

K E N O

(After Hull was Rebuilt 1937)

No. 116,618	Dawson, Yukon	March 15, 1938
British.	Steam Ship--Stern Wheel, Rebuilt Whitehorse, 1937.	
Decks:	One	
Masts:	One	
Rigged:	None	
Stern:	Transom	
Build:	Carvel	
Galleries:	None	
Head:	Straight	
Housework:	Wood	
Bulkheads:	Four	
Length:	150.6	
Beam:	30.4	
Depth:	4.93	
Engine Room:	30.8	
Engines:	2	12" cylinders, 54" stroke. Clinton Novelty Iron Works, Iowa, U.S.A.
Boilers:	1	Loco, British, Vulcan Iron Works, Vancouver, B.C.
N.H.P.	9.6	
Tonnage:		
Under Tonnage Deck	175.147	
Deck Houses	437.902	
GROSS TONNAGE	613.049	
Deductions	196.921	
REG TONNAGE	416.128	

Owners: British Yukon Navigation Co., Ltd., Vancouver, B.C.
64 shares

Dated at Dawson, 15th July, 1938, J. O. Williams, Registrar of Shipping

S.S. KENO

For many years Captain Hughie Morrison was master of the Keno, and many famous pilots served on her. Kid Marion, an early dog driver carrying the mail over the Chilkoot Pass, Bill Bromley, Captain Rabe, famous Columbian river pilot, the Irish Skipper Charlie Coghlan and a Scot, Dan McKay. All those vessels were owned and operated by the British Yukon Navigation Company, a subsidiary of the White Pass & Yukon Route. Many were built at Whitehorse and St. Michaels, a few at Vancouver and Victoria, reaching St. Michaels in tow of tugs.

In the early days there were several vessels which operated on the side stream; the Pelly, Stewart, Hootalinqua, and White Rivers. Keno is the last of these. Three large vessels, the Susie, Hannah, and Sarah, were two stackers of similar design to the Mississippi Packers. Vessels on the upper river had to be lightly constructed and of shallow draft, not more than 3' while on the lower river vessels drawing as much as 5' could operate at certain stages of water.

- Upstream to Whitehorse approximately $4\frac{1}{2}$ to 6 days. Maybe 1 to $1\frac{1}{2}$ cords per hour, depending on the river.
- Downstream $1\frac{1}{2}$ days
- Hootalinqua was the end of the 30 mile river where the bigger boats would bring partial freight and Keno would bring more freight to complete their load capacity.
- First boat left Whitehorse around May 24
- Last boat leaving Dawson in the fall about the 15th of October
- Every second round trip boilers had to be cleaned.

Number of Crew

- | | |
|---------------------|----------------|
| - Skipper | - 4 Waiters |
| - Pilot | - 1 Captain |
| - 2 Mates | - 1 Mess Boy |
| - 5 or 6 Deck Hands | - 1 Pantry Man |
| - 3 Firemen | - 2 Cooks |
| - 2 Engineers | |

The S.S. Keno was built in Whitehorse in 1922, making it a fairly new boat. It was rebuilt in 1937 making it 10 feet longer to accommodate more freight. The S.S. Keno has a maximum tonnage of 120. When there was a large amount of freight the paddle wheeler would push a barge ahead of the boat. There was two barges for the Keno, Keno One and Keno Two, each with a maximum load of 225 tons. The Keno worked on the Stewart River until 1951. The S.S. Keno was the first of the boats taken off the river. The rest of the sternwheelers were off the river by 1955. The Keno was in dry dock in Whitehorse for ten years. In 1961 the S.S. Keno was given to the Federal Government by the British Yukon Navigation Co. and was put in shape for her last voyage down river to Dawson in that same year. It was the last of the paddle wheelers ever to make that run.

Between 1922 and 1951 the S.S. Keno worked up and down the Stewart River hauling silver-lead-zinc concentrates from Mayo landing to Stewart City (where the Stewart joins the Yukon River). At this point the ore was transferred to the bigger freighters on the Yukon for the journey on up river to Whitehorse. From Mayo to Stewart City is a distance of 180 miles by river.

The S.S. Keno has a draft of 3 feet. This is almost unbelievable but the whole boat is made of wood (fir). The Stewart River is a shallow River so a shallow draft boat was necessary. Because of its shallow draft, the S.S. Keno was often the first boat to Dawson in the spring of the year. The Yukon River freezes over in the winter and therefore the boats only ran from the middle of May to about the first week of October. Before the river freezes over all the boats were taken to Whitehorse where they were hauled up on dry dock for the winter months. The arrival of the first boat in the spring was cause for a celebration for the people of Dawson. That boat would bring fresh fruit, fresh vegetables and newspapers that were as much as seven months old, visitors and friends. As soon as the whistle was heard from two or three miles upstream, all the children in the school would run to the docks and all the business would lock their doors and head for the docks to meet the first boat. The S.S. Keno was often the last boat to leave Dawson in the fall and everyone in town was down to give it a send off, knowing that they were once more isolated for several months.

It is a distance of 460 miles from Dawson to Whitehorse by river. When the boat came down river, going north, (this is where they got the saying going down north) it would take only 32 to 36 hours. But when going upstream to Whitehorse against the current it would take 3 to 7 days. The current on the Yukon averages about 10 miles per hour.

The steam boiler which supplies the steam to all the engines in the engine room burns approximately one cord of four foot wood an hour, which is quite a bit of wood. The larger boats burned as much as two cords an hour when pushing barges against the 10 mile an hour current. A cord of wood cut and piled measures 4' by 4' by 8'. It would be impossible to carry all that was necessary for the trip with you, or there would be no room for freight. The wood is stacked on either side of the boiler for the full length of the boiler. Approximately every 4 to 5 hours they would stop for wood at one of the 32 wood camps along the river, between Whitehorse and Dawson. These were camps along the river where people made their living cutting wood for the stern-wheelers.

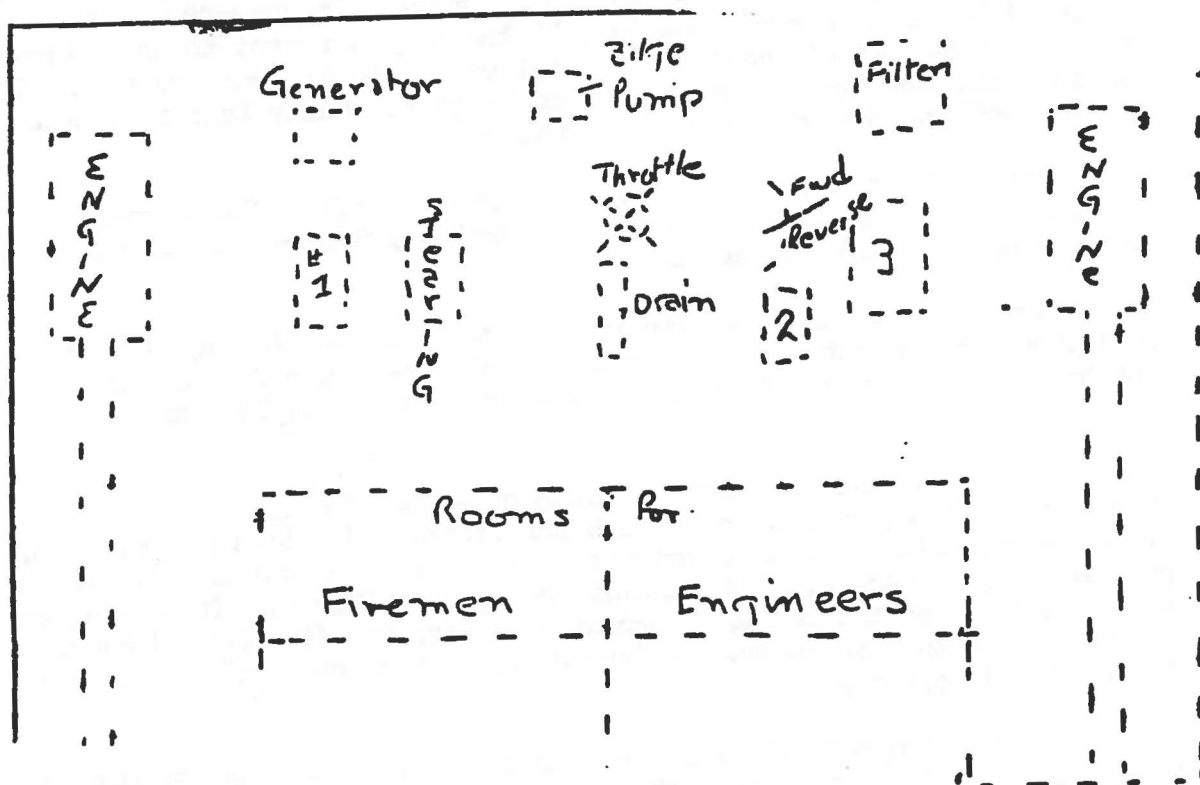
This may seem like a lot of camps, but the White Pass alone operated a fleet of 60 paddle wheelers, working up and down the river. One can't imagine the amount of wood these boats would burn in this time. (At the height of the Gold Rush there were as many as 250 sternwheelers plying the rivers of the Yukon and Alaska). Dry wood eventually became scarce and for the last two or three years the boats were converted to oil. They never did burn coal, mainly because there is not a large supply of coal along the river, only a small coal mine at Carmacks.

If you have to stop and pick up wood every 4 or 5 hours you can't afford to waste too much time at these wood camp stops. They blew the whistle and this woke up the deck hand. It also let the people at the wood camp know that the boat would be coming in for wood. They would come down and check on the amount of wood the boat loaded. A gangplank was put ashore. This gangplank was lined with a rubber mat to make it easier to push the loaded hand trucks on. In this way the wood was loaded as fast as possible, either through the sliding doors or on the bow deck.

The freight deck is that area from the back end of the boiler to near the engine room. The silver-lead ore was brought on the boat in 125 lb. bags. The freight hauled by the boat included live stock, grand pianos, cut glass, apples etc. There is no freight carried below the deck as there is only about 5 feet of head room down there and steam pipes.

Point out the spare sets of rudders carried. Broken rudders have to be replaced immediately in order to be able to steer the boat properly. One of the washrooms on the freight deck was originally a small galley, from where the crew was fed. The crew was not allowed to eat up in the dining room with the passengers.

ENGINE ROOM



Steam comes into the engine room in the main steam line and is separated with the main valve. Some of the steam goes to the steam engines water pump, generator, etc. The paddle wheel at the rear of the boat is powered by these two engines, one on either side of the engine room. There the two huge pistons produce about 167 horse power each with 175 pounds of steam. There is a 190 degrees difference between the cranks on the paddle wheel, so that when one piston is pushing the other one is pulling (use your arms to illustrate the movement).

There were electric lights on the boat and this generator was used to supply the power. (Pointing out the electric generator).

Pump No. 1 is a water pump, supplying water from the river to the wash-room, galley, and the fire hydrants.

This engine powers the hydraulic steering system, soapy water being used as a hydraulic fluid.

The lever is used as a forward-reverse lever. It determines which way the paddle wheel will turn.

The throttle wheel controls the amount of steam that gets to the main steam engines. The engineer gets his orders through the telegraph system. There is one exactly the same as this up in the pilot house. It works on a system of cables and chains. This system was used in later years, being put to use around 1937. Before that they used a bell system, the remains of which you can see on the ceiling here. This was controlled by a cable from the wheel house. It depended on the number of bells that were rung to tell the engineer what to do. Sometimes the cable would break or the engineer couldn't hear too well. He wouldn't get the correct order. He could quite easily land on a sand bar if he didn't receive the orders correctly.

This pedal regulated the length of the piston stroke. The further down you pushed on it the shorter the stroke and the faster the piston would go turning the paddle wheel faster.

Water pump No. 3 is the most important water pump in the engine room. This pump supplied water to the boiler. Water was pumped from the filter system. Water pump No. 2 was used when the boiler supply pump broke down.

All water pumped from the river between here and the White River, about 90 miles upstream, must pass through the filter. The White River comes from the St. Elias Mountains and has a lot of glacial mud in it. There are about sixty tons of silt a minute going past Dawson. If this water were to be pumped into the boiler it would soon clog up with mud and sand. All the water must therefore go through the different levels of screening in the filter system.

The cylinder drain cock lever is to open the drain cocks in the pistons. When a boat sits in port for a while the steam in the engines condenses to water. The piston will not operate with water in it. By forcing steam into the cylinders through opening the drain cock, you force the water out. This operation is done when the boat is ready to move out of port. It makes quite a bit of noise and sometimes lasts up to 15 minutes.

When the boat sits in port for a few days water seeps into the hull. About 7 or 8 inches may enter, not enough to use the big water pump, but enough that it must be pumped out before the boat goes on a run. These valves lined up in a row are used for this purpose. Each of these valves is for a different section of the hull. By opening a valve a bilge pump in that section will force the water out.

The hand-operated pumps are used in case of emergency. In the engine room is a one-man pump and the one on the freight deck is a two-man pump.

The drinking water is stored in a tank at the rear end of the boiler. The water from the river is not suitable at times for drinking. Drinking water is picked up in port, or is taken from the clear streams that run into the river.

The long rods, hanging over head in the rafters are called reamers. You will note that they have brushes on the ends of them. These are used to clean out the tubes in the boiler.

The boiler is divided into two sections, the fire box and the water tank. The fire box is at the front end of the boiler and is where the wood was thrown in. It goes back about five feet. From the back of the fire box to the far end of the boiler is the water storage area. Through this area runs about 115 heating tubes. It is through these tubes that the smoke, heat, and flames go before going up the stack. These heating tubes are called flues. When they are burning green wood there is a large build up of creosote and ash in the flues. If there is too much of a build up of the creosote in the flues then the water will not be heated adequately. After every two or three round trips on the Stewart River these flues must be cleaned out.

The top gauge on the front of the boiler is the steam pressure gauge. This boat ran on a pressure of 175 lbs. of steam. When the steam pressure reached 191 lbs it blew off through the pressure relief valve.

The Monometer or water gauge works like the modern coffee percolator. When the water level of the boiler is getting low you pull the cable which is connected to the main steam valve of the boiler water pump. Pulling this cable will open a valve allowing the pump to start pumping water into the boiler. There is weight attached to this cable in the engine room allowing you to shut it off when there is enough water in the boiler (point out the cable when you are in the engine room). Because you are not turning on the valve with your own hand you have no idea how fast the pump is working and how fast the boiler is filling up. The weight on the end of the cable, in this copper box, works up and down letting you know how fast the pump is operating. This cable that is fastened to the weight goes back to the engine room and is connected to the exterior end of one of the piston arms on the water pump. This is especially useful if the water level gauge is steamed up or clogged with silt. When the water level gauge is unable to be read these three little taps, called tricots, are used.

Depending on whether steam or water comes out of the spouts, your water level is determined. The top tap is opened first. The bottom tap is very seldom opened. Steam will escape through the spout. This indicates the water level of the boiler inside. If there is a big hot fire in the boiler and the water level is low the boiler could blow up.

The inclinometer is used for the even distribution of freight and wood when loading the boat. A glance at the white arrow and its position to the red button will indicate whether the load is evenly distributed. Too much weight will give the boat steering difficulties.

The movement of this cable up or down will open or close a small opening in the fire box giving the fire forced draft or shutting it off. This is especially needed when burning green wood. Any ashes in the flues are forced up the stack with the force of this draft.

The fire box is about five feet long and is lined with fire brick. Originally the fire box was only one foot deep and had no fire bricking. This was changed when the boiler was converted to oil in 1961 for the last trip. Point out the plug below the fire door where the oil burner went. Also point out the built-up floor. One of the first jobs one had when starting to work on the boats was on the fire box, stocking the fires for four hours on and eight hours off. There were three firemen on the boat.

All of the passengers were confined to the passenger deck. The S.S. Keno could officially accommodate 32 passengers, although it probably carried a lot more at times. The passengers socialized in the observation lounge.

The purser took care of complaints, tickets etc. He acted as mailman to all those people living along the river. This was the only means of outside communication for these people. When the boat is travelling on the river and saw a white flag flying along the shore, they knew this was an indication that they are wanted to stop. Sickness, grocery lists, mail, etc. are some of the reasons for flying this white flag. The purser is on 24 hour duty and therefore he sleeps right in his office.

The staterooms for the passengers are off the dining room area. There are no single staterooms and no second or third class rooms. No running water is in these rooms. There is only a stand for a wash basin and a pitcher. To get to the washrooms that had running water you had to go through the halls that led off the dining area to the deck and back behind the galley at the stern of the ship. The dining tables were set up between these supporting posts. This is where the passengers and officers of the boat ate.

The galley contains two pantries to the right as you enter. Behind the galley are the cooks' quarters. Wood was the main type of fuel used on the galley stove on the Keno, except for the occasional use of coal left at Stewart for the Keno by the bigger boats that had picked it up at the coal mine at Carmacks. There is no hot water reservoir on the stove. The hot water for the galley came from the boiler. The long white tank was used for drinking and for cooling. This saved time and a few extra steps

down to the water storage on the freight deck. The chute outside the galley, on the starboard side, was for the disposal of scraps, garbage, etc.

There is also an icebox outside the galley on the same side. Ice for this box was bought from the ice houses in Dawson and Whitehorse, etc. The ice was cut in the winter and stored in sawdust in insulated buildings in town during the summer. The shelves for the dishes have guards so that the dishes will not fall out when the boat is travelling on the river. The wooden paddle is used for removing baked goods from the oven. There were two cooks, a pantry man, and a mess boy working in the galley. The mess boy was the one who fed the crew, most of which ate down below on the freight deck. The meals prepared by the cooks were first class and were served to the passengers by four waiters.

The term "Texas Deck" and "Stateroom" originated on the Mississippi river boats. All the passenger cabins were named after the 48 states. The biggest and best cabins were on the top deck and were named after Texas, the biggest state at that time. The staterooms on the Texas deck of the S.S. Keno were for the captain and his officers. They each had their own room, and some of them had running water in them.

The steam-powered winch you see down on the fore deck was used when the boat was going through the Five Finger Rapids. The current through the Five Fingers was very fast and the Channel was narrow. These winches were used to slow the boat down when coming down through the rapids and it aided them in getting up through them when going upstream. There were cables on the shore that they would pick up and wrap on the winch and pull themselves through.

This large spot light here was used when travelling at night. They were controlled from the pilot house with cables. One wheel controlled the up and down movement and the other movement from side to side. The light was used for vision and also white flag stops.

The side running lights were in the boxes on the side. The red box is on the port side and the green box is on the starboard side. These are clearance lights for night navigation.

The paddle wheel is 16 feet high and 21 feet across. There are two sets of rudders, manual behind and hydraulic in front of the paddle wheel. The two manual ones are used when going in or out of port and for making sharp turns. They are also used for avoiding obstructions or stopping for wood. They have more influence in turning the boat than the hydraulic ones when the boat is going ahead. The manual rudders have all the force of the water pushing against them as the wheel turns. The hydraulic rudders are used for sharp turns when the vessel is going in reverse because they now have the full force of the water from the reverse turning the wheel.

Originally there were three life boats on the S.S. Keno. Now there are only two. The third one was much smaller than these two now on the boat, and was the captain's gig. This boat hung over the side of the boat at all times, ready for launching at a moment's notice.

In the wheel house point out the manual steering wheel, the hydraulic lever, telegraph, and voice tube (where it should be). Also point out the chair, light switches, stove, and the bench where the wood and rain gear was stored. Many controls are missing and wires are cut. This is mainly because in 1961, when the S.S. Keno came down river on its last trip from Whitehorse to Dawson, they had to take the pilot house off when the boat went under the bridge across the Yukon River at Carmacks. This bridge was built after the boats were taken off the Yukon. They also shortened the front mast and hinged the large smoke stack. They made it under the bridge with only 11 inches clearance.

RIVERBOAT STOPS ALONG YUKON RIVER

DAWSON - WHITEHORSE

Dawson City	Tanana Reef
Swede Creek	Thirty Mile
Bellview Rock	Johnston Bar
Mecham Creek	Lower LeBarge
Log Cabin	Scow Point
Stewart City	Talchini Island
White River	Clutte
Carlise Creek	Whitehorse
Coffee Creek	
Brittania Island	
Burnt Point	
Selwyn Creek	
Three-Way Channel	
Fort Salkirk	
Three Mile	
Steamship Slough	
Hells Gate	
Minto	
Kellyville	
Carmacks	
Lake View	
Little Salmon	
Erik	
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Cape Horn	

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DISTANCES, OVERLAND ROUTE - DAWSON TO WHITEHORSE

<u>Place</u>	<u>Dis. Between Pts.</u>	<u>Distance</u>
Dawson to Hollenbecks	26 miles	26
Hollenbeck's to Strickland Lake	20	46
Strickland Lake to Clear Creek	30	76
Clear Creek to Stewart Crossing	19	95
Stewart Crossing to Crooked Creek (Junction)	23	118
Crooked Creek to Summit	23	141
Summit to Pelly Crossing	21	162
Pelly Crossing to Minto	20	182
Minto to Yukon Crossing	24	206
Yukon Crossing to Carmacks	20	226
Carmacks Forks to Montague	24	250
Montague to Braeburn	24	274
Braeburn to Nordenskiold	22	296
Nordenskiold to Little River	22	318
Little River to Takhini	19	337
Takhini to Whitehorse	23	360

Total Distance = 360 Miles

Time and Distance - Steamers, Whitehorse to Dawson

	<u>Time</u>	<u>Distance</u>	<u>Distance Between Pts.</u>
Whitehorse	36-40 hrs.	460 miles	miles
Lake LeBarge	33 hrs	401 miles	59 miles
Hootalinqua	30 hrs	370 miles	31 miles
Big Salmon	27 hrs.	335 miles	35 miles
Carmacks	20 hrs.	256 miles	77 miles
Yukon Crossing	17 hrs	224 miles	34 miles
Salkirk	12 hrs.	178 miles	46 miles
Coffee Creek	9 hrs.	130 miles	48 miles
Stewart	5 hrs.	70 miles	60 miles
Ogilvie to Dawson	3 hrs.	48 miles	22 miles

In the wheel house point out the manual steering wheel, the hydraulic lever, telegraph, and voice tube (where it should be). Also point out the chair, light switches, stove, and the bench where the wood and rain gear was stored. Many controls are missing and wires are cut. This is mainly because in 1961, when the S.S. Keno came down river on its last trip from Whitehorse to Dawson, they had to take the pilot house off when the boat went under the bridge across the Yukon River at Carmacks. This bridge was built after the boats were taken off the Yukon. They also shortened the front mast and hinged the large smoke stack. They made it under the bridge with only 11 inches clearance.

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STEAMERS

Tana	30' X 170'	190 tons freight
Crimmin		
La France		
Prospector		
The Oil City		
Lightning		
Gudahy		
Rock Island		
Louise		
Sarah		
Quick		
Luella		
Light		
Monarch		
Columbian		
Vidette		
Selkirk		
Dawson		
Casca		
Nasutlin		
Aksala		
Whitehorse		
Keno		
Yukon		
Klondike		
Happy Hooligan (barge Gloomy Gus)		
Tana		
Susie		
Ella		

RIVER

DAWSON DAILY NEWS, OCTOBER 16, 1917

Steamer Vidette sunk in Lake Le Barge. It was being towed to lower Le Barge by the Steamer Canadian to be used as a bunkhouse by the repair crews.

The Steamer Vidette had gone on many stampedes on the waters of the White, Pelly, Porcupine, Stewart, and other streams. This was a rebuilt Vidette. The first Vidette was originally the Mae West. The Mae West had been seized by the Government for violation of custom duties in the early days and was sold by auction. The R.N.W.M.P. bought her and changed her name to Vidette. She was used to supply the police stations and for conveying blue ticket delegates, penitentiary candidates, and the insane enroute to the outside. Later she was sold to the Side Stream Navigation Co., headed by Sid Barrington, until she was boneyarded in 1915.

Hooligan on a BarThe Amazon Troupe is GroundedSteamer to Relief

Captain Williams of the Steamer "Canadian", which arrived last night from Whitehorse reports the Steamer "Happy Hooligan" and her barge, "Gloomy Gus", and the numerous flossies en route for the Fairbanks resorts, are stranded on the bar at the mouth of the Thirty Mile River. Frank Simons, the manager of the outfit, sent to La Barge for the Steamer "Olive May" for relief.

The "Olive May" came down the river and was standing by the "Happy" when the "Canadian" passed. The maidens on the "Happy" were a happless looking lot. Some were sitting on the craft with their heads on their arms, looking pensively at the passing steamer.

The delay of the "Happy Hooligan" no doubt is costing the Simons outfit much money. Captain Williams says the outfit should be able to get down river without much trouble after passing Thirty Mile. However, the high water has covered many shallows which are difficult to avoid.

Happy Hooligan Reaches Dawson - June 14, "Dawson Daily News"Happy Hooligan Show To-Nite at the auditorium - all star vaudville

Dawson Daily News

June 14, 1905

Item - The New Steamer

Novelty Engine Construction - King of Lightness

Speaks of the Steamer "Tanana", Captain Gray the master - Steamer "Tanana" used on the Tanana River - 30 foot beam, 170 feet long, draws 28 inches of water. Carried 190 tons of freight. Does not have the heavy cast steam pipes - used hydraulic compressed steel pipe instead -- a big saving in weight. Pins of the engine cranks were hollowed out to conserve weight. It had phosphor bronze axels, also bored hollow.

Boiler was such that it could burn wet or dry fuel. There is a special provision for getting rid of the mud in the boiler legs, reducing to a minimum the amount of hot water to be lost in operation.

Dawson Daily News

May 17, 1905

July 8, 1904 - S.S. Canadian brings new barge "Klondike" marking a new epoch in Yukon River shipping - brought 150 tons on barge - has a capacity of 250 tons. The S.S. Canadian carries 250 tons - extra time involved was 10 hours.

Normal time from Whitehorse to Dawson is 35 - 50 hours - extra time is required because of the Thirty Mile River - narrow places the steamer has to drift around the bends and hold back with utmost caution.

In order to fit the "Canadian" for drifting around bends, monkey rudders were attached to the steamer - they are behind the paddle wheel and operate simultaneously with the other rudders which are before the wheel. They exert more influence being in the wake of the wheel.

All White Pass steamers are operated with Turner patent steam steering gear, invention of Captain Turner, master of the Canadian.

This trip the "Canadian" brought 150 tons on barge, 200 tons on boat. This is the first time a barge was used.

The Steamers "Victoria" and "Bonanza" are to be fitted with barges.

SHIPS

Quite a fleet of independent boats operating on the Tanana in the spring of 1905. Some of the steamers are: the "Florence", the "Independence", the "Minnneapolis", and "Dusty Diamond".

Big company ships on Tanana include the "Isabella", "Koyukuk", "Tanana", and "Margaret".

Others are gasoline launch - "Ana" - 100 ton capacity. Steamer "Ella" owner, Henry Bratnober - launch "Happy Hooligan".

Big independent boats on Tanana River are: the "Monarch", the "Light", the "Tyrell", the "Oil City", the "Crimmin", the "Emma", the "Nott", and the "Mary Clough".

The Steamer "Schwatka", bought in Seattle, 1904, by Captain Peabody and C. W. Thebo for Dawson - Tanana run was at Dutch Harbor in June, 1905.

STERNWHEELERS AT WHITEHORSE, YUKON

Further to Perry-Dunphy telephone conversation of June 6, 1967, the following is additional information on the above steamers, obtained from Mr. Dunphy's notes:

<u>Vessel</u>	<u>Hull Length</u>	<u>Hull Width</u>	<u>Overall Length</u>	<u>Weight</u>
Keno	157 ft.	32 ft.		
Casca	180 ft.	36.5 ft.	202 ft.	540 T
Whitehorse	177 ft.	36.5 ft.	199.5 ft.	540 T
Klondike	210 ft.	41.9 ft.	237 ft.	711 T

Draft of "Casca" and "Whitehorse" - Three feet to Three and a half feet. This draft was taken from scum marks on the hull.

Registered tonnage of the "Casca" is 1033.32 T. Registered tonnage of the "Klondike" is 1020.49 T. The above tonnage figures are carved into the timber near the access hatch to the forecandle.

The calculated displacement weight of the "Casca" is 540 T., and of the "Klondike", 711 T. The "Whitehorse" is approximately the same weight as the "Casca".

In the Y.O.O.P. booklet, "McQuestion's Diary", Jack McQuestion states that there was a small steamer on the Yukon River named the "Yukon", on the river in 1869. The way it is mentioned leaves the impression that it was on the lower river around Fort Yukon.

The following was copied from Volume One, No. One issue of the "Klondyke Nugget" printed in Seattle and dated June 16, 1898. The "Klondyke Nugget" office was on the corner of Fourth Avenue and Queen Street (Second Street). It may have been in the same building as the Ladue Sawmill office.

The Steamer "Bellingham" arrived in Dawson, today June 13, with 32 sacks of mail and 18 passengers, after coming through Miles Canyon and shooting the Whitehorse Rapids. (The first steamer to do this - and maybe the only one). The steamer was owned by Dignam, Stinger & Willock of Whatcom, Washington. It was built in Bellingham Bay for Yukon Trade. It arrived in Dawson June 13, 1898, at 4:30 p.m.

The steamer was freighted to Skagway in a knocked-down condition on the deck of the "Bark." Theobald sledged over the White Pass and assembled it on Lake Bennett. It cost \$2,000 to sled it over the White Pass. It is a stern wheeler 35' long, 8' wide and draws 18" of water fully loaded.

It was powered by a Roberts boiler and two Marine engines.

Thomas McMullen, Assistant Manager, Bank of Commerce; C. J. K. Nourse of the Bank of Commerce staff; W. H. McKay, Barrister of Ottawa; H. H. Caneron of Large Lumber Co.; W. C. Edwards Ltd. in Ottawa; Tom Heney & Wm. Helman of Ottawa; Charles & M. Eschwege of London, England, representative for French and English syndicates; James McNamee; John Tierney, C. Lathrop, J. P. McNamee, J. Wilkeson Sr., J. Wildeson Jr., Tom McNamee, Jack Ross, Ed Ross, L. Dignam, made up the 18 passengers.

PADDLE STEAMERS

The experimental period for Paddle Steamers was 1775 and 1807 on the Hudson River. The first one in Europe was the Paddle Steamer "Comet." of about 28 tons, built to the order of Henry Bell in 1912, and operated on the river Clyde in Scotland. Robert Fulton achieved practical success with the Paddle Steamer "Clermont" on the Hudson.

The first paddle wheeler to cross the Atlantic was a side wheeler, the Paddle Steamer "Savannah" built of wood at Corlears Hook, New York. It was launched August 22, 1818. She had staterooms with 32 berths. She was a three mast sail ship with an auxiliary steam power of 90 indicated horsepower, a one cylinder engine of 40" diameter and a 5' stroke. The boiler was a low pressure type said to be less than one pound per square inch of riveted copper. The engine and boilers took up much of the space in the hold between the main mast and the foremast. The smoke stack was fitted at the top with an elbow so that the sparks could be directed away from the sails.

The paddle wheels (One on each side) were $15\frac{1}{2}$ feet in outer diameter and were collapsible; they could be folded up and stored on deck when not in use. This took about twenty minutes to do. The paddles were 54 inches long and 32 inches wide. The wheel turned at 16 r.p.m. and could propel the boat under steam power at four knots.

The "Savannah", after many delays, left her home port on the 24th of May, 1819, bound for Liverpool, England. She carried no passengers, but had 75 tons of coal and 25 cords of wood. She crossed the Atlantic under sail with the occasional use of the paddles, arriving at Liverpool on the 20th of June. After going to Sweden and Russia she returned to her home port in America, entering the River Savannah on May 30, 1819. She was sold at an auction in 1820 and her engines were removed. It worked as a sailing vessel until November 5, 1821, when it ran shore on Long Island and was wrecked.

She was 320 gross tons, net about 170 tons, length 110 feet, breadth 25.8 ft., depth 14.2, draught 13 feet.

HISTORY & FACTSRe: S. S. Keno

Used mainly on the Stewart River moving ore (silver - lead - concentrates) between the mouth of the Stewart River (Stewart City) on the Yukon River, and Mayo Landing. It made the occasional run to Dawson and Whitehorse.

Paddle wheel turned on the average of 25 r.p.m. Steam pressure was kept at 175 lbs., 176 was blow off pressure. This gave a h.p. rating of the steam engines of 167 each. Bore and stroke was 12" X 54" of each cylinder.

It burned 3/4 of a cord of 4' wood per hour.

It usually took 32 hours to come down stream from Whitehorse and an average of five days to go up stream.

The Keno pushed as many as two barges when hauling freight and silver-lead-zinc concentrates from Mayo to Stewart City on the Yukon.

The barges were:

Keno One - 151.93 Tons, size 124 3/10' X 29 5/10' X 4 7/10', built 1929

Keno Two - same as Keno One

This gave a freight capacity of 303.96 tons and 20 tons on the Keno itself. Total 323.96 Tons.

The last skipper of the S.S. Keno was Billy Goodlad who ran the Keno in 1951.

FLAGS

The S.S. Keno flew three flags while operating on the river. The Royal Mail flag flew at the bow staff; the B.Y.N. Co. flag flew over the pilot house; and the Canadian ensign flew at the stern Jack staff.

There was a fourth Jack staff on some boats so that if they were in foreign waters, the flag of the country they were visiting flew at the bow and the Royal Mail flag was flown on the search light staff.

24. S.S. Keno

This steamship was built in Whitehorse, Yukon in 1922 by the British Yukon Navigation Company. Most of her life was spent on the Stewart River where she hauled silver, lead and zinc ores between Mayo City and Stewart, at the junction of the Yukon and Stewart Rivers. The Keno has a shallow draft (3 feet), and this enabled her to manoeuvre in relatively shallow waters; as a result the Keno was often the first boat into Dawson after spring break-up and the last to leave town before freeze-up in the fall. The Keno was dry docked in 1951. In 1961^{*}, she was once again travelling on the Yukon River and that year made her final voyage. The Keno is now permanently grounded in Dawson City.

* AUG 1960

During the Gold Rush period, steamers like the S.S. Keno were a vital link between the supply ports in the south and the northern cities such as Dawson and Fairbanks. Loaded in Whitehorse, the sternwheelers carried everything from fresh fruit and vegetables to fancy china and delicate crystal. The boats often pushed barges, piled with freight, in front of them.

It was 460 miles by river from Whitehorse to Dawson and the trip took 36 hours to Dawson, three to seven days for the return to Whitehorse. One sternwheeler could consume a cord of wood (a pile 4' X 4' X 8') per hour. To supply these vessels with fuel, wood camps, thirty-two in total, sprang up along the riverbanks between Whitehorse and Dawson.*[At the height of the Gold Rush 250 sternwheelers travelled the Yukon River.] The S.S. Keno is one of the last remnants of that great era in Yukon transportation.

Today the Keno is owned and maintained by Parks Canada.

* ?

HORSE POWER OF A STEAM ENGINEHorse Power (H.P.)

33,000 pound raised one foot in one minute of time.

Piston Speed

The distance in feet travelled by the piston in one minute. It is the product of twice the length of the stroke expressed in feet multiplied by the number of revolutions per minute, (in the case of the paddle wheelers, the number of revolutions of the paddle wheel).

Mean Effective Pressure

M.E.P. - The average pressure acting on the piston through out the stroke minus the back pressure.

Indicated Horse Power

I.H.P. - The horse power as shown on the indicator diagram, is found as follows: The area of the piston in square inches times the M.E.P. times the piston speed divided by 33,000 = I.H.P.

The S.S. Keno has two single cylinder engines, one on either side of the engine room. Each engine has a 12" bore and a 54" stroke.

The horse power constant of a steam engine is found by multiplying the area of the piston in square inches by the speed of the piston in feet per minute and dividing the product by 33,000. This is the horse power the engine would develop with one pound of mean effective steam pressure.

In the case of the S.S. Keno, 12" bore = 113.097 square inches, 54" stroke, 20 R.P.M. = 180 per minute piston travel

Formula

$$\frac{113.097 \times 180}{33,000} = .62 \text{ Horse Power}$$

If the M.E.P. were 150 pound the horse power would be 150 X .62 = 93 H.P.

Horse Power of a Boiler

Boiler horse power is equivalent to the evaporation of 34.5 pounds of water per hour from a temperature of 212 degrees farenheit. This corresponds to 33,479 B.T.U.'s. This is the formula used to get the 9.6 N.H.P. (Nominal Horse Power) mentioned on the sign board at the S.S. Keno.