

Bill of Materials:

- Wing** - Hefty 9.75 inch cut-resistant square red foam plate
- Fuselage** - From 1/8 inch diameter 12 inch long bamboo barbecue skewer as sold in grocery stores
- Fin and Stabilizer** - 1.5 mm thick foam cut from a foam plate
- Nose Weight** - Modeling clay
- Launch Hook** - 1/8 inch aircraft plywood
- Nose Reinforcement** - Dacron cloth or similar 1/4 inch by 7/8 inch
- Rear Launch Grip** - 3/8 inch by 1 inch strip of sand paper

Flight potential with a 25 foot ceiling height is 7 seconds

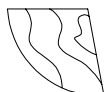
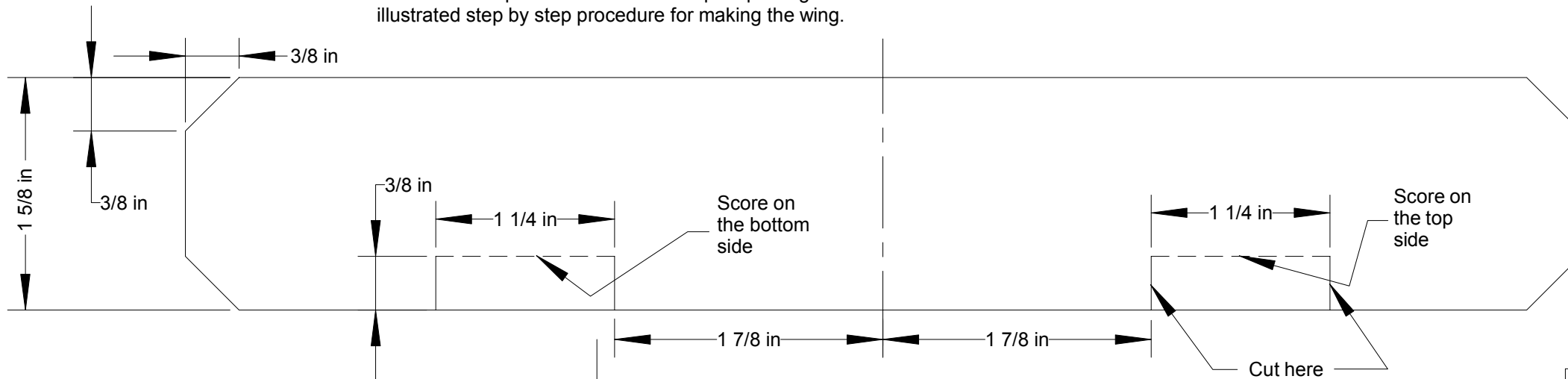
A comprehensive video for building the outdoor version of this model can be found at http://youtu.be/H19G_upFf7Q

Flying Star
Indoor Catapult Glider

Designed by Walter Legan
September 2013

Drawn by Paul Bradley	Feb 2014	Sheet 1 of 4
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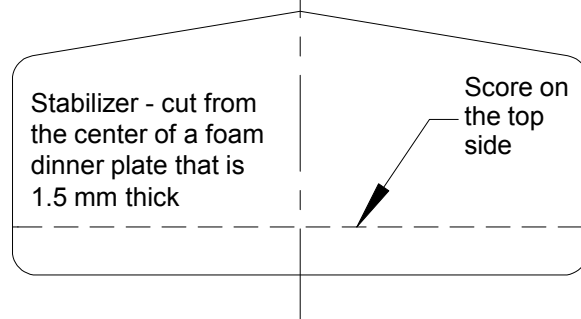
Wing - cut a 1 5/8 inch wide strip from the center of a 9.75 inch square Hefty red cut-resistant foam plate. This drawing is for reference only. Use the dimensions for the trim tabs and tips. See sheet 3 of this plan package for an illustrated step by step procedure for making the wing.



Launch Hook
make from 1/8 inch
aircraft plywood

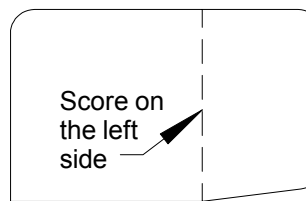


Launch Hook
Reinforcement
1/4 inch by 7/8
inch Dacron or
similar cloth



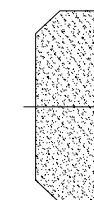
Stabilizer - cut from
the center of a foam
dinner plate that is
1.5 mm thick

Score on
the top
side

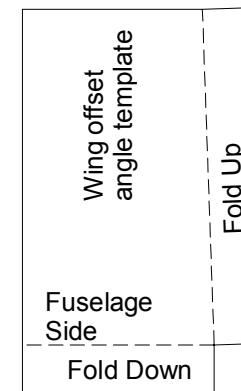


Fin - cut from the
center of a foam
dinner plate that
is 1.5 mm thick

Score on
the left
side



Rear Launch Grip
3/8 inch by 1 inch
piece of sand paper



Wing offset
angle
template

Fold Up

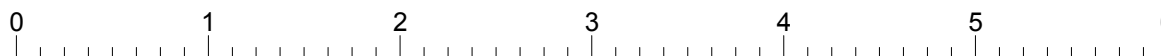
Fuselage
Side

Fold Down

Fuselage - 1/8 inch diameter bamboo barbecue skewer 9 3/8 inches long



Round the ends



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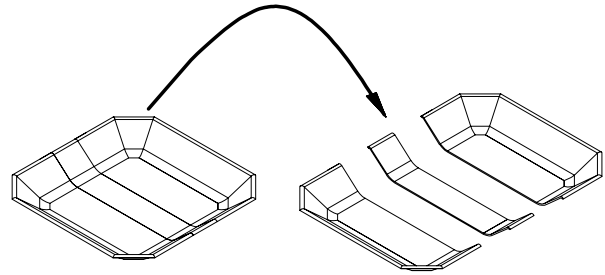
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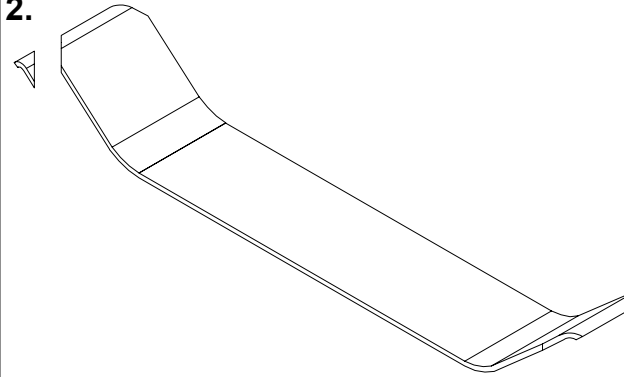
Sheet 2 of 4

1.



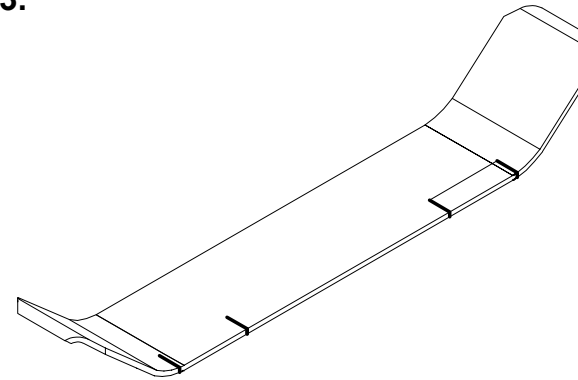
Begin construction by cutting the wing from the foam plate. Draw a 2 1/2 inch wide strip that is centered in the plate. Cut the plate along each edge of the strip.

2.



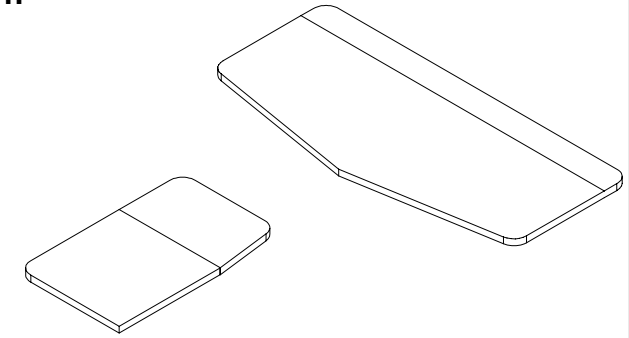
Measure 3/8 of an inch from the corner of each wing tip. Cut the diagonal between each of the 3/8 inch marks to shape the wing tips.

3.



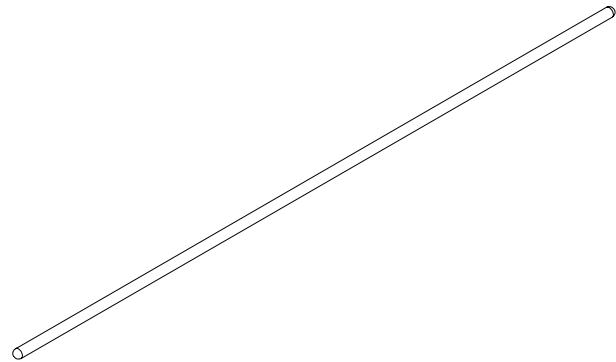
Using the wing reference drawing on sheet 2 of this plan set, draw the trim tabs on the wing. Cut the edges and then score the tabs as noted on the reference drawing.

4.



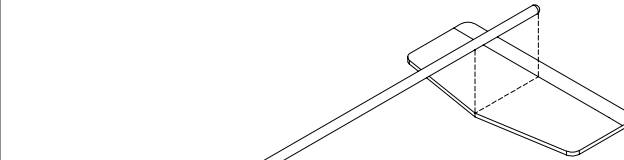
Cut the stabilizer and fin from the center of a foam plate. Make sure the thickness of the material is at least 1.5 mm. Score the left side of the fin and top side of the stabilizer as shown. Use plan sheet 2 of the plan package for the location of the score lines.

5.



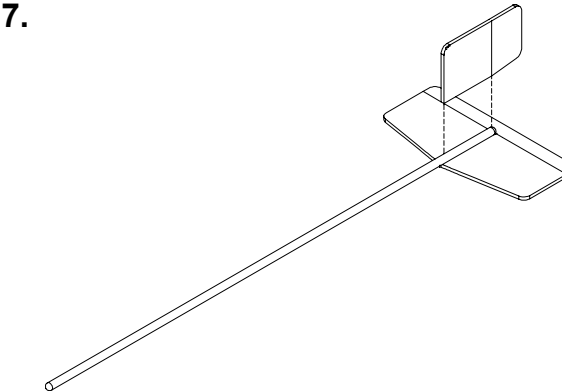
Cut a 9 3/8 inch length of 1/8 inch diameter bamboo skewer. Round off each end using sand paper.

6.



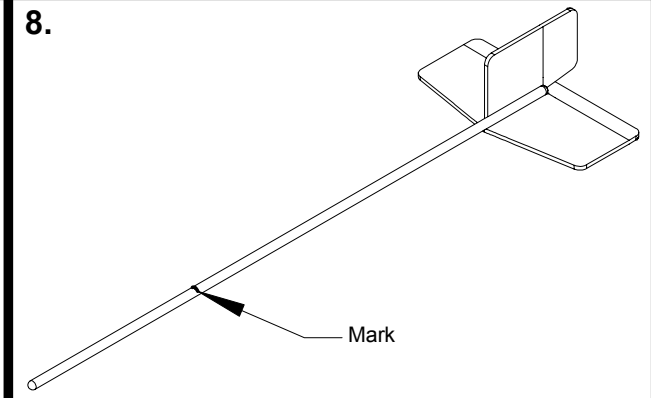
Glue the the stabilizer to the bottom of the fuselage at the rear. The stabilizer should be centered on the fuselage and the score line on top. The score line will be lined up with the end of the fuselage.

7.



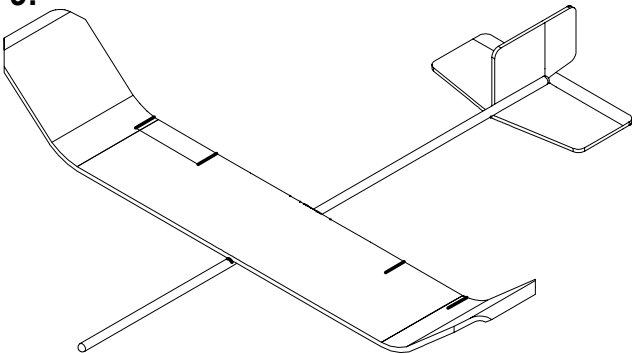
When the stabilizer glue is dry, glue the fin to the right side of the fuselage (as viewed from the top) at the rear. The score line will be to the left and lined up with the end of the fuselage.

8.



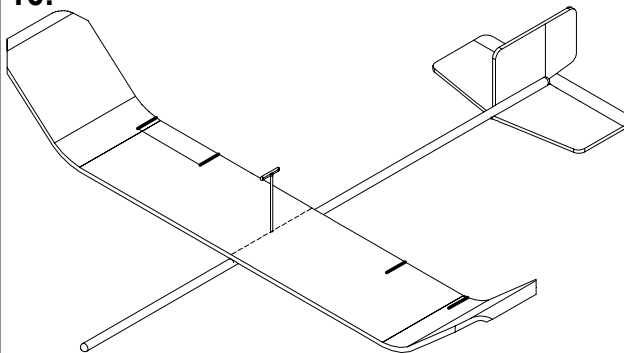
Make a mark on the side of the fuselage that is 3 inches back from the forward edge. The will locate the forward edge (leading edge) of the wing.

9.



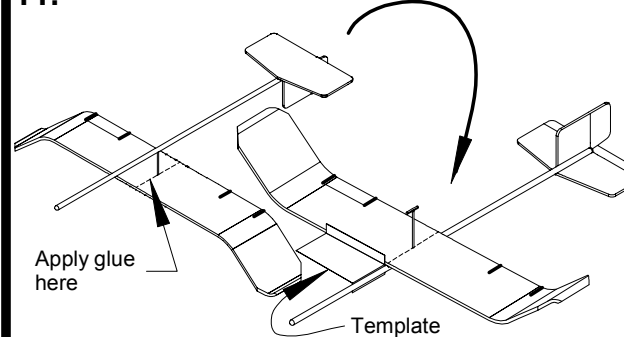
Place the wing on the top of the fuselage with the leading edge lined up with the mark made in the previous step. The wing should be centered on the fuselage.

10.



Push a straight pin through the wing at its center into the bamboo fuselage. Push the pin into the fuselage only about 1/16 of an inch.

11.



Slide the wing up on the straight pin and apply glue to the bottom along the center line. Slide the wing back down on the pin so it is in contact with the fuselage. Using the template from plan sheet 2, rotate the wing so it has a 2 degree offset. The right wing tip is rotated forward.

Flying Star

Indoor Catapult Glider

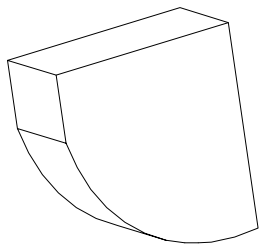
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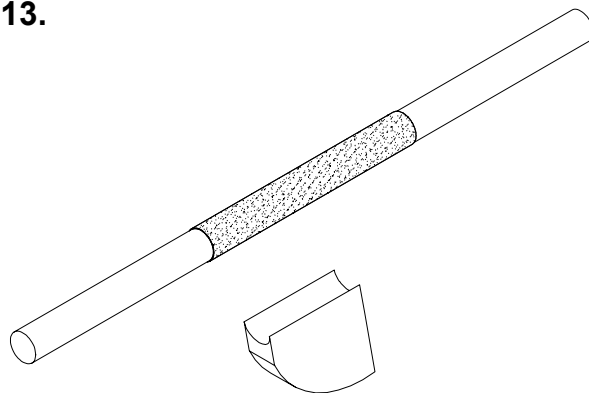
Sheet 3 of 4

12.



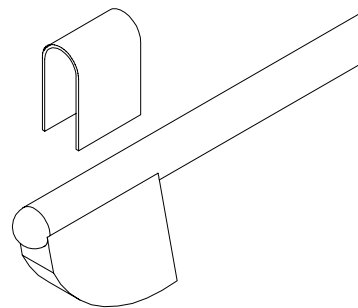
Cut out the launch hook from a piece of 1/8 inch thick aircraft plywood.

13.



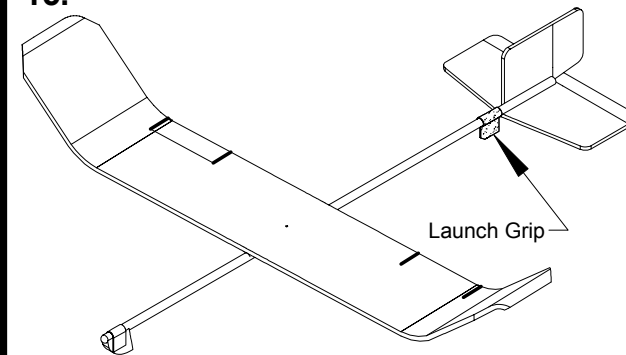
Wrap a piece of sand paper around a length of bamboo skewer. Sand the top edge of the launch hook so it develops a concave shape as shown above.

14.

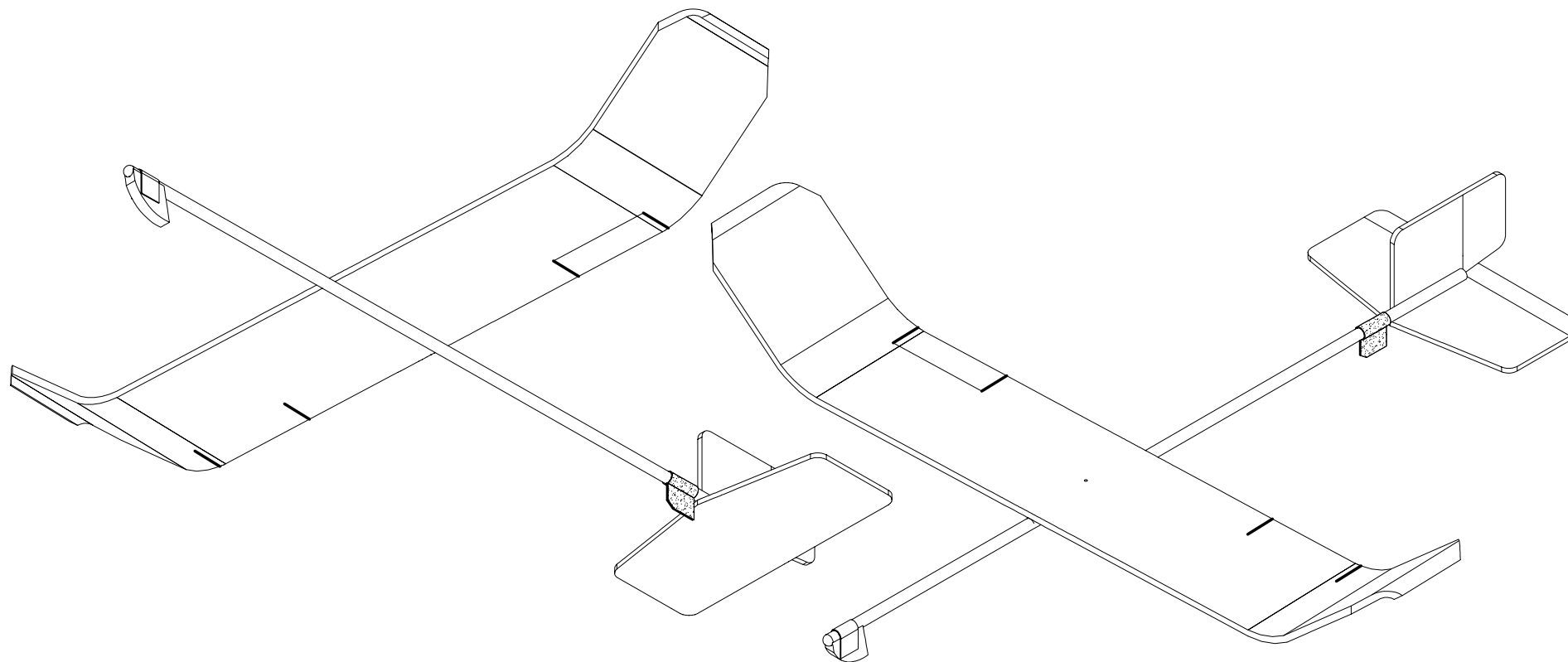


Glue the launch hook to the nose of the fuselage. When the glue has dried, glue the cloth reinforcement strip around the top of the fuselage and down the sides of the launch hook as shown.

15.



Cut a piece of sand paper to the size shown on plan sheet 2 of this plan package. Glue it to the rear of the fuselage ahead of the stabilizer by wrapping it around the fuselage. This completes the assembly of your indoor Flying Star. Now have some fun!



A complete video on building and flying the outdoor Flying Star catapult glider is available at http://youtu.be/H19G_upFf7Q.

The table of times below will help in your viewing of the video:

0:00 - 2:42 Introduction 2:42

2:43 - 6:13 Launch Technique and Flight Path 3:52

6:14 - 10:13 Key Design Features 1 & 2 3:59

10:14 - 14:47 Key Design Features 3 - 11 4:33

14:48 - 24:57 Construction: Wing 10:09

24:58 - 34:07 Construction: Wing & Tail 9:09

34:08 - 46:24 Construction: Fuselage 12:16

46:25 - 56:09 Final Assembly 9:34

56:10 - 59:04 Launcher Construction 2:54

59:05 - 62:54 Flight Trimming 5:49

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