

2612

Diag. Cht. No. 8551-1

Form 504

U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. Office No. H-2612

LOCALITY

State ALASKA

General locality PRINCE WILLIAM SOUND

Locality HINCHINBROOK ENTRANCE

191 02

CHIEF OF PARTY

F. Westdahl

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DATE JANUARY 30, 1903

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1902

Treasury Department,
U. S. COAST AND GEODETIC SURVEY.

J. H. Pittman

Superintendent.

State: *Alaska*

DESCRIPTIVE REPORT

Hydrographic Sheet No. 2612

LOCALITY:

Frye William Sound

Hutchinson Entrance

1902 ✓

CHIEF OF PARTY:

A. Westlake Aust

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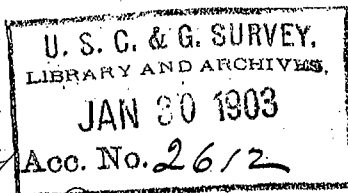


U. S. Smr. "McArthur" Oakland, California
December 1902

To the Superintendent

U. S. Coast and Geodetic Survey

Washington, D. C.



Sir:

I have the honor to submit the following
Descriptive Report to accompany hydrographic sheet
entitled:

Treasury Department
U. S. Coast and Geodetic Survey
O. H. Tittmann Superintendent
Eastern Entrance to
Prince William Sound
Alaska.

Ferdinand Nordahl, Asst. Chief of Party
Smr. "McArthur"

July 25 to September 23

1902
Scale $\frac{1}{40,000}$

The work on this sheet was begun as soon as a sufficient
number of triangulation points were determined by which

to fix the ships position while sounding. It has been carried on under most discouraging conditions of weather, rain falling nearly every day and gales raising a large swell outside the bound and in the entrance. In the beginning boatwork was tried in the vicinity of the Seal Rocks and Cape Hinckinbrook to develop the sunken dangers lying outside the visible rocks, but this had to be abandoned on account of the strong currents and choppy sea when there was any wind. All of the soundings have therefore been obtained from the ship, except at the heads of Fairkof and Rocky Bays, and a few near the Seal Rocks and Cape Hinckinbrook.

The lines run in dangerous proximity to the shores and out-lying rocks were preferably undertaken on days when the large swell would necessarily break on sunken dangers to enable us to cut in the breakers. It is believed that no sunken dangers to navigation within the limits of the sheet have been omitted as I have personally attended to keeping a sharp lookout for breaks not only for their determination but also for the safety of the ship. When running close to shore or rocks the vessel was kept going under a slow bell so as to be under instant control, and hand-lead was used to obtain the depth. The sub-marine spongy, with which the ship is furnished, will not work at a slower speed than about five knots and could therefore not be

used while sounding. It was generally towed while the ship was carrying the triangulation party about, and it gave the first intimation of the existence of the shoal ground nearly a mile to westward of Δ Holmes at Cape Hinchinbrook. In the deep water the ship was generally run at full speed for a certain number of minutes, then stopped and backed immediately and when still in the water the lead was let go. When it reached bottom, and the wire pointed clear of the propeller the ship was started ahead again and the wire reeled in while under way. Frequently, however, on account of the difficulty in controlling the vessel when backing and in strong current and large swell the lead had to be recovered before starting ahead or lead and wire would be lost. Under such conditions it has been difficult to run regular lines of soundings. The ship is high out of water and drifts much in strong wind when stopped. I have endeavored rather to fill the space, regulating the distances between soundings by the depth, increasing the distance with increasing depth and regular bottom, and determining the position of the ship at each cast.

Signals. The signals used for determining the ship's position are included in the triangulation except in Larkof and Rocky Bays and on the southeast or outside shore of



Holmes Δ

View of Cape Hinchinbrook, from W. SW. (mag.)

(Hinchinbrook Δ and Pin Δ closed in behind the point.)

Montague Island where they were determined in the plane-table survey. They are nearly all natural objects such as prominent rocks and trees made more conspicuous by whitewash.

Bottom. The character of the bottom is stated on the sheet wherever obtained. Over a large area in the deeper water nothing adhered to the lead, but I have every reason to believe the bottom there to consist of glacial mud, which washed off the lead before reaching the surface. Sometimes when the ship was not started ahead before reeling in traces of this mud were found on the lead. When nothing came up "no specimen" was marked in the record. In many instances over rocky bottom small fragments of coral were brought up and marked "Crl." on the sheet; otherwise the usual abbreviations of bottom have been used.

Shoreline. All the shore-line, except from about one mile northward of Δ Green and thence around Cape Hinchinbrook to the end of the sheet, has been surveyed with the plane-table. In the stretch mentioned the shore-line was sketched in from a whaleboat which approached the line of rocky, inaccessible cliffs as closely as practicable and, after determining the position of the boat, cuts were made on points of the shore. Around Cape



Waterfall is Spray ☉

Views of SE coast of Hinchinbrook Island NEward from Pin Δ



*Hinchinbrook Is
Pin Δ*

Shine ☉

Hinchinbrook, from Δ "Holmes" to Δ "Pin", even this became impracticable on account of the rough water and strong currents encountered there. The shore-line in this stretch is cut in from the ship alone. From Δ "Pin" eastward it was also cut in from the ship but afterwards a comparatively smooth day was utilized in sending a whaleboat close along shore to correct and sketch in the details. It was my intention to continue this work to Point Herd but the lateness of the season and almost incessant bad weather prevented its completion. From what I have seen this season and heard from residents in Kuchak I do not think it will ever be feasible to carry a plane-table traverse along these inaccessible cliffs even if weather smooth enough for landing in a boat could be assured. When the party erected signal at Δ Hinchinbrook the pra was perfectly smooth and landing was effected on a narrow, sloping ledge of rock immediately on the point; but with any swell running it would have been impracticable to do so, and no similar opportunity was had during the remainder of the season to occupy the station. On either side of this point are short rock and shingle beaches upon which it might be practicable to land in smooth weather, but from which it would be impossible to climb the almost vertical cliffs above, and these beaches are found in deep recesses whence no outlook could be had nor signals seen. So far as I have seen this is characteristic

istic

of the entire outside shore of Hinchinbrook Island.

Currents. On account of the great depth of water in the entrance it was impracticable to anchor the ship there for current observations, and good weather was so scarce and precious that it had to be utilized for the more important work of sounding. In running lines of soundings in the entrance very strong tidal currents were encountered setting directly in or out of the Sound. When there was a large swell in the entrance the current running out against it would cause overfalls, particularly in the deep water about two or three miles to the eastward of Laikof Point, which looked like breakers on a reef and have frequently been mistaken for such. The flood from the western entrance to Prince William Sound runs to the eastward past Montagu Point and causes rips between it and Johnston Point. Outside the entrance, along the south shore of Hinchinbrook Island, the current is almost constantly setting to the westward, and the meeting of this westerly set with currents running in and out of the Sound causes rough water off Cape Hinchinbrook and thence toward the Seal Rocks.

Anchorage. Contrary to verbal reports received from navigators trading to Prince William Sound there are many anchorages along the shores near and within the entrance, and all these have been marked on the sheet wherever

the ship has anchored. There are many others, beyond the limits of the sheet which will be mentioned in the report of the seasons work; and those in Port Etches, which is surveyed on a separate sheet on scale $\frac{1}{20,000}$, in its descriptive report.

Zaikof Bay. This indentation has deep water and uneven bottom along the north shore for about two-thirds of its length from the entrance. Along the south shore the hydrography developed many anchorages, only two of which have been used by the ship. The first of these is about two and a half miles from Zaikof Point, in the bight between stations "Bight" and "Skip" in seven or eight fathoms over soft bottom. There is a regularly curving and gently sloping beach here from the timber line to low water. Many trees have fallen over this beach from having the soil washed away from their roots by northeast swells giving to it at a distance the appearance of skids of a logging camp. This anchorage is perfectly protected from all winds except from north to east, the heaviest winter gales I have been informed, and southerly gales do not blow in such strong williwaws as at Port Etches. I have laid there in southeast gales when the wind draws off the land, but a swell comes in from the Sound, especially when, as is often the case, the wind hauls to the eastward. This anchorage is



Zaikof Pt. & Schooner Rk. Middle Pt.

Part of Montague Island, looking West (mag.) from off Port Etches.

easy of access, the only dangers being a short reef marked by kelp off Skip \odot point to the westward, and two rocks uncovered at about half tide and marked with kelp close under the shore to the eastward.

The northeast gales a well protected but contracted anchorage may be had in a cove on the south shore about one and three-quarters miles from the head of Laitkof Bay in lee of the point where "Round" \odot is located. There is a small lagoon making in at the head of the cove but it is shallow and the bank is steep to. Anchor as close under the point as possible, about two hundred yards from the short spit making out from it. No swell reaches in here, but the gale blows in williwaws over the lower land inside the point with great force. When the gale is about to break up and hauling to the south and southwest these williwaws come from all directions and it is prudent to shift anchorage further from the spit.

The ship was anchored one night about half a mile from the head of Laitkof Bay and about one-quarter of a mile from the south and north shores in about seven fathoms over muddy bottom, but this anchorage is not recommended owing to the great caution required to approach it as the bank on the south and west sides rises up abruptly.

The hydrographic survey developed a bar across the bay about two and a half miles from the head over which vessels may anchor in smooth weather, or anywhere along the south shore where the depth is suitable and the bottom not rocky, taking care to approach cautiously as the bank rises abruptly in many places.

Rocky Bay, so named by the party on account of the dangerous reefs and sunken rocks in the approaches to it, is separated from Zaitkof Bay by Middle Point, also named by the party. It is more open to northerly and easterly winds than Zaitkof Bay, and has so far as known only one fairly good anchorage in it, and even this one is probably unsafe in northeast gales. This anchorage is off the mouth of a lagoon on the south side about one mile from the head to the eastward of the point where "Jan" is located. It is protected by a rocky point and reef running from it on the east and northeast side, but northeast swell from the sound rolls over this reef and makes the anchorage unsafe. Small vessels may enter the lagoon where perfect protection in all winds may be had, but there is only about ten feet at low water over a very limited area inside the mouth of the lagoon. The schooner Olga, drawing six feet, laid there very comfortably while the party on board of her surveyed

the shoreline, but the "McArthur" was anchored in the cove outside on two occasions. The anchorage has rocky and hard bottom in the approaches and the area of soft bottom is very limited and near the sharp looking point which forms the west side of the lagoon entrance. To reach the anchorage steer up through the middle of Rocky Bay and approach the north shore when nearing the head. When abreast the anchorage turn into it by keeping fairly close to the point on the west side. The water shoals abruptly and scattered kelp will be seen close aboard on the port hand reaching out from the reef on the east side of the anchorage, but so far no sunken dangers have been found in the passage. If the anchorage is made at or near high water do not approach too close to the point on the east side. The rocks off it are covered at about half tide and show no sign of their existence when the sea is smooth.

There may be a good and fairly sheltered anchorage for small craft at the head of Rocky Bay but lack of time and suitable weather prevented a more minute investigation.

On the east side of the entrance there is but one anchorage outside of Port Etches within the limits of the sheet. This is in the little cove to the northward of Curve Δ , in about nine fathoms over sandy bottom. Between this cove and Johnston's Point are several gravel beaches off which



Seal Rock B.

View of Seal Rocks from Northward.

temporary anchorage may be found, but there is no protection except in Easterly and southerly winds. I have been informed that northwest winds blow with great force and raise a large swell along this shore.

Off the shingle beach to the northwestward of the village of Kichek steamers sometimes anchor to land or receive passengers and freight. This is at best an uneasy anchorage on account of the almost constant ocean swell falling on this beach. The "McArthur" was anchored there one night when it began to blow from the northeast and the strain on the cable during the withstanding was much relieved by the swell from the opposite direction. The best anchorage is abreast the beach about midway between the village and the rocky, tree-covered island in the middle of the shingle ridge in about ten fathoms, sandy bottom.

Dangers. The Seal Rocks, lying in the entrance apparently on the prolongation of the ridge forming the southern half of Kitchinbrook Island, consists of two rocks about thirty feet high and connected by a lower ridge. The westernmost, upon which the triangulation station is placed, is flat on top, about eighty feet long by twenty-five feet wide with vertical sides. The eastern part is not as large and more irregular in shape. These two are surrounded by an extensive area of four rocks running in dykes approximately north-northeast and south-southwest (mag.) Sunkin rocks extend one mile



Holmes Δ Pin Δ

View of Cape Hinchinbrook, from Westward.

to the northeastward and also a short distance southwestward. The west side is safe to approach and depths of twenty fathoms carried close up to the visible rocks. There is no vestige of soil on top of even the two high rocks, not even the droppings from birds. Evidently heavy seas wash completely over them.

Off Cape Hinchinbrook one-quarter of a mile south-southeast from Δ "Pin" and three-tenths of a mile south from Δ "Holmes" respectively lie sunken rocks upon which the sea breaks in moderate swell. There was no opportunity to ascertain the depth of water on these rocks and the positions of them were determined by cutting in the breaks.

Half a mile to the southward of the point on which Δ "Green" is located is a reef of rocks uncovered at low tide running out one-quarter of a mile south-southwest from the high, rocky bluff. Between this reef and the sunken rock off Δ "Holmes" there is rocky and uneven bottom, reaching out about three-quarters of a mile from shore, as shown on the sheet. It is believed that no danger to ships of even deep draught exists in this area, as I have carefully watched the locality in heavy swell and low tide combined; but it is nevertheless advisable for vessels to give Cape Hinchinbrook a berth of at least three-quarters of a mile. There are heavy winds in this vicinity when the current is running strong. The "McArthur" was anchored about



Nuchek Village

Porpoise Rocks, with Δ Δ

Gnat Δ

Looking NE-ward (mag.) into Port Etches.

half a mile to the northward of Δ "Holmes" and one-quarter of a mile off shore over a limited area of sandy bottom inside this rocky and uneven ground for about eight hours in smooth weather. The swirls from the strong current reached into this anchorage and the ship swung in all directions within short periods of time, the main direction of the set being contrary to the tidal current.

The Porpoise Rocks, about fifty feet high and the principal islets flat on top are no danger to navigation. They can be approached close to on the south side. On the west side, one-tenth of a mile from the westernmost and largest islet, lies a small rock which covers near high water, but the curl on the water over it can nearly always be seen. On the north and east sides these islets should be approached cautiously as there are outlying rocks visible only at low water. There is a passage through the reef reaching from the Porpoise Rocks to the shore but local knowledge is necessary to use it.

From Bear Cape to the limits of the sheet the shore can be approached within a quarter of a mile and all the dangers are in sight. As a rule kelp should be avoided but may be approached close to if necessary.

On the west side of the entrance along the outside shore of Montague Island the coast is fringed with low

rocks and many rocks awash. A few breaks on sunken rocks outside of them were determined in the hydrographic work but along the entire stretch to Schooner Rock no danger was found extending beyond a quarter of a mile from the shoreline. Schooner Rock and the visible rocks near it can be approached close to and no danger has been found near it nor believed to exist outside the kelp line.

There is foul ground, marked by kelp, off Middle Point reaching out about one-quarter of a mile northward from the cliffs. Northward from Middle Point and along the southern shore of Rocky Bay are dangerous outlying ledges which uncover at low tide in two places, evidently the highest points of a dyke of rocks running approximately northeast by north from a rocky island close to the south shore to one and three-quarters miles from it and marked by kelp around the shoalst places.

From the southeast part of Montague Point runs a dangerous reef over half a mile northward, the higher parts of which uncover at half tide; and all around the point to the northward are rocks awash and kelp reaching out about one-quarter of a mile.

Sailing Directions. Detailed directions for entering Prince William Sound by the eastern passage are not needed. The channels on either side of the Seal Rocks are wide and easy



Johnstone Point

Bear Cape

Port Etches

Part of Hinchinbrook Island, from Port Etches to Johnstone Pt.

of access. Steamers trading here at present generally come from the eastward because they call at Yakutat Bay, Kayak, etc. on their way and therefore enter between Seal Rocks and Cape Hinckinbrook, giving the latter a berth of about one or one and a half miles. When bound to the westward from Prince William Sound they leave by the western entrance to westward of Montague Island. Sailing vessels enter preferably through the channel to the westward of the Seal Rocks, and avoid the dangerous locality northward of Middleton Island by passing to the westward of the latter. This channel is wider and better because the tidal currents are more regular. After passing the Seal Rocks they approach the Hinckinbrook Island shore to within one or two miles from Bear Cape and proceed towards Johnstone Point. When abreast the latter, if bound for Ocea or Eysk, they steer for Gravina Point to avoid the so called Middle-ground. If bound for Valdez or other places in the northern part of the Sound they continue to the northward and pass to the westward of Goose Island.

In clear weather when in the entrance Knowles Head looks conspicuous. It is a high, rounded, tree-covered headland with a bright scar, caused by a landslide, running down its southern face. To the westward of it is seen what looks like a high island, which is generally taken



Proposed Lighthouse Site

Squirt ○ (summit of pyramidal rock)

View of Zaikof Point, from Southward.

for Goose Island. It is not Goose Island, however, but Porcupine Point between which and Knowles Head is a low depression. When well into the Sound, about abreast of Bear Cape, two apparently small wooded islets show above the horizon just to the westward of Porcupine Point. These are the tops of the two hills of Goose Island, and when nearing Johnstone Point the whole island rises above the horizon.

Aids to Navigation. There are none at present, but I believe the rapidly increasing commerce of Prince William Sound will warrant the establishment of a light and possibly a fog signal as a guide for the eastern entrance. All vessels at present generally await daylight before entering the Sound. I have heard some talk among nautical men, masters of vessels trading here, of the necessity for a light on Cape Hinchenbrook; and I have been asked for some information regarding the facilities for landing there for the benefit of prospective contractors for such work when the government should take the matter under consideration. Aside from the fact that Cape Hinchenbrook is the roughest part of the entrance, making landing there all but impossible and necessitating the construction at large expense of a road to it from English Bay in Port Etches, this cape from its peculiar rounding formation does not offer the best site for a light of the largest usefulness



Part of Zaikof Point from Southward Squirt © (Mount. Peak)
Proposed Lighthouse Site.



Schooner Rock and Zaikof Point, from Northward Proposed Lighthouse Site.
Squirt ©

both inside and outside the entrance. The Seal Rocks would be the best place for a light but I do not think that the commerce of Prince William Sound at this time, nor for many years to come, will warrant so much expenditure for its safer pursuit as such an aid would give. As I have stated above, the rocks are very limited in area and barely thirty feet above the sea, with no sign of soil or vegetation on top of them, not even bird droppings, showing unmistakably that heavy seas wash entirely over them.

In my estimation Fairkof Point, particularly that part of it where "Squint" \odot is located, offers the best site for a light under present conditions. This point is about one hundred and thirty feet above the sea. A light upon it would be seen by all steamers approaching on the usual course from the eastward, and also along the southeast shore of Montague Island for vessels using the western channel. It would be seen by all vessels bound for Natchez and Ocea from inside the Sound as long as it would remain above the horizon. A red panel could be arranged in the lantern to cover the dangerous area of the Seal Rocks. The water is very deep in the immediate vicinity of this point, with no outlying dangers except Schooner Rock and the reef near it, and another red panel, set low, could be arranged to cover that ground. There is

good and well sheltered anchorage in all but northwesterly winds under "Skip \odot " point in Taikef Bay only two and a half miles distant from it and the country offers seemingly no very great natural obstacles to the construction of a road from it to the site of the light. To increase its arc of visibility inside the Sound the trees on Taikef Point proper could be cleared away, but this does not seem to me essential as even without doing so the light could be seen as long as above the horizon on the route to Valdez, and its obscuration when near enough to be seen would indicate an approach to the dangerous reefs off Rocky Bay.

Respectfully submitted

Ferdinand Westdahl

Assist. C. & G. Survey

Comdy. Amr. "McArthur"

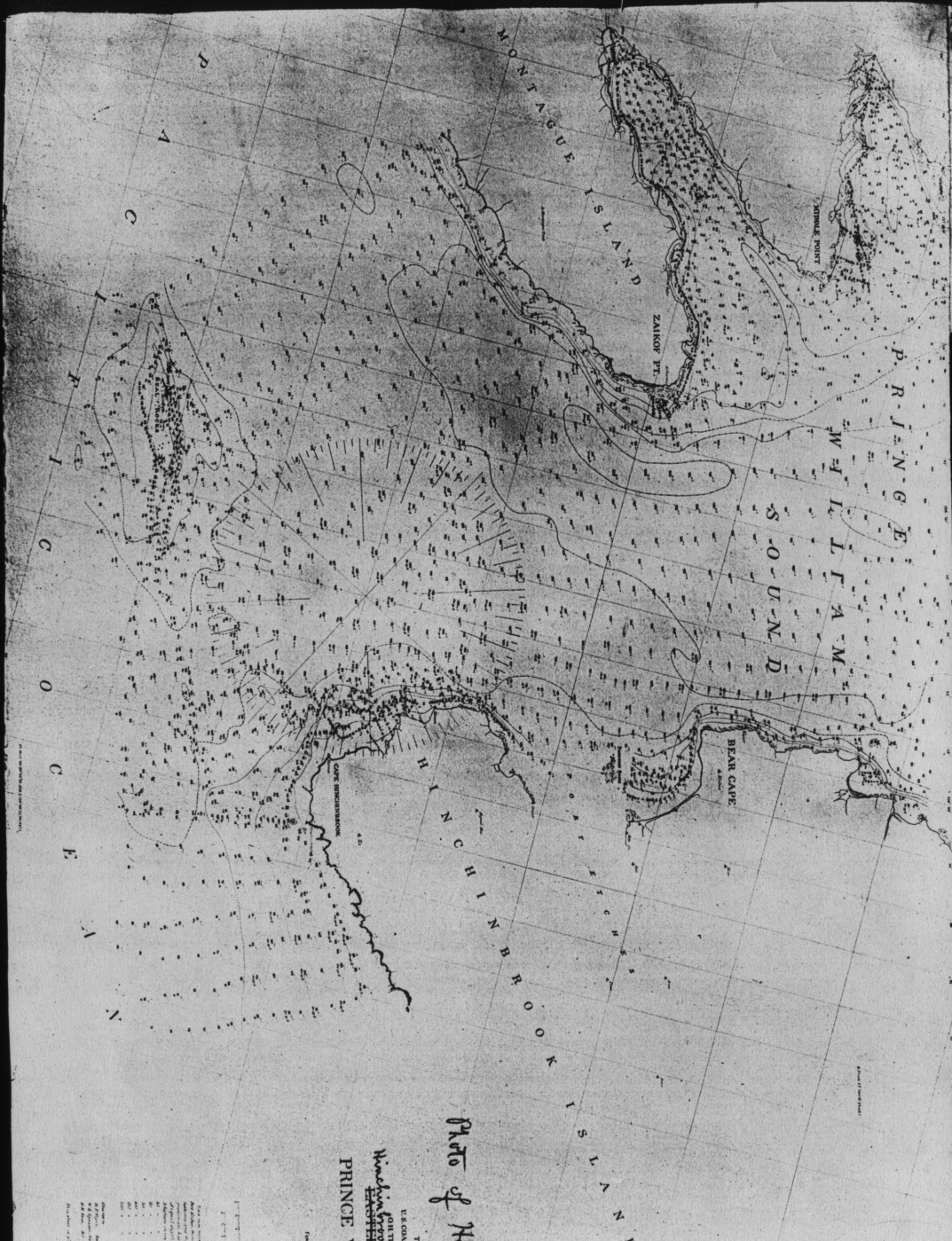


Photo of Hyac 2612

THEATRE DEPARTMENT
 U.S. COAST AND GEODETIC SURVEY
 OCEANIC SURVEY SERVICE
 PRINCE WILLIAM SOUND
 ALASKA

Scale of Soundings
 1:50,000
 1:100,000
 1:200,000
 1:500,000
 1:1,000,000

Depth	Soundings
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Nov. 20, 1903.

Report
on
Hydrographic sheet No. 2612,

Prince William Sound,
Hutchinson Entrance,
Alaska.
Assistant Westdahl,
1902.

Both field and office work is good, a few minor changes in
curves and soundings were necessary.

J. C. Donn.

(Signed)