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EVALUATION OF ORLON AND NYLON WINDCONE SOCKS

FOR LIMITED DISTRIBUTION

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INTRODUCTION

At the request of the Office of Federal Airways, the CAA Technical Development and Evaluation Center conducted a service test on Nylon and Orlon windcone socks to ascertain the relative merits of the two fabrics under actual operating conditions.

The results of this test, covering the period June, 1952, to April, 1953, are described in this report.

DESCRIPTION

The windcone socks were constructed in accordance with CAA drawing No. C-549 and were approximately 99 inches long with a basket diameter of 18-1/2 inches and a tip diameter of 8 inches. Each sock was supported by a cone-shaped steel basket extending one-fourth the length into the sock. The fabric was folded and stitched for reinforcement where it contacted the loops of the steel basket. The tip of each sock was laid into a two-inch-wide multiple fold (resembling a collar) and stitched to prevent the fabric from fraying. Both cones were made by the McLean Co. The Orlon material was supplied by the Glen Raven Cotton Mills.

The socks were installed on top of the TDEC hangar roof on standard rotating masts including a 150-watt illumination inside each sock. The masts were elevated above the angle iron structure to prevent the end collar of the socks from entangling or snagging on the frame. See Figs. 1 and 2. The height of the installation was 42 feet above ground. The Orlon sock weighed 37.92 ounces, and the Nylon sock weighed 23.13 ounces.

The test started June 6, 1952. A record was kept of visual weekly inspections of the socks during the entire test period. Monthly summaries of local climatological data, summarized in Table I, were obtained from the local Weather Bureau office.

RESULTS

Nylon Sock, Orange.

July 25, 1952 - 49 days after installation: The orange color of the sock was beginning to fade on the top of the sock.

Feb. 27, 1953 - 266 days after installation: Color was badly faded all around the sock and the fabric was beginning to tear near the end of the small-diameter collar of the sock.

March 6, 1953 - 273 days after installation: Fabric was torn half-way around the small-diameter collar.

Apr. 17, 1953 - 315 days after installation: Small-diameter collar was torn all the way and was hanging on the side seam of the sock. All other parts and seams, except color, were in good condition.

Orlon Sock, White.

Apr. 17, 1953 - 315 days after installation: Cone was still in good condition, except that it was beginning to tear near the small-diameter collar of the sock. All other parts and seams were in good condition; the cone was soiled, had a grey appearance.

A check of the windcone sock construction (both Orlon and Nylon) against CAA drawing No. C-549, Section B-B, disclosed the absence of a reinforcement seven inches wide cut across warp which extends, when folded, four inches into the cone fabric from the end of the small-diameter collar. The absence of the proper reinforcement evidently caused the heavily-welted collar to separate from the fabric during the pitching and whipping action of the socks in gusts of wind. This may be seen by reference to Figs. 1 and 2. The actual construction of the small end of the windcone socks is shown in Fig. 3.

CONCLUSIONS

After 315 days of operation the orange color of the Nylon sock had faded to such an extent that it could not be recognized as such. The end collar was torn off, leaving the fabric to fray.

After 315 days of operation, the Orlon white sock was soiled and a one-inch rip appeared in the fabric near the end collar. However, the fabric, being heavier and apparently stronger than Nylon, did not tear as easily as the Nylon which developed an identical rip after 266 days.

It should be pointed out however, that neither windcone sock was constructed fully in accordance with CAA drawing C-549. The small end reinforcement construction is believed inferior to that called for in the drawing.

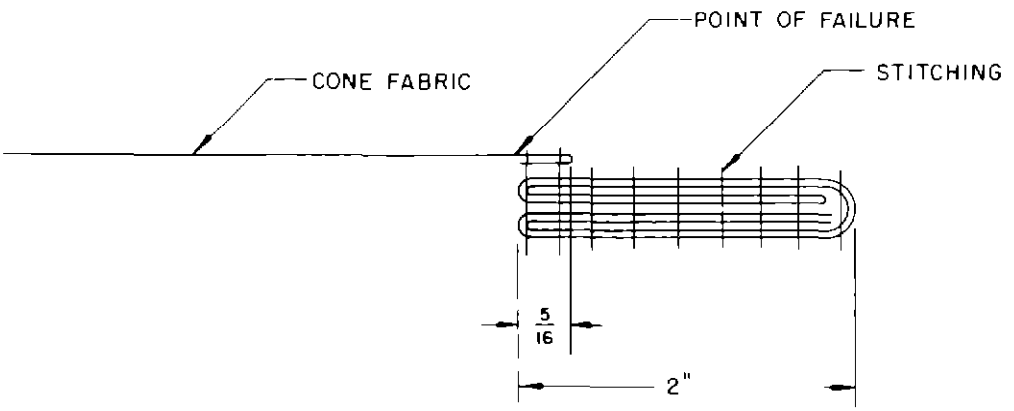

FIG 3 CONSTRUCTION OF SMALL END OF WIND CONE SOCKS TESTED

TABLE I

LOCAL CLIMATOLOGICAL DATA TAKEN FROM U S DEPARTMENT OF COMMERCE WEATHER BUREAU RECORDS FOR WEIR COOK AIRPORT INDIANAPOLIS, INDIANA

MONTH	TEMPERATURE (°F)			WIND (MPH)		PRECIPITATION (INCHES)			
						SNOW SLEET, & HAIL		WATER EQUIVALENT	
	HIGHEST	LOWEST	AVERAGE	FASTEST	AVERAGE	GREATEST IN 24 HOURS	TOTAL FOR MONTH	GREATEST IN 24 HOURS	TOTAL FOR MONTH
JUNE 1952	97	53	76 6	40	9 5			1 83	6 17
JULY	100	52	76 7	26	8 4			1 34	2 45
AUGUST	93	50	73 0	35	7 8			1 02	2 46
SEPTEMBER	94	39	66 0	61	8 1			1 64	4 62
OCTOBER	87	22	49 8	56	11 0			0 29	0 64
NOVEMBER	74	13	42 9	49	12 0	1 3	1 3	1 08	3 87
DECEMBER	65	13	34 0	29	12 2	4 9	6 9	1 00	3 01
JANUARY 1953	63	7	32 9	37	13 0	1 7	4 5	0 63	2 57
FEBRUARY	60	8	35 6	45	13 6	0 3	0 3	0 97	1 93
MARCH	77	11	42 1	49	13 3	5 3	7 5	2 01	5 41

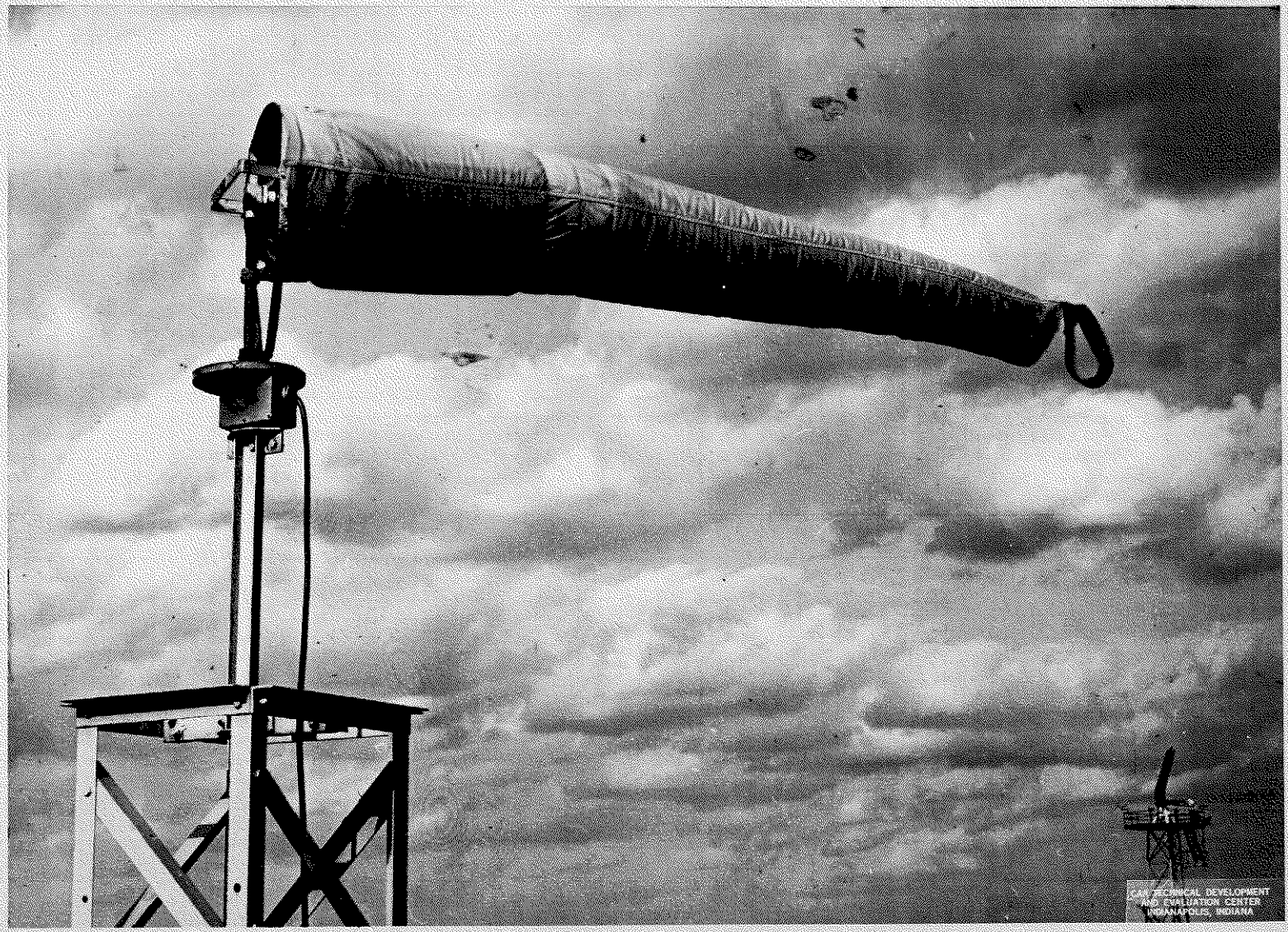

FIG. 1 NYLON SOCK WITH SMALL-DIAMETER COLLAR
TORN LOOSE AND HANGING BY SIDE SEAM

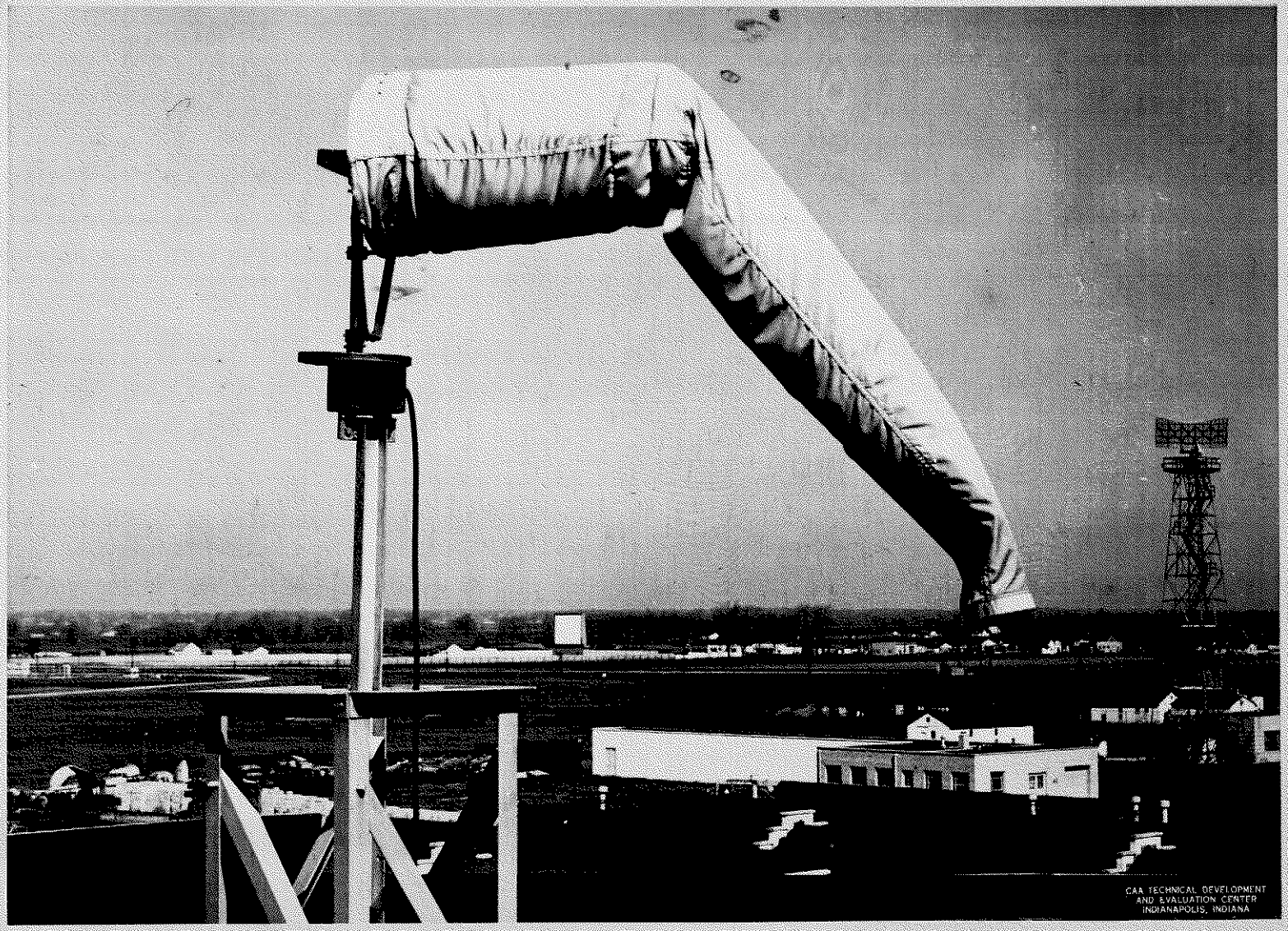

FIG. 2 ORLON SOCK WITH SMALL RIP IN FABRIC
NEAR SMALL-DIAMETER COLLAR