APPEAL OF DOYON, LIMITED *
* ANCAB RLS 76-2
From Decision of Bureau of *
Land Management * Navigability of Kandik
* and Nation Rivers
No. F-19155-26 *

* * *

VOLUME II

TRANSCRIPT OF PROCEEDINGS

Pages 175 through 351

* * *

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TABLE OF CONTENTS
VOLUME II

Presentation of the Government's Case (continued)

* * *

	EXHIBITS	Page Number
B-16	Aerial photograph with mylar overlay	191
B-17	Aerial photograph with mylar overlay	198
B-18	through B-31 Photos taken at rod stations	216
B-32	Carousel of ninety-five slides of the Nation River	221
B-34	Typed summary of field notes	210

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P R O C E E D I N G S

Volume II

ON THE RECORD

JUDGE LUOMA: Mr. Allen, are you ready to proceed?

MR. ALLEN: WE're ready, Your Honor.

MS. NEVILLE: I'd like to call Jules Tileston.

JULES TILESTON

Being first duly sworn under Oath, testified as follows:

BY MS. NEVILLE:

Q Could you please state your name for the record?

A Jules Vincent Tileston.

Q And what is your educational background?

JUDGE LUOMA: Can we spell the last name first please?

A T-i-l-e-s-t-o-n.

Q And what is your educational background?

A I have an undergraduate degree in biology and geology from Earland College at Richmond and in 1954 did my Masters work at Ft. Collins, Colorado in wildlift management and ecology.

Q What is your present occupation?

A I'm Chief of the Division of Resources, Bureau of Land Management, Colorado--or Alaska State office.

Q How long have you held that position?

A Three years.

Q And how long have you been employed by BLM in Alaska?

A Four years.
Q Could you explain what the primary functions of the Division of Resources is--are?
A Yes, it is an interdisciplinary group which provides policy and overall coordination and guidance directly to the State Director on matters relating to statewide issues. It includes responsibility for mineral patents, mining claim locations on federal lands, oil and gas leases, homesites, occupancy, matters dealing with land conveyances either to the state or private individuals or the regional or native corporations, wildlife management on the public lands that the Bureau's charged with, fisheries, recreation, archeology, cultural. It's basically a staff of twenty-one people, twenty-one professional experts ranging from Mike Brown, who testified yesterday as historian, to a general engineer..
Q Has the Division of Resources, while you have been chief of that Division, had any responsibility in connection with navigability determinations?
A Yes, I have.
Q Could you explain what the Division does with respect--or has done with respect to making navigability determinations?
A Until just very recently within the last several months, the Bureau in Alaska operated with a task force approach that involved field people within the Bureau of Land

Management, in this case, Fairbanks district, who went out and met with the people that were concerned, knew the area, made their recommendations. It came back in then through a task force. The leader of that task force within the Bureau of Land Management was a member of my staff at that point in time. There were representatives from the state and representatives from the Land Use Planning Commission that sat in on those deliberations.

Q Is this task was, was it soley concerned with navigability?

A No, it was not, it was navigability and the determination of any easements that would be reserved in accordance with the secretary's guidelines across native selected lands.

Q Okay, you said that that was the function of the Division of REsouces until recently. Is there any current function that the Division of Resouces has with respect to navigability determinations?

A The Bureau just recently reorganized, and they pulled all of the people working on native claims, and they are now in a separate division. So those members of my staff that were directly responsible for easements or navigability at the time this particular determination was made are now in another division. The issues of navigability, however, as it relates to statewide state selections or homesteads or anything else still rests in my division.

Q In terms of your Division of Resouces advising the State

Director on policy issues like that of navigability, is there anything that your Division is doing say as far as making some type of statewide policy or research into that issue?

A Yes, we are presently engaged in a contract with the University of Alaska to collect historical information related specifically to historic documents on navigability or uses of water bodies in the State of Alaska prior to statehood.

Q Okay, and that was the contract that Mike Brown was testifying about yesterday?

A That's correct.

Q Okay, what did you do before--immediately prior to becoming employed by BLM in 1974?

A I was leader of the Alaska Task Force, the Bureau of Outdoor Recreation charged with the basic responsibility of investigating and recommending to the secretary rivers in the State of Alaska which might qualify for wild and scenic river status.

Q How long did you work for the Bureau of Outdoor Recreation?

A Approximately ten years.

Q And how much of that time was in Alaska?

A Two years.

Q Could you explain what your responsibilities were--what type of work you did with the Bureau of Outdoor Recreation prior to the time that you came to Alaska?

A Yes, I was originally employed by the Bureau of Outdoor Recreation in the Denver Regional Office in 1962. At that time the Department of Interior started national wide studies on wild and scenic rivers. I was responsible for investigating rivers in the Rocky Mountain region. That's roughly twelve states running from Canada to Mexico, down the Rocky Mountains and out onto the plains. Those studies were done by an inter-agency group of state and other federal agencies. It culminated in a series of reports which were used by the Department in terms of legislation nationally to create the national system. At the conclusion of those field studies I transfered to the Washington office where one of my principal duties was to follow up with the Wild and Scenic Rivers Act, was directly responsible in the Department as the leading person who developed the criteria and guidelines for application of wild and scenic rivers nationally. That was an inner agency effort. I was involved with the inclusion of state owned rivers, such as the Alagash (ph) where the Secretary's responsibility is to certify at least the criteria and standards and I was involved in that. I conducted follow-up field investigations in many states both in the west and on the east in connection with studies on wild and scenic rivers both by air and by various types of water craft.

Q Now, I believe you testified that as leader of the Alaska task force, you were evaluating different rivers in Alaska what procedure did you use to determine what rivers in Alaska might possibly be recommended for inclusion in the system?

A We started first with the various--the various listing of rivers which might qualify. There was some testimony, very limited, in the Congressional hearings leading to the creation of the Wild and Scenic Rivers Act, and there was a list of a few rivers. I don't recall the exact number that had been inserted by various people at that time. When we came up in '72, the first thing we did was contact the various federal agencies, the various state agencies, and individuals that we knew had used rivers or were knowledgable about the state as a whole. And that ended up with quite a list of rivers. We then did aero-reconnaissance of essentially the entire state looking at various rivers which had repeatedly been nominated. And then based on that section, we pealed down again on the basis of regional setting, uniqueness, distinctiveness, was there something special, was it already duplicated, and then we conducted on-the-ground field work.

Q Did you personally do field work on these various rivers in Alaska?

A Yes, I did.

Q Can you tell us approximately how many rivers in Alaska you personally evaluated in terms of doing field work?

A May I look at my notes on that, I think I can give you an exact answer. I personally conducted studies on the Yukon, from the mouth of the Fortymile in Canada to Circle. The Fortymile River in its entirety, the Charley River, which is in this area also in its entirety, the Kandik, the Ambler, the Aichilik, and those were rivers for which I did the actual field evaluations on. In addition to those, and since '74 when I tranfered to the Bureau of Land Management, I've been involved in similar investigations on American Creek, the middle fork of the Koyukuk, and a year ago on the Yukon under PET four. I've been on other rivers such as the Kenai, the Delta, the Gulkana.

Q Now, maybe--when you're speaking about these rivers that you just listed, are those rivers that you did on the ground versus aerial fieldwork?

A That's correct, these were all--in other words where I was spending whatever length of time it took to go from a given point to another given point where we were picked up or went onto another river.

Q Were you involved in similar work in doing actual field work on rivers before you came to Alaska when you were working for BOR?

A Yes, I did similar work both in the Rocky Mountain region on the west coast and on the east coast.

Q And about how much time did you--how many years were you involved in that type of work?

A A little more than ten professionally.

Q In doing on-river evaluations, could you tell us what types of boats you have personally used?

A We've used rafts with and without motors, we've used riverboats, I've been in jet boats, canoes with and without motors, both standard and square-stern, kayak, those are the ones that I think principally have been used.

Q Okay. Okay, you mentioned that you had been on other rivers in Alaska not in connection with your work with BOR, is river running one of your hobbies?

A Yes, it is. I'm president of the Knik Canoers and Kayakers in Anchorage, a membership of probably seventy to eighty families in the general area of Anchorage. And I've continued to keep information in terms of those rivers which are used for recreation throughout the state. We're frequently involved with the contacts from other people who know the club exists who are affiliation with other clubs, and they say what river can I go to, and we try to provide 'em information ourselves or directly refer 'em to other people who know something about it.

Q Okay, while you were working as leader of the Alaska

Task Force for BOR, was your work entirely comprised of river studies?

A No, it was not.

Q Could you explain the other types of things that you did?

A When the Bureau Task Force was set up, the Bureau of OUtdoor Recreation Task Force was set up, we were given two principal charges. The first and primary one was to do the river studies. And in that connection, I was personally responsible for all of the studies, and that included the briefing to the Secretary to make what decisions and what rivers largely are represented on BLM exhibit--I can't tell which one it is, it's the series E map.

MR. ALLEN: Two.

A Two. Most of those rivers were based on work done prior to '72, and I was directly responsible and conducted all of the briefings, the slide talks and this sort of thing, and the writeups and the EIS's that went with it, including responsible to the other agencies. The second duty that I was involved with was a study of a Congressionally mandated national trail studies. And there was specific requirement that the goldrush trails be studied and a report be made to Congress. So that included the Iditarod, the telegraph lines, at that time we were looking back and forth at the goldrush trails out of Haines and across the Chilkoot Pass, so that was my second duty.

Q Were any of these historic trail studies specifically directed towards what we have been referring to as the Yukon-Charley area?

A Yes, they were. Specifically I conducted the study of the so-called Valdez Trail, which was the original military wagon road from Valdez, and it's original intention was to go to Eagle. Gold was discovered in Fairbanks prior to its completion and the road subsequently turned and went to Fairbanks. The particular thing, however, that I was looking at in the area that we're talking about here is the Washington-Alaska military cable telegraph system, and it's called WAMCAT, and there's a series of the original telegraph lines are still in place and the telegraph stations. And they're south of the river and I spent quite of time collecting history on those, secondary history and in many cases conducted an on-the-ground examination or aeral examinations tracing location of those.

Q Are you generally familiar with the provisions of the Native Claims Settlement Act through your work at BLM?

A Yes, I am.

Q Are you familiar with the Doyon selections that are involved in this appeal?

A Yes, I am.

Q Are you personally familiar with the Nation and the Kandik

Rivers?

A Yes, I am.

Q Could you tell us briefly what the basis for your familiarity with each river is and what visits you've made to the area?

A The Kandik I started with was one of the rivers that we first looked at. And that was--that started in mid-June of '72, and that was basically an overflight that we conducted as part of the state-wide survey. I again looked at the Kandik and the Nation in August of '72 prior to doing on-the-ground work and as part of, again, a regional area where we were looking at the Fortymile, the Charley, and several other rivers in the same general vicinity. In early September of '72, I visited both rivers but went down the Kandik in its entirety by canoe. In early May of '73, I overflew the middle and the lower portions of the Kandik itself. In early September of '75, I conducted for personal recreation a moose hunt on the Kandik River. In June of '77, I made overflights of portions of the Kandik and Nation in connection with other field work that I was doing in the area. In late June of this last--this year, '78, I was again in an overflight and on the river in connection with this hearing and again in August of this year both rivers in collecting measurements for this hearing.

Q Can you identify what has been marked as exhibit B-16, which

I believe is the map or whatever on the right of this blackboard?

A Yes, I can. Can you hear me? It is a aerial--it is in two pieces, the top part is a clear piece of mylar with some notations on them which I will come back to. The--and it is overlayed on an aerial--a composite, an uncontrolled mosaic of several mile two (ph) aerial photographs taken by NASA on July 30, 1977. The photograph itself is of the entire Nation River from the Yukon to the U.S. Canadian border. It is approximately a scale of one-half inche to one mile in terms of the river itself. As an uncontrolled mosaic, though, you have--you cannot use it for taking lateral measurements. As a result,I have only shown key land status as it relates specifically to the river itself. The lines are warped. This is the so-called D-2 boundary that was discussed yesterday. It's a solid yellow line. It's Hard Luck--just above Hard Luck Creek. The dash line--

JUDGE LUOMA: Excuse me, before we get into the testimony, is there any objection to my receiving this into evidence?

MS. TAYLOR: Well, I--I'd like to voir dire Mr. Tilesson on how this--you know, I think he's doing what--what I would do in terms of--

JUDGE LUOMA: Well, I don't want to receive a bunch

of testimony about it unless you are satisfied that it's a true and correct depiction of the river and the aerial has properly been--and you're satisfied with the aerial photo of it.

MS. TAYLOR: Perhaps if I asked him to explain the method of photography and--

JUDGE LUOMA: Well, do you need that sort of explanation?

MS. TAYLOR: Well, I'd like him to continue with his explanation of what the dashes and the solid lines are. And then I would like an opportunity, if necessary, to voir dire him further on how it was developed if...

JUDGE LUOMA: Alright, proceed.

A The dash line is the approximate boundary of the selection area that is a problem. The Nation River is here, the mouth is here. In terms of the aerial photograph itself, This (indiscernible, background noise) north, the material is on the south. This is a high altitude, false color, infra-red photography. The Yukon River itself shows as a milky blue, which is characteristic of this type of photograph of a silty stream, which it is. The Nation itself is shown as a dark, clear blue, which is indicative of non-glaciated stream, which is not in flood stage. The--

MS. TAYLOR: Your Honor, could I interrupt and ask Mr. Tileson some questions I have--

JUDGE LUOMA: Yes you may, go ahead.

MS. TAYLOR: --obtain.

BY MS. TAYLOR:

Q Mr. Tileson, when were these photographs taken?

A June 30, 1977.

Q Were you present--

A Excuse me, July 30, 1977.

Q Were you present when they were taken?

A No, I was not.

Q Do you know who took them?

A Yes, I do.

Q During what period of time were they taken?

A I could tell you that information, I couldn't tell you now, when you say what time, they were taken on July 30, 1977. They were taken by NASA.

Q In one flight?

A As far as I know they were, they were taken the same date. Now when you say one flight, is this photograph and that photograph exactly equal, I could not tell.

Q Do you have--do you have any idea how many photographs were taken to form this composite?

A They are overlaping flights, I had a map of the various photographs which show their general location and their number. And what I did was sit down with the photography--our photography section within the Bureau and said I want the best photograph that will give me a complete composite

of the river when you put it together, realizing that when you get out on the edges, the quality of the photograph is not as good. So we selected those sample (ph) of the river.

Q Am I to understand that you're the one who put these photographs together?

A No, I did not.

Q Who did that?

A They were done professionally by the people who customarily do this in the Bureau for land surveying purposes.

Q Okay, do you know how many overflights, as you term them, were made of this area?

A I do not.

Q Okay, are you an expert in aerial photography?

A I am not.

Q Are you an expert in interpreting aerial photographs?

A I have used aerial photographs, now I don't--

Q In your--in your work, but your--

A Yes.

Q Do you have any technical background in aerial photographs?

A I've gone to several of the courses conducted at a time when I worked both for the Bureau and for the Outdoor--BLM and the Bureau of Outdoor Recreation on how to use aerial photographs.

Q Okay, but you weren't present when these were taken?

A No, it was done by the military. NASSA was the one that did it--they fly--these particular sets of photographs are used statewide. All of the federal agencies and the state submit to NASSA each year an areas of the state that they'd like flown because the military uses for training missions their reconaissance aircraft. I think this was RB-71, I'm not even sure on what type, but anyway, it's a high--a high altitude, very similar to the U-2 (ph). This was done by the military at the request in this case of the forest service, they were the ones that ordered it. I'm sure that the state also made requests, and there are other areas that were flown for the state, but I don't know that for a fact. This particular area was flown for the forest service.

Q Okay. Your Honor, I would object to these in the absence of any testimony to show that they're an accurate depiction of what they purport to portray.

JUDGE LUOMA: Mr. Tileston, are you able to give an opinion as to whether or not exhibit B-16 accurately shows the layout of the Nation River?

A I am.

Q What is your opinion?

A It is an accurate representation of the river based on both my aerial reconaissance on the ground reconaissance and looking at the one-inch to the mile USGS official map

of this area.

JUDGE LUOMA: Exhibit B-16 is received in evidence.

BY MS. NEVILLE:

Q Would you explain a little more in detail what the various colors on the photograph mean. You said it was some type of infrared photography, I notice some things show up as pink, purple, dark blue, light blue, could you explain what, if anything, those colors indicate?

A Yes, I can. The milky blue color is water from the Yukon River, is that color because the Yukon is silty at the time of year it was taken. The Nation River shows, as do all of the other small tributaries like Hard Luck, the Tindir, the Ettrain, Jungle, the upper area into Canada, Rock Creek which was referenced yesterday, show as dark blue, translucent blue. The lighter blue area's very bluish white, by contrast down on the Yukon it really showed there that there is a difference. This color is exposed gravel on the river. When you get--as an example, you see the same light color up here that's exposed bedrock on the mountain top.

Q Excuse me, when you say exposed gravel, do you mean totally exposed or with just very shallow water over it or is there a difference in how it would show it?

A It could be both. In some cases it's a minute shading, but you can make the distinction as to whether the water--

whether there's water across it when you use a hand lens or whether it is above land at the time this particular photograph was taken.

Q Okay.

A The pinkish colors are the vegetation itself. It was infrared so it changes the greens to red. It can be used and is frequently used by the native corporations, the State, all of the federal agencies in determining their overlays for vegetation cover. You can use it to make topography. This is the type of photography that is currently used for making many of the maps that subsequently turn into paper copies. I don't think these particular sets were used for that. I think that kind of summarizes the material that is important. You can see, however, there was quite a bit of disucssion yesterday about mining on the Fourth of July Creek. With a hand lens, and I have a hand lens over here on the table, you can see the road that goes--that goes into those mining areas, very visible, quite distinct. You cannot see such small structures as an individual cabin, at least I cannot. And I make no pretention and I've looked--I know that they're on the ground, I've looked at the area where I know them to be. And I cannot see those,but you can see major things like roads.

Q Can you identify exhibit B-17?

A Yes, I can. It is a similar set of photographs as is B-16 with a mylar overlay on it, and again the solid line is the edge of the so-called D-2 boundary. Everything from there down to the Yukon as far as the north side of the river is concerned, north side of the Yukon River is concerned, is in the so-called D-2. The area that we're talking about on the Kandik itself is--or--yes, on the Kandik, is shown by dash lines, which is the native selection. These two lines correspond to the--our exhibit--

MR. ALLEN: B-3.

A --B-3. The area that is penciled in which is shown as DIC appeal. The two rectangular lines dash represent this line and this line. As I say, it was--it is not a controled mosaic and therefore, I could not represent accurately the upstream or up--inland (ph) boundaries across.

JUDGE LUOMA: When you say this line, state for the record as to which of the townships you're talking about, as to each of the two dashed areas?

A The dashed line on exhibit B-17, which is the Kandik River, represents the northwest corner of township eight north, range--just a second, thirty east. The dash line on exhibit B-16 represents the southwest corner --

MR. ALLEN: South what?

A --southeast, thank you, woutheast corner of township eight north, thirty-one. And I--I think that's thirty-one, at least there's a whole series of offsets in this particular area. It's rather difficult on this large scale a map to tell exactly where it's thirty-one.

Q Okay, you've explained some of the markings that you have on these two overlays, could you just briefly explain what the various markings indicate?

A Yes, I can.

Q The types of things you indicated on the overlay?

A Both exhibits have identical or similar markings.

JUDGE LUOMA: Let's proceed with exhibit B-17, first, to see if we can get it received into evidence.

Q Oh, I'm sorry. I'd like to introduce B-17 into evidence?

JUDGE LUOMA: Any objection?

MS. TAYLOR: We'd object on the same basis that we objected to B-16, there's no evidence that it's an accurate depiction of what it purports to portray.

MS. HIGGINS: Your Honor, the State would join in that objection. I have no objection as to either B-16 or B-17 being used for reference purposes during Mr. Tileston's presentation, but we'd object to its received into evidence as an accurate representation of the area.

JUDGE LUOMA: And what do you base your objection on? The same as previously stated?

MS. HIGGINS: The same.

JUDGE LUOMA: And would you ask the same questions again of the witness regarding B-17 as you did of B-16?

MS. TAYLOR: Are you asking--

JUDGE LUOMA: Miss Taylor?

MS. TAYLOR: Yes, yes, Your Honor.

JUDGE LUOMA: Um-hm, alright, I would also ask the same questions. Can you express an opinion as to the accuracy of B-17?

A Yes, I can.

JUDGE LUOMA: And you'd base that on?

A That opinion is based on my own personal knowledge of the area through several years and working in this particular area both on-river and overflights in combination with using the official one-inch to the mile USGS quads, which show the exact river.

JUDGE LUOMA: I think--

MS. TAYLOR: Your Honor, could I ask a question before we go--

JUDGE LUOMA: Yes, you may.

MS. TAYLOR: Mr. Tileston, do you have the USGS maps with you that you used?

A Yes, I do.

MS. TAYLOR: Could we see those?

A Certainly. Would you like to do that now? If--if it's

a question of whether they're--you know, representing it, we've got the maps, I--

JUDGE LUOMA: Alright, off the record.

OFF THE RECORD

ON THE RECORD

JUDGE LUOMA: Miss Taylor, are you still pursuing your objection?

MS. TAYLOR: Yes, I wonder if you would indulge me and let me ask Mr. Tileston a couple more questions about how he--

JUDGE LUOMA: Alright, go ahead.

MS. TAYLOR: --he arrived at this.

BY MS. TAYLOR:

Q Mr. Tileston, the USGS maps that you used for comparison purposes are not of the same scale as these aerial photographs are they?

A They are not.

Q Okay, and--and do the dashed lines on B-17 purport to represent township boundaries?

A That's correct, only--

Q Okay.

A --and only to the extent that those boundaries relate to the river itself. As soon as you move away from the river, the--the elevation differs on this uncontrolled photograph begins to distort. So the difference--in

other words, you could not lay a ruler across the drainage from ridgetop to ridgetop and make an accurate determination off of this photograph.

Q So as far as representations laterally, there's a distortion built into this map. As you said, you can't measure miles across with any accuracy on this map, is that correct?

A As long as you're staying within the river area itself, you have relatively accurate measurements, because it's--the thing distorts its elevation--elevation differences is the thing that distorts it.

Q Alright, yeah. The dashed lines on B-17, is that--is that supposed to indicate more than one township?

A No, just only--literally the corner.

Q Alright.

A It--in otherwords, the township, if--if I could extend it, if this were controlled, the township--well, let's see, this is six miles--let's pull the scale off of the bottom. Okay, two inches equals a mile--or excuse me, one mile of--when measured on this equals two inches on the mile.

Q Okay, but the dashed lines on B-17 are, in fact, an approximation of the boundaries of a township, is that correct?

A Only one corner of the township--

MS. TAYLOR: Only one--it's an approximation of one corner of the township?

A Right, correct.

Q Okay, I have no further questions, but I maintain my objection based on the accuracy of the exhibit.

JUDGE LUOMA: I want to ask one question while we're on that subject, as the dashed line crosses the Kandik River at two points, are those lines at those points accurately shown?

A To the best of my ability they are accurate.

JUDGE LUOMA: Alright, exhibit B-17 is received in evidence.

BY MS. NEVILLE:

Q Could you please explain the types of --other than the township corners, the types of markings you have made on the overlays in both B-16 and B-17?

A First of all, on the bottom of the overlay, and this applies equally to both of them, so if I may just describe both of them without going through the numbers, they are marked identically. On the bottom there is a name of the river, the date the photograph was taken, in both cases it was July 30th, 1977, and a scale. And that's approximately the scale which applies only generally to the river itself. This again, if you tried to measure headwater to headwater across the basin, it is not accurate. In addition to that information which is on both of them, there are a series of circles with a number in each circle on both rivers.

Those numbers and the arrow coming out of the circle represent slides which we'll use later to give an idea of actually what is on the ground. And as the numbers proceed from the mouth, upstream, through the selection area to or near the Canadian border. In addition to the circled numbers, there are a circle with a dot, and it's labeled BLM Rod Station number so and so. Those are the approximate locations on this overlay of places where we took physical measurements on the ground, which again, are represented in slides. There is in addition to that a circle with two diamonds blocked in which represent stations for which the US Geological Survey took actual flow measurements at different times, and they will testify on that. That, in substance, is identical on both rivers. In addition on the overlay, I have place major place names such as Tindir Creek, Ettrain Creek, Jungle Creek, which have been referred to. I have this morning added Rock Creek, since it was brought up yesterday. It is approximately here on exhibit B-16. These two photographs if matched properly, are actually cut apart, I had to cut 'em apart in order to do, they actually fit together. They way they're here is not quite correct, they're slightly distorted, but if you'd lay them out flat, they'd actually match. I think that the Canandian boundary, U.S. and Canada drawn (ph) boundary again is approximately located,

and I must stress these are literally approximate locations, they are not accurate survey type locations. You can see, as I said earlier, major improvements such as roads. We've only got one or two that are on this particular set of photographs, they're south of the Yukon.

Q Okay, using exhibit B-16 and B-17 for reference, I'm wondering if you could show us, --you've listed a series of trips to the area that you have taken. If you could show us where you went and tell us for each of those trips what was the purpose of the trip and give us an indication on the map the area of--of the rivers that you visited?

MS. TAYLOR: Your HOnor, I'd object, since Mr. Tileston--it's my understanding that he used the U.S. government survey maps and marked the locations on those maps where he made the slides on his trips down these rivers, and it would seem to me that he should--if he's going to use a reference, use those maps, which were the ones that he actually used when he made the trips rather than a photograph which is admittedly out of scale, does not get accurate survey type measurements on the ground.

A May I comment just a minute?

JUDGE LUOMA: Just a moment, Miss Neville.

Q The map she is referring to will not show--those are maps that I believe Mr. Tileston used on the last two trips he has made to the river preparing for this hearing. He used them making his field notes. As I understand his

former testimony, he has made several trips. I thought that this would be an easier way for him to show approximately which portions of the river he has visited at various times, because the GS quads we'd have to probably put up several of them in order to give an indication. We don't have another--we don't have a map which showes the full area. The only thing we have except the series E map, which it's too small. I have no objection to him using the quads, I just think it's going to get much more confusing that way to give us kind of an overview of what his experience on these rivers has been.

JUDGE LUOMA: Mr. Tileston, are you able to use exhibits B-16 and B-17 to help you in answering the question that was posed?

A Yes, I can.

JUDGE LUOMA: Alright, the objection's overruled. If you remember the question, go ahead and answer it.

Q (By Neville) Okay, perhaps before you begin, we should put up the other map, B-3, I believe it is. This is the other--this is the only map we have that shows the entire area we're talking about. It's a little small, but you can use this for reference to it, if you like. Now, if you'd explain to us what locations approximately, what portions of the river you have visited and while you're

doing that, if you could tell us what the purpose of each trip you've made was?

A Starting with exhibit B-16, which is the Nation River, I first was in this area on August 24, 1972. I was through and had included in my slides the middle area. We were coming from the Tatonduk, the Nation, the Charley. It was part of an overflight prior to actually conducting the on-the-ground examinations in the next several weeks. We flew the entire river once--or we flew the entire area, so I only--we were not working on the Nation, so the--that one was an aerial flight through this area on August--

Q Could you explain for purposes of the record, where you say through this area, can you reference it to some marking on the overlay or the name of some creek or something that would give us an idea in the record what--

A The general area that we were coming from on August 24th was we were coming from Eagle, and we were going to the Kandik. The general line of flight if you're going into the upper area, as you come through the head-lands and down Hard Luck Creek and angle straight across, on the series--or the 1:250 exhibit B-3, Eagle is here, we were going up here, and we came generally like this and across into the headwaters and down. So as far as the

Kandik--or the Nation itself, it is the lower area, Hard Luck Creek vicinity. On September 4, 1972, I was in the process of conducting an on-the-ground survey of the Yukon River between the Fortymile and Circle. And I visited the mouth at that point.

JUDGE LUOMA: The mouth of the Nation?

A The mouth of the Nation River.

JUDGE LUOMA: Alright.

A All--all references I'm trying--I'll try to keep specifically to the Nation. On September 28th I flew the Canadian-U.S. border. That was an overlfight with various Interior officials, the State--the Governor's planning--an officer was with us and Canadian park officials. The purpose of that trip was looking at the U.S.-Canadian border general relationships in terms specifically of recreation use and in coordinating recreation planning in Alaska with counterpart planning in Canada. On June 4, 1977, I was in the Eagle area, I made an overflight of the Tatonduk, which is south of here. And again, coming up through this area in the Hard Luck and the middle areas up to approximately Tindir Creek. These are below the selection areas. On June 20th--22nd of 1978, I conducted an overflight of the entire river in preparation for this hearing. It was in a fixed wing aircraft, and then I spent the rest of that period on the river putting in in the general

vicinity of Jungle Creek and taking out on the 22nd at Hard Luck Creek. At the conclusion of that time, we took the helicopter and flew back up the entire area and then back to Eagle. On August 3, 4, and 5 of this year, I was again in the river area. We worked from the mouth up through the area. I spent several hours on the ground, this was all by helicopter, helicopter access, taking measurements in this area. We also had other--

JUDGE LUOMA: This area, identify this area.

A I'm sorry, this area being the selection area--

JUDGE LUOMA: Alright.

A --on the Nation itself. And then flew on up into the general vicinity here and out. That is a summary of work on the Nation.

Q Okay, could you give us a similar summary relating to the Kandik River and the number--for each trip you've taken, the purpose of each trip and what areas you've visited?

A Yes, I can. On June 16, 1972, we were making an over-flight of the entire area. We came out of the Black River drainage, that's the Black and the Salmon and the Squirrel, which is part of the Porcupine drainage to the north. It's the drainage immediately to the north, came into the Kandik at its headwaters and flew the entire area. That was an overflight, the--

Q By the entire area, do you mean the entire length of the river?

A The entire length of the river, from the Candian border downstream. The purpose of that trip was to conduct an aerial survey and was part of the entire wild river studies that we were doing thoughout that period of time statewide. On August 24th prior to coming into the area, we again came into the general river area, we were--got up as far as the general vicinity of Indian Grave Creek, and at that point, low clouds were obscuring our visibility, we were in a small fixed-wing aircraft. We at that point, which was approximately Indian Grave Creek, came down-stream the entire length of the river low altitude specifically looking for navigation hazards or things that I needed to be aware of when we were in on the river later. On September 6 to 9, 1972, we airlifted by helicopter from the mouth of the Kandik River to a point approximately fifteen miles inside of Canada. We airlifted in two canoes. The purpose of that trip was to come back down the river in its entirety as part of the on-the-ground survey. On May 5, 1973, I was taking my boss from Washington on an overflight of some of the general area. We flew at that time in an Aero Commander up the Yukon to the general vicinity of the mouth, and then up into the middle area of the Kandik River. We went about

as far as the upstream--just above Johnson Gorge. On September 28, 1973, we flew the headwater area as part of the joint international overflight (ph) the U.S. Canadian border on the exchange of recreational information and land use in the general area. On the last week of August and the first week in September, 1975, I proceeded upstream from the mouth to the vicinity of the lower Johnson gorge by canoe with a small motor moose hunting for personal recreation. On June 4, 1975, I flew the the mouth and very lower portion as part of the aerial reconaissance of the general area. On June 20, 1978, I flew the entire area by fixed wing aircraft in preparation for this hearing. And on August 3, 4. and 5, 1978, I worked the entire river area by helicopter. And during that period we camped at a point which is labled approximately circle forty-nine, which is in the selection area, for that entire period. So we spent three days on the ground, our nights, in this particular area. That summarizes my on-the-ground work in this area.

Q Okay, in explaining these overlays, you referred to what you have marked as BLM Rod Stations and you have referred to measurements that BLM personnel made, could you explain first of all which trip these measurements were made?

A They were taken on the August 3, 4, and 5 trip for both

rivers of 1978.

Q Okay, and exactly what measurements were made at each of these rod stations?

A We were looking for areas which might be obstructions to upstream navigation or downstream navigation, boat use. As a result, we were particularly concentrating on areas where the river was shallow. We--at the--at the areas measured, walked out to find the deepest part of the water flowing over those bars. And at that point took a series of measurements both of maximum water depth, in other words, how much water is actually in the deepest part of that channel. We made some estimates as to how big, how long, how wide the gravel bar was, the bottom characteristics, and if there was a marked difference in the bottom characteristics, say as an example, large boulders, we took two--we took a second measurement, and that I am terming effective water in terms of that's all the water you've got really to go up stream in that point if you were using the boat. So in some cases, we took two measurements.

Q Now were all of these rod stations on gravel bars?

A Yes, they were.

Q Were these the only gravel bars that you encountered?

A They were not.

Q How did you decide where you would take one of these

BLM rod measurements?

A We looked first of all was an easy place to land the helicopter. And secondly as to whether we could get more than one measurement at that particular area, as an example, we were able in some cases to land the helicopter and by walking up--down--upstream or downstream a quarter of a mile we could get several measurements in one spot, those are the types of criteria we used.

Q Okay, I'd like to hand you what I have just marked as exhibit B-34. Could you identify that?

A Yes, I can, it is a typed summary of my field notes for rod stations one through eight on the Nation River and rod stations one through two on the Kandik.

Q Are these eight stations on the Nation River and two stations on the Kandik River all of the rod measurements that were made?

A Yes, they are.

Q I'd like to introduce this summary.

MS. TAYLOR: Mr. Tileston, was this summary B-34 prepared from your field notes taken at the time?

A Yes, they were.

MS. TAYLOR: Do you have those field notes?

A Yes, I do.

MS. TAYLOR: Are you going to testify as to the measurements that you took?

A Yes, I will.

MS. TAYLOR: And are you using the field notes to refresh your memory or--

A Yes, I'm using both my field notes and the the photographs because I have photographs of all the measurements that show on those particular things. In other words, I took pictures, that was one of the things. So we actually have slides or prints of every--in other words, when I say effective depth at rod station so and so, I in fact, have a slide which I'll use later showing the water as it measures on that particular rod and you can see the stream bottom.

MS TAYLOR: Did you prepare this summary for the purposes of this hearing?

A Yes, I did.

MS. TAYLOR: Your HOnor, I'd object to the summary, I think that we could go ahead and have Mr. Tileston's testimony. If he needs to refer to his notes, he can refer to his notes.

JUDGE LUOMA: What--what's the purpose of the summary, what will it--how will it help us?

Q I just thought for use of reference in the record rather than going through to find what measurements were taken at each rod station, if they were all on one piece of paper and we had that in the record it might be easier for everybody, but I have no problem with paging through

the transcript.

JUDGE LUOMA: Alright, who --who made the original field notes?

A I did.

JUDGE LUOMA: And where did you make them?

A In the field.

JUDGE LUOMA: You made the summary of the field notes as shown on exhibit B-34 for identification?

A Yes, I did.

JUDGE LUOMA: Is that summary a true and correct and accurate summary made from your field notes?

A As--it's a combination of the field notes and the photographs both.

JUDGE LUOMA: Well, can you tell me that it is a true and correct--

A Yes, I can.

JUDGE LUOMA: --summary?

A Yes, it is.

JUDGE LUOMA: Exhibit B-34 is received into evidence. Now, as we go along, you can call for the field notes anytime you like.

UNIDENTIFIED VOICE: Thank you.

Q Okay, I'm going to hand you a series of photographs which is marked exhibits B-18 through B-31, and I'd like to ask you if these are the photographs you were referring

to that you took at each of the rod stations?

A With one exception that is correct. That exception is B-27 which is a photograph of a geological flow measurement station on the Kandik River. It was taken August 4, not by myself, by another member of the party who was with us.

Q Okay, let's just delete that one. Okay, if we refer to exhibit 18, B-18, B-19, B-20, 21, 22, 23, 24, 25, 26, 28, 29, 30, and 31, those are the photographs you took at each of the rod stations?

A That is correct.

Q And could you explain what--first of all, did you take each of these photographs?

A Yes, I did.

Q Okay, and what do these photographs depict, if you can generalize. If not, you can describe each one.

A There are two types of photographs in the exhibits, one is of an engineer's rod, which clearly shows feet with--with the one, two, three, etc. in red, and then in between are marks in black, which are tenths of feet, and those represent the actual measurements taken at the various rod stations. A second set of photographs as an example, B-20, is a general view of the entire gravel bar showing how that actual relationship is and where the measurement was taken. These again are duplicated in the slides

and perhaps would be helpful in reference later. On the back, in addition to a notation as to which river it is, Kandik or Nation, there is a notation as to where that is, Rod Station one, Rod Station two, which is equivalent to the list that you have. Also added on the back is a notation to the distance by river that station is to the mouth, and the distance by river that that station is to the downstream boundary of the selection or if it's in the selection. Those distances were taken from the USGS quads, not the aerial photographs and are approximate.

Q Would you like to look at them and see if you have any objections--

MS. TAYLOR: Are you offering them?

Q Yes, I'm going to. (Pause).

MS. TAYLOR: Your Honor, I'll object to these until more complete foundation's laid.

JUDGE LUOMA: What more do you want?

MS. TAYLOR: I don't think there's been any--

JUDGE LUOMA: Do you want to question the witness?

BY MS. TAYLOR:

Q Yes, who took these photographs?

A I did.

Q Are they an accurate depiction of what they purport to portray?

A Yes.

Q Who made the notations on the back of the photographs?

A I did.

Q How did you correlate the notations on the back of the photographs to what the--what the photograph shows?

A Field notes.

Q Alright, let's take--well, how about B-25 as an example, okay, it shows a gentleman standing in the river with the measuring rod.

A Um-hm.

Q How did you know what location on the river that particular picture was taken?

A I have a small sketch of the area. Now, this one I do not have a small sketch of the area. I have an accurate location on the USGS one-inch to the mile of where we took it. It was taken by following the river from our--the exact points, and then my notes make reference to an identified number on the map itself.

Q Okay, my--my question is, how did you know from the photograph where you were on the river, I don't see any--I don't see any reference.

A Alright, how do I know on this particular thing again, that came out of a series that are in the slides for which I have complete notations including township,section and range. This is nothing more than a pring of a series of slides.

Q Okay, when you got the slides that you took these prints from, how did you know what that slide--where that particular location was on the river, there's no--there's nothing in the photograph to identify where you were. I'm just--I'm curious.

A Alright, field notes in this context. And we had the one-inch to the mile photographs. That was marked at every point that we landed to take a measurement. So I--and I in turn had notes saying roll photograph one, which is labeled, was from this section to this section. Photograph twenty-five is in this general vicinity, and it's marked again on the maps.

Q Now, then your slides were numbered by roll and by slide?

A My field notes are numbered, the slides come back from the factory just with the one through thirty-eight on it.

Q Okay, how were you able to correlate the slides to your field notes.

A By knowing that that was role one which identified each one when it went in and generally in every case there is something that identifies the --

Q Well, that's what I'm trying to get at, did you keep a record of what--of--of the slide numbers on your camera, as shown on your camera, how did you--

A Yes, I did.

Q Do you have that record?

A Yes, I do.

Q Is that in your field notes?

A It's on the maps.

Q And these are prints from the slides?

A Yes, which we'll show later, which I can again identify.

MS. TAYLOR: Well, Your Honor, I--I have some real problems with these pictures since they--they--there's nothing in the picture to indicate where--that they are. Now, I think that perhaps this can be tied up in a different order maybe starting with the slides, but--but as it is now, they are--you know, there's some testimony that they're accurate depictions of measurements on the river, and I have no quarrel that they are, in fact, pictures of a rod measurement on the--on the river, but I know nothing else about them.

JUDGE LUOMA: Alright, based upon the explanation given by the witness, I'm going to receive them into evidence at this time. If you can later show in cross examination that in fact he didn't know what he was talkin' about we'll find out at that time.

MS. TAYLOR: Okay, fine, thank you.

JUDGE LUOMA: Now does--do you also intend to introduce or offer B-27?

BY MS. NEVILLE:

Q Not at this time, Your Honor.

JUDGE LUOMA: At any time?

Q I don't think so. We have that on a slide, I can, but--

JUDGE LUOMA: The thing I'm getting at is, would the answers on B-27 be the same--the questions that were asked of you, would you answer in the same way as to B-27?

A In terms of location with the exception I did not take that photograph.

JUDGE LUOMA: Alright, as to the authenticity, however, you would answer in the same manner, is that correct?

A Yes.

JUDGE LUOMA: At this time, I'm gonna receive into evidence exhibits B-18 through B-31. Was B-31 the last one?

MR. ALLEN: Yes.

Q Since it has been received into evidence, would you like to tell us what this picture portrays, you stated that you did not take this photograph?

A That is correct, this photograph is on the Kandik River, it is approximately two miles upstream from the mouth, and it is a picture of the two US geological hydrologists, geological survey hydrologists taking the measurements and it shows a very characteristic section of the river in that area.

JUDGE LUOMA: And it's also B-27, is that correct?

Q B-27, yes. Mr. Tileston, can you identify a group of slides which has been marked as exhibit--as exhibit B-32, the box top which the slides were in has been marked with

the exhibit number B-32?

A Yes, I can. And they represent ninety-five slides showing the Nation River from its mouth upstream in the general vicinity of the US-Canadian border.

Q Okay, for the record, Your Honor, we've changed the marking onto the carousel that the slides were in.

JUDGE LUOMA: I--to have it straight then, exhibit B-32 is a carousel of slides containing ninety-five different slides, is that correct?

Q That's right, Your Honor.

JUDGE LUOMA: Now, how are the individual ninety-five slides marked, if any?

Q They are marked at this time--well, maybe you'd better answer that.

A The slides are marked in several ways, one is the number that comes from the factory. The second are notations that I have added to the slides and in all cases I believe there is a number which shows in pencil or ballpoint which corresponds to its position in the carousel.

JUDGE LUOMA: Is there a--is there a sequential numbering?

A Yes, a sequential numbering.

JUDGE LUOMA: And what is the sequential numbering?

A It corresponds to the maps on the overlay and it depicts an upstream progression--

JUDGE LUOMA: Well, can you just tell me what those

numbers are?

Q One through ninety-five.

JUDGE LUOMA: Is the sequential numbering actually physically placed on the slides one through ninety-five?

A Yes.

JUDGE LUOMA: Alright.

Q The one through ninety-five corresponds to the numbers which are on the overlay.

JUDGE LUOMA: I understand. Alright, that now identifies the physical object, you can proceed please.

Q Did you personally take all these photographs?

A No, I did not.

Q Did you take any of them?

A I took most of them.

Q Who took the ones that you did not?

A Other members who were in the party either in June or in August. In most cases I have duplicate slides, but these were better than the ones I had taken for that same area.

Q Are you able to testify from your own personal knowledge as to when and where each of those ninety-five slides was taken?

A Yes, I can.

Q And have you personally been at each location which is depicted by this group of slides?

A Yes, I have although in one or two small instances it was over

the area at low level by helicopter because somebody had already taken the on-the-ground measurements at that point, so that would be the only exception. I have been to every place personally on the ground or in the river.

Q And so you are able to recognize the--what each slide depicts from your personal experience on the river?

A Yes, I can.

Q Your Honor, I would like to use these slides in order to illustrate Mr. Tileston's observations of conditions on the river. I realize that opposing counsel have not seen the slides yet and--but I would like to--to use them to have Mr. Tileston testify about them and to introduce them into evidence.

JUDGE LUOMA: Are you making your offer now?

Q Yes.

JUDGE LUOMA: Any objection?

MS. LUOMA: Mr. Tileston, are all the ninety-five slides taken from your--your most recent trip--

A No.

MS. TAYLOR: --to the rivers? I'm confused, which--which year are these?

A They--I've got at least one slide in this particular group that was taken on August 24, 1972. And I've got comparable ones.

MS. TAYLOR: Can you break them down?

A I will be able to break them down as I describe each one. I'll be able to tell you where it is, either by using the mylar or if you wish the one inch to the mile or my field notes.

MS. TAYLOR: Can you identify which slides that you referenced that were taken when you weren't present in the area on the ground?

A Yes, I can.

MS. TAYLOR: Which ones are those?

A I--I will identify them at the time I show--I couldn't--you know, I could not tell you right now slide sixteen was taken by me on such and such a date unless you want me to go through my notes and do that. I was going to do that as part of the presentation, tell you when, where and if it was not me, who did.

MS. TAYLOR: Well, it's difficult to make an objection without knowing when and where each of the slides was taken and whether it accurately depicts what it purports to.

Q I think Mr. Tileston has testified that he can testify as to each slide, when, where, and what it depicts, Your Honor. I don't know if you want us to do a preview screening or what.

JUDGE LUOMA: No. Let's first find out, Miss Taylor, are you objecting?

MS. TAYLOR: Yes.

JUDGE LUOMA: Alright, I'm going to receive exhibits B-32 into evidence subject to the later testimony of the witness, and if at any time a given slide is shown that--that there is not a proper basis for it, then I will simply give no weight to that particular one.

MS. TAYLOR: That's fine, Your Honor.

JUDGE LUOMA: Now let's decide, what have I actually received into evidence physically, is it the carousel and the slides or is it a box with some slides that will be placed in the box, or is it the whole projector. (Laughter).

Q It is the slides. (Pause). The whole carousel?

JUDGE LUOMA: Well, will I be able to use the carousel and the slides with a similar projector back in Washington?

MR. ALLEN: Can we go off the record for a minute?

JUDGE LUOMA: Off the record.

OFF THE RECORD

ON THE RECORD

Q Okay, using the slides, I'd like you to tell us about your experiences and observations concerning the Nation River. We'll have to set up the slide... (Pause).

JUDGE LUOMA: Miss Taylor, Miss HIggins, are you gonna be able to take whatever notes you think are necessary?

MS. TAYLOR: Yes, no problem.

Q Okay, this is slide number one, could you tell us when and

where this was taken and what it depicts?

A It's slide number one, it was taken August 4, 1978. It depicts the helicopter that we used to make the field examinations of both the Kandik and Nation and to take the measurements that I'll be talking about later. And some of the measurements that Mr. Childers will be talking about when he comes on. The barrels are fuel that was brought in from the helicopter by boat from Eagle. This particular slide was taken about a half a mile downstream from the mouth of the Kandik, and the water body that you're looking at is the Yukon River itself. You're looking upstream. The bluffs are on the south bank of the Yukon River. The Kandik mouth would be behind us, and this is the central supply stop, so we flew in and out of this area several times.

Q Oops, I'm sorry about that. This is slide number two, could you tell us when and where this was taken and what it depicts?

A Yes, I can. Slide number two shows the rafts that we used during our June 20 through 22 field examination this past year, 1978. It shows the field party, the slide was taken by Mr. Allen.

Q And did you--

A The exact location is at our put-in point, which is approximately one-quarter mile downstream from Jungle

Creek, which is above the selection area, and inside the mouth--or inside the U.S. border by about eleven or twelve miles.

Q Slide number three, could you tell us when and where it was taken and what it depicts?

A Slide number three shows the mouth of the Nation River, we are looking upstream. The blue water is the--or the milky blue water is the Yukon River itself and it is flowing toward you. The light blue water along the shoreline is water flowing out of the Nation River. The area that was testified yesterday as to the coal mining is in this general vicinity, between here and here. No one is quite certain where that is, but it's someplace--located in this area. The cabin that was referred to is located behind me out of the photograph and would be on this bank, which is the north bank of the Yukon River.

MS. HIGGINS: What was the date of this picture?

A August 4, I believe. I've got about six or seven slides in this general area that were taken both August 4 and 5, I'd have to look at the carousel to tell you exactly where it was four or five.

MS. HIGGINGS: August '78, is that correct?

A Yes, it is 1978.

Q This is slide number five, could you tell us when and where it was taken and what it depicts?

A It was taken the same date as the preceding slide, it is a closer view of the mouth of the Nation River. This water, and I'm using an electric pencil to show the area--show an area along the Yukon River in the central left side is not connected to the Yukon--or to the Nation itself. The main channel of the Nation River is over here and the water that you are seeing in terms of this is surface flow coming down a channel on the extreme righthand side of the photograph next to the bluffs. The blue water that I referred to earlier is subsurface flow through the gravel. There is no surface flow in the left channel looking upstream. Now technically looking downstream that would be the right channel. So what I'm gonna try and refer to is direction, this is, in fact, the west--west side of the mouth of the Nation River.

Q Okay, when--when you describe that channel in the center lefthand portion of the photograph, and you stated, I believe, that it was not connected, could you explain what you mean?

A Yes, the next slide will show exactly what I'm talking about. This is that same channel.

Q Okay, excuse me, for the record, this is slide number six.

MR. ALLEN: Number five.

Q Number five.

JUDGE LUOMA: Let's correct it to them,--

Q Okay, just a minute.

JUDGE LUOMA: The preceding one was number four, is that correct?

A That is correct, this is slide number five. This slide I took from the helicopter. It is looking upstream and it shows the dry braided channel of the west side of the mouth or the delta of the Nation River. We are looking up the drainage of the Nation River, and we are essentially directly over the Yukon River against the mouth itself. The main channel and all of the surface flow of water is along the righthand side or east bank of the Nation River against the bluff. There is flow water in this to a degree, but it is all coming subsurface through the gravel.

Q This is slide number six, could you tell us when it was taken and where and what it depicts?

A This slide was taken August 5, it is a photograph of the main channel of the Nation River, and the flow of water as it comes out of the east branch coming through the Delta. The main flow of water is through here, this is the principal channel. There is a small braid which has flowing water. You can see again as we saw in the dry channel water that is seeping through the gravel. You can see the general flow of the Yukon River from right to left. There is a small log jam, there are shallow bars depicted across the mouth, there are several bars in this

general area. The area of coal again, this is a closer view, is in this general area, which is the east bank of the Yukon River. And the bluffs immediately--as far as I know, the exact site of that coal is not really known. The coal has sluff--or the banks has sluffed in and the exact location is not known.

Q Slide number seven, could you tell us when and where it was taken and what it depicts?

A This slide was taken August 6. It is again an aerial view from the helicopter. We are at the area approximately one mile or one and a half miles upstream from the mouth, and we are looking at the point which shows on the USGS maps as the principal area of where the braiding begins. The dry gravel or the white channel to the left of the photograph coming down through the center is the area that is dry. It ends up on the west bank that was shown in photograph three, I believe. There is a shallow bar across this point. Extending from the gravel bar on the righthand side or west side of the river, coming across to that channel. There's a general area of shallow water depicted by the light gray color, light blue-gray color a definite difference. The deepest water is along the west bank--excuse me, east bank, below the gravel bar. It is along the west bank above the gravel bar. There is no deep channel at this particular point.

There's also a log jam in this general area which shows what happens during high water.

JUDGE LUOMA: Let me ask this, as you go along from now on, river banks are normally designated as left bank and right bank, now should we not use those two terms for future descriptions?

A I will be happy to, I was--

JUDGE LUOMA: I understand what left bank and right bank is, I guess I'm right anyway. When--when you're looking downstream, it's the right bank that's on your righthand side?

A The only problem that I was running into is when I say the left bank, in reality it's going to be the right bank as you're looking at the photograph, and that was why I was trying to use east and west.

JUDGE LUOMA: Yes, I understood the necessity at that point, but I'm wondering if--

A I can use it all the way through--

JUDGE LUOMA: Well (indiscernible, simultaneous speaking) --use right and left bank.

A Alright.

JUDGE LUOMA: Alright.

Q This is slide number eight, could you tell us when and where it was taken and what it depicts?

A This slide was taken August 5. It is approximately a mile and a half to two miles--well excuse me, this particular

slide is two miles above the mouth of the Nation itself with the Yukon. It depicts another gravel bar showing shallow water running the entire width of the river. A sweeper or a tree with its roots caught on the upstream side coming down, several other trees showing what happens-- or showing higher water level, and a very large log jam in the center, and a small channel of water coming around which does not connect to anything. At this point it is identical to this channel above. It is just holding deep water, but it has no connection to the area itself. Deep water in this case is along the right bank. It proceeds on down, there is no marked deep water channel. You have to come up on this side, which would be the left bank, and then portage, pull, or go upstream. It's this sort of thing that perhaps Melany was talking about yesterday, I do not know. Next.

Q Slide number nine, could you tell us when and where it was taken and what it depicts?

A This is another log jam area. It is in the general vicinity of the--of Geological Survey flow measurement station, which was taken approximately through here. The log jam looks similar to the one we just saw in the preceding picture. You will notice, however, that there is no body of water here. This is, in fact, a different log jam. It's about a forth of a mile upstream from the

last one. There is a shallow bar here across between the log jam and the left bank. There is shallow water from the log jam moving westward towards the right bank, and then you have another bar which progresses from the island from the center of the main channel upstream to a snag hanging out. In the deep water coming down to the gravel, there's again another tree, another tree with the roots upstream. The next slide, which I'm not ready to go to yet, will show the general area at the extreme upper right hand side. It will show in particular the characteristics where you do have deep water along the river bank and some reference to sweepers and things of this nature. May we have the next slide please?

MS. HIGGINS: I don't think--excuse me, I don't think we had a date or an exact location for that?

A August 4, approximately two and a half miles upstream from the mouth.

Q This is slide number ten, could you tell us when and where it was taken and what it depicts?

A Okay, slide number ten is a closer view of the area which was in the upper righthand corner of slide nine. It depicts the characteristic sweeper that was referred to yesterday coming out from the right bank. There are two of them here and here. This is in low water. Under high water, this is probably sticking out again at right angles, but with full--

the water would be running--the primary current would be coming from the righthand side of the photograph, down and directly into this area as far as the main upstream. And going upstream or downstream in low water, this effectively blocks the deepest water, which is along the righthand bank in this particular area. The water depth along the left bank is very shallow and again, there is a complete area of shallowness across the river in its entirety. There is a small channel through the center which shows again by a light blue color. This particular area has probably got less than three inches of water across it, the light area, and I'll reserve on that one. You're looking at a very typically braided section of the area again in the upper righthand corner showing the flood plain. The flood plain runs from this point to this point, and during high water level with heavy rains, it is conceivable that this whole area gets water approximately.

Q Excuse me, did you tell us when this one was taken?

A August 5.

Q Okay, thank you.

A '78.

Q This is slide number eleven, could you tell us when and where it was taken and what it depicts?

A This slide was taken August 5, it represents the area of rod station number one, which is shown in the upper lefthand

corner of the photograph at a bend among--along a series--or above a large area of vegetation in the middle of a gravel bar. You'll notice that a gravel bar proceeds across the entire channel at this point, and at this point extending from that bar. There again is another area of shallowness from--extending across the river at this point, and we're above the braided channel, so there's no dry channel off on the righthand side or west side. The only way that you can get through this area at this water level is here, again here, and then the measurements they took at rod station number one are at this point here. If you can go to the next slide.

Q This is slide twelve, could you explain when and where it was taken and what it depicts?

A This slide was taken August 5, and it is looking downstream across the braided area that the last photograph was taken. The point of the last photograph is at the extreme righthand corner of this photograph and looking directly towards the camera. So it's reversed as the helicopter was landing. And this generally shows the type of landing that we were looking for, there were several areas of shallowness that we could check, and it was an excellent place to land, we were running right at max load, and we had to have a long area to take off. The next slide, please. It was taken August 5.

Q Okay, this is slide number thirteen.

A Slide number thirteen is rod station number one. It shows a BLM employee, the area manager for this area, wading across the bar looking for the deepest water. This gravel bar is one hundred yards--one hundred feet, excuse me, this gravel bar is one hundred feet long, it is twenty to twenty-five feet wide. There is no defined channel, in other words, there was no real place where you had appreciably more water than another one. But we did walk out and we took our measurement at this point because it seemed like there was actually a little bit more water going through here than there was behind us. So our measurement point is out there. Next slide, please?

Q Okay, was this August 5th also?

A Yes, it was. No, excuse me, this one was taken August 4. On the--I had a roll of film malfunction and we took two sets of measurements, so we actually measured this particular bar both August 4 and 5. The photograph in this case was August 4.

Q Okay, thank you. Slide number fourteen, could you tell us when and where it was taken and what it depicts?

A It depicts the deepest water that we could find running across this bar at its deepest point. It depicts the maximum amount of water at this particular elevation, which was low water. It shows that the maximum depth in

this particular--across this bar is one point five feet. There is two feet, that's point five, I'm not sure that that's completely in focus. There is a--the--oops, went by it. That's better, for me, can anybody else see it? There's two feet, nine, eight, seven, six, and point five is approximately the actual water level. The water is climbing up onto the rod as a result of the velocity going downstream. You can see exactly the same phenomena on the boots of the gentleman standing holding the rod. The streambed cobble--or streambed in this case is composed basically of boulders up to twelve inches in size. There was a marked difference between putting the rod down between rocks and how much water you have to float a boat. So the next--may I have the next slide please?

Q This is slide number fifteen?

A Slide fifteen shows the effective depth of water if you were coming upstream through this rod--or through this area by boat, you have six-tenths of a foot. In reality you have slightly less than that because you will notice as an example the water flowing up and over this point, down into that one, up and over rocks, and that you have in viewing across the slide that sort of wave characteristic running randomly across the entire bar. So that coming upstream in this area, if you have any boat that draws more than six inches either to its bottom or to its propeller

or jet unit, you're gonna have to get out and pull it at this water level.

MS, HIGGINS: Excuse me, are we still at rod station one?

A These are all rod station one, that's--

MS. HIGGINS: And where approximately--

A --slides eleven through fifteen.

MS. HIGGINS: Okay.

A They are three and a half miles from the mouth and thirty-one and a half miles upstream--downstream, excuse me, from the downstream boundary of the selection area.

Q Okay, this is slide number sixteen, could you tell us when and where it was taken and what it depicts?

A This slide was taken August 4. It depicts a downstream shot of the same area shown by slides six through ten. The area that I explained where the sweepers were or right--to the lower righthand right. The rod measurement station number one is just out of the photograph and to the right from the helicopter. This is taking up and looking back down through the general area. There are bars here, there's bars there, there are bars here, and more shallow water there. This one has less than two inches of water coming across at that particular point. The main channel is against the bank--or against the bluff which would be the left bank.

Q This is slide seventeen, could you tell us when and where it was taken and what it depicts?

A This slide was taken August 5, it is a half a mile upstream from the last one, or four miles from the mouth and forty-one miles from the selection boundary. It shows, again, selection--or shallow water coming across. There is, however, a deep channel on the left bank. It has sweepers on it, but there is a good flow of water coming along the left bank, which terminates in a large--a very large log jam. Shallow water, another log jam, and then again shallow water. On high water, very high water, you probably have an island here as indicated by the vegetation and a log jam upstream. The next slide please?

Q Okay, slide number eighteen, could you tell us when and where this was taken?

A This is rod station number two, it is eight miles upstream from the mouth and twenty-seven miles downstream from the selection boundary. THis partiuclar bar is two hundred feet long and seventy-five feet wide. It shows the BLM employee, the area manager, wading out as he did in rod station number one looking for the deepest amount of water on this particular bar. The next slide please?

Q Slide number nineteen, could you tell us when and where it was taken?

A This is--this photograph was taken August 4, it depicts

the deepest water that we could find on this partiuclar bar, which is rod station number two. The bottom, as you can see from the photograph is uniform. There are no boulders. We only took one measurement. The effective water depth is approximately nine-tenths of a foot.

Q Slide twenty, is that taken at the same place, at the same time?

A Yes, it was, it is just a closer view of the rod showing the exact measurement. This is the slide that was used to make one of the prints exhibited earlier in evidence and the counterpart slide I forgot to mention it, was also a duplicate of that particular slide.

Q Okay.

A Again, you can see clearly point nine is the maximum water flowing across this bar at this time.

JUDGE LUOMA: I guess we're gonna have to recess for lunch. Why don't we break now. And let's recess until one-thirty.

OFF THE RECORD

ON THE RECORD

MS. NEVILLE: Your Honor, we have a bit of a scheduling problem, we have a witness here from Anchorage who's just arrived in town and is scheduled to leave tonight. And we would like to be able to interrupt Mr. Tileston's testimony and put Mr. Brown on the stand now, if that would be okay.

JUDGE LUOMA: Any objection to that?

MS. TAYLOR: I have no objection.

MS. HIGGINS: I--I don't have any objection to reversing the order of witnesses or interrupting Mr. Tileston, but it does mean that it's going to --probably going to take longer before I can get one of our witnesses on who needs to get back to Anchorage as soon as possible, too. So anyway we can expedite this. The order of the witnesses doesn't make a great deal of difference to the State.

JDUGE LUOMA: Well, is this a real objection or just a comment?

MS. HIGGINS: It's a comment.

JUDGE LUOMA: Alright, let's call Mr. Brown.

MS. NEVILLE: I'd like to call Bill Brown.

WILLIAM E. BROWN,

Being first duly sworn under Oath, testified as follows:

BY MS. NEVILLE:

Q Would you please state your name for the record?

A William E. Brown.

Q And what is your occupation?

A I'm a historian working with the Arctic Environmental Information and Data Center, the University of Alaska in Anchorage.

Q And could you give us a brief description of your duties in that position?

A Presently I'm working mainly with historical and cultural resource and land use matters in connection with contracts for the Northslope Borough. Previously I had association with the navigable waters program.

Q Is that the contract that BLM has with the University to collect information on rivers?

A That's correct.

Q Do you know if in connection with that contract, the University has reviewed the Nation and the Kandik Rivers?

A Yes, we were asked to do a special report on the Nation and Kandik by BLM and a printout of material that had been surveyed earlier under the general contract terms was done and special effort was put into that report.

Q Do you know if all available sources of information were reviewed in compiling this printout on the Kandik and Nation Rivers?

A Probably not every source was reviewed directly by the various researchers, but we were using summaries of materials, and we were using compilations of the sort that Melody Webb Grauman did on--in that report "Yukon Frontiers." I believe that she consulted all available resources and distilled specific references to the Nation and the Kandik in that report.

Q Did the results of the University's review of the information on the Nation and the Kandik yield extensive data on

these rivers?

A No, the--the reason I think there weren't extensive data is simply that a lot of people who didn't do a lot of writing but did a lot of things on the river were there. And the written data is sparce.

Q In your opinion, is Melody Grauman's study a thorough compilation of the information which does exist in the literature on these rivers?

MS. TAYLOR: I object, Your Honor, until we have some specifications as to--I'm--I'm confused to the reference to sources, are we talking about documents, historical sources, there's no foundation for--

Q I believe I said references in the literature.

JUDGE GRAUMAN: You have read her report, I take it?

A That's correct.

JUDGE LUOMA: And with more than just a passing interest in it?

A Yes sir.

JUDGE LUOMA: What--what is--what--what is your interest in it?

A My interest is long, I was Alaska area historian for the National Park Service for two and a half years. During the time that the proposal to --and I was also key man, so to speak, it was a term used to described the chief planner on the Yukon-Charley Rivers area. And as a

historian and as someone directly concerned with the area, I set up the proposal with Melody Webb Grauman and developed this historical research program that she eventually carried out. I was interested substantively because I wanted to know what had gone one, I wanted to know what the historic resources were. And in the last--in recent time, why it has had meaning in the carry-over in my job with AEIDC.

JUDGE LUOMA: I gather you would feel yourself qualified then to pass on the quality of that report or nature of it?

A I would, I've been a historian with the Park Service until the last year for nearly twenty years, and I've been a regional historian. I have judged many products of this sort. It is an excellent piece of work, it has been reviewed by many distinguished historians, Robert DeArmond, and others, in Alaska. It has been considered for publication by Yale University Press, it is a major and excellent historical work.

JUDGE LUOMA: I overrule the objection.

Q I think you've answered the question at this point. Could you give us--I know you just mentioned your work with the National Park Service, could you give us a brief description of your educational and professional background?

A Okay, I have a B.A. from Whittier College, and approximately three years in various institutions at Whittier, at George

Washington, the University of Pennslyvania of postgraduate study, some at graduate level. I have worked since 1957 with the National Park Service in various fields of history. And as I indicated for the period since 1962 except for a one year writting sebatical, I worked as a regional historian in southwest region since 1962 until I came up to Alaska in June of 1975, at which time I became area historian for Alaska for the Park Service and came into the Yukon-Charley. Then I shifted for various reasons to AEIDC, going to work for them in January of this year.

Q Okay, when you referred to being key person for the Yukon Charley, could you explain what you mean by the Yukon-Charley area?

A It's the D-2 proposal. (Pause).

Q I'm showing you what has been marked as exhibit B-2, would you tell me if what you referred to as the Yukon-Charley area is marked on this map?

A Yes, it's item twenty-seven on the map.

Q Thank you. And does that area include portions of both the Nation and the Kandik Rivers?

A Yes, their lower regions.

Q Could you describe what your duties and responsibilities were as the key man for this area?

A There were a number of responsibilities. The major one was to continue to gather resource data about the area, to

spend time in the area, do field work, develop understandings of what the boating and recreational and--and preservation and historic resource and on and on, wildlife, resources of the area were. It was a--a program during the period June, 1975, until November of '77, a little more than--well, about two and a half years. It was a program of rather intensive field work, also working with people in the communities, the city of Eagle, Eagle Village, Circle, Central and so on, to try to learn from them understandings about the country.

Q In connection with your work on the Yukon-Charley area, were there any studies or field work or evaluations that were done which specifically concerned either the Nation or the Kandik Rivers?

A Yes, there were a number of specific studies done. There was a--there were--there were flyovers and things of that sort, but then in summer of 1976 the two people who worked with me, for me, on the Yukon-Charley proposal team, Bob Howe and Rick Caulfield took a trip from the--by canoe using a six-horse motor. They went up the Kandik from the mouth to above Johnson's Gorge and returned. During that same year, I took a trip with Rick Caulfield, again with my partner on the team, we hiked from the mouth of the Nation up to above the junction of Hard Luck Creek, something like seven or eight river miles from the mouth

up to the border of the D-2 proposal as it was mapped at that time. I've landed at the mouth in the straight-of-way near the mouth of the Kandik during a development site survey. I've had personal experience aside from my duties recently this summer at a fish camp and lining up the Kandik. I've had winter experience in the upper Kandik. The purpose of these studies and--and my continued personal interest in the area was to, again, determine the values of these streams and how they fit into an overall Park Land concept.

Q Could you clarify a little bit what--what your purpose was in--in doing field work on--on each of these rivers, what do you mean when you say where they fit in in a total Park Concept?

A Well--

Q What types of things were you looking for?

A Among other things, the--the Yukon -Charley, as the name implies, includes within its boundaries, the Charley basin. The Charley basin is a very special kind of a river basin with a number of quite fragil values, peregrine nesting, it is by all hands, declared a wilderness or wilderness study caliber area with great scientific values. One of the things that as --as planners looking at a future that we were concerned about was that the Charley would tend to be, because of its natural

beauty and so on would tend to be overrun by many people who would want to be there. And there are all kinds of problems about care and capacity and this sort of thing that planners have to think about. One of the things that we wanted to find out was whether the Nation and the Kandik Rivers offered an alternative experience for potential visitors. Say, for example, in the midst of a very critical nesting period with the Endangered Species Act in operation and so on there had to be some kind of restriction on uses in the Charley, would , for example, under those situations--would the Nation and the Kandik be pressure valved, so to speak, for visit or use, so that people would have a chance to do something interesting there, even if they couldn't go into certain sections of the Charley.

Q Thank you. Okay, you stated that in August of '76, you personally took a hike along the Nation River. Could you tell us about that trip and perhaps show us on the photograph, B-16 or exhibit B-3, the areas you--you went to?

A We came down from Eagle in a riverboat with a man who's licensed to take commercial, you know, passengers down. We landed on the Yukon at--at about a half a mile down below--downriver from the mouth of the Nation at a point called Bluff Cabin, where we had previously camped the winter before. Because from Bluff cabin there is a trail that cuts across the flats and intersects the Nation River

about a mile up from its mouth. The mouth of the Nation is hard to get through, and the riverman did not want to go into that area. So we packpacked on the trapper's trail through bog and flats over to the Nation. We camped that night--we went up two or three miles. The next day we saw one person who traps on the river coming up the river with some personal supplies for his cabin, which is about three and a half miles up from the mouth. And his name is Dave Evans. He saw us and came over to us. He had a six horse kicker on his canoe, he had to drag at points to get over to us, and was poling. He had some gear that he was bringing up to his cabin. We talked with him, went on and camped a few miles further up. The next day left our gear and hiked up to Hard Luck Creek, went up Hard Luck Creek about a mile, came back, went on up the Nation just a half mile or so further beyond Hard Luck Creek. One of the pary, Rick Caulfield, crossed the river, waded the river, and went over to a cabin that Christopher Nelson had used as a trapping cabin many years before. We walked on back cutting across using, in the summer, what was a glazed winter trapline, but it was--even though it was tough through the--through the flats and so on, it was easier than going along the river, because wading the river was rather difficult. The river was full of drift piles, and in places it narrows down

and is quite swift and it's bad crossing with packs above drift piles, because if you get swept off your feet, why you can drown. So that's kind of it. We hiked up beyond Hard Luck Creek and hiked back.

Q How many times did you cross the river?

A Let's see--

Q If you remember.

A At least twice each way.

Q Did you look for shallow places, gravel bars, to cross?

A Right, right.

Q And was it fairly easy to cross at those places at that time when you were there?

A Yeah, except for maybe a shoot that might be just a few feet across. The--basically the river either--it's constricted, and--and will have a fairly deep flow, or it's wide with--with gravel bars maybe--you know, instead of the river being thirty feet wide in a deep pool situation where it's constricted between--by bank, might be real wide, a hundred, a hundred and fifty feet. In those places, basically, it's a gravel bar.

Q And that's where it's easy to cross?

A Right.

Q I think you mentioned that you had camped someplace in the area the winter before, is that in connection with your Park Service job?

A Yes, we took a dog team down from Eagle on a three day trip, stopping at Seventymile, Montauk Bluff, and finally staying at Bluff Cabin, the same place we landed on this hiking trip I mentioned, for a couple of nights there and back.

Q Now, in--in connection with your job at the Park Service, you've also interviewed residents and collected other information on the Nation River?

A That's correct. We--we had a number of studies on that. One of them was done by my partner, Rick Caulfield, dealing with subsistence. He spent a winter in Eagle living halfway between the city of Eagle and Eagle Village, and spent most of his time that winter with the people in the village, the Han-Athabascan Indian Village of Eagle, and interviewed them at length about their current and historical uses of the area, including the Nation and the Kandik.

Q Based on the studies and evaluations that the Park Service did on the Nation River, what conclusions did you draw as to the potential Park use of the Nation River?

A The Nation is smaller than the Kandik by some, and we concluded as a result of both the Kandik and the Nation studies that they were tricky rivers, they fluctuated very greatly with high water, low water, high water, low water. They have many places where there are sweepers largely

they--there are fires that have swept through that country and because of the high water, you've got a situation where you have tremendous erosion, changing of channel. You have a lot of cut banks that produce the sweepers, and--and high water takes these and piles 'em in drift piles. It's--it's my way of thinking, and I've done a lot of river running both here and elsewhere, I think they are not easy streams. People who have been on them declare them to be very difficult in a small canoe. For instances Dave Evans feels the Nation is a very difficult stream. We didn't look upon them then as--as very--very successful pressure relievers for proposed use of the Charley.

Q And you say those were your conclusions about both rivers?

A Yes.

Q Okay, could you tell us about the evaluation of the Kandik River, now, what field work was involved there?

A Well, the--the significant field work on the Kandik, there--there-- one of 'em I was not directly involved in, though the two people that were reported to me, Rick Caulfield and Bob Howe, and they did a trip, again, in the summer of '76 from the mouth up above Johnson's Gorge. And that was about a ten day--eight or ten day trip. They used a six horsepower kicker, they were--they were dumped in a shoot and lost a good part of their gear. Bob Howe nearly

downed, they were swept against a drift pile, and broke their motor, they repaired it, went on up, came back, they portaged a number of the shallows and rapids. They--they--it was a very difficult trip.

Q Do you know exactly where they ran into this trouble where they dumped the canoe and had all the damage? Could you--

A That rapid is a little bit above Threemile. Threemile Creek comes in, and there's a big rapid just above Threemile Creek, and it was at--you know, three miles up from the mouth, and it was at that point that they got into this situation where their motor was not powerful enough to--to get 'em through this shoot, and the bow of the canoe began to turn, and that's when they ran into trouble.

Q Thank you.

A You--you asked me about other trips, the--the other one which I did basically as a personal matter, I went up to my son's and his partner's fish camp on the Yukon this summer, just a month and a half ago. And I went up to Threemile with a couple of friends, lining up that area, and I had--I reported on this and took notes on it because it was a contribution I could make on my own time to my work on the navigable waters project. And I noted five or six rapids on the way up to Threemile. We were in empty canoes, we were in water that was said to be by Fred, the man who lives at the mouth and traps on the Kandik,

average summer water. We dragged a number of times, it was, again, difficult water. And we had empty canoes, so there was really no problem. But we had to drag.

Q Now, when was this trip taken, you said last summer, do you--do you remember more precisely?

A It was in--we were up there from mid-July to late July, and during the king run.

Q Now your son lives in the area?

A Yeah.

Q What does he do there?

A Well, he fishes in the summer and he traps in the winter.

Q In what area does he trap?

A In the area of the upper Kandik and upper Nation, that area.

Q Okay, going back to your trip this summer, what portion of the river did you cover on this canoe trip in June--July?

A On the Kandik?

Q Yes.

A We entered at the mouth, we went up that straight-away, about a mile up the straight-away there's a heavy rapid, a very difficult rapid. And then a series. And we went on basically lining, paddling across pools, getting to the next bar, lining and on and on until we got up to Threemile. And then we went into the--the alternate channel

at Threemile, left the canoe there, and hiked back to a cabin that's near there and then came back.

Q When you refer to lining a canoe, we--we have heard this term before, could you explain exactly what that involves, how you line a canoe?

A There were--there were two techniques used on this particular trip, one was hand lining, and basically you have about a hundred foot length of line, one end is attached to the bow of the canoe, and the other end is attached to the stern of the canoe. And by way of minipulation of the length of these lines, the stern line being the longest because you're moving up at the bow end, you can keep the canoe--if the current is coming this way, you can keep the canoe just rightly pressured for steerage way by the current coming this way. You're standing here with a line going this way, and this way, and you can walk and pull a canoe up. By adjusting the lines, you can make the canoe go out if you have rocks or something like that, so you can guide the canoe up a small stream this way. The other technique is to use a dog, and one of the people I went up with--the only person in the area now who still uses dogs on small streams, though a number have used them on the Yukon, you have the dog in harness at a point on that line that is equivalent to where the man will be if you were walking, and then the man in the

canoe is able to guide it using the motive power of the dog and the--and the opposing power of the current by shortening or lengthening the line in the stern.

Q Is hand lining a canoe difficult or is it fairly easy if you--if you have like your situation where you had a basically empty canoe?

A Oh it's kind of fun, it's--it's not that hard. If you have a lot of gear--this same stream was lined by one of the persons I was with and by another that went with, his partner, the fall before. And that was very difficult because they were trying to haul some gear. At that point, in a shallow stream like that, it's very difficult because there's a lot of portage, there's a lot of dragging.

Q Okay, when--when you went on this trip last July, up the Kandik, you stated that you--you traveled to the Kandik from Eagle up the Yukon?

A I stated an island in the Yukon where we had a fish camp, about three miles upstream from the mouth of the--of the Kandik.

Q So--so you weren't coming from Eagle on that trip?

A Well, I did come from Eagle--

Q You did, okay.

A --we stopped at the fish camp island, and some days later, why we--

Q Did you, on your way up from Eagle, pass the Nation River?

A Yes.
Q Could you tell us what your observations were as you traveled past the Nation River?
A Well, there had been high water just a few days evidentally before we got there. And there was a--a tremendous pile of drift at the mouth of the Nation, fifteen, twenty feet high, maybe even higher in places. It--it was--it looked from the middle of the Yukon like the mouth was practically closed off, the whole spit in front of the mouth of the Nation was clogged.
Q Okay, you've stated that you son traps in this area, I take it that your knowledge of this area is not based on your Park Service experience alone, is that correct?
A That's right. The trip this past summer was a trip to spend some time with my son in his fish camp, and last Christmas I spent two weeks with him at a site on the upper Kandik going along with him on the trap lines and this sort of thing.
Q Do you know many of the people or any of the people besides your son who trap along the Nation and the Kandik Rivers now, currently?
A Yeah, there aren't that many of 'em, there's basically one family unit that lives near the mouth, at the mouth in the summer, a little bit up on the Nation in the winter. There's another person based on another creek that intersects

up into an upper reach of the Nation. There's one person again at or near the mouth depending on the season of Kandik. And another crew team of two that is up higher on the Kandik quit a bit above Johnson's Gorge. Those are the only people that I know of that are trapping. That's very sparce country and, you know, you don't have great throngs of people. Basically you have two permanent based trappers, one at the mouth of the Kandik and one at the mouth of the Nation.

Q Do these trappers have cabins or camps at various places along the rivers?

A They have a--the pattern is to have a base camp, and then--and then line camps along the way, either old cabins that have been there for a long time--because trapping has been going on there since 1870's or '80's, and there are old cabins and there have been flurries of trapping when numbers of people were there kind of like it is now. Somebody down toward the mouth, somebody in the upper reaches, and that's it, you know, the kind of dividing it up. So from the base camp, you might have a line that would go up a side creek, and over a ridge, and come down a side creek. You might have a line camp up at the end of that--you know, as you get ready to cross over a ridge, you might have a cabin up there, and you stay there overnight, and then come back. Get back to your base camp,

and you might have another loop goin' out this way with another line camp. You might run along the Yukon and have a base camp, and maybe have a line camp here and a line camp up there, and maybe tents, maybe repaired old cabins, whatever.

Q Do you know how people who are trapping up there currently supply themselves duirng the winter, how they bring their supplies up?

A The people who are more or less permanent get their stuff from Eagle, and I'm talking about the two people at the mouth, and their trapping cabins are three, four miles up the streams. They get their stuff down usually with a partner, maybe two or three canoes, bring their stuff down and cache it near the mouth, and then they make a number of runs with a light load up to their--to their cabin, it's three or four miles up the river.

Q This is a light load in a canoe?

A That's right. The people up further, the only team now that's working--that I know of that's working that far up except maybe for a crossover onto a line cabin, the--that group I happen to know fairly well, and they haul their stuff up--not being able to make repeat trips with light loads, they hauled about three hundred pounds each in their canoes up to an area somewhat above Johnson's Gorge, and they told me personally they would never do that

again. They've changed their whole trapping situation so that they do not have to haul heavy staples and things like that up, they're not using canoes to get up there anymore.

Q How do they take their supplies up?

A They--they--they've sort of turned nomadic, they take only a very limited amount that they either take up in a tobaggon or they pack up with dogs when it's snowing, you know, when they've got snow and ice.

Q There was some testimony yesterday or maybe it was an inference I drew from the testimony as to using canoes to bring furs back out after the trapping season was over, do you know how the trappers bring their furs out?

A Well, I can talk about people that I know. The way it happened last year, was there were two times when furs were brought out. One of 'em was just before Christmas because people wanted to get into Eagle, they trapped for four weeks or something like that, and they wanted to get into Eagle and maybe get some special stuff for Christmas or something like that, so they went in by dog team from their cabin. In the spring, they went in again, Most people try and wrap up the trapping before the--the trapping season might be over in terms of, you know, Fish and Game regulations because pelts begin to go down in quality. And so it's maybe March or so when people--March or April when people--early May at the latest. Usually

they try to get out with their furs by--before breakup so they can get into town and then get rid of their furs and get back out into the country minus their furs before breakup, because breakup's a pretty active time, too.

Q Do you know approximately when breakup normally occurs on these two rivers?

A It's--it's been pretty steady--well, the important thing is when breakup occurs on the Yukon, because that's the artery for long distance travel, and that's been in May, May 5 to May 20 over a long period of time, as I recall for that area. And the smaller streams break up--they tend to break up a little sooner.

Q I believe yesterday that there was testimony that the trapping season was basically from November until March, would you agree with that?

A That sounds about right. It sounds about right, because I'm not talking about laws now, I'm talking about when people trap, because November--late November and getting in toward--you know, the break point is around April 1st, as I recall, because I think at that point, things warm up and furs tend to go down in quality. Also people have used their trap lines, and that's a pretty late time in year to start trying to shift trap lines and set up new lines, and you know, there's a diminishing returns effort then.

Q Do you know how the trappers in the area market their furs?

A Most of the people that live out on the river, and I think probably also a lot of people that live in Eagle and Eagle Village that--that do trapping. I think they sell most of their stuff to people in Eagle who act as middlemen and send 'em out to the big auction houses. So they-- I don't think anybody along the river wants to be bothered too much with making the direct arrangments with the auctioneer houses like in Seattle or in Montreal or wherever they are. I think they--they turn 'em over to a couple of people who have given 'em a fair shake over the years, and these people give them cash, and then those people-- you know, they give 'em cash that allowed them a small commission for their trouble.

Q These fur auction houses, are there--is that--is that a continuous thing or is there a certain time of the year that these fur auctions occur, do you know?

A Spring and early summer, I think. I'm not certain about that.

Q Okay, do you know of any instance where a trapper has transported their furs from the season downriver by canoe or by boat?

A No, I personally do not know.

Q Would you think that that would be a--a likely occurrence?

A NO, I don't think so because I think that--I think there's some anxiety to get things into the auction houses so that they get auctioned. You know, it's to the advantage of whoever is handling the stuff in Eagle I think to have it a little early than after breakup.

Q If--if a person wanted to bring his furs down by river, when--when would--based on your knowledge of these rivers, would that be possible? I mean obviously not before breakup, but...?

A Well, again, dealing with the Nation and Kandik, I don't know what it would be like someplace else coming down the Yukon, but after breakup, there is a series of--breakup isn't a single event, it is a long event, a segment of the river breaks, and you've got a big flow of ice for two days. And then--then you'll have almost open, and then another segment of the river up past Dawson will break, and you'll have two or three more days, and so breakup goes on for ten, twelve days with lots of ice. And it is dangerous to try and come up river with all that. So you're talking about, you know, the time that it takes, say to line up. It takes six or eight days to line up. You're talking about after June 1, maybe, before you get into Eagle if you tried to use breakup and water transportage or mode of getting furs into Eagle.

Q And if the trapping season for the most part is over in

March, would it be likely for someone to wait until June to bring out their furs?

A No,I--the one--one thing, there's also a problem with storage. There are a lot of rodents around--around cabins, and it's hard to have a lot of furs kept in good condition as things begin to get kind of mushy and wet, and you've got a lot of rodents that will eat on these furs and ruin 'em. So I mean, the thing to do is get 'em out. Once you've got 'em, you know, stretched and dried and treated and ready to ship out, to get 'em out.

Q And that would most typically be by dogsled then?

A In my knowledge, that's how they do it.

Q Thank you. I think that's all I have, thank you.

JUDGE LUOMA: Miss Taylor?

BY MS TAYLOR:

Q Thank you. Mr. Brown, where does your son live?

A Well, he's moving about (indiscernible). He has lived up in the vicinity of Indian Grave Creek, and during the summer on whatever island is a good island near eddies where he can fish.

Q How many miles up the--which river is--are you talking about? He lives on the Kandik?

A On the Kandik.

Q Okay, how many miles up the Kandik is Indian Grave Creek?

A I can show you, I don't know the exact mileage, I think it's

about sixty--sixty or seventy. Indian Grave is right here.

Q Okay.

A He had a camp (indiscernible) Kandik right there.

Q Does he have a cabin at Indian Grave Creek.

A There is a cabin there that has been repaired (ph).

Q Is it an old cabin?

A Yeah.

Q Alright, and where's his fish camp?

Maybe you'd better stand by the map for a few minutes while we place these things.

A It's--here's the mouth of the Kandik, and the fish camp was here on the Yukon.

Q Alright, am I to understand then that he traps in the winter on the Kandik and what's the approximate area that he traps in?

A Well, I would--I would say that it's this area right along in here.

Q Okay, can you hazard a guess as to the square miles that he might--might be involved in his trapping?

A Well, it'd be somewhere between maybe a hundred and fifty and two hundred square miles, you know, in terms of just a gross area. Obviously--

Q If--to get some idea of--it's a large area, a very large area that one would trap in, is it not?

A Yes.
Q And why is that?
A Because it's a sparce country.
Q Okay, I think you can sit back down for awhile.
A There's a whole business about, you know, if you concentrate in a real small area, why it's gonna be trapped out, so you have kind of a--a large area, and you don't trap it out.
Q In other words, you need a large area so you don't trap out the--
A That's right.
Q --the resources. Does you son bring his furs down by dogsled?
A That's what he did.
Q Okay,does he follow the river when he does that?
A Partly the river--the river is--there's overflow and other things on the river, so the river, benchlands and so on wherever there's a--kind of a trail that people have used, people will go in the flats--
Q Um-hm.
A --to cut off and also to avoid overflow.
Q Um-hm.
A And then coming down the mouth of the Kandik, as you can tell, is way downriver from the mouth of the Nation, and there's a cutoff using a tributary stream of the Nation, and people break off from the--from the Kandik in the

vicinity of Johnson's Gorge and then cut across and hit the tributary and come out on the lower Nation, it saves a lot of miles.

Q Is that Rock Creek?

A Yes.

Q Okay, taking last year as an example, when--when did your son sell his furs, or bring his furs down?

A Two times, one was just before Christmas and the other time was in March.

Q Okay, so he'd be an example of what you described as a typical pattern?

A Yeah, I don't know if you can--if you can really say that, because I don't know if there are enough people up there now, and I don't know how that is in terms of how things were maybe at a different historical era, but it's typical now.

Q As far as--as far he's concerned, it's certainly--in other words, you have actual knowledge of what his activities--

A That's true, and they're similar to those of others that are living down on the river and trapping.

Q Alright, now, when he brings his furs down in December, what does he do after he sells them?

A Well--

Q Does he stay in Eagle?

A Oh no, he went back up.

Q Alright--
A I mean, he came down and lived with us for a little while.
Q Does he dogsled back up to his cabin?
A Yeah.
Q Alright, what about in March, what would his activities be after he brings his furs down?
A Maybe pick up a few supplies and quick trip into town, buy a new rifle, and then get back in time to get back upstream before breakup, so that he can use his dogs.
Q Okay, so then again, he'd go back up again to the cabin--
A Then he might not go up to the cabin.
Q Alright, what--
A He might just go down the Yukon. But he wants to get away from down and have his dogs with him.
Q And what does he do in the summer?
A Basically fish.
Q At the fish camp near the mouth, as I understand it?
A Yeah, that's--that's one place, wherever there are eddies that happened to be a place that--
Q When does he go back to his cabin to start trapping again the next year?
A Well, there's a little--I don't know what they're gonna do this year, I know what they did last year. They've kind of given up on trying to use the cabins except in a very casual way. They're --they're gonna kind of roam

around, they're not gonna trap very much this year. So I really don't know what the schedule is this year, I know what the schedule was last year, and that was that they got stuff up there in September. And did some repair work on the cabin, got their traps ready, and lay out their lines, and basically it's--it's a time of preparation.

Q I see, how did he get up in September?

A That--he took the canoes, lined them up, and that was the time when they decided they weren't gonna do that anymore.

Q Alright. The people that you mentioned--well, let's clarify this first of all, the--the--when you talked about trappers on the river, and your knowledge of trappers, were you talking about present day trapping use, not historical trapping use?

A The patterns are very similar, from what I can gather from the historical record and the way line camps are--are--are spread out at given distances, you know, ten, twelve miles, which is a good day, if you're working traps and so on and so forth. It's--I think there is quite a bit of similarity between what is done now and what was done. I know many of the same trails were being used for that.

Q Okay, but--but your testimony about trapping use today was based on your knowlege of present day activities in the area?

A Okay, my--my talking about what's happening today, yes.

There--there are a lot of other things enter my mind, the subsistence study, relations of people who used the river many years ago, that's in my mind, but I'm talking about the guys now.

Q Alright, these people who are trapping in the area today, how long have they been there, would you--would you say?

A I think the--the earliest of the people in that area,still in that area now, about 1966. Two other people that I know have association with the Charley and--I mean the Kandik and the Nation are five, six years, I think they've been in the area.

Q Um-hm, are these--

A That have come from outside.

Q Okay, are these generally people who are seeking an alternate lifestyle?

A Generally speaking, yes.

Q Alright, is--is your son, for example, employed?

A He traps, and fishes.

Q Okay, is that how he supports himself, is the question?

A Basically, yeah.

Q And is that fairly typical of the pattern of use today?

A That's--that's typical.

Q Okay, and--

A There may be, you know, some periodic cash employment like working on a fire crew or--or some special problem of

having to get a rifle or something and going and getting a cash job for a few weeks to--but I mean basically, yes.

Q Okay, would you say that this pattern of use is a fairly recent phenomena, and i.e. since the '60's?

A Yes, I believe that it's a recent phenomena in that area. It's kind of a continuign phenomena, I--I find it very difficult to say it's something brand new, it's--it's a continuing phenomena. I think people that were there in the '30's, I've talked to Elmer Nelson who trapped out of Big Delta, and he had the same--did the same thing in the '30's and '40's.

Q Okay, is it--is it fair to say that since the '60's, there has been an influx of people seeking this lifestyle by choice?

A Yes.

Q I mean not hordes of people obviously, the numbers are few, but they've chosen to come into the area and pursue this type of lifestyle. You mentioned dogs used to line a canoe up a stream, did you say that dogs are also used on the Yukon with canoes?

A Yeah.

Q And that --is their use on the Yukon more prevalent than onthe Kandik or the Nation?

A That is correct. It's easier, it's a bigger river, it's not--

Q Okay.
A --it's not as difficult for the dogs to line and use their heads as much.
Q Alright, the Yukon's obviously a--I think what we'd all agree is a navigable river.
A Right.
Q So--so the use of dogs is not something that's just confined to a small river or a river that has difficulties?
A No. It's just a way of saving--saving effort, if you don't use a motor, and some of these people don't, it's part of the choice that you talk about, the dogs are.
Q Getting back to your work with the ARctic Environmental Information and Data Center, which I'll try to call AEIDC, if I can keep the initials straight. When did--who's that contract with?
A The navigable waters contract?
Q Yes, um-hm.
A It's with BLM.
Q And--and what are the dates of that contract?
A Let's see, I think the thing was--something like October, '77 to--to December of this year, I believe.
Q Alright, now as I understand it, in the course of the contract, AEIDC was to examine historical materials?
A That's correct. Historical and other, I mean, there were a whole batch of things, physcial data about streams and

a number of other things.

Q Did or does AEIDC do any filed studies on these streams as part of that contract?

A There is a--as I recall, I'm not an expert on that contract, so I'm gonna have to dredge some things on the contract, but as I recall there is a--there's a proviso in there that should there be lack of documentary and archival data and so on and so forth in certain streams that might be questioned and might be more difficult to resolve in terms of navigability, then field investigation might be necessary. But it was like the--the ultimate result, the idea was to try and--and establish historical records and susceptibilities and so on and so forth through documentary sources.

Q Okay, that was its primary focus is to examine and computerize all the available documentary sources?

A That's correct.

Q Alright, but admittedly the written data is very sparce on the Kandik and the Nation?

A This is true.

Q Alright. Now before you were involved in--in the AEIDC work, I understood you to say you were a historian for the Park Service?

A That's correct.

Q Now were your duties at the Park Service primarily involved with D-2 Lands?

A I would say that about thirty percent--I wore two hats, I was Alaska historian for the Park Service, one-half. I was key man for Yukon-Charley, other half.

Q Um-hm.

A As it turned out, that dividied about sixty-forty, and about a third of this forty percent when I was acting as a historian was dealing with existing areas, and about two-thirds was dealing with historical matters and resource studies and so on, dealing with D-2 proposals.

Q Okay, let's put this on your activities then as key man for Yukon-Charley, as you put it. What time period was this involved?

A June of '75 until November 2 of '77.

Q Okay, now I understood you to say that you were making certain investigations of the--of the Kandik and the Nation as part of your--as part of this job as key man for Yukon-Charley, is that--

A That's right.

Q --that right, okay. How far up the river did your studies extend?

A In--in both cases they extended by way of on-ground experience to above the boundaries of the D-2 area, that means above Johnson's Gorge of the Kandik,that's about twenty river miles, I believe, and it means above Hard Luck Creek on the Nation, which is something in the

neighborhood of eight river miles, I believe, from the mouth.

Q Okay. I wonder if you could go over to exhibit B-3, which is taped up here, and--and show us what the boundary is of--of these D-2 lands.

A Okay. Okay, here's the path of the Nation. Hard Luck Creek comes in here and my personal acquaintance with the stream on the ground, the Nation ends there. On the Kandik it runs just inside the boundary until at a point in Johnson's Gorge where the boundary cuts across, that's the end line right there of our experience. Now, I did not take that long trip I talk about with Caulfield and Howe.

Q Right.

A They took that as part of my team.

Q Right. Now on--on exhibit B-3, the D-2 lands are outlined in red, is that correct, and they're--and they're delineated on the map so we can all tell where they are. Okay, you can sit back down. Alright, what are these D-2 lands, what's their land status, what does that mean?

A They're lands that were selected for study for potential four systems designation by Congress as a result of the Alaska Native Claims Settlement Act, the Parks, Refuges, Forests, Wild and Scenic Rivers.

Q Okay, isn't it then these D-2 lands that you were primarily interested in studying?

A That's correct. We were interested also in--in the general area because we had in the near vicinity of the D-2 designated lands, we had areas called areas of environmental concern. The reason we had these areas is quite obvious on a map, because coming in from Canada we have two streams that debouch into the Yukon and flow partly through the D-2 area. But they originate outside that area. And when we--when we called areas of environmental or ecological concern neighboring, we--we chose those areas where we had this kind of--of break in eco systems or in streams so that we would hopefully develop modes of property management and so on with other agencies at a later time to--to make sure that the best condition of the stream say within the D-2 Land, we'd get that rather than something that was, you know, left out.

Q Okay, now the lands on--that are shown on B-3 above the red boundary of the D-2 Lands are lands withdrawn for selection by Doyon Limited, is that correct?

A Yes.

Q Now, could those lands that have been withdrawn for selection be included in a--in a wilderness system?

A That's a very tricky question, not because you're being tricky, but because there are so many potentials that could--could follow Congressional action. Depending on

whether the land is--and again, I'm not an expert, but I'll give an essay, depending on whether the land is conveyed to Doyon. You know, if it's not conveyed to Doyon, it could revert to D-1 status and be studied for wilderness, I don't know.

Q Alright, let's--let's get it at a point in time in say 1975, '76, which is the time when--when Doyon's--this particular selection application is being acted on. Is it correct to say that--that the lands within the withdrawal area for Doyon are subject to Doyon's selected--selection but they might not be selected?

A That's as I understand it, because I believe there is over-selection in that area.

Q Okay, and then your--your jurisdiction over these lands as wilderness areas would have to await selection or non-selection by the regional corporation?

A At that time, there was no thought of jurisdiction over the--over the area.

Q Okay, you were con--you were confining yourself to the--to the--what we call the D-2 area then?

A That's correct.

Q Alright, the lands above the D-2 area are all potential private land?

A That's correct, as I understand it.

Q They could potentially be conveyed to Doyon?

A Right.
Q Does your son, for example, own any land up the Kandik River?
A No, he has been what has been termed on a casual use basis, moving through the country. Not really permanently located.
Q If someone were to establish a permanent residence up the Kandik River on lands that were conveyed to Doyon, he would then be a trespasser, is that true?
A That's how I understand it.
Q Okay, did you--as key man on the Yukon-Charley area, did you have any involvement with the recommendations for easements along the Kandik or the Nation Rivers?
A I had a very indirect involvement. I--i recall that a number of easements came down the Kandik and the Nation. They stopped at the D-2 boundary, these were proposed easement or corridor for transportation purposes.
Q Okay, but--but that wasn't part of your official duties to--
A It was--it was--I was--I was concerned because it was an implication that how come you stopped at the boundary, if you're gonna have an easement along the river, it's probably gonna end up eventually at the Yukon, so I was concerned, and I contacted various officials both at Doyon and BLM and expressed concern. And it was--I was asked as key man

officially to comment on these proposed easements and I expressed those concerns to the two agencies that were most involved. And that was more or less the end of it. I--we simply commented.

Q Um-hm, did you feel at that time that the Kandik or the Nation were suitable for recreation use?

A In a qualified sense. I believe that this particular set--there were--there's been a whole series of--of easement recommendations and the ones I commented on, I think, were either very late '76 or very early '77. And this post dated our--our intensive field work on Nation and Kandik. And at that point we come to a conclusion that these streams were--were marginal in terms of recreational use because of certain difficulties that we'd experienced.

Q Was that your personal conclusion or was that an official conclusion of the Parks Department?

A It was--it was a sequence. On the Kandik, for example, I received very specific recommendations from two qualified people who worked on my team. I converted those recommendations into a revised planning concept for the area. This revised planning concept was stuck in the file for future consideration when--when master planning comes along, so I cannot say that the Parks Service has taken an adamant and explicit stand. I can say that a revised planning concept has been accepted for future

consideration when we get down to a more detailed master planning.

Q How would you characterize your son's use of the river?

A I don't know if I see the point of that question, I don't know.

Q Well, would you characterize it as recreational use or something else?

A Oh, I--I'd characterize it as casual use in a subsistence kind of activity.

Q Does that differ in your mind from recreasional use?

A Yes, yes, I--I really believe so.

Q How so?

A Recreational use is--at the core of the difference, I would say that recreational use is--is non-functional in an economic in a food in a living sense. I don't say it's non-functional, you know, in other value systems, but the--the subsistence style is by contrast extremely functional, it's--it's food.

Q Okay, I have no further questions, thank you.

JUDGE LUOMA: Miss HIggins?

BY MS. HIGGINS:

Q One more question on AEIDC contract with BLM, is the focus of that contract Nation and Kandik Rivers?

A Oh, no, no.

Q I just wanted to clarify that for--

A It was navigable waters throughout the State of Alaska.

Q Okay, can you pinpoint the date of your August hike along the Nation River more precisely than you have?

A I brought copies of my trip report with me and if I can refer to that I can give you a precise date. I think it was in August or possibly July. Okay, this is the hike on the Nation. Okay, we traveled from Eagle to Bluff cabin near the mouth of the Nation on August 22, and--

Q Is this 1976?

A Yeah. And we got back to the Nation mouth on August--on late afternoon August 26.

Q Where exactly did you hike, was it along the creek bed or a trail on the upland?

A It was--it was a combination of--I don't know if using the map makes much difference, but it--it does down at the very mouth. This--you can see at the mouth of the Nation is--is--it's got three or four separate channels coming out, and they're shallow and kind of messed up, so we went down here to where Bluff cabin is in the last little bit of timber, and used a trapper trail that goes right along this kind of interface between a little bench and a the flats, right at that point. And around this point, and we came out right about in here. And from there, what what we did was--it was--we hiked along the--the gravel-- bars and then where we could--where we could find a trail

across the bogs, why--you know, where it was glazed and the trappers use it in the winter. If--if it meant saving a lot of bushwacking right along the river because it was a bank and we couldn't get on a bar, you know, then we crossed the bogs, then we crossed the river, and we'd use the bars, and then we'd cross on the flats cutting off curves and so on and so forth, like that. It was--it was just a lot of little cross country things.

Q Was it easy hiking on the trappers trails?

A Very difficult, extremely difficult. The trapper's trails are fine in the winter because they're frozen, but in the summer they're bogging, they're are all kinds of tussocks and with a packy, why you just--it's no fun. And a lot of insects.

Q Have you been up the Nation River at any other time, either hiking or--or in a boat? That isn't clear in my mind. Was that August '76 hike along the banks of the Nation up to Hard Luck Creek your--

A That--that--yeah, that hike is the only direct personal experience I have on the ground. I have overflown the Nation numerous times, up to Canada and back and so on on orientation trips, but that's my sole experience on the ground.

Q Okay, I have a few more questions.

JUDGE LUOMA: Anything else Miss Neville?

MS. HIGGINGS: Oh, I'm sorry, I did have a few more.

JUDGE LUOMA: Oh, I'm sorry, I thought you said...

Q (By Ms. Higgins). You mentioned that the water level in the Kandik and Nation fluctuate greatly between high and low water, would you say that the water level then typically fluctuates during summer?

A Yeah, that's what I gathered from--from this fellow Fred, who has lived there for four or five years, and--and through the summer.

Q Okay.

A Evidentally what happens is there's a low snow pack in the Ogilvies, and when the snow pack goes out, the stream doesn't have a good base flow, and so when you have the--the thunder storms and so on and so forth during the summer, you'll have local downpours, and the water will go way up. Fred pointed out to us a place that about a week or ten days before we were there--we were in what he called average water, which was water low enough that we were dragging a good part of the time. He pointed out that some of the sloughs that were dry except for puddles, we went by were flowing five feet high ten days before, because of a torrent from--from a local thunderstorm up someplace in the drainage. And, of course, this has problems if somebody's there, because you've got all this drift and all the sweepers that are rippin' loose, and it's-it's bad

news.

Q You don't think it would be unusual then to--to find low water on August 5 and perhaps water that's two feet higher two days later?

A Or ten feet higher, no, that is not an unusual pattern. There is a trend during the summer toward lower water if you were to average day by day. But you can have high water late if you have a thunder storm and downpour in the right part of the drainage.

Q You also mentioned the presence of lots of sweepers on these rivers because of fires, what fires? WE haven't heard mention of fires and so--

A There have been a lot of burns in that area, and I don't--I don't know why--

Q Do you have the dates?

A Pardon?

Q Do you know the dates of any of--of the fires?

A There have been--there have been fires in the Kandik and Nation area every year that I have been associated with the area, that's four summers now. They-sometimes they're local, and sometimes they're fairly extensive. It's an area that gets a lot of dry thunder storms when lightening starts, and there's just a lot of fire up there, I--you know, burns. And this--this--

Q Do the fires tend to contribute to a number of sweepers?

A Yeah, because I think what they do is destablize the growth in the forest and so on and so forth, and that combined with a lot of heavy cutting by high rushing water produces erosion and that's when you rip out your roots. And, you know, dead trees don't hold soil as well as live trees.

Q You also mentioned that in passing the mouth of the Nation on the way to the Kandik during your--your mid-July, 1978 trip that you saw driftwood which appeared to be obstructing the mouth of the Nation. My question is, did you notice on the way back to Eagle, if you went that way, whether that obstruction was still there several days later?

A Yeah, there were drift piles. I don't think that the--- that the mouth of the Nation was just so clogged that you couldn't tell where it was, because we looked at it with glasses.

Q Wouldn't that sort of drift wood jam be a temporary obstruction?

A It would probably get swept away with--with--during breakup. So yeah, at the mouth particularly, because of the action of breakup with the big ice flows knocking it away, it--it would change, anyway, I don't know how much.

Q Can you pinpoint the date of your mid-July, 1978 trip up the Kandik?

A Yeah, I know that, it's--it was July 21.

Q Okay. You also stated your opinion that the Kandik and Nation Rivers are not easy streams, do you happen to know the International difficulty rating of those rivers?

A Yeah--no, I don't know the Internation difficulty of those rivers. I would--I've never heard a real expert pronounce on that. I do know that there have been surveys of the streams by BOR and there have been designations of difficulty against that scale. On the basis of a very amateur understanding of those things, but talking to Bob Howe who does know them and was my partner, I'm assuming that in places we're dealing with four or five. But probably four. The danger difficulty is not as directly related to the actual white water problem, as it is to a number of other things, including sweepers and timber piles, and I don't know how the ratings work in those situations.

Q Okay, assuming someone wanted to get down from the headwaters area of either the Kandik or the Nation after breakup with furs or some other type of freight, would that person go by land or more likely go on--

A I think there is on the record indication of natives in the earlier fur trading period coming down in skin boats, so there is record statement of people coming that way.

Q In your opinion, it would be much more feasible to go by river than by land given the difficulty of hiking over those trapper trails?

A If I were caught that late in the season, I would try and float as much as I could.

Q Okay.

A I would--I would line very much, I know that.

Q And I believe you've already clarified in response to Miss Taylor's questions, that you don't have any personal knowledge of trapping pre-1959? Your statements about trapping were limited to--to current trapping practices?

A No, there--I--I have done historical research, so I do not have direct knowledge, no, anything besides my own experience, it is not in a vacume.

Q Do you know if these spring and summer fur actions were held in the '20's, '30's, '50's, early '60's?

A No, that I don't know. People brought down furs and whenever they brought 'em in, and I'm assuming that they exited the country in the early historic period before air travel took over, I'm assuming they exited the country from centers like Eagle or Ft. Yukon by--well--yeah, Ft. Yukon, too, by steamboat, so that'd be after breakup.

Q Okay. Did your son line a boat all the way up to Indian Creek last September--

A Yes.

Q --line the boat with supplies?

A Yes. There's--with that kind of a load--well, if --where there might be deep pools in between riffles and rapids and

so on, you might paddle across, but basically all forward progress--

Q You did get a boat loaded with supplies all the way up to Indian Creek in what, early September?

A I don't know the exact time, it was--it was probably--they were there by--by early September, I think. I think they spent mostly August. It took 'em about six weeks or five weeks, it was a tough trip. It was lots of portaging.

Q That's all I have.

JUDGE LUOMA: Miss Neville?

BY MS. NEVILLE:

Q Yes, I have a few questions. Miss Taylor asked you to characterize your son's use of the rivers as recreations, or I think your testimony was casual subsistence. When you were talking about use of the river, were you referring to using the area for a whole set of activities, or were you referring to boating use on the river?

A You mean when we--when we made an evaluation of the Yukon and Kandik as recreational streams?

Q No, no, when you were characterizing your son's use of the river, of the Kandik?

A Okay, when I use the term casual subsistence, the river is a--a focal point for a series of land and water activities the whole--the whole cabootle (ph).

Q So you were referring to his trapping activities, not

necessarily boating on the Kandik, is that correct?

A No, a very limited part of it.

Q Okay, as far as your son's boating experience, canoing experience on the Kandik River, was he with you during this trip, this summer--

A Yes.

Q --when you went--you went as far as Threemile?

A Yes.

Q And he went last September as far as Indian Grave, is that correct?

A I believe that's right.

Q Has he used the river with a canoe more often than that or are those the only two instances that you know of that he has canoed on the Kandik?

A There's a lot of--you know, people are going to visit one another and so on and so forth. I mean, I can't say that--I can't give a calendar of his use, but his use has been when feasible during the time he's been in that part of the country, and I don't remember whether he came down last spring by canoe, I don't believe he did because they bought new canoes. They left their canoes up there.

Q Okay, on his trip to Indian Grave Creek, how much gear did he have in the canoe, do you know approximately how much weight he was carrying?

A He told me that he and his partner each hauled in the

the neighborhood of three hundred pounds, that was their estimate of the load, not themselves--

Q And there was a canoe for each three hundred pound load?

A That's correct.

Q Okay, and I'm sorry, I know I'm repeating some questions, but I don't remember your estimate of the number of river miles to Indian Grave,did you say approximately sixty?

A I believe that's right, it's--it's sixty to eighty, and I think sixty is closer than eighty is. It may be more like seventy.

Q And it took them how long to get up there?

A It took them some weeks.

Q Was it two weeks or was it a month or can you get a little bit closer than that from what he told you?

A I can't say for certain. I know that it was at least two weeks, that I know.

Q At least two weeks to go sixty-eight river miles?

A Yeah, and it could have been more. I just--I remember the conversation, basically it was they had to unload and portage so much that they were--they were lucky in certain portions of the stream to make two and three miles a day. That was the kind of difficulty they would run into, that was what was very time consuming.

Q And so he's decided not to bring in supplies that way, that far?

A That's correct.

Q Okay, do you know--oh, one more--one more question on this, when you were with your son traveling up to Threemile, did he indicate whether the river--the portion of the river you were traveling near the mouth, whether conditions were similar further upstream near Indian Grave Creek, or if--if there was a completely different type of conditions on the river further upstream?

A No, we didn't talk about that, but--

Q Okay.

A --basically on the basis of again my own experience on the upper part, it's a smaller river, there aren't as many tributaries that have come into it. And I know from Bob Howe and Rick Caulfield's field trip report that the area, as I recall, some of the miles between Threemile and Johnson's Gorge are very difficult. They've got some discussion of that in their field trip report. I can find that if you wish me to, but whatever.

Q One other question, do you have any idea what the normal rainfall in that portion of interior Alaska is?

A Yeah, at Eagle, for example, I think it runs something in the neighborhood of twelve to--well, this isn't rainfall, it's precipitation, total precipitation, I think it runs twelve to sixteen inches per annum. There are no weather reporting stations that I know of in the Ogilvies, which are

our source areas for the Nation and Kandik, but I would assume being mountains that they would have a heavier rainfall because mountains collect clouds and rainfalls.

Q Now, I believe you testified that a heavy rainfall drastically changed the character of the river, is that correct?

A That's correct.

Q And you testified that your--the person you were with on the Kandik had said that very recently the river had been eight to ten feet higher in level, do you remember how long ago that rain storm was that he was referring to?

A I think he said something like a week to ten days before. He was saying that there was water flowing four and five feet deep in some channels that were--that were above where we were, you know, like there's a channel going like this, and the--the bed of that channel is higher than we are, and he was saying that the water was four and five feet deep in those channels, side channels. So it would be maybe six, seven, eight feet.

Q But just a week to ten days later you were finding very shallow water, --

A That's correct.

Q --is that correct? Okay, given twelve to fifteen inches of annual pprecipation, do you have any opinion as to how many of these heavy rainfalls you might expect to occur in the summer?

A Well, in the general vicinity, there might be a heavy rainfall almost every day because the pattern in the Interior is to have heat generated and a lot of convectional clouds and wham, you get a rain storm in the afternoon or at night when it cools down. But the--the storm that might hit the particular drainages we're talking about, you might go for a couple of weeks maybe and not have any rain in that particular drainage, or such light rain that it wouldn't make any difference. Then you might, you know depending on how the dice roll, you might have three days in a row or four days if you have some--some clouds really hangin' in there where you might have rains and rains on rains. And then you really have a torrent. So there's no way--it's a very local weather situation, no way to give it much predictability.

Q Okay, that's all I have, thank you.

BY MS. HIGGINS:

Q I have one further question.

JUDGE LUOMA: Let's ask Miss Taylor first, she's next in line.

MS. TAYLOR: I don't have any more, thank you.

JUDGE LUOMA: Alright, Miss Higgins.

Q Was the Kandik low when your son went up with supplies in September?

A I gathered that it was low because of the difficulty they

had.

Q You don't recall him specifically saying anything about the water level?

A No, he merely cited the problems that they ran into.

Q That's all.

JUDGE LUOMA: Thank you, Mr. Brown. We'll take a short recess.

OFF THE RECORD

ON THE RECORD

MS. NEVILLE: I'd like to recall Mr. Tileston to the stand.

JULES TILESTON
(Continuation of Direct Examination)

Having already been sworn under Oath, testified as follows:

BY MS. NEVILLE:

Q Continuing with the series of slides on the Nation River, this is slide number twenty-one, and could you tell us where and when it was taken and what it depicts?

A Yes, I can. Slide twenty-one was taken August 4, it is an aerial shot of rod station number three across the gravel bar here in the left hand portion of the picture. This particular gravel bar is nine miles above the mouth and twenty-six miles downstream from the downstream portion of the selection boundary on the Nation River.

Q Slide number twenty-two, could you tell us when and where it was taken and what it depicts?

A This particular slide was taken August 4 on the ground, it depicts the individual walking across this gravel bar, which is a hundred and fifty feet long, it is a hundred feet wide, and there is no major significant channel at any given point in this bar. So we looked for the deepest point.

Q Did this bar extend from bank to bank at the river?

A Yes, it did, it extended obliquely across the entire river channel and angled about thirty degrees at this particular point. It was directly located on a bend.

Q This is slide twenty-three, could you tell us when and where it was taken and what it depicts?

A Slide twenty-three shows the individual taking the measurement. In this particular case the uniform --the bottom itself was uniform with small cobbles five to six inches. As a result, we took a single measurement which is shown on the next slide. This was August 4.

Q Okay, this is slide twenty-four, could you tell us where and when it was taken and what it depicts?

A This is a closeup of the rod at rod station number three. It is taken on August 4, it shows an effective depth of six inches, and I get the--or six-tenths of a foot, excuse me, not six inches, six-tenths of a foot. The one foot mark is here at the very top. The current moving across this is moving the actual water column up on the upstream

side of the rod several inches. The effective water level or the actual water level is right where I'm showing and that is point six on the bar itself..

Q Thank you, this is slide number twenty-five, could you tell us when and where this picture was taken and what it depicts?

A This is the first of a series of slides dealing with the confluence of Hard Luck Creek, which in this case is on the left and the Nation River on the right. The flow of the Nation River is from the lower part of the photograph to the upper left, the flow of Hard Luck Creek is from the lower left to the upper part of the photograph. There are several bars in this area. I'm going to make reference to several points later on, and this one is a good shot, so I'd just like to summarize some of the places that show on the overlays for this particular river on the large aerial mosaic.

Q Excuse me, did you say when this picture was taken?

A This particular picture was taken August--I'm not sure whether it was August 4 or 5, but it was in that time frame, I have several slides of this same general area at that time. And I'd have to look at the exact carousel to see on this one--or to see whether it was August 4 or 5. When we were to the river area in June, we camped here, we had come down the Nation River to this

point, we took the Geological Survey, Joe Childers, took a stream profile section through this area on the 21st of June. He took another measurement across here on the 22nd of June. I have a series--the next series of slides will actually compare those measurements in terms of water level, late June, '78, late--or early August '78 with one exception, and I'll explain that one exception when we get to it. This is the same area taken on June 22, 1978, again an aerial shot from a slightly different point. Hard Luck Creek is coming here from the right of the photograph to the left. The Nation River is flowing from the right to the left. The gravel bar, which was fully exposed in the August picture is in this one completely submerged. The area that we measured in terms of the cross seetion the Geological Survey measured is here. The place that we--across on Hard Luck Creek between the gravel bar and this first clump here and the station that we measured on the Nation River itself proper above the confluence of Hard Luck Creek is approximately from here to here. We pulled into the site on--oh, about five o'clock in the evening. I placed a small white rock in this area to check what the water level was doing at this point. The next morning the river had dropped--or Hard Luck Creek had dropped a good six inches just from the location of where the rock was in less than twelve hours.

Q For the record, I'd like to make it clear that this is slide number twenty-six that we're talking about. Slide number twenty -seven, could you explain when this slide was taken?

A Yes, I can, this is the one exception that I referred to earlier, this particular shot was taken August 23, 1972. The Nation River is coming towards us in the center of the photograph and flows out of the photograph on the lower righthand quadrant. Hard Luck Creek is coming directly out of us and towards us and joins the area. The gravel bar that was exposed in the earlier photograph is located here. The area that we took the measurement across is here, and you can see the tip of this same gravel bar in those other photographs. The general water condition that we observed in the first part of August and in '78, and the last part of August in '72 is very comparable. I did not, how ever, conduct any on-the-ground measurements in '72 on this particular river. I did, however, conduct some on the Kandik in the same time frame. Mr. Brown made reference to storms, there was a rain storm in process or just beginning in the headwaters of the area, and you could see the clouds beginning here. This is what obscured me from getting further upstream on the Kandik, it's the same drainage.

Q This is slide number twenty-eight, could you tell us when

and where it was taken and what it depicts?

A This photograph is on Hard Luck Creek. It is--was taken June 21 in the late afternoon. Mr. Childers is right here for perspective. He was wading across to hang a steel line, which has units measured in it in which to take his flow measurements. We're looking upstream on Hard Luck Creek, and the actual measurement was taken from this tree here to across to a point right behind where I am. The rock that I placed that I mentioned in the earlier slide is just out of this particular photograph. We're looking up Hard Luck Creek or basically east.

Q This is slide twenty-nine, could you tell us when and where this slide was taken?

A This is the equivalent place as the last slide. It was taken August 4, 1978, and it again is a repeat measurement by the Geological Survey of the measurements that they took in August--or in June of the same year. The water level has dropped appreciably. You're looking upstream.

Q And this is Hard Luck Creek, not the Nation, is that correct?

A That's correct, did I say the Nation?

Q No, no.

A This is looking up on the Hard Luck Creek.

Q Thank you. This is slide number thirty, could you tell us when and where this was taken?

A Slide thirty is taken in the same general area. It shows an individual, Mr. Childers, wading across the stream in the same spot. It was taken June 21, 1978.
At that point, according to my recollection, and Mr. Childers would be able to--according to my notes, there was about eight-tenths of a foot over the gravel bar that was exposed in August at this point.

Q Slide number thirty-one, could you tell us when and where this was taken?

A It is in the same area, again, for comparison of current velocity, it shows two Geological Survey people who made the June flow measurements on Hard Luck Creek at the same point as in June.

Q Excuse me, you said they were making June measurements, is that--

A It is not--that is not correct, they are making August measurements, August 4, and it is a repeat of the June measurements.

Q Thank you. This is slide number thirty-two, could you tell us when and where this slide was taken?

A This slide was taken at Hard Luck Creek. It was taken June 21, and it depicts the type of equipment which was used to conduct the measurements by the Geological Survey. They can explain what they are, I'm not going to attempt to. The individual there is Jack Allen, that's

Joe Childers.

Q And did you say--are we looking at Hard Luck Creek again here?

A Alright, what you're looking at in reality, in this case, I put this one in to show the equivalent that we used measurement, but what you're doing is you're looking down Hard Luck Creek at June 21 level to its confluence with the Nation River, the Nation River then flows from the right-hand side in the upper part to your left and around a bend right behind the upraised rod.

Q Thank you. Alright, this is slide number thirty-three, could you tell us when and where it was taken?

A Slide thirty-three was taken August 4, 1978. It shows the area on the main stem of the Nation River immediately upstream of the confluence of Hard Luck Creek. They're standing, you can see, in just a little bit under waist deep water. The main channel in this case is directly over against the bank and where all of the sweepers and the log jams are likewise collected. The toe of the gravel bar that we saw earlier in the first slide of this series is located there. You will notice a greem coloration on the shoreline on the left bank or east bank of the Nation River itself, on the gravel. This green coloration is algae. This particular algae, and I don't know the species, grows underwater. So in terms of what is the normal water level

during the summer time in this area sufficient to grow algae, you've got to generally maybe two to three inches more water and that's about it, in this particular side. This is one of the ways that I use to gauge whether a river is up or down when I only see that particular river at a given time. There are other ways in several slides coming up will show how I use those. But vegetation in this case, algae, above water, is an indication that the water is a little bit lower than normal.

Q This is slide number thirty-four, could you tell us where and when this was taken?

A This--this is taken at our campsite on the left bank of Hard Luck Creek, it is looking across a gravel bar to the Nation River itself, which is clear up against the bank, and as you can say is bank full at this point or nearly bank full. The measurement station that we took is up here, and this is the best slide I have of the measurement station at high water level. But again, in terms of comparison, you can see that there appears to be quite a bit more water in both rivers. Or Hard Luck Creek, which you're looking at directly which is in the foreground, and to the Nation itself, which is in the bankground.

Q And this was taken during the June trip?

A This particular slide was taken June 22, 1978.

Q Thank you. Ooops.

A Back up one, now it should drop, it did.
Q THis is slide number thirty-five, could you tell us when and where this was taken and what it depicts?
A This particular slide was taken August 5, 1978. It depicts a new trapper's cabin built the preceding winter or preceding year on land selected by Doyon. It is approximately one mile upstream from the confluence of Hard Luck Creek on the right bank. It is back in the trees of--oh, probably a hundred yards back in white spruce trees. We examined the cabin and I saw the same cabin--we also looked at the same cabin in June when we were here. It is a typical trapping cabin, there were sides--quite a bit of evidence of--skinning boards used for animals and things of this nature.
Q Now you stated that this cabin was built on land selected by Doyon, this isn't in the selection area that's at issue in this appeal, is it?
A NO, this is not. This particular cabin is eleven miles above the mouth of the Nation River and it's twenty-four miles downstream from the downstream selection boundary of the thing. I might mentioned, I used the term miles. In all cases, unless I otherwise specify, those are river miles, they were determined by measuring on the one-inch to the mile USGS 1956 series for this area, the actual measurements coming down. So the measurements did

not come off the photograph, and they are always in terms of river miles, which is considerably longer than air line miles or hiking miles.

Q This is slide number thirty-six, could you tell us when and where this photograph was taken?

A Yes, it is another view of the same cabin that was built in the preceding winter as far as we can tell from a different angle. The other photograph was taken near the center right looking to the front of the cabin, which is facing the right of the photograph. It shows in the foreground, however, which was the reason I took the slide a very low cabin that was in this same area. Again eleven miles above the mouth, twenty-four miles downstream from the selection area. It was taken June 21, 1978.

Q This is slide number thirty-seven, could you tell us when and where it was taken?

A This slide was also taken June 21, it is on the opposite side of the first cabin that was shown, and shows a much newer cabin, however, unserviceable. This particular cabin I would suspicion is the structure which shows on the 1956 USGS quads, because it does--on the one-inch to the mile, it does show a cabin in this vicinity and in fact, is the only cabin that is shown on the entire Kandik River as far as that drainage is concerned.

Q Nation River?

A Excuse me, Nation River.

Q Okay, are slides thirty-five, thirty-six and thirty-seven three different cabins all in the same general area?

A Yes, they are. Cabin thirty-five is the new one, to the downstream side is the very old cabin, just a hundred or so feet away. And approximately a hundred or so feet on the upstream side is this cabin, which is on slide thirty-seven.

Q This is slide number thirty-eight, could you tell us when and where it was taken and what it shows?

A This slide was taken--well, I'm not sure on this on whether it was taken in June or August of this year, I'd have to look at it. It was taken this summer. It is approximately twenty yards from the new cabin, and it shows hanging on it the traps used by the individual, the inference being this individual traps.

Q This is slide number thirty-nine, could you tell us when and where this was taken?

A Slide thirty-nine was taken August 4, 1978. It is in the general vicinity of the cabin that we just saw in the preceding slides, thirty-five through thirty-eight. It is approximately twelve miles above the mouth of the Nation and twenty-three miles from the downstream selection boundary. The cabin itself, although it is not in this particular photograph is located in this band of trees

running on the right bank, and approximately a third of the way back. The reason that I have this particular slide in is that from this point up, again, twelve miles from the mouth for a considerable distance there tends to be at rather frequent intervals a sharp bluff on one bank or the other. It was sharply tilted rock formations, and you have an entirely different set of river characteristics here in this area where the river channel is very confined in terms of trees and a short bank as opposed to as an example, in the foreground here a very wide channel, very wide gravel bars, and relatively shallow depths over the entire river area except for the area immediately against the cut bank. In this area, along the bluffs themselves, there's probably five to six feet of water directly on--against the bluffs. If you move over against the gravel bar, however, it shallows out very quickly.

Q When you say there's probaby five to six feet of water against t the bluff, what date are you referencing, are you referencing the August date when the picture was taken?

A I would say under any type of flow condition because of the river's shallow (ph) in this case, you would probably have five to six feet of water, as long as there's water flowing at all. This would be if there's no water flowing, in other words, if the river was

completely dry in terms of flowing, this would be a pool, which would probably be five to six feet deep.

Q Okay, thank you. This is slide number forty, can you tell us when and where it was taken?

A It's the same general area showing the water moving by one of these outpost--or sharp outcrops of rocks, sedimentary rocks, in terms of either upstream or downstream naviation in this particular area. There's no real problems at all. You could get either against the bank. There are, however, some tricky spots and sometimes trees hang in these areas, but the river's plenty wide in this area, it would not be an obstruction for either upstream or downstream at this water level.

Q On this slide, I notice some lines going up and down the bluff, is that water runoff like a waterfall I see?

A The--I'm using the pointer, there are a series of vertical lines coming across, those are the uplifted sedimentary rocks, which are typically exposed in the Kandik basin, very typically and it's sharply folded. These are the outflanks of the Olgilvie Mountains. But essentially it's an oil and gas providence, and this is part of the structures that you're looking at. They're rocks, there is no water coming down other than it had been raining on that particular day.

Q This is slide number forty-one, could you tell us when and

where this was taken and what it shows?

A There's quite a bit of discussion on how do you determine how the water is in terms of when you see it. Is it high, is it low, is it medium. The next series of slides are used to indicate how I tell, at least. You saw one with algae being open. This is another way of telling. Typically certain types of vegetation either grow in water, they grow next to water, or they grow on the top of gravel bars. Such things as bluebells or willows, you can use as an excellent bench mark to know whether your river is high. In other words, if the water was running through these areas, then you would know you would have a high water level. You might not know how high, but you would know that in this particular spot that the river was up. You can take these types of observations going through an area over several miles or several days and reach some pretty good conclusions as to where the river typcially is or is not, and from that make some inferences as to how accessible that particular area might be at any given time in terms of boating.

Q Wast his particular photograph taken on one of your trips on the Nation?

A It was, this particular photograph was taken the evening of August 21--August 20--excuse me, June 20, 1978. It was taken at Jungle Creek, and it'd been raining quite heavily

that day.

Q This is slide number forty-two, could you tell us where and when it was taken and what it shows?

A This particular slide was taken in a backwater slough approximately forteen miles upstream from the mouth on one of the old meander channels of the river itself, and the maps and photographs all show that the river in this area frequently meander once you get away from that cliff. A beaver dam has been constructed across one of those meanders, you can see the water flowing off. The reason I took this particular photograph is notice the height of the grass, it is growing on top of the dam where it is dry, here is the same grass in the center of the photograph submerged, indicating that at this particular point, which is a blackwater--or a back water area. In other words, the water's backed up. There's four to five inches of water at this point as indicated by the vegetation. This is not to say that there was only four or five inches of water more in the main channel for several reasons. First of all, this has got a slightly different elevation, in other words, the river flows slightly downstream from here to where it joins a second thing, and this is clear water, which means it's complete backwater, that--and is not muddy. So we know at this point, and this again just shows you how I use what I do when I'm in the field and

investigating rivers to know whether the river's up or now. The next slide please? This was taken August--or June.

Q Okay, this is slide number forty-three, could you tell us when and where it was taken and what it shows?

A This was taken in the same backwater slough, it's taken about twenty yards downstream from the point of the last one. Here you will see the water is muddy , and here you will notice the same bluebells that I started the photograph with in terms of height, not the same bluebell. Again, remember we're fourteen miles from the mouth, the other bluebells were at Jungle Creek. You can see them just sticking out. That tells me at this point there was at least under normal conditions ten inches of less water. I can look at the mud on the leaves and know that very recently within the past day or so the water was much higher because the mud is there. I know the water doesn't stay there very long because this type of plant would be killed if it was left standing in the water for say a week or so.

Q This is slide number forty-four, could you tell us when and where it was taken?

A This slide was taken June 21, 1978--excuse me, June 22, 1978. It was--it is an aerial shot of one of the GS flow measurement stations which ran from the gravel

bar on the right bank across to the cut bank on the right-hand side. The river area itself is very shallow, there was about two to two and a half feet to the log that's in the center, maximum. At that point, the individual that was wading out could not get across, the current was too swift and it began to deepen slightly. We had to use the raft to paddle upstream to get into a comparable point. There was a rod and trasit used to measure the distance across the stream at this point. And if I recall right, we encountered directly against the bank at this point, I think it was almost eight or nine feet of water, as opposed to less than two feet on this side of the log. So again, cut bank is where you have the deepest water, but you'll notice that the lower righthand side, that same deep water is also the same place that you have a sweeper, which means the effective use of that water is restricted naturally by trees, by log jams, and by bars later on. You'll also notice that on higher water even than we observed in June, there are some plianders (ph), another log jam at the top.

Q This is slide number forty-five, could you tell us when and where it was taken and what it depicts?

A This slide is--was taken August 4, 1978, it is eighteen miles upstream from the mouth and seventeen miles from the downstream boundary of the selection. It shows rod

stations four and rod stations five in the next series of slides. We'll move that. Rod station four is across this gravel bar, rod station bar was at this point, at the upper end of the small gravel bar, so we've got--what you have coming down here is an outside curve on the left bank, deep water, a small log jam, a shallow bar, and then the river cutting back across the flood plain, flowing on the right bank, deep water coming on down and then again, another bar at the head of it. And this is fairly typical of all Alaskan rivers, it's not an unusual situation. You'll notice that the bar on--at rod station four takes off from a gravel island and runs across to another one. This again is very typical, that the bars themselves do not run at right angles to the channel, but tend to run down the channel in varying degrees.

Q This is slide number forty-six, could you tell us when and where this was taken and what it shows?

A It was taken August 4. It is on the ground. It shows the helicopter that brought us into the area, and we are looking across the area for which we took the measurement. The bluffs, and again the tilted--not sharply tilted, but tilted sedimentary rocks are shown against the river itself--or against the left bank. There again, it's deep water coming down that part. The aerial photograph that we looked at or the aerial shot, the helicopter was

approximately a quarter of the way across the slide from the left and above the trees. So it was taken at that point and looking down--or looking upstream to the bottom part of the slide that we're in here. Again, the gravel bar is very long. The point of--the point upstream to rod measurement five is behind us, we're looking downstream.

Q This is slide number forty-seven, could you tell us when and where it was taken?

A Yes, I can, it was taken August 4. It is of an individual wading across the same bar from the opposite direction. The helicopter in this case is directly behind us. The particular gravel bar is a hundred feet long. It is twenty to twenty-five feet wide, and there are no pronounced channels in this area, and you'll notice hanging on the down side--downstream side, without any real, with just somewhat of a random nature, several trees with the roots going upstream. In higher water levels, these in and of themselves tend to become hazards to navigation either upstream or downstream, in addition to the bar.

Q This is slide number forty-eight, could you tell us when and where it was taken?

A It is at rod station three, it was taken June--or excuse me, August 4. It is in the deepest part of the water that we could find. The bottom characteristics in this area had boulders up to fourteen inches. They were angularly

located across the bottom rather than standing on end. In other words, they tend to be flattened out, by the current moving over them. The most water that we could find in this place was right at one foot, and you'll notice that in reality that there is slightly less than one foot at this particular point when we took our--our photograph. But again, you can see the water climbing up on the rod to almost one point three as a result of the current going through, but there's approximately one foot of water at this point.

Q Okay, I believe you said that this was located at rod station number three, is that correct?

A That is not correct. It's rod station four.

Q Thank you. This is slide number forty-nine, could you tell us when and where it was taken?

A It was taken August 4, it is at rod station 4, and it is placed on a boulder just immediately adjacent from where the preceding photograph was taken. In this particular rapid or gravel bar, the effective water depth as you can see is less than a half a foot. Again notice the water climbing up onto the bar as you saw previously on some of the boots, that is not where you measure the depth of the water. The depth of the water you look on the back side of the bar.

Q This is slide number fifty, could you tell us when and

where it was taken and what it depicts?

A This is at rod station number five, which is at the upstream portion of the gravel bar where we landed our helicopter. It is approximately two hundred yards upstream from rod station four. Am I keeping my numbers correct?

Q That's right.

A We are at rod station number five, it was taken August 4. There are in this case, several channels that were broken across. You can see one of them at the left, the next photograph will show those channels better.

Q This is slide number fifty-one, could you tell us when and where it was taken?

A It is taken August 4, '78, it is taken at rod station 4, which is approximately eighteen miles from the mouth.

Q Excuse me, is it rod station 4 we're at or is it rod station five?

A Rod station five.

Q Thank you.

A It's approximately eighteen miles from the mouth, seventeen miles from the selection, downstream boundary. This was the deepest channel of three or four running across this gravel bar, again looking for the deepest water in the shallowest part of the river channel. And although there's deep water here in the channel that --the main shoot, you still have to get above that shoot, and the

shallowest water is actually upstream from where you see the shoots. So that's the reason the gentleman is standing here and not down in the shoot itself. This is the critical part of crossing this particular gravel bar. The shoot itself is about forty feet wide from here--from bank to bank. We are looking downstream. The effective width of the deepest part of this channel up here, coming through the slide, is about four feet. It shallows out very rapidly on either side of the white water that you can see bouncing down through the center of the photograph. Cobbles were at six to eight inches in size in the stream bed, and you can see those in clear water of the photograph.

Q This is slide number fifty-two, could you tell us when and where it was taken and what it shows?

A This slide is at the head of rod station number five. It is a close-up of the rod itself. It shows that the maximum and the effective water depth at this point is approximately one foot, even though the water again is climbing up almost one point four on the rod itself. The actual measurement is about one.

Q This is slide number fifty-three, could you tell us when and where it was taken and what it shows?

A We've now moved upstream to Mile 21--or twenty-one miles from the mouth. We're fourteen miles from the downstream selection boundary, and the river at this point begins to

open up. The cliffs that we saw earlier are back behind us on the righthand side of the photograph in the upper ten percent of the photograph. The flow is from the bottom of the photograph to the top. You'll notice several bars, and you can see the wide gravel bar to the left with the various snags, they've got trees pointed downstreams where they've been caught by the roots. You can see the gravel bar on the head of a braided stream. The deepest water in this particular channel is on the left bank. If you were coming upstream or going downstream, you would tend to hug the left bank. At this point, which is directly opposite a large wooded island, which has no water on the right side at all, you would--there is a small gravel bar. That one does not have any great difficulty, you could move a boat up that one without any great difficulty, a small canoe. You would come around the corner, and again, still hugging the bank, and you would have anyplace between two to four feet of water in this general vicinity on the left bank immediately adjacent to the bluffs. But when you get to the headwaters of the bluff, at the lower end of the photograph, you again have a gravel bar, you have probably less than a foot of water at this particular point. The channel on the right comes down where the shallow area immediately opposite the log jam you can see exposed gravel. It comes down through another shallow area. It

almost becomes discontinuous against the trees next to the large wooded area, and there's a small bar across the end with less than two inches of water flowing across it.

Q When did you say this one was taken?

A August 4, 1978.

Q Thank you. This is slide number fifty-four, could you tell us when and where it was taken?

A This slide is in the same vicinity as the last one, approximately twenty-one miles upstream from the mouth. The islands and bars that the preceding photograph are in the righthand side of the photograph, in the upper area. And the flow of the river is away from you from the lower left and out on the upper right. The reason for this particular slide is again showing that the bars that I had just previously talked about are very numerous and very close together. We had bars here, the small channel which goes no place is on the right, here is another bar all the way across the river. Immediately preceding from one side of the river , from the left bank across to the gravel bar on the righthand side, you're cut water, your deep bank is on the left bank. You've again have come up against the area on the right bank above the last bar, which has sweepers, snags and trees in the river, two trees are hanging right in one of the shallow areas, and again a shallow area. There is, however, probably two and

a half to four feet of water at various points along this cut bank. It terminates in the shallow bar, it picks up again with two to four feet of water characteristically, terminates again with a series of short bars. And this is repeated time after time.

Q Is this also an August 4th photo?

A Yes, it is.

Q This is slide number fifty-five, could you tell us when and where it was taken?

A It was taken August 4, the same general area, it is just a closer view, not of the last bend, which is downstream oh a quarter of a mile or so, but another bend again showing the sweepers. A very shallow channel in this case, and although that you have in some cases five to six feet of water against that cut bank, the righthand side in this case, against the trees, it is totally unusable. Those trees come close to making this unusable at this stage. At high water level, you also begin to run into some very severe problems in this sort of a situation, because the current typically will be coming from the left of the photograph, coming straight down through the center, and then it piles against this cut bank where all of these trees are--are piled. It then bounces off, goes against the log jam down to the center left of the photograph, and ricochets on down the river. You'll notice that even

on high water level, if you say well I'm gonna miss the log jams and the sweepers which are hanging on the right-hand side, you have a log jam right in the center of what would then be under water. So although you can move away from the cut bank with higher water giving you more water across what is now gravel bar, you have obstructions on the gravel bar, which at that point become similar obstructions to boat use.

Q This is slide number fifty-six, could you tell us when it was taken and where it is located?

A Yes, I can. This slide was taken August 4, 1978. It shows a gravel bar in the upper center part on a large curve of the river, which we camped on on June 21--excuse me, June 20, when we were coming down the river. We camped on this bar, and at that point, the water was considerably higher, if we can move to that next slide, I'll show you the water level in the same area.

Q This is slide number fifty-seven.

A Slide fifty-seven is on that gravel bar, looking across at the cut bank, which is permafrost, erosion, very typical black spruce, muskeg on the top. It shows a very high water level against the bank. In fact, I was--as party leader, almost ready to say we are not going any further down the river on this particular day. During the night--and we'd gotten into the camp about six or seven o'clock

we had anchored--pulled up onto the shore the rafts, run out our lines, tied them to rock piles, you can see one of the rock piles here, and ate our supper and went to bed. About two o'clock in the morning I began to hear this bank caving from our tents. I walked out and our rafts were floating, which means in a period of about four hours the river level raised almost a foot at this point. During the night again after that point, Mr. Childers had to get out and move the rafts again, so that in a period of about ten hours, and we had just general rain in the area, this was not a downpour. The river rose somewhere between a foot and a half and two feet. I do not know exactly how much it rose, but it rose enough to completely float our rafts, which were about fourteen feet long, and were on a sloping gravel bottom, and it's from that that I estimate about a foot and a half to two feet. Again, a very short period of time.

Q This is slide number fifty-eight, could you explain when and where it was taken?

A Yes, slide fifty-eight is the confluence of Waterfall Creek, which is in the center of the photograph flowing towards us, a very small meandered stream with the Nation River itself, which flows from the left through the center part of the photograph and out of--on the right. The photograph was taken August 4, I believe, '78.

Q This is slide number fifty-nine, could you tell us when and where it was taken?

A Yes, I can, it is rod station six, it is approximately a quarter of a mile to a half a mile upstream from the confluence of Waterfall Creek. Waterfall Creek comes out of the valley that you see to the upper righthand corner of the slide itself. The measurement was taken on this gravel bar in the--just above the bend of the river in the extreme righthand corner of the photograph.

Q This is slide number sixty, and could you tell us when and where it was taken?

A This slide was taken also on August 4, it is looking directly down on the gravel bar showing how the water does. You have in this case a channel coming through the center as indicated by the inverted points of the whitewater bouncing off the rocks or bouncing over rocks. We took our measurement approximately at this point. This was the main channel, very shallow here, very shallow over here, so we looked for the deepest water, and we'll move to the next photograph please.

Q Was this taken from the helicopter?

A Yes, it was, directly over the thing as we were coming in to land.

Q Thank you.

A It's an aerial shot.

Q This is slide number sixty-one, could you explain when and where it was taken?

A It shows the same bar that we just saw from the helicopter. The flow in this case, although it looks like it's a different bar, it is, in fact, the same one. The flow is from right to left. It's a different perspective. The individual that is holding the rod is on the right, so you can see for scale. This particular rod--particular gravel bar is seventy feet long across and better than a hundred feet in its total dimension.

Q This is slide number sixty-two, could you tell us when and where it was taken?

A It was taken August 4, it is at rod station six. It shows the individual standing in that channel that I had pointed out, again, the deepest major point. The bottom boulders are approximately twelve inches in size in this case.

Q This is slide number sixty-three, could you tell us when and where it was taken?

A It is a close-up of the rod in the deepest channel at rod station six. It was taken August 4, and it shows that there was a maximum depth of one point six feet. One foot shows us the right figure there, and it comes on up. You'll notice--talking earlier about the water climbing up on the rock,--rod, you can see the same phenomena occuring on the boots of the individual holding the rod.

Q This is slide number sixty-four, could you tell us when and where it was taken?

A Slide sixty-four was taken at the exact spot as slide sixty-three with one exception, and that is it was placed on top of the boulder that was shown in the preceding slide immediately behind the rod. In this case, it shows that the effective depth of this bar is one foot at this level. It would take at least a foot of water to float an object. In other words, if your object, propellor or whatever drew more than a foot of water on this one, you would have to line it.

Q This is slide number sixty-five could you tell us when and where it was taken?

A This slide was taken August 4, I believe. It is an aerial shot of the river area looking downstream taken--and it's approximately twenty-six miles from the mouth and nine miles from the downstream boundary of the selection area. The cliff that you're seeing here will be in the background of the next photograph, which--

Q Oh, slide number sixty-six?

A And slide sixty-six shows the same bluff and the water level as it existed during our field examination on June 19 in this particular area--June 20, 1978. You see the raft. If we could back up to the preceding slide, which is the bottom. That particular slide, sixty-six, the

June slide is taken approximately just out of the slide on the lefthand bank, near the lefthand bank. The trees that you see in the foreground on slide sixty-six are the group of trees that you see on the large gravel bar on the-- on slide sixty-five, just for reference.

Q And this is sixty-six, again.

A We are now on sixty-six, it's a June shot, the group of trees that I pointed out to you are immediately behind the raft.

Q This is slide number sixty-seven, could you tell us when and where it was taken?

A This particular slide is--was taken August, 1977--August 4--'78, '78, August 4. It is approximately a hundred yards upstream from where the last slides were taken. It's just out of the thing. The bluff is to our left, just out of the photograph as are the islands. It shows again, a very characteristic bar running completely across the river, a log jam so that when we came down on through this area, and all of the gravel that you're seeing--or most of the gravel that you're seeing was underwater at that time. We had to navigate and stay on the lefthand side, now that was in a craft without power, with two people paddling. It might well be analogous to somebody going downstream in a skin boat. I would not say that it would be analogous to somebody going downstream on a raft unless

they were poling. We had to maneuver, and anyone going downstream on high water level must be able to maneuver, because again, right in the center of the river on high water would be a log jam. And you'll notice that there are randomly scattered logs, trees, located entirely throughout the area. On aerial inspections, if you're wondering how you might tell how typically the water level is on a--or how frequently it is, you'll notice that the gray areas on the left are shale. And those are places where the river has run back, which means that these gravel bars are only submerged a very short time that you have a small channel on the righthand side, which shows as gray, and that as soon as the water drops, these again are exposed. They collect the gray, which is shale because the water is standing. In other words, the main channel is off to the left in this case, and this develops a small back eddie, and the sediment load that is being carried in the streams start to deposit, so you can even tell by looking at some gravel bars from the air, where the water level would have been at certain times. You can likewise tell where the water would be by looking at the way they shape down into the water itself when you're on the ground.

Q This is slide number sixty-eight, could you explain when and where it was taken, and what it shows?

A We're in the same general area, we are still downstream from the selection boundary a few miles, a very typical gravel bar, shallow water coming across. The stream, you'll notice, is getting much smaller, this is not a braided channel. In terms of that there's another island behind us, all of the water is flowing to the left of the float on the helicopter that you see in the lower left. The channel comes along--flows out of the river--or flows out of the slide from the bottom to the right center. There are tree sweepers on the right bank, which is where the deepest water is, a log jam, another log jam above water, a log jam on a point of island, and again, you can see a series of log jams on downstream. This is why I say that you must be able to control your craft if you're going downstream, because the current would typically sweep you into areas like that. If you'll notice on the exposed gravel bar on the left bank, or the left side of the main channel as it shows here again, very typically and randomly scattered large trees. Those trees are sixty to seventy feet long in some cases, stranded on the bar. Those in and of themselves likewise become hazards to upstream or downstream movement on high water.

Q This is slide number sixty-nine, could you tell us when and where it was taken and what it shows?

A It was taken August 4, it's in the same general area as the

last slide, which was also taken August 4. It's just another close-up of another log jam. And in this case, you'll notice that there is deep water coming around the log jam. The flow of the Nation River itself is from the left to the right. The deepest part of the channel is along the left bank. At this point, above the log jam the water swings across in front of the log jam, drops around the log jam, and then downstream. There's a small drop and a small shoot immediately across from the log jam. You would not be able to at this water level, get a boat upstream or downstream on this river. This one doesn't have the main shoot across from the log jam itself. It has insufficient water to even get an empty canoe down with anybody in it. No gear or anything else, because you've got a very sharp drop, as indicated by the white water itself. You've probably got a drop in that short distance of a couple of feet where the water just literally drops down. At higher levels, if you were using that shoot, you would end up bouncing right smack into the log jam. At this water level, although you have a little bit deeper water coming from the left bank, it proceeds to flow under and through portions of that log jam, which means that if you tried to navigate that coming downstream as an example in a canoe, unless you got out and lined it, this would be very hazardous because the probability, unless you were a

very skilled canoist, is that you're gonna be sucked directly by the current into the log jam at the upper area.

Q This is slide number seventy, could you tell us where and when it was taken and what it shows?

A Yes, I can. It is--was taken August 4, I believe, and I say I believe because it was either four or five. It shows the confluence of Ettrain Creek. We are now approximately one mile downstream from the selection boundary. This is one of the few areas where there were actually bedrock, which you can see along the right bank exposed in the river. Most of the river up to this point has been typically gravel. There are, however, occasionally outrock (ph) in the river channel in the Nation itself, but this--from this point upstream they become a little bit more common. From here down it's typically gravel. The Ettrain Creek flows from the upper left of the photograph down to the center of the photograph where it joins the Nation River itself. The flow of the Nation is from the left, bottom left, to the right and out of the photograph. There is shallow areas at below the confluence of the river--below the confluence of Ettrain Creek. There really is no shallow water in here, although there is a couple of white areas in here that's bouncing off rocks and where a lightly loaded canoe you could, without any

great difficulty navigate through this particular area. Your difficulty would be downstream just below the confluence.

Q This is slide number seventy-one, could you tell us when and where it was taken and what it shows?

A Yes, I can. This is the confluence of Ettrain Creek from the ground. It was taken June 20. Ettrain Creek itself is flowing from the left to the right where it joins the Nation River in the upper third of the photograph. The Nation River then flows around the corner. You see attached to the bank a large area of ice, which was still remaining in the river on 20 June. We saw several other occurrences of ice here and on the back sloughs in the upper portions of the river when we were here. The river was quite well up at this point in time as you can see by the logs and the trees, which were laying above in the preceding photographs. The rocks that I was pointing out in the stream bed are immediately upstream from this photograph and out of sight. When we came through that area then, we could not tell there was bedrock there. The river was silty. We knew something was there because you had a drop. In other words, there were waves one to two feet high, which indicated that something was there, but we could not tell until we went back and looked in August.

Q This is slide number seventy-two, can you tell us when and

where it was taken?

A It is a slide immediately downstream from the boundary. We've moved upstream from Ettrain Creek probably a quarter of a mile. It was taken August 4. It again shows log jams, a tree being submerged and the water flowing across it just above the log jam in the main channel itself. A very small channel in relationship to the amount of area that at different times may carry water.

Q This is slide number seventy-three, can you tell us when and where it was taken?

A It is another slide--or it is a closer view of the same log jam shown in the proceding area. It was taken on the same day, which was August 4, I believe, 1978. It shows again the hazards that you run into by the log jams. The deepest water comes down the right bank. This log jam is then concentrated on the right bank, but the deepest water again flows through it, and you'll notice that there are logs, which on higher water would be completely submerged. The water would be running over them. Those are the sort of things that if you run into them or if you upset, the probability of drowning is excellent. The possibility of losing your equipment or your gear's almost a hundred percent. If you upset and are swept into this, you would probably lose everything you had.

Q This is slide number seventy-four, can you tell us when and

where it was taken and what it shows?

A Slide seventy-four was taken in the selection boundary. We have now come approximately thirty-five miles upstream from the mouth. The next three miles of the river itself are in the selection, again the Nation River that we're talking about. This particular slide was taken August 5, 1978. We took when we were here in June, measurements from this general area across the stream, Geological Survey took the measurements. There is a long gravel bar that comes out and since the Geological Survey requirements are to run their measurements at direct right angles to the channel, otherwise it distorts the volume flow, they must be at right angles. I also have rod station seven taken on this gravel bar because the effective use of water is controlled by the gravel bar itself. Since the measurement that is taken by Geological Survey is taken at right angles. AT any given point it will always show you to have deep water. When, in fact, if you were going upstream, you had at some point to cross that gravel bar. All of the gravel bars run completely across the river. Very few of them run at right angles.

Q Are--are you saying that all of the gravel bars that you took measurements on, they go from bank to bank at an angle rather than at ninety degrees across the river? Or are you saying that every gravel bar on the river?

A I'm saying yes to both.

Q Okay, every gravel bar on the river does go from bank to bank?

A I observed no gravel bars that you would really say ran bank to bank and a right angles to the bank itself. If they did, they were the exception rather than the rule. I recall none right now. If--if I went back through all of my slides of the area, I might find one or two. But essentially they don't, and the reason being is that the current typically bounces from one cut bank to another cut bank. In other words, it'll be--you'll have a cut bank on the right, it'll make a bend to the left, the cut bank will move to the left, and as a result, the gravel bar will start on the lefthand side, and move across to the right, because you've just changed your water channel.

Q This is slide number seventy-five, could you tell us when and where it was taken?

A This is an on-the-ground shot of the geological flow measurement station that we took in the selection area. It is the same area that I pointed out from the air on the preceding photograph, and it shows the gentleman wading across the gravel bar, it's Joe Childers. I happen to be holding the tape that has the marks on it so we can take his measurements. You'll notice that even at this point it's not very deep. The point that I took this gravel bar

runs across obliquely this way. The measurement that I took at rod station seven is approximately at this location, I'll have some other photographs of that.

Q Okay, was this taken in June?

A Yes, this was taken June 19, I believe--20.

Q Okay, and did Mr. Childers wade the entire width of the Nation here?

A He did, he also--when--when we were discussing it in camp, and at that point he made a very valid point, which confirmed my earlier observations, that in water that is flowing as swift as this is, and you'll notice that although the water is only knee deep where he is standing, it's bouncing up well above and on to his upper leg. In current--unless you're very experienced--and he has a metal rod in his hand that he's holding for balance, that he's using to pry with, that the average person just wading across here has an excellent chance at the point you get above your knees with swift current of being swept off. Remember that in almost all cases immediately below this type of gravel bar is a log jam. If you are swept off your feet even in water just that deep, you cannot regain it, the current will take you on down into that deep water, and in all probability, into a log jam. So in terms of stream crossings in high water, in high water, these are not recommended and even your historic

notes indicate that during higher water on the Nation and on the Kandik and Tatonduk River, that they had difficulties even fording them with horses.

Q To your left in that picture, the left of where your picture is in this slide, there is what looks like some vegetation or a tree branch or something in the river, do you know what that--what that is? Is that part of a tree?

A It probaby is, I couldn't tell you for sure whether it's a piece of a tree which is washed in or whether it's beaver cuttings. It's vegetation. It's something that has washed downstream and has lodged between two rocks. There's a rock at the righthand side, and a rock at the lefthand side. The area that is being referred to is approximately three feet from my feet and the photograph to the left.

Q So that's stationery, that's not something that's just floating along?

A No, it is not, and it is that sort of things that when I mentioned at camp two that I was very--had very seriously considered not going on downstream that day is because as the water level comes up as it is here at high water, things like this start floating. They again, in and of themselves, become hazards. Because they--the current in some cases will be moving submerged much faster than you

are or vice versa. They may come tumbling down, they may be completely waterlogged, and just be moving down at the bottom, so they again become an obstruction if you're lining upstream. If you're poling upstream, or for that matter if you're going downstream on high waters, you have--on very high water levels, this starts picking up the stuff that it's left on the bars and starts moving it downstream.

Q Thank you, this is slide number seventy-six, could you tell us when and where it was taken and what it shows?

A It is another view of the GS flow measurement station. It shows Mr. Childers standing agains the vegetation. You can see the piece of equipment that he's holding is silver, it's the same one that I used at Hard Luck Creek, it's that bar. It was taken June 20. We are looking upstream. This is the gravel bar which I subsequently have a measurement on. It shows the June 20 flow in this partiuclar area.

Q This is slide number seventy-seven, could you tell us when and where it was taken and what it shows?

A It's taken at approximately the same location as the preceding two slides. It was taken August 4, 1978. The measurement station that we were measuring is approximately in the vicinity of this tree hanging over on the lefthand side and running across the bank. The tree that you saw in front of me in one of the slides is right there, you can

see the water level has dropped quite a bit. You'll also notice at right angles at the toe of this bar is a large tree, which floated down and became caught on this gravel bar sometime this year. I could not tell you whether that in fact came down during the time that we were there or at some other time, but this is the sort of thing that again creates a hazard to navigation. Water level much reduced, the flow measurement station again was up across the upper cent, the flow is from the center of the photograph to the left. We spent approximately five hours on the ground in this and about two miles more taking measurements of the river itself and waiting for the helicopter to come back and pick us up.

Q And is this also in the selection area that's under appeal here?

A It is.

Q This is slide number seventy-eight, could you tell us when and where it was taken?

A It was taken August 4, 1978, and it shows the gentleman at the head of the bar that I was talking about previously. We are looking downstream. The GS flow measurement station was taken from approximately this log across to a point approximately seventy-five feet down the stream on the righthand bank from where the gentleman is standing. The vegetation that you referred to in the preceding--or one

of the preceding photographs is located approximately there.

Q This is slide number twenty-nine, could you tll us when and where it was taken?

A Yes, it is a closeup of the rod at rodstation seven which is the gravel bar above the GS flow measurement station. It was taken August 4, it shows that the deepest water at this point was approximately eight-tenths of a feet--eight tenths of a foot. However, the cobbles were also about eight inches in size.

Q This is slide number eighty, could you tell us when and where it was taken and what it depicts?

A Slide number eighty was taken at the same time, and is in the same place as the preceding slide, August 4, it was at rod station number seven, and it shows that there is an effective water depth of approximately three-tenths of a foot. So that if you were coming up through the area measured by GS in the selection area, and you had a boat or a vessel that required more than three-tenths of a foot of water in this area, you would have to get out and pull it.

Q This is slide number eighty-one, could you tell us when and where it was taken and what it shows?

A It was taken the same day, August 4, we're approximately a hundred yards upstream from the preceding area. We are looking downstream, the flow of the water is from the right

to your left and it comes back around into the left. The area that the preceding photographs--are a hundred or so yards downstream from this point. We are in the selection area between thirty-five and thirty-six miles approximately from the mouth of the Kandik itself.

Q This is slide number eighty-two, could you tell us when and where it was taken?

A It shows the gentleman wading across the gravel bar scene in the preceding photograph, it was taken August 5. This gravel bar is seventy-five feet long, it is fifty feet wide. The bottom is very small cobbles, and very uniform. There was no really marked channel, although you can see, as an example, here's a place where the water's a little bit deeper and that's where we took our measurements.

Q This is slide number eighty-three, could you tell us when and where it was taken?

A It was taken at the same place as rod--it is rod station eight, and since the uniform--there is a uniform body, it shows that in this particular place, the effective depth of water is approximately six-tenths of a foot. So within an area of a quarter of a mile maximum. We've gone from one area where the deepest point was three-tenths of a foot to another area where you have six-tenths of a foot in the deep--in other words, it's doubled. But in reality, we found fairly consistently water depths at looking

of moving upstream generally a foot or less. We're in the selection area at this point.

Q This is slide number eighty-four, could you tell us when and where it was taken and what it shows?

A It was taken August 4, we are a hundred yards approximately upstream from rod station number eight. We're looking upstream at a small channel, you have a very steep bluff on the left, which would be the right bank. You'll notice a series of logs which are hanging out at right angles, and I've made reference in some of the other previous aerial photographs about how they hung over. This gives you an idea how they look like near water leve. I would emphasize, however, I'm not at water level, I'm about eight feet above water level at this particular point on a large gravel bar looking down. The channel is over against the right--excuse me, the left bank, that is where the deepest water is. We could wade across this river at this stage, which was August 5--4, 1978 without any great difficulty at all. The current had slowed down in this area, the water was just a little bit deeper that we could wade across, but it was right at margin. It was about waist deep at the deepest point, which is oh, three feet or so back from the bank here on the lefthand side.

Q This slide number eight-five, could you tell us when and where it was taken and what it shows?

A This was taken looking downstream by doing a hundred and eighty degrees from where the preceding slide was taken. All I did was just turn around. We're again about a hundred yards or so upstream from rod station eight, which is right at that bend, just as the river disappears in the center of the photograph. Rod station seven and the flow measurement station would be, again, if you could see the river it would bend right back around and would be behind these trees, but several hundred yards downstream.

Q This is slide number eighty-six, could you tell us when and where it was taken?

A This slide was taken August 4, 1978. It shows the same sweepers that you had seen in slide eighty-four from the ground and the same general area. In other words, this is an aerial view, and I wanted to relate to you what you see from the air and what you see from the ground so that you have--since I've been showing you basically aerial shots, I wanted you to have a relationship of what they really look like on the ground and how we, in turn--I'm able through confirmation of stuff on the ground to be able to say what I would expect to find if I actually--if I had in fact landed a helicopter at a given point.

Q This is slide number eighty-seven, could you tell us when and where it was taken?

A YEs, I can, this slide was taken June 20. It is just inside

selection boundary in the upstream--from the upstream area, and again, the river level is high. And the type of sweepers that we were talking about, here's a tree coming two-thirds of the way across the river itself. One of the members of our party inadvertantly didn't paddle when they should have, and the end result was they went through one of these sweepers. His glasses got broken. It is, you know, even though this tree is above water, if you get swept through this part of it. And the reason they're called sweepers is because that's exactly what they do, they sweep you out of the canoe or out of your vessel. They'll just take you right out, and this again is why I was saying going downstream without some means of control, motor, poles or what have you, and a relative degree of competence because you've got some problems.

Q This is slide number eighty-eight, could you please tell us when and where it was taken?

A Yes, I can, this is about one mile upstream from the selection boundary. We're approximately a half a mile or so downstream from Jungle Creek. This particular photograph was taken in August, I believe August 5 of '78. We camped in June at this point, which is the gray-green area along the left bank in the center right quadrant of the photograph. We took a flow measurement station, which I'll be showing you pictures very shortly through and across the Nation

River downstream from its confluence with Jungle Creek in this general vicinity. I'm going to refer to this area again, so I want you to particularly notice the relationship of the water on the gravel, the vegetation in this area here.

Q This is slide number eighty-nine, could you tell us when and where it was taken and what it shows?

A This is the camp area that we camped at in June, on June 19th. We are downstream from Jungle Creek, the measurement-- upstream measurement taken by GS on flow is across from and a little bit upstream from where you see the blue tent in the right quadrant. You'll notice that the area that I pointed out as being gray-green was dry in August. In June it had water flowing through that area. We're looking upstream towards the headwater areas. May I have the next slide please.

JUDGE LUOMA: Off the record a moment please.

OFF THE RECORD

ON THE RECORD

Q Okay, this is slide number ninety, could you tell us when and where it was taken and what it shows?

A Yes, I can, this is the same area as shown in slide eighty-eight and eighty-nine, which is the camp area downstream from Jungle Creek on the Nation River. This slide was taken on noon on June 20 on the overflight that

we took of both the Kandik and the Nation to see where we could get in to look at the river in general. We also overflew the Seventymile River to look at it. This was taken about noon in that general time frame. When we came back to this area at five o'clock, five hours later, the water was, in fact, flowing through this area. So that in a period of four to five hours, the river character changed and it came up a foot or so in terms of moving it across the river. Now what it's actual fluctuation in height or depth was, I'm gonna defer that to Joe, because I think he can tell you better than I can. But in effect, there was more water. The whole character of the river changed in just that very short time. Now, again, remember at Hard Luck Creek we observed a six-inch drop based on a rock placed on the bank at night, and seeing where it was the next morning. And that at camp two we observed a foot and a half, a two-foot rise in a very short period of time, and this was during the period when there had been very heavy rains in the whole general area. So the basic thing is if the rivers do fluctuate, they fluctuate quite markedly, and they fluctuate extremely rapidly. They also drop extremely rapidly.

Q This is slide number ninety-one, could you tell us when and where it was taken?

A This slide was taken June 20 after our spending the night on

a gravel bar at Jungle Creek. It is on the Nation River. It shows the area for which we took the measurement at right angles across the stream. The note taker is located on the bank. You'll notice a raft on the righthand side, the next photograph will be a blowup of that raft. We found that we could not get across this part of the river by wading, the current was too swift in this area. And, again, this is not a shallow area. In other words, the measurements that we took for this type of thing, you have to look for a good section. You don't look for shallow places to take flow measurements. I specifically look for shallow places when I'm taking my rod measurements. Again, remembering that the bars run oblique. So here we are. The next slide please?

Q This is slide number ninety-two, could you tell us when and where it was taken?

A This is a closeup of the people taking the actual measurements on the Kandik--or on the Nation on June 20th. The rubber raft is being held in this case as I'm hanging over the back, and I have my feet on the ground, approximately ten feet further out I was unable to keep my feet on the ground, the current was moving so swift. What we have done here, and you can see even here, from the amount of current under the raft as to how the water's building up on the front, that there's considerable velocity even at this point.

But what is happening is the main channel is off to my left, and we're now getting into the influence of the bank itself, and the water begins to run a little bit slower there, and also is a little bit shallower. But this is the way we conducted this measurement. We had to paddle, Mr. Allen is actually holding onto the line that has points on it, which in turn are used so that the actual measurements, the depths and flow measurements can be equated back to the cross section of the stream.

Q This is slide number--I'm now confused, ninety-two or ninety-three?

A Ninety-three.

Q Ninety-three? Okay, can you tell us when and where it was taken and what it shows?

A It was taken June 20, it shows the equipment being used that was hanging over the side of the raft in the preceding area. It is the equipment used by the Geological Survey, Mr. Childers, in taking his measurements at this particular point.

Q This is slide number ninety-four, could you tell us when and where it was taken and what it shows?

A It shows the upstream tributaries of the--or the upstream character of the Nation River at its confluence with Jungle Creek, which is to the right. This is Jungle Creek. The flow measurement station and our camp were taken directly--

if you could draw a line from this group of trees across to the preceding bluff on the right bank, we camped right below that group of trees. The measurement station itself is directly across from this group of trees approximately equidistant or halfway between where we camped and the actual confluence of Jungle Creek. We're looking upstream, the Canadian border is approximately behind the sharp conical peak at the extreme right and it--we're looking in a northeasterly direction at this point, so that the Canadian border would run north and south approximately like that.

Q We've heard a lot of testimony about the type of terrain in this area with reference to the possibility of overland transportation of supplies. Can you point out in this picture those features of the terrain at this point of the river basin which would either make overland transportation difficult or where it might be possible?

A Yes, you'd have two different conditions depending on when you were talking, winter time or summer time. The trap lines in winter time would typically be located in this group of trees as an example, along the right bank at the base of the cliff. Again, typically, and I do not know for a fact where --that there is, in fact, a trap line here, but if I was locating one based on what has been said previously and my general knowledge of wildlife

I would tend to locate one in these long stringers (ph) of spruce, and that in turn would be a winter time trail. You could likewise use any of this muskeg country if you were moving upland, as an example, for seismographic work. And this traditionally is done. Doyon, through its contractor Louisiana Land Company, just oh probably twenty-five to thirty airline miles away from this particular point, a land previously conveyed to Doyon, did conduct quite a bit of seismographic work during the winter time. And they were using overland equipment, towed by track vehicles, where the tundra was frozen, and the snow would protect the vegetation. So that winter time, moving the heavy equipment, you could literally go up this valley. You would have some difficulties, however, when you come to the stringer of spruce along the river, which is running at right angles--the creek in this case, Jungle Creek. And you'll notice it's one stringer, another stringer, and another stringer in this particular area, which is probably the lower three or four miles, and that's fairly typical. As you move into the mountains or the upper part of the drainage is to the right on Jungle Creek, it becomes more incise. So again, although the channel of the stream might become a little bit better, shorter across, you have much steeper topography. So if you were going through this area in the winter time, you would have

no difficulty until you got to the band of trees, then you would have it, for overland equipment. In the summer time, these muskegs are pure unadulterated bastards. For two reasons, first of all, you're walking in water if you're out in this area. This area's all generally just completely loaded with water.two to three inches deep. The other thing that you run into is this is where the mosquitoes are. And what you frequently find in toher country, now I cannot say that this is what happens in the Kandik, I do know that this is what happens in the White Mountains, which has similar type topography, you would typically find your summer time acess on the ridge tops because you have solid rock to walk on, you have a breeze which blows the mosquitoes away. And in talking with at least one of the people that lives at the mouth of the Kandik, that is what he does in the summertime, he'll bring his boat up a certain distance, and then he goes up on the ridgetops. If he's going to a point upstream, he'll tend to use the ridge tops . In the winter time, he would use the river valley itself. The river.meanders back and forth so much that even if you were using it as an ice flow, you would have to travel two, three times as far to cover an equivilent distance. So again, if you were going cross country, in other words a purpose point-to -point destination, you would tend to move out through the muskeg down

rather than the river itself for winter time.

Q Okay, I think we have one more slide here. This is slide number ninety-five, could you tell us when and where it was taken and what it shows?

A We've just reversed ourself and we're looking downstream near the Canadian border. Jungle Creek is in the upper area of--the Nation River is not centrally located in the valley. It tends to be skewed completely across against the right side of the drainage, and is typically in the upper part flanked by a rather high set, topographically speaking, if mountains. There are good passes that go back and forth and these are the ones that are used typically by the trappers. But the river is skewed. The main drainages come in from the left or over in the Ogilvies and come completely across and the river itself is displaced rather than be centrally--is against the right. You'll notice the meanders, and this is why I say that if you were going in the winter time downstream, you would not use the ice because you would have to add so many miles and you couldn't cut across them because then you got the trees that are in your way. So you would again move outside.

Q When was this photograph taken?

A August 4 or 5, 1978.

Q Okay, thank you. (End of slides). Mr. Tileston, can you

give us some estimate based on your knowledge of the Nation River, is there any way you can estimate how many of these gravel bars there are in a given stretch of the river?

A Yes.

Q And could you tell me first of all how you make the estimate and secondly what that estimate is?

A The estimate in this case was made by aerial inspection and counting, coroborated both by the slides which you've shown, which in turn I can locate back either on this photograph or on the one-inch to the mile photographs. They were taken in sequence so I don't have that kind of a problem with knowing the general area that I'm in. Between--well, let's see. On the Nation River between the mouth and Hard Luck Creek, there are forty areas which I have counted which are shallow. Between Hard Luck Creek and Waterfall Creek there are an additional sixty such areas. Between Waterfall Creek and the downstream selection of the boundary there are thirty-five additional areas. In essence there are a hundred and thirty-five obstructions during shallow water to either upstream or downstream movement for anything except a canoe, lightly loaded. Between the selection area and the mouth, the selection area itself is--let's see, approximately thirty-five miles of river to the mouth. There are three miles of river approximately within the selection area itself that

we're discussing here, and there's--the total distance from the U.S.-Canadian border to the mouth of the river is about forty-seven miles by river. I don't have an accurate estimate as to how much of the remainder is in Canada.

Q So you--when you were estimating the number of gravel bars, it was from the map to the lower boundary of the selection area, --h.

A That is correct.

Q --a hundred and twenty--thirty-five--okay, thank you. I don't know that this is possible this time of the day, but based on your experience and knowledge of rivers in Alaska in general, and on your observations of the Nation River in particular, could you summarize the conditions which you have observed on the river, which in your opinion would significantly impede river boat travel?

A Well, the first thing is the extreme variability of the water itself at any given point. In other words, if you had to move by water, goods to a given point on a certain day, say you had to have it there by the fifteenth of August, you could not with any degree of certainty say it is x-miles to where I want to move it and it's gonna take me three days, two days, or whatever it might be, because the river is very small in terms of its total drainage. And as a result, any rainfall at all causes it

to go up. If you are fortunate enough to be able to predict the weather, and can predict it in such a way that you can say during the second week of August I would expect to find a rain storn hanging in there so it would raise the water level, then you could begin to move upstream with no great difficulty as long as you had your craft under power. These flows are relatively short in duration. In other words, they don't last more than four or five days at the maximum, unless you had repeated ran.

Q Are you talking about the high water levels?

A The high water, so that what you would have in that case is you would have to get to wherever you were gonna go during the short time that the water was actually high. You would probably get cut off at the time that it was highest by the water being too high. In other words, then is when you have the logs starting to float, the others stop--in other words, it changes the whole character on high water.

Q Okay, so I think you've said that the significant impediment at high water would be the log jams, the floating debris, this type of thing?

A Yes, along with the short duration of the time that the water itself is high.

Q Okay, what about your low water impediments, I think we've

A The bars themselves would be the lowstream--in other words, you--you've got completely across the river at very, very frequent intervals bars that under low water conditions you would be required to get out and pull. And I think we've heard testimony elsewhere coroborating that. I think that anyone except with a lightly loaded canoe would have very extreme difficulty going upstream on low water. Based on personal experience in canoes elsewhere in the state, and I've not been on this particular river, but I've been across enough of those bars, many of those bars with one person in the canoe, and no gear, would have some problems and would probably get hung to where they would have to get out and kind of scootered. In other words, one foot in and kind of push your way down through. If you tried to stay in it, the rocks are just enough uneven that your keel would hang on it. And that's, you know, two to three inches of water.

Q Okay, as far as sweepers go, are those an obstacle at both high and low water?

A Yes.

Q And average, whatever that may be?

A In--in low water or in normal water, if the sweepers occupy the deepest part of the channel, so that if you're moving again anything except a canoe with a light load, you have to use a heavier water, that's where the sweepers

are. In higher water, in other words, to where you suddenly have a much broader channel, the sweepers are less of an obstacle going upstream, they become very severe going downstream, because the reason those are there is that's where the primary current runs. If you're going upstream under power, this is the sort of when you get into those kinds of conditions, if for some reason you loose your power, you knock your prop off, you run out of fuel, you know, anything, if your motor stops, the current is swift enough that your boat probably will turn sideways and you will be just like a log going downstream, which means the current will tend to take you directly into those sweepers.

MS. NEVILLE: Okay, I think that's all I have for now on the Nation River, and unless you want to see fifty slides on the Kandik, maybe we ought to--

JUDGE LUOMA: What is your wish?

MS. NEVILLE: I would like to take a break anyway.

JUDGE LUOMA: Well, is there any reason why we shouldn't break until tomorrow morning? Let's recess until nine o'clock tomorrow morning.

OFF THE RECORD

(END OF DAY'S PROCEEDINGS)

* * *

C E R T I F I C A T E

UNITED STATES OF AMERICA)
) ss.
STATE OF ALASKA)

I, Margaret Johnson, Notary Public in and for the State of Alaska, residing at Fairbanks, Alaska, and electronic reporter for R & R Court Reporters, do hereby certify:

That the annexed and foregoing ~~deposition of~~ Dept. of Interior Hearing _____ was taken before me on the 27th day of September, 1978, beginning at the hour of 10:00 a.m., at the offices of Federal Building, Twelfth Avenue, Fairbanks, Alaska, pursuant to Notice to take the deposition of said witness on behalf of _____;

That the above-named witness, before examination, was duly sworn to testify to the truth, the whole truth, and nothing but the truth;

That this deposition, as heretofore annexed, is a true and correct transcription of the testimony of said witness, taken by me electronically and thereafter transcribed by me:

That the deposition has been retained by me for the purpose of filing the same with the ~~Clerk of the~~ Judge Luoma ~~Court, Fairbanks, Alaska~~ as required by law.

I am not a relative or employee or attorney or counsel of any of the parties, nor am I financially interested in this action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal this 11th day of October, 1978.

Margaret Johnson
Notary Public in and for Alaska

My commission expires: 10/4/80