure (1).

2. This review includes up-to-date published changes related to the procurement, storage, issue and use of subject supplies and equipment. The information contained in enclosure (1) was prepared by the Entomology Division of this laboratory to assist those who have not been able to obtain the numerous references pertinent to the identification and management of these items.

3. References (b) and (c) set forth instructions concerning the procurement, use and reporting of Pesticides and Pest Control Equipment in accordance with Department of Defense and the Secretary of the Navy regulations. These references are valuable to the organization and operation of safe, effective and efficient programs for the control of pests within the military establishment.

4. Additional copies of this review are available on request. Your suggestions and comments on the previous reviews have been incorporated in this report which has been improved by your interest.



Distribution:  
List (X)

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Distribution List (X)

PMU 2 Norfolk (2)  
PMU 5 San Diego (2)  
PMU 6 Pearl Harbor (2)  
PMU 7 Naples, Italy (2)  
Disease Vector Control Center, Alameda (2)  
Disease Vector Control Center, Jacksonville (2)  
BuMed (7222) Wash DC (4)  
MarCorps Supply Center, Albany (2)  
MarCorps Supply Depot, Barstow (2)  
MarCorps Supply Activity, Philadelphia (2)  
ForSurgeon FMFLant, Norfolk (1)  
ForSurgeon FMFPac, Pearl Harbor (1)  
StaffMedO HQMC Wash DC (1)  
CMC (AO4D) Wash DC (2)  
CMC (CSX) Wash DC (1)  
CMC (CSY 4) Wash DC (1)  
DivSurgeon 1st MarDiv (1)  
DivSurgeon 2d MarDiv (1)  
DivSurgeon 3d MarDiv (1)  
DivSurgeon 5th MarDiv (1)  
PrevMedSec 1st MarDiv (1)  
PrevMedSec 2d MarDiv (1)  
PrevMedSec 3d MarDiv (1)  
PrevMedSec 5th MarDiv (1)  
DirMilEntomolInfoServ Wash DC (2)  
Exec Sec AFPCB Wash DC (15)  
NavFacEngCom (63-233) Wash DC (2)  
NavFacEngCom (63A) Seattle (2)  
NavFacEngCom Norfolk (2)  
NavFacEngCom Charleston SC (2)  
NavFacEngCom NY (2)  
NavFacEngCom Boston (2)  
NavFacEngCom New Orleans (2)  
NavFacEngCom Chesapeake Div Wash DC (2)  
NavFacEngCom San Diego (2)  
NavFacEngCom San Bruno Calif (2)  
NavFacEngCom Caribbean Div NY (2)  
NavFacEngCom PacDiv San Fran (2)  
NavFacEngCom European Div NY (2)  
LnO AFPCB USDA Gainesville Fla (2)  
CO Camp Garcia FT FMFLant Vieques PR (2)  
CO Camp Butler FPO San Fran (2)  
MarCorps Supply Center (844) 1100 S. Broad St., Phila (2)

1 August 1970

**PESTICIDES AND PEST CONTROL EQUIPMENT; information concerning**

**NOTE:** All items of supply for the control of pests are considered to be Standard Stock if they appear in the Federal Stock Catalogs. All other items are non-standard and require approval of the Entomologist who serves the major military command. Marine Corps procurement of items which are not in local supply requires the requisition to be sent to the Inventory Control Point, Marine Corps Supply Activity, 1100 South Broad Street, Philadelphia, Pennsylvania 19146. Navy procurement of items which are not in local supply requires that (a) the requisitions for an item in FSC Class 6800 be sent to Defense General Supply Center, Bellwood, Petersburg Pike, Richmond, Virginia 23219, or (b) the requisition for an item in FSC Class 3740 be sent to Defense Construction Supply Center, 3990 East Broad Street, Columbus, Ohio 43215. This Review consists of Part I - "Pesticides," Part II - "Equipment for Pest Control and Pesticide Dispersal," and Part III - "Storage and Disposal of Pesticides."

**Part I. PESTICIDES.**

- References:**
- (a) FSC C6800-IL Identification List, 1 January 1970
  - (b) FSC C6800-IL-CB2 Identification List, 1 July 1970
  - (c) FSC C-6800-ML-MC Management Data List, 1 May 1969
  - (d) FSC C-6800-ML-MC Change Bulletin No. 4, 1 July 1970
  - (e) NAVFACINST 6250.12 of 1 April 1970, Subj: Use of Persistent Pesticides; policy on
  - (f) NAVSUP NOTICE 6250 SUP 0462B of 5 June 1970, Subj: Curtailment of Use of DDT in the Department of Defense.
  - (g) Herbicide Manual for Noncropland Weeds, USDA, Agriculture Handbook No. 269.
  - (h) Suggested Guide for Weed Control for 1969, USDA, Agriculture Handbook No. 332.
  - (i) 2,4-D, 2,4,5-T and Related Chemicals for Woody Plant Control in Southeastern United States, Robert M. Romancier, Report No. 16, Georgia Forest Research Council, Macon, Georgia 1965.
  - (j) Military Entomology Operational Handbook, NAVDOCKS MO-310.
  - (k) Manual of Naval Preventive Medicine, NAVMED P-5010, Chapters 9, 10, 11 and 12.

**Guide:**

Pesticides (Insecticides, Herbicides, Rodenticides, etc) are available in a variety of packages, formulations and concentrations. In order to guarantee that hazardous materials are issued only to personnel who are adequately trained and properly certified as qualified to handle such items, the following controls are established:

- (a) **Training and Certification.** The Naval Facilities Engineering Command and the Bureau of Medicine and Surgery maintain training facilities and establish certification

Enclosure (1)

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regulations. A person who is responsible for procurement, storage, issue, use and disposal of Pesticides should protect himself by compliance with Department of Defense Instruction 4150.7 of 23 July 1964 and CH-1 of 1 October 1965, Subj: "Pest Control Operations at Military Installations" and related departmental publications.

(b) Classification of Pesticides. Each pesticide is given a control category symbol, I, II or III.

I. Ready-to-use items to be issued to troops, fleet units, and other personnel without special qualifications and training in the mixing and application of toxic chemicals.

II. Items to be issued, when approved by the surgeon (medical officer) and/or engineer officer (maintenance or public works officer), for use by installation engineer (or public works) employees who have valid certificates of training in pest control; or for use by troops under the direct supervision of certified personnel of the respective departmental medical service.

III. Items to be issued only on the approval of the Surgeon General.

Additional controls are published when certain techniques are replaced by improved methods or the development of new compounds causes changes in the recommended pesticides. References (e) and (f) of Part I of this review are examples of these controls. Reference (e) emphasizes the value of the control procedure and specifies those pesticides which are considered general use items and those pesticides which must be applied by, or under the direct supervision of trained and certified personnel. The contents of this reference have been indicated in the following descriptive lists. Reference (f) defines the Navy policy on the use of DDT and requests a report "by message or speedletter" of "on hand stocks of the below listed DDT compounds" and advises that the "compounds reported in accordance" with this reference "are not to be used." The compounds which are not to be used are as follows:

<u>FSN</u>	<u>Pesticide</u>
6840-253-3892	Insecticide, DDT, 5% solution, 5-gallon can.
6840-285-4307	Insecticide, DDT, Lindane, indoor fogging, 10% DDT, 2% Lindane, 5-gallon can.
6840-598-7314	Insecticide, DDT, composition 25% DDT, 75% emulsifier and solvent, 55-gallon drum.
6840-254-8770	Insecticide, DDT-Allethrin, aerosol, 12-ounce can.
6840-274-5415	Insecticide, DDT, 10% dust, 2-ounce can.

Since no disposition is directed for pesticides which become obsolete, these supplies must be retained in storage until disposal orders are published. To assist in the proper storage and disposal of pesticides, Part III of this review has been prepared from numerous unofficial sources of information.

Review No. TAM No. Category Symbol	Descriptive Information	Specification FSC Catalog Index No.	Price/Package FSN
---	----------------------------	---	----------------------

HERBICIDES

- |    |    |   |   |  |
|----|----|---|---|--|
| II | 1. | <u>Amino: P/N Tordon 101</u> , a benzoic acid compound which is more effective than 2,4-D for the control of various resistant weeds and certain woody plants. Since it is compatible with 2,4-D, dalapon and certain other herbicides, it is mixed occasionally with another compound to produce desired results (Picloram-2,4-D). | MFG. FED Code 71983<br>660399-500                                   | \$57.00/DR (5 gallons)<br>6840-629-1638  |
| II | 2. | <u>Amino: P/N Tordon 101</u> , special packaging of item No. 1 above. The 16-gauge drum shall have a 3-inch wide white band at the center line. This item is for tactical purposes only and not for base type pest control operations.  | MFG FED Code 71983<br>660472-500                                    | /DR (55 gallons)<br>6840-926-9093        |
| II | 3. | <u>Amitrole (Amizol)</u> , 90% amino triazole and 10% inert ingredients. For suggested uses of this water soluble powder see reference (g), page 6, and reference (h), page 5. Local procurement.   | FED O-H-190<br>660962-500   | \$46.50/DR (50 pounds)<br>6840-833-1217  |
| II | 4. | <u>Borate-Bromacil Mixture</u> . This granular mixture contains 71.2% disodium tetraborate pentahydrate, 22.8% disodium tetraborate decahydrate, 4.0% bromacil and 2% inert ingredients.  | (Procurement approval not required)<br>Spec not given<br>660989-500 | \$20.20/BG (50 pounds)<br>6840-027-6467  |
| II | 5. | <u>Bromacil 80%</u> . This wettable powder contains 80% bromacil and 20% inert ingredients. See reference (h), page 6.  | Spec not given<br>661525-500  | \$256.00/DR (50 pounds)<br>6840-890-2146 |

- II 6. Cacodylic: P/N Phytar 560G. The 16-gauge drum shall have a 3-inch wide Blue band at the center line. This item is for tactical purposes only and is not for base type pest control.

MFG FED Code 03670 /DR (55 gallons)  
662417-500 6840-926-9094
- II 7. Chlorate-Borate. This water soluble powder contains a mixture of 73% disodium octoborate tetrahydrate, 25% sodium chlorate and 2% inert ingredients including the spreading agent. See reference (g), page 14. (Polybor)

FED O-H-202 \$7.59/BG (50 pounds)  
662521-500 6840-684-8975
- II 8. Copper Sulfate. This water soluble crystalline herbicide contains 80.16% cupric sulfate, pentahydrate, approximately 19.84% inert ingredients. Ph of 5% solution, 2.3.

Spec not given /BG (50 pounds)  
662932-500 6840-063-3981
- II 9. Dalapon 85%. This water soluble powder contains 85% 2,2-dichloropropionic acid sodium salt and 15% inert ingredients. See reference (g), page 10, and reference (h), page 7. (Dowpon, Radapon)

FED O-H-205 \$40.70/DR (50 pounds)  
663214-500 6840-577-4204
- II 10. 2,4-D. This liquid form herbicide contains 2,4-dichlorophenoxyacetic acid. See reference (g), page 15, and reference (h), page 12. See Review No. 11 and No. 12. (Amine) Type II

FED O-H-200 \$10.10/CN (95 gallons)  
663777-249 6840-664-7060
- II 11. 2,4-D. See Review No. 10 and No. 12. Type III LVE

FED O-H-200 \$23.10/DR (5 gallons)  
663777-498 6840-577-4194
- II 12. 2,4-D. See Review No. 10 and No. 11. Type III LVE  
Local procurement. Packed in 16-gauge drums.

FED O-H-200 \$181.00/DR (55 gallons)  
663777-747 6840-577-4195

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- II 13. 2,4-D - 2,4,5-T mixture. This solution contains 33.5% low volatile ester of 2,4-D (2.0 lb. 2,4-D acid equivalent/gallon). 31.9% low volatile ester of 2,4,5-T (2.0 lb. 2,4,5-T/gallon) and 34.6% inert ingredients. See reference (g), page 16, and reference (h), page 12. (Ded-Weed LV33) Local procurement.

FED O-H-200 \$297.00/DR (55 gallons)  
 FED O-H-200A 6840-825-7792  
 664340-500

- II 14. 2,4-D - 2,4,5-T. High volatile ester. This solution contains 50% N-butyl 2,4-dichlorophenoxyacetate, 50% N-butyl 2,4,5-T-trichlorophenoxyacetate. The drum shall have an Orange band 3-inches wide at the center line of the drum body. This item is for tactical purposes only and is not for base type pest control operations.

Spec not given 580 pounds  
 664608-500 /DR (55 gallons)  
 6840-926-9095

- II 15. Dicamba 49%. This water soluble salt contains 49% dicamba, 7.9% dimethylamine salts of related acids and 43.1% inert ingredients. It is in liquid form. See reference (g), page 8 and reference (h), page 7.

Spec not given \$26.20/BT (1 gallon)  
 664903-500 6840-905-4304

- II 16. Diquat. This liquid herbicide is a non-volatile and nonflammable contact poison. It contains 35.3% diquat dibromide and 64.7% inert ingredients. See reference (g), page 11, and reference (h), page 7.

Spec not given \$120.00/DR (5 gallons)  
 665466-500 6840-815-2799

- II 17. DCPA, Dimethyl Tetrachloroterephthalate. This wettable powder contains 75% dimethyl ester of tetrachloroterephthalic acid and 25% inert ingredients. It is odorless. (Dacthal) See reference (g), page 9, and reference (h), page 7.

FED O-H-206 \$35.80/Fiber Drum (50 pounds)  
 666029-500 6840-681-9475

- II 18. DSMA, Disodium Methylarsonate. This water soluble powder contains 63% disodium methylarsonate. (DMA) See reference (g), page 8, and reference (h), page 8.

FED O-H-204 \$31.60/Fiber Drum (100 pounds)  
 666592-500 6840-965-2071

19. Diuron 80%. This finely ground water dispersible powder contains 80% active ingredients (3-/3,4 dichlorophenyl)-1, 1-dimethylurea, 20% inert ingredients. See reference (g); page 18, and reference (h), page 7. (Karmex)
- MIL-H-51152 \$122.00/DR (50 pounds)  
667155-500 6840-825-7790
20. Fenuron 25%. This pelletized form of Fenuron contains 25% 3-phenyl-1, 1-dimethylurea and 75% inert ingredients. (Dybar) Local Procurement. See reference (g), page 18, and reference (h), page 7.
- MIL-H-51151 \$60.00/BG (50 pounds)  
667718-500 6840-810-6920
21. Monuron 80%. This water dispersible powder contains 80% 3-(p-chloro-phenyl)-1, - dimethylurea and 20% inert ingredients. See reference (g), page 18, and reference (h), page 9. (Telvar)
- MIL-H-51153 \$118.00/DR (50 pounds)  
668281-500 6840-514-0644
22. Picloram. This pelletized herbicide contains 11.6% picloram potassium salt and 88.4% inert ingredients.
- Spec not given \$52.00/DR (50 pounds)  
668844-500 6840-990-1464
23. Silvex Ester. LVE. This liquid form, emulsion concentrate, contains 58.9% to 65.1% of any suitable low volatile ester derivative of 2-(2,4,5-trichlorophenoxy) propionic acid (4 lb. min. acid equivalent per gallon) and 24.9 to 41.1% inert ingredients. See reference (g), page 17, and reference (h), page 10.
- FED O-H-215 \$77.00/DR (5 gallons)  
669407-500 6840-882-4810
24. Simazine. This water dispersible powder contains 80% 2-chloro-4, 6-BIS-ethylamino/-S-triazine and 20% inert ingredients. See reference (g), page 19, and reference (h), page 10. See item No. 25.
- FED O-H-207 Type I \$12.75/BG or CN (5 pounds)  
669970-500 6840-814-7334
25. Simazine. See Item No. 24. Local procurement.
- FED O-H-00207 Type I /DR (50 pounds)  
670252-500 6840-781-8195
26. Fenac. This liquid herbicide contains 16.1% 2,3,6-trichlorophenylacetic acid, sodium salt and 83.9% inert ingredients.
- Spec not given \$228.00/DR (30 gallons)  
670418-500 6840-929-7951

- II 27. 2,4,5-T. This solution contains 2,4,5-trichlorophenoxyacetic acid, low volatile ester, 4 lb. acid equivalent per gallon. See reference (g), page 17, and reference (h), page 12. Type II, Class 2.
- FED O-H-210 \$33.50/PL (5 gallons)  
671096-333 6840-582-5440
- II 28. 2,4,5-T. See item No. 27. Local procurement.
- FED O-H-210A \$348.00/DR (55 gallons)  
671096-666 6840-577-4201
- II 29. M-1960. Clothing Application Only. This insect repellent **MUST NOT BE APPLIED TO THE SKIN**. It contains 30% propanediol, 30% benzyl benzoate, 30% butylacetanilide and 10% polyoxyethylene/20/sorbitan K4440 II E monoleate. It is necessary to follow the directions carefully when the 1867A impregnation of uniforms is necessary.
- MIL-I-12123 \$7.56/CN (1 gallon)  
671659-500 6840-270-6200
- II 30. Benzyl Benzoate 90%. Clothing Application Only. This compound is an excellent repellent when it is properly used on the clothing. It is especially effective against ticks and chiggers. The formulation contains 90% benzyl benzoate and 10% emulsifier.
- MIL-I-51022 \$6.10/CN (1 gallon)  
672222-500 6840-281-2062
- I 31. DEET. Clothing - Personal Application. This special polyethylene 1/2-ounce bottle contains 75% diethyltoluamide (DEET) and 25% ethanol. It is part of a Survival Kit, Individual, Hot-Wet Environment (FSN 6545-782-2821).
- FED O-I-00503 \$0.47/BT (1/2-ounce)  
672785-500 6840-935-0984
- I 32. DEET. Insect and Leech Repellent: Clothing and Personal Application. This K4430 II E solution contains 75% diethyltoluamide (DEET) and 25% denatured alcohol. 3551B The 2-ounce polyethylene bottle is unbreakable. **READ THE DIRECTIONS ON THE BOTTLE**. Type II. Solution A. (Do not order 6840-656-1632 - it is nonstandard)
- FED O-I-503 \$0.20/BT (2 ounces)  
673349-333 6840-753-4963

- III 33. DEET. See Item No. 32. THIS ITEM IS TO BE ISSUED ONLY AS DIRECTED BY THE SURGEON GENERAL.
- FED O-I-503 /CN (1 gallon)  
673349-666 6840-864-5430
- I 34. DEET. Insect and Leech Repellent. Clothing and Personal Application. This  
K4435 II E 6-ounce pressurized can contains 71.25% N,N-diethyltoluamide (DEET),  
9999A 3.75% other toluamides and 25% inactive ingredients (propellent). It may be  
used to apply the repellent to the clothing or on skin surfaces but FOLLOW  
THE DIRECTIONS on the can.
- FED O-I-503 Type II Size 2 \$0.59/CN (6 ounces)  
674474-500 6840-082-2541
- II 35. Repellent, Stick Form. This stick form repellent contains 65%  
2-ethylhexanediol-1,3, 11% ozokerite 871 mas., 22% stearic acid, 2% inert  
ingredients. This item is part of a Survival Kit. It is inferior to the  
recommended item No. 31 above.
- P/N 6-12 FSCM 61637 \$0.32/Cartridge  
675085-500 6840-142-8965
- II 36. Aluminum Phosphide. The tablets (item No. 36) and the pellets (item No.  
37) are formulated to contain 55% aluminum phosphide, 41% ammonium  
carbamate and 4% paraffin. Special training is required before these items  
can be used in the treatment of grain pests in stored rice, wheat, barley,  
corn, oats, sorghum, millet and rye.
- FSCM31618 3 tubes - 30 tablets  
675652-333 \$4.61/Each Tube per can  
6840-145-0016
- II 37. Aluminum Phosphide, Pellet form: See item No. 36 above.
- FSCM 31618 \$23.30/1660 Pellets - flask  
675652-666 6840-442-5698
- II 38. Baygon Roach Bait. This insecticide in dry granular bait contains 2%  
o-Isopropoxyphenyl methylcarbamate and 98% inert ingredients. Although  
it must be applied by certified personnel it is not necessary to obtain  
approval by the area entomologist prior to procurement. It is recommended  
for the control of German and brown banded cockroaches.
- Spec not given, FSCM 32766 /BT (5 pounds)  
689393-333 6840-498-4057