

(C O P Y)

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February 17, 1941

SUBJECT: Truck, $\frac{1}{2}$ -ton, Liaison - Characteristics.

TO: The Adjutant General.

1. The Chief of Infantry has been given to understand that the War Department has under consideration the procurement of a large number of the subject vehicles produced by the Willys-Overland Company which fail to come up to minimum characteristics set up by the using arms and adopted, after careful consideration, by the Subcommittee on Transportation of the Quartermaster Technical Committee. The following facts are deemed pertinent.

2. The matter of providing the Infantry with a motor vehicle for battle field use which would combine, in the requisite degree, the characteristics of power, lightness, tractive efficiency and inconspicuousness has long been of vital concern. The tests conducted by the Infantry Board with the $\frac{1}{2}$ -ton Marmon-Herrington truck in comparison with other vehicles demonstrated that these characteristics could be built into an all-wheel drive vehicle, but that the retention in that vehicle of full battle-field utility as a weapons and ammunition carrier and as prime mover for the anti-tank gun depended wholly upon keeping weight and silhouette at the absolute minimum. The characteristics found in the Marmon-Herrington truck were accepted as the optimum available at that time, and became the basis of those proposed for infantry weapons carriers, since these were now known to be attainable and accorded with the principle that a battle field vehicle must be capable of being man-handled by the normal complement of men present with it.

3. In spite of the continued emphasis placed by this office upon these two characteristics, the contract for the entire, initial supply of half-ton trucks for the Army was let to a manufacturer who had never previously built a vehicle of this type and who was either unable or unwilling to comply with the stated requirements. As a result, the vehicles issued to the service under the 1940 procurement program exceeded the required weight by several hundred pounds and the height by several inches. In this respect they proved a distinct disappointment.

4. At a meeting of the Subcommittee on Transportation of the Quartermaster Corps Technical Committee, held at Keisbird Quartermaster Depot, on May 17 - 20, 1940, for the purpose of revising the military characteristics of vehicles, and which was attended by representatives of the principal manufacturers, it became evident to the Infantry representatives in attendance that there was little prospect of securing any substantial reduction either in weight or silhouette of the $\frac{1}{2}$ -ton 4x4 trucks. This fact, coupled with the bogging down of the motor tricycle development, indicated that another approach to the question of obtaining suitable battle-field vehicles was required.

5. To meet this situation, and after making a survey of the light vehicle field, the Chief of Infantry, under date of June 6, 1940, wrote to the Adjutant General stating the characteristics of the vehicle desired and requesting prompt development. The characteristics were formulated around the $\frac{1}{2}$ -ton Bantam truck which had been previously tested by the Infantry Board, but added the feature of all-wheel drive. Again the factors of weight and silhouette were heavily emphasized, the proposed maximum silhouette being 36 inches, and the maximum weight 1000 pounds. This proposal received favorable action from the Adjutant General, and the project was eventually referred to the Quartermaster General for development.

6. As the development of the vehicle proceeded, it became evident from step to step, that in order to obtain the requisite load-carrying capacity and sturdiness to perform its cross-country functions, and especially to provide the essential four-wheel drive, large size tires needed to secure flotation, and increased power to handle these features, the weight and silhouette had both to be increased somewhat beyond the limits originally proposed. The pilot vehicle was built by the American Bantam Company of Butler, Pennsylvania, which concern was, for various reasons, in a position to construct the vehicle, feature by feature, as asked for by the Infantry and concurred in by other interested arms working with the Technical personnel of the Quartermaster Corps. The finished vehicle was found to weigh, when fully equipped but without its payload, about 2025 pounds. Its performance fully met the expectations of the Infantry, and, it is understood, greatly impressed all other branches. While heavier than originally contemplated, it was still susceptible of some degree of man-handling, although it was evident that any increase in that weight would practically preclude it. Since the pilot vehicle possessed all the necessary performance characteristics at that weight, it was evident that any increase would be unnecessary and therefore worse than useless. Based on

tests made at Holabird, and in order to save time, the Bantam Pilot Model was accepted as an experimental replacement for the motorcycle with side-car, while also serving many other purposes not originally contemplated. The procurement, for more extended service test, of seventy replicas of this pilot vehicle was decided upon, and has since been accomplished. These seventy are still being tested by the Infantry and other arms and branches with increasingly promising results.

7. In the meantime, as a result of the performance of the original pilot model and to develop an adequate source, it was decided that an additional 1500 should be procured. In the meantime, also, the Ford Company and the Willys-Overland Company had secured the plans and specifications for the Bantam and were manufacturing their own copies of it. It was now discovered, incidentally through conversation with representatives of these two concerns, that they both contemplated constructing vehicles weighing several hundred pounds more than the pilot Bantam on the wholly unjustifiable theory that a few hundred pounds of additional weight was unimportant. It also appeared that the reason for this anticipated excessive weight was that these two concerns each wanted to build the vehicle around a motor already developed by them in connection with a product already on the commercial market. Both motors were larger and heavier than needed in a vehicle such as that contemplated. Aside from showing the desire of these two concerns to open an additional outlet for their engines the significance of this phase of the development is the failure to realize the importance of light weight and the fundamental differences between characteristics required for tactical vehicles and those which are satisfactory for normal, cargo functions. These two factors have since threatened, and are still threatening, to interfere seriously with procurement of the most suitable type of combat equipment for the Infantry. It has been found necessary to be constantly on the alert against the inclusion in this vehicle of features which would destroy its distinctive character by increasing weight and silhouette. Even so, the addition of certain features which after test, had been agreed to as really necessary, had raised the probable weight of the production Bantams to an estimated maximum of 2160 pounds, and this had been agreed upon by all interested arms as being the final limit.

8. In this situation, the Quartermaster General, about October 22, 1940, recommended that the order for the 1500 of these cars be split equally between the Bantam Company, the Ford Company and the Willys-Overland Company. From this the Infantry representative, acting under

specific orders from the Chief of Infantry, vigorously dissented on a number of grounds, but principally on the ground that it would give the using arms a thousand vehicles which had never been tested, whose performance and sturdiness were unknown, and some of whose known characteristics varied radically from those established as essential. In this connection, stress was laid in correspondence with the Quartermaster General's Office on the vital importance of adhering to the characteristics set up with respect to weight and silhouette. Other branches shared the views thus expressed by the Infantry.

9. The Adjutant General, on October 29, 1940, approved standardization and directed the Quartermaster General to procure the entire 1500 from the American Bantam Company. After some delay the contract was let. A few days later this office informally concurred in the placement of contingent contracts for similar numbers with each of the other two concerns, the contingent condition being that each must first produce a model which was acceptable after full tests, and which complied with all prescribed requirements as to weight and silhouette.

10. Pilot models produced by Ford successfully underwent the prescribed tests and their contingent contract became operative. Their first vehicle manufactured under the contract came well within the prescribed limitations on weight and silhouette. It appears to be acceptable. Willys-Overland on the other hand, have never, as far as known, indicated their ability or willingness to meet the weight limitations. The only model produced by them is reported to weigh about 2500 pounds. Its transmission, as was to be expected, failed in the engineering tests. All the known indications are that it is unsatisfactory and does not meet stated requirements. The Quartermaster Corps Technical Committee, meeting on January 22, 1941, reported these facts in the following language:

"It was moved and seconded that the committee report to the Office of the Adjutant General as follows:

a. That no satisfactory pilot model has been submitted by the Willys-Overland Company to date" and "that the contract of the Willys-Overland Company become operative upon acceptance by the Quartermaster Technical Committee of the pilot model from this company, which must be within the weight restriction of 2160 pounds without machine gun base and with 5.50-16 inch tires." The Committee further recommended that the resulting shortage of 1500 vehicles under the program previously

not up be procured from the two concerns who had produced satisfactory vehicles. The Committee also re-drafted the military characteristics, in which the maximum weight limit of 2100 pounds was re-affirmed.

11. A few days after this action the representative of the Willys-Overland Company visited the Office of the Chief of Infantry and argued at length against the position that light weight was important. He stated that his company would be compelled, if this action of the Committee were upheld, either to withdraw entirely or to put a different engine in their model, similar to that used in the Bantam, which is produced by Continental. He was told that, since the Continental engine had met all requirements in the Bantam model, the latter solution would be highly acceptable to the Infantry. He intimated that it would be a great disappointment to his company to lose this additional outlet for the Willys-Overland motor, but went away indicating that he would seek authority to make such a change.

12. In his 2d Indorsement to the Quartermaster General, file AG 451 (1-7-41) M-D, Subject: "Willys-Overland $\frac{1}{2}$ -ton, 4x4 Truck" the Adjutant General said: "The recommendations of the Quartermaster General for clearance of the Willys-Overland pilot model $\frac{1}{2}$ -ton 4x4, truck as acceptable and suitable on the basis of satisfactory performance are approved", indicating that the Quartermaster General had overruled the unanimous action of the Subcommittee on Transportation, representing the views of the using services, and the confirmatory action of the full Quartermaster Corps Technical Committee.

13. This is written to call attention to the fact that the Infantry is apparently about to be required to accept large quantities of equipment which it considers unsuitable for the purposes intended; and to raise the question of whether the using services are to have a voice in the determination of the type of equipment to be furnished them for combat use. It also brings up the question as to whether the regulations governing the operations of the technical committees are adequate to insure adequate consideration of tactical characteristics in the material adopted.

14. The Chief of Infantry recommends:

a. That if the Willys-Overland Company has produced a model which conforms to the characteristics and specifications desired by the Infantry, or presents satisfactory evidence of its ability and readiness to do so, the Chief of Infantry's office be so advised and given the same opportunity to pass upon its suitability as in the case of the other two.

b. That the actions of the Quartermaster Corps Technical Committee with respect to those characteristics of tactical equipment directly affecting tactical functions, be followed unless controlling reasons exist for other action, and

c. In case procurement of the unchanged Willys-Overland vehicle is carried out, that these be not included in issues made to the Infantry.

/s/

GEORGE A. LYNCH,
Major General,
Chief of Infantry.