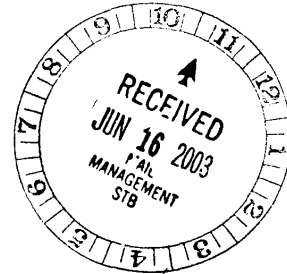


208104

June 13, 2003



VIA EXPRESS MAIL

Mr. Vernon A. Williams
Secretary

Surface Transportation Board
ATTN: STB Finance Docket No. 34079
1925 K Street NW
Washington, DC 20423-0001

FEE RECEIVED

JUN 17 2003

Mr. Roger Nober
Chairman
Surface Transportation Board
1925 K Street NW
Washington, DC 20423-0001

**SURFACE
TRANSPORTATION BOARD**

Office of Proceedings

Dear Secretary Williams and Chairman Nober:
RE:

**STB Finance Docket No. 34079
San Jacinto Rail Limited Construction Exemption and the Burlington Northern and
Santa Fe Railway Company Operation Exemption -
Build-out to the Bayport Loop near Houston, Harris County, TX**

Cover Letter

Petition for Reconsideration / Brian Pietruszewski

Enclosed is an original and a copy of a petition for reconsideration. Also enclosed are hard copies of new evidence (Exhibit A and appendices) and a CD containing this letter; the petition; Exhibit A and its worksheets, figures, files and appendices; and Exhibit B. As time allows, please post this submission to the STB web docket for FD_34079_0.

FILED

JUN 17 2003

**SURFACE
TRANSPORTATION BOARD**

Sincerely,

Brian Pietruszewski

cc: Adrian L. Steel, Jr., Mayer Brown Rowe & Maw

Before the Surface Transportation Board

STB Finance Docket No. 34079
San Jacinto Rail Limited Construction Exemption and the Burlington Northern and
Santa Fe Railway Company Operation Exemption -
Build-out to the Bayport Loop near Houston, Harris County, TX

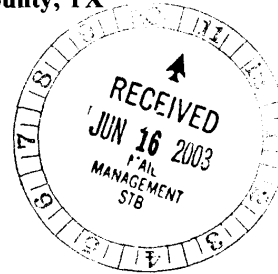
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JUN 17 2003

SURFACE
TRANSPORTATION BOARD

Brian Pietruszewski

Petition for Reconsideration



PREFACE AND SUMMARY

A *person* at any time may file a petition to reopen any administratively final action of the Board pursuant to the requirements of 49 C.F.R. § 1115.3 (c) and (d). 49 C.F.R. § 1115.4 (2002) (emphasis added). This petition introduces new evidence excluded from the STB due to extraordinary circumstances. It sets forth in detail, and enclosed **Exhibit A** fully supports, allegations of grave errors in the supporting environmental document for the STB's proposed decision that are not mere opinions, but rather mathematically verified facts. Consideration of this new evidence by the STB will benefit the public interest and, as is implicit in the STB's June 12th stay decision, not harm the applicants.

FILED

JUN 17 2003

I. BACKGROUND STATEMENT AND PURPOSE

SURFACE
TRANSPORTATION BOARD

From the inception of this proceeding until January 10, 2003, I managed the involvement of party Galveston Bay Conservation and Preservation Association (GBCPA) in this proceeding. Prior to GBCPA entering the proceeding, I sent preliminary correspondence to former STB Chairman Linda Morgan contained in the record for this docket. My name also appeared at one time on the Secretary's service list.

Starting with the notice of intent to participate on September 17, 2002, and prior to January 10, 2003, I wrote all GBCPA filings, with GBCPA attorney-in-charge Jim Blackburn signing off. I also wrote, and my name appears on, a 14-volume set of Draft Environmental Impact Statement (DEIS) comments submitted to the U.S. Army Corps of Engineers for the proposed Bayport Container Terminal, adjacent to San Jacinto Rail's eastern terminus. My final action for GBCPA was the discovery of the environmental justice mapping error in the DEIS for this proceeding.

I currently represent no party in this proceeding. Rather, I am petitioning as an individual under 49 C.F.R. § 1115.4. Despite my present contact address for this petition's short time window, I satisfy prudential standing requirements of concrete, particularized, actual, and imminent injury in fact; causation; and redressability.

Today, I present new evidence in Exhibit A that previous reasonable reliance on GBCPA and co-party City of Houston has prevented me from submitting in a timely manner. This new information addresses mathematical errors and clearly erroneous assumptions surrounding a handful of fundamental parameters in the San Jacinto Rail DEIS. These parameters control the analysis of rail accident and grade crossing impacts in the DEIS. Specifically:

- The DEIS did not account for existing Bayport Loop traffic levels that are statistically more likely than not to occur based on its data.
- Despite FEIS statements to the contrary, calculations show that the DEIS choice of a national scale data set to determine accident frequencies was not reasonable. Using the DEIS method, a total of 57 trains carrying 100 cars would have to traverse every inch of the 560-mile Harris County rail network, daily, for a year, just to generate the actual number of accidents that occurred in 2001.

- Most important of all the calculations, Exhibit A proves that hazardous materials release frequencies listed in DEIS Tables D.3-4, D.3-5, and 4.2-2 are not hazardous materials release frequencies at all, but rather another variable from a related DEIS equation. Therefore, the DEIS-given INTERVALS between hazmat releases have no basis in the DEIS-given methodology ostensibly used to calculate them.
- When proper hazmat release values are calculated using DEIS methodology and data, some project segment INTERVALS between releases decline by over 1300 years, from the thousands to a couple of decades. When project segments are summed, a release is likely every other year.
- A series of demonstrably unreasonable assumptions, including the assumption of vehicle departure rates for urban Houston streets that equal values for major rural highways, fatally impairs the road traffic delay analysis.
- The correction of errors in warning signal duration and vehicle departure rate, and the addition of 2 container trains to the DEIS road traffic delay calculation scheme results in mandatory grade separations over several Houston streets under U.S. Department of Transportation criteria cited in the DEIS.

Though extraordinary circumstances prevented the timely submission of this information, it completely undermines several key bases for the STB's proposed decision. Therefore, the new evidence is admissible, and this petition can be granted, on that basis alone, regardless of any extraordinary circumstances.

II. REASONABLE RELIANCE HAS PREVENTED TIMELY SUBMISSION

After discovering the environmental justice mapping error in January 2003, I was tasked with preparing GBCPA's DEIS comments for this proceeding. A conversation with GBCPA attorney-in-charge Blackburn on January 9, 2003 made it clear that no other attorney or person would be completing DEIS comments for GBCPA. This understanding was reinforced with several phone calls and emails. Blackburn continued to provide copies of materials to submit with the DEIS Comments, including a

Powerpoint presentation on pipeline safety obtained from Union Pacific through discovery. After completing the comments, enclosed on CD as **Exhibit B**, I reasonably relied on GBCPA to submit them to the STB. They were never submitted.

It took almost two weeks after the DEIS comment deadline passed on March 14, 2002, for GBCPA inform me that other comments had been submitted. GBCPA and Blackburn's office also informed me, through a phone call with attorney Mary Carter on April 7, 2003, that other parties or persons, specifically the City of Houston and the Southeast Neighborhood Coalition, had submitted evidence equivalent to that enclosed in Exhibit A. Again I reasonably relied on this information for a time. Just prior to the release of the Final Environmental Impact Statement (FEIS) on May 9, 2003, I attempted to verify this information by sifting through the large number of public comments submitted and posted on the STB's "Environmental Issues-Key Cases-Bayport Loop" webpage. I did not find comments equivalent to Exhibit A, though a number of commenters did address several issues in Exhibit B. To make the briefest and most detailed statement possible, Exhibit A focuses on mathematically verifiable calculations not previously addressed by others.

Since the STB issued a proposed decision at the same time as it issued the FEIS, the petition for reconsideration is my first and last procedural chance to put this evidence before the agency. This new evidence would have been deemed "late" regardless of when I submitted it, since I reasonably relied on my role as an agent of party GBCPA until after the DEIS comment period closed.

III. A CONFLICT OF INTEREST BARRED LATER SUBMISSION THROUGH THE
PRIMARY CO-PARTY

Both GBCPA and co-party City of Houston have had access to Exhibit B for some time now. Even if GBCPA refused to act on evidence contained in Exhibit B, it is possible to argue that I should have turned to their primary co-party, City of Houston. However, a serious unaddressed conflict of interest largely barred that alternative.

Vinson & Elkins serves as current counsel for the Port of Houston Authority (PHA) on the proposed Bayport Container port project. The port's primary adversary is Jim Blackburn's GBCPA. The port's Vinson & Elkins attorney is Sharon Mattox. Mattox and Blackburn have been professional acquaintances since the late 1970s.

Plaintiffs' primary theory of the case on San Jacinto Rail, as in most NEPA EIS challenges, is the agency's failure to identify significant environmental impacts due to various errors and omissions. On October 2, 2002, GBCPA filed a letter in this proceeding stating that the "independent utility" defense against combining San Jacinto Rail and PHA Bayport in a single EIS was superseded by the projects' status as cumulative actions with cumulatively significant impacts under 40 C.F.R. § 1508.25(a)(2). To overcome the independent utility defense, plaintiffs must show overlapping significant impacts from both projects, or the likelihood thereof. Regardless of the cumulative action theory, however, those challenging this project must still show that whatever errors the agency made lead to significant undisclosed impacts, to avoid "fly-specking".

On May 28, 2003, Houston City Council approved a contract with Vinson & Elkins for a quarter million dollars to handle their expected appeal from the STB's decision. Mary Alys Cherry, *San Jac Rail Faces Appeals*, Clear Lake Citizen (June 4, 2003). Prior to that date, the firm represented the City in condemnation proceedings against San Jacinto Rail. As shown on the City's petition for stay on June 6, 2003, Sharon Mattox is the City's attorney on the San Jacinto Rail appeal. Despite her respected personal qualities and ethics, Ms. Mattox cannot feasibly make the necessary arguments against San Jacinto Rail without adversely impacting the port. It is hard to conceive of any potential significant impact to a city facility that does not arise from a more fundamental parameter – such as the projected accident frequency – that would cause the same significant impact elsewhere along the proposed operating route. In other words, speaking as the person primarily responsible for laying the groundwork for plaintiff's challenge (including the October 2, 2002 letter cited *supra*), it is hard to see the invisible wall that GBCPA and the City now claim separate their arguments. *Id.*

The potential conflict would not prove so disturbing were it not for a series of questionable submissions by these parties that I had no part in. *See e.g.*, GBCPA Discovery Request, January 21, 2003 (attempting to take discovery on the STB itself, in disregard of STB regulations); GBCPA DEIS Comments (emphasizing the risk of pipeline-rail accidents, which require multiple levels of chance events, while not addressing the underlying and erroneous DEIS finding that any accidents would be extremely rare); and City of Houston Petition for Stay, June 6, 2003 (advancing utterly baseless argument that the STB acted with only one member, when in fact Linda Morgan did not resign until a week after STB approved its proposed decision). Submissions

leading to the STB's December 6, 2002 decision sought to produce a disharmony with the cases underlying the *Illinois Central* subject matter prohibition on "environmental discovery that GBCPA never pursued, so I do not include them as "groundless" or questionable to the same extent as those above.

These submissions, coupled with my prior knowledge, give at least the appearance that the strongest arguments are not being made for the plaintiffs at this time. I have petitioned for reconsideration and enclosed new evidence in part because information relevant to the people who bear the brunt of rail traffic impacts – the residents of east Houston – has not yet been submitted by their counsel. It is not the STB's job to solve existing rail traffic problems in this proceeding. However, accurate disclosure of current problems in the environmental document supporting the STB's decision is essential to identifying significant impacts that may have been overlooked and finding solutions. It is also required by NEPA.

IV. CONSIDERATION OF THE NEW EVIDENCE IS EXTREMELY RELEVANT TO THE STB's PUBLIC INTEREST MANDATE AND DOES NOT HARM THE APPLICANTS.

The STB has a mandate to ensure that its decision to grant a construction exemption comports with the public convenience and necessity under the Rail Transportation Policy of the United States. 49 U.S.C. §§ 10101, 10502(b) (2001). Specifically, STB must ensure that carriers will "operate transportation equipment without detriment to public health and safety." 49 U.S.C. § 10101(8).

As discussed *supra*, Part I, the new evidence bears directly on this mandate. It is not opinion or material that the Section of Environmental Analysis (SEA) has already responded to in its FEIS, except to the extent that such material must be used as a starting point to a calculation. This evidence should be used to correct the environmental documents that the decision plans to rely on.

Extraordinary circumstances prevented the submission of this evidence until now, because until recently I did not participate in this proceeding in an individual capacity. I understand the applicants' frustration with encountering new information in the process at this time, but offer the following illustration:

GBCPA focuses its DEIS Comments and present argument heavily on pipeline-rail interactions. Based on the current DEIS, this argument is sheer demagoguery. It is an example of what gives the NEPA process a bad name. A pipeline-rail interaction requires (1) an accident, (2) a derailment, (3) impact of the pipeline, (4-5) a rupture or release from the pipeline and/or a tank car, (6) an ignition source, (7) ignition, and (8) exposure. The current DEIS says that the chance of (1) and (2) is so slight that it is not necessary to analyze steps (3)-(8) in the pipeline context. Yet GBCPA says that pipeline-rail accidents were not analyzed, without addressing the underlying accident rate. Perhaps pipelines should not be located near rail lines from a precautionary standpoint, but GBCPA has done nothing to prove its point on the risk analysis in the DEIS.

In contrast, Section II of Exhibit A reveals serious problems with the accident rates that were calculated. It then proves that regardless of whether the calculated accident rates were reasonable, an error exists in the DEIS regarding the calculation of

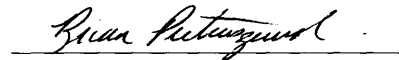
hazardous material release frequencies (such releases are a subset of total accidents). This is a serious, fundamental problem that Exhibit A presents in full for the first time. The reconsideration process is meant to ensure that those fundamental issues have been addressed correctly, before a final decision is made. If the applicants are to be delayed, it is far more important to ensure that fundamental bases of the decision, like the accident and hazardous materials release frequencies, are correct, rather than address specious chance-upon-chance-upon-chance arguments.

The applicants' only bar to reconsideration is demonstrable harm. As is implicit in the STB's June 12, 2003 decision granting a stay, the harm alleged by the applicants in their June 11, 2003 replies is not a sufficient bar.

V. REQUEST FOR DETERMINATION

Therefore, I request that the STB determine that Exhibit A contains new evidence. I further request that STB grant this petition for reconsideration and refer the new evidence in Exhibit A to the SEA. After reviewing the evidence, SEA should determine whether to supplement the EIS or take other actions.

June 13, 2003



Brian Pietruszewski

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San Jacinto Rail
Finance Docket No. 34079

Exhibit A
Pietruszewski Petition for Reconsideration

June 13, 2003

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TABLE OF CONTENTS

SECTION	PAGE
INTRODUCTION	6
AN ACCURATE RISK ANALYSIS WAS NOT PERFORMED	6
I. RAIL OPERATIONS	9
SUMMARY	9
A. <i>The DEIS accounts for only 34.8% of current Bayport Loop traffic levels.</i>	9
B. <i>The DEIS provides no basis to determine rail line capacities.</i>	11
C. <i>The DEIS arbitrarily defines capacity to avoid a discussion of blocked crossings and train delays.</i>	12
II. HAZARDOUS MATERIALS RISK	13
SUMMARY	13
A. <i>Despite its FEIS statements to the contrary, SEA may not apply this particular type of national scale data set to a localized analysis.</i>	13
B. <i>SEA did not check whether its hazmat analysis generated reasonable results, even though another federal agency keeps specific, current accident data for Houston.</i>	15
C. <i>DEIS Tables D.3-4 and D.3-5, showing accident and hazmat release frequencies, cannot support a decision, regardless of whether SEA's use of national-scale data is found reasonable.</i>	18
1. <i>The incorrect accident frequencies discussed in section III-A completely control the DEIS calculations.</i>	
2. <i>The DEIS never reports hazmat release frequencies (RELEASE VALUE), and instead replaces them with another variable, making the risk of release appear smaller.</i>	
3. <i>Therefore the listed INTERVALS between releases cannot be verified from the stated methodology.</i>	
4. <i>In fact, the DEIS' own data and methodology shows that hazmat releases will occur as often as every other accident.</i>	
D. <i>SEA cannot retreat from the hazmat release frequencies (RELEASE VALUE) it determined but failed to disclose.</i>	22
E. <i>The seriousness of SEA's failure to disclose release frequencies (RELEASE VALUE) becomes apparent when the scale and relationship to other impacts in the DEIS is considered.</i>	22

III. GRADE CROSSINGS AND ROAD TRAFFIC DELAY	24
SUMMARY	24
A. SEA fails to analyze the proposed action.	24
B. An incongruity exists between the accident data for this section and the accident data in the hazardous materials section.	24
C. SEA fails to report the relevant accident statistic from its newly acquired local accident data.	25
D. SEA fails to apply the accident data to determine how many citizens will be killed or injured.	26
E. SEA fails to disclose a complete methodology for the grade crossing analysis.	26
F. The DEIS traffic delay analysis relies on an undisclosed and unreasonable free-flow train traffic assumption.	27
1. If just 1 train is delayed for 10 minutes under existing conditions, traffic delays sufficient for grade separation on 2 main streets will result.	
G. The DEIS presents train speeds across Harrisburg Blvd that are unreasonably high.	28
H. The DEIS traffic delay analysis relies on an unreasonably brief warning period that contradicts federal law.	29
I. The DEIS uses assumptions that turn city streets into highways.	30
1. The STB applies a "vehicle departure rate" to urban streets that it applied in another environmental review to a federal highway.	
2. When a correct departure rate is applied, Harrisburg Blvd approaches the mandatory grade separation threshold.	
3. Because it assumes Houston's city streets are free flowing highways, the DEIS fails to account for intersections near grade crossings.	
J. The addition of even a fraction of the container trains from the proposed Bayport Container Terminal will force grade separations on east Houston streets.	31
K. When the errors in warning signal duration and vehicle departure time are corrected, and when 2 container trains are added, mandatory grade separations result.	32

DISCUSSION OF WORKSHEETS	
I. RAIL OPERATIONS	33
<i>A. Fit of DEIS-given UP rail traffic data from the Bayport Loop to Normal Distribution</i>	
<i>B. Verification and determination of p for other levels of rail traffic</i>	
II. HAZARDOUS MATERIALS RISK	36
III. GRADE CROSSINGS AND ROAD TRAFFIC DELAY	39
WORKSHEETS (contained on CD)	
<i>Worksheet1.xls (1 sheet)</i>	
<i>Worksheet2.xls (1 sheet)</i>	
<i>Worksheet3a.xls (10 sheets)</i>	
<i>Worksheet3b.xls (1 sheet)</i>	
APPENDICES AND DATA FILES	
<i>Appendix I-1: Standard Normal Probability Table</i>	
<i>Federal Railroad Administration Office of Safety Database Downloads</i>	
Harris_All_2001.dbf - Rail Operations accidents in Harris County in 2001	
HARRIS_ALL_GXING_1997.dbf – Grade Crossing accidents “ “ 1997	
HARRIS_ALL_GXING_1998.dbf	
HARRIS_ALL_GXING_1999.dbf	
HARRIS_ALL_GXING_2000.dbf	
HARRIS_ALL_GXING_2001.dbf	
HARRIS_ALL_GXING_2002.dbf	
Harris_hazmatrel_1975to2002.xls – Hazardous Materials Releases, Harris Co., 1975-2002	
<i>Appendix III-1: Finance Docket 33877 Environmental Assessment</i>	
FIGURES	
<i>Figure II-1: Example of Normal Distribution with rail traffic from the Bayport Loop</i>	
<i>Figure II-2: Example of Normal Distribution with rail traffic from the Bayport Loop</i>	

TABLES	
<i>Table I-1: DEIS Rail Traffic Understatement</i>	11
<i>Table II-1 Summary of General Example Results using DEIS methodology</i>	14
<i>Table II-2: Consequences of False Release Frequencies</i>	19
<i>Table II-3: Unreported Release Frequencies (RELEASE VALUE)</i>	21
<i>Table II-4: Resulting INTERVALS when DEIS ACCFREQ is used with Actual Release Frequency</i>	21
<i>Table III-1: Grade Crossing Accident Frequencies over the Entire Route</i>	25
<i>Table III-2: Grade Crossing Accidents in Harris County, 1997-2002</i>	26
<i>Table III-3: Number of trains delayed for 10 minutes that would force grade separations under USDOT standards using DEIS assumptions</i>	28
COMPACT DISC	
1. Cover letter and Petition 2. All Sections, Figures, Worksheets, and Appendices to Exhibit A 3. Exhibit B	

ACRONYMS

BNSF – Burlington Northern Santa Fe Railway
 FRA – Federal Railroad Administration
 GBCPA – Galveston Bay Conservation and Preservation Association
 ICF – ICF Consulting, Inc.
 NEPA – National Environmental Policy Act of 1969
 PHA – Port of Houston Authority
 SEA – Section of Environmental Analysis
 SJR – San Jacinto Rail Limited
 STB – Surface Transportation Board
 UP – Union Pacific Railroad Company

INTRODUCTION

AN ACCURATE RISK ANALYSIS WAS NOT PERFORMED

In my scoping comments, I asked the Section of Environmental Analysis (SEA) of the U.S. Surface Transportation Board (STB) to conduct a risk-based analysis of the San Jacinto Rail (SJR) line. *See* GBCPA Scoping Comments 6-8 (January 28, 2002). This rail line, proposed by BNSF and its partners, will carry toxic and hazardous materials into an urban rail network already suffering severe capacity and safety problems. A risk analysis is proper to accurately depict the direct and cumulative impacts this proposal will have, but SEA failed at numerous steps to conduct the analysis accurately, and at some critical steps did not perform it at all.

The importance of attention to detail in each logical step in the analysis should be obvious, but the DEIS analysis fails precisely because it avoids this “big-picture” review. In evaluating “what could make a train carrying hazardous materials an environmental risk?” the agency should ask:

- What is the baseline level of rail traffic?
- What will the future level of rail traffic be?
- Can the rail system handle this new traffic?
- What is the chance of an accident and release?
 - What data on accidents exist *for the relevant study area*?
 - Can that data be projected into the future?
 - Are the results reasonable?
 - If an accident occurred, what is the chance a release would follow?
- What is the chance of exposure following a release?
 - Are some areas more sensitive or susceptible to exposure than others?
- Will this new project cause delays at streets crossing the rail system?
 - How does road traffic move around the crossings (speed, volume, etc)?
 - How does rail traffic move around the crossings (speed, volume, etc)?
- Will this new project cause accidents at streets crossing the rail system?
 - How do those accidents contribute to the release risk?
- Will the cumulative impacts of this new project with others cause delays and accidents at streets crossing the rail system?

These are not difficult questions to analyze. They are the fundamental questions anyone should ask when reviewing this type of proposal. The SEA’s failure to analyze some of these questions completely, and its failure to analyze others accurately, makes these questions the basis of my petition for review. The SEA’s grave errors require no expert testimony to highlight. My exhibit is detailed, but only to show the significance of the facial errors in the agency’s environmental document supporting the proposed decision.

The direct impacts of San Jacinto Rail are significant, increasing hazardous material exposure risk, road and rail traffic delays, and accident risk on the regional rail

system. This exhibit does not just allege that the impacts are significant – it proves it, using SEA’s own figures and methodology in the DEIS.

The new information contained in this exhibit demonstrates the following significant impacts and concerns:

- Despite SEA’s FEIS Comments to the contrary, the traffic levels analyzed in the DEIS are statistically unreasonable. Only 34.8% of the existing rail traffic levels from the Bayport Loop were analyzed. (Section I-A)
- The DEIS defines capacity on Houston’s rail network so as to exclude existing blockage and delay conditions. While it is not the STB’s job to solve these problems, it does have an obligation to disclose them. (Section I-B and I-C)
- The accident frequencies contained in the DEIS are gravely erroneous. Under the DEIS method, it would take 57 trains of 100 cars each traversing every inch of Harris County’s rail network for a year to equal the actual 2001 rate of 100 accidents shown in Federal Railroad Administration (FRA) records. (Section II-A and II-B)
- The hazardous materials (hazmat) release frequencies given in the DEIS do not match expected release frequencies from the DEIS-given equation, because the values shown in the DEIS are actually another variable. (Section II-C)
- When the proper hazmat release frequencies are determined from the DEIS-given equation, INTERVALS between releases decline sharply, on the order of hundreds or even thousands of years compared to current DEIS values. (Section II-C)
- The DEIS assumption of train speed at the Harrisburg Blvd crossing is clearly erroneous. When corrected, DEIS-method traffic delay is sufficient to merit mandatory grade separation under U.S. Department of Transportation standards today. (Section III-G)
- In the DEIS road traffic delay analysis, urban streets in east Houston were assumed to have vehicle departure rates equal to rural federal highways that SEA had evaluated in a previous proceeding. This incorrectly minimized DEIS-calculated traffic delay times by a significant amount. (Section III-I)
- When a series of DEIS errors on train speed, vehicle departure rate, and the federally mandated grade crossing warning time are combined, a grade separation is required under USDOT standards at Harrisburg Blvd. (Section III-K)
- If just one train is delayed for 10 minutes a day across Harrisburg Blvd. or Genoa-Red Bluff Road, using DEIS assumptions, grade separations will be required under USDOT standards. (Section III-F)

- Irrespective of the DEIS errors on train speed, vehicle departure rate, and the federally mandated grade crossing warning time, grade separations are required under USDOT standards for several east Houston streets when container trains are added to the DEIS existing conditions scenario. (Section III-J)

Over the long term, the impact of adding 2 concurrently proposed port projects will prove overwhelming to existing urban surface streets. Yet none of these impacts are discussed in the Draft Environmental Impact Statement. The disclosure obligations of the National Environmental Policy Act require that these errors be corrected and resubmitted for public comment.

I. RAIL OPERATIONS

SUMMARY

The DEIS fails to analyze reasonable traffic levels that San Jacinto Rail (SJR) will haul from the Bayport Loop. So much of the impact analysis (including hazardous materials risk and road traffic delay) depends on this factor. It is not enough to say that there will still only be 2 trains a day. Failing to account for 20-30 cars leads to significant alterations in these analyses.

The DEIS also defines away the potential for significant safety and transportation impacts due to blocked crossings and parked trains, by establishing a free-flowing definition of rail capacity that is at odds with its own figures and contrary to evidence provided in this proceeding.

These are fatal errors. Without an accurate depiction of existing and future rail traffic volumes along the study segments, the DEIS cannot determine impacts resulting from this project.

A. The DEIS accounts for only 34.8% of current Bayport Loop traffic levels.

Rather than analyze a range of rail traffic volumes from the Bayport Loop, SEA adopted the applicant's traffic projections. It compared these projections to waybill data in DEIS Table C-1. SEA found, as the applicants had earlier calculated in their application using the exact same data, that the applicants' initial (28%) and build-out (51%) market share projections yielded 72 and 132 daily cars for the proposed line.

After obtaining the waybill data, SEA specifically requested more accurate data on Bayport Loop rail traffic volumes from outside sources. SEA was provided with rail traffic data broken down into percentiles by UP, the existing operator, in a November 7, 2002 letter from Joe Adams (reprinted in DEIS Appendix C). This traffic count data has undergone additional internal verification by the company, and it is undisputedly more accurate than any other source - including the waybill data that relies on statistical sampling and the field counts that only occurred for two days out of the month. Obviously SEA thought the existing operator's data more reasonable than the waybill data, or it wouldn't have requested it. But then, once SEA received that information and reported it in DEIS Appendix C, it deliberately disregarded it. As a result, the DEIS contains projected SJR rail traffic volumes that are not statistically reasonable.

SEA chose not to use UP's traffic volume data from the Bayport Loop, even though it adopted and used all of the other rail operations data UP provided for the Houston area, including UP's similarly validated and computer-counted rail car volumes on other rail segments. SEA even performed a calculation with UP's Bayport Loop data, on DEIS page C-3, before disregarding the data entirely. The disregarded calculation

shows that a 50% share of business for the applicants would yield 156 daily cars, a significant increase in both traffic and potential risk. Subsequent sections of this exhibit will detail the additional impacts resulting from this uncounted traffic.

Instead of using the existing operator's data, however, SEA has chosen to present one value for the total traffic at all times, and that value is too low. In my scoping comments, I requested that the SEA not do this, and instead analyze a range of values centered around a mean (average) because the rail traffic from the Bayport Loop tends to fluctuate. SEA concedes the traffic fluctuations on DEIS page C-3. Such analysis would present a reasonable and more accurate picture of impacts than currently appears in the DEIS. UP provided SEA with a distribution of existing traffic data to complete such an analysis, but SEA chose not to use it.

Therefore, the resulting DEIS representations are not reasonable. A reasonable analysis accounts for all scenarios more likely to occur than not. That means that before the DEIS uses applicants' market share projections to calculate the number of cars SJR will carry, the total amount of traffic originating from the Bayport Loop must be reasonable. Currently in the DEIS, that total traffic value (258 daily cars loaded and empty) accounts for only 34.8% of the possible traffic levels, based on a normal distribution of UP's data. SEA provides no justification for why the 34.8% level should be the norm, rather than the average of UP's data (310 daily cars loaded and empty), which would account for 50% of the existing traffic levels. See Figure I-1.

True, 65.2% of the time, trains will haul a number of cars less than or equal to the 258 daily cars in the DEIS. But 99% of the time trains will haul at least 1 car. *See* Figure I-2. Is the 99% value more reasonable? Certainly not. While NEPA does not require a worst-case analysis, it does require a reasonable one. If an agency is not forced to consider *all* scenarios more likely than not to occur as "reasonable", why stop at 258 daily cars? Why not push the total traffic projection lower, and minimize the impacts from the market share-to-car calculation further, to 220 daily cars, 200 cars, 150 cars? SEA was provided with data that showed it was not considering all scenarios more likely than not to occur, and it chose to ignore it. No entity would be in a better position to provide the data that SEA ignored here.

It is more likely than not that up to 310 daily cars will originate from the Bayport Loop on a given day, since 310 daily cars represents the existing mean traffic level. Further, though it is more unlikely than not, it is at least reasonably foreseeable that up to 400 cars will originate about 25% of the time, or 8 days per month. It is also reasonably foreseeable that up to 480 cars will originate about 10% of the time, or 3 days per month. UP provided these data points to the STB in its November 7, 2002 letter. None of these traffic levels were analyzed in the DEIS. The only total traffic scenario that was analyzed was one that, while more likely than not to occur, was unreasonable in the face of the other data provided.

The applicants aspire to and have presented market shares of total traffic (reaching 51% at build-out) that translate into rail cars, not the other way around. By

Figure I-1
Example of Normal distribution with rail traffic from the Bayport Loop

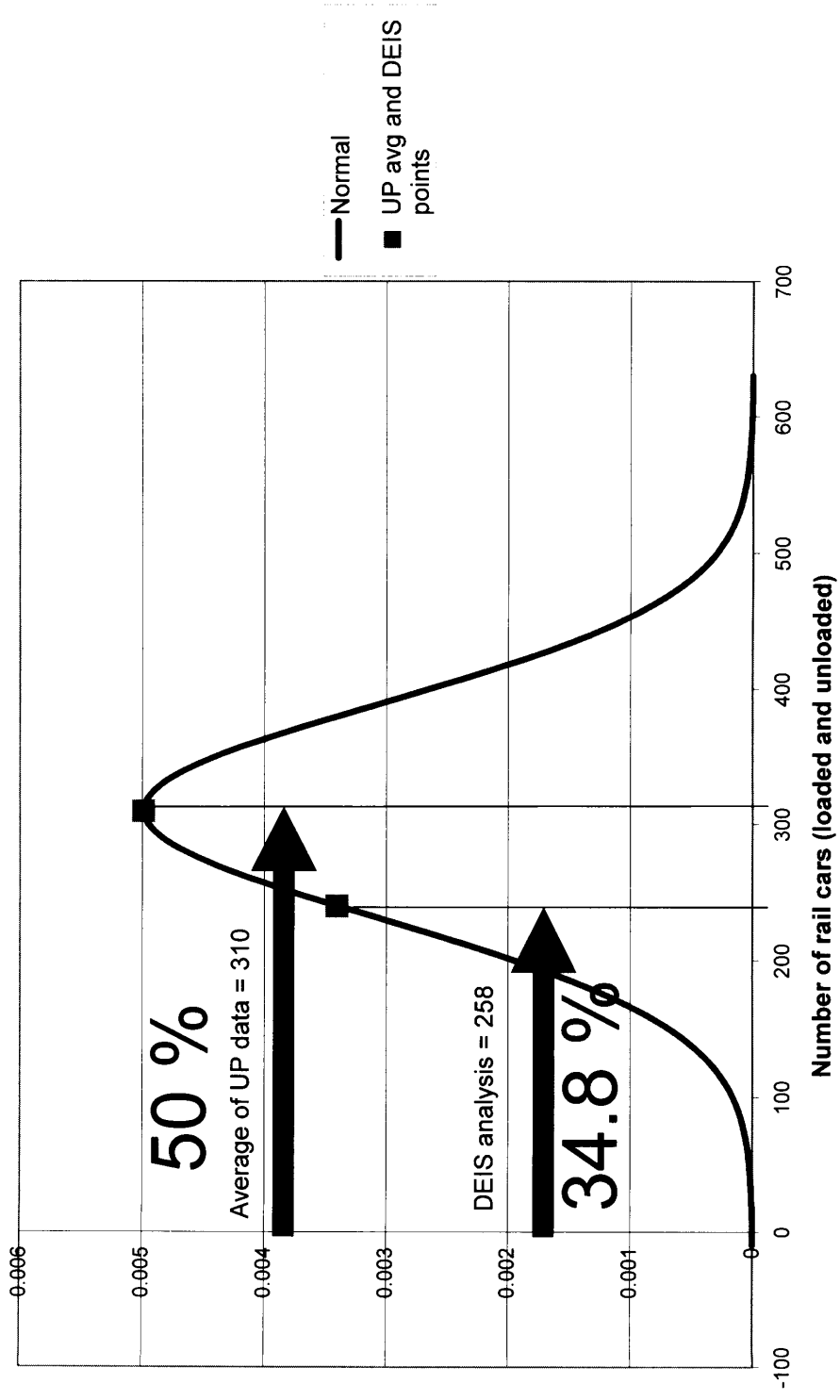
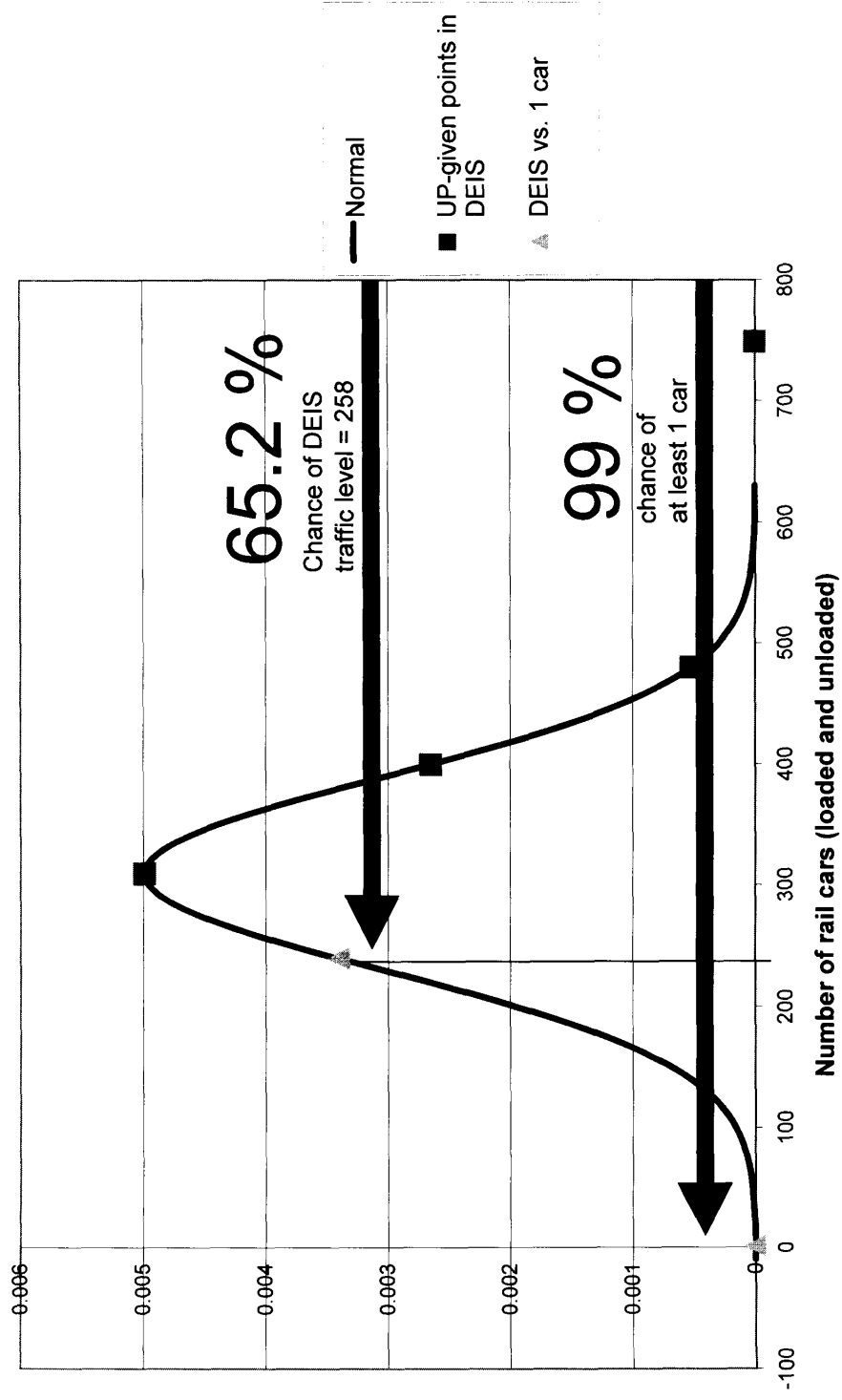


Figure I-2
Example of Normal distribution with rail traffic from the Bayport Loop



definition, an accurate number of cars for SJR depends on an accurate total traffic number. The DEIS translates SJR's build out goal of 51% of the traffic on a given day to 132 daily cars. Yet given the existing data, 132 daily cars correspond to only 43% of the existing traffic, not 51%. The proper build-out value is that calculated (and then ignored) by SEA on DEIS page C-3, which corresponds to 156 daily cars. The proper start-up value would be 28% of 310, or 87 cars.

Table I-1: DEIS Rail Traffic Understatement

Source: Worksheet1.xls

	# cars projected by BNSF	% of traffic projected by BNSF	Actual % of UP avg. existing daily traffic (310 cars) BNSF's projections represent	# of cars necessary to meet target using UP existing data
Start	72	28%	23%	87
Future	132	51%	42%	158

The calculations made in the above paragraph require no statistical analysis. The percentiles were provided by UP and only basic multiplication, as the SEA performed on DEIS page C-3, is required to obtain the correct result. The basic statistics shown in Worksheet1.xls are available in any spreadsheet program and present no hardship for the agency. These statistical functions and charts are provided only to prove the intuitive response - that the DEIS total traffic figure is unreasonable because it is too low and falls well below the average total traffic figure cited by UP. These functions are not required to produce the proper traffic volumes in the above paragraph.

B. The DEIS provides no basis to determine rail line capacities.

Accurate line capacities are critical to the impact analysis for this proposal. The current rail system in Houston is overburdened. Trains are delayed regularly, often blocking streets and neighborhoods for hours at a time. Evidence has already been submitted by 3 parties (GBCPA, Greater East End Coalition for Community Concerns/Eastwood Broadmoor CDC, and UP) in this proceeding to rebut the assumption that free flow conditions exist on Houston's rail lines. SEA concedes as much on DEIS page C-3 and again on page C-10, when it states that "practically, trains are not run that way" and discusses the numerous factors that constrain line capacity in general.

Even so, STB has chosen to employ the free flow assumption. To do so, it must show that the rail segments along the proposed route have enough capacity to handle the additional traffic from this project. (Presumably, capacity would include an analysis of cumulative impacts as well, but this was not included.)

Unfortunately, the DEIS relies on “professional judgment” instead of calculations to justify its capacity determinations. The public encounters no methodology in the DEIS that translates the factors cited on DEIS page C-10 into numbers. The “professional judgment” methodology is undefined and unstated. The result is to make it un rebuttable. This is not permitted under NEPA, particularly when dealing with the derivation of numbers. Without a methodology beyond “professional judgment”, these numbers are unsupported and completely arbitrary. However, as shown below, the more severe error involves how the DEIS defined capacity in the first place.

C. The DEIS arbitrarily defines capacity to avoid a discussion of blocked crossings and train delays.

Capacity does not mean free flow, which reveals a fundamental error in the DEIS. A line can have capacity but still delay trains for hours on end. For instance, DEIS page 3-9 states that the 2.4 mile long GH&H segment between Tower 85 and Tower 30 can handle 15 to 16 trains a day given its existing conditions (it currently handles about one-third of that, or 5 trains, according to the DEIS). Even if every train were 1 mile in length, and moved at the very slow speed of 10 miles per hour, each train would only be in motion over that segment for just over 20 minutes. A total of 16 trains moving in that manner end to end would take about 5-1/2 hours to clear the segment. Allowing 30 minutes of space between each train would take 13-1/2 hours, which still leaves 10-1/2 hours of the day free for the delays, blocked crossings, and parked trains that plague the East End daily. Therefore, capacity cannot equal free flow.

The DEIS uses capacity to avoid the issue of delays, blocked crossings, and parked trains. It posits that as long as capacity exists, the issue of blockages and delays does not. As shown in the above paragraph, the DEIS’s own figures allow for blockages and delays in spite of capacity. The DEIS disregards the impact of Houston’s major yard and switching operations on the rail network, instead forcing the decision maker to pretend that these rail lines exist in isolation. The DEIS simply chose not to disclose the delay and blocked crossing issue, despite the evidence. The only delay analysis that appears in the DEIS was developed under the free flow assumption, and that assumption is fatally flawed.

II. HAZARDOUS MATERIALS RISK

SUMMARY

Hazardous materials (hazmat) incidents require some sort of accident (derailment, collision, or other) to occur. Then, a release must occur. The INTERVAL between releases depends on both of these frequencies – an accident happening, and a release in that accident. In essence, the DEIS makes sure that those releases never occur by ensuring that there are no accidents.

The DEIS presents hazmat release frequencies (Tables D.3-4 and D.3-5, second column from the right, and Table 4.2-2, first and third columns from the right) that have no basis in the DEIS' stated methodology. These numbers, as discussed *infra*, section II-C, are actually another variable from a related equation.

These incorrect hazmat release frequencies in the DEIS Tables cited above have a dual effect. First, they obscure the fact that the accident frequencies in the next column to the left are derived from an unreasonable national scale methodology that mathematically cannot replicate the actual frequencies in Houston today. Second, they obscure the fact that the real hazmat release frequencies – calculable from the information provided, but not reported in the DEIS – are much higher.

These two variables – accident frequency and hazmat release frequency – are the sole basis for the INTERVALS between hazmat release. These INTERVALS, which in the DEIS are on the order of hundreds or thousands of years, shall not serve as a basis for any STB decision, because the accident frequencies and hazmat release frequencies are erroneous.

A. Despite its FEIS statements to the contrary, SEA may not apply this particular type of national scale data set to a localized analysis.

The DEIS ensures that accidents will not occur by using an aggregated nationwide data set to determine probabilities of accidents for rail cars and trains (DEIS pp. D-7 to D-10). Nearly half of the data (2 of the 4.75 years) is estimated, not actual (p. D-8). The use of this data set guarantees that accidents will not occur.

The problem is with applying this type of national aggregation to a local level. It reports accident frequency accurately only on the highest traffic lines for rural conditions, even though most rail accidents occur in congested urban areas and at rail terminals and rail yards. This occurs for two reasons. First, as shown in DEIS Table D.3-3, an overwhelming proportion of derailment incident probability correlates with higher car mile travel distances. This means that the greater the number of cars, and the greater the distance traveled, the more accurately the nationwide situation will reflect the modeled case. This DEIS models only a few dozen miles of track in a congested urban area.

Second, the number of train mile incidents, as opposed to car mile incidents above, depends by definition on something hitting or upsetting the train. This could include another train or a vehicle, or the operator losing control due to human error. Obviously, the chance of a train hitting something increases exponentially in a congested urban area that doubles as a major rail terminal with several rail yards. When those odds are spread out over thousands of miles of rural track with virtually no risk, and then reapplied to the congested terminal, the results should surprise no one.

The unpublished, and to date undisclosed report that STB's Appendix D methodology relies on has a national scope. It was incorrect for SEA to apply this data to a congested, localized terminal for the reasons cited here. This deprived the public of its right to comment on an accurate DEIS.

I concur with SEA that the national scale data produces "higher estimated numbers of accidents on tracks with high volumes of trains." FEIS at 4-47; *See also* examples, *infra*. This exhibit uses the FRA track class suggested for urban tracks in the FEIS.

It is no answer, however, for SEA to say that "local (i.e., urban) [accident] data cannot be used for the accident analysis because the data set is not compatible with the methodology." The issue was whether SEA's national methodology was reasonable in the first place. Local data would have been a useful comparison to test reasonability, as discussed *infra*, section II-B, but SEA did not seek out any.

A few general examples will suffice to support the points above. This exhibit carefully and completely replicates the DEIS hazmat analysis using the methodology in DEIS Appendix D. The results of this analysis are discussed *infra*, section II-C. Additional analysis with the same DEIS formulas produced these general examples.

Table II-1 Summary of General Example Results using DEIS methodology

Source: Worksheet2.xls

(Assume FRA track class 2)	# trains/d	total cars/train	Avg. train length (ft)	Segment length (mi.)	Accident Freq.	Years b/w accidents
Example 1	10	100.0	6640	10	0.30900	3.2
Example 2	30	100.0	6640	5	0.46350	2.2
Example 3	2	100.0	6640	1	0.00618	162
Example 4	10	100.0	6640	100	3.09002	0.32

Examples 1 and 2 work together to illustrate a simple point common to all of the examples shown and common to the DEIS analysis – that the DEIS assumptions are linear. Between example 1 and example 2, the number of trains tripled. Alone, this would lead to a tripling of the accident frequency and a reduction in the time between accidents by one-third. When the segment length is simultaneously reduced by half, however, this 3x becomes a (3/2)x. Instead of tripling, the accident frequency increases

by $3/2$. The number of years between accidents decreases by the inverse of $3/2$, which is $2/3$.

Example 3 illustrates the unreasonableness of the DEIS analysis over short distances. Two very long trains, carrying 100 cars each, travel over a mile long segment. The DEIS methodology predicts one accident every 162 years, regardless of the conditions on and around the line. If the line was near a busy yard or rail crossing, for instance, or crossed a busy set of urban streets, more accidents would certainly occur than on the same length of track in the middle of an open field. While the DEIS methodology does group accident rates by track class, the speed limit based categories are a poor control for real world circumstances. While many urban tracks fall into the low speed category analyzed in Table II-1, this track class includes tens of thousands of miles of rural track to outweigh the comparatively small mileage found in major urban areas. I return to this example in part II-B, *infra*.

Example 4, another very clear linear multiplication (factor of 10), illustrates a situation that still shows some error. The aggregation effect of the long segment length, however, makes the error less pronounced than in other examples. Accidents occur on this segment about once every 3 months. At first that value may seem high, but considering the data, it is within a factor of 2 of reasonability. The major class I carriers operate about 150,000 miles of track across the country. DEIS page D-8 reports that 2,946 accidents occurred on these lines last year. This corresponds to an accident frequency (all types) of roughly 1 per 50 miles per year, or 0.02, which translates into 2 accidents per 100 miles per year, or 1 accident per 100 miles every 6 months. Not knowing anything else about the track, and knowing that the bulk of the nation's rail network lies outside major metropolitan areas, the nationwide aggregation might seem reasonable for any random 100 miles of track. There is, therefore, an appropriate scale for the DEIS analysis. However, it is clearly not the one called for by this proposal.

These general questions of applicability arise because one can easily identify the flaws at this basic level. Yet no one stopped to consider this. Nor did anyone consider the more relevant inquiry - whether the results of the national aggregation bear any resemblance to reality.

B. SEA did not check whether its hazmat analysis generated reasonable results, even though another federal agency keeps specific, current accident data for Houston.

The accident frequency shown in example 3, *supra*, for a 1-mile segment of track, uses the DEIS national scale method for determining accident frequency. For two trains a day carrying 100 cars, the DEIS method predicts an accident frequency of 0.00618, or one accident every 162 years. The FEIS admonishes that "the expected number of accidents on the individual segments should be added to get an understanding of the total number of incidents." FEIS at 4-48. I concur that this is a necessary step, which SEA did not undertake, to determine if the accident frequencies produced by its national scale

data were reasonable. I now undertake it, and prove that the DEIS accident frequencies are not reasonable.

Example 1

The 2000 Census Geographic Information System file for railroads in Harris County shows 560 miles of track within the county. I am willing to assume double that amount for this example. This file is enclosed as tgr482011kB.dbf on the CD.

$$(2*560) * (0.00618) = 6.9216 \quad (\text{summing freq. for 1 mi. over all track miles})$$

$$1/6.9216 = 0.1444 \quad (\text{determining years between accidents})$$

$$365 * 0.1444 = 52.7, \text{ or about one accident every 53 days}$$

For a total of about 7 accidents per year.

In 2001 in Houston, 100 rail operations accidents and 64 grade crossing accidents occurred. See FRA data files Harris_All_2001.dbf and Harris_ALL_GXING_2001.dbf on CD. The SEA's national scale accident data produces a result that is not even close to reasonable.

Example 2

The immediate rejoinder to example 1 is that more than 2 trains should be considered. Obviously, more than 2 trains a day run on Houston's vast rail network. The key factor, however, is the length of the trips made. Example 1 assumes that 2 trains travel on all 560 miles each day – not a reasonable assumption, but due to the linearity of the calculations, one that apports risk over the entire network equally.

No data has been presented regarding the distribution of rail trips in Houston, or what an average daily trip length would be. But for the sake of argument, how many 100-car trains would it take, traveling every inch of rail in Harris County every day for a year, to achieve 100 rail operations accidents under the DEIS method? Using Worksheet2.xls and the DEIS method, I determine that it would take 57 trains traveling every inch of rail every day. The verification appears below:

$$(0.00618) \quad (\text{DEIS method accident freq. for 2 trains of 100-cars traveling 1 mi})$$

$$(560)*(0.00618)*(28.5) \quad (\text{Harris Co. rail length in mi * above * half of 57})$$

$$= 98.6 \text{ accidents per year} \quad (\text{round to 100; next whole number is } > 100).$$

I sincerely doubt that 57 trains of 100 cars each are traversing every inch of Harris County's rail network daily. The DEIS method of determining accident frequencies must be discarded.

Discussion

The Federal Railroad Administration (FRA) keeps records of all railroad safety incidents in the United States dating back to 1975. All manner of data, reports and queries, from the scale of individual grade crossings to national aggregations, are available immediately from databases accessed through its website. FRA reports information so detailed that users can pinpoint the location of previous accidents by line, grade crossing, accident type, train speed, number of cars, and whether hazardous materials were involved, among other criteria. The FRA website is so customizable and easy to use that a user can produce and download the number of rail and grade crossing accidents for Harris County and/or the City of Houston over any time span since 1975 within minutes.

SEA, ICF, and the applicants are aware of the data that FRA records. The DEIS even notes that ICF used nationally aggregated FRA data in its report that it cut-and-pasted the methodology and data from for the DEIS. SEA actually visited the FRA Office of Safety Website to obtain data for the grade crossing safety analysis. DEIS at F-7. There, they downloaded specific data for the past 5 years for every intersection along the proposed route.

SEA did not, however, bother to compare its accident frequencies to actual FRA data, enclosed as files Harris_All_2001.dbf, HARRIS_ALL_GXING_2001.dbf, and HARRIS_ALL_GXING_2002.dbf that show:

- 100 rail operations accidents and 64 grade crossing accidents for Harris County in 2001 alone.
- 3 grade crossing accidents each along Telephone and Old Galveston Roads, and 2 at the Port of Houston's Barbours' Cut Terminal, just in 2002.

The FRA numbers for Houston are a far cry from the dozens, or even hundreds of years between a single accident represented by the DEIS accident frequencies in Tables D.3-4 and D.3-5. The examples above prove that this discrepancy cannot be explained merely by pointing to the rest of the regional rail network.

Verification of DEIS results for proposed operating route

Merely checking the work of the DEIS would have revealed this. Table D.3-5, on page D-18, shows an existing ACCFREQ of 0.44 for the 65.8 miles of the Proposed Alternative and Alternative 1C. That ACCFREQ corresponds to one accident every 2.3 years. Consider that 65.8 miles represents about 1/8th of the 560-mile Harris County rail network. If the other 7/8ths of the network behaved similarly – as the DEIS' uniform national scale aggregation assumes – Houston could expect 8 accidents every 2.3 years, or about 3 to 4 accidents per year. Again, SEA's results are plainly unreasonable and cannot support a decision.

- C. *DEIS Tables D.3-4 and D.3-5, showing accident and hazmat release frequencies, cannot support a decision, regardless of whether SEA's use of national-scale data is found reasonable.*

As stated above, this exhibit completely replicates the DEIS hazmat analysis by reconstructing it in a spreadsheet (Worksheet2.xls). That spreadsheet first matches the results for segment traffic levels given in the DEIS, and then attempts to determine if any difference would emerge when evaluating the higher UP-provided traffic levels. Four results from the spreadsheet stand out. For this section, the following simple formula on DEIS page D-13 will prove helpful:

INTERVAL between releases = 1/CHANCE = 1/(ACCFREQ * RELEASE VALUE)

Where ACCFREQ equals accident frequency (acc/yr) and RELEASE VALUE equals release frequency (rel/acc).

1. *The incorrect accident frequencies discussed in section II-A and II-B completely control the DEIS calculations.*

First, the fact that the results barely changed between the applicants traffic levels and UP's indicates that the accident frequency *and not the release frequency* controlled the DEIS calculations. That result contradicts common sense. While accident likelihood will increase with a longer train, as in the UP traffic data, what should really vary are the release values. More cars should equal more releases. Yet when I held the release values constant for UP's traffic data, I saw that no matter what, *accidents*, which all releases spring from, would not occur more frequently than once every 4 years (ACCFREQ = 0.25) for a given build ("with project") segment.

As noted above, this unreasonable result contradicts available FRA data. If accidents do not occur, releases cannot happen. A release frequency could equal 1, indicating complete certainty of release in an accident, and the DEIS would still forecast hazmat incidents once every 4 years at best, for build project segments, because the accident frequencies are erroneously low. It is no answer to argue that summation of segments solves the problem. The accident frequency for the future market capture version of the proposed action and Alternative 1C is 0.56, or 1 accident every 1.8 years. As shown in the *Verification* of part II-B, *supra*, this value for these busy tracks would still not produce a reasonable result, even if applied to the other 7/8ths of the Harris County rail network as well.

2. *The DEIS never reports release frequencies (RELEASE VALUE), and instead replaces them with another variable, making the risk of release appear smaller.*

Looking at DEIS Tables D.3-4 and D.3-5, one might conclude at first glance that they reflect an intuitive result, where the release frequencies control the model. The accident frequencies in the third column from the right seem to vary little, and the reported “release frequencies” in the second column from the right appear to make all the difference between whether the interval between releases is 22 years or 2200 years.

However, the “release frequencies” reported in the DEIS tables are completely incorrect. If they were the actual release frequencies, the formula given *supra* in this section would produce the following types of results:

Table II-2: Consequences of Incorrect Release Frequencies

Source: Applying DEIS formula, *supra*, to DEIS Tables D.3-4 and D.3-5

Segment	ACCFREQ DEIS Tables D.3-4, D.3-5	“Release frequency” DEIS Tables D.3-4, D.3-5	INTERVAL b/w releases DEIS Tables D.3-4, D.3-5	“INTERVAL” b/w releases applying formula to DEIS data as shown
Proposed Action west of BRT Yard to GH&H (start)	0.022	0.00072	1,400	63,130
Existing UP GH&H line (sum of segments)	0.033	0.0032	320	9,470
Proposed Action entire route (existing, sum of segments)	0.44	0.051	20	45

In reality, the values reported in the “release frequency” column above equal the CHANCE. By definition, using the formula, if the values reported in the DEIS Tables truly were the release frequencies, then the accident frequencies would all equal 1, regardless of the segment. Therefore, not only does the DEIS make assumptions that ensure accidents never happen or happen more rarely than existing data show, it keeps the published release frequencies orders of magnitude smaller than the actual ones, causing everything to appear fine.

3. *Therefore the DEIS INTERVALS between releases cannot be verified from the stated methodology.*

The seemingly innocuous use of CHANCE values in place of the release frequencies diverts the decision maker from understanding what is really going on.

Because the release frequencies (RELEASE VALUES) are never reported, the DEIS-given INTERVALS between releases have no publicly discernible relationship to the data or DEIS methodology at all.

This was confirmed by calculating what the accident and release frequencies would have been had the DEIS methodology been followed. Worksheet2.xls replicates almost all of the DEIS accident frequencies in Tables D.3-4 and D.3-5. When attempting to replicate the release frequencies, however, it was necessary to backcalculate using the existing DEIS data. The DEIS fails to present a methodology for obtaining the release frequencies independently. Instead, DEIS page D-13 states that an undisclosed, amorphous, arbitrary balancing occurs between listed and unlisted factors that vary between segments. Even so, solving for the release frequencies necessary to satisfy the given INTERVAL and ACCFREQ generates a shocking result consistent with the finding *supra*, part II-C-1, that ACCFREQ controls the model.

4. *In fact, the DEIS' own data and methodology shows that hazmat releases will occur as often as every other accident.*

The Worksheet2.xls results show that over the entire route, without questioning any of the DEIS accident frequency (ACCFREQ) or INTERVAL values, a release is likely to occur every 1.5 to 2 accidents. That means that on the rail lines traversed by this proposal, an accident has a greater than 50% chance of resulting in a release of hazardous materials. This is an extraordinarily significant risk to the community that is never disclosed or discussed in the DEIS.

Table II-3: Unreported Release Frequencies (RELEASE VALUE)

Source: DEIS Tables D.3-4, D.3-5; Worksheet2.xls

Segment	Reported "Release frequency" DEIS Tables D.3-4, D.3-5	Actual unrep. Release Frequency (Calculated)	Change in INTERVAL b/w releases (yrs), using DEIS ACCFREQ
Proposed Action west of BRT Yard to GH&H (start)	0.00072	0.032	- 1335
Existing UP GH&H line (sum of segments)	0.0032	0.049	- 304
Existing Tower 87 to Dayton Junction (sum of segments)	0.023	0.187	- 35
Proposed East Belt Tower 85 to Tower 87 (future share)	0.025	0.099	- 37

Table II-4: Resulting INTERVALS when DEIS ACCFREQ is used with Actual Release Frequency

Source: DEIS Tables D.3-4, D.3-5; Worksheet2.xls

Segment	INTERVAL b/w releases (Shown in DEIS Tables D.3-4 and D.3-5) in years	INTERVAL between releases (Calculated) in years
Proposed Action west of BRT Yard to GH&H (start)	1400	45
Existing UP GH&H line (sum of segments)	320	16
Existing Tower 87 to Dayton Junction (sum of segments)	43	8
Proposed East Belt Tower 85 to Tower 87 (future share)	41	4
Proposed Action entire route (existing, sum of segments)	38	2

The STB must not ignore the implications of these numbers. The applicants may not be responsible for mitigating them through this proceeding, but they must be disclosed. There is no alternative but to reopen the proceeding and conduct the analysis correctly.

D. SEA cannot retreat from the hazmat release frequencies it determined but failed to disclose.

SEA must live with the consequences of its incompletely disclosed methodology for determining hazmat release frequencies on DEIS page D-13. It failed to report release frequencies in DEIS Tables D.3-4 and D.3-5, substituting the CHANCE variable instead. However, the unreported release frequencies were determinable from the simple arithmetic formula shown *supra*, once DEIS-given methodologies to determine accident frequency and INTERVAL values were used.

Whether the ACCFREQ and INTERVAL values themselves have independent validity does not matter, since their lack of validity does not, according to the DEIS, impact the STB's release frequency derivation. Rather, STB draws the release frequencies from undisclosed "past peer reviewed work" and "adjust[ments]" performed by the agency (DEIS p. D-13). These are not national-scale or annualized values like the accident frequencies; they are the professional agency determination of how many accidents on a given line under given conditions will result in hazmat release. Now that I have calculated, in Worksheet2.xls column P, what those release frequencies would have had to have been to satisfy the formulas in the DEIS, the agency must publicly disclose and abide by them in a Supplemental EIS.

E. The seriousness of SEA's failure to disclose release frequencies becomes apparent when the scale and relationship to other impacts in the DEIS is considered.

Because the DEIS did not correctly report hazmat release frequencies, absolutely nothing in the DEIS links the actual number of hazmat cars carried to chances of release except for STB's undisclosed methodology. No mathematical or logical statement to explain the relationship between those 2 numbers appears in the DEIS. Given the massive discrepancy shown in Tables II-3 and II-4 between what the hazmat release values should have been using the DEIS equation and what was actually reported in the DEIS, the analysis must be revisited.

These are two of the most critical figures in the entire document. The risk that this project poses to tens of thousands of people depends on discerning the correct relationship between hauling hazardous materials and potentially exposing people to them. I can calculate what the correct, undisclosed release frequencies should be, but the DEIS provides no basis for anyone, besides the SEA, to understand how they relate to the

actual number of hazmat cars traveling through east and southeast Houston. The public must receive an opportunity to see, for the first time, and comment on, this relationship. If SEA or the applicants are uncomfortable with the values in Tables II-3 and II-4, *supra*, they should reopen the process and determine if actual FRA data paints a different picture. As it stands now, the DEIS methodology produces the results in Tables II-3 and II-4.

III. GRADE CROSSINGS AND ROAD TRAFFIC DELAY

SUMMARY

This section presents new information regarding the impact to the transportation system in east and southeast Houston. Each new item represents an increment of traffic delay that was not disclosed. When these increments add together and become large, as shown below, United States Department of Transportation (USDOT) criteria mandates grade separations between rail lines and roadways. DEIS at F-7. Some of the conditions for mandatory grade separation listed in the DEIS include:

- Vehicle delay exceeds 40 vehicle hours per day
- Crossing exposure (the number of trains per day times the ADT, or average daily traffic) exceeds 1,000,000 in urban areas

Meeting either of these conditions triggers the mandatory action. ~~Mandatory~~ grade separations will occur at several intersections when traffic delay is analyzed properly for this proposal. Some of the DEIS errors are so large that they will trigger the mandatory action by themselves when corrected. Others add in logical steps to exceed the threshold.

A. SEA fails to analyze the proposed action.

First, for traffic delay, the DEIS fails to analyze the proposed action. It increased the average number of daily trains but failed to correspondingly increase the average length of the trains in Table F.1-2. Instead it uses the existing conditions train length for all segments. This means that the additional cars from the applicants' trains are nowhere to be found, particularly those on the future market share trains, which greatly exceed the existing average train lengths. I calculated the correct average train lengths in the Worksheet2.xls spreadsheet and applied them in the Worksheet3a.xls spreadsheet. The increases in length for future conditions range from 175' to 301' for the applicant-provided traffic data, and grow to 388' to 578' when UP's Bayport Loop traffic data is used. The increase in delay time is small, as shown on tabs "StartUpApplicants" and "FutureApplicants" in Worksheet 3a.xls, but this is just the beginning.

B. An incongruity exists between the accident data for this section and the accident data in the hazardous materials section.

In the hazardous materials section, SEA did not use more accurate, localized accident data available through the FRA Office of Safety (see comments section II-B, *supra*). Such data would have indicated the unreasonableness of the linear application of national-scale data that was used instead. For grade crossings and traffic delay, however,

the SEA obtained localized accident data, and then failed to conduct a hazardous materials risk analysis with it.

C. The DEIS fails to report the relevant accident statistic from its newly acquired local accident data.

The DEIS only discloses the accident frequency at each road-rail intersection, in DEIS Table F.2-1. But the DEIS only considered 5 of the 27 available years of data. SEA must revise the table to reflect the complete data set, given that the intersections with the greatest risk are “repeat offenders”. Attempting to extrapolate from 5 years of data per grade crossing is not reasonable because the sample size is too small. Using the entire data set will generate more reasonable results because this data set, unlike nationalized accident data, is specific to individual crossings.

The DEIS’s more severe error, however, is the failure to report grade crossing accident risk across the entire proposed route, by adding up the segments. The FEIS admonishes that “the expected number of accidents on the individual segments should be added to get an understanding of the total number of incidents.” FEIS at 4-48. Yet the DEIS never followed its own advice in the grade crossing accident analysis.

Table III-1: Grade Crossing Accident Frequencies over the Entire Route

Data summed from DEIS Table F.2-1 (See Worksheet3b.xls)

	Existing	Proposed
Total accident frequency (acc/yr)	1.82	1.95
Days between accidents	201	188

The contradiction between these values, which predict accidents occurring twice a year, and the inaccurate accident frequency values reported in DEIS Section 4.2 and Tables D.3-4 and D.3-5, that claim dozens of years between a single accident, is fatal. See also Worksheet2.xls, column Q.

It is no answer to argue that the numbers above and the ACCFREQ in DEIS Tables D.3-4 and D.3-5 represent different categories of accidents. With the FRA data in hand, SEA would have known that 64 grade crossing accidents occurred in Houston in 2001. If it had summed the accident data over the proposed route, and determined that approximately 2 grade crossing accidents per year would result, comparison with DEIS Table D.3-5, which shows an ACCFREQ for the proposed action, future market share, of 0.56 or 1.8 accidents per year, should have triggered an alarm. The comparison would have shown grade crossing accidents occurring twice as frequently as rail operations accidents, which include some grade crossing accidents in their total. The FRA data for Houston for 2001, with 100 rail operations accidents and 64 grade crossing accidents, suggests exactly the opposite.

D. STB fails to apply the accident data to determine how many citizens will be killed or injured.

Over the past 6 years, 261 grade crossing accidents have occurred in Harris County, according to the FRA highway-rail incident database. This averages out to 43.5 accidents per year, or 1 accident every 8.4 days.

Table III-2: Grade Crossing Accidents in Harris County, 1997-2002

Source: Federal Railroad Administration

Year	Accidents	Fatalities	Injuries
1997	40	2	15
1998	34	3	14
1999	27	3	19
2000	44	1	16
2001	64	4	24
2002	52	0	11
Total	261	13	99
Average (per yr.)	43.5	2	17
Average (days b/w)	8.4	169	22

Right now in Harris County, if trends continue, a greater than 1 in 3 chance exists that a grade crossing accident will result in an injury. One in 20 accidents will result in death. These numbers may vary somewhat when only the specific project segments are included. But the point is clear. SEA failed to undertake this analysis, even though it had the FRA data in front of it.

Assuming for the moment that the values in DEIS Table F.2-1 are valid (they may not be frequent enough, *See infra*, section III-E), once this project starts, a person will be injured at one of the project segment grade crossings every year and a half (3 times 188 days), and one person will die at them every 10 years (20 times 188 days). These are significant impacts, before future cumulative rail traffic is even considered. Though the applicants may not be responsible for solving them, the SEA has a disclosure obligation if it desires to support its determination of no significant impact for this project.

E. SEA fails to disclose a complete methodology for the grade crossing analysis.

The grade crossing accident frequencies shown in DEIS Table F.2-1 rely on a software program available only by contacting a staff member at FRA. Determining

accident frequencies straight from the 5 years of accident data used will not be accurate since, as discussed supra, Section III-C, the sample size is unreasonably small compared to the 27 years of available data.

The DEIS should list, in Chapter 4 or Appendix F, the train length, average number of cars, average number of hazmat cars, and average number of daily trains input for each project segment. The proper values for startup and future scenarios are contained in Worksheet2.xls, rows 26-87, columns C-F. There is nothing mysterious about these values – it is straight arithmetic to add in the new SJR traffic and calculate the new averages. Yet the DEIS does not disclose this data, leading me to ask, as in section III-A, whether traffic levels from the proposed action were modeled at all.

F. The DEIS traffic delay analysis relies on an undisclosed and unreasonable free-flow train traffic assumption.

As discussed in sections I-B and I-C of these comments, free-flow conditions do not currently exist on the Houston rail network. Trains block intersections and neighborhoods sometimes for hours at a time. The railroads violate Texas' statutory limit of 10 minutes for blocked crossings on a daily basis in Houston's East End. Parties have submitted evidence on numerous occasions documenting these facts.

1. If just 1 train is delayed for 10 minutes under existing conditions, traffic delays sufficient for grade separation on 2 main streets will result.

As for other sections, I replicated the traffic delay calculations using only the assumptions, given values, and methodology in the DEIS. The results of these calculations – including those for the proposed action, which the DEIS fails to analyze entirely - appear in Worksheet3a.xls. In a subsequent calculation on worksheet tab "No Free-flow," I subtracted 1 free-flowing train and added 1 train that experiences a delay of 10 minutes. The same DEIS formulas were applied to this delayed train, and the delayed traffic due to both the free-flowing and delayed train was determined for each grade crossing, just as in the DEIS. These values were then used to determine if the grade crossing violated the USDOT mandatory grade separation level of 40 hours of vehicle delay per day.

Two busy streets, Harrisburg Blvd and Genoa Red-Bluff Road, require grade separation under existing conditions if one of the many trains that crosses them each day blocks the crossing for an extra 10 minutes. These blockages already occur for Harrisburg Blvd. But because the DEIS employed an unreasonable free-flow assumption, its traffic delay analysis starts in the end zone and declares a touchdown once it adds SJR traffic. Any addition of traffic to crossings that already require grade separation is a significant impact that must be disclosed.

When additional trains are delayed under existing pre-SJR conditions for 10 minutes each, the number of streets requiring grade separation under USDOT standards increases. Again, evidence already in the record for this proceeding shows that these lengthy blockages can occur multiple times on the same line or even at the same intersection on the same day.

Table III-3: Number of trains delayed for 10 minutes that would force grade separations under USDOT standards using DEIS assumptions

Source: Worksheet 3a.xls, tab "No free-flow", row 145

<i>Street</i>	<i>Segment</i>	<i>Existing Conditions</i>	<i>Future – Applicant's Traffic Estimates</i>	<i>Future – UP Traffic Data</i>
Harrisburg	East Belt	1	1	1
Canal St.	East Belt	8	7	7
Lawndale	GH&H/Tower 30	2	2	2
Broadway	GH&H/Tower 30	3	3	3
Howard Dr./Cesar Chavez HS	GH&H/Tower 30	2	2	2
S. Richey St	GH&H/Tower 30	2	2	2
Genoa Red-Bluff	GH&H/Tower 30	1	1	1

G. The DEIS presents train speeds across Harrisburg Blvd that are unreasonably high.

The DEIS has overestimated the train speed at the Harrisburg Blvd crossing. Adjusting modestly to account for actual conditions results in a level of delay requiring mandatory grade separation before project traffic is even added.

The DEIS states on page 3-22:

SEA used information available from FRA to determine the train speed for each grade crossing for this analysis. Specifically, SEA used the midpoint of the typical speed range provided in the FRA Office of Safety Analysis Crossing Inventory Database.

The result for Harrisburg Blvd should be field verified. I cannot accept the 15 mph train speed figure based on the geometry of rail lines and streets surrounding that crossing. Harrisburg Blvd crosses the East Belt perpendicularly immediately north of the perpendicular intersection between the East Belt and GH&H. Immediately north of the

Harrisburg crossing, not 1/10th of a mile away, is another perpendicular rail intersection. Within a mile on each side of the Harrisburg crossing, the East Belt crosses 11 streets at grade, 7 to the south and 4 to the north. Both the GH&H and East Belt have maximum speed limits of 20 mph.

It is clear that SJR trains turning onto the East Belt from the GH&H will not take the 90-degree curve at 20 mph, or even 15 mph, and hit the Harrisburg Crossing and the immediately adjacent rail intersection to the north. They will travel much slower. The only question is whether or not trains traveling up and down the East Belt travel sufficiently fast over all of those at grade streets and the 2 busy rail adjacent rail intersections to generate a 15 mph average speed. My calculations show that they likely do not, since a majority of the 25.1 existing daily trains (given in DEIS Table C-3, last row) would have to travel at or near the limit of 20 mph over this entire stretch for that to be true.

The 15-mph assumption obscures an extremely significant freestanding environmental impact. If the actual average speed is 3 mph less, or 12 mph, Harrisburg Blvd requires grade separation under USDOT standards now, before traffic from any project, including SJR, is added. *See* Worksheet3a.xls, tab "Only LOS, Speed, Warning", rows 34-40. With the margin of safety this close, STB must investigate further.

H. The DEIS traffic delay analysis relies on an unreasonably brief warning period that contradicts federal law.

Regulations of the Federal Railroad Administration, at 49 CFR § 234.225, state:

A highway-rail grade crossing warning system shall be maintained to activate in accordance with the design of the warning system, but in no event shall it provide less than 20 seconds warning time for the normal operation of through trains before the grade crossing is occupied by rail traffic.

The DEIS assumes on page F-2 that 15 seconds is sufficient, for 30 seconds, or 0.5 minutes, of total warning system time blocking the intersection. The fact that the DEIS used 0.5 minutes total, instead of 0.67 minutes as required, was verified in my replication. *See* Worksheet3a.xls, tab "DEIS version". The DEIS then states:

Not all crossings have gates as warning devices and thus blocked crossing times for such cases *may be overestimated*. DEIS at F-2, n1.

To put things in perspective for conditions given in the DEIS, imagine a football field with the train at one end zone, on the far sideline. The train is traveling 15 mph. A person in their car is on the near sideline, at the opposite end zone from the train, at a stoplight, with a car in front of them. If the person in the

front car sees the light change and begins to react at the moment the train crosses the far goal line and continues heading towards them, the train and second car will collide when the train reaches the near end zone. That is what 15 seconds is in terms of warning.

Five seconds may not seem like much more warning time. But STB presumably knows the law - in fact it cited to the regulation on DEIS p. 3-20. Why would it knowingly model another duration? Following the law produces another incremental increase in delay that will prove significant when the results of all the errors are corrected for.

I. The DEIS uses assumptions that turn city streets into highways.

1. The STB applies a "vehicle departure rate" to urban streets that it applied in another environmental review to a federal highway.

Central to the artificially low delay times in DEIS traffic analysis is a "vehicle departure rate" concept, that it discusses on page F-2. Vehicle departure rates equal vehicles per hour per lane of road. *Id.* The DEIS cites on that page to the *Highway Capacity Manual*, a standard document in transportation analyses. In footnote 2 on page F-2, the DEIS states:

This analysis uses vehicle departure rates of 1800/hr for highways, 1400/hr for arterials, 900/hr for collectors, and 700/hr for local roads.

The 1400/hr "arterial" classification was applied to several urban streets, including Harrisburg Blvd, Howard Dr./Cesar Chavez HS, Broadway, and S. Richey. Those streets, as shown in Table III-3, require grade separation under current rail network delay conditions that the DEIS failed to disclose. But because the DEIS used the wrong street classification, some of them also require grade separation even if train traffic is free flowing.

It would be one thing to just argue that SEA misclassified the streets. But environmental reports from different proceedings tell the whole story, as in this quote:

"Based upon **1,400 passenger cars per hour per lane** threshold for level of service (LOS) C for multilane highways **with a free flow speed of 50 miles per hour**, **U.S. Highway 61** is operating at LOS C or better..."

Finance Docket No. 33877, *Illinois Central Railroad Company – Construction and Operation – East Baton Rouge Parish, LA*.
Environmental Assessment at 3-24. (attached as Appendix III-1)

U.S. 61 is a four lane divided highway on the National Highway System that is classified as a principal arterial. *Id.* at 3-22. Apparently SEA saw no problem with applying the same assumptions to 30-mph surface streets in the nation's fourth largest city. It apparently confused the term "urban minor arterial" in the USDOT Crossing Inventory

Report with “principal arterial” as defined in the *Highway Capacity Manual*. Of course, the effect of the incorrect departure rate is obvious. When corrected for, more cars back up at the crossing for longer periods, leading to longer delays.

2. *When a lower departure rate is applied, Harrisburg Blvd approaches the mandatory grade separation threshold.*

None of the streets along the GH&H or East Belt lines meet the description of a 4 lane divided principal arterial highway. Therefore, in tab “Reasonable departure rate,” I lowered the vehicle departure rates for those streets to the next highest value, 900/hr. See Worksheet3a.xls, tab “Reasonable departure rate.” This is another incremental increase that will prove significant when all of the errors are corrected.

3. *Because it assumes Houston’s city streets are free flowing highways, the DEIS fails to account for intersections near grade crossings.*

The DEIS never considers the impact of nearby signalized intersections on the delay times it calculates for the grade crossings. The *Highway Capacity Manual* provides methods to account for the interaction between grade crossings and signalized intersections. The DEIS chose not to follow these methods, even though it claimed to use the *Manual*. The burden is not on the public to provide SEA with the magnitude of change that accounting for signalized intersections would generate. However, if nearby stoplights raise the average delay times on several streets by just over 30 seconds, they will require mandatory grade separations under USDOT standards, under existing conditions and without correcting the errors we identified. Clearly when the margin of safety is this close, the burden is on SEA to do its job and disclose the impacts.

- J. *The addition of even a fraction of the container trains from the proposed Bayport Container Terminal will force grade separations on east Houston streets.*

Two proposed container ports will add significant train traffic to Houston’s rail network. The PHA Bayport Container Terminal will add, as stated in its DEIS, eight 8000’ container trains that must traverse the GH&H and Strang Interchange at Manchester Junction and Tower 30. Most if not all of these trains will head further into the East End and then to points north and west. When these trains are included in the delay analysis, Harrisburg Blvd will require a grade separation under USDOT standards. See Worksheet3a.xls, tab “Add Container Train”. The DEIS fails to disclose this impact.

I calculated the effect of a fraction of that container traffic (2 trains) in conjunction with existing conditions and the project. *Id.* That level of container traffic, by itself, pushed Harrisburg Blvd even closer to mandatory grade separation.

K. When the errors in warning signal duration and vehicle departure time are corrected, and when 2 container trains are added, mandatory grade separations result.

Worksheet calculations using only DEIS figures and methodologies reveal the following results:

A grade separation is required at Harrisburg Blvd under existing and SJR-project conditions when a 12-mph average train speed is used in the calculations. *See* Worksheet3a.xls, tab "Only LOS, Speed, Warning", rows 34-40.

A grade separation is required at Harrisburg Blvd under existing and SJR-project conditions when the above speed condition occurs and when the warning signal duration and vehicle departure times are corrected. *Id.* at same tab, rows 7, 16, and 25.

A grade separation is required at Harrisburg Blvd under existing and SJR-project conditions when the warning signal duration and vehicle departure times are corrected and when 2 container trains are accounted for. This finding is unquestionably significant and the DEIS fails to disclose it. The significance of the mandated separation independent of SJR also cannot be understated, as it indicates that the Bayport Container Terminal will cause significant impacts in east Houston that are undisclosed in its DEIS. This is a cumulatively significant impact that both DEIS's fail to disclose. *Id.* at tab "LOS, warning + container," rows 7, 16, and 25.

Grade separations are required at Canal Street, Lawndale, S. Richey Street, and Genoa Red-Bluff under SJR-project conditions using the applicants' traffic data with eight 8000' container trains added and correcting the LOS, warning signal, and vehicle departure time errors. Howard Drive/Cesar Chavez HS with over 2,000 students is added to the mandatory grade separation group when UP's existing and verified Bayport Loop traffic figures are used in place of the applicants' estimates. Level of Service for Canal Street and Harrisburg Blvd under both applicant provided and UP-provided traffic levels falls to grade D under these conditions. Similarly, a grade separation is required at Harrisburg Blvd under an 8-container train scenario irrespective of whether other corrections occur. *Id.* at same tab, rows 39-69.

These are the cumulatively significant port and rail impacts that the agencies are avoiding. *These* are severe impacts affecting schoolchildren, businesses, and neighborhoods across southeast Harris County. *These* are problems requiring years of planning and potentially multi-million dollar investments by our region to solve. *These* are the reasons the National Environmental Policy Act requires agencies to tell the whole truth so our elected officials and planners can make the right decisions. *These* are the reasons this proceeding must be reopened and why its current environmental documents cannot support the proposed decision.

DISCUSSION OF WORKSHEETS

SECTION I-A RAIL OPERATIONS

Worksheet1.xls

This spreadsheet contains the calculations that support this exhibit's claim that the rail traffic levels used in the DEIS were unreasonably low. The calculations involve addition, subtraction, multiplication, division, and the most basic of statistical functions, all of which are available in any spreadsheet software. For a text reference, the first 2 chapters of any high school statistics textbook will suffice. Appendix I-1 is one example. The calculus-based methods more familiar to an upper level college Probability and Statistics class for science and engineering majors are not necessary.

A. Fit of DEIS-given UP rail traffic data from the Bayport Loop to Normal Distribution

The data shown in the DEIS from UP was applied to a normal distribution. As explained on the worksheet, this was a conservative assumption that actually understates the chance of high levels of traffic (particularly levels greater than 2 standard deviations from the mean).

Probability (p) values for the 4 traffic levels in the UP letter, DEIS Appendix C, were given in terms of the event happening. These values appear as (1-p) on the worksheet. To reflect the chance of these values not occurring, (1-(1-p)), or simply p, appears on the worksheet. P values represent the area under the standard normal curve at a given standardized value, which indicates the probability (p) of the data point (here, traffic level) occurring. As stated, these p values were quickly determined from the data in the DEIS. The mean value of 310 corresponded to $p=0.50$, or a 50% likelihood, and so on.

From this p-value, a z-value was determined. Z values, also known as standardized values, from the sample data are necessary to determine where on the standard normal curve the data point is located. This is how other traffic levels can be evaluated to obtain p-values, using a table similar to the one in Appendix I-1. Since the p-values were given, the z-values were needed to calculate the standard deviation (σ). Once σ was calculated, using the standardized value formula:

$$z = (\chi - \mu) / \sigma$$

where χ is a data point, μ is the mean, z is a standardized value, and σ is the standard deviation. The closest data point to the mean was chosen, conservatively, to minimize the effect of outliers and extreme values, such as the 749-car maximum that was reported. Ordinarily, if one had access to the data set, the standard deviation would be calculated directly from the data, rather than estimated from a back-calculation. It is important to

note that, at present, σ cannot be calculated using a standard deviation formula that depends on the average of the squares of the deviations of the data points from the mean, such as:

$$\sigma = \sqrt{\frac{1}{(n-1)} \sum ((x_i - \mu)^2)} \quad \text{or in EXCEL: STDEV(A5:A8).}$$

because UP provided only 4 of the May 2002 data points. STB should ask UP to provide the σ from its data set.

Based on the information provided, back calculation and a resulting test for reasonableness provide the acceptable methods for determining the standard deviation. Because the UP data was not directly reported in the DEIS, the resulting σ was evaluated under the 68-95-99.7 test for normal distributions. That rule states that 68% of the data falls within one σ from the mean, 95% falls within two σ , and 99.7% falls within three σ .

The 68-95-99.7 test showed that the σ calculated was reasonable. Indeed, it slightly overcompensated in favor of lower traffic levels. This is consistent with the conservative assumption of applying a normal distribution to a data set that is slightly skewed to the right (indicating that the upper 50% of values extends over a greater range than the lower 50%). If a distribution skewed to the right that fit even closer were applied, some values outside of 3σ (for instance, > 710) that might virtually never occur ($1-p$ approaches 0) in a normal distribution would be included. Therefore, applying a normal distribution gives the benefit of the doubt that high values, such as the 749 car maximum recorded, are "outliers" and thus extremely rare. The unreasonably narrow range of traffic that STB analyzed (34.8%) therefore appears larger than it may actually be due to this conservative assumption.

B. Verification and determination of p for other levels of rail traffic

With a reasonable σ determined, z-values and resulting p-values could be calculated to determine exactly how much SEA underestimated the existing and future rail traffic levels by. Microsoft Excel's built in STANDARDIZE function calculated z-values, while the built in NORMSDIST function calculated p-values from a standard normal distribution. The table of standard normal probabilities in Appendix II-D serves the same purpose as NORMSDIST. For comparison purposes, the probability that rail traffic levels would exceed a given level ($1-p$) was determined.

Finally, the proximity of the tested traffic levels to the mean was determined by calculating how many σ they were away from the mean. It is clear that any reasonable traffic level falls within one standard deviation. Both the 25% (480) and 75% (220) frequency values provided by UP fall less than one standard deviation away. Applying the 68-95-99.7 test, one σ (where $\sigma = 133$) on either side of the mean (310 total daily cars) corresponds to a range of 177 cars to 443 cars. Choosing 258 cars as the DEIS traffic level undervalues both the rare maximum traffic days and the more significant number of moderate traffic days just greater than the mean. The DEIS provides no

reason to explain why a disproportionately greater share of moderate traffic days in UP's data would be grouped below the mean instead. Therefore, STB has no excuse for discarding the mean of 310 in the DEIS analysis.

SECTION II: HAZARDOUS MATERIALS RISK

Worksheet2.xls

This spreadsheet unifies several DEIS tables to replicate the hazardous materials risk analysis in DEIS Appendix D. It is not a hazardous materials risk analysis of its own. Its only function is to prove the erroneous aspects of the DEIS analysis by replicating it and, where replication was not applicable, showing what the results would have been had the DEIS followed its own stated methodologies.

DEIS Tables D.3-4 (existing segments) and D.3-5 (project segments) form the basis for all subsequent discussions of hazardous materials risk in DEIS chapters 2, 3, 4, and 5. The goal of this analysis was to replicate the values contained in DEIS Tables D.3-4 and D.3-5, and to prove several erroneous aspects of those tables discussed in Section II of these comments. This spreadsheet required no specialized modeling expertise to generate. It relies entirely on DEIS data and the assumptions that the STB chose to disclose in DEIS Appendices C and D.

The upper left corner of the spreadsheet presents the first table, for traffic inputs, using data from DEIS Appendix C. The yearly totals are shown for illustration purposes. The average daily totals were used for calculating the additional daily rail traffic for each segment. UP's traffic data was included for comparison purposes with the applicants data improperly adopted by STB (see section I-A of these comments).

In the main table, each segment is listed in column A. Immediately to the right, in columns C-F, and above the double line, are values from DEIS Table C-3 for existing rail traffic. Below the double line, the number of new trains is added to the existing total, and weighted averages are calculated to determine the new average number of daily rail cars, hazmat cars, and train length. The FRA class was determined from stated speed limits for each line and discussions in DEIS Sections 3.1, 4.1, and Appendix D. The FRA classifications by speed appear in the spreadsheet at row 4, column V.

Where a segment had more than 1 FRA classification, such as on the GH&H where the speed drops as the line enters Houston, the segment was split and the resulting accident and release frequencies in columns O and P were added. The DEIS uses the same method throughout tables D.3-4 and D.3-5, to arrive at a result for multiple segments and eventually the entire project. Segments were only split in this analysis after 1) I was unable to replicate the DEIS result using only a single FRA classification, and 2) the DEIS explicitly stated that different portions of the same segment had different speed limits. Segment lengths were given in Tables C-3, D.3-4 and D.3-5 for all segments. Only two segments required splitting: the UP Lafayette Subdivision and the GH&H line south of Tower 30. While I was able to perfectly match the results on the Lafayette, my results for that segment of the GH&H were slightly, but not significantly, off. As the worksheet shows, the imperfection on part of the GH&H altered the total sum of segments result only negligibly. The overall conclusions about the undisclosed hazmat release values calculated by the worksheet are not in doubt.

The DEIS-reported accident (ACCFREQ) and release frequencies (RELEASE VALUE), as well as the INTERVAL between releases, appear in spreadsheet columns I-K. Section II-C discusses why the release frequencies reported in the DEIS are undisputedly the CHANCE values equal to $1/\text{INTERVAL}$. That fact is determinable without the use of this spreadsheet.

Row 2 column P presents DEIS Table D.3-3, the national-scale accident probabilities by track class that control the model. Below that, accident probabilities for cars and trains are calculated using the methodology shown on DEIS pages D-10 to D-11. These values are then used to calculate the frequency of accidents associated with causes related to car (FACCD CARS) and train-miles (FACCD TRAINS) operated, shown in columns M and N of the main table and as discussed on DEIS pages D-11 to D-12. The ACCFREQ in column O is merely the sum of these two values, as shown on page D-12. The RELEASE VALUE in column P is not independently calculable. However, it can be determined with simple division and multiplication using the ACCFREQ in column O and the given INTERVAL in column K. More simple division and multiplication produces a years between accident value in column Q and verifies consistency with the INTERVAL in column R.

I followed the DEIS methodology for both existing and future conditions to replicate frequency values in the DEIS independently. The fact that the spreadsheet's ACCFREQ results (column O) correlate exactly with both the DEIS existing *and* future conditions on most of the segments leads me to believe I have followed the DEIS methodology correctly. None of the spreadsheet's RELEASE VALUES (column P) match those in the DEIS, because as discussed in section III-3, if the RELEASE VALUE equaled CHANCE, all ACCFREQ would approach 1. Yet if we are to believe the DEIS formula at all, the RELEASE VALUES in the spreadsheet must equal those calculated, but never disclosed, by STB. The DEIS formula appears again below for reference:

$$\text{INTERVAL between releases} = 1/\text{CHANCE} = 1/(\text{ACCFREQ} * \text{RELEASE VALUE})$$

For two "split" segments, discussed *supra*, I was unable to exactly replicate the ACCFREQ given in the DEIS. Neither disturbs the conclusions of this exhibit. The final result at the bottom of the main table in column O was impacted negligibly. One of these segments (the GH&H) involved a split FRA classification. I applied the split where the DEIS said the classification changed. The segment is neither a uniform class 2 or class 3 segment, since using DEIS Table D.3-3 derived values for both of those classes alone failed to produce the DEIS result. The other segment (GH&H b/w Tower 30 and 85) contains a clear typographical error in the DEIS. If the ACCFREQ were supposed to equal 0.0089 or 0.0099, it would be a factor of 10 less than any other ACCFREQ – a completely unreasonable expectation for that line. Verification shows that I applied exactly the same DEIS formulas to those 2 segments as I did to the ones I replicated the results perfectly on. Therefore, I conclude that the actual ACCFREQ values are misrepresented in the DEIS for those segments.

SECTION III: GRADE CROSSINGS AND ROAD TRAFFIC DELAY

Worksheet3b.xls

The data in this worksheet comes directly from DEIS Table F.2-1. The worksheet sums the accident frequencies for each grade crossing to arrive at an accident frequency for the entire operating route. This important calculation did not occur in the DEIS. The results are reported in Table III-1 of these comments.

Worksheet3a.xls

This worksheet consists of 10 independent sheets, each representing a different scenario. The scenarios correct serious errors in the DEIS, each of which results in increased delay times at grade crossings. These scenarios are explained in section III of this exhibit. They consist of applying the DEIS formulas to projected startup and future rail traffic levels on SJR, based on the applicants' and UP's counts of existing traffic.

This worksheet first recreates the DEIS analysis shown in DEIS Appendix F. This is shown in the leftmost worksheet tab, "DEIS Version". This sheet contains formulas shown in DEIS appendices F and H. It replicates the DEIS analysis without error.

The formulas are then applied to projected startup and future rail traffic levels on SJR, based on the applicants' and UP's counts of existing traffic. These results appear in the next 4 tabs to the right.

The "no free flow" tab contains an assumption that 1 train blocks a grade crossing for 10 minutes a day – a common situation currently in east Houston. This train was carefully added using the same DEIS formulas as before. Mainly, it required taking weighted averages of the non-blocked, free-flowing traffic and this new delayed train. This was the only tab where the blocked train assumption was used.

The "reasonable departure time" tab reflects corrections discussed in section III-F of this exhibit.

In the "add container train" tab, multiple container trains were added to existing and project traffic levels. This involved treating the container trains just like new trains from SJR, with the exception of recalculating the average train length.

The remaining 2 tabs apply a combination of assumptions. The first applies the level of service change and a train speed correction at Harrisburg Blvd. It also changes the signal warning time, which adds to the overall delay, to make it comply with federal law. The second allows Harrisburg Blvd.'s train speed to equal the DEIS value, but adds container trains.

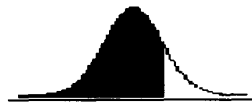
In all worksheets, one column shows a calculation not made in the DEIS: the daily vehicle-hours of delay. These values are significant, because more than 40 vehicle hours of daily delay at a grade crossing requires mandatory grade separation under U.S. Department of Transportation criteria shown in the DEIS. These values are calculated by multiplying the average delay time per vehicle (Da, not Dc) times the "post" number of vehicles delayed per day (the resulting number of vehicles delayed per day by the operations). The value must be divided by 60 to convert from minutes to hours.

Standard Normal Probability Table

The table shows cumulative probabilities for the standard normal curve. In other words, the table shows the area to the left of a z-value as illustrated in the picture at the bottom of the page.

Cumulative probabilities for NEGATIVE z-values are shown in this table.

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
-3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
-3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
-3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
-3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
-2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
-2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
-2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
-2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
-2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
-2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
-2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
-2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
-2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
-2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
-1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
-1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
-1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
-1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
-1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
-1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
-1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
-1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
-1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
-1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
-0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
-0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
-0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
-0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
-0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
-0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
-0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
-0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
-0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641



Cumulative probabilities for POSITIVE z-values are shown in this table.

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

