No. 380 MARCH 2018

T.W.I.T.T. NEWSLETTER

ZRay during at-sea testing near San Diego, CA. (Photo: Scripps)

TWITT had a presentation on this project some years ago.

Source: http://www.navaldrones.com/ZRay.html

T.W.I.T.T.
The Wing Is The Thing
P.O. Box 20430
El Cajon, CA 92021

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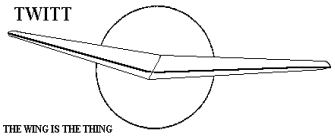

THE WING IS THE THING (T.W.I.T.T.)

T.W.I.T.T. is a non-profit organization whose membership seeks to promote the research and development of flying wings and other tailless aircraft by providing a forum for the exchange of ideas and experiences on an international basis. T.W.I.T.T. is affiliated with The Hunsaker Foundation, which is dedicated to furthering education and research in a variety of disciplines.

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Wt/#Issues	FRG	AUSTRALIA	AFRICA
1oz/1	1.75	1.75	1.00
12oz/12	11.00	12.00	8.00
24oz/24	20.00	22.00	15.00
36oz/36	30.00	32.00	22.00
48oz/48	40.00	42.00	30.00
60oz/60	50.00	53.00	37.00

Meetings are held on the third Saturday of every other month (beginning with January), at 1:30 PM, at Hanger A-4, Gillespie Field, El Cajon, California (first row of hangers on the south end of Joe Crosson Drive (#1720), east side of Gillespie or Skid Row for those flying in).

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PRESIDENT'S CORNER

Not much to cover this month so there will be a lot of white space in this issue, including this section.

I could sure use some input from everyone since I have just about run out of what I brought with me in the move. I do have some control surface and wing configuration stuff from Larry Nicholson for next month, but then it will be back to white space so your assistance would be greatly appreciated.

Andy

LETTERS TO THE EDITOR

(ed. - My apologies for the poor quality of these images, but I lost my photo editing program a couple of months ago and haven't found one that does some of the same things I used to enhance dim text.

I am including the figures that went with the article by Al Backstrom last month. This will finish this particular piece from our archive files on Al's work.

There were no other letters or submissions for this month.)

MEASUREMENTS

Span 26.5'
Length (Overall) 7.5'
Height (Overall) ____
Fuselage Width (Overall) 22"
Fuselage Height (Overall) 44"
Fuselage Cross-Sectional Area 5.5

AREAS

Wing Area (With Aileron) 106
Elevon (Total) 16.3
Flaps (Total) ____
Spoilers (Total) ____
Stabilizer ____
Elevator ____
Horizontal Area 0
Fin 8.2 per side
Rudder 1.2 per side
Vertical Area 8.2 per side

WEIGHTS

Empty 232
Pilot 145
Extra Equipment 30
Total 407
Pilot/Empty 0.625

WING

Wing Planform Rectangular
Sweepback 0°
Dihedral 0°
Gull No
Root Chord 48"
Half Span Chord ____
Tip Chord 48"
Aspect Ratio 6.6
Taper Ratio 1.0
Load Factor 7.5 Ult.

AIRFOIL SECTIONS

Wing Root 15% Thick With Reflex
Wing Half Span "
Wing Tip "
Horizontal Tail ____
Vertical Tail Sym.
Angle of Incidence to Fuselage 0°
Washout 0°
Winch Tow Yes
Auto Tow Yes
Airplane Tow Yes
Aerobatics Yes

PERFORMANCE

Glide Angle (Maximum) 19.8
Minimum Sink 3.9
Airspeed at Best Glide Angle 60 mph
Airspeed at Best Sink 50 mph
Maximum Design Speed 100 mph
Wing Loading (Test Flight) 3.85 P.S.F.
Span Loading (Test Flight) 15.4 #/Ft.

CONSTRUCTION AND MATERIALS

Wing Structure Wood
Fuselage Structure Wood
Horizontal Tail Structure ____
Vertical Tail Structure Wood
Landing Gear 8 x 3 Wheel

AERODYNAMIC CHARACTERISTICS

C_{D_f} Min = .0048
$C_{D_{min}}$ .016 , C_{D_o} = .0115
Efficiency Factor 75%

EPB-1 PLANK SPECIFICATIONS

FIGURE 1

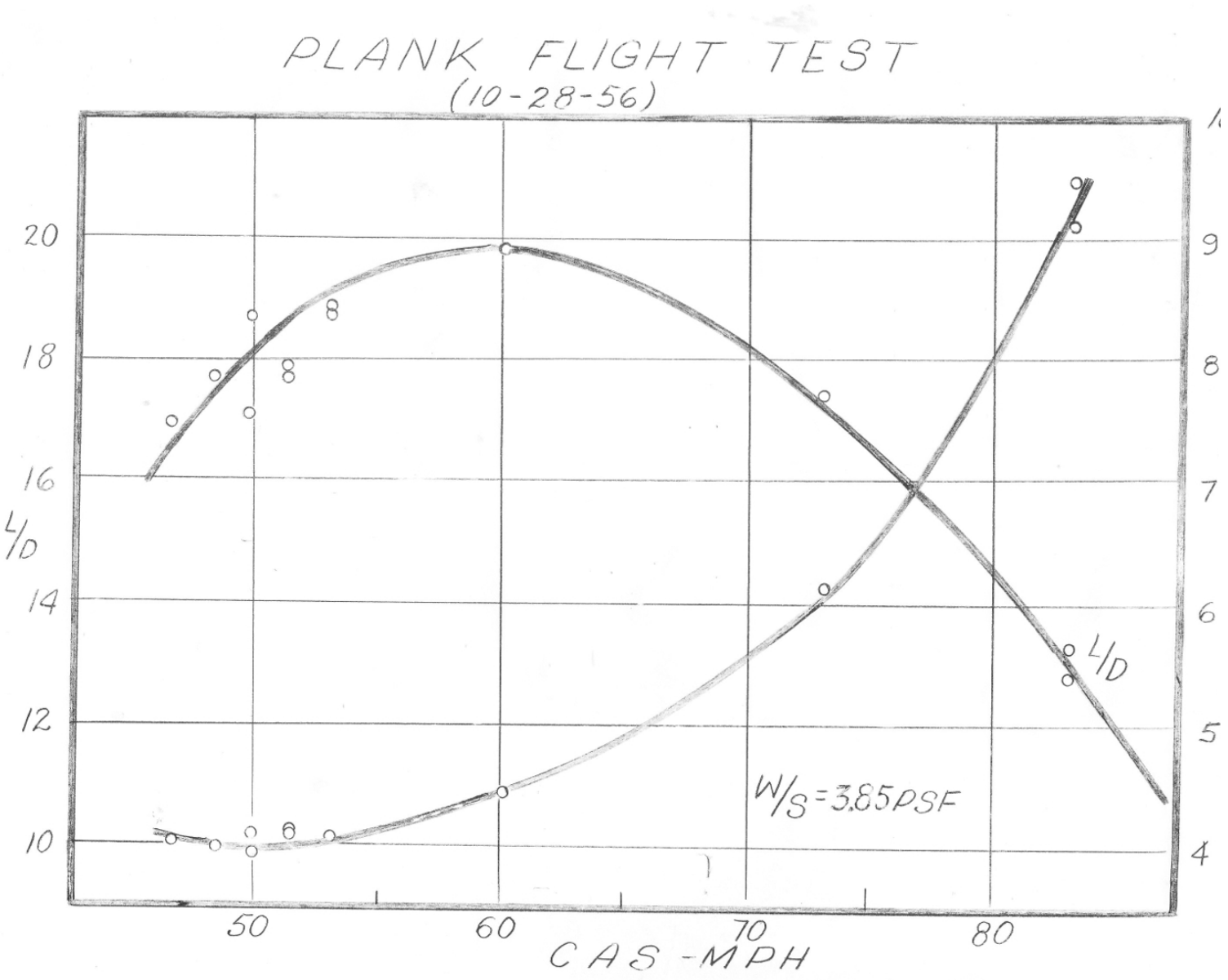

PLANK FLIGHT TEST
(10-28-56)
L/D
20
18
16
14
12
10
9
8
7
6
5
4
50
60
70
80
CAS - MPH
W/S = 3.85 PSF
L/D

FIGURE 2

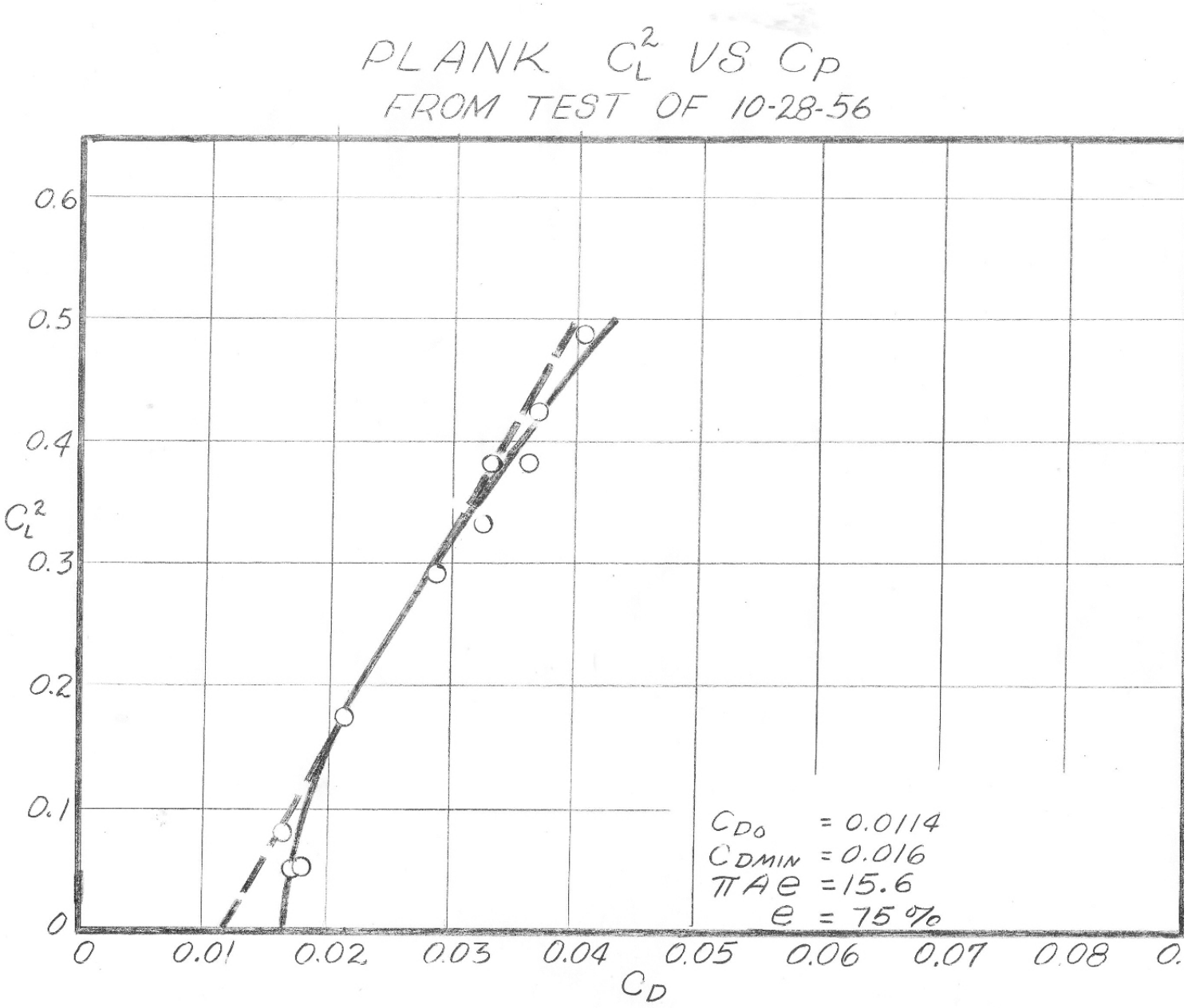
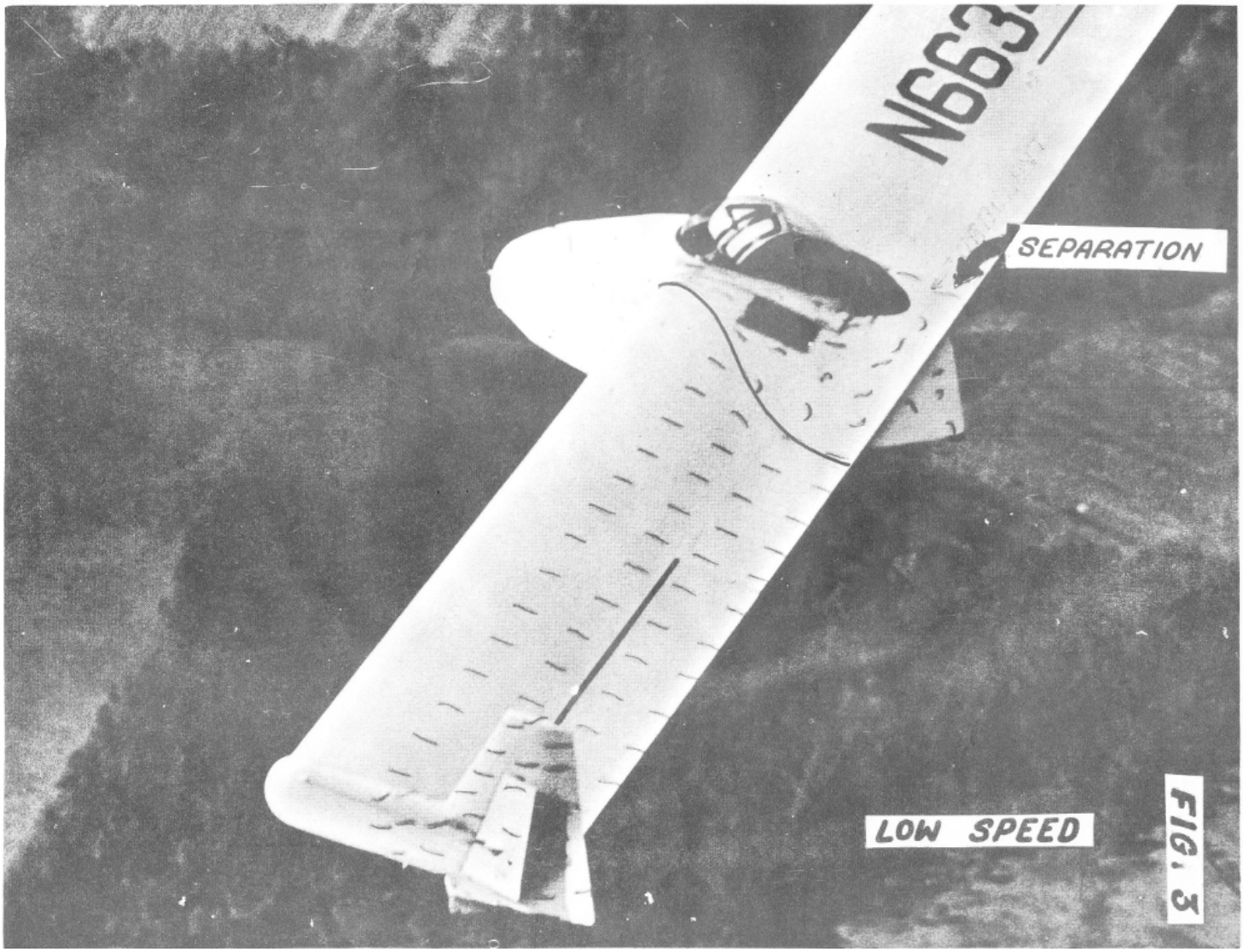

PLANK C_L^2 VS C_P
FROM TEST OF 10-28-56
0.6
0.5
0.4
C_L^2
0.3
0.2
0.1
0
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
C_D
C_{D_0} = 0.0114
$C_{D_{MIN}}$ = 0.016
$\pi A e$ = 15.6
e = 75 %

FIGURE 3



FIIGURE 4

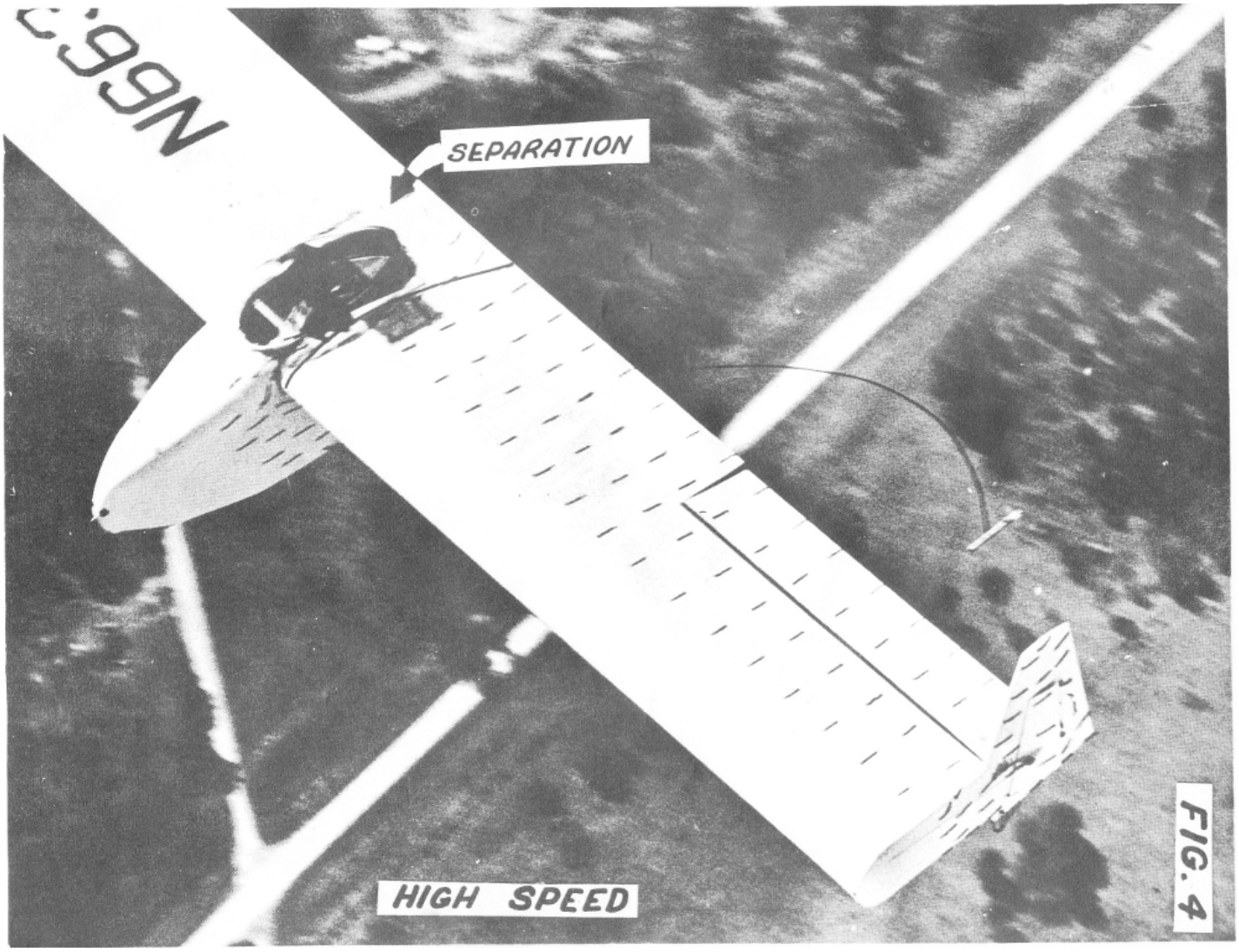
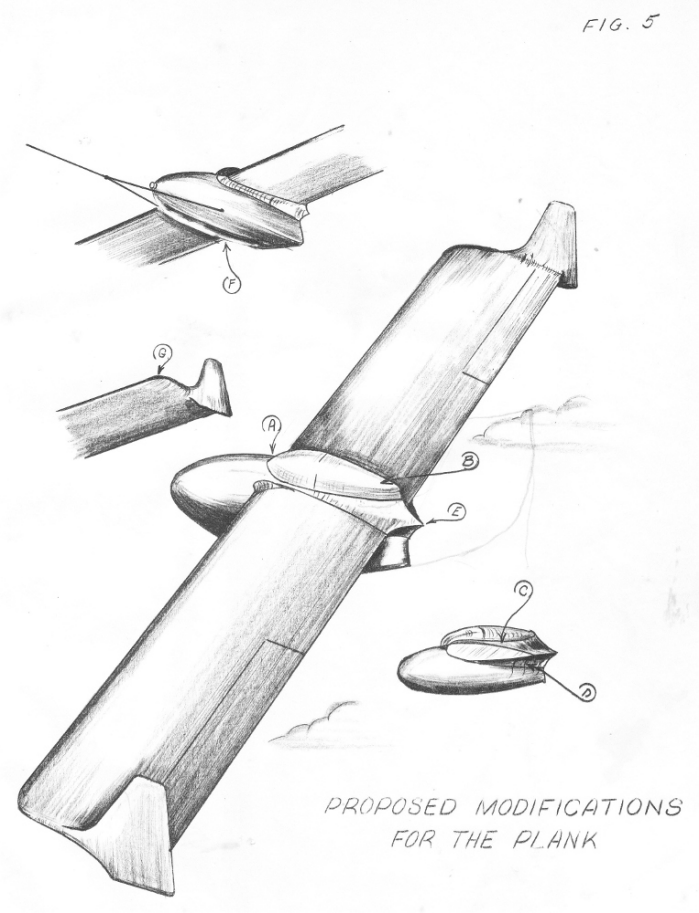


FIGURE 5



AVAILABLE PLANS & REFERENCE MATERIAL

VIDEOS AND AUDIO TAPES

(ed. – These videos are also now available on DVD, at the buyer's choice.)

VHS tape of Al Bowers' September 19, 1998 presentation on "The Horten H X Series: Ultra Light Flying Wing Sailplanes." The package includes Al's 20 pages of slides so you won't have to squint at the TV screen trying to read what he is explaining. This was an excellent presentation covering Horten history and an analysis of bell and elliptical lift distributions.

Cost: $10.00 postage paid
Add: $ 2.00 for foreign postage

VHS tape of July 15, 2000 presentation by Stefanie Brochocki on the design history of the BKB-1 (Brochocki,Kasper,Bodek) as related by her father Stefan. The second part of this program was conducted by Henry Jex on the design and flights of the radio controlled Quetzalcoatlus northropi (pterodactyl) used in the Smithsonian IMAX film. This was an Aerovironment project led by Dr. Paul MacCready.

Cost: $8.00 postage paid
Add: $2.00 for foreign postage

An Overview of Composite Design Properties, by Alex Kozloff, as presented at the TWITT Meeting 3/19/94. Includes pamphlet of charts and graphs on composite characteristics, and audio cassette tape of Alex's presentation explaining the material.

Cost: $5.00 postage paid
Add: $1.50 for foreign postage

VHS of Robert Hoey's presentation on November 20, 1999, covering his group's experimentation with radio controlled bird models being used to explore the control and performance parameters of birds. Tape comes with a complete set of the overhead slides used in the presentation.

Cost : $10.00 postage paid in US
$15.00 foreign orders

FLYING WING SALES

BLUEPRINTS – Available for the Mitchell Wing Model U-2 Superwing Experimental motor glider and the B-10 Ultralight motor glider. These two aircraft were designed by Don Mitchell and are considered by many to be the finest flying wing airplanes available. The complete drawings, which include instructions, constructions photos and a flight manual cost $140, postage paid. Add $15 for foreign shipping.

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8104 S. Cherry Avenue mitchellwing@earthlink.net
San Bruno, CA 93725 http://home.earthlink.net/~mitchellwing/

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