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REPORT ON 1975 BROWN BEAR STUDIES

by
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Volume XVI
Project Progress Report
Federal Aid in Wildlife Restoration
Project W-17-7, Job 4.4R (2nd half) and
Project W-17-8, Job 4.4R (1st half)

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JOB PROGRESS REPORT (RESEARCH)

State: Alaska

Cooperator: Leland P. Glenn

Project Nos.: W-17-7 & W-17-8 Project Title: Big Game Investigations

Job No.: 4.4R Job Title: Distribution and Movements of Alaska Peninsula Brown Bears

Period Covered: January 1, 1975 through December 31, 1975

SUMMARY

Fifty-five brown bears were immobilized, marked and released on the Black Lake Study area. Tagging began on June 1 and continued for 20 consecutive days. Included were 26 bears which had been tagged in previous years. The tagging phase of this project has been completed. Since 1970, 354 marked bears have been recaptured, observed or radio-tracked 783 times. Movement data continue to accumulate from bears equipped with radio transmitters and from tagged bears taken in the sport harvest.

Movements of immature and adult bears are discussed. Young males range further than other sex and age groups. The average maximum distance traveled between location points was 32 miles for young males, 13 miles for young females, 29 miles for adult males and 15 miles for adult females. Conclusions, based on 180 observations of marked immature bears, are that females tend to remain in their maternal home range while males tend to move away from their maternal home range.

By fall 1976 sufficient movement information will be available to complete the objectives of this study. Analysis of data has begun. A paper on bear movements will be prepared during the winter of 1976 and presented at Kalispell Montana (February 20-24) during the Fourth International Conference on Bear Research and Management. This paper will be published and will serve as the final report for Job 4.4R. As data analysis proceeds, other papers on brown bear life history will be submitted for publication in professional journals.

CONTENTS

BACKGROUND

There is nationwide interest and a wide range of views about brown/grizzly bear (*Ursus arctos*) management. These views range from total protection of bears and bear habitat to maximum utilization of the resource. The Alaska Department of Fish and Game is responsible for management of the state's brown/grizzly bear resource. Much of the effort by the Department to develop a management program has been directed toward assessment of hunter harvest and the gathering of abundance and composition data. Other studies are designed to test and improve the accuracy of the cementum age determination technique, to describe breeding biology, and to determine growth rates, survival rates and seasonal bear movements. Research studies in progress in Southcentral Alaska are emphasizing these activities in order to provide information which can be used to improve bear management. In recent years the department has designed studies to determine the effects of industrial activities which may conflict with the well-being of the species. These studies have been conducted in Southeastern Alaska on areas subject to logging (Wood 1976) and in the interior of Alaska where intensive oil exploration may disrupt bear habitat (Reynolds 1976). Information derived from these studies will be used to aid the development of progressive land classification programs vital to the welfare of the brown/grizzly bear resource.

This report addresses brown bear studies which are in progress in Southcentral Alaska. In 1969 the Alaska Department of Fish and Game chose the Black Lake area as the most suitable location to conduct brown bear research. The area is located on the Alaska Peninsula approximately 475 miles southwest of Anchorage. The background of this investigation has been reported previously (Glenn 1971, 1972, 1973 and 1975).

OBJECTIVES

To determine the distribution and movement patterns of Alaska Peninsula brown bears.

PROCEDURES

Procedures for capturing and collecting data on brown bears were described by Glenn (1973).

Radio transmitters manufactured by AVM Instrument Company (Champaign, Illinois) were attached to adult bears in June 1975. Movements of radioed bears were monitored from fixed-wing aircraft equipped with portable receivers (AVM Instrument Co. Champaign, Illinois) and high gain antennas attached to the wing struts.

FINDINGS

The Alaska Department of Fish and Game captured, marked and released 55 brown bears on the Black Lake study area between June 1 and June 20, 1975. Included were 26 bears which had been marked in previous years. Capture success was low in comparison to past years. Poor success was attributed to adverse weather conditions and the fact that bears did not move to the coastal plain in sufficient numbers to permit continuous tagging. Tagging activities have now been completed. Since 1970 a total of 354 different bears have been captured, observed or radio-tracked 783 times. Excluding known mortality an estimated 200 marked bears remain on the study area. For the next decade harvested, tagged bears will provide additional movement information.

Data collected at Black Lake during the past 5 years show that bear movements are influenced by four major factors; differences in sex, age, reproductive status and response to the seasonal food source. Any discussion of population movements must consider these factors. An evaluation of seasonal movements in response to food and reproductive status was presented in an earlier report (Glenn 1975).

Movements of Immature Bears

Movements of young females (less than 5 years of age) were not significantly different from those of adult females. The average maximum distance traveled between locations of recapture, observation or kill points for young females was 13 miles and for adult females was 15 miles (derived from 78 observation points of 221 young females and 220 observation points of 43 adult females.) The longest straight line distance traveled by a young female was 33 miles. Most immature females remained in close proximity to their maternal home range.

Young males ranged further than other sex and age groups. The average maximum distance traveled was 32 miles between locations of recapture, observation or kill points (derived from 92 observation points of 23 young males). Some immature males moved long distances. For example, males No. 97 and No. 799 were captured in the center of the study area at 2.5 years of age. At 3.8 years of age male No. 97 was killed by a hunter 85 miles southwest of the original capture point and approximately 40 miles southwest of the southern study area boundary. At 6.8 years of age male No. 799 was killed 83 miles to the northeast of the original capture point and approximately 40 miles to the northeast

of the northern study area boundary. Both males apparently moved out of the study area a short time after they were captured as they were never observed within the study area after the date of first capture. Pearson (1975), in his studies of the movements of Canadian grizzly bears, found the opposite true of immature males. He stated that the minimum home range for adult females compared in size with those found for immature males. He theorized that young males remain in their maternal home range.

Movement data suggest that by 4 years of age most bears have settled in the area in which their seasonal movement patterns are established. Movement patterns of some immature bears are presented in Appendix I, Part A.

Movements of Adult Bears

The average maximum distance traveled between locations of recapture, observation or kill points for adult males was 29 miles (derived from 24 observation points of 5 adult males). The home ranges of adult boars appear different from those of adult sows, however, the small sample of older males has limited adequate comparisons between the two sexes. Large boars are seldom observed away from mountainous areas. Observations during bear reconnaissance flights and conversations with numerous game guides indicate that most older males confine their movements to the Aleutian Mountain Range. During spring and fall bear hunting seasons it is unusual for males over 7 years of age to be killed on the coastal plain. Young males and legal sows, however, are commonly killed there. The theory is advanced that hunting has caused older males to seek protection provided in more inaccessible areas. A detailed discussion of variables influencing home range size will be presented in the final report. Movement patterns of some adult bears are shown in Appendix I, Part B.

RECOMMENDATIONS

Specific management recommendations will be made next year after complete review of harvest data and research findings.

ACKNOWLEDGEMENTS

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LITERATURE CITED

Glenn L. P. 1971. Report on 1970 brown bear studies. Alaska Fed. Aid in Wildl. Rest. Rep. Proj. W-17-2 and W-17-3.

_____. 1972. Report on 1971 brown bear studies. Alaska Fed. Aid in Wildl. Rest. Rep. Proj. W-17-3 and W-17-4.

_____. 1973. Report on 1972 brown bear studies. Alaska Fed. Aid in Wildl. Rest. Proj. W-17-4 and W-17-5.

_____. 1975. Report on 1974 brown bear studies. Alaska Fed. Aid in Wildl. Rest. Rep. Proj. W-17-6 and W-17-7.

Pearson P. M. 1975. The northern interior grizzly bear Ursus arctos L. Can. Wildl. Ser. Report Series No. 34:1-78.

Reynolds. H. V. 1976. North slope grizzly bear studies. Alaska Fed. Aid in Wildl. Rest. Proj. W-17-6 and W-17-7.

Wood, R. E. 1976. Movement and populations of brown bears in the Hood Bay drainage of Admiralty Island. Alaska Fed. Aid in Wildl. Rest. Final Report. Projs. W-17-5, W-17-6 and W-17-7.

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APPENDIX

Movement Histories of Marked Immature Bears

Appendix I - Part 1A Male No. 420

1972 - Age 6 months

19 June - Captured with sow No. 719 and male litter mate No. 421.

1974 - Age 2 years

27 June - All members of the family group recaptured.

25 Oct. - Family breakup did not occur during 1974 as all members of the family group were captured in the fall.

1976 - Age 4 years

22 May - Killed during the spring bear hunting season 76 miles southwest of the previous capture point.

Appendix I - Part 2A Female No. 833

1971 - Age 2 years

20 June - Captured with sow No. 867 and litter mates No. 868 and No. 869.

2 July - Family group recaptured 8 miles to the northwest.

7 July - Family group recaptured in the foothills 15 miles northeast of the point of first capture.

8 October - All members of the family group observed at point A.

1973 - Age 4 years

10 October - Killed 7 miles from original capture point.

Appendix I - Part 3A Male No. 121

1975 - Age 3 years

1 June - Captured with 8-year-old sow No. 836.

1976 - Age 4 years

17 June - Killed during the spring bear hunting season 30 miles from the original point of capture.

Appendix I - Part 4A Male No. 832

1968 - Age 1 year

11 August - Captured alone.

1971 - Age 4 years

20 June - Captured with estrus female No. 703, 18 miles west of the 1968 capture point.

1972 - Age 5 years

14 June - Captured with estrus female No. 832, 4 miles from the previous capture point.

1973 - Age 6 years

20 October - Killed by a hunter 9 miles north of the previous point of capture.

Appendix I - Part 5A Male No. 764A

1970 - Age 2 years

28 June - Captured alone near the beach.

1976 - Age 8 years

18 May - Killed during the spring bear hunting season 11 miles inland from the original point of capture.

Appendix I - Part 1B Male No. 423

1972 - Age 14 years

21 June - Captured in a dense alder thicket at the 1500 foot level on the north side Mount Veniaminof. A radio-collar was attached but was never successfully monitored.

1974 - Age 16 years

9 June - Captured with two unknown adults which were believed to be estrus sows. Bear No. 423 had lost his radio transmitter. A second radio was attached.

10 June - Radio-tracked to point A.

11 June - Radio-tracked to point B. No further radio signals heard after this date.

1976 - Age 18 years

18 June - Killed by a hunter in a dense alder thicket. The radio-collar was missing. The distance traveled between the point of first capture and kill location was 17 miles.

Appendix I - Part 2B Male No. 112

1974 - Age 6 years

3 July - Captured in a dense alder thicket with two other adults of unknown sex. A radio-collar was attached and was shed by the bear several days later.

1976 - Age 8 years

14 May - Killed by a hunter on the Bering Sea side of the Aleutian Mountain Range. Distance traveled from previous location point was 23 miles.

Appendix I - Part 3B Male No. 860

1971 - Age 4 years

25 June - Captured with estrus sow No. 725A

1976 - Age 9 years

18 May - Killed during the spring bear hunting season 13 miles from previous capture point.

Appendix I - Part 4B Female No. 707

1970 - Age 6 years

19 June - Captured with one 1.5-year-old cub No. 708.

29 June - Observed with her single cub at point A on West Fork River.

12 October - Observed at point B with cub No. 708.

1971 - Age 7 years

22 June - Captured without young and in estrus 8 miles east of the original capture point.

1 October - Killed by a hunter on the coastal plain.

Appendix I - Part 5B Female No. 19

1971 - Age 5 years

6 July - Captured with her two 6-month-old cubs No. 20 and 21 while feeding on salmon on the West Fork River.

7 July - Observed feeding in the same location.

1972 - Age 6 years

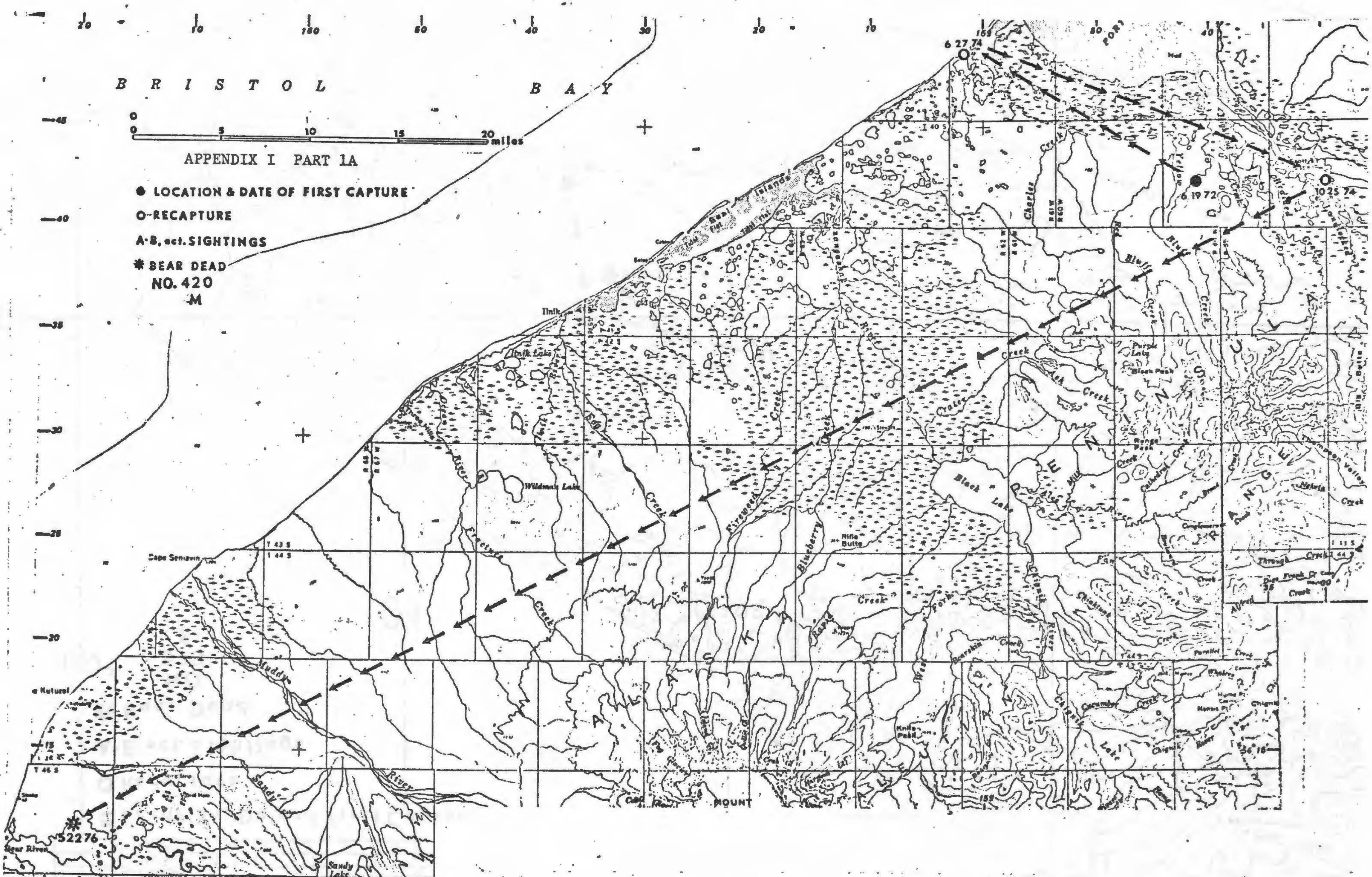
21 June - Captured on the West Fork river without young and 1.5 miles from the original capture site.

1974 - Age 8 years

19 June - Captured with three 6-month-old cubs Nos. 60, 61 and 62. A radio-collar was attached to sow No. 19 and she was located on the following dates: 27 June, 4 July, 6 August, 6 September, and 2 October 1974. During that time the maximum distance moved between observation points was 5 miles.

1976 - Age 10 years

11 May - Killed by a hunter 6 miles from the point of first capture.



B R I S T O L B A Y
0 5 10 15 20 miles
APPENDIX I PART 1A
● LOCATION & DATE OF FIRST CAPTURE
O-RECAPTURE
A-B, ect. SIGHTINGS
* BEAR DEAD
NO. 420
M
6 27 74
6 19 72
10 25 74
5 22 76
Seal Islands
Ilnik
Ilnik Lake
Wildman Lake
Cape Seniavin
Black Lake
Purple Lake
Rifle Butte
Knife Peak
Sandy Lake
Bear River
Muddy River
Sandy
Charles Creek
Bluff Creek
Ash Creek
Crater Creek
Firewood Creek
Blueberry Creek
Chignik River
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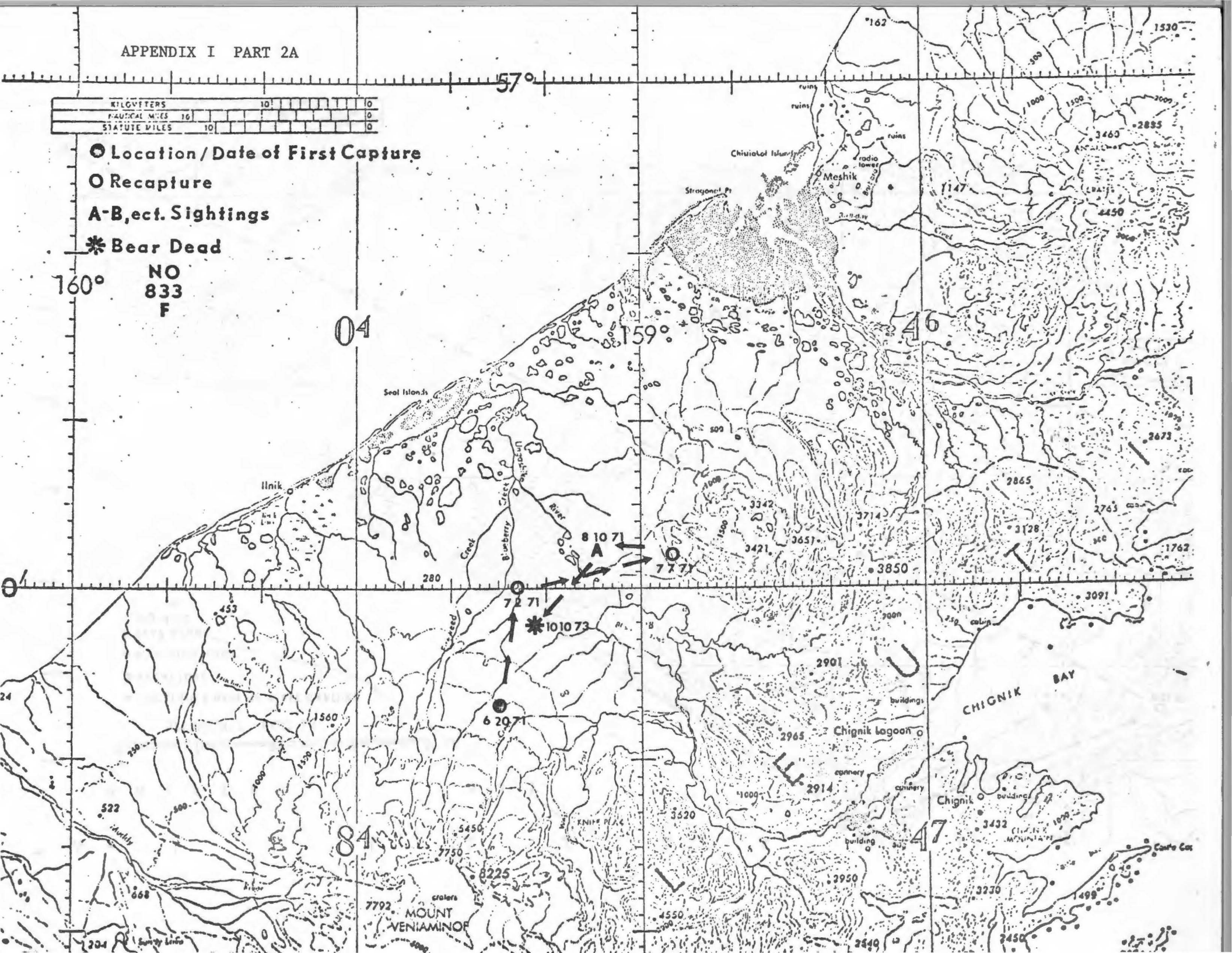
Cucumber Creek
Through Creek
A L A S K A
P E N I N S U L A
R A N G E
MOUNT

APPENDIX I PART 2A



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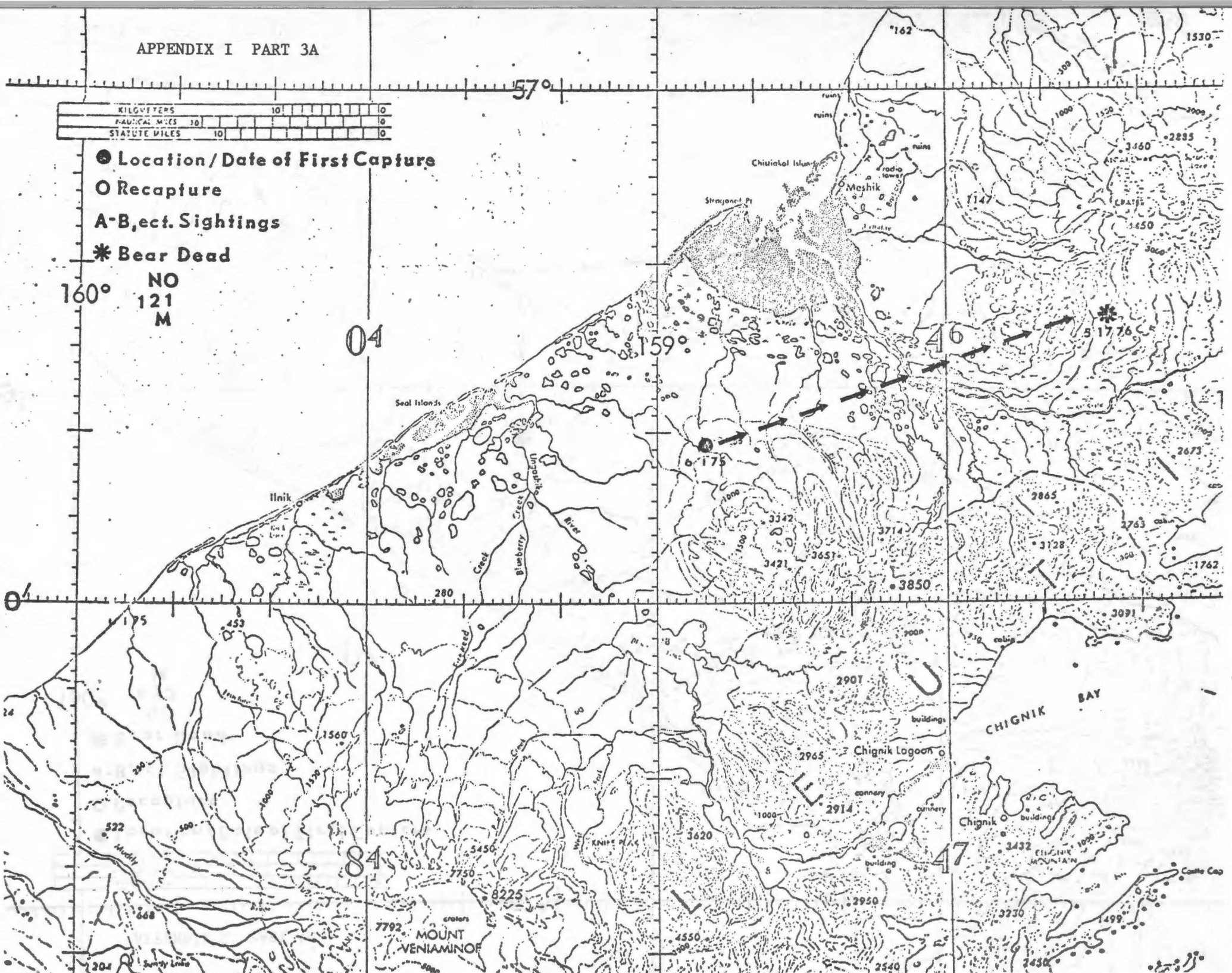

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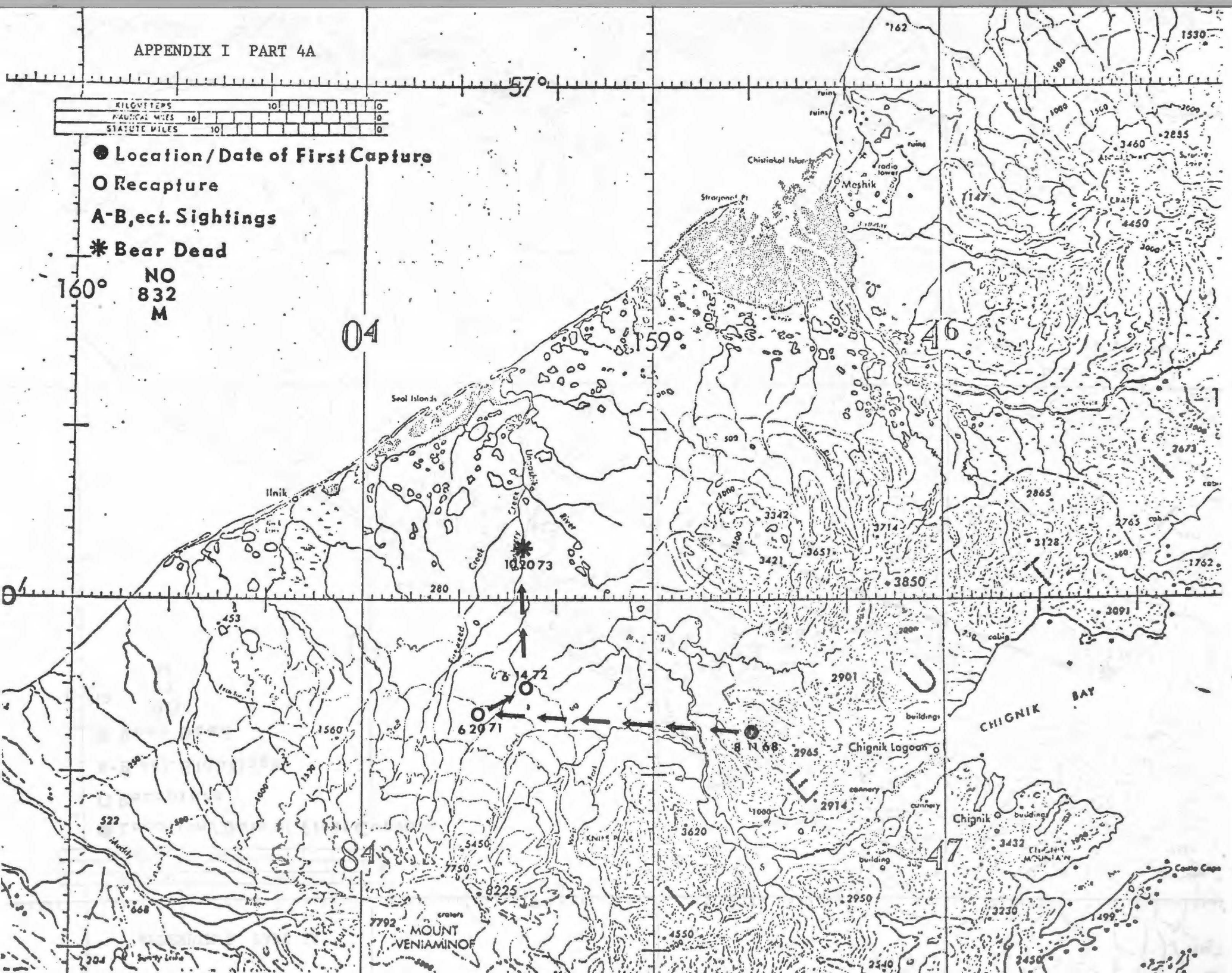

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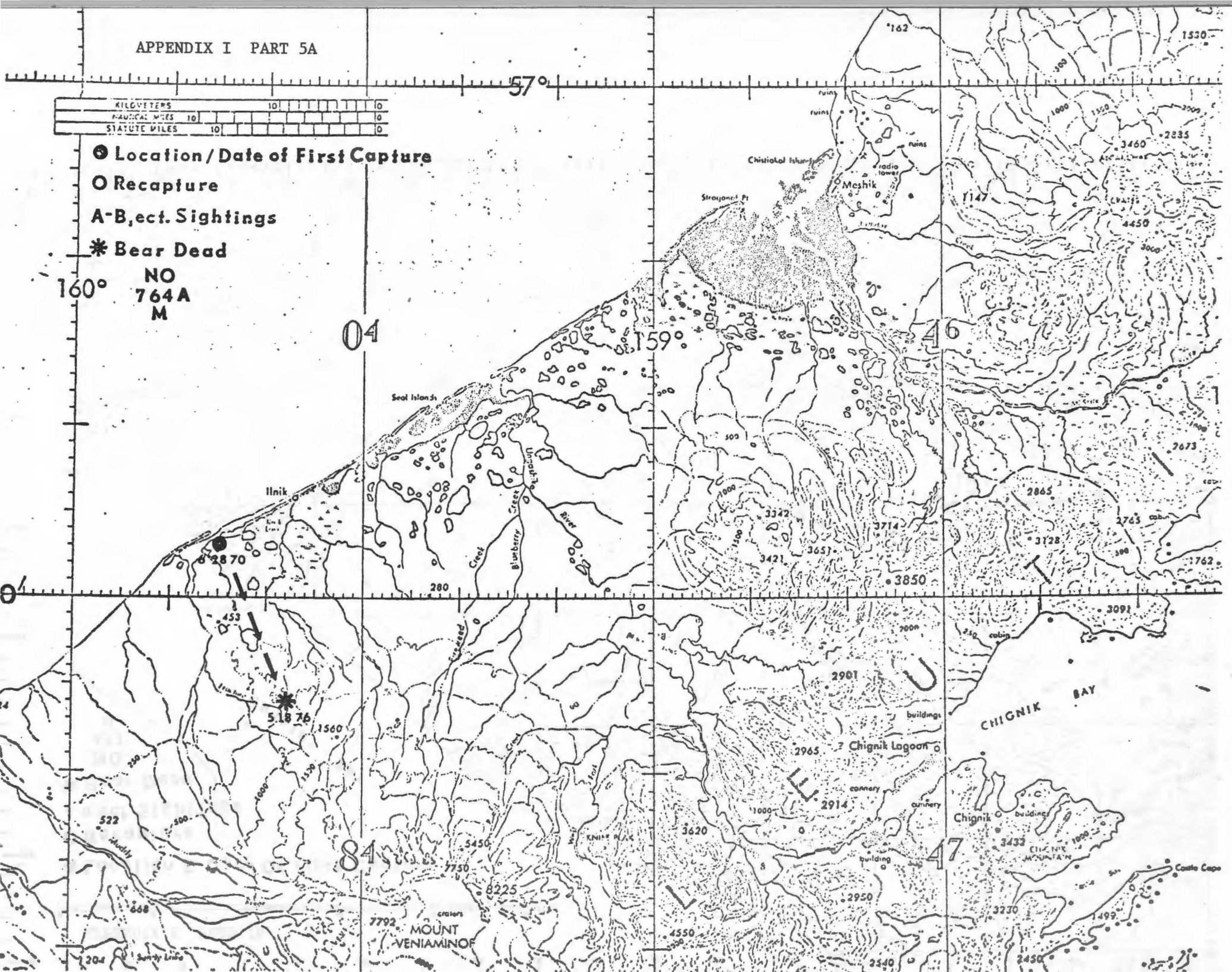

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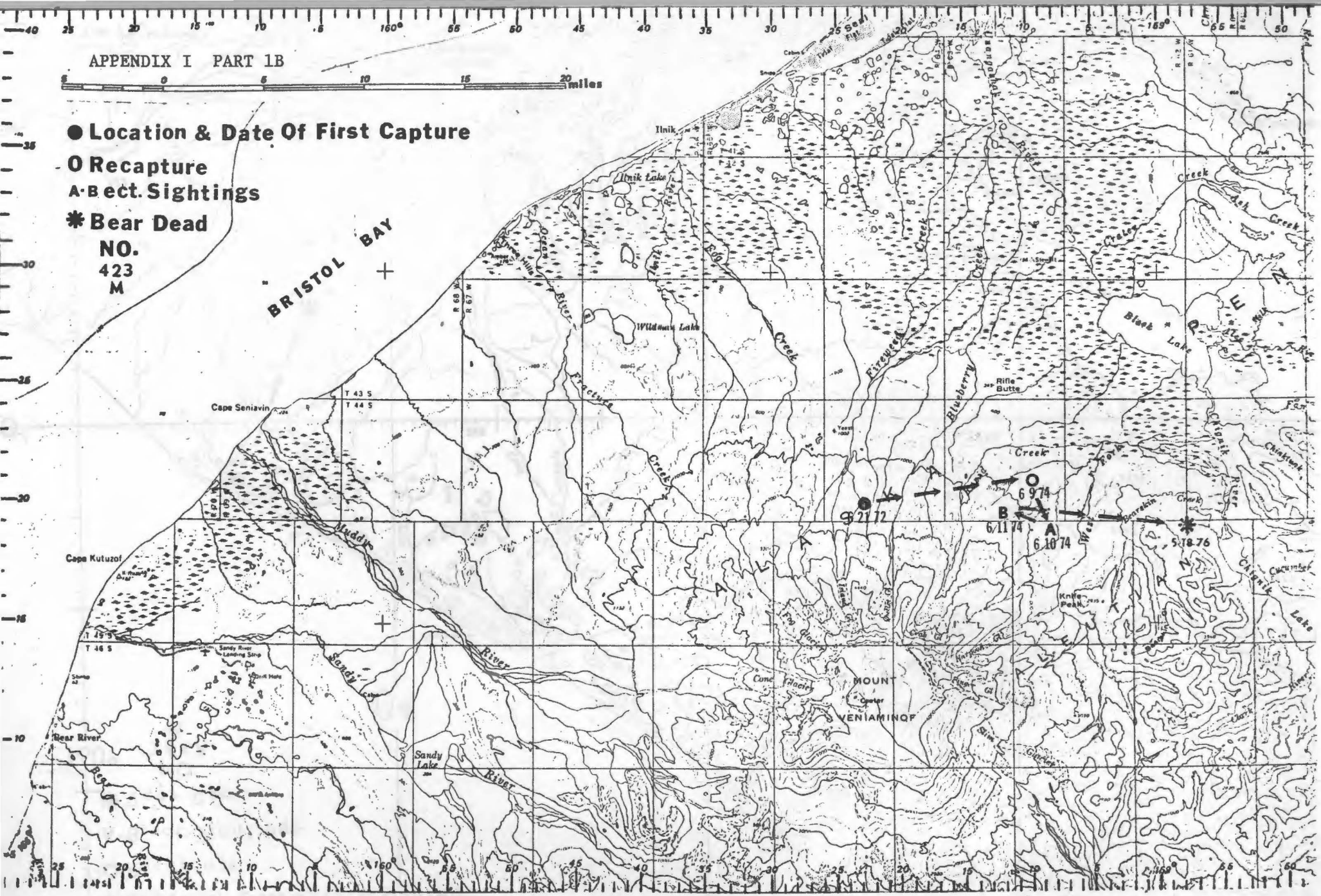

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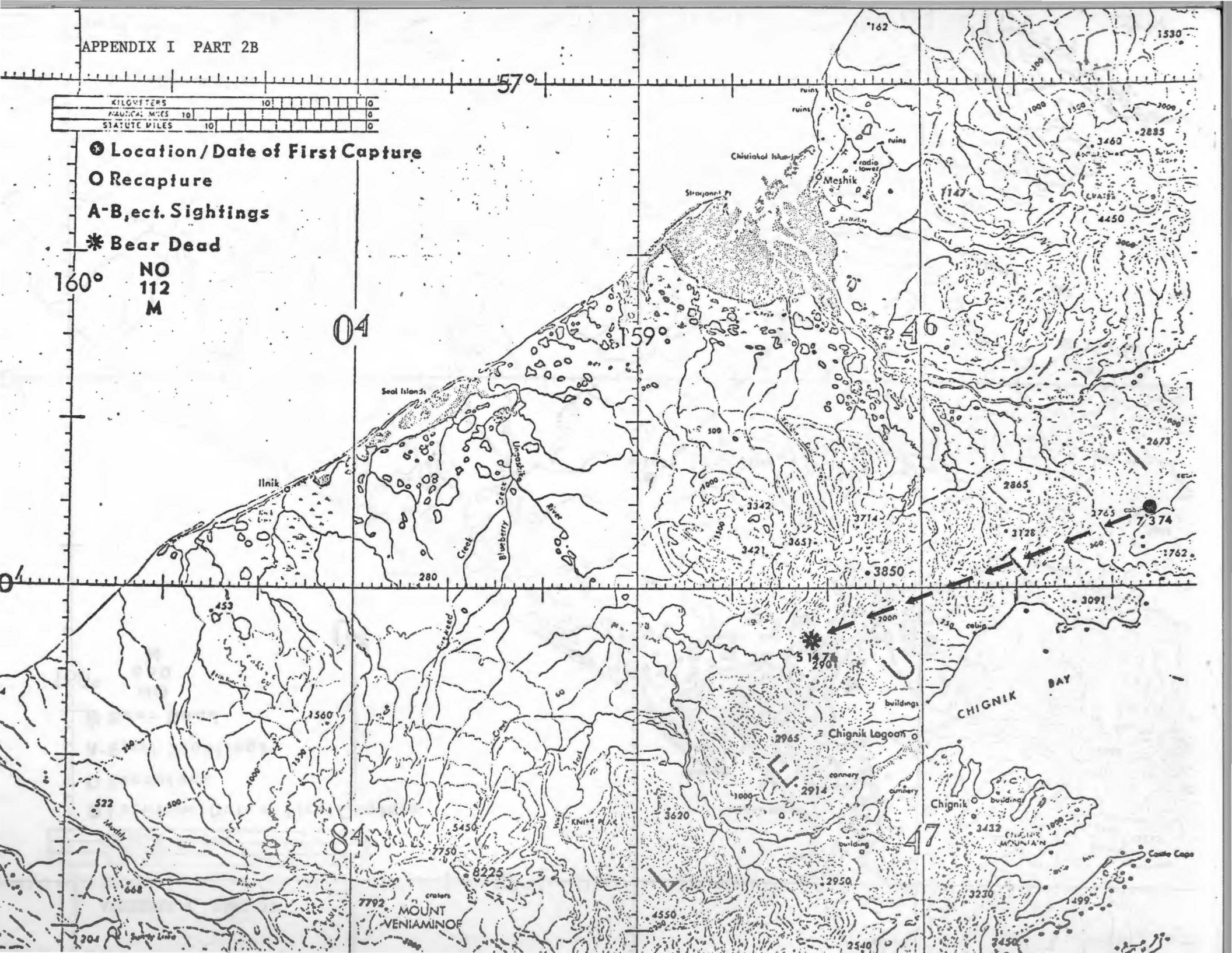

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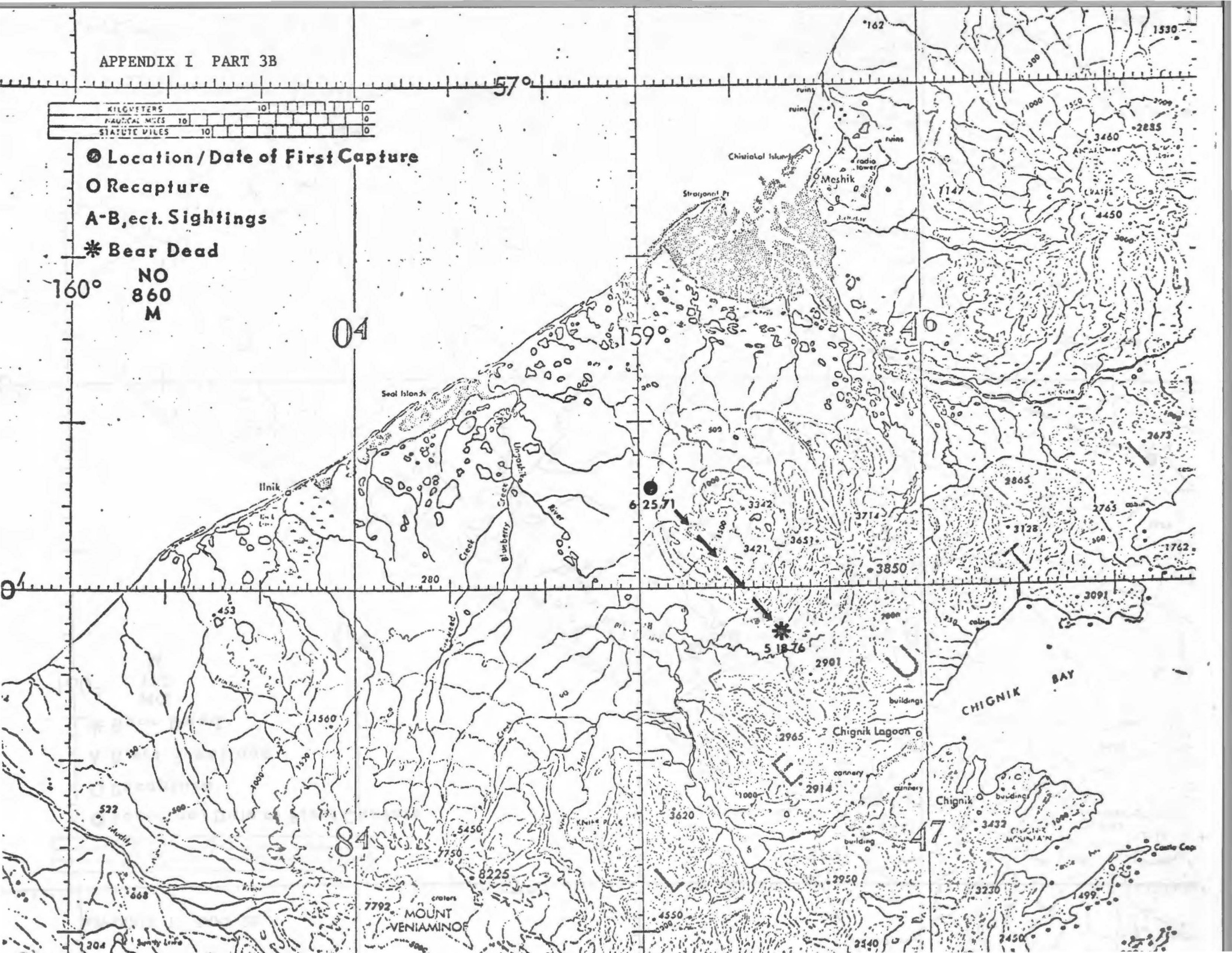

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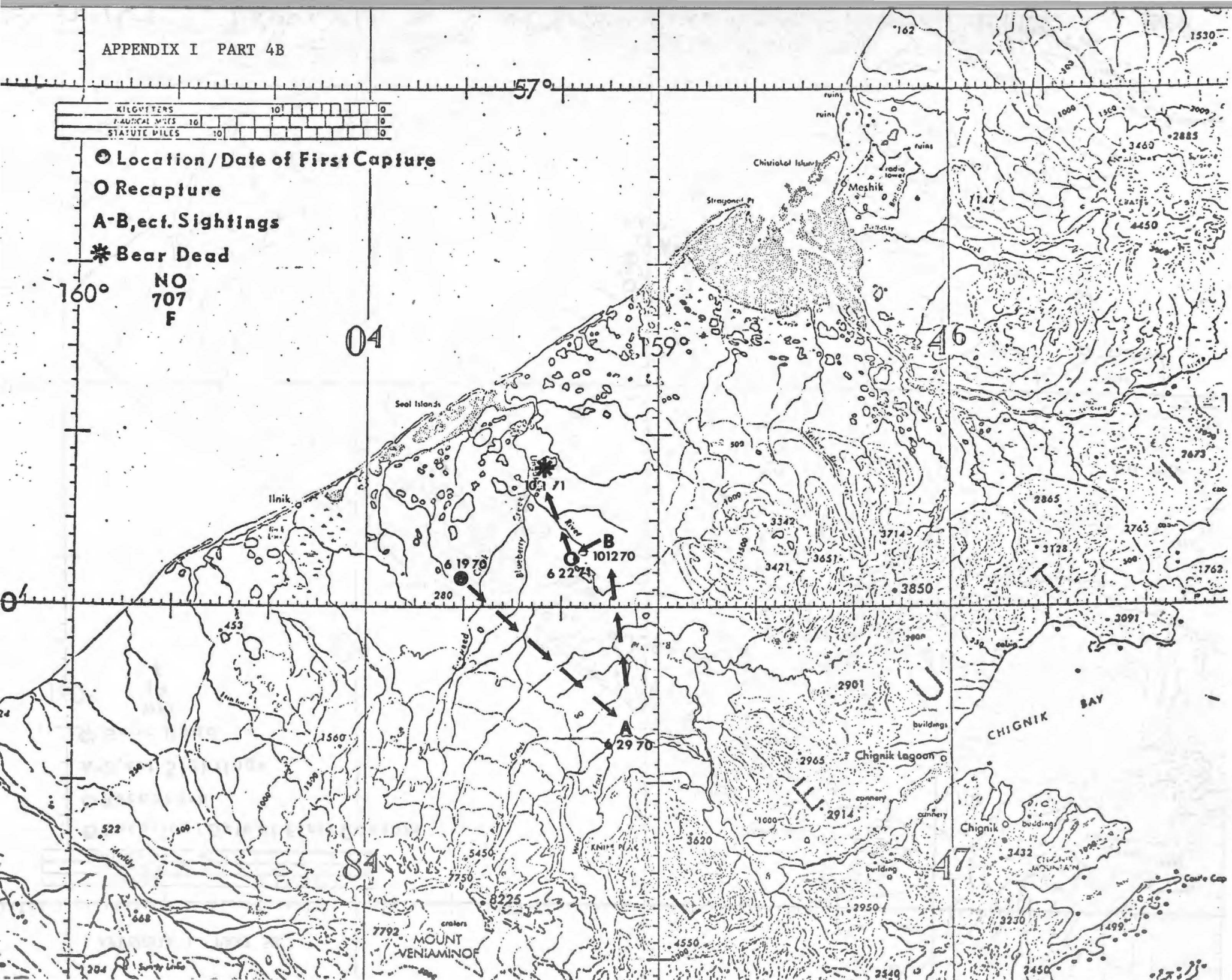

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