C.J. Neuman

WIND ESTIMATIONS
from
AERIAL OBSERVATIONS
of
SEA CONDITIONS

COMPILED BY WEATHER SQUADRON TWO (VJ-2)
NAS JACKSONVILLE
1952

FOREWARD

This booklet has been prepared in order to provide a more complete photographic guide to wind speed estimations from sea observations, than has previously been available. All pictures contained herein were taken from low-flying aircraft and are intended primarily for the use of personnel engaged in low-level hurricane reconnaissance. They should, however. prove useful to other components of the naval service as well.

Photographs of the sea surface under the influence of winds ranging from 8 to 130 knots are included. The speed values identified on each photograph are either computed by drift measurements in the case of the lower speeds or estimated by experienced aerologists attached to Weather Squadron TWO (VJ-2), based at the U. S. Naval Air Station, Jacksonville, Florida. The photographs were selected as being most representative of a large number of pictures taken by squadron photographers during the 1952 hurricane season.

In the interest of uniformity, pictures selected were those taken at approximately the same altitude (between 400 and 600 feet) and at the approximate same angle (45° from the vertical). All were taken with the standard K-20 aircraft camera. The combination of poor lighting, low altitude and continuous turbulence necessitated, for the most part, camera settings of f4.5, a shutter speed of 1/500 second and the use of TRI-X film. Conditions for photography within mature hurricanes are extremely adverse and the hazy appearance of some of the higher wind speed pictures should not be adjudged as poor picture quality but rather as a true portrayal of conditions as they actually exist. A sharp, contrasting photograph of the sea surface swept by 120 knot winds would be unrealistic since such a sea would almost always be partially or completely obscured by haze, spray, rain, clouds or a combination thereof.

All pictures show the appearance of the sea surface over deep water. The appearance of the sea surface over shallow water would indicate a much higher wind speed than that produced by the same wind over deep water.

These pictures are not intended as an absolute guide. Nothing can replace absolute wind measuring devices in obtaining the actual wind. It should be borne in mind that a given wind speed does not always yield the same sea surface appearance. Much depends, for instance, on such factors as the degree of swell present on the sea surface, the lighting available, and the angle and altitude at which the sea is viewed. Average sea conditions delineating certain wind speeds can, however, be specified and are listed on the following page.

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Commanding Officer

Wind Speed (knots)	Description of sea surface as viewed from low-flying aircraft
Under 6	No whitecaps visible; small occasional ripples.
7 to 9	Occasional whitecaps.
10 to 12	Whitecaps become more frequent; occasional small whitecaps are elongated perpendicular to wind direction and carry downwind a short distance.
13 to 15	Whitecaps become larger and more frequent; occasional small patches of foam remain from breaking wavelets.
16 to 18	Slight traces of wind streaks parallel to wind direction begin to appear; whitecaps and small patches of foam cover entire sea.
19 to 22	Wind streaks become more noticeable; secondary wavelets appear on swell crests.
23 to 28	Larger elongated waves form; numerous patches of white foam remain from breaking waves; wind streaks become still more noticeable.
29 to 35	Larger and more frequent patches of white foam from breaking waves; occasional very large waves 'mush' or flare out downwind while breaking and produce larger patches of white foam. Light spray blowing off breaking waves is carried downwind.
36 to 42	Blowing spray becomes more pronounced. Wind streaks appear very prominent but are not continuous.
43 to 48	Wind streaks become continuous. *
49 to 59	Wind streaks continue to increase and cover entire sea; visibility of sea surface affected by blowing spray.
60 to 75	Whole sea takes on whitish green cast; large individual patches of white foam and breaking waves are still visible; blowing spray covers entire sea.

* A well-established criteria

(continued on next page)

Wind Speed (knots)	Description of sea surface as viewed from low-flying aircraft
76 to 100	Sea becomes whiter and whiter from blowing spray and foam.
Over 100	Sea completely white with blowing spray and foam. Spray and foam assume tumbling, cascading appearance.

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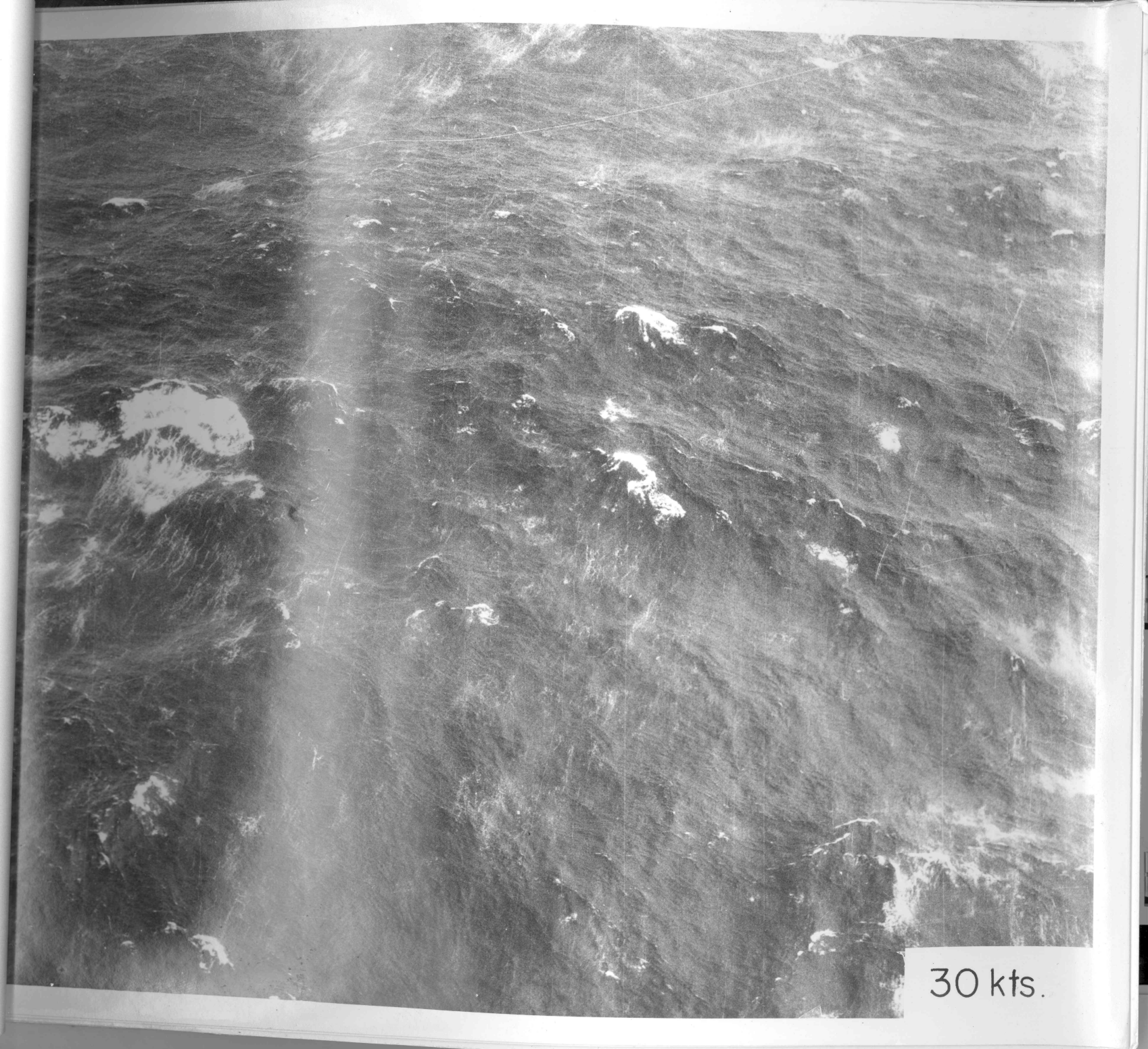
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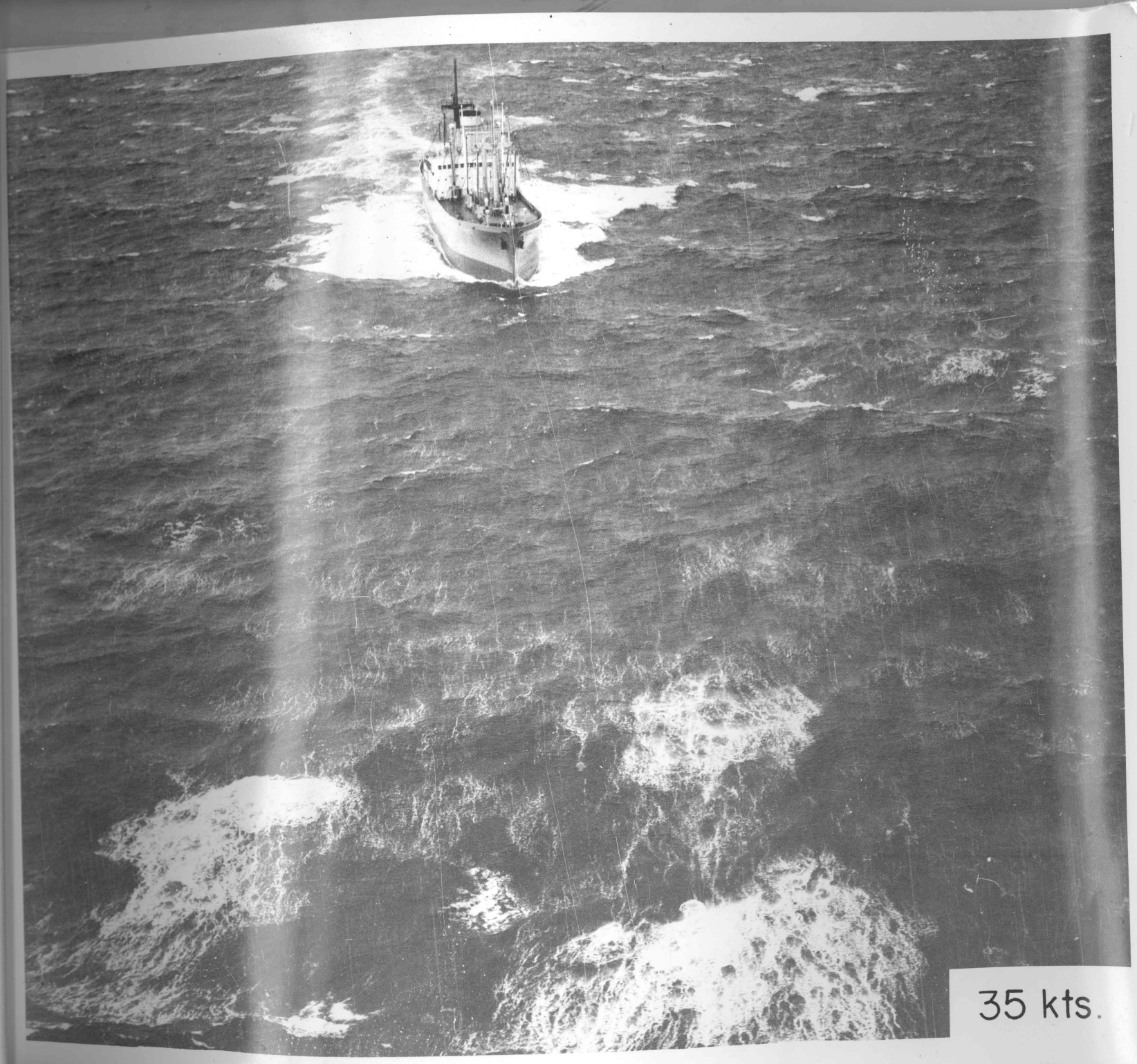
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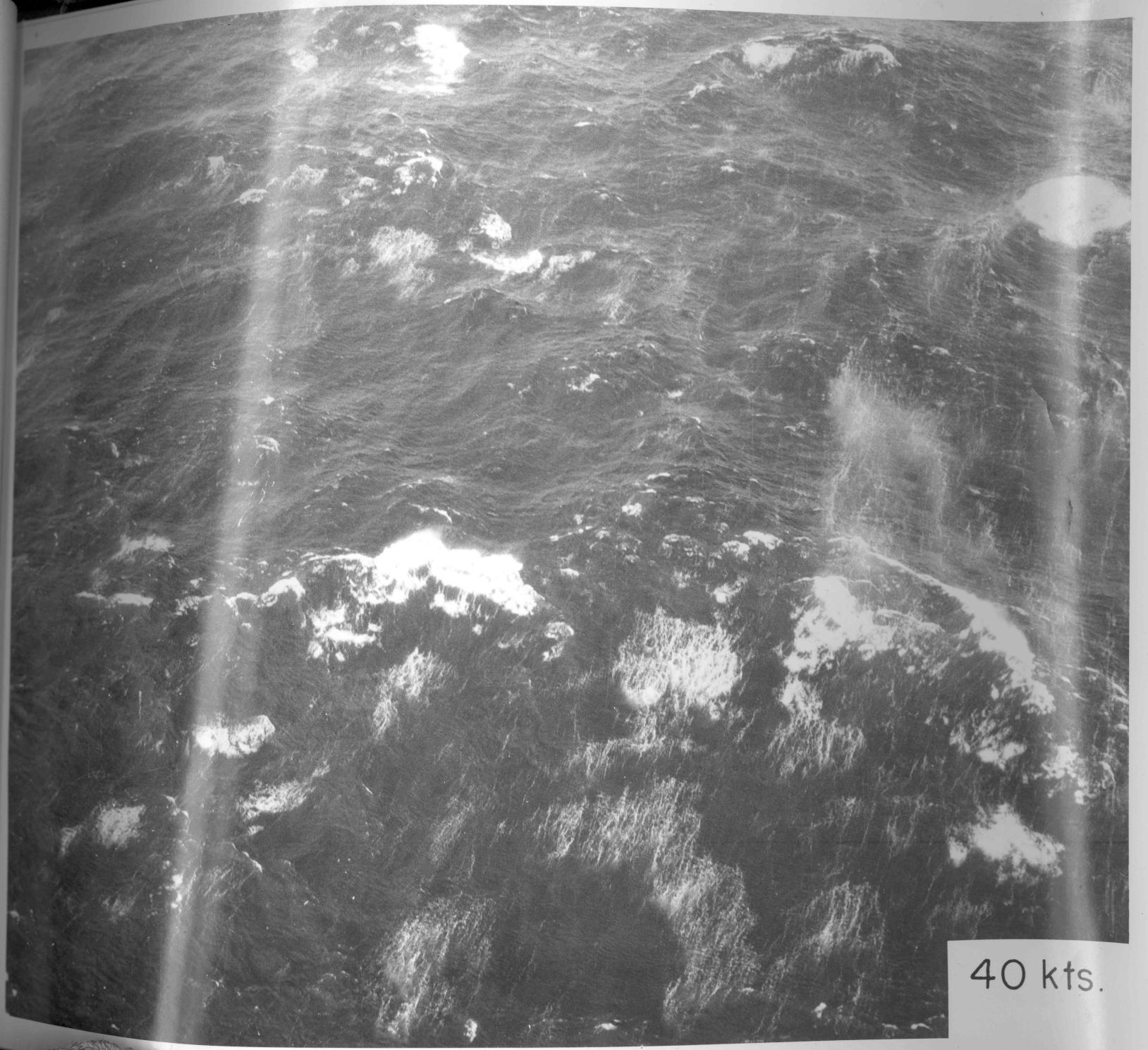
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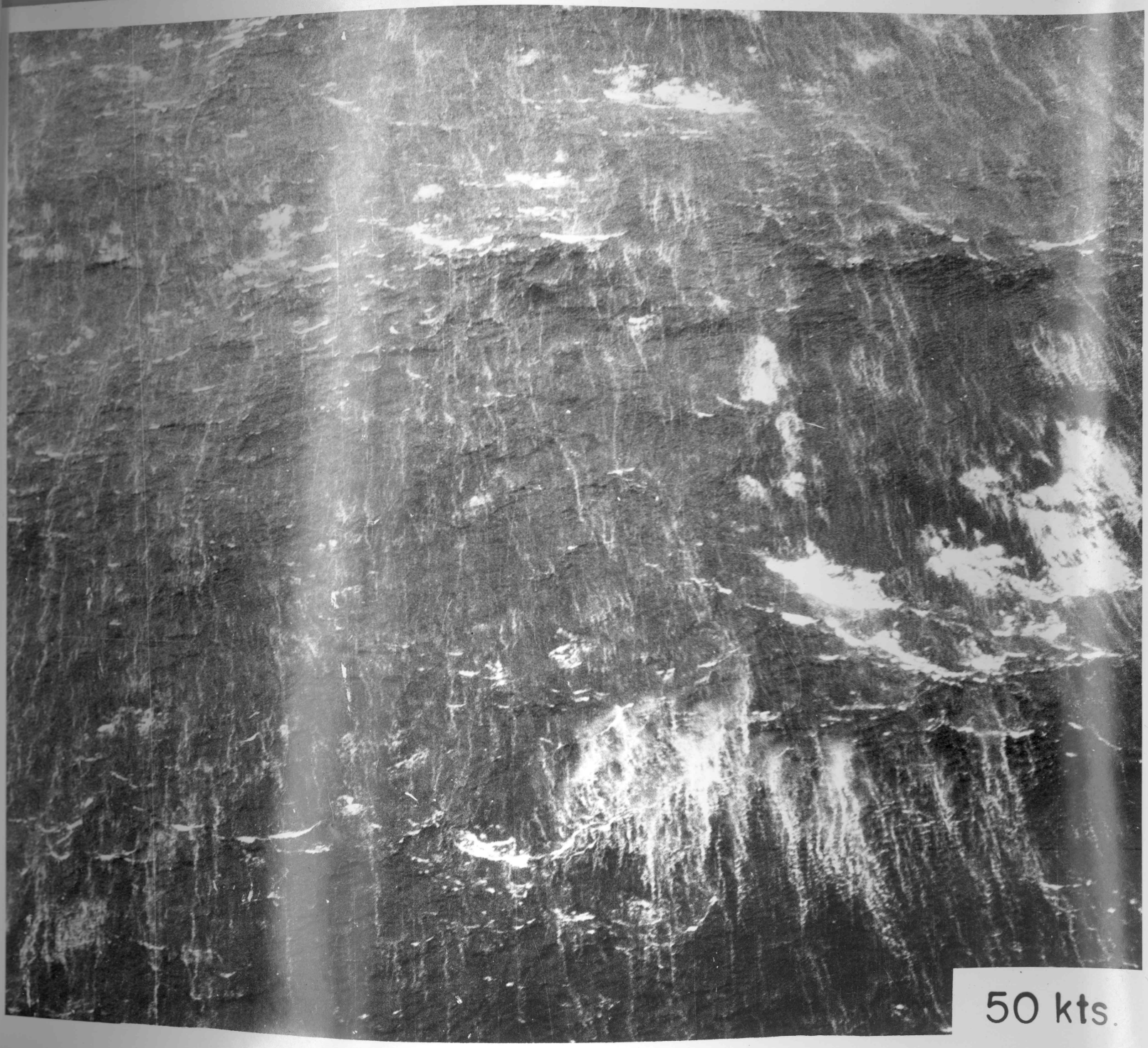
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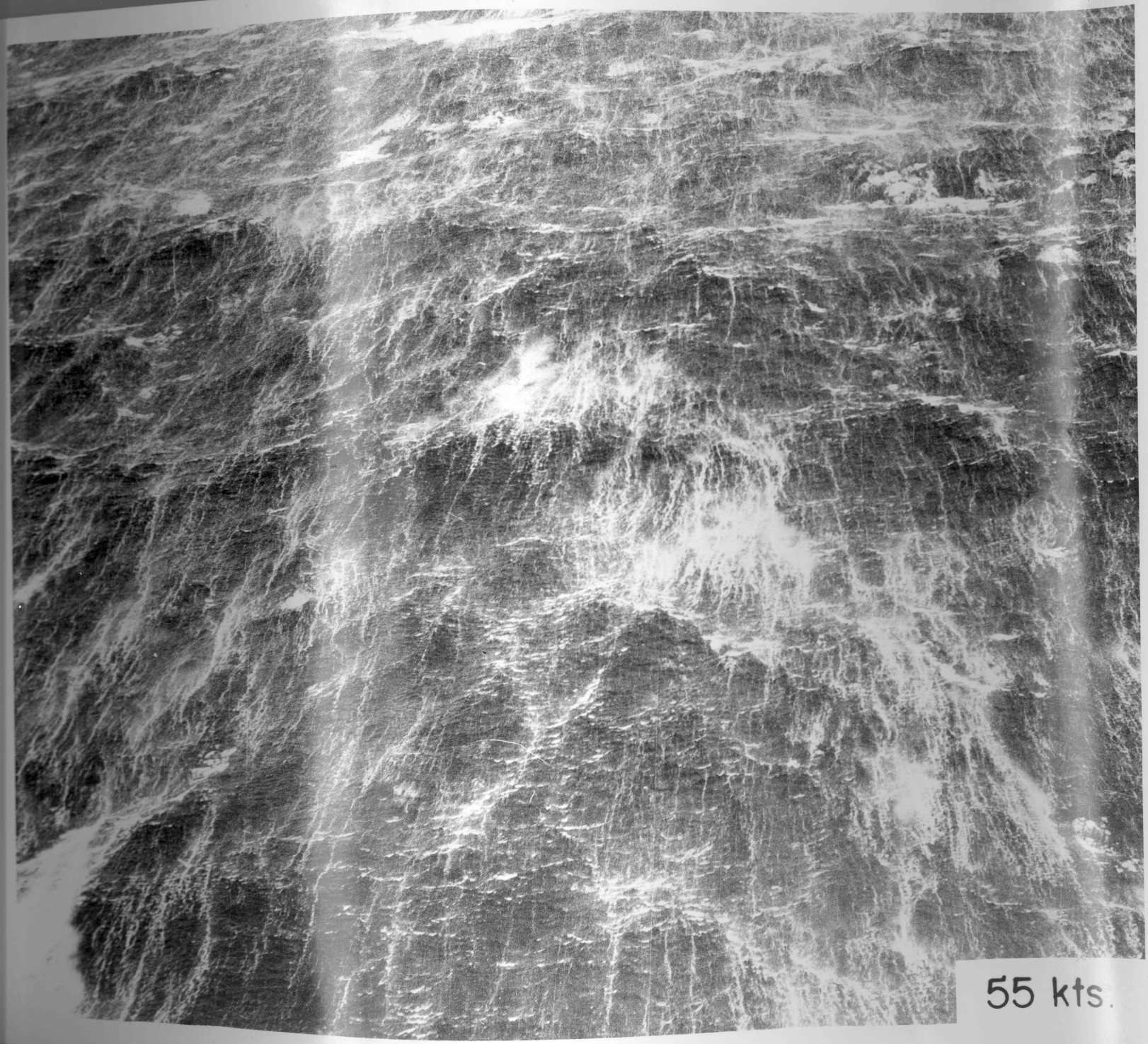
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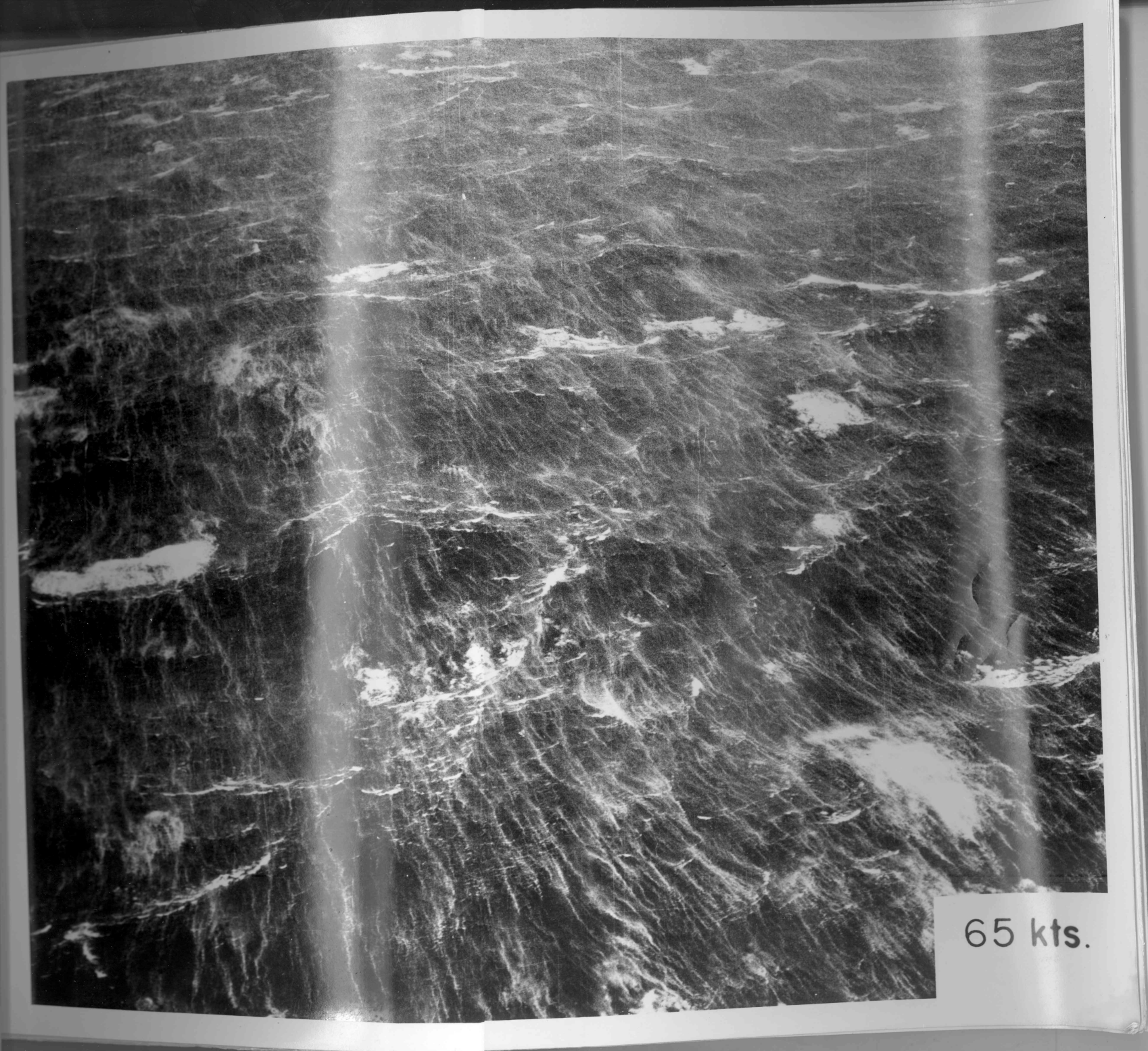
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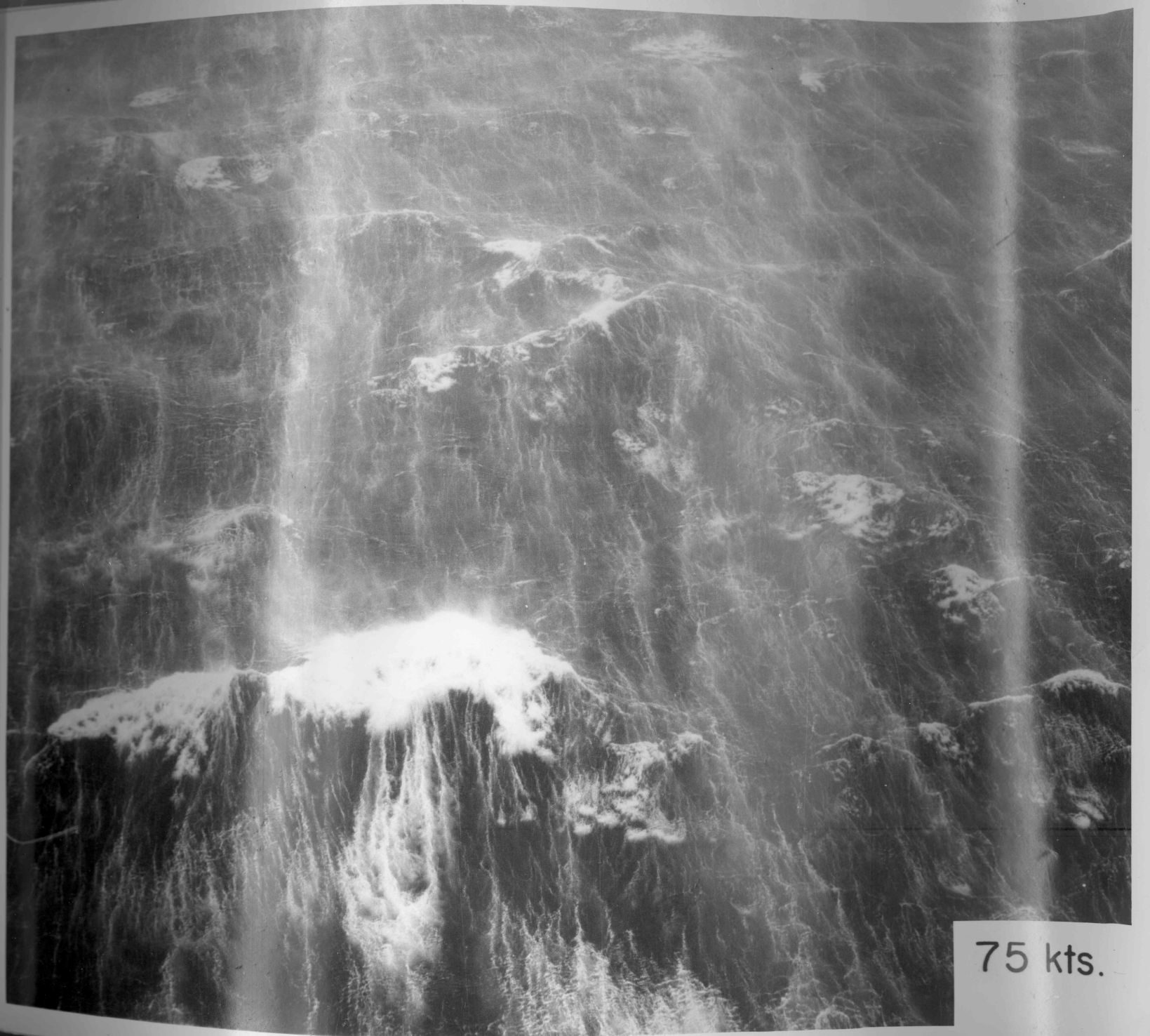
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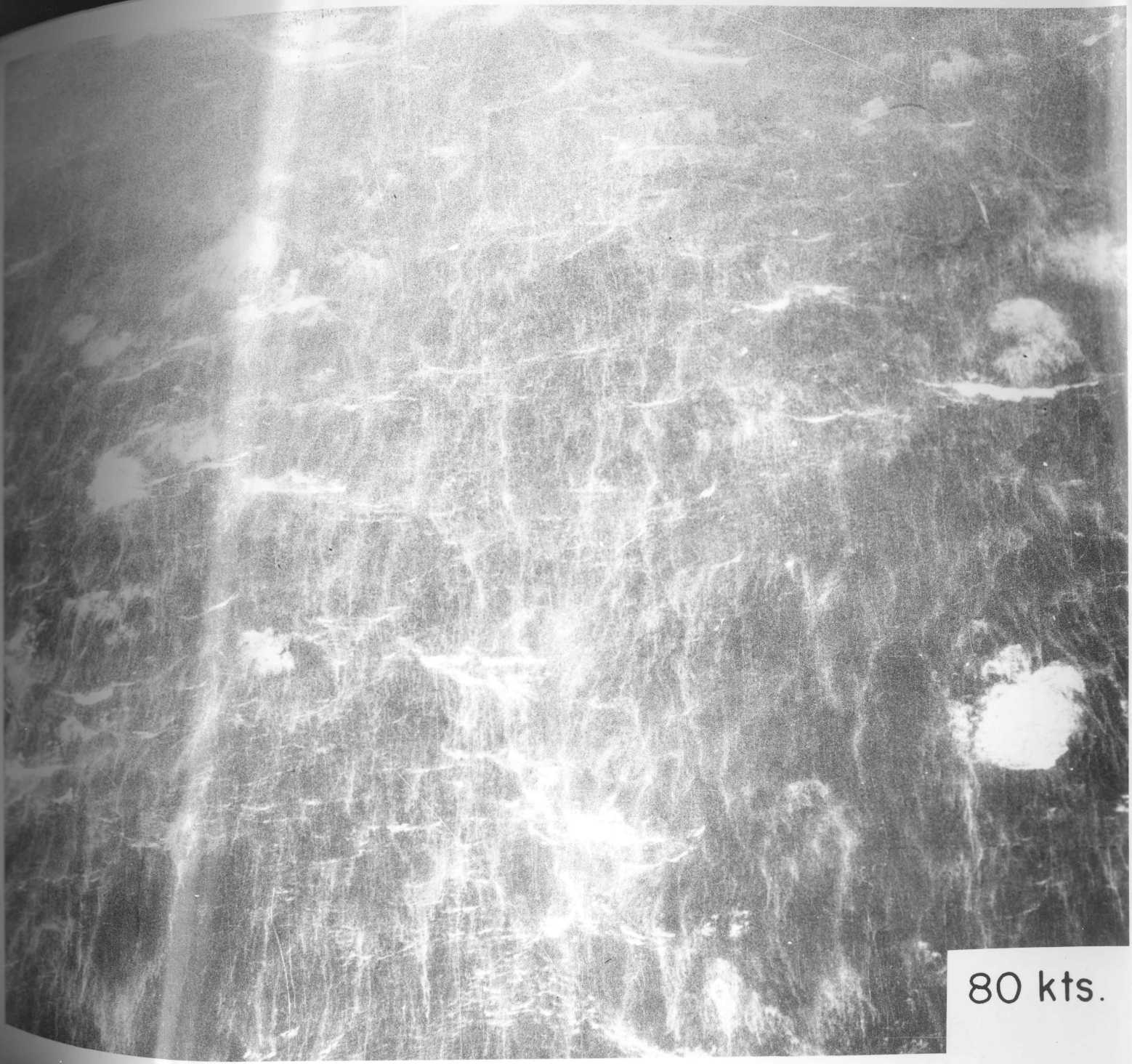
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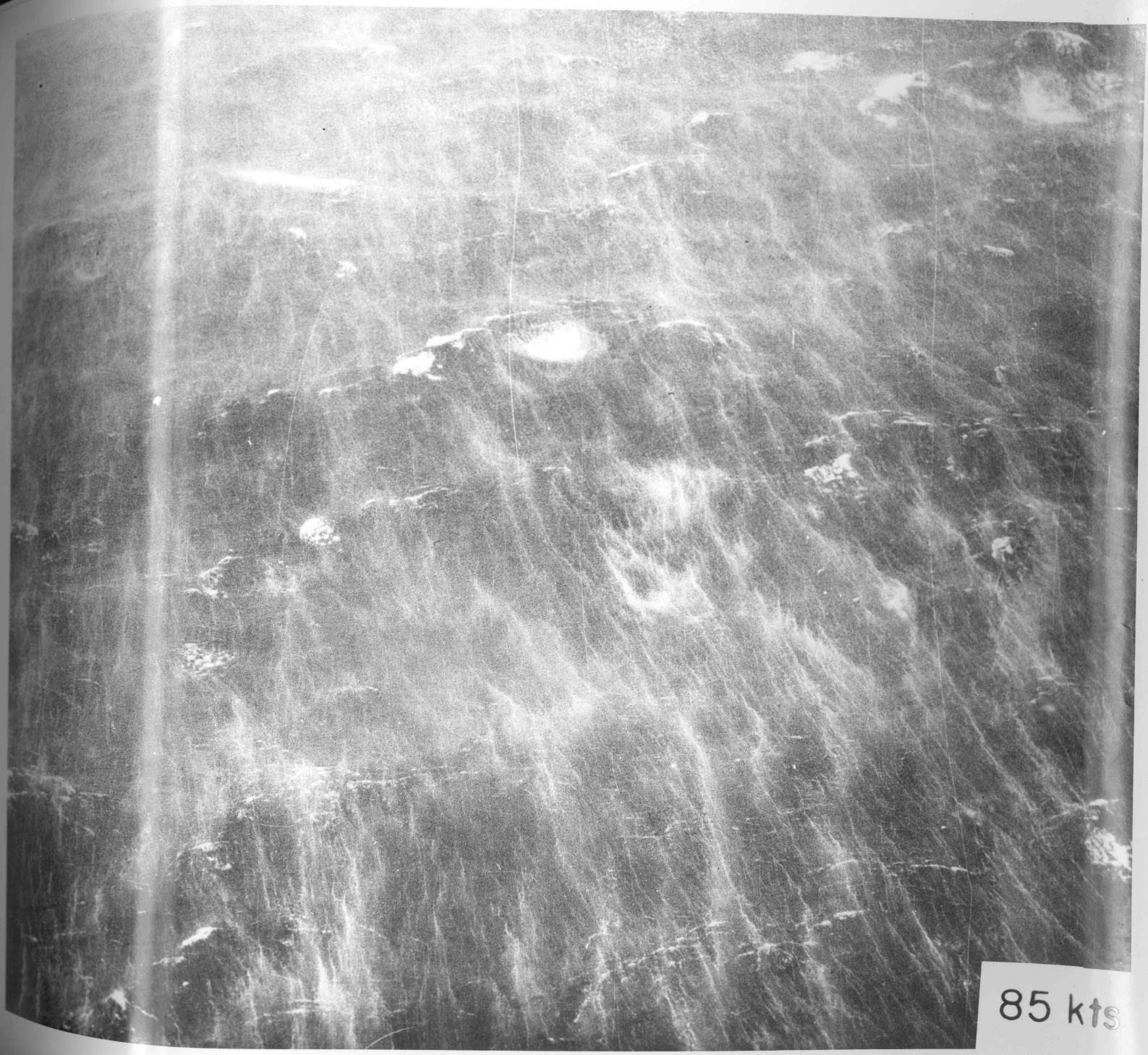
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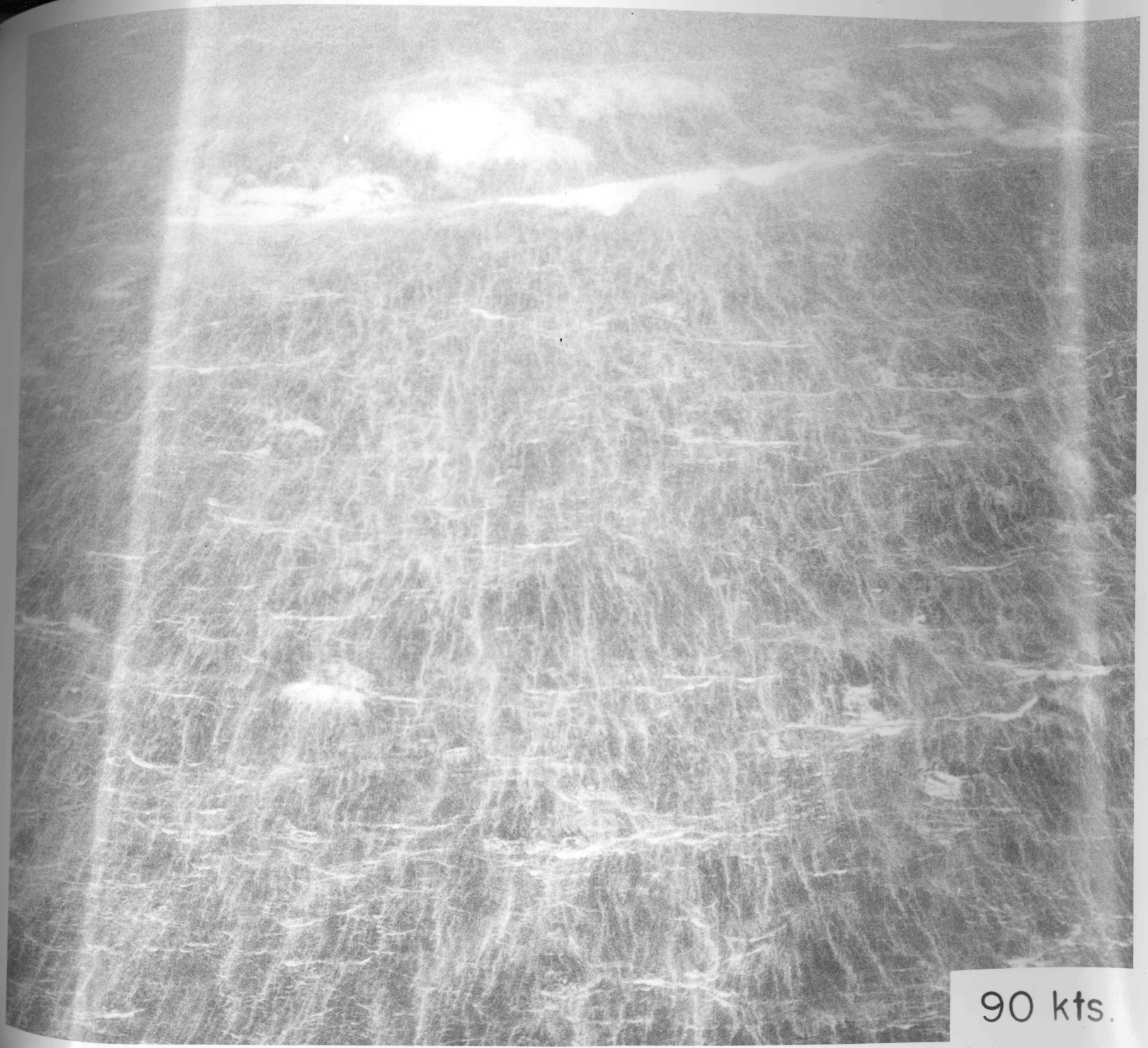
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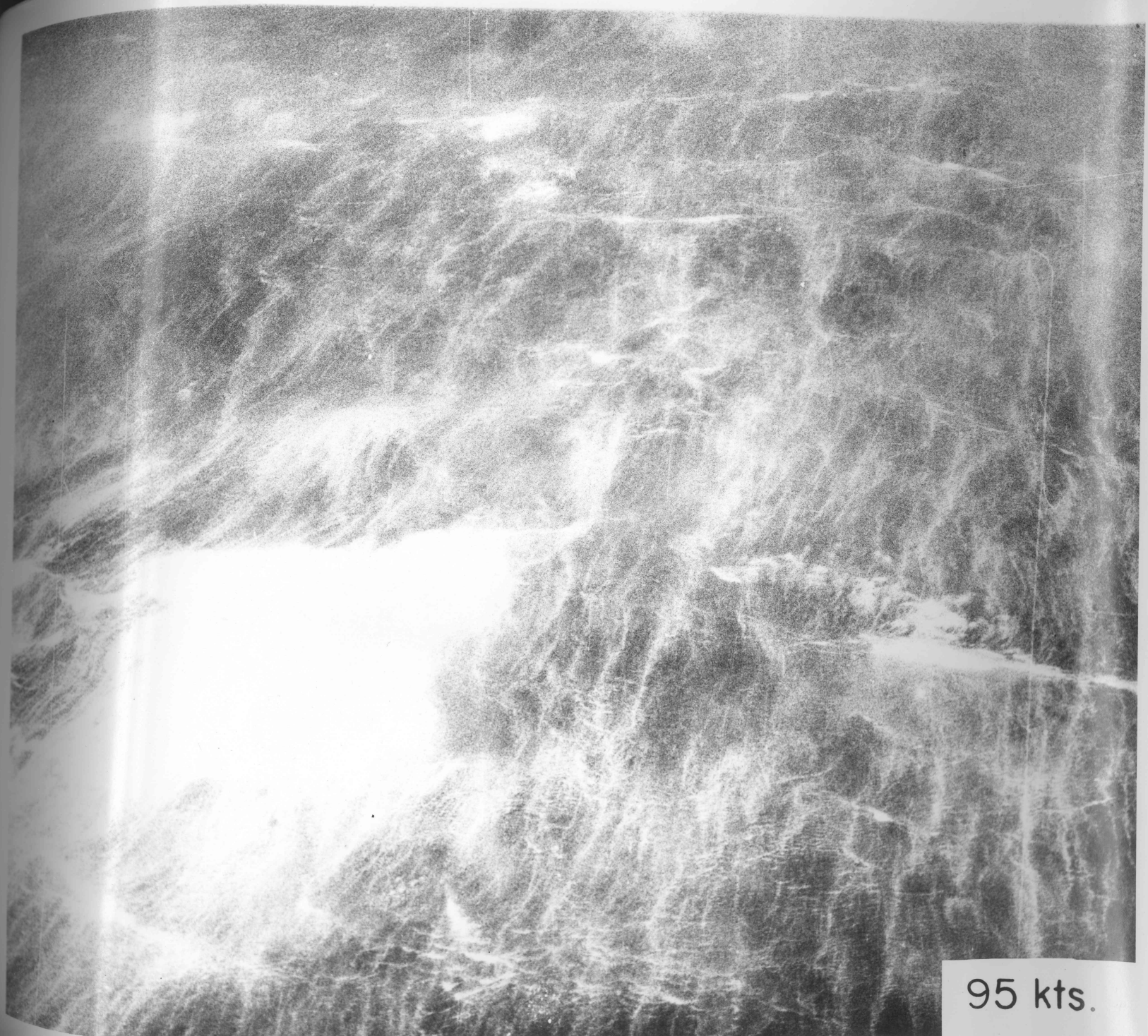
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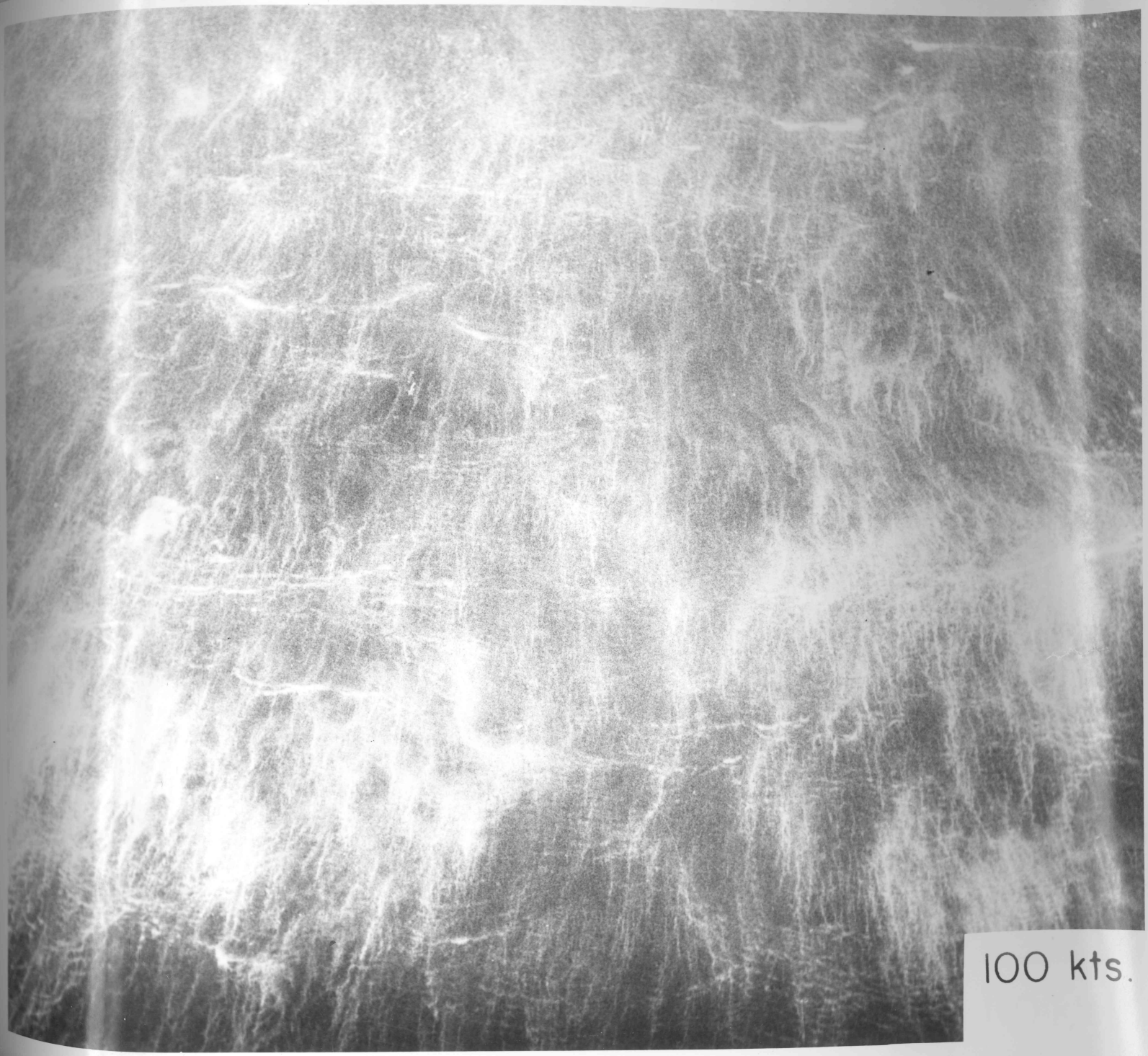
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