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TransAlaska Pipeline Hearings, August 29-30, 1969, Patty Gym, University of Alaska

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Mr. Delaney is discussing the TransAlaska Pipeline traveling from Yukon to Valdez and how it is submitted in exhibit five. He begins discussing soil level research to find optimum levels. Exhibit six has been prepared to explain the soil selection process. The original station and four of the 11 ultimate booster stations will be constructed. Material selection to meet environmental rigors has been deemed as important as the soil selection. The lined pipe has been purchased based on rigid specifications especially designed to meet all requirements. Many steel makers declined to quote, sighting inability to meet the requirements of the specifications. The specifications for the pipeline components are explained in exhibit 7. Arctic Environmental Engineering Laboratory at the University of Alaska has been conducting research in the area of pipe stretches caused by permafrost condition; this is explained in exhibit 8. A program for evaluating a heated line section to provide operational data has been developed by Dr. Payton. This program has been authorized to start immediately in cooperation with the highway department of the state of Alaska. Pipeline control system is discussed. The control concept selected by TAPS depends on maximum operation to remove the opportunity for human error. The usage of computers is also discussed. Exhibit 9 and 10 describe a detailed description of the control system. A description of the terminal site, its method of selection, firefighting, oil spills is all contained in exhibit 11. Most concerns have been related to the environmental and ecological effects because of the pipeline construction and operation. Environmental protection is primarily dependent on soil stability and construction of a secure pipeline facility. He says that the route selected has the correct soil conditions combined with proper engineering will provide a pipeline system of utmost structural integrity.

At 5:10 of the recording a man interrupts Mr. Delaney and tells him his 15 minutes is up and requests that he conclude his presentation.

Mr. Delaney proceeds and mentions exhibits 12, which outlines the basic construction techniques. The re-vegetation techniques are outlined in exhibit 13. Water resources and their protection are spoken to in exhibit 14. The results of an ecological survey are presented in exhibit 15. On exhibit 16 there are comments of the propose stipulations prepared by the department of the interior. Mr. Delaney says the completion of the pipeline is imperative to Alaska's development and its natural resources. It could be completed by early 1972 and the resulting benefits can be obtained. The schedule can be met and it can result in a stable pipeline will full protection to the environment. Dr. Pecora raised a question and he

might say that Dr. Hal Payton and Mr. Migliaccio will appear at Dr. Pecora's desire. They can appear now or later. Mr. Delaney is thanked by the man who requested him to wrap it up.

A man says that Dr. Glasgow has a question at this point. Glasgow asks if TAPS plans to provide supervision to subcontractors to ensure they are compliant with stipulations. Mr. Delaney says it is customary for the owner of construction to maintain close supervision over the performance of the contractor and subcontractors. Mr. Delaney is thanked. The man asks the panel if they wish to hear from Dr. Payton and Dr. Mallachio at this time. A man says that chronologically this seems to be the time and this seems to be the crucial issues before all of use. He mentions Dr. Max Brewer being present and wishes to address him to the subject. The man says he doesn't want to break up the TAPS presentation but asks Mr. Delaney if he would have any objection to Dr. Brewer following Dr. Migliaccio and Dr. Pecora. Mr. Delaney says no. Dr. Payton is presenting first. Dr. Payton states his name as Harold R. Payton from Fairbanks, Alaska. He says he is not certain that he understood completely what Dr. Pecora said. His understanding is that in areas where there were permafrost melt the geological survey is seriously questions a series of the pipeline buried. The consent and the problems associated with permafrost melt have been in the forefront of virtually every aspect of establishing design criteria from TAPS. He says he has worked with permafrost in Alaska since 1953. Conceptually his recommendation to TAPS was to refrigerate the oil and send refrigerated oil down the line and create more permafrost. The principle reason for this is the ultra-sensitivity of central Alaska and the permafrost retention in central Alaska because of high soil temperatures. As we begin to see the magnitude of this concept, the intuition of the engineers hasn't been as good as it was on prior projects that were on a smaller scale. As time went on Dr. Payton says that they realized that it was impossible to refrigerate oil from the north coast to Valdez. The problem became how to transport oil with a temperature above the freezing point of water with a maximum pipeline security. Security is the prerequisite for everything. Dr. Payton says his numbers on permafrost melt reveal that there will be thaw of 200 feet in diameter over the great bulk of the line in full production at the rate of 2 million barrels a day. The whole drilling program and much of the research and money has gone towards research of soils that virtually have no ice in them such that when they have elevated temperature. There is a great amount of gravel in most of route above Yukon in Wiseman and also a great amount of broken rock across the Tanana Valley and up through the Delta River country. Except for isolated locations, all high ice content frozen soils which could experience settlement when thawing have been sidestepped by a route analysis. This is why TAPS is confident in saying most of the line will be buried. The difference of opinion comes from small areas in which Dr. Delaney's analysis says that if they can found the pipe on very competent soils that they can tolerate substantial settlement of soils above the pipe if proper caution can be taken for subsequent hydraulic erosion. There are problem of buoyancy and other engineering details. There are questions about Copper River Valley. Dr. Delaney feels that settlement in the Copper River Basin is well within the capability of handling any erosion and they don't feel there will be any erosion at all. In closing he would like to say he is more than willing to meet and discuss this in great detail.

At 16:30 Dr. Migliaccio is called upon. His name is Ralph Migliaccio. He addresses Mr. Secretary and members of the panel. He says this is an ad lib statement and in responding to Mr. Pecoras comments

in regards to permafrost melt. He doesn't wish to convince anyone that permafrost will be prevented. He says he does wish to state that there are a number of types of permafrost and not all of them are detrimental to construction. He is referring to low moisture content gravel. On the opposite extreme is the extreme saturated ice silt which they are trying to avoid in all situations. The other would be bedrock which if frozen or thawed presents very little difference from a pipeline standpoint with the exception that all of these things are difficult to excavate. The non-frozen soils exist at periodic points on the route even in the zone of so called continuous permafrost. This is one of the reasons why the line is located close to Sagavanirktok River. They have found in analyzing 400 soil borings between Yukon River and Prudhoe Bay that the vast majority of the pipeline from Wiseman to Prudhoe Bay can be founded in ice pore frozen gravels, in thawed gravels, or on bedrock. In the arctic plane and places in the arctic foothills there are extensive deposits of ice rich frozen silt in which a heated pipeline couldn't be buried without experiencing detrimental settlement and thermal erosion. He says they must put the pipeline on a stable material. He says they have paid extreme close attention to moisture content in soils. They have received 300 additional borings from the Atlantic Richfield Company which were made during their seismic studies in the Arctic Plane and Arctic Foothills. These borings are from 120 feet deep. From Prudhoe Bay to Valdez they have made every effort to locate the pipeline where it would be in on or near to low ice content soils preferably granular. They have attempted to keep the pipeline in on or near bedrock where it was available. This was the situation between the Yukon River and Big Delta. You look at the roads in the Fairbanks are the ones that lead to Livengood the radar sites being on the hilltops in dry soils near bedrock. He feels the heated pipe would do as well as radar sites in Fairbanks. A considerable effort has been made to route the pipeline away from the highway by the Copper River Basin because of instability. The bluffs have to be dealt with. Gravel availability is another problem. Placing pumping stations is discussed at 22:30.

The Dr. asks if any of the panel has questions. One man questions if the north exposures of hills by big delta and Yukon River go through well drained soils. The Dr. says that the way the north exposures are handled is that north facing slopes are where detrimental situations exists. These situations are recognized and the north facing slopes aren't seen as representing good situations. Dr. Pecora says that everyone recognizes that setting the structure one should avoid dangerous spots. Selection of bedrock is the optimal position. The man wonders where sand and mud are placed in comparison with silt and bedrock. In the Copper River basin there is a vast expansion of materials that aren't classified as silt or bedrock. Dr. says he has talked with Mr. Farians and member of Pecora and they are cognizant of the situation in the Copper River Basin and he says they plan further exploration in the Copper River Basin.

At 25:40 Dr. Max Brewer is called to the stand. Max C. Brewer says his name. He addresses Mr. Secretary and members of the panel. He says he has been privileged to have been able to talk to many of the people on the government task forces both federal and state and industry. He says he has been impressed with the intensity and depth of thought of the individuals. He says he wonders at times when he hears of controversy as to whether if there was a combination of all those with expertise in the federal, state, and industry if there would be sufficient expertise to design the line to give maximum benefit to both the natural environment and the stockholders. Good engineers serve both and the thing that he would like to stress is good engineering. Dr. Pecora assisted them with frozen water and what

happens when it melts. There are several areas that are vastly different and require different approach. The cold permafrost of the North Slope is vastly different than the permafrost in the Yukon area. When erosion starts it is extremely difficult to re-vegetate it. The permafrost in the Yukon Tanana Copper River country is much warmer and more fragile than the permafrost in the North Slope. However south of the Brooks Range there is a longer growing season and therefore more of a chance to re-vegetate. He thinks if they design for 800 miles of pipe as if it were going across the prairies of Canada that they are missing part of the real problem. The data that have been accumulated over the past 20 years should be added to what has been accumulated over the last two years. Cooperation between all those working at the subject should lead to proper engineering so there will not be mechanical erosion following the melting of the ice. He says there will be a job that causes the least pain to those people who don't want to disturb the environment. The secretary says he wants Dr. Brewer to state his affiliation. Dr. Brewer says he is the Director of the Naval Arctic Research Laboratory at Barrow he spent 6 years there working for permafrost in the early 50s and has been director for the past 13 years. One of the Panel members has a question for Dr. Brewer. He is asked about the proper engineering construction and is asked if the disruption of the permafrost could cause erosional damage of a character that would endanger the structural integrity of the pipeline itself. Dr. Brewer says it depends on the moisture content. There are numerous areas that if the ice content is sufficiently high that they could expect to see buried pipe free swinging in the air for lengths of 100 to 200 feet and this is the mechanical erosion that he discusses. He thinks the greatest problem is how much ice is in the top 20 feet of whatever materials is crossed over or through. Another member of the panel says that he thinks the suggestion Dr. Brewer has made that a cooperative kind of working group be constituted to deal with the critical problem is an excellent one. The panel member says he thinks they have been doing it informally. He says he will direct Dr. Pecora to constitute a working group. A representative of the industry of the state and federal government and any private organization with particular expertise in the area of permafrost and design integrity that has been discussed. He would like to suggest that since some of the obvious members of the group are in the room that the first working session of the group should be sometime today.

35:35 Dr. Edgar Wayburn is called to the stand. Dr. Wayburn is Vice President of the Sierra Club. Dr. Wayburn acknowledges Secretary Tran and Secretary Glasgow and members of the panel as well as Mr. Chairman. He is a physician and conservationist. He says he feels like a Martian landing at an idealized conference at the United Nations. He believes in the room there are conflicting opinions. His home is in San Francisco. He learned of the meeting when he was traveling in Alaska when he was in Anchorage. He spent quite a few weeks during the past few years listening to Alaskans from all over the state. He says he traveled from Ketchikan to Point Barrow to Prudhoe Bay from the Canadian border to Kotzebue, Nome, and Dillingham in trying to find out about Alaska and Alaskans. The issue of the pipeline is one of the most important issues which will face the federal administration. It is a national issue and involves the national good. He says the Sierra Club requested making a statement at the hearings held in Washington DC in about a month. Today he is going to call on his Alaska chapter which has grown from under 100 members to nearly 400 members in the past two years. Before calling on Mr. Hans Van der laan who will present the chapters view he would like to comment on the propose pipeline route. After personal discussion with people who live in Alaska, he's spoken with a number of people at the meeting of the American Association for the Advancement of Science and he's heard some interesting papers

concerning it. He's also talked with a number of scientist and engineers and he is not reassured. He says he has not heard satisfactory answers to too many important questions. He asks questions about earthquakes, the effect of the pipeline on the permafrost, questions about transportation, and pipeline jurisdiction. He wants to assure Mr. Delaney that preservation and the pipeline are not synonymous despite all the good intentions in the world. The pipeline is not a garden hose and will result in destruction of the earth. He's happy to hear Governor Miller and all the state officials who have desire to protect the land. It will take time to develop the capacity. He then reads Governor Miller's testimony regarding how the pipeline should be approached. He now turns the Sierra Club statement to the Alaska chapter. He wishes to place in the record the remarks he made to the 20<sup>th</sup> Conference of the American Association for the Advancement of Science in Fairbanks. Dr. Wayburn remarks are marked as exhibit 25.

At 43:45 Mr. Hans Van der laan is called to the stand and a man on the panel says he hopes they recess at 12:30 for lunch until 2 o'clock. Hans Van der Laan begins speaking. He represents the Alaska chapter of the Sierra Club. He does this is the position of the conservation chairman. The Sierra Club opposed the proposal of the pipeline. The Sierra Club chapter of Alaska was formed last year because of their concern for the environment in regards to the Alaska pipeline project. Two years ago prior to the formation of the Alaska chapter membership was under 100 now the membership is at 400. Of the 80,000 members the Alaska chapter has the largest state per capita membership. He says the quality of human life relates to the quality of the environment in which man lives. In Alaska there is an opportunity to achieve what has failed elsewhere. With increasing development on the natural resources the pressure is surmounting. The most complicated factor is the absence of a well-planned development policy for Alaska and the arctic. He believes the studies that have been done are not definitive. He says Sierra Club notes that Governor Miller claimed that Alaska can adequately supervise development but in Sierra Club view the states records in management is badly lacking. As an example witness the thousands of miles of trails that are bulldozed and irreparable havoc caused by unregulated mining practices. The winter haul roads and proposed railroad extensions and the proposed pipeline should be coordinated. Adequate provisions of protecting key wildlife are discussed. It is claimed that the earth will rejuvenate itself. Such a claim there is no proof or evidence. The Bureau of Land Management stipulations were drawn up prematurely according to Van der laan. Because of the premature and incomplete character of all the studies it is impossible to know what the true requirements are. He believes that the BLM needs to know more before it can act responsibly in the new realm of oil pipelines in Alaska. He says go slow in committing the land and people of Alaska. Hasty premature construction may cheat all Alaskans by doing irreparable harm to the land. Sierra Club opposed granting of permits for the construction of the pipeline and Sierra Club believes further research is necessary. Mr. Ryan asks a question regarding doing additional research and if SC has any particular areas in mind. Mr. Van der laan says ecological studies have been short time studies and not completed prior to the drawing up of the stipulations. He says all the studies should be done over a longer period of time then the stipulations should be drawn up. Another member of the panel discusses the importance of engineering policy in the structural consideration of the pipeline. He asks if the Sierra Club chapter has any expertise in the field of engineering geology. Mr. Van der laan says there are geologists, engineers, and biologists within the chapter. All the people have had a voice in drawing up

the conclusion. The man asks Mr. Van der laan if he has any reports available for the study group. The panel member asks if the Sierra Club chapter would view with acceptance a task force directed by the undersecretary in an attempt to pull together all the technical information and brainpower. Mr. Van der laan says he is in favor. He thinks the approach is excellent. Bert says thank you Mr. Van der laan. He says he has been informed that there are no facilities available at the university with the exception of a snack bar in Constitution Hall.

The recording stops and starts at 54:45. The man says the technician for the university who is also recording the proceedings has asked that all witnesses speak close into the microphone and also that all the members of the panel speak close to the microphone. The first witness to talk is Harry Porter, acting mayor of Fairbanks, Alaska. Mr. Porter says he just found out this morning that his occupation is thermal degradation. He is in the heating business and he does everything they can to combat the frost for about 9 months and they're not even too sure they're not in favor of the man who suggested diking the Arctic Ocean and trapping the Japanese current for the permanent thermal degradation of the arctic. He says they are not arctic experts. He offers the testimony with the unanimous consent of the city council and of behalf of the citizens of Fairbanks. He discusses the flood from two years ago and they are trying hard to get money to build a flood control program. He says they feel strongly that 10-20-30-40 year residents of interior Alaska do have qualifications to state what works for the state of Alaska. He says he was happy to hear Dr. Brewer and Dr. Payton testify because they have credentials and have lived in Alaska. He says they beg the panel to talk to people like Earl E. Nestland [?], John Clark, Niskovic brothers, and Walt Livinivic, Dick Denver, Bobby Miller, Jim Dalton, Jim Mcaughin, Earl Bystline, the Wiens, Howard Bayless and many more whose arctic acquaintance is intimate. He says inquire about what it took to build the DEW line, how the navy operated in petroleum reserve #4, White Ellis system. He says take a look and see if there is lasting damage. He says he was aware about some of the comments about what the success was of protecting the ecology during the federal governments days of holding foreslay over it. Some are more polite about the fishing that happened years ago. He says they tried to eliminate the fish traps that captured all the fish with no regard for the species. He says he would like to ask the members of the committee to remember that only the injection of massive welfare programs which continue to this very day allowed some people to live in that environment. The living standard that was capable to provide to the people is unsatisfactory to some of the observers. He says the company that he is associated with has an island on Prince William Sound. He says we need the invasion of a pipeline and tankers and people like a hole in the head. He wants to be honest that it is going to happen; the pipeline will be built from the North Slope to tidewater. He says sitting here listening he wonders what people can find out by studying the project to death. He says there are two choices, bury it or don't bury it. He says he notices the paper they have on the gym floor and he thinks each one of those sheets are about four feet wide and yet you think a 200 mile area would be getting torn up. He says he doesn't want to see the project delayed. He says maybe the terminant isn't supposed to be Valdez. He hopes that that isn't the reason for any of the delays because the people down there are more than willing to take the ecological risk because they built the oil patch in the Kenai Moose Range. It was suggested that the commission look at what they had done at Delaney Road to see what had been done there. He says he would like the panel to take a look at the 47 inch Davidson oil pipe north of Fairbanks that's been there for many years. Take a look at the 8 inch line from Fairbanks

to Haines. Within spitting distance of this building they have Taylor Piles, the worst way you should leave a country after taking out a mineral. He says the birch and the willow are reclaiming the damage rapidly. He says he is still confused because when they first objected to the study they voiced their disapproval to the department of the interior and congressional committee. He says he has two letters from the department of the interior and the senate office assuring that the study was only to find out what would be the best for transportation in Alaska. He says that it had nothing to do with the pipeline in the two letters. He says he thought undersecretary Trane that the reason for the hearing was to decide what the north wanted and needed for transportation. He says it is a serious possibility that this is a study to study Alaska's transportation needs. He says please don't start with your mind made up and don't advocate an airport unless there are planes and people. He says ask Woody Johanses how long it takes homesteaders to create a new road. He says don't advocate a railroad unless you can find trains people and tracks that want one. If it is only Kennicott Copper that wants the train then say so. The recording ends.