5030-428
Electric & Hybrid Vehicle System
Research & Development Project

DOE/CS-54209-2
Distribution Category UC-96

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Vehicle Test Report: South Coast Technology Electric Conversion of a Volkswagen Rabbit

Theodore W. Price
Thomas W. Shain
James A. Bryant

February 15, 1981

Prepared for
U.S. Department of Energy
Through an agreement with
National Aeronautics and Space Administration
by
Jet Propulsion Laboratory
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ABSTRACT

The South Coast Technology Volkswagen Rabbit, an electric vehicle manufactured by South Coast Technology of Santa Barbara, California was tested at the Jet Propulsion Laboratory's (JPL) dynamometer facility in Pasadena and at JPL's Edwards Test Station (ETS) located near Lancaster, California. The tests were conducted between April and July, 1979. These tests were performed to characterize certain parameters of the South Coast Rabbit and to provide baseline data that will be used for the comparison of near-term batteries that are to be incorporated into the vehicle.

The vehicle tests were concentrated on the electrical drive system; i.e. the batteries, controller, and motor. The tests included coastdowns to characterize the road load, maximum effort acceleration, and range evaluation for both cyclic and constant speed conditions. A qualitative evaluation of the vehicle was made by comparing its constant speed range performance with those vehicles described in the document "State of the Art assessment of Electric and Hybrid Vehicles." The Rabbit performance was near to the best of the 1977 vehicles.

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DEFINITION OF ABBREVIATIONS

DOE - Department of Energy

MERADCOM - Mobility Equipment Research and Development Command

EHV - Electric and Hybrid Vehicle

ETS - Edwards Test Station

SCT - South Coast Technology

JPL - Jet Propulsion Laboratory

GVW - Gross vehicle weight

SAE - Society of Automotive Engineers

EGR - Exhaust gas recirculation

IC - internal combustion

EPA - Environmental Protection Agency

SG - specific gravities

SECTION I

INTRODUCTION

Public Law 94-413, passed by Congress on September 17, 1976, authorized funds to the Energy Research and Development Administration, now the Department of Energy (DOE), to promote increased research and development of electric and hybrid vehicles. In consonance with the act of Congress, DOE awarded contracts in June 1978 to four small business firms for the purpose of purchasing improved electric vehicles. These contracts called for the delivery of two identical models from each of the four manufacturers; hence, the name "2 x 4" vehicles.

The vehicles were manufactured to requirements as specified by DOE. After delivery to DOE, the vehicles were to be tested to assure that the contractual agreements had been satisfied. These acceptance tests were conducted by the United States Army Mobility Equipment Research and Development Command (MERADCOM), located at Fort Belvior, Virginia. Each of the four vehicle manufacturers delivered one vehicle to MERADCOM for acceptance testing while the remaining vehicles were delivered to JPL to be used for the assessment of near-term batteries.

The primary purpose of the near-term battery assessment task was to determine in-vehicle performance of various near-term batteries (i.e., nickel-iron, nickel-zinc). Because the emphasis was on batteries, the test requirements were structured so that only certain vehicle parameters were characterized. The emphasis was on the battery performance as measured by vehicle range, the energy consumed per mile driven, and the re-charge energy. Other vehicle parameters such as handling, braking, passenger accomodations, etc. were not characterized. The bulk of the vehicle test effort was devoted to the vehicle-to-battery interface and to the battery performance itself.

The vehicle tests and data described in this report are part of JPL's Vehicle Test and Evaluation Task in support of the Electric and Hybrid Vehicle (EHV) System Research and Development Project objectives. Both road and dynamometer tests were conducted using JPL procedures based on the Society of Automotive Engineers (SAE) "Electric Vehicle Test Procedure," SAE J227a (Ref. 1-1). The test results include vehicle driving range at both steady speeds and driving schedules, best effort acceleration, and road load data.

SECTION II

TEST OBJECTIVE

The objective of the work described here was to perform the tests necessary to characterize the South Coast Technology (SCT) Volkswagen Rabbit such that a quantitative comparison of vehicle performance can be made when near-term* batteries are integrated into the vehicle. The tests performed were best effort acceleration, range at 56 km/h and 86 km/h (35 and 55 mi/h), and the SAE J227a "B", "C" and "D" driving schedules.

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*For the purposes of this report near-term means batteries which could be available in commercial quantities in the next ~5 years, and which also have the potential for greater capability than batteries currently available.

SECTION III

SUMMARY

The South Coast Technology Volkswagen Rabbit, an electric vehicle manufactured by South Coast Technology of Santa Barbara, California was tested at the Jet Propulsion Laboratory's (JPL) dynamometer facility in Pasadena and at JPL's Edwards Test Station (ETS) located near Lancaster, California. The tests were conducted between April and July, 1979. These tests were performed to characterize certain parameters of the South Coast Rabbit and to provide baseline data that will be used for the comparison of near-term batteries that are to be incorporated into the vehicle.

The South Coast Technology vehicle uses a Volkswagen Rabbit chassis converted to a two-passenger electric car. This front-wheel drive vehicle is propelled by a Siemans motor (model IGVI 161-Z). The shunt wound motor is nominally rated at 17 kW, peak 33 kW, and is controlled by a separately excited field. The vehicle is powered by eighteen 6-volt ESB-XPV-23 lead-acid batteries connected in series. The conventional Volkswagen four-speed manual transmission is used. Regenerative braking has been incorporated into the design of the vehicle.

All tests were conducted using a gross vehicle weight of 1633 kg (3600 lb). The test program included coastdown tests (to characterize road load) and maximum effort acceleration at the ETS site as well as constant speed and cyclic range tests at the Pasadena site. The test results, summarized in Tables 3-1 and 3-2, are the subject of this report.

Table 3-1. Summary of SCT Rabbit Range Test Results

Test	Range, km	Range, mi	Battery Energy, MJ/km	Battery Energy, (Wh/mi)
86 km/h (55 mi/h)	72.3	(44.3)	0.581	(259)
56 km/h (35 mi/h)	131.2	(81.6)	0.415	(185)
Driving Schedule B	76.3	(47.4)	0.782	(350)
Driving Schedule C	60.5	(37.7)	0.768	(343)
Driving Schedule C (Track)	67.0	(41.6)	0.711	(318)
Driving Schedule D	42.3	(26.3)	0.783	(350)

Table 3-2. Summary of SCT Rabbit Acceleration Test Results

Test	Time To Speed, s Battery Discharge Level 0%	40%	80%
0 to 48 km/h (30 mi/h)	11.2	11.7	12.2
0 to 72 km/h (45 mi/h)	23.7	25.0	29.5
0 to 88 km/h (55 mi/h)	40.4	44.0	56.0

SECTION IV

VEHICLE DESCRIPTION AND OPERATION

A. DESCRIPTION

The design and vehicle modifications of the electric Rabbit were the product of South Coast Technology (SCT) of Santa Barbara*, California. The vehicle utilized is a 1978 Volkswagen, Champagne Edition Rabbit, Figures 4-1, 4-2, and 4-3. The curb weight of the Volkswagen Rabbit is 880 kg (1940 lb), with a manufacturers gross vehicle weight (GVW) of 1309 kg (2887 lb). As a result of the vehicle modifications by SCT, the curb weight was increased to 1424 kg (3140 lb) with a maximum gross vehicle weight of 1633 kg (3600 lb). The gross vehicle weight is also the vehicle test weight. The vehicle load distribution, as received from SCT, was rear axle 754 kg (1663 lb) and front axle 670 kg (1477 lb). The vehicle is equipped with 175-70-13 size steel-belted radial tires inflated to a pressure (cold) of 220 kPa (32 psi) in the front and 248 kPa (36 psi) in the rear. The vehicle is 3.94 m (155.3 in.) long, 1.61 m (63.4 in.) wide, 1.41 m (55.5 in.) high, and has a wheel-base of 2.40 m (94.5 in.). The body is a standard two-door model with a hinged rear hatch.

The vehicle's suspension was modified in order to support the additional weight. The front shock absorbers were replaced with heavy-duty Koni shocks. The existing rear suspension was redesigned to provide a heavy-duty, fully independent suspension. The stock bushing and springs were replaced with heavy-duty units. Gussets were added in the trailing arms of the rear suspension for additional strength. The rear shock absorbers were also replaced with the Koni heavy-duty type model. The rear drum brakes were replaced with larger Volkswagen Dasher brakes, and the entire vacuum-assisted braking system was replaced with a nonpower Rabbit design.

The vehicle body is equipped with a sunroof and front door window vents to provide passenger ventilation in place of air conditioning. A gasoline-fueled hot air heater is installed in place of the normal hot water heater, and a one gallon fuel tank, for use with the heater, is located in the front motor compartment. Body modifications necessary to accomodate the propulsion batteries were accomplished by removing the rear seat and cutting out a section of the floor. A metal box, welded in the floor and fitted internally with a heavy-duty fiberglass container, houses the eighteen propulsion batteries, as shown in Figure 4-4. The battery compartment is covered with a fiberglass lid which has three access panels to allow for ease of checking the electrolyte level and taking specific gravities. An opening was cut in the right rear quarter panel to provide an inlet for ventilation of the battery compartment. A 115 V ac centrifugal blower is installed at the inlet of the battery compartment and provides positive ventilation during battery charging. The air

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*SCT has moved since the preparation of this report.

Figure 4-1. Side View of SCT Rabbit

Figure 4-2. Vehicle on Runway at ETS

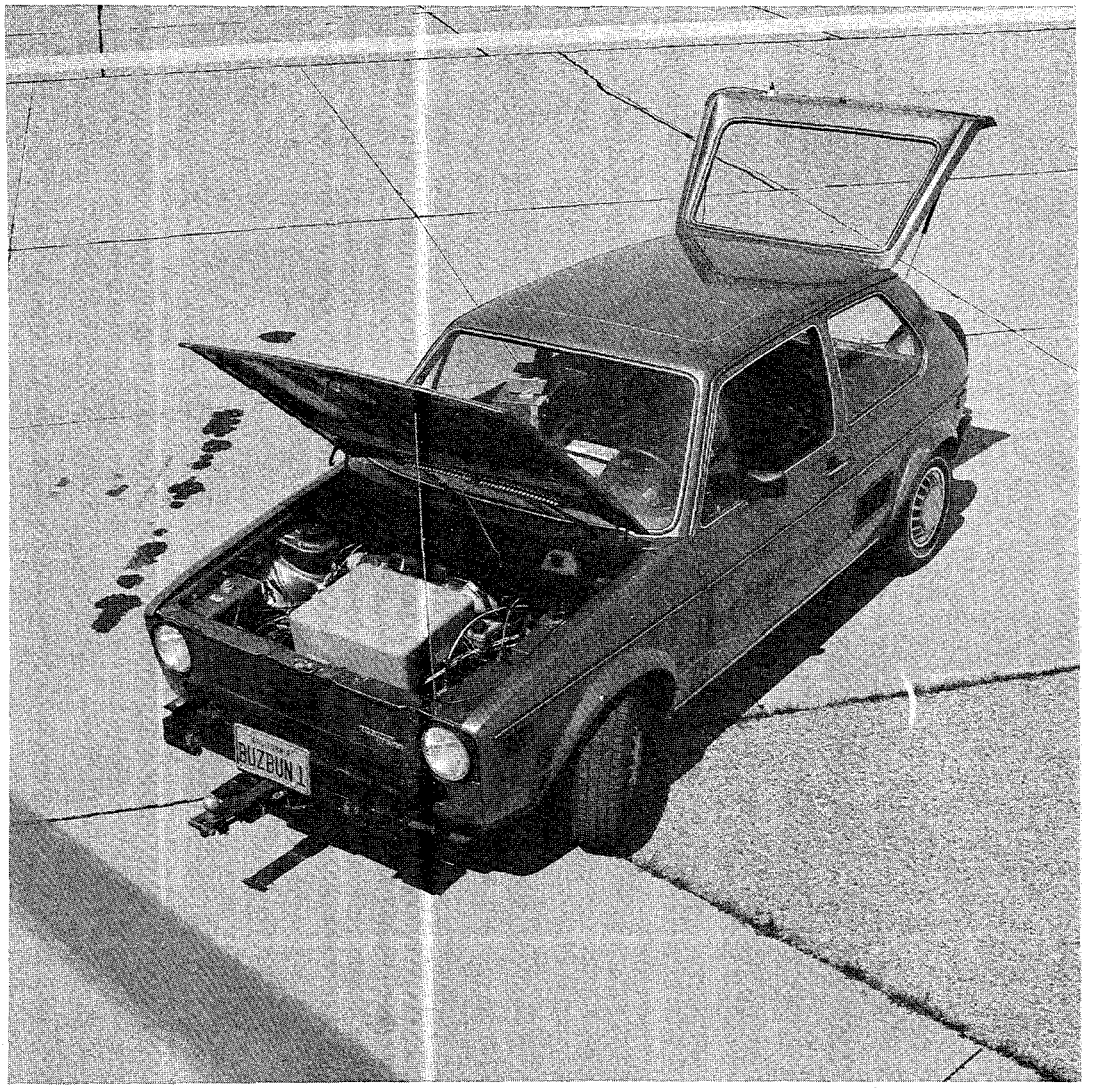

Figure 4-3. View of SCT Rabbit

Figure 4-4. View of Battery Compartment

circulated through the battery compartment is exhausted at the rear of the vehicle. Should the airflow become restricted during battery charging, the charger automatically shuts off. During driving, ram air provides ventilation to the batteries. The batteries are contained in the compartment by strips of metal "T" bars which are wedged between individual strings of batteries and then bolted through the floor of the vehicle.

Propulsion energy is provided by eighteen 6-volt lead-acid batteries, manufactured by the Electric Storage Battery Company's Model ESB-XPV-23. At a 75 A rate these batteries are rated at 155 a-h. The total battery weight is 514 kg (1134 lb). Therefore, based on curb weight, the battery weight fraction of the Rabbit, as delivered to JPL, is 36%. The batteries were cycled three or four times prior to delivery to JPL. Prior to the start of testing at JPL, the ESB-XPV-23 batteries were further conditioned using a JPL charging procedure as described in Section 5-8. The battery discharge cycle was performed either by driving the vehicle or by discharging the batteries through a nominally constant resistive load. The load used was a bank of light bulbs containing 48 200 W lamps.

The vehicle is propelled by a separately excited, shunt wound, direct current electric traction motor manufactured in Germany by the Siemans Motor Company, (Model #IGVI 161-Z). The traction motor weighs 88 kg (195 lb), and is equipped with an internal tach generator. The rated continuous power of the motor is 17 kW (22.8 hp) with a peak rating of 33 kW (44 hp). The rated continuous motor voltage and current are 130 V and 150 A respectively. An upper limit to the motor current of about 300 A is provided by the controller. As additional motor protection, a fuse rated at 200 A (time delay duel element) is located in the main battery electrical cables. The base (idle) speed of the motor, as set by the SCT control subsystem at 108 V, is 1880 rev/min. The recommended maximum safe motor speed is 6700 rev/min. Thermal protection of the motor is provided by two series-connected Positive Temperature Coefficient (PTC) type thermistors (model P395D201). The over-temperature sense logic is designed such that if the motor temperature reaches 115°C (239°F) the maximum current allowed is limited to 150 A. Should the temperature rise further to 135°C (275°F) a complete motor shutdown will occur. A two-speed blower provides cooling for the motor. When the vehicle electrical systen is on, the blower operates continuously on low speed and switches to high speed should the motor temperature reach 75°C (167°F).

Motor speed control by field weakening is employed in the South Coast Technology-designed controller. The field weakening is achieved by a transitorized, pulse width modulated chopper operating at 20 Hz rate.* The on time is continually modified by accelerator position and

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*The SCT design value was 30 Hz and the power measuring instrumentation described on pages 5-9 through 5-15 was in part designed around the higher frequency. The difference between the actual and design values resulted in some minor instrumentation problems.

motor speed. Armature current assumes whatever value is required to satisfy the torque needs (up to the 300 A limit) until the motor (vehicle) achieves the speed commanded by the weakened field.

Voltage and current wave shapes of the battery, motor, and field are shown in Figures 4-5 and 4-6. The waveforms in Figure 4-5 were recorded during a 56 km/h (35 mi/h) constant speed test, while those in Figure 4-6 were taken during a 88 km/h (55 mi/h) constant speed test. All signals were recorded at the output of the energy measurement system. (A description of the measurement system is discussed under the Test Methodology Section.)

The traction motor drives the front-wheel drive vehicle through a standard Rabbit four speed transaxle with a differential ratio of 3.90. The gear ratios are: first, 3.45:1; second, 1.94:1; third, 1.37:1; and fourth, 0.97:1. A stock Rabbit clutch is used. The tractor motor is connected to the transmission by means of an adapter plate and shaft coupler designed by SCT. A block diagram of the propulsion system is shown in Figure 4-7. A schematic of the Rabbit power system, including instrumentation sense points is illustrated in Figure 4-8.

Regenerative braking, which is operational down to approximately 13 km/h (8 mi/h) if downshifting is used, has been included in the vehicle design. The regenerative braking occurs automatically when the driver removes his foot from the accelerator pedal, as long as the motor speed is above 1800 rev/min, and is particularly effective at motor speeds above 3000 rev/min. The implementation of the regenerative braking provides for more "motor" braking than the compression braking of a conventional engine.

A heavy-duty 12 V auxiliary battery provides power for the electronic controller, lights, windshield wipers, and traction motor cooling fan. The auxiliary battery is charged from the main propulsion batteries by means of a dc-to-dc converter. The auxiliary battery charger is activated when either the vehicle ignition is on or when utilizing the on board charger.

In addition to the conventional tachometer and speedometer the vehicle instrumentation panel contains several special gauges. A brief description of each follows:

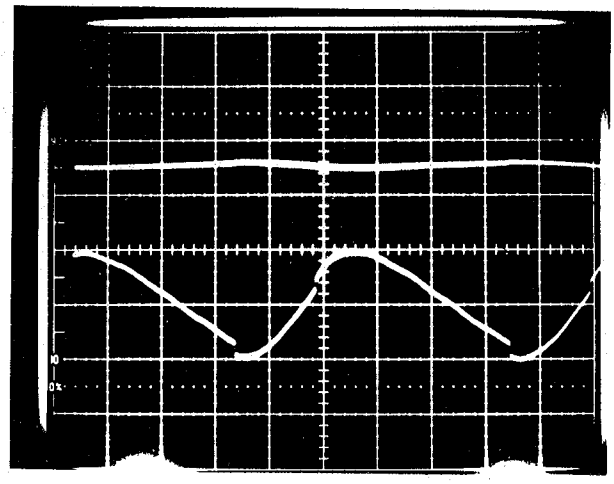
(1) Motor Temperature Warning Gauge: (converted water temperature gauge)

This gauge indicates the internal temperature of the motor. If the motor temperature reaches the red zone, 115°C (239°), the motor current is automatically limited to 150 A at this temperature.

(2) Motor Temperature Warning Light: (converted oil pressure light)

Light comes on if the motor temperature reaches 135°C (275°). Motor shuts down when this occurs.

Battery



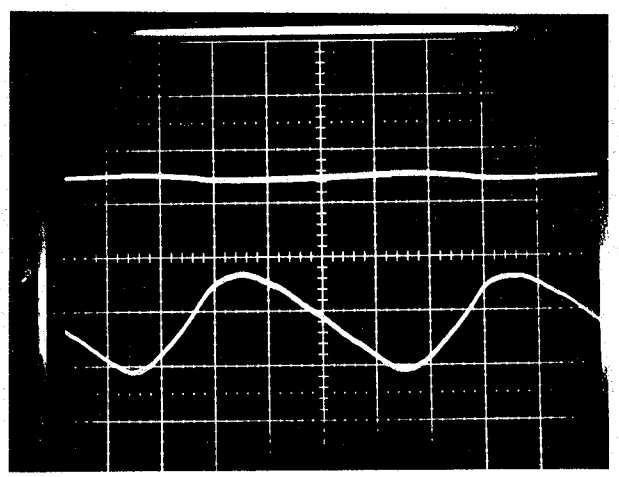
-V 20 V/cm

-A 25 A/cm

-0 V and 0 A

10 ms/cm

Motor



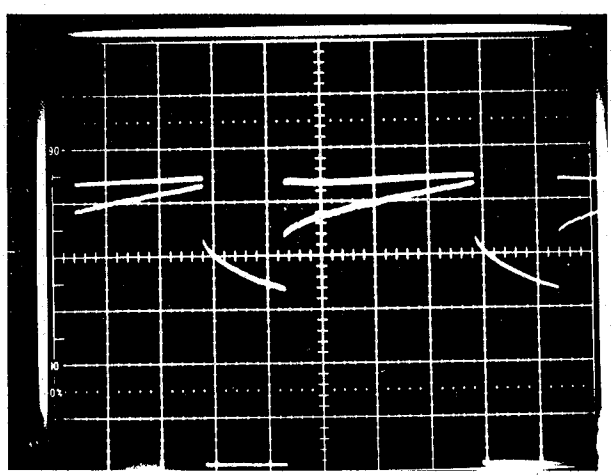
-V 20 V/cm

-A 25 A/cm

-0 V and 0 A

10 ms/cm

Field

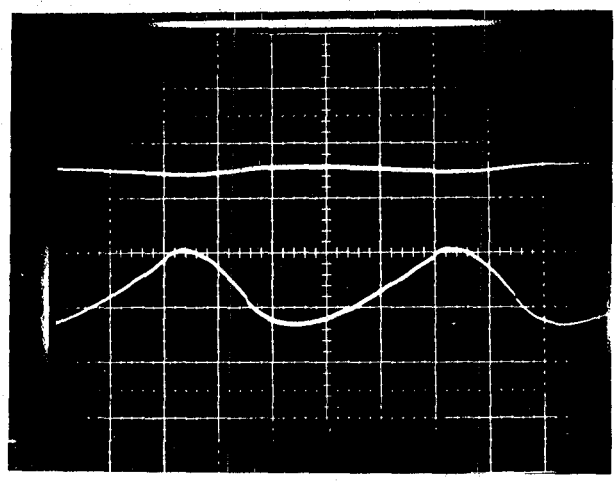


-V 20 V/cm

-A 1.25 A/cm

-0 V and 0 A

Figure 4-5. SCT Rabbit Oscilloscope Traces -- 35 m/h Test



Battery

V

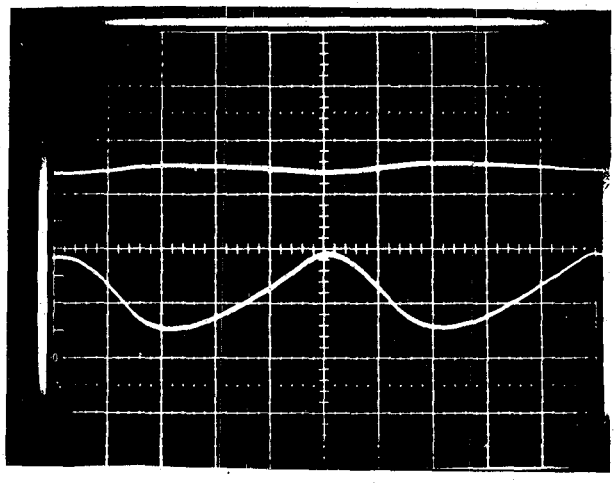
V = 20 V/cm

A

A = 50 A/cm

-0 V and 0 A

10 ms/cm



Motor

V

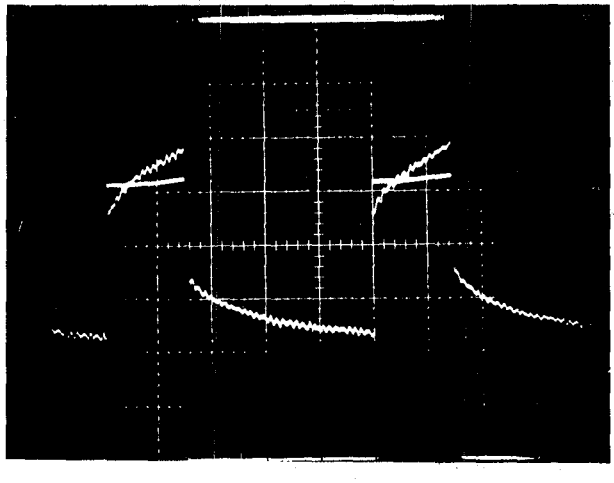
V = 20 V/cm

A

A = 50 A/cm

-0 V and 0 A

10 ms/cm



Field

V = 20 V/cm

A

A = 0.5 A/cm

-0 V and 0 A

Figure 4-6. SCT Rabbit Oscilloscope Traces -- 55 m/h Test

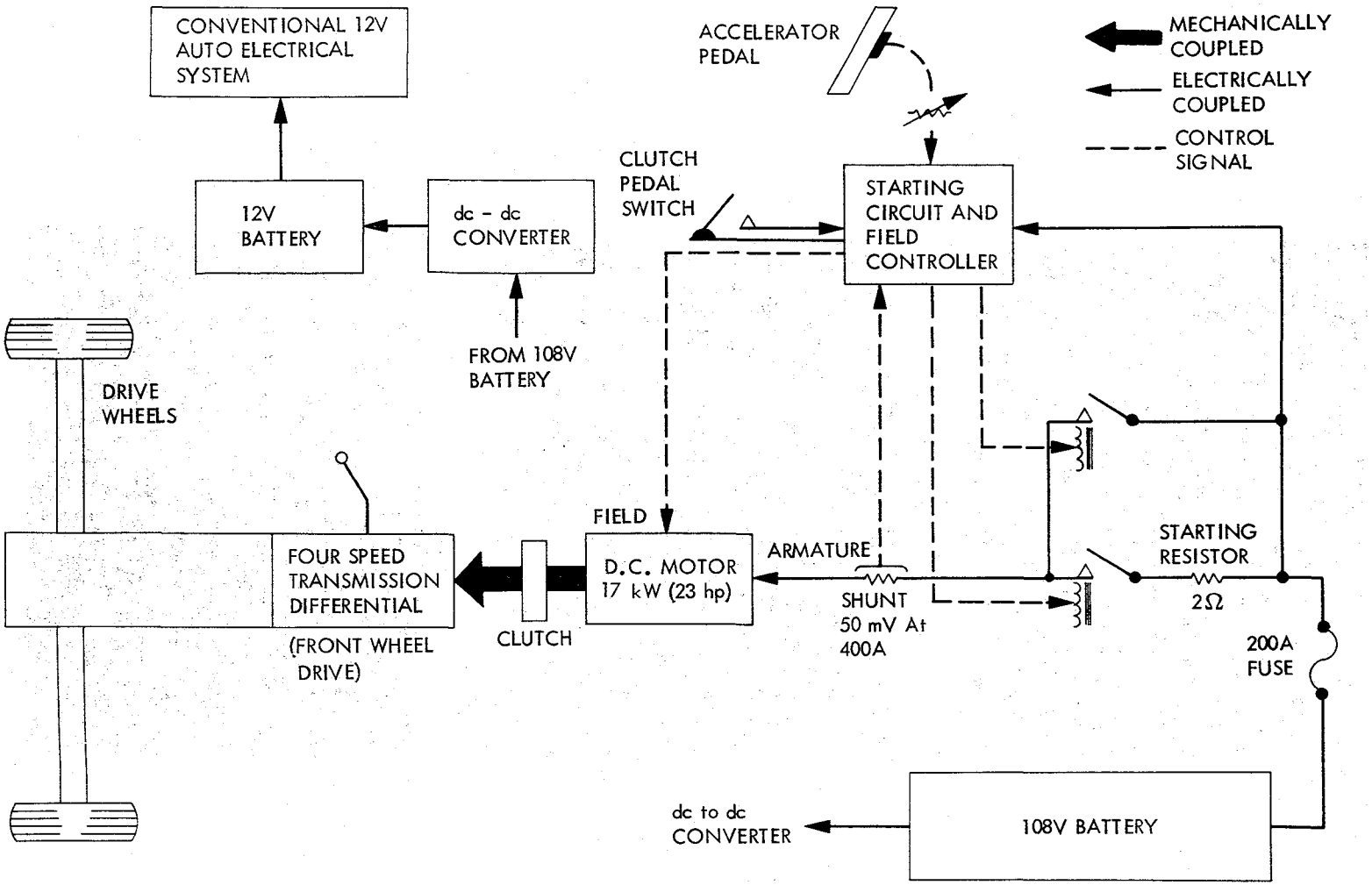
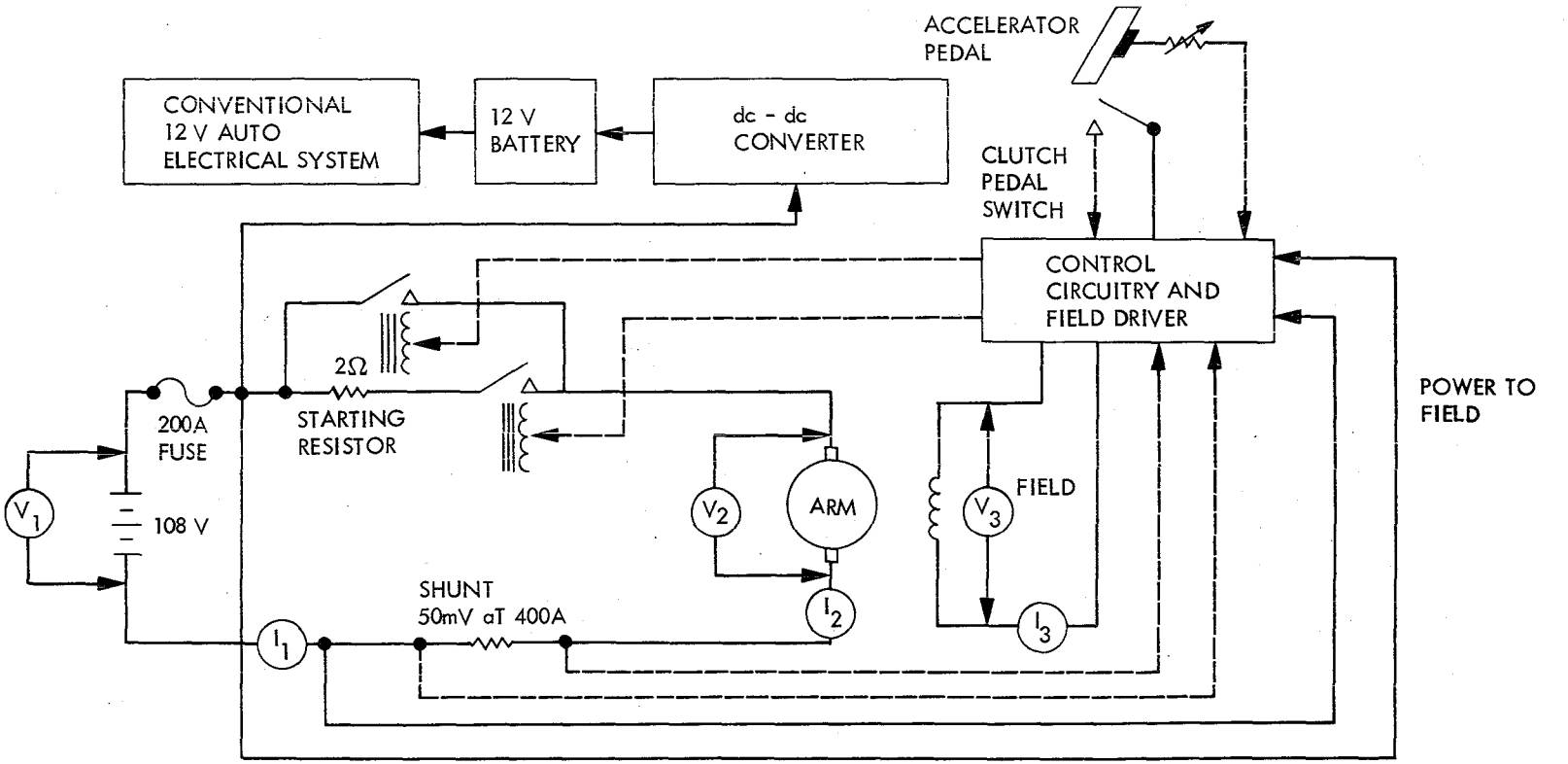


Figure 4-7. SCT Rabbit Propulsion System



NOTES:

1. ALL CURRENTS WERE SENSED WITH CALIBRATED SHUNTS INSTALLED IN THE NEGATIVE LEG OF THE CIRCUIT
2. ALL CONTROL SIGNALS (DASHED LINES) ARE NOT SHOWN HERE

JPL SENSORS

- V_1 = BATTERY VOLTAGE
- V_2 = ARMATURE VOLTAGE
- V_3 = FIELD VOLTAGE
- I_1 = BATTERY CURRENT
- I_2 = ARMATURE CURRENT
- I_3 = FIELD CURRENT

Figure 4-8. Schematic of SCT Rabbit Power Systems

(3) Auxiliary Battery Warning Light:
Light comes on when the auxiliary battery voltage drops below 10 V. Warning only.

(4) Main Contactor Warning Light: (used as exhaust gas recirculation over-temperature (EGR) light for an internal combustion (IC) engine and is still labeled as EGR)
Indicates the main contactor is off. The main contactor may open and the light come on if the motor current exceeds 400 A. This may happen as a result of attempting to accelerate or to climb a steep hill in too high a gear, by not disengaging the clutch when the car is brought to a stop, or if the system is shut down by the motor overheating.

(5) State of Charge Indicator: (converted fuel gauge)
Provides a coarse indication of the available battery energy. When the needle enters the red area, there is a reserve of approximately 10% of the maximum battery capacity. NOTE: No tests were conducted to evaluate the accuracy of this indicator.

(6) Ammeter:
Indicates either the current being drawn by the motor (positive scale) or the current being produced by the regenerative braking system (minus scale).

B. VEHICLE OPERATION

Operation of the Rabbit is straightforward and can easily be mastered in a short period of time. Some minor differences between the SCT Rabbit and a conventional internal combustion (IC) engine are required in order to start the vehicle, but once the motor is operating it is driven in essentially the same manner as an IC engine-equipped vehicle. The starting sequence is listed below:

(1) Fasten seat belt. (Required by an interlock before vehicle can be started.)

(2) Depress the clutch pedal completely to the floor. The vehicle will not start unless the clutch pedal is fully depressed.*

(3) Turn the ignition switch all the way to the right. (Observe main contactor warning light is on.) Keep the key in the start position until the main contactor is energized (warning light goes off).

---

*Clutch must be disengaged when the vehicle is at a standstill just as for an internal combustion engine-powered vehicle.

(4) Without depressing the accelerator pedal shift into first or reverse gear. Since the motor base speed is high enough for initial vehicle acceleration it is not necessary to depress the accelerator as the clutch is engaged. Simply engage the clutch and later depress the accelerator to raise the vehicle's speed.

(5) Thereafter use the accelerator, clutch and gear shift in the same manner as for a conventional IC engine-powered car.

Should the motor go below base speed, excess current will be demanded by the motor and the main contactor may open. This would occur should the clutch be engaged too quickly or if the clutch is engaged with the transmission in the wrong gear. The motor is additionally protected by the controller logic which limits current to a nominal maximum of 300 A.

If the vehicle stalls (main contactor opens), restarting the vehicle is done be depressing the clutch completely to the floor, and then turning the key to the "off" position, and then the the "start" position until the main contactor warning light goes out. Because of the possibility of locking the steering when the key is switched off, it is recommended that the vehicle be brought to a complete stop before attempting to restart.

C. BATTERY CHARGER

The vehicle is equipped with an on-board battery charger, although it should be noted that this charger is an interim unit and will be retrofitted with a more efficient model in the near future. The charger consists of a full bridge rectifier circuit which operates directly off the 115-V ac line. The charger is equipped with a 14-hour timer. The battery compartment blower automatically comes on to remove hydrogen gas from the battery compartment while charging the batteries.

The interim on-board battery charger is limited in its capabilities so that 15 to 20 hours are required for a full recharge. All battery pack charging, including battery conditioning and charging prior to testing, was performed with an off-board charger as discussed under the Battery Conditioning section.

D. BATTERY CONDITIONING

Prior to the initiation of vehicle testing the batteries supplied by the vehicle manufacturer were conditioned at JPL by being deep discharged and charged eleven times. Two methods of discharge were utilized. One method was to drive the vehicle (e.g., during coastdown tests and vehicle familiarization) until a minimum battery pack voltage of 70 V (1.3 V per cell was reached. The second method was to discharge the battery pack through a nominally constant

electrical load which consisted of a bank of forty-eight 200 W light bulbs. Again the discharge was terminated when a voltage of 70 V was reached. At times, both methods of discharge were used to deplete the batteries for a single discharge cycle. Because of the two techniques for discharging the batteries, a completely consistent history of the battery capacity was not obtained.

A battery charger manufactured by the Christie Co., was utilized for all the battery conditioning and charging prior to vehicle testing. This charger is a filtered dc power supply that operates from a 208 V single-phase power source and is either voltage-regulated or current-limited to 25 A. Figures 4-9 and 4-10 illustrate a typical charge and discharge cycle.

E. VEHICLE MODIFICATION AND PREPARATION FOR TEST

Upon receipt of the vehicle at JPL, a safety inspection was performed. The primary purpose of the inspection was to insure that the vehicle was safe for testing purposes. For example, it was verified that the battery terminals were covered, all points of high voltage were shielded from accidental human contact, the propulsion system was electrically isolated from the vehicle chassis, the batteries were adequately constrained, the conventional safety equipment (horn, lights, turn indicators, etc.) operated properly, the battery compartment ventilation system functioned properly, etc.

Prior to start of the test phase, the wheel bearing and suspension system were inspected and lubricated. All wheels were balanced and aligned according to the manufacturer's specifications. The vehicle was weighed and the load distribution between the front and rear axles defined. From this measurement the additional weight and distribution of the added weight required to bring the vehicle to the manufacturer's recommended gross vehicle weight of 1633 kg (3600 lb) was determined.

Several modifications were made to the vehicle at JPL in preparation for the performance testing. These modifications consisted of the following:

The existing front bumper was replaced with one of special design for the SCT Rabbit. The primary purpose of this heavy-duty bumper was to allow safe towing of the vehicle at high speeds. Quick disconnect connectors were installed between the battery pack and the motor/controller. These provide a safe way to isolate the batteries from the motor and controller during maintenance and repair, and also allow a convenient place to connect and use batteries that are not physically within the vehicle. Current sensors (coaxial shunts) were installed on the negative cable side of the battery pack, the motor armature, the motor field, and the battery charger. Voltage sense points were also connected at positions to correspond with the current sensors. A schematic of the Rabbit power system, including instrumentation sense points, is illustrated in Figure 4-8.

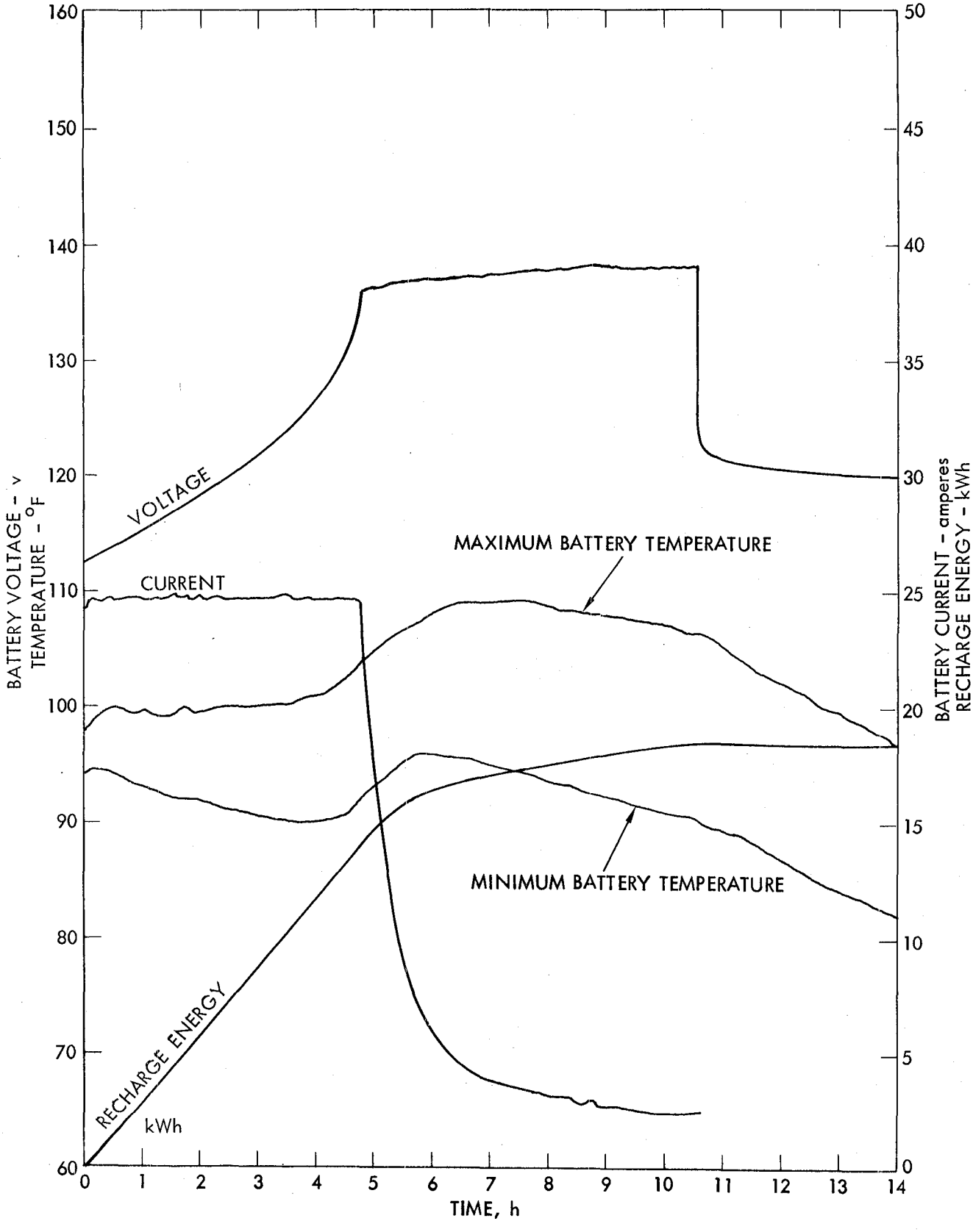


Figure 4-9. Standard Battery Charge

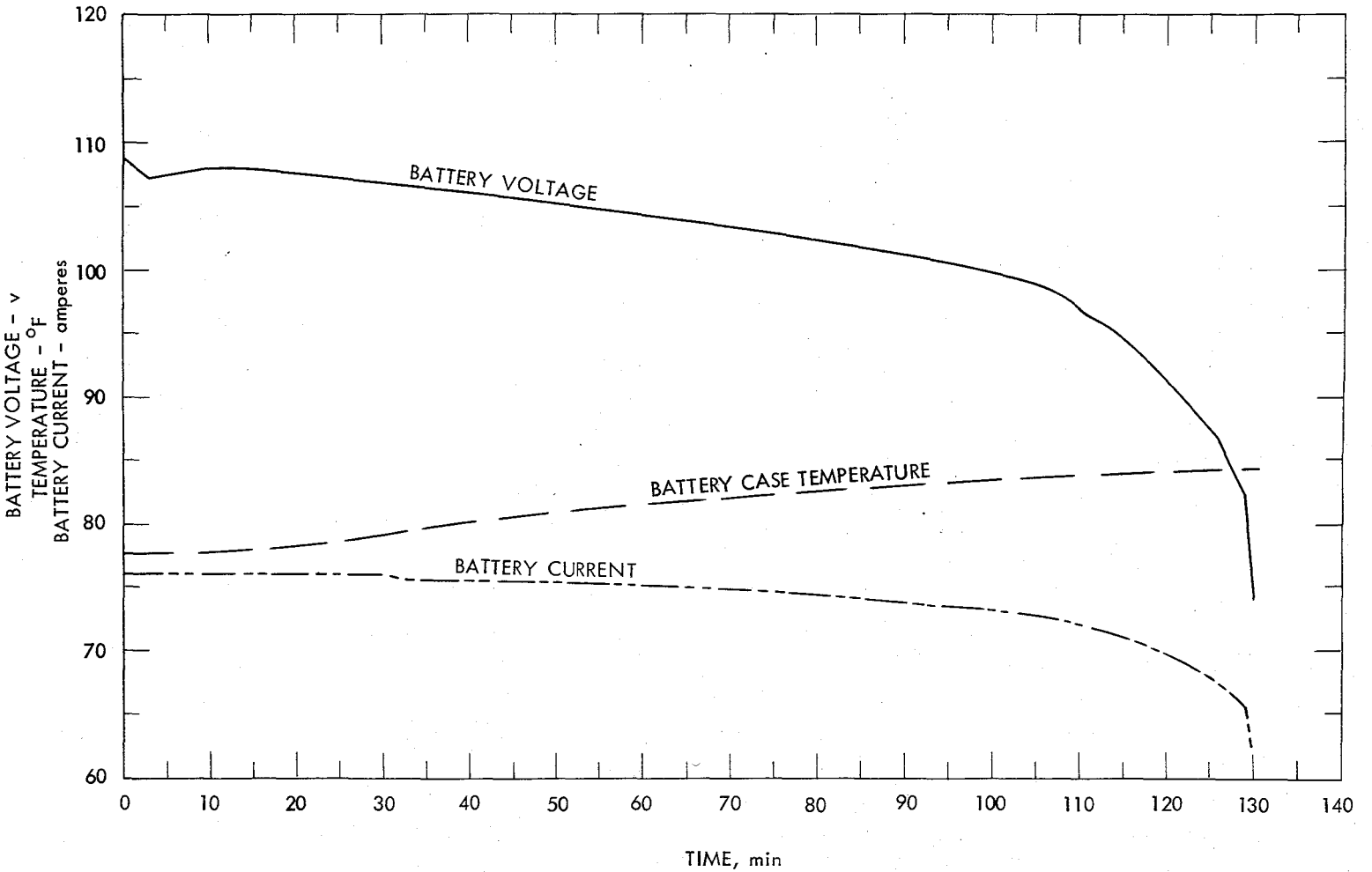


Figure 4-10. Typical Light Bank Discharge

Temperature sensors were installed in various locations such as in the battery case and electrolyte, motor air inlet, and battery compartment air inlet. An addditional circuit was added to allow for the monitoring of the SCT-installed internal motor temperature sensor.

SECTION V

TEST METHODOLOGY

Testing may be divided into two general categories: track and chassis dynamometer. A limited number of track tests were performed which consisted of maximum acceleration, "C" cycle driving schedule range tests, and road load determination tests. The road load determination tests were conducted primarily for the purpose of establishing dynamometer settings. The chassis dynamometer tests consisted of range at constant speeds of 56 km/h (35 mi/h) and 88 km/h (55 mi/h), "B", "C" and "D" driving schedules, and maximum acceleration tests. These tests and the results are discussed in subsequent portions of this report.

JPL operates a Test Facility at the Edwards Air Force Base, located near Lancaster, California. At this facility, known as Edwards Test Station (ETS), JPL has access to a semi-active Air Force runway which is 1829 m (6000 ft) in length. Figure 5-1 depicts the slope profile of the runway. In all cases, testing was performed on the relatively flat* (0.18% slope) 1219 m (4000 ft) portion of the runway.

The majority of the tests, i.e., the steady speed range and cyclic range, were conducted in the chassis dynamometer portion of the JPL Automotive Test Facility. A twin-roll Clayton dynamometer with 218 mm (8.6 in.) diameter rollers and direct-drive inertia weights was used in the dynamometer tests. This dynamometer is the type recommended by the Environmental Protection Agency (EPA) for exhaust emission certification testing, and has inertia weight increments of 57 kg (125 lb).

The Clayton twin-roll type of dynamometer used at JPL has only a single adjustment for the simulation of aerodynamic load. That is, the aerodynamic load can be set at only one value of vehicle speed. The loads at other speeds are fixed by the nominally cubic variation of load as a function of roller velocity that is inherent in the dynamometer. In addition, the tire pressure and/or the tire loading (vehicle weight on the drive wheels) can be and was manipulated, within limits, so as to vary the tire/roller losses.

A. ENVIRONMENTAL CONDITIONS - TRACK

Determination of road load power requirements is a necessary prelude to using a dynamometer and is a part of the SAE Test Procedure J227a. However, the intent of the SAE procedure is to quantify road load per se, while in the context of this report the road load is established primarily as a means of defining dynamometer adjustments.

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*See note concerning Road Load Determination in the Foreword of this report.

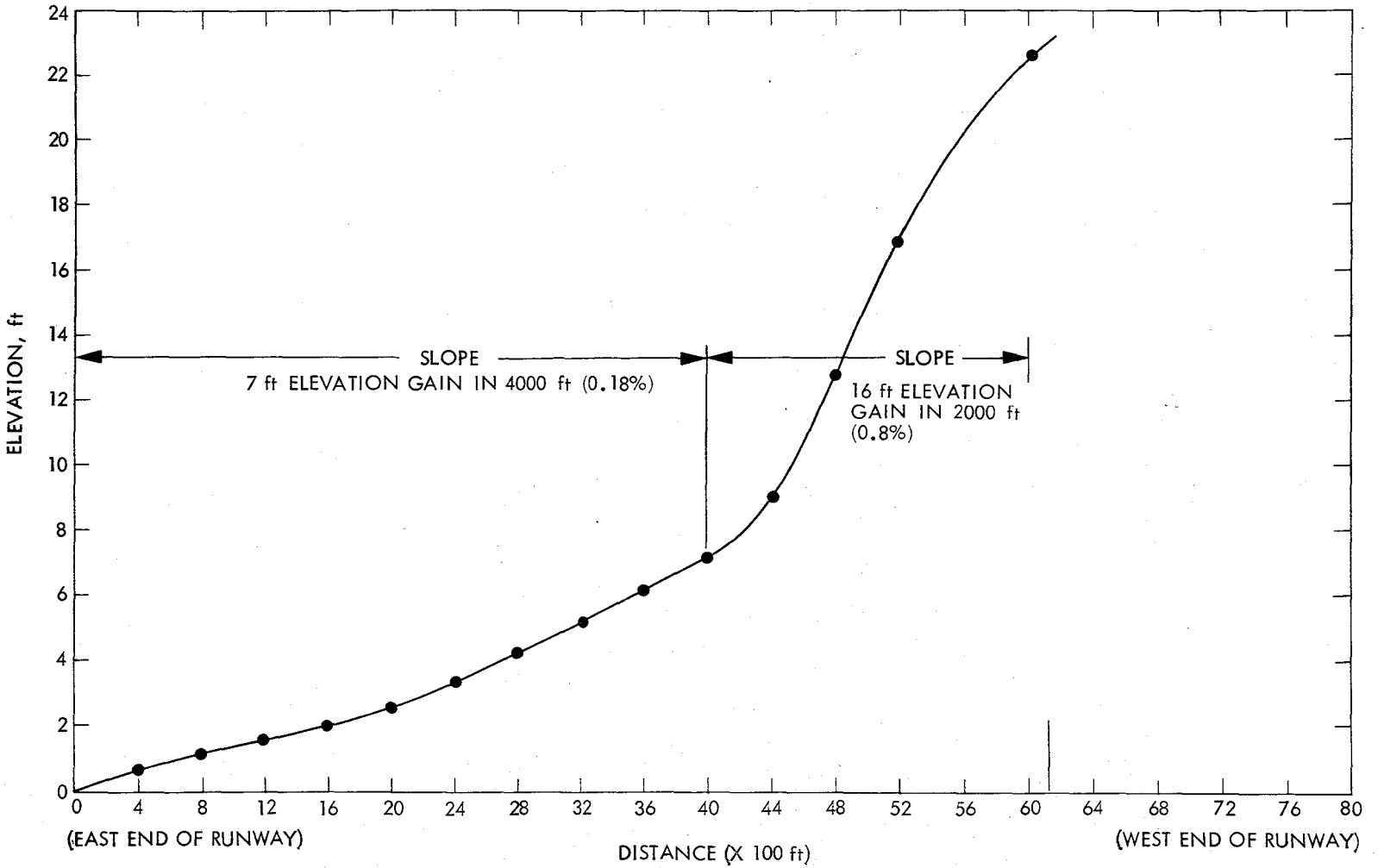

Figure 5-1. ETS Runway Profile

Winds have the largest environmental effect on road load data and ideally the tests should be conducted when they are at a minimum. For this reason, wind velocity and direction were monitored at the midpoint of the ETS runway. The goal was to limit coastdown tests to those times when the average wind speed was less than 3.2 km/h (2 mi/h), however, this was not entirely successful. Many days may elapse before these near-zero wind conditions exist. Hence, the tests may require a lengthy calendar time to complete or else one must accept the variations due to winds. Due to the fact that ETS is located in a high desert atmosphere and is subject to gusty wind conditions, some of the coastdown tests were performed with wind in the 0-8 km/h (0-5 mi/h) range. Wind speeds in excess of 16 km/h (10 mi/h) or gusts over 24 km/h (15 mi/h) constituted unacceptable test conditions.

The temperature of both the vehicle and the environment are also a source of data variability. Ambient temperatures during track operations ranged from 18°C (65°F) to 39°C (103°F). Because of the desire to minimize the wind effects and because of the near impossiblity of obtaining both near zero winds and a constant environmental temperature, no attempt was made to test under restricted temperature range. However, between track tests, the vehicle was stored in an air-conditioned building. The storage temperatures were maintained between 21°C (70°F) and 24°C (75°F). During track testing, continuous chart recordings were obtained during each test run of ambient temperature, humidity, wind speed, and direction, using meteorological instruments located midway along the test track.

B. ENVIRONMENTAL CONDITIONS - DYNAMOMETER

An important advantage of dynamometer testing is the ability to eliminate winds and provide a relatively stable set of environmental conditions to the vehicle; thereby significantly reducing the effect of the environment on the test results. The chassis dynamometer room is maintained at a relatively constant 21° + 2°C (70°F) during all testing, and the effects of winds are of course non-existent.

Although precise measurements of relative humidity and atmospheric pressure are routinely recorded in the JPL Automotive Test Facility, these values are not reported here. They are of little significance when pure electric vehicles are tested on a dynamometer within a closed building.

Simulation of the Rabbit forced-convection cooling (airflow as a result of driving) was accomplished with the placement of a large fan in front of the car. While little heat is generated by electric vehicles, it was felt that the vehicle would heat more on the dynamometer, as compared to the track tests, unless the fan was employed. Figure 5-2 shows the placement of the fan as well as an overall view of the dynamometer and vehicle test configuration.

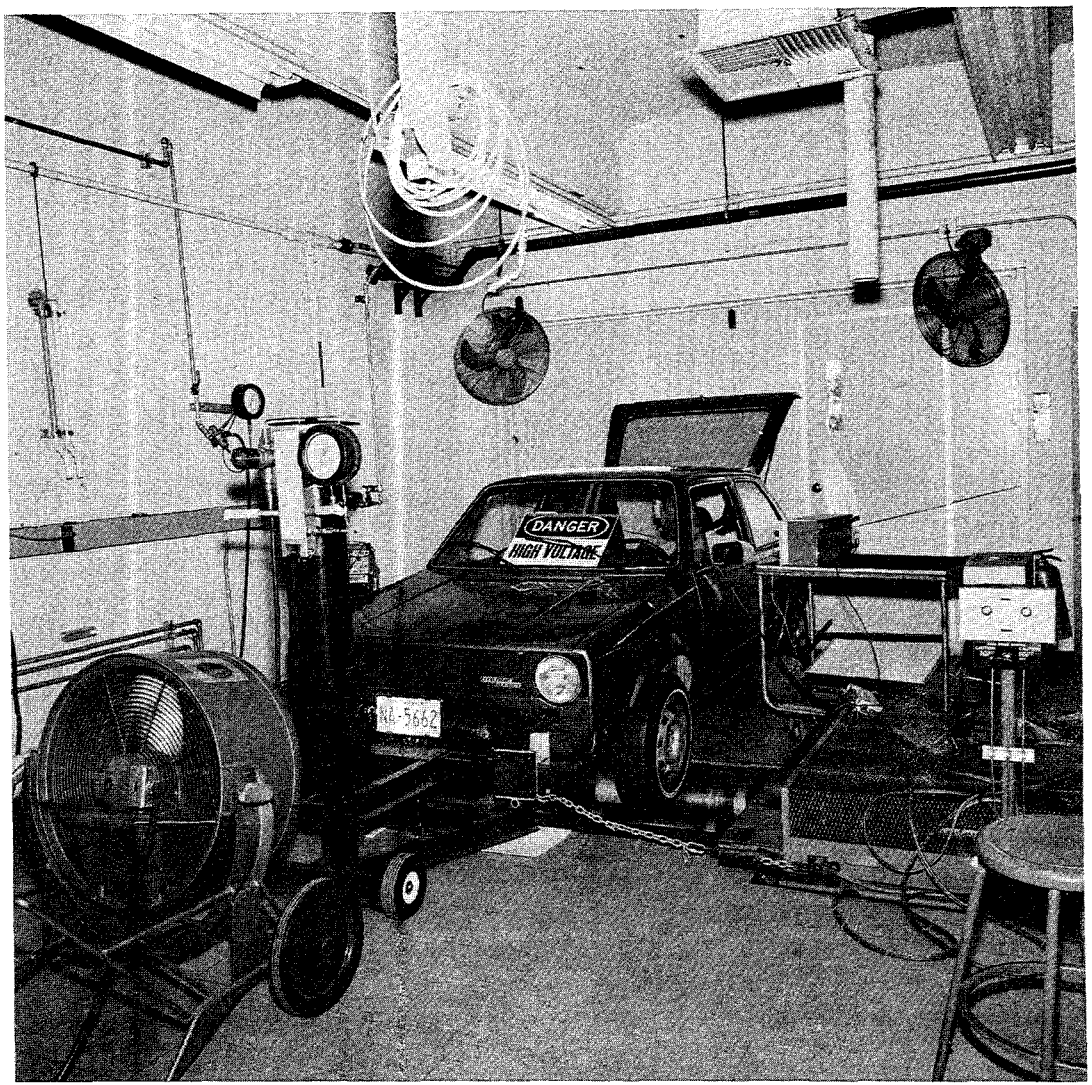

Figure 5-2. Vehicle During Dynamometer Tests

C. BATTERY CHARGING

As previously discussed. The on-board battery charger was an interim unit and was limited in its charging capacity. As a result, an external charger was utilized for all battery charging.

The following is the procedure that was followed for charging of the vehicle's battery pack:

(1) The charger was turned on and the open circuit charger voltage was set to a pack voltage equivalent of 2.7 volts per cell (i.e., 146 V). The charger was then connected to the batteries.

(2) Charge occurred at a constant 25 A rate until the battery pack terminal voltage was equivalent to 2.46 volts per cell (i.e., 133 V) when corrected to 26°C (80°F).

NOTE:

The temperature correction factor was:

(a) Subtract four millivolts per cell for each degree F over 80°F.

(b) Add four millivolts per cell for each degree F under 80°F.

(3) When the 133 volts was reached, the charger was turned off, disconnected from the battery pack, and the open circuit voltage was set to a temperature-corrected 2.7 volts per cell.

(4) The charger was reconnected to the batteries and a six-hour charge performed. The current was allowed to taper while the voltage was held constant to the value determined in step 3.

(5) Specific gravities (S.G.'s)* were then measured from six cells and recorded after a minimum of one hour following completion of battery charging.

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*During the battery conditioning process S.G.'s of every cell were measured before and after every discharge/charge cycle. The three cells exhibiting the highest S.G.'s and the three showing the lowest were used during the vehicle tests. At several times during the baseline tests, complete S.G.'s were measured.

D. BATTERY TEMPERATURE CONDITIONING

The energy capacity of a Pb-acid battery is dependent on several factors, including the electrolyte temperature. The 1977 State-Of-The-Art Assessment Report (Ref. 5-1) gives as a rule of thumb a 1% change in battery capacity for each 1°C change in temperature. This results in a 30% variation in battery capacity for the 30°C (54°F)* temperature variation allowed for vehicle testing. In order to reduce range variations resulting from battery temperature variations, a much narrower temperature range was selected for the tests described here.

After battery charge termination, the vehicle was allowed to soak in a temperature-controlled room until the average battery electrolyte temperature stabilized at 21 ± 2.8°C (70 ± 5°F). An entire day was specifically set aside between each test day for temperature stabilization. Even with this extra "soak" day, forced convection cooling of the batteries had to be employed to satisfy the temperature criterion within the allocated time. The final (equalization) portion of battery charging resulted in self-heating of the batteries to the point that they typically gained from 10 to 15°C (18° to 29°F) during the charging process. The final electrolyte temperature was generally in excess of 38°C (100°F).

E. TEST TERMINATION CRITERIA

Three test termination criteria, which differed slightly, were used depending on the nature of the test; i.e., constant speed or cyclic. Constant speed tests were ended when (1) the battery voltage decayed to 1.3 volts/cell for more than 3-5 seconds (70 volts for the total battery pack), (2) the batteries or motor temperature exceeded the limit specified by the manufacturer, or (3) the vehicle speed could not be maintained within 95% of the specified velocity. Criteria (1) and (2), battery voltage and battery/motor temperature, were also employed for the cylic tests. An additional criteria was used for the cyclic tests: the test was terminated when the acceleration portion of any cycle could not be completed within 2 seconds of the time specified by the procedure. In actual practice the constant speed tests and the B cycle tests were terminated by the battery voltage criteria, while the other cyclic tests were ended by a failure to meet the acceleration standard.

F. INSTRUMENTATION AND DATA RECORDING

Both off-board and on-board recording of data were employed. Although most data was recorded automatically by means of strip charts and magnetic tape, manual recordings of several parameters were

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*According to the SAE J227a any temperature between 5°C (41°F) and 35°C (95°F) is acceptable.

recorded before and after each test. Comprehensive data sheets were developed for the appropriate tests performed. Appendix A shows examples of the data sheets used during dynamometer testing and the field data sheets used for track testing.

As a complement to the field data sheet entries, continuous chart recordings were made during each test of ambient temperature, humidity, wind speed, and direction. In addition, a separate vehicle log book was kept for a narrative description of testing activities, unusual events, vehicle problems, and repairs.

The instrumentation and recording methods used for the ETS tests were limited and simple. This was primarily a consequence of not having a suitable on-board data recording system. On the other hand, associated with the chassis dynamometer is a large, fixed, high-speed digital recording device. Hence, the instrumentation and data recording equipment used for the dyno tests were much more extensive and complex. For both test locations, electrical power/energy measurement circuits were used, however, only a hand recording of total energy was made during the ETS tests. A more detailed description of the instrumentation used at ETS and at the chassis dynamometer facility follows.

G. ETS INSTRUMENTATION

Instrumentation for the road load determination tests (coastdowns) consisted of a Nucleus Corporation model NC7 fifth wheel and a Nucleus expanded scale speedometer. Vehicle velocity as a function of time was recorded on a Hewlett Packard 7100B strip chart recorder.

For the maximum acceleration and "C" cycle tests, additional instrumentation included two Curtis Model 1002 Ah counters, with a 50 MV/500 A bar shunt, used for recording of battery Ah in and out. A second Hewlett Packard strip chart recorder was added for recording battery current and voltage during the maximum acceleration tests. A Fluke digital thermometer was employed for monitoring temperatures of three batteries, two motors, and one controller.

H. CHASSIS DYNAMOMETER INSTRUMENTATION

A relatively large (Figure 5-3) general purpose, Integrated Data Acquisition and Control (IDAC) system is an integral part of the JPL Automotive Test Facility. The digital recording system is used to record data for all tests conducted on the chassis dynamometer. Approximately 40 data channels are routinely recorded. A general listing of the parameters is contained in Appendix B. The digitally formatted energy data is sampled 10 times per second to permit good time resolution of the transients during a test. Each analog data channel is also sampled about 10 times per second.

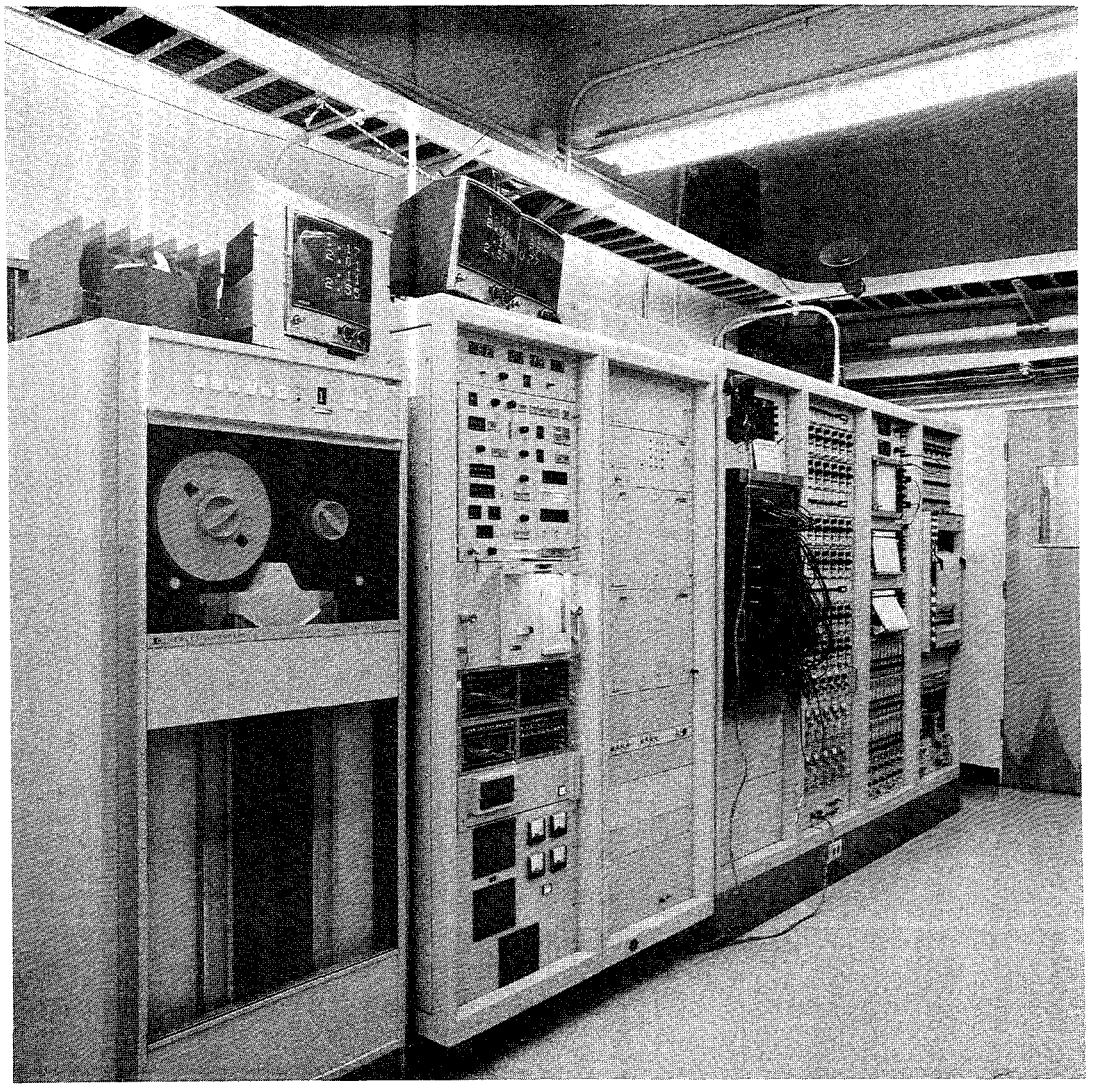

Figure 5-3. Central Instrumentation Area

Data recording is accomplished in two ways: high-speed printer (on paper) and magnetic tape. The bulk of the recording is done with the magnetic tape while the direct printing is used for a "quick look" immediately after test completion. Subsequent data reduction of the magnetic tapes provides a detailed tabular printout of the data as well as plots of pertinent parameters. Appendix C contains a sample of the tabulated data. Appendix D contains a typical set of plots.

Slices of data are acquired at various time intervals. The exact time within the test depends on the type of test. For instance, during constant-speed tests, data are recorded once every 30 seconds. During the driving schedule tests, the 30 second interval data are supplemented by several continuous recordings of two complete sequential repetitions of the driving cycle (Figure 5-4). These continuous recordings are intended to occur at 4 discrete levels of battery depth of discharge, however, the time at which these levels of depth of discharge occur must be estimated prior to the test. As a result of the estimation process, data indicated as occurring at 0%, 40%, 80%, and 100% depth of discharge may actually have been recorded slightly before or after the specified depth of discharge. During some tests, the continuous recording at 100% depth of discharge was missed altogether because of a combination of the estimating process and the very rapid decay in battery voltage as 100% depth of discharge is approached.

During the chassis dynamometer tests, approximately 40 parameters were measured and recorded. A complete list of the parameters and the method of recording are given in Appendix B. The key measurements were those of voltage, current, energy and power for the battery, motor armature and the motor field, motor and half-axle rotational speed, aerodynamic horsepower, vehicle velocity and distance traveled, and battery electrolyte temperature. Each of these is discussed in more detail below.

1. Voltage, Current, Power, and Energy

These four parameters are intimately connected and are discussed together. In addition, the baseline tests of the SCT VW Rabbit represent the first use of new power/energy measurement devices which were designed and fabricated at JPL. Since this is the first use of these devices and since they have not yet been described in the open literature*, they are accorded more space here than they will receive in similar, subsequent reports.

The power measurement system consists of three physically separate parts. These are the charging power unit, the measurement chassis and the counter chassis. The charging power unit measures electrical power consumed during re-charge of the vehicle batteries

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*One paper was completed and presented at the IAS Annual Meeting, IEEE Industry Applications Society, Sept. 1980 (Ref. 5-3). Another paper is being written.

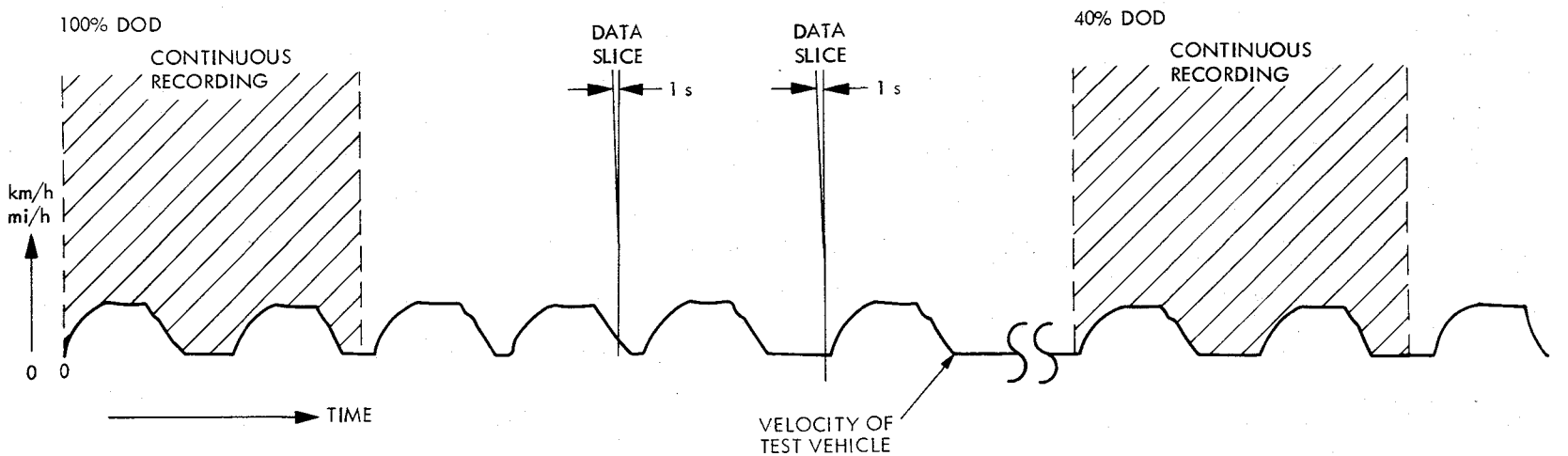

Figure 5-4. Typical Data Recording Format

and can be used in conjunction with either on-board or off-board chargers. The internal design of the charging power unit is identical to those of the measurement chassis, therefore both electrical output, signals, and performance of the charging unit are identical to those of the measurement chassis.

The measurement chassis (Figure 5-5) includes provision for six plug-in circuit cards that are discussed in the next section. The entire system is powered from 110 V ac that is provided by an on-board inverter (road tests) or wall power (chassis dynamometer tests). The electrical (current and voltage) input signals connect directly to the cards to minimize noise. All output signals are available at the rear of the measurement chassis. The entire chassis can be heated by a temperature control circuit attached to an aluminum plate underneath the cards. Measurement performance is adequate under most ambient temperature conditions without the temperature control. However, because sub-freezing conditions can affect the measurement stability, the heater provision was included in the initial design.

The counter chassis (Figure 5-6) contains nine electromechanical counters. Signals proportional to electrical power from the measurement chassis are fed to the counters and the counters integrate the power signal. Thus, the counters display electrical energy. The counters were primarily designed for use during road tests when electrical recording of the power signal is not possible, but are also routinely read and recorded during the dynamometer tests.

The counter chassis was constructed as a separate unit in order to minimize the instrument volume in the vicinity of the driver/observer during road tests. Since electric vehicles may be relatively small, this was thought to be an important consideration. It also has a safety advantage since it isolates all the high-voltage signal lines from the driver/observer's vicinity. Figure 5-7 depicts the installation of these systems in the vehicle.

The heart of the power measurement system is the measurement circuit cards. These cards accept signals from voltage leads and current sensors and provide digital output signals proportional to bipolar power. Analog signals proportional to the input current and voltages are also available from the cards. These analog signals are isolated from common-mode voltages and include both a wideband (approximately 50 kHz) and a filtered (approximately 10 Hz) output signal. The 50 kHz response outputs are primarily used for checkout, investigation of waveforms, and related activities. The low-frequency signals are connected to the test facility's data system to provide recorded data of both voltage and current. The output signals proportional to power are sent to both the counter chassis and the data system.

The standard technique of multiplying the voltage and current signals to obtain an analog signal proportional to power is used. The analog output signal of power is sent to two voltage-to-frequency converters (one for each signal polarity) to convert the analog power signal to a frequency. The frequencies are then sent to the counter chassis and to the output connector for recording by the data system.

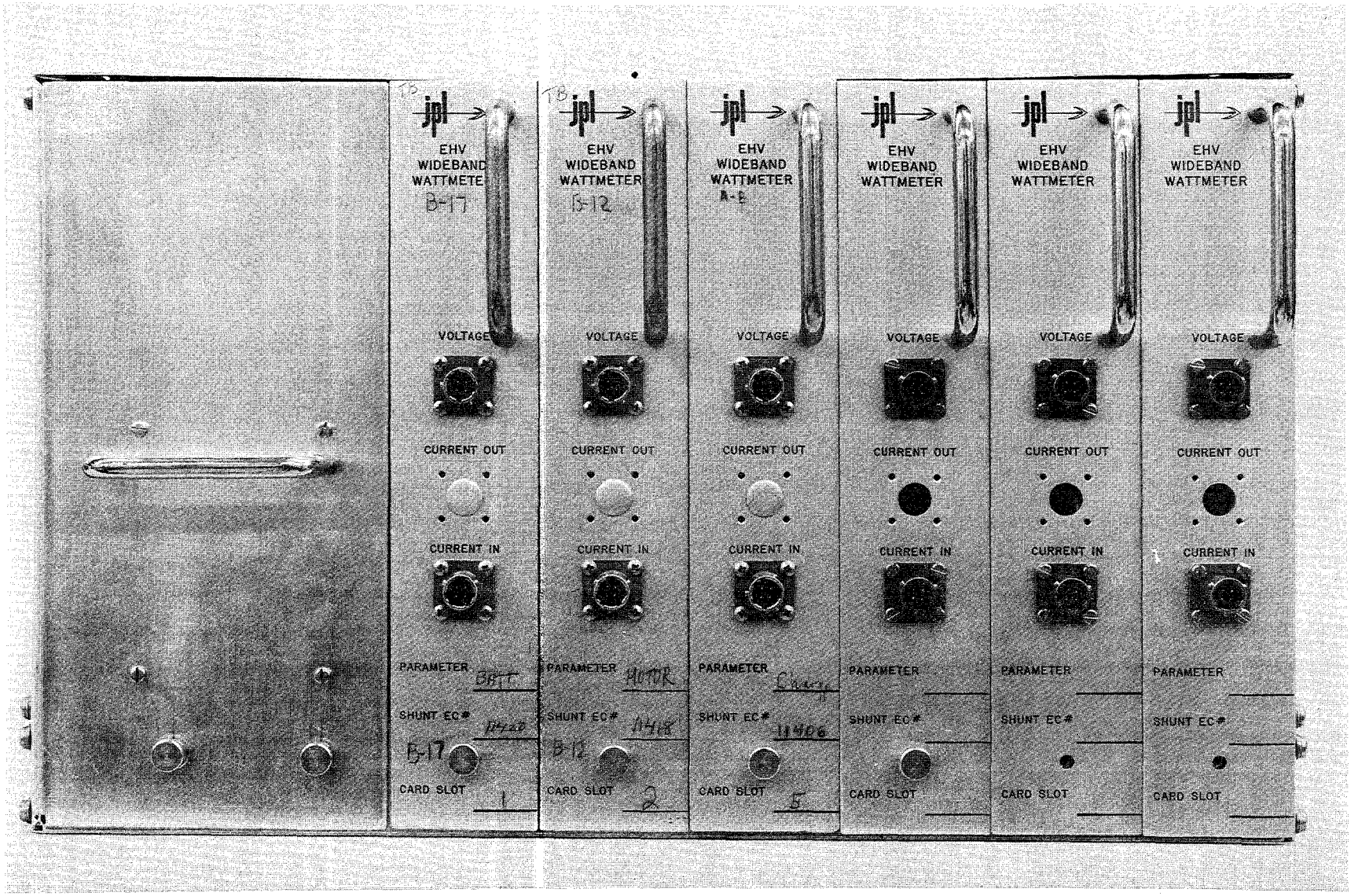

Figure 5-5. Energy Measurement Chassis

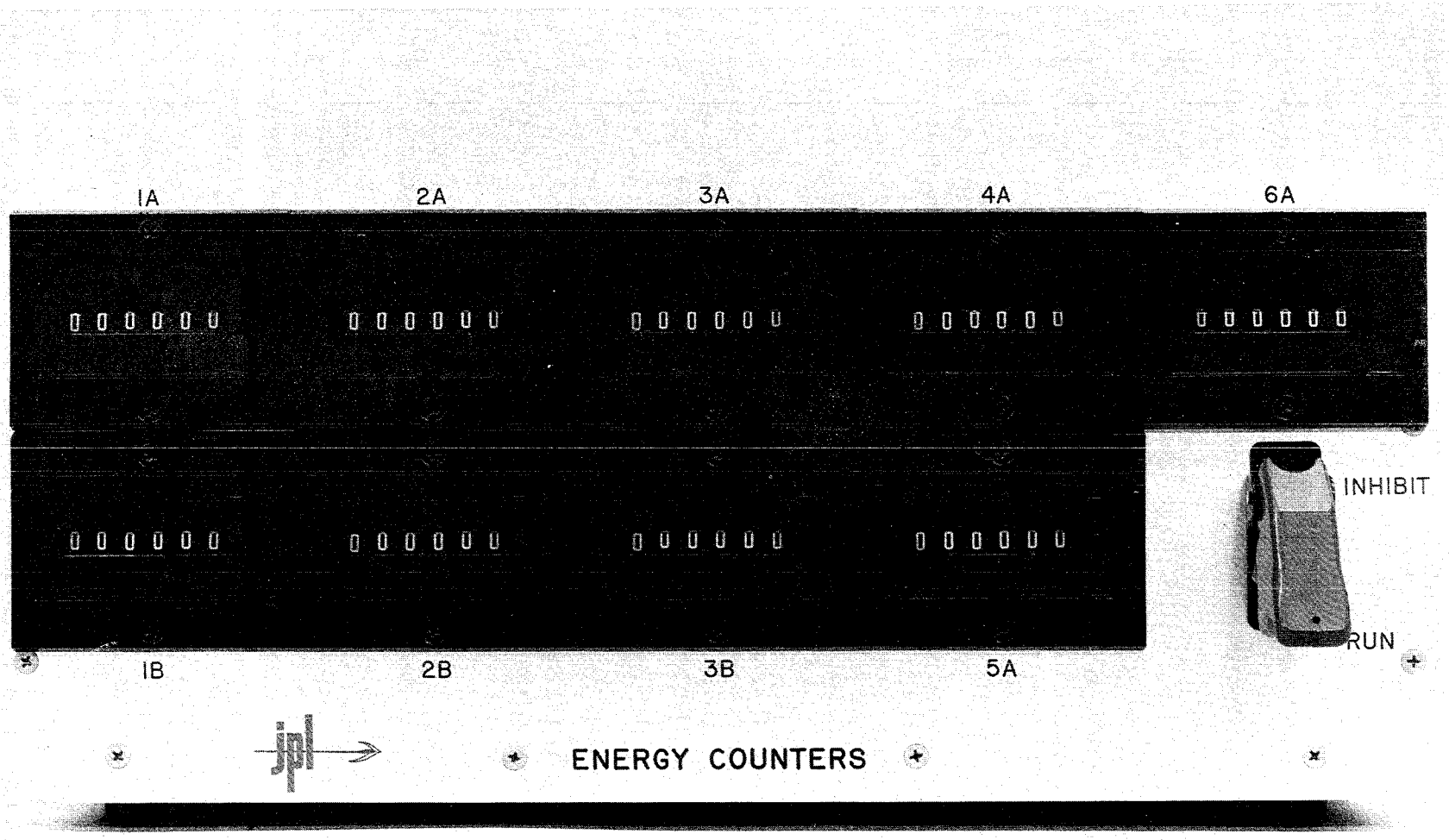

Figure 5-6. Counter Chassis

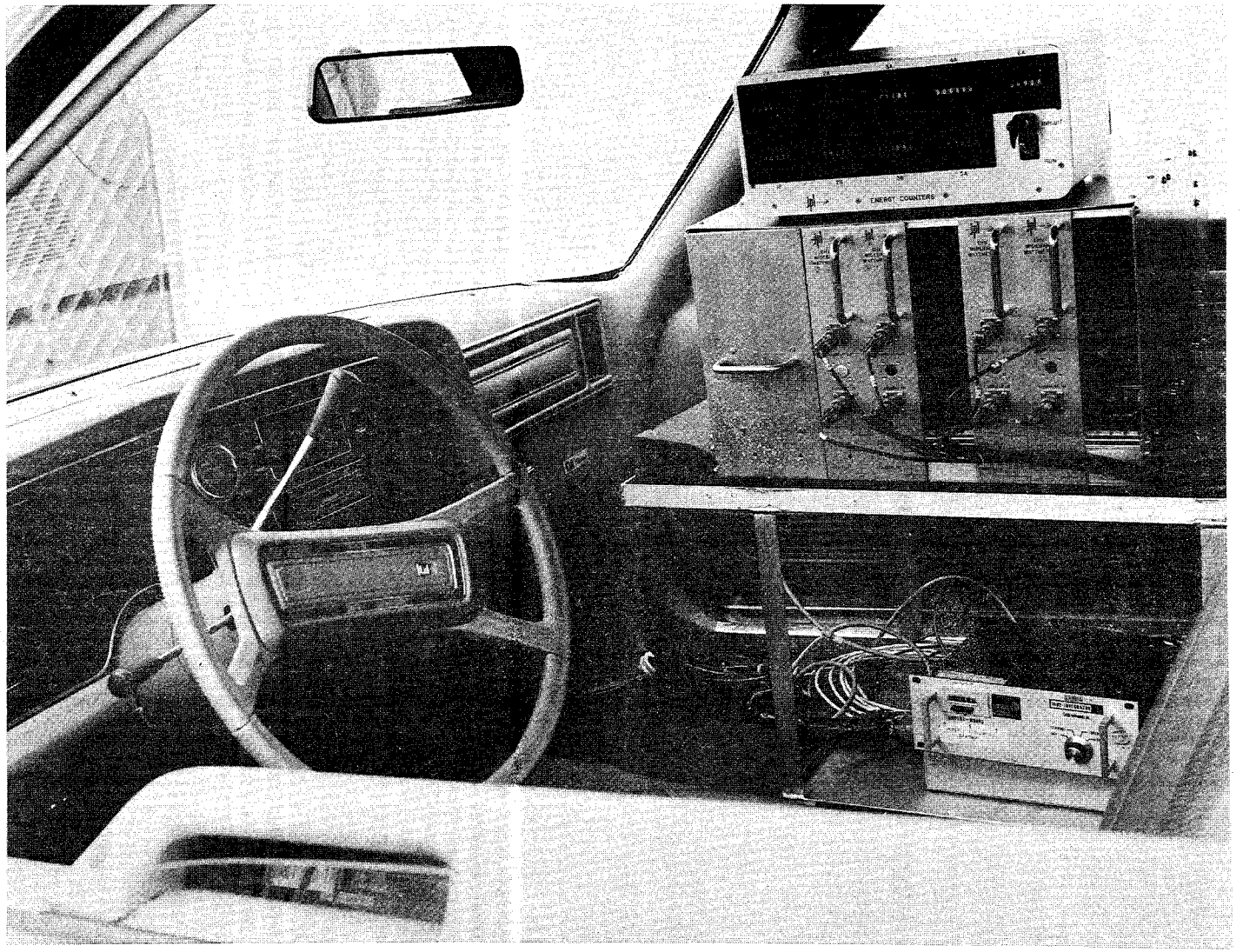

Figure 5-7. Measurement System and Counters Installed in Vehicle

The current circuit up to the multiplier includes three amplification stages and the voltage channel two. This circuitry removes any common mode voltage, amplifies the signal and directs the high-level signal to both the multiplier and to output connectors as the high-frequency output signal. A buffer stage with a gain of 1 is used to provide the low-frequency output signal. This stage and its separate power supply are necessary to eliminate any common mode voltages that may exist between the points where the high-frequency outputs are being used, which is typically in the chassis dynamometer room, and the data system which is in an adjacent room.

Each card includes provision for a jumper change to permit the card to measure ampere hours instead of power. One or two cards per measurement system are connected in this manner to provide battery ampere hour data during charging and discharging.

2. Motor and Half-Shaft Rotational Speed

The Siemans motor used by SCT includes a tachometer generator. For the purpose of the baseline testing this signal was used as an indication of the motor speed and was routinely recorded. The rotational speed at the output of the transmission is also useful since it provides a means of deducing the gear being used at any time, and also makes a historical record that will allow clutch failures to be detected. Since the Rabbit uses a transaxle there is no ready access to the transmission output shaft. Therefore the wheel half-shaft speed was measured by attaching alternating strips of reflective and optically black tape to the half-shaft. A photo optical sensor was used to monitor the black-to-reflective transitions and thus provide a signal proportional to the shaft rotational speed.

3. Vehicle Velocity and Distance Traveled

Each of the two dynamometer rolls is equipped with a digital transducer which produces a pulse proportional to each centimeter of distance traveled. These pulses are recorded as a rate (miles per hour) and integrated with a counter (miles). Although the pulse signals from both dynamometer rolls are recorded, only the data on the idle roll are used for reporting purposes. Data from the other dynamometer roll (absorption roll) are used for engineering information and to adjust the dynamometer aerodynamic load simulation.

4. Torque and Aerodynamic Horsepower

The reactive torque which results from energy being dissipated in the dynamometer absorption unit is measured by a precision load cell. Using torque and dynamometer revolutions-per-minute the IDAC data system calculates horsepower in near real time (within 0.1 s). This permits accurate adjustments of the dynamometer aerodynamic horsepower.

5. Miscellaneous Measurements

Additional recorded measurements include battery temperature, motor case temperature, atmospheric pressure, calibration voltages and several other parameters as described in Appendix B.

I. VEHICLE CONDITIONING AND WARM-UP

No vehicle warm-up was performed before the range and acceleration tests. However a warm-up was performed prior to all road load determination (coastdown) testing at ETS and before the companion chassis dynamometer coastdowns. The warm-up at ETS was accomplished by towing the vehicle up and down the length of the runway at 40-56 km/h (25-35 mi/h) for approximately 10 km (6 miles). The intent of this warm-up period was to bring the vehicle lubricants, wheel bearings, and tires to near their normal operating temperatures. For the "C" cycle tests at ETS, no warm-up was performed other than towing the vehicle about 2.7 km (1.7 mi) from the storage area to the runway. The vehicle power was never turned on prior to start of performance testing.

J. ROAD LOAD DETERMINATION AND DYNAMOMETER LOAD ADJUSTMENT*

Determination of road load power requirements is a standard test specified in the SAE Test Procedure J227a. However, the intent of the procedure is to define road load for reporting purposes, while in the context of this report, road load is established primarily for defining dynamometer adjustments.

The coastdown portion of the road load determination was performed at the Edwards Test Station (ETS) runway, and because of the slight slope of the runway (see Figure 5-1), tests were conducted in opposite directions and then averaged to compensate for the differences in grade. Because of the limited length of the runway, and because of the desire to use only the "flat" 1219 m (4000 ft) section, it was necessary to perform the coastdown tests in two parts. In one portion, the vehicle was towed to a speed of about 97 km/h (60 mi/h), released from the tow vehicle and allowed to coast, with the clutch disengaged and transmission in neutral, to a speed of about 56 km/h (35 mi/h). During the second part, the vehicle was accelerated under its own power to a speed of about 64 km/h (40 mi/h) and then again, with the clutch disengaged and transmission in neutral, was allowed to coast to a speed of less then 16 km/h (10 mi/h). To decrease the effect of air turbulance created by the tow vehicle during the high speed coastdowns, a 61 m (200 ft) nylon tow

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*See note concerning Road Load Determination in the Foreword of this report.

strap was used. A release mechanism was fitted to the front of the test vehicle and was activated by the test driver upon reaching the appropriate speed. The velocity of the vehicle as a function of time was recorded on a strip chart recorder and represents the primary data from this test.

The vehicle was next moved to the dynamometer. The coastdown process was repeated, but the vehicle traction motor was used to turn the wheels. The time required to coast from 32 to 16 km/h (20 to 10 mi/h) was matched first by adjusting the tire pressure and/or tire loading. The tire loading was varied by lifting the front of the vehicle with a pneumatic lift (see Figure 5-2). This is probably the most difficult part of the dynamometer setup, since matching the tire/road interface with the tire/dynamometer interface often presents problems. At the nominal 24 km/h (15 mi/h) the aerodynamic portion of the total road load is small and the necessary tire adjustments are not masked by the aerodynamic variable.

Once the coastdown time was matched at about 24 km/h (15 mi/h) the aerodynamic load was adjusted by means of the water brake absorber portion of the dynamometer. This is generally done at 80 km/h (50 mi/h), but can, in principle, be done at any velocity. As high a speed as practical is used so that the aerodynamic load is as large a part of the total as possible. Again, the time to coast between two speeds was matched to that obtained during the road test.

After the "road" coastdown times were duplicated on the dynamometer, the resultant aerodynamic horsepower at 80 km/h (50 mi/h) was measured. (The specific value for the Rabbit was 5.57 kW* (7.47 hp.) Note that this is the first time that an actual power value has been used though road load is nominally being duplicated. The dynamometer and lift pressure were then adjusted to the specific horsepower value before each test of the vehicle.

Table 5-1 summarizes the coastdown data obtained on the ETS runway. Because of the slight slope of this runway, tests were

Table 5-1. SCT Rabbit Coastdown Tests on Track at ETS

Velocity, km/h (mi/h) From	To	Sample Pairs, No.	Coastdown Time, s	Standard Deviation, %	Total Road* Load, kW	(hp)
88(55)	72(45)	22	17.3	6.4	9.56	(12.82)
32(20)	16(10)	22	39.1	13.3	1.28	(1.72)

*See Note concerning Road Load Determination in the Foreword of this report.

conducted in opposite directions and then averaged to compensate for the differences in grade. These data are presented as the average value of that pair.

Dynamometer adjustments, tire pressures and lift pressures were varied until the 88 to 72 km/h (55 to 45 mi/h) and 32 to 16 km/h (20 to 10 mi/h) coastdown times, respectively, matched those observed for the track tests. Once agreement was obtained, three dynamometer coastdowns were conducted. The results of the dynamometer coastdowns are given in Table 5-2.

Table 5-2. SCT Rabbit Coastdown Tests on Dynamometer at JPL

Velocity, km/h From	Velocity, (mi/h) To	Samples, No.	Coastdown Time, s	Standard Deviation, %	Total Road Load, kW	Total Road Load, (hp)
88(55)	72(45)	3	18.0	.8	9.11	(12.22)
32(20)	16(10)	3	34.5	3.3	1.43	(1.92)

Table 5-3 demonstrates the agreement between the dynamometer and track coastdown data. Wind tunnel data, obtained from a similar Rabbit, is also given in the Table 5-3.

Table 5-3. SCT Rabbit Road Load Comparison Among Track, Dynamometer and Wind Tunnel

Velocity, km/h	Velocity, (mi/h)	Test Track Power, kW	Test Track Power, (hp)	Dynamometer Power, kW	Dynamometer Power, (hp)	Wind Tunnel Power, kW	Wind Tunnel Power, (hp)
80	(50)	9.56	(12.82)	9.11	(12.22)		
24	(15)	1.28	(1.72)	1.43	(1.92)		
80	(50)[a]			5.57	(7.47)[a]	5.62	(7.53)[a]

[a] - Aerodynamic power only

K. MAXIMUM ACCELERATION

The purpose of these tests was to determine the time required for vehicle acceleration to maximum speed at 0, 40 and 80% battery discharge levels. In the SAE J227a procedure, these levels are to be achieved by discharging the fully-charged batteries at a fixed rate

until the desired depth of discharge is reached. In order to expedite the testing schedule, the different levels of battery discharge were achieved in a different manner. The procedure used is described below.

The test driver positioned the vehicle at the east end of the runway. The driver then accelerated the vehicle at the maximum rate possible. The shift points (see page 5-20) used were those recommended by the manfacturer. The speed reached as the vehicle passed the west 1219 m (4000 ft) marker was, for the purposes of these tests, defined as the maximum acceleration speed. The driver then braked and repositioned the vehicle at the west 1219 m (4000 ft) marker, and performed a maximum acceleration run in the easterly direction. The speed reached as the vehicle passed the east 76 m (250 ft) marker was defined as the maximum acceleration speed.

Between pairs of acceleration runs, the vehicle was driven the length of the runway four times at about 40 km/h (25 mi/h). This maneuver was used to discharge the batteries as well as to allow a cool-down period for the motor. When weather conditions permitted, the cruise time was used to perform the low-speed coastdowns.

The velocity of the vehicle as a function of time was measured by a fifth wheel, and was recorded on a strip chart recorder. This represents the primary data from this test. The resulting data, acquired from the maximum effort acceleration tests, is summarized in Section VI, Test Results.

L. DRIVING SCHEDULES AT THE ETS

For the purposes of partially correlating the dynamometer results to actual "road use", two "C" schedule range tests were conducted at the ETS runway. "B" schedules were not performed because of the lengthy time required to complete this particular schedule (3-4 h). Because of the limited runway length, it was not possible to perform "D" schedule tests and remain on the flat portion of the runway. Typically, two "C" cycles could be driven in each direction on the runway while utilizing the flat 4000 ft section. Turnarounds for driving cycle tests presented no difficulties. As the driver approached the end of a cycle, he would begin his turn during the braking period and would complete approximately 75% of the turn before coming to a complete stop for the idle portion. The final 25% of the turn was completed during the acceleration portion of the next cycle. The driver performed the driving schedule by matching the vehicle velocity (from the fifth wheel) to a cycle plot which was pre-recorded on a strip chart recorder. The on-board power measurement system was utilized for providing totalized energy measurements. Results are summarized in Section VI, Test Results.

M. DYNAMOMETER TEST PREPARATIONS

A dynamometer warm-up was conducted prior to vehicle testing in the following manner: An inertia weight setting of 1644 kg (3625 lb)

corresponding to the gross vehicle weight of the SCT Rabbit was coupled to the dynamometer rollers. A gasoline powered vehicle was driven on the dynamometer for 5 min at 80 km/h (50 mi/h) and 5 min at 56 km/h (35 mi/h). The warm-up vehicle was then driven at a constant speed of 80 km/h (50 mi/h) and the dynamometer was adjusted to the specific horsepower value of 7.47 hp for the Rabbit. Immediately following the warm-up, the test vehicle was winched onto the dynamometer for the actual test. No warm-up of the test vehicle was performed prior to testing. However the vehicle and battery pack had been temperature-conditioned to 21 + 2.8°C (70 + 5°F) prior to the test.

Range at steady speed and maximum acceleration tests were performed as specified in the SAE Test Procedure J227a. Driving schedule tests were performed as defined by the SAE J227a with the exception of the changes as outlined in the following section: JPL Standardization of the SAE J227a Driving Cycles.

The manufacturer's recommended shift points were utilized during the test phase and are as follows:

First to second gear	3200 rev/min (24 km/h, 15 mi/h)
Second to third gear	2600 rev/min (34 km/h, 21 mi/h)
Third to fourth gear	2600 rev/min (48 km/h, 30 mi/h)

N. JPL STANDARDIZATION OF THE SAE J227a DRIVING CYCLES

In order to provide a well-defined baseline from which to measure the performance of the near-term batteries, a set of test procedures which are repeatable and which can easily be maintained constant over a long calender time are a necessity. An important part of these consistent procedures is the specific driving schedules to be used. The SAE J227a driving schedules provide a good basis for the required consistency, but as currently written they are not totally adequate. The principle deficiency (for the purposes of the testing described here) is the lack of definition of the time/velocity path to be followed for the acceleration, coast, and brake portions of the cycle. Therefore, those portions of the J227a driving schedules were defined by JPL for the purpose of the tests described here. The complete cycles are shown in Tables 5-4, 5-5, and 5-6 and are graphed in Figure 5-8. Some of the considerations that affected the final choice are discussed below.

The primary constraint (self-imposed) used in deriving the time/velocity traces of Figure 5-8 was that they should reflect the practice and expectations of the "average" driver, (i.e., deceleration rate during braking and coast should not be excessive, the transitions from one mode to another should be smooth and continuous, etc.). The acceleration paths chosen were taken from the Federal Test Procedure, normalized to the J227a schedule requirements. A maximum deceleration rate of 3.3 mph/s was allowed for the braking mode. An asymptotically

decaying velocity was selected for the coast mode. This is a composite of coasts from an electric Corvette (Ref. 5-2) and several IC powered vehicles. Again the expectations of the "average" driver when the accelerator pedal is released was the rationale, but with an additional consideration that the coast should allow as much regeneration as practical for those vehicles so designed. The coast-brake portion of the "D" cycle presented a special problem in that all the constraints touched on above and the J227a times for coast and brake could not be simultaneously satisfied. The compromise reflected in Table 5-6 and Figure 5-8 was that the 3.3 mph/s deceleration rate was maintained, the brake time lengthened by 3 s, and the coast time shortened by 3 s. The overall coast-brake time for the "D" cycle is as specified by the J227a, and except for the coast-brake of the "D" cycle, all the schedules of Tables 5-4, 5-5, and 5-6 meet the letter of the J227a document.

Table 5-4. Time - Speed Tables Schedule "B"

Time, (s)	Speed, (mi/h)	Time, (s)	Speed, (mi/h)	Time, (s)	Speed, (mi/h)
0	0	21	20.00	51	0
1	1.67	22	20.00	52	0
2	3.35	↕	↕	↕	↕
3	5.03				
4	6.71				
5	8.46	36	20.00	70	0
6	9.78	37	20.00	71	0
7	11.06	38*	20.00	72*	Repeat cycle
8	12.28	39	19.20		starting at
9	13.40	40	18.60		0 s
10	14.23	41	18.20		
11	15.36	42*	18.00		
12	16.20	43	14.40		
13	16.97	44	10.80		
14	17.65	45	7.20		
15	18.26	46	3.60		
16	18.80	47*	0		
17	19.26	48	0		
18	19.66	49	0		
19*	20.00	50	0		
20	20.00				

*Denotes transition points from one mode to another (i.e., acceleration to cruise).

Table 5-5. Schedule "C"

Time (s)	Speed (mi/h)	Time (s)	Speed (mi/h)	Time (s)	Speed (mi/h)
0	0	21	30.00	54	2.89
1	2.65	↕	↕	55*	0
2	5.31			56	0
3	7.97			57	0
4	10.60	37	30.00	58	0
5	13.05	38*	30.00	59	0
6	15.28	39	29.19	60	0
7	17.33	40	28.52	↕	↕
8	19.18	41	27.89		
9	20.89	42	27.40		
10	22.43	43	26.95	78	0
11	23.83	44	26.59	79	0
12	25.08	45	26.27	80*	Repeat cycle
13	26.21	46*	26.00		starting at
14	27.20	47	23.11		0 s
15	28.07	48	20.22		
16	28.82	49	17.33		
17	29.45	50	14.44		
18*	30.00	51	11.56		
19	30.00	52	8.67		
20	30.00	53	5.78		

*Denotes transition points from one mode to another (i.e., acceleration to cruise).

Table 5-6. Schedule "D"

Time (s)	Speed (mi/h)	Time (s)	Speed (mi/h)	Time (s)	Speed (mi/h)
0	0.0	25	43.31	91	19.00
1	2.56	26	43.93	92	15.83
2	5.12	27	44.49	93	12.67
3	7.68	28*	45.00	94	9.50
4	10.24	29	45.00	95	6.33
5	12.80	30	45.00	96	3.17
6	15.36	↕	↕	97*	0
7	17.79			98	0
8	20.08			99	0
9	22.24	75	45.00	100	0
10	24.28	76	45.00	↕	↕
11	26.20	77	45.00		
12	28.01	78*	45.00		
13	29.72	79	43.53	120	0
14	31.34	80	42.33	121	0
15	32.85	81	41.33	122*	Repeat cycle
16	34.27	82	40.40		starting at
17	35.60	83	39.53		0 s
18	36.85	84	38.73		
19	38.01	85*	38.00		
20	39.09	86	34.83		
21	40.08	87	31.67		
22	41.00	88	28.50		
23	41.85	89	25.33		
24	42.61	90	22.17		

*Denotes transition points from one mode to another (i.e., acceleration to cruise).

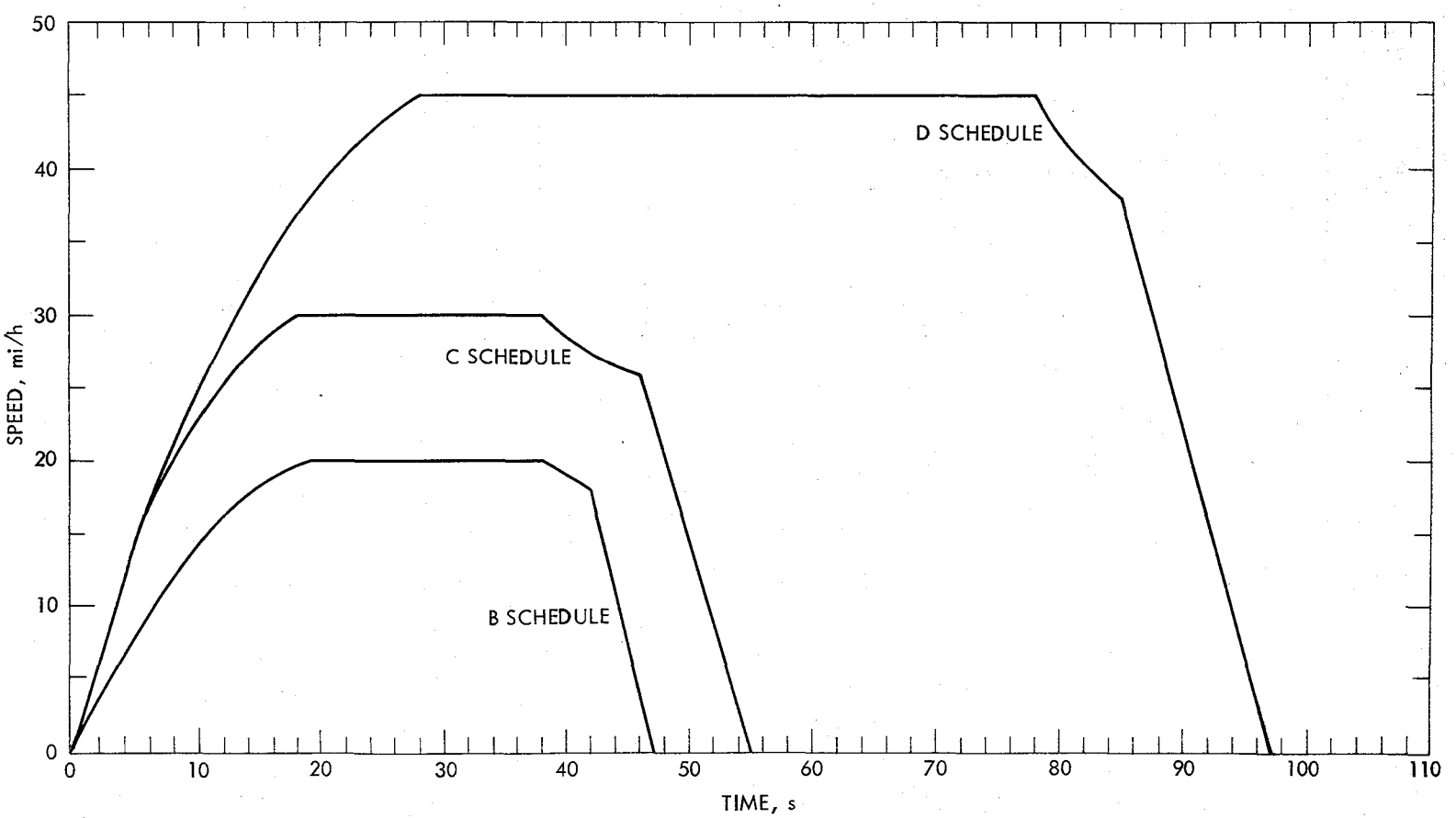

Figure 5-8. JPL Standardized J227a Driving Schedule

SECTION VI

TEST RESULTS

This section presents the results of both the track (ETS) and dynamometer testing. These tests were of four major types: range at constant speed, range under the SAE J227a driving schedules B, C and D, best effort accelerations, and road load determination tests. The results are presented in separate subsections with a corresponding summary table of pertinent test data. All test data were recorded in customary U.S. units, but are reported in this section in both S.I. (metric) and U.S. units. Appendix E is a tabulation of all track and dynamometer test data.

A. RANGE AT CONSTANT SPEED TESTS

Due to the limited length of the runway, no constant speed tests were performed at the ETS facility. Two 88 km/h (55 mi/h) and three 56 km/h (35 mi/h) constant speed tests were conducted on the dynamometer at the JPL Automotive Test Facility. Speed was held constant to within $\pm$ 5% of the nominal value and the tests were terminated when either the battery pack voltage fell below 70 V dc (1.3 volts per cell) or the vehicle speed could not be held to within 5% of the nominal value. The 88 km/h (55 mi/h) and 56 km/h (35 mi/h) test data are shown in Table 6-1 and 6-2 respectively.

The 6% and 5% difference in range of tests 5 and 9, respectively, as compared to test 7 of the constant speed 56 km/h (35 mi/h), is a combination of the difference in battery temperature at the end of test and lesser power demand resulting from a reduced vehicle load. The variable vehicle load resulting from disc brake drag is discussed in detail under Section VII, Discussion and Problems.

In the limited number of steady-state tests performed, the repeatability was satisfactory although the difference between the largest and smallest ranges at 56 km/h (35 mi/h) was 6.7%. The major source of the variation was later found to be the result of the drag of the disc brakes. The drag of the brakes is not only non-repeatable from test to test, but also changed during a single test. The brake drag effect is described in more detail in Section VII, Discussion and Problems. The difference in the battery electrolyte temperature, as reflected by the end of test temperature, is also a known contributor to range variation. Although, in the case of the 56 km/h (35 mi/h) tests the total energy from the batteries (electrolyte temperature effects would show up there) differed by less than 1%.

B. DRIVING CYCLE RANGE TESTS

To establish uniform procedures for the testing of an electric vehicle, i.e., stop-and-go driving, the SAE has established four driving cycles for electric vehicles. The driving cycles exercise the

vehicle in a near "normal" manner (i.e., accelerate, cruise, coast, brake, and idle), but also lead to test repeatability and standardization. The exact requirements of these cycles are presented in Section VI, SAE J227a: "Electric Vehicle Test Procedure" (see Ref. 1-1). Additional definition has been added to these driving schedules which are used at JPL. The form of the cycles used at JPL are described in detail in the Test Methodology section of this report and referred to as "JPL Standardizaton of SAE J227a Driving Cycles." Two schedule D's, two C's, and one B test were completed at the JPL dynamometer facility. In addition, two schedule C tests were conducted at the ETS facility. All tests were terminated as a result of the vehicle being unable to match the acceleration ramp in the prescribed time.

Table 6-3 summarizes the results of the Schedule B cycle test. Because of the good repeatability demonstrated in the D and C cyclic tests, the limited requirements the B cycle places on the vehicle and a desire to conserve test time, only one B cycle test was deemed necessary. Due to an equipment failure, the battery amp-hour discharge data during the B cycle test were not recorded.

Table 6-4 summarizes the results of the Schedule C cyclic tests. The difference in range of 5% is attributed to the difference in battery temperature at the end of each test. Again the rule of thumb is a 1% change in capacity per each degree Celsius of temperatures accounts for the 5% range difference. The use of the 28°C (82°F) starting temperature was deliberate and was an attempt to match the end of test conditions for the "C" cycle tests conducted at the ETS facility.

Table 6-5 summarizes the results of the Schedule D driving cycle tests. It can be seen the the overall results of these two tests agree closely. The ending temperature difference of 4°C (7°) relates closely to the 3.7% difference in battery energy and in the vehicle range. Note that the overall vehicle efficiency, as reflected in the battery energy consumption remained virtually constant.

C. TRACK DRIVING CYCLE TEST RESULTS

Two Schedule C driving cycle tests were conducted at ETS. No vehicle warm-up was conducted prior to the track tests other than towing the vehicle approximately 274 m (9000 ft) from the garage to the runway. For test number 20 the ambient temperature ranged from 31 to 39°C (88 to 103°F) and winds varied from 0 to 4.8 km/h (0 to 3 mi/h). For test 21 the temperature and wind variation were from 30° to 36°C (86° to 97°F) and from 0 to 8 km/h (0 to 5 mi/h) respectively. The warm environment led, at least in part, to high after-test battery temperature. Note that test 20 was interrupted for nine minutes to allow for an aircraft landing. As discussed in Reference 5-2, interruptions of this type allow battery recuperation and directly affect the range results. Table 6-6 summarizes the results of the track Schedule C cyclic tests.

D. TRACK TO DYNAMOMETER COMPARISONS

Dynamometer testing of the C cycles was carried out to the same conditions as was done on the track, except for the towing of the vehicle the 274 m (9000 ft) from the garage to the runway, and except for the ambient temperature variation. The dynamometer facility temperature was controlled at 21°C ± 2°C (70°F), and during track tests at ETS the ambient temperature ranged from 31 to 39°C (88 to 103°F). Table 6-7 lists the averages of the track and dynamometer Schedule C results for comparison purposes. It can be seen that the distance per cycle agrees quite closely, which indicates the driving techniques between the track and the dynamometer are consistent. The remaining areas of difference between the track and the dynamometer are range, regeneration energy and the ambient temperature conditions. A 1.5% increase in track range can be attributed to the battery ending temperature difference. The remaining factors that could account for range differences between the track and the dynamometer are the vehicle warm-up resulting from the 274 m (9000 ft) tow and the ambient temperature. However, no analysis to quantify the difference was attempted.

E. ENERGY CONSUMPTION

Energy consumption and road power requirements were determined using methods similar to those given in SAE Test Procedure J227a, Section 10, Vehicle Road Energy Consumption. For the SAE procedure, three pairs of the coastdown tests are averaged for the full velocity profile. The data from Table 6-8 are an average of 24 separate coastdown tests (i.e., 12 pairs) which were conducted on the separate days. The results of the calculations represent the energy required by the vehicle to overcome aerodynamic and rolling, including part of the transmission energy losses. This is not the energy needed from the vehicle batteries to propel the vehicle at various speeds. The battery, controller, motor, and a majority of the transmission energy losses are excluded from the energy consumption values reported here.

Table 6-8 is a tabulation of the time increment required to coast between each of the velocity increments listed. Figure 6-1 shows the same data graphically. After plotting the data from Table 6-8 the curve of Figure 6-1 was fitted to provide some smoothing. "Smoothed" values of time were read from this curve and are included in Table 6-8. The smoothed values were used in the subsequent calculations of road energy and power. The road power and energy consumption were calculated using the appropriate equations from SAE Procedure J227a. The results of these calculations are given in Table 6-9 and are plotted in Figures 6-2 and 6-3.

F. MAXIMUM EFFORT ACCELERATION

Tests to measure the vehicle's maximum effort acceleration capability were conducted at the ETS track and on the dynamometer. Although the agreement between the two sites is reasonable, particularly at 40% and 80% depth of battery discharge, the

dynamometer results are not discussed here. The lack of vehicle warm-up had a very noticeable effect on the dynamometer results at 0% depth of discharge. In addition, the possibility of tire-roller slippage at low speeds led to the decision not to use the dynamometer acceleration data here. The track data is complete and, by itself, shows the vehicle's acceleration and gradeability (see next section) capabilities.

Table 6-10 shows the average of two accelerations, one in each direction of the runway for three levels of battery depth of discharge. The Table 6-10 entries are in terms of the time increment required for each velocity change shown and have been used to derive Figure 6-4 as absolute values. The curves of Figure 6-4 were fitted to provide some smoothing for the purpose of the acceleration and gradeability calculations. "Smoothed" values of incremental time were determined from the fitted curves and are included in Table 6-10.

As described on page 5-20, in the Methodology section, the vehicle's batteries were discharged between accelerations by driving the vehicle at 30 mi/h and measuring the cumulative battery energy consumed. The vehicle's acceleration performance from 0-48 km/h (0-30 mi/h) was fair in that even at 80% DoD the time was just slightly over 12 seconds. The top speed attainable however was noticeably affected by the battery state. At 80% DoD a top speed of only 88 km/h (55 mi/h) was possible and required nearly a minute to reach.

G. MAXIMUM GRADEABILITY

The "smoothed" data of Table 6-10 were used to calculate the vehicle's acceleration rate and gradeability per the SAE J227a Test Procedure. The results of these calculations, shown in Table 6-11 and Figures 6-5 and 6-6 represent the acceleration rate and maximum velocity an SCT Rabbit can achieve at different road grades. The effects of battery depth of discharge are included in the calculations. The relationship used to calculate the acceleration rate and gradeability, as taken from Ref. 1-1, were:

$$G = 100 \tan (\sin^{-1} Ca)$$

where G is the grade at speed V expressed in percent

a is the acceleration rate at speed V in mi/h/s

C is a units conversion constant whose value is 0.455 when the units of a are mi/h/s

$$\text{and } \bar{a} = \frac{V_n - V_{n-1}}{t_n - t_{n-1}} \qquad V = \frac{V_n + V_{n-1}}{2}$$

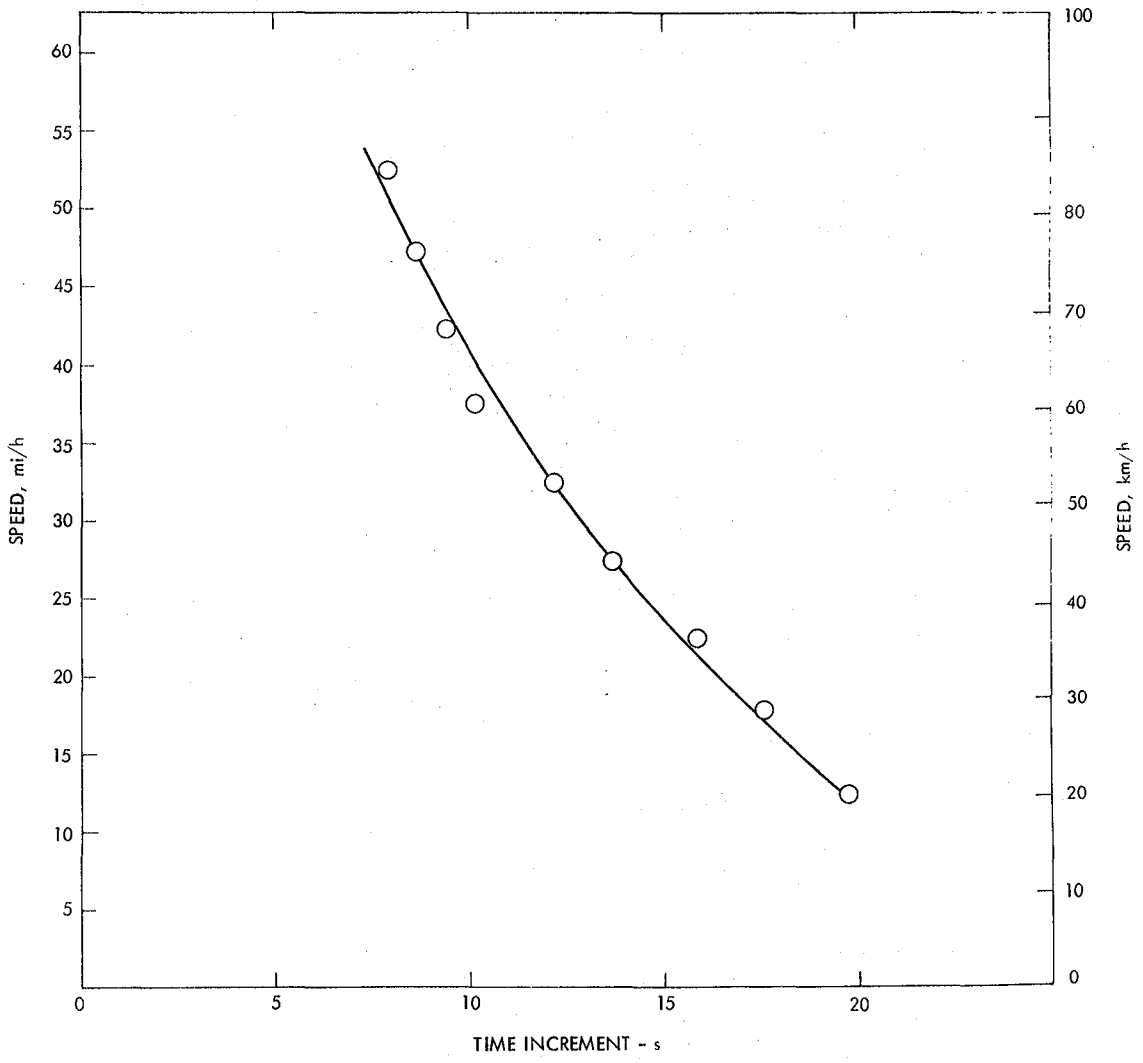

Figure 6-1. Average Speed vs Time Increment

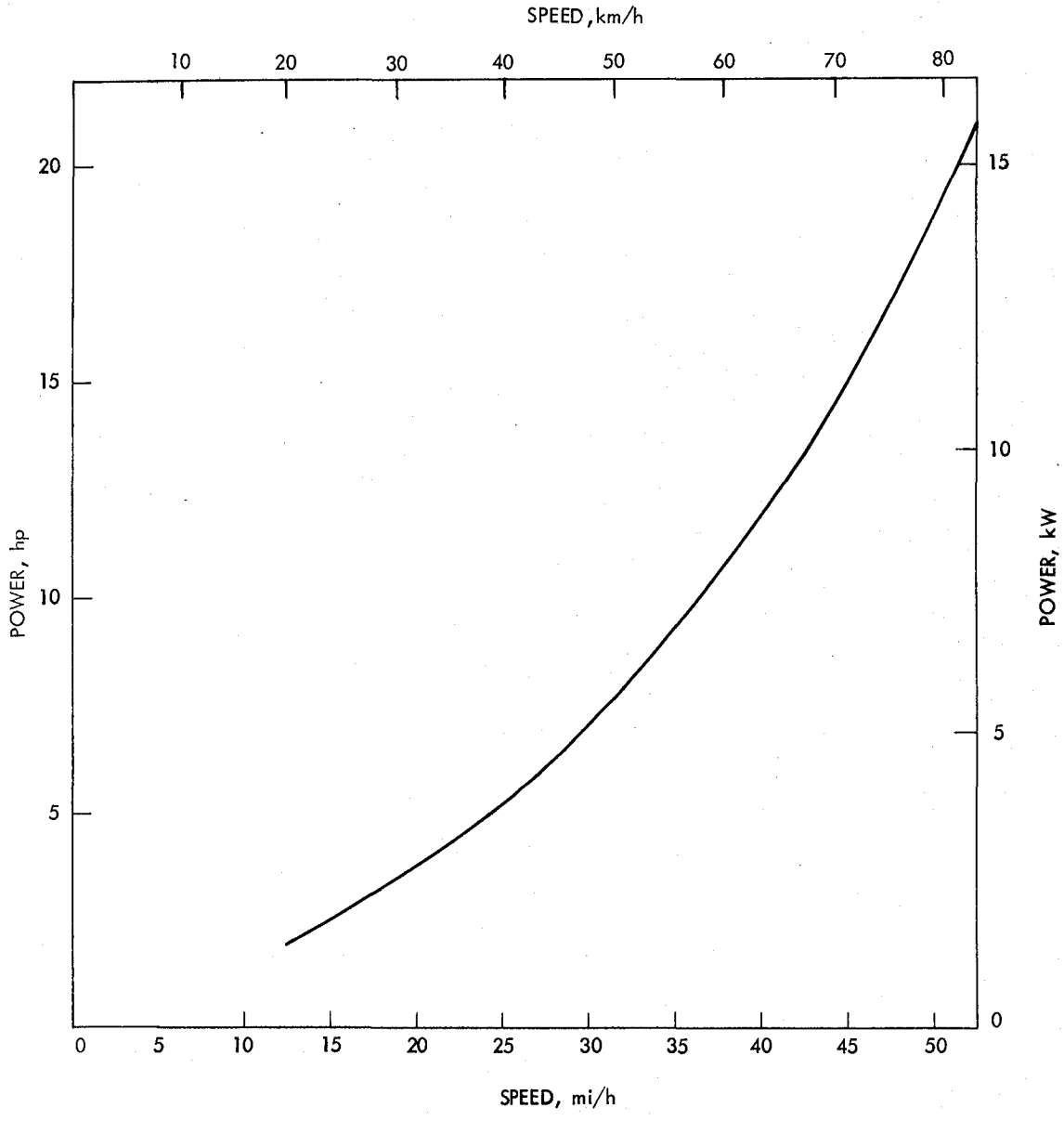

Figure 6-2. Road Power vs Speed

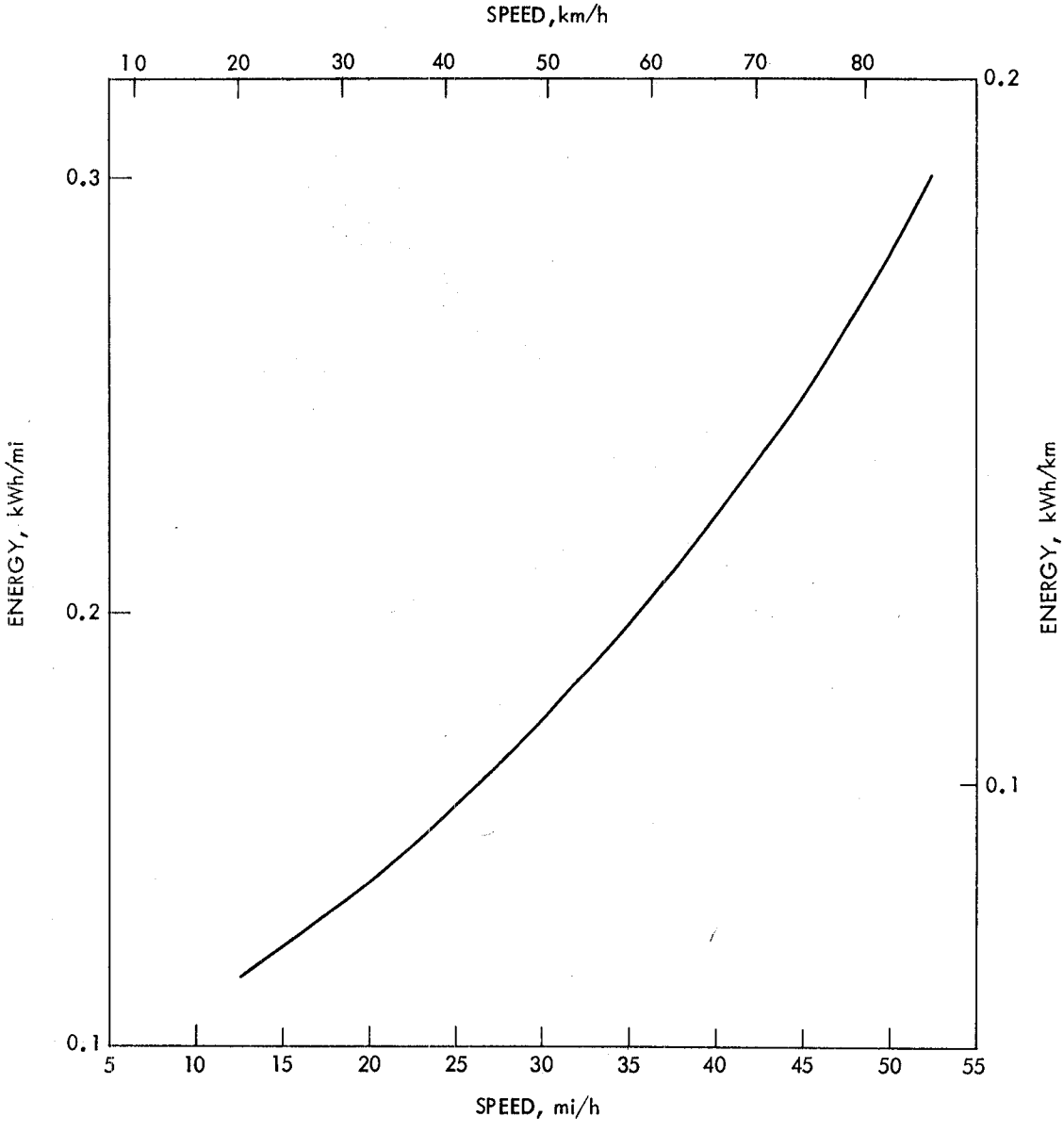

Figure 6-3. Road Energy vs Speed

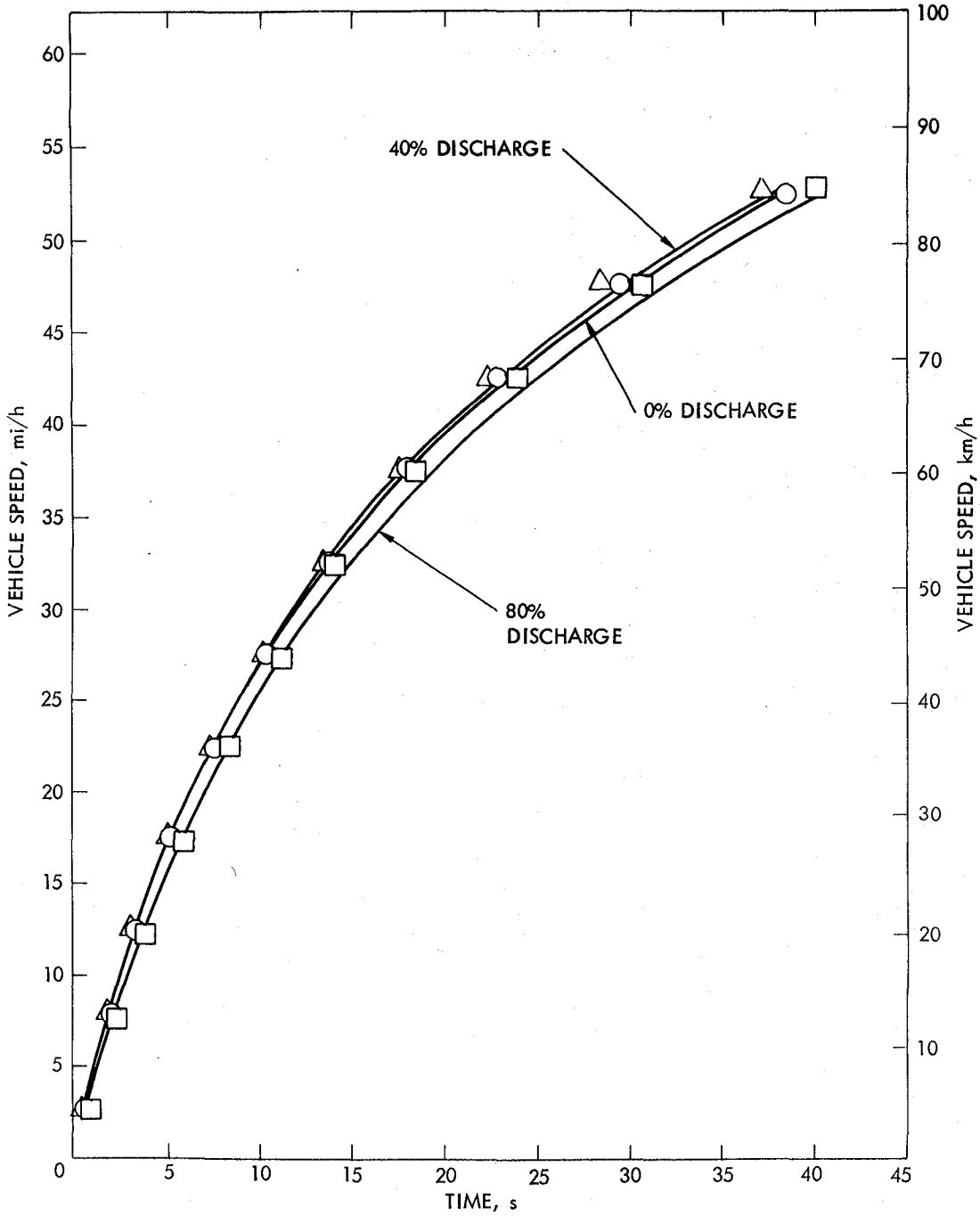

Figure 6-4. Vehicle Velocity vs Time During Maximum Effort Acceleration

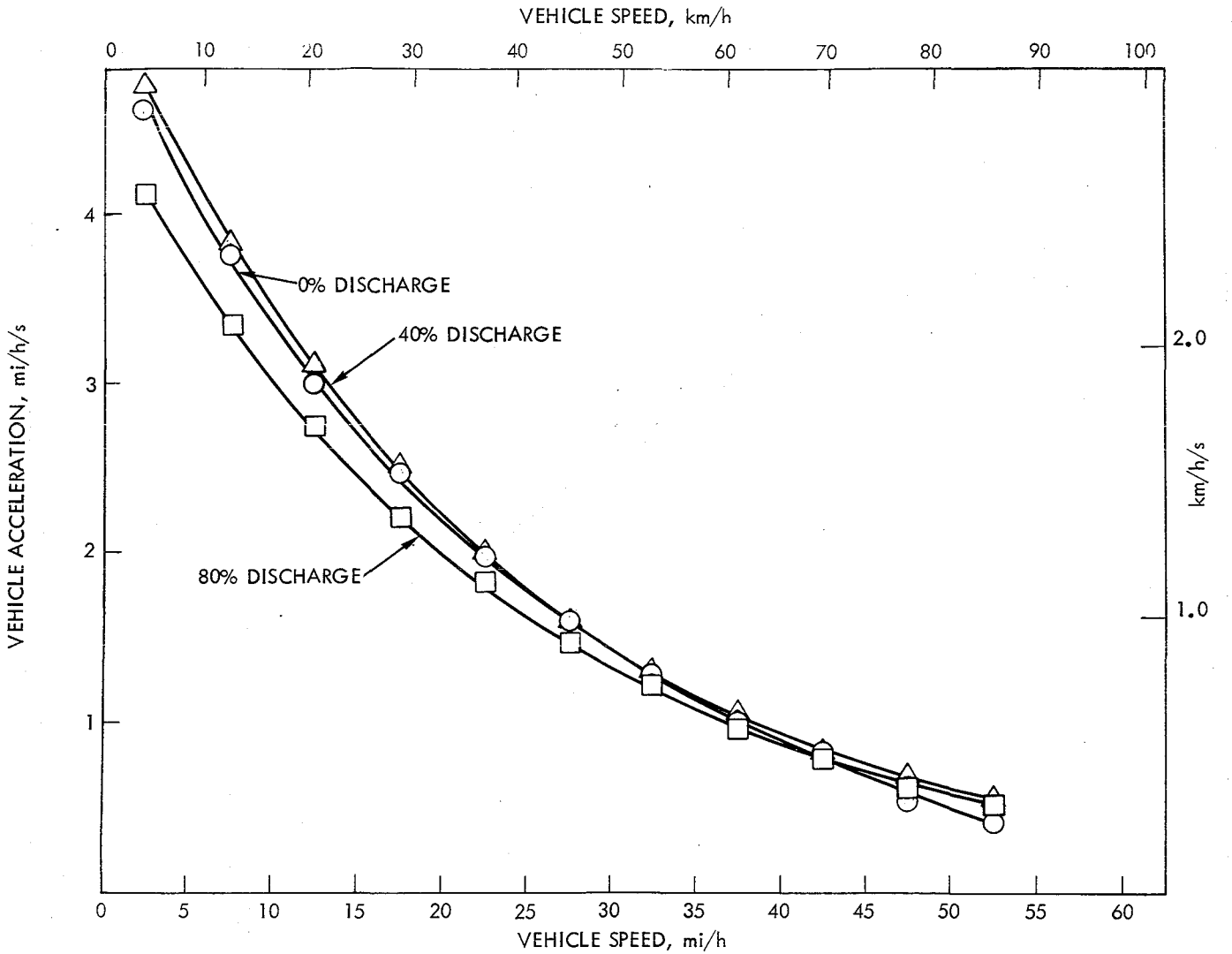

Figure 6-5. Acceleration vs Speed

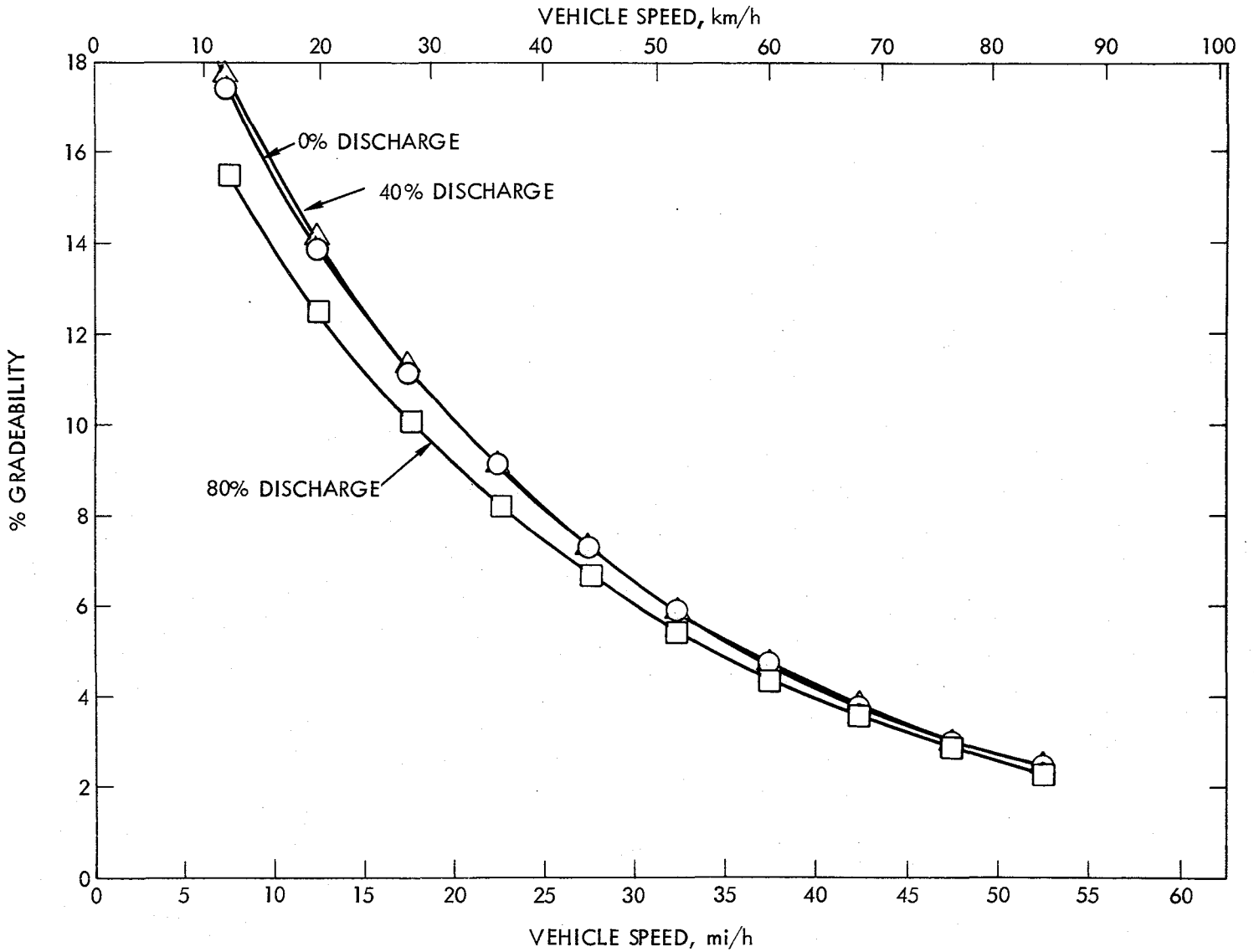

Figure 6-6. Gradeability vs Velocity

Table 6-1. SCT Rabbit Constant Speed 56 km/h (35 mi/h) Range Test Results (Dynamometer)*

U.S. CUSTOMARY UNITS

Test No.	Range, mi	Battery Energy Out, Wh	In, Wh Regen	Battery Energy Consumption, Wh/mi	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, Wh	Battery Temp.[a] Before, °F	After, °F
5	79.5	15089	8.5	190	149.9	184.0	22949	72	78
7	84.8	15226	9.6	179.5	152.3	181.1	22005	75	86
9	80.4	15038	8.3	187	147.4	175.2	21922	73	83
Average	81.6	15118	8.8	185.5	149.8	1180.1	22292	--	--

SI Units

Test No.	Range, km	Battery Energy Out, MJ	In, MJ Regen	Battery Energy Consumption, MJ/km	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, MJ	Battery Temp.[a] Before, °C	After, °C
5	128	54.320	.030	.424	149.9	184.0	82.62	22	26
7	136.4	54.813	.034	.402	152.3	181.1	79.22	24	30
9	129.3	54.136	.029	.419	147.4	175.2	78.92	23	28
Average	131.2	54.423	0.31	.415	149.8	180.1	80.25	--	--

a - Average of five batteries

* See Appendix F

Table 6-2. SCT Rabbit Constant Speed 86 km/h (55 mi/h) Range Test Results (Dynamometer)*

U.S. CUSTOMARY UNITS

Test No.	Range, mi	Battery Energy Out, Wh	In, Wh Regen	Battery Energy Consumption, Wh/mi	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, Wh	Battery Temp.[a] Before, °F	After, °F
3	44.8	11707	18.4	261	118.7	149.3	19069	74	91
4	43.8	11321	6.1	258	114.1	140.2	17422	72	98
Average	44.3	11514	12.25	259.5	116.4	144.8	18245	--	--

SI Units

Test No.	Range, km	Battery Energy Out, MJ	In, MJ Regen	Battery Energy Consumption, MJ/km	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, MJ	Battery Temp.[a] Before, °C	After, °C
3	72.1	42.145	.066	.584	118.7	149.3	68.65	23	33
4	70.5	40.756	.022	.578	114.1	140.2	62.72	22	37
Average	71.3	41.450	.044	.581	116.4	144.8	65.68	--	--

a - Average of five batteries

* See Appendix F

Table 6-3. SCT Rabbit Driving Schedule B Test Results (Dynamometer)*

U.S. CUSTOMARY UNITS

Test No.	Range, mi	Cycles Driven	Battery Out, Wh	Energy In, Wh Regen	Battery Energy Consumption, Wh/mi	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, Wh	Battery Temp.[a] Before, °F	After, °F
10	47.4	234	16570	432.6	350	b	192.4	23907	70	82

SI Units

Test No.	Range, km	Cycles Driven	Battery Out, MJ	Energy In, MJ Regen	Battery Energy Consumption, MJ/km	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, MJ	Battery Temp.[a] Before, °C	After, °C
10	76.3	234	59.652	1.56	.782	b	192.4	86.07	21	28

a - Average of five batteries

b - Equipment failure

* See Appendix F

Table 6-4. SCT Rabbit Driving Schedule C Test Results (Dynamometer)*

U.S. CUSTOMARY UNITS

Test No.	Range, mi	Cycles Driven	Battery Energy Out, Wh	Energy In, Wh Regen	Battery Energy Consumption, Wh/mi	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, Wh	Battery Temp.[a] Before, °F	After, °F
24	38.6	107	13170	343.1	341	132	156	18651	82	100
25	36.7	104	12687	305.9	346	127.7	153	18309	74	92
Average	37.7	105.5	12929	324.5	343.5	129.9	154.5	18480	--	--

SI Units

Test No.	Range, km	Cycles Driven	Battery Energy Out, MJ	Energy In, MJ Regen	Battery Energy Consumption, MJ/km	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, MJ	Battery Temp.[a] Before, °C	After, °C
24	62	107	47.412	1.24	.762	132	156	67.14	28	38
25	59	104	45.673	1.10	.774	127.7	153	65.91	23	33
Average	60.5	105.5	46.542	1.17	.768	129.9	154.5	66.53	--	--

a - Average of five batteries

* See Appendix F

Table 6-5. SCT Rabbit Driving Schedule D Test Results (Dynamometer)*

U.S. CUSTOMARY UNITS

Test No.	Range, mi	Cycles Driven	Battery Energy Out, Wh	Energy In, Wh Regen	Battery Energy Consumption, Wh/mi	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, Wh	Battery Temp.[a] Before, °F	After, °F
6	25.8	26	9045	240.7	351	91.9	115.6	14192	72	87
8	26.8	27	9372	240.6	350	94.2	118.4	15175	75	90
Average	26.3	26.5	9281	240.65	350.5	93.05	117	14683	-	-

SI Units

Test No.	Range, km	Cycles Driven	Battery Energy Out, MJ	Energy In, MJ Regen	Battery Energy Consumption, MJ/km	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, MJ	Battery Temp.[a] Before, °C	After, °C
6	41.5	26	32.562	.867	.784	91.9	115.6	51.09	22	30
8	43.1	27	33.739	.866	.782	94.2	118.4	61.83	24	32
Average	42.3	26.5	33.150	.866	.783	93.05	117	52.86	-	-

[a] - Average of five batteries.

* Appendix F

Table 6-6. SCT Rabbit Driving Schedule C Test Results at ETS (Track)*

U.S. CUSTOMARY UNITS

Test No.	Range, mi	Cycles Driven	Battery Energy Out, Wh	Energy In, Wh Regen	Battery Energy Consumption, Wh/mi	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, Wh	Battery Temp.[a] Before, °F	After, °F
20	41.9	117	13320	670	318	135.3	167.2	c	74	100
21	41.3	116	b	b	b	135.9	160.6	c	72	98
Average	41.6	116.5	--	--	--	135.6	163.9	--	--	--

SI Units

Test No.	Range, km	Cycles, Driven	Battery Energy Out, MJ	Energy In, MJ Regen	Battery Energy Consumption, MJ/km	Battery Out, Ah	Amphours Recharge, Ah	Battery Energy Recharge, MJ	Battery Temp.[a] Before, °C	After, °C
20	67.4	117	47.952	2.41	.711	135.3	167.2	c	23	38
21	66.5	116	b	b	b	135.9	160.6	c	23	36
Average	67	116.5	--	--	--	135.6	163.9	--	--	--

[a] - Average of three batteries

[b] - Equipment failure

[c] - Measurement of recharge energy at ETS not performed because instrumentation not available

* Appendix F

Table 6-7. SCT Rabbit Track to Dynamometer Comparison SAE J227a Driving Schedule C*

U.S. CUSTOMARY UNITS

Test Location	Range, mi	Cycles Driven	Range Per Cycle, mi	Battery Energy Out, Wh	Battery Energy In, Wh Regen	Battery Energy Consumption, Wh/mi	Battery Temp.[a] Before, °F	Battery Temp.[a] After, °F
Track[a]	41.6	116.5	.357	13320[c]	670[c]	318[c]	73	99
Dynamometer[b]	37.7	105.5	.357	12929	324.5	343.5	78	96
Difference	9%	9%	0	2.9%	51.6%	8%	5	3

SI Units

Test Location	Range, km	Cycles Driven	Range Per Cycle, km	Battery Energy Out, MJ	Battery Energy In, MJ Regen	Battery Energy Consumption, MJ/km	Battery Temp.[a] Before, °C	Battery Temp.[a] After, °C
Track[a]	67	116.5	.575	47.452[c]	2.41[c]	.711[c]	23	37
Dynamometer[b]	60.5	105.5	.573	46.542	1.17	.768	25.5	35.5
Difference	9%	9%	0	2.9%	51.6%	8%	2.5	1.5

[a] - Average values from Table 6-6

[b] - Average values from Table 6-4

[c] - Data from track test number 20 only

* Appendix F

Table 6-8. Track Coastdown Data

Velocity Increment,		Average Velocity,		Time Increment,	"Smoothed" Time Increment,
km/h	mi/h	km/h	mi/h	s	s
88.5-80.5	55-50	84.5	52.5	7.85	7.57
80.5-72.4	50-45	76.4	47.5	8.64	8.53
72.4-64.4	45-40	68.4	92.5	9.42	9.61
64.4-56.3	40-35	60.3	37.5	10.19	10.82
56.3-48.3	35-30	52.3	32.5	12.18	12.19
48.3-40.2	30-25	44.2	27.5	13.67	13.73
40.2-32.2	25-20	36.2	22.5	15.82	15.46
32.2-24.1	20-15	28.1	17.5	17.53	17.42
24.1-16.1	15-10	20.1	12.5	19.73	19.62

Table 6-9. Road Energy and Power

Velocity Increment,		Average Velocity,		Energy,		Power,	
km/h	mi/h	km/h	mi/h	$\frac{kW/h}{km}$	$\frac{kW/h}{mi}$	kW	hp
88.5-80.5	55-50	84.5	52.5	0.216	0.300	15.7	21.1
80.5-72.4	50-45	76.4	47.5	0.192	0.266	12.6	16.9
72.4-64.4	45-40	68.4	42.5	0.170	0.236	10.0	13.4
64.4-56.3	40-35	60.3	37.5	0.151	0.210	7.83	10.5
56.3-48.3	35-30	52.3	32.5	0.134	0.186	6.05	8.11
48.3-40.2	30-25	44.2	27.5	0.119	0.165	4.54	6.09
40.2-32.2	25-20	-	-	-	-	-	-
32.2-24.1	20-15	28.1	17.5	0.094	0.130	2.28	3.06
24.1-16.1	15-10	20.1	12.5	0.084	0.116	1.45	1.94

Table 6-10. Maximum Effort Acceleration (Track)

Incremental Velocity		Incremental Time-Sec, for Three Battery Depths of Discharge					
		0%		40%		80%	
km/h	mi/h	Meas	Smooth	Meas	Smooth	Meas	Smooth
0-8.0	0-5	1.40	1.07	1.37	1.05	1.61	1.21
8.0-16.1	5-10	1.12	1.32	1.11	1.31	1.36	1.49
16.1-24.1	10-15	1.50	1.64	1.25	1.62	1.50	1.83
24.1-32.2	15-20	2.05	2.04	2.37	2.01	2.37	2.25
32.2-40.2	20-25	2.77	2.53	2.75	2.50	2.87	2.76
40.2-48.3	25-30	2.65	3.14	2.62	3.10	2.62	3.39
48.3-56.3	30-35	4.26	3.90	4.00	3.85	3.62	4.17
56.3-64.4	35-40	4.17	4.83	4.12	4.78	5.25	5.13
64.4-72.4	40-45	5.69	6.0	5.12	5.93	5.50	6.31
72.4-80.5	45-50	7.42	7.44	7.32	7.36	7.74	7.76
80.5-88.5	50-55	11.02	9.23	10.33	9.14	11.98	9.53

Table 6-11. Acceleration Rate and Gradeability

Incremental Velocity		Acceleration Rate at Three Battery Depths of Discharge						% Gradeability At Three Battery Depths of Discharge		
		0%		40%		80%				
km/h	mi/h	km/h/s	mi/h/s	km/h/s	mi/h/s	km/h/s	mi/h/s	0%	40%	80%
0-8.0	0-5	7.52	4.67	7.63	4.74	6.65	4.13	21.8	22.1	19.2
8.0-16.1	5-10	6.07	3.77	6.15	3.82	5.41	3.36	17.4	17.7	15.5
16.1-24.1	10-15	4.89	3.04	4.96	3.08	4.39	2.73	14.0	14.1	12.5
24.1-32.2	15-20	2.94	2.45	2.99	2.48	3.57	2.22	11.2	11.4	10.2
32.2-40.2	20-25	3.17	1.97	3.22	2.00	2.91	1.81	9.0	9.1	8.3
40.2-48.3	25-30	2.56	1.59	2.59	1.61	2.37	1.47	7.3	7.3	6.7
48.3-56.3	30-35	2.06	1.28	2.09	1.30	1.43	1.20	5.8	5.9	5.4
56.3-64.4	35-40	1.66	1.03	1.69	1.05	1.56	0.97	4.7	4.8	4.4
64.4-72.4	40-45	1.34	0.83	1.35	0.84	1.27	0.79	3.8	3.8	3.6
72.4-80.5	45-50	1.08	0.67	1.09	0.68	1.03	0.64	3.0	3.1	2.9
80.5-88.5	50-55	0.87	0.54	0.89	0.55	0.84	0.52	2.5	2.5	2.4

SECTION VII

DISCUSSION AND PROBLEMS

The purpose of this section is to convey information and observations regarding the SCT Rabbit that have no direct bearing on the baseline performance results. Problems encountered with the vehicle are also discussed.

A. GENERAL

During the baseline testing the vehicle proved to be acceptably reliable (some minor failures occurred, but were readily corrected) and was considered "easy to drive" by the test drivers. The vehicle electrical design allows for good accessibility to the internal components for rework or any required maintenance. The basic vehicle design allowed for safe operations during all test phases and required no major modifications. The conversion of the Volkswagen instrumentation cluster from basic internal combustion engine to all-electric is functional and convenient to use.

B. SCT RABBIT CONTROL STRATEGY

The SCT Rabbit employs a shunt-wound dc motor with a separately excited field. Control of the motor speed is solely by means of field weakening; there is no armature chopping. There are several advantages to this strategy: simplicity of the control circuit, efficiency of the controller, and automatic maximum regeneration. Since the power requirements of the field are modest (0.65 kW maximum), the controller does not need components capable of large electrical currents. In particular, it does not need components capable of chopping large currents. Not only does this allow for a simpler controller, it also results in an efficient controller because the major portion of the traction energy is not chopped. Since the motor field is at maximum strength, when the driver's foot is removed from the accelerator pedal, maximum regeneration is immediately available.

The particular implementation of the control strategy chosen by SCT has, however, two major disadvantages. These are: (1) the motor base speed of 1800 rev/min reduces the amount of regeneration possible, and (2) the battery energy consumed during non-motive periods is large. These are discussed in more detail below.

As an aid to understanding the characteristics of the Rabbit control logic during stop-and-go driving, energy usage was analyzed as a function of the five phases of the SAE procedure J227a driving schedules (acceleration, cruise, coast, brake and idle). Figures 7-1, 7-2, and 7-3 depict the energy division for typical SAE J227a B, C, and D driving schedules respectively. The three cycles are compared directly in Figures 7-4 and 7-5. As expected for all the cycles, over

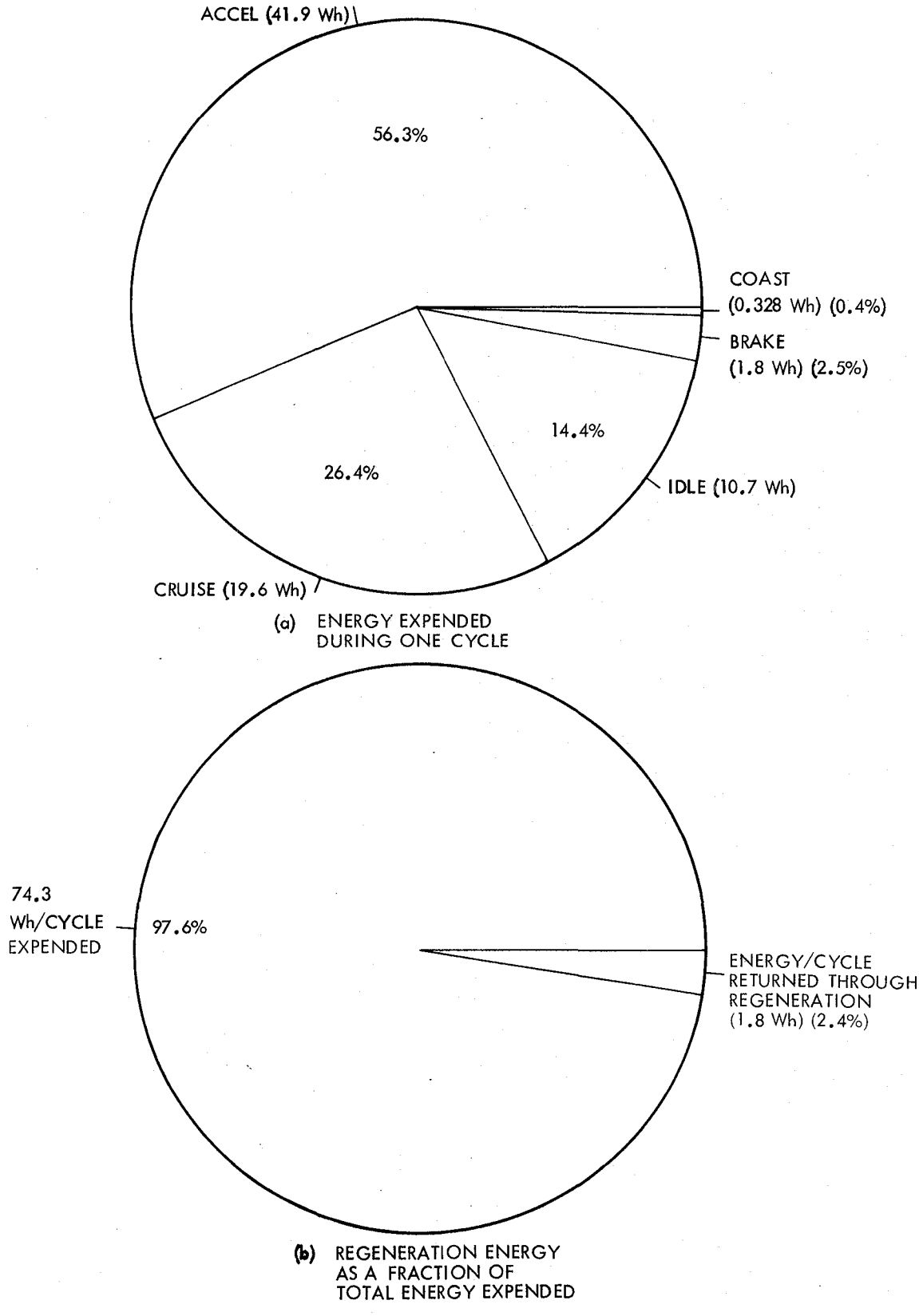

Figure 7-1. SCT VW Rabbit "B" Cycle Energy Split

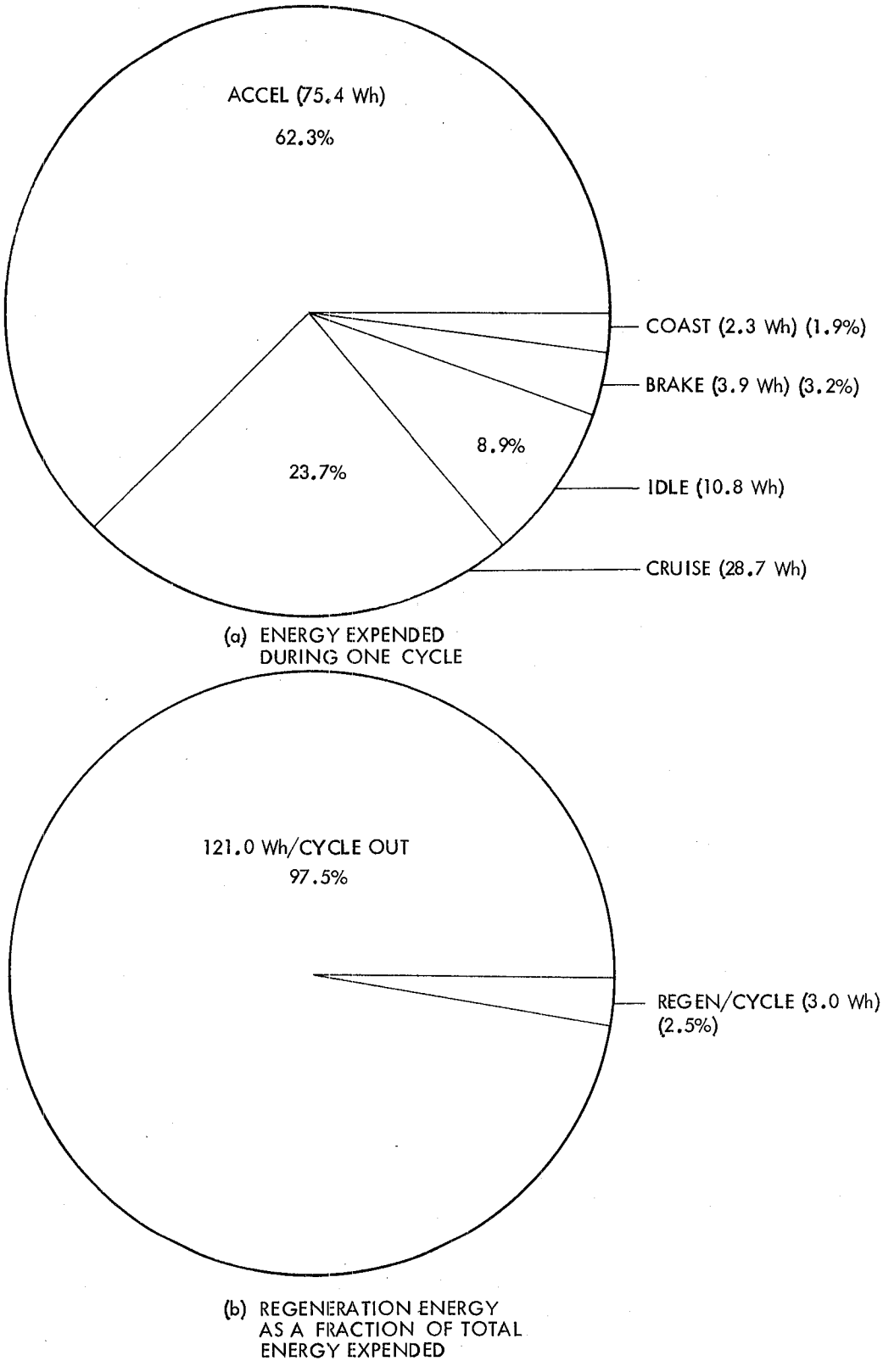

Figure 7-2. SCT VW Rabbit "C" Cycle Energy Split

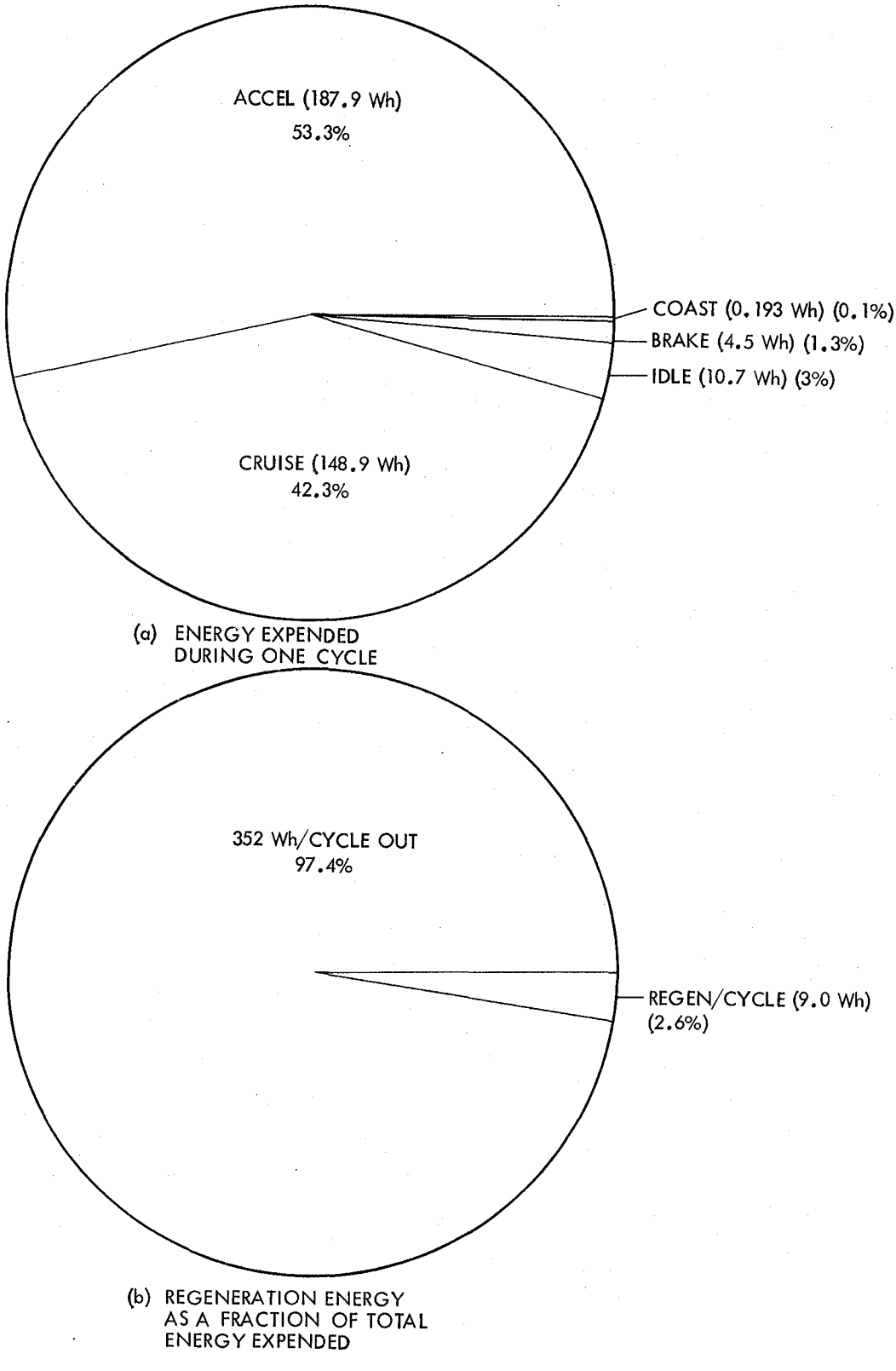

Figure 7-3. SCT VW Rabbit "D" Cycle Energy Split

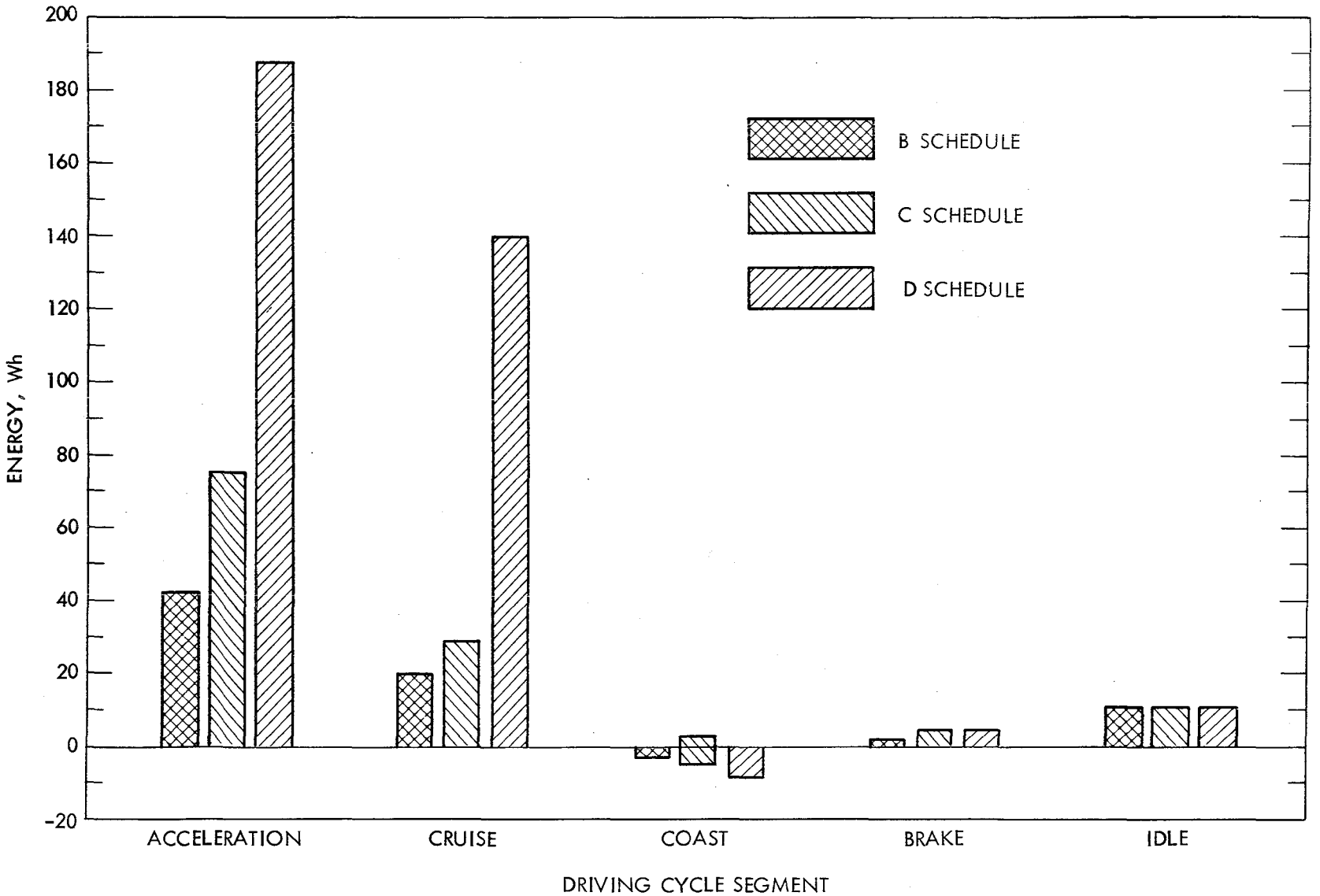

Figure 7-4. SCT Rabbit Schedule Comparison - Energy Usage on a Wh Basis

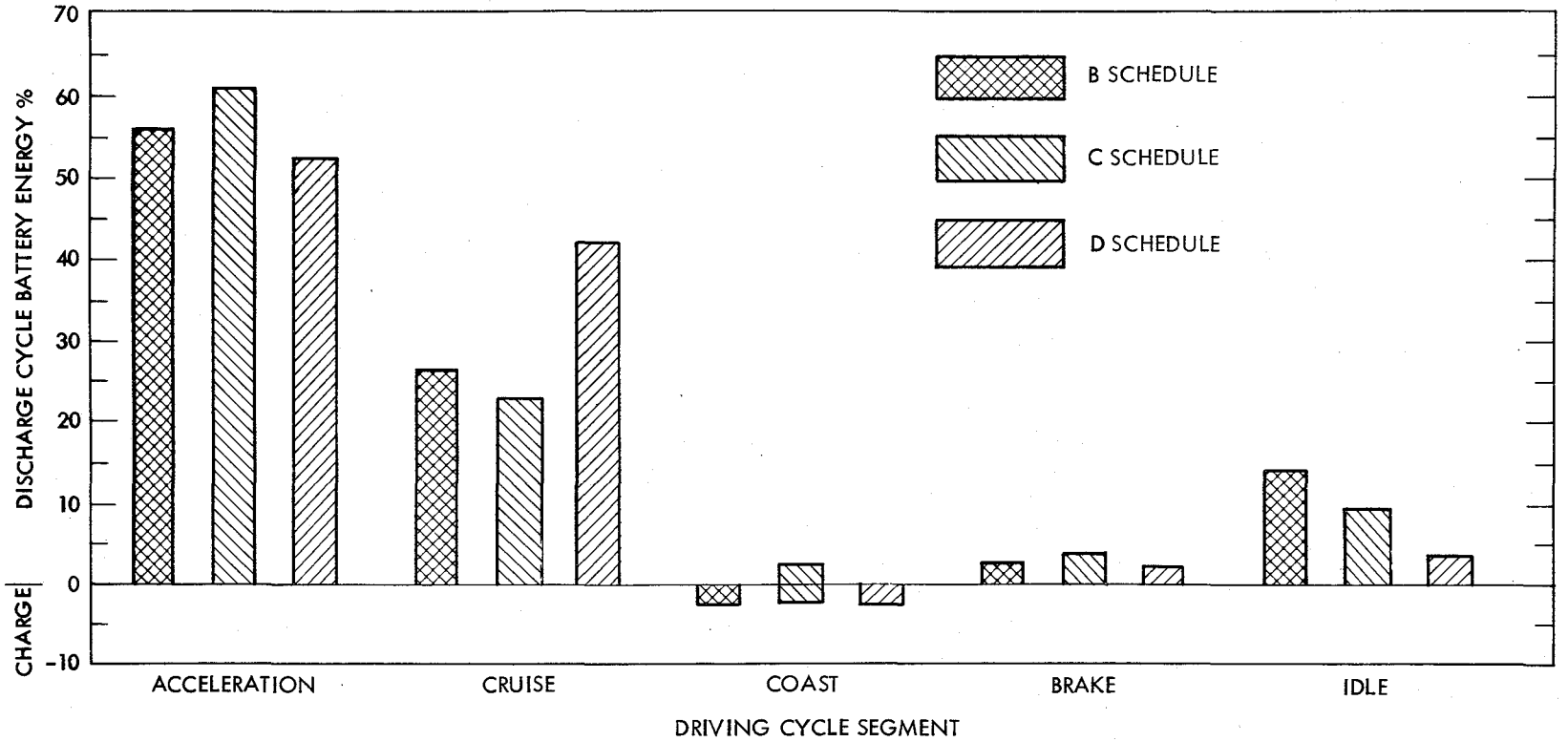

Figure 7-5. SCT Rabbit Schedule Comparison - Energy Usage on a Percentile Basis

half of the total energy from the batteries was expended during acceleration and another large part was used during cruise. However the amount of regeneration energy realized was small and the energy expended during non-motive portions of the B and C cycles was a larger fraction of the total than expected.

The majority of the regeneration benefits occurred during the coast portion of the cycles. For the tests described here, four factors limited the amount of regeneration achieved; (1) the self-imposed requirement to follow the standardized driving schedules (which required some use of the accelerator pedal during coast since the deceleration rate under maximum regeneration was greater than allowed by the schedules (see pages 5-21 to 5-25), (2) the particular motor base speed chosen by the vehicle manufacturer below which no regeneration is possible, (3) the gears selected during the actual test and (4) the recommendation by SCT to depress the clutch whenever the brakes are used. The shift points recommended by SCT (see page 5-20) were used for all tests. This means the cruise portion of the B cycles were driven in second gear, the C cycles in third gear, and the D cycles in fourth gear. The corresponding motor speeds were 2300, 2290, and 2600 rpm respectively. The incremental motor speeds until the base speed of 1800 rpm were reached, were 500, 490, 800 rpm. Because of the relatively short coast times allowed, the drivers were instructed not to attempt a downshift during coast. Downshifting may have increased the regeneratiion energy (although even that may not be true because of the time required to accomplish the gear change) but the amount would be expected to be small.

Figures 7-1 and 7-2 show that significant fractions of the total battery energy were consumed in non-motive portions of the B and C schedules. During a single B cycle 17.3% (12.6 Wh) and during the C cycle 14.0% (17.0 Wh) were used during coast, brake and idle. (Note that the D cycle non-motive energy of 15.4 Wh is about the same magnitude as for the B and C cycles but represents only 4.4% of the total D cycle energy.) To first order the penalty of this non-motive energy in terms of vehicle range can be estimated with the aid of Figure 7-6. Figure 7-6 is a plot of the available battery energy versus the average power level as derived from the J227a B, C, and D cycle driving tests. (See Tables 6-3 through 6-5.) If the SCT Rabbit were turned off during coast, brake, and idle, then the average power demanded would be reduced from 3.72 kW to 3.08 kW and from 5.45 kW to 4.69 kW for the B and C cycle tests respectively. The corresponding new energy efficiencies would be 300 Wh/mi and 308 Wh/mi. From Figure 7-6, the corresponding energy available at the reduced power levels would be 171 kWh and 14.3 kWh. Then the range which would be predicted for the B and C cycles, respectively, would be 91.6 km (57.0 mi) and 74.9 km (46.5 mi). Eliminating all the energy expended for non-motive purposes would give a range extension of 16.8% for the B cycle and 18.9% for the C cycle.

A more practical plan might be to eliminate only the energy expended during the idle, thus keeping the vehicle electrically live during coast and brake. An analysis similar to that above leads to an

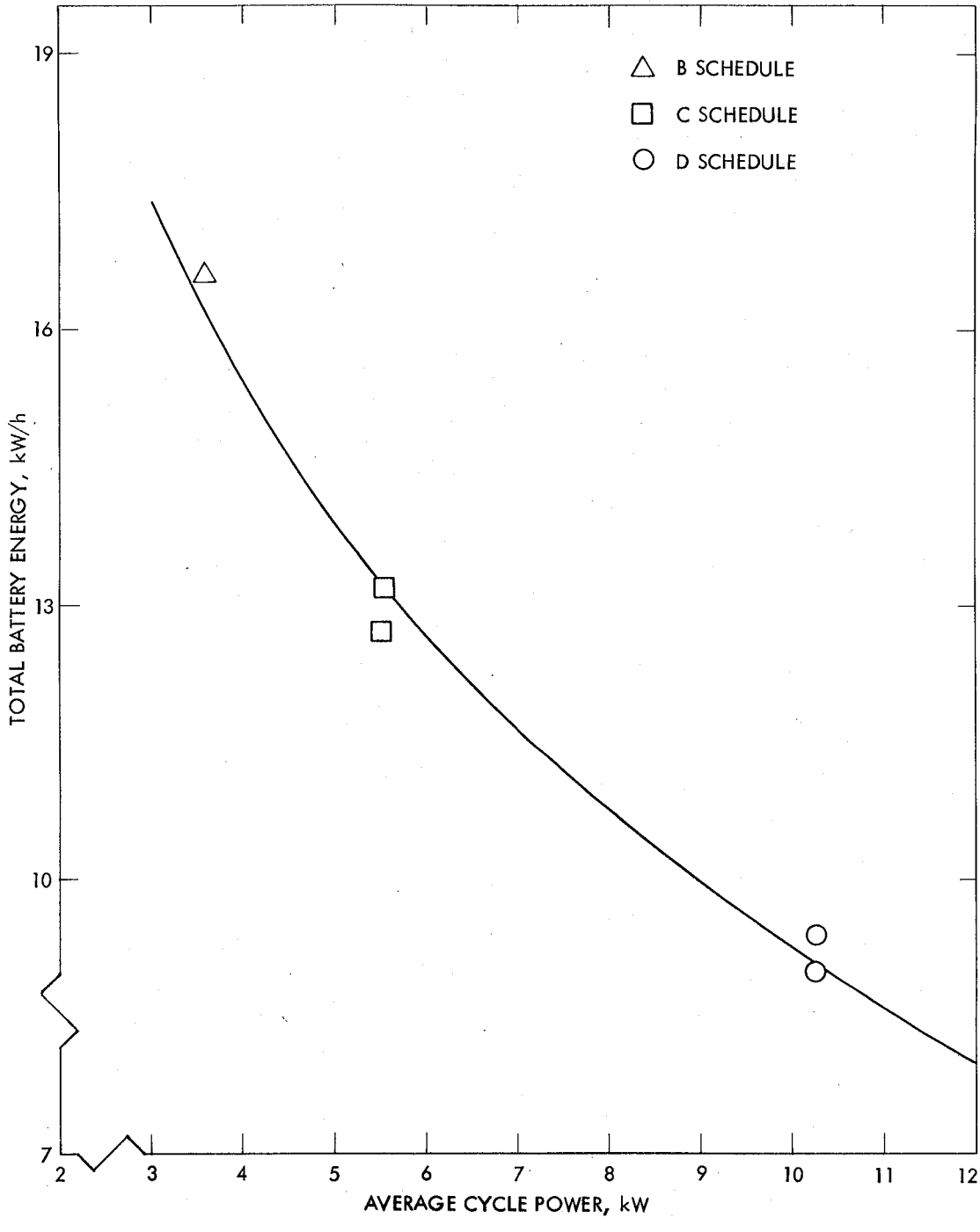

Figure 7-6. Battery Energy Available as a Function of Average Power

average power demand of 3.18 kW and 4.66 kW for the B and C cycles, repsectively. The corresponding energy efficiencies are 310 Wh/mi and 326 Wh/mi, while the total battery energy available at reduced power levels are 16.9 kWh and 13.9 kWh. The ranges predicted then are 87.9 km (54.6 mi) for the B cycle and 68.9 km (42.8 mi) for the C cycle. Thus eliminating only the non-motive energy expended during the idle periods (i.e., 10.7 Wh for the B cycle and 10.8 Wh for the C cycle) would give a range extension of 13.2% and 11.9% for the B and C cycles respectively.

C. COMPARISON TO OTHER ELECTRIC VEHICLES

A qualtitative evaluation of the Rabbit has been made by comparing the range performance described in this report with the results reported in Reference 5-1, where test results for 22 electric vehicles are reported. The vehicles were tested specifically for the purpose of assessing the state-of-the-art of electric vehicles in 1977.

Figure 7-7 is a plot of vehicle range for constant-speed operation versus vehicle speed. The vehicles from Reference 5-1 fell into two broad categories. The average of each of these two categories is denoted by light dashed lines. The Rabbit range is well above the average of the lower group of vehicles, and is only slightly below the range of the best vehicles. Since no effort was made to correct for the inevitable differences in test conditions and/or techniques which exist between the results of Reference 5-1 and this report, the comparison of Figure 7-6 is only indicative of relative performance. In particular, the magnitude of the range difference between the average of the four best and the SCT Rabbit must be used with caution. However it does seem fair to conclude that the SCT Rabbit is comparable to the best in the 1977 electric vehicles.

D. PROBLEMS ENCOUNTERED DURING TESTING

1. Motor Heating

Prior to the start of vehicle baseline testing, a motor overheating problem was encountered during vehicle shakedown and driver familiarization tests. On several occasions, the vehicle's control logic limited the maximum current to 150A because of high motor temperature. The limited current followed extended accelerations or periods of cruise at speeds of 97 km/h (60 mi/h) and was particularly noticeable where some upgrade was encountered. Several fixes were attempted by the manufacturer, such as changing control logic cards, and increasing the cooling fan speed. The final modification was to change the temperature at which the motor cooling fan is switched to high speed. Originally, the logic was designed to switch the fan to high speed at 100°C (212°F) and limit the motor current when the motor temperature reached 115°C (239°F). It was determined by South Coast Technology, as a result of their own test activities, that lowering the temperature at which the fan changes to

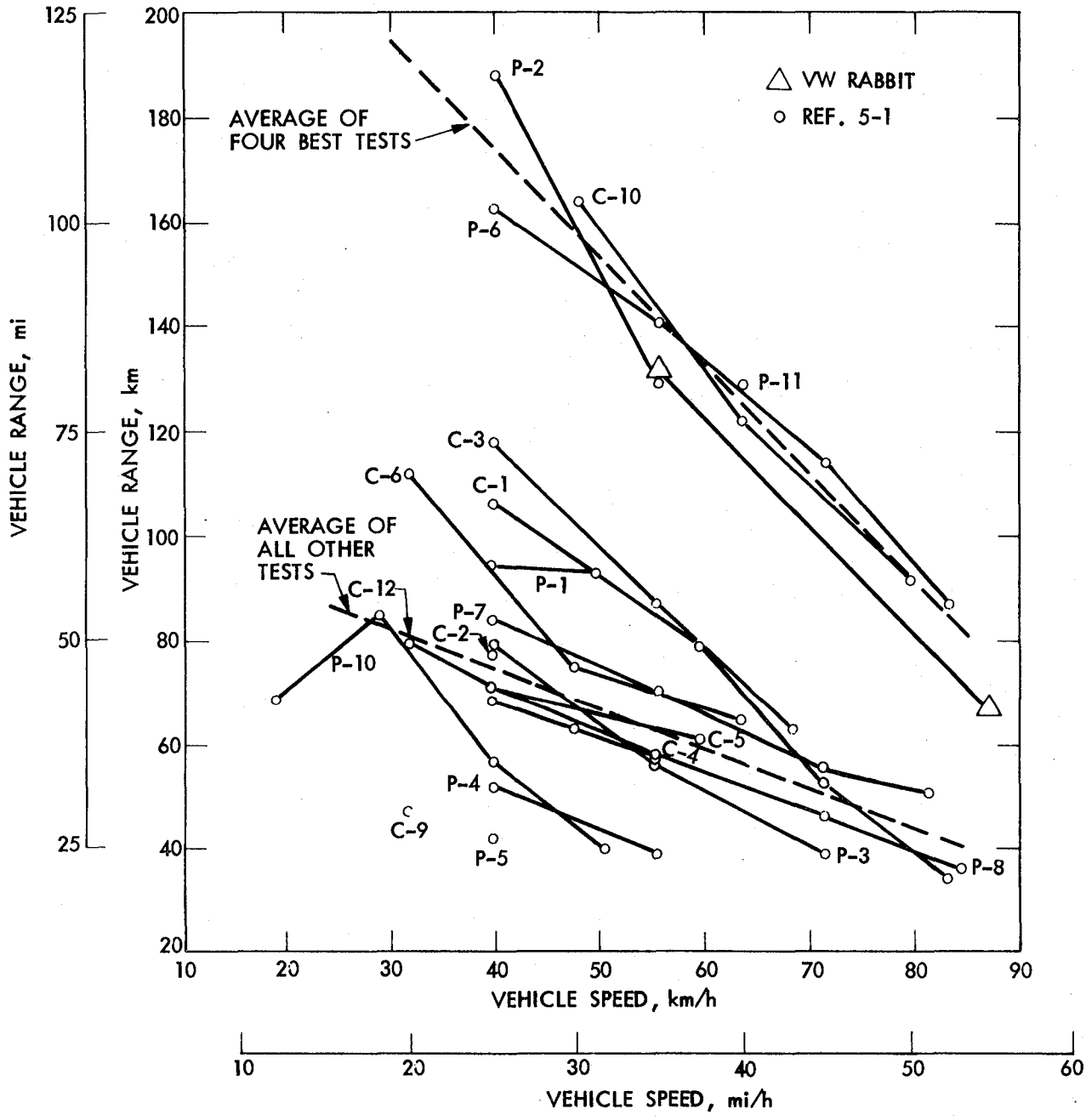

Figure 7-7. Vehicle Range as a Function of Speed

high speed to 75°C (167°F), while leaving the current limit point unchanged, would probably solve the problem. The change was incorporated in the vehicle and no further motor over-temperature problems were encountered during dynamometer testing,* although the vehicle motor temperature comes within a few degrees of the current limit point during 88 km/h (55 mi/h) constant speed tests.

It was observed that during "D" schedule cycle tests, the motor temperature exceeded the 115°C (239°F) setting at which current limiting is to occur. This occurred during the latter portion of the tests and did not affect the test outcome. At the time of the occurrence of the high temperature, the vehicle was in the cruise, coast, and brake portions of the schedule, and the maximum current demand was less than the current limit of 150 A. Nominal current demand during the cruise portion of a "D" schedule is about 98 to 100 A. Also, near the completion of the 88 km/h (55 mi/h) constant speed tests, as a higher current is demanded to maintain a constant vehicle speed, motor heating becomes more evident and the motor temperature increases to near the 115°C (239°F) current limit setting.

2. Motor Failure

As part of the initial dynamometer and vehicle instrumentation debugging process two 88 km/h (55 mi/h) tests were performed. These tests showed a significant difference in vehicle range of approximately 9%. Further investigation at JPL indicated the possibility of a faulty motor. The vehicle was transported to South Coast Technology for a more detailed examination and a decision was made by SCT to exchange the motor with a new unit. After installation of a new motor by SCT the vehicle was returned to JPL to start baseline tests. SCT later found, after additional diagnostic tests, that an electrical short existed in the armature of the faulty motor.

3. Controller Failure

During the idle portion of one of the C Schedule driving cycle tests, the vehicle propulsion system shut down for no apparent reason. The vehicle was immediately restarted and the test was continued with no futher problems. An inspection was conducted on the electrical system to assure that all connections were proper. No obvious loose connections were detected. South Coast was notified of the problem and their recommendation was to change the controller logic card. Several tests were successfully conducted following the replacement of the suspected faulty card when again the problem occurred. After the second failure, the vehicle could not be restarted and it was determined that the logic control power supply card was at fault. This card was replaced and no further propulsion system shutdowns have occurred.

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*See note concerning Road Load Determination at beginning of report.

4. dc to dc Converter Failure

Shortly after receipt of the vehicle at JPL, the dc to dc converter, which is used for charging the 12 V auxiliary battery, failed during an otherwise normal charge cycle of the traction batteries. The unit was returned to South Coast Technology for a failure analysis and repair or replacement. Since there were no spare converters available, the test program proceeded using an off-board charger for the auxiliary battery. During the course of the baseline tests, the repaired converter was returned to JPL and installed. However, after three charge cycles the converter again failed. Consequently, all the tests described in this part were performed without the on-board dc to dc converter and none of the energy usage reported here includes that used for the auxiliary battery functions. It is estimated that the auxiliary battery would consume less than 2% of the total energy.

5. Brake Drag

During the course of the dynamometer tests it was noted that the drag of the disc brakes had an unsuspected, deleterious effect on the data repeatability. Further, the brake drag is of sufficient magnitude to have a measurable effect on the vehicle range. It was recognized that disc brakes do drag and an overt decision was made before beginning the tests to accept the brake drag as an inherent characteristic of the SCT vehicle. Implicit in this decision was an assumption that the drag would be repeatable from test to test. This latter assumption has turned out to have been invalid, however it was not of large enough magnitude to invalidate the baseline tests. Because of the way the phenomenon appeared, some effort in terms of special diagnostic tests was expended in understanding and characterizing the problem. What follows is an account of the results of these special tests.

The effect of the brake drag was noted during the 56 km/h (35 mi/h) constant speed tests and is discussed here in that context. However, the effect was undoubtedly present during all tests. Since the brakes are used frequently during the cyclic tests, the brake pads are continuously repositioned and the drag effect was small. Since the phenomenom was apparently time dependent, it was not observed during the 86 km/h (55 mi/h) constant speed tests. Those tests were shorter than the apparent critical time of approximately 3600 s.

It was observed during the 56 km/h (35 mi/h) constant speed tests that a reduction in battery power from about 7 kW down to 6 kW was occurring at approximately 3000 to 3600 seconds after start of the tests. Figure 7-8 depicts a typical manifestation of the phenomenon. Figure 7-9 is the same data as Figure 7-8, except the scale has been expanded for better resolution. The large spikes in Figure 7-8 and 7-9 are a result of velocity adjustment by the driver and are partly the result of the choice of times at which data were recorded. The smaller magnitude, oscillation, which is particularly noticeable in Figure 7-9, is a result of a mismatch between the signal filtering and

the chopper frequency of the vehicle. (See page 4-6) Figure 7-10 is the temperature of the vehicle's motor. The drop in motor temperature from 124°F to 118°F correlates with the decrease in the power seen in Figures 7-8 and 7-9. The shape of the battery power time curve is in marked constrast to the shape generally observed. Usually there is a rapid decrease in the required power as the vehicle "warms up" and this is followed by a more gradual decrease in power. Figures 7-11 and 7-12 show the "usual" battery power curves for two other, similar, vehicles. As can be seen from these two figures, no major reduction in power occured following the warm-up period.

A test was designed to eliminate (or implicate as the case may be) the dynamometer itself as the source of the problem. This test was conducted in the following sequence. First, a dynamometer calibration was performed. This was followed by a dynamometer coastdown of the SCT Rabbit (after an initial warm-up) while the vehicle was in the high power mode (approximately 7 kW battery power out). The vehicle was then operated at a constant 56 km/h (35 mi/h) velocity until a decrease in power occurred, similar to that shown in Figures 7-8 and 7-9, and the battery power dropped to about 5.7 kW. At that point a second dynamometer coastdown with the Rabbit was conducted. The vehicle was removed from the dynamometer and another calibration of the dynamometer was performed.

The two dynamometer calibrations repeated within 1% of the results of similar calibrations which have been conducted over the past two years. On the other hand, the vehicle coastdown times, as shown in Table 7-1, exhibited a large variation.

Table 7-1. Dynamometer Coast Times

	88 to 72 km/h (55 to 45 mi/h)	64 to 48 km/h (40 to 30 mi/h)	32 to 16 km/h (20 to 10 mi/h)
High Power (7 kW) Mode	17 s	22.3 s	31 s
Low Power (5.7 kW) Mode	18.5 S	26.2 s	42 s
Difference	8%	15%	26%

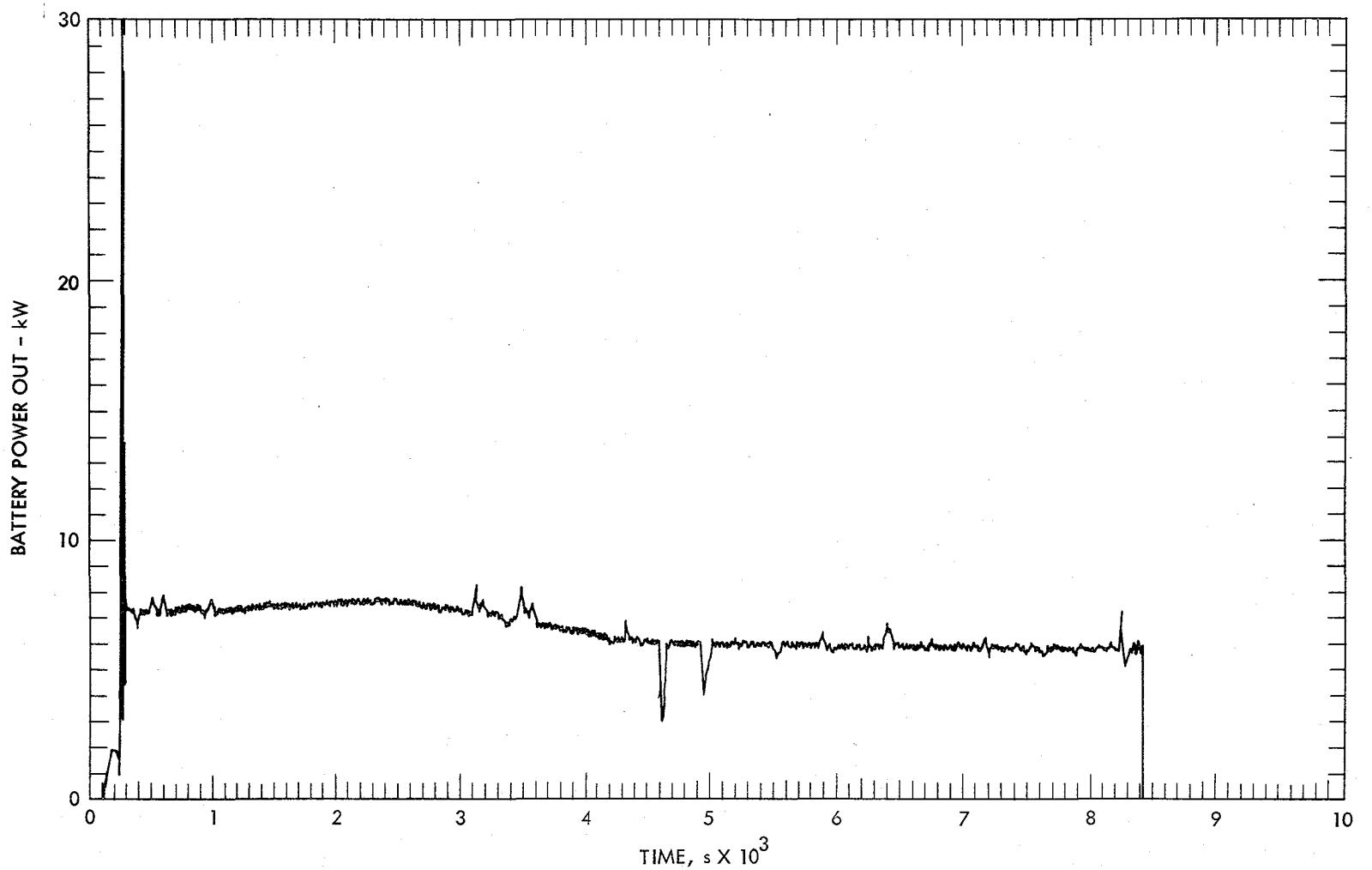

Figure 7-8. SCT VW Rabbit Dynamometer Test Results - Battery Power

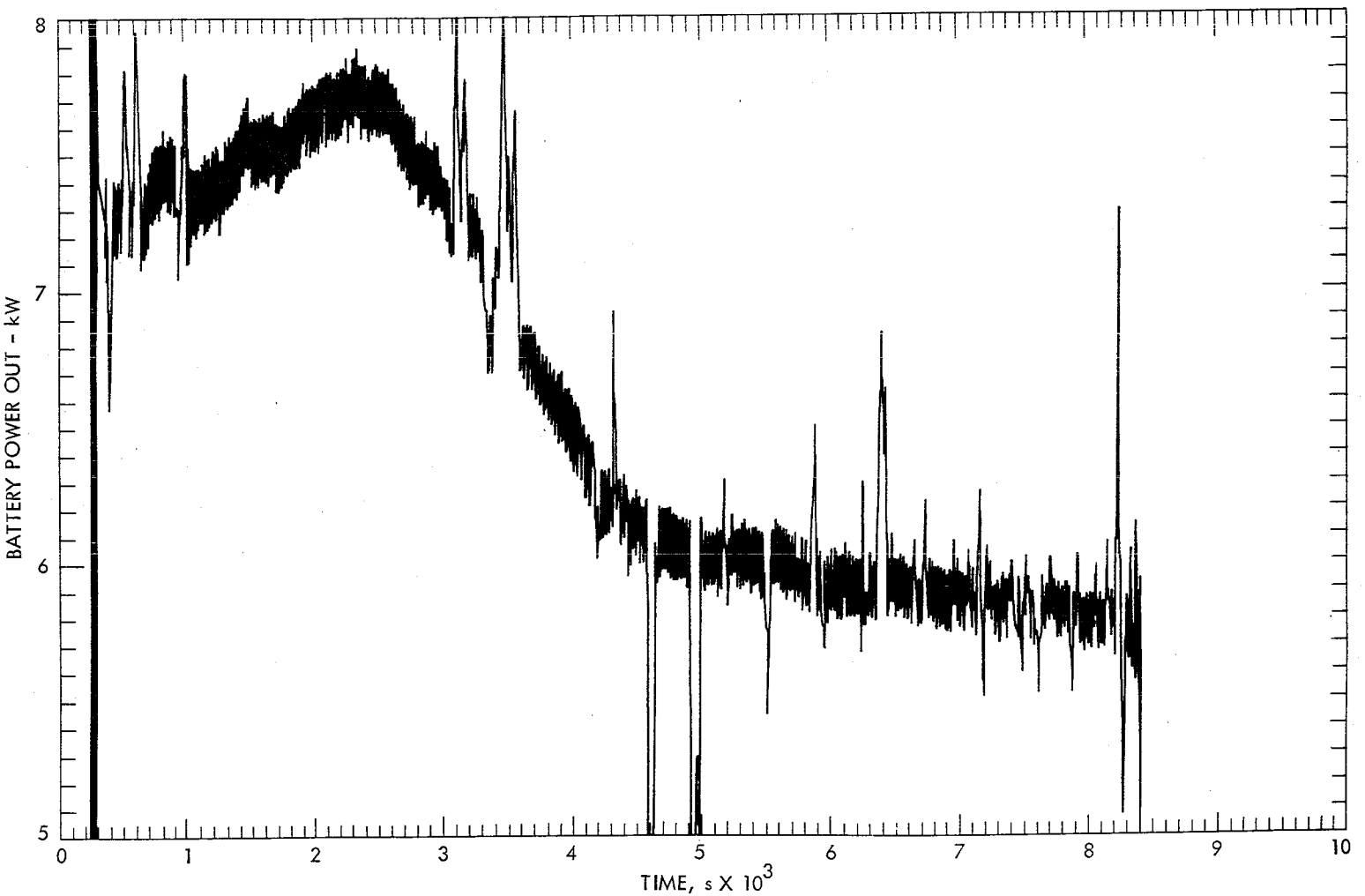

Figure 7-9. SCT VW Rabbit Dynamometer Test Results - Battery Power (Scale Expanded for Better Resolution)

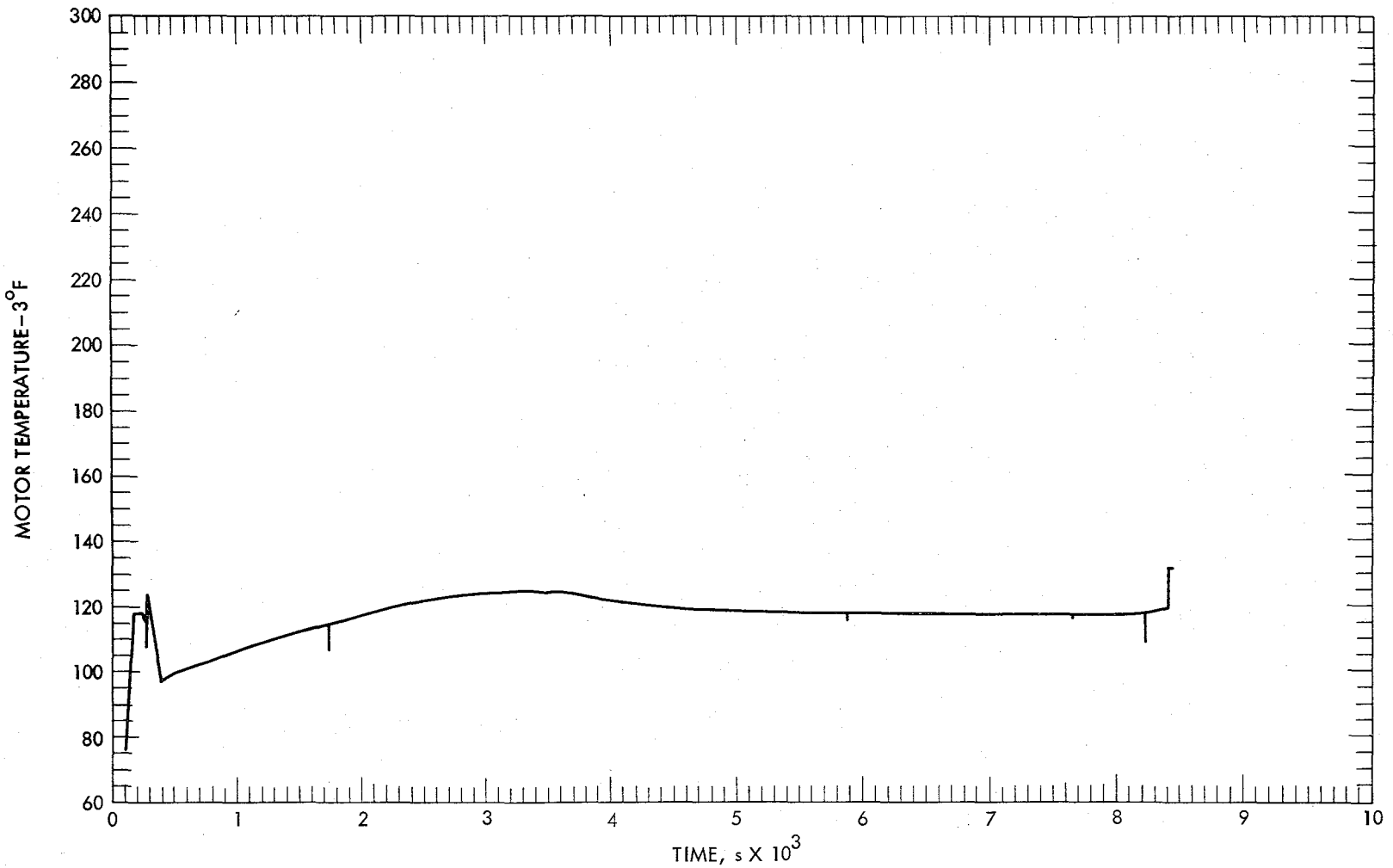

Figure 7-10. SCT VW Rabbit Dynamometer Test Results - Motor Temperature

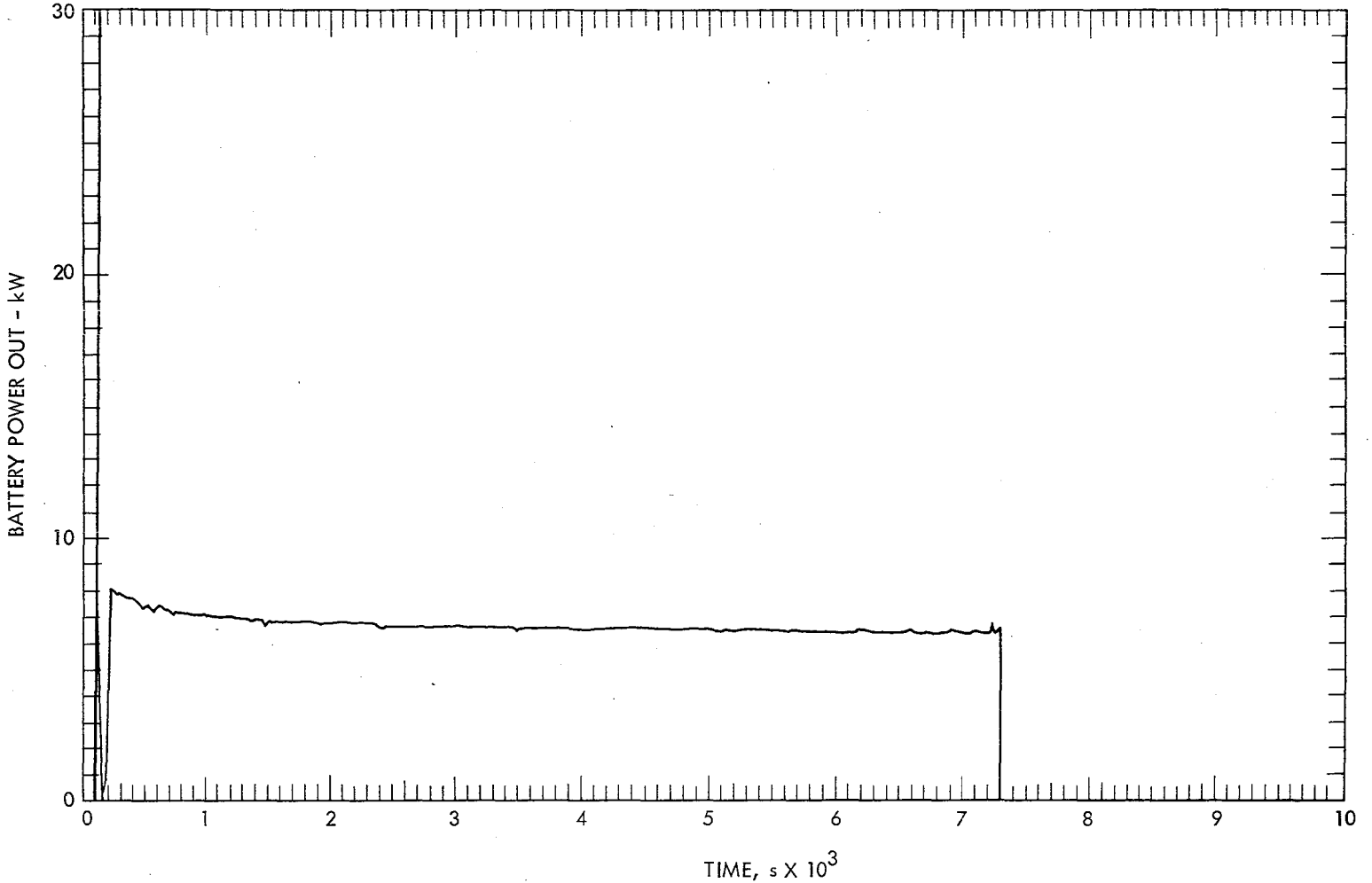

Figure 7-11. Vehicle Technology Test Bed (VVTB) Dynamometer Test Results

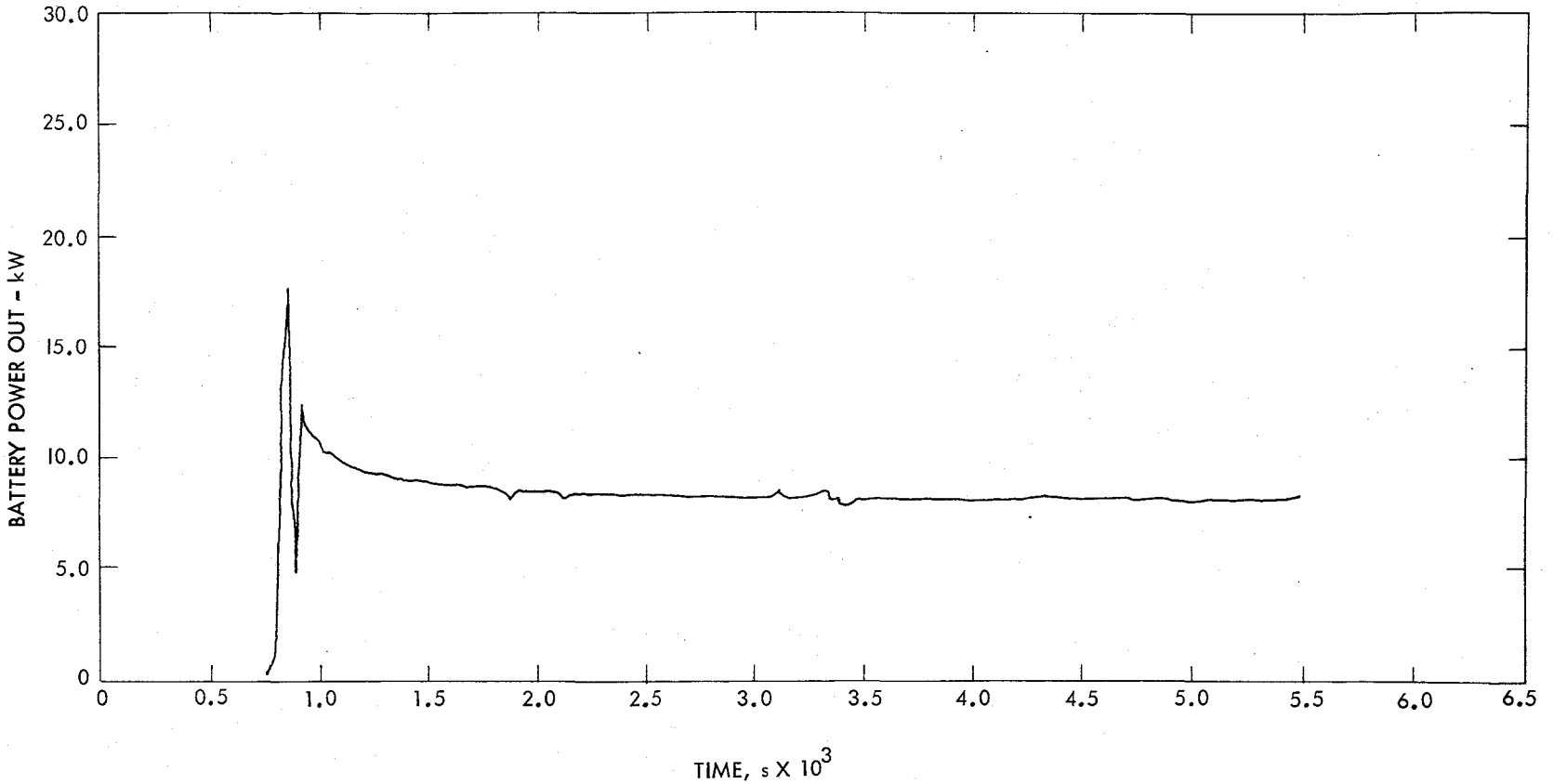

Figure 7-12. Corvette Dynamometer Test Results

The conclusions from the above tests were:

(1) The chassis dynamometer was not the source of decreasing power phenomenon.

(2) The decreasing power demand was independent of the vehicle's electrical system.

(3) The reduced power demand, with continuous operation, is uniquely attributable to the vehicle, but the specific source could not be identified from these tests.

The vehicle was instrumented with thermocouples on the wheel bearing housings, brake calipers, transaxle bearings, and the transmission. A subsequent 56 mk/h (35 mi/h) diagnostic test was performed. The results showed a close relationship between the brake caliper, wheel bearing temperatures, and the occurrence of the power reduction. Figures 7-13, 7-14, 7-15, and 7-16 show the brake caliper and wheel bearing temperature in comparison to the battery power.

To confirm that the source of the problem was indeed the brakes, the brake calipers were removed and another 56 km/h (35 mi/h) test was conducted. The results clearly indicated that the disc brake drag was the cause of the reduced power phenomenon. Figure 7-17 shows the power out of the battery with the brakes removed. Further, note the significant difference in power required from the battery with the brakes in place (Figure 7-8) and when removed (Figure 7-17). No further diagnostic tests were performed and the brake calipers were re-installed for all remaining vehicle tests.

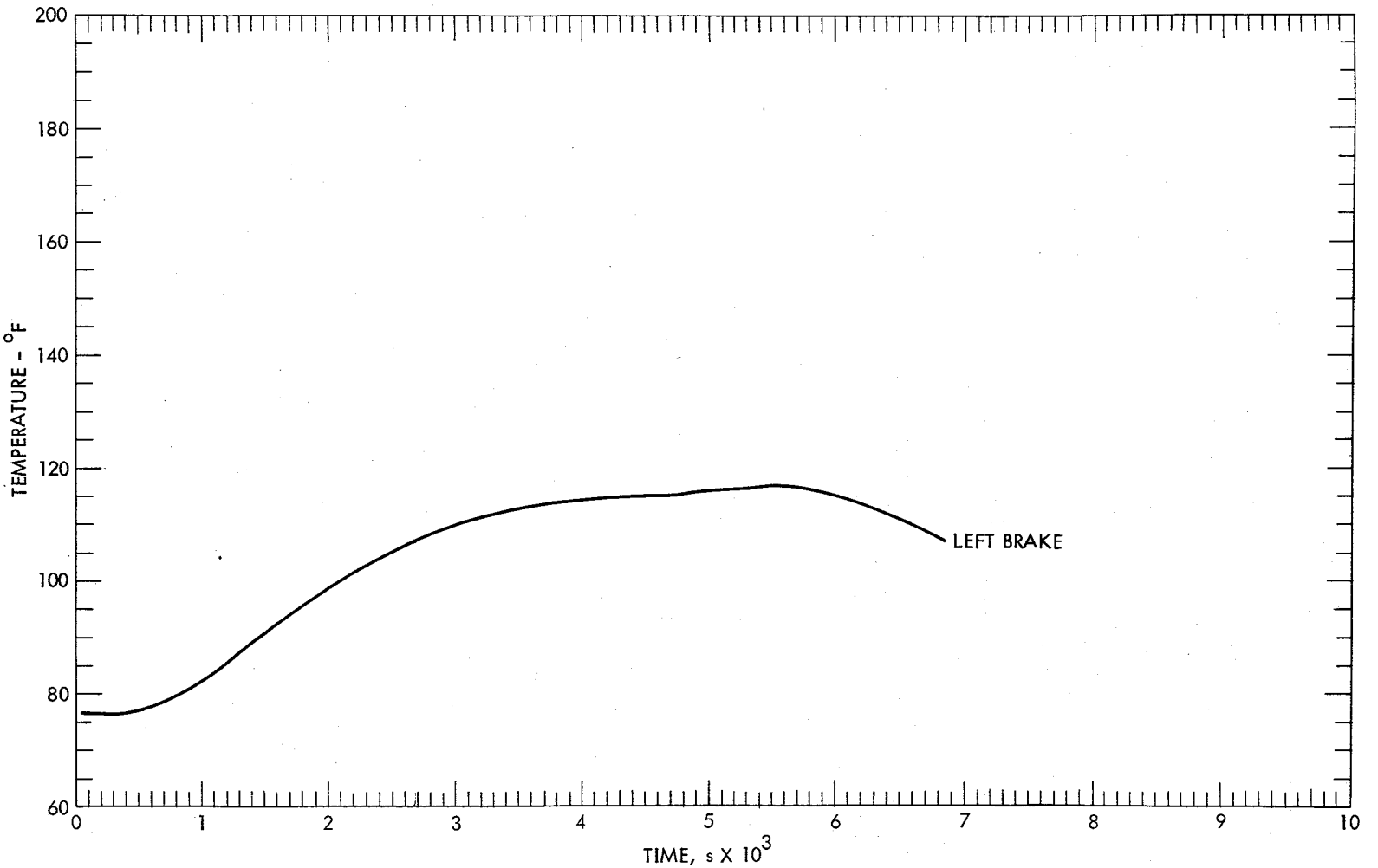

Figure 7-13. SCT VW Rabbit Dynamometer Test Results Left Brake Temperature

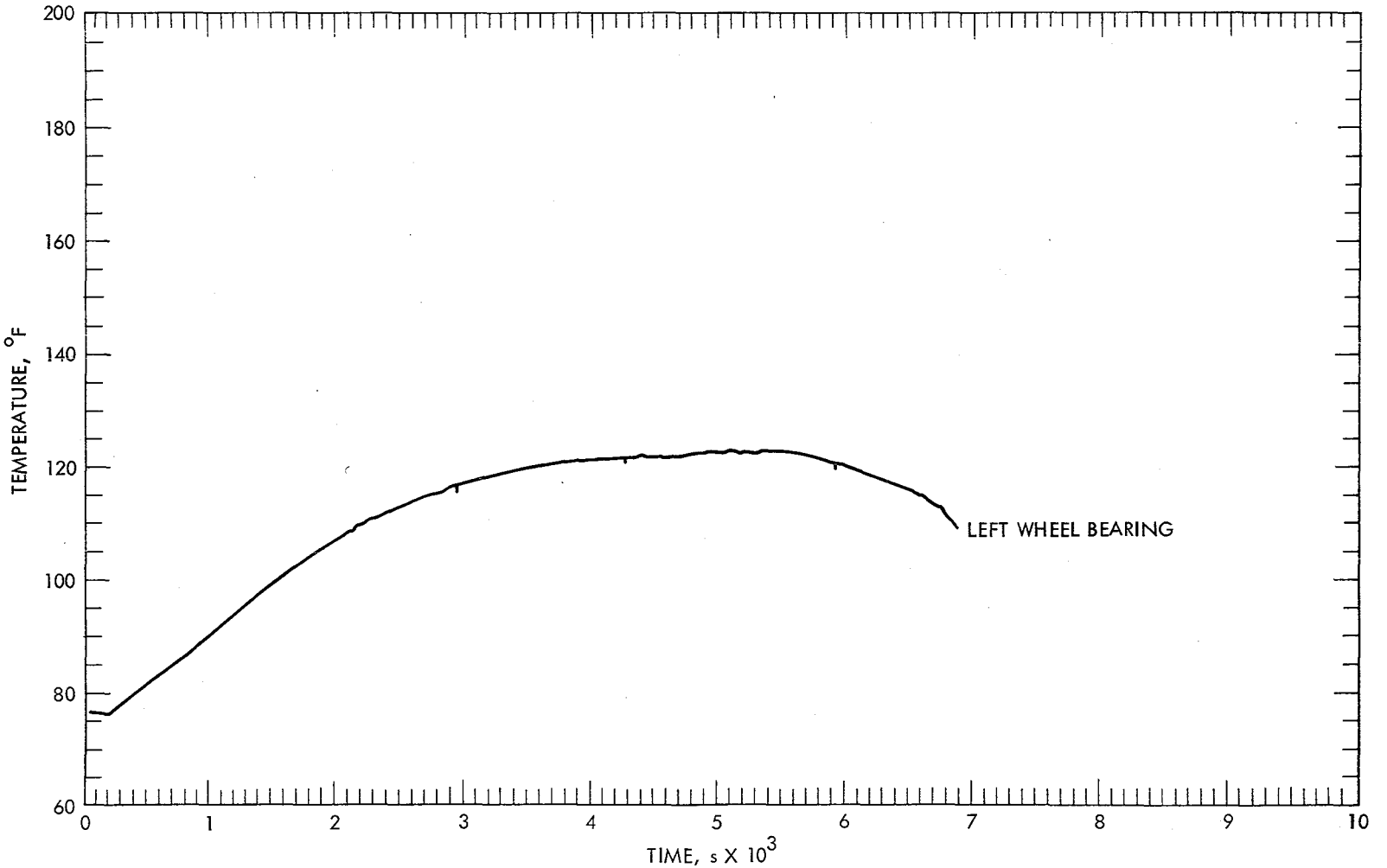

Figure 7-14. SCT VW Rabbit Dynamometer Test Results Left Wheel Bearing Temperature

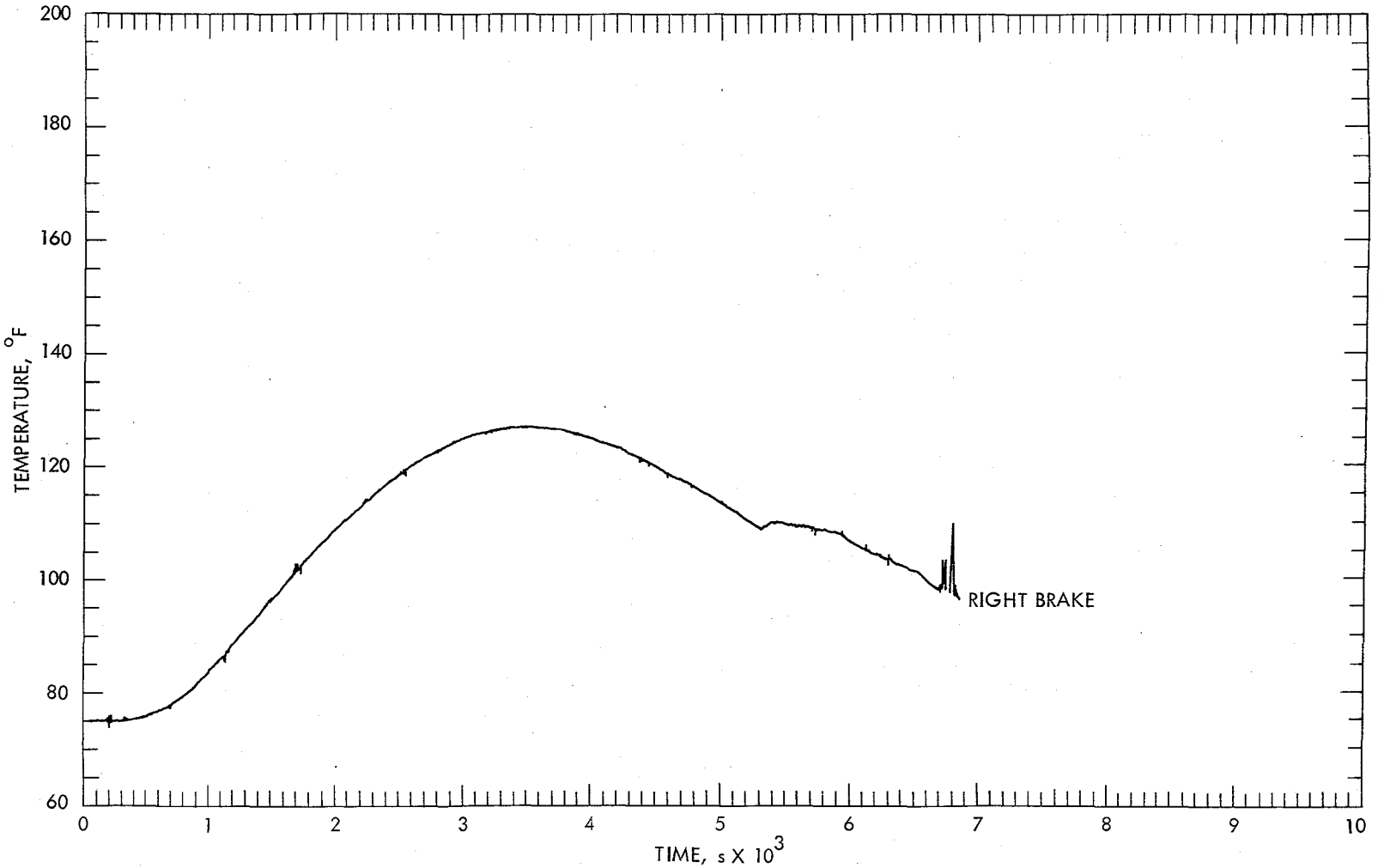

Figure 7-15. SCT VW Rabbit Dynamometer Test Results Right Brake Temperature

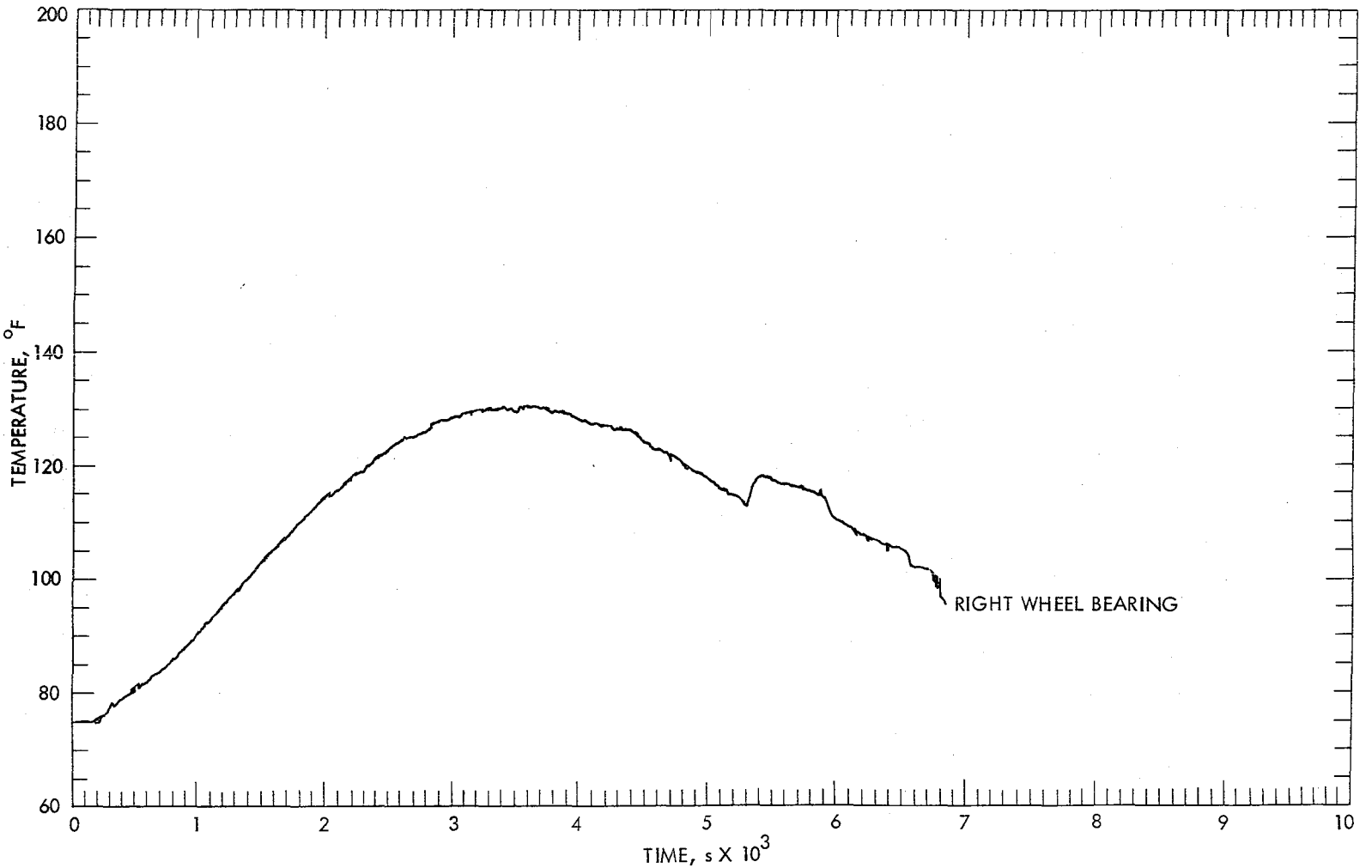

Figure 7-16. SCT VW Rabbit Dynamometer Test Results Right Wheel Bearing Temperature

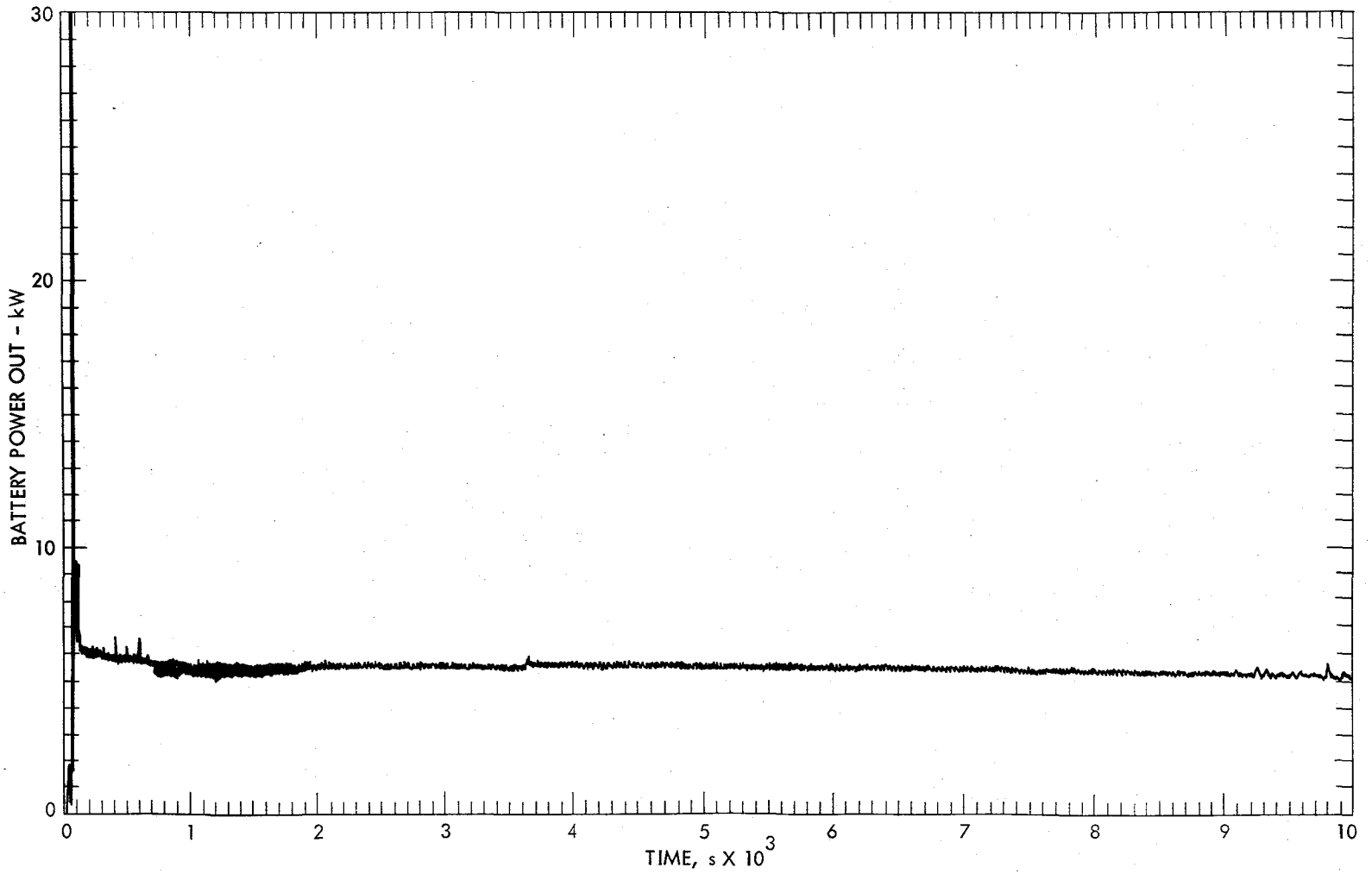

Figure 7-17. SCT Dynamometer Test Results No Brakes Test

REFERENCES

1-1. Electric Vehicle Test Procedure - SAE J227a, Society of Automotive Engineers - Recommended Practice, February 1976.

5-1. State of The Art Assessment of Electric and Hybrid Vehicles, NASA TM-73756, September 1977.

5-2. Bryant, J. A., Vehicle Test Report: Cutler-Hammer Corvett, Document 5030-215, Jet Propulsion Laboratory, Pasadena, California, September 1979.

5-3. Griffin, D. C., and Bryant, J. A., "Data Acquisition System for Electric Vehicle Tests," Proceedings of the IAS Annual Meeting, IEEE Industry Applications Society, September 1980.

APPENDIX A

DATA SHEET EXAMPLES

JET PROPULSION LABORATORY
California Institute of Technology
4800 Oak Grove Dr. / Pasadena, Calif. 91103

ELECTRIC AND HYBRID VEHICLE PROJECT
DYNAMOMETER DATA SHEET

VEHICLE SCT-VW DATE 6-9-79
TYPE TEST Driving Cycle "D" BATT. TYPE Pb-A EV-130
TEST NO. 006, TAPE NO. A6122 PARITY ERRORS YES - NO
DRIVERS RF INSTRU DP, RB

PRETEST DATA

DYNO 1 HP 5.70, AHP 7.47, INERTIA WT 3625 LBS
ODOMETER 2495.4 MI, TIRE PRESSURE L. 50.0, R. 50.0
BATTERY TEMPS: 1 73 (85), 2 72 (86), 3 73 (87), 4 72 (88), 5 72 (89) °F
LIFT PRESSURE 12.0 PSIG, AVG BATTERY S.G. 1297.5
TEST START TIME _____, AMB TEMP 74 (164) °F

POST TEST DATA

ODOMETER 2521.2, TIRE PRESS L. 59.0, R. 57.5
NO. CYCLES _____, TIRE TEMPS L. 119.__, R. 123.__ °F
LIFT PRESSURE 12.0 PSIG, AVG BATTERY S.G. 1193.1
MILES TRAVELED (ODOMETER) 25.8

MECHANICAL COUNTERS:

EBO 9.04 (1A) KWH, EMI 8.56 (2A) KWH, ABO 91.9 (3A) AH, EF 450.5 (4A) WH
EBI .26 (1B) KWH, EMO .26 (2B) KWH, ABI 1.64 (3B) AH
____.__ ÷2 901 ÷2
____.__ ÷2

IDAC DATA

EBO (560)	9.045 KWH	ABO	(565)	____.____	AH
EBI (561)	.2407 KWH	ABI	(566)	___.____	AH
EMI (562)	8.561 KWH	DISTANCE	(567)	25.80	MI
EMO (563)	.2652 KWH	ELAPSED TIME	(202)	53.9	MIN
EF (564)	.4506 KWH				

COMMENTS

TEST TERMINATED WHEN VEHICLE WAS IN EXCESS OF 2 (TWO) SEC. LATE TO 45mph

NOTE: NUMBERS IN ( ) ARE IDAC CHANNELS OR MECHANICAL COUNTER NUMBERS

Figure A-1. Electric and Hybrid Vehicle Project Dynamometer Data Sheet

JET PROPULSION LABORATORY
California Institute of Technology
4800 Oak Grove Dr. / Pasadena, Calif. 91103

POST TEST RECHARGE DATA

DATE 6-9-79 PROCEDURE DATE _____

TYPE TEST "D" TEST NO. 006 TAPE NUMBER AG122

TYPE CHARGER CHRISTIE, CURRENT LIMIT 25. AMPS

VOLTAGE ADJUST A 146 VOLTS, B _____ VOLTS

END CHARGE TIME _____

MECH CTRS AT END OF CHARGE:

EBIR 14.189 (5A) KWH, ABIR 115.57 (6A) AH, EBCIR ____.____ (Wall) KWH

CALCULATIONS

MILES PER KWH BATTERY	=	2.852	MILES (DISTANCE/EBO)
MILES PER AH BATTERY	=	0.2807	MILES (DISTANCE/ABO)
MILES PER CYCLE	=	0.993	MILES (DISTANCE/CYCLES)
AVERAGE SPEED	=	____.____	MPH (DISTANCE/E.T.) 60
BATTERY AH EFFICIENCY	=	79.52	% (ABO/ABIR)
BATTERY KWH EFFICIENCY	=	63.75	% (EBO/EBIR)
WALL KWH EFFICIENCY	=	____.____	% (EBO/EBCIR)

COMMENTS

1130 HRS. START CHARGE CYCLE # 37

NOTE: NUMBERS IN ( ) ARE IDAC CHANNELS OR MECHANICAL COUNTER NUMBERS

Figure A-1. Electric and Hybrid Vehicle Project Dynamometer Data Sheet (Continuation 1)

Data Sheet 1.

For Section IV of JPL Procedure EHV 200.01 (Best Effort Acceleration)

1. Vehicle Under Test: SCT Rabbit Serial Number: 11783411481 2. Date: 4-5-79
3. Test Number: 4 Driver: R. Freeman Recorded By: T. Shain
4. Vehicle Odometer Readings Starting (Step 6) 1885.8 End (Step 44) 1914.3
5. Fifth Wheel: Contact Force Starting (Step 20, Prep Section) 20 Lbs
   End (Step 48) 20 Lbs
   Tire Pressure Starting (Step 20, Prep Section) 45 psi
   End (Step 48) 49 psi
6. Weather Station Start Temp (Step 4) 66°F End Temp (Step 50) 91°F
   Start Humidity (Step 4) 58% End Humidity (Step 50) 28%
   Barometer (Step 4) 30.08 Barometer (Step 50) —
7. Tire Temperatures and Pressures:

	Prep Section (Step 6)		Start (Step 4)		End (Step 44)	
Location	Temperature	Pressure	Temperature	Pressure	Temperature	Pressure
Left Front	68	32	70°F	33.5	78°F	35
Left Rear	68	36	69	38.0	78	40
Right Rear	68	36	72.8	37.5	78.8	38.5
Right Front	68	32	72.8	32.5	80.5	34.5
	Time Read 0800		Time Read 1102		Time Read 1328	
	Track Temp N/A		Track Temp 79.5		Track Temp 86.6	

8. Shift Point Speeds Used Step 22:
   First to Second 17 MPH, Second to Third 24 MPH
   Third to Fourth 36 MPH, Fourth to Fifth NA MPH
9. Vehicle Weight as Tested 3600 Lbs

Figure A-2. Data Sheet -- Best Effort Acceleration

Data Sheet 1. (contd)

For Section IV of JPL Procedure EHV 200.01 (Best Effort Acceleration)

Onboard Instrumentation (columns are listed by run number)

Measurement	Prep Sec Step 8	Step 10	Run 1 W	Run 1 E	Pre	Run 2 W	Run 2 E	Pre	Run 3 W	Run 3 E
Time		1100	1113	1116	1123	1128	1133	1145	1146	1150
Bat W-h Out	N/A	N/A								
Mot W-h Out	N/A	N/A								
Bat A-h	N/A	N/A	5.07	10.44	14.56	19.56	24.85	28.84	33.80	39.08
Motor 1 T		73.8	75	80	88	91	100	102	105	109
Motor 2 T		74	75	80	92	95	99	111	113	117
Bat 1 T		71	71	72	74	74	76	76	77	78
Bat 2 T		72	72	74	75	75	77	78	78	79
Bat 3 T		72	73	74	76	76	78	78	79	80
Bat In T		72	78	84	77	78	83	82	81	87
Bat Out T		74	80	85	81	82	91	88	86	90
Heat Sink T		75	78	84	91	91	92	100	100	103
Motor Air T		69	—	—	—	—	—	—	—	—
Spare T										
Wind Speed & Direction		0-5 E	0-5 S	0-4 S	0-5 S	0-3 S	0-1 SE	0-3 SE	0-4 SSE	

Measurement	Pre	Run 4 W	Run 4 E	Pre	Run 5 W	Run 5 E	Pre	Run 6 W	Run 6 E	Pre
Time	1155	1200	1211	1214	1218	1220	1232	1235	1238	1249
Bat W-h Out										
Mot W-h Out										
Bat A-h	43.65	47.66	53.87	59.46	64.60	69.85	76.94	82.08	89.42	94.12
Motor 1 T	113	114	116	115	116	119	117	118	120	116
Motor 2 T	123	125	127	131	130	130	133	132	134	132
Bat 1 T	79	80	81	82	82	83	85	85	85	87
Bat 2 T	81	82	82	84	84	85	86	87	88	89
Bat 3 T	81	82	83	84	84	85	86	86	87	88
Bat In T	78	79	84	73	77	84	75	76	84	72
Bat Out T	83	84	93	81	83	93	84	82	93	82
Heat Sink T	110	109	110	118	116	116	123	121	121	126
Motor Air T	—	—	—	—	—	—	—	—	—	—
Spare T										
Wind Speed & Direction	0-4 SE	0	0-4 SE	0-7 SE	0-3 S	0-6 SW	0-7 S	5-7 S	0-4 S	0-8 S

Figure A-2. Data Sheet 1 -- Best Effort Acceleration (Continuation 1)

Data Sheet 1. (contd)

For Section IV of JPL Procedure EHV 200.01 (Best Effort Acceleration)

Onboard Instrumentation (contd)

	Run 7		Pre	Run 8		Pre	Run 9		Pre	Run ____	
Measurement	W	E		W	E		W	E		W	E
Time	1251	1254	1306	1308	1312	1325	1330				
Bat W-h Out											
Mot W-h Out											
Bat A-h	99.44	104.93	111.79	117.36	122.96	130.32	133.67				
Motor 1 T	113	120	117	118	121	116	116				
Motor 2 T	133	132	132	132	132	131	132				
Bat 1 T	87	88	89	90	91	93	93				
Bat 2 T	89	90	91	92	93	95	95				
Bat 3 T	88	89	90	91	92	93	93				
Bat In T	74	83	74	78	84	73	77				
Bat Out T	82	94	83	85	98	84	85				
Heat Sink T	123	122	127	124	133	127	126				
Motor Air T											
Spare T											
Wind Speed	0-6	0-5	7-10	8	0-10	0-4	0-4				
& Direction	S	S	SW	SW	SW	S	SW				

	Run ____		Pre	Run ____		Pre	Run ____		Pre	Run ____	
Measurement	W	E		W	E		W	E		W	E
Time											
Bat W-h Out											
Mot W-h Out											
Bat A-h											
Motor 1 T											
Motor 2 T											
Bat 1 T											
Bat 2 T											
Bat 3 T											
Bat In T											
Bat Out T											
Heat Sink T											
Motor Air T											
Spare T											
Wind Speed											
& Direction											

Figure A-2. Data Sheet 1 -- Best Effort Acceleration (Continuation 2)

Data Sheet 2.

For Section V of JPL Procedure EHV 200.01 (Coastdown Tests)

1. Vehicle Under Test: SCT RABBIT Serial Number: 1783411481 2. Date: 4-4-79
3. Test Number: 2 Driver: R. FREEMAN Record by: T. Shain
4. Vehicle Odometer Readings: Start (Step 6) 1824.2 End (Step 60) 1847.9
5. Fifth Wheel: Contact Force Start (Prep Sec 20) 20 Lbs End (Step 54) 20 Lbs
   Tire Pressure Start (Prep Sec 20) 45 psi End (Step 54) 48 psi
6. Weather Station: Start Temp (Step 6) 64 End Temp (Step 58) 77
   Start Humidity (Step 6) 50 % End Humidity (Step 58) 45 %
   Barometer (Step 6) Barometer (Step 58)
7. Coastdown Data

Note: The data is in two sets. The first data set is for a release speed of 57 mph. The second set is for the lower release speed (approx 35 mph)

DATA SET 1
RELEASE
SPEED MPH

Run Number	1	2	3	4	5	6	7	8	9	10
Run Direction	W	E	W	E	W	E	W	E	W	E
Release Time	0835	0859	0905	0911	0916	0920	0952	1007	1014	1018
Wind Speed	0	0	3	1	2	2	2	2	2	0
Wind Direction	—	—	S	E	S	S	SE	S	E	—
Ambient Temp	66	67	66	67	67	67	67	69	69	70

DATA SET 2
RELEASE
SPEED 35 MPH

Run Number	11	12	13	14	15	16	17	18	19	20
Run Direction	W	E	W	E	W	E	W	E	W	E
Release Time	0924	0929	0933	0937	0942	0946	1030	1034	1038	1044
Wind Speed	1	2	2	3	0-4	2-3	1-2	0	0-4	3
Wind Direction	SW	W	S	SSW	S	E	W	—	SW	S
Ambient Temp	67	67	67	67	67	68	70	73	74	73

Figure A-3. Data Sheet 2 -- Coastdown Tests

Date Sheet 2. (continued)

8. Tire Temperatures and Pressures:

Location	Start (Step 18)		End (Step 54)	
	Temperature	Pressure	Temperature	Pressure
Left Front	64.5 °F	34.5	78.4 °F	35.5
Left Rear	66.5	39.0	79.4	39.5
Right Rear	65.6	38.0	80.8	39.5
Right Front	63.5	34.0	79.8	35.5
	Time Read 0830		Time Read 1102	
	Track Temp 60 °F		Track Temp 81.5	

9. Comments:

Figure A-3. Data Sheet 2 -- Coastdown Tests (Continuation 1)

APPENDIX B

RECORDED DATA PARAMETERS

RECORDED DATA PARAMETERS

The attached tables contain the abbreviations used for column headings in the Tabulated Chassis Dynamometer data output located in Appendix C. Included are the equations used for the calculated data.

The table columns contain:

COLUMN	The column number, from the left, that the abbreviation occurs.
SYMBOL	The column heading symbol, or abbreviation.
PLOT	Equals YES if this is a default plot parameter. Note that all parameters can be plotted.
CODE	Equals I if an IDAC data; equals C if a calculated parameter.
DESCRIPTION	Give a description of column contents, including equations if this is a calculated parameter.

Table B-1. Part 1, General Parameters

Column	Symbol	Plot	Code	Description
1	RUN	NO	I	Test run number
2	EB	NO	I	Emission bench number. Equals 0 for electric only cars
3	TIME	YES	I	Elapsed time since start of recording
4	VEL	YES	I	Vehicle velocity
5	DIST	YES	I	Distance traveled
6	HPDYNO	YES	I	Dyno absorbed power
7	HPROAD	YES	C	Road load powers; = HPAERO + HPROLL
8	HPIW	YES	I	Inertia weight power
9	HPAERO	YES	C,I	Aero hp = $(VEL/50)^3$ x HP aero @ 50 mi/h if given, else = HYDYNO
10	TPOS	NO	I	Carburetor throttle position, not used
11	APOS	NO	I	Accelerator pedal position, not used.
12	DSS	YES	I	Drive shaft or half axle speed
13	PBO	NO	I	Battery power out, hp
14	HPROLL	YES	C	Rolling load, = RDL50 = (RDL15 - RDL50) $\frac{(VEL-50)}{(15-50)}$; where RDL50 = rolling load at 50 mi/h, lb RDL15 = rolling load at 15 mi/h, lb
15	DTEFF	YES	C	Drive train efficiency = HPROAD / PBO-100
16	%AERO	YES	C	HPAERO/HPROAD * 100
17	%ROLL	YES	C	HPROLL/HPROAD * 100

Table B-2. Part 2, Energy and Power Parameters

Column	Symbol	Plot	Code	Description
1	RUN	NO	I	Test run number
2	TIME	YES	I	Elapsed time since start of recording
3	VEL	YES	I	Vehicle velocity
4	EBO	YES	I	Energy out of battery
5	EBI	YES	I	Energy into battery
6	EMAI	YES	I	Energy into motor armature
7	EMAO	YES	I	Energy out of motor armature
8	EMF	YES	I	Energy into motor field
9[a]	BTAMPO	NO	I	Total A/h out of battery
10[a]	BTAMPI	NO	I	Total A/h into battery
11[a]	BCHGP	NO	I	Charging power into battery
12	PBO	YES	I	Power out of battery
13	PBI	YES	I	Power into battery
14	PMAI	YES	I	Power into motor armature
15	PMAO	YES	I	Power out of motor armature
16	PMF	YES	I	Power into motor field
17	MSPD	YES	I	Electric motor speed
18	GRATM	YES	C	Motor speed/DSS

[a] Not operational

Table B-3. Part 3, Voltages, Currents, and Temperatures

Column	Symbol	Plot	Code	Description
1	RUN	NO	I	Test run number
2	TIME	YES	I	Elapsed time since start of recording
3	VEL	YES	I	Vehicle velocity
4[a]	BCHGV	NO	I	Charging voltage to battery
5	BV	YES	I	Battery voltage
6	MAV	YES	I	Motor armature voltage
7	MFV	YES	I	Motor field voltage
8	BCHGA	NO	I	Charging current to battery
9	BA	YES	I	Battery current
10	MAA	YES	I	Motor armature current
11	MFA	YES	I	Motor field current
12	TBATI	YES	I	Battery temperature #1
13	TBAT2	YES	I	Battery temperature #2
14	TBAT3	YES	I	Battery temperature #3
15	TBAT4	YES	I	Battery temperature #4
16	TBAT5	YES	I	Battery temperature #5
17	TCONT	YES	I	Controller temperature
18	TEM1	YES	I	Electric motor temperature #1 (external)
19	TEM2	YES	I	Electric motor temperature #2 (external)
20	TEM3	YES	I	Electric motor temperature #3 (external)
21	ABV	YES	I	Access battery voltage

[a] Non operational, invalid numbers

APPENDIX C

SAMPLE OF TABULATED DATA

APPENDIX C

SAMPLE OF TABULATED DATA

The following data are portions of a single schedule D driving cycle recorded at the 40% depth of discharge level. The data is presented in two sections with each section consisting of three parts.

The first section consists of a small portion of the idle period and all of the acceleration portion. The second section includes the last of the cruise portion and all of the coast and brake segment of the schedule D cycle.

The header terminology utilized in the tabulated data is described in Appendix B; Table B-1 Part 1, Table B-2 Part 2, and Table B-3 Part 3.

PART 1

ACCELERATION

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.085 DEG F PAMB = 14.123 PSIA TEST DATA START 09:46:22 REL HUM = 26.31 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1809.2	.00	3.087	.00	.00	.00	.00	.0	.0	.0	3.86	.00	.00	.00	.00
3	0	1809.3	.00	3.087	.00	.00	.00	.00	.0	.0	.0	4.81	.00	.00	.00	.00
3	0	1809.4	.00	3.087	.00	.00	.00	.00	.0	.0	.0	5.93	.00	.00	.00	.00
3	0	1809.4	.00	3.087	.00	.00	.00	.00	.0	.0	.0	7.95	.00	.00	.00	.00
3	0	1809.5	.00	3.087	.00	.00	.00	.00	.0	.0	.0	9.70	.00	.00	.00	.00
3	0	1809.6	.00	3.087	.00	.00	.00	.00	.0	.0	.0	10.62	.00	.00	.00	.00
3	0	1809.7	.90	3.087	.00	.11	.09	.00	.0	.0	629.8	11.00	.11	.99	.04	99.96
3	0	1809.8	1.09	3.087	.00	.13	.11	.00	.0	.0	714.7	11.21	.13	1.17	.06	99.94
3	0	1809.9	1.32	3.087	.00	.16	.14	.00	.0	.0	425.1	11.55	.16	1.37	.09	99.91
3	0	1810.0	1.56	3.087	.00	.19	.20	.00	.0	.0	205.7	12.28	.19	1.53	.12	99.88
3	0	1810.1	1.84	3.087	.00	.22	.25	.00	.0	.0	151.1	13.30	.22	1.66	.17	99.83
3	0	1810.2	2.12	3.087	.00	.25	.31	.00	.0	.0	293.5	14.05	.25	1.81	.22	99.78
3	0	1810.3	2.43	3.087	.00	.29	.36	.00	.0	.0	190.1	14.38	.29	2.02	.29	99.71
3	0	1810.3	2.74	3.087	.00	.33	.44	.00	.0	.0	336.4	14.80	.33	2.21	.37	99.63
3	0	1810.4	3.09	3.087	.00	.37	.55	.00	.0	.0	314.9	15.60	.37	2.37	.48	99.52
3	0	1810.5	3.50	3.087	.00	.42	.67	.00	.0	.0	250.6	16.70	.42	2.51	.61	99.39
3	0	1810.6	3.89	3.087	.00	.47	.78	.00	.0	.0	240.8	17.56	.46	2.65	.76	99.24
3	0	1810.7	4.34	3.087	.00	.52	.91	.00	.0	.0	229.1	18.19	.51	2.85	.94	99.06
3	0	1810.8	4.80	3.087	.00	.57	1.02	.01	.0	.0	246.7	18.87	.57	3.04	1.15	98.85
3	0	1810.9	5.29	3.088	.00	.63	1.12	.01	.0	.0	261.3	19.58	.62	3.23	1.40	98.60
3	0	1811.0	5.82	3.088	.00	.70	1.23	.01	.0	.0	306.1	20.36	.68	3.42	1.69	98.31
3	0	1811.1	6.51	3.088	.00	.78	1.38	.02	.0	.0	372.4	21.96	.76	3.55	2.12	97.88
3	0	1811.2	7.14	3.088	.01	.86	1.51	.02	.0	.0	392.9	23.18	.83	3.69	2.54	97.46
3	0	1811.2	7.56	3.088	.01	.91	1.60	.03	.0	.0	410.5	22.85	.88	3.97	2.85	97.15
3	0	1811.3	7.85	3.089	.01	.94	1.66	.03	.0	.0	425.1	21.47	.91	4.39	3.07	96.93
3	0	1811.4	8.05	3.089	.01	.97	1.67	.03	.0	.0	433.9	19.34	.94	5.00	3.22	96.78
3	0	1811.5	8.21	3.089	.01	.99	1.46	.03	.0	.0	475.8	17.28	.95	5.72	3.35	96.65
3	0	1811.6	8.32	3.089	.01	1.00	1.23	.03	.0	.0	508.0	15.26	.97	6.56	3.44	96.56
3	0	1811.7	8.41	3.089	.01	1.01	1.02	.04	.0	.0	491.4	13.40	.98	7.55	3.51	96.49
3	0	1811.8	8.46	3.090	.01	1.02	.85	.04	.0	.0	484.6	12.45	.98	8.18	3.56	96.44
3	0	1811.9	8.63	3.090	.01	1.04	.80	.04	.0	.0	470.9	12.89	1.00	8.07	3.70	96.30
3	0	1812.0	8.85	3.090	.01	1.07	.89	.04	.0	.0	497.2	14.06	1.03	7.59	3.88	96.12
3	0	1812.1	9.14	3.090	.01	1.10	1.02	.05	.0	.0	548.9	15.95	1.06	6.92	4.13	95.87
3	0	1812.1	9.44	3.091	.01	1.14	1.16	.05	.0	.0	542.1	17.92	1.09	6.37	4.41	95.59
3	0	1812.2	9.78	3.091	.02	1.18	1.34	.06	.0	.0	538.2	19.99	1.13	5.93	4.72	95.28
3	0	1812.3	10.15	3.091	.02	1.23	1.50	.06	.0	.0	547.0	22.08	1.17	5.58	5.07	94.93
3	0	1812.4	10.53	3.091	.02	1.28	1.65	.07	.0	.0	605.5	24.36	1.21	5.26	5.45	94.55
3	0	1812.5	10.90	3.091	.02	1.33	1.78	.08	.0	.0	632.8	26.22	1.25	5.07	5.83	94.17
3	0	1812.6	11.25	3.092	.02	1.37	1.90	.09	.0	.0	628.9	27.35	1.29	5.03	6.19	93.81
3	0	1812.7	11.58	3.092	.03	1.42	1.96	.09	.0	.0	630.8	27.79	1.33	5.10	6.55	93.45
3	0	1812.8	11.92	3.092	.03	1.46	1.99	.10	.0	.0	690.3	28.06	1.36	5.21	6.92	93.08
3	0	1812.9	12.20	3.093	.03	1.50	2.01	.11	.0	.0	708.8	28.34	1.39	5.29	7.23	92.77
3	0	1813.0	12.47	3.093	.03	1.54	2.01	.12	.0	.0	703.0	28.61	1.42	5.37	7.54	92.46
3	0	1813.0	12.73	3.093	.04	1.57	2.00	.12	.0	.0	707.8	28.58	1.45	5.50	7.84	92.16
3	0	1813.1	12.99	3.094	.04	1.61	1.98	.13	.0	.0	759.5	28.52	1.48	5.64	8.15	91.85
3	0	1813.2	13.24	3.094	.04	1.64	1.99	.14	.0	.0	758.5	28.72	1.50	5.72	8.45	91.55
3	0	1813.3	13.50	3.094	.04	1.68	1.98	.15	.0	.0	749.8	29.09	1.53	5.77	8.76	91.24
3	0	1813.4	13.75	3.095	.04	1.71	1.96	.16	.0	.0	802.4	29.15	1.56	5.87	9.07	90.93
3	0	1813.5	13.98	3.095	.05	1.74	1.96	.16	.0	.0	810.2	28.94	1.58	6.03	9.36	90.64
3	0	1813.6	14.21	3.095	.05	1.78	1.95	.17	.0	.0	795.6	29.03	1.61	6.12	9.65	90.35

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 73.900 DEG F PAMB = 14.132 PSIA TEST DATA START 09:46:22 REL HUM = 26.30 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1813.7	14.44	3.096	.05	1.81	1.94	.18	.0	.0	840.4	29.53	1.63	6.13	9.95	90.05
3	0	1813.8	14.68	3.096	.05	1.84	1.95	.19	.0	.0	852.1	30.80	1.65	5.98	10.25	89.75
3	0	1813.9	14.94	3.097	.06	1.88	1.99	.20	.0	.0	834.6	32.20	1.68	5.84	10.59	89.41
3	0	1813.9	15.22	3.097	.06	1.92	2.03	.21	.0	.0	884.3	32.85	1.71	5.85	10.96	89.04
3	0	1814.0	15.45	3.097	.06	1.96	2.06	.22	.0	.0	898.9	33.22	1.74	5.89	11.27	88.73
3	0	1814.1	15.71	3.098	.07	1.99	2.07	.23	.0	.0	884.3	33.52	1.76	5.95	11.62	88.38
3	0	1814.2	15.94	3.098	.07	2.03	2.06	.24	.0	.0	932.1	33.68	1.79	6.02	11.93	88.07
3	0	1814.3	16.16	3.098	.07	2.06	2.07	.25	.0	.0	932.1	33.52	1.81	6.15	12.24	87.76
3	0	1814.4	16.38	3.099	.08	2.09	2.04	.26	.0	.0	920.4	33.42	1.83	6.27	12.54	87.46
3	0	1814.5	16.22	3.099	.07	2.07	1.11	.26	.0	.0	969.1	33.36	1.82	6.21	12.33	87.67
3	0	1814.6	15.67	3.100	.07	1.99	.26	.23	.0	.0	995.5	32.38	1.76	6.14	11.57	88.43
3	0	1814.7	15.29	3.100	.06	1.93	-.27	.21	.0	.0	994.5	23.95	1.72	8.07	11.06	88.94
3	0	1814.8	15.10	3.101	.06	1.90	-.59	.21	.0	.0	964.3	11.50	1.70	16.56	10.80	89.20
3	0	1814.8	15.04	3.101	.06	1.90	-.67	.20	.0	.0	907.7	5.46	1.69	34.69	10.72	89.28
3	0	1814.9	15.25	3.101	.06	1.93	-.16	.21	.0	.0	893.1	4.09	1.71	47.08	11.00	89.00
3	0	1815.0	15.77	3.102	.07	2.00	.58	.23	.0	.0	907.7	8.81	1.77	22.74	11.70	88.30
3	0	1815.1	16.11	3.102	.07	2.05	.88	.25	.0	.0	909.7	13.81	1.80	14.87	12.17	87.83
3	0	1815.2	16.44	3.102	.08	2.10	1.28	.27	.0	.0	949.6	18.10	1.84	11.62	12.63	87.37
3	0	1815.3	16.96	3.103	.08	2.18	2.02	.29	.0	.0	969.1	22.83	1.89	9.56	13.36	86.64
3	0	1815.4	17.84	3.103	.10	2.32	3.24	.34	.0	.0	975.0	28.78	1.98	8.06	14.62	85.38
3	0	1815.5	17.84	3.104	.10	2.32	3.24	.34	.0	.0	975.0	28.78	1.98	8.06	14.62	85.38
3	0	1815.6	19.03	3.104	.12	2.51	3.20	.41	.0	.0	1090.0	34.14	2.10	7.36	16.40	83.60
3	0	1815.7	19.07	3.105	.12	2.52	2.85	.41	.0	.0	1127.1	34.77	2.10	7.25	16.45	83.55
3	0	1815.7	19.15	3.105	.12	2.53	2.70	.42	.0	.0	1115.4	35.13	2.11	7.21	16.58	83.42
3	0	1815.8	19.28	3.106	.12	2.55	2.56	.43	.0	.0	1122.2	35.06	2.13	7.28	16.77	83.23
3	0	1815.9	19.44	3.106	.13	2.58	2.47	.44	.0	.0	1130.0	34.79	2.14	7.42	17.02	82.98
3	0	1816.0	19.62	3.106	.13	2.61	2.42	.45	.0	.0	1116.4	34.76	2.16	7.51	17.29	82.71
3	0	1816.1	19.80	3.107	.13	2.64	2.40	.46	.0	.0	1157.3	34.84	2.18	7.58	17.57	82.43
3	0	1816.2	19.99	3.108	.14	2.67	2.35	.48	.0	.0	1138.8	34.77	2.20	7.69	17.86	82.14
3	0	1816.3	20.17	3.108	.14	2.70	2.32	.49	.0	.0	1181.7	34.44	2.21	7.85	18.14	81.86
3	0	1816.4	20.37	3.109	.15	2.74	2.31	.51	.0	.0	1170.0	34.28	2.23	7.99	18.45	81.55
3	0	1816.5	20.56	3.109	.15	2.77	2.28	.52	.0	.0	1198.3	34.30	2.25	8.08	18.75	81.25
3	0	1816.6	20.75	3.110	.15	2.81	2.27	.53	.0	.0	1190.5	34.35	2.27	8.17	19.04	80.96
3	0	1816.6	20.93	3.110	.16	2.84	2.25	.55	.0	.0	1216.8	34.09	2.29	8.32	19.32	80.68
3	0	1816.7	21.10	3.111	.16	2.87	2.23	.56	.0	.0	1222.6	33.74	2.31	8.50	19.58	80.42
3	0	1816.8	21.29	3.112	.17	2.90	2.19	.58	.0	.0	1236.3	33.68	2.32	8.61	19.88	80.12
3	0	1816.9	21.46	3.112	.17	2.93	2.18	.59	.0	.0	1244.1	33.78	2.34	8.68	20.15	79.85
3	0	1817.0	21.64	3.112	.17	2.96	2.17	.61	.0	.0	1249.9	33.74	2.36	8.78	20.44	79.56
3	0	1817.2	21.99	3.113	.18	3.03	2.14	.64	.0	.0	1271.4	33.52	2.39	9.03	20.99	79.01
3	0	1817.3	22.17	3.114	.19	3.06	2.15	.65	.0	.0	1288.0	33.79	2.41	9.05	21.27	78.73
3	0	1817.4	22.35	3.115	.19	3.09	2.12	.67	.0	.0	1291.9	34.08	2.43	9.08	21.56	78.44
3	0	1817.5	22.52	3.115	.20	3.13	2.12	.68	.0	.0	1305.5	33.96	2.44	9.20	21.83	78.17
3	0	1817.5	22.70	3.116	.20	3.16	2.11	.70	.0	.0	1311.4	33.74	2.46	9.36	22.12	77.88
3	0	1817.6	22.85	3.117	.20	3.19	2.10	.71	.0	.0	1325.0	33.75	2.47	9.44	22.36	77.64
3	0	1817.7	23.02	3.117	.21	3.22	2.10	.73	.0	.0	1336.7	34.00	2.49	9.47	22.65	77.35
3	0	1817.8	23.19	3.117	.21	3.25	2.07	.75	.0	.0	1344.5	34.00	2.51	9.56	22.91	77.09
3	0	1817.9	23.35	3.118	.22	3.28	2.06	.76	.0	.0	1359.1	33.73	2.52	9.73	23.18	76.82
3	0	1818.0	23.52	3.119	.22	3.32	2.05	.78	.0	.0	1429.3	33.56	2.54	9.88	23.44	76.56
3	0	1818.1	23.66	3.119	.23	3.34	2.04	.79	.0	.0	1450.8	33.69	2.55	9.92	23.67	76.33
3	0	1818.2	23.78	3.120	.23	3.37	1.77	.80	.0	.0	1408.9	33.83	2.56	9.95	23.86	76.14

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 73.993 DEG F PAMB = 14.125 PSIA TEST DATA START 09:46:22 REL HUM = 26.29 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1818.3	23.41	3.121	.22	3.30	.65	.77	.0	.0	1416.7	31.76	2.53	10.38	23.27	76.73
3	0	1818.4	22.83	3.121	.20	3.18	-.07	.71	.0	.0	1368.9	25.20	2.47	12.63	22.33	77.67
3	0	1818.4	22.44	3.122	.19	3.11	-.63	.67	.0	.0	1352.3	15.39	2.43	20.21	21.70	78.30
3	0	1818.5	22.20	3.122	.19	3.07	-1.01	.65	.0	.0	1304.5	7.47	2.41	41.07	21.33	78.67
3	0	1818.6	22.16	3.123	.19	3.06	-.98	.65	.0	.0	1319.2	3.85	2.41	79.51	21.26	78.74
3	0	1818.7	22.54	3.123	.20	3.13	-.10	.68	.0	.0	1291.9	6.75	2.44	46.37	21.87	78.13
3	0	1818.8	23.00	3.124	.21	3.22	.53	.73	.0	.0	1333.8	14.06	2.49	22.88	22.61	77.39
3	0	1818.9	23.34	3.124	.22	3.28	.95	.76	.0	.0	1330.9	20.79	2.52	15.79	23.15	76.85
3	0	1819.0	23.63	3.125	.23	3.34	1.25	.79	.0	.0	1426.4	25.89	2.55	12.89	23.62	76.38
3	0	1819.1	24.13	3.126	.24	3.44	2.07	.84	.0	.0	1446.9	30.69	2.60	11.20	24.44	75.56
3	0	1819.2	24.90	3.126	.26	3.59	3.00	.92	.0	.0	1470.3	34.20	2.67	10.50	25.69	74.31
3	0	1819.3	25.26	3.127	.26	3.67	2.74	.96	.0	.0	1480.0	35.29	2.70	10.39	26.28	73.72
3	0	1819.3	25.35	3.128	.26	3.68	2.59	.97	.0	.0	1488.8	36.19	2.71	10.18	26.42	73.58
3	0	1819.4	25.44	3.128	.26	3.70	2.48	.98	.0	.0	1496.6	36.52	2.72	10.14	26.57	73.43
3	0	1819.5	25.55	3.129	.29	3.73	2.38	1.00	.0	.0	1480.0	36.68	2.73	10.16	26.74	73.26
3	0	1819.6	25.67	3.129	.29	3.75	2.33	1.01	.0	.0	1504.4	36.83	2.74	10.19	26.95	73.05
3	0	1819.7	25.82	3.130	.30	3.78	2.29	1.03	.0	.0	1487.8	36.94	2.75	10.24	27.18	72.82
3	0	1819.8	25.97	3.131	.30	3.82	2.25	1.05	.0	.0	1511.2	36.82	2.77	10.36	27.44	72.56
3	0	1819.9	26.10	3.131	.30	3.84	2.23	1.06	.0	.0	1522.0	36.48	2.78	10.54	27.65	72.35
3	0	1820.0	26.26	3.132	.31	3.88	2.22	1.08	.0	.0	1522.9	36.27	2.80	10.69	27.91	72.09
3	0	1820.1	26.42	3.133	.32	3.91	2.22	1.10	.0	.0	1542.4	36.32	2.81	10.77	28.18	71.82
3	0	1820.2	26.57	3.134	.32	3.95	2.19	1.12	.0	.0	1530.7	36.48	2.82	10.82	28.42	71.58
3	0	1820.2	26.73	3.134	.33	3.98	2.18	1.14	.0	.0	1557.1	36.43	2.84	10.92	28.67	71.33
3	0	1820.3	26.87	3.135	.33	4.01	2.17	1.16	.0	.0	1561.9	36.33	2.85	11.04	28.90	71.10
3	0	1820.4	27.03	3.136	.34	4.05	2.16	1.18	.0	.0	1564.9	36.46	2.87	11.10	29.16	70.84
3	0	1820.5	27.18	3.136	.34	4.08	2.15	1.20	.0	.0	1589.2	36.63	2.88	11.14	29.41	70.59
3	0	1820.6	27.34	3.137	.35	4.11	2.13	1.22	.0	.0	1573.6	36.54	2.89	11.26	29.67	70.33
3	0	1820.7	27.49	3.137	.36	4.15	2.12	1.24	.0	.0	1601.9	36.35	2.91	11.42	29.92	70.08
3	0	1820.8	27.62	3.138	.36	4.18	2.12	1.26	.0	.0	1609.7	36.17	2.92	11.55	30.12	69.88
3	0	1820.9	27.77	3.139	.37	4.21	2.10	1.28	.0	.0	1600.9	36.33	2.93	11.59	30.37	69.63
3	0	1821.0	27.92	3.140	.37	4.25	2.10	1.30	.0	.0	1631.2	36.49	2.95	11.64	30.62	69.38
3	0	1821.1	28.06	3.140	.38	4.28	2.07	1.32	.0	.0	1672.1	36.41	2.96	11.76	30.85	69.15
3	0	1821.1	28.20	3.141	.38	4.31	2.07	1.34	.0	.0	1716.0	36.27	2.97	11.89	31.07	68.93
3	0	1821.2	28.33	3.142	.39	4.34	2.05	1.36	.0	.0	1706.2	36.29	2.98	11.97	31.29	68.71
3	0	1821.3	28.48	3.143	.40	4.38	2.05	1.38	.0	.0	1670.2	36.48	3.00	12.00	31.54	68.46
3	0	1821.4	28.63	3.143	.40	4.41	2.03	1.40	.0	.0	1678.0	36.50	3.01	12.09	31.77	68.23
3	0	1821.5	28.76	3.144	.41	4.45	2.03	1.42	.0	.0	1685.8	36.22	3.02	12.27	31.99	68.01
3	0	1821.6	28.90	3.144	.41	4.48	2.01	1.44	.0	.0	1667.2	36.08	3.04	12.41	32.21	67.79
3	0	1821.7	29.03	3.145	.42	4.51	2.02	1.46	.0	.0	1695.5	36.24	3.05	12.44	32.42	67.58
3	0	1821.8	29.17	3.146	.43	4.54	1.99	1.48	.0	.0	1705.3	36.39	3.06	12.49	32.66	67.34
3	0	1821.9	29.30	3.147	.43	4.57	1.98	1.50	.0	.0	1688.7	36.27	3.07	12.61	32.86	67.14
3	0	1822.0	29.44	3.148	.44	4.61	1.99	1.52	.0	.0	1720.9	36.07	3.08	12.77	33.09	66.91
3	0	1822.0	29.58	3.148	.44	4.64	1.96	1.55	.0	.0	1727.7	36.13	3.10	12.85	33.31	66.69
3	0	1822.1	29.70	3.148	.45	4.67	1.95	1.57	.0	.0	1713.1	36.34	3.11	12.86	33.52	66.48
3	0	1822.2	29.82	3.151	.45	4.70	1.95	1.58	.0	.0	1744.3	36.32	3.12	12.95	33.70	66.30
3	0	1822.3	29.96	3.151	.46	4.74	1.93	1.61	.0	.0	1746.2	36.06	3.13	13.13	33.93	66.07
3	0	1822.4	30.09	3.151	.47	4.77	1.92	1.63	.0	.0	1737.4	35.96	3.14	13.26	34.14	65.86
3	0	1822.5	30.22	3.152	.47	4.80	1.91	1.65	.0	.0	1762.8	36.13	3.15	13.29	34.35	65.65
3	0	1822.6	30.34	3.153	.48	4.83	1.90	1.67	.0	.0	1771.6	36.27	3.16	13.32	34.54	65.46
3	0	1822.7	30.48	3.153	.49	4.87	1.90	1.69	.0	.0	1759.9	36.16	3.17	13.46	34.76	65.24

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.085 DEG F PAMB = 14.129 PSIA TEST DATA START 09:46:22 REL HUM = 26.28 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP.	HPROAD HP	HPIN HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1822.8	30.61	3.154	.49	4.90	1.66	1.71	.0	.0	1783.3	35.92	3.19	13.64	34.97	65.03
3	0	1822.9	30.73	3.155	.50	4.93	1.86	1.73	.0	.0	1795.9	35.91	3.20	13.74	35.17	64.83
3	0	1822.9	30.85	3.156	.50	4.96	1.86	1.75	.0	.0	1791.1	36.11	3.21	13.74	35.36	64.64
3	0	1823.0	30.96	3.157	.51	4.99	1.85	1.77	.0	.0	1798.9	36.10	3.22	13.83	35.54	64.46
3	0	1823.1	31.09	3.158	.52	5.03	1.84	1.80	.0	.0	1814.5	35.86	3.23	14.01	35.75	64.25
3	0	1823.2	31.21	3.158	.52	5.06	1.82	1.82	.0	.0	1819.3	35.73	3.24	14.15	35.94	64.06
3	0	1823.3	31.34	3.159	.53	5.09	1.82	1.84	.0	.0	1814.5	35.91	3.25	14.17	36.14	63.86
3	0	1823.4	31.46	3.160	.53	5.12	1.80	1.86	.0	.0	1840.8	36.04	3.26	14.21	36.33	63.67
3	0	1823.5	31.57	3.160	.54	5.15	1.78	1.88	.0	.0	1843.7	35.88	3.27	14.35	36.50	63.50
3	0	1823.6	31.70	3.161	.55	5.18	1.78	1.90	.0	.0	1832.0	35.68	3.28	14.53	36.71	63.29
3	0	1823.7	31.81	3.162	.55	5.21	1.80	1.92	.0	.0	1852.5	35.70	3.29	14.61	36.89	63.11
3	0	1823.8	31.93	3.163	.56	5.25	1.78	1.94	.0	.0	1866.1	35.89	3.30	14.62	37.08	62.92
3	0	1823.8	32.04	3.164	.56	5.28	1.74	1.97	.0	.0	1870.0	35.88	3.31	14.70	37.25	62.75
3	0	1823.9	32.15	3.165	.57	5.31	1.73	1.99	.0	.0	1861.3	35.60	3.32	14.91	37.43	62.57
3	0	1824.0	32.27	3.166	.58	5.34	1.75	2.01	.0	.0	1883.7	35.48	3.33	15.04	37.61	62.39
3	0	1824.1	32.39	3.166	.58	5.37	1.73	2.03	.0	.0	1892.5	35.62	3.34	15.08	37.81	62.19
3	0	1824.2	32.50	3.167	.59	5.40	1.68	2.05	.0	.0	1890.5	35.76	3.35	15.10	37.98	62.02
3	0	1824.3	32.50	3.168	.59	5.40	1.68	2.05	.0	.0	1890.5	35.76	3.35	15.10	37.98	62.02
3	0	1824.4	32.71	3.168	.60	5.46	1.70	2.09	.0	.0	1912.0	35.44	3.37	15.41	38.32	61.68
3	0	1824.5	32.83	3.169	.61	5.49	1.71	2.12	.0	.0	1918.8	35.46	3.38	15.49	38.50	61.50
3	0	1824.6	32.94	3.170	.61	5.52	1.70	2.14	.0	.0	1911.0	35.70	3.39	15.47	38.67	61.33
3	0	1824.7	33.06	3.171	.62	5.56	1.67	2.16	.0	.0	1923.7	35.72	3.40	15.55	38.85	61.15
3	0	1824.7	33.17	3.172	.63	5.59	1.66	2.18	.0	.0	1936.3	35.51	3.41	15.73	39.03	60.97
3	0	1824.8	33.26	3.173	.63	5.61	1.65	2.20	.0	.0	1944.1	35.47	3.41	15.83	39.18	60.82
3	0	1824.9	33.38	3.174	.64	5.65	1.65	2.22	.0	.0	1933.4	35.75	3.43	15.80	39.36	60.64
3	0	1825.0	33.50	3.174	.64	5.68	1.64	2.25	.0	.0	1950.0	35.97	3.43	15.79	39.54	60.46
3	0	1825.1	33.60	3.175	.65	5.71	1.63	2.27	.0	.0	1967.5	35.83	3.44	15.94	39.70	60.30
3	0	1825.2	33.72	3.176	.66	5.74	1.61	2.29	.0	.0	1968.5	35.61	3.45	16.13	39.88	60.12
3	0	1825.3	33.82	3.177	.66	5.77	1.59	2.31	.0	.0	1965.6	35.71	3.46	16.17	40.04	59.96
3	0	1825.4	33.93	3.178	.67	5.81	1.58	2.33	.0	.0	1972.4	35.95	3.47	16.15	40.21	59.79
3	0	1825.5	34.04	3.179	.68	5.84	1.59	2.36	.0	.0	1988.0	35.96	3.48	16.23	40.38	59.62
3	0	1825.6	34.14	3.180	.68	5.87	1.60	2.38	.0	.0	1994.8	35.75	3.49	16.41	40.54	59.46
3	0	1825.6	34.24	3.181	.69	5.90	1.60	2.40	.0	.0	1991.9	35.74	3.50	16.50	40.69	59.31
3	0	1825.7	34.35	3.182	.70	5.93	1.60	2.42	.0	.0	1993.9	35.97	3.51	16.48	40.86	59.14
3	0	1825.8	34.45	3.183	.70	5.96	1.61	2.44	.0	.0	2013.4	36.12	3.52	16.50	41.02	58.98
3	0	1825.9	34.56	3.183	.71	5.99	1.59	2.47	.0	.0	2021.2	35.96	3.52	16.66	41.18	58.82
3	0	1826.0	34.66	3.183	.71	6.02	1.56	2.49	.0	.0	2027.0	35.67	3.53	16.88	41.33	58.67
3	0	1826.2	34.87	3.185	.73	6.08	1.53	2.53	.0	.0	2028.0	35.91	3.55	16.94	41.65	58.35
3	0	1826.3	34.97	3.186	.73	6.11	1.53	2.55	.0	.0	2039.7	35.92	3.56	17.02	41.80	58.20
3	0	1826.4	35.07	3.187	.74	6.14	1.53	2.58	.0	.0	2049.4	35.73	3.57	17.20	41.96	58.04
3	0	1826.5	35.17	3.188	.75	6.17	1.51	2.60	.0	.0	2052.4	35.74	3.57	17.28	42.11	57.89
3	0	1826.5	35.27	3.189	.75	6.20	1.51	2.62	.0	.0	2046.5	36.02	3.58	17.22	42.26	57.74
3	0	1826.6	35.36	3.190	.76	6.23	1.50	2.64	.0	.0	2058.2	36.23	3.59	17.20	42.40	57.60
3	0	1826.7	35.47	3.191	.77	6.27	1.48	2.67	.0	.0	2070.9	36.04	3.60	17.38	42.56	57.44
3	0	1826.8	35.54	3.191	.77	6.29	1.19	2.68	.0	.0	2078.7	35.76	3.60	17.58	42.66	57.34
3	0	1826.9	35.15	3.192	.74	6.17	.09	2.60	.0	.0	2069.9	34.72	3.57	17.77	42.08	57.92
3	0	1827.0	34.63	3.193	.71	6.01	-.58	2.48	.0	.0	2040.7	33.35	3.53	18.02	41.28	58.72
3	0	1827.1	34.20	3.194	.69	5.89	-1.27	2.39	.0	.0	2023.1	28.16	3.49	20.90	40.63	59.37
3	0	1827.2	33.95	3.195	.67	5.81	-1.57	2.34	.0	.0	2004.6	20.94	3.47	27.76	40.25	59.75
3	0	1827.3	34.09	3.196	.68	5.85	-.76	2.37	.0	.0	1995.8	18.98	3.48	30.84	40.45	59.55

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.271 DEG F PAMB = 14.132 PSIA TEST DATA START 09:46:22 REL HUM = 26.29 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1827.4	34.57	3.197	.71	5.99	.17	2.47	.0	.0	1992.9	22.78	3.52	26.31	41.19	58.81
3	0	1827.4	34.99	3.198	.73	6.12	.55	2.56	.0	.0	2024.1	27.65	3.56	22.13	41.83	58.17
3	0	1827.5	35.36	3.199	.76	6.23	1.19	2.64	.0	.0	2060.2	31.13	3.59	20.02	42.40	57.60
3	0	1827.6	35.88	3.200	.79	6.39	2.01	2.76	.0	.0	2081.6	33.62	3.63	19.02	43.17	56.83
3	0	1827.7	36.55	3.200	.84	6.60	2.73	2.92	.0	.0	2109.9	35.96	3.69	18.36	44.17	55.83
3	0	1827.8	36.79	3.201	.85	6.68	2.36	2.98	.0	.0	2137.2	36.46	3.71	18.33	44.53	55.47
3	0	1827.9	36.77	3.202	.85	6.67	2.09	2.97	.0	.0	2142.1	36.47	3.70	18.30	44.49	55.51
3	0	1828.0	36.73	3.203	.85	6.66	1.91	2.96	.0	.0	2147.9	36.31	3.70	18.35	44.44	55.56
3	0	1828.1	36.74	3.204	.85	6.67	1.80	2.96	.0	.0	2148.9	36.41	3.70	18.31	44.46	55.54
3	0	1828.2	36.78	3.205	.85	6.68	1.67	2.97	.0	.0	2150.8	36.62	3.71	18.24	44.52	55.48
3	0	1828.3	36.84	3.206	.86	6.70	1.58	2.99	.0	.0	2149.9	36.79	3.71	18.21	44.61	55.39
3	0	1828.3	36.92	3.207	.86	6.72	1.55	3.01	.0	.0	2147.9	36.89	3.72	18.23	44.72	55.28
3	0	1828.4	37.00	3.208	.87	6.75	1.54	3.03	.0	.0	2153.8	37.12	3.72	18.19	44.84	55.16
3	0	1828.5	37.10	3.209	.88	6.78	1.56	3.05	.0	.0	2165.5	37.62	3.73	18.04	44.99	55.01
3	0	1828.6	37.20	3.209	.88	6.82	1.58	3.08	.0	.0	2173.3	38.03	3.74	17.92	45.14	54.86
3	0	1828.7	37.31	3.210	.89	6.85	1.57	3.10	.0	.0	2181.1	38.20	3.75	17.94	45.30	54.70
3	0	1828.8	37.42	3.211	.90	6.89	1.56	3.13	.0	.0	2180.1	38.18	3.76	18.04	45.45	54.55
3	0	1828.9	37.51	3.212	.91	6.92	1.58	3.15	.0	.0	2181.1	38.29	3.76	18.07	45.59	54.41
3	0	1829.0	37.62	3.213	.91	6.95	1.60	3.18	.0	.0	2182.0	38.57	3.77	18.03	45.74	54.26
3	0	1829.1	37.72	3.214	.92	6.99	1.61	3.21	.0	.0	2198.6	38.57	3.78	18.11	45.88	54.12
3	0	1829.2	37.83	3.216	.93	7.03	1.58	3.24	.0	.0	2213.2	38.36	3.79	18.32	46.05	53.95
3	0	1829.2	37.91	3.217	.93	7.05	1.57	3.26	.0	.0	2217.1	38.27	3.80	18.43	46.17	53.83
3	0	1829.3	38.01	3.218	.94	7.09	1.54	3.28	.0	.0	2218.1	38.39	3.80	18.46	46.31	53.69
3	0	1829.4	38.11	3.219	.95	7.12	1.53	3.31	.0	.0	2221.0	38.53	3.81	18.48	46.46	53.54
3	0	1829.5	38.21	3.219	.96	7.15	1.51	3.33	.0	.0	2223.0	38.45	3.82	18.60	46.60	53.40
3	0	1829.6	38.29	3.220	.96	7.18	1.49	3.36	.0	.0	2226.9	38.24	3.83	18.78	46.72	53.28
3	0	1829.7	38.40	3.221	.97	7.22	1.50	3.38	.0	.0	2236.6	38.29	3.84	18.85	46.87	53.13
3	0	1829.8	38.47	3.222	.98	7.24	1.54	3.40	.0	.0	2246.4	38.48	3.84	18.83	46.98	53.02
3	0	1829.9	38.58	3.223	.98	7.28	1.53	3.43	.0	.0	2258.1	38.47	3.85	18.93	47.13	52.87
3	0	1830.0	38.67	3.224	.99	7.31	1.48	3.46	.0	.0	2262.0	38.22	3.86	19.13	47.26	52.74
3	0	1830.1	38.77	3.225	1.00	7.35	1.43	3.48	.0	.0	2264.9	38.12	3.86	19.27	47.39	52.61
3	0	1830.1	38.86	3.226	1.01	7.38	1.44	3.51	.0	.0	2264.9	38.34	3.87	19.25	47.53	52.47
3	0	1830.2	38.95	3.227	1.01	7.41	1.45	3.53	.0	.0	2263.9	38.44	3.88	19.27	47.65	52.35
3	0	1830.3	39.04	3.228	1.02	7.44	1.46	3.55	.0	.0	2267.8	38.29	3.89	19.43	47.78	52.22
3	0	1830.4	39.12	3.228	1.03	7.47	1.47	3.58	.0	.0	2283.4	38.06	3.89	19.63	47.90	52.10
3	0	1830.5	39.22	3.229	1.03	7.50	1.47	3.60	.0	.0	2295.1	38.13	3.90	19.68	48.03	51.97
3	0	1830.6	39.31	3.231	1.04	7.54	1.42	3.63	.0	.0	2295.1	38.34	3.91	19.66	48.17	51.83
3	0	1830.7	39.39	3.232	1.05	7.57	1.38	3.65	.0	.0	2303.9	38.29	3.91	19.76	48.28	51.72
3	0	1830.8	39.49	3.233	1.06	7.60	1.42	3.68	.0	.0	2306.8	38.09	3.92	19.95	48.42	51.58
3	0	1830.9	39.58	3.234	1.06	7.63	1.45	3.71	.0	.0	2306.8	38.03	3.93	20.08	48.54	51.46
3	0	1831.0	39.66	3.235	1.07	7.66	1.41	3.73	.0	.0	2311.7	38.20	3.93	20.06	48.66	51.34
3	0	1831.0	39.76	3.236	1.08	7.70	1.37	3.75	.0	.0	2307.8	38.34	3.94	20.07	48.79	51.21
3	0	1831.1	39.84	3.237	1.08	7.73	1.37	3.78	.0	.0	2320.5	38.16	3.95	20.25	48.90	51.10
3	0	1831.2	39.92	3.238	1.09	7.76	1.40	3.80	.0	.0	2327.3	37.94	3.95	20.45	49.02	50.98
3	0	1831.3	40.01	3.238	1.10	7.79	1.42	3.83	.0	.0	2335.1	37.98	3.96	20.51	49.14	50.86
3	0	1831.4	40.10	3.239	1.11	7.82	1.38	3.85	.0	.0	2345.8	38.18	3.97	20.49	49.27	50.73
3	0	1831.5	40.20	3.241	1.11	7.86	1.29	3.88	.0	.0	2348.8	38.17	3.98	20.59	49.40	50.60
3	0	1831.6	40.28	3.242	1.12	7.89	1.34	3.90	.0	.0	2357.5	37.97	3.98	20.77	49.51	50.49
3	0	1831.7	40.37	3.243	1.13	7.92	1.40	3.93	.0	.0	2358.5	37.92	3.99	20.89	49.63	50.37
3	0	1831.8	40.45	3.244	1.14	7.95	1.32	3.96	.0	.0	2359.5	38.05	4.00	20.89	49.75	50.25

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.271 DEG F PAMB = 14.123 PSIA TEST DATA START 09:46:22 REL HUM = 26.27 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1831.9	40.53	3.245	1.14	7.98	1.28	3.98	.0	.0	2362.4	38.13	4.00	20.93	49.86	50.14
3	0	1831.9	40.62	3.246	1.15	8.01	1.33	4.00	.0	.0	2361.4	37.99	4.01	21.09	49.98	50.02
3	0	1832.0	40.70	3.247	1.16	8.04	1.35	4.03	.0	.0	2366.3	37.81	4.01	21.28	50.09	49.91
3	0	1832.1	40.79	3.248	1.16	8.08	1.30	4.06	.0	.0	2379.0	37.92	4.02	21.30	50.22	49.78
3	0	1832.2	40.87	3.248	1.17	8.11	1.23	4.08	.0	.0	2383.9	38.11	4.03	21.27	50.32	49.68
3	0	1832.3	40.95	3.250	1.18	8.14	1.30	4.10	.0	.0	2390.7	38.08	4.03	21.37	50.43	49.57
3	0	1832.4	41.03	3.251	1.18	8.17	1.33	4.13	.0	.0	2402.4	37.85	4.04	21.58	50.54	49.46
3	0	1832.5	41.11	3.252	1.19	8.20	1.22	4.15	.0	.0	2405.3	37.78	4.05	21.70	50.65	49.35
3	0	1832.6	41.20	3.253	1.20	8.23	1.24	4.18	.0	.0	2408.2	37.93	4.05	21.70	50.77	49.23
3	0	1832.7	41.28	3.254	1.21	8.26	1.33	4.20	.0	.0	2418.0	38.05	4.06	21.72	50.88	49.12
3	0	1832.8	41.36	3.255	1.21	8.29	1.24	4.23	.0	.0	2418.0	37.89	4.06	21.88	50.98	49.02
3	0	1832.8	41.45	3.256	1.22	8.33	1.18	4.26	.0	.0	2419.9	37.74	4.07	22.06	51.10	48.90
3	0	1832.9	41.51	3.258	1.23	8.35	1.28	4.27	.0	.0	2425.8	37.81	4.08	22.09	51.19	48.81
3	0	1833.0	41.60	3.259	1.23	8.38	1.25	4.30	.0	.0	2421.9	37.99	4.08	22.07	51.30	48.70
3	0	1833.1	41.60	3.259	1.23	8.38	1.25	4.30	.0	.0	2421.9	37.99	4.08	22.07	51.30	48.70
3	0	1833.2	41.77	3.260	1.25	8.45	1.25	4.36	.0	.0	2430.7	37.70	4.10	22.42	51.54	48.46
3	0	1833.3	41.84	3.261	1.26	8.48	1.24	4.38	.0	.0	2431.6	37.64	4.10	22.53	51.63	48.37
3	0	1833.4	41.91	3.262	1.26	8.51	1.13	4.40	.0	.0	2442.4	37.84	4.11	22.48	51.72	48.28
3	0	1833.5	42.00	3.263	1.27	8.54	1.22	4.43	.0	.0	2445.3	37.94	4.11	22.51	51.84	48.16
3	0	1833.6	42.08	3.265	1.28	8.57	1.21	4.45	.0	.0	2456.0	37.75	4.12	22.71	51.95	48.05
3	0	1833.7	42.16	3.266	1.29	8.60	1.11	4.48	.0	.0	2458.0	37.57	4.13	22.90	52.05	47.95
3	0	1833.7	42.23	3.267	1.29	8.63	1.22	4.50	.0	.0	2465.8	37.66	4.13	22.92	52.14	47.86
3	0	1833.8	42.30	3.268	1.30	8.66	1.18	4.52	.0	.0	2474.5	37.86	4.14	22.87	52.24	47.76
3	0	1833.9	42.39	3.269	1.31	8.69	1.10	4.55	.0	.0	2476.5	37.82	4.14	22.98	52.35	47.65
3	0	1834.0	42.47	3.269	1.31	8.72	1.21	4.58	.0	.0	2486.2	37.62	4.15	23.19	52.46	47.54
3	0	1834.1	42.54	3.270	1.32	8.75	1.13	4.60	.0	.0	2489.2	37.54	4.15	23.32	52.55	47.45
3	0	1834.2	42.62	3.272	1.33	8.79	1.13	4.63	.0	.0	2494.0	37.73	4.16	23.29	52.66	47.34
3	0	1834.3	42.69	3.273	1.33	8.81	1.18	4.65	.0	.0	2498.9	37.82	4.16	23.30	52.75	47.25
3	0	1834.4	42.77	3.274	1.34	8.85	1.08	4.68	.0	.0	2498.9	37.65	4.17	23.50	52.85	47.15
3	0	1834.5	42.85	3.275	1.35	8.88	1.15	4.70	.0	.0	2503.8	37.50	4.18	23.68	52.96	47.04
3	0	1834.6	42.92	3.276	1.36	8.91	1.11	4.73	.0	.0	2509.6	37.57	4.18	23.71	53.05	46.95
3	0	1834.6	43.00	3.278	1.36	8.94	1.07	4.75	.0	.0	2513.5	37.74	4.19	23.69	53.15	46.85
3	0	1834.7	43.07	3.278	1.37	8.97	1.13	4.77	.0	.0	2513.5	37.67	4.19	23.80	53.24	46.76
3	0	1834.8	43.14	3.280	1.38	8.99	1.03	4.80	.0	.0	2515.5	37.45	4.20	24.02	53.33	46.67
3	0	1834.9	43.22	3.280	1.38	9.03	1.10	4.83	.0	.0	2521.3	37.46	4.20	24.11	53.44	46.56
3	0	1835.0	43.30	3.281	1.39	9.06	1.05	4.85	.0	.0	2529.1	37.65	4.21	24.06	53.53	46.47
3	0	1835.2	43.44	3.284	1.41	9.12	1.06	4.90	.0	.0	2532.1	37.54	4.22	24.29	53.71	46.29
3	0	1835.3	43.51	3.285	1.41	9.15	1.02	4.92	.0	.0	2535.0	37.40	4.23	24.46	53.81	46.19
3	0	1835.4	43.58	3.286	1.42	9.18	1.07	4.95	.0	.0	2541.8	37.50	4.23	24.48	53.91	46.09
3	0	1835.5	43.67	3.287	1.43	9.21	.99	4.98	.0	.0	2540.8	37.67	4.24	24.46	54.01	45.99
3	0	1835.5	43.73	3.288	1.43	9.24	1.05	5.00	.0	.0	2549.6	37.58	4.24	24.59	54.10	45.90
3	0	1835.6	43.79	3.290	1.44	9.26	.99	5.02	.0	.0	2554.5	37.37	4.25	24.79	54.17	45.83
3	0	1835.7	43.87	3.291	1.45	9.30	1.03	5.05	.0	.0	2550.6	37.39	4.25	24.87	54.27	45.73
3	0	1835.8	43.94	3.291	1.46	9.33	1.01	5.07	.0	.0	2559.4	37.57	4.26	24.82	54.36	45.64
3	0	1835.9	44.02	3.292	1.46	9.36	1.01	5.10	.0	.0	2566.2	37.63	4.26	24.87	54.46	45.54
3	0	1836.0	44.09	3.293	1.47	9.39	1.00	5.12	.0	.0	2567.2	37.42	4.27	25.09	54.54	45.46
3	0	1836.1	44.15	3.295	1.48	9.41	.98	5.14	.0	.0	2569.1	37.28	4.27	25.25	54.62	45.38
3	0	1836.2	44.24	3.296	1.48	9.45	1.01	5.17	.0	.0	2575.0	37.42	4.28	25.26	54.73	45.27
3	0	1836.3	44.29	3.297	1.49	9.47	.97	5.19	.0	.0	2581.8	37.62	4.28	25.18	54.80	45.20
3	0	1836.4	44.36	3.298	1.50	9.50	.98	5.22	.0	.0	2583.7	37.50	4.29	25.35	54.89	45.11

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.178 DEG F PAMB = 14.126 PSIA TEST DATA START 09:46:22 REL HUM = 26.27 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PRO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1836.4	44.43	3.300	1.50	9.53	.94	5.24	.0	.0	2587.6	37.27	4.29	25.58	54.97	45.03
3	0	1836.5	44.49	3.301	1.51	9.56	.98	5.26	.0	.0	2593.5	37.30	4.30	25.63	55.05	44.95
3	0	1836.6	44.57	3.302	1.52	9.60	.94	5.29	.0	.0	2592.5	37.51	4.30	25.58	55.15	44.85
3	0	1836.7	44.64	3.302	1.53	9.62	.96	5.31	.0	.0	2600.3	37.58	4.31	25.60	55.23	44.77
3	0	1836.8	44.70	3.303	1.53	9.65	.93	5.34	.0	.0	2600.3	37.32	4.31	25.86	55.32	44.68
3	0	1836.9	44.77	3.304	1.54	9.68	.95	5.36	.0	.0	2611.0	37.20	4.32	26.02	55.40	44.60
3	0	1837.0	44.83	3.306	1.55	9.71	.92	5.38	.0	.0	2613.0	37.36	4.32	25.98	55.47	44.53
3	0	1837.1	44.92	3.307	1.55	9.74	.93	5.42	.0	.0	2613.0	37.54	4.33	25.95	55.58	44.42
3	0	1837.2	44.97	3.308	1.56	9.77	.89	5.44	.0	.0	2623.7	37.26	4.33	26.21	55.65	44.35
3	0	1837.3	45.04	3.309	1.57	9.80	.89	5.46	.0	.0	2625.7	36.61	4.34	26.76	55.74	44.26
3	0	1837.3	45.10	3.311	1.57	9.82	.86	5.48	.0	.0	2626.6	36.18	4.34	27.15	55.81	44.19
3	0	1837.4	45.14	3.312	1.58	9.84	.83	5.50	.0	.0	2633.5	35.91	4.34	27.40	55.85	44.15
3	0	1837.5	45.20	3.313	1.58	9.87	.80	5.52	.0	.0	2634.4	35.36	4.35	27.90	55.93	44.07
3	0	1837.6	45.26	3.313	1.59	9.89	.74	5.54	.0	.0	2639.3	34.55	4.35	28.63	56.00	44.00
3	0	1837.7	45.30	3.315	1.59	9.91	.73	5.55	.0	.0	2643.2	33.96	4.36	29.18	56.05	43.95
3	0	1837.8	45.35	3.316	1.60	9.93	.66	5.57	.0	.0	2643.2	33.40	4.36	29.73	56.11	43.89
3	0	1837.9	45.35	3.317	1.60	9.93	.57	5.57	.0	.0	2648.1	31.14	4.36	31.89	56.11	43.89
3	0	1838.0	45.33	3.318	1.60	9.92	.29	5.57	.0	.0	2653.0	26.48	4.36	37.47	56.09	43.91
3	0	1838.1	45.22	3.320	1.59	9.88	-.05	5.53	.0	.0	2649.1	21.25	4.35	46.48	55.95	44.05
3	0	1838.2	45.05	3.321	1.57	9.80	-.44	5.46	.0	.0	2641.3	17.04	4.34	57.52	55.75	44.25
3	0	1838.2	44.87	3.322	1.55	9.72	-.80	5.40	.0	.0	2634.4	14.14	4.32	68.77	55.53	44.47
3	0	1838.3	44.68	3.323	1.53	9.64	-1.06	5.33	.0	.0	2621.8	11.88	4.31	81.14	55.29	44.71
3	0	1838.4	44.54	3.325	1.52	9.58	-1.25	5.28	.0	.0	2610.1	10.16	4.30	94.34	55.12	44.88
3	0	1838.5	44.43	3.325	1.50	9.53	-1.40	5.24	.0	.0	2606.2	9.24	4.29	.00	54.97	45.03
3	0	1838.6	44.33	3.326	1.49	9.49	-1.55	5.21	.0	.0	2603.2	9.00	4.29	.00	54.85	45.15
3	0	1838.7	44.27	3.327	1.49	9.47	-1.59	5.19	.0	.0	2594.5	9.24	4.28	.00	54.78	45.22
3	0	1838.8	44.25	3.328	1.49	9.46	-1.65	5.18	.0	.0	2590.6	10.10	4.28	93.64	54.75	45.25
3	0	1838.9	44.31	3.329	1.49	9.48	-1.55	5.20	.0	.0	2592.5	11.47	4.28	82.66	54.83	45.17
3	0	1839.0	44.40	3.331	1.50	9.52	-1.27	5.23	.0	.0	2600.3	13.28	4.29	71.72	54.94	45.06
3	0	1839.1	44.49	3.332	1.51	9.56	-1.12	5.26	.0	.0	2602.3	15.13	4.30	63.19	55.05	44.95
3	0	1839.1	44.58	3.333	1.52	9.60	-.90	5.30	.0	.0	2605.2	16.48	4.30	58.26	55.17	44.83
3	0	1839.2	44.66	3.334	1.53	9.63	-.83	5.32	.0	.0	2614.9	17.46	4.31	55.16	55.26	44.74
3	0	1839.3	44.73	3.336	1.54	9.66	-.72	5.35	.0	.0	2617.9	18.49	4.31	52.27	55.35	44.65
3	0	1839.4	44.82	3.336	1.54	9.70	-.56	5.38	.0	.0	2621.8	19.72	4.32	49.20	55.47	44.53
3	0	1839.5	44.90	3.337	1.55	9.74	-.49	5.41	.0	.0	2624.7	20.89	4.33	46.60	55.56	44.44
3	0	1839.6	44.98	3.338	1.56	9.77	-.40	5.44	.0	.0	2627.6	21.62	4.33	45.18	55.66	44.34
3	0	1839.7	45.04	3.339	1.57	9.80	-.32	5.46	.0	.0	2637.4	22.19	4.34	44.16	55.74	44.26
3	0	1839.8	45.11	3.341	1.57	9.83	-.24	5.49	.0	.0	2642.2	22.88	4.34	42.96	55.82	44.18
3	0	1839.9	45.18	3.342	1.58	9.86	-.22	5.51	.0	.0	2645.2	23.51	4.35	41.93	55.90	44.10
3	0	1840.0	45.24	3.343	1.59	9.88	-.17	5.53	.0	.0	2649.1	23.67	4.35	41.76	55.98	44.02
3	0	1840.0	45.29	3.344	1.59	9.91	-.18	5.55	.0	.0	2652.0	23.56	4.35	42.05	56.04	43.96
3	0	1840.1	45.34	3.346	1.60	9.93	-.13	5.57	.0	.0	2657.8	23.66	4.36	41.95	56.10	43.90
3	0	1840.2	45.38	3.347	1.60	9.95	-.15	5.58	.0	.0	2652.0	23.95	4.36	41.53	56.15	43.85
3	0	1840.3	45.42	3.347	1.61	9.96	-.13	5.60	.0	.0	2662.7	24.07	4.36	41.39	56.20	43.80
3	0	1840.4	45.45	3.348	1.61	9.98	-.14	5.61	.0	.0	2663.7	23.80	4.37	41.92	56.24	43.76
3	0	1840.5	45.49	3.349	1.61	10.00	-.15	5.63	.0	.0	2661.7	23.53	4.37	42.49	56.29	43.71
3	0	1840.6	45.52	3.351	1.62	10.01	-.14	5.64	.0	.0	2670.5	23.36	4.37	42.84	56.32	43.68
3	0	1840.7	45.54	3.352	1.62	10.02	-.19	5.65	.0	.0	2670.5	23.09	4.37	43.39	56.35	43.65
3	0	1840.8	45.56	3.353	1.62	10.02	-.24	5.65	.0	.0	2666.6	22.36	4.37	44.83	56.37	43.63
3	0	1840.9	45.57	3.355	1.62	10.03	-.31	5.65	.0	.0	2668.6	21.41	4.37	46.85	56.38	43.62

PART 2

ACCELERATION

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1809.2	.00	2725.8	133.2	2438.1	147.2	141.5	.00	.00	.00	2.87	.00	1.99	.00	.8909	1799.7	.00
3	1809.3	.00	2725.9	133.2	2438.2	147.2	141.5	.00	.00	.00	3.59	.00	2.69	.00	.8881	1785.9	.00
3	1809.4	.00	2726.0	133.2	2438.3	147.2	141.6	.00	.00	.00	4.42	.00	3.57	.00	.8847	1771.9	.00
3	1809.4	.00	2726.2	133.2	2438.5	147.2	141.6	.00	.00	.00	5.92	.00	5.11	.00	.8812	1749.7	.00
3	1809.5	.00	2726.4	133.2	2438.7	147.2	141.6	.00	.00	.00	7.23	.00	6.39	.00	.8766	1725.6	.00
3	1809.6	.00	2726.7	133.2	2438.9	147.2	141.6	.00	.00	.00	7.92	.00	7.04	.00	.8706	1710.0	.00
3	1809.7	.90	2726.7	133.2	2438.9	147.2	141.6	.00	.00	.00	8.21	.00	7.32	.00	.8675	1702.8	2.70
3	1809.8	1.09	2726.9	133.2	2439.1	147.2	141.7	.00	.00	.00	8.36	.00	7.47	.00	.8656	1699.7	2.38
3	1809.9	1.32	2727.2	133.2	2439.3	147.2	141.7	.00	.00	.00	8.61	.00	7.72	.00	.8644	1696.2	3.99
3	1810.0	1.56	2727.4	133.2	2439.6	147.2	141.7	.00	.00	.00	9.16	.00	8.28	.00	.8634	1688.4	8.21
3	1810.1	1.84	2727.7	133.2	2439.8	147.2	141.7	.00	.00	.00	9.92	.00	9.06	.00	.8609	1675.9	11.09
3	1810.2	2.12	2728.0	133.2	2440.1	147.2	141.8	.00	.00	.00	10.47	.00	9.58	.00	.8569	1665.9	5.68
3	1810.3	2.43	2728.3	133.2	2440.4	147.2	141.8	.00	.00	.00	10.72	.00	9.84	.00	.8550	1659.7	8.73
3	1810.3	2.74	2728.6	133.2	2440.7	147.2	141.8	.00	.00	.00	11.04	.00	10.15	.00	.8531	1655.0	4.92
3	1810.4	3.09	2729.0	133.2	2441.0	147.2	141.8	.00	.00	.00	11.63	.00	10.75	.00	.8516	1647.2	5.23
3	1810.5	3.50	2729.3	133.2	2441.3	147.2	141.9	.00	.00	.00	12.45	.00	11.57	.00	.8487	1634.1	6.52
3	1810.6	3.89	2729.3	133.2	2441.3	147.2	141.9	.00	.00	.00	13.09	.00	12.21	.00	.8450	1622.5	6.74
3	1810.7	4.34	2729.7	133.2	2441.7	147.2	141.9	.00	.00	.00	13.56	.00	12.70	.00	.8422	1613.7	7.04
3	1810.8	4.80	2730.1	133.2	2442.0	147.2	141.9	.00	.00	.00	14.07	.00	13.19	.00	.8394	1606.2	6.51
3	1810.9	5.29	2730.5	133.2	2442.4	147.2	141.9	.00	.00	.00	14.60	.00	13.71	.00	.8369	1597.5	6.11
3	1811.0	5.82	2730.5	133.2	2442.8	147.2	142.0	.00	.00	.00	15.18	.00	14.31	.00	.8344	1589.1	5.19
3	1811.1	6.51	2731.4	133.2	2443.3	147.2	142.0	.00	.00	.00	16.37	.00	15.52	.00	.8325	1573.1	4.22
3	1811.2	7.14	2731.9	133.2	2443.8	147.2	142.0	.00	.00	.00	17.29	.00	16.39	.00	.8269	1555.6	3.96
3	1811.2	7.56	2732.4	133.2	2444.2	147.2	142.0	.00	.00	.00	17.04	.00	16.07	.00	.8206	1555.6	3.79
3	1811.3	7.85	2732.8	133.2	2444.6	147.2	142.0	.00	.00	.00	16.01	.00	15.00	.00	.8191	1570.9	3.70
3	1811.4	8.05	2733.2	133.2	2444.9	147.2	142.1	.00	.00	.00	14.42	.00	13.40	.00	.8203	1595.0	3.68
3	1811.5	8.21	2733.2	133.2	2444.9	147.2	142.1	.00	.00	.00	12.89	.00	11.86	.00	.8259	1620.0	3.40
3	1811.6	8.32	2733.5	133.2	2445.2	147.2	142.1	.00	.00	.00	11.38	.00	10.37	.00	.8325	1642.2	3.23
3	1811.7	8.41	2733.7	133.2	2445.5	147.2	142.1	.00	.00	.00	9.99	.00	8.97	.00	.8394	1662.8	3.38
3	1811.8	8.46	2734.0	133.2	2445.7	147.2	142.1	.00	.00	.00	9.29	.00	8.45	.00	.8084	1681.6	3.47
3	1811.9	8.63	2734.2	133.2	2445.9	147.2	142.2	.00	.00	.00	9.61	.00	8.96	.00	.7344	1711.6	3.63
3	1812.0	8.85	2734.5	133.2	2446.2	147.2	142.2	.00	.00	.00	10.49	.00	9.90	.00	.6578	1758.7	3.54
3	1812.1	9.14	2734.9	133.2	2446.5	147.2	142.2	.00	.00	.00	11.89	.00	11.37	.00	.5916	1813.1	3.30
3	1812.1	9.44	2735.3	133.2	2446.9	147.2	142.2	.00	.00	.00	13.36	.00	12.99	.00	.5256	1873.7	3.46
3	1812.2	9.78	2735.7	133.2	2447.4	147.2	142.2	.00	.00	.00	14.91	.00	14.64	.00	.4653	1938.7	3.60
3	1812.3	10.15	2736.2	133.2	2447.9	147.2	142.2	.00	.00	.00	16.47	.00	16.19	.00	.4119	2007.2	3.67
3	1812.4	10.53	2736.2	133.2	2447.9	147.2	142.2	.00	.00	.00	18.16	.00	17.81	.00	.3766	2079.7	3.43
3	1812.5	10.90	2736.8	133.2	2448.4	147.2	142.2	.00	.00	.00	19.55	.00	19.15	.00	.3513	2153.4	3.40
3	1812.6	11.25	2737.4	133.2	2449.0	147.2	142.2	.00	.00	.00	20.39	.00	20.06	.00	.3278	2225.0	3.54
3	1812.7	11.58	2738.0	133.2	2449.5	147.2	142.2	.00	.00	.00	20.72	.00	20.40	.00	.3028	2291.6	3.63
3	1812.8	11.92	2738.6	133.2	2450.1	147.2	142.3	.00	.00	.00	20.92	.00	20.52	.00	.2853	2353.7	3.41
3	1812.9	12.20	2739.1	133.2	2450.7	147.2	142.3	.00	.00	.00	21.13	.00	20.64	.00	.2772	2413.7	3.41
3	1813.0	12.47	2739.7	133.2	2451.3	147.2	142.3	.00	.00	.00	21.33	.00	20.90	.00	.2691	2469.7	3.51
3	1813.0	12.73	2740.3	133.2	2451.9	147.2	142.3	.00	.00	.00	21.31	.00	20.97	.00	.2544	2522.8	3.56
3	1813.1	12.99	2740.9	133.2	2452.5	147.2	142.3	.00	.00	.00	21.27	.00	20.89	.00	.2391	2575.3	3.39
3	1813.2	13.24	2741.5	133.2	2453.0	147.2	142.3	.00	.00	.00	21.42	.00	20.96	.00	.2319	2628.4	3.47
3	1813.3	13.50	2741.5	133.2	2453.0	147.2	142.3	.00	.00	.00	21.69	.00	21.22	.00	.2284	2678.7	3.57
3	1813.4	13.75	2742.1	133.2	2453.6	147.2	142.3	.00	.00	.00	21.74	.00	21.38	.00	.2228	2727.8	3.40
3	1813.5	13.98	2742.7	133.2	2454.2	147.2	142.3	.00	.00	.00	21.58	.00	21.26	.00	.2094	2776.9	3.43
3	1813.6	14.21	2743.3	133.2	2454.8	147.2	142.3	.00	.00	.00	21.65	.00	21.24	.00	.1997	2824.7	3.55

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1813.7	14.44	2743.9	133.2	2455.4	147.2	142.3	.00	.00	.00	22.02	.00	21.58	.00	.1969	2870.9	3.42
3	1813.8	14.68	2744.6	133.2	2456.0	147.2	142.3	.00	.00	.00	22.97	.00	22.57	.00	.1906	2920.3	3.43
3	1813.9	14.94	2745.3	133.2	2456.7	147.2	142.3	.00	.00	.00	24.01	.00	23.71	.00	.1816	2971.2	3.56
3	1813.9	15.22	2746.0	133.2	2457.4	147.2	142.3	.00	.00	.00	24.50	.00	24.15	.00	.1703	3024.4	3.42
3	1814.0	15.45	2746.7	133.2	2458.1	147.2	142.3	.00	.00	.00	24.77	.00	24.32	.00	.1678	3076.9	3.42
3	1814.1	15.71	2747.4	133.2	2458.8	147.2	142.3	.00	.00	.00	25.00	.00	24.48	.00	.1672	3126.2	3.54
3	1814.2	15.94	2747.4	133.2	2458.8	147.2	142.3	.00	.00	.00	25.12	.00	24.66	.00	.1647	3173.7	3.40
3	1814.3	16.16	2748.1	133.2	2459.5	147.2	142.3	.00	.00	.00	24.99	.00	24.60	.00	.1569	3219.1	3.45
3	1814.4	16.38	2748.8	133.2	2460.2	147.2	142.3	.00	.00	.00	24.92	.00	24.44	.00	.1497	3263.1	3.55
3	1814.5	16.22	2749.5	133.2	2460.8	147.2	142.3	.00	.00	.00	24.87	.00	24.33	.00	.1462	3316.9	3.42
3	1814.6	15.67	2750.1	133.2	2461.5	147.2	142.4	.00	.00	.00	24.14	.00	23.56	.00	.1412	3443.7	3.46
3	1814.7	15.29	2750.6	133.2	2462.0	147.2	142.4	.00	.00	.00	17.86	.00	17.04	.00	.1450	3631.6	3.65
3	1814.8	15.10	2750.7	133.2	2462.0	147.3	142.4	.00	.00	.00	8.57	2.39	7.90	2.67	.1531	3787.5	3.93
3	1814.8	15.04	2750.7	133.5	2462.0	147.5	142.4	.00	.00	.00	4.07	3.66	3.63	3.85	.1519	3840.9	4.23
3	1814.9	15.25	2750.7	133.5	2462.1	147.5	142.4	.00	.00	.00	3.05	1.72	2.96	1.79	.1475	3815.9	4.27
3	1815.0	15.77	2751.0	133.5	2462.3	147.5	142.4	.00	.00	.00	6.57	.77	6.69	.78	.1506	3710.6	4.09
3	1815.1	16.11	2751.0	133.5	2462.3	147.5	142.4	.00	.00	.00	10.30	.35	10.41	.34	.1494	3550.0	3.90
3	1815.2	16.44	2751.4	133.5	2462.7	147.5	142.4	.00	.00	.00	13.49	.16	13.47	.16	.1606	3383.4	3.56
3	1815.3	16.96	2751.9	133.5	2463.2	147.5	142.4	.00	.00	.00	17.02	.07	16.90	.07	.1850	3209.7	3.31
3	1815.4	17.84	2752.5	133.5	2463.8	147.5	142.4	.00	.00	.00	21.46	.04	21.40	.02	.2206	2980.3	3.06
3	1815.5	17.84	2753.3	133.5	2464.6	147.5	142.4	.00	.00	.00	21.46	.04	21.40	.02	.2206	2980.3	3.06
3	1815.6	19.03	2754.0	133.5	2465.3	147.5	142.4	.00	.00	.00	25.46	.00	24.97	.00	.3106	2402.2	2.20
3	1815.7	19.07	2754.7	133.5	2466.0	147.5	142.4	.00	.00	.00	25.92	.00	25.34	.00	.3275	2268.1	2.01
3	1815.7	19.15	2755.5	133.5	2466.7	147.5	142.4	.00	.00	.00	26.19	.00	25.62	.00	.3362	2218.7	1.99
3	1815.8	19.28	2756.2	133.5	2467.4	147.5	142.4	.00	.00	.00	26.14	.00	25.62	.00	.3316	2204.7	1.96
3	1815.9	19.44	2756.9	133.5	2468.1	147.5	142.4	.00	.00	.00	25.94	.00	25.41	.00	.3234	2208.4	1.95
3	1816.0	19.62	2756.9	133.5	2468.1	147.5	142.4	.00	.00	.00	25.92	.00	25.30	.00	.3225	2221.9	1.99
3	1816.1	19.80	2757.6	133.5	2468.8	147.5	142.5	.00	.00	.00	25.98	.00	25.34	.00	.3247	2238.7	1.93
3	1816.2	19.99	2758.4	133.5	2469.6	147.5	142.5	.00	.00	.00	25.92	.00	25.36	.00	.3216	2257.5	1.98
3	1816.3	20.17	2759.1	133.5	2470.3	147.5	142.5	.00	.00	.00	25.68	.00	25.17	.00	.3100	2277.5	1.93
3	1816.4	20.37	2759.8	133.5	2470.9	147.5	142.5	.00	.00	.00	25.56	.00	24.99	.00	.3028	2297.8	1.96
3	1816.5	20.56	2760.5	133.5	2471.6	147.5	142.5	.00	.00	.00	25.57	.00	24.95	.00	.3037	2317.8	1.93
3	1816.6	20.75	2761.2	133.5	2472.3	147.5	142.5	.00	.00	.00	25.62	.00	25.05	.00	.3044	2338.4	1.96
3	1816.6	20.93	2761.9	133.5	2473.0	147.5	142.5	.00	.00	.00	25.42	.00	24.92	.00	.2969	2358.4	1.94
3	1816.7	21.10	2762.6	133.5	2473.7	147.5	142.5	.00	.00	.00	25.16	.00	24.66	.00	.2872	2379.7	1.95
3	1816.8	21.29	2763.3	133.5	2474.4	147.5	142.5	.00	.00	.00	25.12	.00	24.52	.00	.2847	2399.1	1.94
3	1816.9	21.46	2763.3	133.5	2474.4	147.5	142.5	.00	.00	.00	25.19	.00	24.58	.00	.2862	2419.7	1.94
3	1817.0	21.64	2764.0	133.5	2475.1	147.5	142.5	.00	.00	.00	25.16	.00	24.66	.00	.2841	2438.1	1.95
3	1817.2	21.99	2765.4	133.5	2476.4	147.5	142.5	.00	.00	.00	24.99	.00	24.46	.00	.2662	2477.8	1.95
3	1817.3	22.17	2766.1	133.5	2477.1	147.5	142.6	.00	.00	.00	25.20	.01	24.61	.00	.2675	2498.4	1.94
3	1817.4	22.35	2766.8	133.5	2477.8	147.5	142.6	.00	.00	.00	25.41	.00	24.85	.00	.2675	2518.1	1.95
3	1817.5	22.52	2767.5	133.5	2478.5	147.5	142.6	.00	.00	.00	25.32	.00	24.88	.00	.2609	2538.1	1.94
3	1817.5	22.70	2768.2	133.5	2479.2	147.5	142.6	.00	.00	.00	25.16	.00	24.69	.00	.2519	2556.9	1.95
3	1817.6	22.85	2768.9	133.5	2479.9	147.5	142.6	.00	.00	.00	25.17	.00	24.62	.00	.2512	2576.6	1.94
3	1817.7	23.02	2769.6	133.5	2480.6	147.5	142.6	.00	.00	.00	25.36	.00	24.75	.00	.2538	2595.3	1.94
3	1817.8	23.19	2769.6	133.5	2480.6	147.5	142.6	.00	.00	.00	25.36	.00	24.85	.00	.2516	2614.1	1.94
3	1817.9	23.35	2770.3	133.5	2481.2	147.5	142.6	.00	.00	.00	25.16	.00	24.72	.00	.2428	2632.5	1.94
3	1818.0	23.52	2771.0	133.5	2481.9	147.5	142.6	.00	.00	.00	25.02	.00	24.52	.00	.2363	2650.9	1.85
3	1818.1	23.66	2771.7	133.5	2482.6	147.5	142.6	.00	.00	.00	25.12	.00	24.54	.00	.2387	2668.4	1.84
3	1818.2	23.78	2772.4	133.5	2483.3	147.5	142.6	.00	.00	.00	25.22	.00	24.66	.00	.2394	2686.6	1.91

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1818.3	23.41	2773.0	133.5	2483.9	147.5	142.6	.00	.00	.00	23.68	.00	23.14	.00	.2259	2746.9	1.94
3	1818.4	22.83	2773.5	133.5	2484.4	147.5	142.6	.00	.00	.00	18.79	.00	18.07	.00	.2069	2905.3	2.12
3	1818.4	22.44	2773.7	133.5	2484.6	147.5	142.6	.00	.00	.00	11.47	.00	10.54	.00	.2059	3088.4	2.28
3	1818.5	22.20	2773.7	133.5	2484.6	147.5	142.6	.00	.00	.00	5.57	.53	4.99	.83	.2128	3214.7	2.46
3	1818.6	22.16	2773.7	133.5	2484.6	147.5	142.6	.00	.00	.00	2.87	1.04	2.63	1.18	.2084	3262.2	2.47
3	1818.7	22.54	2773.7	133.5	2484.6	147.5	142.6	.00	.00	.00	5.03	.45	5.16	.50	.1972	3222.8	2.49
3	1818.8	23.00	2773.9	133.5	2484.8	147.5	142.6	.00	.00	.00	10.48	.20	10.57	.22	.2019	3083.7	2.31
3	1818.9	23.34	2774.4	133.5	2485.3	147.5	142.7	.00	.00	.00	15.50	.09	15.42	.09	.2216	2917.8	2.19
3	1819.0	23.63	2775.0	133.5	2485.9	147.5	142.7	.00	.00	.00	19.31	.04	19.18	.04	.2406	2775.0	1.95
3	1819.1	24.13	2775.7	133.5	2486.5	147.5	142.7	.00	.00	.00	22.89	.02	22.78	.01	.2597	2627.8	1.82
3	1819.2	24.90	2776.5	133.5	2487.3	147.5	142.7	.00	.00	.00	25.50	.00	25.09	.00	.3362	2410.9	1.64
3	1819.3	25.26	2777.2	133.5	2488.0	147.5	142.7	.00	.00	.00	26.31	.00	25.71	.00	.3887	2164.7	1.46
3	1819.3	25.35	2778.0	133.5	2488.8	147.5	142.7	.00	.00	.00	26.99	.00	26.30	.00	.4147	2025.9	1.36
3	1819.4	25.44	2778.8	133.5	2489.5	147.5	142.7	.00	.00	.00	27.23	.00	26.55	.00	.4219	1966.2	1.31
3	1819.5	25.55	2779.5	133.5	2490.3	147.5	142.7	.00	.00	.00	27.35	.00	26.65	.00	.4212	1943.7	1.31
3	1819.6	25.67	2779.5	133.5	2490.3	147.5	142.7	.00	.00	.00	27.46	.00	26.71	.00	.4203	1939.1	1.29
3	1819.7	25.82	2780.3	133.5	2491.0	147.5	142.7	.00	.00	.00	27.55	.00	26.84	.00	.4237	1943.1	1.31
3	1819.8	25.97	2781.0	133.5	2491.8	147.5	142.8	.00	.00	.00	27.46	.00	26.82	.00	.4166	1950.3	1.29
3	1819.9	26.10	2781.8	133.5	2492.5	147.5	142.8	.00	.00	.00	27.21	.00	26.59	.00	.4097	1959.4	1.29
3	1820.0	26.26	2782.6	133.5	2493.2	147.5	142.8	.00	.00	.00	27.04	.00	26.39	.00	.4044	1969.7	1.29
3	1820.1	26.42	2783.3	133.5	2494.0	147.5	142.8	.00	.00	.00	27.09	.00	26.36	.00	.4025	1980.0	1.28
3	1820.2	26.57	2784.1	133.5	2494.7	147.5	142.8	.00	.00	.00	27.20	.00	26.49	.00	.4094	1990.0	1.30
3	1820.2	26.73	2784.8	133.5	2495.4	147.5	142.8	.00	.00	.00	27.17	.00	26.52	.00	.4028	2001.2	1.29
3	1820.3	26.87	2785.6	133.5	2496.2	147.5	142.8	.00	.00	.00	27.09	.00	26.45	.00	.3947	2011.9	1.29
3	1820.4	27.03	2786.3	133.5	2496.9	147.5	142.8	.00	.00	.00	27.19	.00	26.46	.00	.3909	2023.1	1.29
3	1820.5	27.18	2786.3	133.5	2496.9	147.5	142.8	.00	.00	.00	27.31	.00	26.59	.00	.3922	2033.7	1.28
3	1820.6	27.34	2787.1	133.5	2497.7	147.5	142.8	.00	.00	.00	27.25	.00	26.62	.00	.3881	2044.7	1.30
3	1820.7	27.49	2787.8	133.5	2498.4	147.5	142.9	.00	.00	.00	27.11	.00	26.51	.00	.3791	2055.9	1.28
3	1820.8	27.62	2788.6	133.5	2499.1	147.5	142.9	.00	.00	.00	26.97	.00	26.33	.00	.3728	2066.9	1.28
3	1820.9	27.77	2789.3	133.5	2499.9	147.5	142.9	.00	.00	.00	27.09	.00	26.38	.00	.3753	2077.5	1.30
3	1821.0	27.92	2790.1	133.5	2500.6	147.5	142.9	.00	.00	.00	27.21	.00	26.52	.00	.3769	2088.1	1.28
3	1821.1	28.06	2790.9	133.5	2501.3	147.5	142.9	.00	.00	.00	27.15	.00	26.54	.00	.3700	2098.4	1.25
3	1821.1	28.20	2791.6	133.5	2502.1	147.5	142.9	.00	.00	.00	27.04	.00	26.43	.00	.3622	2108.7	1.23
3	1821.2	28.33	2792.4	133.5	2502.8	147.5	142.9	.00	.00	.00	27.06	.00	26.36	.00	.3603	2119.4	1.24
3	1821.3	28.48	2793.1	133.5	2503.5	147.5	142.9	.00	.00	.00	27.21	.00	26.49	.00	.3637	2130.0	1.28
3	1821.4	28.63	2793.1	133.5	2503.5	147.5	142.9	.00	.00	.00	27.22	.00	26.59	.00	.3597	2141.6	1.28
3	1821.5	28.76	2793.9	133.5	2504.3	147.5	142.9	.00	.00	.00	27.01	.00	26.45	.00	.3516	2150.9	1.28
3	1821.6	28.90	2794.6	133.5	2505.0	147.5	142.9	.00	.00	.00	26.91	.00	26.31	.00	.3466	2160.9	1.30
3	1821.7	29.03	2795.4	133.5	2505.7	147.5	143.0	.00	.00	.00	27.02	.00	26.33	.00	.3500	2171.9	1.28
3	1821.8	29.17	2796.1	133.5	2506.5	147.5	143.0	.00	.00	.00	27.14	.00	26.46	.00	.3509	2181.6	1.28
3	1821.9	29.30	2796.9	133.5	2507.2	147.5	143.0	.00	.00	.00	27.04	.00	26.46	.00	.3444	2192.2	1.30
3	1822.0	29.44	2797.6	133.5	2507.9	147.5	143.0	.00	.00	.00	26.90	.00	26.33	.00	.3366	2201.9	1.28
3	1822.0	29.58	2798.4	133.5	2508.7	147.5	143.0	.00	.00	.00	26.94	.00	26.28	.00	.3353	2211.9	1.28
3	1822.1	29.70	2799.1	133.5	2509.4	147.5	143.0	.00	.00	.00	27.10	.00	26.39	.00	.3391	2221.6	1.30
3	1822.2	29.82	2799.9	133.5	2510.1	147.5	143.0	.00	.00	.00	27.08	.00	26.47	.00	.3359	2231.2	1.28
3	1822.3	29.96	2799.9	133.5	2510.1	147.5	143.0	.00	.00	.00	26.89	.00	26.35	.00	.3269	2241.2	1.28
3	1822.4	30.09	2800.6	133.5	2510.9	147.5	143.0	.00	.00	.00	26.81	.00	26.22	.00	.3219	2250.6	1.30
3	1822.5	30.22	2801.4	133.5	2511.6	147.5	143.0	.00	.00	.00	26.94	.00	26.27	.00	.3244	2260.9	1.28
3	1822.6	30.34	2802.1	133.5	2512.3	147.5	143.0	.00	.00	.00	27.05	.00	26.39	.00	.3269	2270.0	1.28
3	1822.7	30.48	2802.9	133.5	2513.1	147.5	143.0	.00	.00	.00	26.96	.00	26.39	.00	.3209	2279.7	1.30

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1822.8	30.61	2803.6	133.5	2513.8	147.5	143.1	.00	.00	.00	26.79	.00	26.22	.00	.3125	2289.7	1.28
3	1822.9	30.73	2804.4	133.5	2514.5	147.5	143.1	.00	.00	.00	26.77	.00	26.14	.00	.3119	2298.7	1.28
3	1822.9	30.85	2805.1	133.5	2515.3	147.5	143.1	.00	.00	.00	26.92	.00	26.24	.00	.3156	2307.8	1.29
3	1823.0	30.96	2805.8	133.5	2516.0	147.5	143.1	.00	.00	.00	26.92	.00	26.32	.00	.3144	2317.5	1.29
3	1823.1	31.09	2806.6	133.5	2516.7	147.5	143.1	.00	.00	.00	26.74	.00	26.20	.00	.3050	2326.2	1.28
3	1823.2	31.21	2806.6	133.5	2516.7	147.5	143.1	.00	.00	.00	26.64	.00	26.05	.00	.2997	2335.6	1.28
3	1823.3	31.34	2807.3	133.5	2517.4	147.5	143.1	.00	.00	.00	26.77	.00	26.11	.00	.3037	2344.4	1.29
3	1823.4	31.46	2808.1	133.5	2518.2	147.5	143.1	.00	.00	.00	26.87	.00	26.25	.00	.3059	2353.4	1.28
3	1823.5	31.57	2808.8	133.5	2518.9	147.5	143.1	.00	.00	.00	26.76	.00	26.21	.00	.3000	2362.2	1.28
3	1823.6	31.70	2809.6	133.5	2519.6	147.5	143.1	.00	.00	.00	26.61	.01	26.05	.00	.2922	2371.6	1.29
3	1823.7	31.81	2810.3	133.5	2520.4	147.5	143.1	.00	.00	.00	26.62	.00	25.99	.00	.2919	2380.6	1.29
3	1823.8	31.93	2811.0	133.5	2521.1	147.5	143.1	.00	.00	.00	26.76	.00	26.11	.00	.2928	2389.4	1.28
3	1823.8	32.04	2811.8	133.5	2521.8	147.5	143.1	.00	.00	.00	26.76	.00	26.18	.00	.2934	2398.1	1.28
3	1823.9	32.15	2812.5	133.5	2522.5	147.5	143.2	.00	.00	.00	26.55	.00	26.02	.00	.2856	2406.9	1.29
3	1824.0	32.27	2813.3	133.5	2523.2	147.5	143.2	.00	.00	.00	26.46	.00	25.89	.00	.2806	2415.3	1.28
3	1824.1	32.39	2813.3	133.5	2523.2	147.5	143.2	.00	.00	.00	26.56	.00	25.91	.00	.2844	2424.1	1.28
3	1824.2	32.50	2814.0	133.5	2524.0	147.5	143.2	.00	.00	.00	26.67	.00	26.06	.00	.2869	2431.9	1.29
3	1824.3	32.50	2814.7	133.5	2524.7	147.5	143.2	.00	.00	.00	26.67	.00	26.06	.00	.2869	2431.9	1.29
3	1824.4	32.71	2815.5	133.5	2525.4	147.5	143.2	.00	.00	.00	26.42	.00	25.89	.00	.2737	2449.4	1.28
3	1824.5	32.83	2816.2	133.5	2526.1	147.5	143.2	.00	.00	.00	26.44	.00	25.83	.00	.2722	2457.5	1.28
3	1824.6	32.94	2816.9	133.5	2526.9	147.5	143.2	.00	.00	.00	26.62	.00	25.97	.00	.2775	2466.2	1.29
3	1824.7	33.06	2817.7	133.5	2527.6	147.5	143.2	.00	.00	.00	26.64	.00	26.09	.00	.2766	2474.4	1.29
3	1824.7	33.17	2818.4	133.5	2528.3	147.5	143.2	.00	.00	.00	26.48	.00	25.99	.00	.2684	2482.5	1.28
3	1824.8	33.26	2819.1	133.5	2529.0	147.5	143.2	.00	.00	.00	26.45	.00	25.88	.00	.2641	2491.2	1.28
3	1824.9	33.38	2819.9	133.5	2529.7	147.5	143.2	.00	.00	.00	26.66	.00	26.02	.00	.2681	2499.1	1.29
3	1825.0	33.50	2819.9	133.5	2529.7	147.5	143.2	.00	.00	.00	26.82	.00	26.22	.00	.2697	2508.1	1.29
3	1825.1	33.60	2820.6	133.5	2530.5	147.5	143.2	.00	.00	.00	26.72	.00	26.22	.01	.2634	2515.9	1.28
3	1825.2	33.72	2821.4	133.5	2531.2	147.5	143.2	.00	.00	.00	26.56	.00	26.06	.00	.2566	2523.4	1.28
3	1825.3	33.82	2822.1	133.5	2531.9	147.5	143.3	.00	.00	.00	26.63	.00	26.02	.00	.2575	2532.2	1.29
3	1825.4	33.93	2822.9	133.5	2532.6	147.5	143.3	.00	.00	.00	26.81	.00	26.16	.00	.2616	2540.0	1.29
3	1825.5	34.04	2823.6	133.5	2533.4	147.5	143.3	.00	.00	.00	26.82	.00	26.27	.00	.2600	2548.7	1.28
3	1825.6	34.14	2824.3	133.5	2534.1	147.5	143.3	.00	.00	.00	26.66	.00	26.16	.00	.2528	2556.2	1.28
3	1825.6	34.24	2825.1	133.5	2534.8	147.5	143.3	.00	.00	.00	26.65	.00	26.07	.00	.2497	2564.4	1.29
3	1825.7	34.35	2825.8	133.5	2535.6	147.5	143.3	.00	.00	.00	26.82	.00	26.16	.00	.2544	2572.5	1.29
3	1825.8	34.45	2826.6	133.5	2536.3	147.5	143.3	.00	.00	.00	26.94	.00	26.34	.00	.2550	2580.0	1.28
3	1825.9	34.56	2826.6	133.5	2536.3	147.5	143.3	.00	.00	.00	26.81	.00	26.31	.00	.2491	2588.1	1.28
3	1826.0	34.66	2827.3	133.5	2537.0	147.5	143.3	.00	.00	.00	26.60	.00	26.11	.01	.2422	2595.6	1.28
3	1826.2	34.87	2828.8	133.5	2538.5	147.5	143.3	.00	.00	.00	26.77	.00	26.14	.00	.2487	2611.6	1.29
3	1826.3	34.97	2829.5	133.5	2539.2	147.5	143.3	.00	.00	.00	26.79	.00	26.22	.00	.2478	2618.7	1.28
3	1826.4	35.07	2830.3	133.5	2539.9	147.5	143.3	.00	.00	.00	26.64	.00	26.13	.00	.2403	2626.6	1.28
3	1826.5	35.17	2831.0	133.5	2540.7	147.5	143.3	.00	.00	.00	26.65	.00	26.06	.00	.2372	2633.7	1.28
3	1826.5	35.27	2831.8	133.5	2541.4	147.5	143.3	.00	.00	.00	26.86	.00	26.22	.00	.2412	2640.9	1.29
3	1826.6	35.36	2832.5	133.5	2542.1	147.5	143.3	.00	.00	.00	27.02	.00	26.44	.00	.2419	2649.1	1.29
3	1826.7	35.47	2833.3	133.5	2542.8	147.5	143.4	.00	.00	.00	26.87	.00	26.40	.00	.2337	2656.3	1.28
3	1826.8	35.54	2833.3	133.5	2542.8	147.5	143.4	.00	.00	.00	26.67	.00	26.18	.00	.2256	2665.0	1.28
3	1826.9	35.15	2834.0	133.5	2543.6	147.5	143.4	.00	.00	.00	25.89	.00	25.35	.01	.2072	2728.7	1.32
3	1827.0	34.63	2834.7	133.5	2544.3	147.5	143.4	.00	.00	.00	24.87	.00	24.16	.00	.1947	2912.8	1.43
3	1827.1	34.20	2835.3	133.5	2544.8	147.5	143.4	.00	.00	.00	21.00	.00	20.31	.00	.1806	3157.5	1.56
3	1827.2	33.95	2835.6	133.5	2544.8	147.5	143.4	.00	.00	.00	15.61	.00	15.07	.00	.1572	3389.4	1.69
3	1827.3	34.09	2836.0	133.5	2546.0	147.5	143.4	.00	.00	.00	14.15	.00	13.84	.00	.1394	3546.2	1.78

IDAC TAPE A6122R TEST NO, 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1827.4	34.57	2836.5	133.5	2546.0	147.5	143.4	.00	.00	.00	16.99	.00	16.76	.00	.1453	3546.2	1.78
3	1827.4	34.99	2837.1	133.5	2546.6	147.5	143.4	.00	.00	.00	20.62	.00	20.41	.00	.1603	3420.6	1.69
3	1827.5	35.36	2837.8	133.5	2547.3	147.5	143.4	.00	.00	.00	23.21	.00	23.00	.00	.1759	3246.2	1.58
3	1827.6	35.88	2838.6	133.5	2548.1	147.5	143.4	.00	.00	.00	25.07	.00	24.71	.00	.2075	3027.5	1.45
3	1827.7	36.55	2838.6	133.5	2548.1	147.5	143.4	.00	.00	.00	26.82	.00	26.28	.00	.2878	2720.3	1.29
3	1827.8	36.79	2839.4	133.5	2548.1	147.5	143.4	.00	.00	.00	27.19	.00	26.60	.00	.3281	2406.6	1.13
3	1827.9	36.77	2840.1	133.5	2548.1	147.5	143.4	.00	.00	.00	27.19	.00	26.62	.00	.3434	2230.6	1.04
3	1828.0	36.73	2840.9	133.5	2551.0	147.5	143.4	.00	.00	.00	27.07	.00	26.49	.00	.3497	2149.7	1.00
3	1828.1	36.74	2841.6	133.5	2551.0	147.5	143.4	.00	.00	.00	27.15	.00	26.47	.00	.3553	2114.4	.98
3	1828.2	36.78	2842.4	133.5	2551.8	147.5	143.4	.00	.00	.00	27.31	.00	26.61	.00	.3641	2100.9	.98
3	1828.3	36.84	2843.1	133.5	2552.5	147.5	143.5	.00	.00	.00	27.44	.00	26.79	.00	.3653	2095.9	.97
3	1828.3	36.92	2843.9	133.5	2553.3	147.5	143.5	.00	.00	.00	27.51	.00	26.89	.00	.3575	2096.2	.98
3	1828.4	37.00	2844.7	133.5	2554.0	147.5	143.5	.00	.00	.00	27.68	.00	27.01	.00	.3528	2098.7	.97
3	1828.5	37.10	2845.5	133.5	2554.8	147.5	143.5	.00	.00	.00	28.05	.00	27.33	.00	.3544	2102.8	.97
3	1828.6	37.20	2845.5	133.5	2554.8	147.5	143.5	.00	.00	.00	28.36	.00	27.69	.00	.3544	2106.9	.97
3	1828.7	37.31	2846.3	133.5	2555.6	147.5	143.5	.00	.00	.00	28.49	.00	27.87	.01	.3469	2111.6	.97
3	1828.8	37.42	2847.1	133.5	2556.3	147.5	143.5	.00	.00	.00	28.47	.00	27.85	.00	.3409	2116.9	.97
3	1828.9	37.51	2847.9	133.5	2556.3	147.5	143.5	.00	.00	.00	28.56	.00	27.84	.00	.3422	2122.2	.97
3	1829.0	37.62	2848.7	133.5	2558.7	147.5	143.5	.00	.00	.00	28.76	.00	28.03	.00	.3466	2127.2	.97
3	1829.1	37.72	2849.4	133.5	2558.7	147.5	143.5	.00	.00	.00	28.76	.00	28.10	.00	.3444	2132.8	.97
3	1829.2	37.83	2850.2	133.5	2559.5	147.5	143.5	.00	.00	.00	28.61	.00	28.00	.00	.3372	2138.1	.97
3	1829.2	37.91	2851.0	133.5	2560.2	147.5	143.6	.00	.00	.00	28.54	.00	27.87	.00	.3328	2142.8	.97
3	1829.3	38.01	2851.8	133.5	2561.0	147.5	143.6	.00	.00	.00	28.63	.00	27.89	.00	.3381	2148.4	.97
3	1829.4	38.11	2852.6	133.5	2561.8	147.5	143.6	.00	.00	.00	28.73	.00	28.02	.00	.3412	2153.7	.97
3	1829.5	38.21	2852.6	133.5	2561.8	147.5	143.6	.00	.00	.00	28.67	.00	28.02	.00	.3356	2159.4	.97
3	1829.6	38.29	2853.4	133.5	2562.6	147.5	143.6	.00	.00	.00	28.52	.00	27.90	.00	.3294	2163.7	.97
3	1829.7	38.40	2854.2	133.5	2563.3	147.5	143.6	.00	.00	.00	28.56	.00	27.84	.00	.3300	2169.4	.97
3	1829.8	38.47	2855.0	133.5	2564.1	147.5	143.6	.00	.00	.00	28.69	.00	27.97	.00	.3350	2174.4	.97
3	1829.9	38.58	2855.8	133.5	2564.1	147.5	143.6	.00	.00	.00	28.69	.00	28.03	.00	.3322	2179.4	.97
3	1830.0	38.67	2856.6	133.5	2566.4	147.5	143.6	.00	.00	.00	28.50	.00	27.89	.00	.3219	2184.7	.97
3	1830.1	38.77	2857.4	133.5	2566.4	147.5	143.6	.00	.00	.00	28.42	.00	27.77	.00	.3212	2190.0	.97
3	1830.1	38.86	2858.2	133.5	2567.2	147.5	143.6	.00	.00	.00	28.59	.00	27.84	.00	.3259	2195.0	.97
3	1830.2	38.95	2859.0	133.5	2568.0	147.5	143.6	.00	.00	.00	28.66	.00	27.97	.00	.3287	2200.0	.97
3	1830.3	39.04	2859.8	133.5	2568.8	147.5	143.7	.00	.00	.00	28.55	.00	27.92	.00	.3219	2205.0	.97
3	1830.4	39.12	2859.8	133.5	2568.8	147.5	143.7	.00	.00	.00	28.38	.00	27.76	.00	.3150	2210.6	.97
3	1830.5	39.22	2860.6	133.5	2569.5	147.5	143.7	.00	.00	.00	28.43	.00	27.75	.00	.3163	2215.0	.97
3	1830.6	39.31	2861.4	133.5	2570.3	147.5	143.7	.00	.00	.00	28.59	.00	27.87	.00	.3209	2220.3	.97
3	1830.7	39.39	2862.2	133.5	2571.1	147.5	143.7	.00	.00	.00	28.55	.00	27.89	.00	.3200	2225.6	.97
3	1830.8	39.49	2862.9	133.5	2571.9	147.5	143.7	.00	.00	.00	28.41	.00	27.80	.00	.3112	2230.6	.97
3	1830.9	39.58	2863.7	133.5	2572.6	147.5	143.7	.00	.00	.00	28.36	.00	27.69	.00	.3081	2235.0	.97
3	1831.0	39.66	2864.5	133.5	2573.4	147.5	143.7	.00	.00	.00	28.49	.00	27.78	.00	.3128	2240.0	.97
3	1831.0	39.76	2865.3	133.5	2574.2	147.5	143.7	.00	.00	.00	28.59	.00	27.92	.00	.3147	2245.3	.97
3	1831.1	39.84	2866.1	133.5	2575.0	147.5	143.7	.00	.00	.00	28.46	.00	27.86	.00	.3087	2250.6	.97
3	1831.2	39.92	2866.9	133.5	2575.7	147.5	143.7	.00	.00	.00	28.29	.01	27.67	.00	.3016	2255.0	.97
3	1831.3	40.01	2866.9	133.5	2575.7	147.5	143.7	.00	.00	.00	28.32	.00	27.62	.00	.3037	2260.3	.97
3	1831.4	40.10	2867.7	133.5	2576.5	147.5	143.7	.00	.00	.00	28.47	.00	27.76	.00	.3075	2265.3	.97
3	1831.5	40.20	2868.5	133.5	2577.3	147.5	143.8	.00	.00	.00	28.46	.00	27.84	.00	.3050	2269.4	.97
3	1831.6	40.28	2869.3	133.5	2578.0	147.5	143.8	.00	.00	.00	28.31	.00	27.72	.00	.2969	2275.0	.96
3	1831.7	40.37	2870.0	133.5	2578.8	147.5	143.8	.00	.00	.00	28.27	.00	27.61	.00	.2937	2279.7	.97
3	1831.8	40.45	2870.8	133.5	2579.6	147.5	143.8	.00	.00	.00	28.37	.00	27.67	.00	.2987	2284.4	.97

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1831.9	40.53	2871.6	133.5	2580.3	147.5	143.8	.00	.00	.00	28.44	.00	27.77	.00	.3009	2289.7	.97
3	1831.9	40.62	2872.4	133.5	2581.1	147.5	143.8	.00	.00	.00	28.33	.00	27.74	.00	.2944	2293.7	.97
3	1832.0	40.70	2873.2	133.5	2581.9	147.5	143.8	.00	.00	.00	28.19	.00	27.58	.00	.2891	2298.7	.97
3	1832.1	40.79	2874.0	133.5	2582.7	147.5	143.8	.00	.00	.00	28.27	.00	27.58	.00	.2909	2303.7	.97
3	1832.2	40.87	2874.0	133.5	2582.7	147.5	143.8	.00	.00	.00	28.42	.00	27.73	.00	.2944	2308.1	.97
3	1832.3	40.95	2874.8	133.5	2583.4	147.5	143.8	.00	.00	.00	28.39	.00	27.79	.00	.2912	2313.1	.97
3	1832.4	41.03	2875.5	133.5	2584.2	147.5	143.8	.00	.00	.00	28.22	.00	27.66	.00	.2834	2317.8	.96
3	1832.5	41.11	2876.3	133.5	2585.0	147.5	143.8	.00	.00	.00	28.17	.00	27.52	.00	.2813	2322.5	.97
3	1832.6	41.20	2877.1	133.5	2585.0	147.5	143.8	.00	.00	.00	28.29	.00	27.59	.00	.2862	2326.9	.97
3	1832.7	41.28	2877.9	133.5	2587.3	147.5	143.8	.00	.00	.00	28.37	.00	27.71	.00	.2872	2331.9	.96
3	1832.8	41.36	2878.7	133.5	2587.3	147.5	143.9	.00	.00	.00	28.26	.00	27.69	.00	.2822	2335.9	.97
3	1832.8	41.45	2879.5	133.5	2588.0	147.5	143.9	.00	.00	.00	28.14	.00	27.54	.00	.2766	2340.3	.97
3	1832.9	41.51	2880.3	133.5	2588.8	147.5	143.9	.00	.00	.00	28.19	.00	27.50	.00	.2791	2345.3	.97
3	1833.0	41.60	2881.0	133.5	2589.6	147.5	143.9	.00	.00	.00	28.33	.00	27.64	.00	.2825	2349.7	.97
3	1833.1	41.60	2881.0	133.5	2589.6	147.5	143.9	.00	.00	.00	28.33	.00	27.64	.00	.2825	2349.7	.97
3	1833.2	41.77	2881.8	133.5	2590.3	147.5	143.9	.00	.00	.00	28.11	.00	27.56	.00	.2725	2358.4	.97
3	1833.3	41.84	2882.6	133.5	2591.1	147.5	143.9	.00	.00	.00	28.07	.00	27.44	.00	.2712	2363.1	.97
3	1833.4	41.91	2883.4	133.5	2591.9	147.5	143.9	.00	.00	.00	28.22	.00	27.52	.00	.2756	2367.5	.97
3	1833.5	42.00	2884.2	133.5	2592.6	147.5	143.9	.00	.00	.00	28.29	.00	27.65	.00	.2769	2372.2	.97
3	1833.6	42.08	2884.9	133.5	2593.4	147.5	143.9	.00	.00	.00	28.15	.00	27.60	.00	.2694	2377.2	.97
3	1833.7	42.16	2885.7	133.5	2594.2	147.5	143.9	.00	.00	.00	28.02	.00	27.44	.00	.2647	2380.9	.97
3	1833.7	42.23	2886.5	133.5	2594.9	147.5	143.9	.00	.00	.00	28.08	.00	27.41	.00	.2675	2385.6	.97
3	1833.8	42.30	2887.3	133.5	2595.7	147.5	143.9	.00	.00	.00	28.23	.00	27.54	.00	.2712	2389.7	.97
3	1833.9	42.39	2888.1	133.5	2596.4	147.5	143.9	.00	.00	.00	28.21	.00	27.61	.00	.2687	2394.1	.97
3	1834.0	42.47	2888.1	133.5	2596.4	147.5	143.9	.00	.00	.00	28.05	.00	27.48	.00	.2600	2399.1	.96
3	1834.1	42.54	2888.9	133.5	2597.2	147.5	144.0	.00	.00	.00	27.99	.00	27.38	.00	.2594	2402.5	.97
3	1834.2	42.62	2889.6	133.5	2598.0	147.5	144.0	.00	.00	.00	28.14	.00	27.44	.00	.2641	2407.2	.97
3	1834.3	42.69	2890.4	133.5	2598.7	147.5	144.0	.00	.00	.00	28.21	.00	27.56	.00	.2659	2411.9	.97
3	1834.4	42.77	2891.2	133.5	2599.5	147.5	144.0	.00	.00	.00	28.07	.00	27.51	.00	.2594	2415.6	.97
3	1834.5	42.85	2892.0	133.5	2600.3	147.5	144.0	.00	.00	.00	27.96	.00	27.37	.00	.2547	2419.7	.97
3	1834.6	42.92	2892.8	133.5	2601.0	147.5	144.0	.00	.00	.00	28.02	.00	27.36	.00	.2584	2424.4	.97
3	1834.6	43.00	2893.5	133.5	2601.8	147.5	144.0	.00	.00	.00	28.14	.00	27.47	.00	.2616	2428.4	.97
3	1834.7	43.07	2894.3	133.5	2602.6	147.5	144.0	.00	.00	.00	28.09	.00	27.49	.00	.2597	2432.8	.97
3	1834.8	43.14	2895.1	133.5	2603.3	147.5	144.0	.00	.00	.00	27.92	.00	27.37	.00	.2519	2436.9	.97
3	1834.9	43.22	2895.1	133.5	2603.3	147.5	144.0	.00	.00	.00	27.93	.00	27.29	.00	.2509	2440.9	.97
3	1835.0	43.30	2895.9	133.5	2604.1	147.5	144.0	.00	.00	.00	28.07	.00	27.41	.00	.2553	2445.6	.97
3	1835.2	43.44	2897.4	133.5	2605.6	147.5	144.0	.00	.00	.00	27.99	.00	27.44	.00	.2503	2453.7	.97
3	1835.3	43.51	2898.2	133.5	2606.4	147.5	144.0	.00	.00	.00	27.89	.00	27.27	.00	.2453	2457.5	.97
3	1835.4	43.58	2899.0	133.5	2607.1	147.5	144.0	.00	.00	.00	27.96	.00	27.30	.00	.2491	2462.2	.97
3	1835.5	43.67	2899.8	133.5	2607.9	147.5	144.1	.00	.00	.00	28.09	.00	27.45	.00	.2525	2465.6	.97
3	1835.5	43.73	2900.5	133.5	2608.6	147.5	144.1	.00	.00	.00	28.02	.00	27.46	.00	.2500	2470.0	.97
3	1835.6	43.79	2901.3	133.5	2609.4	147.5	144.1	.00	.00	.00	27.87	.00	27.31	.00	.2428	2473.7	.97
3	1835.7	43.87	2902.1	133.5	2610.2	147.5	144.1	.00	.00	.00	27.88	.00	27.24	.00	.2428	2478.1	.97
3	1835.8	43.94	2902.1	133.5	2610.2	147.5	144.1	.00	.00	.00	28.02	.00	27.34	.00	.2475	2481.9	.97
3	1835.9	44.02	2902.9	133.5	2610.9	147.5	144.1	.00	.00	.00	28.06	.00	27.46	.00	.2481	2486.2	.97
3	1836.0	44.09	2903.6	133.5	2611.7	147.5	144.1	.00	.00	.00	27.91	.00	27.36	.00	.2412	2490.0	.97
3	1836.1	44.15	2904.4	133.5	2612.4	147.5	144.1	.00	.00	.00	27.80	.00	27.20	.00	.2375	2494.4	.97
3	1836.2	44.24	2905.2	133.5	2613.2	147.5	144.1	.00	.00	.00	27.91	.00	27.25	.00	.2419	2498.1	.97
3	1836.3	44.29	2906.0	133.5	2614.0	147.5	144.1	.00	.00	.00	28.06	.00	27.39	.00	.2447	2502.2	.97
3	1836.4	44.36	2906.7	133.5	2614.7	147.5	144.1	.00	.00	.00	27.96	.00	27.41	.00	.2409	2505.6	.97

IDAC TAPE A6122R TEST NO. 6 DAY 160 09146:18 SITE NO.=4.0 IDAC SITE# 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1836.4	44.43	2907.5	133.5	2615.5	147.5	144.1	.00	.00	.00	27.79	.00	27.22	.00	.2350	2510.0	.97
3	1836.5	44.49	2908.3	133.5	2616.2	147.5	144.1	.00	.00	.00	27.81	.00	27.18	.00	.2363	2514.1	.97
3	1836.6	44.57	2909.1	133.5	2617.0	147.5	144.1	.00	.00	.00	27.97	.00	27.31	.00	.2400	2517.5	.97
3	1836.7	44.64	2909.1	133.5	2617.0	147.5	144.1	.00	.00	.00	28.02	.00	27.42	.00	.2409	2521.9	.97
3	1836.8	44.70	2909.8	133.5	2617.7	147.5	144.1	.00	.00	.00	27.83	.00	27.31	.00	.2341	2525.3	.97
3	1836.9	44.77	2910.6	133.5	2618.5	147.5	144.2	.00	.00	.00	27.74	.00	27.16	.00	.2306	2529.1	.97
3	1837.0	44.83	2911.4	133.5	2619.3	147.5	144.2	.00	.00	.00	27.86	.00	27.20	.00	.2353	2533.7	.97
3	1837.1	44.92	2912.1	133.5	2620.0	147.5	144.2	.00	.00	.00	27.99	.00	27.35	.00	.2384	2536.9	.97
3	1837.2	44.97	2912.1	133.5	2620.8	147.5	144.2	.00	.00	.00	27.79	.00	27.22	.00	.2363	2541.6	.97
3	1837.3	45.04	2913.7	133.5	2621.5	147.5	144.2	.00	.00	.00	27.30	.00	26.76	.00	.2322	2544.1	.97
3	1837.3	45.10	2914.4	133.5	2622.2	147.5	144.2	.00	.00	.00	26.98	.00	26.34	.00	.2366	2547.5	.97
3	1837.4	45.14	2915.1	133.5	2623.0	147.5	144.2	.00	.00	.00	26.77	.00	26.09	.00	.2431	2551.2	.97
3	1837.5	45.20	2915.9	133.5	2623.7	147.5	144.2	.00	.00	.00	26.37	.00	25.80	.00	.2447	2553.1	.97
3	1837.6	45.26	2915.9	133.5	2623.7	147.5	144.2	.00	.00	.00	25.76	.00	25.25	.00	.2391	2556.2	.97
3	1837.7	45.30	2916.6	133.5	2624.4	147.5	144.2	.00	.00	.00	25.32	.00	24.77	.00	.2378	2558.4	.97
3	1837.8	45.35	2917.3	133.5	2625.0	147.5	144.2	.00	.00	.00	24.91	.00	24.26	.00	.2484	2560.9	.97
3	1837.9	45.35	2917.9	133.5	2625.7	147.5	144.2	.00	.00	.00	23.22	.00	22.56	.00	.2641	2562.5	.97
3	1838.0	45.33	2918.4	133.5	2626.2	147.5	144.2	.00	.00	.00	19.75	.01	19.14	.00	.2703	2560.0	.96
3	1838.1	45.22	2918.8	133.5	2626.6	147.5	144.2	.00	.00	.00	15.84	.00	15.22	.00	.2772	2553.1	.96
3	1838.2	45.05	2919.1	133.5	2626.8	147.5	144.2	.00	.00	.00	12.71	.00	12.06	.00	.2912	2544.4	.96
3	1838.2	44.87	2919.3	133.5	2627.1	147.5	144.2	.00	.00	.00	10.54	.00	9.94	.00	.3041	2535.3	.96
3	1838.3	44.68	2919.5	133.5	2627.3	147.5	144.3	.00	.00	.00	8.86	.00	8.44	.00	.3075	2527.5	.96
3	1838.4	44.54	2919.7	133.5	2627.4	147.5	144.3	.00	.00	.00	7.57	.00	7.24	.00	.3041	2520.6	.97
3	1838.5	44.43	2919.7	133.5	2627.4	147.5	144.3	.00	.00	.00	6.89	.00	6.50	.00	.3062	2515.3	.97
3	1838.6	44.33	2919.9	133.5	2627.6	147.5	144.3	.00	.00	.00	6.71	.00	6.29	.00	.3134	2510.3	.96
3	1838.7	44.27	2920.1	133.5	2627.8	147.5	144.3	.00	.00	.00	6.89	.00	6.57	.00	.3131	2507.5	.97
3	1838.8	44.25	2920.3	133.5	2628.0	147.5	144.3	.00	.00	.00	7.53	.00	7.37	.00	.3006	2507.5	.97
3	1838.9	44.31	2920.5	133.5	2628.2	147.5	144.3	.00	.00	.00	8.56	.00	8.37	.00	.2862	2510.9	.97
3	1839.0	44.40	2920.8	133.5	2628.5	147.5	144.3	.00	.00	.00	9.90	.00	9.63	.00	.2819	2516.6	.97
3	1839.1	44.49	2921.2	133.5	2628.8	147.5	144.3	.00	.00	.00	11.28	.00	11.02	.00	.2803	2521.2	.97
3	1839.1	44.58	2921.5	133.5	2629.2	147.5	144.3	.00	.00	.00	12.29	.00	12.11	.00	.2759	2526.2	.97
3	1839.2	44.66	2921.9	133.5	2629.5	147.5	144.3	.00	.00	.00	13.02	.00	12.83	.00	.2647	2529.4	.97
3	1839.3	44.73	2922.3	133.5	2629.9	147.5	144.3	.00	.00	.00	13.79	.00	13.51	.00	.2603	2533.4	.97
3	1839.4	44.82	2922.3	133.5	2629.9	147.5	144.3	.00	.00	.00	14.71	.00	14.37	.00	.2625	2537.8	.97
3	1839.5	44.90	2922.7	133.5	2630.4	147.5	144.3	.00	.00	.00	15.58	.00	15.31	.00	.2625	2541.6	.97
3	1839.6	44.98	2923.2	133.5	2630.8	147.5	144.4	.00	.00	.00	16.12	.00	15.92	.00	.2553	2545.3	.97
3	1839.7	45.04	2923.7	133.5	2631.3	147.5	144.4	.00	.00	.00	16.54	.00	16.25	.00	.2491	2549.7	.97
3	1839.8	45.11	2924.1	133.5	2631.7	147.5	144.4	.00	.00	.00	17.06	.00	16.67	.00	.2503	2553.1	.97
3	1839.9	45.18	2924.6	133.5	2632.2	147.5	144.4	.00	.00	.00	17.53	.00	17.14	.00	.2550	2557.2	.97
3	1840.0	45.24	2925.1	133.5	2632.7	147.5	144.4	.00	.00	.00	17.65	.00	17.36	.00	.2544	2559.4	.97
3	1840.0	45.29	2925.6	133.5	2633.2	147.5	144.4	.00	.00	.00	17.57	.00	17.29	.00	.2472	2561.9	.97
3	1840.1	45.34	2926.1	133.5	2633.7	147.5	144.4	.00	.00	.00	17.64	.00	17.24	.00	.2466	2565.0	.97
3	1840.2	45.38	2926.6	133.5	2634.2	147.5	144.4	.00	.00	.00	17.86	.00	17.41	.00	.2525	2566.9	.97
3	1840.3	45.42	2926.6	133.5	2634.2	147.5	144.4	.00	.00	.00	17.95	.00	17.59	.00	.2547	2569.7	.97
3	1840.4	45.45	2927.1	133.5	2634.6	147.5	144.4	.00	.00	.00	17.75	.00	17.48	.00	.2487	2571.2	.97
3	1840.5	45.49	2927.6	133.5	2635.1	147.5	144.4	.00	.00	.00	17.54	.00	17.19	.00	.2453	2573.1	.97
3	1840.6	45.52	2928.1	133.5	2635.6	147.5	144.4	.00	.00	.00	17.42	.00	16.96	.00	.2516	2575.0	.96
3	1840.7	45.54	2928.5	133.5	2636.1	147.5	144.4	.00	.00	.00	17.22	.00	16.77	.00	.2578	2576.2	.96
3	1840.8	45.56	2929.0	133.5	2636.5	147.5	144.4	.00	.00	.00	16.67	.00	16.35	.00	.2569	2576.9	.97
3	1840.9	45.57	2929.4	133.5	2636.9	147.5	144.4	.00	.00	.00	15.96	.00	15.64	.00	.2522	2576.9	.97

PART 3

ACCELERATION

IDAC TAPE A6122R IDAC DAY 9160

RUN	TIME	VEL	BCHGV	BV	MAV	SFV	BCHGA	BA	MAA	SFA	TBAT1	TBAT2	TBAT3	TBAT4	TBAT5	TCONT	TEM1	TEM2	TEM3	ABV
	SEC	MPH	VOLT	VOLT	VOLT	VOLT	AMP	AMP	AMP	AMP	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	VOLT
3	1809.2	.00	109.3	110.2	110.1	106.9	-.5	22.6	16.2	8.37	80.3	78.4	79.0	78.8	79.4	109.0	112.1	123.4	196.3	12.43
3	1809.3	.00	108.8	109.8	109.5	106.9	-.5	30.9	24.4	8.34	80.4	78.4	79.1	78.8	79.3	109.0	112.2	123.3	196.3	12.44
3	1809.4	.00	108.5	109.4	109.2	106.9	-.5	37.7	31.2	8.31	80.4	78.3	79.0	78.7	79.3	109.0	112.2	123.3	196.3	12.43
3	1809.4	.00	107.9	109.2	108.8	106.9	-.5	49.1	43.9	8.29	80.4	78.4	79.0	78.7	79.3	109.1	112.3	123.3	196.3	12.44
3	1809.5	.00	107.2	108.4	107.9	106.9	-.5	63.5	58.6	8.24	80.3	78.4	79.1	78.7	79.3	109.0	112.3	123.5	196.3	12.43
3	1809.6	.00	106.6	107.5	107.1	106.9	-.5	73.3	67.2	8.18	80.4	78.5	79.1	78.8	79.3	109.0	112.2	123.5	196.3	12.43
3	1809.7	.90	106.4	107.1	106.7	106.8	-.5	77.5	70.1	8.13	80.4	78.5	79.1	78.7	79.4	109.1	112.3	123.4	196.3	12.44
3	1809.8	1.09	106.3	106.9	106.6	106.9	-.5	78.9	70.9	8.11	80.3	78.3	79.0	78.8	79.4	109.1	112.2	123.4	196.3	12.44
3	1809.9	1.32	106.2	106.8	106.5	106.9	-.5	80.2	72.3	8.11	80.3	78.5	79.1	78.8	79.4	109.1	112.3	123.4	196.3	12.44
3	1810.0	1.56	106.0	106.8	106.4	106.8	-.5	83.7	76.6	8.10	80.4	78.5	79.0	78.7	79.2	109.0	112.3	123.6	196.3	12.43
3	1810.1	1.84	105.6	106.5	106.1	106.9	-.5	90.6	84.3	8.06	80.3	78.4	79.1	78.8	79.4	109.1	112.2	123.4	196.2	12.43
3	1810.2	2.12	105.2	106.0	105.5	106.9	-.5	97.6	91.1	8.05	80.3	78.5	79.1	78.8	79.4	109.0	112.2	123.4	196.2	12.43
3	1810.3	2.43	105.0	105.7	105.2	106.9	-.5	101.6	94.3	8.02	80.4	78.4	78.9	78.7	79.2	109.1	112.2	123.3	196.2	12.43
3	1810.3	2.74	104.8	105.5	105.1	106.9	-.5	104.0	96.6	8.00	80.3	78.3	79.0	78.8	79.4	109.1	112.3	123.3	196.2	12.44
3	1810.4	3.09	104.6	105.4	104.9	106.9	-.5	108.2	101.3	7.99	80.3	78.5	79.1	78.7	79.3	109.0	112.3	123.4	196.2	12.43
3	1810.5	3.50	104.2	105.1	104.5	106.9	-.5	115.7	109.6	7.97	80.3	78.4	78.9	78.8	79.3	109.1	112.2	123.4	196.2	12.44
3	1810.6	3.89	103.7	104.6	104.0	106.9	-.5	123.6	117.4	7.94	80.4	78.5	79.1	78.7	79.4	109.0	112.2	123.3	196.2	12.44
3	1810.7	4.34	103.4	104.2	103.6	106.9	-.5	129.5	122.7	7.90	80.4	78.3	78.9	78.7	79.4	109.2	112.2	123.3	196.1	12.44
3	1810.8	4.80	103.1	103.9	103.3	106.9	-.5	134.4	127.6	7.88	80.3	78.4	79.1	78.8	79.4	109.1	112.3	123.4	196.1	12.44
3	1810.9	5.29	102.8	103.6	103.0	106.9	-.5	139.8	133.1	7.86	80.4	78.5	79.0	78.7	79.3	109.1	112.3	123.4	196.1	12.44
3	1811.0	5.82	102.5	103.3	102.7	106.9	-.5	145.1	138.6	7.83	80.3	78.4	79.0	78.8	79.4	109.1	112.2	123.4	196.1	12.44
3	1811.1	6.51	102.1	103.2	102.3	106.9	-.4	154.2	148.8	7.82	80.3	78.4	79.0	78.8	79.3	109.1	112.2	123.3	196.1	12.43
3	1811.2	7.14	101.3	102.4	101.5	106.9	-.5	167.2	162.1	7.79	80.4	78.5	79.0	78.7	79.3	109.1	112.2	123.2	196.1	12.44
3	1811.2	7.56	101.1	101.6	100.9	106.8	-.5	170.8	163.2	7.70	80.4	78.4	78.9	78.8	79.4	109.1	112.3	123.4	196.1	12.44
3	1811.3	7.85	101.4	101.4	101.0	106.9	-.5	163.3	153.2	7.65	80.4	78.4	79.1	78.8	79.3	109.0	112.3	123.3	196.0	12.44
3	1811.4	8.05	102.2	101.8	101.6	106.9	-.5	147.9	136.1	7.65	80.4	78.5	79.1	78.7	79.3	109.1	112.3	123.4	196.0	12.43
3	1811.5	8.21	103.0	102.6	102.5	106.9	-.5	130.1	118.0	7.70	80.4	78.4	79.1	78.9	79.3	109.1	112.2	123.3	196.0	12.44
3	1811.6	8.32	103.8	103.5	103.4	106.9	-.5	114.1	102.2	7.78	80.3	78.4	79.0	78.9	79.4	109.1	112.1	123.3	196.0	12.44
3	1811.7	8.41	104.5	104.3	104.3	106.9	-.5	99.2	87.5	7.85	80.4	78.4	79.1	78.8	79.3	109.2	112.3	123.5	196.0	12.44
3	1811.8	8.46	105.1	105.1	105.1	106.9	-.5	87.9	77.8	7.04	80.4	78.4	79.1	78.7	79.3	109.1	112.3	123.4	196.0	12.44
3	1811.9	8.63	105.1	105.7	105.5	106.9	-.5	87.7	81.6	6.07	80.4	78.4	79.1	78.7	79.4	109.1	112.3	123.3	195.9	12.44
3	1812.0	8.85	104.6	105.7	105.2	106.9	-.4	95.7	92.4	5.60	80.4	78.4	79.1	78.9	79.4	109.1	112.2	123.3	195.8	12.44
3	1812.1	9.14	104.0	105.3	104.6	106.9	-.4	107.7	106.5	5.19	80.3	78.3	79.0	78.8	79.4	109.1	112.2	123.2	195.7	12.44
3	1812.1	9.44	103.3	104.6	103.9	106.9	-.4	122.2	122.2	4.50	80.3	78.5	79.0	78.8	79.3	109.1	112.3	123.4	195.6	12.44
3	1812.2	9.78	102.5	103.8	103.0	106.9	-.4	138.8	139.7	3.80	80.4	78.5	79.1	78.7	79.2	109.1	112.3	123.4	195.5	12.44
3	1812.3	10.15	101.5	102.9	102.0	106.9	-.4	157.2	158.6	3.41	80.4	78.5	79.0	78.8	79.3	109.1	112.2	123.3	195.4	12.44
3	1812.4	10.53	100.6	102.1	101.0	106.9	-.4	175.4	177.0	3.44	80.4	78.5	79.0	78.8	79.4	109.2	112.3	123.3	195.3	12.44
3	1812.5	10.90	99.8	101.1	100.0	106.9	-.4	190.8	191.9	3.35	80.3	78.4	79.0	78.8	79.4	109.1	112.3	123.2	195.2	12.43
3	1812.6	11.25	99.3	100.3	99.3	107.0	-.5	201.7	201.9	2.94	80.4	78.5	79.1	78.8	79.3	109.2	112.2	123.3	195.2	12.44
3	1812.7	11.58	98.9	99.7	98.7	106.9	-.5	208.9	208.2	2.55	80.4	78.5	79.0	78.7	79.3	109.1	112.3	123.4	195.2	12.44
3	1812.8	11.92	98.7	99.3	98.4	107.0	-.5	212.6	211.2	2.56	80.4	78.4	79.1	78.8	79.4	109.2	112.2	123.3	195.2	12.44
3	1812.9	12.20	98.6	99.2	98.3	107.0	-.5	213.8	212.1	2.67	80.3	78.5	79.1	78.8	79.4	109.1	112.2	123.2	195.2	12.44
3	1813.0	12.47	98.6	99.2	98.3	106.9	-.5	213.8	212.1	2.54	80.4	78.4	79.0	78.7	79.3	109.1	112.2	123.1	195.3	12.44
3	1813.0	12.73	98.5	99.1	98.2	106.9	-.5	214.7	213.0	2.15	80.4	78.4	79.0	78.8	79.5	109.2	112.2	123.3	195.3	12.44
3	1813.1	12.99	98.4	98.9	98.0	106.9	-.5	216.1	214.5	2.01	80.4	78.4	79.0	78.7	79.4	109.2	112.3	123.3	195.3	12.44
3	1813.2	13.24	98.3	98.9	98.0	107.0	-.5	217.3	215.8	2.18	80.4	78.5	79.1	78.8	79.3	109.1	112.2	123.3	195.3	12.43
3	1813.3	13.50	98.2	98.9	97.9	107.0	-.5	218.6	217.2	2.26	80.4	78.5	79.1	78.7	79.4	109.2	112.3	123.3	195.3	12.43
3	1813.4	13.75	98.2	98.7	97.8	107.0	-.5	219.1	217.7	2.03	80.3	78.4	79.1	78.8	79.4	109.3	112.2	123.2	195.2	12.44
3	1813.5	13.98	98.1	98.6	97.7	106.9	-.5	219.5	217.9	1.71	80.3	78.4	78.9	78.9	79.4	109.2	112.2	123.2	195.2	12.44
3	1813.6	14.21	98.1	98.6	97.7	107.0	-.5	220.5	219.1	1.78	80.3	78.5	79.1	78.7	79.3	109.1	112.2	123.2	195.2	12.44

IDAC TAPE AA122R IDAC DAY 9160

RUN	TIME SEC	VEL MPH	RCHGV VOLT	BV VOLT	MAV VOLT	MBV VOLT	RCHGA AMP	BA AMP	AAA AMP	MBA AMP	TBAT1 DEGF	TBAT2 DEGF	TBAT3 DEGF	TBAT4 DEGF	TBAT5 DEGF	TCONT DEGF	TEM1 DEGF	TEM2 DEGF	TEM3 DEGF	ABV VOLT
3	1813.7	14.44	97.9	98.6	97.7	107.0	-.5	222.5	221.5	1.89	80.4	78.6	79.1	78.8	79.3	109.1	112.2	123.3	195.2	12.43
3	1813.8	14.68	97.7	98.6	97.6	107.0	-.4	228.4	228.7	1.82	80.4	78.5	79.1	78.8	79.4	109.2	112.1	123.3	195.1	12.44
3	1813.9	14.94	97.1	98.2	97.0	107.0	-.4	240.2	241.7	1.58	80.3	78.5	79.0	78.7	79.3	109.2	112.1	123.1	195.1	12.44
3	1813.9	15.22	96.5	97.4	96.2	107.0	-.5	251.7	252.4	1.45	80.4	78.3	79.1	78.9	79.5	109.2	112.3	123.2	195.1	12.44
3	1814.0	15.45	96.2	96.8	95.7	107.0	-.5	257.5	257.0	1.57	80.3	78.4	79.1	78.8	79.4	109.1	112.3	123.2	195.0	12.44
3	1814.1	15.71	96.1	96.6	95.5	107.0	-.5	259.8	258.7	1.68	80.3	78.5	79.1	78.8	79.4	109.1	112.3	123.3	195.1	12.44
3	1814.2	15.94	96.1	96.5	95.5	106.9	-.5	260.1	258.7	1.58	80.4	78.5	79.1	78.7	79.3	109.1	112.3	123.2	195.1	12.44
3	1814.3	16.16	96.0	96.5	95.4	107.0	-.5	260.3	259.0	1.36	80.4	78.4	79.0	78.7	79.4	109.2	112.1	123.1	195.0	12.44
3	1814.4	16.38	96.0	96.5	95.4	106.9	-.5	259.9	258.5	1.39	80.4	78.4	79.0	78.8	79.4	109.2	112.2	123.2	195.0	12.44
3	1814.5	16.22	96.1	96.5	95.5	107.0	-.5	258.6	257.1	1.35	80.3	78.4	79.1	78.8	79.4	109.1	112.2	123.2	195.0	12.44
3	1814.6	15.67	96.3	96.4	95.5	107.0	-.5	252.8	249.6	1.43	80.4	78.5	79.1	78.8	79.3	109.1	112.2	123.1	195.0	12.43
3	1814.7	15.29	97.8	95.4	95.4	107.0	-.6	219.1	206.4	1.40	80.5	78.5	79.0	78.7	79.3	109.1	112.2	123.2	195.0	12.44
3	1814.8	15.10	102.9	97.3	99.2	107.0	-.7	118.9	92.4	.80	80.4	78.3	78.9	78.7	79.4	109.2	112.1	123.1	194.9	12.44
3	1814.8	15.04	108.0	104.7	106.6	107.0	-.6	21.8	.1	.78	80.3	78.4	79.0	78.8	79.4	109.2	112.2	123.2	194.9	12.44
3	1814.9	15.25	109.2	109.8	110.2	107.0	-.4	-4.7	-9.7	1.33	80.4	78.5	79.1	78.8	79.2	109.2	112.2	123.2	194.8	12.43
3	1815.0	15.77	107.6	110.4	109.6	107.0	-.4	25.9	33.5	1.64	80.4	78.5	79.1	78.8	79.4	109.2	112.2	123.2	194.8	12.44
3	1815.1	16.11	105.0	108.1	106.8	107.0	-.4	76.8	87.1	1.57	80.4	78.5	79.1	78.8	79.4	109.1	112.2	123.1	194.7	12.44
3	1815.2	16.44	102.9	105.4	104.0	107.0	-.4	120.0	128.1	1.82	80.4	78.4	79.0	78.7	79.4	109.2	112.1	123.1	194.7	12.44
3	1815.3	16.96	101.1	103.5	102.2	106.9	-.4	155.4	162.3	2.27	80.3	78.4	79.0	78.8	79.4	109.3	112.2	123.2	194.7	12.44
3	1815.4	17.84	99.1	102.0	100.4	107.0	-.4	196.7	205.3	2.59	80.3	78.4	79.1	78.8	79.3	109.1	112.1	123.3	194.7	12.43
3	1815.5	17.84	99.1	102.0	100.4	107.0	-.4	196.7	205.3	2.59	80.3	78.4	79.1	78.8	79.3	109.1	112.1	123.3	194.7	12.43
3	1815.6	19.03	95.6	96.8	95.3	106.9	-.5	268.2	269.9	3.01	80.5	78.5	79.0	78.8	79.4	109.2	112.1	123.1	194.8	12.43
3	1815.7	19.07	95.5	96.1	94.8	106.9	-.5	273.2	271.7	3.21	80.3	78.5	79.0	78.8	79.4	109.3	112.2	123.1	194.9	12.44
3	1815.7	19.15	95.4	95.9	94.8	106.9	-.5	273.5	271.4	3.26	80.3	78.4	79.1	78.9	79.4	109.2	112.2	123.2	194.9	12.44
3	1815.8	19.28	95.4	95.8	94.7	106.9	-.5	273.4	270.9	2.97	80.4	78.5	79.0	78.8	79.3	109.2	112.2	123.2	194.9	12.44
3	1815.9	19.44	95.4	95.7	94.7	106.9	-.5	272.7	270.0	2.85	80.4	78.5	79.1	78.8	79.4	109.2	112.2	123.2	194.8	12.44
3	1816.0	19.62	95.4	95.8	94.7	106.9	-.5	271.7	269.2	3.10	80.4	78.4	79.1	78.8	79.4	109.2	112.1	123.2	194.8	12.44
3	1816.1	19.80	95.4	95.9	94.8	106.9	-.5	270.6	268.2	3.20	80.3	78.4	79.0	78.8	79.4	109.2	112.1	123.1	194.8	12.44
3	1816.2	19.99	95.5	95.9	94.8	106.9	-.5	269.5	267.1	2.98	80.3	78.4	79.0	78.8	79.4	109.2	112.1	123.1	194.8	12.44
3	1816.3	20.17	95.5	95.9	94.8	106.9	-.5	268.5	265.9	2.69	80.3	78.5	79.0	78.8	79.3	109.2	112.1	123.2	194.7	12.44
3	1816.4	20.37	95.5	95.9	94.9	106.9	-.5	267.7	265.2	2.77	80.4	78.5	79.1	78.8	79.3	109.2	112.2	123.1	194.7	12.44
3	1816.5	20.56	95.5	96.0	94.9	106.9	-.5	266.8	264.4	2.98	80.4	78.5	79.0	78.8	79.3	109.2	112.1	123.2	194.7	12.43
3	1816.6	20.75	95.6	96.1	95.0	106.9	-.5	265.5	263.2	2.95	80.4	78.4	79.0	78.8	79.4	109.3	112.2	123.0	194.7	12.44
3	1816.6	20.93	95.6	96.0	95.0	107.0	-.5	264.4	262.0	2.61	80.4	78.4	79.1	78.8	79.5	109.2	112.1	123.2	194.7	12.44
3	1816.7	21.10	95.7	96.0	95.0	107.0	-.5	263.2	260.6	2.49	80.4	78.5	79.1	78.8	79.3	109.2	112.2	123.2	194.7	12.43
3	1816.8	21.29	95.7	96.2	95.1	107.0	-.5	262.3	260.0	2.72	80.5	78.5	79.1	78.8	79.3	109.2	112.1	123.2	194.6	12.43
3	1816.9	21.46	95.8	96.3	95.2	106.9	-.5	261.0	258.7	2.83	80.5	78.5	79.1	78.8	79.4	109.3	112.1	123.2	194.6	12.43
3	1817.0	21.64	95.8	96.3	95.2	106.9	-.5	260.1	258.1	2.63	80.3	78.4	79.0	78.7	79.4	109.3	112.1	123.1	194.6	12.43
3	1817.2	21.99	95.8	96.2	95.2	106.9	-.5	260.5	258.7	2.41	80.3	78.5	79.1	78.8	79.4	109.2	112.0	123.2	194.6	12.44
3	1817.3	22.17	95.7	96.3	95.2	107.0	-.5	261.6	260.0	2.64	80.5	78.5	79.1	78.8	79.4	109.2	112.1	123.2	194.6	12.43
3	1817.4	22.35	95.6	96.2	95.1	106.9	-.5	262.6	261.0	2.63	80.4	78.5	79.1	78.8	79.4	109.2	112.1	123.2	194.5	12.44
3	1817.5	22.52	95.6	96.1	95.0	106.9	-.5	262.9	261.2	2.30	80.4	78.4	79.0	78.7	79.5	109.3	112.0	123.0	194.5	12.44
3	1817.5	22.70	95.6	96.1	95.0	107.0	-.5	263.2	261.2	2.18	80.5	78.4	79.0	78.8	79.4	109.3	112.1	123.1	194.5	12.44
3	1817.6	22.85	95.6	96.1	95.0	106.9	-.5	263.1	261.1	2.39	80.4	78.4	79.0	78.8	79.4	109.3	112.2	123.2	194.5	12.43
3	1817.7	23.02	95.6	96.1	95.1	107.0	-.5	263.0	261.3	2.55	80.3	78.4	79.1	78.9	79.4	109.2	112.2	123.2	194.5	12.44
3	1817.8	23.19	95.6	96.1	95.1	106.9	-.5	262.4	260.5	2.34	80.5	78.5	79.1	78.9	79.5	109.2	112.1	123.2	194.5	12.44
3	1817.9	23.35	95.7	96.1	95.0	106.9	-.5	262.2	260.4	2.06	80.4	78.4	79.0	78.8	79.4	109.3	112.1	123.1	194.5	12.44
3	1818.0	23.52	95.6	96.1	95.0	107.0	-.5	262.0	260.1	2.14	80.5	78.5	79.0	78.8	79.4	109.2	112.1	123.1	194.4	12.44
3	1818.1	23.66	95.7	96.2	95.1	106.9	-.5	261.5	259.6	2.36	80.4	78.5	79.0	78.8	79.4	109.3	112.2	123.2	194.4	12.44
3	1818.2	23.78	95.7	96.2	95.2	107.0	-.5	260.9	259.1	2.35	80.4	78.5	79.1	78.8	79.4	109.3	112.0	123.2	194.4	12.43

IDAC TAPE AA122R IDAC DAY 91A0

RUN	TIME SEC	VEL MPH	BCHGV VOLT	BV VOLT	MAV VOLT	MFV VOLT	BCHGA AMP	BA AMP	MAA AMP	MFA AMP	TBAT1 DEGF	TBAT2 DEGF	TBAT3 DEGF	TBAT4 DEGF	TBAT5 DEGF	TCONT DEGF	TEM1 DEGF	TEM2 DEGF	TEM3 DEGF	ABV VOLT
3	1818.3	23.41	96.0	95.7	94.9	107.0	-.5	254.0	249.4	1.85	80.4	78.5	79.2	78.9	79.4	109.3	112.0	123.1	194.4	12.43
3	1818.4	22.83	97.6	95.6	95.6	107.0	-.6	219.7	207.8	1.62	80.4	78.4	79.1	78.8	79.5	109.3	112.1	123.1	194.4	12.44
3	1818.4	22.44	101.1	97.5	98.5	106.9	-.7	149.9	131.2	1.67	80.5	78.5	79.1	78.8	79.5	109.3	112.2	123.2	194.3	12.44
3	1818.5	22.20	105.1	101.9	103.3	107.0	-.6	71.8	52.6	1.79	80.4	78.5	79.1	78.8	79.4	109.3	112.3	123.3	194.2	12.44
3	1818.6	22.16	107.7	106.3	107.4	107.0	-.5	19.7	7.2	1.62	80.4	78.5	79.1	78.8	79.4	109.3	112.1	123.2	194.2	12.44
3	1818.7	22.54	107.8	109.4	109.3	107.0	-.4	19.0	20.1	1.62	80.4	78.5	79.1	78.8	79.4	109.2	112.1	123.2	194.1	12.43
3	1818.8	23.00	105.1	108.8	107.4	107.0	-.4	70.5	82.0	2.20	80.3	78.4	79.0	78.8	79.3	109.3	112.0	123.1	194.1	12.43
3	1818.9	23.34	101.9	105.5	103.8	106.9	-.4	132.3	144.4	2.65	80.4	78.5	79.1	78.8	79.4	109.3	112.1	123.1	194.0	12.44
3	1819.0	23.63	99.6	102.3	100.7	107.0	-.4	180.6	189.4	2.71	80.5	78.5	79.0	78.7	79.3	109.3	112.1	123.2	194.0	12.44
3	1819.1	24.13	97.7	100.2	98.5	107.0	-.4	221.2	228.7	2.72	80.4	78.5	79.1	78.8	79.4	109.3	112.1	123.2	194.1	12.44
3	1819.2	24.90	95.7	97.8	96.0	106.9	-.4	260.7	266.2	4.35	80.4	78.4	79.1	78.8	79.4	109.3	112.1	123.1	194.1	12.43
3	1819.3	25.26	94.8	95.7	94.2	106.9	-.5	281.2	281.5	3.93	80.4	78.4	79.0	78.8	79.5	109.4	112.1	123.1	194.1	12.44
3	1819.3	25.35	94.6	95.3	94.0	106.9	-.5	286.2	284.3	4.15	80.4	78.5	79.1	78.8	79.5	109.3	112.1	123.2	194.2	12.44
3	1819.4	25.44	94.5	95.1	93.8	106.9	-.5	288.4	285.8	4.11	80.4	78.4	79.1	78.8	79.4	109.3	112.2	123.3	194.2	12.44
3	1819.5	25.55	94.5	95.0	93.8	106.9	-.5	289.1	286.4	4.09	80.4	78.6	79.1	78.9	79.4	109.3	112.2	123.2	194.2	12.43
3	1819.6	25.67	94.4	95.0	93.8	106.9	-.5	288.7	285.8	4.10	80.5	78.5	79.2	78.9	79.4	109.3	112.1	123.1	194.2	12.43
3	1819.7	25.82	94.5	95.0	93.8	106.9	-.5	288.2	285.3	4.06	80.4	78.4	78.9	78.7	79.5	109.4	112.0	123.1	194.2	12.44
3	1819.8	25.97	94.5	94.9	93.8	106.9	-.5	287.5	284.3	3.69	80.4	78.4	79.1	78.7	79.5	109.4	112.2	123.2	194.1	12.44
3	1819.9	26.10	94.5	94.8	93.7	106.9	-.5	287.1	283.7	3.48	80.4	78.5	79.1	78.9	79.4	109.3	112.2	123.2	194.1	12.44
3	1820.0	26.26	94.5	94.8	93.7	106.9	-.5	286.9	283.5	3.62	80.4	78.5	79.1	78.8	79.4	109.3	112.1	123.2	194.1	12.43
3	1820.1	26.42	94.5	94.9	93.7	106.9	-.5	286.7	283.5	3.93	80.5	78.4	79.1	78.8	79.4	109.3	112.1	123.2	194.1	12.44
3	1820.2	26.57	94.5	95.0	93.8	106.9	-.5	286.4	283.6	4.03	80.4	78.4	79.1	78.8	79.4	109.4	112.0	123.1	194.0	12.44
3	1820.2	26.73	94.5	95.0	93.8	106.9	-.5	286.0	283.2	3.74	80.4	78.5	79.1	78.8	79.4	109.5	112.2	123.2	194.0	12.44
3	1820.3	26.87	94.5	95.0	93.8	106.9	-.5	286.0	283.2	3.61	80.5	78.5	79.0	78.8	79.4	109.3	112.1	123.2	194.0	12.44
3	1820.4	27.03	94.5	95.0	93.8	107.0	-.5	286.0	283.3	3.79	80.4	78.5	79.2	78.8	79.4	109.3	112.1	123.3	194.0	12.43
3	1820.5	27.18	94.5	95.0	93.8	106.9	-.5	285.9	283.3	3.81	80.5	78.5	79.1	78.8	79.4	109.3	112.1	123.2	194.0	12.44
3	1820.6	27.34	94.5	94.9	93.8	106.9	-.5	285.7	283.1	3.54	80.4	78.3	79.0	78.7	79.4	109.4	112.0	123.1	194.0	12.44
3	1820.7	27.49	94.5	94.9	93.8	107.0	-.5	285.5	282.6	3.27	80.4	78.4	79.1	78.9	79.5	109.3	112.0	123.2	194.0	12.44
3	1820.8	27.62	94.5	94.9	93.7	106.9	-.5	285.7	282.8	3.36	80.4	78.5	79.2	78.8	79.4	109.3	112.1	123.2	193.9	12.43
3	1820.9	27.77	94.5	94.9	93.8	106.9	-.5	285.7	283.0	3.65	80.5	78.5	79.1	78.8	79.4	109.3	112.0	123.2	193.9	12.44
3	1821.0	27.92	94.5	94.9	93.8	106.9	-.5	285.7	283.1	3.66	80.4	78.4	79.2	78.9	79.5	109.4	112.1	123.1	193.9	12.44
3	1821.1	28.06	94.5	94.9	93.8	106.9	-.5	285.6	283.0	3.37	80.4	78.4	79.1	78.8	79.4	109.4	112.1	123.1	193.9	12.44
3	1821.1	28.20	94.4	94.9	93.7	106.9	-.5	285.7	283.1	3.27	80.5	78.5	79.0	78.9	79.5	109.3	112.1	123.2	193.9	12.44
3	1821.2	28.33	94.5	95.0	93.7	106.9	-.5	285.6	283.0	3.45	80.5	78.5	79.0	78.8	79.4	109.4	112.2	123.3	193.9	12.44
3	1821.3	28.48	94.5	95.0	93.8	106.9	-.5	285.3	282.8	3.57	80.3	78.5	79.1	78.8	79.4	109.4	112.1	123.2	193.8	12.44
3	1821.4	28.63	94.4	95.0	93.8	106.9	-.5	285.0	282.6	3.30	80.4	78.5	79.1	78.9	79.4	109.3	112.1	123.1	193.8	12.44
3	1821.5	28.76	94.5	94.8	93.7	107.0	-.5	284.9	282.2	3.06	80.4	78.5	79.1	78.8	79.4	109.4	112.0	123.1	193.8	12.43
3	1821.6	28.90	94.5	94.9	93.8	106.9	-.5	284.7	282.1	3.14	80.5	78.4	79.0	78.8	79.4	109.4	112.1	123.2	193.8	12.44
3	1821.7	29.03	94.5	95.0	93.8	106.9	-.5	284.8	282.3	3.43	80.4	78.5	79.1	78.9	79.5	109.3	112.1	123.3	193.8	12.44
3	1821.8	29.17	94.5	94.9	93.8	106.9	-.5	284.6	282.2	3.41	80.4	78.5	79.1	78.8	79.4	109.3	112.1	123.2	193.8	12.43
3	1821.9	29.30	94.5	94.9	93.8	106.9	-.5	284.4	281.9	3.12	80.5	78.5	79.0	78.7	79.4	109.4	112.1	123.2	193.8	12.44
3	1822.0	29.44	94.5	94.9	93.8	107.0	-.5	284.2	281.7	2.99	80.4	78.5	79.1	78.9	79.5	109.4	112.1	123.1	193.7	12.44
3	1822.0	29.58	94.5	95.0	93.8	106.9	-.5	284.5	282.1	3.21	80.4	78.5	79.0	78.8	79.5	109.4	112.2	123.2	193.7	12.44
3	1822.1	29.70	94.5	95.0	93.9	106.9	-.5	284.2	281.9	3.35	80.5	78.4	79.0	78.8	79.4	109.4	112.2	123.2	193.7	12.44
3	1822.2	29.82	94.5	95.0	93.8	106.9	-.5	283.7	281.3	3.10	80.4	78.5	79.1	78.9	79.5	109.4	112.1	123.2	193.7	12.44
3	1822.3	29.96	94.5	94.9	93.8	106.9	-.5	283.4	280.9	2.82	80.5	78.5	79.0	78.8	79.4	109.5	112.1	123.1	193.7	12.44
3	1822.4	30.09	94.5	95.0	93.8	107.0	-.5	283.6	281.2	2.92	80.4	78.4	79.0	78.8	79.5	109.4	112.1	123.1	193.7	12.44
3	1822.5	30.22	94.5	95.0	93.8	106.9	-.5	283.8	281.5	3.20	80.3	78.5	79.1	78.9	79.5	109.4	112.2	123.2	193.7	12.44
3	1822.6	30.34	94.5	95.0	93.8	106.9	-.5	283.7	281.4	3.18	80.4	78.5	79.0	78.7	79.5	109.4	112.2	123.3	193.7	12.44
3	1822.7	30.48	94.5	94.9	93.8	106.9	-.5	283.4	281.2	2.90	80.4	78.5	79.1	78.9	79.5	109.4	112.1	123.2	193.6	12.44

IDAC TAPE A6122R IDAC DAY 91A

RUN	TIME SEC	VEL MPH	BCHGV VOLT	BV VOLT	MAV VOLT	MFV VOLT	BCHGA AMP	BA AMP	MAA AMP	MFA AMP	TBAT1 DEGF	TBAT2 DEGF	TBAT3 DEGF	TBAT4 DEGF	TBAT5 DEGF	TCONT DEGF	TEM1 DEGF	TEM2 DEGF	TEM3 DEGF	ABV VOLT
3	1822.8	30.61	94.5	94.9	93.8	106.9	-.5	283.1	280.7	2.76	80.4	78.5	79.2	78.8	79.4	109.4	112.2	123.2	193.6	12.43
3	1822.9	30.73	94.5	95.0	93.8	106.9	-.5	282.8	280.5	2.98	80.5	78.5	79.1	78.8	79.4	109.6	112.2	123.2	193.6	12.44
3	1822.9	30.85	94.5	95.1	93.9	106.9	-.5	282.5	280.2	3.14	80.4	78.5	79.1	78.9	79.5	109.4	112.3	123.2	193.6	12.44
3	1823.0	30.96	94.6	95.0	93.9	106.9	-.5	281.9	279.6	2.91	80.4	78.5	79.1	78.7	79.4	109.5	112.2	123.3	193.6	12.44
3	1823.1	31.09	94.6	95.0	93.9	106.9	-.5	281.6	279.3	2.64	80.4	78.5	79.0	78.8	79.5	109.4	112.1	123.2	193.6	12.44
3	1823.2	31.21	94.6	95.0	93.8	107.0	-.5	281.7	279.3	2.73	80.4	78.5	79.1	78.9	79.4	109.4	112.1	123.2	193.5	12.44
3	1823.3	31.34	94.6	95.1	93.9	107.0	-.5	281.5	279.4	3.01	80.4	78.5	79.0	78.8	79.4	109.5	112.2	123.1	193.5	12.44
3	1823.4	31.46	94.6	95.1	94.0	106.9	-.5	281.3	279.2	2.98	80.4	78.5	79.1	78.9	79.5	109.4	112.2	123.2	193.5	12.44
3	1823.5	31.57	94.6	95.0	93.9	106.9	-.5	280.9	278.7	2.66	80.6	78.6	79.1	78.8	79.4	109.4	112.2	123.3	193.5	12.44
3	1823.6	31.70	94.6	95.0	93.9	106.9	-.5	280.8	278.6	2.57	80.4	78.4	79.1	78.9	79.4	109.4	112.2	123.3	193.5	12.44
3	1823.7	31.81	94.6	95.1	93.9	107.0	-.5	280.8	278.6	2.82	80.5	78.6	79.2	78.8	79.4	109.4	112.2	123.2	193.5	12.43
3	1823.8	31.93	94.6	95.1	94.0	107.0	-.5	280.4	278.3	2.94	80.4	78.4	79.0	78.9	79.5	109.5	112.2	123.2	193.5	12.44
3	1823.8	32.04	94.6	95.1	94.0	106.9	-.5	280.0	277.9	2.74	80.4	78.5	79.1	78.9	79.5	109.5	112.3	123.3	193.5	12.44
3	1823.9	32.15	94.7	95.0	94.0	107.0	-.5	279.6	277.3	2.48	80.4	78.5	79.1	78.8	79.4	109.4	112.2	123.3	193.4	12.44
3	1824.0	32.27	94.7	95.1	94.0	106.9	-.5	279.3	277.2	2.57	80.4	78.6	79.1	78.9	79.5	109.4	112.1	123.2	193.4	12.43
3	1824.1	32.39	94.6	95.2	94.0	107.0	-.5	279.3	277.2	2.82	80.5	78.5	79.1	78.8	79.5	109.4	112.1	123.3	193.4	12.44
3	1824.2	32.50	94.7	95.2	94.1	107.0	-.5	279.0	277.0	2.81	80.4	78.4	79.0	78.9	79.4	109.5	112.1	123.2	193.4	12.43
3	1824.3	32.50	94.7	95.2	94.1	107.0	-.5	279.0	277.0	2.81	80.4	78.4	79.0	78.9	79.4	109.5	112.1	123.2	193.4	12.43
3	1824.4	32.71	94.7	95.1	94.0	107.0	-.5	278.7	276.6	2.39	80.4	78.5	79.1	78.9	79.5	109.4	112.2	123.3	193.4	12.44
3	1824.5	32.83	94.7	95.1	94.0	107.0	-.5	278.9	276.8	2.63	80.4	78.6	79.1	78.9	79.4	109.4	112.1	123.2	193.4	12.43
3	1824.6	32.94	94.6	95.2	94.1	107.0	-.5	278.7	276.9	2.78	80.4	78.5	79.1	78.9	79.5	109.5	112.2	123.3	193.4	12.43
3	1824.7	33.06	94.7	95.2	94.0	107.0	-.5	278.5	276.6	2.57	80.5	78.4	79.1	78.9	79.5	109.5	112.2	123.2	193.4	12.44
3	1824.7	33.17	94.7	95.1	94.0	107.0	-.5	278.5	276.5	2.30	80.4	78.5	79.1	78.9	79.5	109.5	112.2	123.3	193.4	12.44
3	1824.8	33.26	94.7	95.1	94.0	107.0	-.5	279.0	277.0	2.41	80.4	78.5	79.1	78.8	79.4	109.4	112.2	123.3	193.3	12.44
3	1824.9	33.38	94.6	95.2	94.0	107.0	-.5	279.7	278.2	2.67	80.4	78.5	79.1	78.8	79.5	109.5	112.1	123.3	193.3	12.44
3	1825.0	33.50	94.6	95.1	94.0	106.9	-.5	280.3	278.7	2.64	80.4	78.5	79.2	78.8	79.5	109.5	112.1	123.2	193.3	12.44
3	1825.1	33.60	94.6	95.0	93.9	107.0	-.5	280.4	278.5	2.29	80.4	78.5	79.1	78.8	79.4	109.5	112.2	123.1	193.3	12.43
3	1825.2	33.72	94.6	95.0	93.9	107.0	-.5	280.6	278.6	2.20	80.5	78.5	79.1	78.9	79.6	109.5	112.2	123.2	193.3	12.44
3	1825.3	33.82	94.6	95.0	93.9	106.9	-.5	281.0	279.1	2.48	80.4	78.5	79.2	78.8	79.3	109.4	112.2	123.4	193.3	12.44
3	1825.4	33.93	94.5	95.1	93.9	107.0	-.5	281.2	279.5	2.63	80.4	78.5	79.1	78.9	79.6	109.5	112.1	123.3	193.3	12.43
3	1825.5	34.04	94.5	95.0	93.9	106.9	-.5	281.1	279.2	2.43	80.5	78.6	79.2	78.9	79.5	109.5	112.3	123.3	193.3	12.44
3	1825.6	34.14	94.6	95.0	93.8	107.0	-.5	281.0	279.2	2.18	80.4	78.4	79.1	78.9	79.5	109.5	112.2	123.3	193.3	12.44
3	1825.6	34.24	94.5	95.0	93.8	107.0	-.5	281.6	279.8	2.35	80.4	78.5	79.1	78.8	79.6	109.6	112.2	123.3	193.3	12.44
3	1825.7	34.35	94.5	95.1	93.9	106.9	-.5	281.6	279.9	2.57	80.5	78.5	79.0	78.8	79.5	109.5	112.2	123.4	193.3	12.44
3	1825.8	34.45	94.5	95.1	93.9	107.0	-.5	281.2	279.6	2.46	80.4	78.5	79.1	78.9	79.5	109.4	112.1	123.3	193.2	12.43
3	1825.9	34.56	94.5	95.0	93.9	107.0	-.5	281.2	279.4	2.11	80.4	78.5	79.1	78.8	79.5	109.5	112.2	123.2	193.2	12.43
3	1826.0	34.66	94.5	94.9	93.8	107.0	-.5	281.3	279.2	2.04	80.4	78.5	79.0	78.8	79.4	109.5	112.2	123.2	193.2	12.44
3	1826.2	34.87	94.5	95.0	93.9	107.0	-.5	281.6	279.8	2.50	80.4	78.5	79.1	78.9	79.5	109.4	112.3	123.3	193.2	12.44
3	1826.3	34.97	94.5	95.0	93.9	107.0	-.5	281.3	279.5	2.35	80.4	78.5	79.2	78.9	79.4	109.5	112.1	123.3	193.2	12.43
3	1826.4	35.07	94.5	95.0	93.8	107.0	-.5	281.2	279.4	2.12	80.4	78.5	79.1	78.9	79.5	109.5	112.3	123.3	193.1	12.44
3	1826.5	35.17	94.5	95.1	93.9	107.0	-.5	281.4	279.7	2.30	80.5	78.5	79.1	78.9	79.5	109.5	112.2	123.3	193.1	12.44
3	1826.5	35.27	94.5	95.1	94.0	106.9	-.5	281.2	279.7	2.47	80.5	78.5	79.1	78.8	79.6	109.5	112.3	123.3	193.2	12.44
3	1826.6	35.36	94.6	95.1	94.0	107.0	-.5	281.1	279.6	2.30	80.4	78.5	79.1	78.9	79.4	109.5	112.3	123.4	193.1	12.44
3	1826.7	35.47	94.6	95.0	93.9	107.0	-.5	281.1	279.3	1.88	80.4	78.5	79.1	78.9	79.5	109.5	112.2	123.3	193.1	12.44
3	1826.8	35.54	94.5	94.9	93.8	107.0	-.5	281.6	279.6	1.75	80.4	78.5	79.1	78.8	79.6	109.6	112.2	123.3	193.1	12.43
3	1826.9	35.15	94.7	94.6	93.6	107.0	-.5	277.8	274.2	1.40	80.4	78.5	79.0	78.8	79.6	109.7	112.2	123.3	193.1	12.43
3	1827.0	34.63	95.1	94.9	94.0	107.0	-.5	268.3	263.6	1.92	80.5	78.5	79.0	78.9	79.6	109.6	112.3	123.4	193.1	12.44
3	1827.1	34.20	96.7	95.0	94.8	107.0	-.6	236.0	225.3	1.55	80.4	78.5	79.1	78.9	79.5	109.6	112.3	123.4	193.0	12.44
3	1827.2	33.95	99.5	96.9	97.4	107.0	-.6	180.2	165.5	.83	80.5	78.6	79.1	78.8	79.5	109.6	112.2	123.4	193.0	12.44
3	1827.3	34.09	101.6	100.8	101.0	107.0	-.5	138.5	129.9	.92	80.5	78.6	79.1	78.9	79.6	109.6	112.3	123.4	192.9	12.43

IDAC TAPE A6122R IDAC DAY 9160

RUN	TIME SEC	VEL MPH	RCHGV VOLT	BV VOLT	MAV VOLT	MFV VOLT	RCHGA AMP	BA AMP	MAA AMP	MFA AMP	TBAT1 DEGF	TBAT2 DEGF	TBAT3 DEGF	TBAT4 DEGF	TBATS DEGF	TCONT DEGF	TEM1 DEGF	TEM2 DEGF	TEM3 DEGF	ABV VOLT
3	1827.4	34.57	101.0	102.9	102.0	107.0	-.4	148.2	151.0	1.66	80.5	78.5	79.0	78.8	79.5	109.7	112.3	123.3	192.9	12.44
3	1827.4	34.99	98.9	101.7	100.1	107.0	-.4	168.2	196.2	1.95	80.5	78.5	79.1	78.9	79.5	109.6	112.3	123.3	192.8	12.44
3	1827.5	35.36	96.9	99.2	97.5	107.0	-.4	228.7	235.8	1.95	80.4	78.5	79.1	78.8	79.5	109.6	112.2	123.4	192.9	12.43
3	1827.6	35.88	95.6	97.3	95.7	106.9	-.4	257.0	261.6	2.57	80.4	78.5	79.2	78.8	79.5	109.5	112.2	123.4	192.9	12.43
3	1827.7	36.55	94.6	96.1	94.5	106.9	-.4	277.7	280.5	3.81	80.5	78.5	79.1	78.9	79.6	109.7	112.2	123.3	192.9	12.44
3	1827.8	36.79	94.3	95.0	93.7	106.9	-.5	286.5	285.7	3.04	80.4	78.4	79.1	78.9	79.5	109.6	112.3	123.3	192.9	12.44
3	1827.9	36.77	94.3	94.7	93.5	107.0	-.5	288.1	285.7	3.00	80.4	78.5	79.2	78.9	79.5	109.6	112.3	123.4	193.3	12.43
3	1828.0	36.73	94.3	94.6	93.5	106.9	-.5	287.9	285.0	3.08	80.5	78.5	79.1	78.9	79.4	109.5	112.3	123.4	193.0	12.44
3	1828.1	36.74	94.3	94.7	93.5	106.9	-.5	288.0	285.3	3.42	80.5	78.6	79.1	78.8	79.5	109.6	112.2	123.4	193.0	12.44
3	1828.2	36.78	94.2	94.7	93.5	106.9	-.5	288.2	285.6	3.62	80.5	78.5	79.1	78.9	79.6	109.7	112.1	123.4	193.0	12.44
3	1828.3	36.84	94.2	94.7	93.5	106.9	-.5	288.7	286.5	3.47	80.4	78.4	79.1	78.9	79.6	109.7	112.3	123.3	193.0	12.44
3	1828.3	36.92	94.1	94.7	93.4	106.9	-.5	290.4	288.3	3.26	80.4	78.5	79.1	78.9	79.5	109.6	112.3	123.3	193.0	12.44
3	1828.4	37.00	94.0	94.6	93.3	106.9	-.5	292.8	290.9	3.33	80.5	78.6	79.1	78.9	79.5	109.5	112.3	123.3	192.9	12.43
3	1828.5	37.10	93.9	94.5	93.3	107.0	-.5	295.4	293.8	3.51	80.5	78.5	79.2	78.8	79.5	109.6	112.2	123.4	192.9	12.43
3	1828.6	37.20	93.7	94.4	93.1	106.9	-.5	298.5	296.8	3.39	80.5	78.6	79.2	78.9	79.6	109.7	112.2	123.3	192.9	12.44
3	1828.7	37.31	93.6	94.1	92.9	107.0	-.5	301.5	299.7	3.08	80.5	78.5	79.0	78.8	79.5	109.7	112.2	123.3	192.9	12.44
3	1828.8	37.42	93.4	94.0	92.7	107.0	-.5	304.0	301.9	3.05	80.5	78.5	79.1	78.9	79.6	109.7	112.2	123.4	192.9	12.44
3	1828.9	37.51	93.4	93.9	92.6	106.9	-.5	304.9	302.6	3.30	80.6	78.5	79.1	78.9	79.5	109.6	112.3	123.5	192.9	12.44
3	1829.0	37.62	93.4	93.9	92.7	106.9	-.5	305.3	303.1	3.44	80.4	78.5	79.1	79.0	79.6	109.6	112.2	123.4	192.9	12.44
3	1829.1	37.72	93.4	93.9	92.6	107.0	-.5	305.3	303.0	3.18	80.5	78.5	79.2	78.9	79.7	109.7	112.2	123.4	192.9	12.44
3	1829.2	37.83	93.4	93.8	92.6	107.0	-.5	305.0	302.4	2.92	80.5	78.5	79.2	78.9	79.6	109.6	112.3	123.3	192.9	12.44
3	1829.2	37.91	93.4	93.8	92.5	106.9	-.5	305.3	302.7	3.04	80.5	78.5	79.2	78.9	79.5	109.7	112.2	123.4	192.9	12.44
3	1829.3	38.01	93.4	93.8	92.6	106.9	-.5	305.5	303.0	3.34	80.5	78.5	79.1	78.8	79.5	109.6	112.2	123.4	192.8	12.44
3	1829.4	38.11	93.4	93.8	92.6	106.9	-.5	305.1	302.7	3.32	80.4	78.5	79.2	78.9	79.5	109.6	112.2	123.4	192.9	12.44
3	1829.5	38.21	93.4	93.8	92.6	106.9	-.5	305.0	302.6	3.04	80.4	78.6	79.3	79.0	79.6	109.6	112.2	123.4	192.9	12.44
3	1829.6	38.29	93.4	93.8	92.5	106.9	-.5	305.0	302.5	2.97	80.5	78.5	79.1	78.8	79.5	109.7	112.3	123.3	192.9	12.44
3	1829.7	38.40	93.4	93.9	92.6	106.9	-.5	304.8	302.3	3.20	80.6	78.5	79.0	78.9	79.6	109.7	112.2	123.5	192.9	12.44
3	1829.8	38.47	93.4	93.9	92.7	106.9	-.5	304.5	302.2	3.30	80.5	78.5	79.1	78.9	79.6	109.7	112.4	123.5	192.8	12.44
3	1829.9	38.58	93.4	93.8	92.6	107.0	-.5	304.5	302.2	3.07	80.4	78.5	79.2	78.9	79.6	109.7	112.1	123.5	192.8	12.44
3	1830.0	38.67	93.4	93.8	92.6	106.9	-.5	304.1	301.6	2.84	80.5	78.5	79.2	78.9	79.6	109.6	112.2	123.5	192.9	12.44
3	1830.1	38.77	93.4	93.8	92.6	107.0	-.5	304.0	301.5	2.96	80.4	78.5	79.1	78.8	79.4	109.7	112.2	123.4	192.8	12.44
3	1830.1	38.86	93.4	93.9	92.6	107.0	-.5	304.2	301.9	3.24	80.5	78.6	79.1	78.9	79.5	109.7	112.3	123.4	192.8	12.44
3	1830.2	38.95	93.4	93.9	92.6	106.9	-.5	303.9	301.7	3.17	80.5	78.5	79.0	78.8	79.5	109.7	112.3	123.5	192.8	12.44
3	1830.3	39.04	93.4	93.8	92.6	107.0	-.5	303.6	301.2	2.86	80.4	78.5	79.0	79.0	79.6	109.7	112.2	123.4	192.8	12.44
3	1830.4	39.12	93.4	93.8	92.6	107.0	-.5	303.4	300.9	2.79	80.5	78.6	79.2	79.0	79.6	109.7	112.2	123.5	192.9	12.44
3	1830.5	39.22	93.4	93.9	92.6	106.9	-.5	303.5	301.2	3.05	80.4	78.5	79.2	78.9	79.5	109.6	112.2	123.4	192.8	12.44
3	1830.6	39.31	93.4	93.9	92.6	106.9	-.5	303.7	301.6	3.19	80.5	78.5	79.1	78.9	79.5	109.7	112.3	123.5	192.8	12.44
3	1830.7	39.39	93.4	93.8	92.6	107.0	-.5	303.3	301.1	2.97	80.4	78.5	79.2	78.9	79.5	109.6	112.2	123.6	192.8	12.44
3	1830.8	39.49	93.4	93.8	92.6	106.9	-.5	303.0	300.6	2.74	80.5	78.6	79.2	78.9	79.5	109.6	112.2	123.6	192.8	12.43
3	1830.9	39.58	93.4	93.9	92.6	106.9	-.5	303.0	300.6	2.88	80.5	78.6	79.1	78.9	79.6	109.7	112.2	123.5	192.8	12.44
3	1831.0	39.66	93.4	94.0	92.7	106.9	-.5	302.9	300.8	3.11	80.3	78.5	79.1	78.9	79.5	109.7	112.2	123.3	192.8	12.44
3	1831.0	39.76	93.4	93.9	92.7	107.0	-.5	303.0	300.9	3.02	80.5	78.5	79.1	78.8	79.5	109.7	112.3	123.4	192.8	12.43
3	1831.1	39.84	93.4	93.8	92.6	106.9	-.5	302.7	300.4	2.71	80.4	78.5	79.1	78.9	79.6	109.6	112.2	123.5	192.8	12.44
3	1831.2	39.92	93.4	93.8	92.6	107.0	-.5	302.4	300.0	2.67	80.5	78.6	79.2	79.0	79.5	109.6	112.2	123.5	192.8	12.43
3	1831.3	40.01	93.4	93.9	92.6	106.9	-.5	302.2	299.9	2.93	80.4	78.5	79.1	78.9	79.6	109.7	112.2	123.5	192.8	12.44
3	1831.4	40.10	93.4	94.0	92.7	107.0	-.5	302.1	300.0	3.05	80.4	78.5	79.0	78.9	79.6	109.7	112.2	123.4	192.8	12.44
3	1831.5	40.20	93.5	93.9	92.7	106.9	-.5	302.1	299.9	2.81	80.5	78.5	79.0	78.9	79.6	109.7	112.2	123.5	192.8	12.44
3	1831.6	40.28	93.5	93.9	92.7	107.0	-.5	302.0	299.7	2.59	80.4	78.5	79.1	78.9	79.5	109.7	112.3	123.6	192.8	12.44
3	1831.7	40.37	93.4	93.9	92.6	107.0	-.5	302.1	299.9	2.74	80.5	78.5	79.2	78.9	79.5	109.7	112.3	123.5	192.8	12.44
3	1831.8	40.45	93.4	94.0	92.7	106.9	-.5	301.9	299.8	2.97	80.5	78.5	79.1	78.9	79.6	109.8	112.2	123.5	192.8	12.44

IDAC TAPE A6122R IDAC DAY 91&C

RUN	TIME	VEL	BCHGV	BV	DAV	MFV	BCHGA	BA	MAA	MFA	TBAT1	TBAT2	TBAT3	TBAT4	TBAT5	TCONT	TEM1	TEM2	TEM3	ABV
	SEC	MPH	VOLT	VOLT	VOLT	VOLT	AMP	AMP	AMP	AMP	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	VOLT
3	1831.9	40.53	93.5	93.9	92.7	107.0	-.5	301.4	299.3	2.91	80.4	78.5	79.1	78.9	79.5	109.7	112.2	123.4	192.8	12.44
3	1831.9	40.62	93.5	93.9	92.7	106.9	-.5	301.1	298.9	2.60	80.5	78.5	79.0	78.9	79.6	109.8	112.2	123.5	192.8	12.44
3	1832.0	40.70	93.5	93.9	92.7	106.9	-.5	301.1	298.9	2.58	80.5	78.4	79.1	78.9	79.6	109.6	112.2	123.5	192.8	12.43
3	1832.1	40.79	93.5	94.0	92.7	106.9	-.5	301.2	299.1	2.85	80.5	78.5	79.2	79.0	79.6	109.5	112.2	123.6	192.8	12.43
3	1832.2	40.87	93.5	94.0	92.8	106.9	-.5	301.2	299.2	2.92	80.5	78.6	79.2	79.0	79.6	109.8	112.2	123.5	192.8	12.44
3	1832.3	40.95	93.5	94.0	92.7	106.9	-.5	300.8	298.8	2.64	80.4	78.5	79.1	79.0	79.6	109.7	112.2	123.5	192.8	12.44
3	1832.4	41.03	93.5	93.9	92.7	106.9	-.5	300.9	298.7	2.43	80.4	78.6	79.1	78.9	79.6	109.7	112.3	123.5	192.8	12.44
3	1832.5	41.11	93.5	93.9	92.7	106.9	-.5	301.1	298.9	2.60	80.5	78.5	79.1	78.9	79.5	109.8	112.2	123.6	192.8	12.44
3	1832.6	41.20	93.5	94.0	92.7	106.9	-.5	301.1	299.0	2.85	80.4	78.5	79.2	79.0	79.6	109.7	112.1	123.6	192.8	12.43
3	1832.7	41.28	93.5	94.0	92.7	106.9	-.5	300.9	298.8	2.79	80.4	78.5	79.1	78.9	79.6	109.7	112.2	123.5	192.8	12.44
3	1832.8	41.36	93.5	93.9	92.7	106.9	-.5	300.7	298.7	2.51	80.5	78.5	79.0	78.8	79.5	109.8	112.2	123.4	192.8	12.43
3	1832.8	41.45	93.5	94.0	92.7	106.9	-.5	300.5	298.4	2.48	80.5	78.5	79.1	78.9	79.6	109.7	112.2	123.6	192.8	12.44
3	1832.9	41.51	93.5	94.0	92.7	106.9	-.5	300.4	298.4	2.74	80.5	78.6	79.1	78.9	79.5	109.7	112.2	123.6	192.8	12.43
3	1833.0	41.60	93.5	94.0	92.8	106.9	-.5	300.1	298.2	2.81	80.5	78.5	79.1	78.9	79.5	109.7	112.1	123.5	192.8	12.44
3	1833.1	41.60	93.5	94.0	92.8	106.9	-.5	300.1	298.2	2.81	80.5	78.5	79.1	78.9	79.5	109.7	112.1	123.5	192.8	12.44
3	1833.2	41.77	93.5	94.0	92.7	107.0	-.5	299.6	297.5	2.37	80.5	78.5	79.1	78.9	79.6	109.8	112.2	123.5	192.8	12.44
3	1833.3	41.84	93.5	94.0	92.7	106.9	-.5	299.7	297.6	2.56	80.4	78.5	79.1	79.0	79.7	109.7	112.2	123.5	192.8	12.44
3	1833.4	41.91	93.5	94.1	92.8	106.9	-.5	299.6	297.7	2.77	80.5	78.5	79.1	78.8	79.4	109.7	112.2	123.6	192.8	12.44
3	1833.5	42.00	93.5	94.0	92.8	106.9	-.5	299.3	297.4	2.65	80.5	78.5	79.1	79.0	79.6	109.7	112.1	123.5	192.8	12.43
3	1833.6	42.08	93.5	94.0	92.7	106.9	-.5	299.2	297.1	2.34	80.5	78.6	79.2	79.0	79.6	109.7	112.1	123.5	192.8	12.43
3	1833.7	42.16	93.6	94.0	92.7	106.9	-.5	299.2	297.1	2.33	80.5	78.5	79.1	78.9	79.6	109.8	112.1	123.4	192.8	12.43
3	1833.7	42.23	93.5	94.0	92.7	106.9	-.5	299.3	297.3	2.62	80.5	78.5	79.1	78.9	79.5	109.8	112.1	123.5	192.8	12.43
3	1833.8	42.30	93.5	94.0	92.8	106.9	-.5	299.2	297.3	2.71	80.5	78.5	79.1	78.9	79.5	109.7	112.1	123.6	192.8	12.43
3	1833.9	42.39	93.5	94.0	92.8	106.9	-.5	298.9	297.0	2.45	80.4	78.6	79.2	79.0	79.6	109.7	112.1	123.6	192.7	12.43
3	1834.0	42.47	93.6	94.0	92.7	106.9	-.5	298.8	296.8	2.25	80.5	78.6	79.2	78.9	79.5	109.7	112.1	123.6	192.8	12.43
3	1834.1	42.54	93.6	94.0	92.7	106.9	-.5	298.9	296.9	2.43	80.4	78.5	79.1	78.9	79.6	109.8	112.2	123.5	192.8	12.44
3	1834.2	42.62	93.5	94.1	92.8	106.9	-.5	299.0	297.1	2.65	80.5	78.5	79.1	79.0	79.7	109.8	112.2	123.5	192.8	12.44
3	1834.3	42.69	93.5	94.0	92.8	106.9	-.5	298.8	296.9	2.57	80.5	78.6	79.2	79.0	79.5	109.7	112.2	123.7	192.8	12.44
3	1834.4	42.77	93.6	94.0	92.8	106.9	-.5	298.6	296.6	2.29	80.5	78.6	79.1	79.0	79.5	109.8	112.1	123.6	192.8	12.43
3	1834.5	42.85	93.6	94.0	92.7	106.9	-.5	298.5	296.5	2.30	80.4	78.5	79.1	79.0	79.6	109.8	112.0	123.5	192.8	12.43
3	1834.6	42.92	93.6	94.1	92.8	106.9	-.5	298.3	296.5	2.55	80.4	78.5	79.1	79.0	79.5	109.8	112.0	123.5	192.8	12.44
3	1834.6	43.00	93.6	94.1	92.8	106.9	-.5	298.1	296.2	2.60	80.5	78.6	79.1	78.9	79.6	109.8	112.1	123.6	192.8	12.44
3	1834.7	43.07	93.6	94.0	92.8	106.9	-.5	297.7	295.8	2.35	80.5	78.5	79.1	78.9	79.5	109.7	112.2	123.6	192.8	12.44
3	1834.8	43.14	93.6	94.0	92.8	106.9	-.5	297.7	295.8	2.20	80.4	78.5	79.1	79.0	79.6	109.8	112.0	123.6	192.8	12.43
3	1834.9	43.22	93.6	94.1	92.8	106.9	-.5	297.7	295.9	2.40	80.5	78.5	79.2	78.9	79.6	109.8	112.0	123.6	192.8	12.43
3	1835.0	43.30	93.6	94.1	92.9	106.9	-.5	297.7	296.1	2.58	80.4	78.5	79.2	78.9	79.6	109.8	112.0	123.6	192.8	12.44
3	1835.2	43.44	93.6	94.0	92.8	106.9	-.5	297.5	295.7	2.17	80.5	78.6	79.2	78.8	79.6	109.8	112.1	123.6	192.8	12.44
3	1835.3	43.51	93.6	94.0	92.8	106.9	-.5	297.5	295.6	2.22	80.4	78.5	79.2	78.9	79.6	109.8	112.1	123.6	192.8	12.43
3	1835.4	43.58	93.6	94.1	92.8	106.9	-.5	297.5	295.7	2.49	80.5	78.6	79.2	79.0	79.5	109.8	112.0	123.6	192.8	12.43
3	1835.5	43.67	93.6	94.1	92.9	106.9	-.5	297.1	295.4	2.51	80.6	78.5	79.1	78.9	79.6	109.9	111.9	123.5	192.9	12.44
3	1835.5	43.73	93.6	94.1	92.9	106.9	-.5	296.8	295.0	2.23	80.5	78.5	79.2	79.1	79.6	109.8	112.1	123.6	192.9	12.44
3	1835.6	43.79	93.6	94.0	92.8	106.9	-.5	296.9	295.0	2.09	80.5	78.6	79.2	78.9	79.5	109.7	112.1	123.6	192.9	12.44
3	1835.7	43.87	93.6	94.1	92.8	106.9	-.5	297.1	295.4	2.34	80.5	78.6	79.1	78.9	79.6	109.8	112.1	123.6	192.8	12.44
3	1835.8	43.94	93.6	94.1	92.9	106.9	-.5	297.1	295.4	2.51	80.5	78.5	79.2	78.9	79.6	109.8	112.0	123.6	192.9	12.43
3	1835.9	44.02	93.6	94.1	92.9	106.9	-.5	296.7	295.0	2.36	80.5	78.6	79.1	78.9	79.6	109.8	111.9	123.5	192.8	12.44
3	1836.0	44.09	93.7	94.1	92.9	106.9	-.5	296.4	294.5	2.07	80.5	78.6	79.1	78.9	79.6	109.8	112.1	123.7	192.9	12.44
3	1836.1	44.15	93.6	94.1	92.8	106.9	-.5	296.5	294.6	2.14	80.5	78.5	79.2	78.9	79.6	109.9	112.0	123.6	192.9	12.44
3	1836.2	44.24	93.6	94.1	92.9	106.9	-.5	296.7	295.0	2.42	80.5	78.5	79.2	78.9	79.6	109.8	112.0	123.7	192.9	12.43
3	1836.3	44.29	93.6	94.1	92.9	106.9	-.5	296.7	294.9	2.44	80.5	78.6	79.2	79.0	79.6	109.7	111.9	123.7	192.9	12.44
3	1836.4	44.36	93.6	94.1	92.9	106.9	-.5	296.2	294.5	2.14	80.5	78.5	79.1	78.9	79.6	109.9	111.9	123.5	192.9	12.43

IDAC TAPE A6122R IDAC DAY 9160

RUN	TIME	VEL	BCHGV	BV	MAV	MFV	BCHGA	BA	MAA	MFA	TRAT1	TRAT2	TRAT3	TRAT4	TRAT5	TCONT	TEM1	TEM2	TEM3	ABV
	SEC	MPH	VOLT	VOLT	VOLT	VOLT	AMP	AMP	AMP	AMP	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	VOLT
3	1836.4	44.43	93.6	94.1	92.8	106.9	-.5	296.1	294.2	2.02	80.4	78.5	79.1	78.9	79.6	109.8	112.0	123.7	192.9	12.44
3	1836.5	44.49	93.6	94.1	92.9	106.9	-.5	296.3	294.4	2.27	80.5	78.7	79.2	78.9	79.5	109.8	112.0	123.8	192.9	12.44
3	1836.6	44.57	93.6	94.1	92.9	106.9	-.5	296.4	294.7	2.45	80.5	78.6	79.1	79.0	79.6	109.8	111.9	123.7	192.9	12.44
3	1836.7	44.64	93.6	94.1	92.9	106.9	-.5	296.1	294.4	2.27	80.5	78.6	79.2	79.0	79.6	109.9	112.0	123.7	192.9	12.44
3	1836.8	44.70	93.7	94.0	92.9	106.9	-.5	295.8	293.9	1.99	80.4	78.5	79.0	79.0	79.6	109.9	111.9	123.6	192.9	12.44
3	1836.9	44.77	93.6	94.1	92.9	106.9	-.5	295.9	294.0	2.10	80.5	78.5	79.1	79.0	79.7	109.7	112.0	123.7	192.9	12.44
3	1837.0	44.83	93.6	94.1	92.9	106.9	-.5	296.1	294.4	2.37	80.5	78.6	79.1	78.9	79.5	109.8	112.0	123.8	193.1	12.44
3	1837.1	44.92	93.6	94.2	93.0	106.9	-.5	295.8	294.2	2.37	80.5	78.5	79.2	78.9	79.6	109.8	111.9	123.7	192.9	12.43
3	1837.2	44.97	93.6	94.0	92.9	106.9	-.5	295.2	293.2	2.12	80.5	78.5	79.2	79.0	79.6	109.8	111.9	123.6	192.9	12.44
3	1837.3	45.04	93.8	94.1	92.9	106.9	-.5	292.1	289.3	2.02	80.6	78.5	79.0	78.9	79.6	109.9	111.8	123.6	193.0	12.44
3	1837.3	45.10	94.0	94.3	93.2	106.9	-.5	287.7	284.8	2.30	80.5	78.4	79.2	78.9	79.6	109.9	111.9	123.7	193.0	12.44
3	1837.4	45.14	94.2	94.5	93.5	106.9	-.5	282.8	279.7	2.47	80.5	78.6	79.2	78.9	79.5	109.8	111.9	123.8	193.0	12.44
3	1837.5	45.20	94.5	94.7	93.7	106.9	-.5	277.2	274.2	2.25	80.5	78.6	79.1	78.9	79.6	109.8	111.9	123.7	193.0	12.43
3	1837.6	45.26	94.8	94.9	94.0	106.9	-.5	272.1	268.9	2.01	80.5	78.5	79.1	79.1	79.7	109.8	111.9	123.6	193.0	12.44
3	1837.7	45.30	95.0	95.2	94.2	107.0	-.5	267.7	264.7	2.18	80.5	78.6	79.1	78.9	79.6	109.8	111.8	123.7	193.0	12.44
3	1837.8	45.35	95.2	95.4	94.4	106.9	-.5	262.7	259.4	2.62	80.5	78.5	79.1	79.0	79.7	109.9	111.9	123.7	193.1	12.44
3	1837.9	45.35	95.8	95.3	94.7	106.9	-.5	249.2	243.2	2.71	80.5	78.5	79.1	78.9	79.6	109.8	111.9	123.7	193.1	12.44
3	1838.0	45.33	97.3	95.9	95.8	106.9	-.6	218.5	208.4	2.39	80.4	78.6	79.2	79.0	79.6	109.8	111.8	123.8	193.1	12.43
3	1838.1	45.22	99.4	97.7	97.9	106.9	-.6	176.7	164.7	2.31	80.6	78.6	79.2	79.0	79.6	109.8	111.9	123.6	193.1	12.44
3	1838.2	45.05	101.3	100.0	100.3	106.9	-.5	137.1	126.2	2.67	80.5	78.5	79.0	79.0	79.6	110.0	111.8	123.7	193.1	12.43
3	1838.2	44.87	102.8	102.1	102.3	106.9	-.5	107.0	98.4	2.90	80.5	78.5	79.2	79.0	79.6	109.9	111.9	123.7	193.1	12.44
3	1838.3	44.68	103.8	103.5	103.6	106.9	-.5	87.0	80.2	2.72	80.6	78.7	79.1	78.9	79.5	109.8	111.9	123.8	193.1	12.43
3	1838.4	44.54	104.5	104.4	104.5	106.9	-.5	74.4	69.2	2.58	80.6	78.6	79.2	78.9	79.6	109.9	111.8	123.8	193.1	12.44
3	1838.5	44.43	104.8	105.1	105.0	106.9	-.5	67.2	63.0	2.84	80.4	78.6	79.2	79.0	79.7	109.9	111.9	123.8	193.0	12.44
3	1838.6	44.33	105.1	105.5	105.4	107.0	-.5	63.1	59.7	3.11	80.5	78.5	79.2	79.0	79.6	109.9	111.7	123.7	193.0	12.44
3	1838.7	44.27	105.2	105.8	105.7	106.9	-.5	61.8	59.3	2.95	80.5	78.5	79.1	78.9	79.7	109.9	111.9	123.8	193.0	12.44
3	1838.8	44.25	105.0	105.9	105.6	107.0	-.5	66.6	65.7	2.57	80.4	78.5	79.1	79.0	79.6	109.9	111.8	123.8	193.0	12.44
3	1838.9	44.31	104.5	105.6	105.1	107.0	-.5	77.8	78.4	2.51	80.5	78.6	79.2	78.9	79.6	109.8	111.8	123.8	193.0	12.43
3	1839.0	44.40	103.8	105.0	104.4	107.0	-.5	91.2	92.1	2.76	80.5	78.6	79.2	79.0	79.6	109.9	111.8	123.8	193.0	12.43
3	1839.1	44.49	103.2	104.4	103.7	107.0	-.5	104.0	105.0	2.85	80.6	78.5	79.1	78.9	79.6	109.9	111.7	123.7	193.0	12.43
3	1839.1	44.58	102.6	103.7	103.1	107.0	-.5	115.3	115.9	2.57	80.5	78.5	79.0	78.9	79.7	109.9	111.9	123.7	193.1	12.44
3	1839.2	44.66	102.1	103.1	102.4	107.0	-.5	125.5	125.6	2.30	80.5	78.6	79.1	78.9	79.6	109.8	111.8	123.8	193.0	12.44
3	1839.3	44.73	101.7	102.6	101.9	107.0	-.5	134.4	134.3	2.47	80.5	78.6	79.2	79.0	79.6	109.8	111.8	123.8	193.1	12.43
3	1839.4	44.82	101.3	102.2	101.5	107.0	-.5	142.2	142.1	2.65	80.5	78.6	79.2	79.0	79.6	109.9	111.8	123.8	193.1	12.44
3	1839.5	44.90	100.9	101.8	101.1	107.0	-.5	149.9	149.9	2.58	80.5	78.5	79.1	78.9	79.6	110.0	111.7	123.7	193.1	12.44
3	1839.6	44.98	100.5	101.3	100.6	106.9	-.5	157.7	157.6	2.25	80.5	78.5	79.1	78.9	79.7	109.9	111.8	123.8	193.2	12.44
3	1839.7	45.04	100.1	100.9	100.1	107.0	-.5	164.6	164.1	2.25	80.5	78.4	79.1	79.0	79.6	109.8	111.7	123.8	193.2	12.44
3	1839.8	45.11	99.9	100.6	99.9	107.0	-.5	169.8	168.9	2.52	80.5	78.7	79.2	79.0	79.6	109.8	111.8	123.8	193.2	12.43
3	1839.9	45.18	99.7	100.4	99.7	107.0	-.5	173.2	172.1	2.60	80.6	78.7	79.2	78.9	79.6	109.8	111.7	123.8	193.2	12.43
3	1840.0	45.24	99.6	100.2	99.5	107.0	-.5	175.4	173.9	2.34	80.5	78.5	79.1	78.9	79.6	110.0	111.7	123.7	193.3	12.43
3	1840.0	45.29	99.5	100.0	99.3	107.0	-.5	176.9	175.1	2.13	80.5	78.6	79.1	79.1	79.6	109.9	111.8	123.8	193.3	12.44
3	1840.1	45.34	99.5	100.0	99.3	107.0	-.5	177.8	175.9	2.35	80.5	78.6	79.2	79.0	79.5	109.9	111.8	123.9	193.3	12.43
3	1840.2	45.38	99.4	100.0	99.3	107.0	-.5	178.2	176.4	2.56	80.6	78.6	79.1	79.0	79.6	109.9	111.8	123.9	193.3	12.43
3	1840.3	45.42	99.4	99.9	99.3	107.0	-.5	178.2	176.4	2.46	80.5	78.6	79.2	79.0	79.7	109.8	111.7	123.9	193.3	12.44
3	1840.4	45.45	99.5	99.9	99.2	107.0	-.5	178.1	176.1	2.15	80.5	78.6	79.2	78.8	79.6	109.9	111.7	123.8	193.4	12.44
3	1840.5	45.49	99.4	99.9	99.2	106.9	-.5	177.8	175.6	2.22	80.5	78.5	79.0	79.0	79.7	109.9	111.8	123.8	193.4	12.44
3	1840.6	45.52	99.5	99.9	99.3	106.9	-.5	175.9	173.4	2.52	80.5	78.6	79.1	79.0	79.6	109.8	111.7	123.8	193.4	12.44
3	1840.7	45.54	99.7	100.0	99.5	107.0	-.5	172.0	169.1	2.58	80.5	78.6	79.1	78.9	79.6	109.9	111.7	123.9	193.4	12.43
3	1840.8	45.56	100.0	100.2	99.7	106.9	-.5	167.1	163.8	2.30	80.6	78.5	79.2	79.0	79.6	110.0	111.6	123.8	193.4	12.43
3	1840.9	45.57	100.2	100.4	99.9	107.0	-.5	161.7	158.2	2.16	80.5	78.5	79.1	79.0	79.6	109.9	111.6	123.8	193.4	12.44

PART 1

CRUISE, COAST AND BRAKE

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.921 DEG F PAMB = 14.134 PSIA TEST DATA START 09:46:22 REL HUM = 26.20 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PRO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1881.9	45.28	3.871	1.59	9.90	-1.28	5.55	.0	.0	2647.1	12.57	4.35	78.75	56.03	43.97
3	0	1882.0	45.27	3.872	1.59	9.90	-1.29	5.55	.0	.0	2648.1	12.40	4.35	79.85	56.02	43.98
3	0	1882.1	45.27	3.873	1.59	9.90	-1.29	5.54	.0	.0	2650.0	12.12	4.35	81.66	56.01	43.99
3	0	1882.2	45.27	3.875	1.59	9.90	-1.28	5.54	.0	.0	2647.1	12.19	4.35	81.21	56.01	43.99
3	0	1882.3	45.26	3.876	1.59	9.89	-1.28	5.54	.0	.0	2643.2	12.49	4.35	79.23	56.01	43.99
3	0	1882.3	45.27	3.877	1.59	9.90	-1.28	5.55	.0	.0	2647.1	12.54	4.35	78.95	56.02	43.98
3	0	1882.4	45.27	3.878	1.59	9.90	-1.28	5.55	.0	.0	2650.0	12.22	4.35	81.00	56.02	43.98
3	0	1882.5	45.27	3.880	1.59	9.90	-1.28	5.55	.0	.0	2644.2	12.11	4.35	81.73	56.02	43.98
3	0	1882.6	45.28	3.880	1.59	9.90	-1.28	5.55	.0	.0	2641.3	12.35	4.35	80.20	56.03	43.97
3	0	1882.7	45.27	3.881	1.59	9.90	-1.28	5.54	.0	.0	2645.2	12.58	4.35	78.67	56.01	43.99
3	0	1882.8	45.27	3.882	1.59	9.90	-1.28	5.54	.0	.0	2643.2	12.35	4.35	80.11	56.01	43.99
3	0	1882.9	45.28	3.883	1.59	9.90	-1.28	5.55	.0	.0	2644.2	12.10	4.35	81.81	56.03	43.97
3	0	1883.0	45.28	3.885	1.59	9.90	-1.28	5.55	.0	.0	2644.2	12.22	4.35	81.02	56.03	43.97
3	0	1883.1	45.27	3.886	1.59	9.90	-1.28	5.55	.0	.0	2648.1	12.53	4.35	79.00	56.02	43.98
3	0	1883.2	45.26	3.887	1.59	9.89	-1.28	5.54	.0	.0	2647.1	12.48	4.35	79.28	56.01	43.99
3	0	1883.2	45.27	3.888	1.59	9.90	-1.28	5.55	.0	.0	2645.2	12.17	4.35	81.34	56.02	43.98
3	0	1883.3	45.28	3.890	1.59	9.90	-1.28	5.55	.0	.0	2651.0	12.14	4.35	81.58	56.03	43.97
3	0	1883.4	45.28	3.891	1.59	9.90	-1.29	5.55	.0	.0	2651.0	12.40	4.35	79.87	56.03	43.97
3	0	1883.5	45.28	3.891	1.59	9.90	-1.29	5.55	.0	.0	2650.0	12.55	4.35	78.91	56.03	43.97
3	0	1883.6	45.27	3.892	1.59	9.90	-1.29	5.55	.0	.0	2652.0	12.30	4.35	80.45	56.02	43.98
3	0	1883.7	45.27	3.893	1.59	9.90	-1.29	5.55	.0	.0	2653.0	12.11	4.35	81.73	56.02	43.98
3	0	1883.8	45.28	3.895	1.59	9.90	-1.29	5.55	.0	.0	2651.0	12.26	4.35	80.75	56.03	43.97
3	0	1883.9	45.27	3.896	1.59	9.90	-1.29	5.54	.0	.0	2651.0	12.52	4.35	79.04	56.01	43.99
3	0	1884.0	45.27	3.897	1.59	9.90	-1.29	5.55	.0	.0	2657.8	12.45	4.35	79.53	56.02	43.98
3	0	1884.1	45.27	3.898	1.59	9.90	-1.29	5.54	.0	.0	2651.0	12.15	4.35	81.43	56.01	43.99
3	0	1884.1	45.28	3.900	1.59	9.90	-1.29	5.55	.0	.0	2653.9	12.14	4.35	81.53	56.03	43.97
3	0	1884.2	45.27	3.901	1.59	9.90	-1.29	5.55	.0	.0	2655.9	12.41	4.35	79.75	56.02	43.98
3	0	1884.3	45.28	3.902	1.59	9.90	-1.29	5.55	.0	.0	2652.0	12.53	4.35	79.02	56.03	43.97
3	0	1884.4	45.28	3.902	1.59	9.90	-1.29	5.55	.0	.0	2653.0	12.25	4.35	80.87	56.03	43.97
3	0	1884.5	45.26	3.903	1.59	9.89	-1.29	5.54	.0	.0	2659.8	12.09	4.35	81.87	56.01	43.99
3	0	1884.6	45.27	3.905	1.59	9.90	-1.28	5.54	.0	.0	2654.9	12.30	4.35	80.44	56.01	43.99
3	0	1884.7	45.28	3.906	1.59	9.90	-1.28	5.55	.0	.0	2656.9	12.56	4.35	78.86	56.03	43.97
3	0	1884.8	45.28	3.907	1.59	9.90	-1.28	5.55	.0	.0	2656.9	12.56	4.35	78.86	56.03	43.97
3	0	1884.9	45.26	3.908	1.59	9.89	-1.28	5.54	.0	.0	2657.8	12.10	4.35	81.74	56.00	44.00
3	0	1885.0	45.27	3.910	1.59	9.90	-1.29	5.55	.0	.0	2655.9	12.17	4.35	81.34	56.02	43.98
3	0	1885.0	45.28	3.911	1.59	9.90	-1.29	5.55	.0	.0	2654.9	12.48	4.35	79.34	56.03	43.97
3	0	1885.1	45.28	3.912	1.59	9.90	-1.28	5.55	.0	.0	2655.9	12.50	4.35	79.23	56.03	43.97
3	0	1885.2	45.28	3.914	1.59	9.90	-1.28	5.55	.0	.0	2657.8	12.21	4.35	81.08	56.03	43.97
3	0	1885.3	45.28	3.914	1.59	9.90	-1.28	5.55	.0	.0	2653.0	12.08	4.35	81.98	56.03	43.97
3	0	1885.4	45.27	3.915	1.59	9.90	-1.29	5.54	.0	.0	2656.9	12.31	4.35	80.38	56.01	43.99
3	0	1885.5	45.28	3.916	1.59	9.90	-1.29	5.55	.0	.0	2659.8	12.55	4.35	78.91	56.03	43.97
3	0	1885.6	45.28	3.917	1.59	9.90	-1.29	5.55	.0	.0	2654.9	12.34	4.35	80.25	56.03	43.97
3	0	1885.7	45.28	3.919	1.59	9.90	-1.29	5.55	.0	.0	2653.0	12.06	4.35	82.11	56.03	43.97
3	0	1885.8	45.28	3.920	1.59	9.90	-1.29	5.55	.0	.0	2658.8	12.19	4.35	81.26	56.03	43.97
3	0	1885.9	45.27	3.921	1.59	9.90	-1.29	5.55	.0	.0	2654.9	12.49	4.35	79.27	56.02	43.98
3	0	1885.9	45.28	3.922	1.59	9.90	-1.29	5.55	.0	.0	2652.0	12.47	4.35	79.41	56.03	43.97
3	0	1886.0	45.28	3.924	1.59	9.90	-1.29	5.55	.0	.0	2651.0	12.16	4.35	81.41	56.03	43.97
3	0	1886.1	45.28	3.925	1.59	9.90	-1.29	5.55	.0	.0	2654.9	12.09	4.35	81.92	56.03	43.97
3	0	1886.2	45.28	3.925	1.59	9.90	-1.29	5.55	.0	.0	2651.0	12.35	4.35	80.20	56.03	43.97
3	0	1886.3	45.26	3.926	1.59	9.89	-1.30	5.54	.0	.0	2654.9	12.53	4.35	78.97	56.01	43.99

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.735 DEG F PAMB = 14.134 PSIA TEST DATA START 09:46:22 REL HUM = 26.20 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1886.4	45.27	3.927	1.59	9.90	-1.30	5.54	.0	.0	2651.0	12.30	4.35	80.44	56.01	43.99
3	0	1886.5	45.29	3.929	1.59	9.91	-1.30	5.55	.0	.0	2650.0	12.06	4.35	82.13	56.04	43.96
3	0	1886.6	45.27	3.930	1.59	9.90	-1.30	5.54	.0	.0	2651.0	12.20	4.35	81.10	56.01	43.99
3	0	1886.7	45.28	3.931	1.59	9.90	-1.30	5.55	.0	.0	2646.1	12.50	4.35	79.23	56.03	43.97
3	0	1886.8	45.28	3.932	1.59	9.90	-1.30	5.55	.0	.0	2650.0	12.44	4.35	79.60	56.03	43.97
3	0	1886.8	45.28	3.934	1.59	9.90	-1.30	5.55	.0	.0	2646.1	12.13	4.35	81.64	56.03	43.97
3	0	1886.9	45.27	3.935	1.59	9.90	-1.29	5.55	.0	.0	2644.2	12.10	4.35	81.79	56.02	43.98
3	0	1887.0	45.28	3.936	1.59	9.90	-1.29	5.55	.0	.0	2649.1	12.39	4.35	79.93	56.03	43.97
3	0	1887.1	45.27	3.936	1.59	9.90	-1.28	5.54	.0	.0	2644.2	12.52	4.35	79.04	56.01	43.99
3	0	1887.2	45.26	3.937	1.59	9.89	-1.29	5.54	.0	.0	2647.1	12.25	4.35	80.75	56.01	43.99
3	0	1887.3	45.28	3.939	1.59	9.90	-1.29	5.55	.0	.0	2649.1	12.09	4.35	81.92	56.03	43.97
3	0	1887.4	45.26	3.940	1.59	9.89	-1.28	5.54	.0	.0	2645.2	12.26	4.35	80.69	56.01	43.99
3	0	1887.5	45.27	3.941	1.59	9.90	-1.28	5.55	.0	.0	2644.2	12.51	4.35	79.11	56.02	43.98
3	0	1887.6	45.28	3.942	1.59	9.90	-1.28	5.55	.0	.0	2646.1	12.40	4.35	79.82	56.03	43.97
3	0	1887.7	45.27	3.944	1.59	9.90	-1.28	5.54	.0	.0	2647.1	12.08	4.35	81.94	56.01	43.99
3	0	1887.7	45.26	3.945	1.59	9.89	-1.30	5.54	.0	.0	2650.0	11.68	4.35	84.75	56.01	43.99
3	0	1887.8	45.24	3.946	1.59	9.88	-1.37	5.53	.0	.0	2648.1	10.52	4.35	93.97	55.98	44.02
3	0	1887.9	45.13	3.947	1.58	9.84	-1.56	5.49	.0	.0	2641.3	7.78	4.34	.00	55.85	44.15
3	0	1888.0	44.95	3.947	1.56	9.76	-1.94	5.43	.0	.0	2638.3	4.42	4.33	.00	55.62	44.38
3	0	1888.1	44.77	3.949	1.54	9.68	-2.37	5.36	.0	.0	2629.6	2.38	4.32	.00	55.40	44.60
3	0	1888.2	44.56	3.950	1.52	9.59	-2.67	5.29	.0	.0	2613.0	1.16	4.30	.00	55.14	44.86
3	0	1888.3	44.35	3.951	1.50	9.50	-2.87	5.21	.0	.0	2604.2	.57	4.29	.00	54.87	45.13
3	0	1888.4	44.19	3.952	1.48	9.43	-3.12	5.16	.0	.0	2589.6	.32	4.28	.00	54.68	45.32
3	0	1888.5	44.03	3.954	1.46	9.36	-3.26	5.10	.0	.0	2580.8	.19	4.26	.00	54.47	45.53
3	0	1888.6	43.88	3.955	1.45	9.30	-3.39	5.05	.0	.0	2576.9	.13	4.25	.00	54.28	45.72
3	0	1888.6	43.76	3.956	1.44	9.25	-3.39	5.01	.0	.0	2569.1	.09	4.24	.00	54.13	45.87
3	0	1888.7	43.66	3.957	1.43	9.21	-3.50	4.97	.0	.0	2556.4	.07	4.24	.00	54.00	46.00
3	0	1888.8	43.56	3.958	1.42	9.17	-3.50	4.94	.0	.0	2552.5	.05	4.23	.00	53.87	46.13
3	0	1888.9	43.47	3.958	1.41	9.13	-3.51	4.91	.0	.0	2547.7	.05	4.22	.00	53.76	46.24
3	0	1889.0	43.37	3.960	1.40	9.09	-3.53	4.87	.0	.0	2540.8	.06	4.21	.00	53.63	46.37
3	0	1889.2	43.23	3.962	1.39	9.03	-3.54	4.83	.0	.0	2612.0	.04	4.20	.00	53.45	46.55
3	0	1889.3	43.15	3.963	1.38	9.00	-3.49	4.80	.0	.0	2577.9	.04	4.20	.00	53.34	46.66
3	0	1889.4	43.08	3.964	1.37	8.97	-3.50	4.78	.0	.0	2545.7	.04	4.19	.00	53.26	46.74
3	0	1889.5	43.00	3.966	1.36	8.94	-3.46	4.75	.0	.0	2532.1	.04	4.19	.00	53.15	46.85
3	0	1889.5	42.93	3.967	1.36	8.91	-3.49	4.73	.0	.0	2525.2	.04	4.18	.00	53.07	46.93
3	0	1889.6	42.84	3.968	1.35	8.88	-3.50	4.70	.0	.0	2521.3	.03	4.18	.00	52.95	47.05
3	0	1889.7	42.75	3.969	1.34	8.84	-3.54	4.67	.0	.0	2512.6	.02	4.17	.00	52.83	47.17
3	0	1889.8	42.63	3.969	1.33	8.79	-3.61	4.63	.0	.0	2509.6	.04	4.16	.00	52.68	47.32
3	0	1889.9	42.50	3.970	1.32	8.74	-3.70	4.59	.0	.0	2504.8	.04	4.15	.00	52.50	47.50
3	0	1890.0	42.35	3.972	1.30	8.68	-3.87	4.54	.0	.0	2494.0	.03	4.14	.00	52.30	47.70
3	0	1890.1	42.19	3.973	1.29	8.62	-3.94	4.49	.0	.0	2491.1	.03	4.13	.00	52.09	47.91
3	0	1890.2	42.03	3.974	1.27	8.55	-4.10	4.44	.0	.0	2479.4	.00	4.12	.00	51.88	48.12
3	0	1890.3	41.86	3.975	1.26	8.49	-4.12	4.38	.0	.0	2470.6	.03	4.10	.00	51.66	48.34
3	0	1890.4	41.72	3.976	1.25	8.43	-4.25	4.34	.0	.0	2459.9	.03	4.09	.00	51.47	48.53
3	0	1890.4	41.57	3.977	1.23	8.38	-4.24	4.29	.0	.0	2451.1	.04	4.08	.00	51.27	48.73
3	0	1890.5	41.45	3.979	1.22	8.33	-4.28	4.26	.0	.0	2440.4	.03	4.07	.00	51.10	48.90
3	0	1890.6	41.32	3.980	1.21	8.28	-4.30	4.22	.0	.0	2429.7	.00	4.06	.00	50.93	49.07
3	0	1890.7	41.20	3.980	1.20	8.23	-4.25	4.18	.0	.0	2422.9	.04	4.05	.00	50.77	49.23
3	0	1890.8	41.09	3.981	1.19	8.19	-4.33	4.14	.0	.0	2414.1	.03	4.04	.00	50.62	49.38
3	0	1890.9	40.99	3.982	1.18	8.15	-4.20	4.12	.0	.0	2403.4	.03	4.04	.00	50.48	49.52

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.828 DEG F PAMB = 14.131 PSIA TEST DATA START 09:46:22 REL HUM = 26.21 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1891.0	40.89	3.983	1.17	8.12	-4.27	4.09	.0	.0	2403.4	.03	4.03	.00	50.35	49.65
3	0	1891.1	40.80	3.984	1.16	8.08	-4.16	4.06	.0	.0	2398.5	.03	4.02	.00	50.22	49.78
3	0	1891.2	40.71	3.985	1.16	8.05	-4.22	4.03	.0	.0	2395.6	.03	4.01	.00	50.10	49.90
3	0	1891.3	40.60	3.986	1.15	8.01	-4.11	4.00	.0	.0	2394.6	.04	4.01	.00	49.96	50.04
3	0	1891.3	40.52	3.988	1.14	7.98	-4.17	3.98	.0	.0	2393.6	.03	4.00	.00	49.85	50.15
3	0	1891.4	40.44	3.989	1.13	7.95	-4.08	3.95	.0	.0	2384.8	.03	3.99	.00	49.73	50.27
3	0	1891.5	40.36	3.990	1.13	7.92	-4.02	3.93	.0	.0	2380.0	.02	3.99	.00	49.63	50.37
3	0	1891.6	40.30	3.990	1.12	7.89	-4.02	3.91	.0	.0	2372.2	.03	3.98	.00	49.54	50.46
3	0	1891.7	40.24	3.991	1.12	7.87	-3.80	3.89	.0	.0	2363.4	.03	3.98	.00	49.46	50.54
3	0	1891.8	40.19	3.992	1.11	7.86	-3.83	3.88	.0	.0	2360.5	.05	3.98	.00	49.40	50.60
3	0	1891.9	40.15	3.993	1.11	7.84	-3.70	3.87	.0	.0	2348.8	.02	3.97	.00	49.33	50.67
3	0	1892.0	40.10	3.994	1.11	7.82	-3.58	3.85	.0	.0	2353.6	.02	3.97	.00	49.27	50.73
3	0	1892.1	40.06	3.995	1.10	7.81	-3.65	3.84	.0	.0	2353.6	.03	3.97	.00	49.21	50.79
3	0	1892.2	39.99	3.997	1.10	7.78	-3.49	3.82	.0	.0	2352.7	.03	3.96	.00	49.11	50.89
3	0	1892.2	39.94	3.998	1.09	7.76	-3.45	3.81	.0	.0	2354.6	.04	3.96	.00	49.04	50.96
3	0	1892.3	39.88	3.999	1.09	7.74	-3.49	3.79	.0	.0	2353.6	.03	3.95	.00	48.95	51.05
3	0	1892.4	39.82	4.000	1.08	7.72	-3.36	3.77	.0	.0	2342.9	.02	3.95	.00	48.87	51.13
3	0	1892.5	39.75	4.000	1.08	7.69	-3.37	3.75	.0	.0	2347.8	.03	3.94	.00	48.78	51.22
3	0	1892.6	39.67	4.001	1.07	7.67	-3.37	3.73	.0	.0	2415.1	.02	3.94	.00	48.67	51.33
3	0	1892.7	39.62	4.002	1.07	7.65	-3.28	3.72	.0	.0	2379.0	.03	3.93	.00	48.60	51.40
3	0	1892.8	39.55	4.003	1.06	7.62	-3.32	3.70	.0	.0	2345.8	.03	3.93	.00	48.50	51.50
3	0	1892.9	39.49	4.004	1.06	7.60	-3.28	3.68	.0	.0	2334.1	.03	3.92	.00	48.42	51.58
3	0	1893.0	39.42	4.005	1.05	7.58	-3.23	3.66	.0	.0	2323.4	.03	3.92	.00	48.31	51.69
3	0	1893.1	39.33	4.006	1.04	7.54	-3.29	3.64	.0	.0	2316.6	.00	3.91	.00	48.19	51.81
3	0	1893.1	39.27	4.008	1.04	7.52	-3.25	3.62	.0	.0	2313.7	.03	3.90	.00	48.10	51.90
3	0	1893.2	39.20	4.009	1.03	7.50	-3.21	3.60	.0	.0	2314.6	.03	3.90	.00	48.01	51.99
3	0	1893.3	39.13	4.010	1.03	7.47	-3.26	3.58	.0	.0	2304.9	.00	3.89	.00	47.91	52.09
3	0	1893.4	39.06	4.010	1.02	7.45	-3.21	3.56	.0	.0	2290.3	.00	3.89	.00	47.81	52.19
3	0	1893.5	38.99	4.011	1.02	7.43	-3.14	3.54	.0	.0	2287.3	.03	3.88	.00	47.72	52.28
3	0	1893.6	38.99	4.012	1.02	7.43	-3.14	3.54	.0	.0	2287.3	.03	3.88	.00	47.72	52.28
3	0	1893.7	38.87	4.013	1.01	7.38	-3.18	3.51	.0	.0	2283.4	.03	3.87	.00	47.54	52.46
3	0	1893.8	38.81	4.014	1.00	7.36	-3.07	3.49	.0	.0	2282.5	.00	3.87	.00	47.46	52.54
3	0	1893.9	38.74	4.015	1.00	7.34	-3.06	3.48	.0	.0	2283.4	.00	3.86	.00	47.36	52.64
3	0	1894.0	38.68	4.016	.99	7.31	-3.13	3.46	.0	.0	2282.5	.03	3.86	.00	47.26	52.74
3	0	1894.0	38.61	4.017	.99	7.29	-3.07	3.44	.0	.0	2272.7	.03	3.85	.00	47.18	52.82
3	0	1894.1	38.56	4.018	.98	7.27	-2.97	3.43	.0	.0	2260.0	.02	3.85	.00	47.10	52.90
3	0	1894.2	38.50	4.019	.98	7.25	-3.00	3.41	.0	.0	2255.2	.02	3.84	.00	47.02	52.98
3	0	1894.3	38.44	4.019	.97	7.23	-3.05	3.39	.0	.0	2254.2	.03	3.84	.00	46.93	53.07
3	0	1894.4	38.37	4.020	.97	7.21	-2.96	3.37	.0	.0	2252.2	.02	3.83	.00	46.82	53.18
3	0	1894.5	38.32	4.021	.96	7.19	-2.89	3.36	.0	.0	2255.2	.03	3.83	.00	46.75	53.25
3	0	1894.6	38.26	4.023	.96	7.17	-2.94	3.35	.0	.0	2259.1	.03	3.82	.00	46.67	53.33
3	0	1894.7	38.20	4.024	.96	7.15	-2.97	3.33	.0	.0	2248.3	.02	3.82	.00	46.58	53.42
3	0	1894.8	38.13	4.025	.95	7.13	-2.90	3.31	.0	.0	2236.6	.00	3.81	.00	46.49	53.51
3	0	1894.9	38.05	4.026	.94	7.10	-2.95	3.29	.0	.0	2234.7	.03	3.81	.00	46.37	53.63
3	0	1894.9	37.94	4.027	.94	7.06	-2.91	3.26	.0	.0	2225.9	.03	3.80	.00	46.21	53.79
3	0	1895.0	37.92	4.028	.94	7.06	-3.10	3.26	.0	.0	2226.9	.03	3.80	.00	46.18	53.82
3	0	1895.1	37.50	4.029	.90	6.92	-3.73	3.15	.0	.0	2223.0	.02	3.76	.00	45.58	54.42
3	0	1895.2	37.06	4.029	.87	6.77	-4.03	3.04	.0	.0	2196.7	.42	3.73	.00	44.93	55.07
3	0	1895.3	36.81	4.030	.86	6.69	-4.17	2.98	.0	.0	2174.2	1.06	3.71	.00	44.57	55.43
3	0	1895.4	36.62	4.031	.84	6.63	-4.29	2.93	.0	.0	2150.8	1.46	3.69	.00	44.28	55.72

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.642 DEG F PAMB = 14.126 PSIA TEST DATA START 09:46:22 REL HUM = 26.18 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1895.5	36.38	4.032	.83	6.55	-4.40	2.88	.0	.0	2138.2	1.62	3.67	.00	43.92	56.08
3	0	1895.6	36.15	4.033	.81	6.48	-4.51	2.82	.0	.0	2139.1	1.68	3.65	.00	43.59	56.41
3	0	1895.7	35.95	4.034	.80	6.42	-4.60	2.78	.0	.0	2125.5	1.73	3.64	.00	43.29	56.71
3	0	1895.8	35.76	4.035	.78	6.35	-4.73	2.73	.0	.0	2115.7	1.77	3.62	.00	42.99	57.01
3	0	1895.8	35.47	4.036	.77	6.27	-4.96	2.67	.0	.0	2092.3	1.79	3.60	.00	42.56	57.44
3	0	1895.9	35.08	4.037	.74	6.15	-5.17	2.58	.0	.0	2070.9	1.79	3.57	.00	41.97	58.03
3	0	1896.0	34.72	4.038	.72	6.04	-5.35	2.50	.0	.0	2062.1	1.79	3.54	.00	41.42	58.58
3	0	1896.1	34.40	4.038	.70	5.94	-5.43	2.43	.0	.0	2041.6	1.79	3.51	.00	40.93	59.07
3	0	1896.2	34.12	4.039	.68	5.86	-5.49	2.37	.0	.0	2017.3	1.79	3.49	.00	40.51	59.49
3	0	1896.3	33.90	4.040	.67	5.80	-5.49	2.33	.0	.0	1993.9	1.80	3.47	.00	40.16	59.84
3	0	1896.4	33.69	4.041	.66	5.74	-5.50	2.29	.0	.0	1989.0	1.79	3.45	.00	39.84	60.16
3	0	1896.5	33.50	4.042	.64	5.68	-5.50	2.25	.0	.0	1986.1	1.79	3.43	.00	39.54	60.46
3	0	1896.6	33.33	4.042	.64	5.63	-5.43	2.21	.0	.0	1967.5	1.80	3.42	.00	39.28	60.72
3	0	1896.7	33.16	4.043	.63	5.59	-5.36	2.18	.0	.0	1945.1	1.80	3.41	.00	39.02	60.98
3	0	1896.7	32.99	4.044	.62	5.54	-5.33	2.15	.0	.0	1947.1	1.82	3.39	.00	38.75	61.25
3	0	1896.8	32.82	4.045	.61	5.49	-5.32	2.11	.0	.0	1941.2	1.81	3.38	.00	38.48	61.52
3	0	1896.9	32.62	4.046	.60	5.44	-5.30	2.07	.0	.0	1928.5	1.80	3.36	.00	38.17	61.83
3	0	1897.0	32.42	4.046	.58	5.38	-5.28	2.04	.0	.0	1902.2	1.78	3.34	.00	37.85	62.15
3	0	1897.1	32.17	4.047	.57	5.31	-5.34	1.99	.0	.0	1909.0	1.79	3.32	.00	37.47	62.53
3	0	1897.2	31.94	4.048	.56	5.25	-5.39	1.95	.0	.0	1895.4	1.81	3.30	.00	37.09	62.91
3	0	1897.3	31.69	4.049	.55	5.18	-5.38	1.90	.0	.0	1862.2	1.80	3.28	.00	36.69	63.31
3	0	1897.4	31.46	4.050	.53	5.12	-5.38	1.86	.0	.0	1859.3	1.79	3.26	.00	36.34	63.66
3	0	1897.5	31.24	4.051	.52	5.06	-5.38	1.82	.0	.0	1855.4	1.81	3.24	.00	35.98	64.02
3	0	1897.6	31.03	4.051	.51	5.01	-5.35	1.78	.0	.0	1828.1	1.82	3.22	.00	35.64	64.36
3	0	1897.6	30.82	4.052	.50	4.95	-5.30	1.75	.0	.0	1812.5	1.82	3.20	.00	35.31	64.69
3	0	1897.7	30.60	4.053	.49	4.90	-5.31	1.71	.0	.0	1816.4	1.82	3.19	.00	34.96	65.04
3	0	1897.8	30.36	4.054	.48	4.84	-5.31	1.67	.0	.0	1799.8	1.80	3.16	.00	34.57	65.43
3	0	1897.9	30.08	4.054	.47	4.77	-5.30	1.63	.0	.0	1770.6	1.81	3.14	.00	34.12	65.88
3	0	1898.0	29.74	4.055	.45	4.68	-5.34	1.57	.0	.0	1773.5	1.81	3.11	.00	33.57	66.43
3	0	1898.2	29.04	4.056	.42	4.51	-5.38	1.46	.0	.0	1716.0	1.81	3.05	.00	32.44	67.56
3	0	1898.3	28.67	4.057	.40	4.42	-5.45	1.41	.0	.0	1712.1	1.80	3.01	.00	31.84	68.16
3	0	1898.4	28.32	4.058	.39	4.34	-5.43	1.36	.0	.0	1681.9	1.81	2.98	.00	31.26	68.74
3	0	1898.5	28.01	4.059	.38	4.27	-5.43	1.31	.0	.0	1661.4	1.81	2.95	.00	30.76	69.24
3	0	1898.5	27.73	4.059	.37	4.20	-5.39	1.27	.0	.0	1651.6	1.82	2.93	.00	30.30	69.70
3	0	1898.6	27.43	4.060	.35	4.14	-5.37	1.23	.0	.0	1618.5	1.83	2.90	.00	29.82	70.18
3	0	1898.7	27.15	4.061	.34	4.07	-5.33	1.20	.0	.0	1611.7	1.80	2.88	.00	29.37	70.63
3	0	1898.8	26.85	4.061	.33	4.01	-5.31	1.16	.0	.0	1601.9	1.82	2.85	.00	28.87	71.13
3	0	1898.9	26.57	4.062	.32	3.95	-5.23	1.12	.0	.0	1571.7	1.82	2.82	.00	28.42	71.58
3	0	1899.0	26.29	4.062	.31	3.88	-5.22	1.09	.0	.0	1564.9	1.83	2.80	.00	27.96	72.04
3	0	1899.1	25.99	4.063	.30	3.82	-5.15	1.05	.0	.0	1533.7	1.83	2.77	.00	27.47	72.53
3	0	1899.2	25.67	4.064	.29	3.75	-5.12	1.01	.0	.0	1530.7	1.81	2.74	.00	26.94	73.06
3	0	1899.3	25.29	4.065	.28	3.67	-5.11	.97	.0	.0	1506.4	1.81	2.71	.00	26.33	73.67
3	0	1899.4	24.87	4.065	.26	3.58	-5.10	.92	.0	.0	1487.8	1.82	2.67	.00	25.63	74.37
3	0	1899.4	24.46	4.066	.25	3.50	-5.09	.87	.0	.0	1469.3	1.83	2.63	.00	24.97	75.03
3	0	1899.5	24.05	4.067	.24	3.42	-5.09	.83	.0	.0	1431.3	1.82	2.59	.00	24.31	75.69
3	0	1899.6	23.66	4.067	.23	3.34	-5.01	.79	.0	.0	1420.6	1.80	2.55	.00	23.67	76.33
3	0	1899.7	23.27	4.067	.22	3.27	-4.93	.75	.0	.0	1380.6	1.81	2.51	.00	23.04	76.96
3	0	1899.8	22.86	4.068	.20	3.19	-4.84	.71	.0	.0	1375.7	1.83	2.48	.00	22.38	77.62
3	0	1899.9	22.47	4.068	.19	3.12	-4.76	.68	.0	.0	1333.8	1.84	2.44	.00	21.76	78.24
3	0	1900.0	22.07	4.069	.18	3.04	-4.67	.64	.0	.0	1331.8	1.82	2.40	.00	21.12	78.88

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.828 DEG F PAMB = 14.129 PSIA TEST DATA START 09:46:22 REL HUM = 26.19 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PBO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1900.1	21.69	4.070	.18	2.97	-4.59	.61	.0	.0	1287.0	1.82	2.36	.00	20.52	79.48
3	0	1900.2	21.29	4.070	.17	2.90	-4.51	.58	.0	.0	1288.0	1.82	2.32	.00	19.88	80.12
3	0	1900.3	20.92	4.071	.16	2.83	-4.43	.55	.0	.0	1244.1	1.82	2.29	.00	19.30	80.70
3	0	1900.3	20.56	4.071	.15	2.77	-4.35	.52	.0	.0	1236.3	1.83	2.25	.00	18.74	81.26
3	0	1900.4	20.27	4.072	.14	2.72	-4.29	.50	.0	.0	1208.0	1.82	2.22	.00	18.28	81.72
3	0	1900.5	20.03	4.073	.14	2.68	-4.24	.48	.0	.0	1183.6	1.81	2.20	.00	17.93	82.07
3	0	1900.6	19.84	4.073	.13	2.65	-4.20	.47	.0	.0	1186.6	1.82	2.18	.00	17.63	82.37
3	0	1900.7	19.63	4.073	.13	2.61	-4.16	.45	.0	.0	1142.7	1.82	2.16	.00	17.30	82.70
3	0	1900.8	19.38	4.074	.12	2.57	-4.11	.44	.0	.0	1165.1	1.83	2.14	.00	16.93	83.07
3	0	1900.9	19.14	4.074	.12	2.53	-4.05	.42	.0	.0	1125.1	1.81	2.11	.00	16.56	83.44
3	0	1901.0	18.85	4.075	.11	2.48	-3.99	.40	.0	.0	1131.0	1.82	2.08	.00	16.12	83.88
3	0	1901.1	18.55	4.075	.11	2.43	-3.93	.38	.0	.0	1108.6	1.82	2.05	.00	15.67	84.33
3	0	1901.2	18.20	4.076	.10	2.38	-3.86	.36	.0	.0	1082.2	1.82	2.02	.00	15.16	84.84
3	0	1901.2	17.85	4.076	.10	2.32	-3.78	.34	.0	.0	1082.2	1.83	1.98	.00	14.64	85.36
3	0	1901.3	17.50	4.077	.09	2.27	-3.71	.32	.0	.0	1031.5	1.82	1.95	.00	14.14	85.86
3	0	1901.4	17.12	4.077	.09	2.21	-3.63	.30	.0	.0	1046.2	1.82	1.91	.00	13.58	86.42
3	0	1901.5	16.76	4.077	.08	2.15	-3.55	.28	.0	.0	1005.2	1.83	1.87	.00	13.07	86.93
3	0	1901.6	16.37	4.078	.08	2.09	-3.47	.26	.0	.0	966.2	1.83	1.83	.00	12.53	87.47
3	0	1901.7	16.02	4.078	.07	2.04	-3.39	.25	.0	.0	977.9	1.82	1.79	.00	12.04	87.96
3	0	1901.8	15.68	4.078	.07	1.99	-3.32	.23	.0	.0	937.0	1.82	1.76	.00	11.59	88.41
3	0	1901.9	15.36	4.079	.06	1.94	-3.25	.22	.0	.0	905.8	1.80	1.73	.00	11.14	88.86
3	0	1902.0	15.02	4.079	.06	1.89	-3.18	.20	.0	.0	919.4	1.83	1.69	.00	10.70	89.30
3	0	1902.1	14.72	4.080	.05	1.85	-3.12	.19	.0	.0	872.6	1.82	1.66	.00	10.31	89.69
3	0	1902.1	14.38	4.080	.05	1.80	-3.05	.18	.0	.0	851.2	1.84	1.62	97.66	9.86	90.14
3	0	1902.2	14.04	4.080	.05	1.75	-2.97	.17	.0	.0	859.9	1.82	1.59	96.38	9.43	90.57
3	0	1902.3	13.75	4.081	.04	1.71	-2.91	.16	.0	.0	825.8	1.82	1.56	94.15	9.07	90.93
3	0	1902.4	13.75	4.081	.04	1.71	-2.91	.16	.0	.0	825.8	1.82	1.56	94.15	9.07	90.93
3	0	1902.5	13.09	4.081	.04	1.62	-2.77	.13	.0	.0	810.2	1.82	1.49	89.12	8.27	91.73
3	0	1902.6	12.80	4.082	.04	1.58	-2.71	.13	.0	.0	775.1	1.83	1.46	86.58	7.93	92.07
3	0	1902.7	12.51	4.082	.03	1.54	-2.65	.12	.0	.0	736.1	1.82	1.42	84.75	7.58	92.42
3	0	1902.8	12.17	4.082	.03	1.50	-2.58	.11	.0	.0	735.1	1.81	1.39	82.67	7.20	92.80
3	0	1902.9	11.85	4.083	.03	1.45	-2.51	.10	.0	.0	731.2	1.81	1.35	80.28	6.84	93.16
3	0	1903.0	11.56	4.083	.03	1.41	-2.45	.09	.0	.0	701.0	1.84	1.32	77.06	6.52	93.48
3	0	1903.0	11.26	4.083	.02	1.38	-2.38	.09	.0	.0	658.1	1.82	1.29	75.60	6.20	93.80
3	0	1903.1	10.93	4.083	.02	1.33	-2.32	.08	.0	.0	667.9	1.81	1.25	73.62	5.86	94.14
3	0	1903.2	10.65	4.084	.02	1.30	-2.26	.07	.0	.0	661.0	1.82	1.22	71.28	5.57	94.43
3	0	1903.3	10.40	4.084	.02	1.26	-2.20	.07	.0	.0	633.7	1.82	1.20	69.50	5.32	94.68
3	0	1903.4	10.16	4.084	.02	1.23	-2.15	.06	.0	.0	591.8	1.81	1.17	68.11	5.09	94.91
3	0	1903.5	9.93	4.084	.02	1.20	-2.10	.06	.0	.0	577.2	1.81	1.14	66.48	4.86	95.14
3	0	1903.6	9.66	4.085	.02	1.17	-2.05	.05	.0	.0	616.2	1.81	1.11	64.55	4.60	95.40
3	0	1903.7	9.43	4.085	.01	1.14	-2.00	.05	.0	.0	584.0	1.81	1.09	62.99	4.40	95.60
3	0	1903.8	9.17	4.085	.01	1.11	-1.94	.05	.0	.0	546.0	1.81	1.06	61.18	4.16	95.84
3	0	1903.9	8.89	4.085	.01	1.07	-1.88	.04	.0	.0	520.6	1.82	1.03	58.93	3.92	96.08
3	0	1903.9	8.63	4.086	.01	1.04	-1.83	.04	.0	.0	512.8	1.83	1.00	56.91	3.70	96.30
3	0	1904.0	8.36	4.086	.01	1.01	-1.77	.03	.0	.0	542.1	1.80	.97	55.81	3.47	96.53
3	0	1904.1	8.11	4.086	.01	.97	-1.72	.03	.0	.0	511.9	1.80	.94	54.09	3.27	96.73
3	0	1904.2	7.85	4.086	.01	.94	-1.66	.03	.0	.0	478.7	1.81	.91	52.09	3.07	96.93
3	0	1904.3	7.57	4.086	.01	.91	-1.60	.03	.0	.0	448.5	1.81	.88	50.16	2.85	97.15
3	0	1904.4	7.27	4.086	.01	.87	-1.54	.02	.0	.0	427.0	1.82	.85	47.91	2.63	97.37
3	0	1904.5	7.01	4.087	.01	.84	-1.48	.02	.0	.0	433.9	1.81	.82	46.38	2.45	97.55

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4
TAMB = 74.735 DEG F PAMB = 14.126 PSIA TEST DATA START 09:46:22 REL HUM = 26.17 IN.WGHT.= 3625.

RUN	EB	TIME SEC	VEL MPH	DIST MI	HPDYNO HP	HPROAD HP	HPIW HP	HPAERO HP	TPOS %	APOS %	DSS RPM	PRO HP	HPROLL HP	DTEFF %	%AERO	%ROLL
3	0	1904.6	6.71	4.087	.01	.80	-1.42	.02	.0	.0	455.3	1.79	.79	44.82	2.25	97.75
3	0	1904.7	6.46	4.087	.00	.77	-1.37	.02	.0	.0	406.6	1.81	.76	42.72	2.09	97.91
3	0	1904.8	6.18	4.087	.00	.74	-1.31	.01	.0	.0	380.2	1.79	.73	41.23	1.91	98.09
3	0	1904.8	5.94	4.087	.00	.71	-1.26	.01	.0	.0	361.7	1.82	.70	39.03	1.76	98.24
3	0	1904.9	5.65	4.087	.00	.68	-1.20	.01	.0	.0	350.0	1.80	.66	37.46	1.59	98.41
3	0	1905.0	5.36	4.088	.00	.64	-1.13	.01	.0	.0	314.9	1.79	.63	35.70	1.44	98.56
3	0	1905.1	5.06	4.088	.00	.60	-1.07	.01	.0	.0	304.2	1.81	.60	33.42	1.28	98.72
3	0	1905.2	4.75	4.088	.00	.57	-1.01	.01	.0	.0	326.6	1.80	.56	31.46	1.13	98.87
3	0	1905.3	4.46	4.088	.00	.53	-.94	.01	.0	.0	326.6	1.79	.53	29.71	1.00	99.00
3	0	1905.4	4.19	4.088	.00	.50	-.89	.00	.0	.0	280.8	1.80	.50	27.78	.88	99.12
3	0	1905.5	3.91	4.088	.00	.47	-.83	.00	.0	.0	268.1	1.80	.46	25.93	.77	99.23
3	0	1905.6	3.62	4.088	.00	.43	-.77	.00	.0	.0	228.1	1.80	.43	24.02	.66	99.34
3	0	1905.7	3.36	4.088	.00	.40	-.71	.00	.0	.0	203.8	1.81	.40	22.20	.56	99.44
3	0	1905.7	3.09	4.088	.00	.37	-.65	.00	.0	.0	224.2	1.81	.37	20.39	.48	99.52
3	0	1905.8	2.81	4.088	.00	.34	-.60	.00	.0	.0	133.6	1.81	.34	18.58	.39	99.61
3	0	1905.9	2.53	4.088	.00	.30	-.54	.00	.0	.0	183.3	1.80	.30	16.82	.32	99.68
3	0	1906.0	2.24	4.088	.00	.27	-.48	.00	.0	.0	182.3	1.82	.27	14.77	.25	99.75
3	0	1906.1	1.97	4.088	.00	.24	-.42	.00	.0	.0	105.3	1.81	.24	13.06	.19	99.81
3	0	1906.2	1.16	4.089	.00	.14	-.25	.00	.0	.0	55.6	1.82	.14	7.80	.07	99.93
3	0	1906.3	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1906.4	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1906.5	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1906.6	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.82	.00	.00	.00	.00
3	0	1906.6	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.82	.00	.00	.00	.00
3	0	1906.7	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1906.8	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.79	.00	.00	.00	.00
3	0	1906.9	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1907.0	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.79	.00	.00	.00	.00
3	0	1907.2	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1907.3	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.79	.00	.00	.00	.00
3	0	1907.4	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1907.5	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1907.5	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1907.6	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1907.7	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1907.8	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1907.9	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1908.0	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1908.1	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1908.2	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1908.3	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1908.4	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1908.4	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.83	.00	.00	.00	.00
3	0	1908.5	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1908.6	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.80	.00	.00	.00	.00
3	0	1908.7	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1908.8	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1908.9	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00
3	0	1909.0	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.82	.00	.00	.00	.00
3	0	1909.1	.00	4.089	.00	.00	.00	.00	.0	.0	.0	1.81	.00	.00	.00	.00

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PART 2

CRUISE, COAST AND BRAKE

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1881.9	45.28	3038.2	133.5	2742.7	147.5	147.7	.00	.00	.00	9.37	.00	9.05	.00	.2872	2563.7	.97
3	1882.0	45.27	3038.5	133.5	2743.0	147.5	147.7	.00	.00	.00	9.24	.00	9.04	.00	.2844	2563.7	.97
3	1882.1	45.27	3038.7	133.5	2743.2	147.5	147.7	.00	.00	.00	9.04	.00	8.82	.00	.2775	2563.7	.97
3	1882.2	45.27	3039.0	133.5	2743.5	147.5	147.7	.00	.00	.00	9.09	.00	8.76	.00	.2794	2564.4	.97
3	1882.3	45.26	3039.2	133.5	2743.7	147.5	147.7	.00	.00	.00	9.31	.00	8.96	.00	.2862	2563.7	.97
3	1882.3	45.27	3039.5	133.5	2744.0	147.5	147.7	.00	.00	.00	9.35	.00	9.09	.00	.2872	2563.7	.97
3	1882.4	45.27	3039.7	133.5	2744.2	147.5	147.7	.00	.00	.00	9.11	.00	8.91	.00	.2797	2564.1	.97
3	1882.5	45.27	3040.0	133.5	2744.4	147.5	147.7	.00	.00	.00	9.03	.00	8.76	.00	.2775	2563.7	.97
3	1882.6	45.28	3040.0	133.5	2744.4	147.5	147.7	.00	.00	.00	9.21	.00	8.84	.00	.2834	2563.7	.97
3	1882.7	45.27	3040.3	133.5	2744.7	147.5	147.7	.00	.00	.00	9.38	.00	9.06	.00	.2875	2563.7	.97
3	1882.8	45.27	3040.5	133.5	2744.9	147.5	147.7	.00	.00	.00	9.21	.00	9.02	.00	.2828	2563.4	.97
3	1882.9	45.28	3040.8	133.5	2745.2	147.5	147.7	.00	.00	.00	9.02	.00	8.79	.00	.2756	2563.4	.97
3	1883.0	45.28	3041.0	133.5	2745.4	147.5	147.7	.00	.00	.00	9.11	.00	8.78	.00	.2813	2563.7	.97
3	1883.1	45.27	3041.3	133.5	2745.7	147.5	147.8	.00	.00	.00	9.34	.00	8.97	.00	.2866	2564.4	.97
3	1883.2	45.26	3041.5	133.5	2745.9	147.5	147.8	.00	.00	.00	9.31	.00	9.06	.00	.2819	2564.1	.97
3	1883.2	45.27	3041.8	133.5	2746.2	147.5	147.8	.00	.00	.00	9.07	.00	8.87	.00	.2769	2563.1	.97
3	1883.3	45.28	3042.0	133.5	2746.4	147.5	147.8	.00	.00	.00	9.05	.00	8.75	.00	.2772	2564.1	.97
3	1883.4	45.28	3042.3	133.5	2746.7	147.5	147.8	.00	.00	.00	9.24	.00	8.88	.00	.2837	2564.1	.97
3	1883.5	45.28	3042.3	133.5	2746.7	147.5	147.8	.00	.00	.00	9.36	.00	9.07	.00	.2869	2564.4	.97
3	1883.6	45.27	3042.5	133.5	2746.9	147.5	147.8	.00	.00	.00	9.17	.00	8.98	.00	.2819	2564.1	.97
3	1883.7	45.27	3042.8	133.5	2747.2	147.5	147.8	.00	.00	.00	9.03	.00	8.77	.00	.2766	2564.1	.97
3	1883.8	45.28	3043.0	133.5	2747.4	147.5	147.8	.00	.00	.00	9.14	.00	8.79	.00	.2819	2564.1	.97
3	1883.9	45.27	3043.3	133.5	2747.7	147.5	147.8	.00	.00	.00	9.34	.00	9.01	.00	.2869	2563.7	.97
3	1884.0	45.27	3043.6	133.5	2747.9	147.5	147.8	.00	.00	.00	9.28	.00	9.06	.00	.2847	2564.4	.96
3	1884.1	45.27	3043.8	133.5	2748.2	147.5	147.8	.00	.00	.00	9.06	.00	8.86	.00	.2784	2564.1	.97
3	1884.1	45.28	3044.1	133.5	2748.4	147.5	147.8	.00	.00	.00	9.06	.00	8.75	.00	.2787	2563.4	.97
3	1884.2	45.27	3044.3	133.5	2748.6	147.5	147.9	.00	.00	.00	9.26	.00	8.89	.00	.2850	2564.1	.97
3	1884.3	45.28	3044.6	133.5	2748.9	147.5	147.9	.00	.00	.00	9.34	.00	9.08	.00	.2875	2563.4	.97
3	1884.4	45.28	3044.6	133.5	2748.9	147.5	147.9	.00	.00	.00	9.13	.00	8.95	.00	.2809	2564.1	.97
3	1884.5	45.26	3044.8	133.5	2749.1	147.5	147.9	.00	.00	.00	9.01	.00	8.73	.00	.2769	2564.1	.96
3	1884.6	45.27	3045.1	133.5	2749.4	147.5	147.9	.00	.00	.00	9.17	.00	8.80	.00	.2819	2563.4	.97
3	1884.7	45.28	3045.3	133.5	2749.6	147.5	147.9	.00	.00	.00	9.36	.00	9.02	.00	.2872	2563.7	.96
3	1884.8	45.28	3045.6	133.5	2749.9	147.5	147.9	.00	.00	.00	9.36	.00	9.02	.00	.2872	2563.7	.96
3	1884.9	45.26	3045.9	133.5	2750.1	147.5	147.9	.00	.00	.00	9.02	.00	8.81	.00	.2769	2563.7	.96
3	1885.0	45.27	3046.1	133.5	2750.4	147.5	147.9	.00	.00	.00	9.07	.00	8.74	.00	.2797	2564.1	.97
3	1885.0	45.28	3046.4	133.5	2750.6	147.5	147.9	.00	.00	.00	9.31	.00	8.94	.00	.2859	2563.4	.97
3	1885.1	45.28	3046.6	133.5	2750.9	147.5	147.9	.00	.00	.00	9.32	.00	9.06	.00	.2875	2563.7	.97
3	1885.2	45.28	3046.9	133.5	2751.1	147.5	147.9	.00	.00	.00	9.11	.00	8.91	.00	.2800	2564.4	.96
3	1885.3	45.28	3046.9	133.5	2751.1	147.5	147.9	.00	.00	.00	9.01	.00	8.74	.00	.2769	2563.7	.97
3	1885.4	45.27	3047.1	133.5	2751.4	147.5	147.9	.00	.00	.00	9.18	.00	8.81	.00	.2841	2564.1	.97
3	1885.5	45.28	3047.4	133.5	2751.6	147.5	147.9	.00	.00	.00	9.36	.00	9.03	.00	.2875	2563.7	.96
3	1885.6	45.28	3047.6	133.5	2751.9	147.5	148.0	.00	.00	.00	9.20	.00	9.01	.00	.2831	2563.7	.97
3	1885.7	45.28	3047.9	133.5	2752.1	147.5	148.0	.00	.00	.00	8.99	.00	8.79	.00	.2775	2563.7	.97
3	1885.8	45.28	3048.2	133.5	2752.4	147.5	148.0	.00	.00	.00	9.09	.00	8.74	.00	.2809	2564.4	.96
3	1885.9	45.27	3048.4	133.5	2752.4	147.5	148.0	.00	.00	.00	9.31	.00	8.95	.00	.2866	2564.1	.97
3	1885.9	45.28	3048.7	133.5	2753.1	147.5	148.0	.00	.00	.00	9.30	.00	9.06	.00	.2869	2563.7	.97
3	1886.0	45.28	3048.9	133.5	2753.1	147.5	148.0	.00	.00	.00	9.07	.00	8.87	.00	.2791	2564.4	.97
3	1886.1	45.28	3049.2	133.5	2753.4	147.5	148.0	.00	.00	.00	9.01	.00	8.72	.00	.2775	2564.4	.97
3	1886.2	45.28	3049.2	133.5	2753.4	147.5	148.0	.00	.00	.00	9.21	.00	8.84	.00	.2841	2564.1	.97
3	1886.3	45.26	3049.4	133.5	2753.6	147.5	148.0	.00	.00	.00	9.34	.00	9.03	.00	.2878	2564.1	.97

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1886.4	45.27	3049.7	133.5	2753.8	147.5	148.0	.00	.00	.00	9.17	.00	8.99	.00	.2819	2564.1	.97
3	1886.5	45.29	3049.9	133.5	2754.1	147.5	148.0	.00	.00	.00	8.99	.00	8.77	.00	.2769	2563.7	.97
3	1886.6	45.27	3050.2	133.5	2754.3	147.5	148.0	.00	.00	.00	9.10	.00	8.76	.00	.2813	2563.1	.97
3	1886.7	45.28	3050.4	133.5	2754.6	147.5	148.0	.00	.00	.00	9.32	.00	8.97	.00	.2869	2563.7	.97
3	1886.8	45.28	3050.7	133.5	2754.8	147.5	148.0	.00	.00	.00	9.27	.00	9.04	.00	.2859	2564.4	.97
3	1886.8	45.28	3050.9	133.5	2755.1	147.5	148.1	.00	.00	.00	9.04	.00	8.84	.00	.2775	2563.7	.97
3	1886.9	45.27	3051.2	133.5	2755.3	147.5	148.1	.00	.00	.00	9.02	.00	8.73	.00	.2781	2563.4	.97
3	1887.0	45.28	3051.4	133.5	2755.6	147.5	148.1	.00	.00	.00	9.24	.00	8.87	.00	.2847	2563.7	.97
3	1887.1	45.27	3051.4	133.5	2755.6	147.5	148.1	.00	.00	.00	9.34	.00	9.07	.00	.2872	2563.4	.97
3	1887.2	45.26	3051.7	133.5	2755.8	147.5	148.1	.00	.00	.00	9.14	.00	8.94	.00	.2813	2563.1	.97
3	1887.3	45.28	3052.0	133.5	2756.1	147.5	148.1	.00	.00	.00	9.01	.00	8.73	.00	.2769	2563.4	.97
3	1887.4	45.26	3052.2	133.5	2756.3	147.5	148.1	.00	.00	.00	9.14	.00	8.79	.00	.2819	2563.7	.97
3	1887.5	45.27	3052.5	133.5	2756.6	147.5	148.1	.00	.00	.00	9.33	.00	9.02	.00	.2872	2563.7	.97
3	1887.6	45.28	3052.7	133.5	2756.8	147.5	148.1	.00	.00	.00	9.25	.00	9.04	.00	.2847	2563.7	.97
3	1887.7	45.27	3053.0	133.5	2757.1	147.5	148.1	.00	.00	.00	9.01	.00	8.78	.00	.2787	2563.7	.97
3	1887.7	45.26	3053.2	133.5	2757.3	147.5	148.1	.00	.00	.00	8.71	.00	8.32	.00	.2844	2563.4	.97
3	1887.8	45.24	3053.4	133.5	2757.5	147.5	148.1	.00	.00	.00	7.84	.00	7.36	.00	.3022	2560.9	.97
3	1887.9	45.13	3053.5	133.5	2757.6	147.5	148.1	.00	.00	.00	5.80	.00	5.39	.00	.3187	2554.4	.97
3	1888.0	44.95	3053.5	133.5	2757.6	147.5	148.1	.00	.00	.00	3.29	.00	2.97	.14	.3300	2543.4	.96
3	1888.1	44.77	3053.5	133.5	2757.6	147.6	148.2	.00	.00	.00	1.77	.32	1.59	.65	.3462	2529.7	.96
3	1888.2	44.56	3053.5	133.6	2757.6	147.6	148.2	.00	.00	.00	.87	.89	.79	1.39	.3675	2514.4	.96
3	1888.3	44.35	3053.5	133.6	2757.6	147.7	148.2	.00	.00	.00	.42	1.60	.38	2.02	.3809	2509.1	.96
3	1888.4	44.19	3053.5	133.7	2757.6	147.7	148.2	.00	.00	.00	.24	2.35	.21	2.67	.3841	2502.5	.97
3	1888.5	44.03	3053.5	133.8	2757.6	147.8	148.2	.00	.00	.00	.14	3.15	.10	3.44	.3866	2496.6	.97
3	1888.6	43.88	3053.5	133.9	2757.6	148.0	148.2	.00	.00	.00	.10	3.42	.06	3.85	.3994	2490.0	.97
3	1888.6	43.76	3053.5	134.0	2757.6	148.1	148.2	.00	.00	.00	.07	3.41	.04	3.84	.4100	2484.1	.97
3	1888.7	43.66	3053.5	134.1	2757.6	148.2	148.2	.00	.00	.00	.05	3.53	.02	3.83	.4097	2478.4	.97
3	1888.8	43.56	3053.5	134.2	2757.6	148.3	148.2	.00	.00	.00	.04	3.86	.04	4.12	.4069	2473.1	.97
3	1888.9	43.47	3053.5	134.2	2757.6	148.3	148.2	.00	.00	.00	.04	3.99	.00	4.35	.4112	2468.4	.97
3	1889.0	43.37	3053.5	134.3	2757.6	148.4	148.3	.00	.00	.00	.04	3.78	.01	4.24	.4212	2463.7	.97
3	1889.2	43.23	3053.5	134.5	2757.6	148.6	148.3	.00	.00	.00	.03	3.76	.01	3.99	.4172	2455.3	.94
3	1889.3	43.15	3053.5	134.6	2757.6	148.8	148.3	.00	.00	.00	.03	3.92	.02	4.23	.4169	2451.2	.95
3	1889.4	43.08	3053.5	134.7	2757.6	148.9	148.3	.00	.00	.00	.03	3.75	.02	4.17	.4256	2446.6	.96
3	1889.5	43.00	3053.5	134.8	2757.6	149.0	148.3	.00	.00	.00	.03	3.51	.00	3.91	.4325	2442.8	.96
3	1889.5	42.93	3053.5	134.9	2757.6	149.1	148.3	.00	.00	.00	.03	3.65	.02	3.94	.4291	2438.1	.97
3	1889.6	42.84	3053.5	135.0	2757.6	149.2	148.3	.00	.00	.00	.02	4.09	.00	4.37	.4287	2433.4	.97
3	1889.7	42.75	3053.5	135.2	2757.6	149.4	148.4	.00	.00	.00	.01	4.40	.00	4.83	.4406	2427.8	.97
3	1889.8	42.63	3053.5	135.2	2757.6	149.4	148.4	.00	.00	.00	.03	4.60	.00	5.10	.4587	2421.9	.97
3	1889.9	42.50	3053.5	135.3	2757.6	149.5	148.4	.00	.00	.00	.03	5.20	.00	5.62	.4684	2414.4	.96
3	1890.0	42.35	3053.5	135.5	2757.6	149.7	148.4	.00	.00	.00	.02	6.15	.00	6.52	.4766	2405.0	.96
3	1890.1	42.19	3053.5	135.7	2757.6	149.9	148.4	.00	.00	.00	.02	6.90	.00	7.37	.4906	2396.9	.96
3	1890.2	42.03	3053.5	135.9	2757.6	150.1	148.4	.00	.00	.00	.00	7.14	.01	7.72	.5106	2388.1	.96
3	1890.3	41.86	3053.5	136.1	2757.6	150.4	148.4	.00	.00	.00	.02	7.28	.00	7.79	.5197	2379.7	.96
3	1890.4	41.72	3053.5	136.3	2757.6	150.6	148.4	.00	.00	.00	.02	7.64	.00	8.03	.5206	2371.9	.96
3	1890.4	41.57	3053.5	136.6	2757.6	150.8	148.5	.00	.00	.00	.03	8.04	.00	8.44	.5256	2364.1	.96
3	1890.5	41.45	3053.5	136.8	2757.6	151.1	148.5	.00	.00	.00	.02	8.01	.00	8.57	.5381	2356.9	.97
3	1890.6	41.32	3053.5	137.0	2757.6	151.3	148.5	.00	.00	.00	.00	7.81	.02	8.36	.5481	2350.3	.97
3	1890.7	41.20	3053.5	137.0	2757.6	151.3	148.5	.00	.00	.00	.03	7.78	.00	8.22	.5437	2343.8	.97
3	1890.8	41.09	3053.5	137.2	2757.6	151.5	148.5	.00	.00	.00	.02	7.93	.00	8.32	.5422	2338.1	.97
3	1890.9	40.99	3053.5	137.4	2757.6	151.8	148.5	.00	.00	.00	.02	7.91	.00	8.42	.5469	2331.9	.97

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE= 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATH
3	1891.0	40.89	3053.5	137.6	2757.6	152.0	148.5	.00	.00	.00	.02	7.59	.00	8.17	.5575	2326.9	.97
3	1891.1	40.80	3053.5	137.9	2757.6	152.2	148.5	.00	.00	.00	.02	7.38	.02	7.89	.5559	2321.2	.97
3	1891.2	40.71	3053.5	138.1	2757.6	152.4	148.6	.00	.00	.00	.02	7.44	.00	7.84	.5519	2315.6	.97
3	1891.3	40.60	3053.5	138.3	2757.6	152.7	148.6	.00	.00	.00	.03	7.52	.00	7.94	.5534	2310.9	.97
3	1891.3	40.52	3053.5	138.5	2757.6	152.9	148.6	.00	.00	.00	.02	7.27	.00	7.84	.5619	2305.3	.96
3	1891.4	40.44	3053.5	138.7	2757.6	153.1	148.6	.00	.00	.00	.02	6.87	.02	7.41	.5637	2300.6	.96
3	1891.5	40.36	3053.5	138.8	2757.6	153.3	148.6	.00	.00	.00	.01	6.59	.00	6.99	.5548	2296.6	.96
3	1891.6	40.30	3053.5	138.8	2757.6	153.3	148.6	.00	.00	.00	.02	6.42	.00	6.77	.5441	2292.8	.97
3	1891.7	40.24	3053.5	139.0	2757.6	153.4	148.6	.00	.00	.00	.02	6.04	.00	6.51	.5437	2289.7	.97
3	1891.8	40.19	3053.5	139.1	2757.6	153.6	148.7	.00	.00	.00	.04	5.49	.01	6.01	.5478	2286.6	.97
3	1891.9	40.15	3053.5	139.3	2757.6	153.7	148.7	.00	.00	.00	.01	5.12	.00	5.56	.5409	2283.4	.97
3	1892.0	40.10	3053.5	139.4	2757.6	153.9	148.7	.00	.00	.00	.01	5.05	.00	5.40	.5325	2280.6	.97
3	1892.1	40.06	3053.5	139.5	2757.6	154.0	148.7	.00	.00	.00	.02	4.97	.00	5.37	.5303	2277.2	.97
3	1892.2	39.99	3053.5	139.7	2757.6	154.2	148.7	.00	.00	.00	.02	4.59	.00	5.11	.5384	2274.1	.97
3	1892.2	39.94	3053.5	139.8	2757.6	154.3	148.7	.00	.00	.00	.03	4.27	.00	4.74	.5398	2270.6	.96
3	1892.3	39.88	3053.5	139.9	2757.6	154.4	148.7	.00	.00	.00	.02	4.22	.01	4.59	.5316	2267.5	.96
3	1892.4	39.82	3053.5	140.0	2757.6	154.6	148.8	.00	.00	.00	.01	4.32	.00	4.68	.5294	2263.1	.97
3	1892.5	39.75	3053.5	140.0	2757.6	154.6	148.8	.00	.00	.00	.02	4.17	.00	4.66	.5330	2260.0	.96
3	1892.6	39.67	3053.5	140.1	2757.6	154.7	148.8	.00	.00	.00	.01	3.84	.00	4.37	.5428	2256.6	.93
3	1892.7	39.62	3053.5	140.2	2757.6	154.8	148.8	.00	.00	.00	.02	3.74	.00	4.16	.5384	2251.9	.95
3	1892.8	39.55	3053.5	140.3	2757.6	154.9	148.8	.00	.00	.00	.02	3.86	.00	4.21	.5344	2248.4	.96
3	1892.9	39.49	3053.5	140.4	2757.6	155.0	148.8	.00	.00	.00	.02	3.92	.00	4.38	.5375	2244.4	.96
3	1893.0	39.42	3053.5	140.5	2757.6	155.2	148.8	.00	.00	.00	.02	3.72	.00	4.28	.5494	2240.3	.96
3	1893.1	39.33	3053.5	140.7	2757.6	155.3	148.8	.00	.00	.00	.00	3.59	.00	4.07	.5512	2235.6	.97
3	1893.1	39.27	3053.5	140.8	2757.6	155.4	148.9	.00	.00	.00	.02	3.69	.00	4.06	.5462	2231.9	.96
3	1893.2	39.20	3053.5	140.9	2757.6	155.5	148.9	.00	.00	.00	.02	3.81	.00	4.21	.5459	2228.4	.96
3	1893.3	39.13	3053.5	141.0	2757.6	155.6	148.9	.00	.00	.00	.00	3.64	.01	4.19	.5541	2224.4	.97
3	1893.4	39.06	3053.5	141.0	2757.6	155.6	148.9	.00	.00	.00	.00	3.36	.00	3.89	.5609	2220.0	.97
3	1893.5	38.99	3053.5	141.1	2757.6	155.7	148.9	.00	.00	.00	.02	3.32	.00	3.74	.5556	2216.9	.97
3	1893.6	38.99	3053.5	141.1	2757.6	155.8	148.9	.00	.00	.00	.02	3.32	.00	3.74	.5556	2216.9	.97
3	1893.7	38.87	3053.5	141.2	2757.6	155.9	149.0	.00	.00	.00	.02	3.40	.01	3.89	.5550	2209.4	.97
3	1893.8	38.81	3053.5	141.3	2757.6	156.0	149.0	.00	.00	.00	.00	3.10	.02	3.68	.5653	2205.6	.97
3	1893.9	38.74	3053.5	141.4	2757.6	156.1	149.0	.00	.00	.00	.00	2.96	.00	3.42	.5634	2201.9	.96
3	1894.0	38.68	3053.5	141.5	2757.6	156.2	149.0	.00	.00	.00	.02	3.01	.00	3.40	.5587	2198.4	.96
3	1894.0	38.61	3053.5	141.6	2757.6	156.3	149.0	.00	.00	.00	.02	3.10	.00	3.52	.5587	2194.7	.97
3	1894.1	38.56	3053.5	141.7	2757.6	156.4	149.0	.00	.00	.00	.01	2.87	.00	3.42	.5675	2191.2	.97
3	1894.2	38.50	3053.5	141.7	2757.6	156.5	149.0	.00	.00	.00	.01	2.64	.00	3.16	.5687	2188.1	.97
3	1894.3	38.44	3053.5	141.7	2757.6	156.5	149.0	.00	.00	.00	.02	2.63	.00	3.05	.5653	2184.1	.97
3	1894.4	38.37	3053.5	141.8	2757.6	156.6	149.1	.00	.00	.00	.01	2.77	.00	3.14	.5637	2180.6	.97
3	1894.5	38.32	3053.5	141.9	2757.6	156.7	149.1	.00	.00	.00	.02	2.69	.00	3.22	.5694	2177.2	.97
3	1894.6	38.26	3053.5	141.9	2757.6	156.8	149.1	.00	.00	.00	.02	2.42	.00	2.98	.5781	2174.7	.96
3	1894.7	38.20	3053.5	142.0	2757.6	156.8	149.1	.00	.00	.00	.01	2.32	.00	2.81	.5744	2170.6	.97
3	1894.8	38.13	3053.5	142.1	2757.6	156.9	149.1	.00	.00	.00	.00	2.42	.00	2.84	.5716	2166.9	.97
3	1894.9	38.05	3053.5	142.2	2757.6	157.0	149.1	.00	.00	.00	.02	3.39	.00	4.06	.6144	2161.9	.97
3	1894.9	37.94	3053.5	142.3	2757.6	157.2	149.2	.00	.00	.00	.02	4.87	.00	5.60	.6850	2142.5	.96
3	1895.0	37.92	3053.5	142.4	2757.6	157.3	149.2	.00	.00	.00	.02	3.87	.00	4.61	.7675	2075.9	.93
3	1895.1	37.50	3053.5	142.4	2757.6	157.4	149.2	.00	.00	.00	.01	2.01	.01	2.76	.8309	1983.1	.89
3	1895.2	37.06	3053.5	142.4	2757.6	157.4	149.2	.00	.00	.00	.31	.91	.00	1.27	.8666	1907.5	.87
3	1895.3	36.81	3053.6	142.4	2757.6	157.4	149.2	.00	.00	.00	.79	.42	.06	.56	.8859	1862.5	.86
3	1895.4	36.62	3053.6	142.4	2757.6	157.4	149.3	.00	.00	.00	1.09	.21	.23	.26	.8956	1838.7	.85

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE# 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1895.5	36.38	3053.6	142.4	2757.6	157.4	149.3	.00	.00	.00	1.21	.10	.29	.11	.9009	1828.1	.85
3	1895.6	36.15	3053.7	142.4	2757.6	157.4	149.3	.00	.00	.00	1.26	.04	.34	.06	.9037	1822.2	.85
3	1895.7	35.95	3053.7	142.4	2757.6	157.4	149.3	.00	.00	.00	1.29	.01	.37	.02	.9053	1819.1	.86
3	1895.8	35.76	3053.7	142.4	2757.6	157.4	149.4	.00	.00	.00	1.32	.02	.35	.00	.9072	1818.1	.86
3	1895.8	35.47	3053.8	142.4	2757.6	157.4	149.4	.00	.00	.00	1.33	.01	.34	.00	.9069	1817.2	.87
3	1895.9	35.08	3053.8	142.4	2757.7	157.4	149.4	.00	.00	.00	1.33	.00	.39	.00	.9072	1816.6	.88
3	1896.0	34.72	3053.8	142.4	2757.7	157.4	149.4	.00	.00	.00	1.33	.00	.39	.01	.9075	1815.6	.88
3	1896.1	34.40	3053.8	142.4	2757.7	157.4	149.4	.00	.00	.00	1.33	.00	.36	.00	.9072	1815.0	.89
3	1896.2	34.12	3053.9	142.4	2757.7	157.4	149.5	.00	.00	.00	1.33	.00	.39	.00	.9081	1815.0	.90
3	1896.3	33.90	3053.9	142.4	2757.7	157.4	149.5	.00	.00	.00	1.34	.00	.37	.00	.9078	1814.4	.91
3	1896.4	33.69	3054.0	142.4	2757.7	157.4	149.5	.00	.00	.00	1.34	.00	.36	.00	.9075	1815.0	.91
3	1896.5	33.50	3054.0	142.4	2757.7	157.4	149.5	.00	.00	.00	1.34	.00	.39	.00	.9075	1814.4	.91
3	1896.6	33.33	3054.0	142.4	2757.7	157.4	149.6	.00	.00	.00	1.34	.00	.39	.00	.9075	1814.1	.92
3	1896.7	33.16	3054.1	142.4	2757.7	157.4	149.6	.00	.00	.00	1.34	.00	.34	.00	.9078	1813.7	.93
3	1896.7	32.99	3054.1	142.4	2757.7	157.4	149.6	.00	.00	.00	1.36	.00	.39	.00	.9075	1814.1	.93
3	1896.8	32.82	3054.1	142.4	2757.7	157.4	149.6	.00	.00	.00	1.35	.00	.38	.00	.9075	1813.7	.93
3	1896.9	32.62	3054.2	142.4	2757.8	157.4	149.7	.00	.00	.00	1.34	.00	.37	.00	.9081	1813.7	.94
3	1897.0	32.42	3054.2	142.4	2757.8	157.4	149.7	.00	.00	.00	1.32	.00	.39	.00	.9072	1813.1	.95
3	1897.1	32.17	3054.2	142.4	2757.8	157.4	149.7	.00	.00	.00	1.34	.00	.37	.00	.9078	1813.4	.95
3	1897.2	31.94	3054.2	142.4	2757.8	157.4	149.7	.00	.00	.00	1.35	.00	.38	.00	.9069	1813.4	.96
3	1897.3	31.69	3054.3	142.4	2757.8	157.4	149.7	.00	.00	.00	1.34	.00	.39	.00	.9069	1813.4	.97
3	1897.4	31.46	3054.3	142.4	2757.8	157.4	149.8	.00	.00	.00	1.33	.00	.37	.00	.9069	1812.8	.97
3	1897.5	31.24	3054.4	142.4	2757.8	157.4	149.8	.00	.00	.00	1.35	.00	.40	.00	.9069	1812.8	.98
3	1897.6	31.03	3054.4	142.4	2757.8	157.4	149.8	.00	.00	.00	1.36	.00	.37	.00	.9072	1812.8	.99
3	1897.6	30.82	3054.4	142.4	2757.8	157.4	149.8	.00	.00	.00	1.36	.00	.39	.00	.9069	1812.8	1.00
3	1897.7	30.60	3054.5	142.4	2757.8	157.4	149.9	.00	.00	.00	1.36	.00	.39	.00	.9069	1812.2	1.00
3	1897.8	30.36	3054.5	142.4	2757.9	157.4	149.9	.00	.00	.00	1.34	.00	.41	.00	.8987	1812.5	1.01
3	1897.9	30.08	3054.5	142.4	2757.9	157.4	149.9	.00	.00	.00	1.35	.00	.39	.00	.8994	1812.2	1.02
3	1898.0	29.74	3054.5	142.4	2757.9	157.4	149.9	.00	.00	.00	1.35	.00	.38	.00	.9028	1812.5	1.02
3	1898.2	29.04	3054.6	142.4	2757.9	157.4	150.0	.00	.00	.00	1.35	.00	.40	.00	.9050	1812.5	1.06
3	1898.3	28.67	3054.7	142.4	2757.9	157.4	150.0	.00	.00	.00	1.34	.00	.41	.00	.9016	1812.2	1.06
3	1898.4	28.32	3054.7	142.4	2757.9	157.4	150.0	.00	.00	.00	1.35	.00	.40	.00	.9053	1812.2	1.08
3	1898.5	28.01	3054.7	142.4	2757.9	157.4	150.0	.00	.00	.00	1.35	.00	.39	.00	.9059	1811.9	1.09
3	1898.5	27.73	3054.8	142.4	2757.9	157.4	150.1	.00	.00	.00	1.36	.00	.39	.00	.8994	1812.5	1.10
3	1898.6	27.43	3054.8	142.4	2757.9	157.4	150.1	.00	.00	.00	1.36	.00	.40	.00	.9006	1812.8	1.12
3	1898.7	27.15	3054.8	142.4	2758.0	157.4	150.1	.00	.00	.00	1.34	.00	.39	.00	.9037	1811.9	1.12
3	1898.8	26.85	3054.8	142.4	2758.0	157.4	150.1	.00	.00	.00	1.36	.00	.40	.00	.9044	1812.5	1.13
3	1898.9	26.57	3054.9	142.4	2758.0	157.4	150.1	.00	.00	.00	1.36	.00	.39	.00	.9050	1812.2	1.15
3	1899.0	26.29	3054.9	142.4	2758.0	157.4	150.2	.00	.00	.00	1.36	.00	.39	.00	.9053	1812.2	1.16
3	1899.1	25.99	3054.9	142.4	2758.0	157.4	150.2	.00	.00	.00	1.36	.00	.39	.00	.9053	1812.2	1.18
3	1899.2	25.67	3055.0	142.4	2758.0	157.4	150.2	.00	.00	.00	1.35	.00	.42	.00	.9056	1811.9	1.18
3	1899.3	25.29	3055.0	142.4	2758.0	157.4	150.2	.00	.00	.00	1.35	.00	.38	.00	.9059	1812.2	1.20
3	1899.4	24.87	3055.1	142.4	2758.0	157.4	150.3	.00	.00	.00	1.36	.00	.41	.00	.9059	1812.5	1.22
3	1899.4	24.46	3055.1	142.4	2758.0	157.4	150.3	.00	.00	.00	1.36	.00	.38	.00	.9053	1811.9	1.23
3	1899.5	24.05	3055.1	142.4	2758.0	157.4	150.3	.00	.00	.00	1.36	.00	.41	.00	.9050	1812.2	1.27
3	1899.6	23.66	3055.2	142.4	2758.1	157.4	150.3	.00	.00	.00	1.34	.00	.39	.00	.9053	1811.9	1.28
3	1899.7	23.27	3055.2	142.4	2758.1	157.4	150.3	.00	.00	.00	1.35	.00	.40	.00	.9050	1812.2	1.31
3	1899.8	22.86	3055.2	142.4	2758.1	157.4	150.4	.00	.00	.00	1.36	.00	.38	.00	.9059	1812.2	1.32
3	1899.9	22.47	3055.2	142.4	2758.1	157.4	150.4	.00	.00	.00	1.37	.00	.42	.00	.9053	1811.9	1.36
3	1900.0	22.07	3055.3	142.4	2758.1	157.4	150.4	.00	.00	.00	1.36	.00	.39	.00	.9047	1811.9	1.36

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE# 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1900.1	21.69	3055.3	142.4	2758.1	157.4	150.4	.00	.00	.00	1.36	.00	.41	.00	.9056	1811.6	1.41
3	1900.2	21.29	3055.4	142.4	2758.1	157.4	150.5	.00	.00	.00	1.36	.00	.38	.00	.9047	1812.2	1.41
3	1900.3	20.92	3055.4	142.4	2758.1	157.4	150.5	.00	.00	.00	1.36	.00	.40	.00	.9016	1812.2	1.46
3	1900.3	20.56	3055.4	142.4	2758.1	157.4	150.5	.00	.00	.00	1.36	.00	.37	.00	.9053	1811.9	1.47
3	1900.4	20.27	3055.5	142.4	2758.1	157.4	150.5	.00	.00	.00	1.36	.00	.41	.00	.9044	1811.2	1.50
3	1900.5	20.03	3055.5	142.4	2758.1	157.4	150.6	.00	.00	.00	1.35	.00	.37	.00	.9050	1812.2	1.53
3	1900.6	19.84	3055.5	142.4	2758.1	157.4	150.6	.00	.00	.00	1.36	.00	.41	.00	.9047	1812.2	1.53
3	1900.7	19.63	3055.5	142.4	2758.2	157.4	150.6	.00	.00	.00	1.36	.00	.37	.00	.9056	1811.9	1.59
3	1900.8	19.38	3055.6	142.4	2758.2	157.4	150.6	.00	.00	.00	1.36	.00	.40	.00	.9047	1811.9	1.56
3	1900.9	19.14	3055.6	142.4	2758.2	157.4	150.6	.00	.00	.00	1.35	.00	.38	.00	.9047	1812.5	1.61
3	1901.0	18.85	3055.7	142.4	2758.2	157.4	150.7	.00	.00	.00	1.36	.00	.41	.00	.9050	1811.9	1.60
3	1901.1	18.55	3055.7	142.4	2758.2	157.4	150.7	.00	.00	.00	1.36	.00	.39	.00	.9047	1812.2	1.63
3	1901.2	18.20	3055.7	142.4	2758.2	157.4	150.7	.00	.00	.00	1.36	.00	.39	.00	.9050	1812.2	1.67
3	1901.2	17.85	3055.8	142.4	2758.2	157.4	150.7	.00	.00	.00	1.36	.00	.39	.00	.9047	1811.6	1.67
3	1901.3	17.50	3055.8	142.4	2758.2	157.4	150.8	.00	.00	.00	1.36	.00	.41	.00	.9044	1811.9	1.76
3	1901.4	17.12	3055.8	142.4	2758.2	157.4	150.8	.00	.00	.00	1.36	.00	.40	.00	.9047	1811.9	1.73
3	1901.5	16.76	3055.8	142.4	2758.2	157.4	150.8	.00	.00	.00	1.36	.00	.40	.00	.9050	1811.9	1.80
3	1901.6	16.37	3055.9	142.4	2758.3	157.4	150.8	.00	.00	.00	1.36	.00	.40	.00	.9050	1811.9	1.88
3	1901.7	16.02	3055.9	142.4	2758.3	157.4	150.8	.00	.00	.00	1.36	.00	.39	.00	.9047	1811.6	1.85
3	1901.8	15.68	3056.0	142.4	2758.3	157.4	150.9	.00	.00	.00	1.36	.00	.41	.00	.9044	1811.9	1.93
3	1901.9	15.36	3056.0	142.4	2758.3	157.4	150.9	.00	.00	.00	1.34	.00	.39	.00	.9047	1811.6	2.00
3	1902.0	15.02	3056.0	142.4	2758.3	157.4	150.9	.00	.00	.00	1.36	.00	.40	.00	.9044	1811.9	1.97
3	1902.1	14.72	3056.1	142.4	2758.3	157.4	150.9	.00	.00	.00	1.36	.00	.39	.00	.9047	1811.9	2.08
3	1902.1	14.38	3056.1	142.4	2758.3	157.4	151.0	.00	.00	.00	1.37	.00	.41	.00	.9044	1811.9	2.13
3	1902.2	14.04	3056.1	142.4	2758.3	157.4	151.0	.00	.00	.00	1.36	.00	.39	.00	.9047	1811.9	2.11
3	1902.3	13.75	3056.2	142.4	2758.3	157.4	151.0	.00	.00	.00	1.36	.00	.42	.00	.9053	1812.2	2.19
3	1902.4	13.75	3056.2	142.4	2758.3	157.4	151.0	.00	.00	.00	1.36	.00	.42	.00	.9053	1812.2	2.19
3	1902.5	13.09	3056.2	142.4	2758.4	157.4	151.0	.00	.00	.00	1.36	.00	.41	.00	.9044	1812.2	2.24
3	1902.6	12.80	3056.2	142.4	2758.4	157.4	151.1	.00	.00	.00	1.36	.00	.37	.00	.9041	1811.9	2.38
3	1902.7	12.51	3056.3	142.4	2758.4	157.4	151.1	.00	.00	.00	1.36	.00	.41	.00	.9037	1811.9	2.46
3	1902.8	12.17	3056.3	142.4	2758.4	157.4	151.1	.00	.00	.00	1.35	.00	.37	.00	.9044	1812.2	2.47
3	1902.9	11.85	3056.4	142.4	2758.4	157.4	151.1	.00	.00	.00	1.35	.00	.41	.00	.9037	1811.9	2.48
3	1903.0	11.56	3056.4	142.4	2758.4	157.4	151.2	.00	.00	.00	1.37	.00	.37	.00	.9041	1812.2	2.59
3	1903.0	11.26	3056.4	142.4	2758.4	157.4	151.2	.00	.00	.00	1.36	.00	.40	.00	.9037	1811.9	2.75
3	1903.1	10.93	3056.5	142.4	2758.4	157.4	151.2	.00	.00	.00	1.35	.00	.38	.00	.9034	1811.6	2.71
3	1903.2	10.65	3056.5	142.4	2758.4	157.4	151.2	.00	.00	.00	1.36	.00	.41	.00	.9037	1811.6	2.74
3	1903.3	10.40	3056.5	142.4	2758.4	157.4	151.2	.00	.00	.00	1.36	.00	.38	.00	.9034	1812.2	2.86
3	1903.4	10.16	3056.5	142.4	2758.5	157.4	151.3	.00	.00	.00	1.35	.00	.39	.00	.9041	1811.9	3.06
3	1903.5	9.93	3056.6	142.4	2758.5	157.4	151.3	.00	.00	.00	1.35	.00	.39	.00	.9034	1811.6	3.14
3	1903.6	9.66	3056.6	142.4	2758.5	157.4	151.3	.00	.00	.00	1.35	.00	.40	.00	.9031	1811.9	2.94
3	1903.7	9.43	3056.7	142.4	2758.5	157.4	151.4	.00	.00	.00	1.35	.00	.41	.00	.9037	1812.2	3.10
3	1903.8	9.17	3056.7	142.4	2758.5	157.4	151.4	.00	.00	.00	1.35	.00	.40	.00	.9034	1811.9	3.32
3	1903.9	8.89	3056.7	142.4	2758.5	157.4	151.4	.00	.00	.00	1.36	.00	.40	.00	.9037	1812.2	3.48
3	1903.9	8.63	3056.8	142.4	2758.5	157.4	151.4	.00	.00	.00	1.36	.00	.39	.00	.9034	1811.9	3.53
3	1904.0	8.36	3056.8	142.4	2758.5	157.4	151.5	.00	.00	.00	1.34	.00	.38	.00	.9034	1811.6	3.34
3	1904.1	8.11	3056.8	142.4	2758.5	157.4	151.5	.00	.00	.00	1.34	.00	.39	.00	.9034	1812.5	3.54
3	1904.2	7.85	3056.8	142.4	2758.5	157.4	151.5	.00	.00	.00	1.35	.00	.39	.00	.9034	1812.5	3.79
3	1904.3	7.57	3056.9	142.4	2758.6	157.4	151.5	.00	.00	.00	1.35	.00	.39	.00	.9037	1812.2	4.04
3	1904.4	7.27	3056.9	142.4	2758.6	157.4	151.5	.00	.00	.00	1.36	.00	.39	.00	.9016	1811.9	4.24
3	1904.5	7.01	3056.9	142.4	2758.6	157.4	151.6	.00	.00	.00	1.35	.00	.40	.00	.9037	1811.9	4.18

IDAC TAPE A6122R TEST NO. 6 DAY 160 09:46:18 SITE NO.=4.0 IDAC SITE# 4

RUN	TIME SEC	VEL MPH	EBO WH	EBI WH	EMAI WH	EMAO WH	EMF WH	BTAMPO AMP-HR	BTAMPI AMP-HR	BCHGP KW	PBO KW	PBI KW	PMAI KW	PMAO KW	PMF KW	MSPD RPM	GRATM
3	1904.6	6.71	3057.0	142.4	2758.6	157.4	151.6	.00	.00	.00	1.34	.00	.40	.00	.9037	1812.2	3.98
3	1904.7	6.46	3057.0	142.4	2758.6	157.4	151.6	.00	.00	.00	1.35	.00	.40	.00	.9028	1812.2	4.46
3	1904.8	6.18	3057.1	142.4	2758.6	157.4	151.6	.00	.00	.00	1.34	.00	.39	.00	.9031	1812.2	4.77
3	1904.8	5.94	3057.1	142.4	2758.6	157.4	151.7	.00	.00	.00	1.36	.00	.40	.00	.9028	1811.9	5.01
3	1904.9	5.65	3057.1	142.4	2758.6	157.4	151.7	.00	.00	.00	1.34	.00	.40	.00	.9028	1812.5	5.18
3	1905.0	5.36	3057.2	142.4	2758.6	157.4	151.7	.00	.00	.00	1.34	.00	.40	.00	.9031	1811.9	5.75
3	1905.1	5.06	3057.2	142.4	2758.6	157.4	151.7	.00	.00	.00	1.35	.00	.40	.00	.9022	1812.5	5.96
3	1905.2	4.75	3057.2	142.4	2758.6	157.4	151.7	.00	.00	.00	1.34	.00	.39	.00	.9028	1812.5	5.55
3	1905.3	4.46	3057.2	142.4	2758.7	157.4	151.8	.00	.00	.00	1.34	.00	.40	.00	.9025	1811.6	5.55
3	1905.4	4.19	3057.3	142.4	2758.7	157.4	151.8	.00	.00	.00	1.34	.00	.39	.00	.9022	1812.2	6.45
3	1905.5	3.91	3057.3	142.4	2758.7	157.4	151.8	.00	.00	.00	1.34	.00	.39	.00	.9025	1812.2	6.76
3	1905.6	3.62	3057.4	142.4	2758.7	157.4	151.8	.00	.00	.00	1.34	.00	.40	.00	.9025	1812.8	7.95
3	1905.7	3.36	3057.4	142.4	2758.7	157.4	151.9	.00	.00	.00	1.35	.00	.39	.00	.9025	1812.2	8.89
3	1905.7	3.09	3057.4	142.4	2758.7	157.4	151.9	.00	.00	.00	1.35	.00	.39	.00	.9019	1811.9	8.08
3	1905.8	2.81	3057.5	142.4	2758.7	157.4	151.9	.00	.00	.00	1.35	.00	.40	.00	.9009	1811.9	13.56
3	1905.9	2.53	3057.5	142.4	2758.7	157.4	151.9	.00	.00	.00	1.34	.00	.41	.00	.9028	1812.5	9.89
3	1906.0	2.24	3057.5	142.4	2758.7	157.4	151.9	.00	.00	.00	1.36	.00	.39	.00	.9022	1812.8	9.94
3	1906.1	1.97	3057.5	142.4	2758.7	157.4	152.0	.00	.00	.00	1.35	.00	.39	.00	.9022	1812.2	17.21
3	1906.2	1.18	3057.6	142.4	2758.8	157.4	152.0	.00	.00	.00	1.36	.00	.39	.00	.9028	1811.6	32.60
3	1906.3	.00	3057.6	142.4	2758.8	157.4	152.0	.00	.00	.00	1.35	.00	.39	.00	.9025	1812.2	.00
3	1906.4	.00	3057.7	142.4	2758.8	157.4	152.0	.00	.00	.00	1.34	.00	.39	.00	.9025	1812.2	.00
3	1906.5	.00	3057.7	142.4	2758.8	157.4	152.1	.00	.00	.00	1.35	.00	.39	.00	.9022	1812.5	.00
3	1906.6	.00	3057.7	142.4	2758.8	157.4	152.1	.00	.00	.00	1.36	.00	.39	.00	.9028	1812.5	.00
3	1906.6	.00	3057.8	142.4	2758.8	157.4	152.1	.00	.00	.00	1.36	.00	.40	.00	.9022	1812.2	.00
3	1906.7	.00	3057.8	142.4	2758.8	157.4	152.1	.00	.00	.00	1.35	.00	.39	.00	.9022	1812.2	.00
3	1906.8	.00	3057.8	142.4	2758.8	157.4	152.2	.00	.00	.00	1.34	.00	.41	.00	.9022	1812.2	.00
3	1906.9	.00	3057.8	142.4	2758.8	157.4	152.2	.00	.00	.00	1.34	.00	.39	.00	.9016	1812.8	.00
3	1907.0	.00	3057.9	142.4	2758.8	157.4	152.2	.00	.00	.00	1.34	.00	.40	.00	.9019	1812.5	.00
3	1907.2	.00	3057.9	142.4	2758.9	157.4	152.2	.00	.00	.00	1.34	.00	.39	.00	.9022	1812.5	.00
3	1907.3	.00	3058.0	142.4	2758.9	157.4	152.3	.00	.00	.00	1.34	.00	.40	.00	.9016	1812.8	.00
3	1907.4	.00	3058.0	142.4	2758.9	157.4	152.3	.00	.00	.00	1.35	.00	.40	.00	.9016	1812.8	.00
3	1907.5	.00	3058.1	142.4	2758.9	157.4	152.3	.00	.00	.00	1.34	.00	.39	.00	.8994	1812.5	.00
3	1907.5	.00	3058.1	142.4	2758.9	157.4	152.3	.00	.00	.00	1.35	.00	.40	.00	.9019	1811.9	.00
3	1907.6	.00	3058.1	142.4	2758.9	157.4	152.4	.00	.00	.00	1.34	.00	.40	.00	.9022	1812.5	.00
3	1907.7	.00	3058.2	142.4	2758.9	157.4	152.4	.00	.00	.00	1.34	.00	.40	.00	.8984	1812.8	.00
3	1907.8	.00	3058.2	142.4	2758.9	157.4	152.4	.00	.00	.00	1.35	.00	.40	.00	.9019	1812.5	.00
3	1907.9	.00	3058.2	142.4	2758.9	157.4	152.4	.00	.00	.00	1.34	.00	.39	.00	.9019	1812.8	.00
3	1908.0	.00	3058.2	142.4	2759.0	157.4	152.4	.00	.00	.00	1.35	.00	.40	.00	.9016	1811.9	.00
3	1908.1	.00	3058.3	142.4	2759.0	157.4	152.5	.00	.00	.00	1.34	.00	.40	.00	.9019	1812.2	.00
3	1908.2	.00	3058.3	142.4	2759.0	157.4	152.5	.00	.00	.00	1.34	.00	.41	.00	.9012	1812.5	.00
3	1908.3	.00	3058.4	142.4	2759.0	157.4	152.5	.00	.00	.00	1.35	.00	.39	.00	.9009	1812.8	.00
3	1908.4	.00	3058.4	142.4	2759.0	157.4	152.5	.00	.00	.00	1.35	.00	.41	.00	.9012	1812.8	.00
3	1908.4	.00	3058.4	142.4	2759.0	157.4	152.6	.00	.00	.00	1.36	.00	.39	.00	.9019	1812.2	.00
3	1908.5	.00	3058.5	142.4	2759.0	157.4	152.6	.00	.00	.00	1.35	.00	.41	.00	.9019	1812.8	.00
3	1908.6	.00	3058.5	142.4	2759.0	157.4	152.6	.00	.00	.00	1.34	.00	.39	.00	.9012	1813.1	.00
3	1908.7	.00	3058.5	142.4	2759.0	157.4	152.6	.00	.00	.00	1.35	.00	.41	.00	.9012	1812.5	.00
3	1908.8	.00	3058.5	142.4	2759.0	157.4	152.6	.00	.00	.00	1.35	.00	.39	.00	.9016	1813.1	.00
3	1908.9	.00	3058.6	142.4	2759.0	157.4	152.7	.00	.00	.00	1.35	.00	.42	.00	.9012	1811.9	.00
3	1909.0	.00	3058.6	142.4	2759.1	157.4	152.7	.00	.00	.00	1.36	.00	.38	.00	.9019	1813.1	.00
3	1909.1	.00	3058.6	142.4	2759.1	157.4	152.7	.00	.00	.00	1.35	.00	.42	.00	.9009	1813.1	.00

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PART 3

CRUISE, COAST, AND BRAKE

IDAC TAPE A6122K IDAC DAY 9160

RUN	TIME SEC	VEL MPH	BCHGV VOLT	BV VOLT	MAV VOLT	MFV VOLT	BCHGA AMP	BA AMP	MAA AMP	MFA AMP	TRAT1 DEGF	TRAT2 DEGF	TRAT3 DEGF	TRAT4 DEGF	TRAT5 DEGF	TCONT DEGF	TEM1 DEGF	TEM2 DEGF	TEM3 DEGF	ABV VOLT
3	1881.9	45.28	104.1	104.7	104.4	107.0	-.5	88.2	86.0	2.85	80.8	78.6	79.3	79.1	79.9	110.6	112.2	124.3	201.4	12.43
3	1882.0	45.27	104.2	104.6	104.4	107.0	-.5	87.9	85.8	2.54	80.7	78.7	79.4	79.2	79.9	110.5	112.2	124.3	201.4	12.43
3	1882.1	45.27	104.1	104.6	104.3	107.0	-.5	88.1	85.7	2.42	80.7	78.7	79.5	79.2	79.9	110.5	112.0	124.3	201.4	12.43
3	1882.2	45.27	104.1	104.6	104.3	107.0	-.5	88.2	86.0	2.70	80.7	78.9	79.4	79.1	79.9	110.4	112.2	124.3	201.4	12.43
3	1882.3	45.26	104.1	104.7	104.4	107.0	-.5	88.2	86.0	2.89	80.7	78.7	79.3	79.1	79.8	110.5	112.1	124.3	201.4	12.43
3	1882.3	45.27	104.1	104.6	104.4	107.0	-.5	88.1	85.8	2.70	80.7	78.8	79.4	79.2	79.9	110.5	112.1	124.3	201.4	12.43
3	1882.4	45.27	104.1	104.6	104.3	107.0	-.5	88.0	85.7	2.41	80.8	78.9	79.4	79.2	79.8	110.5	112.2	124.3	201.4	12.43
3	1882.5	45.27	104.1	104.6	104.3	107.0	-.5	88.1	85.9	2.56	80.7	78.8	79.3	79.1	79.8	110.5	112.0	124.3	201.4	12.43
3	1882.6	45.28	104.1	104.7	104.4	107.0	-.5	88.2	86.1	2.85	80.7	78.7	79.4	79.2	79.9	110.6	112.2	124.3	201.4	12.43
3	1882.7	45.27	104.1	104.7	104.4	107.0	-.5	88.1	85.9	2.83	80.7	78.8	79.4	79.1	79.8	110.5	112.2	124.4	201.4	12.43
3	1882.8	45.27	104.2	104.6	104.3	107.0	-.5	88.0	85.6	2.50	80.9	78.8	79.4	79.1	79.8	110.5	112.2	124.4	201.4	12.43
3	1882.9	45.28	104.2	104.6	104.3	107.0	-.5	88.0	85.7	2.44	80.8	78.8	79.4	79.1	79.9	110.5	112.2	124.4	201.5	12.43
3	1883.0	45.28	104.1	104.7	104.4	107.0	-.5	88.2	86.0	2.75	80.6	78.8	79.4	79.2	80.0	110.5	112.1	124.4	201.5	12.43
3	1883.1	45.27	104.1	104.7	104.4	107.0	-.5	88.1	86.0	2.89	80.6	78.8	79.5	79.2	79.9	110.5	112.1	124.2	201.5	12.43
3	1883.2	45.26	104.1	104.6	104.3	107.0	-.5	87.9	85.7	2.65	80.7	78.8	79.4	79.0	79.8	110.5	112.2	124.4	201.5	12.43
3	1883.2	45.27	104.2	104.6	104.3	107.0	-.5	88.0	85.6	2.41	80.8	78.8	79.3	79.1	79.9	110.6	112.1	124.4	201.5	12.43
3	1883.3	45.28	104.1	104.6	104.3	107.0	-.5	88.1	85.9	2.60	80.7	78.8	79.4	79.2	79.9	110.5	112.1	124.3	201.5	12.44
3	1883.4	45.28	104.1	104.7	104.4	107.0	-.5	88.2	86.1	2.87	80.7	78.8	79.4	79.1	79.9	110.5	112.1	124.3	201.5	12.43
3	1883.5	45.28	104.1	104.7	104.4	107.0	-.5	88.0	85.9	2.80	80.7	78.8	79.3	79.2	79.9	110.5	112.3	124.3	201.5	12.43
3	1883.6	45.27	104.2	104.6	104.4	107.0	-.5	87.9	85.6	2.47	80.7	78.7	79.4	79.1	79.9	110.5	112.3	124.4	201.5	12.43
3	1883.7	45.27	104.1	104.6	104.3	107.0	-.5	88.0	85.7	2.47	80.7	78.8	79.4	79.1	79.8	110.5	112.2	124.4	201.5	12.43
3	1883.8	45.28	104.1	104.7	104.4	107.0	-.5	88.2	86.0	2.78	80.7	78.9	79.4	79.1	79.9	110.5	112.2	124.4	201.5	12.44
3	1883.9	45.27	104.1	104.7	104.4	107.0	-.5	88.0	86.1	2.88	80.7	78.8	79.3	79.2	80.0	110.6	112.2	124.3	201.5	12.43
3	1884.0	45.27	104.1	104.6	104.4	107.0	-.5	87.9	85.7	2.60	80.7	78.8	79.4	79.2	79.9	110.4	112.2	124.4	201.6	12.44
3	1884.1	45.27	104.1	104.6	104.3	107.0	-.5	88.0	85.7	2.41	80.7	78.9	79.3	79.0	79.9	110.6	112.2	124.3	201.5	12.43
3	1884.1	45.28	104.1	104.7	104.3	107.0	-.5	88.1	85.9	2.65	80.8	78.8	79.3	79.0	79.9	110.5	112.2	124.4	201.6	12.43
3	1884.2	45.27	104.1	104.7	104.4	107.0	-.5	88.1	86.0	2.87	80.7	78.7	79.4	79.2	79.9	110.5	112.2	124.3	201.5	12.43
3	1884.3	45.28	104.2	104.7	104.4	107.0	-.5	87.8	85.8	2.76	80.7	78.8	79.3	79.1	79.9	110.5	112.1	124.3	201.6	12.43
3	1884.4	45.28	104.1	104.6	104.4	107.0	-.5	87.9	85.6	2.44	80.7	78.7	79.4	79.2	80.1	110.6	112.2	124.4	201.6	12.44
3	1884.5	45.26	104.1	104.6	104.3	107.0	-.5	88.0	85.7	2.50	80.7	78.7	79.4	79.1	79.9	110.4	112.3	124.4	201.6	12.43
3	1884.6	45.27	104.1	104.7	104.4	107.0	-.5	88.2	85.9	2.81	80.8	78.8	79.4	79.1	79.8	110.6	112.2	124.5	201.6	12.43
3	1884.7	45.28	104.1	104.7	104.4	107.0	-.5	88.0	86.0	2.86	80.8	78.8	79.3	79.2	80.0	110.5	112.2	124.4	201.6	12.43
3	1884.8	45.28	104.1	104.7	104.4	107.0	-.5	88.0	86.0	2.86	80.8	78.8	79.3	79.2	80.0	110.5	112.2	124.4	201.6	12.43
3	1884.9	45.26	104.1	104.6	104.3	107.0	-.5	87.9	85.6	2.41	80.7	78.8	79.4	79.1	79.9	110.5	112.2	124.4	201.6	12.43
3	1885.0	45.27	104.1	104.6	104.3	107.0	-.5	88.1	85.8	2.69	80.7	78.8	79.4	79.0	79.9	110.5	112.2	124.3	201.6	12.43
3	1885.0	45.28	104.1	104.7	104.4	107.0	-.5	88.0	86.0	2.89	80.8	78.7	79.4	79.1	79.9	110.5	112.2	124.5	201.6	12.43
3	1885.1	45.28	104.1	104.7	104.4	107.0	-.5	87.8	85.7	2.72	80.7	78.8	79.4	79.2	80.0	110.5	112.3	124.4	201.6	12.44
3	1885.2	45.28	104.2	104.6	104.3	107.0	-.5	87.7	85.5	2.42	80.7	78.8	79.3	79.1	79.9	110.5	112.1	124.3	201.7	12.43
3	1885.3	45.28	104.1	104.6	104.3	107.0	-.5	88.0	85.7	2.54	80.7	78.8	79.4	79.1	80.0	110.5	112.2	124.3	201.6	12.44
3	1885.4	45.27	104.1	104.7	104.4	107.0	-.5	88.0	85.9	2.84	80.8	78.8	79.4	79.1	79.9	110.5	112.2	124.5	201.6	12.44
3	1885.5	45.28	104.1	104.7	104.4	107.0	-.5	87.9	85.8	2.84	80.7	78.9	79.4	79.2	79.9	110.5	112.3	124.4	201.6	12.43
3	1885.6	45.28	104.2	104.6	104.4	107.0	-.5	87.7	85.5	2.51	80.8	78.8	79.4	79.1	79.9	110.5	112.2	124.4	201.6	12.44
3	1885.7	45.28	104.2	104.6	104.3	107.0	-.5	87.8	85.6	2.43	80.7	78.7	79.4	79.1	80.0	110.6	112.0	124.4	201.6	12.43
3	1885.8	45.28	104.1	104.6	104.4	107.0	-.5	88.0	85.9	2.73	80.8	78.8	79.4	79.2	79.9	110.5	112.2	124.4	201.6	12.43
3	1885.9	45.27	104.1	104.7	104.4	107.0	-.5	88.0	85.8	2.89	80.8	78.8	79.4	79.0	79.8	110.5	112.2	124.4	201.6	12.43
3	1885.9	45.28	104.2	104.6	104.4	107.0	-.5	87.8	85.6	2.66	80.8	78.8	79.3	79.1	79.8	110.6	112.2	124.4	201.7	12.43
3	1886.0	45.28	104.2	104.6	104.3	107.0	-.5	87.8	85.5	2.40	80.7	78.8	79.4	79.2	79.9	110.5	112.1	124.3	201.6	12.44
3	1886.1	45.28	104.1	104.6	104.3	107.0	-.5	87.9	85.7	2.59	80.7	78.8	79.4	79.0	79.9	110.5	112.1	124.4	201.6	12.43
3	1886.2	45.28	104.1	104.7	104.4	107.0	-.5	88.0	85.9	2.86	80.8	78.8	79.3	79.1	79.9	110.5	112.2	124.4	201.7	12.43
3	1886.3	45.26	104.1	104.7	104.4	107.0	-.5	87.8	85.7	2.81	80.7	78.8	79.4	79.1	80.0	110.4	112.3	124.4	201.7	12.43

IDAC TAPE A6122R IDAC DAY 91A0

RUN	TIME SEC	VEL MPH	ACHGV VOLT	BV VOLT	MAV VOLT	MFV VOLT	SCHGA AMP	BA AMP	MAA AMP	MFA AMP	THAT1 DEGF	THAT2 DEGF	THAT3 DEGF	THAT4 DEGF	THAT5 DEGF	TCONT DEGF	TEM1 DEGF	TEM2 DEGF	TEM3 DEGF	ABV VOLT
3	1886.4	45.27	104.2	104.6	104.4	107.0	-.5	87.7	85.5	2.47	80.8	78.9	79.4	79.1	79.9	110.6	112.2	124.5	201.7	12.43
3	1886.5	45.29	104.2	104.6	104.3	107.0	-.5	87.9	85.6	2.45	80.7	78.8	79.4	79.2	80.0	110.6	112.2	124.4	201.7	12.43
3	1886.6	45.27	104.1	104.7	104.4	107.0	-.5	88.0	85.9	2.77	80.7	78.7	79.4	79.2	79.9	110.5	112.0	124.4	201.7	12.43
3	1886.7	45.28	104.1	104.7	104.4	107.0	-.5	87.9	85.8	2.88	80.8	78.8	79.3	79.2	79.9	110.6	112.1	124.4	201.7	12.43
3	1886.8	45.28	104.2	104.6	104.4	107.0	-.5	87.7	85.5	2.62	80.7	78.8	79.4	79.2	79.9	110.4	112.1	124.5	201.7	12.44
3	1886.8	45.28	104.2	104.6	104.3	107.0	-.5	87.8	85.4	2.40	80.8	78.8	79.4	79.1	79.8	110.5	112.2	124.5	201.7	12.43
3	1886.9	45.27	104.1	104.6	104.3	107.0	-.5	87.9	85.7	2.63	80.8	78.8	79.3	79.1	79.9	110.5	112.2	124.5	201.7	12.43
3	1887.0	45.28	104.1	104.7	104.4	107.0	-.5	87.9	85.9	2.87	80.6	78.8	79.4	79.2	79.9	110.5	112.1	124.3	201.7	12.43
3	1887.1	45.27	104.1	104.7	104.4	107.0	-.5	87.8	85.7	2.77	80.8	78.7	79.4	79.1	79.9	110.6	112.1	124.5	201.7	12.43
3	1887.2	45.26	104.2	104.6	104.4	107.0	-.5	87.7	85.4	2.45	80.7	78.8	79.4	79.1	79.9	110.5	112.2	124.5	201.7	12.43
3	1887.3	45.28	104.1	104.6	104.3	107.0	-.5	87.9	85.5	2.49	80.7	78.9	79.5	79.2	79.9	110.5	112.2	124.5	201.7	12.43
3	1887.4	45.26	104.1	104.7	104.4	107.0	-.5	88.0	85.8	2.80	80.8	78.8	79.4	79.1	79.9	110.5	112.1	124.4	201.7	12.43
3	1887.5	45.27	104.1	104.7	104.4	107.0	-.5	87.9	85.9	2.87	80.7	78.8	79.3	79.1	80.0	110.6	112.0	124.3	201.7	12.43
3	1887.6	45.28	104.2	104.6	104.4	107.0	-.5	87.7	85.6	2.56	80.7	78.8	79.4	79.1	80.0	110.6	112.1	124.5	201.7	12.43
3	1887.7	45.27	104.1	104.6	104.3	107.0	-.5	87.7	85.4	2.43	80.7	78.8	79.5	79.2	79.9	110.5	112.2	124.5	201.7	12.43
3	1887.7	45.26	104.2	104.5	104.3	107.0	-.5	86.4	83.5	2.82	80.8	78.9	79.4	79.1	79.8	110.5	112.1	124.5	201.7	12.43
3	1887.8	45.24	104.5	104.6	104.5	107.0	-.5	79.1	74.5	3.17	80.8	78.8	79.4	79.1	79.8	110.5	112.2	124.5	201.7	12.43
3	1887.9	45.13	105.4	104.9	105.2	107.0	-.5	62.8	55.8	3.04	80.8	78.7	79.4	79.1	80.0	110.6	112.1	124.5	201.7	12.43
3	1888.0	44.95	106.6	105.8	106.3	107.0	-.5	40.3	31.8	2.90	80.7	78.8	79.5	79.2	80.0	110.5	112.1	124.5	201.7	12.43
3	1888.1	44.77	107.8	107.2	107.8	107.0	-.5	18.9	11.1	3.21	80.7	78.9	79.4	79.1	79.8	110.5	112.1	124.6	201.7	12.43
3	1888.2	44.56	108.6	108.4	108.9	107.0	-.5	3.7	-2.9	3.65	80.8	78.9	79.5	79.1	79.9	110.5	112.1	124.6	201.7	12.43
3	1888.3	44.35	109.4	109.3	109.8	107.0	-.5	-9.7	-15.6	3.66	80.8	78.8	79.4	79.1	79.9	110.6	112.0	124.6	201.7	12.43
3	1888.4	44.19	109.9	110.0	110.4	107.0	-.5	-18.4	-23.2	3.45	80.8	78.7	79.3	79.1	80.0	110.6	112.0	124.3	201.7	12.43
3	1888.5	44.03	110.2	110.4	110.8	107.0	-.5	-24.2	-28.8	3.51	80.8	78.7	79.4	79.2	80.1	110.6	112.0	124.6	201.7	12.43
3	1888.6	43.88	110.5	110.9	111.2	107.0	-.5	-28.0	-32.1	3.93	80.7	78.8	79.4	79.2	79.8	110.5	112.1	124.6	201.7	12.43
3	1888.6	43.76	110.7	111.1	111.5	107.0	-.5	-30.7	-34.4	4.06	80.8	78.9	79.5	79.1	79.8	110.6	112.1	124.6	201.6	12.43
3	1888.7	43.66	110.8	111.3	111.6	107.0	-.5	-32.2	-35.7	3.77	80.8	78.8	79.4	79.1	79.9	110.6	112.0	124.6	201.6	12.43
3	1888.8	43.56	110.9	111.4	111.7	107.0	-.5	-33.0	-36.5	3.64	80.7	78.7	79.3	79.1	80.0	110.6	112.0	124.5	201.6	12.43
3	1888.9	43.47	111.0	111.5	111.8	107.0	-.5	-33.3	-36.7	3.91	80.7	78.8	79.4	79.2	80.0	110.5	112.1	124.6	201.6	12.43
3	1889.0	43.37	111.0	111.6	111.9	107.0	-.5	-33.5	-36.8	4.19	80.8	78.8	79.4	79.1	79.8	110.6	112.2	124.6	201.6	12.43
3	1889.2	43.23	111.1	111.6	111.9	107.0	-.5	-33.5	-36.7	3.74	80.8	78.8	79.4	79.2	80.0	110.5	112.0	124.5	201.7	12.42
3	1889.3	43.15	111.1	111.6	111.8	107.0	-.5	-32.9	-36.2	3.81	80.7	78.8	79.4	79.1	79.9	110.6	112.0	124.5	201.7	12.41
3	1889.4	43.08	111.0	111.7	111.9	107.0	-.5	-32.3	-35.5	4.19	80.7	78.8	79.4	79.2	80.0	110.6	112.0	124.5	201.7	12.41
3	1889.5	43.00	111.1	111.7	111.9	107.0	-.5	-32.2	-35.4	4.23	80.7	78.8	79.4	79.2	79.9	110.6	112.0	124.6	201.7	12.40
3	1889.5	42.93	111.1	111.6	111.9	107.0	-.5	-32.6	-36.0	3.93	80.8	78.8	79.4	79.2	79.9	110.5	112.0	124.6	201.7	12.40
3	1889.6	42.84	111.2	111.6	111.9	107.0	-.5	-33.7	-37.6	3.89	80.9	78.9	79.4	79.1	80.0	110.5	112.0	124.6	201.7	12.40
3	1889.7	42.75	111.3	111.7	112.1	107.0	-.5	-35.9	-40.0	4.28	80.7	78.7	79.4	79.2	80.0	110.7	112.0	124.5	201.7	12.41
3	1889.8	42.63	111.5	111.9	112.3	107.0	-.5	-39.3	-43.7	4.59	80.7	78.8	79.4	79.2	79.9	110.5	112.1	124.6	201.7	12.41
3	1889.9	42.50	111.8	112.0	112.5	107.0	-.5	-44.4	-49.4	4.42	80.8	78.8	79.4	79.1	79.9	110.6	112.1	124.6	201.7	12.40
3	1890.0	42.35	112.1	112.3	112.8	107.0	-.5	-50.7	-56.2	4.36	80.7	78.8	79.4	79.2	80.0	110.5	112.0	124.6	201.7	12.40
3	1890.1	42.19	112.5	112.7	113.2	107.0	-.5	-56.6	-62.1	4.65	80.8	78.9	79.4	79.2	79.9	110.6	112.0	124.6	201.7	12.40
3	1890.2	42.03	112.7	113.1	113.5	107.0	-.5	-61.2	-66.2	5.05	80.7	78.7	79.4	79.2	80.0	110.6	111.9	124.5	201.7	12.23
3	1890.3	41.86	112.9	113.3	113.8	107.0	-.5	-64.4	-69.2	4.97	80.7	78.8	79.4	79.2	80.0	110.6	112.0	124.6	201.7	12.40
3	1890.4	41.72	113.0	113.4	113.9	107.0	-.5	-66.7	-71.4	4.78	80.7	78.8	79.4	79.1	79.9	110.6	112.1	124.7	201.7	12.40
3	1890.4	41.57	113.1	113.5	114.0	107.0	-.5	-68.1	-72.8	4.86	80.8	78.8	79.5	79.2	79.9	110.5	112.0	124.6	201.7	12.40
3	1890.5	41.45	113.2	113.7	114.1	107.0	-.5	-68.9	-73.5	5.24	80.8	78.9	79.4	79.2	79.9	110.6	112.2	124.7	201.7	12.40
3	1890.6	41.32	113.2	113.8	114.2	107.0	-.5	-69.3	-73.5	5.31	80.7	78.8	79.4	79.2	80.0	110.6	112.1	124.5	201.7	12.40
3	1890.7	41.20	113.2	113.8	114.3	107.0	-.5	-69.2	-73.5	5.03	80.8	78.9	79.5	79.2	80.0	110.6	112.1	124.6	201.7	12.40
3	1890.8	41.09	113.3	113.8	114.2	107.0	-.5	-68.6	-73.0	4.94	80.8	78.8	79.4	79.1	79.9	110.6	112.1	124.7	201.7	12.40
3	1890.9	40.99	113.2	113.8	114.2	107.0	-.5	-67.7	-72.0	5.20	80.7	78.8	79.4	79.2	80.0	110.6	112.1	124.6	201.7	12.40

IDAC TAPE A6122R IDAC DAY 9160

RUN	TIME SEC	VEL MPH	BCHGV VOLT	BV VOLT	MAV VOLT	MFV VOLT	BCHGA AMP	BA AMP	MAA AMP	MFA AMP	TBAT1 DEGF	TBAT2 DEGF	TBAT3 DEGF	TBAT4 DEGF	TBAT5 DEGF	TCONT DEGF	TEM1 DEGF	TEM2 DEGF	TEM3 DEGF	ABV VOLT
3	1891.0	40.89	113.2	113.8	114.2	107.0	-.5	-66.9	-71.1	5.45	80.8	78.9	79.5	79.2	79.9	110.6	112.1	124.6	201.7	12.40
3	1891.1	40.80	113.2	113.8	114.2	107.0	-.5	-66.1	-70.2	5.23	80.8	78.9	79.3	79.1	79.9	110.6	112.1	124.4	201.7	12.40
3	1891.2	40.71	113.2	113.7	114.1	107.0	-.5	-65.2	-69.5	5.03	80.8	78.8	79.4	79.1	80.1	110.6	112.1	124.6	201.7	12.40
3	1891.3	40.60	113.1	113.7	114.1	107.0	-.5	-64.2	-68.5	5.13	80.7	78.9	79.4	79.2	79.9	110.6	112.3	124.7	201.7	12.40
3	1891.3	40.52	113.1	113.7	114.1	107.0	-.5	-63.1	-67.4	5.47	80.7	78.9	79.5	79.2	79.9	110.6	112.1	124.6	201.7	12.40
3	1891.4	40.44	113.1	113.7	114.1	107.0	-.5	-62.0	-66.0	5.39	80.8	78.9	79.4	79.1	80.0	110.5	112.2	124.6	201.7	12.40
3	1891.5	40.36	113.0	113.6	114.0	107.0	-.5	-59.8	-63.5	5.05	80.7	78.7	79.4	79.2	80.0	110.6	112.1	124.6	201.7	12.40
3	1891.6	40.30	112.8	113.5	113.8	107.0	-.5	-56.4	-60.0	4.92	80.8	78.9	79.5	79.1	79.9	110.6	112.2	124.7	201.7	12.40
3	1891.7	40.24	112.7	113.4	113.7	107.0	-.5	-52.7	-56.2	5.17	80.7	78.8	79.4	79.1	79.9	110.5	112.2	124.7	201.7	12.40
3	1891.8	40.19	112.5	113.2	113.5	107.0	-.5	-49.5	-52.9	5.32	80.8	78.9	79.5	79.1	79.9	110.5	112.2	124.6	201.7	12.40
3	1891.9	40.15	112.4	113.1	113.4	106.9	-.5	-46.9	-50.5	5.03	80.8	78.9	79.4	79.2	80.0	110.6	112.0	124.6	201.7	12.40
3	1892.0	40.10	112.4	112.9	113.3	107.0	-.5	-44.7	-48.5	4.81	80.7	78.7	79.4	79.2	79.9	110.6	112.0	124.6	201.7	12.40
3	1892.1	40.06	112.2	112.9	113.1	107.0	-.5	-42.4	-46.2	4.92	80.8	78.9	79.4	79.1	79.9	110.6	112.2	124.6	201.7	12.40
3	1892.2	39.99	112.2	112.8	113.1	107.0	-.5	-40.5	-44.2	5.25	80.9	78.8	79.4	79.1	79.9	110.6	112.2	124.7	201.7	12.40
3	1892.2	39.94	112.1	112.7	113.0	107.0	-.5	-39.1	-42.8	5.14	80.8	78.9	79.5	79.2	79.9	110.5	112.2	124.7	201.7	12.40
3	1892.3	39.88	112.1	112.6	112.9	107.0	-.5	-37.9	-41.8	4.85	80.9	78.9	79.4	79.2	79.9	110.5	112.2	124.6	201.7	12.40
3	1892.4	39.82	112.0	112.6	112.8	107.0	-.5	-36.8	-40.8	4.83	80.7	78.7	79.3	79.1	80.0	110.7	112.1	124.6	201.7	12.40
3	1892.5	39.75	112.0	112.6	112.8	107.0	-.5	-35.7	-39.7	5.15	80.8	78.8	79.4	79.2	80.0	110.6	112.2	124.7	201.8	12.40
3	1892.6	39.67	111.9	112.6	112.8	107.0	-.5	-34.9	-38.8	5.27	80.8	78.9	79.5	79.1	79.9	110.5	112.2	124.7	201.7	12.40
3	1892.7	39.62	111.9	112.5	112.8	107.0	-.5	-34.2	-38.2	4.99	80.8	78.9	79.4	79.1	79.9	110.6	112.2	124.7	201.7	12.40
3	1892.8	39.55	111.9	112.4	112.7	107.0	-.5	-33.4	-37.6	4.85	80.7	78.8	79.5	79.2	79.9	110.6	112.2	124.6	201.7	12.40
3	1892.9	39.49	111.9	112.4	112.6	107.0	-.5	-32.7	-37.0	5.07	80.7	78.9	79.5	79.2	79.9	110.6	112.1	124.6	201.7	12.40
3	1893.0	39.42	111.8	112.5	112.7	107.0	-.5	-32.6	-36.9	5.38	80.8	78.8	79.4	79.2	79.9	110.6	112.3	124.6	201.7	12.37
3	1893.1	39.33	111.9	112.4	112.7	107.0	-.5	-32.8	-37.1	5.21	80.8	78.8	79.4	79.1	79.9	110.6	112.3	124.7	201.8	12.40
3	1893.1	39.27	111.9	112.4	112.7	107.0	-.5	-32.7	-37.0	4.99	80.7	78.9	79.4	79.3	80.0	110.6	112.2	124.7	201.8	12.40
3	1893.2	39.20	111.9	112.4	112.7	107.0	-.5	-32.2	-36.5	5.02	80.8	78.8	79.5	79.2	80.0	110.6	112.2	124.7	201.8	12.40
3	1893.3	39.13	111.8	112.4	112.7	107.0	-.5	-31.4	-35.7	5.37	80.8	78.8	79.4	79.1	80.0	110.7	112.3	124.7	201.8	12.40
3	1893.4	39.06	111.8	112.4	112.7	107.0	-.5	-30.9	-35.0	5.40	80.7	78.8	79.4	79.1	80.1	110.7	112.3	124.7	201.8	12.40
3	1893.5	38.99	111.8	112.3	112.6	107.0	-.5	-30.3	-34.6	5.12	80.8	78.8	79.4	79.2	80.0	110.6	112.3	124.7	201.7	12.40
3	1893.6	38.99	111.8	112.3	112.6	107.0	-.5	-30.3	-34.6	5.12	80.8	78.8	79.4	79.2	80.0	110.6	112.3	124.7	201.7	12.40
3	1893.7	38.87	111.7	112.3	112.5	107.0	-.5	-28.7	-33.0	5.27	80.8	78.9	79.4	79.1	79.9	110.6	112.2	124.7	201.8	12.40
3	1893.8	38.81	111.7	112.3	112.5	107.0	-.5	-28.0	-32.1	5.51	80.8	78.7	79.4	79.2	80.0	110.7	112.3	124.6	201.8	12.40
3	1893.9	38.74	111.7	112.3	112.5	107.0	-.5	-27.3	-31.6	5.28	80.7	78.8	79.4	79.3	80.0	110.7	112.3	124.6	201.8	12.40
3	1894.0	38.68	111.7	112.2	112.4	107.0	-.5	-26.7	-31.1	5.09	80.8	78.9	79.5	79.2	79.9	110.6	112.3	124.7	201.7	12.40
3	1894.0	38.61	111.6	112.2	112.4	107.0	-.5	-25.9	-30.2	5.18	80.8	78.9	79.5	79.2	79.9	110.6	112.3	124.7	201.7	12.40
3	1894.1	38.56	111.6	112.2	112.4	107.0	-.5	-25.1	-29.3	5.52	80.8	78.8	79.5	79.2	80.0	110.7	112.4	124.7	201.8	12.40
3	1894.2	38.50	111.5	112.2	112.4	107.0	-.5	-24.5	-28.7	5.46	80.7	78.8	79.4	79.2	79.9	110.6	112.3	124.7	201.8	12.40
3	1894.3	38.44	111.6	112.1	112.3	107.0	-.5	-23.9	-28.3	5.20	80.8	78.9	79.4	79.1	79.9	110.6	112.4	124.7	201.8	12.40
3	1894.4	38.37	111.5	112.0	112.3	107.0	-.5	-23.3	-27.8	5.16	80.8	78.8	79.4	79.1	79.9	110.6	112.3	124.8	201.8	12.40
3	1894.5	38.32	111.5	112.0	112.3	107.0	-.5	-22.6	-27.0	5.45	80.8	78.8	79.4	79.2	80.0	110.6	112.3	124.7	201.7	12.40
3	1894.6	38.26	111.5	112.1	112.3	106.9	-.5	-22.1	-26.5	5.61	80.8	78.9	79.5	79.2	80.0	110.6	112.4	124.7	201.8	12.40
3	1894.7	38.20	111.5	112.0	112.2	107.0	-.5	-21.7	-26.0	5.35	80.8	78.8	79.4	79.1	79.9	110.6	112.3	124.7	201.8	12.40
3	1894.8	38.13	111.4	112.0	112.2	107.0	-.5	-21.1	-25.6	5.22	80.8	78.8	79.4	79.1	80.0	110.7	112.4	124.7	201.8	12.40
3	1894.9	38.05	111.5	111.7	112.0	107.0	-.5	-23.5	-29.7	6.26	80.8	78.9	79.5	79.2	79.9	110.6	112.4	124.8	201.8	12.40
3	1894.9	37.94	112.2	112.0	112.6	107.0	-.5	-37.7	-47.2	6.96	80.8	79.0	79.5	79.2	80.0	110.6	112.3	124.7	201.8	12.40
3	1895.0	37.92	112.4	113.2	113.5	106.9	-.5	-40.9	-47.5	7.88	80.8	78.9	79.4	79.2	80.0	110.6	112.5	124.7	201.8	12.40
3	1895.1	37.50	111.7	113.1	113.0	106.9	-.4	-26.5	-30.5	8.27	80.7	78.7	79.4	79.2	80.1	110.7	112.4	124.7	201.8	12.40
3	1895.2	37.06	110.8	112.2	112.0	106.9	-.5	-9.1	-13.3	8.42	80.7	78.7	79.4	79.2	80.0	110.7	112.4	124.7	201.9	12.40
3	1895.3	36.81	110.3	111.3	111.2	106.9	-.5	2.6	-3.4	8.49	80.7	78.8	79.4	79.2	79.9	110.5	112.4	124.8	202.0	12.40
3	1895.4	36.62	110.1	110.8	110.8	106.9	-.5	8.4	.9	8.51	80.8	78.9	79.4	79.1	79.9	110.6	112.3	124.7	202.0	12.39

IDAC TAPE A6122R IDAC DAY 91oo

RUN	TIME SEC	VEL MPH	BCHGV VOLT	BV VOLT	MAV VOLT	MFV VOLT	BCHGA AMP	BA AMP	MAA AMP	MFA AMP	TBAT1 DEGF	TBAT2 DEGF	TBAT3 DEGF	TBAT4 DEGF	TBAT5 DEGF	TCONT DEGF	TEM1 DEGF	TEM2 DEGF	TEM3 DEGF	ABV VOLT
3	1900.1	21.69	109.6	110.1	110.2	106.9	-.5	12.4	3.8	8.49	80.8	78.8	79.4	79.2	80.1	110.7	112.8	124.7	202.1	12.40
3	1900.2	21.29	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.8	78.9	79.6	79.2	80.0	110.7	112.9	124.8	202.0	12.40
3	1900.3	20.92	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.9	78.9	79.4	79.2	79.9	110.7	113.0	124.9	202.1	12.40
3	1900.3	20.56	109.6	110.1	110.2	106.9	-.5	12.4	3.7	8.48	80.8	78.9	79.5	79.2	80.0	110.6	112.9	124.9	202.0	12.39
3	1900.4	20.27	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.48	80.9	78.9	79.5	79.2	79.9	110.7	112.9	124.7	202.1	12.40
3	1900.5	20.03	109.6	110.1	110.2	106.9	-.5	12.4	3.7	8.48	80.8	78.8	79.4	79.1	80.1	110.7	112.8	124.8	202.0	12.40
3	1900.6	19.84	109.5	110.1	110.2	106.9	-.5	12.5	3.7	8.48	80.8	78.9	79.5	79.1	80.0	110.6	112.9	124.8	202.0	12.40
3	1900.7	19.63	109.6	110.1	110.1	106.9	-.5	12.5	3.7	8.48	80.8	78.9	79.4	79.1	80.0	110.6	113.0	124.9	202.0	12.40
3	1900.8	19.38	109.6	110.0	110.2	106.9	-.5	12.5	3.7	8.48	80.8	78.9	79.5	79.2	80.0	110.7	113.0	124.8	202.0	12.40
3	1900.9	19.14	109.6	110.1	110.2	106.9	-.5	12.4	3.7	8.48	80.9	78.9	79.5	79.2	80.1	110.6	113.0	124.8	202.0	12.40
3	1901.0	18.85	109.6	110.1	110.2	106.9	-.5	12.4	3.7	8.48	80.8	78.8	79.4	79.1	80.1	110.7	112.9	124.7	202.0	12.39
3	1901.1	18.55	109.5	110.1	110.2	106.9	-.5	12.5	3.7	8.48	80.8	78.9	79.5	79.2	80.0	110.7	113.0	124.9	202.0	12.40
3	1901.2	18.20	109.6	110.1	110.1	106.9	-.5	12.5	3.7	8.48	80.8	78.8	79.4	79.1	80.0	110.7	113.0	124.9	202.0	12.40
3	1901.2	17.85	109.5	110.1	110.1	106.9	-.5	12.5	3.7	8.48	80.9	79.0	79.5	79.2	79.9	110.6	113.0	124.9	202.0	12.39
3	1901.3	17.50	109.5	110.1	110.1	106.9	-.5	12.5	3.8	8.48	80.8	78.8	79.4	79.2	80.1	110.7	112.9	124.8	202.0	12.39
3	1901.4	17.12	109.6	110.1	110.1	106.9	-.5	12.4	3.7	8.48	80.8	78.9	79.4	79.1	79.9	110.7	112.9	124.7	202.0	12.40
3	1901.5	16.76	109.5	110.1	110.2	106.9	-.5	12.5	3.7	8.48	80.9	78.8	79.5	79.2	80.1	110.7	113.0	124.7	202.0	12.40
3	1901.6	16.37	109.5	110.0	110.2	106.9	-.5	12.5	3.7	8.48	80.9	78.9	79.5	79.1	79.9	110.6	113.0	124.9	202.0	12.40
3	1901.7	16.02	109.5	110.1	110.1	106.9	-.5	12.4	3.7	8.48	80.8	78.9	79.4	79.1	80.0	110.7	113.0	124.8	202.0	12.39
3	1901.8	15.68	109.5	110.1	110.1	106.9	-.5	12.5	3.7	8.48	80.8	79.0	79.5	79.2	80.0	110.6	113.0	124.8	202.0	12.40
3	1901.9	15.36	109.5	110.1	110.1	106.9	-.5	12.5	3.7	8.48	80.9	78.8	79.3	79.1	80.1	110.7	112.9	124.8	202.0	12.40
3	1902.0	15.02	109.5	110.1	110.1	106.9	-.5	12.4	3.8	8.48	80.8	78.9	79.5	79.3	80.1	110.7	113.1	124.7	202.0	12.40
3	1902.1	14.72	109.5	110.1	110.1	106.9	-.5	12.5	3.7	8.48	80.9	78.9	79.4	79.1	79.9	110.7	113.1	124.8	202.0	12.40
3	1902.1	14.38	109.5	110.0	110.1	106.9	-.5	12.5	3.7	8.47	80.9	79.0	79.5	79.2	80.0	110.6	113.0	124.8	202.0	12.39
3	1902.2	14.04	109.5	110.1	110.1	106.9	-.5	12.5	3.7	8.47	80.9	78.9	79.4	79.2	80.1	110.7	113.1	124.8	202.0	12.40
3	1902.3	13.75	109.5	110.0	110.1	106.9	-.5	12.5	3.7	8.48	80.8	78.9	79.5	79.2	80.1	110.7	113.0	124.7	202.0	12.39
3	1902.4	13.75	109.5	110.0	110.1	106.9	-.5	12.5	3.7	8.48	80.8	78.9	79.5	79.2	80.1	110.7	113.0	124.7	202.0	12.39
3	1902.5	13.09	109.5	110.1	110.1	106.9	-.5	12.5	3.7	8.47	80.8	78.9	79.4	79.1	79.9	110.7	113.2	124.8	201.9	12.40
3	1902.6	12.80	109.5	110.0	110.1	106.9	-.5	12.5	3.7	8.47	80.8	78.8	79.5	79.2	80.0	110.7	113.1	124.8	201.9	12.40
3	1902.7	12.51	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.47	81.0	78.9	79.5	79.2	80.0	110.7	113.1	124.8	201.9	12.40
3	1902.8	12.17	109.5	110.1	110.1	106.9	-.5	12.4	3.7	8.48	80.8	78.9	79.5	79.2	80.0	110.6	113.0	124.7	201.9	12.40
3	1902.9	11.85	109.5	110.1	110.1	106.9	-.5	12.5	3.7	8.47	80.9	78.9	79.5	79.3	80.2	110.7	113.1	124.7	201.9	12.40
3	1903.0	11.56	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.47	80.9	78.9	79.5	79.2	79.9	110.6	113.1	124.9	201.9	12.39
3	1903.0	11.26	109.5	110.0	110.1	106.9	-.5	12.5	3.7	8.47	80.9	78.9	79.4	79.2	80.0	110.7	113.1	124.8	201.9	12.40
3	1903.1	10.93	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.47	80.9	78.9	79.5	79.2	79.9	110.7	113.1	124.8	201.9	12.39
3	1903.2	10.65	109.5	110.0	110.1	106.9	-.5	12.4	3.8	8.47	80.8	78.8	79.4	79.2	80.1	110.7	113.0	124.7	201.9	12.40
3	1903.3	10.40	109.5	110.1	110.1	106.9	-.5	12.5	3.7	8.47	80.8	78.9	79.5	79.2	80.0	110.6	113.1	124.7	201.9	12.4
3	1903.4	10.16	109.5	110.0	110.1	106.9	-.5	12.5	3.7	8.47	80.9	78.9	79.4	79.1	80.0	110.7	113.1	124.8	201.9	12.40
3	1903.5	9.93	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.47	80.8	78.9	79.5	79.2	79.9	110.7	113.2	124.8	201.9	12.40
3	1903.6	9.66	109.5	110.1	110.1	106.9	-.5	12.5	3.7	8.47	80.9	78.9	79.4	79.2	80.0	110.8	113.1	124.8	201.9	12.40
3	1903.7	9.43	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.47	80.8	78.9	79.5	79.2	80.1	110.6	113.1	124.7	201.9	12.40
3	1903.8	9.17	109.5	110.1	110.1	106.9	-.5	12.4	3.7	8.47	80.9	78.9	79.5	79.2	80.1	110.8	113.2	124.8	201.9	12.40
3	1903.9	8.89	109.5	110.0	110.1	106.9	-.5	12.5	3.7	8.47	80.8	78.9	79.4	79.2	80.0	110.7	113.2	124.7	201.9	12.40
3	1903.9	8.63	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.47	80.9	79.0	79.5	79.2	79.8	110.7	113.2	124.8	201.9	12.39
3	1904.0	8.36	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.46	80.9	78.8	79.4	79.2	80.1	110.7	113.1	124.8	201.9	12.40
3	1904.1	8.11	109.5	110.0	110.1	106.9	-.5	12.3	3.7	8.46	80.8	78.8	79.4	79.2	80.0	110.6	113.0	124.7	201.9	12.39
3	1904.2	7.85	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.46	80.9	78.9	79.5	79.2	80.0	110.7	113.2	124.7	201.9	12.39
3	1904.3	7.57	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.47	80.8	78.8	79.4	79.1	80.0	110.7	113.2	124.8	201.9	12.40
3	1904.4	7.27	109.5	110.0	110.1	106.9	-.5	12.4	3.7	8.46	80.8	78.9	79.5	79.2	80.0	110.7	113.2	124.8	201.8	12.39
3	1904.5	7.01	109.5	110.0	110.1	106.9	-.5	12.5	3.8	8.46	80.9	78.8	79.4	79.2	80.0	110.7	113.2	124.8	201.8	12.

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RUN	TIME	VEL	BCHGV	BV	DAV	BFV	BCHGA	BA	DAA	DFA	TBAT1	TBAT2	TBAT3	TBAT4	TBAT5	TCONT	TEM1	TEM2	TEM3	AB
	SEC	MPH	VOLT	VOLT	VOLT	VOLT	AMP	AMP	AMP	AMP	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	DEGF	VOLT
3	1904.6	6.71	109.5	110.0	110.1	106.9	0.5	12.4	3.8	8.46	80.8	78.9	79.5	79.3	80.2	110.7	113.2	124.7	201.8	12.4
3	1904.7	6.46	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.46	80.9	78.9	79.5	79.2	80.1	110.7	113.2	124.8	201.8	12.3
3	1904.8	6.18	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.46	80.8	78.8	79.4	79.2	80.1	110.7	113.2	124.8	201.8	12.39
3	1904.8	5.94	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.46	80.9	78.9	79.5	79.2	80.0	110.6	113.2	124.8	201.8	12.39
3	1904.9	5.65	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.9	78.9	79.4	79.2	80.0	110.7	113.1	124.7	201.8	12.39
3	1905.0	5.36	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.8	78.8	79.4	79.1	80.1	110.8	113.2	124.8	201.8	12.40
3	1905.1	5.06	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.8	78.9	79.6	79.3	80.1	110.7	113.2	124.9	201.8	12.40
3	1905.2	4.75	109.5	110.0	110.1	107.0	0.5	12.4	3.7	8.46	80.8	79.0	79.5	79.1	79.9	110.7	113.3	124.8	201.8	12.40
3	1905.3	4.46	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.46	81.0	78.9	79.4	79.1	80.0	110.8	113.3	124.9	201.8	12.40
3	1905.4	4.19	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.9	78.9	79.5	79.2	80.1	110.7	113.2	124.8	201.8	12.40
3	1905.5	3.91	109.5	110.0	110.1	106.9	0.5	12.3	3.7	8.46	80.8	78.9	79.5	79.2	80.1	110.7	113.1	124.9	201.8	12.39
3	1905.6	3.62	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.9	78.9	79.4	79.2	80.1	110.8	113.2	124.8	201.8	12.40
3	1905.7	3.36	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.8	78.9	79.5	79.2	80.0	110.7	113.2	124.8	201.8	12.40
3	1905.7	3.09	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.9	79.0	79.4	79.1	79.9	110.7	113.2	124.8	201.8	12.39
3	1905.8	2.81	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.9	79.4	79.2	80.1	110.7	113.2	124.8	201.8	12.39
3	1905.9	2.53	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.7	78.9	79.5	79.3	80.1	110.8	113.2	124.7	201.7	12.40
3	1906.0	2.24	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.8	78.9	79.5	79.2	80.0	110.7	113.2	124.8	201.8	12.40
3	1906.1	1.97	109.5	110.0	110.1	106.9	0.5	12.5	3.6	8.46	80.8	78.9	79.4	79.2	80.1	110.8	113.3	124.8	201.7	12.40
3	1906.2	1.18	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.45	80.8	78.9	79.5	79.2	80.0	110.8	113.3	124.8	201.7	12.40
3	1906.3	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	79.0	79.6	79.2	80.0	110.6	113.3	124.8	201.7	12.39
3	1906.4	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.9	78.9	79.5	79.3	80.0	110.7	113.2	124.7	201.7	12.40
3	1906.5	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.8	78.8	79.4	79.2	80.1	110.9	113.4	124.8	201.7	12.40
3	1906.6	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.46	80.9	78.9	79.5	79.2	80.0	110.7	113.3	124.8	201.7	12.39
3	1906.6	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.8	79.0	79.5	79.3	80.0	110.7	113.2	124.8	201.7	12.40
3	1906.7	.00	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.45	80.9	78.9	79.5	79.2	80.0	110.8	113.3	124.7	201.7	12.40
3	1906.8	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.7	78.9	79.4	79.2	80.1	110.8	113.2	124.7	201.7	12.39
3	1906.9	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.8	78.9	79.5	79.3	80.0	110.7	113.3	124.7	201.7	12.40
3	1907.0	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.9	79.4	79.1	79.9	110.7	113.4	124.8	201.7	12.40
3	1907.2	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.8	79.0	79.6	79.2	80.0	110.7	113.3	124.7	201.6	12.40
3	1907.3	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.9	79.4	79.2	80.1	110.8	113.2	124.7	201.6	12.39
3	1907.4	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.7	78.8	79.6	79.3	80.1	110.8	113.3	124.7	201.6	12.40
3	1907.5	.00	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.45	80.9	78.9	79.5	79.2	79.9	110.7	113.3	124.7	201.6	12.39
3	1907.5	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.9	79.4	79.2	80.1	110.8	113.3	124.8	201.6	12.40
3	1907.6	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.8	8.45	80.8	78.9	79.5	79.3	80.1	110.7	113.2	124.8	201.6	12.40
3	1907.7	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.9	79.5	79.2	80.0	110.8	113.2	124.7	201.6	12.40
3	1907.8	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.8	79.4	79.2	80.1	110.8	113.3	124.7	201.6	12.40
3	1907.9	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.8	78.9	79.5	79.3	80.0	110.7	113.4	124.7	201.6	12.40
3	1908.0	.00	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.45	80.9	79.0	79.5	79.2	80.0	110.8	113.4	124.8	201.6	12.40
3	1908.1	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.9	79.4	79.2	80.1	110.8	113.4	124.7	201.6	12.40
3	1908.2	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.9	79.5	79.3	80.0	110.7	113.2	124.8	201.6	12.40
3	1908.3	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.9	79.5	79.2	80.0	110.7	113.4	124.7	201.6	12.40
3	1908.4	.00	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.45	80.9	78.9	79.4	79.1	80.1	110.8	113.4	124.7	201.6	12.40
3	1908.4	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.9	78.9	79.5	79.3	80.1	110.8	113.4	124.7	201.6	12.40
3	1908.5	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.8	8.45	80.8	79.0	79.6	79.3	79.9	110.7	113.3	124.7	201.5	12.40
3	1908.6	.00	109.5	110.0	110.1	106.9	0.5	12.5	3.8	8.45	80.9	78.9	79.4	79.2	80.1	110.9	113.3	124.7	201.5	12.40
3	1908.7	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.7	8.45	80.8	78.9	79.5	79.3	80.2	110.8	113.3	124.7	201.5	12.40
3	1908.8	.00	109.5	110.0	110.1	107.0	0.5	12.5	3.7	8.45	80.9	78.9	79.5	79.3	80.0	110.7	113.4	124.8	201.5	12.40
3	1908.9	.00	109.5	110.0	110.1	106.9	0.5	12.5	3.7	8.44	81.0	78.9	79.4	79.2	80.0	110.9	113.5	124.9	201.5	12.40
3	1909.0	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.8	8.45	80.9	78.9	79.5	79.3	80.1	110.8	113.4	124.7	201.5	12.40
3	1909.1	.00	109.5	110.0	110.1	106.9	0.5	12.4	3.8	8.44	80.9	78.9	79.5	79.2	80.0	110.8	113.3	124.7	201.5	12.39

IDAC TAPE A6122R IDAC DAY 91b0

RUN	TIME SEC	VEL MPH	BCHGV VOLT	BV VOLT	MAV VOLT	MFV VOLT	BCHGA AMP	BA AMP	MAA AMP	MFA AMP	TBAT1 DEGF	TBAT2 DEGF	TBAT3 DEGF	TBAT4 DEGF	TBAT5 DEGF	TCONT DEGF	TEM1 DEGF	TEM2 DEGF	TEM3 DEGF	ABV VOLT
3	1895.5	36.38	109.9	110.5	110.6	106.9	-.5	10.6	2.6	8.51	80.7	78.9	79.5	79.2	80.0	110.6	112.4	124.7	202.1	12.40
3	1895.6	36.15	109.9	110.5	110.5	106.9	-.5	11.7	3.1	8.52	80.7	78.8	79.4	79.1	79.9	110.6	112.3	124.7	202.1	12.40
3	1895.7	35.95	109.9	110.4	110.5	106.9	-.5	12.0	3.3	8.52	80.9	78.8	79.4	79.2	80.0	110.7	112.5	124.7	202.2	12.40
3	1895.8	35.76	109.8	110.4	110.4	106.9	-.5	12.0	3.3	8.52	80.8	78.8	79.4	79.2	80.0	110.6	112.4	124.8	202.2	12.40
3	1895.8	35.47	109.8	110.4	110.5	106.9	-.5	12.2	3.4	8.52	80.8	78.9	79.5	79.2	79.9	110.6	112.5	124.7	202.1	12.39
3	1895.9	35.08	109.8	110.3	110.4	106.9	-.5	12.2	3.5	8.52	80.8	78.9	79.4	79.2	80.0	110.7	112.5	124.7	202.1	12.40
3	1896.0	34.72	109.8	110.3	110.4	106.9	-.5	12.2	3.4	8.51	80.7	78.9	79.4	79.1	80.0	110.6	112.4	124.7	202.1	12.40
3	1896.1	34.40	109.8	110.3	110.4	106.9	-.5	12.2	3.4	8.51	80.8	78.8	79.4	79.1	80.0	110.6	112.5	124.7	202.1	12.40
3	1896.2	34.12	109.7	110.3	110.4	106.9	-.5	12.2	3.4	8.52	80.8	78.8	79.4	79.2	79.9	110.5	112.5	124.7	202.1	12.40
3	1896.3	33.90	109.7	110.3	110.4	106.9	-.5	12.2	3.5	8.51	80.8	78.9	79.5	79.2	79.9	110.6	112.5	124.8	202.1	12.40
3	1896.4	33.69	109.7	110.3	110.4	106.9	-.5	12.2	3.5	8.51	80.8	78.8	79.5	79.1	80.1	110.6	112.6	124.7	202.1	12.40
3	1896.5	33.50	109.7	110.3	110.4	106.9	-.5	12.2	3.5	8.51	80.7	78.7	79.4	79.2	80.0	110.7	112.5	124.7	202.1	12.40
3	1896.6	33.33	109.7	110.3	110.3	106.9	-.5	12.3	3.5	8.51	80.8	78.8	79.4	79.2	79.9	110.6	112.5	124.8	202.1	12.40
3	1896.7	33.16	109.7	110.3	110.3	106.9	-.5	12.2	3.5	8.51	80.8	78.8	79.4	79.3	80.0	110.6	112.5	124.9	202.1	12.40
3	1896.7	32.99	109.7	110.2	110.3	106.9	-.5	12.3	3.5	8.51	80.9	78.9	79.5	79.1	79.9	110.6	112.5	124.9	202.1	12.40
3	1896.8	32.82	109.7	110.2	110.3	106.9	-.5	12.3	3.6	8.51	80.7	78.9	79.4	79.2	80.1	110.7	112.5	124.8	202.1	12.40
3	1896.9	32.62	109.7	110.2	110.3	106.9	-.5	12.3	3.6	8.51	80.8	78.8	79.5	79.1	79.9	110.6	112.5	124.7	202.1	12.40
3	1897.0	32.42	109.7	110.2	110.3	106.9	-.5	12.3	3.5	8.51	80.8	78.8	79.3	79.2	80.1	110.7	112.5	124.7	202.1	12.40
3	1897.1	32.17	109.7	110.2	110.3	106.9	-.5	12.3	3.5	8.51	80.7	78.8	79.4	79.1	79.9	110.6	112.6	124.8	202.1	12.39
3	1897.2	31.94	109.7	110.2	110.3	106.9	-.5	12.3	3.5	8.51	80.8	78.9	79.5	79.1	79.9	110.6	112.6	124.8	202.1	12.40
3	1897.3	31.69	109.7	110.2	110.3	106.9	-.5	12.3	3.6	8.50	80.9	78.9	79.5	79.1	80.0	110.6	112.6	124.8	202.1	12.40
3	1897.4	31.46	109.7	110.2	110.3	106.9	-.5	12.3	3.6	8.50	80.8	78.8	79.4	79.2	80.0	110.7	112.6	124.7	202.1	12.40
3	1897.5	31.24	109.6	110.2	110.3	106.9	-.5	12.4	3.7	8.51	80.8	78.9	79.4	79.2	80.0	110.6	112.7	124.8	202.1	12.40
3	1897.6	31.03	109.7	110.2	110.3	106.9	-.5	12.5	3.7	8.50	80.9	78.8	79.4	79.1	80.0	110.7	112.7	124.8	202.1	12.40
3	1897.6	30.82	109.7	110.2	110.3	106.9	-.5	12.4	3.7	8.51	80.7	78.9	79.4	79.2	79.9	110.6	112.7	124.8	202.1	12.40
3	1897.7	30.60	109.7	110.2	110.2	106.9	-.5	12.5	3.7	8.50	80.8	78.9	79.5	79.2	79.9	110.7	112.7	124.8	202.1	12.40
3	1897.8	30.36	109.6	110.1	110.2	106.9	-.5	12.4	3.7	8.50	80.7	78.8	79.4	79.2	79.9	110.7	112.6	124.7	202.1	12.40
3	1897.9	30.08	109.6	110.2	110.2	106.9	-.5	12.5	3.7	8.50	80.8	78.8	79.4	79.2	80.0	110.7	112.7	124.7	202.1	12.40
3	1898.0	29.74	109.6	110.2	110.2	106.9	-.5	12.4	3.7	8.50	80.7	78.8	79.4	79.2	79.9	110.7	112.8	124.8	202.1	12.40
3	1898.2	29.04	109.6	110.2	110.2	106.9	-.5	12.5	3.7	8.50	80.7	78.9	79.5	79.2	80.0	110.7	112.7	124.8	202.1	12.40
3	1898.3	28.67	109.6	110.2	110.2	106.9	-.5	12.4	3.7	8.50	80.8	78.8	79.4	79.1	80.0	110.7	112.7	124.8	202.1	12.40
3	1898.4	28.32	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.50	80.8	78.8	79.4	79.3	80.0	110.6	112.7	124.8	202.1	12.40
3	1898.5	28.01	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.50	80.9	78.9	79.4	79.1	79.9	110.6	112.8	124.9	202.1	12.40
3	1898.5	27.73	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.50	80.8	78.8	79.4	79.2	80.0	110.6	112.7	124.8	202.1	12.40
3	1898.6	27.43	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.8	78.9	79.5	79.2	80.0	110.6	112.7	124.9	202.1	12.39
3	1898.7	27.15	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.8	78.8	79.4	79.2	80.0	110.7	112.7	124.7	202.1	12.40
3	1898.8	26.85	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.50	80.8	78.9	79.5	79.2	79.9	110.6	112.7	124.7	202.1	12.40
3	1898.9	26.57	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.50	80.9	78.9	79.4	79.1	79.9	110.7	112.8	124.9	202.1	12.40
3	1899.0	26.29	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.8	78.8	79.4	79.2	80.0	110.6	112.7	124.8	202.1	12.39
3	1899.1	25.99	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.8	78.9	79.5	79.2	80.0	110.6	112.8	124.8	202.1	12.40
3	1899.2	25.67	109.6	110.1	110.2	106.9	-.5	12.4	3.7	8.49	80.8	78.8	79.4	79.2	80.0	110.7	112.7	124.7	202.1	12.40
3	1899.3	25.29	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.7	78.8	79.4	79.2	80.1	110.6	112.9	124.8	202.1	12.40
3	1899.4	24.87	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.9	78.9	79.4	79.1	79.9	110.7	112.9	124.8	202.1	12.40
3	1899.4	24.46	109.6	110.1	110.2	106.9	-.5	12.4	3.7	8.49	80.7	78.9	79.5	79.2	80.0	110.6	112.9	124.9	202.1	12.40
3	1899.5	24.05	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.9	78.9	79.5	79.1	79.9	110.6	112.8	124.9	202.1	12.40
3	1899.6	23.66	109.6	110.1	110.2	106.9	-.5	12.4	3.8	8.49	80.8	78.8	79.4	79.1	80.0	110.6	112.7	124.6	202.1	12.40
3	1899.7	23.27	109.6	110.1	110.2	106.9	-.5	12.4	3.7	8.49	80.8	78.9	79.5	79.3	80.0	110.6	112.9	124.7	202.1	12.39
3	1899.8	22.86	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.8	78.8	79.5	79.1	79.9	110.6	112.9	124.7	202.1	12.39
3	1899.9	22.47	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.8	78.9	79.4	79.2	80.1	110.7	112.9	124.8	202.1	12.39
3	1900.0	22.07	109.6	110.1	110.2	106.9	-.5	12.5	3.7	8.49	80.9	78.9	79.5	79.1	80.0	110.6	112.8	124.8	202.1	12.40

APPENDIX D

PLOTS OF DYNAMOMETER DATA

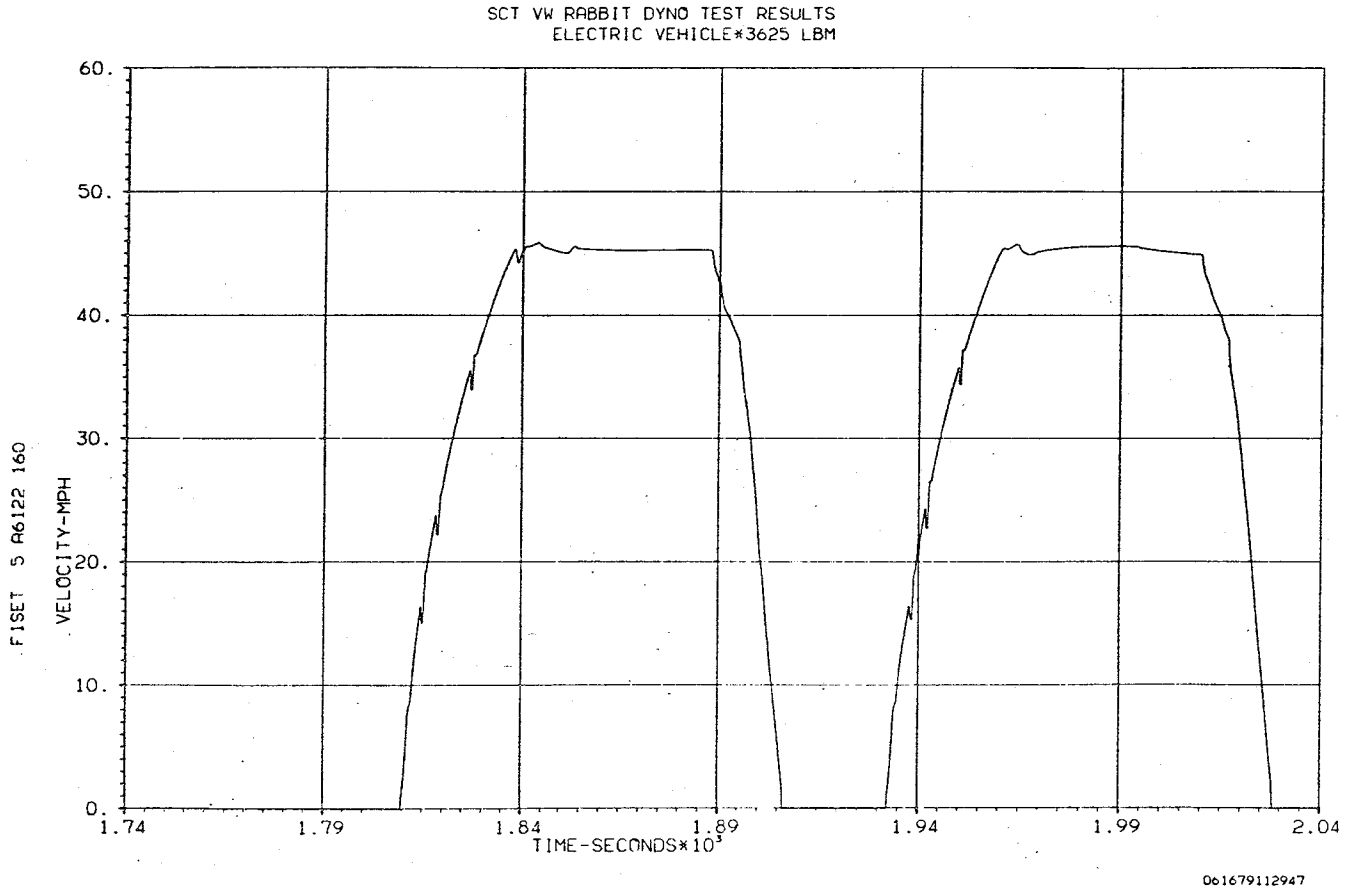

Figure D-1. Vehicle Velocity, Test No. 6: Driving Schedule D Range at 40% Battery Depth of Discharge

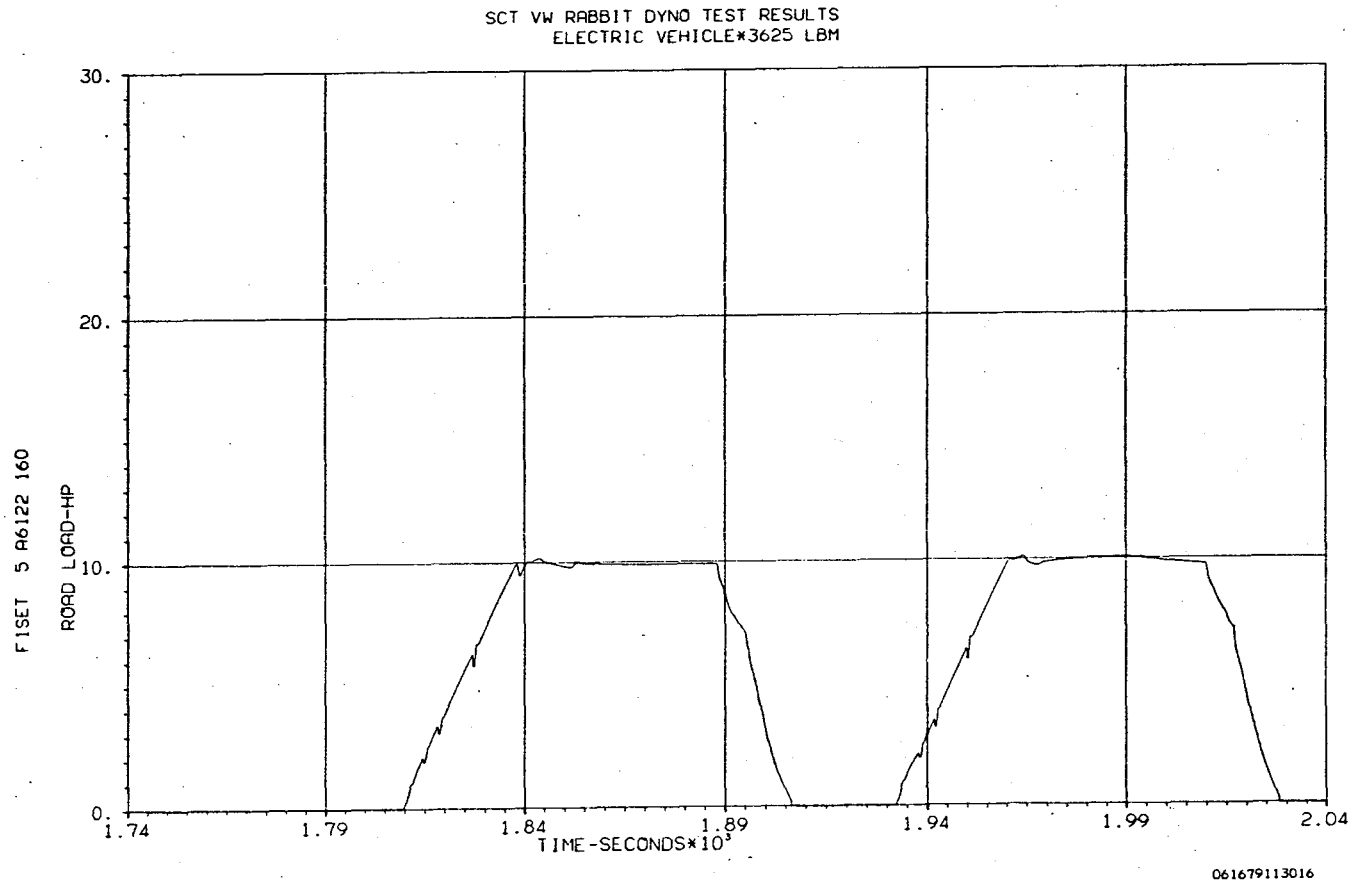

Figure D-2. Road Load - hp, Test No. 6: Driving Schedule D Range at 40% Battery Depth of Discharge

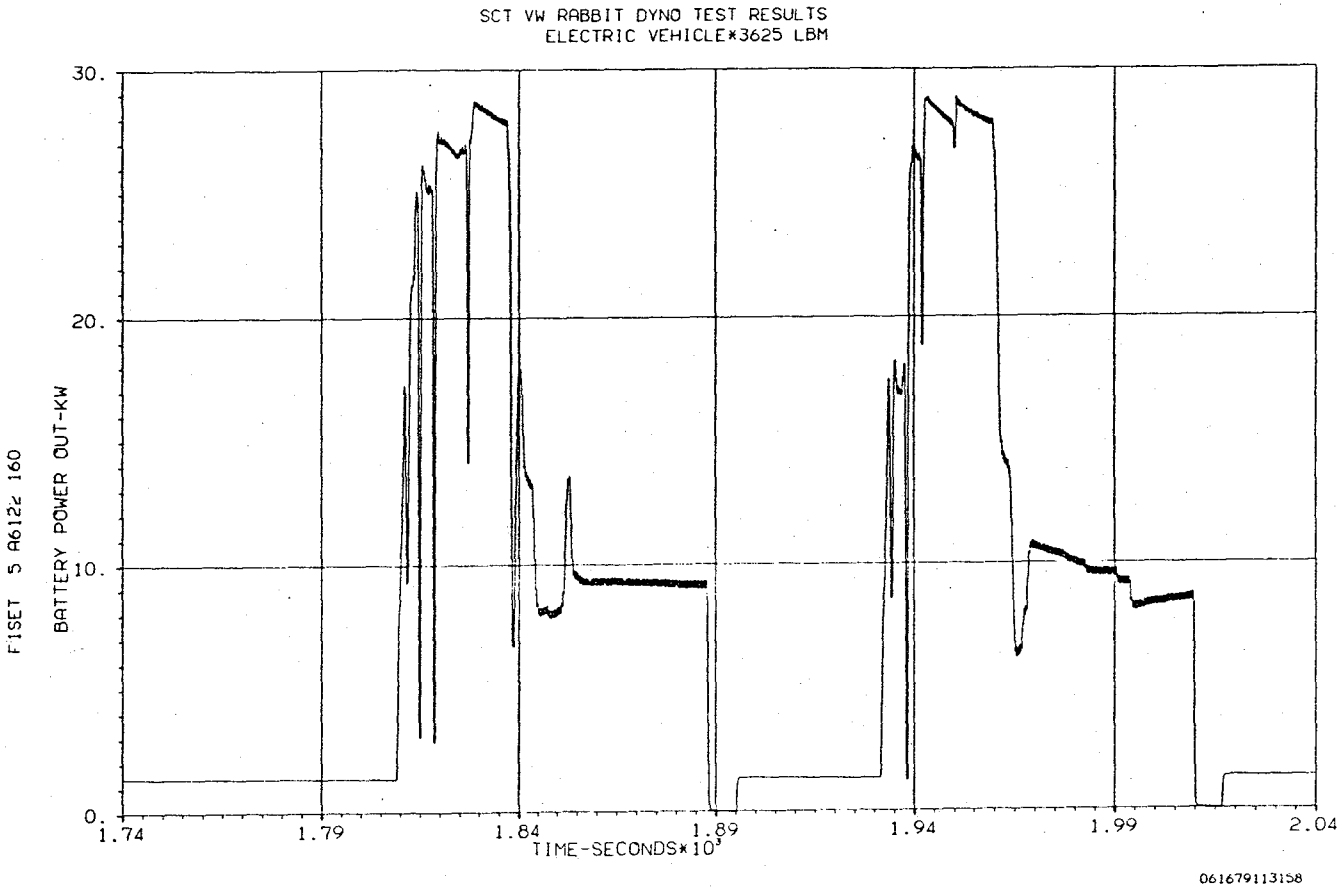

Figure D-3. Battery Output Power, Test No. 6: Driving Schedule D Range at 40% Battery Depth of Discharge

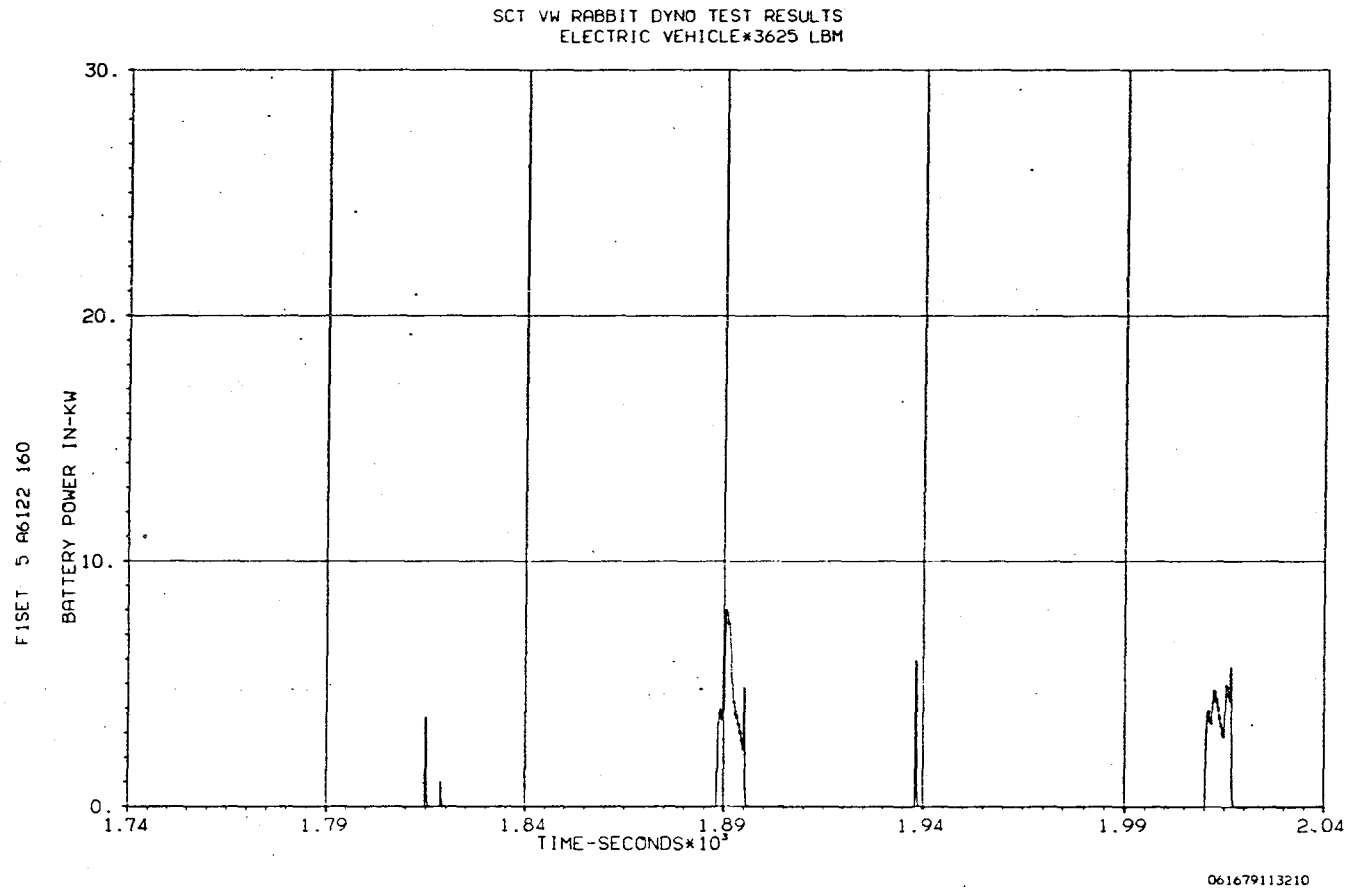

Figure D-4. Battery Input Power (Regeneration), Test No. 6: Driving Schedule D Range at 40% Battery Depth of Discharge

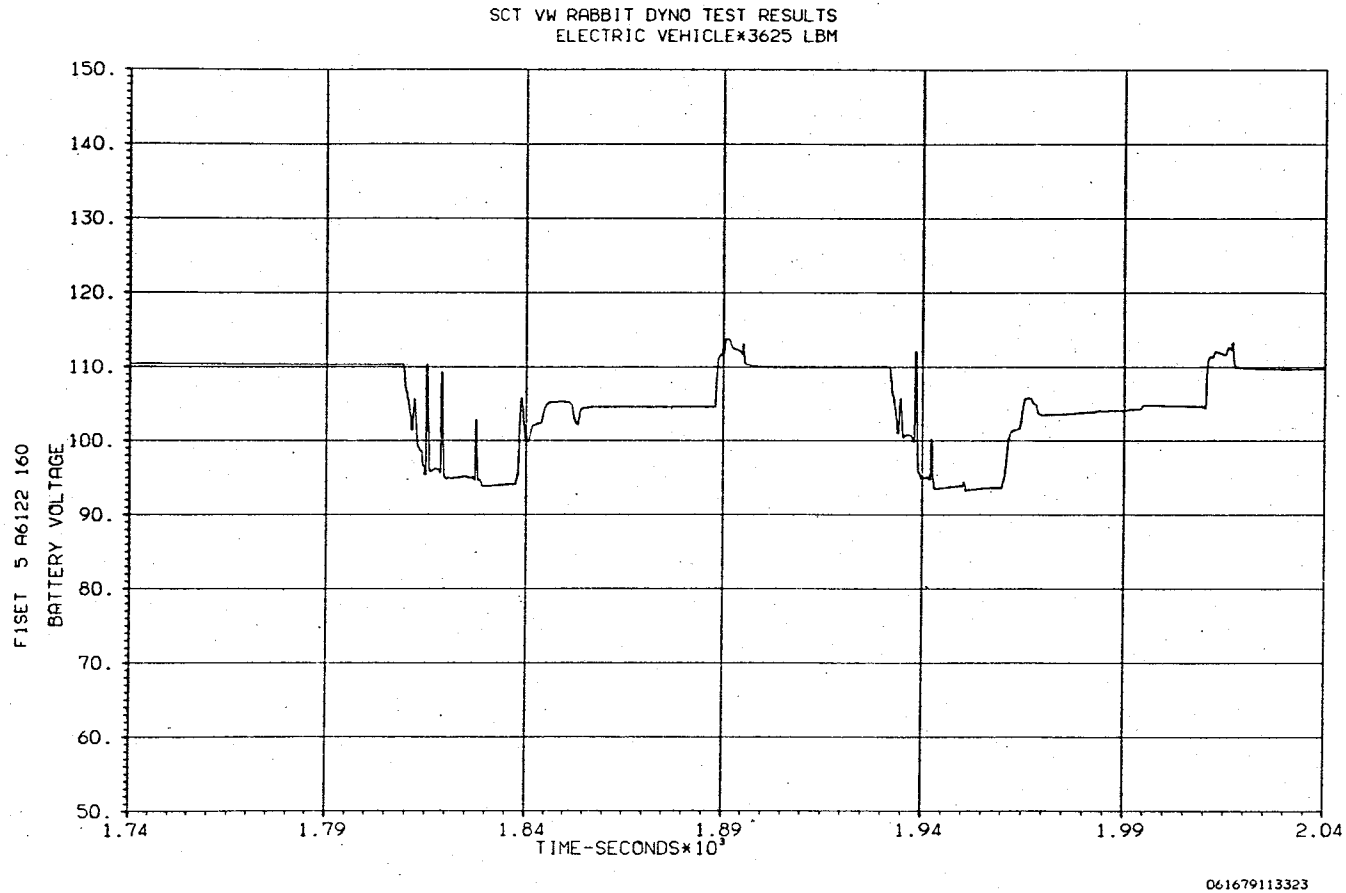

Figure D-5. Battery Voltage, Test 6: Driving Schedule D Range at 40% Battery Depth of Discharge

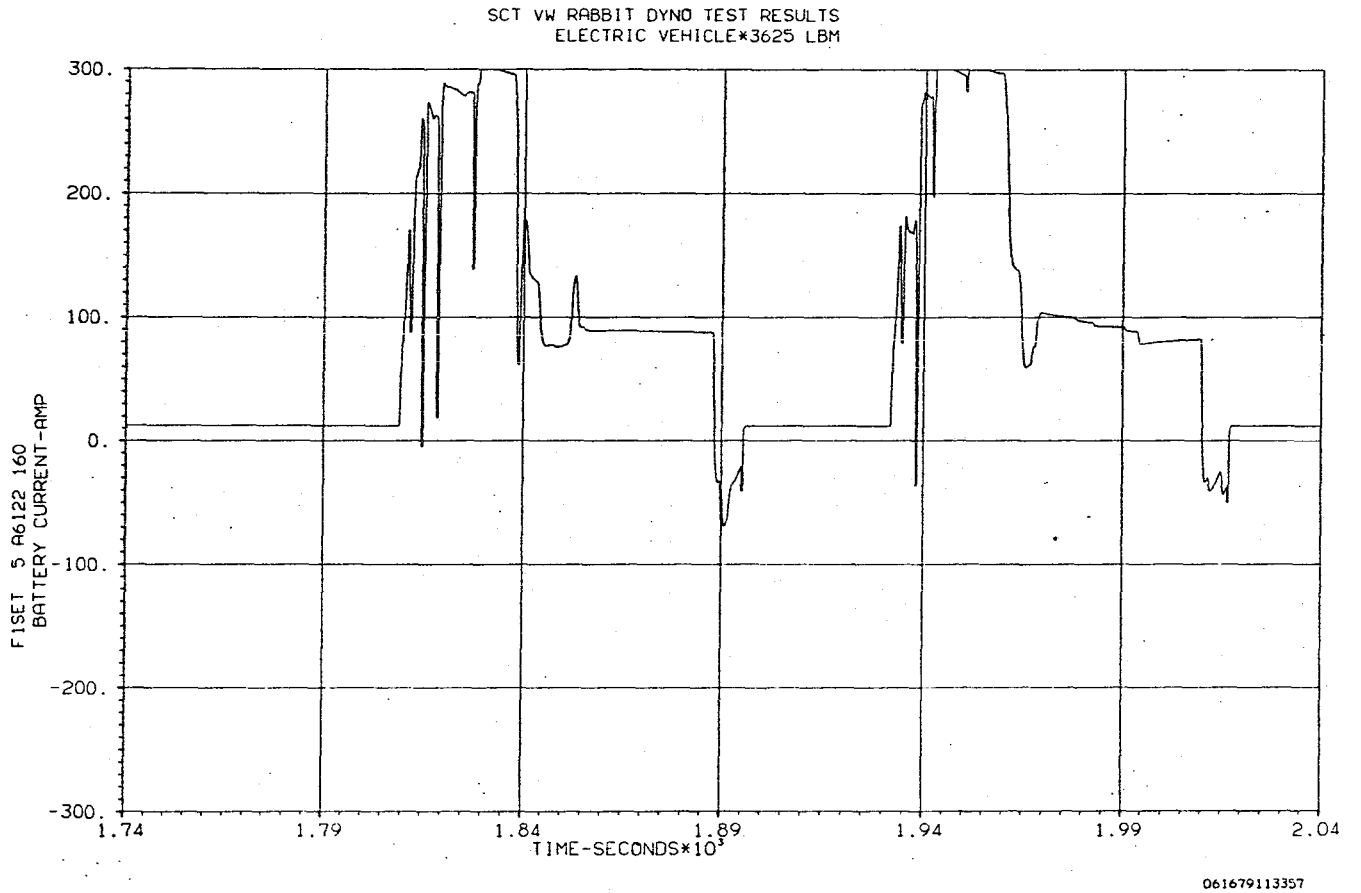

Figure D-6. Battery Current, Test 6: Driving Schedule D Range at 40% Battery Depth of Discharge

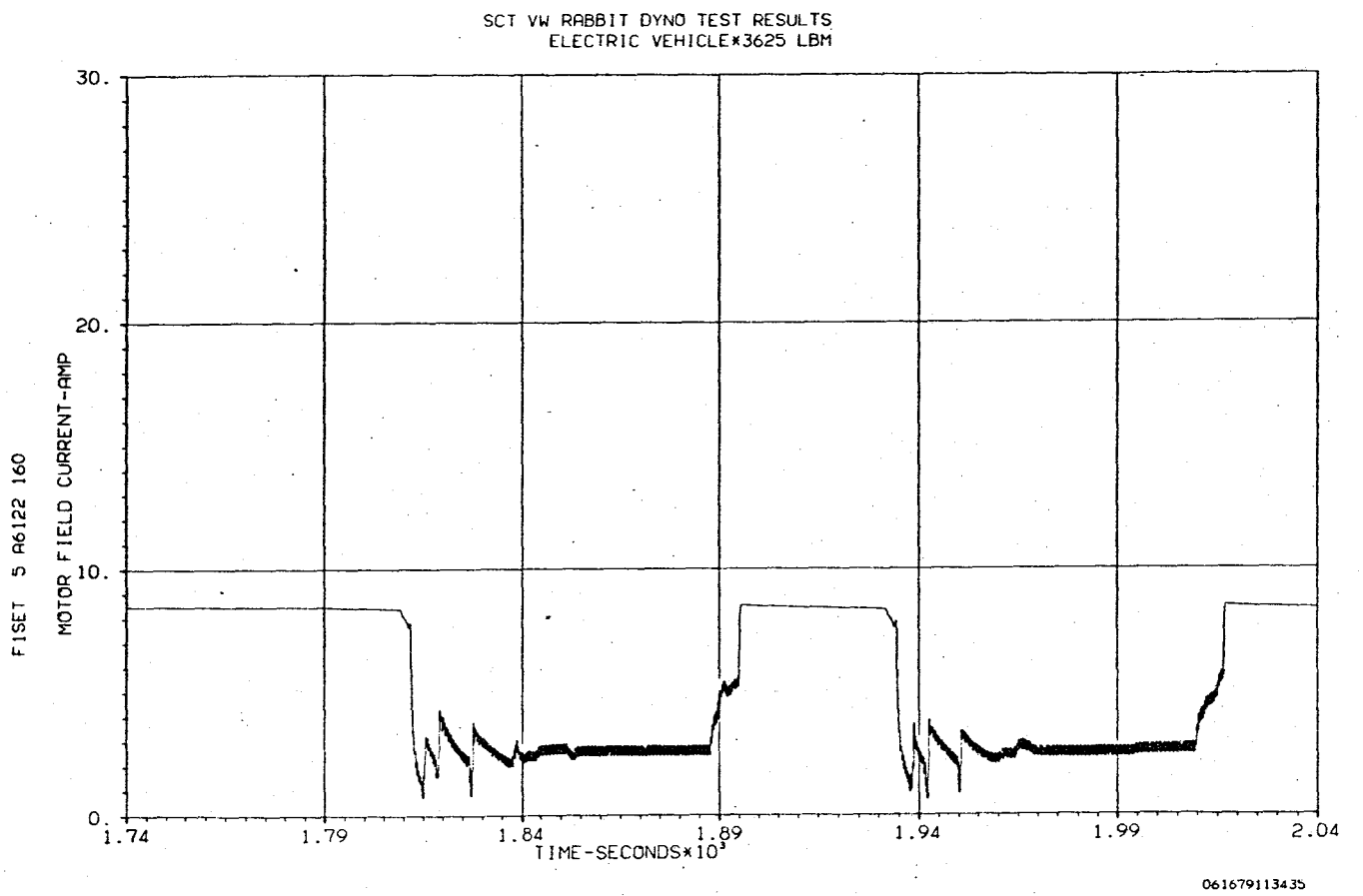

Figure D-7. Motor Field Current, Test 6: Driving Schedule D Range at 40% Battery Depth of Discharge

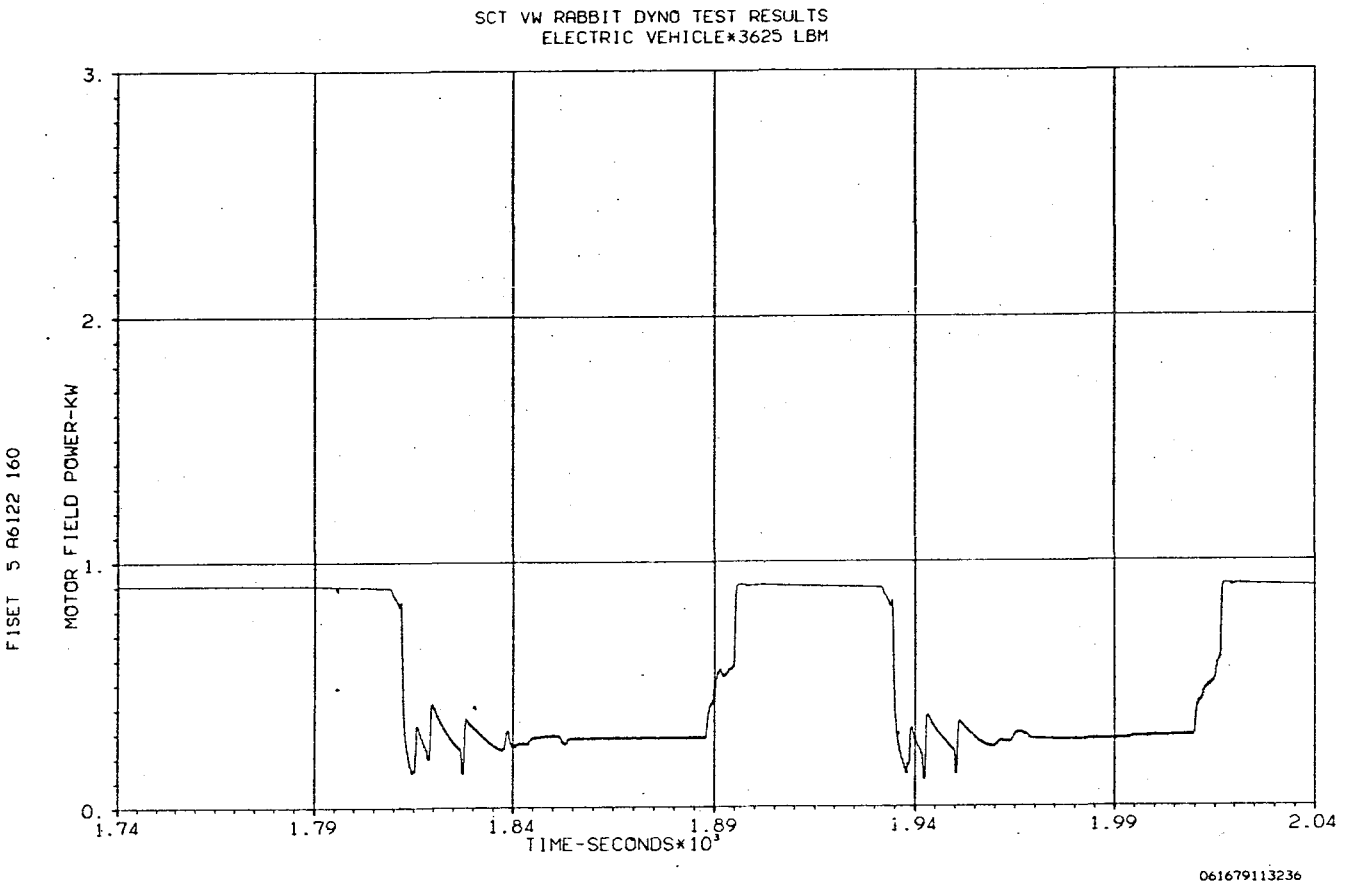

Figure D-8. Motor Field Power, Test 6: Driving Schedule D Range at 40% Battery Depth of Discharge

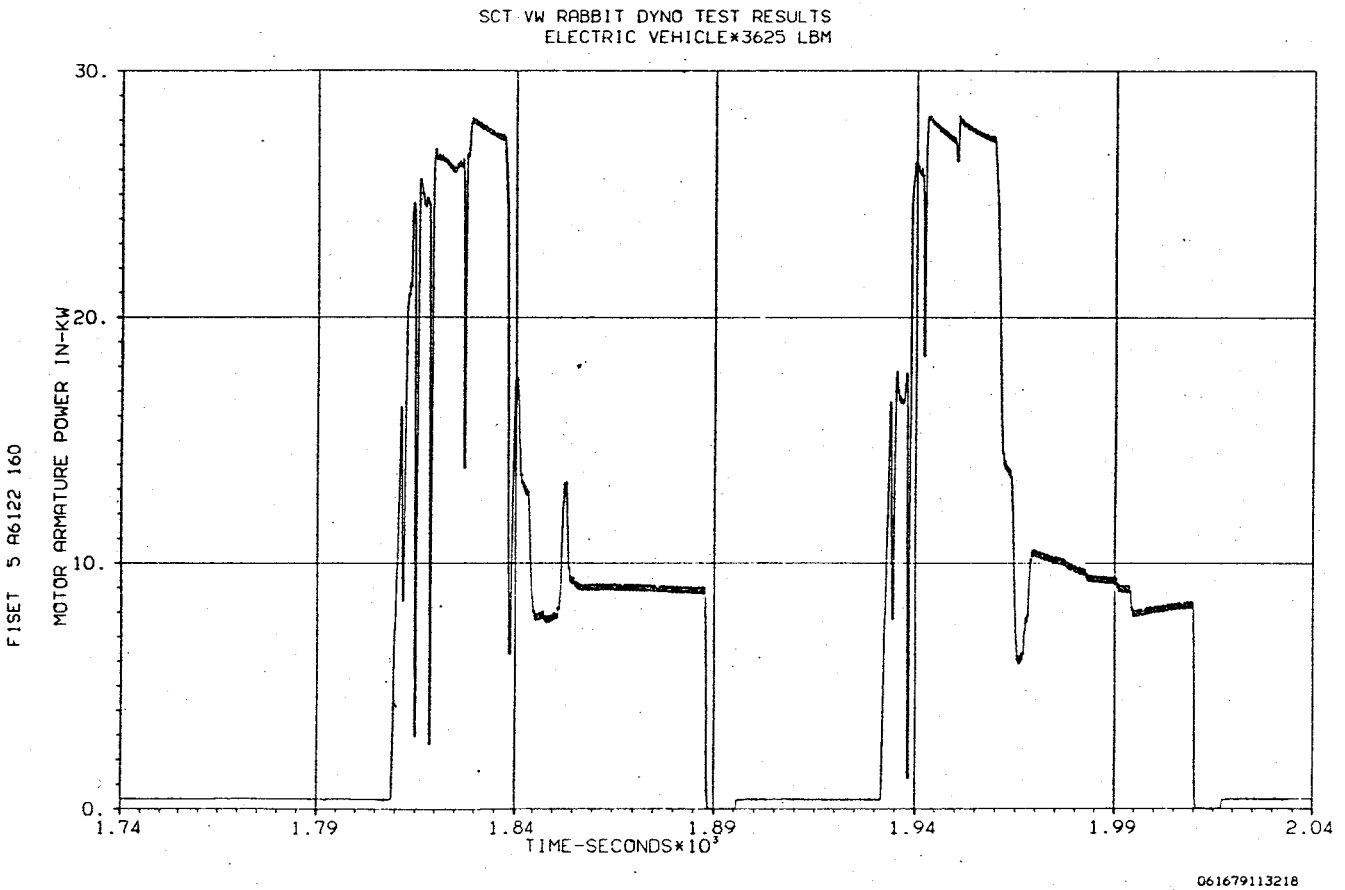

Figure D-9. Motor Armature Input, Power Test No. 6: Driving Schedule D Range at 40% Battery Depth of Discharge

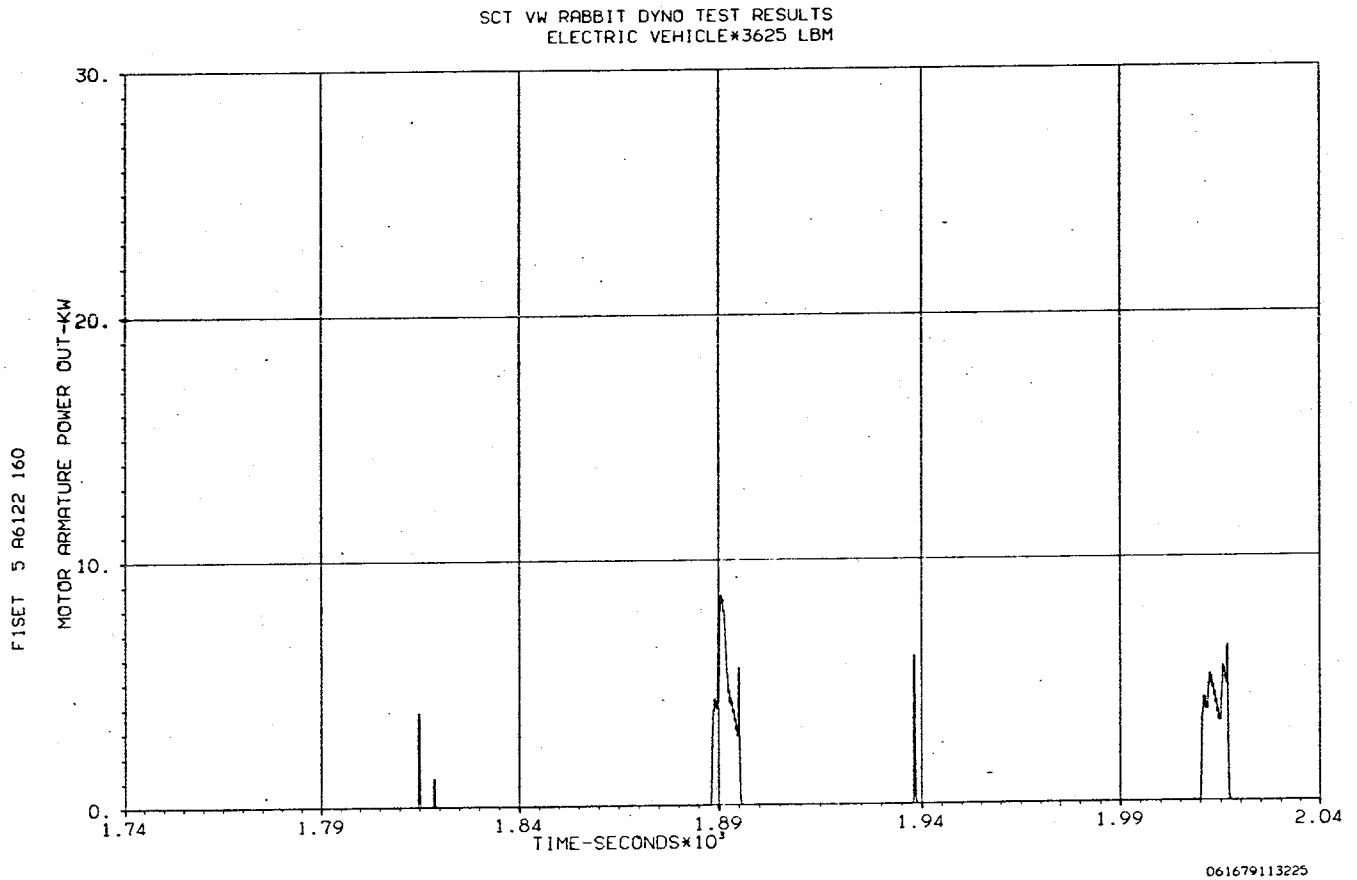

Figure D-10. Motor Armature Power Out, (Regeneration) Test 6: Driving Schedule D Range at 40% Battery Depth of Discharge

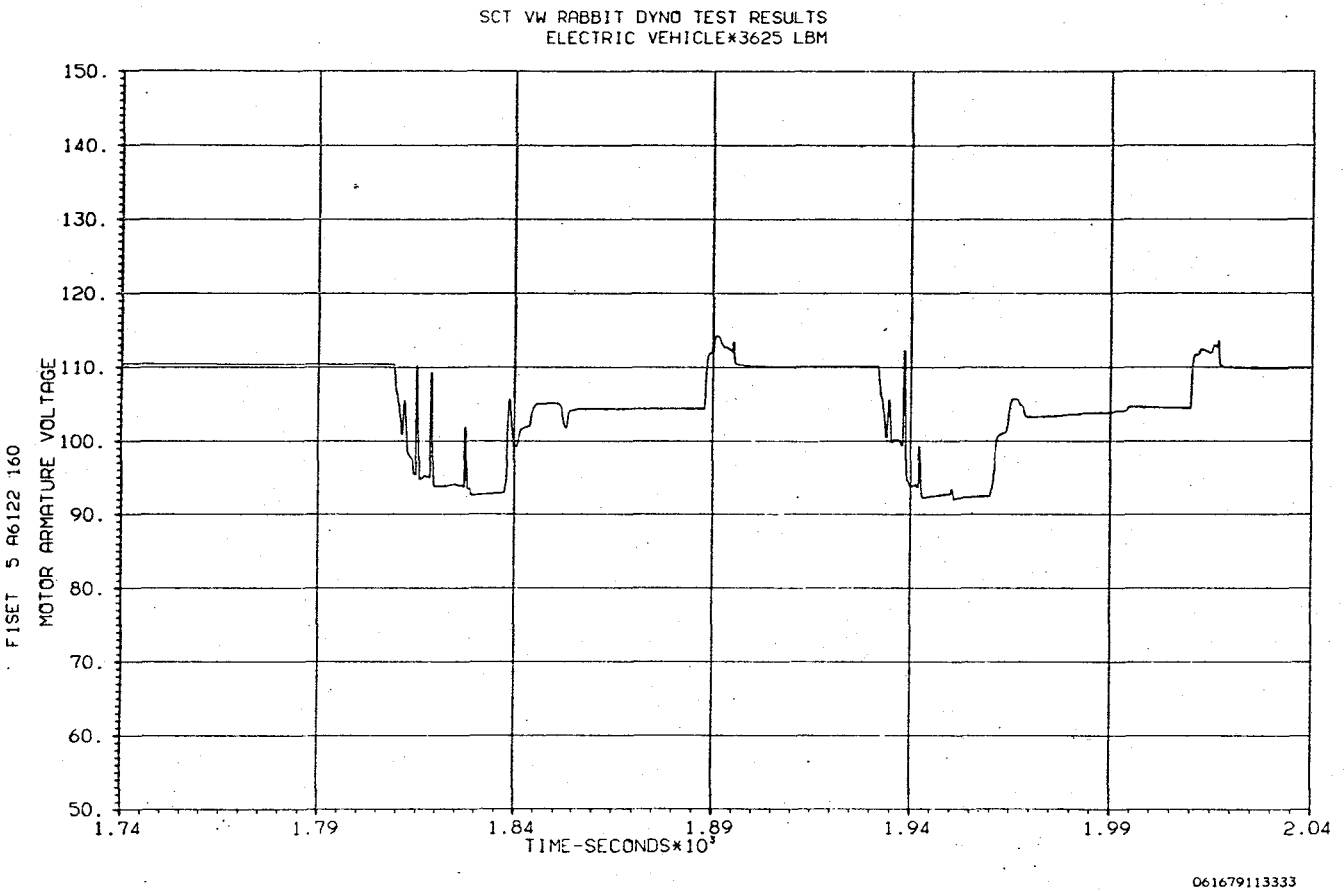

Figure D-11. Motor Armature Voltage, Test 6: Driving Schedule D Range at 40% Battery Depth of Discharge

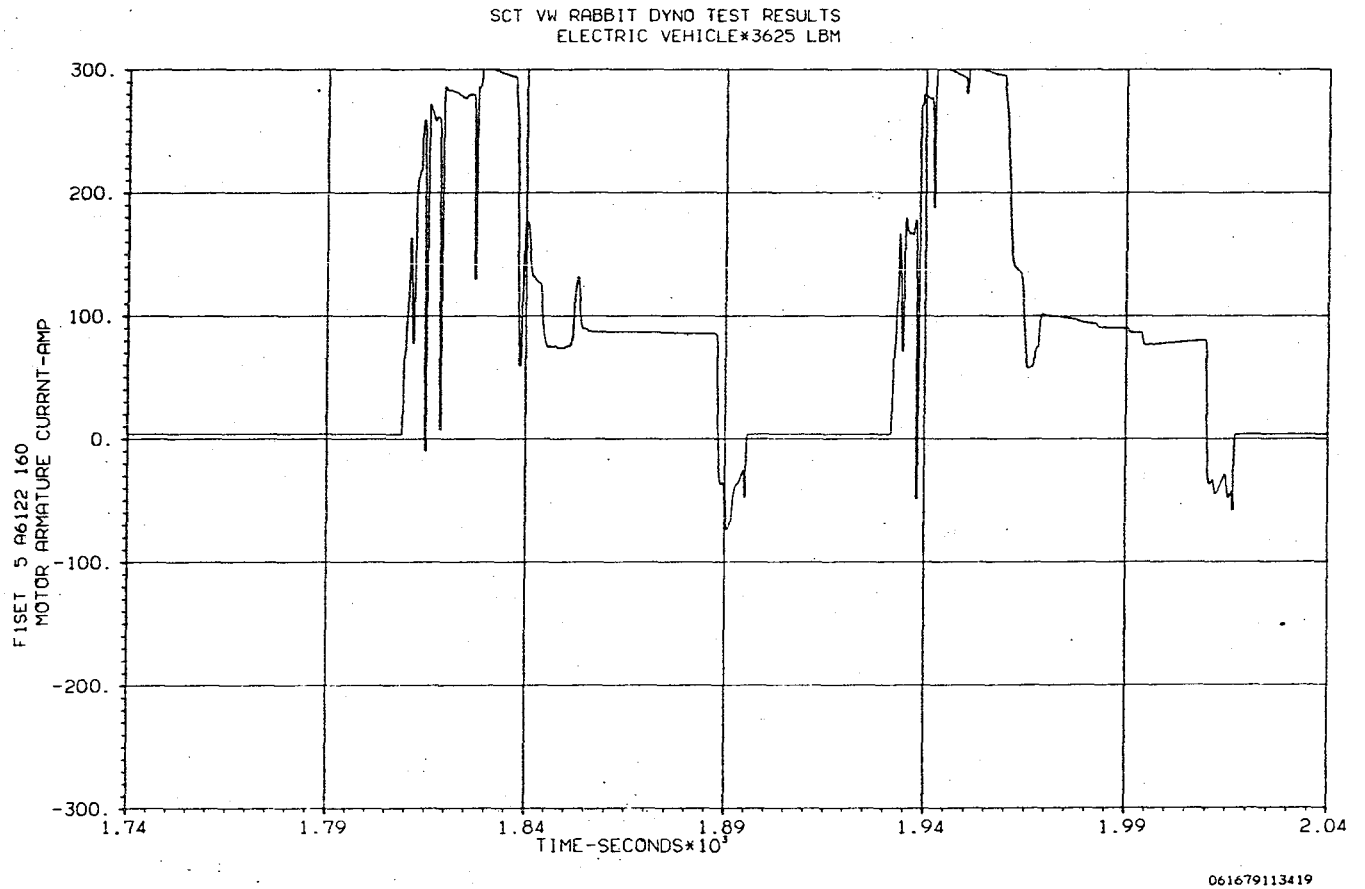

Figure D-12. Motor Armature Current, Test 6: Driving Schedule D Range at 40% Battery of Discharge

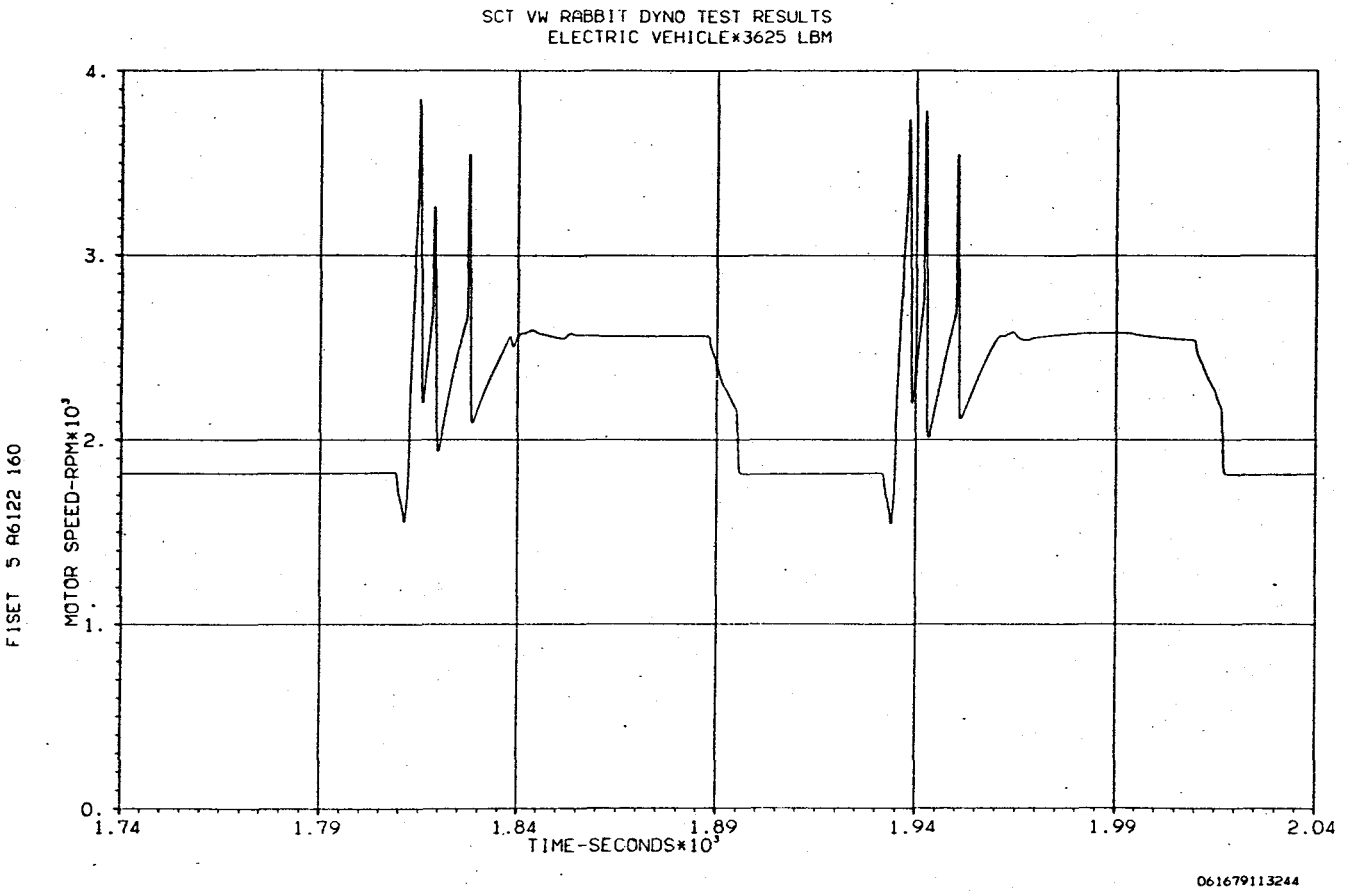

Figure D-13. Motor Speed, Test 6: Driving Schedule D Range at 40% Battery Depth of Discharge

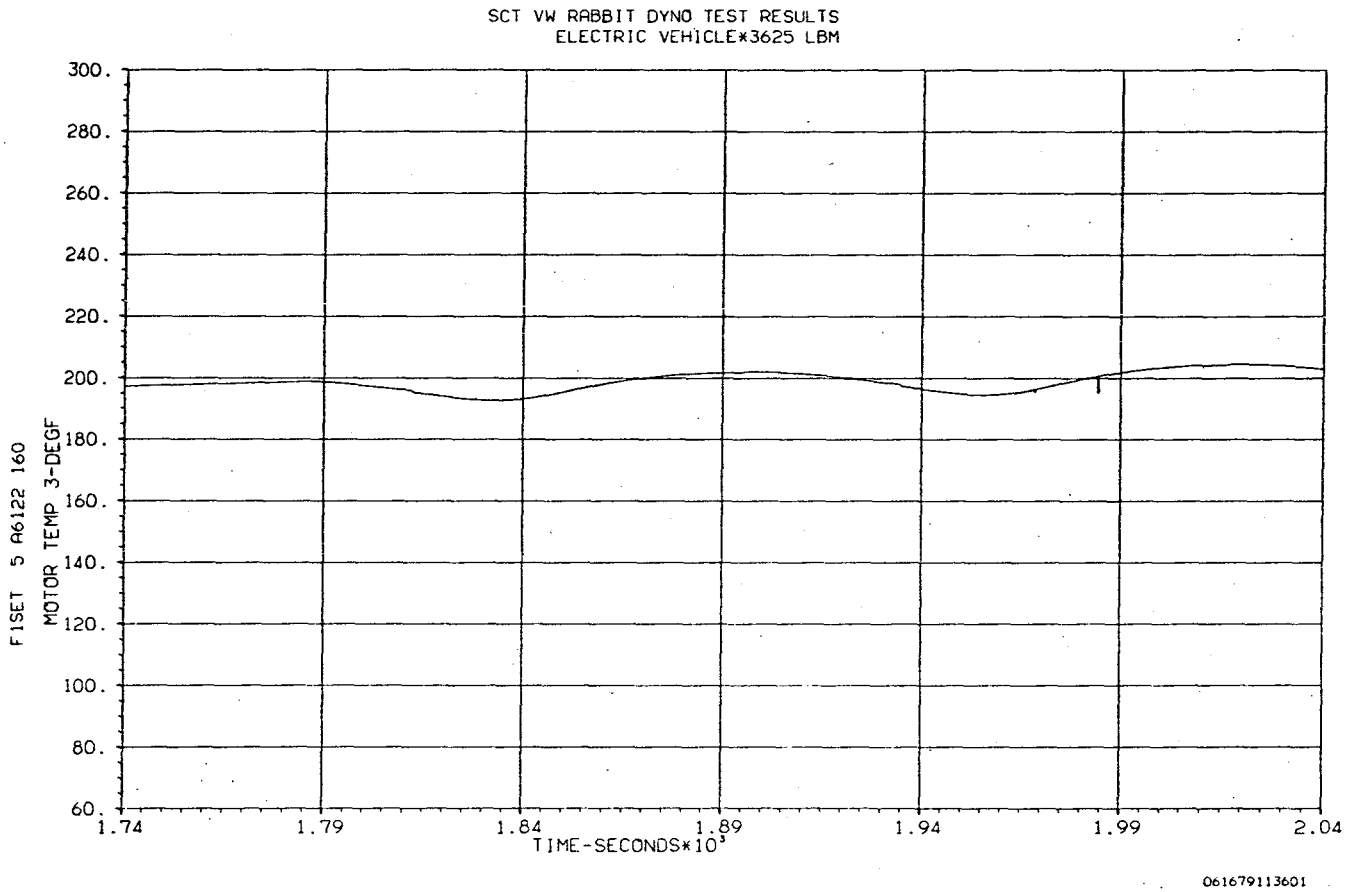

Figure D-14. Internal Motor Temperature, Test 6: Driving Schedule D Range at 40% Battery Depth of Discharge

APPENDIX E

TEST DATA RESULTS

Table E-1. Dynamometer and Track Test Results

Test No.	Description	Distance Traveled Miles	Cycles Driven	Cycle Distance Per Miles	Battery Temp. °F Before/After	Motor Temp. °F Before/After	WH From Battery
3	Range at 55 mi/h	44.8	----	----	74/91	69/237	11707
4	Range at 55 mi/h	43.8	----	----	72/87	71/238	11321
5	Range at 35 mi/h	79.5	----	----	72/83	76/120	15089
6	Schedule D Range	25.8	26	.992	72/87	73/242	9045
7	Range at 35 mi/h	84.8	----	----	75/86	79/119	15226
8	Schedule D Range	26.8	27	.992	75/90	74/238	9372
9	Range at 35 mi/h	80.4	----	----	73/83	73/159	15038
10	Schedule B Range	47.4	234	.203	70/82	74/131	16570
20	Schedule C Range (Track)	41.9	117	.358	74/97	[b]81/137	13320
21	Schedule C Range (Track)	41.3	116	.356	72/97	[b]81/137	[c]
24	Schedule C Range	38.6	107	.360	83/100	78/164	13170
25	Schedule C Range	36.7	104	.353	74/92	71/160	12687

[a] Average of five batteries

[b] External motor surface temperature (all other entries were from sensor internal to motor)

[c] Hardware problem, no data obtained for the paramter.

Table E-1. Dynamometer and Track Test Results (Continuation 1)

Wh to Armature	Wh From Arm (Regen)	Wh Battery (Regen)	Wh to Field	Wh to Battery Recharge	Ah Battery Discharge	Ah Battery Recharge	Regenerative Fraction %
11457	189	184	c	19069	118.7	149.3	1.6
11072	61	61	c	17422	114.1	140.2	0.5
14089	99	85	664	22949	149.9	184.0	0.6
8561	265	241	450	14192	91.9	115.6	2.7
14292	11	10	835	22005	152.3	181.1	.06
8877	268	241	390	15175	94.2	118.4	2.6
14014	10	8	836	21922	147.4	175.2	.05
14063	552	431	2297	23907	c	192.4	2.6
11680	850	670	1420	c	135.3	167.1	5.0
c	c	c	c	c	135.9	160.5	c
11601	454	343	1315	18651	132.0	156.0	2.6
11184	409	306	1282	18309	127.7	153.0	2.4

Table E-1. Dynamometer and Track Test Results (Continuation 2)

Test No.	Battery Eff. Wh %	Battery Eff. Ah %	Battery Economy mi/kWh
3	61.4	79.5	3.829
4	64.9	81.4	3.866
5	65.7	81.4	5.270
6	63.7	79.5	2.852
7	69.2	84.1	5.571
8	61.8	79.6	2.862
9	68.6	84.1	5.348
10	69.3	c	2.863
20	c	80.9	3.146
21	c	84.7	c
24	70.6	84.6	2.931
25	69.3	83.4	2.894

APPENDIX F

ERRATA-ROADLOAD ERROR

APPENDIX F

After the tests described in this report and the report itself were completed, a problem was discovered with the coastdown tests. By the time the problem was noted, the performance tests had been completed. In addition, the vehicle had suffered damage to the motor and transmission which made it impossible to repeat the coastdowns. The net result is that the performance results, range, and energy economy reported here are optimistic. Note, however, that the objective of the tests (see Section III) was to provide a base from which comparative tests of batteries (with the same vehicle) could be made. Since the error from the coastdown tests affected all dynamometer range tests made with the SCT vehicle, the baseline data are acceptable for comparative purposes.

The problem arose because the 4000 ft portion of the runway used for the coastdowns (see Figure 5-1) was assumed to have a constant grade of 0.18%. The data from a detailed survey showed that the 4000 ft section in reality consists of two sections of about equal length with grades of 0.13% and 0.23%. The problem was further complicated because no attempt was made to record where on the runway the coastdown occurred. This latter step was not needed if indeed the grade had been constant over the entire 4000 ft length, but the data cannot be corrected with any confidence.

However, after the tests reported here, a second SCT VW Rabbit was subjected to proper coastdown and dynamometer tests. While these tests do not lend themselves to a simple adjustment of the results of this report, they have been used to make an estimate of the errors in range resulting from the improper coastdowns. These estimates are based on both the coastdown and dynamometer data for the second vehicle and represent the largest error that could be estimated from the two sources.

Although exact positions on the runway are unknown, both the 50 mi/h and 15 mi/h tests were, in general, conducted at the extreme ends of the runway and therefore are most likely to have the largest error. The direction of the errors was such as to understate the road load. The 35 mi/h data was, in general, obtained near the middle of the runway and, in the case of the opposite direction tests, are more likely to cancel the effects of slope as they were intended to do. The maximum error which could have resulted is approximately 7.2 lb_f. The total road load at 50 and 15 mi/h was 96.1 and 43.0 lb_f, respectively.

Reference to Tables 5-1 and 5-2 shows that the loads actually set into the dynamometer differed from the runway values. The dynamometer load at 15 mi/h could not be set low enough even though the lift technique was used. (Hindsight has shown that the runway value was too low.) As a compromise, note that the 55 mi/h dynamometer load was set lower than the runway load and the 15 mi/h load was then higher than the runway value. Therefore, the percentage error for the low speed tests is less than for the higher speeds.

It is estimated that the range values given in Tables 6-1, 6-2, 6-4, and 6-5 are too large by the following amounts:

35 mi/h - 4%
55 mi/h - 11%
C cycle - 0%
D cycle - 11%

Note also that when the second vehicle was tested at a correct dynamometer setting, it was unable to complete a 55 mi/h or a D cycle because the motor temperature exceeded the safe limit and the vehicle automatically went into a current limit mode. Therefore, applying the corrections given above will adjust for the errors in road load, but will not predict inherent vehicle limitations which only become apparent with the proper road load. Also note that the road load errors were approximately 1/2 the values stated for range.

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