

NATIONAL ADVISORY COMMITTEE
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TECHNICAL NOTES

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

No. 249

EFFECT OF PROTRUDING GASOLINE TANKS UPON THE
CHARACTERISTICS OF AN AIRFOIL

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Washington
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TECHNICAL NOTE NO. 249.

EFFECT OF PROTRUDING GASOLINE TANKS UPON THE
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Uncertainty as to the effect of a gasoline tank protruding from the center section of a wing upon the aerodynamic characteristics of the wing has led to the testing of such an arrangement in the variable density wind tunnel.

A 5-inch by 30-inch model duralumin airfoil having the Clark Y section, was used for the investigation. Two tank models were made of wood to fit the upper and lower surface of the airfoil. The airfoil was then tested in the usual manner with the tank first fastened to the upper surface and then to the lower surface. The tests were made only at the highest value of the Reynolds Number at which the tunnel is ordinarily operated.

The tank was made to represent roughly that used on the De Havilland "Moth." The tank model was made rectangular in plan form 2 inch by 5 inch, thus covering one-fifteenth of the span. Its section was obtained by fitting one side to the airfoil and then making the thickness at each point along the chord equal to the thickness of the airfoil at that point. A sketch of the section of the airfoil and tank will be found in Fig. 1.

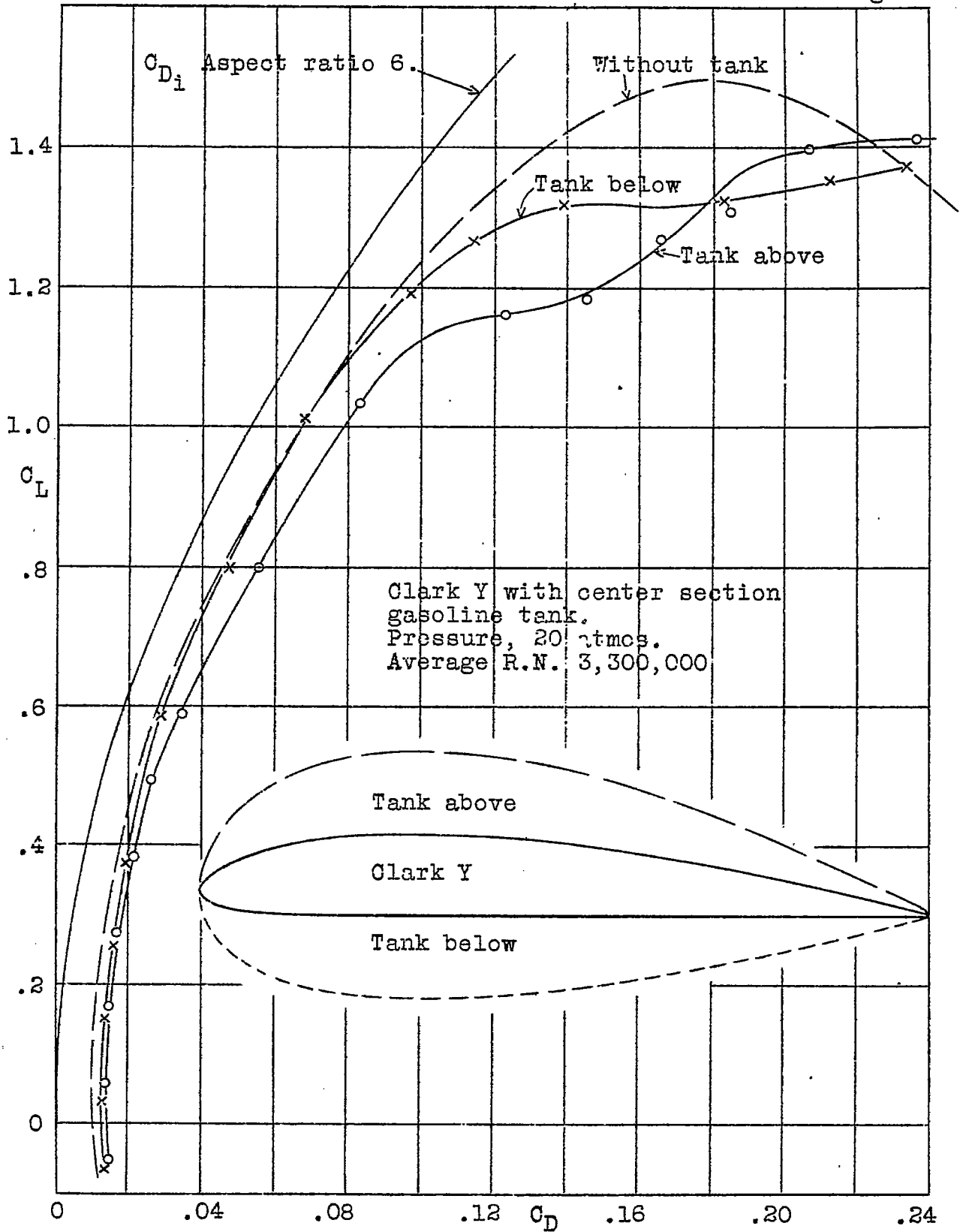


Fig.1

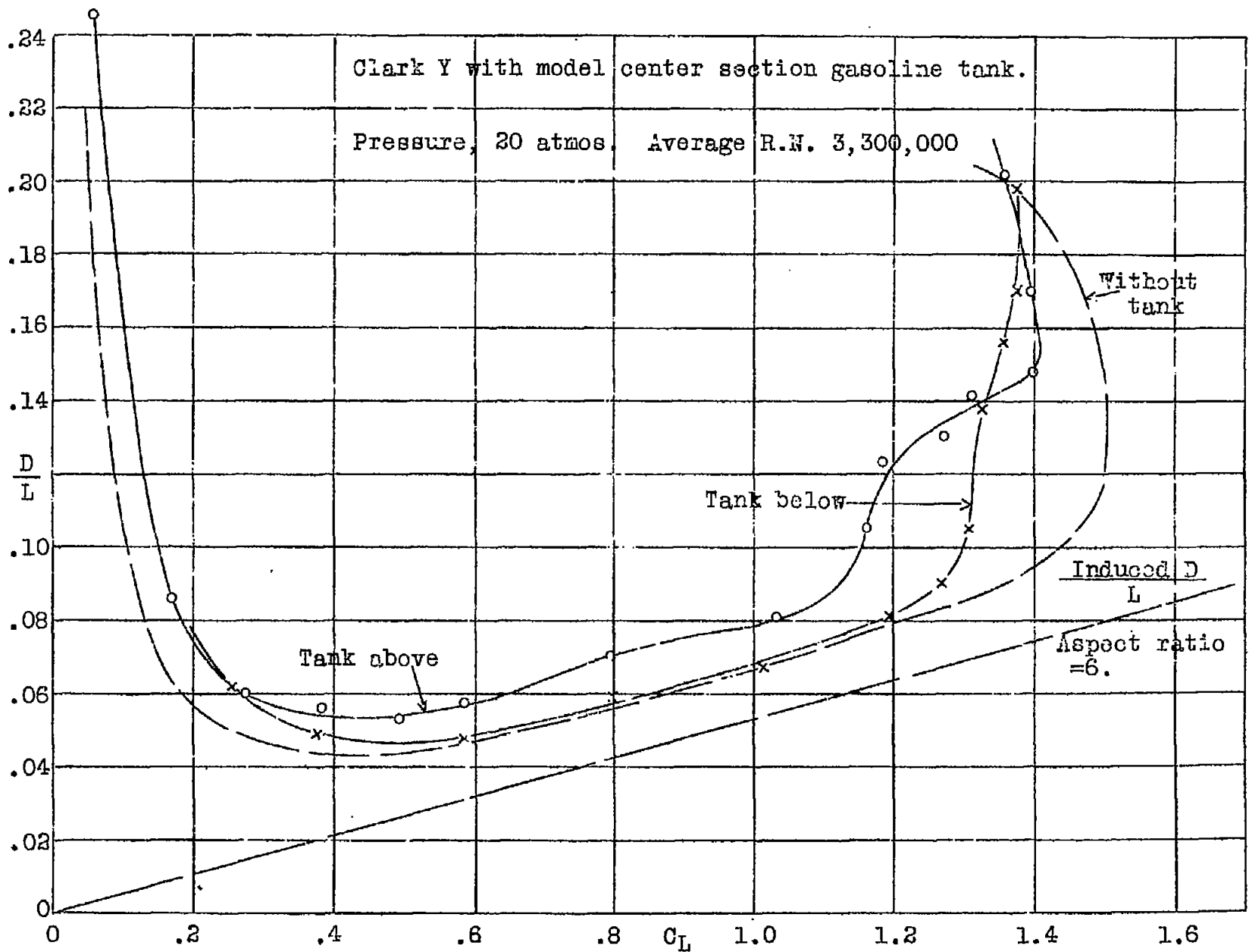


Fig. 3

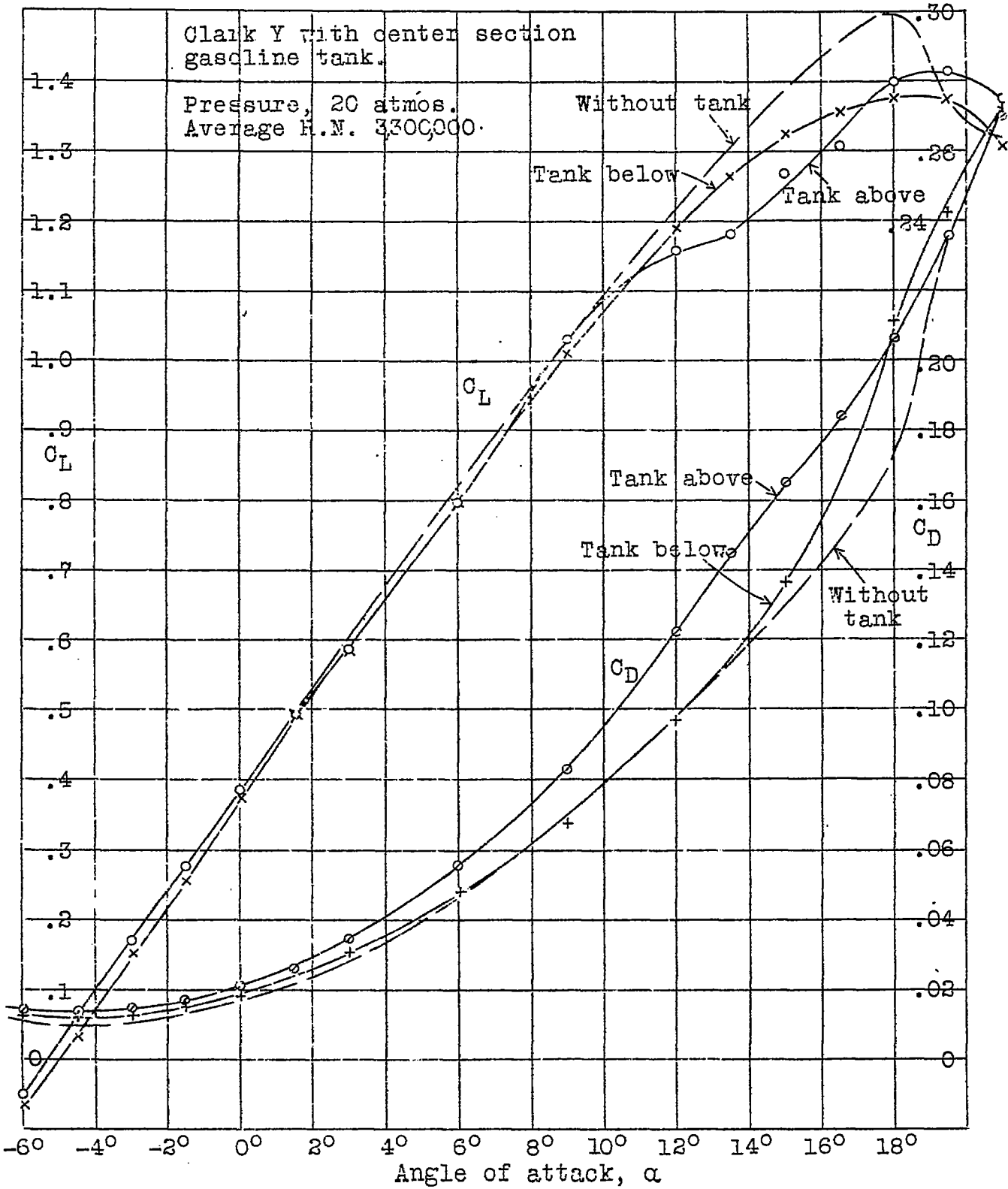


Fig.3