

ALASKA LEGISLATURE COMMITTEE FILES 1995-1996 8672

8706 HOUSE RESOURCES

ATTACHMENT 1
Proposed Title V Disapproval Issues

Region 10 believes the provisions of Alaska's title V program discussed below currently require disapproval of the program for the following reasons.

1. **Applicability.** Section 502(a) of the Act and 40 CFR 70.3 require, among other things, that a State program permit all major sources as defined in section 112 or parts C and D of title I of the Act. Although the Alaska program does not include a definition of the term "major source," it requires title V permits for facilities that emit, or have the potential to emit, more than specified tons per year thresholds of regulated air contaminants. The Alaska definition of "facility" and the tons per year thresholds conform to the requirements of the Act and part 70. However, the Alaska definitions of "potential to emit" and "volatile organic compounds," a "regulated air contaminant," which are necessary to determine the sources subject to the Alaska title V program, have the effect of excluding certain sources from the obligation to obtain a title V permit.

The Alaska definition of "potential to emit" as expanded and clarified in 18 AAC 50.210, is inconsistent with the EPA definition in 40 CFR 70.2 in two respects. First, the Alaska definition does not require that only limitations on the capacity of a source to emit a pollutant that are enforceable as a practical matter may be considered in determining a source's potential to emit. Rather, the Alaska program would allow any provision in Alaska's rules or any condition of a permit to be considered even if the restriction is not enforceable as a practical matter, contrary to the decision in United States v. Louisiana-Pacific Corporation, 682 F. Supp. 1122 (D. Colo. 1987) and 682 F. Supp. 1141 (D. Colo. 1988).

Second, EPA's regulations require that fugitive emissions be included in a facility's determination of potential to emit for certain specified source categories (see definition of "major source" in 40 CFR 70.2). Although the Alaska rules similarly require the inclusion of fugitive emissions, the Alaska rules limit this requirement by stating that fugitive emissions must be included only if "reasonably quantifiable." EPA's part 70 regulations do not contain this limitation. The parallel provision in EPA's regulations for the prevention of significant deterioration (PSD) program does state that only "quantifiable" fugitive emissions must be included in determining a source's potential to emit (see 40 CFR 51.166(i)(4)(ii)), but no EPA regulations defining "potential to emit" include the qualification that only "reasonably quantifiable" fugitive emissions must be included. EPA believes it is acceptable for a State to require the inclusion of only "quantifiable" fugitive emissions, but believes that the further qualification that only "reasonably quantifiable" fugitive emissions be included could have the effect of impermissibly excluding fugitive emissions from the determination of a facility's potential to emit,

particularly where, as is the case in Alaska, it is completely unclear who determines whether emissions are "reasonably quantifiable."

A final problem with the applicability criteria in Alaska's title V regulations stems from the Alaska definition of the term "VOC or volatile organic compound" (18 AAC 50.990(92)). The Alaska definition is inconsistent with EPA definition in 40 CFR 51.100(s) in that: (1) it excludes a compound that has not been determined by EPA to be one that has negligible photochemical reactivity; (2) it fails to exclude many compounds that EPA has already determined to have negligible photochemical activity; and (3) it fails to include the requirements for testing and quantifying compounds before they can be excluded from a facility's emissions calculations. Although the effect of the Alaska definition would be to require some sources to include compounds that EPA has excluded, the Alaska definition would also impermissibly allow sources to exclude a compound that EPA's definition would include or to claim exclusions without adequate quantification.

In summary, because the Alaska rules would allow inappropriate conditions to be used in determining a facility's potential to emit, would allow quantifiable fugitive emissions to be excluded in determining a sources potential to emit, and would allow sources to exclude certain compounds from being considered VOC's, EPA is proposing to disapprove the Alaska title V program because it would not ensure that all major sources, as defined in 40 CFR 70.2, would be required to obtain title V permits. Therefore, EPA proposes to require, as a condition of interim approval, that Alaska demonstrate to EPA's satisfaction that its title V program covers all "major sources" as defined in 40 CFR 70.3.

2. Permit Applications. Section 502(b)(1) of the Act and 40 CFR 70.5 specify minimum requirements for permit applications. Although the Alaska Statutes state that the State regulations must include a standard permit application form that meets the requirements of part 70, the Alaska regulations fail to require permit applications to include much of the information required by 40 CFR 70.5. Specifically, the Alaska regulations fail to require a description of the source's processes and products by Standard Industrial Classification Code (40 CFR 70.5(c)(2)), fail to require submittal of most of the emissions-related data required by 40 CFR 70.5(c)(3) (emissions rates; fuels, fuel use, raw materials, production rates, and operating schedules; identification and description of pollution control equipment and monitoring devices; etc.), and fail to include a certification of compliance with all applicable requirements (40 CFR 70.5(c)(9)(i)).

In addition, the Alaska provisions for "insignificant sources" fail to meet the requirements of 40 CFR 70.5 that "an application may not omit information needed to determine the applicability of, or to impose, any applicable requirement" (i.e., the "applicable requirements gatekeeper" for insignificant emission units). The Alaska rules only require that the

application include a statement that the facility contains one or more additional small sources subject to 18 AAC 50.055, 18 AAC 50.070, or 18 AAC 50.075. See 18 AAC 50.335(e)(7). However, the emission standards and requirements in these sections are not generally applicable standards that apply to generically to all sources, including insignificant sources, but rather, are unit specific emission standards and requirements. As such, the Alaska rule would not require a permit application to include the information necessary for the State to determine which standards in these sections actually apply to the facility, or to determine what sources at the facility are subject to those standards. As a condition of interim approval, EPA proposes to require that Alaska demonstrate to EPA's satisfaction that its application requirements meet the requirements of 40 CFR 70.5(c).

3. **Applicable Requirements.** Part 70 requires all "applicable requirements," as defined in 40 CFR 70.2, to be included in title V permit applications and permits. As stated above, the Alaska program does not use the term "applicable requirements", but instead requires that a title V permit contain each "air quality control requirement," which is defined in 18 AAC 50.990 as an obligation created by AS 46.14, 18 AAC 50 or a term or condition of a preconstruction permit issued by ADEC. By so constructing its program, the Alaska program allows the omission of two types of "applicable requirements" from title V permit applications and permits.

First, part 70 defines "applicable requirement" to include any standard or other requirement provided for in the applicable implementation plan approved or promulgated by EPA through rulemaking under title I of the Act that implements the relevant requirements of the Act, including any revisions to that plan promulgated in 40 CFR part 52. This would include standards and requirements of the Alaska State Implementation Plan, approved by EPA in 40 CFR part 52, subpart C, and provisions promulgated by EPA under title I of the Act (known as Federal Implementation Plans or "FIPs"). The Alaska regulations require that the current version of its State air regulations be included in title V permit applications and permits, rather than requiring that the version approved as part of the Alaska SIP be included in permit applications and permits. The Alaska program also does not require the inclusion of any FIP standards and requirements in Alaska title V permit applications and permits. Thus, the Alaska regulations do not ensure that the requirements of 40 CFR part 52, subpart C (the EPA approved and promulgated Alaska implementation plan) are included in permit applications and permits.

Part 70 also defines "applicable requirement" as including the terms and conditions of any preconstruction permits issued pursuant to regulations approved or promulgated through rulemaking under title I of the Act, including parts C or D of the Act. See 40 CFR 70.2. The Alaska program does require that the terms of any such State-issued permit be included in title V permit applications and permits. Prior to July 5, 1983, however, EPA issued permits to construct to new and modified major

stationary sources in Alaska under the PSD permitting regulations (40 CFR 52.21). These permits are still in effect and contain Federally-enforceable requirements for sources subject to those permits. Alaska's regulations would not require title V permit applicants to identify these terms and conditions of EPA-issued permits in permit applications, nor require the State to include these terms and conditions in title V permits.

As a condition of interim approval, EPA proposes to require that Alaska demonstrate to EPA's satisfaction that sources are required to include in permit applications and ADEC is required to include in title V permits all "applicable requirements" as defined in 40 CFR 70.2.

4. Emissions Trading Under a Federally-enforceable Emissions Cap. Part 70 requires a permitting authority, if a permit applicant so requests, to issue permits allowing for the trading of increases and decreases within the permitted facility solely for the purposes of complying with a Federally-enforceable emissions cap that is established in the permit independent of otherwise applicable requirements. See 40 CFR 70.4(b)(12)(iii). The comparable Alaska provision would allow trading of emissions increases and decreases for any facility-wide permit requirement, including emission limitations established to ensure attainment and maintenance of ambient standards and PSD increments. See 18 AAC 50.335(h) and 18 AAC 50.350(e)(4). These provisions appear to encompass and even broaden the types of emissions trading allowed for under 40 CFR 70.4(b)(12)(ii), 40 CFR 70.6(a)(8) and 40 CFR 70.6(a)(10) without including the remaining provisions of those sections. As a condition of interim approval, EPA proposes to require that Alaska demonstrate to EPA's satisfaction that the Alaska regulations do meet the requirements of the Act and 40 CFR part 70 with respect to emissions trading provisions.

5. Permit Content. EPA believes that there are currently two deficiencies with Alaska's regulations regarding permit content that require disapproval unless addressed prior to EPA final action on this proposal. First, as discussed in section B.1.iii. above, the Alaska rules do not include the "applicable requirements gatekeeper" to ensure that permit applications include all information necessary to impose all applicable requirements, even those for insignificant sources. The Alaska rules regarding permit content similarly omit the requirement to include permit terms and conditions to ensure compliance with such applicable requirements. See 18 AAC 50.350(d)(2) and (3). As such, the Alaska rules do not comply with the requirement of section 504(a) of the Act and 40 CFR 70.6(a)(1). Accordingly, EPA proposes to disapprove the Alaska program for failing to ensure that permits include all requirements applicable to a source unless Alaska demonstrates to EPA's satisfaction that its program meets the requirements of section 504(a) and 40 CFR 70.6(a)(1) for those insignificant sources subject to applicable requirements.

Second, EPA's regulations require that all emissions monitoring and analysis procedures or test methods required under

applicable requirements be included in the permit. See 40 CFR 70.6(a)(3)(i). However, Alaska's rules only require monitoring and analytical procedures consistent with certain federal standards adopted by reference in 18 AAC 50.040. As such, monitoring, analytical procedures and test methods required by Alaska rules, EPA-issued PSD permits, federal compliance orders, and other "applicable requirements" would not be required to be included in permits, contrary to the requirements of 40 CFR Part 70. Accordingly, EPA believes that it must propose to disapprove the Alaska program for failing to ensure that permits include all monitoring and testing requirements applicable to a source unless this deficiency is resolved prior to final action on this proposal.

6. **Administrative Amendments.** Part 70 allows the requirements of a preconstruction permit to be incorporated into a title V permit by administrative amendment, provided that such a preconstruction permit is issued under an EPA-approved program that meets procedural requirements substantially equivalent to the part 70 procedures for public, affected State and EPA review that apply to permit modifications and compliance requirements substantially equivalent to those required for part 70 permits. See 40 CFR 70.7(d)(1)(v). The Alaska program allows the incorporation of terms of preconstruction permits by administrative amendment "if the federal administrator reviewed the permit as an operating permit revision under AS 46.14.220 and did not object." See 18 AAC 50.370(a)(8). By referencing only the EPA review and objection requirements of AS 46.14.220, however, the Alaska regulation does not require that preconstruction permits incorporated by administrative amendment meet all of the other procedural requirements for permit issuance and does not require that such permits contain compliance requirements substantially equivalent to the requirements of a title V permit. Therefore, title V permits modified by administrative amendments through the incorporation of preconstruction permits in Alaska would not be required to provide for adequate public notice and an opportunity for public comment and hearing or to assure compliance with all applicable requirements, which are requirements for interim approval of a State operating permits program. See 40 CFR 70.4(c)(1), 70.4(d)(3)(iv) and 70.4(d)(3)(ii). Accordingly, EPA believes that it must disapprove Alaska's program unless Alaska demonstrates that issuance of preconstruction permits incorporated into a title V permit by administrative amendment meets the procedural requirements for issuance of title V permits and that the terms of such permits contain compliance requirements substantially equivalent to the requirements of a title V permit.

7. **Minor Permit Modifications.** Part 70 requires States to establish procedures for minor permit modifications which are substantially equivalent to those set forth in 40 CFR 70.7(e). The part 70 regulations contain criteria that a revision must meet in order to be processed as a minor permit modification.

See 40 CFR 70.7(e)(2)(i)(A). For example, a permit revision may not be made as a minor permit modification if the revision attempts to "establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject." 40 CFR 70.7(e)(2)(i)(A)(4).

The Alaska program takes the same basic approach to permit modifications as part 70. See 18 AAC 50.375. However, unlike part 70, the Alaska program only prohibits changes to be made by minor permit modification if the change would "revise permit terms or conditions" thereby allowing for the establishment of new terms and conditions using the minor modification procedures. See 18 AAC 50.375(a)(3) and (4). EPA therefore proposes to require, as a condition of interim approval, that Alaska demonstrate to EPA's satisfaction that its program meets the requirements of 40 CFR 70.7(e)(2)(i)(A).

8. **Permit Review by EPA.** Part 70 requires the permitting authority to submit to EPA a copy of each permit application, each proposed permit (the version that the permitting authority proposes to issue) and each final permit (the version that is issued by the permitting authority and has completed all required review). 40 CFR 70.2 and 70.8(a)(1). It then prohibits a permitting authority from issuing a permit until EPA has had an opportunity to review the proposed permit and all necessary supporting information and has not objected to the permit within 45 days of receipt of the proposed permit and such supporting information. 40 CFR 70.8(c)(1) and (e). The Alaska program requires the facility to submit a copy of each permit application to EPA and requires ADEC to provide to EPA each "preliminary decision, draft permit, final decision, and final permit". 18 AAC 50.335(a) and 50.340(j). AS 46.14.220 prohibits ADEC from issuing a permit until EPA approves the permit "or until 45 days after a copy of the final draft permit" has been provided by ADEC to EPA. None of these terms are defined in Alaska's regulations, however, and neither AS 46.14.220, nor the implementing regulations, appear to require ADEC to submit the proposed permit (as defined by part 70) and all necessary supporting information to EPA for review. Accordingly, EPA proposes to require, as a condition of interim approval, that Alaska demonstrate to EPA's satisfaction that ADEC is required to submit to EPA for review the proposed permit (as defined in part 70) and all necessary supporting information and that EPA's 45 day review period runs from EPA receipt of such information. At the same time, EPA recommends that Alaska define in its statutes or regulations each version of the permit and the accompanying permitting decisions that Alaska uses in its statutes and regulations.

9. **Permit Program Documentation.** Part 70 requires a State to submit, as part of its title V submission, relevant permit program documentation not contained in regulations, such as permit application forms, permit forms, and relevant guidance to assist in the State's implementation of its permit program. See

40 CFR 70.4(b)(4). The Alaska submittal does not contain this documentation, stating instead that its permit application forms and permit forms are currently under development. Without even draft copies of the permit forms and application forms Alaska intends to use in its program, EPA believes it must disapprove the Alaska program because such documentation is required as part of a State's title V submission. Should Alaska submit drafts of these documents before EPA takes final action on this proposal, EPA proposes to grant interim approval instead of disapproval. Final versions of these documents will need to be developed by the time they are needed to implement the program.

ATTACHMENT 2
Proposed 112(1) Disapproval Issues

Region 10 believes the provisions of Alaska's 112(1) submittal discussed below currently require disapproval for the following reasons.

1. Alaska did not adopt the preconstruction review sections of 40 CFR part 63 subparts A and B (sections 63.5(b)(2)-(4), and 63.54) because they already have similar preconstruction review requirements under 18 AAC 50.300 to -.320. The Alaska regulations (18 AAC 50.300 to -.320), however, do not apply to newly constructed non-major sources, whereas 40 CFR 63.5(b)(4) does. In this respect Alaska's preconstruction review program does not meet the stringency requirement of 40 CFR 63.91. Furthermore, 40 CFR 63.91 only applies to straight delegation requests. If Alaska wishes to receive 40 CFR 63.91 delegation for 40 CFR part 63 subparts A and B, Alaska must adopt the federal regulations as codified. If Alaska wishes to substitute the federal preconstruction review regulations of 40 CFR 63.5 and 63.54 with comparable State-adopted regulations, Alaska would need to make this delegation request under the authority of 40 CFR 63.93.

2. Alaska did not adopt into State law the general applicability requirements of 40 CFR 63.50, stating instead that this section of the Federal subpart B rule was not necessary for the State program. EPA disagrees with this conclusion and believes 40 CFR 63.50 is integral to determining which category of sources would be subject to the maximum achievable control technology (MACT) case-by-case determination requirements of 40 CFR 63.50 to 63.59.

ATTACHMENT 3
Proposed Title V Interim Approval Issues

Region 10 believes the provisions of Alaska's title V program discussed below currently require interim rather than full approval for the following reasons.

1. **Applicability.** The Alaska definition of "regulated air contaminant" in AS 46.14.990(21) is inconsistent with the EPA definition of the term "regulated air pollutant" in 40 CFR 70.2. Specifically, EPA's definition requires that any pollutant subject to section 112(j) of the Act be considered a regulated air pollutant on the date 18 months after the applicable date established pursuant to section 112(e) of the Act (i.e., the date that major sources are required to submit permit applications under section 112(j)(2)). The Alaska definition, however, only requires a pollutant to be considered a regulated air contaminant only after a permit has been issued pursuant to section 112(j). Since there are currently no sources or pollutants subject to section 112(j) of the Act, EPA does not consider this deficiency to be a disapproval issue. However, since sources and pollutants may become subject to section 112(j) in the future, the Alaska definition must be revised. As a condition of full approval, EPA proposes that Alaska demonstrate to EPA's satisfaction that its definition of "regulated air contaminant" is consistent with EPA's definition of "regulated air pollutant" in 40 CFR 70.2.
2. **Option to Obtain Permit.** Part 70 requires States to allow any source exempt under 40 CFR 70.3(b) to opt to obtain a part 70 permit. See 40 CFR 70.3(b)(3). The Alaska regulations do not contain a comparable provision and Alaska has not demonstrated that it has authority to issue permits to exempt sources. Few, if any, Alaska sources would be expected to apply for an optional title V permit, however, because Alaska has several mechanisms for obtaining Federally-enforceable limits through a means other than a title V permit. As a condition of full approval, however, EPA proposes to require that Alaska demonstrate to EPA's satisfaction that it has the authority required by 40 CFR 70.3(b)(3).
3. **Applicable Requirements.** Part 70 requires all "applicable requirements" to be included in a permit application and permit, and defines "applicable requirement" to include, among other things, the requirements of title VI of the Act (Stratospheric Ozone Protection). See 40 CFR 70.2. The Alaska definition of "applicable requirements" does not include all of the EPA regulations implementing title VI (40 CFR Part 82) but only Subparts B and F. Although EPA has proposed to revise 40 CFR part 70 to limit the definition of "applicable requirement" to only those provisions promulgated under sections 608 and 609 of the Act, this proposed revision is not yet adopted. As such, EPA believes it must propose interim approval of the Alaska program at this time because it does not meet the requirements of part

70. Should EPA revise part 70 as proposed, Alaska's rules will be consistent and no revisions will be needed. However, if EPA does not revise part 70 as proposed, EPA proposes to require that Alaska adopt and submit appropriate revisions as a condition of interim approval.

4. **Emissions Trading Provided for in Applicable Requirements.** Part 70 requires that the permitting authority must include terms and conditions, if the permit applicant request them, for trading of emissions increases and decreases in the permitted facility, to the extent that the applicable requirements provide for trading such increases without a case-by-case approval of each emissions trade. See 40 CFR 70.6(a)(10). The Alaska program does not contain a comparable provision. This appears to be based on the State's assumption that no applicable requirements currently provided for such trading. Certain EPA standards in 40 CFR Part 63, however, do allow for such trading, and as such, EPA believes that the Alaska program must contain such a provision as a condition of full approval. Therefore, as a condition of full approval, EPA proposes that Alaska ensure that its program include the necessary provisions to meet the requirements of 40 CFR 70.6(a)(10).

5. **Inspection and Entry Requirements.** Part 70 requires each title V permit to contain a provision allowing the permitting authority or an authorized representative, upon presentation of credentials and other documents as may be required by law, to perform specified inspection and entry functions. See 40 CFR 76.6(c)(2). The Alaska program fails to meet the requirements of part 70 in an important respect. Alaska law conditions ADEC's inspection and entry authority on first obtaining the consent of the owner or operator or a warrant. See AS 46.03.860; 46.14.515(a); 18 AAC 50.345(7). The owner or operator is not required to consent to such inspections and entry as a condition of obtaining a title V permit. EPA proposes to require, as a condition of full approval, that Alaska demonstrate to EPA's satisfaction that its inspection and entry authority meets the requirements of 40 CFR 70.6(c)(2).

6. **Progress Reports.** Part 70 requires a title V permit to require the submission of progress reports, consistent with the applicable schedule of compliance and 40 CFR 70.5(c)(8), to be submitted at least semiannually, or at a more frequent period if specified in the applicable requirement or by the permitting authority. See 40 CFR 70.6(c)(4). Alaska requires the submission of such reports semi-annually, but requires that they be submitted more frequently only if required by the permitting authority. See 18 AAC 50.350(k)(3). There is therefore no assurance that more frequent progress reports will be required in the permit if specified in the applicable requirement. As a condition of full approval, EPA proposes to require that Alaska demonstrate to EPA's satisfaction that its program complies with the requirements of 40 CFR 70.6(c)(4).

7. **Compliance Certification.** Part 70 requires a permitting program to contain requirements for compliance certification with terms and conditions contained in the permit, including emissions limitations, standards or work practices. See 40 CFR 70.6(c)(5). The Alaska program requires a title V permit to contain compliance certification requirements only with permit terms and conditions established under 18 AAC 50.345 (standard conditions) and 18 AAC 50.350(d) (source specific permit requirements), (e) (facility-wide permit requirements) or (f) (certain other requirements). It therefore does not require certification of compliance with all permit terms and conditions, such as monitoring, recordkeeping, reporting and compliance plan requirements. See 18 AAC 50.350(g), (h), (i) and (j). There may also be other terms and conditions of a permit that are required by a statute or regulation other than those specifically enumerated in 18 AAC 50.350(j).

8. **General Permits.** Part 70 allows States to issue "general permits," which are permits issued after notice and opportunity for public participation, that cover numerous similar sources. See 40 CFR 70.6(d). The Alaska program authorizes the issuance of general permits. See AS 46.14.210; 18 AAC 50.380. The Alaska provisions for general permits, however, fail to comply with the requirements of part 70 in one respect. Part 70 allows permitting authorities to provide for applications for general permits which deviate from the requirements of 40 CFR 70.5, provided that such applications otherwise meet the requirements of title V. 40 CFR 70.6(d)(2). The Alaska regulations indicate that ADEC will issue specialized permit applications for general permits, see 18 AAC 50.380(c) (source shall submit a completed application form issued by ADEC for the specific facility type), but do not require that such facility-specific applications meet the requirements of title V. Accordingly, EPA proposes to require, as a condition of full approval, that Alaska demonstrate to EPA's satisfaction that applications for general permits meet the requirements of title V.

9. **Affirmative Defense for Emergencies.** Part 70 provides an affirmative defense to an action brought for noncompliance with a technology-based limitation in a title V permit if certain specified conditions are met. See 40 CFR 70.6(g). Alaska's program provides an affirmative defense for unavoidable emergencies, malfunctions and nonroutine repairs that closely parallels 40 CFR 70.6(g), but is slightly broader than that section in a few respects. See AS 46.14.560; 18 AAC 50.235; 18 AAC 50.990. First, the Alaska regulations include a definition of "technology-based standard" that includes the phrase "any other similar standard for which the stringency of the standard is based on determinations of what is technologically feasible, considering relevant factors." Because a State's decision as to the appropriate mix of controls to be used to attain the ambient air quality standards in nonattainment areas is based in part on technical feasibility, this provision could be used to incorrectly classify a health-based standard as a technology-

based standard. Second, the Alaska regulations do not restrict the affirmative defense to those cases where the required showing is made through properly signed, contemporaneous operating logs or other relevant evidence, as is required by section 70.6(g)(3). Third, although the Alaska program requires a permittee claiming the affirmative defense to notify ADEC within two working days of the exceedance, Alaska gives a permittee up to one week after the discovery of the exceedance to provide ADEC with a written notice describing the cause of and its response to the exceedance. 18 AAC 50.235. Part 70 requires that written notice of the exceedance containing this information be provided within two working days of the exceedance. See 40 CFR 70.6(g)(3)(iv). As a condition of full approval, EPA proposes to require that Alaska demonstrate to EPA's satisfaction that its emergency provisions are consistent with the requirements of 40 CFR 70.6(g).

10. **Off-Permit Provisions.** Part 70 authorizes an approved permit program to include certain "off-permit" provisions whereby a source can make a change at the permitted facility without the need for a permit revision. See 40 CFR 70.4(b)(14) and (15). These provisions require the permittee to keep a record at the facility describing each off-permit change and to provide "contemporaneous" notice of each off-permit change to EPA and the permitting authority. See 40 CFR 70.4(b)(14). The Alaska program, however, limits the requirement to provide notice and keep records to only sources required to provide certain information under 18 AAC 50.335. As a condition of full approval, EPA proposes to require that Alaska ensure that its program requires notice and records for all off-permit changes.

11. **Statement of Basis.** Part 70 requires that the permitting authority shall provide and send to EPA and to any other person who requests a statement that sets forth the legal and factual basis for the draft permit conditions (including references to the applicable statutory or regulatory provisions. See 40 CFR 70.7(a)(5). The Alaska title V program does not contain a comparable requirement. As a condition of full approval, Alaska must demonstrate to EPA's satisfaction that its program satisfies the requirements of 40 CFR 70.7(a)(5).

12. **Administrative Amendments.** Part 70 authorizes States to allow certain ministerial types of changes to title V permits to be made by administrative amendment, which does not require EPA or public review or participation. See 40 CFR 70.7(d). That section contains a list five types of changes which may be made by administrative amendment, and authorizes EPA to approve as appropriate for incorporation by administrative amendment other types of changes which are similar to those specifically enumerated in 40 CFR 70.7(d)(1). See 40 CFR 70.7(d)(1)(vi). The Alaska program authorizes three types of changes to be made by administrative amendment in addition to the five listed in part 70. See 18 AAC 50.370(a)(4), (5) and (6). EPA proposes to approve two of these types of changes as appropriate for administrative amendment. See Attachment 4. EPA believes that

one of the three additional changes is not approvable for the following reason and must be revised as a condition of full approval.

Alaska's program allows alterations in the identification of equivalent replacement equipment or components that have been made been replaced with equivalent equipment or components to be made by administrative amendment provided certain conditions are met. See 18 AAC 50.370(a)(5). EPA believes that the restrictions on such permit alterations for equivalent replacement equipment or components are sufficient to ensure that any resulting change would be truly ministerial, with the following exception. 18 AAC 50.370(a)(5)(D) prohibits such a change to be made by administrative amendment if the revision would result in a modification under 40 CFR part 60, which is adopted by reference in 18 AAC 50.040. This restriction is too narrow, in that it would allow alterations in equivalent replacement or components even if the change resulted in a modification under 40 CFR part 61 or 63. Such changes are title I modifications and as such must be made by significant permit modification procedures. See 18 AAC 50.990(82); 18 AAC 50.375. Accordingly, EPA proposes to require, as a condition of full approval, that Alaska revise 18 AAC 50.370(a)(5)(D) to expand the prohibition to include modifications made pursuant to 40 CFR parts 60, 61 and 63, or to eliminate 18 AAC 50.370(a)(5) from the list of changes that may be made by administrative amendment.

13. Minor Permit Modifications.

Part 70 requires States to establish procedures for minor permit modifications which are substantially equivalent to those set forth in 40 CFR 70.7(e). The part 70 regulations contain criteria that a revision must meet in order to be processed as a minor permit modification and then contains procedures for those changes qualifying as minor permit modifications. See 40 CFR 70.7(e)(2)(i)(A). The Alaska program takes the same basic approach to permit modifications as part 70. See 18 AAC 50.375. The Alaska program is deficient, however, in several respects.

First, part 70 prohibits a permit revision to be made as a minor permit modification if the revision involves "significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit." 40 CFR 70.7(e)(2)(i)(A)(2). Part 70's significant modification procedures further restrict the class of revisions that may be processed as a minor permit modification, stating that "every significant change in existing monitoring permit terms or conditions and every relaxation of reporting or recordkeeping permit terms shall be considered significant." See 40 CFR 70.7(e)(4). Like part 70, the Alaska program prohibits changes to be made by minor permit modification if the change would "materially alter or reduce the frequency, accuracy, or precision of existing monitoring, recordkeeping, or reporting requirements in the permit." 18 AAC 50.375(a)(6). In contrast to part 70, however, neither Alaska's minor or significant modification procedures require that a relaxation of reporting or recordkeeping permit terms must be processed as a significant modification. Instead, the Alaska program simply

states that any revision that cannot be processed as an administrative amendment or minor permit modification shall be processed as a significant modification. 18 AAC 50.370(h). The Alaska program would therefore allow a relaxation of reporting or recordkeeping requirements to be processed as a minor modification, as long as the revision did not "materially alter or reduce" the frequency, accuracy, or precision of existing reporting or recordkeeping requirements.

Second, the Alaska program also appears deficient with respect to the information required in applications for minor permit modifications. Part 70 requires that an application for a minor permit modification must include a description of the change, the emissions resulting from the change and any new applicable requirements that will apply if the change occurs. 40 CFR 70.7(e)(2)(ii)(A). The Alaska program requires that an application for a minor permit modification contain a description of changes at the facility that would result from the proposed revision and, for any resulting changes at the facility, the information required by 18 AAC 50.335, which sets for the requirements for permit applications for title V permits. That section, however, would not appear to require a facility applying for a minor permit modification to provide information on the emissions resulting from the modification.

Finally, the Alaska program fails to include provisions which allow minor permit modification procedures to be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches to the extent that such minor permit modification procedures are explicitly provided for in an applicable implementation plan or in applicable requirements promulgated by EPA. See 70.7(e)(2)(B). Again, the Alaska program does not contain a comparable provision, based on an incorrect assumption by the State that no applicable requirement currently provided for the use of such minor permit modification procedures. However, as stated above in Attachment 4, certain EPA standards in 40 CFR Part 63 do allow for the use of minor modification procedures, and as such, this provision is required as a condition of full approval. Therefore, as a condition of full approval, EPA proposes that Alaska ensure that its program include the necessary provisions to meet the requirements of 40 CFR 70.7(e)(2)(B).

14. Group Processing of Minor Permit Modifications. Part 70 allows a permitting authority to process as a group certain categories of applications for minor permit modifications at a single source. See 40 CFR 70.7(e)(3). Section 70.7(e)(3)(i) establishes standard thresholds for determining whether requests for permit modifications can be grouped, but allows EPA to approve alternative thresholds, if the permitting authority can justify the alternative thresholds based on two specified criteria. The Alaska program contains provisions allowing group processing of minor permit modifications. See 18 AAC 50.375(d). The Alaska program, however, does not contain any thresholds, either the standard thresholds set forth in 40 CFR 70.7(e)(3)(i)

or proposed thresholds tailored to Alaska sources, for determining whether minor permit modifications may be processed as a group.

The failure of the Alaska program to establish thresholds for group processing leads to two additional deficiencies in the Alaska program. First, the Alaska program allows for group processing of minor permit modifications on a quarterly basis. Section 70.7(e)(3)(iii) requires that the permitting authority notify EPA of requested permit modifications to be processed as a group on a quarterly basis or within 5 working days of receipt of an application demonstrating that the aggregate of a source's pending applications equals or exceeds the approved threshold levels, whichever is earlier. Second, Alaska's regulations do not require a source to include in an application for group processing a determination of whether a requested modification, when aggregated with the other pending applications to be processed as a group, equals or exceeds the approved threshold levels, as required by 40 CFR 70.7(e)(3)(ii)(D).¹ As a condition of full approval, EPA proposes that Alaska be required to demonstrate that its group processing procedures are consistent with the requirements of 40 CFR 70.7(e)(3).

15. **Significant Permit Modifications.** Part 70 requires a State to provide for a review process that will assure completion of review of the majority of significant permit modifications within 9 months after receipt of a complete application. 40 CFR 70.7(e)(4)(ii). The Alaska submittal does not address this requirement in its regulations or otherwise in its program submittal. EPA proposes to require, as a condition of full approval, that Alaska provide assurances that its program is designed and will be implemented so as to complete review on the majority of significant permit modifications within this timeframe.

16. **Reopenings.** Part 70 establishes minimum requirements a State must meet where the State or EPA determines that cause exists to terminate, modify or revoke and reissue a permit. See 40 CFR 70.7(f) and (g). The Alaska program contains reopening provisions, but the provisions fail to comply with part 70 in several respects. Part 70 requires that a permit be reopened if additional requirements become applicable to a major part 70 source with a remaining term of 3 or more years. Reopening is not required if the effective date of the requirement is later than the date the permit is due to expire, except this exception to the reopening requirement shall not apply if the permit or its terms have been administratively extended. See 40 CFR

¹Because the Alaska group processing provision relies on the State's general permit modification procedures, Alaska's group processing provision is also deficient for the reasons set forth above in the discussion of the problems with Alaska's minor permit modification procedures. These issues must also be addressed for group processing as a condition of full approval.

70.7(f)(1)(i). The Alaska program satisfies the requirements for reopening a permit in the event of new applicable requirements, except that there is nothing in the Alaska program that would require reopening in the event that the effective date of a new applicable requirement is later than the permit expiration date but the permit has been administratively extended. See AS 46.14.280(a)(3)(B).

Part 70 also requires that a permit shall be reopened or revised if the State or EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit. See 40 CFR 70.7(f)(2)(iii). The Alaska program states that ADEC may reopen a permit if the permit was obtained by misrepresentation of a material fact or by failure of the facility to disclose fully the facts relating to issuance of the permit or if the permit contains a material mistake. See AS 46.14.280(1)(A) and (2)(A). This provision of Alaska's program does not appear to comply with part 70 in the following respects. The Alaska program merely authorizes ADEC to reopen a permit under the stated circumstances. Part 70 requires that a permit be reopened if ADEC or EPA makes such a finding. In addition, even the circumstances under which the Alaska program would allow ADEC to reopen a permit (misrepresentation of a material fact or failure to fully disclose facts) appear to be narrower than the circumstances where reopening is required (material mistake or inaccurate statements in establishing permit terms).

The Alaska program also fails to contain required procedures in the event of a reopening for cause by EPA. Part 70 requires that, within 90 days of receiving notice from EPA that cause exists to terminate, modify or revoke and reissue a permit, the permitting authority shall forward to EPA a proposed determination of termination, modification, or revocation and reissuance. 40 CFR 70.7(g)(2). If EPA then objects to the permitting authority's proposed determination, the permitting authority has 90 days to resolve the objection by terminating, modifying, or revoking and reissuing the permit in accordance with EPA's objection. 40 CFR 70.7(g)(4). The Alaska program does not appear to contain any comparable provisions.

Finally, part 70 requires that a State title V program assure that reopenings are made as expeditiously as practicable. 40 CFR 70.7(f)(2). The Alaska program does not appear to contain a comparable provision either in its regulations or otherwise in its program submittal. EPA proposes to require, as a condition of full approval, that Alaska demonstrate to EPA's satisfaction that its provisions for reopenings comply with the requirements of 40 CFR 70.7(f) and (g).

17. **Public Petitions to EPA.** Part 70 allows any person, within 60 days after expiration of EPA's 45-day review period, to petition EPA to object to a permit based on grounds raised during the public comment period. See 40 CFR 70.6(d). If, as a result of such a petition, EPA objects to the permit and the permit has not already been issued, the permitting authority may not issue the permit until EPA's objection has been resolved. If the

permit has been issued at the time of an EPA objection resulting from a public petition, the petition for review does not stay the effectiveness of the permit and, after any action by EPA to modify, terminate, or revoke the permit, the permitting authority may thereafter issue only a revised permit that satisfies EPA's objection. Alaska's program does not appear to address these requirements. The prohibition on issuance of a permit if the EPA objects appears to apply only if EPA objects during its 45-day review period. AS 46.14.220(a). In the case of an EPA objection in response to a petition, EPA's objection would occur after the 45-day review period. EPA proposes to require, as a condition of full approval, that Alaska demonstrate to EPA's satisfaction that Alaska's provisions regarding public petitions to EPA comply with the requirements of 40 CFR 70.8(d).

18. **Public Participation.** Part 70 requires that the permitting authority make available to the public any permit application, compliance plan, permit, and monitoring and compliance certification report pursuant to section 503(e) of the Clean Air Act, except for information entitled to confidential treatment pursuant to section 114(c) of the Act, and expressly provides that the contents of a title V permit are not be entitled to confidential treatment. See 40 CFR 70.4(b)(3)(viii). Alaska's statutes and regulations regarding public access to information appear to be comparable to the requirements of part 70 with one exception. See AS 09.25.110 to -.220; 46.14.520; 45.50-910 to -.945. There is no express assurance under Alaska law that the terms and contents of a title V permit will not be entitled to confidential treatment. EPA believes that it is very unlikely that anything in a title V permit would qualify for confidential treatment under Alaska law in light of the narrow scope of information entitled to confidential treatment in Alaska and the provisions specifying the content of a title V permit. EPA therefore believes that the failure of the Alaska program to expressly state that nothing in a title V permit shall be entitled to confidential treatment does not pose a bar to interim approval. See 40 CFR 70.4(d)(3)(iv); see also 60 FR 54990, 54999 (October 27, 1995). In order to obtain full approval, however, Alaska must demonstrate to EPA's satisfaction nothing in a title V permit will be entitled to confidential treatment.

ATTACHMENT 4
Proposed Implementation Issues

The following is a list of areas where the Alaska program does not directly address certain requirements of part 70, but Region 10 believes either that the Alaska program, as a whole, satisfies the requirements of part 70 in that particular respect or (2) that no changes are currently required to the Alaska program to comply with part 70, but changes will likely be required some time in the future. If you do not share Region 10's understanding of the implementation and operation of your title V program, as described below, please advise us so in writing.

1. Application Submittal. Part 70 defines a "timely application" for sources applying for a title V permit for the first time as an application that is submitted within 12 months after the source becomes subject to the program or on or before such time as the permitting authority may establish. See 40 CFR 70.5(a)(1)(i). For sources required to meet the preconstruction requirements of section 112(g) of the Act or required to have a permit under the preconstruction review program approved into the SIP under part C or part D of the Act, a "timely application" is one that is submitted within 12 months after the source commences operation or such earlier date set by the permitting authority. 40 CFR 70.5(a)(1)(ii).

The Alaska program requires a source to submit an application within 12 months of becoming subject to the title V program or 60 days before beginning construction of a source if the facility containing the source is a new source that is not required to obtain a construction permit under AS 46.14.130(a). See AS 46.14.150(a). However, the Alaska program does not specifically address new sources under section 112(g) or parts C or D of the Act. EPA has interpreted the Alaska program as considering such sources as "becoming subject to the title V program" at the time the source commences operation, thereby making the Alaska program consistent with 40 CFR 70.5(a)(1)(ii).

2. Variances. AS 46.03.170 establish procedures for the granting of variances under certain conditions from compliance with applicable emission control regulations. EPA has previously disapproved these provisions as part of the Alaska SIP. See 40 CFR 52.75 (Volume III, Appendices, Section II State Air Quality Control Program, II.A. State Air Statutes). EPA regards AS 46.03.170 as wholly external to the program submitted by the State of Alaska for approval under part 70, and consequently proposes to take no action on these provisions of State law in this rulemaking. EPA does not recognize the ability of a permitting authority to grant relief from the duty to comply with a Federally-enforceable title V permit, except where such relief is granted through procedures allowed by part 70. In other words, a variance does not affect the title V source until the title V permit is modified pursuant to procedures approved under part 70. EPA reserves the right to enforce the terms of the

title V permit where the permitting authority purports to grant relief from the source's duty to comply with a title V permit in a manner inconsistent with procedures approved under part 70. A title V permit may also incorporate, via part 70 permit issuance or modification procedures, a schedule of compliance incorporated into a variance. EPA reserves the right, however, to pursue enforcement of applicable requirements notwithstanding the existence of a compliance schedule in a permit to operate. This is consistent with 40 CFR 70.5(c)(8)(iii)(C), which states that a schedule of compliance "shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based."

3. **Applicable Requirements.** The Alaska program does not use the term "applicable requirements" and therefore does not contain a concise definition of the Federally-enforceable requirements which must be contained in a title V permit. Rather, the Alaska program simply indicates that a title V permit must contain each "air quality control requirement" which is defined in 18 AAC 50.990 as an obligation created by AS 46.14, 18 AAC 50 or a term or condition of a preconstruction permit issued by ADEC. In order to ensure that all EPA-promulgated regulatory requirements are covered, ADEC has adopted by reference into 18 AAC 50.040 Federal regulations that currently apply to sources in Alaska. ADEC has not adopted, however, those existing Federal regulations for which there are currently no subject sources in Alaska. If at some future time, sources in Alaska become subject to these existing Federal regulations, ADEC will need to expeditiously update its incorporation by reference in order to adequately implement its title V program. In addition, as new EPA regulations are promulgated which apply to sources in Alaska, ADEC is expected to expeditiously incorporate these new regulations into 18 AAC 50.040.

4. **Inclusion of Fugitive Emissions.** EPA's regulations require that fugitive emissions be included in the permit in the same manner as stationary source emissions whether the source category in question is included in the list of sources for which fugitives must be included in determining a source's potential to emit. See 40 CFR 70.3(d). Alaska's regulations do not include a similar requirement, but rather, only contain the provisions regarding the inclusion of fugitives when determining a source's potential to emit. However, the Alaska rules do not include any provision which would explicitly allow a permit to exclude fugitive emissions once a source has been determined to require a permit. As such, EPA believes that the Alaska program complies with the requirements of EPA's regulations.

5. **Changes Provided for in the Permit.** Part 70 requires a permit to contain a provision stating that no permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in the permit. See 40 CFR 70.6(a)(8). Similarly, part 70 requires that, if an

applicable implementation plan allows a determination of an alternative emission limit, equivalent to that contained in the plan, to be made in the permit issuance, renewal or significant modification process and the State elects to use such process, any permit containing such an equivalency determination shall contain provisions to ensure that any resulting emissions limit has been demonstrated to be quantifiable, accountable, enforceable and based on replicable procedures. See 40 CFR 70.6(a)(1)(iii). The Alaska program does not contain corresponding requirements for permit content because there are currently no such programs in the Alaska SIP. EPA is proposing to approve this portion of the Alaska program based on an understanding that, should any such program be added to the Alaska SIP in the future, the provisions required by 40 CFR 70.6(a)(8) and 40 CFR 70.6(a)(1)(iii), as applicable, will be added to Alaska's title V rules at the same time.

6. **Administrative Amendments.** Part 70 authorizes States to allow certain ministerial types of changes to title V permits to be made by administrative amendment, which does not require EPA or public review or participation. See 40 CFR 70.7(d). That section contains a list five types of changes which may be made by administrative amendment, and authorizes EPA to approve as appropriate for incorporation by administrative amendment other types of changes which are similar to those specifically enumerated in 40 CFR 70.7(d)(1). See 40 CFR 70.7(d)(1)(vi). The Alaska program authorizes three types of changes to be made by administrative amendment in addition to the five listed in part 70. See 18 AAC 50.370(a)(4), (5) and (6). EPA proposes to approve two of these types of changes as appropriate for administrative amendment with the following understanding. EPA believes that one of the three additional changes is not approvable and must be revised as a condition of full approval. See Attachment 3.

The Alaska program allows a change in assessable emissions to be made by administrative amendment, provided the change does not allow emissions to exceed emissions allowable under the permit. See 18 AAC 50.370(a)(4). "Assessable emissions" is defined as the lesser of the annual rate of emissions of each air contaminant authorized by the facility's title V permit or the projected annual rate of emissions of each air contaminant based on previous actual annual emissions if the facility can make a certain showing to ADEC. See AS 46.14.240(h)(1). EPA interprets Alaska's administrative amendment procedures as allowing a change of assessable emissions only if the facility's assessable emissions are based on the facility's projected annual rate of emissions, and the change does not increase assessable emissions above the emissions allowable under the permit.

Finally, Alaska's program allows a source to convert an approval to operate under a general permit to a facility-specific permit with identical terms and conditions and the same expiration date. See 18 AAC 50.370(a)(6). According to Alaska's submittal, the purpose of allowing conversion from a general permit to a facility-specific permit is so that the permit can

then be modified, by means other than administrative amendment, without affecting other facilities operating under the general operating permit. By the express terms of 18 AAC 50.370(a)(6), such a change is a change in the type of permit and not in the permit terms themselves. EPA therefore believes that this type of change is sufficiently similar to the other truly "administrative" types of changes specified in part 70 as appropriate for administrative amendment.

ATTACHMENT 5
Comments on Proposed Rule Revisions

EPA has reviewed the proposed amendments to 18 AAC chapter 50 and believes the following changes are necessary for the rules amended by these amendments to receive full approval as part of Alaska's title V program and Alaska's SIP.

Title V Only

1. 18 AAC 50.335(b)(8) This provision must also require the application to include the facility's "Standard Industrial Classification" (SIC) code as required by 40 CFR 70.5(c)(2).
2. 18 AAC 50.335(e)(7) This new provision does not satisfy the requirements of 40 CFR 70.5(c) that "an application may not omit information needed to determine the applicability of, or to impose, any applicable requirement" (i.e., the "applicable requirements gatekeeper" for insignificant emission units). The emission standards in 18 AAC 50.055, 070, and 075 are not generally applicable standards that apply to any insignificant source but rather, are unit specific emission standards and requirements. In order for the Alaska program to comply with 40 CFR 70.5(c), this provision must require the permit application to include a list of the standards or requirements from 18 AAC 50.055, .070, and .075 that apply to insignificant sources, along with the identification of the sources to which they apply, rather than just a statement that the facility contains an insignificant source subject to a standard.
3. 18 AAC 50.350(e)(3) Note that the punctuation in this provision needs correcting - specifically, the comma after the word "terms" needs to be deleted.
4. 18 AAC 50.350(e)(4) This provision is inconsistent with the emissions trading provisions in 40 CFR 70.4(b)(12) and 70.6(a)(8) and is not approvable. Because the Alaska SIP does not contain any emissions trading provisions, the only emission trading provision that can be included in the title V rules is that allowed by 40 CFR 70.4(b)(12)(iii).
5. 18 AAC 50.375(a)(3) and (4) These provisions must also include the establishment of such permit terms or conditions, not just the revision of such terms.
6. 18 AAC 50.990(81) The new paragraph (E) must either be deleted or ADEC must specifically identify what other standards would be covered by this provision. There are no other federal technology-based standards which are not already specifically included in paragraphs (A) through (D). All standards submitted by Alaska for inclusion in the SIP must include a demonstration of attainment and maintenance of the NAAQS, thereby making them health-based standards. Terms and conditions in permits to construct, other than BACT or LAER, are based on ambient air

quality considerations. EPA is unaware of any "similar standards" which would be covered by this provision.

Title V and PSD/NSR

1. 18 AAC 50.210 POTENTIAL TO EMIT. Two problems: (1) allows for consideration of emission standards or limitations in rules, and conditions in permits which do not limit a sources physical capacity to emit (per the LP decision); and (2) requires fugitive emissions to be "reasonably quantifiable" rather than just quantifiable. Note: the provision in 210(b)(2) that fugitives must be from "sources included in the facility type" may need to be an implementation issue based on the future outcome of the litigation on fugitive emissions and support facilities.
2. 18 AAC 50.990(92) "VOC or volatile organic compounds" Two problems: (1) adds "volatile methyl siloxanes" which isn't on the EPA list of excluded compounds; and (2) doesn't include requirements for testing and quantification in order to qualify for exclusion.

PSD/NSR Only

1. 18 AAC 50.300(h)(1) and (2) The proposed change from "actual" to "allowable" in these two provisions is unacceptable. The definition of "modification" in both the Act (section 111(a)(4)) and EPA regulations (40 CFR 60.2) is based on increases in "actual" emissions.
2. 18 AAC 50.310(n)(2) As in #1 above, the use of "allowable" rather than "actual" emissions is unacceptable.
3. 18 AAC 50.315(e)(2) This provision must clearly indicate that the concentrations in Table 6 do not apply to the maximum allowable ambient concentrations (i.e., the PSD increments).
4. 18 AAC 50.990(92) "VOC or volatile organic compounds" One additional PSD/NSR problem: Doesn't list all excluded compounds so would allow sources to take netting credit for compounds which are not considered to be VOC's.

Attachment 3 contains a list of issues that Region 10 believes will require interim, rather than full approval, if they are not resolved before EPA takes final action on Alaska's submittal. If EPA grants final interim approval of the Alaska title V program, Alaska will have two years to make changes to its regulations and statutes to address the interim approval issues.

Attachment 4 contains a list of areas where the Alaska program does not directly address certain requirements of part 70, but Region 10 believes either that the Alaska program, as a whole, satisfies the requirements of part 70 in that particular respect or no changes are currently required to the Alaska program to comply with part 70, but changes will likely be required some time in the future (see discussion in Attachment 4). If you do not share Region 10's understanding of the implementation and operation of your title V program, as described in Attachment 4, it would be helpful if you explained any differences in a letter.

Attachment 5 addresses issues that Region 10 has identified in its review of the most current version of the proposed amendments to 18 AAC Chapter 50. It lists the issues that must be addressed in order for EPA to fully approve the regulations affected by the proposed amendments as part of Alaska's title V program and part of Alaska's SIP.

In preparing the Attachments listed above, Region 10 has assumed that the most current version of the proposed amendments to 18 AAC Chapter 50, which the Department of Environmental Conservation informally submitted to Region 10 for review on January 8, 1996, will be the version that is finally promulgated. The disapproval, interim approval and implementation issues identified in the attachments would, of course, change if the proposed amendments are not adopted. Any changes other than editorial ones are likely to require additional revisions to the draft Federal Register notice. On the positive side, if the proposed amendments are changed before adoption to address the concerns identified by Region 10 in Attachment 5, disapproval or interim approval issues could be eliminated.

Please also note that the attachments include the issues that have been identified by Region 10 staff. Additional issues may be identified during review of the Alaska submittal by EPA Headquarters, which we anticipate will be completed within a week after Region 10 receives the final regulations from Alaska. (This assumes that EPA is not shut down after the continuing resolution providing temporary funding expires on January 26.) In the event additional items are identified by EPA Headquarters, we will supplement this letter with any such additional issues.

Alaska Oil & Gas Association

121 W. Fireweed Lane, Suite 207

Anchorage, Alaska 99503

Tony Brady, Executive Director - Marilyn Crockett, Assistant Executive Director - Anita Gray, Public Affairs Manager - Thomas Reichert, Administrator - Thomas Sheffield, Support Services

Date:

1/26/96

Total # of pages including cover sheet:

3

To:

Company

John Stone

From:

Marilyn Crockett

MESSAGE:

If problems occur during transmission call 907/272-1481

Alaska Oil and Gas Association



121 W. Fireweed Lane, Suite 207
Anchorage, Alaska 99503-2036
Phone: (907)272-1481 Direct: (907)272-9497 Fax: (907)279-8114
Marilyn Crockett, Assistant Executive Director

January 26, 1996

TO: Len Verrelli, Director, Division of Air and Water Quality

FROM: Marilyn Crockett

RE: Title V Regulatory Workgroup Proposal

On behalf of the Alaska Stakeholders Coalition, attached is the outline of the Title V Regulatory Workgroup Proposal.

A handwritten signature in cursive script, appearing to read 'Marilyn', is positioned below the main body of the letter.

cc: Commissioner Michele Brown
John Stone, Chief, Air Quality Maintenance

TITLE V REGULATORY WORKGROUP PROPOSAL

Objective: Develop amendments to 18 AAC 50 to obtain EPA approval and address remaining concerns of Alaska Stakeholders and ADEC.

Workgroup Members:

- ADEC
- EPA
- Legislative Staffers
(House & Senate Resources Committee)
- Utilities (ARECA, Electric Utilities)
- Industry
- Public
- Municipalities/Villages
- Dept. Of Law

Timeframe: The goal is to complete this effort in two weeks. To accomplish this goal, efforts should be initiated the week of February 5, 1996 and two meetings per week should be conducted (for a total of four meetings)

Process:

- Meetings to be chaired by a facilitator who is familiar with the issues.
- Meetings to be recorded and transcripts distributed to participants prior to each meeting.
- Members to agree to process.
- Flexibility in Meeting Locations.

Substantive Issues for Stakeholders/Agencies:

Workgroup will address and attempt to resolve EPA disapproval/interim approval issues and stakeholder issues. Stakeholder issues are:

- Unavoidable Excess Emissions
- Ambient Air Quality Impact Requirements
- 1 Insignificant Sources
- Modifications
- 2 Agency Discretion
- 3 *Temporary sources - non-road engines, drilling rigs*
- Streamlined Permitting
- 4 Billing/Audit Procedures

SIP

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION
OFFICE OF THE COMMISSIONER
410 Willoughby Avenue, Suite 105
Juneau, Alaska 99801-1795

Phone: (907)465-5066
Fax: (907)465-5070
TTY: (907)465-5133

February 8, 1996

Alaska Stakeholder Coalition
% Ms. Marilyn Crockett
Alaska Oil & Gas Association
121 W. Fireweed Lane, Suite 207
Anchorage, Alaska 99503

Dear Ms. Crockett:

I would like to thank you and the rest of the Alaska Stakeholder Coalition (ASC) for the recent proposal to work out your remaining concerns with Alaska's air quality regulations. We are committed to working with ASC and other interested parties to ensure that the air quality rules are not more stringent than necessary to protect the air quality enjoyed by Alaskans, while maintaining the productivity of Alaska's businesses.

We are concerned about the process ASC has proposed, primarily because it establishes an unrealistic time frame to address extraordinarily complex issues of serious concern to many different interests. ASC proposed to resolve eight complex issues in two weeks with four short meetings. In addition, ASC, at our request, proposed to address the new EPA disapproval issues (expressed in a 26 page letter dated 1/10/96) in these same four meetings. While a well-organized effort can make much progress in two weeks, only a cursory review of these complex issues could be accomplished in this time frame.

In addition, the format and short time-frame proposed by ASC would effectively exclude meaningful public participation. The "Drafting Manual for Administrative Regulations" states that an oral hearing should be scheduled no sooner than 20 days into the public comment period in order to allow the public time to arrange to attend. While the meetings proposed by ASC are not precisely oral hearings, the Department still needs to allow the public time to arrange to attend. The Department of Law recommends a minimum of 10 days public notice for open meetings.

As an alternative, we offer the following good faith effort to establish a process that will retain Alaska's primacy, address ASC's concerns and allow the public meaningful participation.

First, we plan to propose changes to Alaska's regulations to meet the EPA disapproval issues as soon as possible. We have been meeting extensively with EPA on these issues. As a result, we believe that most of these issues can be resolved with minimal changes to the regulations. We plan to suggest those changes to EPA by February 16. We believe the most time-critical task for the Department is to address the EPA's concerns and, by doing so, avoid a federal take-over of air quality management in Alaska. If the EPA disapproval issues are not satisfactorily addressed immediately, the rest of the discussion may become moot.

February 8, 1996

The EPA disapproval issues do not generally affect ASC's concerns, except for the "Potential to Emit" and "Technology-based emission standards" regulations. For these two sections, EPA has stated that Alaska's regulations do not meet the federal minimums, so it would not be productive for us to discuss ASC's assertion that these regulations exceed the federal minimums until an understanding is reached with EPA. ASC will still have the opportunity to discuss corrections for these particular areas during the ensuing public comment period described below.

Second, we are willing to propose several regulation options for addressing ASC's concerns and to host work groups and public meetings to resolve the outstanding issues as quickly as possible. We will also address the remaining EPA issues through the forum and have requested EPA to directly participate in the work sessions to expedite the process.

Specifically, if you let us know as soon as possible if this plan is acceptable, we can public notice the meetings and have the first meeting by the middle or end of February. As you suggest, the first such meeting will be devoted to establishing ground rules for the following working meetings and discuss points such as the use of a mediator, meeting location, and transcription of the meetings.

Before the first meeting, ASC and others can review our proposed regulation options to see if they are sufficiently "on target" to be formally noticed. If so, we can put them out for public notice immediately, and then commence the public work sessions to fine tune the regulations proposals. This should expedite the process considerably. If the proposed regulation options are not ready for notice, we can work on them collectively during work groups and put them out to public notice as soon as we have an acceptable proposal.

Given the nature and number of issues it is our best estimate that it may take several months to address all the issues. However, we propose moving ahead with separate regulatory packages based upon a priority list established at the first meeting. We understand that this presents a longer time frame for resolution than you had requested. We are willing to do whatever is feasible to expedite this effort, but we also want to give you a realistic picture so that we will all enter the process with clear expectations.

As you know, we must have a Title V proposal that meets federal approval to avoid jeopardizing primacy for the Alaska air quality program. We understand that the EPA will be prepared to assume control of the permit program before the end of April. We believe that the process we have laid out provides the best opportunity for avoiding federal assumption of the Alaska program and for addressing ASC's concerns, while maintaining clean air for the citizens of Alaska. Please contact me if you can suggest any improvements to the process we have described here.

Sincerely


Michele Brown
Commissioner

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF AIR & WATER QUALITY
410 Willoughby Avenue, Suite 105
Juneau, Alaska 99801-1795

Phone: (907) 465-5260
Fax: (907) 465-5274

August 25, 1995

Ms. Kathryn K. Lamal
GVEA, Inc.
P.O. Box 71249
Fairbanks, AK 99707-1249

Dear Ms. Lamal:

This letter responds to your July 27, 1995, letter. In that letter, you asked the Department to consider revising the opacity standard for coal-fired utilities. You state that Alaska opacity standards should be no more stringent than federal standards, and that Alaska should use other states' standards as a model for its own regulations. As a final note, your letter says that Alaska should make use of a standard that has already gone through federal review.

My staff has reviewed your request (see enclosed memorandum). Alaska's current regulation has already gone through federal review (1972). Also, Alaska's regulation appears to be similar to many other states' regulations. The changes proposed by the Coal Burners group, however, seem to combine parts of other states' regulations in a way that is less protective of our air quality resource than any other state. As presently written, the Department cannot propose the changes you suggest.

The Department will consider changes in the opacity standard that still meet the State's air quality goal of clean air. My staff advises me that allowing increased opacity during certain boiler operations can provide you the changes you seek and meet the State's goal. However, to maintain and protect air quality, such boiler operations must be well-defined and the effect of allowing increased opacity must be examined. We need the Coal Burner's group to help us gather the necessary information, in order to grant your request. The conclusions of the enclosed memorandum explain some of the needed information.

My staff is also developing a guide explaining the information we need to make good air quality management decisions. I have enclosed a draft of this guide. I hope this information will assist you in evaluating this change and future changes you may propose. My staff is available to meet with you to discuss your request at length, should you desire.

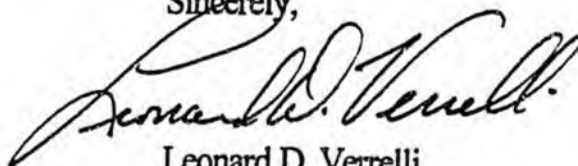
Ms. Kathryn K. Lamal

-2-

August 25, 1995

If you have further comments or questions on this issue, please contact John Stone, Chief, Air Quality Maintenance Section, at (907) 465-5100.

Sincerely,

A handwritten signature in cursive script, appearing to read "Leonard D. Verrelli".

Leonard D. Verrelli
Director

LDV/JMS/JK/pal (h:\air\johnk\gvea.ltr)

Enclosure

MEMORANDUM

State of Alaska
Department of Environmental Conservation
Division of Air & Water Quality - Air Quality Maintenance

TO: Leonard Verrelli, Director
Air and Water Division

DATE: August 22, 1995

FILE NO: 363.11

THRU: John Stone, Chief ~~of the~~
Air Quality Management Section

TELEPHONE NO: 465-5100; FAX: 465-5129

FROM: John Kuterbach *[Signature]*
Air Quality Management Section

SUBJECT: GVEA Petition to change opacity standards

As requested I have reviewed the change requested by Golden Valley Electric Association to our opacity regulations. This memo summarizes my analysis and conclusions.

Summary

A group of coal-burning power plants in interior Alaska asked the department to consider changing the opacity standard that applies to them. I analyzed our existing regulation and the proposed changes to that regulation. Our existing regulation is comparable to other states regulations, and the proposed change is more lenient than other states. During normal boiler operation, coal-fired facilities can comply with our current 20 percent standard using reasonably available control technology. Because the change does not make air quality management sense, I recommend that the department retain the 20 percent opacity standard for normal boiler operation.

Several other states do allow greater opacity during certain boiler operations, such as start up, shut down, soot blowing, etc. Although the proposed change is too lax and ambiguous to be adopted as is, the department should look at allowing greater opacity during these periods. For good air quality management, any new regulation should clearly define these periods and limit the allowable excess opacity in both amount and duration.

Introduction

A group of coal-burning power plants in interior Alaska asked the department to consider changing the opacity standard that applies to them. According to these utilities, it is common for coal-fired plant to exceed the department's 20 percent opacity standard during start-up, shut-down, soot blowing, grate cleaning, and unintentional boiler disruptions.

Existing regulation

The department adopted its existing regulation in 1972 after full public comment. The public comment included Charles Winegarden, Chief Engineer for Golden Valley Electric Association (GVEA). GVEA is one of the power utilities requesting a change to the regulations. Mr. Winegarden did not object to or comment on the opacity regulation; however, the Alaska Oil and Gas Association did recommend a 40% opacity standard for existing industrial facilities. The final regulations established a 20% opacity standard, which may be exceeded for up to three minutes in any one hour. These final regulations were approved by the EPA in Alaska's State Implementation Plan.

Comparison to other states' regulations¹

For existing sources, about half of the U.S. states and territories specify an opacity of 20% or less for existing sources at least part of the state. Limiting the analysis to western states does not change this statistic. (See attached pie charts). Alaska's opacity standard is typical of opacity standards in other states for normal operation.

Alaska's regulation does differ from other state's regulations in two ways. First, most other states use a six-minute average to determine opacity. Because of Alaska's climate, condensed water vapor often precludes an accurate six minute reading of stack opacity. Therefore, Alaska's regulation specifies that the 20 percent limit may be exceeded for no more than three minutes in any one hour. Each observation of opacity represents 15 seconds of emissions, and a violation is detected when 13 or more observations in one hour exceed the opacity limit. Typically, other states allow 3 or 5 minutes of excess emissions per hour.

Many, but not all, other states also provide for boiler disruptions such as start-up, shut-down, soot blowing, and the like. Alaska does not. States that do provide for greater opacity during these operations typically set limits on the excess opacity through one or more of the following:

- Limit on the maximum opacity during these operations (commonly 40 or 60 percent)
- Limit the amount of time the opacity may exceed the standard (per hour, per day, or per event)
- Limit on the number of events per day or the length of an event
- Continuous emission monitoring

Proposed Regulation Change

The power utilities suggested a new regulation (see Table I below). This new regulation changes the normal operation opacity standard and adds a less stringent opacity standard for certain boiler operations. Also, generous exemption times are included in the proposed standard².

¹ Analysis of State and Federal Particulate and Visible Emission Combustion Sources, EPA-450/ 2-81-080, November 1981.

² Exemption times suggested equal 10% of entire operation time

TABLE I. The regulation proposed by the coal-fired utilities.

"Visible emissions, excluding condensed water vapor, from an industrial process or fuel burning equipment may not reduce visibility through the exhaust effluent by . . .

(9) greater than 40 percent for a total of more than 6 minutes in any hour for coal-fired power plants that commenced operation before August 17, 1971; and

(10) greater than 60 percent for not more than 6 minutes in any one hour for coal-fired power plants when emissions occur due to start up, shut down, grate cleaning, ash cleaning, boiler disruptions or soot blowing."

The power utilities developed this rule using Montana, Washington State, and 40 CFR 60, subpart D as references³

Effect of regulation and comparison to other states' regulations on which the power utilities based their proposal

Proposed Regulation	Equivalent Montana Regulation	Equivalent Washington State Regulation	40 CFR 60 Subpart D
Opacity limited to 40%, except for 6 minutes in any one hour when the opacity can be up to 100%	Opacity limited to 40%, 6-minute average (no exempt time)	Opacity limited to 20%, except for 3 minutes in any one hour when emissions can be up to 100 percent AND All emissions units must use reasonably available control technology	Opacity limited to 20%, six-minute average, except for one six-minute period per hour which is limited to 27%
Opacity during specific operations limited to 60%, except for 6 minutes in any one hour when opacity can be up to 100%	Opacity during specific operations limited to 40%, except that opacity may be up to 60% for one four-minute period each hour. Period must be four consecutive minutes.	Opacity during specific operations can exceed 20% for up to 15 minutes in any consecutive eight hours	Federal new source rules do not apply during start up and shut down

³ GVEA Letter dated February 17, 1995 to Commissioner Burden, ADEC.

Evaluation of proposed regulation changes

To evaluate the suggested changes, this study examines the following points:

1. Is the current regulation reasonable compared to other states?
2. Can the facilities comply with the current opacity regulation using reasonably available control technology?
3. Is the proposed change reasonable compared to other states?
4. Does the proposed change make sense from an air quality perspective?
5. What effect does the proposed change have on the existing Alaska State Implementation Plan.

Point 1 - Is the current regulation reasonable compared to other states?

As explained earlier, Alaska's regulation is comparable to other states' regulations. However, it may not be reasonable to expect the facilities to comply with 20 percent opacity during specific boiler operations such as start up, shut down, grate cleaning, and soot blowing. Many other states have provisions for such operations.

Point 2 - Can the facilities comply with the current opacity regulation using reasonably available control technology?

For normal operations, existing facilities can comply with 20 percent opacity using reasonably available control technology. Both the experience in other states and our own experience with the Fairbanks Municipal Utility System's Chena 5 unit show this to be true. Some coal-fired unit may need to upgrade their existing control equipment to comply with the standard. If the power utilities disagree with this conclusion, they should provide evidence showing that no reasonably available control technology can comply with the 20 percent opacity standard during normal operations.

For the boiler disruption operations (i.e. start-up, shut down, soot blowing, grate cleaning, and ash removal), we do not have enough information to say whether reasonably available control technology would ensure compliance. Certainly, the example of other states is to establish specific limits or narrow exemptions that apply to these operations.

Point 3 - Is the proposed change reasonable compared to other states?

The proposed change would make Alaska's regulation the least stringent opacity standard in the United States.

Point 4 - Does the proposed change make sense from an air quality perspective?

In Alaska, the opacity regulations serve two air quality purposes—to indicate compliance with the particulate matter standard and to protect visibility. The proposal from the power utilities addresses neither of these issues. We have no data.

Neither do we have any data on the cost of complying with these regulations. Any regulation will have costs associated with it, and air quality management must balance these costs with the expected environmental benefit. The same must hold true when relaxing existing regulations. The economic benefit gained must be tempered by the environmental degradation endured. With no data, one can not make a sound air quality management decision.

The proposed exemptions are too ambiguous to represent good air quality management. Most other states are very careful to fully describe and limit the boiler operations that result in increased opacity. Also, the exemption time of six minutes is too generous, considering that Alaska does not enforce a six minute average. Other regulations that allow a six minute exemption only allow one six-minute period (i.e. six consecutive minutes) to exceed the standard while the utilities propose six minutes in any one hour.

Point 5 - What effect does the proposed change have on the existing Alaska State Implementation Plan (SIP)?

The opacity regulation in the Alaska SIP indicates compliance with the particulate matter standard and protects visibility. If the new opacity standard still indicates compliance with the particulate matter standard, and if the particulate matter standard does not change, then this change would not significantly change the Alaska SIP. We do not currently have any data to show whether this is the case with the proposed change.

Conclusions

My analysis indicates that the department should not adopt the regulation proposed by the power utilities as written. I came to this conclusion from the following points:

1. The existing regulation has been an approved part of Alaska's SIP for 23 years.
2. The existing opacity standard is comparable to other state standards
3. Facilities can comply with this standard using reasonably available control technology.
4. The change proposed by the power utilities is not reasonable compared to other states.
5. The change does not make sense from an air quality management perspective because of
 - a lack of data regarding the need for the change and the attendant environmental effect
 - the ambiguous language of the exemptions, and
 - the too-lenient exemption periods (six minutes in any one hour)
 - no data on whether the relaxed opacity would still ensure compliance with particulate matter standard.

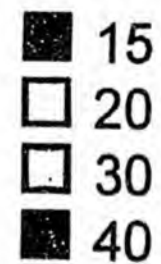
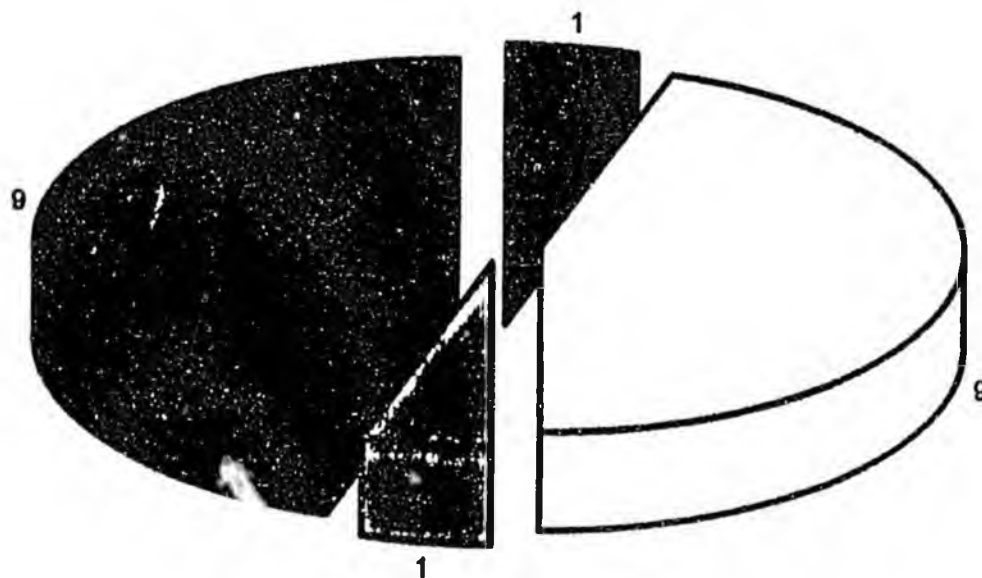
Other states often do allow limited periods of increased opacity for specific boiler operations. The department may want to look at adding a similar standard. To craft such a standard, the department needs to know the following:

- what specific boiler operations can be expected to increase opacity (i.e. 'boiler disruption' is too general to be useful)?
- how often do these events have to take place?
- how long do these events last
- what increased opacity can be expected (assuming reasonably available control technology)?
- how long is opacity increased?
- can the facility comply with the particulate matter standard during these periods?
(0.1 gr/dscf averaged over three hours)

The draft guideline for requesting changes specifically lists the information we need to approve a change in emission standards.

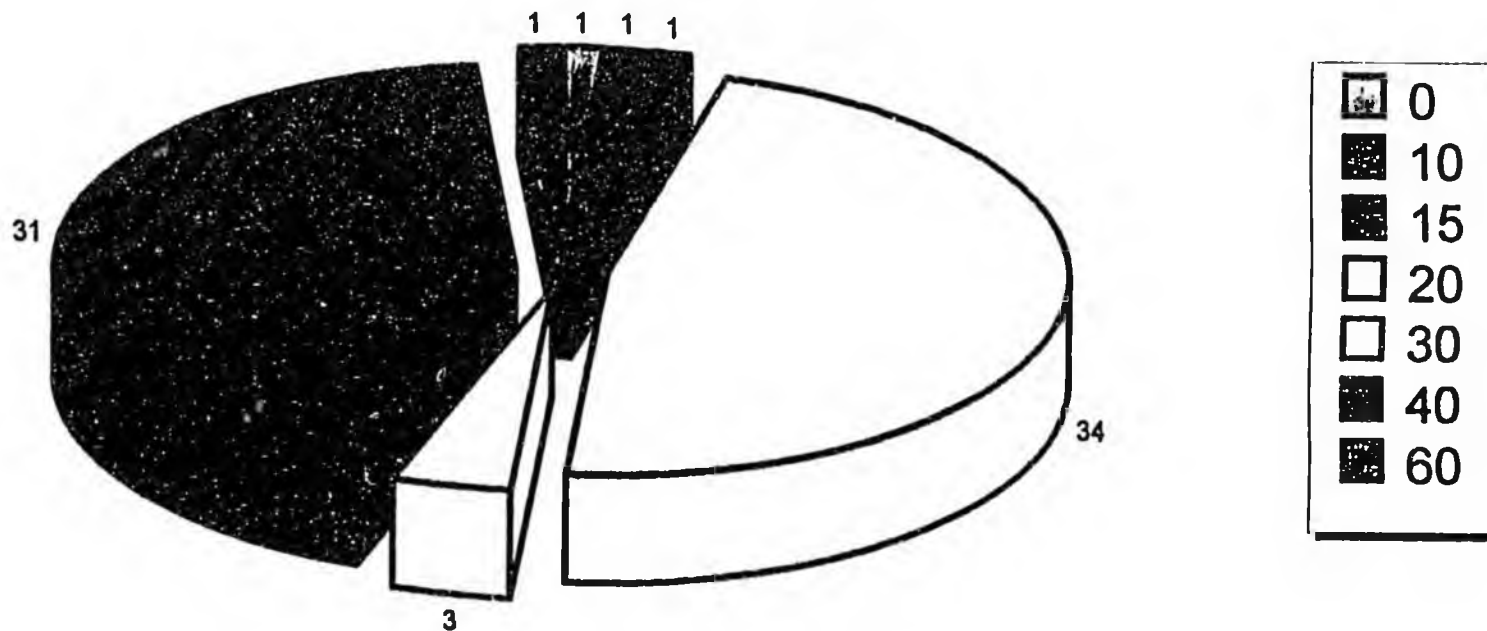
Western States

Existing Source Opacity Limits



Western States: AK, AZ, CA, CO, ID, MT, NM, NV, OK, OR, TX, UT, WA, WY
Some States have multiple opacity standards

Opacity Standards for Existing Sources



*All U.S. States and Territories
Some States have multiple standards*

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**Guide for Requesting Changes to the
Opacity, Particulate Matter, Sulfur Compounds
Emission Standards
in 18 AAC 50**



**Prepared by the
Air Quality Maintenance Section**

Alaska Department Of Environmental Conservation
August 22, 1995

DRAFT

Purpose of this Document

This document helps accomplish the following:

- (1) It explains how a person may request changes to the air pollution standards that are listed in 18 AAC 50.050, 50.055, and 50.060.
- (2) It explains how the ADEC will act upon the requests.

Please note that this document is not intended to diminish or restrict any right or privilege which a party may have under the Alaska Administrative Procedure Act.

Why this Document is Necessary

In accordance with the 1990 amendments to the Clean Air Act, ADEC developed new air pollution regulations during 1994 and 1995. A major component of these regulations is a new operating permit program established in 18 AAC 50.

This program requires certain facilities to submit applications that contain a certification of their compliance status with air pollution control requirements. For each requirement whose status is compliance, the application must contain a statement that the facility will continue to comply with the requirement. For those requirements whose status is non-compliance, the application must contain a compliance plan that dictates remedial measures, as an enforceable sequence of actions with milestone dates, that lead to compliance.

ADEC received many comments from the public on this new program. Several commenters stated that they do not currently meet some of the air pollution standards established in 18 AAC 50, and would not be able to certify that they were in compliance with the requirements. They requested that ADEC change the air pollution standards so they could certify compliance. Other commenters requested that ADEC increase the stringency of the air pollution standards to ensure the public's health and welfare is protected.

ADEC did not act upon these requests during development of the operating permit regulations because the requests were beyond the scope of the regulation development project, and, most importantly, we did not have sufficient information to assess the air quality impact of changing the standards.

This document provides a mechanism for people to request changes to certain air pollution standards and outlines what information must accompany the request. Our intent is to establish an orderly and efficient process for acting upon requests to change the standards.

DRAFT

An Explanation of the Air Pollution Standards

The emission standards listed in 18 AAC 50.050, 055, and 060 are the subject of this document. The standards are for incinerators, fuel burning equipment and industrial processes, and pulp mills. These emission standards help meet the requirements that were established in the 1970 and 1977 Clean Air Acts. In doing this, they help ensure that air pollution does not exceed the ambient air quality standards for particulate matter and sulfur compounds. The ambient standards are established to protect human health and welfare. They also help ensure that Alaska's air quality resources are not significantly deteriorated.

In addition, these emission standards are part of Alaska's plan that is approved under §110 and §161 of the Clean Air Act, which was prepared, developed, and submitted in accordance with the implementing regulations found in 40 C.F.R. Part 51. Alaska's approved plan is published in 40 C.F.R. Part 52, Subpart C. The approved plan provides the authority for ADEC's primacy to implement major Clean Air Act programs.

ADEC established these emission standards in 1972. The standards are established for general classes of air pollution sources and represent a continuous level of emission reduction that was believed to be reasonably available in 1972. In the early 1980's, a second group of emission standards was added to further the goals of public health and welfare protection, and to help ensure that Alaska's air quality resources are not significantly deteriorated.

Who Can Request a Change to the Air Pollution Standards

Through this document, any person can request ADEC to change the air pollution standards.

During the regulation development process, the basis for requests was for one of two reasons. Owners and operators that are subject to the air pollution standards requested changes due to compliance problems under certain operating conditions. These operating conditions include, but are not limited to, startup and shutdown of an affected source, or problems during operating modes such as sootblowing, gratecleaning, or maintenance.

Other people have requested changes because they believe the emission standards do not adequately protect the ambient air quality standards, air pollution increments, or applicable air quality related values in Alaska's Class I areas or integral vistas.

We will consider requests for these and other reasons.

THE FOLLOWING DOCUMENT(S)
HAVE BEEN REFILMED TO
ASSURE LEGIBILITY OR PAGINATION



Rev. 6/98

Central Microfilm Services
Department of Education
State of Alaska

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Other people have requested changes because they believe the emission standards do not adequately protect the ambient air quality standards, air pollution increments, or applicable air quality related values in Alaska's Class I areas or integral vistas.

We will consider requests for these and other reasons.

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How to Request A Change to the Air Quality Control Requirements

ADEC will consider requests for changes under this document until **January 1, 1996**. Due to time constraints, ADEC will not consider requests received after this date within the schedule of this regulation project.

All requests and supporting information must be sent to the Alaska Department of Environmental Conservation, Air Quality Maintenance Section, Attn: John Stone, Chief, 410 Willoughby Avenue, Juneau, Alaska, 99801.

What the Request Must Include

All requests will need to include some basic supporting information. ADEC expects there will be three types of requests for changes to the air pollution standards. A request could increase the stringency, relax the stringency, or have no effect upon the stringency of the standard. Depending upon the effect of the request, specific additional information must be provided.

All requests must include the following basic supporting information.

1. Contact information of the person making the request.
2. A specific citation of the air pollution standard that is the subject of the request.
3. If applicable, the name of the facility, its Air Permit Number, and a description of the sources at the facility that are subject to the emission standard.
4. A description of, and an explanation of the reason for, the request, including a detailed showing of whether the request increases, decreases, or has no effect upon the stringency of the air pollution standard.
5. The specific request, in the form of a proposed enforceable emission standard. To be considered enforceable, the proposed emission standard must
 - (a) specify the equipment or operation that is subject to the standard, including definitions of the equipment or operation when needed;
 - (b) limit the quantity, rate, or concentration of emissions on a continuous basis, including any requirements that limit the level of opacity, set fuel specifications, prescribe specific equipment, or prescribe operation and maintenance procedures to assure continuous emission reduction;
 - (c) specify the time or averaging period of the proposed emission standard; and
 - (d) prescribe procedures for monitoring compliance, including the test methods used to detect violations.

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Any requests that increase the stringency of an air pollution standard must include a demonstration that shows why the increase in stringency is necessary. To demonstrate that the increase in stringency is necessary, the requestor must

1. cite the specific Clean Air Act and/or underlying federal requirement that forms the basis of the request; and
2. show why the change is needed and how the change will meet the specific Clean Air Act and/or underlying federal requirement by using the ambient analyses methods outlined in 18 AAC 50.510.

Any requests that reduce the stringency of an air pollution standard must include the following additional information.

1. A showing that the basis for the request is not the result of improper, careless, or inadequate design, maintenance or operation, or the lack of reasonably available pollution control equipment or practice for the specific source type.
2. For a request that would result in or cause an increase in the allowable emissions of particulate matter or sulfur compounds at a facility,
 - (a) a showing of the allowable emissions increase in units consistent with the averaging period of each relevant ambient air quality standard and air pollution increment;
 - (b) an analysis of the effect of the allowable emissions increase on ambient air quality using the methods outlined in 18 AAC 50.510; and
 - (c) if the allowable emission increase would cause the facility to be subject to 18 AAC 50.300(a), an application for a permit to operate in accordance with 18 AAC 50.300(b) – (h).

How ADEC will Act Upon the Requests

ADEC will review each request beginning on January 1, 1996 to determine if all of the supporting information has been provided. In situations where additional information or clarification is needed, ADEC will, after consultation the requestor, specify the information that is needed to complete action upon the request, and the date such information must be submitted. After receiving all information needed to act upon a request, ADEC will conditionally approve those requests that meet the underlying requirements and purposes of the Clean Air Act and the Alaska Statutes, and notify the requestor if its determination.

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ADEC will then prepare and propose the conditionally-approved requests as changes to its regulations in accordance with the Alaska Administrative Procedure Act. ADEC will seek -- public comment on the technical and public policy merits of adopting the changes. After full consideration of the public comment, ADEC will adopt, modify, decline to adopt the change. For those changes that are adopted, ADEC will submit the changes to the U.S. EPA for review and approval as part of Alaska's implementation plan.

ADEC expects to act upon these changes as quickly as possible. Based upon current staffing and workload, we expect to propose the conditionally-approved changes around July 1, 1996.

For more information, please contact John Stone at (907) 465-5100.

Guide for Requesting Changes to the Opacity, Particulate Matter, Sulfur Compounds Emission Standards in 18 AAC 50



Prepared by the

**Alaska Department Of Environmental Conservation
December 4, 1995**

Air Quality Maintenance Section

Purpose of this Document

This document helps accomplish the following:

(1) It explains how a person may request changes to the air pollution standards that are listed in 18 AAC 50.050, 50.055, and 50.060.

(2) It explains how the ADEC will act upon the requests.

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Why this Document is Necessary?

In accordance with the 1990 amendments to the Clean Air Act, ADEC developed new air pollution regulations during 1994 and 1995. A major component of these regulations is the new operating permit program established in AS 46.14 and 18 AAC 50.

This program requires certain facilities to submit applications that contain a certification of their compliance status with air pollution control requirements. For each requirement whose status is compliance, the application must contain a statement that the facility will continue to comply with the requirement. For those requirements whose status is non-compliance, the application must contain a compliance plan that dictates remedial measures, as an enforceable sequence of actions with milestone dates, that lead to compliance.

ADEC received many comments from the public on this new program. Several commenters stated that they do not currently meet some of the air pollution standards established in 18 AAC 50, and, as a result, would not be able to certify that they were in compliance with the requirements. Usually, the non-compliance was associated with certain operating condition such as startup and shutdown of an affected source, or problems during sootblowing, grate cleaning, or routine maintenance activities. The commenters requested that ADEC change the air pollution standards so they could certify compliance.

Other commenters requested that ADEC increase the stringency of the air pollution standards to ensure the public's health and welfare is protected.

ADEC did not act upon these requests during development of the operating permit regulations because the requests were beyond the original scope of the regulation development project, and, most importantly, we did not have sufficient information to assess the air quality and economic impacts of changing the standards.

This document provides a mechanism for any person to request changes to certain air pollution standards and outlines the information that must accompany the request. Our intent is to establish an orderly and efficient process for acting upon requests to change the standards.

An Explanation of the Air Pollution Standards

The air pollution standards listed in 18 AAC 50.050, 055, and 060 are the subject of this document. The standards are for incinerators, fuel burning equipment and industrial processes, and pulp mills. These standards help meet the requirements that were established in the 1970 and 1977 Clean Air Acts by helping to ensure that air pollution does not exceed the national ambient air quality standards for particulate matter and sulfur compounds and to prevent significant deterioration of Alaska's air quality resources.

The standards are part of Alaska's plan that is approved under §110 and §161 of the Clean Air Act, which was prepared, developed, and submitted in accordance with the implementing regulations found in 40 C.F.R. Part 51. Alaska's approved plan is published in 40 C.F.R. Part 52, Subpart C. The approved plan provides the authority for ADEC's primacy to implement the Clean Air Act stationary source programs.

ADEC established the standards in 1972. The standards are established for general classes of air pollution sources and represent a continuous level of emission reduction that was believed to be reasonably available in 1972. In the early 1980's, a second group of emission standards was added to further the goals of public health and welfare protection, and to help ensure that Alaska's air resources are not significantly deteriorated.

How Do I Request A Change to the Air Quality Control Requirements?

ADEC will consider requests for changes under this document until **February 29, 1996**. Due to time and budget constraints, ADEC will not consider requests received after this date within the schedule of this regulation project.

All requests and supporting information must be sent to the Alaska Department of Environmental Conservation, Air Quality Maintenance Section, Attn: John Stone, Chief, 410 Willoughby Avenue, Juneau, Alaska, 99801.

What Information Must My Request Include?

ADEC expects there will be three types of requests for changes to the air pollution standards. A request could increase the stringency, relax the stringency, or have no effect upon the stringency of the standard. Information to be provided depends upon the type of request.

All requests must include the following basic information.

1. Contact information of the person making the request.
2. A specific citation of the air pollution standard that is the subject of the request.
3. If applicable, the name of the facility, its Air Permit Number, and a description of the sources at the facility that are subject to the emission standard.
4. A description of, and an explanation of the reason for, the request, including a detailed showing of whether the request increases, decreases, or has no effect upon the stringency of the emission standard.
5. The specific request, in the form of a proposed enforceable emission standard. To be considered enforceable, the proposed emission standard must
 - (a) specify the equipment or operation that is subject to the standard, including definitions of the equipment or operation when needed;
 - (b) limit the quantity, rate, or concentration of emissions on a continuous basis, including any requirements that limit the level of opacity, set fuel specifications, prescribe specific equipment, or prescribe operation and maintenance procedures to assure continuous emission reduction;
 - (c) specify the time or averaging period of the proposed emission standard; and
 - (d) prescribe procedures for monitoring compliance, including the test methods used to detect violations.

Requests that increase the stringency of an air pollution standard must include a demonstration that shows why the increase in stringency is necessary. To demonstrate that the increase in stringency is necessary, the requestor must

1. cite the specific Clean Air Act and/or underlying federal requirement that forms the basis of the request; and
2. show why the change is needed and how the change will meet the specific Clean Air Act and/or underlying federal requirement, including supporting documentation using the ambient analyses methods outlined in 18 AAC 50.510.

Requests that reduce the stringency of an air pollution standard must include the following additional information.

1. A showing that the basis for the request is not the result of improper, careless, or inadequate design, maintenance or operation, or the lack of reasonably available pollution control equipment or practice for the specific source type.
2. For a request that would result in or cause an increase in the allowable emissions of particulate matter or sulfur compounds at a facility,
 - (a) a showing of the allowable emissions increase in units consistent with the averaging period of each relevant ambient air quality standard and increment;

- (b) an analysis of the effect of the allowable emissions increase on ambient air quality using the methods outlined in 18 AAC 50.510; and
- (c) if the allowable emission increase would cause the facility to be subject to 18 AAC 50.300(a), an application for a permit to operate in accordance with the applicable requirements of 18 AAC 50.300(b) -- (h).

How ADEC will Act Upon the Requests

ADEC will review each request beginning on March 1, 1996 to determine if all of the supporting information has been provided. In situations where additional information or clarification is needed, ADEC will, after consultation the requestor, specify the information that is needed to complete action upon the request, and the date such information must be submitted. After receiving all information needed to act upon a request, ADEC will conditionally approve those requests that meet the underlying requirements and purposes of the Clean Air Act and the Alaska Statutes, and notify the requestor of its determination.

ADEC will then prepare and propose the conditionally-approved requests as changes to its regulations in accordance with the Alaska Administrative Procedure Act. ADEC will seek public comment on the technical and public policy merits of adopting the changes. After full consideration of the public comment, ADEC will adopt, modify, decline to adopt the change. For those changes that are adopted, ADEC will submit the changes to the U.S. EPA for review and approval as part of Alaska's implementation plan.

ADEC expects to act upon these changes as quickly as possible. Based upon current staffing and workload, we expect to propose the conditionally-approved changes around July 1, 1996.

For more information, please contact John Stone at (907) 465-5100.

How ADEC developed the Air Quality Regulations

★ Alaska adopts a law to meet new and existing Federal Requirements

★ ADEC seeks extensive public input before proposing regulations



Summer, 1993
ADEC holds workshops
to explain new law &
get public input



December, 1993
ADEC drafts "Strawman" regulations,
holds presentations including a video
broadcast, and requests comment

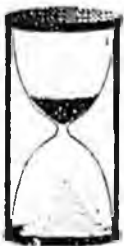


January-March, 1994
ADEC responds to
comment on "Strawman"
and holds workshops on
important issues



Propose Regulations. June 1, 1994

★ ADEC Seeks extensive public input after proposing regulations



ADEC extends the Public
Comment Period twice at
request of industry
commentators. ADEC
accepts comment from June
1st through August 31st.



ADEC holds workshops and hearing
throughout the summer, including a
teleconference hearing



ADEC holds special workshops at
request of industry commentators

★ ADEC reviews public comment and prepares final regulations



Fall, 1994

ADEC reviews comment & prepares final regulations to meet EPA deadline



EPA asks for submittal by November, 1994
Clean Air Act sets EPA deadline of May, 1995

★ Some groups ask ADEC to hold another comment period before adopting final regulations.



December 5, 1994

Commissioner Sandor decides to adopt final regulations, and to allow commentators to request changes to these regulations

ADEC works with Dept of Law to ensure adopted regulations meet state and federal requirements



June 1995

ADEC submits program for EPA approval



February-August, 1995
Industry groups recommend changes to regulations

★ ADEC proposes regulation changes



August 1995
Meet w/industry to



Sept - Nov 1995
Public comment on changes



December, 1995
Adopt final changes
Draft appropriate guidance

Time line on Development of Alaska's Air Quality Regulations

1993

- June 25 Signed into Law "An Act Related to air quality control and the prevention, abatement, and control of air pollution; relating to inspection and enforcement powers of the Department of Environmental Conservation; and providing for an effective date (SCS CSHB 167(JUD) am S/Chapter 74)
- July 20 Town meeting held in Juneau, 7pm, at Centennial Hall, Egan Room, 101 Egan Drive to discuss new statute and solicit public input into the regulation development process.
- July 26 Town meeting held in Anchorage, 7pm, at ZJ Loussac Library, Public Conference Room, 3600 Denali, to discuss new statute and solicit public input into the regulation development process.
- July 27 Town meeting held in Fairbanks, 7pm, at Captain Bartlett Hotel, Chart Room, 1411 Airport Way, to discuss new statute and solicit public input into the regulation development process.
- July 28 Town meeting held in Valdez, at Valdez Civic Center, 110 Clifton Drive, to discuss new statute and solicit public input into the regulation development process.
- July 29 Town meeting held in Kenai, at Kings Inn, Atrium, 10352 Kenai Spur Hwy, to discuss new statute and solicit public input into the regulation development process.
- Aug 3 Town meeting held in Sitka, at the Centennial Building, Rousseau Room, 330 Harbor Drive, to discuss new statute and solicit public input into the regulation development process.
- Aug 5 Town meeting held in Ketchikan, at First Bank, Conference Room, 309 Dock St, to discuss new statute and solicit public input into the regulation development process.
- August 20 Deadline for returning citizen questionnaires on Development of ADEC's revised Air Quality Permit Program.
- October 4 Workshop in Bethel on regulation development plan, 7:30 pm, the Log Cabin

- October 5 Workshop in Anchorage on regulation development plan, 7:30 pm, Egan Center
- October 6 Workshop in Fairbanks on regulation development plan, 7:30 pm, Westmark
- October 7 Meeting with AOGA representatives in the AOGA conference room 121 W. Fireweed Lane, Anchorage, at 3 pm
- October 11 Workshop in Juneau on regulation development plan, 4 pm, ADEC Conference room
- October 21 ADEC distributed draft outline of new regulations. Regulation adoption scheduled for November 1, 1994.
- October 25 Progress update teleconference meeting (8 locations)
- November 4 Progress update teleconference meeting (8 locations)
- November 15 **CLEAN AIR ACT DEADLINE FOR SUBMITTING STATE TITLE V PROGRAMS (CAA §502(d))** After this deadline, the Administrator of the EPA may, in the Administrator's discretion, apply sanctions to the State.
- November 15 At the request of industry, ADEC distributed Pre-release Draft of two Articles of the Strawman Regulations
- November 18 Progress update teleconference meeting (8 locations)
- November 29 Strawman regulation package distributed for review
- December 8 Workshop held in Anchorage, 10 am, at the Regal Alaskan Hotel, Denali 2 Room, 3rd floor, 4800 Spenard Rd.
- December 9 Workshop held in Fairbanks, 10 am, at the Westmark Hotel Rampart Room, 813 Noble St.
- December 10 Workshop held in Soldatna, 10 am, at the Kenai Peninsula Borough Bldg., Assembly Chambers, 114 North Binkley St.
- December 14 Workshop held in Juneau, 10 am, Centennial Hall, Egan Room.
- December 15 Extended the comment deadline on Strawman regulations to January 21, 1994.
- December 20 Public Workshop on Air Pollution Regulations (via satellite). Cable Channel 33 in Bethel, Nome-Belz High School, Nome; UAS Sitka Campus, 1332 Seward Sitka; Kodiak College, 117 Bennie Benson, Kodiak; UAA Campus, Anchorage, and Valdez;

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- January 19 Public Hearing on ADEC Air Quality Small Business Assistance Program, Anchorage, 2pm, Public Conference Room, Loussac Library, 3600 Denali
- January 20 Public Hearing on ADEC Air Quality Small Business Assistance Program, Fairbanks, 9am, Ester Conference Room, Fairbanks North Star borough Administrative Center, 809 Pioneer Rd.
- January 21 Department received about 350 pages of comment from 45 commentators.
- January 28 Comment deadline for comments on ADEC Air Quality Small Business Assistance Program.
- February 28 ADEC distributed "Response to Your Comments on Strawman Packet & The Next Steps"
- March 2-3 Workshop in Anchorage, Egan Civic Center, covering Start-up/Shutdown, Emergencies, and monitoring /Testing.
- March 9 ADEC distributed re-write of Operating permits section of regulations for public comment.
- March 15 - 16 Workshop in Anchorage , Sheraton Anchorage, covering Operating Permits and Statewide teleconference comments on the Strawman regulations
- March 21 Workshop in Anchorage on Alaska's Air Pollution Prohibited regulation (Called Detriment to Persons or Property in the Strawman).
- March 22 Workshop in Fairbanks on Alaska's Air Pollution Prohibited regulation (Called Detriment to Persons or Property in the Strawman).
- March 24 Workshop in Sitka on Alaska's Air Pollution Prohibited regulation (Called Detriment to Persons or Property in the Strawman).
- March 31 Deadline for comments on the March 9 revisions to the operating permit program
- April 4, 5, 6, 7 ADEC holds workshops on Open Burning in Palmer, Kenai, Fairbanks, and Delta Junction respectively
- June 1 ADEC proposes regulations in 18 AAC 50. Deadline for public comment is August 1, 1994.
- July 5-6 Workshop and public hearing on proposed regulations in Anchorage, at the Sheraton Hotel Anchorage.

- July 7 Workshop and public hearing on proposed regulations in Fairbanks.
- July 11 Workshop and public hearing on proposed regulations in Juneau.
- July 19 At the request of industry, ADEC extends the comment period to August 12, 1994
- July 26 Public hearing by teleconference on the proposed regulations, including 11 LIO's around the State.
- August 1 Initial deadline for comments on Proposed Changes in Air Quality Control Plan.
- August 2 Notice of Extension of Comment Deadline for Proposed Changes in Air Quality Control Plan (extended to August 31).
- August 12 Deadline for submittal of survey on how ADEC could reorganize the Air Quality Management Program's Permitting Activities.
- August 15 Special meeting with Matthew Cohen and certain industry representatives in Juneau at the ADEC conference room.
- August 29 Public Meeting to solicit comment on several alternatives to the organization of the Air Quality Management Program, Lousic Library.
- August 31 Deadline for comments on Proposed Changes in Air quality Control Plan. Department received about 500 pages of comment from 58 commentators.
- Sept. 26-30 Air Quality Inspector's Basic Training Program. Offered by the California Air Resources Board and the ADEC., 8:30 am. - 5:30 pm., Westmark Hotel, Anchorage.
- December 5 Commissioner Sandor adopted the new 18 AAC 50. ADEC announced plan and schedule for accepting comments on further revisions to the regulations.

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- Jan. 5 ADEC distributed "Response to Comments" on June 1, 1994 Proposal.
- Jan. 17-18 Public meeting on Air Regulations, Regal Alaskan.
- February 17 Comment deadline for public input on additional changes to December 5, 1994 Adopted Regulations. Department received 101 pages of recommended changes from 16 parties, some of whom never commented before.
- April 20 ADEC distributed "Adopted Draft Incorporating Public Comments and Changes proposed by Department of Law", dated April 14, 1995.
- May 15 **CLEAN AIR ACT MANDATORY SANCTION DEADLINE.** If a state fails to submit a Title V program by this date, the Administrator must apply sanctions. (CAA§502(d)(2)(B))
- May 17 Commissioner Burden signs final regulations.
- June 13-14 Public meeting to discuss new regulations and ADEC organization.
- July 18 Department met with the Cook Inlet operators to discuss their specific concerns.
- July 19 Department met with AOGA in Anchorage to discuss their concerns about "non-road" engines
- July 28 ADEC responds individually to stakeholders who expressed concern over process leading to 5/17/95 adoption of regulations.
- August 17 Department received a letter from Matthew Cohen containing 9 pages of comment about specific provisions in the adopted regulations.
- August 30 Department met with AOGA to discuss their specific concerns
- September 5 Department met with Matthew Cohen and other industry representative to discuss their specific concerns
- September 8 Department received 9 pages of comment on the department's adopted regulations from the Trustees for Alaska.
- Sept. 19 ADEC proposes amendments to 5/17/95 regulations. Comment deadline set at October 31, 1995.
- October 4 ADEC holds workshop in Anchorage on proposed amendments.

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- October 26 Public hearing on proposed amendments.
- October 31 Comment deadline on proposed amendments.
- November 15 **MANDATORY FEDERAL TAKE-OVER DEADLINE.** If a State fails to submit an approvable program by this date, the Clean Air Act requires the EPA to promulgate, administer and enforce a federal permit program.
- December 19 ADEC distributed copies of 12/18/95 Adoption Draft of Amendments: Response to Comments on Amendments Proposed on September 19, 1995; and Response to Comment on Requested Changes Beyond the Scope of the Public Notice.

Svend Brandt-Erichsen (206) 447-0900

House Resources Committee
January 18, 1996

Overview

- * There has been an open dialogue
- * DEC has accepted our suggestions in some areas and has corrected errors and clarified some provisions
- * The remaining issues are well defined.
 - Some policy disputes
 - Some disagreements over interpretation
 - A few may result from differences in priority -- DEC apparently thinks they can wait, and we don't

What Were We Supposed To Accomplish?

- * Operating permit program required by federal law
- * Alaska already had a combined construction and operating permit program, renewable every five years
- * In developing these rules, DEC set out to replace the existing program with two permits:
 - one-time construction permit
 - operating permit renewed every five years

Why Are We Unhappy?

- * The operating permit rules go beyond the federal model in some important respects.
 - Fairness Operating permits should not be the vehicle for imposing new requirements on facilities that haven't changed
 - Consistency For EPA guidance to apply, DEC must have the same rules, or at least the same basis for its rules as EPA
- * The construction permit program contains some changes from the existing rules that we object to.
- * While the construction permit rules were being rewritten, we asked for some changes which the department would not agree to.

- Exceeding Federal Requirements . . . Unrealistic requirements
- Streamlining opportunities

**House Resources Committee
Briefing
January 18, 1996
Presented by John Stone, Chief
Air Quality Maintenance Section/ADEC**

I. INTRODUCTION - WHO IS AIR QUALITY MAINTENANCE SECTION?

- A. 24 Current Staff in AQM
- B. 22 Technical Staff have 194 years of Air Quality Management Experience in both the public and private sector
- C. 6 Registered Professional Engineers & 8 EIT's preparing to take the Professional Engineering Exam
- D. Many staff with advanced degrees in engineering and environmental-related disciplines

II. WHAT DOES ALASKA'S AIR QUALITY CONTROL PLAN CONSIST OF?

- A. Started in 1972, periodic revisions since that time
- B. Gives Alaska primacy for construction permits for industrial development
- C. Gives Alaska primacy for vehicle emission control programs

III. WHAT IS TITLE V?

- A. A New federal operating permit program created by the 1990 Clean Air Act -designed to improve compliance with air pollution laws
- B. Who is subject to Alaska's operating permit program? About 450 Alaska Facilities

IV. LEGISLATIVE INTENT OF AS 46.14

“It is the intent of the Legislature to comply with the Clean Air Act in a manner that meets the federal requirements, allows efficient and cost effective processing of permits, requires accountability from ADEC on matters relating to recovery of program costs, and ensures the productivity of Alaska’s businesses while protecting the health and welfare of the state’s residents.”

“It is the intent of the legislature that ADEC implement AS 46.14 in a manner that contains costs, minimizes the number of staff performing air quality permit duties, fosters accountability, improves efficiency of government, and uses its contracting authority as appropriate to undertake alternative methods of accomplishing duties under this Act.”

V. WHAT IS ADEC DOING TO MEET LEGISLATIVE INTENT?

- A. Obtain primacy of all important federal clean air programs
- B. Develop regulations to obtain primacy of the federal clean air programs
- C. See Attachment 1.
- D. What is the cost of the implementing AS 46.14? - See Attachment 2

VI. HOW ADEC DEVELOPED REGULATIONS TO IMPLEMENT AS 46.14

- A. Public Process
 - 1. See Time line Attachment
 - 2. Extensive opportunities for public input/Far beyond what required in the Administrative Procedures Act

VII. REGULATIONS THAT RECEIVED THE MOST COMMENT

The regulations that received the most comment and deliberation pertained to the following topics:

- A. Did ADEC exceed the federal requirements for primacy in the air pollution regulations?
- B. What air pollution violations are excused and how are they excused?
- C. Did ADEC provide for all of the federal air pollution exemptions?

VIII. POLICY PRINCIPLES USED BY COMMISSIONER SANDOR AND BURDEN FOR MAKING DECISIONS ON REGULATIONS FOR THE NEW PROGRAM

- A. Develop regulations that meet the intent of the Legislature
- B. Do not fundamentally alter the existing programs that provide primacy to Alaska
- C. Develop new regulations to obtain primacy of the new 1990 Clean Air Act programs - Title V permits and Title III Hazardous air pollutants
- D. Adhere as closely as possible to the new Title V and Title III permit program requirements
- E. Develop regulations and a program that is in "plain English"
- F. Program maximum flexibility to permittees
- G. Incorporate public comment where possible
- H. Make sure the regulations make air quality management sense
- I. Meet Clean Air Act Deadlines

IX. REMAINING REGULATORY ISSUES OF THE ALASKA STAKEHOLDER'S COALITION

1. Excess Emissions - What air pollution violations are excused?

ADEC analyses of concern- affirmative defense provided to maximum extent of federal law/ EPA claims that we went to far, will need to be trimmed back

ADEC action to address concern - created a process to work with industry to adjust stack standards to address compliance concerns. We believe this process will address concerns in a manner that ensures continued primacy of Alaska's program.

2. Ambient Air Quality Impact Requirements Application of PSD increments

ADEC analyses of concern:

- 1. Alaska's PSD program submitted and approved by EPA in the early 1980's**
- 2. ADEC did not reallocate the compliance obligations among industrial facilities from the federally-approved PSD program**
- 3. Past 13 years of experience shows that Alaska's program is just barely, and maybe not, adequate to meet the federal requirements for preventing significant deterioration of air quality**

ADEC action to address concern:

- 1. ADEC can reexamine and redistribute compliance obligations for the prevention of significant deterioration program among Alaska' source of air pollution.**
- 2. Will require increased in staff and/or contractor assistance to accomplish**
- 3. Will require robust public involvement during development of program to ensure continued state primacy and that all affected individuals understand and comment on the impact of new compliance obligations**

3. Air pollution exemptions - Three classes of exemptions

1. Insignificant pollutant sources

ADEC analyses of concern - current program does not meet EPA requirements/ goes too far

ADEC action on concern - adjust program to meet EPA requirements for securing federal primacy and adjust the list on an ongoing basis as we gain experience during implementation of the program

2. Temporary Sources - exemptions for certain oil exploration activities

ADEC action - work underway with the oil industry and EPA to create a regulatory regime that meets the federal requirements in a manner that minimizes the regulatory burden on industry

3. Modifications - exemptions for pollution increases classified by cause of pollution increase

ADEC analysis - ADEC program more flexible/does not exempt pollution for cause, exempts by amount

ADEC action - agree to undertake regulations providing pollution exemptions for cause

4. Audit Requirements

ADEC action - agree to work with industry on audit procedures and incorporate regulation changes if needed.

5. ADEC's ability to specify terms and conditions in permits to ensure compliance with state pollution laws

ADEC analysis - ADEC restricted by Alaska Statute/cannot violate statute requirements

ADEC action - needs specific examples of Stakeholder's concerns in order to find out how to address concerns.

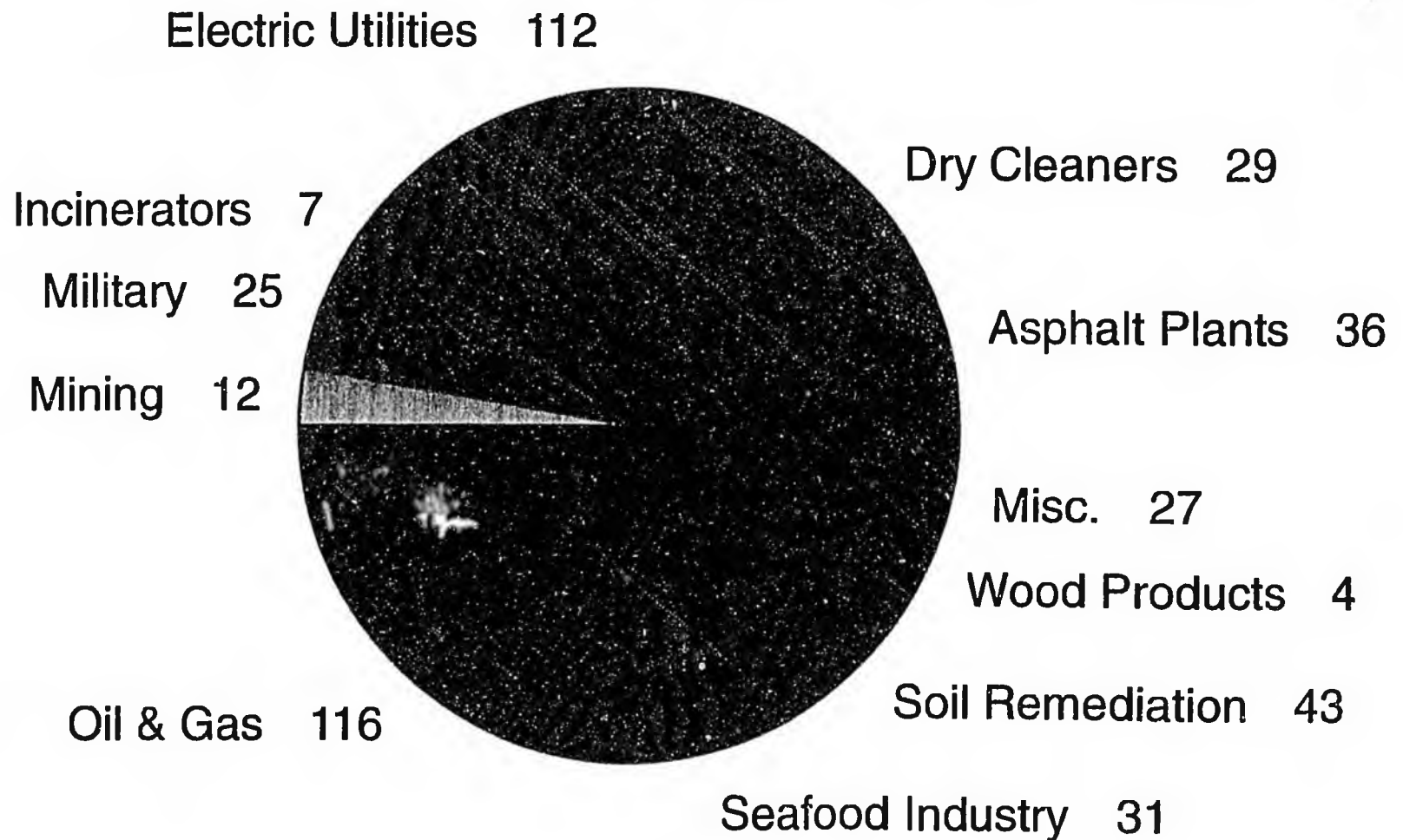
6. Streamlined administrative procedures for issuing construction permits

ADEC action - ADEC not against streamlining administrative procedures for certain types of permit actions.. Streamlining can be addressed in future regulation changes.

X. ADEC RECOMMENDATIONS FOR FUTURE ACTIONS

1. Alaska Statutes currently provide authorities to address Alaska Stakeholder's concerns/ all concerns can be addressed in administrative regulations
2. Alaska Statutes provide an adequate vehicle for state primacy

Who's Affected?



Total: 442 Alaska Facilities

What is DEC doing to hold down costs? (1 of 2)

✓ *DEC Reorganization*

→ AQM structured itself to meet Legislative intent and contain costs, minimize the number of staff performing air permit duties, and foster accountability, while improving the efficiency of government.

✓ *Small Business Assistance Program*

→ DEC established this technical assistance program to help small businesses comply with air quality laws, including permitting.

✓ *General Operating Permits*

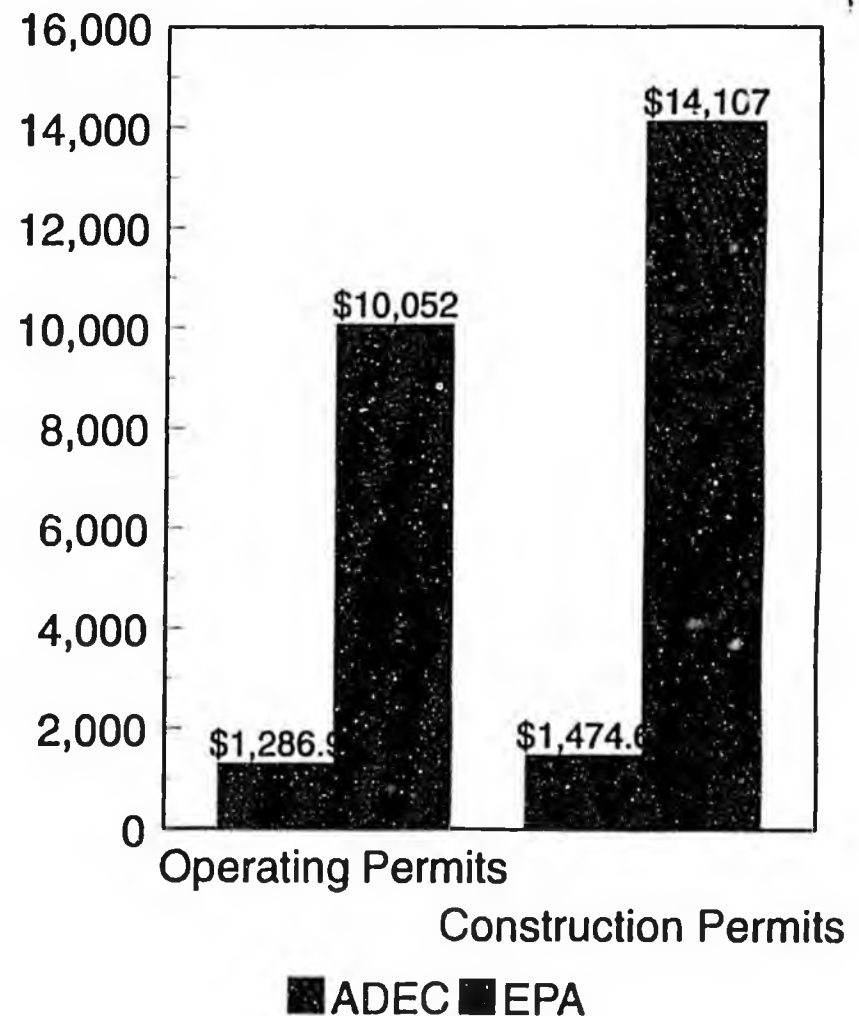
→ AQM is developing general permits for certain facility types, including: electric utilities, asphalt plants, dry cleaners, and fuel storage facilities.

What is DEC doing to hold down costs? (2 of 2)

- ✓ *Oil Exploration Equipment Project*
 - AQM is exploring alternatives to permitting for transportable oil drilling rigs.
- ✓ *Inspector Certification Program*
 - AQM is developing a program to certify private air pollution inspectors to help the department and industry meet their compliance objectives.
- ✓ *Title V Avoidance Schemes*
 - AQM has established a legal framework that will help facilities with actual emissions less than 100 tpy avoid the Title V operating permit process.
 - AQM is working with ARECA to implement this program.
- ✓ *Simplified Application Regulations*
 - AQM has developed plain-English permit application requirements that meet federal law.

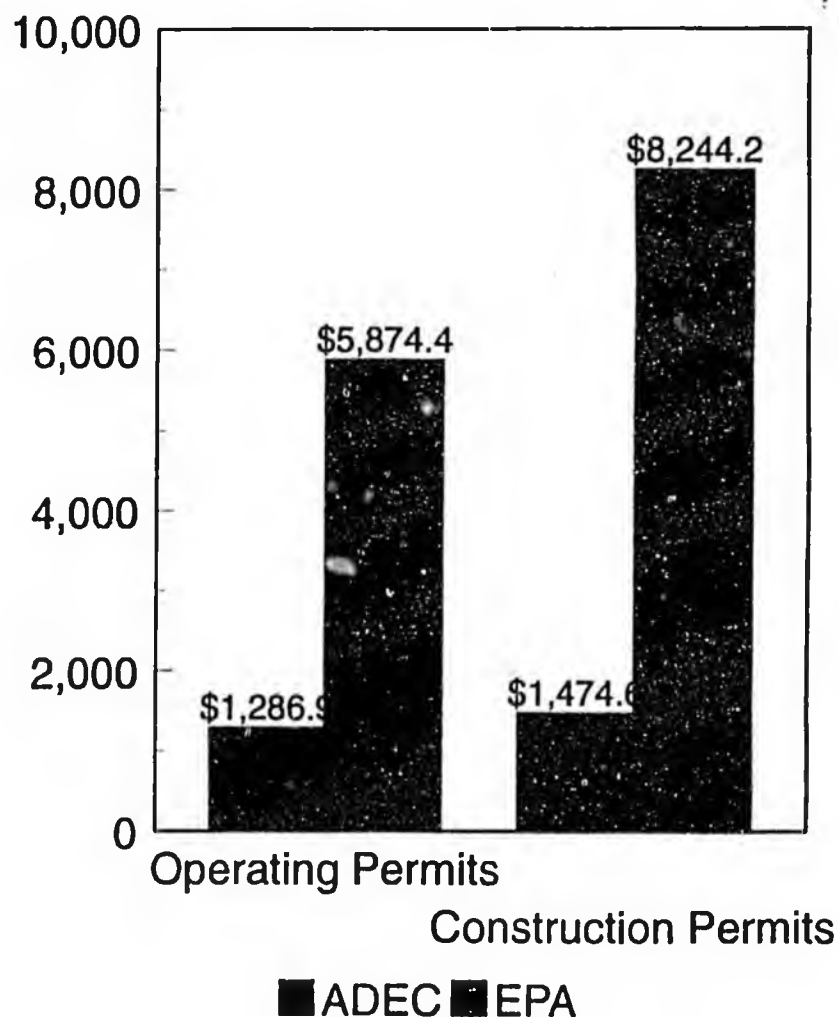
How Much Will It Cost?

- DEC Program
 - \$2,761.5
 - Alaska Legislature controls revenue
- EPA Contractor Program
 - \$24,159.0
 - Federal government controls revenue



How Much Will It Cost?

- DEC Program
 - \$2,761.5
 - Alaska Legislature controls revenue
- EPA Staff Program
 - \$14,118.6
 - Federal government controls revenue



COAL

BED

METHANE

3/6/95

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STATE OF ALASKA

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Copies of minutes listed below were originally included in this file. The minutes are available on the legislative computer database. In order to save space copies of minutes have not been left in the files.

Mary Pagenkopf

House Resources

3/6/95 8:05 AM

Tape # 95-28, Side A #000

03/06/95 LEGISLATIVE TELECONFERENCE NETWORK SYSTEM LTN1150
 08:53:32 PARTICIPANT LIST (ALL PARTICIPANTS) BY:FBX
 TCN:50331 SCHEDULED FOR:03/06/95 08:00 TO 10:00 FOR:FBX
 PUBLIC HEARING HOUSE RESOURCES
 LOCATION:FAIRBANKS
 HB 170. MR. OLIVER (BUD) BURRIS ✓ 3010 2801 Talkeetna 99709 TESTIFY 474-0437
 HB 170 MR. SAM HARBO ✓ P.O. Box 10201 99710 457-7815 TESTIFY

03/06/95 LEGISLATIVE TELECONFERENCE NETWORK SYSTEM LTN1150
 08:13:13 PARTICIPANT LIST (ALL PARTICIPANTS) BY:SEW
 TCN:50331 SCHEDULED FOR:03/06/95 08:00 TO 10:00 FOR:SEW
 PUBLIC HEARING HOUSE RESOURCES
 LOCATION:SEWARD
 HB 170 MR. MICHAEL TETREAU ✓ 911 Bx 3046 99664 TESTIFY 224-3175
 HB 170 MR. JIM RAMSDELL ✓ 019/3x 2004 TESTIFY 2301
 HB 170 MR. MARK LUTTRELL ✓ 571 TESTIFY 5372

03/06/95 LEGISLATIVE TELECONFERENCE NETWORK SYSTEM LTN1150
 06:09:13 PARTICIPANT LIST (ALL PARTICIPANTS) BY:ANC
 TCN:50331 SCHEDULED FOR:03/06/95 08:00 TO 10:00 FOR:ANC
 PUBLIC HEARING HOUSE RESOURCES
 LOCATION:ANCHORAGE
 COAL BED METHA DAVID JOHNSTON ✓ 3001 Porcupine Dr. 99501 279-1433 TESTIFY
 COAL BED METHA DAVE LAPPI ✓ 4900 Sportsman Dr. 99502 248-7188 TESTIFY
 COAL BED METHA PAUL CRAIG ✓ 2900 Boniface PKWY 99504 563-5686 TESTIFY
 COAL BED METHA ROBERT MINTZ 4031 W. 4th St 200 DEPT OF LAW 99501 TESTIFY 269-5255
 HB 170 SANDRA ARNOLD AGAINST NATL WILDLIFE ALTESTIFY
 P.O. Box 202022 99520 277-0897

HOUSE RESOURCES COMMITTEE
Roll Call and Members' Bill Votes

* (indicates first public hearing)

Room 124, Capitol Bldg.

(Mon.) Wed., Fri.

Date: 3/3/95

Tape# 95-28 Joint _____

Time: 8:05 am/pm Time Adjourned: 9:30 (am/pm)

ROLL CALL:	PRES	ABS	TIME	AR	_____	_____	_____
Rep. Joe Green	✓	_____	_____	_____	_____	_____	_____
Rep. Bill Williams	_____	_____	_____	_____	_____	_____	_____
Rep. Scott Ogan	✓	_____	_____	_____	_____	_____	_____
Rep. Alan Austerman	✓	_____	_____	_____	_____	_____	_____
Rep. Ramona Barnes	_____	_____	<u>8:50</u>	_____	_____	_____	_____
Rep. John Davies	_____	_____	_____	_____	_____	_____	_____
Rep. Pete Kott	✓	_____	_____	_____	_____	_____	_____
Rep. Eileen MacLean	_____	_____	_____	_____	_____	_____	_____
Rep. Irene Nicholia	_____	_____	<u>8:22</u>	_____	_____	_____	_____

Other Legislators Present _____

AGENDA:

Bill No.	Short Title	Action Taken
<u>overview on Coal Bid Methane</u>	_____	_____
<u>HB 195</u>	<u>Repeal milk Marketing laws</u>	<u>Not heard</u>
<u>HB 170</u>	<u>Interstate Management of Prairie</u>	<u>Heard + Reld</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

OTHER

porosity



INTERGAS '95

May 15-19, 1995
The University of Alabama
Tuscaloosa, Alabama USA

Proceedings of the 1995 Unconventional Gas Symposium

The University of Alabama/Tuscaloosa
May 15-19, 1995

9501

Coalbed Methane Potential for Alaska and Drilling Results for the Upper Cook Inlet

*T. N. Smith, State of Alaska, Department of
Natural Resources, Division of Oil and Gas*

ABSTRACT

Alaska's estimated coal reserves exceed 5.5 trillion short tons or nearly 1/2 of the U. S. total. Based on analysis performed during this study, I have concluded that these coals could contain up to 1,000 tcf of gas. Most of these coals range in age from Cretaceous to Tertiary and rank from bituminous to subbituminous. This study uses coal rank, present-day burial depth, seam thickness and structure as criteria to evaluate thirteen of Alaska's most promising coal basins. Most of the Cook Inlet, Susitna, North Slope, Middle Tanana, Nenana, Yukon Flats, North Aleutian, Seward Peninsula, and Copper River Basins contain thermally immature coals ($R_o < 0.5\%$) with low methane potential. The Upper and Lower Koyukuk, Kobuk, Gulf of Alaska, and the Alaska Peninsula Basins contain bituminous coals with moderate potential for local gas usage. Thermal maturity and coal isopach maps indicate that the Matanuska Valley area of the Cook Inlet Basin and the western foothills belt of the North Slope Basin contain abundant, bituminous, coalbeds up to 50 feet (15 m) thick. These coals have high potential for methane production at depths between 500 and 6,000 feet (150 and 1,800 m). Gas content of coal seams from the first core hole (AK-94CBM-1) drilled in the state to evaluate coalbed methane support this conclusion for the northern portion of Cook Inlet Basin. Coals penetrated by this well show increasing gas content with depth ranging from 63 scf/ton (1.96 cc/g) at 521 feet (159 m) to 245 scf/ton (7.66 cc/g) at 1,236 feet (377 m) on a dry, ash free basis.

INTRODUCTION

Alaska contains vast, lightly explored coal resources that underlie approximately 9% of the land area (Figure 1). Hypothetical coal resources exceed 5.5 trillion short tons, about half of the total United State's coal resources [1]. Most of the coal is Cretaceous to Tertiary in age and bituminous to subbituminous in rank. The North Slope and Cook Inlet Basins contain both subbituminous and bituminous rank coals and constitute the largest coal resources in the state (Figures 1 and 2). The Upper and Lower Koyukuk, Kobuk, Alaska Peninsula and the Gulf of

Alaska Basins all contain bituminous coals (Figures 1 and 2). Subbituminous and lignite coals are found in the Susitna, Middle Tanana, Nenana, North Aleutian, Seward Peninsula and Copper River Basins (Figures 1 and 2).

Near-surface coal has been commercially utilized and studied in Alaska for over 100 years and most of the surface coal occurrences have been mapped and studied. Deep coal resources have received considerably less attention. This study focuses on the coal at deeper depths. Information from petroleum production and exploration wells, gravity surveys and surface studies are integrated to provide a coalbed methane resource estimate for Alaska and coalbed methane potential for Alaska's coal basins. Since gas content analyses are available only for the State of Alaska core hole (AK-94CBM-1) in Cook Inlet Basin, established indirect methods using data such as depth, rank and composition [2, 3 and 4] were used to estimate Alaska's coalbed methane resource. The available data suggests that Alaska's coal could contain over 1,000 trillion cubic feet (tcf) of gas. If only 10% is recoverable, the resource would triple the current proven conventional gas reserves for Alaska.

NORTHERN ALASKA PROVINCE

The Northern Alaska Province (North Slope)(Figure 3) contains the largest coal resource in Alaska with hypothetical reserves of 4 trillion short tons [1]. The coals underlie a 400 mile long by 150 mile (640 km by 240 km) wide area (approximately 60,000 square miles (154,000 sq km)). While coals range in age from Mississippian to Tertiary, the primary coal resources occur in the Lower Cretaceous Corwin Formation of the Nanushuk Group (Figure 4).

The North Slope is one of the most thoroughly explored basins in Alaska. Coal was exploited by whaling ships in the late 1800's along the Chukchi Sea coast and the first coal investigation was conducted by Collier [5] in 1906 in that same area. Early explorers also occasionally exploited natural oil seeps for fuel. Oil and gas exploration was initiated in 1919 by geologists of the U. S. Geological Survey and it was this early survey work that led to the

establishment of the Naval Petroleum Reserve No. 4 (now National Petroleum Reserve in Alaska (NPRA)) in 1923. Between 1943 and 1953, early exploratory drilling by the Navy in NPRA found three oil and six gas accumulations. In 1967, the super giant Prudhoe Bay Field was discovered in the central North Slope by ARCO-Humble. This field is now expected to yield 12 billion barrels of oil and eventually over 23 tcf of gas.

The North Slope data base includes more than 350 oil and gas exploratory wells, 2,500 development wells and seismic data from near the Canadian border to the Chukchi Sea. Since NPRA was established, systematic geologic investigations have proceeded on the North Slope and the Brooks Range that include mapping and sampling the coals. Extensive coal studies have been done on Native lands in the area west of NPRA, where large, exploitable deposits are located near tidewater, but lack the infrastructure to commence mining operations.

Mississippian Coal

Mississippian coals are found in the Kapaloak Formation on the Lisburne Peninsula and in the regionally extensive Kekiktuk Formation (Figure 4). The Kapaloak Formation outcrops over a 45 mile (72 km) long belt trending north-south across the Lisburne Peninsula (Figure 3) and contains low-volatile bituminous to semianthracite coals up to 11 feet (3.4 m) thick. A minimum of 13 coal beds have been identified in outcrop along 2,200 feet (670 m) of measured section [6] that is extensively faulted and folded [7].

The presence of the Kekiktuk Formation has been documented across most of the North Slope. It has been described in detail from outcrops in the Brook Range [8] and is the primary petroleum reservoir at the Endicott Field located on the east side of the Prudhoe Bay Complex (Figure 3). In the Endicott Field, multiple, thick (greater than 10 feet (3 m)) coal seams with an average Ro of 0.6% occur at depths greater than 9,500 feet (2,900 m) (Figure 5). Several wells in NPRA have encountered coal beds as thick as 5 feet (1.5 m) in the Kekiktuk Formation [9]. Only minor, thin Kekiktuk Formation coal occurrences are found in the Brooks Range outcrop belt.

Coalbed Methane Potential. The structurally complex and high rank Kapaloak Formation coals on the Lisburne Peninsula may provide gas for local village or mining use. The Kekiktuk Formation coals are generally too deep to be viable for coalbed methane production.

Lower Cretaceous Coal

Most of the coal resources in Alaska are found in the Cretaceous Corwin and the Chandler Formations of the Nanushuk Group (Figure 4) [9]. Both the Corwin and Chandler Formations are dominantly nonmarine strata that were deposited in two separate, but simultaneous prograding delta systems (Corwin delta of western NPRA and Umiat delta of eastern NPRA) [10]. The Corwin

Formation contains abundant coal seams up to 20 feet (6 m) thick that underlie most of western and central NPRA and extend farther west under the Chukchi Sea [11]. These coal seams have been documented in outcrop along the Kukpowruk River [12] to the west of NPRA and in wells drilled in NPRA. The Kaolak -1 penetrated 255 feet (78 m) of coal in over 4,500 feet (1,370 m) of Nanushuk section and the Meade -1 encountered 130 feet (40 m) of coal in 2,000 feet (610 m) of Nanushuk Group section. Individual coal beds in these wells reach 20 feet (6 m) with up to 26 coal beds exceeding 5 feet (1.5 m) thick. Mapping by Sable and Stricker [9] shows that the coal-bearing interval lies between the surface and 6,000 feet (1,830 m) in western NPRA (Figure 5). In eastern NPRA, the Chandler Formation contains abundant coals similar to those found in the Corwin Formation. The coal-bearing interval of the Chandler Formation is less than 2,000 feet (610 m) deep (Figure 5). Coal rank increases from north to south, to the foothills of the Brooks Range, and also increases with depth. Most of the coal is high-volatile bituminous with a mean Ro of 0.7% [9].

Coalbed Methane Potential. The area of western NPRA, to the Chukchi Sea coast, has high coalbed methane potential and large possible gas reserves (Figure 5). These coals are in a relaxed tectonic stress regime. The area has been uplifted and stripped of overburden which may allow for open fractures and cleats. In the western NPRA area, the depth to the base of the Nanushuk Group coals exceeds 2,500 feet (760 m), placing a substantial portion of the coal section below permafrost. In eastern NPRA, most of the Nanushuk Group coals lie at depths less than 2,000 feet (610 m), placing them near or in the permafrost zone. It is currently uncertain what effects permafrost and cold temperatures will have on gas flow from these coals.

Upper Cretaceous and Tertiary Coal

The Upper Cretaceous Colville Group and the Tertiary Sagavanirktok Formation (Figure 4) contain substantial coal with coaly intervals and coal beds as thick as 50 feet (15 m) [13 and 14]. However, most beds are thinner and lower in rank than the Nanushuk Group coals. The rank of these coals range from lignite A to subbituminous B. The nonmarine Prince Creek Formation of the Colville Group occurs mostly in northeast Alaska and overlies the Nanushuk Group. The Sagavanirktok Formation conformably overlies the Colville Group [15] and occurs generally northeast of NPRA. In NPRA, distribution of the Sagavanirktok Formation is limited to the northeast corner and northern coastal areas, where it reaches a maximum thickness of 1,500 feet (460 m). East of NPRA, the formation thickens to over 7,000 feet (2,130 m) adjacent to the Arctic National Wildlife Refuge (ANWR) (Figure 3).

Coalbed Methane Potential. The Upper Cretaceous and Tertiary coals represent a large, low rank coal resource that probably contain large gas reserves. However, because of the low rank of these coals and cold subsurface

temperatures (permafrost), they have low potential for coalbed methane production.

COOK INLET-SUSITNA PROVINCE

With hypothetical resources exceeding 1.5 trillion short tons, the Cook Inlet-Susitna Province (Figures 2 and 6) constitute the second largest coal resource in the state. The province covers an area of approximately 14,000 square miles (36,000 sq km), which is bounded by the Kenai Mountains to the east, the Aleutian Range to the west, and extends north to the Alaska Range and the Talkeetna Mountains. Unlike many other areas of the state, portions of the Cook Inlet-Susitna Province are road accessible.

The first major commercial oil discovery in Alaska was made 16 miles (26 km) northeast of Kenai (Figure 6) at Swanson River Field in 1957. Subsequent oil and gas discoveries have produced over 1.2 billion barrels of oil and 5.5 tcf of gas. Seismic, well and production data from within the basin provide an extensive data base which greatly decreases coalbed exploration risk. Additionally, Cook Inlet oil and gas production has created an infrastructure which may enable near term gas development.

Cook Inlet Basin

The Cook Inlet Basin is located in the arc-trench gap between the volcanoes of the Alaska-Aleutian Range and the Aleutian trench. Over 25,000 feet (7,600 m) of Tertiary continental deposits unconformably overlie mostly marine Mesozoic rocks [16]. Although coal is found in the entire Tertiary section, the Oligocene to Miocene Tyonek and the Paleocene Chickaloon Formations (Figure 7) have the highest coalbed methane potential. The Tyonek Formation is widespread across Cook Inlet Basin. Large coal fields have been mapped where it crops out on the west side of Cook Inlet. The Chickaloon Formation is limited to the northeast portion of the Cook Inlet Basin.

Cook Inlet Basin forms a large trough with the basin axis located just west of Kenai and roughly paralleling the current shoreline (Figure 6). Because of post-depositional uplift of the basin margins, older rocks with higher thermal maturity are exposed on the basin margins, while rocks of similar age and thermal maturity occur at significant depths along the axis of the basin. For example, an Ro of 0.6% is reached at a depth of 15,000 feet (4,600 m) near the axis of the basin and at 5,000 feet (1,500 m) near the basin edge (Figure 6). Holocene uplift has brought the thick coals of the Tyonek and the Chickaloon Formations near the surface, making some of the onshore areas of the Cook Inlet basin attractive for coalbed methane exploration.

In 1994, the State of Alaska funded a core hole to sample Tyonek Formation coals near Wasilla, located in the northern portion of Cook Inlet Basin. The core hole (AK-94CBM-1) was drilled on a previously identified prospect [17] (Figure 8) located between the towns of Palmer and Houston and near roads and gas pipelines. In this area, the Tyonek Formation is estimated to have a total thickness in

excess of 4,000 feet (1,220 m) with cumulative coal thickness exceeding 100 feet (30 m). High-volatile bituminous coals are expected to be present at depths ranging from 500 to 6,000 feet (150 to 1,800 m).

AK-94CBM-1 was drilled to a total depth of 1,245 feet (380 m), continuously coring the Tyonek Formation from the surface casing shoe at 354 feet (380 m) to total depth. Eighteen seams of high-volatile C bituminous coal were encountered with the thickest being 6.5 feet (3.0 m) and a cumulative thickness of 41 feet (12.5 m). Thirteen of these coal seams were sampled for gas content using 38 gas desorption canisters. Gas content ranges from 63 scf/ton (1.96 cc/g) to 245 scf/ton (7.66 cc/g). Gas content and vitrinite reflectance generally increase with depth, while moisture decreases. Coal moisture contents are low, ranging from 9.02% at 521 feet (159 m) to 4.82% at 1,236 feet (377 m). Gas analyses show that carbon isotopes become slightly heavier with depth indicating an increase in the thermogenic/biogenic gas ratio. The range of -49.3 to -43.2 $\delta^{13}\text{C}$ for methane encountered here is indicative of coalbed gas that has both biogenic and thermogenic sources. Gas composition is 98% methane with minor amounts of CO_2 and N_2 . Due to cost constraints, the drilling program was designed solely to acquire coal samples for analysis and therefore the well was not flow tested. Porosity and permeability measurements have not been obtained. From visual analysis, coal cleat and fracture density is widely spaced with vertical fractures occurring 1 to 3 inches (2.5 to 7.6 cm) apart. Calcite coating was noted on some of the fracture surfaces which may lower effective permeability. Almost no fractures were noted in the clastic rocks. Figure 9 outlines the coal analyses from core samples for this well.

The coal-bearing Chickaloon Formation occurs only in the Matanuska Valley area north of Palmer (Figure 8). These coals have been mined from 1914 to 1968. Geologists with the Bureau of Mines and the U. S. Geological Survey [18] have mapped the extent of these coals in detail using outcrop, mining and core hole data. Most of the coal is confined to the upper 1,400 feet (426 m) of the Chickaloon Formation, which is greater than 3,000 feet (914 m) thick [18]. The coal in the Chickaloon Formation ranges in rank from high-volatile bituminous to anthracite. Coal beds up to 34 feet (10 m) thick and laterally continuous for up to 5 miles (8 km) have been mapped in faulted synclines that increase in structural severity to the east [18 and 19]. The presence of coalbed gas has been documented by mine explosions which occurred in 1937 and in 1957. In the 1937 incident, a violent methane and dust explosion in the Evan Jones Mine, located 12 miles (19 km) north of Palmer, killed 14 men. The 1957 incident was another methane and dust explosion in the same mine, killing 5 men.

Barnes and Payne [18] estimate that over half of the coal reserves lie beneath 1,000 to 2,000 feet (305 to 610 m) of overburden. Bituminous rank coal at shallow depths and the methane gas problems associated with mining combine

4

COALBED METHANE POTENTIAL FOR ALASKA AND
DRILLING RESULTS FOR THE UPPER COOK INLET BASIN

to make the Matanuska Valley area highly prospective for coalbed methane production.

Coalbed Methane Potential. High gas content (up to 245 scf/ton at 1,200 feet (366 m) deep) and large coal resources (hypothetical coal resources exceeding 1.5 trillion short tons), indicate that Cook Inlet Basin contains large gas reserves. Conventional gas production, infrastructure and a local market make near term coalbed gas production possible. The uplifted margins of the basin constitute the best plays.

Cook Inlet coal is very similar to coal found in the Powder River Basin where economical flow rates have been accomplished. However, several significant questions need to be answered to determine the economics of coalbed production from within the basin. These include determination of production flow rates for gas as well as formation water.

Susitna Basin

The Susitna Basin underlies a lowland north of Cook Inlet between the Talkeetna Mountains to the east and the Alaska Range to the north and west (Figures 6 and 8). The Castle Mountain Fault and the Susitna Arch separates the shallower and younger Susitna Basin from the Cook Inlet Basin to the south (Figure 8). The dextral Castle Mountain Fault has offset Mesozoic rocks over 60 miles (97 km) and has almost a 2 mile (3.2 km) vertical throw [20]. The Tertiary coal-bearing section exceeds 13,400 feet (4,080 m) and consists of rocks equivalent to the Sterling, Beluga and upper part of the Tyonek Formations (Kirschner, unpublished report).

Nine exploratory wells have been drilled, plugged and abandoned in the basin, seven of which were drilled near the Castle Mountain Fault. The Trail Ridge -1 was drilled in a deeper part of the basin to 13,708 feet (4,178 m) and encountered Tyonek Formation coals with good gas shows from 11,700 feet to 13,708 feet (3,566 m to 4,178 m). The Tyonek Formation outcrops around the margins of the basin and contains subbituminous coal seams over 20 feet (6 m) thick. One reported seam on Sunflower Creek, located on the northwest side of the basin, measured 55 feet (16.8 m) thick [21].

Coals and sandstones north of the Castle Mountain Fault in the Houston area (Figure 8), where a small coal deposit was mined episodically between 1917 and 1952, appear to have high levels of gas. Five oil and gas exploration wells (Rosetta -1 through Rosetta -4A) and three U. S. Bureau of Mines (USBM) core holes drilled near Houston, encountered gassy coals (Figure 8). The USBM core holes, drilled in 1951, flowed small quantities of gas, possibly from coal seams. The Rosetta wells were drilled between 1954 and 1963 and encountered gas shows while drilling coals and sandstones. In spite of being plugged and abandoned, Rosetta -3 still has some gas escaping from around the surface casing. Some shallow water wells near the Castle Mountain Fault also flow small

quantities of gas. Gas analysis results are similar to those from the coals core d in AK-94CDM-1. Gas analyses from a water well located six miles (10 km) north of Wasilla indicated the gas to be 98% methane, 2% N₂ and the carbon isotope for methane -46.4 δ¹³C.

Coalbed Methane Potential. Susitna Basin is a smaller, shallower extension of Cook Inlet Basin. Like Cook Inlet Basin, the uplifted basin margins constitute the best potential for gas targets. The area along the Castle Mountain Fault is also highly prospective. This basin lacks the infrastructure of roads and pipelines, however, gas could be exploited for local use or pipelines could be built to connect with the existing transportation system in the Cook Inlet Basin.

ALASKA PENINSULA PROVINCE

The Alaska Peninsula contains two distinct coal-bearing basins. Coals in the Cretaceous basin are bituminous rank and the Tertiary (North Aleutain Basin) coals are of bituminous, subbituminous and lignite ranks. The two coal basins have different structural and depositional histories and are separated by a regional angular unconformity. The Cretaceous coal accumulated in an arc-trench gap setting while most of the Tertiary coal-bearing deposits are in a back-arc setting [22].

Cretaceous Basin

All Cretaceous coal occurs in the Upper Cretaceous Coal Valley Member of the Chignik Formation [22]. The Chignik Formation subcrops from Wide Bay in the north to the Herendeen Bay-Pavlof Bay in the south, an area over 200 miles (322 km) long and 50 miles (80 km) wide (Figure 10). The strata is moderately folded and faulted with dips varying from 20 to 35 degrees. The Coal Valley Member is laterally discontinuous in this area. The thickest deposits are found near Herendeen Bay (1,250 feet (381 m)), while this member is absent at other localities. Coal deposition was also variable. An aggregate thickness of 26 feet (7.9 m) of coal [19] was found in one 200-foot (61 m) thick section in the Herendeen Bay area. Other sections within the area contain little coal [23]. Coal beds average 3 feet (0.9 m) thick (the thickest 8 feet (2.4 m)), contain 12 percent ash and have a high (90 percent) vitrinite content. The vitrinite reflectance values of these high-volatile bituminous coals range from 0.57% to 1.76% Ro.

In the subsurface, the Chignik Formation has been penetrated by at least four deep oil and gas wells (Figure 10). The Phillips, Big River A-1 penetrated 27 thin coal seams (maximum thickness of 6 feet (1.8 m) over a 1,345-foot (410 m) interval. The Pan Am, Hoodoo Lake Unit -2 encountered 18 thin coals (maximum thickness of 8 feet (2.4 m)) and the Cities, Painter Cr. -1 encountered 9 coal seams (maximum thickness of 9 feet (2.7 m)). Only the Pan Am, David River 1-A did not encounter any coal seams in the Chignik Formation. All the wells that encountered coals had excellent mudlog gas shows. Coal samples from the

Hoodoo Lake Unit -2 well at depths greater than 8,000 feet (2,438 m), and the David River 1-A at depths between 8,500 to 10,250 feet (2,590 to 3,124 m) (above the Chignik Formation in the overlying Tolstoi Formation) are high-volatile to low-volatile bituminous rank. The Cities Service, Painter Creek -1 encountered a medium-volatile bituminous coal at 1,018 feet (310 m) [24]. Coals of similar rank are found in outcrops at Chignik and Herendeen Bay, indicating that these areas have undergone considerable uplift since maximum burial. The permeability of the cleat system could be enhanced in the uplifted areas.

Coalbed Methane Potential. Cretaceous coal underlies a significant portion of the Alaska Peninsula. The variability of thickness and discontinuous nature of the thick coal seams make subsurface exploration for coalbed methane difficult, particularly for large scale operations. However, if a local energy source is the objective and large reserves and high productivity wells are not necessary, the Chignik Formation coals are viable gas targets for villages towns such as Chignik Lake and Chignik Lagoon.

Tertiary Coal

Alaska Peninsula Tertiary coal occurs in the Tolstoi (Paleocene to Eocene), Stepovak (Oligocene), and Bear Lake (Miocene) Formations. In general, the Bear Lake and Stepovak Formation coals are lignitic to subbituminous rank. Tolstoi Formation coals range from medium- to low-volatile bituminous rank. Most of the coal seams are less than 3 feet (0.9 m) thick. The Bear Lake Formation coals crop out in the area south of Herendeen Bay and on Unge Island (Figure 10). On the north side of the Alaska Peninsula, most of the Tertiary coal-bearing strata subcrop in an area which is over 250 miles (400 km) long and extends at least 35 miles (56 km) offshore to the North Aleutian Coast well in the North Aleutian Basin (Figure 10). Minor to good gas shows are associated with these coals. For example, the Gulf, Port Heiden Unit -1 shows greatly increased mudlog gas in the coaly section in the Bear Lake Formation from depths of 4,000 feet to 5,000 feet (1,219 m to 1,524 m). The mudlog gas levels increased from 20 ppm to over 250 ppm in some of the coal seams. Over this interval, the Port Heiden well encountered approximately 23 coal seams, most of which were less than 5 feet (1.5 m) thick. The David River 1-A well encountered Bear Lake Formation subbituminous coals at similar depths and the Hoodoo Lake Unit -1 penetrated lignitic coals to 5,000 feet (1,524 m) and subbituminous coals to the well's total depth of 8,049 feet (2,453 m) in the Stepovak Formation [24]. This trend is consistent to the north, where the General Petroleum, Great Basins -1 encountered immature rocks with an average Ro of 0.29% for the Bear Lake Formation and an average Ro of 0.51% for the Stepovak Formation. The Hoodoo Lake Unit -2 encountered a gassy coal section in the Tolstoi Formation between 5,800 feet and 6,500 feet (1,768 m and 1,980 m). Based on the mudlog, this well encountered coal seams to 20 feet (6 m) thick with good mudlog gas shows and trace oil shows. The coal is described as lignitic to subbituminous in rank and is shaly.

The rank of these coals must be higher than described in the mudlog since McLean [24] reports the vitrinite reflectance values average 1.15 % (medium-volatile bituminous) for this interval. Geophysical logs do not verify the thick coals noted on the mud log. This may be due to the shale interbeds and/or the nature of the shaly coal beds. The David River 1-A well encountered thin, high-volatile to low-volatile bituminous coal seams between the depths of 8,500 feet and 10,400 feet (2,590 m and 3,170 m) [24].

Coalbed Methane Potential. Structurally high areas where the Tolstoi Formation coals are found above 5,000 feet (1,524 m) in depth have the highest potential. Coal seams in the Bear Lake and Stepovak Formations are too low rank to have good gas potential.

GULF OF ALASKA PROVINCE

The Gulf of Alaska Province consists of the northern Gulf of Alaska onshore area of southern Alaska and is composed of amalgamated tectonic terranes that resulted from both Mesozoic and Cenozoic plate interactions [25]. The Tertiary coal-bearing rocks are found in the Yakutat terrane, the most recently arrived terrane. This terrane is presently moving north with the Pacific plate, colliding with and subducting beneath southern Alaska [26], subjecting the entire area to intense compressional stresses. The tectonism has caused the intense fold and fault deformation present in the Bering River Field [27].

Most of the coal in the Gulf of Alaska Province is found within the Eocene to Early Oligocene Kulthieth Formation [28 and 26]. The coals found in the Bering River Field area (Figure 11) are low-volatile bituminous to meta-anthracite and occur in deformed lenses up to 60 feet (18 m) thick. The coal seams are lenticular both from intense structural deformation and stratigraphic thinning (27) (Merritt, 1986). Coal seams up to 6 feet (1.8 m) thick are found in the Duktoth River District in the Robinson Mountains about 50 miles (80 km) east of the Bering River Field (Figure 11). Thin coal seams are encountered over a much broader and less deformed area in the subsurface from the Bering River field to the Yakutat Bay area, however, none of the thick coal seams found at the Bering River field have been encountered in the subsurface. Onshore exploratory wells (Figure 11) encountered both coal-bearing fluvial and marine strata based on the presence of sparse outer neritic to upper bathyal benthic microfauna in the Kulthieth Formation [29]. Reconstruction of the Kulthieth depositional system indicates that a series of deltas probably deposited sediments directly into a deep marine basin with rapid lateral changes in paleobathymetry [25].

Coalbed Methane Potential. The coals in the Gulf of Alaska Province are subject to intense compressional stress and severely deformed. These coals may be too metamorphosed and compressed to be viable gas targets. However, suitable coalbed methane plays may be found in structurally less deformed areas between the Bering River Field and the coast line.

YUKON-KOYUKUK PROVINCE

The Yukon-Koyukuk Province of western interior Alaska is characterized by maturely eroded and heavily-vegetated terrain with most of the coal found in outcrops along the Yukon, Koyukuk, and Kobuk Rivers. Three poorly defined coal basins (Upper Koyukuk, Lower Koyukuk, and Kobuk) (Figure 12) have been identified in this province by Merritt and Hawley [1]. Cretaceous and Tertiary volcanic and sedimentary rocks [30] were deposited in a highly mobile basin complex subject to repeated volcanism and plutonism [31]. Up to 25,000 feet (7,620 m) of Cretaceous sedimentary rocks have been documented in this province [31]. This assemblage consists of marine volcanic graywacke and mudstone turbidites overlain by a westward prograding assemblage which includes coal-bearing deltaic deposits at least 10,000 feet (3,048 m) thick [32]. Patton [31] concluded the coal-bearing beds were deposited along a broad shallow trough extending along the eastern margin of the province.

Upper Koyukuk Basin

The thickest coal seams in the Yukon-Koyukuk Province are found in the Tramway Bar Field in the Upper Koyukuk Basin. The Tramway Bar Field is located 35 miles (56 km) above Bettles on the Middle Fork of the Koyukuk River (Figure 12). At this field, three coal seams with thicknesses of 17.5 feet, 3 feet and less than 1 foot (5.3, 0.9, and 0.3 m) have been mapped. These coals are steeply dipping, high-volatile B bituminous, with 38% ash and 6% moisture content [33]. Although these are the only significant coal outcrops in the Upper Koyukuk Basin, abundant coal float has been reported on the John River north of Bettles [34].

Coalbed Methane Potential. The Upper Koyukuk Basin contains bituminous rank coals that could provide gas for local use. Widely scattered outcrops, little surface data, lack of continuity of coal seams, and the structural complexity of the area make drilling targets very elusive.

Lower Koyukuk Basin

Lower Koyukuk Basin coals consist primarily of scattered coal occurrences between Ruby and Anvik on the Yukon River [35] (Figure 12). However, coals in this basin possibly extend much farther south than Anvik as bituminous coals have been reported on the lower Yukon River and Kuskokwim Rivers and Nelson and Nunivak Islands [34]. Between 1890 and 1903, some of these coal occurrences were mined to supply fuel for the steam-powered boats of the Yukon River. The area near Nulato supported several small scale mines in what is now referred to as the Nulato Field. These coals are typically thin (less than 4 feet (1.2 m) thick), high-volatile C bituminous and occur in the Late Cretaceous Kaltag Formation [36]. The thickest coal seam, an 11-foot (3.4 m) bed, is located 12 miles (19 km) upriver from Galena [37]. Thin coal seams were reported at this location by Collier [35] and Chapman [38].

In 1960, the Nulato Unit -1 was drilled to 12,000 feet (3,658 m) and is the only deep well to be drilled in this basin. This well was drilled on a north-east trending surface anticline and penetrated only Cretaceous rocks, yielding little information on the coal-bearing section. Sample descriptions indicate only minor coal was encountered and cores show dips greater than 60 degrees and abundant fractures and brecciation. The entire succession is over mature with respect to oil generation [39] with vitrinite Ro values ranging from 2.62% near the surface to over 4.0% at 6,100 feet (1,859 m) measured depth.

Coalbed Methane Potential. The entire area has undergone moderate to severe structural deformation with some of the coal seams sheared and dipping at steep angles. The complex structure, combined with very limited outcrop control, make predicting reservoir continuity and drillable targets impossible. Gas from bituminous coals for local village usage along the lower Koyukuk and Yukon Rivers may be obtained provided viable drilling targets can be delineated.

Kobuk Basin

Kobuk Basin coals consist of scattered, high-volatile C bituminous occurrences along a 120 mile (193 km) stretch of the Kobuk River between Kiana and Kobuk [21] (Figure 12). Some of these coals were sampled by Clough and others [40] on the west end of the known coal deposition in the Hockley Hills-Singauruk River (near Kiana) areas. Clough and others [40] noted some coal seams up to 6 feet (1.8 m) thick with most of the coal thickness less than 2 feet (0.6 m). Ash contents are high, reaching values of 60%. While the area is slightly less deformed than the Upper and Lower Koyukuk Basins, bed dips exceeding 40 degrees are common. Because of the lack of well and seismic data, no subsurface information on the extent of coal beds is available in this area.

Coalbed Methane Potential. The Kobuk basin lacks the outcrop and subsurface data (well and seismic) to fully evaluate the gas potential of its coals. However, bituminous coals in the basin may be viable exploration targets if they can be demonstrated to subcrop near villages now dependent on imported oil for heating and electricity.

NENANA PROVINCE

The Nenana coal trend is located north of the Alaska Range and includes fields located in the Minchumina, Middle Tanana, and Nenana Basins (Figure 13). These Tertiary coal bearing basins form a discontinuous belt from the Jarvis Creek Field near Big Delta on the east, through Healy, Lignite Creek, and Suntrana Coal Fields in the central portion, to the Farewell-Little Tonzona area (Minchumina Basin) to the southwest. The entire trend extends over 200 miles (320 km) and is over 30 miles (50 km) wide. The coals in these areas are mostly Oligocene to Miocene in age and are subbituminous C or B in rank.

Minchumina Basin

The Minchumina Basin is probably a complex of small, extensional basins [41]. Scattered Tertiary nonmarine sedimentary rocks crop out along stream valleys and river bluffs adjacent to the Alaska Range on the eastern edge of the basin. No subsurface data is available in this area and therefore mapping the lateral extent of coals is problematic. Most outcrops lie along the Farewell Fault Zone and are steeply [42]. The Farewell Fault separates the Minchumina Basin from the Alaska Range. To the west, away from the Farewell Fault, it is conceivable that the dips of these rocks could flatten into the subsurface. Coals in this area range from subbituminous A to high-volatile C bituminous and ash content ranges from 4% to over 26%. Seam thicknesses up to 20 feet (6 m) and multiple coal seams over 3 feet (0.9 m) thick have been mapped [43]. One subbituminous coal seam over 100 feet (30 m) thick has been reported from the Farewell-Little Tonzona Field [44].

Coalbed Methane Potential. The Minchumina Basin contains coal similar to that found in Cook Inlet Basin. Known coal occurrences dip steeply along the major dextral faults in the area. Without subsurface control, the extent and depth to these Tertiary coals is unknown and locating viable coalbed methane targets will be difficult. If found, the coalbed gas could be a useful fuel for local village use.

Nenana Basin

The Nenana Basin contains over 3,000 feet (914 m) of nonmarine Tertiary coal-bearing rocks which unconformably overlie Precambrian and Paleozoic metamorphic rocks. The Nenana Basin is the most explored of the three basins in the Nenana Province and contains a large coal resource (Figures 2 and 13) with coal seams up to 60 feet (18 m) thick. Most of the coal in this basin is subbituminous and is comparable in overall quality to coals found in the Cook Inlet and Wyoming's Powder River Basins [27]. Although the Healy Creek, Suntrana, and Lignite Creek Formations of the Usibelli Group all have significant coal deposits, most exploitable coal is contained within the Suntrana Formation [27]. The Lignite (Hoseanna) Creek Field near Healy is the only active coal mine in Alaska. Here, multiple coal seams that average 20 feet (6 m) thick are being mined from the Suntrana Formation.

Coalbed Methane Potential. The Nenana Basin contains thick coals that are similar to those found in Cook Inlet Basin. If the gas contents are comparable to those in Cook Inlet Basin, these coals could be good gas objectives. This basin contains coalbed methane targets located along the state's road system between Nenana and Healy and in the Big Delta area.

Middle Tanana Basin

The Middle Tanana Basin lies just north of the Nenana Basin and contains about 10,000 feet (3,050 m) of late Cenozoic fill [45 and 41]. Two oil and gas exploratory

wells have been drilled in the Middle Tanana Basin. The Unocal, Nenana -1 and the Arco, Totek Hills -1 (Figure 13) were drilled near the margin of the basin. These wells drilled through the Tertiary section, encountering metamorphic basement rocks at 2,090 feet (789 m) and 3,163 feet (963 m) respectively. Both wells encountered coal, with the Totek Hills -1 well encountering numerous coal seams up to 10 feet (3 m) thick. The nonmarine Tertiary sequence in this basin penetrated by these wells consists of the Usibelli Group, which has been described from outcrops in the Nenana Basin to the south. Coals penetrated by both wells produced only minor mudlog gas shows. Cutting descriptions for the wells indicate the coals to be lignite to subbituminous and the section to be poorly to moderately consolidated. Higher rank coals could be encountered in the deeper parts of the Middle Tanana Basin. Stanley and others [46] estimate the top of the oil window (Ro of 0.6%) to be at depths exceeding 4,500 feet (1,370 m).

Coalbed Methane Potential. Wells in the Middle Tanana Basin encountered lignite to subbituminous coal. Higher rank (high-volatile bituminous) coal is projected to be below 4,500 feet (1,370 m) and is probably too deep for good coalbed methane production. Geologically, the low-rank coals are poor to moderate methane drainage targets, although the basin's proximity to the large Fairbanks market makes it attractive from an economic perspective.

NORTHERN YUKON PROVINCE

The Northern Yukon Province encompasses lower to middle Tertiary coal-bearing sedimentary rocks found in the Eagle and Rampart Troughs and the Yukon Flats Basin (Figure 13). Outcrops are scarce in this region occurring only in recently eroded bluffs and stream cutbanks. The area extends west over 400 miles (640 km) from the Canadian border along the Yukon River. Coal rank for the area ranges from lignite A to subbituminous C, though a few localities containing bituminous coal have been reported [47].

Eagle Trough

The Eagle Trough (Tintina Trench) is a northwest-trending basin that lies along the Tintina Fault Zone (Figure 13). This basin is estimated to contain as much as 9,500 feet (3,000 m) of Tertiary fill [48] in the vicinity of the Tintina Fault Zone. The basin contains subbituminous coals, although some coals have been tectonically upgraded in rank near the Tintina Fault Zone [47]. Although coal seams thicker than 30 feet (9 m) have been reported, most seams have a thickness less than 3 feet (0.9 m). In outcrop, many coal beds are highly fractured and steeply dipping [34].

Coalbed Methane Potential. The Eagle Trough contains mainly subbituminous coals which may be too low in rank to be good gas prospects. Gas for local use may be

found in areas near faulting where the coal rank is higher and coal fractures may be better developed.

Rampart Trough

The Rampart Trough is a southwest-trending basin that lies along the Kaltag Fault. Tertiary fill in the trough is estimated to be as much as 6,500 feet (2,000 m) [41] (Figure 13). Coals found in the basin are dominantly subbituminous in rank and generally less than 5 feet (1.5 m) thick. Most of the mapped coal occurrences in the Rampart Trough are found adjacent to the Kaltag Fault and are very tectonically disturbed [47]. As in the Eagle Trough, some of the coals are bituminous in rank due to tectonic rank upgrading along major faults.

Coalbed Methane Potential. The Rampart Trough coals have low gas potential because of their low rank (subbituminous). Near faulting, where coals are fractured and have a higher rank, coalbed methane targets may be more attractive.

Yukon Flats Basin

Covering over 8,500 square miles (22,000 sq km), the Yukon Flats Basin is the largest Tertiary basin in Interior Alaska [47] (Figure 13). The basin is a half-graben complex with about 2 to 3 miles (3 to 5 km) of nonmarine Tertiary fill [49]. The only subsurface control in this large basin is a proprietary oil company seismic survey, shallow core holes, and a 1,200-foot (366 m) core hole drilled in 1994 at Fort Yukon by the U. S. Geological Survey. Bedrock outcrops are rare with the only exposures found along the margins of the basin. These limited exposures indicate coal-bearing rocks probably underlie most of the Yukon Flats Basin. Barker and Goff [47] report augering about 20 feet (6 m) of coal with a rank from lignite A to subbituminous B. The USGS Fort Yukon well encountered a 21+ feet (6.4 m), Middle Miocene, lignitic coal bed at a depth of 1,260 feet (384 m) (Gary Stricker, personnel communication, 1994). The core sample released a significant amount of gas when brought to the surface. This resulted in the termination of drilling (Tom Ager, personnel communication, 1994).

Coalbed Methane Potential. The known coals of Yukon Flats Basin are too low in rank for good gas production. However, higher rank coals found closer to the surface along the uplifted basin margins may have high gas potential.

SEWARD PENINSULA PROVINCE

Lignite and subbituminous coal-bearing rocks of Cretaceous and Early Tertiary age occur in isolated, structurally controlled coal fields on the Seward Peninsula [50] (Figure 12). Some of the coal beds are impressive in thickness reaching 80 feet (24 m) at Chicago Creek Field and 180 feet (55 m) at Grouse Creek [7]. The Tertiary section at Chicago Creek Field is generally less than 200 feet (61 m) thick and unconformably overlies quartz-mica

schist of lower Paleozoic or Proterozoic age. Lignite beds in the Unalakleet area are generally less than 2 feet (0.6 m) thick and also dated as early Tertiary [31].

Both the Socal, Cape Espenberg -1, drilled on the north side of the Seward Peninsula, and the Socal, Nimiuk Point -1, drilled south of Kotzebue (Figure 12), penetrated a coal-bearing section in the Selawik Basin. The coal-bearing section penetrated by the wells is Upper Pliocene to lower Pleistocene in age [51] and thermally immature with Ro values less than 0.4%, distinguishing it from the Paleocene coals found in outcrop at Chicago Creek Field [52]. These wells reached total depth in schistose metasandstone and marble that likely correlate with pre-Mississippian schists and marble exposed on the Seward Peninsula. Both wells failed to penetrate the Cretaceous and early Tertiary coal-bearing rocks that outcrop on the Seward Peninsula, possibly indicating that the Seward Peninsula coal-bearing strata occurs as local, isolated basins.

Coalbed Methane Potential. Coals in the Seward Peninsula, Selawik, and Unalakleet areas are too low in rank for good gas production.

OTHER COAL-BEARING AREAS

Southeast Alaska

High-volatile B Bituminous [53] coal occurs near Angoon on the Kootznahoo Inlet (Admiralty Island) throughout an area of about 40 square miles (100 sq km) [54] (Figure 1). The coals are high sulfur, dirty, discontinuous and thin. The prominent structural dip of the rocks in the area is 45 degrees to the southeast. Coal with similar characteristics crops out near Murder Cove at the southern tip of Admiralty Island. Small, isolated outcrops of Tertiary lignite also are present on Prince of Wales, Kuiu, and Kake Islands [34].

Coalbed Methane Potential. The Kootznahoo Inlet coals on Admiralty Island are the only coals in southeast Alaska that hold even low gas potential. However, these coals are thin, discontinuous, dirty and structurally complex, making them unlikely targets.

Copper River

The Copper River Basin (Figure 11) occupies a lowland area in south-central Alaska between the Talkeetna and the Wrangell Mountains. Coal occurs throughout the 3,000 feet (914 m) of nonmarine Tertiary sedimentary basin fill. The coals penetrated in the wells and found in outcrops on the basin margins are lignites. Ten exploratory oil and gas wells have been drilled in the basin. The thickest Tertiary section penetrated in the northeast portion of the basin by Salmon Berry Lake -1 and Rainbow Federal -1 and -2 wells (Figure 11). A high thermal gradient on the eastern side of the basin near the Neogene and Quaternary Wrangell Mountain volcanoes may be present and upgrade the rank of coal in this area. However, coal outcrops in the Wrangell Mountains (Figure 11) are reported to be lignite [1] and Ro

values of Tertiary sediments are generally less than 0.4% in the eastern portion of the basin near the Wrangell Mountains.

Coalbed Methane Potential. The Copper River Basin coals are too low in rank to have good gas potential.

DISCUSSION

Neither a proven reserve base or an export market for coalbed methane has been established in Alaska. However, preliminary analysis suggests that coalbed methane represents a huge, untapped state resource. As Alaska's conventional oil and gas reserves decline, it is critical to locate and identify and catalog potential deposits that can contribute to long term growth. In addition, identifying future energy resources is essential for land use planning.

This report's evaluation of Alaska's coalbed methane potential is based primarily upon the current limited knowledge of the basins and is calibrated with analogs from producing coalbed methane basins, primarily in the lower 48 states. It must be noted, however, that coal is a complex, heterogeneous material that defies simple analysis and comparisons. Predictions of Alaska's coalbed methane potential is fraught with pitfalls and ultimately only exploration drilling and long term well testing can provide definitive results.

For large scale coalbed methane production (involving several tcf) to take place in Alaska, it will have to compete with other gas sources for export to Pacific Rim markets. The economics involved with using coalbed methane as a local energy source may be much more favorable. Alaska's remote communities are currently dependent on large deliveries of diesel fuel for heating and electrical generation. Some areas pay the equivalent of \$10 to \$15 per mcf in fuel costs. The potential for spills during water-borne transportation of petroleum products is well known, and regulators are making it increasingly expensive. Additionally, using gas for local consumption would eliminate the large oil storage facilities (large enough to sustain the village through the entire winter) that each village must maintain, thus eliminating the potential for oil spills and pollution of ground and surface water. Wells producing 30 mcf per day, that in other situations would be uneconomic, could fill the energy needs of many of Alaska's rural communities.

CONCLUSIONS

Alaska's enormous coal resources provide many opportunities for coalbed methane exploration. Both Northern Alaska (North Slope) and Cook Inlet-Susitna Provinces contain thick coal sequences that hold large coalbed methane resources. The onshore areas in the Matanuska Valley and the uplifted basin margins of Cook Inlet Basin provide the highest potential for near term, large scale coalbed methane development. Large scale coalbed methane development on the North Slope is currently not

feasible due to a lack of infrastructure. Bituminous coals in the Upper and Lower Koyukuk, Kobuk, Gulf of Alaska and Alaska Peninsula Basins could provide gas for the rural communities that depend on diesel fuel for power generation. Subbituminous and lignite coals in the North Slope, Cook Inlet, Susitna, Middle Tanana, Nenana, Yukon Flats, North Aleutian, Seward Peninsula and Copper River Basins could provide more opportunities for gas production provided hydrologic conditions and gas contents are suitable.

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