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November 19, 2021

By Email

Kali N. Bracey
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Re: Finance Docket No. 36496, *Application of the National Railroad Passenger Corp. Under 49 U.S.C. § 24308(e) – CSX Transportation, Inc. and Norfolk Southern*

Dear Counsel:

We are writing in response to your November 17, 2021 letter asking questions about certain workpapers for the opening evidence filed by CSX Transportation, Inc. (“CSXT”) and Norfolk Southern Railway Company (“NSR”) on November 3, 2021. We respond to each of your questions below.

CSXT RTC Inputs

1. CSXT provided the “NoBuild Growth Data.xlsx” workpaper to the RTC Modelers without active formulas showing how “Future Train Lengths” and “Future Train Tonnage” (Columns C and D of the “Volume Growth” tab) were calculated. The “Growth Summary” tab explains the calculations that were used to derive the future train length and tonnage for local (prefix “M”), merchandise (prefix “Q”), and foreign (prefix “Z”) trains. Additional local volume was “spread evenly to Merchandise trains with available capacity” until those trains reached 10,000 feet. For local and foreign trains, a 2% compound annual growth rate (“CAGR”) was applied to the existing train length and train tonnages. That equation is listed below:

V_f = Final value (use for length and tonnage)
 V_b = Beginning value (use for length and tonnage)
 t = Number of years (in this case, 20)

$$\text{CAGR} = \left[\frac{V_f}{V_b} \right]^{\frac{1}{t}} - 1$$

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If Amtrak wishes to determine the existing train lengths and tonnages, the CAGR equation can be adjusted as follows to calculate those values:

$$V_b = \frac{V_f}{[CAGR+1]^t}$$

While the RTC Modelers were not given the underlying calculations, a spreadsheet titled “Copy of UpdatedTrainCombineWithNotes.xlsx” that contains the “active calculations” or equations for “Future Train Lengths” and “Future Train Tonnage” was produced in discovery. *See* CSX_AmtrakGC_0007473. We would note that the “Copy of UpdatedTrainCombineWithNotes.xlsx” spreadsheet contains eight more trains than are present in the “NoBuild Growth Data.xlsx” workpaper. These eight “new” trains were ultimately not included in CSXT’s final growth projections provided to the RTC Modelers.

2. We are providing an updated file titled “Train Profile Data UPDATED.xlsx” resolving the “#REF” errors identified in your letter. We will provide access to that file today by separate email. This file should be treated as Highly Confidential as reflected in the revised RTC Report Workpapers index attached as Appendix A.
3. The updated file titled “Train Profile Data UPDATED.xlsx” that we are providing in response to your question 2 also should resolve the query error on the “Dwell Analysis” tab.
4. The “SG_TRAIN_MOVEMENT” table referenced in the “SQL Statement” tab of workpaper “DispatchData.xlsx” is located within an Oracle database maintained by CSXT that has all the dispatch data for the entire network, not just the Gulf Coast region. The RTC Modelers received only the information from the Oracle database that was relevant for this case, which is contained in workpaper “DispatchData.xlsx.” The reference to “SG_TRAIN_MOVEMENT” is simply that—a reference so CSXT knows where the data was originally pulled from internally.
5. In the “DrawBridgeInputData.xlsx” workpaper, the “Notes” column of the “DrawBridges” tab was used by internal CSXT personnel to track their efforts to compile drawbridge data. The RTC Modelers did not rely on the content in cells E7 and E8 in developing the RTC Model. CSXT believes that the asterisks in these cells may have been intended to denote bridges that were slated for or in the process of being automated.

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HNTB RTC Inputs

6. The source of the calculations underlying the data shown in the “2039” tab of the “Moveable Bridge Analysis.xlsx” workpaper is a query in the Access database titled “FAF4.5.1.accdb” located in folder “1.3 HNTB.” The source of the data is the United States Department of Transportation’s Freight Analysis Framework (“FAF”), and the FAF data can be found in the “FAF4.5.1.accdb” Access database.

RTC Files

7. The RTC Modelers did not utilize or rely on most of the RTC file types identified in your letter in conducting their analysis, and those RTC files therefore do not exist. Of the RTC file types you identified, the RTC Modelers did use or rely on the following files: .DELAY, .REPORT, and .ROUTE. Most of the data contained in these file types is located in the Access database titled “Train Analysis.accdb,” which was provided in the “3.0 RTC Output and Analysis Files” workpaper folder. Nevertheless, we will supplement the RTC Report workpapers by providing the .DELAY, .REPORT, and .ROUTE files for each of the 10 RTC cases analyzed in the report. We will provide access to these files today by separate email. These files should be treated as Highly Confidential as reflected in the revised RTC Report Workpapers index attached as Appendix A.
8. The development of a .TRAIN file requires an RTC user to condense down several months of train data into two weeks of train data that best represents normal operations on a given route for the purpose of train simulation. Therefore, there is no formula, document, or workpaper that captures the iterative process between the RTC Modelers and CSXT with respect to creating the .TRAIN file.

Please let me know if you have any questions. You may reach me at 202-736-8996 or mjwarren@sidley.com.

Sincerely

/s/ Matthew J. Warren

Matthew J. Warren

cc: William A. Mullins, Counsel for Norfolk Southern Railway Company

Appendix A

RTC Report Workpapers Index

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NEW ORLEANS – MOBILE GULF COAST PASSENGER SERVICE RTC MODELING WORKPAPERS

All documents referenced in this workpapers index that are highlighted in yellow should be treated as highly confidential. All other documents referenced in this workpapers index, including the workpapers index itself, should be treated as confidential. These designations are made pursuant to the protective order entered by the Surface Transportation Board in *Application of the National Railroad Passenger Corporation Under 49 U.S.C. § 24308(e) – CSX Transportation, Inc. and Norfolk Southern Corporation*, STB Docket No. FD 36496.

1.0 CSX and NS Provided Inputs

1.1 CSX Inputs

File	Description
Bulletin for Kreole OS.pdf	Timetable update for new KREOLE control point at 000702.3
Descriptions of non standard train movements.docx	Descriptions of local train movements that might not be clear in the data
OS Data.xlsb	Control point “On Station” data provided by CSX with additional columns added by HNTB
Train Profile Data.xlsx	Train Profile data provided by CSX for entire routes of all trains on corridor. HNTB developed “Filtered Data” tab to only include locations on the corridor and sheet analyzing train dwells.
Train Profile Data UPDATED.xlsx	This file fixes several equation and formula issues but is otherwise substantively identical to Train Profile Data.xlsx.
DispatchData.xlsb	Data from dispatch system including specific track circuit trains are on. Data corresponds to segments in Dispatch Screens documents. Additional columns added by HNTB.
Dispatch Screens from CSX.docx	Screen captures of CSX dispatch screens to provide track and CP numbering for Dispatch Data
Dispatch Screens.pptx	Sheet developed for legibility and to fill in missing data from CSX Dispatch Screens.
M_AND_M_Timetable.pdf	M&M Timetable dated Nov 1, 2017
NO_AND_M_Timetable.pdf	NO&M Timetable dated Nov 1, 2017
CSX No Build Projects.pdf	Track Chart of M&M showing projects CSX expects to complete before 2039
NoBuild Growth Data.xlsx	Expected increase in train length by 2039 by train profile

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DrawBridgeInputData.xlsx	Drawbridge opening logs
2019_09 Almonaster Ave Bridge Logs_Redacted.pdf	Almonaster Ave (Industrial Canal) Bridge opening logs for September 2019
2019_10 Almonaster Ave Bridge Logs_Redacted.pdf	Almonaster Ave (Industrial Canal) Bridge opening logs for October 2019
2019_11 Almonaster Ave Bridge Logs_Redacted.pdf	Almonaster Ave (Industrial Canal) Bridge opening logs for November 2019
Randomization _ Follow-up Questions.msg	Email correspondence describing train movements at Choctaw Yard
Amtrak Station Locations.docx	Physical locations of proposed passenger stations along the corridor.
Amtrak Consists.docx	Passenger train size, length, and locomotives.
Amtrak Schedules.docx	Proposed passenger schedules

1.2 NS Inputs

File	Description
AmtrakHDR_20200304.zip	GIS Data of NS trackage in New Orleans
Crescent Updated Schedules.pdf	New Crescent (trains 19 and 20) schedules effective 6/6/21
Gulf Coast Simulation NS Bridge Openings.xlsx	Seabrook bridge opening data
Gulf Coast Simulation NS Data.pdf	NS Map and Track Patrol
Gulf Coast Simulation NS Growth Forecast.pdf	Projected volumes in trains per day by operating segment
Gulf Coast Simulation NS Track Charts.pdf	NS Track Charts
Gulf Coast Simulation NS Train Data.pdf	Descriptions of NS train movement and scheduled times
Gulf Coast Simulation NS Train Data.xlsx	NS Train arrival times, engine data and consist information
NS Growth.docx	Frequency and new schedules for 2039 Growth
Observed Foreign Moves.docx	Descriptions of the CSX interchange movements
Public_Projects_Manual.pdf	NS Public Projects Manual
Std Plan 7-2 Design Speeds.pdf	NS Standard Plan design speeds for curves

1.3 HNTB Analysis Files

File	Description
NS Train Analysis.xlsx	Analysis spreadsheet of NS data to determine train length, departure time and on duty randomization

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CSX Train Analysis.xlsx	Analysis spreadsheet of CSX data to determine departure time and dwell randomization
Moveable Bridge Analysis.xlsx	Analysis spreadsheet of moveable bridge data used to determine bridge opening frequency and duration. Includes analysis of FAF data to determine increased in vessel tonnage in 2040.
FAF4.5.1.accdb	Access database of FAF 4.5.1 data used to create vessel tonnage projections in 2040. Some columns removed from data to reduce file size.
Grade Crossings.xlsx	FRA grade crossing database data of grade crossings on the corridor. Columns removed to reduce file size. Used to determine low volume grade crossings.

2.0 RTC Input Files

Each case used in the study is provided as a separate folder in the workpapers. The nomenclature of the RTC File as compared to the Case name in the report is below:

RTC File	Report Name	Description
2019 F	2019 Base Case	Model representing existing (2019) infrastructure and operations. Allows validation of model against actual data.
2019 P	2019 Passenger Case	2019 base case with no projects and the addition of the proposed passenger service.
2019 BUILD	2019 Build Case	Case with 2019 freight operations, proposed passenger service, and infrastructure changes. This case is used to determine projects required to mitigate impact of proposed passenger service.
2039 F	2039 Base Case	Case representing future (2039) operations on the corridor without the proposed passenger service. This case includes anticipated future freight growth, and any currently anticipated infrastructure. This case is sometimes referred to as the "No Build."
2039 P XINGS	2039 Passenger Case	2039 Base Case with no projects and the addition of the proposed passenger service. Grade crossing dwell time between New Orleans and Flomaton increased to 150 minutes.
2039 BUILD	2039 Build Case	Case with 2039 freight operations, proposed passenger service, and currently anticipated infrastructure. This case is used to determine required projects to mitigate impact of proposed passenger service.
2039 BUILD NO BRIDGE	2039 Build Case with no Bridge Openings	2039 Build Case with no bridge openings to determine how bridge openings limit potential OTP of proposed service on the corridor with the inclusion of the 2039 projects.
2039 P NO F	2039 Passenger Only	Passenger service, with 2039 bridge openings and no projects. Used to determine performance of proposed service alone.
2039 FRA	2039 FRA	Case evaluating train performance with projects proposed by the FRA in the 2017 Gulf Coast Working Group Report to Congress.
2039 FRA ADJ	2039 FRA Adjusted	Case evaluating train performance with projects proposed by the FRA in the 2017 Gulf Coast Working Group Report to Congress with projects that require approval outside the control of the railroads or are infeasible to build removed.

For each case all relevant input files are included to rerun the cases used in the simulation study. Multiple cases make use of the same input files, but they are included separately in each case folder. To recreate the report results for each case the random seed in the .OPTION file and the

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.TRAIN and .PERMIT file for the same seed need to be selected in the .INPUT file. The files are split into 5 folders:

Folder	Description
Common	.ASPECT, .DIVISION & .LOCO files: These are the same across every case
Infrastructure	.LINK, .NODE, .EQUATION, .SIGNAL, etc. files: These are the infrastructure files for each case.
Output	This folder was initially empty as the results from the .ROUTE, .DELAY & .REPORT files are included in the relevant Access Databases. However, these files were ultimately provided to Amtrak upon request.
Permit	.PERMIT files: These are created randomly using the excel input in the folder for each modeling seed. The 30 files for the seeds used in the analysis are included in the .zip file. Description of the nomenclature of the .xlsx input file is included later.
Trains	.TRAIN files: These are created randomly using the excel input in the folder for each modeling seed. Excel files are included separately for CSX, NS, interchange, and passenger trains. The 30 files for the seeds used in the analysis are included in the .zip file. Description of the nomenclature of the .xlsx input file is included later.

1.1.1 PERMIT EXCEL INPUT FILES

The excel files are used to create each random seed. A proprietary tool uses the excel file, creates randomized values and outputs the file into a .PERMIT file. The orange columns with names beginning with "Random" are used to randomize the file outputs. Depending on the type of permit the location, length, start time and duration of the specific curfew is randomized.

Files were created for 2019 and for 2039 which include the increased frequency and duration of bridge openings, and adjusted timing of Crescent trains passenger window. The Build cases have adjusted nodes for the Crescent in New Orleans due to new crossover locations.

Nomenclature

Each values follows the following format (prefix; random distribution value 1; random distribution value 2). If the value of P is listed it will use the previous rows value.

Prefix

- +: add random time to base value (otherwise ignore base value and only use random)
- S: all values in seconds, minutes by default
- %: use each distribution will have a conditional probability of occurrence to determine which distribution to use. There is a 100% chance one of the distributions will be selected, the % is the probability of which one is selected. Without the % in the prefix the probabilities of independent, multiple or none of the distributions could be selected.
- A: start time of the permit is an offset from the previous rows value using the assigned distribution

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Random Distribution

A value after the initial letter sets the probability of that distribution occurring

- Uniform Distribution-- U,min,max
- Triangular Distribution -- T,min,avg,max
- No Distribution (Single Value) - V,value

1.1.2 TRAIN EXCEL INPUT FILES

For each case the multiple excel files were created. Separate files were developed for CSX, NS, interchange, and passenger trains. These excel files were used to create each random seed. A proprietary tool uses the excel file, creates randomized values and outputs the file into a .TRAIN file. The orange columns with names beginning with "Random" are used to randomize the file outputs. Randomized was used to for the departure times, dwell, consist, on duty time and route nodes. When a train is randomized a suffix for the day will be added to train (01 for week 1 Sunday). For the Split/Merge, Linked, Hold Train, SO Block and PU Block columns if the value has an "R" prefix the suffix for the day of the train is added to the train connection.

Nomenclature

Each values follows the following format (prefix; random distribution value 1; random distribution value 2). If the value of P is listed it will use the previous rows value.

Prefix

RandomDwell

- + - add random time to base RTC value (otherwise ignore RTC value and only use random)
- S - all values in seconds, minutes by default
- %: use each distribution will have a conditional probability of occurrence to determine which distribution to use. There is a 100% chance one of the distributions will be selected, the % is the probability of which one is selected. Without the % in the prefix the probabilities of independent, multiple or none of the distributions could be selected.

RandomDepart

- + - add random time to base RTC value (otherwise ignore RTC value and only use random)
- S - all values in seconds, minutes by default

RandomOnDuty (no modifiers, random value will set on duty time)

RandomConsist (determines number cars, used in conjunction with CarSize (T,L,%) to determine, tons, length, loads and empties)

- P - will have value equal previous row (only row input)
- PXX - percentage of previous row (only row input)
- +P - will add to the previous row
- + - add random time to base RTC value (otherwise ignore RTC value and only use random)

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Random Distribution

A value after the initial letter sets the probability of that distribution occurring

- Uniform Distribution-- U,min,max
- Triangular Distribution -- T,min,avg,max
- No Distribution (Single Value) - V,value (sometimes used to force the train symbol to have prefix)

Other Randomization Inputs

CarSize (T,L,%) -- (required with RandomConsist to determine)

- format: tons per car, length per car (ft), % loads

RandomNode (used to select different node if the criteria is met)

- format: criteria (length "L", tonnage "T", dwell seconds "D"), ">" or "<", value, true node, false node

3.0 RTC Output and Analysis Files

File	Description
Train Analysis.accdb	Access database containing data from .REPORT and .DELAY files. Used to perform the analysis and collecting of data used in the report.
OTP.accdb	Access database contained .ROUTE activity nodes for Gulf Coast Passenger trains. Used to determine OTP.
DISTRIBUTION.xlsx	Spreadsheet used to create distribution charts of specific train IDs in report.
FREIGHT.xlsx	Spreadsheet used to evaluate freight metrics between cases.
NODE.xlsx	Spreadsheet used to create delay by location charts and identify top delay locations for use in maps.
PASSENGER.xlsx	Spreadsheet used to evaluate passenger runtimes, OTP and delays
CROSSINGS.xlsx	Spreadsheet with grade crossing blockage analysis
3.1 2019 Crossings Analysis	See 3.1 description below
3.2 2039 Crossing Analysis	See 3.2 description below
CSXT & NSR Growth Calculations.xlsx	Analysis spreadsheet of CSXT and NSR train growth rates.

3.1 2019 Crossings Analysis

Summary files from grade crossings analysis of 2019 Build, 2019 F and 2019 P cases. Files created using tool that analyzes the .ROUTE file to determine the duration of time (head end arrive to tail end departure) trains occupy specific links. Includes an additional 30 seconds for

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event to account for gate warning time. The results from each of the 30 analyzed seeds are collected into the combined files.

3.2 2039 Crossings Analysis

Summary files from grade crossings analysis of 2039 P XINGS and 2039 F cases. Files created using tool that analyzes the .ROUTE file to determine the duration of time (head end arrive to tail end departure) trains occupy specific links. Includes an additional 30 seconds for event to account for gate warning time. The results from each of the 30 analyzed seeds are collected into the combined files.