

# PAPERS AND PROCEEDINGS OF THE 24TH ANNUAL MEETING

of the  
AMERICAN MOSQUITO CONTROL ASSOCIATION

and the  
10TH ANNUAL MEETING

of the  
LOUISIANA MOSQUITO CONTROL ASSOCIATION

New Orleans, Louisiana, March 31-April 3, 1968

Part I

## UNIQUE PROBLEMS IN INSECT AND PEST CONTROL OF NASA'S MISSISSIPPI TEST FACILITY

FREDERICK W. HARDEN AND BEVERLY J. ETHRIDGE<sup>1</sup>

The mosquito control program at the National Aeronautics and Space Administration's Mississippi Test Facility is unique among organized mosquito control programs. The area under control has no permanent residents; only transient employees of NASA and its contractors, many of whom have never lived in an area with a serious mosquito annoyance problem. The test complex is located in a remote area of south coastal Mississippi. The central Fee area, or government-owned land, encompasses over 13,000 acres and the surrounding uninhabited, acoustical buffer zone another 128,000 acres in size.

The insect and pest control program is under the supervision of a non-governmental agency, the General Electric Company, NASA's operational and service contractor at the Mississippi Test Facility. The technical personnel are General Electric employees; the field inspection, maintenance, repair and custodial work is done by four unionized subcontractors to General Electric. Operational management is, to say

the least, not typical of that of a local county mosquito control program.

During the severe 1963 mosquito outbreak, *Aedes sollicitans* and *Aedes taeniorhynchus* were found in astronomical numbers, reaching 100+ per minute landing rate counts throughout the area. This created a situation which was almost intolerable, causing many construction crews to leave their jobs. It was estimated there was a loss of work efficiency of at least 25 percent. Since there was no organized program at the time, the Air Force Special Spray Flight was brought in to treat approximately 150,000 acres with malathion in oil; this gave satisfactory control for several weeks.

The present control program began about one year after the initiation of construction. There were few roads available, and those that were were usually occupied by heavy construction equipment day and night. It was not unusual to use a construction road one week as a fog road and have it obliterated by a canal the following week. As a result, to provide adequate coverage, a system of small fog roads was constructed entirely separate from the existing road system.

<sup>1</sup>General Electric Company, Mississippi Test Support Department, Bay Saint Louis, Mississippi.

To provide control in the salt marsh south of our control area but outside our jurisdiction, MTF has a cooperative agreement with the Gulf Coast Mosquito Control Commission to provide insecticide for adulticiding, paris green for larval control and helicopter flying time for inspection at a total cost of approximately \$36,000.00. In addition, a three-quarter yard dragline has been supplied for permanent mosquito control in Hancock County salt marshes immediately south and southeast of the test site.

As one would expect, the principal area of control is the test complex, where there are three test stands, one over 400 feet in height. This entire area is extremely well lighted and borders a large swamp beyond the fog area, hence it is subject to rapid mosquito reinfestation from areas outside our jurisdiction.

Personnel work in the test area continuously 24 hours a day, 7 days per week. Until the problem of liquid oxygen (LOX) compatibility came to our attention, the standard fogging chemicals with a #2 diesel oil base were used. However, when any hydrocarbon, whether it be an insecticide or not, is brought into the presence of LOX in sufficient quantity, a catastrophic explosion may occur. Consequently, last spring our fog trucks were banned from the test area during the handling of LOX, which, during tests, may be a period of several days to a week. As a result, lab personnel at MTF began a crash program testing insecticides to determine the hydrocarbon level of the various field formulations. This was done by infra red determination expressed as cetane, a typical hydrocarbon, which is a standard in LOX work. These data were then converted to acreage deposit amounts assuming that all particles were deposited within the first 300 feet, even though our standard swath is 600 plus feet.

Two insecticides—Dibrom and Baygon—were found to fall within the approved range of two milligrams of hydrocarbon per square foot. A non-thermal fog machine (cold fogger) is used in these areas, applying Dibrom 8 at the rate of 1.75

ounce technical per gallon at 40 gallons per hour. As soon as satisfactory ground equipment for the application of ultra low volume insecticide is developed this operation will be converted to ultra low volume.

Since diesel oil formulations can still be used in the balance of the Fee area, the non-thermal applications have provided satisfactory control in the test area on most occasions. However, mosquitoes and certain midges have apparently not read the references which state they do not usually go above the second floor of buildings. Mosquitoes at MTF so far have become annoying in the test stands up to the tenth floor. This created a control problem which has not yet been solved.

Mosquito control is only a portion of the work listed in the unit's work scope; for example, structural pest control (roaches, ants and termites) and rodent control is carried on in some 119 buildings, encompassing approximately 1-1/4 million square feet, ranging in size from the smallest skid house to a 19-story test stand. Additional responsibilities are weed and brush control, encephalitis surveillance, removal of small animals such as snakes, skunks and squirrels, and control of turf, horticultural and forest insects and diseases. The diversified work creates a number of problems usually not encountered. For example: One unusual problem has been the annual fall migration of *Polistes* wasps by the tens of thousands from the surrounding pine woods into all levels of test stands and high bay areas accumulating largely on the tops of the high boom rigs. They are apparently attracted by the grease on the cables and in the sheaves, as well as a warmer location. The Booster Storage building, with a 123-foot ceiling, has presented quite a pest control problem especially since the large access doors remain open most of the time. Microsol misters are used, treating from the upper levels of the building.

During one period of high density, an S-11 rocket engine stage (weighing approximately 86,000 pounds) was being lifted into its stand by a high boom. At

this critical moment, several wasps entered the cab of the crane operator. Since there was a chance the operator might be stung and cause the "Bird" to be dropped, the entire operation was stopped until the pest control unit could supply personnel to treat the test stand for wasps.

Dog flies and deer flies constitute another problem throughout the summer. Satisfactory control has been obtained using the Florida State Board of Health's dog fly control recommendation of Dibrom 14 at 3.5 ounces of technical material per gallon at 40 gallons per hour. However, during

high density of deer flies the output has to be increased to 80 gallons per hour.

Since General Electric is a contractor to the government, our operation is subjectively graded each month by NASA as to efficiency. Our contract is of the CPAF (Cost Plus Award Fee) type. The areas covered include cost performance, manpower, utilization, quality of work, management performance and timing, safety and material utilization.

Since the inception of the pest control program in 1964, there has not been any loss of work efficiency due to mosquitoes.