The 1973 SeaTac Communities Plan told us that the maximum capacity of Sea-Tac Airport was 260,000 and hence, the noise remedy boundaries are based upon that figure.

It should therefore be plainly obvious that we are dealing with unreliable data, inconsistent figures and forecasts that are either biased, flawed or just plain wrong.

Please refer to the enclosed (Attachment #2) table of forecasts and the dates those forecasts were made.

Another dramatic illustration of the disparity between figures is in the peak hour screening and refined dispersion analysis for nitrogen dioxide. The tables below represent these problems which are most likely based upon the same inconsistent figures used for the annual inventory above:

1994 Draft EIS	43.9 existing hourly op.	0.08 ppm NO_2 154th St.
1995 Final EIS	63.9 hourly op.	0.051 "
1997 SEIS existing	54.1 hourly op.	0.08 "
1997 SEIS 2000 do-nothing	64 hourly op.	0.09 "
1997 SEIS 2000 with proj.	64 hourly op.	0.05 "
1997 SEIS 2005 do-nothing	64 hourly op.	0.09 "
1997 SEIS 2005 with proj.	64 hourly op.	0.06 "
1997 SEIS 2010 do-nothing	64 hourly op.	0.07 "
1997 SEIS 2010 with proj.	64 hourly op.	0.05 "

One reason the dispersion analysis shows decreased NO_2 impacts even though the airplane numbers departing in the peak hour are increased is due to the fact that the consultant insisted that larger aircraft could not take off at a rate of one per minute due to regulations regarding aircraft spacing in the preferred noise abatement corridor.[11] When a higher number was used in the peak hour, the consultant used a higher number of non-jet operations. In the 2000 scenario where approximately 408,000 annual aircraft operations are considered, the peak hour fleet mix reflects 217,000 annual non-jet aircraft operations. This scenario is untypical of Sea-Tac and will be even more untypical in the future. This number of non-jet operations represents more than half the expected 2000 Sea-Tac aircraft operations and is unrealistic and must be revised.

The consultant failed to note that even the FAA states that one aircraft departure per minute is theoretically possible at Sea-Tac with two runways and they make no qualifications about spacing or types (Attachment #3) and that the Sea-Tac tower personnel have publicly stated in the enclosed article that 75 peak departures occur beginning at 7:00 a.m. in the summer (Attachment #4). The consultant also failed to mention that aircraft departing from the third runway 3 to 4% of the time will have to

[11]SEIS Appendix B Attachment A-11 Response to Comment 28

make a break-neck turn to hit the existing noise abatement corridor before reaching the 5 NM or 3000 foot turn. I must assume that the consultant believes that all aircraft departures in the future from the third runway will use the same old noise abatement route even though the EIS flight tracks for the third runway are independent of the old corridor.

Additionally, the spacing of the third runway is suspicious at 2500 feet from the easternmost runway. The FAA Advisory Circular 5300/13 Change #4 states that for independent departures, the standard separation distance between runways is 2500 feet and that the distance for independent landings is 4300 feet. We already know that this new runway will not allow for dual simultaneous arrivals in poor weather without the addition of advanced technology and equipment such as LDA and GPS. We learned during the DEIS process that the alleged existing 44% bad-weather landing delay figure at Sea-Tac that was used to justify the purpose and need of the third runway is false. We have seen the current FAA statistics which rank Sea-Tac as one of the least delayed airports in the country. The SEIS now gives us an admission that the third runway will increase capacity. Therefore, it is reasonable to conclude that the 2500 feet, being the exact separation needed for dual simultaneous departures, **will** accommodate dual simultaneous departures in the peak hour which will use independent flight corridors without the addition of further noise abatement procedures.

The FSEIS should re-run the model considering 75 aircraft departures and using the standard fleet mix given in the DEIS Table D-1 with an existing condition dispersion analysis that compares 75 peak departures in the do-nothing condition to a number at least 30% (to 500,000) higher for the new runway which will accommodate dual-simultaneous departures.

Another area of concern is the analysis that moved from the original screening of nitrogen oxides to the refined analysis in the DEIS[12]. The SEIS provided the short term screening rate of NO_2 at the receptor located at 154th Street which corresponds with qualifications with receptor C-7 in the DEIS.[13] The DEIS did not chose the highest receptor from the screening dispersion analysis and the approximate rates of annual refined level of higher original DEIS receptors is given below:

Max concentration NOx	Annual Average by $\mu g/m^3$	Annual Average ppm
C-7 3058.80 = 14226	0.215 = 2.6875	0.08 ppm (SEIS exceedance)
C-6 3315.09	0.23	0.086 ppm annual
M-7 3614.60	0.25[14]	0.095 ppm annual
L-6 3783.65	0.26[15]	0.099 ppm annual

[12]Ibid. A-4 Response to Comment 10

[13]DEIS pages D-17 - [grid] and D-86, 87 dispersion rate by grid point in micrograms per cubic meter.

[14]Ibid.

[15]This rate and the last two are above the California short-term 1 hour standard of 0.25 ppm

We used standard procedures and agency guidance throughout. Health risks from air-borne contaminants were estimated using a three-step procedure. First, a toxic emission inventory was prepared. This inventory quantifies the amount of each pollutant of concern that would be emitted from the airport in 2010 for the Project and no Project cases. The increase in emissions due to the Project is determined by subtracting the no Project emissions from the Project emissions. Second, the increase in toxic emissions due to the Project was used to estimate corresponding increases in ambient concentrations of each pollutant that are actually breathed by exposed individuals using U.S. EPA and California Air Resources Board ("CARB") approved models. Third, the ambient concentrations were converted into estimates of cancer and noncancer risk using standard U.S. EPA and California risk assessment procedures.

SUMMARY

These analyses indicate that off-site health impacts of the Project are significant and would increase the incidence of cancer and respiratory disease in residential neighborhoods around the airport and among employees at the airport itself. The highest exposures would occur in residential areas in Alameda in the southeast section of Bay Farm Island, in residential areas on both sides of 98th Street adjacent to I-880 in Oakland, and north of the San Leandro Marina. The maximum incremental cancer risk in 2010 due to the Project in these locations is 22 in one million and exceeds the significance threshold of 10 in one million by over a factor of two. The maximum incremental noncancer hazard index in 2010 due to the Project is 5 and exceeds the significance threshold of 1 by a factor of five.

The Project would also increase the risk of cancer and noncancer diseases to workers within the MOIA. The maximum exposures would occur north of Runway 29 along a service road in the North Airport. The maximum incremental cancer risk at this location is 16.9 in one million and the maximum chronic noncarcinogenic hazard index is 28.2, both of which exceed significance thresholds by large margins. Workers within the terminals would also receive significant exposures. The increase in cancer risk among workers within the terminals would be 10.5 in one million and the increase in chronic noncancer risk would be 16.4.

These estimates substantially underestimate the actual health risks posed by the Project because most of the toxic emissions were omitted due to the lack of adequate information in the FEIR and time constraints. The health risks calculated here are only those due to exhaust emissions from aircraft and associated ground support equipment. There are numerous additional sources of toxic emissions at airports, including the exhaust from passenger and employee automobiles, evaporative emissions from refueling aircraft, emissions from boilers, heaters and generators, and solvents from

maintenance operations such as degreasing and coating. The FEIR did not contain adequate information to include these additional emissions in the health risk assessment. If these additional sources of toxic emissions were included, the actual health risks of the Project would be substantially higher than reported here. Finally, cumulative impacts from the Project and the 2010 baseline operations of the MOIA would be substantially higher than estimated here.

TOXIC EMISSION INVENTORY

The first step in performing a health risk assessment is to identify and quantify the toxic compounds that are emitted. Toxic emissions are the amount of toxic substances that are released per unit time into the atmosphere. Toxic emissions from airports have been previously studied and reported.

There are a large number of emission sources at an airport. These include:

- the exhaust from burning jet fuel, diesel, or gasoline in aircraft, vehicles used to transport passengers, employees, and supplies to the airport, ground support equipment ("GSE") used to service the aircraft, and auxiliary power units used to generate electricity and compressed air to operate the aircraft's systems;
- natural gas combustion byproducts from boilers, space heaters, and emergency generators;
- evaporative emissions from fueling aircraft and GSE and fuel storage tanks; and
- solvents and other organic compounds from numerous maintenance operations, including degreasing, plating, and coating.[2]

The only emission sources included in this risk assessment are exhaust emissions from aircraft and GSE. The FEIR did not contain adequate information on any of the other emission sources to include them in this analysis. Further, the time between the release of the FEIR on December 4 and the public hearing on December 16, 1997 was inadequate to acquire the information missing from the FEIR, prepare a detailed emission inventory for all of these sources, and perform the risk assessment. The FEIR either contained no information at all (maintenance, APUs, evaporative emissions from

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[2] Federal Aviation Administration and United States Air Force, Air Quality Procedures for Civilian Airports & Air Force Bases, April 1997, Sec. 3.2.

fueling), or there was inadequate information to estimate toxic emissions (evaporative emissions from fuel storage tanks, exhaust from passenger and other vehicles), or the location of the source was unknown and therefore could not be modeled (boilers, space heaters).

The increase in toxic exhaust emissions from aircraft and GSE in 2010 due to the Project was calculated using basic information in the FEIR coupled with standard U.S. EPA and CARB guidance. The increase was calculated in pound per year ("lbs/yr") as the difference between the Project in 2010 and no Project in 2010. Procedures used to estimate toxic emissions from aircraft and GSE are separately discussed below.

Aircraft Exhaust

Aircraft emit toxics from burning fuel. There are two general classes of aircraft engines, jet engines, which are turbines, and piston engines, which are used on smaller aircraft such as Cessnas. The emissions from each class of engine are distinct because of differences in the engines and their fuels. Jet engines burn jet fuel while piston engines burn aviation gas. The exhaust emissions from burning this fuel are emitted directly to the atmosphere.

The exhaust from jet and piston engines used in aircraft contains a large number of organic compounds. Review of the literature performed by the U.S. EPA[3] and studies performed by others[4] demonstrate that aircraft exhaust is a substantial source of

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[3] PEI Associates, Literature Review Concerning Air Carcinogens Near Airports, Report Prepared for the U.S. EPA, September 1987 and U.S. EPA, Toxic Emissions from Aircraft Engines: A Search of Available Literature, Report EPA-453-/R-93-028, July 1993.

[4] D.J. Robertson, R.H. Groth, and T.J. Blasko, Organic Content of Particulate Matter in Turbine Engine Exhaust, Journal of the Air Pollution Control Association, v. 30, no. 3, 1980, pp. 261-266; D.A. Berry, M.W. Holdren, T.F. Lyon, R.M. Riggin, and C.W. Spicer, Turbine Engine Exhaust Hydrocarbon Analysis, Air Force Engineering & Services Center Report ESL-TR-82-43, June 1983; C.W. Spicer, M.W. Holdren, T.F. Lyon, and R.M. Riggin, Composition and Photochemical Reactivity of Turbine Engine Exhaust, Air Force Engineering & Services Center Report ESL-TR-84-61, June 1985; C.W. Spicer, M.W. Holdren, S.E. Miller, D.E. Smith, R.N. Smith, and D.P. Hughes, Aircraft Emissions Characterization, Air Force Engineering & Services Center Report ESL-TR-87-63, March 1988; C.W. Spicer, M.W. Holdren, D.L. Smith, D.P. Hughes, and M.D. Smith, Chemical Composition of Exhaust from Aircraft Turbine Engines, Journal of Engineering for Gas Turbines and Power, v. 114, 1992, pp. 111-117; C.W. Spicer, M.W. Holdren, R.M. Riggin,

toxic air emissions and includes many carcinogens. Air emissions in weight per unit weight of fuel consumed substantially exceed those from catalyst-equipped automobiles.[5] Toxic organic compounds that have been detected in aircraft exhaust include acetaldehyde, benzaldehyde, formaldehyde, benzene, 1,3-butadiene, acrolein, toluene, xylenes, styrene, phenol, and numerous polynuclear aromatic hydrocarbons ("PAHs"), including anthracene, benzo(a)anthracene, dimethylnaphthalene, fluoranthene, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, phenanthrene, pyrene, perylene, chrysene, benzacridine, and benzo(a)pyrene, among many others.

The composition of the exhaust from commercial jets for three power settings (idle/taxi, approach, and climbout/takeoff) for a CFM-56 engine is summarized in Table 1. The CFM-56 engine represents newer jet engine technology, was designed for low emissions, and is equivalent to the CF6-6 engine that powers the McDonnell Douglas DC-10 Series 10 tri-jet aircraft. This data has been used by both the U.S. EPA and the CARB to estimate speciation profiles for jet aircraft by weighting the concentrations for each mode by the time in that mode. Older generation engines, which are frequently found on aircraft used for cargo, have much higher toxic emissions, frequently double the concentrations reported in Table 1. Because about half of the increase in emissions in 2010 at the MOIA due to the Project are due to increases in cargo traffic, the use of profiles based on the data in Table 1 will underestimate health risks.

The health risk assessment only evaluated the impact of 10 compounds out of the 78 that were measured (marked by an asterisk in Table 1). The compounds that were evaluated include all of the known carcinogens (benzene, 1,3-butadiene, formaldehyde, acetaldehyde, carcinogenic polynuclear aromatic hydrocarbons) and three noncarcinogens (acrolein, xylene, styrene). Actual health impacts would be higher than estimated here because there are many additional toxic compounds present in aircraft exhaust that were not evaluated due to lack of adequate data.

Toxic emissions from jet and piston aircraft are estimated by multiplying the amount of total organic gases ("TOG") present in the exhaust by the fractional weight of each compound. The fractional weights can be estimated from the data in parts per million as carbon ("ppmC") in Table 1 by dividing the total measured organic gases by

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and T.F. Lyon, Chemical Composition and Photochemical Reactivity of Exhaust from Aircraft Turbine Engines, Annales Geophysicae, v. 12, 1994, pp. 944-955.

[5] C.W. Spicer, M.W. Holdren, S.E. Miller, D.L. Smith, R.N. Smith, and D.P. Hughes, Aircraft Emissions Characterization, Air Force Engineering & Services Center Report ESL-TR-87-63, March 1988.

- SenTac
- Legal Research

MEMORANDUM

11:30 Tomorrow

TO: RCAA
FROM: Jeffrey Eustis
DATE: September 8, 1992
RE: Of Bad Air and Iced Tea

Airport planning and facilities expansions are subject to the requirements of two recently enacted pieces of legislation: the National Intermodal Surface Transportation Efficiency Act of 1991 (PL102-240) and the conformity requirements under the state and federal Clean Air Acts. Procedurally, these measures would add additional layers of review for airport planning and expansion of facilities. However, in the final analysis there is nothing within these laws that would prevent the Port from adding a third runway. But as a condition for doing so, the provisions of ISTEA and the conformity doctrine may very well require that there be additional measures to provide greater non-single occupancy vehicle access to the airport itself. Indirectly, this requirement may add an additional and costly requirement to airport expansion, but greater high occupancy vehicle or transit access to the airport itself would not address the noise and other health effects resulting from airport expansion.

OVERVIEW OF ISTEA

A. Introduction

In December 1992 the 102nd Session of Congress enacted the National Intermodal Surface Transportation Efficiency Act. This enactment was signed into law by President Bush on December 9, 1991. Commonly referred to by the acronym ISTEA (pronounced "iced tea"), this law substantially changes the federal highway program away from automobile dependence and towards other means of transportation. These other, "intermodal" means of transportation include transit, pedestrian, bicycle, high speed rail, magnetic levitation systems, and "intelligent vehicles". The purpose of ISTEA is to assure a national transportation system that uses all forms of transportation in a unified, interconnected manner towards the end of reducing energy consumption and air pollution while promoting economic development. Section 2 of ISTEA.

The principal means of accomplishing these objectives is through regional and statewide transportation planning. The leverage to assure that this transportation planning is carried out is the authority of the Secretary of Transportation to withhold federal funds. These funds are principally for highways and certain types of non-highway transportation, such as rail and ferry boat terminals. There is no specific funding

11:00 2nd Interview

for airport facilities.

On a regional level the required transportation planning is to be conducted by an entity entitled a "Metropolitan Planning Organization", or "MPO" that is designated by the Governor. In the Puget Sound area the designated MPO is the Puget Sound Regional Council (PSRC). The PSRC contact is Don Pethick (464-7536). As the region's MPO, the PSRC is required under the Act to develop a long range plan and a Transportation Improvement Program. The long range plan is to be developed under a schedule that is to be established by the Secretary of Transportation. The Transportation Improvement Program or "TIP" is to establish a priority list of projects that would be in response to the long range plan.

Both the long range plan and the TIP must address a number of factors. Those factors which bear on airport facilities planning and improvements are identified below:

> 1) preservation of existing transportation facilities and, where practical, ways to meet transportation needs by using existing transportation facilities more efficiently.
>
> . . .
>
> 6) the effects of all transportation projects to be undertaken within the metropolitan area, without regard to whether such projects are publicly funded.
>
> 7) international border crossings and access to ports, airports, intermodal transportation facilities, major freight distribution routes, national parks, recreation areas, monuments and historic sites, and military installations.
>
> . . .
>
> 13) the overall social, economic, energy and environmental effects of transportation decisions.

air noise Pollution

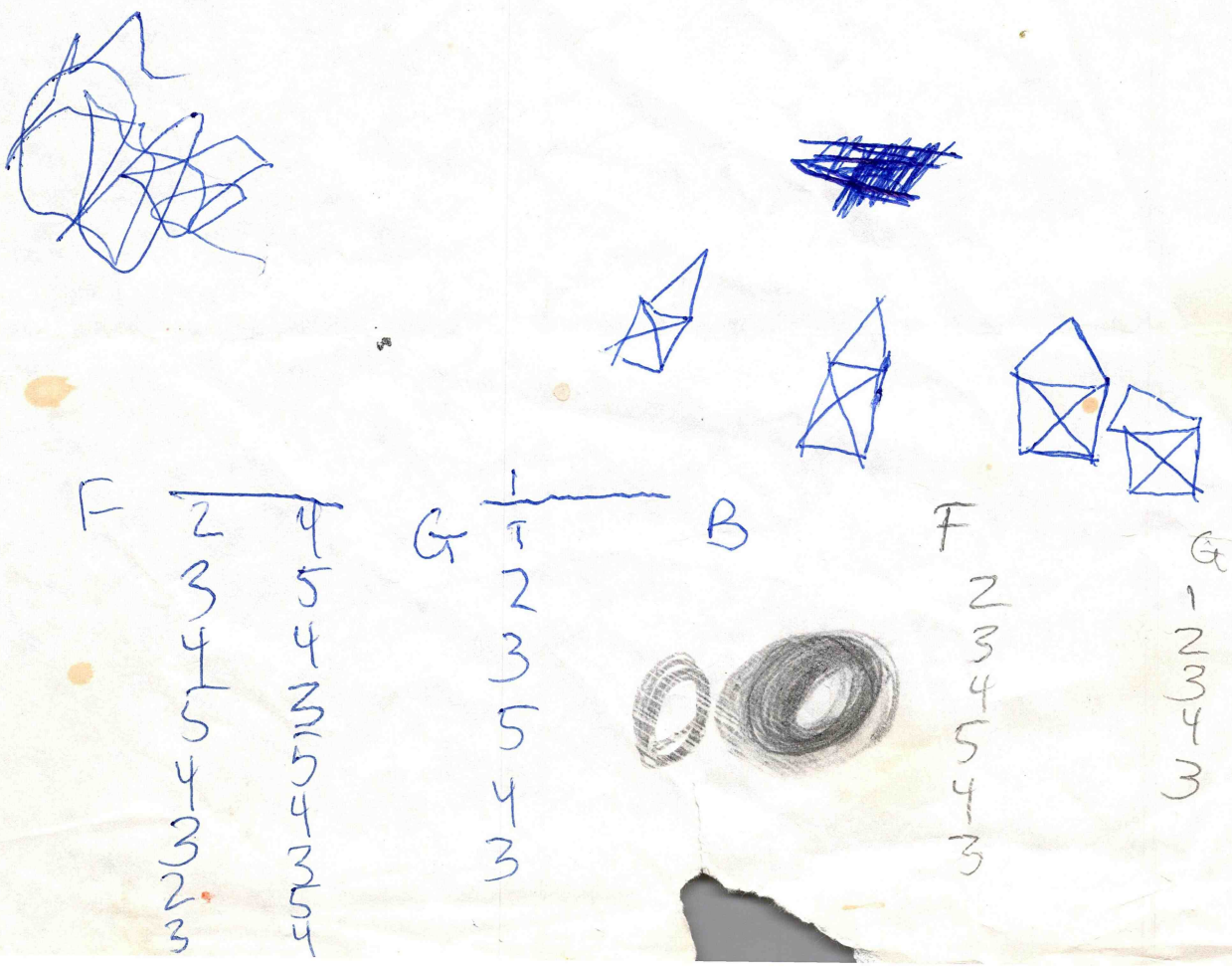
Sec. 1024(a) of ISTEA. Thus the transportation plan and the priority list of transportation projects that would be developed by the PSRC under ISTEA would be required to place emphasis upon the use of existing facilities over the construction of new facilities, upon intermodal connections to airports, as opposed to single occupancy vehicle access, and to social and environmental effects of its decisions, which presumably would include consideration of public health impacts.

The Secretary of Transportation has been delegated rule making authority which may flesh out these planning requirements. By statute, the Secretary is delegated authority to review and to certify the plans for content. This review occurs every three years (well beyond the expected date of the Flight Plan decision). The sanction for failing to attain certification is the withholding of federal funds that are made available under the Act.

The Act also requires statewide planning, which parallels

currently proposing rules addressing the procedures by which conformity determinations would be made. Although not specifically identified, airport siting and expansion would be subject to conformity review.

In conclusion, the conformity rule provides a far more significant point of leverage over airport related plans and programs than the requirements of ISTEA. To date, the conformity requirement has largely been ignored by the Port. For example, our research has indicated that no conformity determinations were made either for the parking garage or the gate expansion, yet these measures obviously have a tremendous effect upon traffic loads in this area. The issue of compliance with the conformity requirement was specifically raised as a comment in the EIS. Now alerted to the need to make a conformity determination we would expect at least some pro forma compliance with the conformity rule. However, if it can be demonstrated that the airport expansion, possibly in conjunction with prior Port decisions that had been made after the conformity rule initially went into effect in 1977, have an effect of either increasing the frequency of CO and O_3 violations, or delaying attainment of national standards for these pollutants, federal funding for airport planning and expansion could be held off. Ultimately the strength of a conformity challenge would turn upon an analysis of air quality impacts resulting from additional traffic to and from the airport.



(4) Metropolitan planning organizations shall update TIP conformity findings whenever the TIP is updated. Projects that are no longer current to the program, or that are no longer intended to begin construction within the period of the program, shall be removed from the conformity analysis.

(5) Transportation improvement programs that have been approved and found to conform to the state implementation plan before adoption of this chapter need not be updated until two years after the enactment of this chapter.

(6) The lead agency of each transportation project on the regional transportation system within the MPO's jurisdiction shall submit sufficient documentation to support the MPO's modeling efforts. This documentation shall include design speed, anticipated speed limit, number of lanes, and lane capacity as relevant for all transportation projects that must comply with WAC 173-420-100 and that are not exempted under WAC 173-420-110.

(7) The TIP shall include the status of each transportation control measure in the state implementation plan as an attached appendix. All transportation control measures shall be scheduled for implementation and funded for completion before the proposed attainment demonstration date for each criteria pollutant. Projects in the transportation improvement program shall not interfere with or cause a delay in the implementation of a transportation control measure. Those transportation control measures that are no longer viable shall be documented and removed from the status report.

[Statutory Authority: Chapter 70.94 RCW and RCW 70.94.037. 93-04-006 (Order 92-07), § 173-420-090, filed 1/22/93, effective 2/22/93.]

WAC 173-420-100 Transportation project conformity. (1) This section applies to all transportation projects on the regional transportation system regardless of funding base within a metropolitan area boundary of any region that is contained either wholly or partially in a nonattainment area. Projects that are exempted from these requirements because they are deemed to have neutral impact on air quality are listed in WAC 173-420-110.

(2) Transportation projects shall meet the analysis requirements of this section before approval of plans, specifications, and estimates; before acquisition of right of way not exempted under WAC 173-420-110; and before expenditure of funds for construction. In no instance shall funds be obligated nor approvals granted that will commit a lead agency to construction of a project if the requirements of this section have not been met.

(3) Transportation projects on the regional transportation system that are located outside a nonattainment area but affect a nonattainment area shall meet the requirements of this section and SEPA (chapter 197-11 WAC). Such transportation projects need not come from a conforming transportation improvement program.

(4) Any temporary construction-related measures shall not prevent a conformity determination, but shall be subject to permit conditions to minimize pollution during construction.

(5) Transportation projects shall be modeled by the lead agency with the methodology determined in WAC 173-420-070. The lead agency shall provide sufficient documentation to demonstrate to the MPO that the requirements of this section are met. Such transportation projects shall be included in a conforming transportation improvement program as described in WAC 173-420-090.

(6) Transportation projects that are not on the regional transportation system and are located in a MAB with a conforming transportation plan and improvement program are deemed to comply with this chapter. Such projects may include, but are not limited to, intersection signalization and channelization, or construction of local or collector streets. In no instances shall the requirements of WAC 173-420-060 be contravened. Transportation projects that are not on a regional transportation system and are not located in a nonattainment area for criteria pollutants are deemed to comply with this chapter.

(7) Transportation projects that are included in a conforming transportation improvement program and that have completed the public comment period of the environmental review requirements of the SEPA or the NEPA before adoption of this chapter, are not required to comply with the conformity requirements of this chapter unless there are significant changes in the project scope.

[Statutory Authority: Chapter 70.94 RCW and RCW 70.94.037. 93-04-006 (Order 92-07), § 173-420-100, filed 1/22/93, effective 2/22/93.]

WAC 173-420-110 Exempt projects. The following types of projects because of their nature, will not affect the outcome of any air quality analyses nor add any substance to those analyses and are exempted from all conformity requirements.

(1) Safety, preservation, or maintenance projects of the following type:

(a) Railroad/highway crossing signing;

(b) Pavement marking that does not add lanes or capacity;

(c) Hazard elimination program;

(d) Off-system road safety;

(e) Emergency relief;

(f) Shoulder improvements;

(g) Truck size and weight inspection stations;

(h) Safety improvement program;

(i) Railroad/highway crossing warning devices;

(j) Increasing sight distance that does not require changes in horizontal or vertical alignments;

(k) Guardrails, median barriers, crash cushions;

(l) Pavement resurfacing or rehabilitation;

(m) Widening narrow pavements or bridges (less than one travel lane);

(n) Noise attenuation;

(o) Fencing;

(p) Skid treatments;

(q) Safety roadside rest areas;

(r) Truck climbing lanes;

(s) Lighting improvements;

(t) Median additions.

(2) Mass transit projects of the following type:

(a) Purchase of office, shop, and operating equipment for existing facilities;

(b) Purchase of operating equipment for vehicles, including ferries, trains, and buses;

(c) Construction or renovation of power, signal, and communication systems;

(d) Operating assistance;

tenance of a source to assure continuous emission reduction, and any design, equipment, work practice, or operational standard adopted under the federal clean air act or this chapter.

(13) "Lowest achievable emission rate" (LAER) means for any source that rate of emissions that reflects:

(a) The most stringent emission limitation that is contained in the implementation plan of any state for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable; or

(b) The most stringent emission limitation that is achieved in practice by such class or category of source, whichever is more stringent.

In no event shall the application of this term permit a proposed new or modified source to emit any pollutant in excess of the amount allowable under applicable new source performance standards.

(14) "Modification" means any physical change in, or change in the method of operation of, a stationary source that increases the amount of any air contaminant emitted by such source or that results in the emission of any air contaminant not previously emitted. The term modification shall be construed consistent with the definition of modification in Section 7411, Title 42, United States Code, and with rules implementing that section.

(15) "Multicounty authority" means an authority which consists of two or more counties.

(16) "New source" means (a) the construction or modification of a stationary source that increases the amount of any air contaminant emitted by such source or that results in the emission of any air contaminant not previously emitted, and (b) any other project that constitutes a new source under the federal clean air act.

(17) "Permit program source" means a source required to apply for or to maintain an operating permit under RCW 70.94.161.

(18) "Person" means an individual, firm, public or private corporation, association, partnership, political subdivision of the state, municipality, or governmental agency.

(19) "Reasonably available control technology" (RACT) means the lowest emission limit that a particular source or source category is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. RACT is determined on a case-by-case basis for an individual source or source category taking into account the impact of the source upon air quality, the availability of additional controls, the emission reduction to be achieved by additional controls, the impact of additional controls on air quality, and the capital and operating costs of the additional controls. RACT requirements for a source or source category shall be adopted only after notice and opportunity for comment are afforded.

(20) "Silvicultural burning" means burning of wood fiber on forest land consistent with the provisions of RCW 70.94.660.

(21) "Source" means all of the emissions units including quantifiable fugitive emissions, that are located on one or more contiguous or adjacent properties, and are under the control of the same person, or persons under common control, whose activities are ancillary to the production of a single product or functionally related group of products.

(22) "Stationary source" means any building, structure, facility, or installation that emits or may emit any air contaminant. [1993 c 252 § 2; 1991 c 199 § 103; 1987 c 109 § 33; 1979 c 141 § 119; 1969 ex.s. c 168 § 2; 1967 ex.s. c 61 § 1; 1967 c 238 § 2; 1957 c 232 § 3.]

Finding—1991 c 199: See note following RCW 70.94.011.

Purpose—Short title—Construction—Rules—Severability—Captions—1987 c 109: See notes following RCW 43.21B.001.

70.94.035 Technical assistance program for regulated community. The department shall establish a technical assistance unit within its air quality program, consistent with the federal clean air act, to provide the regulated community, especially small businesses with:

(1) Information on air pollution laws, rules, compliance methods, and technologies;

(2) Information on air pollution prevention methods and technologies, and prevention of accidental releases;

(3) Assistance in obtaining permits and developing emission reduction plans;

(4) Information on the health and environmental effects of air pollution.

No representatives of the department designated as part of the technical assistance unit created in this section may have any enforcement authority. Staff of the technical assistance unit who provide on-site consultation at an industrial or commercial facility and who observe violations of air quality rules shall immediately inform the owner or operator of the facility of such violations. On-site consultation visits shall not be regarded as an inspection or investigation and no notices or citations may be issued or civil penalties assessed during such a visit. However, violations shall be reported to the appropriate enforcement agency and the facility owner or operator shall be notified that the violations will be reported. No enforcement action shall be taken by the enforcement agency for violations reported by technical assistance unit staff unless and until the facility owner or operator has been provided reasonable time to correct the violation. Violations that place any person in imminent danger of death or substantial bodily harm or cause physical damage to the property of another in an amount exceeding one thousand dollars may result in immediate enforcement action by the appropriate enforcement agency. [1991 c 199 § 308.]

Finding—1991 c 199: See note following RCW 70.94.011.

70.94.037 Transportation activities—"Conformity" determination requirements. In areas subject to a state implementation plan, no state agency, metropolitan planning organization, or local government shall approve or fund a transportation plan, program, or project within or that affects a nonattainment area unless a determination has been made that the plan, program, or project conforms with the state implementation plan for air quality as required by the federal clean air act.

Conformity determination shall be made by the state or local government or metropolitan planning organization administering or developing the plan, program, or project.

U.S. Department
of Transportation
**Federal Aviation
Administration**

Northwest Mountain Region
Colorado, Idaho, Montana
Oregon, Utah, Washington
Wyoming

1601 Lind Avenue, S. W.
Renton, Washington 98055-4056

September 10, 1996

Mrs. D. L. DesMarais
31500 1st Ave. S. #14-103
Federal Way, WA 98003

Dear Mrs. DesMarais:

This is in response to you letter of August 25, 1996. I am sorry you have a misunderstanding regarding your comments on the Environmental Impact Statement (EIS) conformity determination. I will not be responding individually. Your comments will be considered in the Record of Decision (ROD).

The FEIS appeal process is through the U.S. Court of Appeals. Such an appeal must be filed within 60 days of the date of ROD signing. The airports division has no "formal internal appeal procedure".

Sincerely,

Dennis G. Ossenkop
Environmental Protection Specialist

min (4-6). There is clear evidence that 5-10 min peaks occur in the vicinity of sources that exceed these levels. In addition, low levels of SO_2 have been shown to sensitize the airways of animals to inhaled antigens and one recent study in humans showed the induction of a mild inflammatory reaction at 0.4 ppm. Since the most important sequella of SO_2 is bronchospasm, an event which can begin within minutes of exposure, the 3-h and 24-h NAAQS are not adequate to protect sensitive asthmatics from brief, but potentially morbid, SO_2 peaks.

Particulate Matter (PM_{10})
The primary sources of respirable particulate (i.e., PM_{10}, particles with an aerodynamic diameter of < 10 μm) are power plants, heave industry, wood-burning stoves, and diesel fuel combustion. The NAAQS for PM_{10} are 50 $\mu g/m^3$ as an annual mean and 150 $\mu g/m^3$ as a 24-h maximum. Approximately 1/4 of the U.S. population lives in areas that exceed the NAAQS each year. The bulk of the evidence that particulate is deleterious comes from epidemiologic studies that have shown a strong correlation between particulate concentrations at or below the NAAQS and (1) chronic cough, bronchitis and lower respiratory illness and in schoolchildren in six midwestern cities (7), (2) "symptoms of COPD" (chronic bronchitis, history of asthma and wheezing, history of emphysema, and dyspnea on exertion) in Seventh Day Adventists in California, and (3) increased hospital admissions for respiratory illnesses for the residents of several valleys in Utah. In all three studies, the strength of association may well have been due to the lack of confounding exposure to tobacco smoke. Laboratory studies are hampered by the fact that atmospheric particulate matter is so heterogeneous that generating a relevant or reproducible exposure is difficult. Aerosolized acidic particulate (predominantly sulfuric acid), better known as acid aerosols, or the suspended equivalent of acid rain, have caused either small or no changes in symptoms and PFT's, and do not cause inflammation as assessed by BAL.

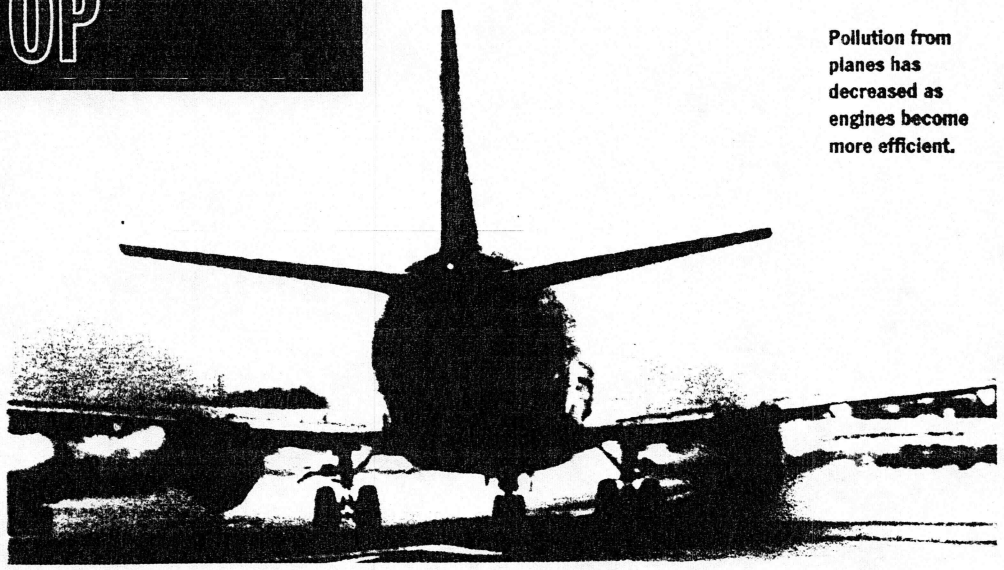
Carbon Monoxide (CO) and Lead
Carbon monoxide and lead are both readily absorbed across the alveolar-capillary membrane and do not cause direct toxicity to the lung. They epitomize the majority of the pollutants in the 10,000 L of air a person inhales each day be causing, or having the potential to cause, effects distant to the lung.

Carbon monoxide is an odorless, colorless gas produced by incomplete combustion that has an affinity for hemoglobin 400-fold greater than oxygen. The NAAQS is 9.5 ppm (8-h average), but levels of 100-400 ppm are not unusual in heavy traffic scenarios. The concern that high ambient CO levels might lead to tissue hypoxia and/or accelerated atherosclerosis has received support from two recent studies which have shown (1) myocardial ischemia in patients with coronary artery disease at a carboxyhemoglobin level of 2% (8), and (2) an excess mortality of 35% in tunnel tollbooth workers having an average CO exposure of 38 ppm compared to bridge tollbooth workers with a CO exposure of 23 ppm (9). These data strongly suggest that ambient CO concentrations may be detrimental to a large segment of the population at risk for cardiovascular disease. Monitoring distant to CO sources can severely underestimate dangerous short-term CO peaks.

The air pollutant lead (mostly PbBrCl) is produced by the burning of "leaded" fuel, which contains tetraethyl lead as a catalyst. The NAAQS for lead is 1.5 $\mu g/m^3$ as a quarterly average. Although capable of disturbing kidney and bone marrow function at higher concentrations, lead has been shown to affect brain function in children at low levels of exposure. The results of multiple studies have demonstrated insidious, irreversible declines in IQ in children with only slightly elevated blood lead levels. Lead, by having been virtually eliminated as an air pollutant through the regulation of the lead content of fuel, is exemplary of what the EPA had hoped would occur for all pollutants given criteria status.

This review of the six criteria pollutants is a tip-of-the-iceberg discussion of the health impact of air pollution. Hundreds of pollutants are now defined as air toxics, but are not regulated in ambient air and thousands of other chemicals, now being identified with improved technology, may, in the future, prove to be health hazards. But EVEN WITH THE CURRENT DATABASE, THERE IS UNEQUIVOCAL PROOF OF THE DETRIMENTAL EFFECTS OF AIR POLLUTION. These effects have gone largely unrecognized, because air pollution insidiously imposes a small burden on a large population. The manifestations are often relatively subtle accentuations or accelerations of underlying diseases, but the end result is an enormous toll on the health of the population. And if good health were not incentive enough to breathe clean air, the American Lung Association estimates that the financial burden to society is $50 billion/year. This, in fact, might be conservative since a 1989 California State, Fullerton report estimated that a $9.4 billion/year benefit would accrue if the NAAQS for O_3 and PM_{10} could be achieved in the LA basin alone. AS SPECIALISTS IN PULMONARY MEDICINE, WE ARE QUALIFIED TO SPEAK FOR THE HEALTH BENEFITS OF CLEAN AIR AND SHOULD EMBRACE THIS CAUSE IN AN EFFORT TO IMPROVE NATIONAL AND GLOBAL HEALTH. OUR FOCUS SHOULD BE EDUCATION. In the public arena, we should work toward attainment of the national/state standards for pollutants, and for our patients, we should advise compliance with pollution alerts and warnings. Most importantly, we should conduct research to enrich our knowledge base so that we, as a society, can make well-informed decisions about clean air policy.

STOP



Pollution from planes has decreased as engines become more efficient.

Clearing the air

Airports focus on the environment

By Krista Carothers

GETTING STUCK IN TRAFFIC ON THE way to the airport. Sitting in a plane on the runway waiting to take off. Riding a fumy bus to the car-rental outlet. Such common experiences are not only annoying to travelers but have a serious cumulative effect: Airports are among the worst polluters in the nation.

In fact, according to the Natural Resources Defense Council, many airports, including Los Angeles International, Chicago's O'Hare, and New York's Kennedy and LaGuardia, are among the top smog producers in their respective metropolitan areas. A 747 landing and taking off at JFK produces as much smog as a car driven for 5,600 miles and as many nitrogen oxides—contributors to global warming—as a car driven for 26,500 miles, the organization reports.

The problem will only get worse as the aviation industry continues its exponential growth: Passenger traffic is expanding by nearly 5 percent each year, according to the International Air Transport Association. A study released last April by the UN's Intergovernmental Panel on Climate Change projected that aircraft emissions, which now represent about 3.5 percent of the human contribution to global climate change, could account for up to 17 percent in 2050. "All other sources of nitrogen oxides are reducing their emissions," says Ellina Levina, a research analyst with the Center for Clean Air Policy. "Aviation is the only one that's not controlled—and it's growing."

Clean air is not the sole concern. Water near airports is often contaminated by runoff, particularly from de-icing compounds, which can be harmful to fish and wildlife.

Airports are beginning to pay attention in small but significant ways. Detroit Metropolitan has begun a wetlands-replacement program. To encourage electric-car users, LAX gives them free power and parking. Phoenix has set up strict policies at Sky Harbor to keep storm-water runoff free of toxic chemicals. Salt Lake City Airport recently opened an on-site recycling facility for its de-icing fluid.

But building an airport from the ground up is the best way to ensure its eco-friendliness. Austin-Bergstrom International in Austin, Texas, which opened last May on the site of a former Air Force base, is an environmentalist's dream—as airports go. Made of recycled and recovered materials, it has runways designed to minimize taxiing distances, and its shuttle buses run on clean-burning propane. It was built around historic cemeteries, and trees from elsewhere on the site were transplanted for landscaping. Four schools that would have been impacted by aircraft noise were relocated.

Runoff from de-icing fluid contaminates water supplies

Many airports are among the top smog producers in their areas

After the Air Force cleaned up 481 hazardous-waste sites from Austin-Bergstrom—including more than 10,000 gallons of spilled jet fuel—airport designers installed new aboveground fuel-storage tanks so that any leaks can be quickly spotted and dealt with. They also created systems to filter runoff from the tarmac and runways; even water drained from parking lots is filtered—before being used to irrigate a nearby golf course.

"Most airports have to retrofit to implement progams like these, which is difficult and costly," says Holland Young, Austin-Bergstrom's planning and environmental manager. "We've brought considerations for the environment into every step of the project."

Pollution from individual planes has also decreased as engines become more fuel-efficient. "Every new airplane and every new engine is better than the last one," says Ian Waitz, head of the Aeronautical Environment Department at MIT, noting that these improvements are economically driven: Every penny the airlines save by burning less fuel leads to a decrease in emissions. But reforms occur at a snail's pace in the airline industry, given that a jet's commercial life is more than 25 years.

"Over the next few years," says Young, "you'll start to see environmental management elevated to a higher priority. We're just beginning to realize our big responsibilities." □

Top: Ilan Jacobsohn

Ticker Tape **American Airlines says that it changes more than 70 airplane tires a day.**

Port of Seattle

August 29, 1995

Ms. Lori Wardian
609 SW 187th Street
Normandy Park, WA 98166

Dear Ms. Wardian:

Thank you for your call to the Noise Information Line on August 23, 1995, in which you commented about jet fuel odor from Sea-Tac International Airport jet aircraft activity. A high number of jet aircraft operations may increase the smell of jet fuel odor and depending on weather conditions, localities around the Airport may notice the odor more. The recently released draft Environmental Impact Statement (EIS) on the proposed master plan developments at Sea-Tac addresses several different environmental categories, including air quality impacts associated with existing and future development at the Airport.

Generally, the Puget Sound Air Pollution Control Agency (PSAPCA) is the regional agency that deals with air quality issues. PSAPCA staff can be reached at 343-8800. I have enclosed a copy of a recent issue of FORUM, which addresses the EIS and where it can be reviewed. If you have additional questions about the EIS, please feel free to call Rachel Garson, Sea-Tac Public Information. She can be reached at 248-6851.

Sincerely,

Toni E. Turner
Noise Abatement Assistant

cc: Rachel Garson - Aviation Communications

Enclosure

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Seattle-Tacoma
International Airport
P.O. Box 68727
Seattle, WA 98168 U.S.A.
TELEX 703433

U.S. Department
of Transportation

**Federal Aviation
Administration**

Northwest Mountain Region
Colorado, Idaho, Montana
Oregon, Utah, Washington,
Wyoming

1601 Lind Avenue, S. W.
Renton, Washington 98055-4055

March 13, 1997

Mrs. D. L. DesMarais
31500 1st Ave. S. #14-103
Federal Way, WA 98003

Dear Mrs. DesMarais:

This is in response to your letter of December 29, 1996.

1. You are correct in your understanding that Boeing Field personnel are conducting a Master Plan study. The study is considering existing facilities and future needs at the airport. There are no expansion projects planned that will expand or enhance aircraft operation capacity or induce added aircraft operations at the airport.

2. The Federal Aviation Administration has not attempted to determine the maximum airspace capacity in the airspace utilized by aircraft using Sea-Tac, Boeing Field, or Renton airports. Such a task would be nearly impossible due to the dozens of incalculable variables and combinations thereof that would have to be considered.

3. The Federal Aviation Administration has estimated the capacity at Sea-Tac airport as part of the 1995 FAA Capacity Enhancement Update. Data related to this question can be found in the Final Environmental Impact Statement for the Sea-Tac airport master plan update. The capacities of Boeing Field and Renton airports have not been determined.

4. The Federal Aviation Administration will continue to operate the airspace surrounding Sea-Tac, Boeing Field, and Renton airports in a safe and efficient manner as it has in the past. Appropriate adjustments to aircraft flows will be made to maintain the current level of safety no matter what the combined level of operations at these airports.

5. The Federal Aviation Administration has no particular concern regarding future growth in aircraft activity at Sea-Tac, Boeing Field, or Renton airports.

6. The is no definitive method to estimate "accident potential" in the skies above Sea-Tac airport.

7. The computer modeling mentioned in Appendix R of the FEIS assumed that Sea-Tac arrival flows would allow 100% of Boeing Field arrivals to be completed without unreasonable delay. That modeling effort estimated a worst case 2253 hours of delay would be incurred at Sea-Tac if Boeing Field traffic were given that preference. In actual practice, during heavy arrival activity hours at Sea-Tac, aircraft operating to Boeing Field may experience some delay. The number of hours of delay can not be accurately determined because of variables and combinations thereof that would have to be considered.

Sincerely,

Dennis G. Ossenkop
Environmental Protection Specialist

c. Distribution to Washington Headquarters. The region shall send one copy to P-10 and one copy to AEE-1 for information.

d. Distribution to DOI. The region shall send, to the DOI address listed in paragraph 91a(4)(a), the number of copies listed in paragraph 91a(5)(b).

e. Other Distribution by the Region. A copy of the final environmental impact statement shall also be sent to each Federal agency, state and local agency or point of contact, and private organization which made substantive comments on the draft statement, and to individuals who requested a copy of the final statement or who made substantive comments on the draft. A copy of the approved final statement shall be sent to APP-600 for information unless the document was approved by the Associate Administrator for Airports. When the number of commentors is such that distribution in this manner is impractical, alternative arrangements shall be made after consultation with APP-600.

f. Availability to the Public.

(1) Additional copies shall also be made available by the region for review by the public through distribution to appropriate locations accessible to the general public.

(2) The availability of the final statement shall be announced by the region in the appropriate local media in a manner similar to the announcement method for the draft environmental impact statement.

g. Filing with EPA. The region shall distribute to EPA the required five copies of the final statement for Federal Register notification. The region shall forward the copies directly to the address listed in paragraph 91d. A copy of the transmittal to EPA shall be forwarded to APP-600 for record purposes.

h. Timing of Decision. In accordance with CEQ 1506.10(b) "No decision on the proposed action shall be made or recorded [see paragraph 98]...until the later of the following dates: (1) Ninety (90) days after publication of the notice described above [by EPA per paragraph 91d]...for a draft environmental impact statement. (2) Thirty (30) days after publication of the notice described above [by EPA per paragraph 96g above]...for a final environmental impact statement."

i. Comments Before Decision. CEQ 1503.1(b) provides that "An agency may request comments on a final environmental impact statement before the decision is finally made. In any case other agencies or persons may make comments before the final decision...."

97. OTHER AVAILABILITY OF FINAL STATEMENTS. In addition to the availability and distribution of approved final environmental impact statements, final statements proposed for approval shall normally be made available upon request in FAA offices for inspection by the public and by Federal, state, or local agencies prior to final approval and filing with EPA. Such statements shall carry a notation that they have not been approved and filed. If a Clean Water

environmental impact statements may be approved by the regional director or his designee.

(3) All actions in (1) above are subject to prior review for legal sufficiency by the Chief Counsel; in (2) above, by regional counsel.

c. Headquarters Review. When final approval of an environmental statement is retained in headquarters, the headquarters coordination is initiated when statements are received in the Office of Airport Planning and Programming. Copies are forwarded by APP-600 to the Office of Environment and Energy, and to the Office of the Chief Counsel for review for legal sufficiency, and then to appropriate elements of the Office of the Secretary of Transportation when required for review and concurrence, with a request for response within 15 to 30 days, depending upon the complexity of the statement. For highly controversial EISs, P-1 and General Counsel (C-1) will be notified at Airports headquarters level that the EIS is being reviewed, and shall be provided a copy of the EIS summary. During headquarters review, the statement is revised as necessary or information added. The statement, with any comment, is then submitted to the Associate Administrator for Airports for approval (steps 35 through 38, Appendix 1). P-1 and C-1 will be given two weeks' notice before approval of a highly controversial EIS.

d. Approval Declaration. As the mechanism for approval of a final statement, a declaration approximately as follows shall be added to the summary. Signature and date blocks shall be added for the concurrence of appropriate offices and approval or disapproval of the approving official (step 38 or 41, Appendix 1).

"After careful and thorough consideration of the facts contained herein and following consideration of the views of those Federal agencies having jurisdiction by law or special expertise with respect to the environmental impacts described, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in section 101(a) of the National Environmental Policy Act of 1969."

96. NOTIFICATION AND DISTRIBUTION OF APPROVED FINAL ENVIRONMENTAL IMPACT STATEMENT.

a. General. Distribution by the region or airports district office of approved final statements to EPA, other agencies and organizations, and the public shall, insofar as possible, be simultaneous so as to avoid unnecessary inquiries and insure that all interested parties have a fair opportunity to review the documentation (step 42, Appendix 1). If there have been only minor changes to the draft, the procedure in CEQ 1503.4(c) may be used for circulation of less than the entire document. The region shall notify APP-600 when distribution has been completed.

b. Distribution to EPA. The FAA regional office preparing the final environmental impact statement shall forward to the appropriate EPA regional office one copy of the final statement if it was categorized LO-1. Otherwise, five copies shall be sent to the EPA regional office. In the event that EPA has comments on a final impact statement, the FAA regional office shall make every reasonable effort to resolve any conflicting issues. If the issues cannot be resolved, the matter shall be referred to APP-600.

ct Section 404 permit is involved, a copy shall be provided to the Corps of Engineers if necessary to facilitate resolution of any disagreement before final action is taken and to expedite the Corps' final action on the permit.

98. DECISION.

a. Following the review periods prescribed in CEQ 1506.10, the FAA decisionmaker may make a decision on the Federal action (see steps 43 and 44 of Appendix 1). The environmental impact statement and other environmental documents shall be included in the administrative record and made available to the decisionmaker. CEQ 1505.2 requires a record of this decision and specifies information to be included in the record of decision. CEQ 1505.2(b) states "An agency may discuss preferences among alternatives based on relevant factors including economic and technical considerations and agency statutory missions." The Airports Program's statutory mission is to promote the development of a safe and efficient nationwide airport system adequate to meet the current and projected growth in aviation, and this mission is to be given appropriate weight in any final decision on an action. Based upon the data presented in the environmental impact statement and other relevant considerations, the record of decision shall also include the appropriate assurances, conclusions, or findings as delineated in paragraph 94b.

b. The record of decision shall include any mitigation measures which were made a condition of the approval of the environmental impact statement. Proposed changes in or deletions of mitigation measures which were a condition of approval of the environmental impact statement shall be reviewed by the same FAA offices which reviewed the final statement and must be approved by the environmental impact statement approving official.

c. If the decisionmaker wishes to take an action which was included within the range of alternatives of an approved environmental impact statement but was not the agency's preferred alternative as identified in the final statement, the decisionmaker shall first coordinate the draft record of decision for concurrence of the same FAA and DOT offices whose concurrence was required for approval of the final statement. These offices may concur without comment, may concur on the condition that specific mitigation measures be incorporated in the record of decision, may request that a supplement to the environmental impact statement be prepared and circulated, or may nonconcur. The decisionmaker shall not approve the Federal action over a nonconcurrence.

d. If the alternative the decisionmaker now wishes to take action on involves a special interest (e.g., section 4(f) land, endangered species, wetlands, historic sites, or others), the FAA shall first complete any required evaluation and consultation that has not been done, supplementing the original environmental impact statement, prior to taking the action. Supplements to environmental impact statements shall be reviewed and approved in the same manner as the original document.

99. IMPLEMENTATION OF ENVIRONMENTAL COMMITMENTS.

a. In accordance with CEQ 1505.3, "Mitigation...and other conditions established in the environmental impact statement or during its review and

(a) There is no practicable alternative, and

(b) The action conforms to applicable state and/or local floodplain protection standards.

(7) For actions within or affecting land or water uses in an area covered by an approved state coastal zone management program, there shall be evidence to support a determination that the action is consistent with the approved state coastal zone management program to the fullest extent practicable. (If the action is determined to be inconsistent with the state's approved program, the Federal agency shall not approve the action except upon a finding by the Secretary of Commerce that the proposed action is consistent with the purposes or objectives of the Coastal Zone Management Act or necessary in the interest of national security.)

c. CEQ 1504 establishes procedures for "environmental referrals" to CEQ by Federal agencies with disagreements on the environmental effects of a proposal. When a notice of intended referral has been received on an Airports Program environmental impact statement, a copy of the notice shall be forwarded to APP-600 which will advise P-10. Every effort shall be made to resolve the issues prior to processing the final environmental impact statement. Resolution of issues shall be documented in the final statement including, if possible, notification in writing to the FAA from the referring agency indicating that its objections have been resolved. In the event of an actual referral, FAA's response to CEQ will require P-1 concurrence.

95. APPROVAL OF FINAL ENVIRONMENTAL IMPACT STATEMENTS.

a. Delegation to FAA. Final approval authority on environmental impact statements for airport actions has been delegated to the FAA. Concurrence by the Assistant Secretary for Policy and International Affairs, P-1, is required only if that office requests an opportunity to review and concur in the final statement or if FAA requests review and concurrence by that office, but see paragraph 95d, below.

b. Airports Program Approval Authority (steps 34 thru 41 in Appendix 1).

(1) The Office of the Associate Administrator for Airports has final impact statement approval authority for any action specified below, unless specifically delegated to the region by APP-600 on a case-by-case basis:

(a) Any new airport in a metropolitan area (construed as a standard metropolitan statistical area (SMSA) unless specifically directed otherwise).

(b) Any new runway or major runway extension at a commercial service airport located in an SMSA.

(c) Any action for which a Federal, state or local government agency has expressed opposition on environmental grounds.

(2) Those actions in (1) above for which the Office of the Associate Administrator for Airports has delegated approval authority and all other

(b) Fair consideration has been given to the interest of communities in or near the project location (section 509(b)(4));

(c) Appropriate action has been or will be taken to restrict, to the extent reasonable, the use of land in the vicinity of the airport to purposes compatible with airport operations (section 511(a)(5));

(d) Appropriate air and water quality certificates have been or will be obtained for projects involving airport location, runway location, or a major runway extension (section 509(b)(7)).

(2) For actions involving an airport location, runway location, or major runway extension pursuant to section 509(b)(5) of the 1982 Airport Act and found to have a significant adverse effect, there shall be evidence to support a conclusion that:

(a) There is no feasible and prudent alternative, and

(b) All reasonable steps have been taken to minimize adverse effects.

(3) For actions involving the use of lands subject to section 4(f) of the DOT Act, there shall be evidence to support a conclusion that:

(a) There is no feasible and prudent alternative to the use of such land, and

(b) The project includes all possible planning to minimize harm to such lands resulting from such use.

(4) For actions involving the displacement and relocation of people, there shall be statements to support assurances that:

(a) Fair and reasonable relocation payments and assistance have been or will be provided pursuant to provisions in Title II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

(b) Comparable decent, safe, and sanitary dwellings are available for occupancy on the open market or will be built if necessary prior to actual displacement.

(5) For actions involving new construction directly or indirectly affecting wetlands, there shall be evidence to support a finding that:

(a) There is no practicable alternative to such construction, and

(b) The proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

(6) For actions involving a significant encroachment on a flood-plain, there shall be evidence to support a finding that:

(3) may propose airport development only if the development complies with standards the Secretary prescribes or approves, including standards for site location, airport layout, site preparation, paving, lighting, and safety of approaches; and

(4) shall be in the form and contain other information the Secretary prescribes.

(c) State Standards for Airport Development.--The Secretary may approve standards (except standards for safety of approaches) that a State prescribes for airport development at nonprimary public-use airports in the State. On approval under this subsection, a State's standards apply to the nonprimary public-use airports in the State instead of the comparable standards prescribed by the Secretary under subsection (b)(3) of this section. The Secretary, or the State with the approval of the Secretary, may revise standards approved under this subsection.

(d) Certification of Compliance.--The Secretary may require a sponsor to certify that the sponsor will comply with this subchapter in carrying out the project. The Secretary may rescind the acceptance of a certification at any time. This subsection does not affect an obligation or responsibility of the Secretary under another law of the United States.

(e) PREVENTIVE MAINTENANCE.--After January 1, 1995, the Secretary may approve an application under this subchapter for the replacement or reconstruction of pavement at an airport only if the sponsor has provided such assurances or certifications as the Secretary may determine appropriate that such airport has implemented an effective airport pavement maintenance-management program. The Secretary may require such reports on pavement condition and pavement management programs as the Secretary determines may be useful.

(f) Notification.--The sponsor of an airport for which an amount is apportioned under section 47114(c) of this title shall notify the Secretary of the fiscal year in which the sponsor intends to submit a project grant application for the apportioned amount. The notification shall be given by the time and contain the information the Secretary prescribes.

Sec. 47106. Project grant application approval conditioned on satisfaction of project requirements

(a) Project Grant Application Approval.--The Secretary of Transportation may approve an application under this subchapter for a project grant only if the Secretary is satisfied that--

(1) the project is consistent with plans (existing at the time the project is approved) of public agencies authorized by the State in which the airport is located to plan for the development of the area surrounding the airport;

(2) the project will contribute to carrying out this subchapter;

(3) enough money is available to pay the project costs that will not be paid by the United States Government under this subchapter;

(4) the project will be completed without unreasonable delay; and

(5) the sponsor has authority to carry out the project as proposed.

(b) Airport Development Project Grant Application Approval.--The Secretary may approve an application under this subchapter for an airport development project grant for an airport only if the Secretary is satisfied that--

Port begins runway mitigation

Port officials claim the land purchase is merely 'potential mitigation'

The Times-News Saturday, December 16, 1995

By Marc Stiles
STAFF WRITER

SEATTLE—Even though completion of the third runway environmental review process is a month away, the Port of Seattle is spending $1.58 million to mitigate lost wetland.

Port commissioners on Tuesday voted to buy 69 acres of land in Auburn to make up for wetlands that will be filled if the third runway is built at Sea-Tac Airport.

The airport wetlands are along Miller and Des Moines creeks. Various groups are concerned about replacing them with wetlands that are not even in the same basin.

The Auburn land is adjacent to King County's Green River Park. Acquisition of the property involves a pending foreclosure on a bankrupt partnership. The general partner, Robert Steinberg, now is a trustee acting on behalf of the P. Hendley Estate.

Pat Hendley, according to Auburn Mayor Charles Booth, is "a builder who owned quite a bit of land" and who "went into receivership." Booth said Hendley once lived in Auburn but is unsure where he resides now.

Pressed by the wind storm that was barreling toward Seattle, commissioners made quick work of most of their meeting agenda. They were poised to

See Buy, page A3

Table 4. Emissions of polycyclic aromatic hydrocarbons (JP-5 fuel)

	Concentration in μg/m³					
	TF-39 Engine			CFM-56 Engine		
Engine Power	Idle	30%	80%	Idle	30%	80%
Naphthalene	870	26	2.1	620	1.5	1.9
2-Methyl Naphthalene	480	4.8	< 0.10	330	< 0.01	0.10
1-Methyl Naphthalene	450	3.5	< 0.10	380	< 0.01	0.03
Dimethyl Naphthalene	58	0.91	< 0.01	24	< 0.01	< 0.10
Dimethyl Naphthalene	74	2.5	< 0.01	34	< 0.01	< 0.10
Dimethyl Naphthalene	27	0.68	< 0.01	99	< 0.01	< 0.10
Dimethyl Naphthalene	9.6	0.14	< 0.01	3.6	< 0.01	< 0.10
Phenanthrene	7.7	0.49	0.21	5.1	0.65	1.2
Anthracene	0.94	0.035	0.050	0.56	0.020	0.057
Fluoranthene	1.1	0.17	0.10	1.3	0.17	0.20
Pyrene	1.1	0.17	0.088	1.6	0.14	0.16
Benzo(a)Anthracene	0.006	0.074	0.10	0.10	0.10	0.055
Chrysene	0.019	0.043	0.010	0.10	< 0.01	< 0.010
Benzo(e)Pyrene	0.056	0.20	0.11	0.11	0.17	0.090
Benzo(a)Pyrene	0.042	0.12	0.066	0.058	0.069	0.043
Perylene	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Coronene	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Table 5. Comparison of total organics measured by continuous flame ionization detection versus the sum of inidvidual species (JP-5 fuel)

Engine	Power Setting	Total Organics by Continuous FID[a], ppmC	Total Organics by Species Summation [a,b] ppmC	Carbon Balance %
TF-39	Idle	343	325	95
	30%	13.8	13.1	95
	80%	4.59	5.20	113
CFM-56	Idle	179	178	99
	30%	2.31	2.58	112
	80%	4.71	3.68	78
			Average	99%

[a] Mean from replicate tests.
[b] Corrected for oxygenated carbon response.

Table 6. Major organic species summarized by compound class in exhaust of jet engines operating with JP-5 fuel[a] (weight percent basis)

Compound	TF-39 Engine			CFM-56 Engine		
	Idle	30%	80%	Idle	30%	80%
Alkanes	14.2	17.8	58.9	12.3	64.2	52.3
Acetylene	7.5	11.3	0	7.3	0	0
Alkenes	52.4	39.8	3.9	46.9	3.2	11.2
Aromatics	9.3	7.3	7.9	8.7	3.2	2.8
Aldehydes	16.2	21.9	21.8	24.0	16.2	27.1
Ketones	0.3	1.8	7.4	0.5	13.2	6.5
Alcohols	0.3	0	0	0.3	0	0

[a] Average for three replicate determinations.

on a mass basis. These species, in addition to several other alkenes and carbonyl compounds found in the exhaust, are cracking or partial oxidation products not found in the fuel.

The other major component of the emissions at idle power is unburned fuel. This component consists predominantly of normal alkanes (C_9–C_{17}), with smaller amounts of alkyl substituted aromatics, cycloalkanes, and branched alkanes.

Inspection of the data in Table 3 reveals that the total hydrocarbon emissions are greatly reduced at both the 30- and 80-% thrust conditions. The unburned fuel component, represented by C_9–C_{17} alkanes, is virtually eliminated at both of these thrust settings. For the TF-39 engine at 30-% power, the predominant species emitted are methane, ethene, propene, acetylene, benzene, formaldehyde, and acetaldehyde. However, for the CFM-56, the major organic species emitted at 30-% thrust are methane and formaldehyde, with all other materials being much lower in concentration. At the 80-% power setting, all of the individual hydrocarbons, with the exception of methane, are very low.

3.4 Distribution of emissions by compound class

The exhaust organic distribution by compound class is listed in Table 6. The distribution is given on a weight percentage basis. At idle, the dominant class of organic species emitted by both engines is the alkenes, representing about 50% of the organic emissions by weight. The aldehydes are the next most significant class of emissions, followed by alkanes and aromatic hydrocarbons. For the TF-39 engine at 30-% power, the compound class emissions follow this same order of importance. For the CFM-56 engine at 30-% power, and for both engines at 80-% power, alkanes are the most significant class of emissions, followed by aldehydes. At the higher power

March 31, 1997

Mr. Dennis Ossenkop
Northwest Region FAA
1601 Lind Avenue SW
Renton, WA 98055

Dear Mr. Ossenkop:

Attachment #1

These questions and comments are to be included along with the other comments I made and previously submitted to FAA with reference to the draft Air Quality Conformity Determination. These comments are not meant to replace the previous comments but are to be considered a supplement to those comments. Please include all my submittals into the Record of Decision.

Questions and Comments Regarding the draft Transportation and General Conformity Determination for the Sea-Tac Airport Master Plan Update Draft, Final and Draft Supplemental Environmental Impact Statements

Please refer to my numbers when responding to my questions and please indicate by page number or reference in the FSEIS responses to comments section where any questions and/or comments warranted any change and where that can be found in the text or no change in the analysis.

1. How can the project be exempted from a conformity review when there are existing and future modeled exceedances of the CO, NO_2 and PM_{10} standards?

2. Why didn't FAA model ozone, especially since Sea-Tac Airport is the greatest producer by acre of ozone precursors in the county?

3. Why do the numbers for annual inventory in tons per year of pollutants vary so much between documents? Why do the numbers go up and down arbitrarily without any relationship to number or type of polluters?

4. Why is it that when I average the pollution from the standard fleet mix and then increase the number in the fleet as the SEIS predicts is the future case, I derive more pollution but the SEIS shows less?

KCIA BLAST PAD AND FENCES

In July at the Steam Plant meeting held at KCIA, John Current, FAA Airport Planner, said that the existing KCIA blast pad is substandard at 200' and needs to be 400'.

Attached are pertinent points and photocopied pages from the FAA Advisory Circular, Airport Design, AC: 150/5300-13 that describes the effects and treatment of jet blast.

The high velocities of jet exhaust (jet blast) are capable of causing bodily injury to personnel and damage to airport equipment or facilities. Blast velocities greater than 30 M.P.H. (48 km/hr) can cause loose objects on the pavement to become missiles causing injury to personnel who may be at a considerable distance behind the airplane. In other operational areas, sudden gusts averaging more than 20 M.P.H. (31 km/hr) are hazardous, and when striking moving vehicles or airplanes, are more dangerous than continuous velocities of the same magnitude. Velocities of this magnitude can occur over 2,000 feet (600 m) to the rear of certain airplanes when their engines are operating at takeoff thrust. For site specific conditions, include manufacturers' jet blast data for the most demanding airplane in the analysis.

Paved shoulders should run the full length of the runway(s) and taxiway(s). Blast pads at runway ends should extend across the full width of the runway plus the shoulders.

As per Table 3-3, runway design standards for aircraft approach categories C & D, Airplane Design Group V and VI, the runway blast pad length needs to be 400 feet. For example, 747s are D-V, the Antonov AN – 124 is a C-VI.

At takeoff thrust, the 747 and DC-10 velocity extends to over 4,000 feet. The takeoff thrust of the DC-10 velocity is over 700 miles per hours. For a DC-10, at maximum values, velocities may extend 30' beyond the width of the wing tip and to a height of 60' above ground level.

Aircraft Approach Category. A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

Category C: speed 121 knots or more but less than 141 knots.

Category D: speed 141 knots or more but less than 166 knots.

Category E: speed 166 knots or more.

Aircraft Design Group (ADG). A grouping of airplanes based on wingspan. The groups are as follows:

Group V: 171 feet (52m) up but not including 214 feet (65m).

Group VI: 214 feet (65m) up to but not including 262 feet (80).

Generally, the closer a properly designed blast fence is to the source of blast, the better it performs, provided that the centerline of the exhaust stream falls below the top of the fence. Blast fences may be necessary near runway ends to shield off-airport, as well as, airport pedestrian or vehicular traffic.

Summarized by Lorna Dove
August 29, 1998

requires submission of the control strategy implementation provision. If the SIP is submitted more than 120 days after the Clean Air Act deadline (see §51.448(b), 58 FR 62228), is there still a 90-day grace period following SIP submission, during which conformity may be determined according to Phase II interim period criteria?

A: Yes. This is the literal meaning of the rule. However, because the transportation plan and TIP must be found to conform according to transitional period criteria within one year from the Clean Air Act SIP submission deadline, an area may choose to determine conformity using transitional period criteria even during this 90-day grace period. If the transportation plan and TIP are found to conform using Phase II interim period rather than transitional period criteria, the state air agency must be consulted regarding any projects involving new regionally significant SOV capacity (see §51.448(e), 58 FR 62229).

SIP disapprovals.

Q: If an area is in nonattainment for several pollutants, and the control strategy SIP revision addressing one of the pollutants is disapproved, do the transportation plan and TIP lapse even if the SIP revisions addressing the other pollutants are ok?

A: Yes. Disapproval of any control strategy SIP revision for an area would result in the transportation plan and TIP lapsing after 120 days.

Exemption of ECO development and planning activities.

Q: In the event of a nonconforming transportation plan/TIP, may ECO planning and development activities funded by CMAQ proceed?

A: Yes, ECO planning and development activities are considered "planning activities," which are exempt under Table 2 (see 58 FR 62233). Such activities may proceed in the absence of a conforming transportation plan and TIP.

cc: Sara Schneeberg
Gerri Pomerantz

Table 3. Results from emissions tests with JP-5 fuel at three power settings[a]

	TF-39 Engine			CFM-56 Engine		
Power	Idle	30%	80%	Idle	30%	80%
Date (1983)	7–20	7–20	7–21	10–19	10–19	10–19
Fuel Flow (lb/hr)	1201	3793	11952	791.7	2466	7341
Air Flow (lb/sec)	34.94	79.42	146.6	18.65	49.60	94.73
Fuel/Air (Actual)	.01032	.01144	.01985	.01126	.01394	.02100
Combustion Eff. (%)	97.06	99.75	99.96	97.61	99.91	99.99
NO_x (ppm)	19.6	61.4	313.4	19.0	57.8	199.4
NO (ppm)	11.5	43.8	269.5	17.4	49.2	181.7
CO (ppm)	551.9	95.5	24.2	786.4	48.4	-
CO_2 (%)	2.09	2.41	4.22	2.29	2.95	4.47
Total Hydrocarbons (ppmC)	359.0	15.0	4.0	188.4	3.0	5.5
Emission Index (g/kg fuel)						
NO_x	2.96	8.36	24.5	2.62	6.45	
CO	50.8	7.91	1.15	66.0	3.28	-
Total Hydrocarbons	18.9	0.71	0.038	9.06	0.12	-
Organic Compounds (ppmC)						
Methane	9.42	1.63	1.09	5.58	0.58	0.44
Ethane	2.04	0.05	0.11	1.11	0.04	ND[b]
Ethene	62.28	3.03	0.04	35.25	ND	0.05
Propane	0.89	0.01	ND	0.17	0.01	ND
Acetylene	16.85	1.23	ND	9.67	ND	ND
Propene	21.33	0.42	0.02	10.34	0.01	ND
1-Butene	7.53	0.16	ND	4.00	0.01	0.02
1,3-Butadiene	8.28	0.29	ND	3.99	ND	0.01
c-2-Butene	2.07	0.05	ND	0.48	0.01	ND
1-Pentene	2.95	0.07	ND	1.77	ND	ND
n-Pentane	0.79	0.01	ND	0.44	ND	ND
C_5-ene	1.81	0.06	ND	0.82	ND	ND
2-Methyl-2-Butene	0.85	0.15	ND	0.42	ND	ND
C_5-ene	1.92	0.03	ND	0.63	ND	ND
2-Methylpentane	1.02	0.07	ND	0.91	ND	ND
1-Hexene	3.15	0.04	ND	1.68	0.01	ND
Benzene	7.45	0.49	0.03	4.13	0.02	0.02
1-Heptene	1.97	0.02	ND	0.98	ND	0.04
n-Heptane	0.20	ND	ND	0.14	ND	ND
Toluene	2.71	0.11	0.01	1.56	0.01	ND
Hexanal	0.55	0.01	ND	0.32	ND	0.01
1-Octene	1.29	0.01	0.03	0.63	ND	ND
n-Octane	0.34	0.01	0.04	0.14	ND	ND
Ethylbenzene	0.93	0.02	ND	0.42	ND	ND
m-p-Xylene	1.48	0.08	0.13	0.68	ND	ND
Styrene	1.38	0.06	ND	0.76	0.01	ND
o-Xylene	0.82	0.03	0.01	0.40	ND	0.01
1-Nonene	1.18	0.01	ND	0.56	ND	ND
n-Nonane	0.52	0.03	ND	0.14	0.01	ND
Phenol	0.64	ND	ND	0.40	ND	ND
1-Decene	0.57	ND	ND	0.42	ND	ND
n-Decane	1.58	0.02	0.002	0.72	0.013	0.002
C_4-Benzene	0.76	ND	ND	0.52	ND	ND
n-Undecane	2.45	0.02	0.022	1.00	0.009	0.022
1-Decene	0.57	ND	ND	0.42	ND	ND
n-Decane	1.58	0.02	0.002	0.72	0.013	0.002
C_4-Benzene	0.76	ND	ND	0.52	ND	ND
n-Undecane	2.45	0.02	0.022	1.00	0.009	0.002
C_5-Cyclohexane	0.86	ND	ND	0.58	ND	ND
C_5-Benzene	0.80	ND	ND	0.50	ND	ND
Naphthalene	1.99	0.011	0.003	1.35	ND	ND
n-Dodecane	2.84	0.051	0.23	1.04	0.071	0.042
C_{13}-branched alkane	0.89	ND	ND	0.42	ND	ND
C_{14}-branched alkane	0.92	ND	ND	0.42	ND	ND
n-Tridecane	2.81	0.022	0.056	1.21	0.015	0.022
2-Methyl Naphthalene	0.88	ND	ND	0.51	ND	ND
1-Methyl Naphthalene	0.88	ND	ND	0.61	ND	ND
C_{15}-branched alkane	0.49	ND	ND	0.40	ND	ND
n-Tetradecane	1.70	0.003	0.002	0.94	0.019	0.02
C_{16}-branched alkane	0.56	ND	ND	0.33	ND	ND