Cascadia Wildlands

March 28, 2009

ARA Project Team

Emerald/ ABS

State Agency Oversight Team

VIA email to: aracomments@nukaresearch.com and ira.rosen@alaska.gov

RE: CASCADIA WILDLANDS COMMENTS ON DRAFT A.R.A. METHODOLOGY

When Sarah Palin announced the Alaska Risk Assessment we cheered the move. Comprehensive, objective information regarding risks would give badly needed common ground for public, regulators, and industry to engage in partnership to reduce risks. This is a worthwhile goal.

Enthusiasm dimmed as the bureaucracy took hold. It took nearly a year for the project to be contracted, and another year now for a methodology to be proposed. It was impossible not to notice the conflict of interest of the selected contractor—Doyon/Emerald—the parent corporation of which holds oilfield contracts on some of the infrastructure being examined and is seeking controversial new petroleum development. But, we were encouraged by good communication with the project team, and sincere efforts to provide transparency.

The questions listed on page 8 are an excellent summary of the root purpose of this project.

- *What risk management initiatives should be pursued?*
- *What risk management initiatives should not be pursued?*
- *How much money should reasonably be spent on risk management?*
- *How should that money be spent to obtain the most value?*

The proposed methodology does not provide the information needed to answer these questions. The fact that the ARA project may in the end be used to answer these questions, is positively dangerous because decisions would be based on an inaccurate picture of reality. The ARA risk profile would be incomplete, biased, and inaccurately

skewed to understating the level of risk. Importantly, it would have included absolutely no consideration of mitigation, so managers will be starting at square one. If Exxon's executives made risk decisions based on this amount of information they could be accused of incompetence and recklessness. Our many specific reasons for feeling this way are explained in more detail below.

The turning point for me, in retrospect, was the October 14, 2008, meeting in Anchorage between the SAOT, and a table packed with oil company attorneys. Talk was in vague terms about trade secrets and proprietary data. It was clear industry brought no good will to the project. What has happened, in my view, is that industry has held the project hostage using bogus concerns about proprietary data. The State has made itself available for transparent input, and is anxious to accommodate industry interests. But the oil companies aren't playing along. Industry is refusing to turn over even publicly available, published, non-proprietary information on their risk management practices.

In the last several months, the project has taken a turn for the worse. When industry refused to play along, the contractor and State had a choice of how to deal with it. You could have 1) gotten needed information independently in the field 2) gotten legal authority to compel production of needed information from industry, or 3) passively submitted to the lack of cooperation, and abandoned the original project goals. It seems the SAOT and Contractors have opted for the third approach.

The proposed methodology gives no hope of an outcome worthy of the importance of the project purpose. Mistakes range from minor to massive, but a pattern is apparent. Errors all tend in the direction of diminishing risk and avoiding recommendations for any changes. It is time to pull the plug on this project, and implement three needed reforms:

1) State legislation and/or ADEC or DNR regulations, requiring industry to release their internal risk analyses to regulators (ADEC or PSIO).
2) Spend remaining ARA funds to establish independent ombudsman to hear and investigate worker complaints.
3) Support federal legislation creating Regional Citizen Advisory Councils, such as exist in Cook Inlet and Prince William Sound, to cover TAPS and North Slope operations.

These comments on the draft methodology are in two sections. First, we list several of our highest priority comments, and second, comments specific to sections of the draft methodology.

1. Methodology fails utterly with regard to mitigation measures & recommendations.

The whole point of this project is to recommend and ultimately adopt mitigation measures that could effectively, efficiently and demonstratively make operation of Alaska's oil infrastructure safer and more reliable. The Draft Methodology is totally inadequate to this task due to several specific failures.

a. Methodology fails to provide for specific recommendations for mitigation

Public pronouncements of this project have been that offering recommendations for mitigation measures was a central task of the ARA contract. It now appears this will be cut out of the contract. This is a major lost opportunity to get independent, objective analysis. Department of Environmental Conservation will be left evaluating itself. One would hope this is part of normal ADEC operations. Leaving mitigation recommendations up to the SAOT will be a bureaucratic quagmire, and will result in a product that lacks objectivity and stakeholder credibility. In talking over this concern with Project Manager Ira Rosen, he described an early concept of the risk management process. That was an iterative process between industry and ADEC, in which the State basically asks industry what they'd like to do about various risks. This sort of self-policing by industry is exactly what got us into this mess to begin with, and is an unacceptable direction for this project.

b. Risk methodology filters out cost-effective, needed mitigation measures

Focused as it is only on unforeseen, catastrophic events, the draft methodology will screen out all risk factors that do not have direct potential to cause major disasters in a very specific subset of circumstances. Ironically, these one-in-a-million, catastrophic events are (arguably) the most difficult and least cost-effective to mitigate. By contrast, there are many steps that could be taken that would cost-effectively mitigate risks of lesser, but still important, risks. In order to make an informed comparison, we'd need hard data. Data this methodology will not provide.

c. Risk Assessment needs to assess mitigation measures

Mitigation measures should be included as a third column, alongside risk and consequence, as part of the risk analysis. This is absolutely essential in order to use the final product to conduct cost-benefit analysis of which mitigation measures to use. The determinative issue may not be which event or node is the greatest risk, but which course of action would most decrease risk. My point could be illustrated with an example. Lets say the ARA study discovered only two risks, one at the level of $100, the other $1,000,000. Lets say that the $100 risk could be eliminated for $10, while the $1,000,000 risk would require $2,000,000 to mitigate. Obviously, the first priority in this circumstance would be to spend that $10. Yet under the draft methodology, the $100 risk would have been filtered out as insignificant and beyond the scope of the study, leaving only a $1,000,000 risk with no effective mitigation. Not only would the study not list this $100 risk, it also would at no point notice that it costs only $10 to fix. On the other hand, the $1,000,000 risk would be listed, and the state would then spend its time discovering that available mitigation doesn't pencil out.

2. Scope of Methodology is too narrow

The scope of risks considered in the draft methodology is much too narrow. The final result as it is proposed (p.7) lends itself to misinterpretation because it frames itself as a

cumulative total of risks. In reality it is nothing of the sort. It is only going to list *some* of the risks—the largest & simplest ones springing from a subset of the possible causes. It will collect and provide no information on a wide range of very real and important risks. Whether the risks the ARA project examines are a large or a small part of the overall risk picture will remain a mystery. Based on past studies (e.g. Capstone 2001; BLM 2002), the smaller spills are a much larger proportion of the risk in terms of frequency. According to Alyeska's 2005 risk analysis, damage from maintenance (14.3%), and sabotage (37.9%) are predicted as the two leading causes of TAPS leaks, which together are likely to cause most moderate-to-large spills. (DNV Screening Risk Assessment 2005, p.42). Process Safety risks are certainly among the most important.

3. Lack of any fieldwork, inspections, or verification of industry-supplied data, is a fatal flaw of the methodology

In its initial conception this project would have been a thorough ground-truthing of Alaska infrastructure. It has devolved into a paperwork exercise that relies entirely on information provided by owners and operators to evaluate all the engineering factors behind risks. Instead of doing an engineering analysis, the contractor plans to run a statistical analysis that is based on industry-supplied data without verification. This is an outrageous failure to meet the core purpose of the risk analysis—providing objective data. The methodology would need to be re-worked to conduct fieldwork to analyze and verify the state of infrastructure. It strikes us as strange that the State doesn't have legal authority to look at industry risk analyses, but if that is really true then State legislation is urgently need to close this loophole.

The approach proposed in the methodology is, basically, to ask industry to provide their own information for operational hazards, leak detection times, corrosion levels, etc. Because there is little indication they will provide this data, the fallback plan is to rely on industry average data. I cannot emphasize enough how totally lacking in credibility this approach is. If the industry won't provide the data, you need to get it. You have physical access to facilities. Go examine them. If you don't have enough funds to do that, then get more funds. If you can't do that, and the State won't provide needed legal authority, then the risk analysis can't happen.

On page 18, the methodology indicates the liklihood that industry has conducted risk analyses that are not publicly available. First, it is hard to fathom why this information would remain a secret. Does the State have no authority to gather this information from owner/ operators? It is our oil, our land, our waters. The State is under obligations to implement Article VIII of the Alaska Constitution, to manage state lands for the public's best interest. Second, some of the risk analyses conducted by industry are publicly available. The PHMSA IM standards require risk analysis for pipelines. Alyeska has conducted at least two risk analyses recently, the 2001 Capstone Study, and the 2005 DNV Study, both of which are publicly available through JPO. If you cannot locate a copy, please let me know. At this stage fo the project, his information should already be gathered.

3. Static assessment of a dynamic system is not very useful—process safety must be considered

Pipelines are dynamic systems with management systems that are in constant flux. The methodology takes a snapshot and analyzes it pixel by pixel. This approach is not going to provide information relevant to mitigating risks in a dynamic system.

This flaw appears in the methodology when it hinges the entire assessment on discreet physical nodes. While in some respects this approach has merit, using it alone ensures a complete picture of risks will not emerge.

Some components do not have significant event potential on their own, but feed into larger, systematic failures. For example, not having bullethole clamps ready in a timely manner resulted in the 2001 bullethole spill flowing for much longer than was foreseen. Not having those clamps and workers ready to use them is not in itself a risk, so under this methodology it would be considered a low risk node and screened out of the analysis.

Many risks have no geographic location, but are organizational, or process-oriented. The physical nodes generally performed correctly in the *Exxon Valdez* disaster, for example, but there obviously was a problem. If pipe is over-pressured, it could burst even perfectly maintained pipe. Similar pipe of similar age could be in different condition depending on how it was maintained. Other times, failure to gather information in the first place is itself a risk factor. The State didn't think the FS1 line was corroded, for example, but only because it wasn't looking. BPs corrosion manager tookt he 5th at Congressional hearings, a strong indication that significant management failures were involved. Process safety is not a minor component of risk. According to the Pipeline Safety Trust, all six of the "primary reasons why pipeline disasters occur" are process safety oriented.[1] The methodology screens all of these factors out.

I am not an expert on process safety, but from reading the Baker Report it is apparent that a large body of work exists to support meaningful assessment of process safety risks. Again, we strongly urge you to incorporate that report's recommendations in full, and adopt a methodology that builds on that approach. Even BP has recognized these risk factors. Why would the State's independent study be less vigorous?

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[1] http://pstrust.org/about/background.htm The six reasons are: "1. Pipeline (and other transportation system) operators fail to maintain adequate release prevention and response systems; 2. Regulatory agencies provide ineffective and/or inadequate regulation and enforcement, 3. Federal and state elected officials fail to pass laws strong enough to protect the environment and public safety and/or fail to give regulatory agencies the funds they need, 4. Residents and local governments aren't paying attention, or do not have access to the information that allows them to participate 5. There is inadequate liability for releases of transported and stored fuel, and 6. This country lacks a comprehensive and coherent energy conservation policy that is focused on increased conservation and renewable energy sources."

One key process safety risk on TAPS is the Strategic Reconfiguration. The proposed methodology looks at nodes pre- or post-SR based on case-by-case judgment, but will not consider the fact that the project is ongoing. Yet, clearly, SR increases risks in many key ways—cost pressure, problems with management on change, loss of spill response capability, loss of workers on the ground, changes in reliability (e.g. cold restart), potential confusion of roles in emergencies, etc. etc. Even if SR went smoothly this massive project would increase risk, but the SR has been anything but. The SR itself has been reconfigured. Serious complications have dogged the project from its start in 2003. The original 2005 completion date is now pushed back to 2011. It is hundreds of millions of dollars over-budget. Complications have resulted in ongoing and very complex modifications to everything from oil flow to staff levels to oil spill response. Exactly what SR *is* remains in a state of flux.[2]

4. Standard for "Unacceptable Consequences" to Safety, is unacceptable.

The standards set for safety are so grossly out of whack that in my opinion they represent a reckless disregard for human life. Four dead workers is being considered such a low risk that it will be screened out as "insignificant." That this would even be proposed is disturbing. This horrific definition of acceptable safety risks is an outgrowth of the failure to consult with oilfield workers. Even the least responsible oilfield operators use a far more rigorous standard that this when analyzing safety risks. It is beyond me why the ARA team would show less concern for workers than the oil companies.

The Note to Table 6-1 in the Draft Methodology is the ARA team's disclaimer, but it is a poor excuse. The first reason given, that the safety consequence categories reflect the purpose of the State charter, is ridiculous. A human death is surely sufficiently catastrophic. Also, this is not the charter. "Catastrophic level events that are potentially high risk which could result in severe or significant consequences" is the ARA team's language, not the State's. The charter is to <u>comprehensively</u> evaluate risks and recommend mitigations, not to list only high-risk catastrophes. This is what was presented to the legislature, and is what they agreed to fund.

The second reason given is that,

> "large quantity of resources that are already dedicated to protecting the workers and members of the public from accidents that involve the oil and gas infrastructure. Less severe safety threats to workers and the public are already managed by regulations and extensive corporate safety/risk management programs."

This too is incorrect. Small risks are no more regulated than are large ones, so this logic gives no argument for the choice to focus only on catastrophes. You are prejudging conclusions based on no data. It is simply not true that, *prima facia*, non-severe health and safety risks are fully managed. If they were then we would not have unnecessary accidents. How do you know that lesser risks are adequately managed? Is there evidence? Secondly,

[2] *See* Kristen Nelson, 9/2/2007. "Alyeska works issues: strategic reconfiguration project now sequential; part of normal operations." *Petroleum News Alaska*. 12(10).

existing management deals with both large and small risks to safety, so this is not a unique property of either. If the standard is that any risk that is already managed will be screened out, then both large and small risks would need to be. Thirdly, even if it were true that these lesser risks were perfectly managed already, it remains important in a comprehensive risk analysis to know what those risks are. If these risks are so comprehensively managed then it should be easy to obtain data. Rather than gather that information, though, the draft methodology has arbitrarily predetermined the conclusion that these risks will be ranked "zero."

5. Public Process and Stakeholder input has not been adequate

Stakeholder comments have not been incorporated into the Methodology. It is the equivalent of gathering the information, but not using it. In general, it seems input was used where it served the pre-determined objectives of the project, and was disregarded where it did not. The lack of any systematic way of considering input is a key methodological problem. The closest thing I've seen to a tracking of stakeholder input were the reports that came out of the public meetings, that were posted on the project website. Those forms have two columns—one for each comment, and another stating follow-up action to be taken based on the comment. Those forms show that for almost *every single* comment, the ARA team took "no action." This is one of the clearest, documented examples of stakeholder input being disregarded that I've ever seen. If these forms are accurate, then the public process can only be considered a monumental failure and waste of time.

Rather than frankly deal with ongoing problems gathering stakeholder input, the methodology misleadingly touts the public process as "extensive" and a total success. Simply adding the total number of people contacted and meetings held is misleading. Making contact with 200 people doesn't necessarily mean anything— that could just be one mass email with 200 addresses. The truth is that the meetings were sparsely attended (except for Anchorage), and that a great many key stakeholders have not been consulted. Oilfield workers, unions, tribal governments, villages, and others have not been consulted.

I think the contractor has a fundamental misconception of the purpose of this stakeholder process. This is not a permitting process, where the important thing is to give the public every opportunity to comment. In those cases, if nobody comments, then the end product may not suffer much. The ARA public process is different. The purpose here is to affirmatively gather stakeholder input. Not because it's polite, or legally required (it's not); but because the risk assessment needs information that only stakeholders can provide. If the ARA team put out a public notice and no oilfield workers responded to it, that's not the oilfield workers' problem, it's the ARA team's problem.

Comments on Specific Sections of the Draft Methodology

§3.1 Complexity and Scope of the ARA are too narrow

While much has been made about the allegedly huge scope of this risk analysis, what is not mentioned are the many aspects of risk that are being defined out of the risk analysis. A quick review of the risk aspects that are being excluded:

- Regulatory Oversight (or lack thereof)
- Marine transportation (the highest-risk aspect of oil transportation, by far)
- Sabotage/ terrorism (empirically the cause of the largest spills on TAPS)
- Cat. 1 Risks (e.g. Safety risks that would kill four people or less)
- Process Safety
- Maintenance & 3rd party damage
- Strategic Reconfiguration

We would much rather have a comprehensive, comprehensive assessment, and a partially comprehensive one.

§3.2 Preliminary Screening

On the whole, the methodology is much too aggressive about preliminary screens. A precautionary principle should be applied instead. Please error on the side of caution when deciding what risks and factors are worth considering.

The purpose and need for these screens is not explained, and there is no warrant for them. The only rationale that I can think of, based on public presentations so far, is that the contractor is trying to reduce workload in order to more cheaply fulfill the contract. But at least be clear—all these screening mechanisms are measures of convenience, and they come at a cost to precision and accuracy of the final assessment.

Process safety risks are being excluded by use of this screening methodology. On page 15, the methodology says, "compliance with original design standards does not guarantee that systems will not fail." This logic is properly being applied to the Natural Hazards Risk Assessment, but is improperly <u>not</u> being applied to Operational Hazards. The same thing is true, for example, of the safety risks that are being excluded here because they are already managed. The fact they are managed does not, in reality, reduce their risk to zero, as this methodology would express it. Even if you insist on using such aggressive screens, please do not express the value of these risks as "zero."

§3.3 IM Standards and Practices

This section does not make clear how IM standards are going to be applied. While we certainly agree that segments having IM standards are safer with them than without them, how this actually applies to risk calculations is very unclear. As the methodology notes these are relatively new standards, so we do not have enough experience to say how effective they would be. How would they be applied? The methodology does not say.

3.4.2.4 Business Continuity

Regarding availability of industry risk assessments, please obtain them.

One key measure of risk relies on these industry studies, not only in the raw data itself, but because they provide an indication of the judgment of each operator— the relative level of risk each company is taking. What level of risk are they operating at? Are some operators taking more risks than others? The current methodology makes no distinction between the "good" and "bad" operators. This is key information also for considering mitigation measures, because if the State were implement management measures to decrease a given risk in a given place, depending on the operator's position that may simply cause them to cut back in some other areas, bringing the risk back to the level it was before. Mitigation in this circumstance would be counter-productive because it simply shifts the cost of risk mitigation from the operator to the public. Where this is the situation, risk management steps would need to include mandatory, binding rules to correct industry behavior.

§3.4.2.5 IM Risk Assessments

The methodology indicates confusion as to whether risk analyses done under these regulations are provided to agencies or not. In the case of Alyeska's 2005 risk analysis I can tell you that it is, because I got a copy of it from the JPO. I hoped those agencies would be more helpful and have provided copies of those studies by now. Even if JPO does not ordinarily obtain copies of IM risk analyses, they certainly have the authority to get them. Please request that DOT obtain the needed studies and share them. These are federal requirements and risk analysis results should not be hidden from the State.

§3.4.2.6

How can you not know whether EPA/OSHA process safety studies are available? This task should have been completed long ago and these studies clearly need to be incorporated.

It remains unclear how this information, where it <u>is</u> available, will be used. Will the industry studies just be photocopied and the conclusions repeated? How will differences in methodology between studies be accounted for? How will industry average information, and site-specific data provided by industry, be integrated? These questions came up at the Anchorage workshop, May 5, 2009, and the answers were much too

vague. The complication on integrating studies is only necessary because you are not gathering comprehensive information yourself. Doing engineering assessment in the field yourself according to a consistent, comprehensive methodology, would solve this problem.

§3.5.4 Significant Consequences

The term "significant consequences," rather than "unacceptable consequences," seems semantic. "Unacceptable consequences" really most accurate, but really it is of little importance which term you use. The approach we urge is to abandon the use of such aggressive screens, and conduct a truly comprehensive risk analysis. The decision about what is "unacceptable" or "significant" is best made later when all of the information is in front of us. These judgments are likely to change over time, anyway. Making this decision of what is worth worrying about, on an arbitrary basis, ahead of time, guarantees the statistical outcome of the risk analysis will be false.

I have several important comments about the change of terms. The definition of what is unacceptable is, truly, the central point on which the outcome of the risk analysis hinges.

First, in the early phases of the project, stakeholders were asked what they considered to be an "unacceptable consequence." My perception of this change of terms, for "unacceptable" to "insignificant," is that the input into what was acceptable and what was not was not what the project team wanted to hear. You'd rather deal with a smaller universe of risks, so re-defined terms of the study to narrow the scope. This is a clear example of stakeholder input being taken, then disregarded.

Second, "significant" is not the right word for what the methodology is talking about. Four deaths, for example, are surely significant, but do not fall within the definition. If you are going to use the word significant, then please use it the way everybody else does. If you have to change the English language to make your logic fit, then that's a sign the problem probably isn't in the words.

Third, the decision to allow the ARA team to administratively screen out "insignificant" consequences, as you define them, along with broad aspects of physical infrastructure and spill causes, is misplaced. If risk management decisions are all going to be made by the SAOT, then that is who ought to define what is and is not significant. But by screening out so much to begin with, the methodology predetermines the outcome, and will prevent decision-makers from making an informed judgment of their own.

Fourth, by over-limiting this definition of significant to extraordinary, catastrophic events, the methodology cancels out a large universe of risks that likely could be effectively managed and mitigated. If we have the ability to eliminate some of these lesser risks, then that needs to be reflected in this project.

Fifth, insignificant risks are counted as zero in the methodology, but it does not need to be this way. The methodology could be corrected to count screened-out risks in some different way. A better last-ditch method would be to use industry average statistical data

that is available. Stating risks that are screened out as zero biases the final result strongly towards lowering risks from what we know to be the case.

3.5.5 Safety Consequences

The methodology says, "health consequences from the normal operation… are not included in the scope…" (p.25) We strongly argue against this decision. This is not an abstract issue. Health risks from oilfield infrastructure, for example from flaring in the vicinity of Nuiqsut, are making Alaskans sick right now. These risks have *not* been thoroughly managed or analyzed. The ARA team has no idea whether or not these risks are higher or lower than those from unanticipated events. In response to public comments identifying these risks as some of the most important, the ARA team has argued they come from "normal" operations, and so are screened out. This is an incorrect decision that needs to be reversed. A situation where an oilfield is making citizens sick is an operational failure. It is *unanticipated.* Health consequences were not necessarily foreseen. Health risks certainly are significant and preventable. The situations in Arctic villages are not what any reasonable person would consider to be normal. If gas flares went in just upwind of *your* house, and your kids were getting sick, would you consider that "normal operations?" At the May 5, 2009 public workshop, an ABS presenter said that contractors were not exercising their own judgment on what risks were acceptable. But the methodology does exactly that by giving a free pass for any risk that could be construed as coming from "normal" operations.

If the State wants to make the decision to do nothing about these risks, then that is one thing. But it remains vital that these risks be tabulated and considered. They are a key part of the overall weight of risk associated with the infrastructure.

§3.5.6 Environmental Consequences

Thank you for the clear identification of spills to water as being in a class by itself. This is an instance where you did a good job of incorporating stakeholder input.

Again there are problems with overly aggressive screens. The methodology states that environmental consequences are not considered where they result from activities that are legal. Whether an activity is legal or not is not an appropriate place to draw this line. Lots of things are legal that increase risk. The key problem is that use of this standard as an early screen eliminates the possibility that project results will reveal any needed (or desirable) statutory or regulatory changes. It presumes (without basis) that what is legal now, is acceptable and not worth considering for improvement. If it turns out existing regulations are the desirable response to existing risks, then fine. But this needs to be based on information.

Thank you for broadening the definition of high environmental consequence areas. The various legal definitions (Environmentally Sensitive Areas, USAs, HCAs, etc.) are legalistic, confusing, inconsistently applied, and not a full representation of actual

environmental risk. Our local concern is, as you know, that a spill to any part of the Copper River Watershed be appreciated as an environmental disaster and absolutely unacceptable risk.

Please include consideration of perception-based impacts, for example to subsistence use and tourism. Consequences of a spill can be out of proportion to physical damage based on perceptions of toxicity that prevent resources from being utilized, or perceptions that precious wilderness or cultural cites have been contaminated and ruined. It is in the mainstream of science to appreciate disasters like spills cause substantial psychological and social harm to impacted communities.

As with reliability, please carefully consider reasonably foreseeable secondary environmental effects. The draft methodology seems to accommodate this in weighing environmental consequences, although this is a little unclear.

§3.5.7 Reliability

Under the draft methodology, "impacts [that] relate to secondary, socioeconomic consequences that were not defined as consequence areas of concern and are outside the scope of this project." (p.26) Defined where? By whom? Why? The methodology does not provide any reason. This appears to be yet another case where stakeholder concerns raised inconvenient truths to the project team, who then redefined the parameters to count these risks as "0."

Secondary, socio-economic impacts, such as cascading effects to the military, municipalities, other industries, and other citizens need to be considered. These impacts are obviously important. Importance of these risks was expressed by stakeholders in early project feedback. In public meetings the project team seemed to agree. Given the clearly foreseeable impacts that are being excluded, whatever arbitrary line was drawn is overly restrictive.

The usual objection to considering secondary impacts is that long chains of events are difficult to predict. Of course we can never predict every consequence, but that is no reason to put on blinders to the things we can clearly see. Expense is no excuse for failing to consider some secondary impacts. It is far from prohibitively difficult. Federal agencies do it all the time, for much smaller amounts of money than the ARA team has, in Environmental Assessments and Environmental Impact Statements.

The line of where "secondary" impacts begin is not defined in the methodology, and is always arbitrary anyway. Actions can always be broken down into more and more steps, or grouped into fewer. Rather than excluding all steps after the second one, we recommend that you draw the line at reasonably foreseeable effects. This protects you from engaging in guesswork, while including the full range of predictable consequences. If you know it'll happen, then consider it. If you don't, then don't.

One specific indirect impact that needs to be considered is the cascade of effects of spills into the Copper River watershed on both commercial and subsistence fisheries. For

example, one of the primary negative consequences of a spill into the would be immediate impacts to the carefully crafted marketing message of clean, wild, Copper River Salmon. This vulnerability is especially troubling because it is perception-based. Even a spill that had fairly minor impacts to the environment could have massive impacts to the commercial and subsistence fisheries. Research from the *Exxon Valdez* shows that subsistence users stopped using resources based on perceptions of toxicity. This research is directly applicable to the threat of TAPS spills on the Copper River.[3] These are economic impacts that would be locally severe, and significant in terms of the state economy.

§4 Physical Infrastructure Scope

The physical scope of this project should be expanded to incorporate marine transportation aspects of infrastructure. Experience is that these are among the highest risk components of the system. The idea that marine transportation is somehow so perfectly regulated that further analysis is unneeded is preposterous. Much of this information is readily available, for example in the Prince William Sound risk analysis, and it does not seem an extreme burden for the ARA to address this risk. Again, even if you choose not to study it, it biases the study to count these risks as zero, so known risk levels should be incorporated into the ARA.

It is disappointing that future, especially offshore, infrastructure is not being incorporated in any way. There must be a way of expressing an expandable portfolio model for expressing risk. By the time this assessment is done, the important risk areas may well have moved on to different seas.

Abandoned facilities should also be re-included into the scope. At the 2008 Fairbanks public hearing, I asked whether abandoned facilities were within the scope, and was told that yes, they probably were. This seems like another instance where the project scope has narrowed. Examples of facilities that should be included are abandoned reserve pits, fuel and chemicals, and improperly capped or uncapped wells. One risky location is at Katalla, where an open reserve pit and abandoned drill rig over an uncapped well with dozens of rusty drums of fuel & oil, sit a couple hundred yards above spawning salmon and the commercial Copper River fishing grounds. I've provided documentation of all this to ADEC, and they have extensive information on thousands of abandoned oil facilities in the state.

Again, as explained above, by focusing only on physical infrastructure the methodology needlessly excludes important process-safety risks.

§6 Preliminary Screening

This whole part of the methodology is arbitrary and totally unnecessary. The Hazard ID described sounds like a fancy description of brainstorming. How will the team know

[3] Brady 2008.

when they've brainstormed the complete list of hazards? I asked this question at the May 5, 2009 workshop, and it was explained that a single, worst-case scenario would be uniformly applied to all segments. That would be a bad method to apply because different threats are highest in different places. For example, a guillotine pipeline break may be a worst-case event at the Gulkana River crossing on TAPS, whereas a slow leak that goes undetected for a long time may be the worst-case at the Klutina crossing. One thing that is certain is that this method will result in only a partial list of potential hazards. Yet, many of the worst events are things that people hadn't thought of before. It is generally the less-obvious threats that turn out to be the most dangerous.

If secondary measures are relied on to mitigate risks at a particular node, then the ARA team should conduct validation monitoring of those measures. As the Fineberg reports have documented, the historical problem has been that oil company assertions of sparkling mitigation measures that are never implemented. For example, there are check valves and remote gate valves on TAPS to limit the size of potential spills, but many of these valves are leaky. There are miles of boom in containers, but in many cases response times would be much too slow for them to make any difference. The point is that the risk analysis needs to assess the integrity of these risk management components of the system, just like you assess whether a given pipe is corroded or not. As Mr. French correctly pointed out at the May 5, 2009 workshop, it is also important to consider the impacts of what happens *after* a spill. In the *Exxon Valdez* spill, the cleanup was worse environmentally and socially, than the spill itself. We're not asking you to look into a crystal ball, but don't put on blinders, either.

§6.2 Safety Consequence Screening

This section is unwarranted backpedaling away from considering very serious safety impacts. Truly, this to me is a gross disregard for human life. The only safety impacts that will be considered, apparently, are explosions where people—lots of people— are in the immediate vicinity of the blast. This administrative decision, that getting blown up and killed is the only safety risk of our infrastructure worth considering here, is inexplicable to me. It is unreasonable, unsupported, and arbitrary. Why would you consider only the explosion impacts, and not the health impact of a toxic cloud rolling through Fairbanks? Or of confined space accidents? Why is four, or *any*, dead workers, such a commonplace event that the ARA team can't afford the *time* to consider it?

I urge you to pay close attention to Ott (2005), which details some of the health consequences of large oil spills. Cleanup and response are particularly unhealthy activities, and should be considered among the negative consequences of spills. As Dr. Ott details, the tendency of risk analyses is to try not to learn about health concerns. It is seen as a can of worms, and indeed it is. But not opening the can doesn't make the worms go away. The basic science Ott cites regarding long-term, sub lethal toxicity of PAHs, has become conventional wisdom in the scientific community. You are not going out on any limbs to consider health among the impacts of spills.

As with other factors, the methodology inaccurately lists all safety risks except for explosions resulting in fatalities as "0". That is plainly not the truth, so the ARA result will understate safety risks. Even if you aren't able to analyze these factors, it is no solution to assign them a value you know to be wrong. Use the best data you can gather. Almost anything may be better than no data.

The State could be exposing itself to liability for future, preventable fatalities on the patch, because it codifies a reckless disregard for human life.

§6.3 Environmental Consequences Screening

As with so much else, the methodology inaccurately characterizes spills of less than 1,000 gallons as zero-risk. Even if you don't want to think about those spills, they are a risk factor and it is highly misleading to characterize them as not existing.

The whole issue of setting a lower limit on spill volumes to consider is specious. Why do that at all? Records are just as available for the smaller spills, and those risks could just as easily be calculated. Records show that the vast majority of spill events are of relatively smaller volumes, so by setting a lower volume limit the methodology is severely skewing the frequency analysis. Ten spills of 100 gallons is the same volume as one spill of 1,000 gallons. To consider one but not the other is irrational. Particularly since the ten, ten-gallon spills are more likely preventable, than the 1,000 gallon one.

What is the rationale for only dealing in hydrocarbons, and not, "other types of hazardous substances?" (p.98) That makes no sense. If there are risks from other substances then evaluate them.

The screening may put too much faith in secondary containment. In the vicinity of river crossings, for example, there needs to be some review of that containment. There are dikes in places near TAPS river crossings, for example, but those aren't reliable secondary containment the way that dikes around a tank farm are. In the TAPS contingency plan they consider the banks of the Gulkana River as "containment." The mere fact of asserted "secondary containment" is not the end of the story. Further assessment is necessary.

The methodology has a number of shortcomings in consideration of potential spill volumes.

First, please do not just assume that RGVs and CVs will work. Many of those valves are leaky including at latest information RGVs 73, 31, 95B, 103, CKV 5 , CKV 84A, PS 10 BL1, and PS6 BL1.[4]

Second, we question the statistical reliability of self-reported spill volumes. A high-ranking ADEC spill responder once told me her rule of thumb for oil company first reports of spill volumes, was to multiply the provided figure by a factor or ten. Reported volumes are calculated more on the basis of legal factors than a scientific calculation of the

[4] Alyeska C-plan, 2006; JPO March 2005. *An Evaluation of TAPS Mainline Valve Reliability*. JPO # FBU-050A-001, p.3.

actual volume. The determinative factor in those volumes is whether they achieve a legal settlement for spill penalties. Incentives are to settle quickly on a volume, not to investigate, for fear of upsetting delicate negotiations. Using those legal fictions for a scientific study such as this is unreliable, and almost certainly slants the risk calculation towards smaller spills than will actually occur.

Third, consideration of leak detection time needs to be given. For all but the most massive spills, leak detection is highly unreliable and quite slow.[5] This has several implications. The longer leaks go undetected, the larger the volume. Also, slower leak detection increases environmental damage of a spill, independent of the volume, because spills migrate further downstream, impact larger (and harder to define) areas, and greatly diminish the potential for effective response or avoidance by those downstream.

Fourth, it is crazy to rely only on data from 1996 to 2004 to figure potential spill volumes on the North Slope. The largest volume spill there, some 260,000 (or so) gallons, happened in 2006. Yet the methodology imagines the largest-ever spill was only 38,000 gallons. It is ironic that the spill that sparked this study, is not being considered in it.

Why set a lower limit in the first place? A spill of 420 gallons into the Klutina River in May, for example, would send shockwaves through Copper River fishermen and almost certainly would disrupt fish markets. At our Adjudicatory Hearing last June (Cascadia v. ADEC SPAR), Copper Basin village residents testified that even a very small spill into one of the sensitive waterways would cause them to distrust environmental health and forego subsistence fishing. Given the history of hostility and lies towards our town, I know that Cordovans would have a hard time trusting that only 420 gallons had spilled. Consider a hypothetical scenario in which Alyeska inspected the belowground Klutina River crossing, and discovered some leakage from pinhole corrosion leaks. Imagine they report the spill volume as ten gallons. What would be the response? Would fishermen, still traumatized (and I mean clinically traumatized) from the *Exxon Valdez*, trust that only that much had spilled? This situation is not true in every location. For tundra areas, perhaps 1,000 gallons is a reasonable lower limit (although it seems high to me), but at a river crossing it wouldn't be. The best solution is to recognize certain geographic places (primarily rivers) where <u>any</u> spill would cause significant effects. There are not so awful many such places that we can't afford to protect them specially.

§6.4 Reliability Consequence Screening

Your characterization of the mandate from the state with regard to reliability is wrong. Surely the legislature, when they appropriated $5 million, had in mind the economic interests of all their constituents.

This analysis would screen out the loss of all Cook Inlet production. Clearly, the threshold for significance is drawn too high. I don't think anyone would argue that loss of

[5] Capstone 2001; DNV 2005; Alyeska 2008

all that oil and gas production would not have significant impacts on the state economy. This mistake is a result of eliminating consideration of "secondary" effects.

Lack of cold restart ability is a key reliability factor that needs to be considered on TAPS. I'm reliably told Alyeska's cold restart plans post-SR are untested and uncertain, and that many lack confidence in the plan. Anything that might cause a prolonged shutdown of TAPS during winter should be considered a major risk to reliability.

Along these same lines, please conduct validation on estimated times to repair and get back up and running. Experience certainly is that restarts are themselves risky and tricky, and things go wrong.

§7 Operational Hazards Assessment

With regard to operational hazards, on page 4 the methodology does not offer a methodology. Rather, it just indicates that information will be gathered and failure rates calculated by statistical methods. What methods? How will the failure rates be measured? The purpose of the methodology is to answer these questions, and it doesn't. At a fundamental level, this section of the proposed methodology is simply not done.

As also indicated above, we have fundamental problems with the way this information is being gathered and applied. What is proposed amounts to simply copying industry-supplied data, with no independent assessment whatsoever. This method amounts to more of the same self-policing. It would all take place behind closed doors, and the product isn't being peer reviewed. This is worse than doing no risk assessment at all. The solution, as we indicate in our attached letter to the Governor, is to grant ADEC authority to subpoena or otherwise gain access to industry risk analyses. This gets all the same advantages of the proposed risk assessment methodology, more reliably, and for free.

As indicated above, chronic risks, for example of toxic discharges, should be considered within the scope of this study.

Third party damage, including that caused by sabotage/ terrorism and maintenance work, needs to be considered as part of the operational hazards. These are statistically some of the leading causes of pipeline damage. (DNV 2005) This is especially true of the largest and worst spills. The two largest TAPS spills, by a large margin, were both caused by sabotage. These risks are real, there are steps we could be taking to make ourselves safer, and there's is no reason to exclude them from this analysis. Damage from maintenance, and other complications such as those caused by SR, are similarly likely to show fruitful opportunities for improvement.

§6 Natural Hazards

The draft methodology appears to exclude hazards insofar as they interact with access. For example, a flood could not only cause a breach of the pipeline but, if it did so, would

also likely cause road closures that would prevent access to the spill location, preventing both detection and response. If that is the case, please fix it.

Please consult with local residents when evaluating locally significant natural hazards. Nature's challenges are something we know probably the most about.

For all of these reasons, we feel that continuing forward with this study, using this methodology, would do more harm than good. If Doyon/Emerald and ABS are not up to the task they signed up to do, then the State needs to find someone who is.

Please continue to keep us apprised as this important program moves forward. We remain committed to helping in any way possible to make Alaska's oilfield safer.

Sincerely,

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