February 9, 1944.

AIR MAIL

Toledo Scale Company,
Toledo, Ohio.

Subject – Contract No. NAW-2049 – Scale Equipment for 16-Foot
High Speed Tunnel at Langley Field, Virginia.

Gentlemen:

References – (a) NACA letter dated December 21, 1943.
(b) Your letter dated January 10, 1944.

Attention – Mr. H. O. Hem.

We are in receipt of your letter of January 10, 1944, and note that you
state that the sensitivity as required in the original drag scale specification
cannot be obtained and you suggest that one-pound scale graduations rather
than 0.1-pound graduations be employed. In this connection we wish to point
out that our 6-foot high-speed tunnel sensitive drag scales have graduations
of 0.050 pounds, and that the drag data obtained show that these graduations are
justified. In order to obtain the same accuracy for our aerodynamic data at
our 16-foot high-speed tunnel, 0.2-pound graduations are the maximum that can
be allowed. This figure conforms to the requirement for the alternate single
drag scale specified in the original specifications. Drag scales with gradu-
ations coarser than 0.2 pounds would be inadequate for our use.

As noted in paragraph 1 of your letter the pre-load weight of 625 pounds
at the sensitive drag scale appears to be the factor limiting the accuracy of
this scale. This weight is necessary to counterbalance the maximum negative
drag load of 5000 pounds. The limiting negative drag load required of the
sensitive drag scale, however, is only 400 pounds. For drag loads in the
range from -400 to -5000 pounds the sensitive drag scale will not be used, and
the only necessity for the pre-load weight of 625 pounds is to prevent an
up-load being applied to the sensitive drag scale. It is suggested that
a pre-load weight of 50 pounds be used instead of 625 pounds. This
weight would balance the required drag load of -400 pounds, and, it is
believed, would permit the attainment of the accuracy required in our speci-
fications. In order to prevent an up-load from being applied to the
sensitive drag scale when -400 pounds drag is exceeded, it is suggested that
a device be incorporated in the scale to lock it out after the -400-pound load has been exceeded and to permit the high capacity drag scale to continue to function normally to the limit of its capacity (-5000 pounds). Manual application of this locking device will be acceptable.

In regard to the increases in size of the levers, bellcranks, etc., mentioned in the third paragraph of your letter, we agree that such increases in size will be necessary. Both the original specifications and the specification of changes anticipate and provide for such alterations.

In regard to the question concerning the indication of the scale dials on the control panel (fourth paragraph of your letter), it is desired that these dials indicate the total load carried by each scale, as stated in the original specifications.

It is requested that your firm comment at the earliest possible date on the method suggested above for obtaining the necessary sensitivity for the low capacity drag scale.

Yours very truly,

Sherwood L. Butler,
Procurement Officer.

SLB:1ml
RLB

Copy to Becher - 16-Foot Tunnel