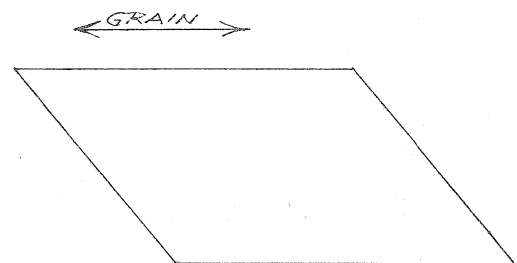
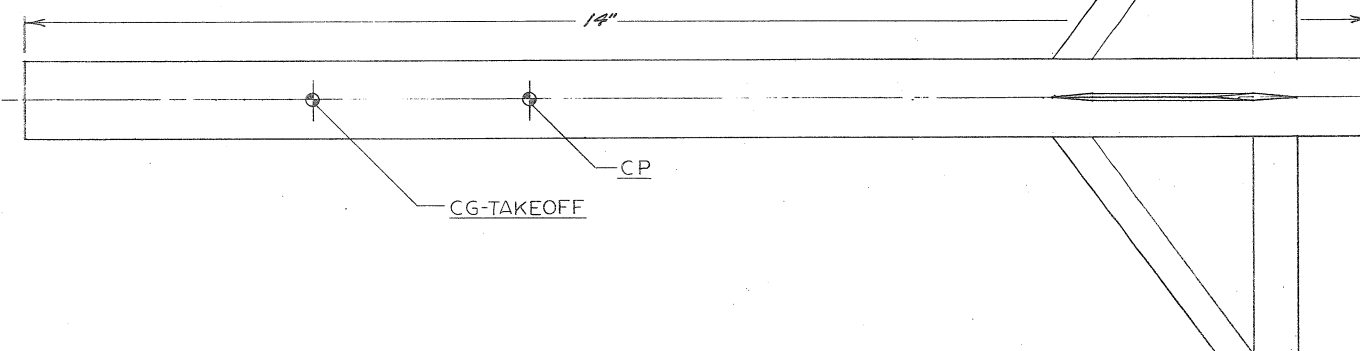


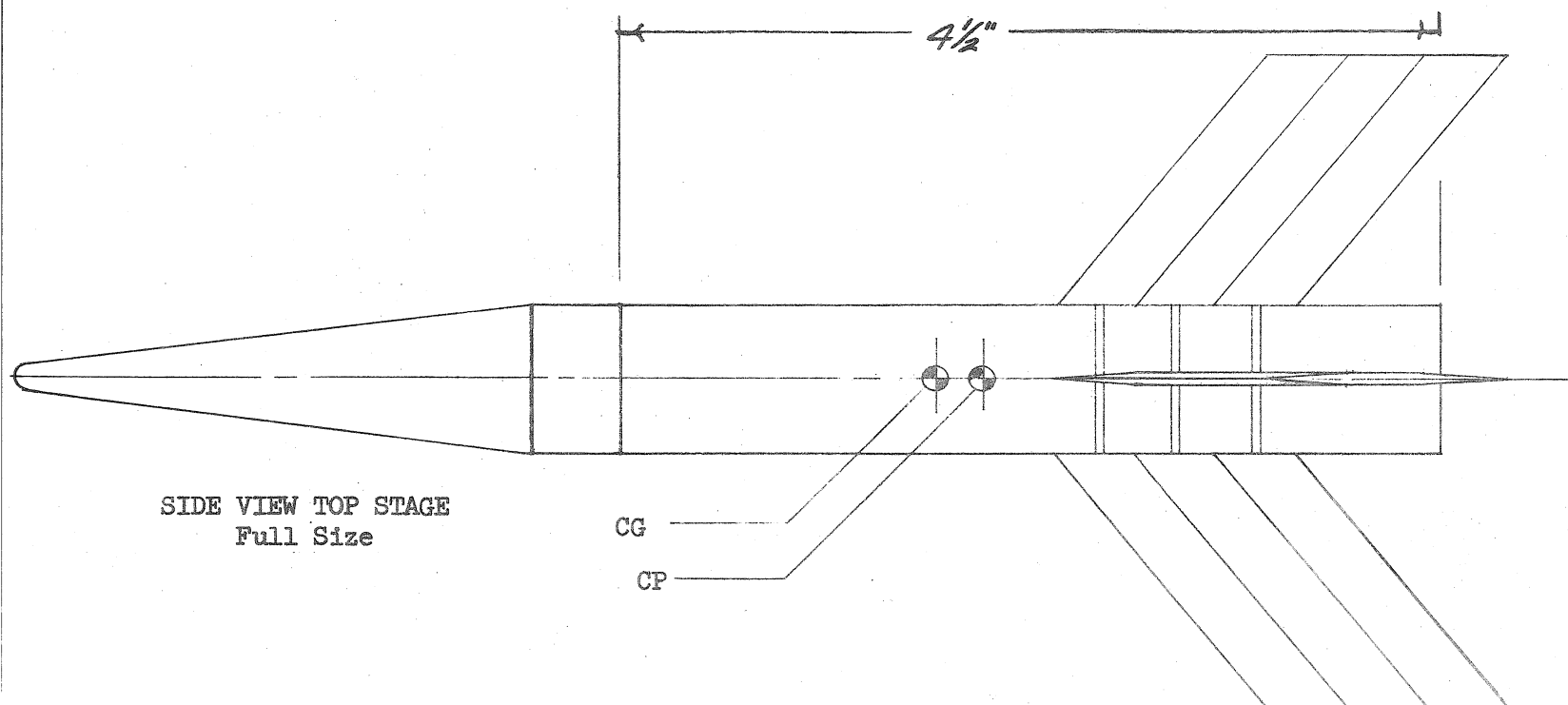
NOSE CONE (wood)
Full size



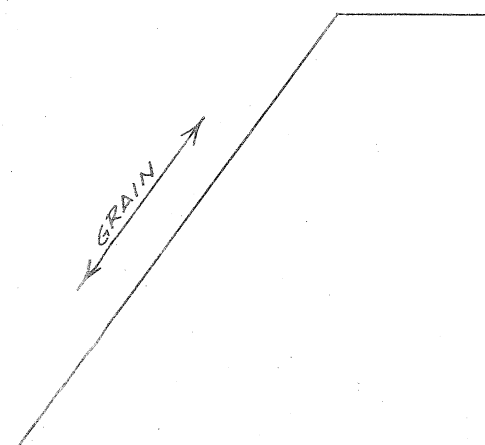
TOP STAGE FIN (1/16" Balsa)
Full Size



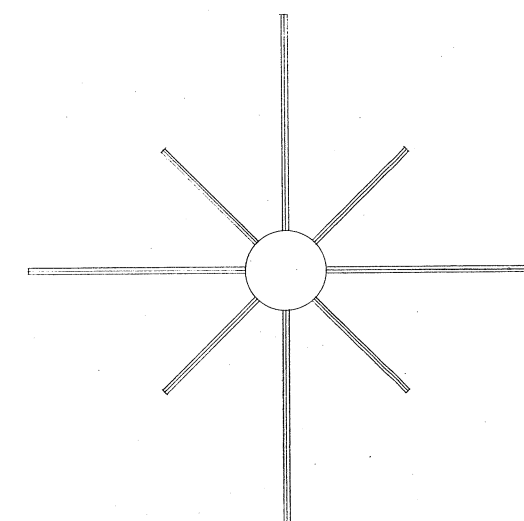
SIDE VIEW LOWER STAGE
Half size



SIDE VIEW TOP STAGE
Full Size

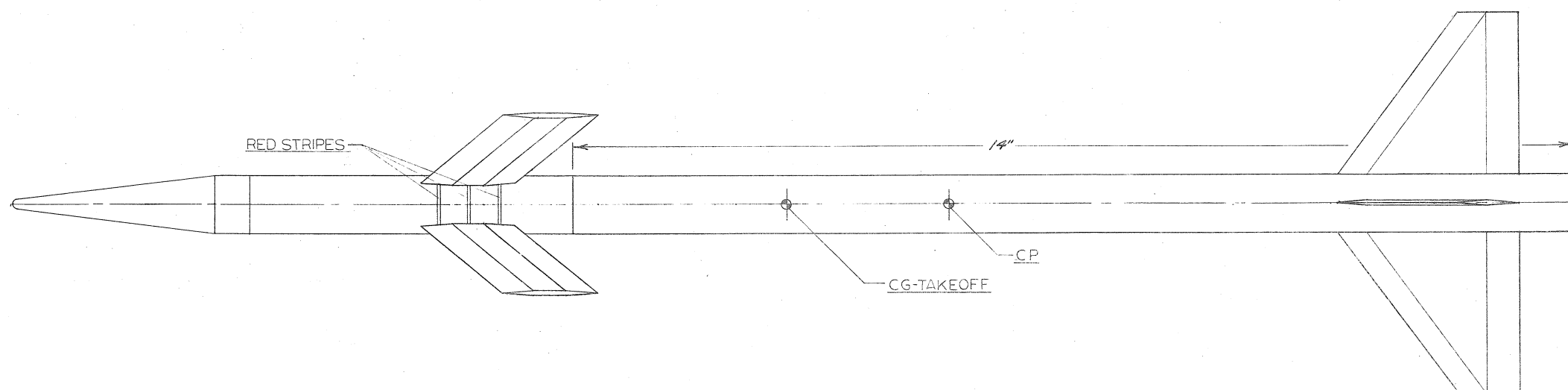


LOWER STAGE FIN (1/16" Balsa)
Full size



FRONT VIEW COMBINED STAGES
Half-size

WEIGHT (NO MOTOR): 1.95 oz.



SIDE VIEW COMBINED STAGES-Half size

FOR NON COMMERCIAL USE ONLY



NATIONAL ASSOCIATION OF ROCKETRY
PLAN PROGRAM

TERRAPIN

MODEL SCALE: 1:8 DRAWING SCALE: As noted

SCALE SOURCE: See Fact Sheet

DESIGN BY: Tydings & Roe DRAWN BY: GHS

CHECKED BY: WSR RELEASED: Sept. 1961

DRAWING NUMBER: NAR- 110

National Association of Rocketry

Plan No. 110

PLAN PROGRAM FACT SHEET

Model Name TERRAPIN

PROTOTYPE DATA: The "Terrapin" rocket was designed as an inexpensive rocket to probe the upper atmosphere. With solid propellant engines, it can be launched easily and quickly from any location with a minimum of equipment. It was designed by a group from the University of Maryland under the direction of Dr. S. Fred Singer and is built by the Guided Missiles Division of Republic Aviation Corporation. It can carry 6 lb. of payload to an altitude of 400,000 feet. Its overall length is 14.7 feet and its diameter is 6.25 inches. During operation, the firing of the second stage is delayed until 26 seconds after launch to allow the top stage to coast up out of most of the atmosphere. Nose cone is designed to be recovered for micrometeorite experiments; it is blown off the rocket during descent and lowered by parachute.

MODEL CONSTRUCTION: The "Terrapin" model of Plan 110 was designed by Rick Tydings, NAR#363 and William S. Roe, NAR#13 independently. During the 1960 NAR National Meet, Tydings established a new Open Scale Altitude record when his "Terrapin" soared to 1176 feet, powered by an NAR Type b.8-0 in the lower stage and a B.8-4 in the top stage.

Standard model rocket construction techniques are used throughout. They are described in various NAR Technical Reports. The lower stage body is made from a paper tube 14" long x 0.75" i.d. x 0.825" o.d.. The upper stage body is from a paper tube 4.5" long with same diameters as lower stage. Fins are cut from 1/16" balsa sheet. For greatest strength, balsa grain should run parallel to fin leading edges. Fins are tapered to double-wedge cross-section with sandpaper. The nose cone is turned on a lathe from pine. There is not much room in the top stage for a parachute, but a narrow ~~streamer~~ streamer makes an adequate recovery system for the top stage. The lower stage will not need a recovery system as it is designed to return to the ground without much damage in an unstable condition.

The nose cone is black. The upper stage body is white with red stripes as shown. Two opposite fins are black, the other two white. Lower stage color is the same.

When preparing for flight, use the following upper stage engines: Type 1/2.8-4, Type A.8-4, or Type B.8-6. Make certain that the nozzle is clear and free of clay particles. The engine may be taped so that it fits snugly into the top stage body with about 1/4" extending aft. Tape around the aft end of the top stage engine so that it slips into the forward end of the lower stage body tube, joining the stages in such a way that they cannot bend with respect to each other, yet will slide apart easily.

For the lower stage, always use either an Type A.8-0 or a B.8-0 engine! Tape it snugly into the body tube and install electric igniter.

The model must be flown from a launcher at least 36" long. For tower launch, the fins may be lined up instead of being interdigitated as shown on the plans. Launching lugs may be glued to the model to permit launching from a rod. Because of the critical top stage stability, it is not recommended that the top stage be flown alone as a single-staged model. All CG and CP points should be carefully observed.

Fly this model only in large open areas well away from trees, buildings, and power lines. Two-staged models are much more difficult to fly than single-staged models. Be careful.

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