Testimony of John Niles to the Sound Transit Board
About Link Light Rail Safety Certification
As Presented February 27, 2003

Good afternoon, I'm John Niles, 4005 20th Avenue West in Seattle, and living in this city since 1982. I am a transportation policy analyst, doing research for, among others, Mineta Transportation Institute. I have a professional background as a quantitative analyst for state and local government, with some earlier experience in aviation safety. Also, I have prepared reports for Discovery Institute on technology for improving transportation performance.

I'm here to report that Sound Transit and the Federal Transit Administration have a serious problem in the safety certification of the **design** of the Central Link Light Rail Initial Segment. This problem is being pursued by me on behalf of the Coalition for Effective Transportation Alternatives, CETA.

Safety certification of fixed-guideway transit now requires analyzing potential hazards and proving an expectation for the future of no more than one fatality per one million operating hours. Based on my preliminary review, it is unlikely that the design of the Central Link light rail portion of Sound Transit can be certified to this required level of safety.

The Initial Segment design includes **18 ungated grade-level track crossings of streets in the Rainier Valley**. The crossings will see the passage of 272 trains per weekday, each train 180 feet long initially. Eventually, trains are planned to have four cars and be 360 feet long, coming every four minutes during peak periods.

An engineering analysis of light rail experience published in **the 1999 Final EIS for Central Link shows an expected collision between a train and a vehicle or person every 12 days in the Rainier Valley**.

Under downtown Seattle, the light rail design includes a shared right of way for buses and trains in the existing transit tunnel, a facility that in 2010 peak periods is planned to see 60 buses and 10 trains per hour intermixed in each direction under signal-assisted human control. A merge point at each end of the tunnel provides an opportunity for those buses to cross the path of oncoming trains.

The FTA Record of Decision, endorsing the Initial Segment overall design, makes no mention of the basic challenges to safety certification that I'm describing here.

The danger from light rail trains is not to the people riding the trains, but rather to the entire community. Nationwide, the **fatality rate per vehicle mile** for light rail operations in recent years has been five to ten times higher than for bus transit operations.

While Sound Transit management as well as bus and train operators would try very hard to make light rail operate safely if it were to go into operation in 2009, their efforts will likely fail in light of the design characteristics described.

Safety certification is a requirement. Sound Transit will find that certifying the Initial Segment for sufficiently safe operation is very difficult or impossible under

new published hazard guidelines for fixed-guideway transit. This is my preliminary conclusion, drawing from research in Federal documents as well as some conversations with officials at FTA and elsewhere.

The hazard guidelines are from FTA, published in January 2000, and written by the Volpe National Transportation Systems Center. The guidelines are the result of a 1997 recommendation to FTA from the National Transportation Safety Board.

Safety certification for acceptable hazard risk in fixed-guideway transit now requires the expectation of no more than one fatality per one million operating hours. Translated, this means Sound Transit needs to show why and how Central Link can operate for 20 years with no more than one fatality. That will be extremely difficult.

The recent record of nationwide light rail safety statistics from FTA shows a fatality rate of three to five deaths per 10 million vehicle miles. This reported rate translates into at least three fatalities per million operating hours. This rate fails to meet the new standard for light rail systems not yet built.

With historical accident and fatality rates available, plus the new hazard analysis guidelines from FTA, the burden of proof lies with Sound Transit to explain how the design of the new Seattle light rail can be expected to yield a lower fatality rate than seen recently in existing light rail systems nationwide.

One potential response, that of slowing down the Link trains to below the performance described in the environmental record, will cut into the ridership that justifies the Federal grant funding.

Sound Transit must produce a Safety Plan document as a predicate to being granted a Federal Full Funding Grant Agreement. FTA Administrator Dorn has testified to Congress that “FTA expects its New Starts grantees to take a systematic approach to safety and security throughout the planning, design, construction, testing, and acceptance phases of a project, ensuring that design decisions on safety and security are logically evaluated and documented and that determinations regarding risk acceptance are clearly communicated and understood."

In summary: There are new safety standards for light rail since year 2000. But the numbers from Sound Transit's environmental analysis of 1999 plus national statistics suggest that **the Link Initial Segment design can be expected to yield a fatality rate that exceeds the limit allowed by the new standard.**

In conclusion, I recommend that the Sound Transit Board direct agency staff to demonstrate how they intend to achieve the necessary safety certification of the present light rail design.

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