

NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY CHUGACH (Ranger Boat)
NAME:

MULTIPLE
NAME:

STATE & COUNTY: ALASKA, Wrangell-Peterburg

DATE RECEIVED: 12/09/91 DATE OF PENDING LIST: 12/24/91
DATE OF 16TH DAY: 1/09/92 DATE OF 45TH DAY: 1/23/92
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 91001937

NOMINATOR: FEDERAL *V S F S*

REASONS FOR REVIEW:

APPEAL: N DATA PROBLEM: N LANDSCAPE: N LESS THAN 50 YEARS: N
OTHER: N PDIL: N PERIOD: N PROGRAM UNAPPROVED: N
REQUEST: N SAMPLE: Y SLR DRAFT: Y NATIONAL: N

COMMENT WAIVER: N

ACCEPT RETURN REJECT 1/21/92 DATE

ABSTRACT/SUMMARY COMMENTS:

This thorough and excellent nomination provides justification for the National Register listing of Chugach, for its association with the USDA Forest Service's administration of the nation's two largest national forests. In addition, the property is significant as the sole remaining vessel of the former fleet of wooden range boats that provided vital transportation and support in the Forest Service's work.

RECOM./CRITERIA Receipt/acc
REVIEWER Rutkowski/Shee
DISCIPLINE History
DATE 1/21/92

DOCUMENTATION see attached comments Y/N see attached SLR Y N

CLASSIFICATION

___count ___resource type

STATE/FEDERAL AGENCY CERTIFICATION

FUNCTION

___historic ___current

DESCRIPTION

___architectural classification
___materials
___descriptive text

SIGNIFICANCE

Period Areas of Significance--Check and justify below

Specific dates Builder/Architect
Statement of Significance (in one paragraph)

___summary paragraph
___completeness
___clarity
___applicable criteria
___justification of areas checked
___relating significance to the resource
___context
___relationship of integrity to significance
___justification of exception
___other

BIBLIOGRAPHY

GEOGRAPHICAL DATA

___acreage ___verbal boundary description
___UTMs ___boundary justification

ACCOMPANYING DOCUMENTATION/PRESENTATION

___sketch maps ___USGS maps ___photographs ___presentation

OTHER COMMENTS

Questions concerning this nomination may be directed to

_____ Phone _____

Signed _____ Date _____

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SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 91001937 Date Listed: 1/21/92

Chugach (Ranger Boat)
Property Name

Wrangell-Peterburg AK
County State

N/A
Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

fn *Antonicek*
Signature of the Keeper

1/23/92
Date of Action

=====
Amended Items in Nomination:

Classification: Under Number of Resources, 1 structure replaces 1 site.

Function or Use: Under Current Functions, it should read: "Transportation: Water-related."

Statement of Significance: Under Areas of Significance, "Maritime History" and "Naval Architecture" are added.

Geographical Data: The Acreage of Property should read "less than one acre."

This information was confirmed with Evan DeBloois of the USDA Forest Service.

DISTRIBUTION:

- National Register property file
- Nominating Authority (without nomination attachment)

1932

United States Department of the Interior
National Park Service

National Register of Historic Places
Registration Form

RECEIVED
NATIONAL REGISTER

NATIONAL REGISTER

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries.

1. Name of Property

historic name Chugach
other names/site number M/V Chugach, Ranger Boat Chugach
Alaska Heritage Resource Survey number 49 PET 200

2. Location

street & number Federal Government Dock, Wrangell Narrows not for publication
city, town Petersburg vicinity
state Alaska code AK county Wrangell-Petersburg code 280 zip code 99833

3. Classification

Ownership of Property	Category of Property	Number of Resources within Property	
<input type="checkbox"/> private	<input type="checkbox"/> building(s)	Contributing	Noncontributing
<input type="checkbox"/> public-local	<input type="checkbox"/> district	<u>1</u>	_____
<input type="checkbox"/> public-State	<input type="checkbox"/> site	_____	_____
<input checked="" type="checkbox"/> public-Federal	<input checked="" type="checkbox"/> structure	_____	_____
	<input type="checkbox"/> object	_____	_____
			Total

Name of related multiple property listing: _____
Number of contributing resources previously listed in the National Register 0

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property meets does not meet the National Register criteria. See continuation sheet.
Gwan J. DeVellis 7-30-91
Signature of certifying official Date
USDA Forest Service
State or Federal agency and bureau

In my opinion, the property meets does not meet the National Register criteria. See continuation sheet.
Judith E. Battner May 16, 1991
Signature of commenting or other official Date
Alaska
State or Federal agency and bureau

5. National Park Service Certification

I, hereby, certify that this property is:
 entered in the National Register. Austin with Grace 1/21/92
 See continuation sheet.
 determined eligible for the National Register. See continuation sheet.
 determined not eligible for the National Register.
 removed from the National Register.
 other, (explain:)

fn Signature of the Keeper Date of Action

6. Function or Use

Historic Functions (enter categories from instructions)

Government/other: boat

Current Functions (enter categories from instructions)

Government/other: boat

7. Description

Architectural Classification

(enter categories from instructions)

Other: wooden motor vessel

Materials (enter categories from instructions)

foundation N/A

walls N/A

roof N/A

other wood

Describe present and historic physical appearance.

Motor Vessel Chugach is the last wooden-hulled ranger boat still in use by the USDA Forest Service in Alaska. She is moored at the Federal Government dock on Wrangell Narrows in Petersburg, Alaska, her home port for most of the last thirty-seven years (Figure 1). The Stikine Area management team, USDA Forest Service, has contracted with a marine architect to develop a refurbishment plan for Chugach. For the present time, the boat is scheduled primarily to transport work crews, and in slack periods, for education, interpretation, public relations trips, and related uses.

Chugach is presently afloat at her mooring in the harbor of Petersburg, Alaska, one of the busiest commercial fishing ports in the Pacific Northwest. The U.S. Government Dock, at the edge of Petersburg, lies amidst a row of docks lining the Petersburg waterfront. On the channel side of the government dock, the U.S. Coast Guard maintains its vessels for activities. Nearby is the Alaska Marine Highway dock where state operated ferries coming from as far away as Bellingham, Washington, stop on their regular runs through the Wrangell Narrows. The Forest Service headquarters for the Stikine Area of the Tongass National Forest is located in Petersburg, and large tracts of the Tongass area are easily reached from Petersburg, by boat and aircraft. The waterfront setting is an appropriate one, and adds to Chugach's integrity as a working vessel. The location is also reminiscent of her earlier home port of Cordova, Alaska, which is also a major fishing port and was also settled around the turn of the century.

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:

nationally statewide locally

Applicable National Register Criteria A B C D

Criteria Considerations (Exceptions) A B C D E F G

Areas of Significance (enter categories from instructions)

Government

Period of Significance

1925-1941

Significant Dates

1925
1926

Cultural Affiliation

Significant Person

Architect/Builder

L.H. Coolidge/Lake Union Drydock and
Machine Works, Seattle, Washington

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

Ranger boat Chugach, named after the Chugach National Forest in south central Alaska, is the last of the Forest Service's Alaska wooden fleet remaining in commission. Known unofficially as the "Green Serge Navy," the fleet operated along the 12,000 miles of coastline of Alaska's two national forests. Since her launching in 1925, Chugach has been in continuous government service and has been associated with the broad pattern of events that relate to the administrative history and economic development of Alaska. She has also been associated with a number of significant persons and vessels. She was designed by the well-known Seattle naval architect L. H. Coolidge, and she transported and supplied field camps for several nationally and internationally respected anthropologists. She regularly transported government officials, including a Congressman, a Washington, D.C.-based agency chief, and Territorial Alaska bureau chiefs, as passengers. Chugach possesses integrity of location, design, setting, workmanship, materials, and feeling.

During the seven decades of her career, Chugach has played a central role in the successful administration of the nation's two largest national forests, the Chugach National Forest and the Tongass National Forest. Her activities also have had an important influence upon the regional economy, and on the welfare and safety of isolated communities, and of people and vessels in distress. Chugach's eventful career has been associated with the maritime history of the Pacific Northwest, and the changing role of the government as the Territory of Alaska moved into statehood.

9. Major Bibliographical References

1. Chugach Service Record and related files, USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska.
2. Erling W. Husvik and Arthur Rosvold Interview, November 17-18, 1989 Petersburg, Alaska.
3. Spencer N. Israelson and Frances Israelson Interview, January 13-14, 1990, Petersburg, Alaska.
4. Clarence E. "Jake" Jacobsen Interview, November 13, 1989, Juneau, Alaska.

Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # _____

See continuation sheet

Primary location of additional data:

- State historic preservation office
- Other State agency
- Federal agency
- Local government
- University
- Other

Specify repository: _____

10. Geographical Data

Acreage of property _____

UTM References

A

0	8	6	2	3	9	4	0	6	2	9	7	8	0	0
Zone				Easting				Northing						

B

Zone				Easting				Northing						

C

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

D

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

See continuation sheet

Verbal Boundary Description

All that area encompassed by the extreme length and breadth of the vessel.

See continuation sheet

Boundary Justification

The boundary encompasses the entire area of the vessel as she floats at her berth.

See continuation sheet

11. Form Prepared By

name/title W. Conner Sorensen and Thomas Schley

organization Historical Consultants

date July 2, 1990

street & number 9491 Moraine Way

telephone (508) 281-6725

city or town Juneau

state Alaska zip code 99801

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Chugach is classified as a public vessel (government vessel), and thus has not been registered, nor has she received an official tonnage rating.¹ Her displacement is estimated at 40 tons.² Her hull is approximately 62 feet in length overall, and approximately 14.5 feet in breadth. She now draws 6 feet of water, some 6 inches less than when she carried her original, heavier engine.

Chugach has a round-bottomed, displacement hull. She has a sharp, slightly forward-raked bow, and a round, fantail stern with a moderately long counter. The sheer line rises gently toward the bow along the raised or forward deck, and remains nearly level along the aft deck (Figure 1). Her ribs, fashioned from white oak, have been steam-bent to their present shape. Her original stem was also made of oak.³ The deck planking is of Douglas fir. She retains at least some of her original fir deck carlings and knees. Chugach's hull is planked with fir. A portion of the hull extending somewhat above the waterline is clad with an iron bark shield from bow to well past midships as protection against logs and sea ice. This extends higher up on the starboard bow to prevent the anchor flukes from damaging the hull planking (Figure 2). A rubbing strake of iron bark, dressed to fit over the sponson, runs from bow to stern. The deadwood, keelson, and keel are all fashioned from fir. A shoe of iron bark protects the keel from damage due to grounding. A stem iron is fastened along the forefoot from deck to the rabbet line (Figure 3).

Below decks, moving from stem to stern, the hull is comprised of forecabin, engine room with adjoining head, trunk cabin, and galley. These compartments are separated by joint bulkheads. The chain locker bulkhead may have been designed to be a watertight collision bulkhead, but is not so at present.

The pilothouse sits over the engine room and contains the engine controls, chart table, modern navigational and radio gear, a single

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berth, and the original wood and brass steering wheel (Figure 4). Her Forest Service insignia, two bronze shields, are mounted on the exterior port and starboard walls of the pilothouse (Figure 5). Historic photographs show the shields attached to the sides of the bow (Figure 6). Formica panelling covers most of the walls and ceiling, though the windows retain their original teak frames and self draining copper pockets. Two teak doors open from the pilothouse onto the foredeck and a stairway leads aft and below to the trunk cabin. In the trunk cabin, a small galley, complete with oil-burning stove, occupies the after port side while on the starboard side, the after companionway provides access to the afterdeck through a booby hatch (Figure 7). The galley is separated from the wardroom/dining area by a counter and sink. A large table, chairs, modern refrigerator, and two berths are located in the wardroom. Eight portholes line the walls (four port and four starboard) and another porthole faces aft of the trunk cabin. The ceiling and walls of the trunk cabin have been covered with formica panelling. The next compartment forward from the trunk cabin is the engine room. Here beams, knees, and ceiling are exposed to view, though the bilge is decked over. Engine noise is baffled by a wood frame box. The head and shower are sandwiched in between the electrical switchboard and the forward bulkhead. The forecastle contains four berths and a sink. The forward escape hatch and skylight lie overhead. Originally this was a "booby hatch" with no skylight, only small portholes on the hatch combing. These were considered safer in rough seas.⁴ Four portholes line each side of the vessel's hull below the foredeck, providing lighting to the forecastle and engine room. It is not known when the hatch configuration was changed.

The first engine fitted to Chugach was a massive, three cylinder, 75 horsepower diesel Atlas Imperial, manufactured by the Atlas-Imperial Engine Company of Oakland, California. It was chosen for its reliability and the ready availability of parts in Alaska.⁵ It came with

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an auxiliary gas engine which ran the bilge pump and the air compressor. The gasoline driven compressor engine and one of the two compressed air tanks were required to turn the engine over when starting. It was a strong engine, and running at around 325 r.p.m., it routinely drove Chugach all day long at a speed of 8 to 9 knots.⁶ The Atlas was much heavier than present day engines. It proved ideal for providing the ballast the vessel needed to be an extremely stable sea boat. The flywheel alone weighed 1,840 pounds, and the engine another 10,660 pounds.⁷ Chugach carried five tons of fuel when fully loaded.⁸

L. H. Coolidge, the naval architect who designed Chugach, also designed and made the vessel's original bronze propeller. It was 48 inches in diameter by 44 inch pitch. The length proved to be an overload and the blades were shortened to 46 inches. The three specially made right hand blades were very narrow, causing an "unusual amount of slip allowing the engine to turn up about 310 r.p.m. and [the] boat would make 9 knots."⁹

The main engine generator was usually able to fully charge the batteries after a day's run. The 32 volt electrical system could then supply the entire electrical needs of Chugach for a day or two while at anchor.¹⁰ An electric winch, mounted on the foredeck, was originally used to raise the two patent anchors. The anchor chain ran out through two hawse pipes. The hawse pipes were removed about 1969 to remove a source of leaks and rot. Today Chugach carries only one patent anchor (Figure 3). Its chain feeds through a fairlead mounted on the bow. The original winch has been replaced by an hydraulic one (Figure 8). An Arcola oil stove provides heat through a series of radiators. The original heater was a coal-burning Arcola stove.

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In April 1954 the Atlas was replaced by a pre-1950 surplus Gray Marine, 6 cylinder, 165 horsepower diesel engine, Model 64HN9. The present engine, a 6-71 GMC installed in 1980, is an updated version of the Gray model.¹¹ Ballast in the form of steel ingots and cement has been added in an effort to offset some of the weight lost when the original engine, flywheel, clutch, and 1/4 inch thick boiler plate compressed air tanks were removed.¹²

Originally Chugach was rigged with a single wooden mast, with boom, block and tackle for lifting the lifeboat and skiff.¹³ The mast appears immediately aft of the smokestack in a 1928 photograph.(Figure 10). Later in 1928, at the request of Skipper Erland M. Jacobsen, the Forest Service contracted with L. E. Geary, a Seattle naval architect, to design an auxiliary sailing rig for Chugach.¹⁴ She was subsequently rigged with two fir masts (Figure 9).¹⁵ Her rigging was made more stout and her sails heavier than called for in Geary's plans, probably in the justified belief that Alaskan outside waters are more prone to heavy weather than most other American waters. Both masts were stayed fore and aft and supported a set of three sails. A heavy jib was sometimes set on the forestay to serve as a riding sail to steady the vessel in heavy seas when crossing Prince William Sound or the Gulf of Alaska on long trips from Cordova to Kodiak or Ketchikan. The sails provided added insurance in the days before small boats carried radios, and at times they could add a knot or two to the engine's output.¹⁶ With all sails set and without engine power, Chugach could move along at two to three knots.¹⁷ However only the jib saw repeated use since the heavy canvas tended to cause the boat to heel over more than desired.

Other early photographs show two stayed masts, a foremast mounted several feet forward of the pilothouse, and a mainmast rising from the after roof of the trunk cabin. When Chugach was first placed in service she carried a heavy 16 foot carvel-built lifeboat, and probably

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a smaller work skiff. The lifeboat was easy to row, but was not efficient with the original 2.5 horsepower. Elto or later 4 horsepower Johnson outboards. It was kept onboard as a spare after it was replaced by a lighter, more stable clinker-built boat, better suited to outboard engines.¹⁸ The lifeboats and skiff were mounted on the trunk cabin roof. While the forward-facing boom handled the boats, a second boom facing aft (seen in early color slides), served to support the mainsail.¹⁹ The masts also provided support for the Marconi antenna that was installed some time in the 1930's, and towing lights that were required when towing scows and wanigans at night. The mainmast was removed about 1960, and the foremast was moved aft to just aft of the pilothouse.²⁰ About 1981 the present metal mast was mounted. At present it provides support for several modern whip antennas and towing lights. Chugach now carries two Boston Whalers, nested on top of the trunk cabin. A single cannister secured to the pilothouse contains an inflatable life raft. Radar gear has recently been installed on the pilothouse roof.

By 1934 Chugach had sailed 43,493 miles and required a major overhaul at the Forest Service marine station on Gravina Island near Ketchikan. In its original configuration the smokestack was located immediately aft of the pilothouse (Figure 6). At the marine station that year the pilothouse was enlarged to fully enclose the stack.²¹ This helped to heat the house and allowed room for the subsequent installation of radio gear which, at that time, was still quite cumbersome. This allowed the captain's berth to be moved from its cross-wise location to a more comfortable fore-and-aft position.²² The original round, steel smokestack eventually rusted out and was replaced a few years ago with a modern, tapered version. The first known permanent radio facilities on board consisted of a transmitter and receiver made by Northern Radio Company of Seattle.²³ The Type 395A transmitter and 736D receiver were listed on the vessel's equipment list at least as early as February 1946..

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The original bulwarks of Chugach were fir, dressed with an oak cap. In 1980 they were replaced by aluminum bulwarks of similar dimension, with a 2 inch thick iron bark cap.²⁴ A railing of galvanized iron stanchions provides safety for passengers on deck.

During the earliest days of the Alaska forest fleet the Ranger class boats had yellow hulls and red deck houses. The original color scheme of Chugach followed that of later ranger boats, white with crimson pilothouse and trunk cabin (Figure 6). A color photograph taken in 1940 still depicts her in these colors. However, sometime during the Second World War she received a coat of wartime gray (Figure 11). By 1946, as color pictures show, she was entirely dark green (popularly known as "Heintzleman green" after Regional Forester Heintzleman who liked the color).²⁵ When Spencer Israelson took over as captain in 1950 she was still dark green (Figure 12). Very soon thereafter, he painted her white, the color she still retains.²⁶ Her foredeck, which had always been varnished before, he painted brown. Her distinctive rubbing strake and rail cap have been left dark (Figure 1).

The fir hull of Chugach was similar in construction to a packer, a fishing boat that carried her catch in the hold. These older wooden fishing boats typically were not built with watertight bulkheads.²⁷ Chugach is considered by many to be the best handling vessel in the Forest Service fleet. Spencer Israelson, who at various times skippered most of the fleet's boats, considered her to be the most seaworthy, as well as the most comfortable ocean-going craft in the Forest Service fleet. Both Israelson and Harold "Andy" Anderson consider her design superior to the later steel-hulled ranger boats, two of which are, in 1990, still in service in Sitka and Ketchikan. She was particularly well-suited to work in heavy weather. Since the replacement of the massive Atlas engine by a lighter GMC diesel, she

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responds to the helm in a more lively manner than before. Both Israelson and Andersen, who operated her both before and after the engine was replaced, consider her to have been somewhat more stable when she carried the original, heavier Atlas engine.²⁸

SUMMARY

Chugach is moored in an appropriate setting, at the government dock on a working waterfront in Petersburg, Alaska (Figure 13). Her frame still retains its original lines and most of its original fabric. Although many interior features have been altered, including the original engine, these changes reflect the normal needs of a work boat as it is adapted to contemporary needs of safety and comfort. All the changes have been made with the aim of improving her performance and efficiency as conditions changed, such as replacing the mast to meet safety requirements, and adjusting the design of the pilothouse to provide more working room for the skipper and crew. Her external appearance remains much the same as during the early years of her operation. Chugach in her present configuration provides an authentic material link between the Forest Service as it served the population of Territorial Alaska in the second quarter of the twentieth century and the agency today as it continues to serve the people of Alaska and the nation.

¹Marine Inspector, U.S. Coast Guard, Juneau, Alaska, copy in Chugach File, USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska.

²Douglas McKinlay and Herbert E. McLean, "Alaska's Green Serge Navy," American Forests, p. 18 [volume and date unknown], copy in Chugach File, USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska; Erling Husvik and Arthur Rosvold Interview, Petersburg, Alaska, November 17-18, 1989 (hereafter, Rosvold, November 17-18, 1989 and Husvik, November 17-18, 1989).

³Lyle Blodgett to Charles H. Flory, August 21, 1925, USDA Forest Service, Alaska Region, Tongass National Forest, Engineering Division, Chugach Service

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Record, Juneau, Alaska, on file with Chugach Records, Stikine Area, Division of Recreation, Petersburg, Alaska (hereafter cited as Chugach Service Record).

⁴Husvik, November 16-17, 1989 and Rosvold, November 16-17, 1989; Spencer and Frances Israelson Interview, January 13-14, 1990, Petersburg, Alaska (hereafter, Israelson, January 13-14, 1990).

⁵Lyle W. Blodgett (Port Engineer in Ketchikan) memorandum to Forest Supervisor R. A. Zeller, May 17, 1926, Chugach Service Record.

⁶Ibid.

⁷Marine Engine Specification No. 253, Atlas-Imperial Engine Company, Chugach Service Record.

⁸Jacobsen to Regional Forester, April 25, 1947, Chugach Service Record.

⁹Jacobsen to Regional Forester, March 1940, in Ibid.

¹⁰Regional Forester, R. A. Zeller, to District Forester Flory, July 15, 1926, in Ibid.

¹¹Boat File, 1980, USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska.

¹²Rosvold, November 17, 1989.

¹³L.H. Coolidge, "Design Specifications, 1925," in Chugach File, USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska.

¹⁴L. E. Geary to M. L. Merritt, Assistant District Forester, September 7, 1928, Chugach Service Record.

¹⁵L. E. Geary, Naval Architect, "Sail and Rigging Plan, MS Chugach." Blueprint for USFS, September 7, 1928, in Ibid.

¹⁶Clarence "Jake" Jacobsen Interview, November 13, 1989, Juneau, Alaska (hereafter, Jacobsen, November 13, 1989).

¹⁷Harold "Andy" Andersen Interview, (by telephone from Juneau, Alaska), November 24, 1989, Mount Vernon, Washington (hereafter, Andersen, November 24, 1989).

¹⁸Clarence "Jake" Jacobsen comments on preliminary Chugach draft report, April 1990.

¹⁹Israelson, January 13-14, 1990.

²⁰Husvik, November 17, 1989.

²¹Chugach Log. July 21-September 30, 1934, Log Books located variously in USDA Forest Service, Chugach National Forest, Division of Recreation, Anchorage, Alaska, and Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska.

²²Jacobsen, November 13, 1989.

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²³Boat Equipment List, February 25, 1946, Chugach Service Record.

²⁴Boat File, 1980, USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska.

²⁵Clarence "Jake" Jacobsen comments on draft Chugach report, April 1990.

²⁶Israelson, January 13-14, 1990.

²⁷Ibid.

²⁸Andersen, November 24, 1989; Husvik and Rosvold, November 17-18, 1989; Israelson, January 13-14, 1990; Jacobsen, November 13, 1989.

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Since 1908, ranger boats have played a prominent role in the administration of the nation's two largest national forests, the Chugach and the Tongass. The ranger fleet provided the only reliable and efficient transportation available to Forest Service administrators and field personnel in the days before adequate aircraft services. The dense coastal forests and islands were, and often remain, largely inaccessible to horse and motorized land travel. Although aircraft have in part replaced the ranger boat and the changing role of the Forest Service has lessened the need for some of its original uses, the ranger boat still plays a significant role as floating office and camp for multidisciplinary teams of specialists managing the two Alaskan national forests.

Chugach is the sole remaining wooden ranger boat that retains its integrity in the Alaska Region of the Forest Service. It is the only survivor of the wooden ranger fleet that still carries out its original commission. However the Tongass National Forest currently employs two other ranger vessels in addition to Chugach, the metal-hulled Sitka Ranger and Tongass Ranger. Both Alaskan forests also make use of smaller water craft and chartered boats when necessary. There are conditions in which boats are still safer, more comfortable, convenient, and cost effective than aircraft.

Three or four other wooden ranger boats, no longer in Federal service, are reported to be still afloat. One that is definitely still operational and moored at Auke Bay, Alaska, is Maybeso, owned and operated by the University of Alaska and used for fisheries research.

This summary of the significance of Chugach is based on the more detailed remarks that follow.

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RANGER BOATS IN ALASKA

The two national forests in Alaska, the Chugach and the Tongass, have a total coastline of approximately 12,000 miles. Large glaciers abutting coastal waters, steep terrain, and numerous islands make extensive road building impractical in most areas, necessitating reliable transportation by sea and by air. E. A. Sherman, in a 1921 report to the forester in charge of both the Chugach and the Tongass National Forests, indicated the importance of the Alaska ranger boat in the years just prior to the launching of the Chugach:

The Alaskan ranger is just as proud of his boat as the Bedouin horseman is of his steed, and the Ranger boats in Alaska are the most distinctive craft sailing the waters of the Alexander Archipelago. They are named Ranger No. 1 to 4, consecutively, have yellow sides and decks, with carmine trimmings. They are staunch boats, several of them having been built at the Bremerton (Washington) Navy Yards according to a special design which gives strength, seaworthiness, and a special ability for the particular service expected to [of] them. In case of any trouble or disaster in Southeastern Alaska, shipwrecks, sickness, or sorrow, the public appeals to the nearest Ranger boat, and if the request is a proper one or a reasonable one, the appeal is never in vain.¹

The Chugach National Forest was created by presidential proclamation in 1907, and it incorporated the Afognak Forest and Fish Culture Reserve, which was the first Federal withdrawal for conservation purposes made in Alaska. Although the Tongass National Forest in southeast Alaska had better timber reserves and consequently required more ranger boats, the need for such craft on the Chugach

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National Forest had long been recognized. In 1905, W. A. Langille, the first Forest Supervisor for the Alaska District, wrote:

Herewith I submit a rough specification of a boat suitable for use in these waters, with the idea in mind of the possible increase of the reserve here and the creation of reserves to the westward in the Prince William Sound or Cook Inlet region, and the necessity of having a boat suitably strong to stand the weather to be met in the passage to those sections. . . Without a personal knowledge of the conditions you cannot understand the needs or use of such a [craft], but it must be understood that transportation is almost entirely by water, that distances are great, local transportation inadequate and opportunities for obtaining supplies for maintenance not always the best. . . .²

Langille continued by saying that it was important for the Forest Service to have its own boats. The expense of acquiring and maintaining such craft would be more than worth the costs, he felt, when compared to charter costs, and the loss of time waiting for boats and good weather. In addition, the charter boats, skippers, and crews were of uneven quality and reliability.

The first craft of any size in the Chugach National Forest was probably Restless, powered by a 30 horsepower engine. Built in 1908, Restless was purchased by the Forest Service about 1911, and used until it was damaged on rocks in 1916 and decommissioned in 1919.³ From 1919 until the arrival of Chugach in 1926, the Chugach National Forest relied on chartered boats.

The first ranger boat, the 64 foot, 75 horsepower Tahn, was built in 1908 to Forest Service specifications.⁴ She was put into service the

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following year on the two year old Tongass National Forest, operating out of Ketchikan. In 1913, the first two Ranger class boats, the 35 foot Ranger 1, and Ranger 2, were built (Figure 14). Over the next few years other ranger boats were built, but most of the early boats were underpowered and proved unsafe in rough water. The 98 foot yacht, Hiawatha, formerly a naval patrol boat, with two 80 horsepower engines, was acquired by the Forest Service in 1921, but it proved too large and expensive to run. These vessels served the Tongass National Forest, and were known as the "Tongass Navy." In 1925, when approximately eight seagoing vessels made up the Forest Service fleet, Hiawatha was traded for Chugach.⁵ By 1928, the fleet size for both forests reached what may have been its peak. There were eleven ranger boats then in service: Chugach, Ranger 1, Ranger 2, Ranger 4, Ranger 5, Ranger 6, Ranger 7, Ranger 8, Tahn, Weepoose, and L-38 (the latter two boats were expected to be decommissioned soon).⁶

Apparently no new ranger or patrol vessels were added to the fleet between 1934 and 1953. Since then several wooden and metal-hulled ranger boats were commissioned.

In 1916, the Forest Service Marine Station began operation on Gravina Island, near Ketchikan, Alaska. The purpose of the station was to provide maintenance and repair facilities for the Forest Service fleet. Several vessels, for example Ranger 7, were constructed and launched at the Marine Station.

In 1928-29, a proposal was made to coordinate the repair of all Federal government vessels in the area at the station.⁷ This plan did not prove feasible, and the station continued to service only Forest Service boats up until its closing in the mid-1950's.⁸ In 1952, Marine Engineer George Reynolds proposed to close down the station because

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he considered commercial yards less expensive and "more satisfactory in some ways."⁹

During her early service in Prince William Sound, Chugach made trips to the Marine Station as frequently as once a year, as warranted by needed repairs. Records indicate her last trip to the Gravina Marine Station took place in 1952, when she was scheduled for a complete overhaul.¹⁰ Since the closing of the Marine Station, Chugach has been repaired at various commercial ship yards in Petersburg, Wrangell, and Ketchikan.

It should be noted that the various skippers of Chugach did much of the maintenance and repair themselves since the vessel was often too distant from the station or could not schedule an appointment at a convenient time. The skippers were all well-versed in routine maintenance and repair of the vessel and engine, and they often came up with ingenious "temporary fixes" that allowed Chugach to continue with her busy work schedule until a slower time of year. Normal maintenance and repairs on Chugach were thus performed at Cordova, while every few years Chugach was sailed from Cordova to Ketchikan in the fall or winter to undergo maintenance and repairs at the Marine Station, and sometimes to spend a few weeks assisting with forest work in the Tongass National Forest. Through this combination of skillful skippers performing routine and emergency maintenance and repair, and the Gravina Island Marine Station and commercial shipyards performing more extensive work, Chugach has been maintained in seaworthy condition over the years.

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CONSTRUCTION AND EARLY CAREER OF CHUGACH, 1925-1953

Chugach was designed in 1925 by L. H. Coolidge, a respected Puget Sound naval architect, for the Forest Service.¹¹ Born and educated in the East, Coolidge opened his practice as a marine architect in the Seattle area about 1901. He designed what in 1925 was the world's largest diesel tug, the 120 foot Mahoe. He is best known for his design of the powerful Mikimiki in the 1930's, which became the prototype for the huge armada of "Miki" class tugs used by the United States armed forces in the Second World War. Coolidge designed many other government vessels, and he founded the Coolidge Propeller Company in 1910. He died in 1959 in Seattle at age eighty-eight.¹²

Construction of Chugach took place in the fall of 1925 at the Lake Union Dry Dock and Machine Works in Seattle.¹³ The Lake Union Dry Dock, an old and respected firm in the Puget Sound area, was well known during the prohibition era of the 1920's for its launching of a large fleet of 75 foot "rum chasers," built to specifications for the Federal government revenue service.¹⁴ Lake Union disposed of their architectural drawings and plans of Chugach in the 1940's. There are no known extant copies of Chugach's construction plans. Originally the Forest Service had hoped to trade Hiawatha to the ship works in exchange for the new vessel.¹⁵ However, Hiawatha's engines were found to be beyond repair, and her keel dead wood and horn timber were badly damaged by toredo worms.¹⁶ The final agreement reached between the Forest Service and builders stated that Hiawatha would be exchanged for construction of Chugach's bare hull, deck, and some fittings. The engine, propeller shaft, and other gear was installed later. Final construction and outfitting costs for Chugach, including engine installation, totalled \$26,185.00 This figure included

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the price of the Atlas engine (\$5,890.00) and the agreed upon exchange value of Hiawatha (\$12,500.00).¹⁷

When the first ranger boats entered government service around 1910, they (like other small motor-driven work vessels of the time) were powered by heavy duty, slow speed gasoline engines. In the 1920's, diesel engines known for their safety, durability, and economy of fuel costs came into general use.¹⁸ Chugach and Ranger 7 were the first diesel powered vessels in the Alaskan forest fleet. After delivery to the Forest Service in Seattle, Chugach was towed to Ketchikan, Alaska, arriving there sometime prior to November 14, 1925.¹⁹ The Atlas engine was installed there during the summer of 1926. Erland M. Jacobsen travelled from Cordova to Ketchikan to supervise her final fitting out. He sailed her north on her maiden voyage to Cordova where he arrived on August 20, 1926. For the next 23 years, Jacobsen was captain of Chugach, operating out of her home port at Cordova.

Jacobsen, the first of four Alaskans who served as captains of Chugach, had a colorful career prior to his assignment as skipper of Chugach. Born in Denmark in 1887, Erland worked on his father's fishing boat before going to sea in 1902 on a three-masted schooner bound for Iceland. On a subsequent voyage in 1908, he jumped ship in Tacoma, Washington. Sometime later he joined a group of young adventurers bound for the gold fields of Alaska and the Klondike in the Yukon Territory. After working his way down the Yukon River from the Klondike to Nome, he purchased a trading schooner, which he sailed around the Alaska Peninsula, and landed in Seward, Alaska. There he made his living hauling coal, construction materials, and supplies to sites around western Prince William Sound. He also worked in the fishing industry, establishing a number of salteries on Prince William Sound. His seafaring skills came to the attention of W. J. McDonald, Supervisor of the Chugach National Forest, who hired him with the dual title of boat operator and forest ranger.²⁰

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Jacobsen's last entry in the log as skipper of Chugach was December 1, 1949. He retired from government service at the year's end and died in Seattle in 1971.²¹

Cordova, Alaska, was the headquarters of the Chugach National Forest and the home port of Chugach. Founded in 1906, Cordova served as construction headquarters and saltwater terminus of the Copper River and Northwestern Railway (CR&NWR). The CR&NWR hauled ore from the huge copper mines near Kennicott, in the interior.²² The bustling town also served as the focal point for a growing commercial fishing industry that eventually supplanted mining as the leading activity in Prince William Sound.²³ Canneries, fish traps, wharves, fur farms, homesteads, and the railway required timber from the forest, as well as land use sites along the coast for their operations. These needs were provided by the Chugach National Forest through special use permits and timber sales administered by the Forest Service. In addition, permits had to be issued for Federal power sites. This required visits to check all generators every two years. Chugach was the vital link between forest administrators and forest users, operating as a portable office and work station in the administration of the Chugach National Forest. She carried a complete duplicate set of office records on board, and in fact was the principle locus of the administrative work done in the Chugach National Forest from the 1920's to the early 1950's. Her regular tours of work and inspection extended over a huge area, covering virtually all of Prince William Sound and beyond, to Afognak Island, just north of Kodiak Island. The town of Kodiak served as a supply port when working on Afognak Island. Chugach often operated every month of the year, sometimes even crossing the stormy Gulf of Alaska in the dead of winter. Her trips took her as far west as Kodiak Island and as far south and east as Ketchikan, Alaska, where she sailed when major maintenance and repairs were required at the Forest Service Marine Station. In the 1940's, she was increasingly called upon to assist

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other ranger boats in their forestry work in the Tongass National Forest.

In the 1930's, the scope of Forest Service work in Alaska increased dramatically as the Forest Service became the administrator of the Civilian Conservation Corps (CCC) in Alaska. Designed as a measure to combat the effects of the Great Depression by employing young men in conservation related projects, the CCC worked on a multitude of projects in the Tongass and Chugach National Forests, such as trail and road building and maintenance, construction of shelter cabins, recreation facilities, and community service projects in towns such as Cordova and Tatitlek, a native village on eastern Prince William Sound.²⁴ The CCC work, like other Forest Service work, was administered primarily from Chugach. Jacobsen enrolled recruits for the program, delivered them to the CCC camps, and made monthly visits of supply and inspection to the camps located along Prince William Sound. For accounting purposes, CCC work was kept separate on the Forest Service books and in the Chugach log (e.g., "3 meals charged to CCC"). Most of the CCC work was done in winter, leaving the men free to return to Alaska's largely seasonal employment of commercial fishing, cannery work, or construction in the summer.²⁵ Utilizing her towing bits and electric winch, Chugach frequently towed scows and wanigans that housed and supplied the work crews.

In her routine work, Chugach sometimes carried a deckhand and/or a cook, but much of the time Jacobsen served as captain and crew, with the assistance of any forest rangers on board. Because of the danger to the boat in potentially treacherous waters, Jacobsen usually had to remain aboard the anchored boat while the rangers carried out forest work ashore. The vessel's log records incidents which occurred when Chugach was left alone and fetched up on the rocks. Only the heroic and strenuous efforts of Jacobsen managed to save her from serious damage or destruction.²⁶

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Chugach's service to the public and cooperation with other agencies played a vital role in the safety and welfare of the isolated population situated along Alaska's coast line, particularly during her service in Cordova where often she was the primary means of government transportation and communication in Prince William Sound. Sea disasters in Prince William Sound and the Gulf of Alaska in the 1920's prompted calls from the editor of the Cordova Daily Times and other citizens for the U.S. Coast Guard to station a cutter permanently in these waters. The usual practice, however, was for the cutters to cruise these waters during the summer months, then return south during the winter, which placed them too far away to be effective during the stormiest months when they were needed the most. In 1928, the commander of USCG Cutter Unalga and the editor of the Cordova Daily News, citing twenty-seven lost lives and twenty-nine lost vessels in recent years, called for more Coast Guard protection. The territorial governor responded by stating that not enough cutters were presently available to station one closer than Unalga in Juneau, some 500 miles distant.²⁷ As a result, Chugach continued throughout most of her service in Cordova to operate as the front line vessel in response to calls for emergency assistance during the winter months. One of her later skippers, speaking of this time period, stated that "In wintertime Chugach was the only boat of any consequence out on Prince William Sound. Everyone else holed up for the winter."²⁸

Chugach's role in emergency relief involved many routine voyages of assistance, as well as some dramatic rescues. In April, 1927, Chugach, with local authorities and a coroner's jury aboard, searched the waters of Prince William Sound in vain for a reported missing boat containing a headless corpse.²⁹ In late December 1927, Chugach and the only other government vessel in the area, the Alaska Game Commission's Seal, searched for S. S. Pioneer, which was missing in rough seas. Handicapped by heavy weather, Seal developed engine

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trouble and had to drop out of the search effort. During the night of December 28 her cumbersome "radio apparatus" was transferred to Chugach. (Incidentally, this was her first radio, though the installation was only temporary.) Two days later, Chugach made a run to the small village of Katalla, on the Gulf of Alaska, to deliver mail and food, and to take a seriously ill passenger to Cordova for medical treatment. Katalla had been isolated for days since Pioneer was lost. USCG cutter Unalga came from Juneau to assist in what was the largest search in the Cordova area for many years. Finally on January 1, 1928, frozen bodies and the wreckage of Pioneer were located by the searchers on a wave-tossed beach.³⁰

In May 1929, Chugach and U. S. Bureau of fisheries boat Kittiwake, went out to look for the Gorst Air Transport, Inc. amphibian plane "Alaska," which was two days overdue. This plane had recently gained fame when it brought the first paying air passenger from the lower mainland to Alaska, and the first "same-day" U. S. newspaper to Alaska in April of that year.³¹ On May 7, it became the first plane to cross the Gulf of Alaska thus connecting the final link of the chain of airways that linked South America to the Arctic. Fortunately the aircraft was only storm bound on a beach. On leaving, it circled the still searching Chugach to let her know all aboard were safe.³²

Another incident involved Milton Pratt, the son of Forest Service office manager L. C. Pratt of Cordova. He accidentally shot himself in the thigh while hunting ducks. Captain Jacobsen transported him to Cordova where he died a day or so later. For that trip, Jacobsen made some mechanical adjustments to the engine to get more speed, and Chugach reportedly averaged 11 knots (which must have been near her hull speed). This took place around 1932.³³

Sometime during the 1930's, Chugach rescued a man and his son from the exposed side of an island where they had been wrecked. A third

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man died and was buried there. The rescued man's daughter later became the wife of E. M. Jacobsen's son, Clarence Jacobsen.³⁴

One rescue operation that captured national attention began in late December 1938. Three men were stranded on a small bar on the Copper River delta when their 45 foot fishing boat Ya-Sure developed engine trouble in the face of 40 to 60 mph winds and temperatures averaging -10 to -12 degrees Fahrenheit. After four days they were spotted by aircraft and supplies were dropped to them. Conditions were such that no plane could land on the beach. The first vessel to respond to the emergency was the 327 foot USCG cutter, John C. Spencer, which in January 1937, had been stationed in Cordova, its new home port.³⁵ Spencer proved to be too large to cruise near the shallow Copper River flats. It was hoped that Chugach would be small and powerful enough to get close to the bar, so a radio was installed on board which would allow Captain Jacobsen to remain in contact with guiding aircraft. On December 27, a local pilot and a radio operator joined Chugach, and along with a motorboat from Spencer, they attempted to get in close while Spencer lay three miles offshore. However, Chugach could get no closer than 1,000 feet from the shore due to "terrific winds and mountainous breakers."³⁶ The water's surface was covered by ice up to an inch and a half thick, conditions for which Chugach's iron bark sheathing was necessary. On December 28, freezing spray, which at times formed coats of ice eighteen inches thick on the search vessels, forced Chugach into a sheltered bay for de-icing. Meanwhile, the citizens of Cordova, including Captain Jacobsen's family, were gathered around their radios listening to station KNX, Hollywood, California, where news of the rescue attempt was being transmitted.³⁷ The gale continued unabated into the new year, and the Coast Guard was stalemated by the wind and freezing conditions. They made an unsuccessful two day overland attempt, tried landing surf boats, and brought in the cutter Morris, all to no avail. Finally the wind and waves moderated somewhat and Morris

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landed a party which picked up two of the men. The third man, at first believed lost, was later seen by air. Chugach rushed to the scene again, hoping to get through the channel where the Ya-Sure was beached. She found Ya-Sure adrift, being pushed by the ice in the channel. Chugach rescued the third man, Skipper Bill Frazier of Ya-Sure, who was on board, and successfully towed the boat to the cutter Morris.³⁸

Another dramatic rescue involving Chugach took place on October 11, 1942, when ten men from the wrecked cannery tender Taku were rescued from the beach on Cape St. Elias in the Gulf of Alaska. With the entrance of the United States in the Second World War, the Coast Guard had transferred Spencer from Cordova to the Atlantic in support of allied naval convoys to Europe, leaving Chugach once again the front line government emergency vessel for Prince William Sound and much of the Gulf of Alaska. Taku, in imminent danger of sinking had turned up on a beach near Cape St. Elias, about sixty five miles southeast of Cordova. Two of the crew, having hiked for thirty-six hours, reached the Cape St. Elias lighthouse, and contacted Cordova by radio. Chugach was sent to the scene where she was able to approach close enough to the beach to rescue the entire crew.³⁹

While Chugach participated in numerous other search and rescue operations, she also served the government and the public in less dramatic roles. Her log relates many instances of her transporting doctors, nurses, and veterinarians to remote villages; of carrying game wardens to distribute hay to feed starving deer in the winter; of re-lighting U.S. Lighthouse Service lights and buoys; of carrying prohibition agents, ministers, local charity commission officials, and law enforcement officials to perform their duties and ministries; of carrying mail to residents of remote sites; of transporting a "floating court" in Prince William Sound; of transporting U. S. troops during the Second World War; and of carrying food to and relieving emergency

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conditions of inhabitants of Indian villages. On occasion, she took Cordova townspeople to annual picnics, and high school students and their teachers on annual two day "sneaks."⁴⁰ The first tour of duty entrusted to Spencer Israelson, the second skipper of Chugach, was the enumeration of every individual and family residing in remote areas (outside the main towns like Cordova and Whittier) of Prince William Sound for the Federal census of 1950.⁴¹

Chugach's log gives evidence of extensive cooperation with other agencies, Federal, territorial, and state. Some agencies had no boat, or if they did it was often not available, and Chugach would often be called upon to transport personnel from such agencies as the U.S. Biological Survey (Now U.S. Fish and Wildlife Service), National Park Service, Bureau of Mines, Department of the Army, U.S. Coast Guard, Bureau of Indian Affairs, Bureau of Fisheries, and territorial law enforcement and game management agencies.

In her capacity as a public service vessel, Chugach often served as a floating station for scientific research and moving base for reconnaissance of the natural and cultural features of Prince William Sound and the Gulf of Alaska, in particular the spectacular tidewater glaciers. In May 1928, M. L. Merritt, Assistant District Forester from Juneau, working on behalf of the U.S. Geological Survey, travelled on board Chugach in order to measure and photograph the advance of the Hubbard Glacier near Yakutat, and the return of vegetation in the area since the 1899 earthquake.⁴² In 1951, Israelson piloted a team of National Park Service officials aboard Chugach on a tour of inspection to view and evaluate the scenic and recreation potential of tidewater glaciers, like Barry Glacier and Surprise Glacier, in western Prince William Sound (Figure 15).⁴³

In the course of her career as a vital transportation link and a public service vessel in Prince William Sound and the Alexander

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Archipelago, Chugach became associated with a number of nationally and internationally prominent individuals. Perhaps most significant in terms of lasting contributions are the anthropologists who first opened the scientific study of the prehistory of aboriginal peoples inhabiting south-central and southeast Alaska. Dr. Frederica de Laguna (born in 1906), the noted archaeologist who explored and excavated extensively along coastal and interior Alaska has a long association with Chugach. She was chairman of the Department of Anthropology at Bryn Mawr College from 1950 to 1972, and was made professor emeritus in 1975. At the present time (1990), she continues her Alaskan research.

Dr. de Laguna first came into contact with Chugach when Jacobsen, returning from cruising timber on Afognak Island, visited her camp on Hawkins Island near Cordova in early June 1933. That summer de Laguna was studying old Eskimo village sites along Prince William Sound.⁴⁴ On Sunday, June 25, Chugach again visited the camp. The de Laguna party would sometimes go on board for Sunday outings or picnics.⁴⁵ The party consisted of de Laguna, her father and mother, and the renowned Danish archaeologist and ethnographer Dr. Kaj Birket-Smith.

Birket-Smith (born 1893) was curator of the Danish National Museum in Copenhagen from 1929 to 1940, and chief curator of the museum's ethnographical department from 1940 to 1963. He conducted field research in Greenland, the Canadian Arctic, the Philippines, and the Solomon Islands. He was joint leader along with de Laguna of their 1933 Alaskan expedition. He co-authored (with de Laguna) The Eyak Indians of the Copper River Delta, Alaska (1938).

The vessel's log tells of transporting the de Laguna party to Chenega village on July 25 and bringing them back to Hawkins Island on August 7. At the time, de Laguna was studying the Chugach Eskimo

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and was joint leader of the 1933 Danish National Museum and University of Pennsylvania archaeological and ethnological expedition to Alaska. The party left for the Continental United States by steamer on September 10, 1933, having completed their summer field season on Prince William Sound.⁴⁶

Two decades later found de Laguna at work researching the history and culture of the Yakutat Tlingit. In 1952, skipper Israelson delivered a major portion of the seasons' supplies to the de Laguna party at Yakutat.⁴⁷

Another internationally prominent anthropologist, Dr. Ales Hrdlicka, physical anthropologist with the U.S. National Museum, became associated with Chugach while excavating archaeological sites on Kodiak Island between 1931 and 1936. Hrdlicka (1869-1943) was known as "the Grand Old Man of American anthropology."⁴⁸ Director of the U.S. National Museum from 1910 until the early 1940's, he was famous for furthering the theory that America's first settlers migrated from Asia 8,000 to 10,000 years ago. Trained as a physician, he later became associated as a physical anthropologist with the Smithsonian Institution (1903), and became the first president of the American Association of Physical Anthropologists (1929).

In his book, The Anthropology of Kodiak Island, Hrdlicka notes, "July 9, 1935, [Alaska Regional Forester John H.] Flory has sent the S. S. Chugatch [sic] to give us some help. Cannot go with them myself, not well enough yet -- will send Heizer. Object is to explore Takli Island for reported 'big site.'"⁴⁹ This Heizer, of whom he speaks of elsewhere in his book as "one of my boys," eventually became one of America's best known archaeologists. Dr. Robert F. Heizer (1915-1979) was head of the anthropology department at the University of California, Berkeley (1950-1975) and professor emeritus from 1975 until his

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death. At Berkeley, he also served as director of the Archaeology Research Facility, and as curator of North American archaeology at the Lowie Museum.

Later that summer, Hrdlicka wrote, "July 11, 1935 . . . Chugach with a draft of only 1 fathom could go in close, so a circuit of the B [Takli] Island was made, going off shore about 200 yards while investigating with 7 power binoculars. At five points stops were made and landings were effected with the small boat. All investigations except one failed to reveal a site."⁵⁰ Jacobsen wrote in the log book that Heizer was on board July 10 and 11. According to the policy of cooperation with governmental and university personnel, encouraged by Regional Forester B. Frank Heintzleman, Jacobsen charged his time to cooperation with Hrdlicka.

The association of Chugach with these pioneers of Alaska anthropology in the 1930's and 40's was critical to the success of their work at remote locations. At various times, they depended on Chugach and her crew for transportation and supply in the course of their research along the remote coastline of Prince William Sound and in the Yakutat area. While this association was relatively short in terms of days or weeks spent on board, the association was critical to their work because Chugach supplied transportation and logistical support upon which their work depended. For example, at least on one occasion, the drop of supplies at the remote site at Yakutat provided necessary supplies and equipment for de Laguna and her crew for the field season.

In addition to the national and international figures in anthropology associated with Chugach, other nationally prominent individuals associated with her include most or all of the Alaska regional foresters. Perhaps most prominent among these was B. Frank Heintzleman, who served as regional forester from 1937 to 1953 and

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later as Governor of Alaska. The Chief of the U.S. Biological Survey, Paul Reddington, took a "fishing trip" on Chugach in 1928.⁵¹ Upon his return from Alaska, Reddington spoke out for more funding to protect wildlife.⁵² At least one Congressman, Representative Simmons of Nebraska, was on Chugach, accompanied by his family.⁵³ In addition, Jimmy La Gaza, nephew of the first Chief Forester, Gifford Pinchot, worked on board Chugach as a summer assistant during Spencer Israelson's tenure as skipper in the 1950's.⁵⁴

During her active career, Chugach received her share of mishaps. In May 1948, while Jacobsen and Forest Ranger James Clough were ashore scaling logs near Zaikof Bay on Montague Island, the vessel dragged her anchor and went aground. Jacobsen got her afloat again, and since she appeared to have received no serious damage, went back to work. By the next day, she was leaking badly and had to be beached for inspection and repair. Apparently clay and gravel from the grounding had filled the damaged area in her planking, temporarily preventing water from leaking in. Later, rough seas worked the gravel and clay loose and she was in danger of sinking. Inspection revealed that she had two holes, five damaged planks, two broken ribs, and a severely damaged keel and keelson. Jacobsen patched her on the beach at low tide with the emergency material (boards and painted canvas) he always carried aboard.⁵⁵ Once back in Cordova, Jacobsen installed sawn planks and repaired the keel.

THE LATER CAREER OF CHUGACH, 1953-PRESENT (1990)

In the period 1949-53, Chugach underwent a major transition, marked by the close of her first skipper's service, and her permanent transfer from Prince William Sound to southeast Alaska. Jacobsen retired at the end of 1949, and a temporary captain came aboard. This was Harold "Andy" Andersen, the new Supervisor of the Chugach National

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Forest. Born and raised among fishermen around Puget Sound, Andersen came to Alaska in the 1930's. During the Second World War, he served as skipper of several PT boats, and after the war he returned to Alaska and the Forest Service. He sailed with Jacobsen on Chugach as early as 1946. In light of Chugach's recent grounding and near disaster in Zaikof Bay, Andersen insisted that a full time skipper, one experienced in Alaskan waters, be assigned to Chugach. This would leave the forest rangers free to conduct work ashore, secure in the knowledge that an experienced skipper remained in charge of Chugach. Andersen requested marine engineer George Reynolds, the Forest Service official based in Juneau who was in overall charge of the ranger boats, to find him a good "Petersburg fisherman" to take charge of Chugach.⁵⁶ By April 1950, Reynolds sent Andersen his new captain. Spencer N. Israelson was born and raised in Petersburg, Alaska, a town founded after the turn of the century by Norwegian immigrants who had quickly made their town the thriving center of commercial fishing in southeast Alaska. Israelson fished on boats in southeast Alaska and Prince William Sound (where he first saw Chugach in 1946) prior to moving with his young bride, Frances, to Cordova in 1950 (Figure 12 shows Chugach as she appeared at that time, docked in Cordova).

In 1953, Chugach was permanently transferred from Cordova to the Tongass National Forest. This was certainly not new territory for Chugach. She had long been associated with the Tongass while on temporary assignments, usually in the fall, winter, or spring, and when passing through on her way to the Marine Station for repairs.

By the late 1940's, the forest workload had fallen off considerably on the Chugach National Forest. The Copper River and Northwestern Railway and the Alaska Railroad, both of which had required considerable lumber in construction, were now either idle or on a lower maintenance schedule. In the 1920's, there had been a boom in

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fox farming, so that by 1926 the Chugach National Forest had thirty-eight active fur farms, each of which had to be inspected and issued a permit annually.⁵⁷ However, furs were too expensive during the depression, and by the beginning of the war, fox farming had ended as a profitable occupation. With the decline in demand for construction grade lumber, the large sawmill at Whittier, on western Prince William Sound, closed down. In addition to the decline in timber operations in Prince William Sound, there was the problem of maintaining Chugach, so far from the Forest Service Marine Station near Ketchikan. The decision was made that the Chugach National Forest could be served with chartered boats, and Chugach would be transferred to the Tongass. Thereafter, the Chugach National Forest utilized chartered boats, surplus U.S. Coast Guard boats, and later, chartered aircraft to meet its transportation needs.⁵⁸

Meanwhile, the Tongass National Forest was experiencing a dramatic increase in timber production, due to the promotional efforts of Heintzleman and the post-war needs of Japan, the United States, and other industrial nations for wood and wood products. The Forest Service and timber companies were embarking on a greatly accelerated production of timber under terms of fifty-year timber contracts, awarded in the early 1950's.⁵⁹

In September 1953, Captain Israelson and his wife, Frances, sailed out from Cordova on Chugach, bound for their new home in Petersburg. Unfortunately they were beset by one of the fierce storms that often appear around the autumnal equinox in the North Pacific. At times the vessel was completely buried by huge seas, and water flowed into the pilothouse and down the steps into the hold. However, Chugach was heavily built with closely spaced ribs and could take the punishment. In the midst of the storm, a large ocean-going tug, with its windows smashed in by the seas, steamed by. She could be heard on the radio asking what that "little white boat" [Chugach] was doing

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out there. After twelve days, Chugach made it as far as Juneau, normally a three day trip from Cordova. It should be noted that on these long trips, it was customary to motor through the whole day and night. Sometimes during severe weather, as on this trip, the captain would seek out an island to take shelter and catch two or three hours sleep.⁶⁰

The transfer of Chugach from Cordova and the Chugach National Forest to Petersburg and the Tongass National Forest occurred at a time of transition in Alaska and in the Forest Service that included changes in the role of ranger boats as well. With the advent of fifty-year timber contracts and large scale logging in the 1950's, the nature of Forest Service work changed from the personalized style of the pre-war years to a more highly organized style typical of a large bureaucracy in the post-war years. Efficiency and a division of labor increasingly marked the post-war operations of the Forest Service in Alaska. These and other changes indicative of the times are reflected in the log books and other documentation relating to Chugach. The log books themselves changed format, with operations reported more in terms of statistics rather than daily logs entries, and there is less information of a personal nature, or comments on non-official USDA Forest Service matters. Dramatic search and rescue operations, such as appeared in the Cordova days, drop from the log books in the southeast Alaska era. Newspaper accounts of Forest Service vessels and their operations also appear less regularly in Petersburg than in Cordova. Although Chugach, under the command of able and efficient skippers, continued to serve a vital role, her individual contributions are less prominent in the context of the larger operations of the Forest Service and the development of southeast Alaska in the post-war era.

In the fall of 1954, Captain Israelson and Chugach were transferred from Petersburg to Juneau to work on timber inventory. Then in late 1958, Chugach was reassigned to work out of Sitka. A year or two

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later, Chugach returned to Petersburg which has been her home port to the present time.

In 1962, Israelson took a silviculture position with the Petersburg Office of the Tongass National Forest, and worked there until his retirement in 1981. Erling W. Husvik, who succeeded Israelson as skipper, was also born in Petersburg and grew up working on commercial fishing boats. In 1953, Erling was hired as captain of the Forest Service boat, Maybeso (a boat designed by Harold Andersen) to do forest inventory for a research project out of Hollis, on Prince of Wales Island.

In 1962, upon Israelson's transfer to the Petersburg Office, Husvik took over as skipper of Chugach. Erling recalls taking Chugach out for timber sales regularly during the winter, often staying away from home port for a month at a time. Although Chugach no longer made the long distance trips that were common in her Chugach National Forest days, Captain Husvik was out on the waters of southeast Alaska an average of 170 days a year, and occasionally for 200 days or more. Thus Chugach had to carry sufficient food and stores to supply the crew for many weeks at a time. In 1967, Husvik also transferred to the Petersburg Office of the Tongass National Forest. He has since retired from the Forest Service.

During the 1950's and early 1960's, Petersburg, situated in the center of the Tongass National Forest, had perhaps the greatest need for ranger boats of any port at any time in the history of the Forest Service in Alaska. Due to increasing timber harvesting, ranger boats were needed to tow wanigans and scows for the engineering crews, and to supply outlying camps with food, supplies, and fuel. Chugach supplied wanigans with fuel and food and other supplies. Fuel drums were routinely carried lashed to the deck. Her various skippers considered Chugach to be the safest and most reliable means of

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transportation used in the forest. The work year then averaged 170 days.⁶¹

While the use of ranger boats like Chugach in timber production activities expanded in the 1950's and 1960's, their use for non-forestry activities, like search and rescue, so prominent earlier in Prince William Sound, decreased. In southeast Alaska, the Coast Guard presence was much more in evidence than in Prince William Sound, and Chugach did relatively little search and rescue or other public service work.⁶²

In 1967, Arthur Rosvold took over as Captain. He operated Chugach through 1988.⁶³ Arthur was born in Petersburg, and worked there as a fisherman and carpenter before joining the Forest Service. In addition to timber sales work, Captain Rosvold transported and supplied Young Adult Conservation Corps crews on work projects in the Tongass National Forest. He also transported crews engaged in various aspects of silviculture research related to sustained yield timber production in the Tongass. During this time, even the Tongass National Forest experienced a declining use of ranger boats, and by the end of his tenure the fleet had dwindled to only three boats. In addition to Chugach, those still in service at the present (1990) are two metal-hulled boats, Sitka Ranger operating out of Sitka, Alaska, and Tongass Ranger operating out of Ketchikan.⁶⁴ This declining use of boats occurred partly as a result of changing logging practices and inspections. Logging operations are much larger now, the center of activity being clear cuts, supported by an extensive system of roads, in contrast to the smaller, largely shore-based logging operations prior to the major timber contracts. The result is that boats are no longer needed to visit many small isolated logging camps and other forest users.

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In 1973, the Boat Study Committee recommended that Chugach be disposed of by the Forest Service. During the previous two years all hull and other major work had been suspended pending the outcome of the study. Captain Rosvold continued to do what he could to keep up the appearance of the ageing vessel. Fortunately for Chugach, the Regional Forester overruled the committee's recommendation, citing increased workloads and a new reorganization within the Alaska Region of the Forest Service. Chugach was scheduled for maintenance and repairs in 1974, and Rosvold was commended for an excellent job done on her upkeep and for his continued interest in the appearance of the vessel.⁶⁵

Ranger boats were, and still are, used for timber sale layout and reconnaissance work where a portable office and camp are almost a necessity.⁶⁶ A study done for the Alaska Regional Engineer in 1974 indicated that ranger boats were more efficient than shore locations in providing mobile camps for multidisciplinary teams that were increasingly being sent into the field to study the effects of forest practices in the Tongass. It was pointed out that shore-based camps involved a semi-permanent camp for each job, which would necessitate hiring a cook, providing skiffs, radio communication, air transportation, and transport of food, fuel, and other supplies. Ranger boats were still considered useful for towing scows, wanigans, delivering fuel, lumber, culverts, and other supplies.⁶⁷

In the recent past, Chugach and other ranger boats have seen use by other resource specialists and multidisciplinary teams. The forester has been joined by a new breed of professionals, such as archaeologists, hydrologists, geologists, soil scientists, wildlife biologists, fisheries biologists, landscape architects, and others. Ranger boats have proved valuable in providing transportation and movable offices for these specialists when engaged in research and other field work.

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Although Chugach is the last remaining wooden-hulled ranger boat in Federal ownership, several wooden ranger boats probably still exist. Maybeso, a 42 foot diesel boat designed by Harold Andersen for forest inventory work on the Tongass National Forest during the 1950's, is presently owned and operated by the University of Alaska's School of Fisheries, and is stationed at Auke Bay, near Juneau, Alaska.⁶⁸ Ranger 10 and Ranger 9 were reported to be under private ownership in the Puget Sound area as recently as 1981.⁶⁹ Motor Vessel Forester was last known to be in private ownership in the Juneau area. Chugach is unique, however, in that she is the only member of the Alaska Region's wooden fleet still in Federal service, and very likely she is also the oldest ranger boat still afloat.

Throughout the past year (1989-1990), Chugach has been in an inactive state and is in need of repairs. A marine survey performed by the U. S. Coast Guard on March 20, 1989, however, concluded that Chugach is basically sound and is well worth refurbishing.⁷⁰

CONCLUSION

Chugach is significant because of her uniqueness and because of her association with the broad pattern of events, people, and institutions in the history of Alaska and the nation. She is the only remaining vessel of the fleet of wooden ranger boats that provided vital transportation and support in the multifaceted work of the Forest Service throughout south central and southeast Alaska during the second and third quarters of the Twentieth Century. In her early career based in Cordova, Chugach served as the single most important transportation and communication link among the communities of Prince William Sound. During most of this time, she served as the first line emergency vessel and was involved in many dramatic

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search and rescue operations in Prince William Sound. In the course of her career, Chugach has also been associated with many prominent individuals, most notably the nationally and internationally renowned archaeologists and anthropologists who pioneered the study of aboriginal peoples in Alaska. These include Dr. Frederica de Laguna, Dr. Kaj Birket-Smith, Dr. Ales Hrdlicka, and Dr. Robert F. Heizer.

In these ways, Chugach has served in a prominent role in the economic, administrative, social, and scientific development of Alaska as a territory and a state. She embodies the tradition of service rendered by the USDA Forest Service during this period.

¹quoted in Lawrence W. Rakestraw, A History of the United States Forest Service in Alaska (Anchorage, Alaska: Alaska Historical Commission, Alaska State Department of Education, USDA Forest Service, and Alaska Historical Society, 1981), p. 67.

²W. A. Langille to [Chief Forester] Washington, D. C., July 27, 1905, in Boat File, USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska.

³W. A. Langille, Forest Supervisor [in Ketchikan, Alaska], to District Forester, Portland, Oregon, April 13, 1911, in Chugach File, USDA Forest Service, Stikine Area, Recreation Division, Petersburg, Alaska (hereafter, Chugach File); Rakestraw, Forest Service in Alaska (1981), p. 67.

⁴Inter-Departmental Marine Station, memorandum to Regional Forester Flory, December 22, 1928, in unclassified file box, USDA Forest Service, Alaska Region, Division of Recreation, Juneau, Alaska.

⁵"The Work of Alaska Forest Rangers and Boats," File in USDA Forest Service, Alaska Region, Division of Recreation, Juneau Alaska.

⁶Inter-Departmental Marine Station, memorandum to Regional Forester Flory, December 22, 1928, in unclassified file box, USDA Forest Service, Alaska Region, Division of Recreation, Juneau, Alaska.

⁷"Combined Marine Station at Ketchikan," 1928-29, in Ibid.

⁸Spencer N. and Frances Israelson Interview, January 13-14, 1990, Petersburg, Alaska (hereafter, Israelson, January 13-14, 1990).

⁹Quoted in memo from Milford Page, Regional Engineer to Regional Forester, April 14, 1952, Chugach Service Record.

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¹⁰Ibid.

¹¹"Specifications for a Power Boat" by L. H. Coolidge, received at Chugach National Forest, Cordova, February 24, 1925, Chugach File. There is a persistent but unsubstantiated rumor that the design was originally intended as a yacht for a Mr. Skinner who owned Alaska Steam. Clarence Jacobsen interview, November 13, 1989, Juneau, Alaska (hereafter, Jacobsen, November 13, 1989) and Israelson, January 13-14, 1990.

¹²Gordon Newell, ed., The H. W. McCurdy Marine History of the Pacific Northwest, (Seattle, Washington: The Superior Publishing Company, pp. 401 and 642.

¹³Contract between United States Department of Agriculture, Acting Secretary R. W. Dunlap and Lake Union Dry Dock and Machine Works, Otis Cutting Treasurer, Chugach Service Record.

¹⁴Ibid., p. 352.

¹⁵District Forester Flory to Chief Forester, October 2, 1925 and L. H. Coolidge to District Forester Merrit, January 10, 1925, Chugach Service Record.

¹⁶Signal Corps, U.S. Army, Washington-Alaska Military Cable and Telegraph System, telegram to District Forester Flory, August 14, 1925, Ibid.

¹⁷"Interdepartmental Marine Station File 1928," in unclassified box, Division of Recreation, USDA Forest Service, Alaska Region, Juneau, Alaska; Forest Supervisor Zeller, to District Fiscal Agent, Juneau, April 19, 1928, in Ibid.

¹⁸Harold "Andy" Andersen Interview (by telephone from Juneau, Alaska), November 24, 1989, Mount Vernon, Washington (hereafter, Andersen, November 24, 1989).

¹⁹District Forester Flory to Forest Supervisor Weigle, December 14, 1925, Chugach Service Record.

²⁰"Memoirs of EMJ [Erland M. Jacobsen]," typed transcript of taped interview of E. M. Jacobsen by his daughter, May 4, 1967, [Seattle, Washington], copy courtesy of Clarence Jacobsen, Juneau, Alaska.

²¹Jacobsen, November 13, 1989.

²²Lone E. Janson, The Copper Spike (Anchorage, Alaska: Alaska Northwest Publishing Company, 1975), pp. pp. 56-58 and 137-138.

²³Steven Haycox, "The Impact of the Closing of the Copper River and Northwestern Railway on Cordova, Alaska: 1938," manuscript copy sent to Conner Sorensen by author.

²⁴Conner Sorensen, "Civilian Conservation Corps in Southeast Alaskan Newspapers: An Index," (Anchorage, Alaska: Alaska Historical Commission

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- Studies in History, No. 173, 1984), available in the State Historical Library, Juneau, Alaska, and the libraries belonging to the Alaska Library Network.
- ²⁵Chugach Log, 1930's; Jacobsen, November 13, 1989.
- ²⁶Chugach Log, May 18, 1948; Andersen, November 24, 1989.
- ²⁷Cordova Daily Times (CDT), February 2, 1929.
- ²⁸Andersen Interview, November 24, 1989.
- ²⁹CDT, April 4, 8, 11, 13, 1927.
- ³⁰CDT, December 27 and 28, 1927 and January 2, 1928.
- ³¹CDT, April 18, 1929.
- ³²CDT, May 28 and 29, 1929.
- ³³Clarence "Jake" Jacobsen notes on preliminary Chugach report.
- ³⁴Jacobsen, November 13, 1989.
- ³⁵Gene Gurney, The United States Coast Guard: A Pictorial History (New York: Crown Publishers, 1973), pp. 114-118.
- ³⁶CDT, December 28, 1938.
- ³⁷Jacobsen, November 13, 1989.
- ³⁸CDT, January 4, 1939.
- ³⁹CDT, October 10 and 12, 1942.
- ⁴⁰Chugach Log, April 14 and 15, 1942.
- ⁴¹Israelson, January 13 and 14, 1990.
- ⁴²Chugach Log, May 22, 1928.
- ⁴³Chugach Log, June 11-16, 1951; Israelson, January 13-14, 1990.
- ⁴⁴CDT, June 9 and Sept 9, 1933.
- ⁴⁵Jacobsen, November 13, 1989.
- ⁴⁶CDT, September 9, 1933.
- ⁴⁷Chugach Log, May 3, 1952; Israelson, January 13-14, 1990.
- ⁴⁸Current Biography (1941), 412.
- ⁴⁹Ales Hrdlicka, The Anthropology of Kodiak Island (Philadelphia, Pennsylvania: The Wistar Institute of Anatomy and Biology, 1944), 93.
- ⁵⁰Hrdlicka, Kodiak Island (1944), 132.
- ⁵¹Chugach Log, August 25-27, 1946 and August 13, 1928.
- ⁵²CDT, February 5, 1929.
- ⁵³Chugach Log, July 22 and August 8-13, 1931.

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- 54 Israelson, January 13-14, 1990.
- 55 Chugach Log, May 18-20, 1948; Israelson, January 13-14, 1990.
- 56 Andersen, November 24, 1989.
- 57 CDT, January 11, 1926.
- 58 Andersen, November 24, 1989; Israelson, January 13-14, 1990.
- 59 Rakestraw, Forest Service in Alaska (1981), pp. 127-128.
- 60 Israelson, January 13-14, 1990.
- 61 Memorandum to Forest Supervisor from District Ranger, July 8, 1964, justifying continued use of Chugach, File 7/1/73-3/1/78, USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska.
- 62 Israelson, January 13-14, 1990.
- 63 Arthur Rosvold Interview, November 16-17, 1989, Petersburg, Alaska.
- 64 Israelson, January 13-14, 1990.
- 65 George Danner, Engineering Technician, to Regional Engineer, January 8, 1974, and Danner to Area Manager, Stikine Area, Tongass National Forest, January 11, 1974, Chugach Service Record.
- 66 Israelson, January 13-14, 1990.
- 67 Danner to Regional Engineer, January 8, 1974, Chugach Service Record.
- 68 Rakestraw, Forest Service in Alaska (1981), pp. 140 and 145.
- 69 Robert R. Burns, Sequoia Marine Service, Everett Washington to USDA Forest Service, Juneau, Alaska, July 3, 1981, Chugach File.
- 70 Marine Survey of M/V Chugach, in Ibid.

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5. Harold E. "Andy" Andersen Interview (telephone from Juneau), November 24, 1989, Mount Vernon, Washington.

6. Chugach Log, USDA Forest Service, Chugach National Forest, Division of Recreation, Anchorage, Alaska, and Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska.

7. Cordova Daily Times, 1925-1953.

(Please see notes for additional sources)

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Figures

Figure 1. Chugach starboard view, U.S. Government Dock
Property: M/V Chugach
City : Petersburg
State: Alaska
Photographer: Conner Sorensen
Date: November 13, 1989
Location of Original Negative: USDA Forest Service, Tongass National
Forest, Stikine Area, Division of Recreation, Petersburg, Alaska
Direction: Northwest
Photograph number as keyed to sketch map: N/A
Note: Information for subsequent figures is identical to Figure 1
except where noted.

Figure 2. Chugach starboard quarter view, U.S. Government Dock
Photographer: Thomas Schley
Direction: West

Figure 3. Chugach bow view, U.S. Government Dock
Photographer: Thomas Schley
Direction: Southeast

Figure 4. Chugach pilothouse interior
Direction: Northeast

Figure 5. USDA Forest Service bronze shield mounted on port and
starboard sides of Chugach pilothouse (photo of starboard side).
Direction: Northwest

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Figure 6. Chugach taken prior to refit of pilothouse in 1934
City: unknown
Name of Photographer: unknown
Location of Original Negative: USDA Forest Service, Alaska Region,
Office of Public Affairs, Photo File, No. 439567, Juneau, Alaska
Direction: unknown

Figure 7. Chugach, view of afterdeck
Photographer: Thomas Schley
Direction: Southwest

Figure 8. Chugach, view of foredeck
Photographer: Thomas Schley
Direction: Northeast

Figure 9. L. E. Geary, Naval Architect, "Sail and Rigging Plan, MS Chugach," Blueprint for USFS, September 7, 1928, computerized and reduced copy by Dave Funaro, 1990.
Original Blueprint located with Chugach Service Record, USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska

Figure 10. Earliest known photograph of Chugach. In ice on Prince William Sound
City: N/A
Photographer: unknown
Date: 1928, prior to addition of foremast
Location of Original Negative: USDA Forest Service, Tongass National Forest, Stikine Area, Division of Recreation, Petersburg, Alaska
Direction: unknown

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Figure 11. "M.S. Chugach in front of Barry Glacier," showing wartime gray color

City: N/A

Photographer: Alva W. Blackerby

Date: September 20, 1946

Location of original negative: USDA Forest Service, Alaska Region,
Office of Public Affairs, Photo File, No. 442219, Juneau, Alaska

Direction: unknown

Figure 12. Chugach at USDA Forest Service dock, Cordova, Alaska, 1950

City: Cordova

Photographer: unknown

Date: 1950

Location of Original Negative: USDA Forest Service, Tongass National
Forest, Stikine Area, Division of Recreation, Petersburg, Alaska

Direction: unknown

Figure 13. Chugach stern view, U.S. Government Dock

Photographer: Thomas Schley

Direction: Northeast

Figure 14. Tahn and Rangers 1,2,3, arriving in Ketchikan, 1913

City: Ketchikan

State: Alaska

Photographer: unknown

Date: 1913

Location of Original Negative: USDA Forest Service, Alaska Region,
Office of Public Affairs, Photo File, Juneau Alaska

Direction: unknown

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Figure 15. Chugach in front of Columbia Glacier, 1941

City: N/A

State: Alaska

Photographer: unknown

Location of Original Negative: USDA Forest Service, Alaska Region,
Office of Public Affairs, Photo File, Juneau Alaska

Direction: unknown