Endicott Development Project

Public Scoping Meeting

Anchorage

1983

PUBLIC SCOPING MEETING
ENDICOTT DEVELOPMENT PROJECT

ANCHORAGE, ALASKA

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P R O C E E D I N G S

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(Whereupon the hearing convened at 9:00 a.m.)

COLONEL SALING:

Good morning, ladies and gentlemen. I appreciate your all coming out this morning. And for those of you who have not met me, I'm Colonel Neil Saling. I'm District Engineer for the Alaska District for the Corps of Engineers. I've met quite a few of you that I see in the audience, but I haven't met all of you. I hope that -- I hope doesn't cause you to hesitate to speak up today, because that's what this meeting is all about.

We received an application for a permit for Section 10 and 404 -- Section 404 permits from the Exxon and Sohio Petroleum Companies for a project which is now known as the Endicott Development. For th -- I -- I suggested to somebody that as a password to get in, that everybody would have to pronounce Sagavanirktok as the delta. I've been told I have to know that name when I go up on the North Slope, instead of just saying Sag Delta. But -- it was the Sag Delta to some people, other people it's the Duck Island, to us here today, it's the Endicott Development.

You're going to be briefed on what that is all about, regardless of what you call it, a little bi later by representatives of the -- of the two oil companies. The reason that we're here today is because as a basis for my reaching a decision on those permits that have been requested, we are going to prepare an Environmental Impact Statement. This meeting, plus four others -- one in Barrow, one in Nuiqsut, one in Kaktovik, and one in Fairbanks will allow us to begin to get a feel for those things that must be addressed in that environmental impact statement.

When we say a scoping meeting, that's precisely what we mean. We're trying to get a feel for wha the scope of that Environmental Impact Statement should cover. And we hope to get from you today some comments as to what you think ought to be included in that en -- en-- environmental impact statement.

These -- these scoping meetings are designed to begin at the beginning of the environmental impact process. And I think the approach has some real merit. We have had virtually no comment -- formal comment from any of the -- duly constituted resource agencies and so those of you who are

private citizens today, really are getting your word in first, before we've had any -- any formal input from any of these agencies.

You have with you an outline as prepared by our contractor with some of the bare bones of what he thinks ought to -- we ought to start out with in that Environmental Impact Statement. What we need from you is to begin to fill in some of the blanks that's been left.

Our schedule for preparing the Environmental Impact Statement is shown in the scoping document which you have for reference. The draft is planned to be out in October of this year, and the final EIS completed in March of 1984.

One of our preliminary assumptions is -- is that there is a body of knowledge available to us, such that this Environmental Impact Statement will not require extensive additional field work beyond that which has been done to date. And the schedule that you see is based upon that assumption. Once the impact statement is completed, then I will make a decision on the permits some time in the May or June time frame of next year.

So that you know who's -- who the players are in this, let me introduce some of my people. My staff

that's going to be responsible for preparing the Environmental Impact Statement is Bill Lloyd, and sitting here in front and with him, Rich Gutleber and here, Dave Barrows. Right here in front is the head of my regulatory functions branch and those people will be the key movers.

To help these people and my shop prepare the Environmental Impact Statement, we have a third party agreement with a consulting firm of Environmental Research and Technology, or E-R-T, or ERT. They are the -- they're the people who'll be doing much of the environmental analysis. And sitting right here is Bob McDonald, who is our representative, and he's going to help me chair the meeting today.

I've asked the -- as I indicated, I've asked the oil companies to make a presentation on their proposed Endicott Project. And they're going to cover several of the alternatives that they've already considered as far as this project is concerned. Then Mr. McDonald of ERT will discuss the environmental affects, a little bit more about the Environmental Impact Statement, and then we'll take about a -- we'll have a question period after that. So that you get a chance to ask these people, both the oil

companies and our environmental consultant, questions on their presentations. Then following that we'll take a fifteen minute break, have a cup of coffee, and then come back and we will go through your comments and any formal presentations that you have.

I want to make sure that you understand the alternatives that I have, and this may affect the comments that you give me of what should be considered. I have three alternatives as far as the permit is concerned. I can deny the permit in its totality for one reason or another. I could issue the permit precisely as it's requested. Or the third, and probably the alternative that is most probable is that there will be major changes to the permit stipulations and then the permit will be -- would be issued. Which one of those three alternatives is chosen, is dependent upon the outcome of the Environmental Impact Statement. And so your comments now that we will get from you, both now and after the draft of the nvironmental Impact Statement is published, will allow me to make one of those three decisions.

So, I think that's enough for introductions, Bob I'm going to ask you to take over now. Bob will introduce the people from Sohio and Exxon, and then

he will proceed on with his part of the presentation.

MR. MC DONALD:

Thank you, Colonel. Before I proceed with my presentation, just a little -- a couple of items I want to take care of.

For all those who came in early, please make sure that you fill out the sign up cards if you want to give a presentation and return those to the lady in the back. We want to make sure that you all are given an opportunity to give a presentation later on.

In addition, we do have a copy of the scoping document back on the back table. Make sure that you do get a copy of that.

As the Colonel indicated, I am the overall Project Manager for ERT on this project. And ERT has been retained as the third party in the EIS contract to conduct the environmental analysis for this project. Therefore, we're going to work -- we will be working quite closely with the Corps of Engineers throughout this entire process. We've been working with them over the last month in preparation of the scoping process, in order to make all the arrangements for that. And we will continue to work closely with them throughout the remainder of the project.

As the Colonel indicated, the session that I'm chairing now will consist mainly of three different parts. The first topic will be a presentation by Sohio of the project's description and alternatives. Following that, I will give a brief description of the EIS scoping process and what we are going to accomplish by going through the scoping process. And then, finally, I will give an overall description of just the EIS process for those who may not be familiar with the EIS process.

At this time, I think it would be very appropriate for me to introduce to you some of the people who will be participating in the rest of the presentations this morning. And we have two gentlemen on my right from Sohio. We have Dan Huxley, who is the Development Planning Supervisor for Sag Delta Project, Dan. And then we have ~~Bill~~ Del Dias, who is the Senior Environmental Engineer. And both those individuals will be involved either in a formal presentation or helping to answer some of the questions that you have on the project later on.

With that as a brief overview, it's appropriate now for me to turn the podium over to Dan, so that he can give us a briefing of the project description and the environmental--or the engineering summary,

along with the alternatives. It's very clear for all of you that have a good understanding of the proje description so that you can bring forward you issues and concerns that we're trying to identify for today. So, with that as a general introduction, Dan, I'll turn over to you.

MR. HUXLEY:

I'd like to begin this morning by just briefly reviewing the progress that we've made in the project since the developmental review meeting that we had back in May of last year with many of the permitting agencies. And I know many of you here today were present at that meeting. As Colonel Saling mentioned, the project is now referred to officially as the Endicott Development Project. At the time that we met last, it was at that time called the Duck Island Sag Delta Project.

One of the most important things that has happened, is the major conceptual engineering studies of the project that we've been conducting, have now been completed. These studies had been conducted for the purpose of determining the technical feasibility of developing the field, and the estimated cost of such development.

This work was being conducted in the broadest

scale contemplatable in terms of overall development size, realizing that certainly, the scope would be changing and subject to change through optimization work to be done in later phases of design.

Another item that the Colonel mentioned was we have now filed the initial project permit application, that being a gravel permit application with the Corps of Engineers. And that filing has kicked off the EIS process for which we're all here this morning.

The purpose of filing early, first off, is realizing that the EIS process is a lengthy one, and that the receipt of project permits is critical to our overall project development schedule. Secondly, it's been our intent -- continues to be our intent to resolve issues of both agency and public concern at as early a time in the project life as possible.

Another thing that we have done, we have prepared and submitted to the Corps and to the other agencies, an engineering overview and a companion environmental overview. The engineering overview describes the base case development that we have carried through conceptual design. And the environmental overview describes both the environmental

setting and the changes that we feel might occur as a result of the development.

In terms of the current work that's ongoing right now, we are presently -- the companies are evaluating the major development concept alternatives, for the purpose of arriving at a preferred development scheme. The major issue that we're looking at right now, and what our efforts are focused on is on the optimum number and location of gravel islands. This determination is going to be dependent on the results of study work that's ongoing right now, both of a reservoir nature and an engineering nature.

We have also at the present time getting prepared to start our preliminary and detailed desigr effort. That's scheduled to get underway in the second quarter of 1983. At this present time, we have commenced already a very extensive 3-D seismic program, which has been conducted this winter in the project area. That survey is very necessary to the project in gaining a better understanding of this reservoir that we're trying to develop.

In terms of general comments, back in May we noted and feel it proper to note again, this project is of a marginal nature and at this time, a final commitment has not yet been made to develop. Such

a commitment cannot be made, in our feeling, until additional reservoir information, engineering information and cost data is collected on the project. However, we feel that we have made a significant financial commitment to the project. To date, we have expended as a group, in the order of $100 million, in terms of exploration, predevelopment, engineering and environmental study work. And during the next eighteen months through the preliminary detail design phases, and as a result of the 3-D seismic work, we expect to expend in the order of an additional fifty to sixty million dollars. We feel this is indicative of our serious intent to proceed as far forward in the project as we feel it's financially and economically feasible at this time. And we'll continue in that direction.

What I'd like to read off to you now is a description of the project. The description I'll be making, will, as I mentioned, represent the base case project design that we carried through our conceptual design work. And this is consistent with the project description included in the engineering overview, as I noted has been filed with the Corps of Engineers, and is available for public review. It is also consistent with the meeting handout that

you all have in front of you this morning.

In a very, sort of general nature, I'd like to just briefly describe the project overview and then get into more details on the specific project components. The project area is located approximately 15 miles east of Prudhoe Bay and two to four miles offshore from the Sag River Delta. We are generally looking in our base case, we're showing here four gravel islands. This includes a central drilling production island, two satellite drilling islands, and a waterflood gravel island. Next to that we'll have gravel causeway (indiscernible--coughing) main island shore, we will have pipelines, both inter island pipelines connecting the islands as well as sales pipelines transporting the oil and gas products from the main island to sales points at Prudhoe Bay area.

We'll have a total of up to 240 wells, 80 of those on each of three drilling and production islands. In addition to that, we will have a base operations camp, a permanent facility and a main construction camp, which will be on location for duration of the construction period. Both of those and base case are shown approximately six miles from the main production island in the Delta Uplands.

The project is expected to commence production start up in mid-1988. Production, at that time, is expected to amount to somewhere between 75 and 150,000 barrels of oil per day. That rate would expect to hold for several years and then begin to decline. The gas produced and sold from field is expected to peak at approximately 250 million cubic feet of gas per day. The actual timing of that sales peak and start of gas sales, at this point, has not been determined and will depend, both on the timing of the installation of the proposed Alaska Natural Gas transportation system, as well as a possible reservoir management needs for re-injection of the gas.

What I'd like to do now is move into a little more detailed description of the individual islands and project facilities. The two satellite drilling islands, each of those is located about 2½ miles from the main island and approximately two miles from shore. They will contain drilling and well operations facilities for a maximum of 80 wells each. The actual size of those islands in the base case is noted to be approximately 750 feet by 1000 ft. These islands will be constructed of gravel and will have slope protection to insure slope stability.

The main production island is, as with the others, located about two miles offshore. Again, will include the same drilling and well operations facilities for up to 80 wells. This including the one or more drilling rigs, drilling support equipment, and the well manifolding and well test facilities were also included on the satellite islands. This island is expected to be approximately 1250 feet by 1350 feet in dimension. It will also be constructed of gravel and adequately slope protected for erosion protection. In addition to the facilities that I've noted, this island will also contain all the main field production processing and support equipment for the development. This will include the fluid separation handling facilities to separate production, to produce fluid from the three islands, the water, oil and gas. The oil will then be dehydrated and ready for sales. The gas handling facilities on the island will include both gas dehydration and gas compression equipment. The compressed gas will be available both for gas sales, possible gas injection for pressure maintenance purposes, as well as compressed gas that, as I noted earlier, will be used on each of the three drilling production islands for

The actual facilities on the islands will include on the satellite drilling islands, will include one or more drilling rigs and drilling support equipment, well manifolding and well testing facilities, as well as reserve quarters and other emergency living facilities.

The production from the wells on each of the satellite islands will be transported via a subsea produced via pipelines to the main production island. At that point, the fluids will be combined with the produced fluids from the wells on the main island and move on to the separation of processing facilities.

Coming back to each of the satellite islands, will be firstly, a pressurized water line, which will be transporting ejection water back to satellite islands for re-injection for waterflooding purposes in select wells. It will also be transporting in a separate line, compressed gas back to each of the satellite islands, for use in artificial lifting of fluids as needed. There may also be fuel transported back, as well as an expectation of a having power lines transporting -- for distributing our main power to each of the satellite islands.

artificial lift needs.

The main island will also contain the water handling facilities for the field. This includes facilities for the treatment and re-injection of produced fluids that will be produced from the wells on the three islands, as well as facilities for the treatment and injection of source water that we'll be getting from our waterflood island, I'll discuss in a moment.

Also on this main island will be the power system, the power generation for the field. This will include both the generators and a distribution network of subsea power cables out to each of the three satellite islands.

The last and smallest of the four islands is the waterflood island. This measures approximately 520 feet in diameter. It also is constructed of gravel and will be slope protected. This particular island is located in the deepest water in the project area. At the present time, our base case indicates that to be approximately 18 feet. The purpose of this water depth is to assure us a year-round supply of source water for waterflooding purposes.

This island will contain a waterflood intake structure and a system to transport sea water

collected out at the island to the main production island. At the main production, as I noted earlier, the water will be processed, treated and ready for injection into each of the three drilling and production islands for waterflooding purposes. The pipelines that we have in the project include both inter island pipelines connecting the islands as well as the sales pipelines to sales points. With respect to the inter island pipelines, between the satellite drilling islands and the main island, we will have a produced fluid pipeline, transporting produced fluid to the main island. And, as I noted earlier, returning to the satellite islands, we'll have pressurized water for the waterfloods and also compressed gas for the artificial lift. In addition, we're also likely and may have a fuel line.

The pipelines that we would have from the main island to the waterflood island include the main source water pipeline, transporting source water to the main island as well as a possible fuel line with returning--fuel line returning to the waterflood island.

These pipelines, these inter island pipelines, will vary in size from 6 inches to 24 inches in diameter. They will vary in length from 2 to 2½

miles. The material, the pipeline material to be used will vary depending on the service. Each of the pipelines for the most part will externally be coated to protect from external corosion, methodically protected to prevent erosion cr corosion. They will also be insulated to prevent the heat loss, as well as possibly weight coated to assure negative buoyancy of the pipelines.

Internally, where necessary, the pipelines will be protected from possible internal corosion. This would include possible internal coating of the pipelines, injection of chemical inhibitors, or combination of the two.

The pipelines, inter island pipelines, will b installed in trenches, which will be pre-dredged And the actual depth of the trenches and the method of covering the trenches once the pipelines are in, will depend on further work, geotechnical work, and study work now underway.

The burial of pipelines in trenches is necessitated to prevent and maintain project--pipeline integrity from possible effects of ice pounding, ice gouging, and strudel scour phenomena.

The pipelines, both the inter island pipelines and sales pipelines, that I'll be getting into in a

moment, will be designed, installed and operated with the intent of preventing any sort of pipeline leaks. This will be actually the design philosophy in putting in the pipelines. This leak prevention will result from a combination of proper material selection, proper installation procedure, and the use of proper corosion control methods where necessary.

In addition to the leak prevention methods that I've just described, we will also have leak detection equipment in use. This will include both continuous leak detection devices. These would involve, for the most part, the monitoring of flow and pressure deviations in the pipelines. In addition to the continuous methods, we'll also have periodic methods of leak detection, including obviously visual surveillance. In addition to that, the use of periodic use of internal pipeline monitoring pigs -- inspection pigs.

Further, the pipelines will have adequate freeze protection systems employed. This will include methods such as insulation and minimum flow, and where necessary, line displacement.

I'd like to move on now to description of the sales pipelines. There are two pipelines planned.

One, being an oil sales line, the other being a gas sales line. Both of these are in the base case planned to be sixteen inches in diameter. The oil will be transported from the main production island to the TAPS Pump Station Number 1. The gas pipeline will go from the main island to the proposed Alaska Gas Conditioning Facility.

Two alternatives were examined very carefully through our conceptual design work for the routing of these pipelines. And I'd like to go through those briefly.

Firstly, we have the Sag Delta route. In this case the pipelines came ashore, buried in a gravel causeway. At that point they continued burying it in a gravel causeway approach for another mile and a half. At that point they come above ground and continue on elevated pipeline supports through the Delta area over to the Drill Site 9 location. At this point they join existing pipeline corridors and continue on to past Pump Station 1 and future AGCF.

In this particular case, adjacent to the pipeline along that route, we have a access road--gravel access road and the necessary work path for the pipeline. The access road will come along the same route and connect to the existing road system--

Prudhoe Bay road system, over at Drill Site 9. The alternative to this route that we examined was what we call the West Dock pipeline route. In this case the pipelines are buried in a subsea trench that goes from the main production island over to Prudhoe Bay West Dock. At this point they come on dock and continue buried in gravel (indiscernible--coughing).

What I'd like to do now is touch on the camps that are being proposed. We have two major camps. One, being a base operations camp, the other being a main construction camp. Both of these are located approximately six miles from the main production island in the Delta Uplands. They are contained or in our base case included on the same gravel path, approximately a 50 acre site.

The base operations camp would be a permanent facility, designed to house approximately 260 people. It would include facilities for living quarters and administration facilities, waste, water and sewage treating equipment, as well as power generation of the support equipment.

The main construction camp, located in our base case on that same site would house up to 750 people. This camp would operate throughout the period

of construction. This time is undetermined as yet, because of the uncertainty in the timing of the installation of possible future increments for the project. Facilities for the main construction camp would include living quarters for the construction personnel, the waste, water and sewage handling equipment needed, material and fuel storage areas, as well as power generations. If, as noted, in our base case that's shown here, the camps are located adjacent to one another, the support facilities will be shared to the extent possible.

In addition to the main camps that I've just described, we are also -- possibly we'll have small temporary camps adjacent to gravel mines, in the event that onshore gravel sites are utilized.

In terms of gravel requirements, we're estimating at the present time, we'll need approximately 8 million cubic yards of gravel for the project. This will include approximately 4 million yards of gravel for the islands, an additional 2½ million yards for causeway and causeway approach, and an additional 1½ million yards for the road system, and pipeline and camp work paths. The sources of gravel have not yet been determined. Several onshore and offshore sites are currently being examined,

although no decision has been made, or no preference been made on an established site. The transportation and placement of the gravel will, obviously, depend on the location of the gravel source. (Next slide, please.)

I'd like to now just briefly describe our project schedule as we see it happening now. Detail design is expected to start in the second quarter of 1983 and continue through the end of 1985. In mid-1984, we expect to see a major financial commitment being made to develop the project. This decision will be made following the receipt of project permits. At this point in time we would order the long awaited equipment required for the project, as well as starting site preparation work on the North Slope.

The construction of access roads, construction camp and the pipeline work paths would begin in (indiscernible--coughing) 1984. The gravel island and causeway construction, looking at the same line would begin approximately mid-1985. Also in mid-1985 we would start building modules -- module construction would begin in the Lower 48.

The drilling of wells is expected to begin, as shown here in early 1986. As soon as the islands

are ready, the pre-drilling of a certain number of wells before facility is started is necessary to have sufficient well capacity to start the facilities.

Also, in late 1985, we're indicating the start of pipeline construction work carrying on through 1986. We'll begin installing modules and process equipment, that major work activity occurring after our major sea lift in 1987.

The start of production for the project is shown as mid-1988 -- we're indicating project start up. And the last line here, future increments, the design installation of those increments will proceed, as has yet to be determined. (Can I have th first slide again?)

I'd like to just briefly recap what we have here -- what we're proposing. A total of four gravel islands, a main drilling production island, two satellite drilling islands, a waterflood island, pipelines, subsea pipelines connecting the four islands together, as well as oil and gas product pipelines to sales points at Prudhoe Bay, a gravel causeway connecting the main island to shore, an access road continuing through the Delta to existing road systems at Prudhoe Bay, and the main

construction camp, and base operation facility located in the Delta Uplands. That concludes my presentation.

MR. MC DONALD:

Thank you, Dan. You'll have an opportunity to ask Dan some questions shortly following my presentation.

The second topic that I want to discuss today, briefly, is that of the scoping process. That's the reason why we're here. I'm sure you're all aware of the fact that the Council on Environmental Quality requires agencies to use an early scoping process for determining issues to be addressed in the EIS and for identifying the significant issues associated with the proposed action and the alternatives.

And the public scoping process basically consists of three parts or three steps. The first step is to gather all the public concerns, and that's what we're doing throughout this week and throughout the other three public meetings at the -- that Colonel Saling was talking about.

The second step is to then take and analyze that information -- analyze the issues and concerns that were identified.

And then lastly, to go ahead and then from that process, identify the significant issues.

The scoping process we are in today represents the first step in the process. The final product of the scoping process will be a final report that we will send out. This document will, in essence, identify the issues raised at the public meetings, along with the analysis of all these issues, and how the significant issues will be handled in the EIS. And this document will be indeed sent to all the folks that have -- that are on the mailing list and that have indicated that they would like to receive additional information for this project.

It is important to recognize that we are here learn today. We're not here to tell you all about the project we know, but we're here to learn about your concerns, so that we can, indeed, include those in the Environmental Impact Statement. And we do want to encourage active participation later on when we open the session up.

The last topic that I want to generally discuss is the summary of the EIS process. For those of you who are familiar with the EIS process, this is old hat, but for some of the others it might be good to go ahead and review the EIS process. And

also we want to generally discuss the tentative schedule that we've identified for preparation of the EIS.

The first task of public scoping, obviously that's where we're at today, and we hope to have that scoping process finalized in the near future, within, say, the middle part of February. The study plans -- finalized study plans, is a process whereby we will go ahead and take the input that we have received from the scoping process and develop detailed study plans which will direct our discipline specialists to go about conducting their impact analysis. And this will indicate basically the schedule that they'll be following along with the scope of work.

The next task of base line data collection and review, as Colonel Saling indicated, one of the major assumptions that we are making on this particular project is that there is an adequate base line data available. As a lot of you are aware that there have been many studies conducted throughout the last two or three years in the project area. And we are assuming that, based on what we know today, no additional field base line data will have to be collected. Obviously, if there's

something that would come up through the scoping process, or through our analysis process that woul require us to identify data gaps, we would have to do that in conjunction with direction from the Corps of Engineers.

I think it would be appropriate to basically summarize some of the field studies that have been conducted in the immediate project area. There are four major ones that have been conducted, along with several minor ones. One of the first ones is the Biological and Archeological Investigations of the Road Corridor and Pipeline Route through the Sag Delta, which was conducted in 1981. The second study is the Marine Environmental Studies near the Sag River Delta in 1981. The third one is the Under-Ice Survey of Overwintering Fish in the Sag River in the vicinity of the Sag River, which was also conducted in the winter of 1981 and 1982. And then lastly, the Summer Environmental Studies of 1982, which have not -- the final results have not been finalized yet, for that particular study.

It is important to note that we do have two subcontractors that are supporting us on this study, and that is LGL and Nortec, who are providing base line support and also participating in impact

analysis.

The next task of impact analysis, basically, is where we go back doing the hard, rigorous analysis required by means of -- to determine impacts of the proposed action and the alternatives.

It's also important to note during this particular task, that specialists will also be identifying any mitigation majors to lessen the adverse impacts on the environment. And at the same time, if there are any alternatives that are identified that would reduce the impacts, they would also be identified at this point in time.

And the outcome of Task 5, then, is the preparation of the draft of the Environmental Impact Statement, where we basically take and consolidate all the information concerned with base line and the affected environment and impact analysis. What we're planning on now is that the draft EIS to be, hopefully, out on the street in October of 1983. With following that point in time during the public review phase, we'll also have a hearing, which the Corps of Engineers will schedule at a later date.

The last task is the preparation of the final Environmental Impact Statement, which basically consists of responding to the agency and individual

review comments on the draft document, and making any corrections in analysis that might be required as a result of these review comments. Obviously, the magnitude of the revisions will be a direct comparison of the types of comments that will be received on the document. On the bottom of the draft, we have the tentative schedule, and that's exactly what it is at this point in time, without having input from the scoping process we took our best stab at trying to identify the schedule. It's fair to say, that based on the output of scoping, the schedule may be compressed or it may be expanded. It's very tentative at this point in time.

In summary, I think it'd be good to basically indicate to you some of the issues and concerns that we have identified. Obviously, this is not an exclusive list, and that's the purpose of scoping, but in order to start the process and provide some issues and concerns that we have identified, we generally identified these eight which were in your scoping brochure, which consists of: water quality, fish migration effects, effects on the snow goose, nesting and rearing habitat, effects of discharging drilling mud and cuttings, effects of the project on the Boulder Patch, disturbance of bowhead whale

and any other marine mammals, effects on caribou use, and risk analysis associated with ice over-ride and lastly, risk analysis related to wellhead blowouts.

Here again, I don't want to warn you, this is not an exclusive list, but just to start the ball rolling. Later on when we open up, these are some of the tentative issues and concerns that we have identified. Colonel, with that is a brief run down of the second part of our agenda, I'll turn this back to you now for some questions.

COLONEL SALING:

Okay, we have the technical presentation on the features in the project that have been looked at to date. And we have a description of the environmental impact side and the scheduling.

What I'd like to do now is to open up for questions for these two gentlemen, and then we'll take a break and go on to your statements. So let me have your questions and I'll ask them to the appropriate person now.

Yes?

UNIDENTIFIED SPEAKER:

(Inaudible question.)

MR. HUXLEY:

Generally, the exploration islands have been considered the smaller. For the most part been designed to handle no more than maybe one to three wells. I don't have an exact size of one of the current islands. Does anybody happen to know what the size is?

UNIDENTIFIED SPEAKER:

350 to 400 feet.

MR. HUXLEY:

350 to 400 feet, that compared to on our satellite islands approximately 750 by 1000. The main island, upwards of 1250 to 1350 and the water-flood island, somewhere near 520.

UNIDENTIFIED SPEAKER:

(Inaudible question.)

MR. HUXLEY:

Yes, the exploration islands were designed for the purpose of exploration; thus, they weren't put out there for the purpose of a twenty to thirty year project life. The actual design perameters that will go into our islands have not yet been determined. This will be one of the efforts in going through in our preliminary detail design phase. As part of that we will be collecting oceanographic data. And with that we will be making our efforts

to predict storm surges, storm frequency periods to assure ourselves that the islands are -- have sufficient free board to protect them from waves and storm action. Work has been done and continues to be done on Slope protection methods, to try to determine what we see as being the most effective, and particularly from the standpoint of a Slope protection system that will be in place and have to continue to operate and serve the islands for many years. The islands will also be designed in both in size and styling for purposes of resisting ice forces--the ice over-ride conditions that are certain factors that occur in the delta area.

COLONEL SALING:

Additional questions? Yes, sir?

UNIDENTIFIED SPEAKER:

He has described protection being developed with the island--but what about a two mile causeway when you have two miles of exposed area. Will the pipeline be buried under the causeway, so that it is protected from a possible ice over-flow, or would it be buried on top of the causeway. And if so, what provisions are made for the flow of water through or to pass through the causeway?

MR. HUXLEY:

The causeway itself will be designed in a similar manner as I've described on the islands to resist ice forces. This will depend, certainly, on what part of the causeway you're in. It's (indiscernible) likely the shape of the causeway will vary because of the fact we are getting into deeper water as we approach the main island and greater ice forces are expected. The causeway will also be designed with slope protection methods systems to provide Slope stability. With respect to pipelines, those plans are to bury those pipelines in the causeway, not under the causeway, but in the causeway to protect them from possible ice over-ride. As far as water paths through, we have done some work and continue to do work on measurements in the area for flows, and we're also doing some modeling work at the present time to try to determine the effects of the causeway on the flow, particularly in the case we have here where we are in a delta region.

COLONEL SALING:

Yes? I forgot one administrative...for the record, would you please state your name as you start to state your question?

UNIDENTIFIED SPEAKER:

(Inaudible question.)

MR. MC DONALD:

To answer your question, no not at this point in time. That will be the part of Task 2 -- develop in detail a study plan. If you've got some concerns on that, we'd certainly like to hear about your concerns later on during the public session--the open session.

COLONEL SALING:

Additional questions?

I don't want to cut them off; and if in fact, during the open session which follows the break you do have some questions, we'll address those. Then also along with statements...but I did have a hand over here.

JUDY ~~GOTLIN~~ Gottlieb (phonetic)

When are the meetings planned on the North Slope?

COLONEL SALING:

Barrow is this Friday, Nuiqsut is the 27th, and Kaktovik is the 28th, and Fairbanks sometime the second week in February.

Okay...ya? Just made it.

UNIDENTIFIED SPEAKER:

When do you plan to close the formal scoping

period? Any established deadline for written suggestions on the scope of the EIS?

COLONEL SALING:

Thirty days.

UNIDENTIFIED SPEAKER:

Thirty days from now?

COLONEL SALING:

Yes.

UNIDENTIFIED SPEAKER:

Thank you.

COLONEL SALING:

Okay, let's take about a fifteen minute break. Those of you who filled out those cards, if you would just put them here on the corner, and tl Bob and I can use those as a basis for calling on those people who have comments.

(Whereupon the hearing recessed for a short break.)

COLONEL SALING:

I have only four cards so far, does anybody else got one squirreled away some place that didn't get up here to the front table? Okay, well, we'll proceed with these. What I'd like to have as I call your name, and as you note, I'm shuffling these so

that there's no question about sequence. I'd like to have you come up and identify yourself and then indicate whatever -- say whatever you'd like to say. If it's a question, fine, we'll try and answer it, if it's a statement, good for you. But, please come up to the front podium. So, after shuffling these, Rosa ~~Vihan~~ Meehan (phonetic).

MS. ~~VIHAN~~ Meehan: My name is Rosa ~~Vihan~~ Meehan and I'm presenting testimony for the U.S. Fish and Wildlife Service. We have several concerns regarding the impacts of the proposed project on fish and wildlife. The proposed development is located in an environmentally sensitive area adjacent to the delta of a major North Slope river, near the only nesting colony of snow geese in Alaska. And adjacent to and actually infringing upon the Stefansson Sound Boulder Patch, a unique benthic community.

Our specific major concerns are potential impacts to the snow goose colony. This colony is a geographically isolated individual colony, and although individual snow geese have been noted to nest in other places along the North Slope, this colony is still unique and of great concern to our agency.

Snow geese are particularly sensitive to

disturbance. And it will be difficult, if not impossible, to predict the impacts of construction and operation of the project on the nesting geese. Additionally, measures to accommodate passage of flightless geese traveling across the delta will have to be developed and incorporated into the project design. Further studies on the return rate of the snow geese to the delta should be conducted, so that the ultimate impacts on nesting can be predicted with greater confidence.

Another major concern to our agency is a proposal of another causeway, prior to receiving substantive information on the impacts of Prudhoe Bay waterflood extension. Review of this causeway proposal, using a worst case scenario, as was done for the Prudhoe Bay waterflood extension, would not be appropriate. Our primary concern is that of the potential impact of the causeway on the movement and distribution of anadromous fish, which is related to potential changes in the near shore hydrographic regime.

A reasoned risk analysis of the proposal and the alternatives' potential impact must be conducted.

A third major concern of our agency is location of

the waterflood island in the Stefansson Sound Boulder Patch. The proposed island would cover approximately 10 acres of the Boulder Patch. The increased turbidity and sedimentation during island construction may adversely affect the kelp's annual growth and potential for recolonization. Operation of the waterflood intake will entrap and entrain motile organisms. Of particular concern are the larval fish in the area.

Additionally, impacts will be caused by the filter backwash. The EIS process should be used to find a more suitable, i.e., environmentally acceptable location, unless substitute evidence can be presented, that the impact will be minimal.

Another concern of our agency is the impact of extracting 8 million cubic yards of gravel that would be required for the project. The potential mine sites need to be identified early, and measures to minimize the impacts developed and included in the review process. Impacts due to the removal of the gravel required for the causeway construction must be included in an evaluation of that alternative.

Another concern is the location of the base operations camp. In this regard, the impacts of

extending the support facilities out onto the delta versus consolidation of support facilities within the Prudhoe Bay unit, need to be considered.

A final issue is the cumulative effects of this project and other development or reasonably foreseeable development in the near shore Beaufort. This issue needs to be discussed in the EIS.

COLONEL SALING:

Good, thank you very much.

David Wigglesworth (phonetic).

MR. WIGGLESWORTH:

Hello, my name is David Wigglesworth and I'm here speaking for the Alaska Center for the Environment. And we are pleased to be given the opportunity to testify here.

We are concerned primarily about the management of the drilling muds and associated produced waters with regards to this project. We're concerned about the lack of federal and state programs in Alaska geared toward the development of proper standards and permit procedures for the discharge of drilling muds into reserved pits, or whatever, associated with oil and gas operations.

Our anxiety is heightened by the fact that, both the Federal Resource Conservation Recovery

Act and the State's proposed draft, hazardous waste management program and regulations fail to comprehensibly address the issue of drilling muds. In fact, both programs exempt muds from any form of regulatory control. This factor, looked in conjunction with the anticipated growth of oil and gas exploration state-wide, poses a potentially serious threat to Alaska's wetlands and associated wildlife that inhabit these areas.

Our concerns regarding drilling muds and additives are four-fold. First, while muds themselves are not necessarily harmful to wetland ecosystems, the additives, like lignosulfates, salts, naphthalene, caustic soda, and para-formaldhyde injected into the muds in the proper concentrations deletirious to the life forms inhabiting these wetland areas. A Canadian Study addressing the acute toxicity of drilling muds on fish concluded that drilling muds were acutely toxic to both local fish in the McKenzie River Delta and Canadian bioassay fish, rainbow trout.

In the past, drilling muds and mud reserve pits have been excavated near rivers and wetlands in Alaska. A reserve pit created along a section of the Putuligayuk River is just one example of this

phenomena. In the event of a river flooding and/or the reserve pit overflowing, the muds would enter and contaminate the river system.

Second, the present construction designs for reserve pits are insufficient.

Third, there are many studies investigating the acute toxicity of drilling muds to fish and other wildlife. While relatively few studies have addressed the issue of chronic toxicity of drilling muds, we would like to see more study in this area.

Fourth, there are approximately 200 miles of roads at Prudhoe Bay. In the past, the State has issued permits allowing the discharge of drilling muds and oils along the roads to control dust. We are concerned that non-target areas off the road system could become contaminated due to run-off.

In essence, the Alaska Center for the Environment is troubled by the fact that drilling muds from oil and gas operations are being disposed of without a proper management program and without foreknowledge of their effects on wet and dry land areas in the State.

We ask that a comprehensive drilling mud program be included in any type of EIS process regarding this project. Included in the programs -- should

include such specifics such as a list of the types of muds and additives used by oil and gas industries. Second, standards for the concentrations of hydrocarbons and other additives present in the muds at the time of their disposal. And these standards should be based on acute and chronic toxicity reports. Criteria for disposing of highly toxic muds and a monitoring system that tests the areas wherever muds are disposed.

The program should be established on a site specific basis. And that is in the case of say reserve pits, where reserve pits are excavated on wetlands or they could impact wetlands and waterways. Specific permits and requirements would be developed for that particular area. Whereas, those areas not adjacent to areas or specifically not adjacent to a really fragile wetland or wildlife ecosystem, those pits could fall under a more general permitting program, thereby speeding up the permit process in these particular areas.

In the final analysis, present management of drilling muds in Alaska is entirely inadequate. We feel the drilling muds under their present management threaten Alaska's fragile wetlands and inland areas. And we hope that steps are taken to

protect these priceless areas. Thank you.

COLONEL SALING:

Thank you.

Rosa, did you want to get a copy of the transcript?

MS. ~~VIHAN~~ Meehan:

Yes.

COLONEL SALING:

Okay, let me check that. Okay...Robert Mintz.

I'll ask you the same question then, do you want to get a copy of the transcript?

MR. MINTZ:

(Inaudible response to question.)

My name is Robert Min~~k~~tz, and I'm here speaking for Trustees for Alaska.

I was pleased to see in your description of the scoping process, the Corps' emphasis on alternatives, because I think that's a vital element of the EIS process which will help inform the ultimate decision-making. I just have a couple of points that I'd like to mention on some alternative concepts that I think should be addressed in the EIS.

One has to do with the question of gravel usage. Not only the extent of gravel and the implications

for impacts of extraction as Ms. Vihan mentioned, but also whether or not there are alternative structures or approaches to the development project facilities that would not need as much gravel or indeed, any gravel.

Perhaps Mr. Huxley or someone else could tell me right now whether that has been considered so far in your plan -- the use of non-gravel structures for the production facilities.

MR. HUXLEY:

The use of non-gravel structures has been considered. The preliminary findings indicate that these sorts of structures that I'm sure we'll see employed in some of the deeper waters, are indeed more applicable to deeper water areas. And the project area we're involved with, three of the four islands will be located in very shallow water, from 4 to 8 ft. deep and our indications thus far -- and our studies thus far have indicated that a gravel island is the preferred construction and the far less costly kind of construction.

MR. MINTZ:

Would it be fair to say that this is something which the contractor still intends to investigate as an alternative?

MR. HUXLEY:

We don't have any present plans at this time to do any further work in looking at alternative structures. At this time we feel that the base case that we've selected and run through our conceptual design, that being gravel islands, is the preferred method of construction.

COLONEL SALING:

Let me respond to that. I hear what you're saying that...let me try to clarify that.

Are you indicating that you would like to have us take a look at the non-gravel structures in the EIS as an alternative?

MR. MINTZ:

Definitely.

COLONEL SALING:

Okay. All right. That definitely will have to be looked at in the EIS process. That will be addressed, and the level of detail will be commensurate with the impacts associated with that.

MR. MINTZ:

Cause of course the economic comparison between gravel and non-gravel alternatives depends on the cost of extracting the gravel. And that's why--another reason why I think it's important to assess

the implications of the construction on the demand for gravel and where it might be taken from and what the environmental, as well as the economic costs are.

A different area which I think alternative approaches need to be investigated is in the seasonal variations or restrictions on various activities--construction, drilling and so forth. As I'm sure all of us know, seasonal variation in biological activity and environmental hazards and so forth are extemely important on the North Slope and the Beaufort Sea. And the possibility for substantially mitigating possible impacts on the environment and on wildlife are there in terms of varying when the activities take place. Especially, of course, avoiding critical wildlife functions such as nesting and other things which mainly occur during the summer months. So again I recommend that the EIS look closely at alternatives and mitigating measures concerned with seasonality.

I'd also hope the EIS will investigate the question of oil spill clean up and prevention capability. This is, I suppose, the only opportunity for EIS process and the entire development of this project because it's on State tracts. And the

adequacy or inadequacy of oil spill clean up technology is a recurrent question which has not yet been satisfactorily resolved. I think that past experience in the oil industry indicates that the rate of loss of well control with blow-outs tends to be substantially higher in the development phase, for whatever reason. And given the fact that we're talking about hundreds of wells, we're confronting, really, a possible risk of oil spills which is in order of magnitude, more greater than what we've confronted in the past.

Finally, I'd just like to reemphasize a point which was earlier made about, looking at the question of the location of the onshore facilities. And the possible consolidation of such facilities in the existing Prudhoe Bay are, rather than intruding new facilities into the Sag Delta area.

Also, in terms of the causeways, one area of alternatives which I think should be assessed, is the question of open or continuous flow causeways allowance for greater water circulation. I don't know whether it's even in the cards in terms of feasibility, to consider non-causeway structures, such as pilings or bridge type structures. If it is, I would hope this would be assessed as well.

Thank you.

COLONEL SALING:

Thank you.

Richard Sumner.

MR. SUMNER:

We have a two-part show.

COLONEL SALING:

Huntley-Brinkley?

MR. ~~STINEWIRE~~ Steinborn:

Yes. I am not Richard Sumner. I'm Dan ~~Stinewire~~ Steinborn (phonetic). I'm routinely here with EIS to do with EPA. And we've got two pieces, and Richard kind of fits in the middle.

The first thing that I'd like to address is the schedule for the EIS. We're talking, it looks like about a year and a quarter from start to finish, and that's a very ambitious schedule. What that requires, among other things, is that we--the EPA and the Corps and the other agencies and sponsors do everything right the first time. There's no time for mistakes in a schedule like that. In some projects we've been able to do that, like on the Alpetco Refinery Project, and on some we haven't. And when we make mistakes just takes a lot longer.

And the first thing that leads to is the kinds of data gaps that we've been able to see in the information that we've seen so far. First, in terms of the information that's available about the proposal, I see nothing about the field size, about the production rates over time, other than a maximum, nothing on the physical dimensions of the field, only average numbers for discharge rates, no numbers for air pollutant emissions at all, nothing on the fate of produced formation waters, nothing on waterflooding rates--how much water are they going to withdraw over what period of time, how fast they'll reinject it. We haven't seen a water budget or a gravel budget, per se, there's just lots of data gaps on what the proposal entails. As well--I've seen nothing on the life cycle costs, so we could get an idea of what the cost of the time would be and how significant any environmental protection requirements might be in terms of actual cost.

There are similar gaps in the environmental data--at least that which is available in the environmental overview. For instance, the water quality contains no base line data on hydrocarbons in the water in the area, or on dissolved oxygen

or nutrients. It basically is limited to salinity, temperature and temperature data--there's no suspended sediment data. And those kind of data gaps would need to be filled before it can really start doing an analysis of the effects of the project.

The second major topic is alternatives, and some of the folks have already addressed that. Alternative alignments for the pipeline, not just the major alignment--the differences that we saw earlier this morning, but alternative alignments within the corridor to minimize the effects of the pipeline and the access road on wetland habitats.

Alternative locations for the waterflood island. It seems to us that you could move that island just marginally and remove its footprint from the Stefansson Sound Boulder Patch.

Alternative gravel extraction sites, perhaps changes in the locations of the production island if their impacts that result from where they're located. They could be mitigated easily by shiting them in one direction or another.

Rick Sumner is going to come up and talk in more detail about the other kinds of effects we're concerned about--basically on the placement of

structures and on water quality habitats.

COLONEL SALING:

Fine, thanks. Ya, come on up.

MR. SUMNER:

My name is Richard Sumner. I with the Environmental Protection Agency here in the Anchorage office. I'd like to express a few comments and observations, again, more specifically related to the dredge and drill components of this project.

To begin with I'm most interested in the--primarily the causeway. We're looking at water quality concerns, generally relating back to circulation. We'd like to see some modeling of circulation surrounding any proposed causeway, and this needed to address littoral drift changes in local hydrological regime within the delta. Water quality across the causeway, and on that water quality, at least salinity, temperature differences and turbidity trajectories caused by that causeway. Also get into longshore nutrient transport and trial discharge effects--how the causeway will affect these discharges from the Sag River. Again, these all--these water quality perameters all relate back to anadromous fish

movement--movement epifaunal within the local regime and perhaps even bird use of the inshore littoral zone.

The islands themselves apart from the causeway, we're looking also like, Dan mentioned, the footprint each island would place in the area surrounding the Boulder Patch. We're also looking at secondary impacts, we'd like to see a review of secondary impacts associated with construction--turbidity, saltation and such on the Boulder Patch and any subsea trench work which might impact the Boulder Patch area.

To and from the islands, we're looking at barge activity and its effect on birds, fish, perhaps even mammals.

We'd like to see a discussion based on the waterflood I think Rosa mentioned, concerns with the intake at that structure.

Other physical components I'd like to see addressed, again which was mentioned earlier, ice gouging. We're also concerned with subsea permafrost and the specific impact of subsea trenches and causeway placement has on that. Also snow removal from the islands and the causeway itself. The problem with that is usually gravels can be

contained within snow during the removal process, and so we begin to have expansion of the fill dis charge.

On shore base, we have camps. We'd like to know the exact location of these base camps and also the pipeline land routing across the Sag Delta. This is important so we can discuss and review for issues of overwintering, exit break up and review of the culverting strategy for that roadway. Again, I must emphasize, to be specific on these locations, enough so we can use air photo interpretation to help review the best alignment.

The West Dock pipeline route--I'll touch on that briefly again--we're looking at a major dredging operation. We'll be concerned about methods that that alternative--methods that would be used for that dredging, spoil handling disposal, backfilling, and again, effects on permafrost subsea --subsea permafrost.

To help our review in any type of draft, I ask that it'd be useful to have a separate section or component of the draft which specifically addresses mitigation and perhaps alternative mitigative strategies. We're looking at, it was mentioned

earlier, causeway bridges to increase circulation caused by through the causeway. And then, essentially, maintenance and placement of those bridges--maintenance of the water depths underneath those bridges to insure water circulation.

We're looking for means to mitigate the impact at landfall, when causeway comes into the shore. Again, this is a very sensitive habitat. Mitigation towards what type of routing flexibility that will be through the onshore operations, camp flexibility, reclamation of facilities that will be used just for construction. Mitigating measures for culverting silt curtains -- use of silt curtains for any type of dredging activity and their usefulness. And perhaps you might want to even consider off site mitigation. We will provide more formal comments--this is essentially a list.

COLONEL SALING:

Thank you very much.

MR. ~~STINEWIRE~~ Steinborn:

The other areas where we have concern, the most predominant one is the discharge permit which the facility will need under Section 402, the Clean Water Act. And the lead one to cover the filter backwash, drilling muds and cuttings discharge,

the desalination discharge, the sanitary discharges. And for us to be able to write that permit, we wi need to see what's called an ocean discharge criterial evaluation under Section 403C the Clean Air Act. We'd love to have that in the EIS. Particularly because we're talking about drilling muds and cuttings discharges that are in order of magnitude larger than anything that EPA's looked at in this region before. So it's a whole new ball game to us.

COLONEL SALING:

Tell me the name of that--ocean discharge...

MR. ~~STINEWIRE~~ Steinborn:

Ocean discharge criteria evaluation. And the focus of it is on the fate and effects of the discharge on marine biode and marine water quality.

And before we can issue a permit for discharge for ocean waters, we essentially have to make a determination that there will be no unreasonable degradation. And there's a series of criteria that we have to address to make that determination. And what we've, in fact our goal is, to try to time it so that we can have the draft permit in the draft EIS and do a joint public hear-

ing.

Second, oil spill risk analyses. The ones we normally see just give a point estimate for what the odds are for spill occurring or how many spills might occur. And we believe that that is a method which has little utility. That at least the one presented in the EIS is a picture of how uncertain the estimate is. Confidence intervals is standard in the air estimate--something that gives readers a sense of really how--that we're just beginning to develop techniques to make reasonable estimates.

Third, air quality. The summary indicates the project only--Prevention of Significant Deterioration permit under the Clean Air Act. The EIS should present emission estimates, describe existing air quality and describe the modeling results --of effects of the project on ambient air quality and on how much of what are called the increments that the project will consume for those for which we have increments, which is sulphor dioxide, and suspended particulants.

Finally, coastal zone management consistency. Often we see EIS's which simply have a one-liner that says the project or isn't consis-

tent. We think a more thorough discussion makes a lot of sense and is appropriate. Alaska's program has standards that are specifically applicable to energy development. They have habitat management provisions that are focused particularly on this habitat. We think the EIS ought to discuss how this proposal, as designed, would conform with those standards and with the goals of those habitat management provisions. And where it doesn't conform, how it could be modified so it does.

That's it.

COLONEL SALING:

Thank you.

MR. ~~STINEWIRE~~ Steinborn:

Thank you.

COLONEL SALING:

Those are the cards that I have up here. However, if I have anyone who would like to comment at this time, or has any questions, I'd like to open the floor to you.

I don't see any. If you would like to supply us with written comments, we would be more than happy to have you drop us a line over the next 30 days.

Thank you very much.