

U. S. ARMY TRANSPORTATION RESEARCH COMMAND
Fort Eustis, Virginia
April 1964

SWAMP FOX II
REPUBLIC OF PANAMA
VOLUME III. ENGINEERING TEST
USATRECOM Project No. 9R98-003-02

FINAL REPORT

TEST 10: XM-408

(CW) Radiator was noted to be hot when it reached St 2 but test was continued. Steam was coming from radiator when it became immobilized at St 1 and investigation revealed the fan had been forced into the radiator preventing the fan from turning, and cutting the radiator core -- evidently when vehicle hit the far slope in a stream crossing. This test was started at the top of OH and stopped beyond St 1.

TEST 11: Vehicle Number CV-6

(CW) Driver stalled the engine at St 3 in an otherwise routine test that was started and stopped at the top of OH.

TEST 12: Vehicle Number CV-6

(CCW) Vehicle started slowing down between St 2 and St 3 and stopped at St 3. Water was removed from the carburetor sediment bowl and the test continued. It again stopped near the end of the course for the same reason. This test was started and stopped at the top of OH. Note: - Vehicle Number CV-6 had been swamped a few days before when it stalled in the middle of a stream crossing. The water had nearly covered it before it was retrieved.

TEST 13: Vehicle Number CV-7

(CW) This test was conducted without incident and was started and stopped at the top of OH.

TEST 14: Vehicle Number CV-7

(CCW) This test was conducted without incident and was started and stopped at the top of OH.

TEST 15: Vehicle Number CV-4

(CW) Stalled about 300 feet from the base of OH, at the beginning of the portion of the tire covered with water. It again stalled at St 2, and in DTS 1 before completing the test. The space between the tire and fender tended to fill with mud. The rider was required to dismount and assist the scooter up the inclines at the three stream crossings and OH. Assistance was given in DTS 2 when the engine was running poorly. Started and stopped at the top of OH.

TEST 16: Vehicle Number CV-4

(CW) Test was hindered by the engine stopping. Stalled in DTS 2 and twice again farther along in the test, but not to the extent of the first Vehicle Number CV-4. The rider had to assist the vehicle out of the stream crossings and up OH. Mud filled space between tire and fender. Started and stopped at top of OH.

TEST 17: Vehicle Number CV-2A

(CW) Stalled in DTS 2 and could not be made to run properly after that. Started at the top of OH, ended in DTS 2.

(CW) Conducted without incident; started at the top of OH and stopped at the TA

TEST 26: Vehicle Number CV-8

(CW) This test is a rerun of test 24 (when the vehicle was in two-wheel drive). Proceeded without incident until it became disabled at St 2 when water entered the motor (there was about 2-1/2 feet of water at this crossing). Test started at the top of OH and stopped at St 2

TEST 25: M-151, Terra tires

(CW) Vehicle was in two-wheel drive until this error was discovered at St 1. Immobilized at St 2 and St 1, inadequate traction. The test was started at OH and stopped at St 1.

TEST 24: M-151, Terra tires

(CW) Became immobilized in St 1, St 2, St 3, and at the base of OH. These immobilizations attributed to lack of power and insufficient traction. The test was started at the TA and stopped at the base of OH.

TEST 23: Vehicle Number CV-9

(CW) Slid down Observation Hill at start of the test and stalled at St 3. Came out of St 3 when the engine was restarted and again stalled in St 2. The belt to the injector was loose and the engine was not developing full power. Became immobilized in St 2. The engine was restarted and then negotiated St 1. The driver tried to go up the back slope of OH but could not proceed about half way. Test started at the top of OH and stopped at the turnaround past St 1.

TEST 22: Vehicle Number CV-9

(CW) Test conducted without incident; started and stopped at the top of OH.

TEST 21: M-151, Terra tires

(CW) Immobilized in all stream crossings, lack of traction. Test started at the top of OH and stopped past St 1. Retrieved twice at St 1 when it could not move forward after being stalled to nearly level ground.

TEST 20: M-37, 3/4 ton, 4x4 Sand tires

(CW) This was the same vehicle as used in test 18, but with a different rider. Performance was about the same as in the previous test, except that the rider completed the course in 30 seconds less. The air cleaner fell off at St 2. Minimal assist was given to the underpowered vehicle and the test was started and stopped at the top of OH.

TEST 19: Vehicle Number CV-2B

(CW) Stalled for a short time in DTS 2 but was restarted and test completed. Rider was required to dismount at St 3 and St 2 to assist scooter up slope but did not dismount at St 1. The water in DTS 2 was the major difficulty in this and the next test. The engine was partially submerged at St 2 but continued to run. This test was started and stopped at the top of OH.

TEST 18: Vehicle Number CV-2B

CROSS COUNTRY TEST FIELD NOTES, AREA B

TEST 1: Vehicle Number CV-4

Vehicle could not negotiate steep inclines or soft mud over 8 inches deep. The rider retrieved the vehicle many times by pushing and pulling it. The small front tire is not suitable for a forested area, as there is a tendency for it to skid along roots and branches on the ground, upsetting vehicle and rider. Test stopped at St 3 when the idler shaft bent as a result of vegetation and mud clogging up the chain drive and sprocket. The rider stopped several times during the test to rest.

TEST 2: Vehicle Number CV-3

Required assistance at all steep inclines, in some cases by three people. Stalled for 30 minutes at St 2 and again at St 3 for another 10 minutes. The rider had difficulty controlling the vehicle going down steep inclines because of poor traction and ineffective brakes. This vehicle is much heavier than the other cycles tested and caused much driver fatigue. Had to be lifted over roots larger than three inches diameter, in addition to being pushed up and walked down steep inclines. The driver was upset several times by the front wheel sliding along a root; and when going up the incline to CP3 the scooter fell upon the rider. The chain drive came off at Alt St 4 and three men were required to retrieve it. The rider in this test was hospitalized for observation as a result of the vehicle falling on him.

TEST 3: Vehicle Number CV-1

Performed satisfactorily until St 2 where it upset at the base of the entrance slope. The rider was required to assist this machine up the steeper inclines, and rested three times during the test. The clearance between the wheels and fenders proved inadequate for the mud conditions found in this area during the rainy season, and the rider was forced to push the cycle downhill at one point. The large wheels of this vehicle were not greatly affected by the roots and branches in the trail, but the chain drive was affected by the mud and vegetation picked up by the wheel. The vehicle stopped once due to a vine between the chain and sprocket. The CV-1 is a finished machine and proved to be the most reliable of the two-wheeled machines tested.

TEST 4: Vehicle Number CV-2A

No difficulties were encountered until the vehicle stalled at the exit slope of St 2. The vehicle had to be walked up this incline as it did at CP 2. A field expediency air cleaner (a beer and C-ration can) failed to function properly because the steady rain wetted it. The vehicle upset half-way down the CP 2 hill (inexperienced rider) and stalled at Stream 3. The test was stopped when the cycle could not be restarted. The hand or foot (right) operated shift could not be kicked into gear and the motor stalled when the rider tried to shift with the throttle hand. The left hand controls the clutch.

TEST 5: Vehicle Number CV-2B

Rider required to dismount and assist the vehicle up the steeper inclines. Vehicle seemed to have adequate traction but the engine stalled on steep slopes and would not spin the wheels. The assist given this machine was to guide it up the slopes. The chain drives on this machine fouled with mud and vegetation but not enough to throw the chain or halt the machine. This vehicle stalled at St 4 for 5 minutes, after which it completed the test.

This low ground pressure tracked vehicle experienced little difficulty until reaching CP 2. Stopped at the base of the incline before attempting climb. Vehicle started moving again.

TEST 11: Vehicle Number CV-6

Vehicle did not reach CP 1 as there was excessive forward and side slippage. Several attempts were required, in leaving St 1. Immobilized at this point by three men; and could not re- turn to the trail after backing off downhill to turn around. Immobilized at St 1 on return trip. The Duplex tires on this vehicle were intended to be used in place of duals and had a highway tread design. Roots affected steering.

TEST 10: M-151, Oversize tires (12-16.5 Duplex)

Completed the course in the CW direction without difficulty, although excessive slippage was noted at the steepest inclines. The driver had little control of the vehicle on slopes and it was necessary to line the vehicle up before ascending a slope. Lieutenant General O'Meara and party were aboard the unloaded vehicle for a demonstration.

TEST 9: XM-548

Completed the course at a slow pace, losing a track at St 5. The right track came off, when O'Meara at St 5 and went downstream to get out of the way of the XM-548, in which the General and his party were riding. At the request of General O'Meara the CV-7 was driven upstream across the trail so he could see it. The track came off after the vehicle had jacked up on the trail and was starting to leave the stream bed.

TEST 8: Vehicle Number CV-7

Completed the course with only one incident, that being a track starting to come off at St 2.

TEST 7: Vehicle Number CV-6

Completed the course to St 2 without difficulty, becoming immobilized at that point and gained at CP 2. The vehicle retrieved itself in both instances by winching and completed the course. Wheel slip was minimal except at points of immobilization, where the Terra tires came filled with mud and would not adequately clean or gain sufficient traction to overcome the obstacles.

TEST 6: Vehicle Number CV-8

This machine was a newer model with more horsepower. The rider successfully negotiated the course to St 2 where the front chain was thrown at the crest of the exit slope. Mud and vegetation had collected on the sprockets in this test as on other scooters. The fork was found to be bent; the chain would not stay on, although it was replaced four times. The vehicle did not perform well in one-wheel drive and had to be manhandled the remainder of the distance around the course. It should be noted that the course had deteriorated some of the time of this test, and performance cannot be compared directly to the other tests with

TEST 27: Vehicle Number CV-2C (This test purposely out of sequence for consistent group- of this vehicle.)

Appendix II

| TECHNICAL DATA | |
|--------------------------------|---|
| Weight, unloaded (lb.) | 184 |
| Payload (lb.) | - |
| Gross vehicle wt. (lb.) | - |
| Length | 6 ft. 6 in. |
| Width | 2 ft. 4 in. |
| Height | 3 ft. 5 in. |
| Ground clearance (in.) | 14 |
| Angle of approach (deg.) | - |
| Angle of break (deg.) | - |
| Angle of departure (deg.) | - |
| Stability | Handlebar |
| Maximum speed (MPH) | 20 |
| Tire size | 6.70 x 15 Chevron |
| Tire dia. and sect. wdt. (in.) | - |
| Max soil tire pressure (psi) | 2.0 |
| Average ground pressure (psi) | 0.85 |
| Engine | 9 HP, 1 cylinder, 2 cycle (New Model 12 HP) |
| Transmission | Manual 3 speed |
| Suspension | None |
| Drive | Chain |

Figure 132. CV-2, Motorcycle, Personnel, 2 x 2. (U. S. Army photograph).

