Attachment D to Agenda File No. 2015-1600

SAN DIEGO UNIFIED PORT DISTRICT

MEMORANDUM

Date: September 17, 2015

To: Board of Port Commissioners

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Subject: Freight Rail Operations in the San Diego Region

The National City Bayfront is a location-specific planning initiative warranting an expedited work effort in order to achieve near-term, as well as long-term, District objectives. At the July 2015 Board of Port Commissioners (Board) meeting, the Board directed staff to hold a special workshop of the Board to discuss National City Bayfront land use issues, specifically looking at marine terminal optimization, commercial development, and public access.

The purpose of this memo is to provide general information on freight rail operations in the San Diego Region in advance of the September 23, 2015 Special Meeting of the Board. The operation of the freight rail that serves the District's terminals is limited by capacity and allowable operating windows in San Diego County, as well as in the Los Angeles and Riverside areas. However, there remains limited train capacity to allow for an additional Pasha Automotive Services (PAS) vehicle unit train each day. In order to utilize this additional capacity and accommodate constraints on the rail line, including freight train operating windows, length constraints, and constraints on rail car storage, improvements in rail infrastructure at NCMT are required to accommodate additional cargo movement by rail. This is consistent with the preliminary findings of the Vickerman National City Optimization Study presented to the Board in July.

This memo covers the following rail topics:

- Rail Line Geography and Ownership
- Agency Responsibilities and Authority
- Freight Operating Windows

Subject: Freight Rail Operations in the San Diego Region

- Capacity
- Operations

This memo was prepared by District staff using public information provided by District Rail Consultant John J. Hoegemeier of SD Freight Rail Consulting.

Rail Line Geography and Ownership

All freight rail arriving in San Diego and leaving San Diego runs through the Atwood area, east of Fullerton, California. Freight rail that departs San Diego heads eastward from Atwood to further destinations in the United States. Between the District's terminals and Atwood, there are five different rail segments (or subdivisions) which are owned and operated by five different organizations, each with their own limiting factors for freight rail operations. These rail segments are shared by passenger and freight rail. The rail segments (from south to north) and the owner/operators are as follows:

- BNSF San Diego Subdivision – Owned and operated by BNSF
- North County Transit District (NCTD) San Diego Subdivision – Owned by NCTD and Metropolitan Transit District; Operated by NCTD
- Orange Subdivision – Owned by Orange County Transit Authority (OCTA); Operated by Metrolink
- Olive Subdivision – Owned by OCTA; Operated by Metrolink
- San Bernardino Subdivision – Owned and operated by BNSF

The locations of these five rail segments and the rail segments within the central portion of San Diego are shown on Attachment A.

Agency Responsibilities and Authority

Federal, state, and regional agencies oversee various aspects of the rail lines, as discussed further below.

Federal

All rail operations in the United States are overseen by the Surface Transportation Board (STB), which is an independent agency within the United States Department of Transportation. The STB is the operating authority and grants preemptions that give rail operations priority over local jurisdictions in regard to interstate rail operations.

The Federal Railroad Administration is the Federal authority for rail safety and operating rules. The Federal Railroad Administration also enforces the hazardous materials rules for safety related to the Pipeline and Hazardous Materials Safety Administration.

State

The California Public Utilities Commission (CPUC) has authority of rail safety and operating rules, and grade crossings in California. The CPUC's authority extends into ports and non-railroad industrial (e.g., oil refinery, power plant) tracks and operations.

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Regional
The NCTD is responsible for track and signal maintenance and performs the dispatching for all rail operations (passenger and freight) within the San Diego Subdivision. BNSF operates its freight trains by authority of a freight easement on the tracks owned by NCTD. Freight operating windows are prescribed in a contract between BNSF and NCTD, with the times published in an operating timetable.

The Southern California Regional Rail Authority (SCRRA), also known as "Metrolink," operates the multi-county Metrolink rail system and is responsible for track and signal maintenance and dispatching within its rail lines.

BNSF is responsible for track and signal maintenance of the rail lines that it owns, and also performs the dispatching within the San Diego and San Bernardino Subdivisions. BNSF's San Bernardino Subdivision connects to the remainder of the United States rail system and freight rail operates freely east of the San Bernardino Subdivision. No commuter passenger trains (e.g., Coaster, Metrolink) operate east of the San Bernardino Subdivision; however, these rail lines are shared with Amtrak, which has priority dispatching on the lines. BNSF has exclusive freight operating rights on the San Diego, Orange, and Olive Subdivisions.

Freight Operating Windows
Passenger trains (e.g., Coaster, Amtrak, Metrolink) within the San Diego Subdivision have priority use of the rail lines within certain timeframes each day. Freight rail is not allowed to operate during these timeframes. The restricted freight operating windows on the San Diego rail line are from 5:30 a.m. to 8:30 a.m. (the "morning commute") and from 3:00 p.m. to 7:00 p.m. (the "evening commute"). The restricted freight operating windows within the Orange and Olive Subdivisions are from 4:00 a.m. to 9:00 a.m. (the "morning commute") and from 5:00 p.m. to 9:00 p.m. (the "evening commute").

The freight train transit time between the San Diego and Olive Subdivisions is typically between three (3) to three and a half (3.5) hours.

Capacity
Freight rail operations are limited by capacity. Capacity comes in the form of line capacity, train capacity, and spot capacity, as discussed below.

Line Capacity
Line capacity is the physical number of trains that can fit on a rail corridor per day. The line capacity is usually a function of track speed, amount of double-track, and sidings. Line capacity is usually determined using sophisticated computer models which determine delay as the number of trains on the line increase. These computer models produce "stringline" diagrams which plot the location of trains versus time over a 24-hour period. This computer model determined the freight train capacity on the San Diego Subdivision to be limited to eight (8) daily trains – 4 southbound (inbound) and 4 northbound (outbound). Of these eight freight trains, six (3 inbound, 3 outbound) are modeled within the nighttime window and two (1 inbound, 1 outbound) are modeled within the daytime window. In addition, there are at least 44 (22 roundtrip) daily passenger trains on the San Diego Subdivision.

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Train Capacity

Train capacity is the physical limitations on train operations due to train length and/or train tonnage. Trains operating in different directions require sidings (a short stretch of railroad track used to enable trains on the same line to pass) or double track (parallel tracks with one set of tracks running in each direction) in order to meet, or pass each other. Trains operating at different speeds but in the same direction require sidings or a double track for the faster train to overtake, or move past, the slower train. In order to accommodate the meets (location where trains moving in opposite directions "meet") or overtakings, the lengths of the trains have to be limited in order to fit into the sidings.

The shortest siding in the San Diego Subdivision is 4,400 feet. The length of this shortest siding is a limiting factor in freight trains operating between the restricted windows. Freight trains that operate during the day time, between those two restricted windows, are limited to a length of 4,400 feet, unless prior arrangements are made within the subdivision dispatcher. As a point of comparison, within the San Bernardino Subdivision, trains are limited to 8,000 feet in length. This length restriction allows for passenger trains to meet or overtake freight trains within the length limit on the sidings within the San Diego Subdivision. This length restriction is necessary to ensure that the freight train reaches the San Bernardino Subdivision within that operating window and does not delay the passenger trains during the evening commute.

In addition, steep grades (also known as "mountain grade territory") require more horsepower as the train is more difficult to pull. Therefore, rail track with steep grades have operating window limits on the tonnage a train can carry and prescribe a minimum amount of locomotive horsepower per ton. Since the tonnage a train carries determines the acceleration time, the acceleration of a train slows in mountain grade territory. Miramar Hill in the San Diego Subdivision is considered mountain grade territory and thus a factor in the train capacity in the San Diego Subdivision.

If a freight train does not travel at a speed that allows for the three (3) to three and a half (3.5) hour transit time needed to reach Atwood from downtown San Diego, it will have to pause within one of the "rail sidings" along the route and wait for another train to pass. The effective freight operating window is reduced by the transit time in order to ensure that there is sufficient transit time to clear the restricted freight operating windows within the San Diego, Orange, and Olive Subdivisions.

Effective Operating Windows

Taking into consideration the restricted freight operating windows on the San Diego, Orange and Olive Subdivisions, as well as the train length restrictions, the effective operating windows are as follows:

- Northbound (outbound) train departing San Diego: from 7:00 p.m. to 2:00 a.m., and from 9:00 a.m. 11:30 a.m.
- Southbound (inbound) train enroute to San Diego entering the rail corridor at Atwood: from 9:00 p.m. to 2:00 a.m., and from 9:00 a.m. and 11:30 a.m.

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The figure on Attachment B shows typical rail operations on the San Diego Subdivision between the downtown San Diego entrance to the BNSF facility near Cesar Chavez Parkway and the Santa Fe Depot. All of these freight trains subsequently travel north through the other four subdivisions noted above.

Spot Capacity
Spot capacity determines the ultimate number of cars a rail facility (e.g., terminal, yard, storage) can accommodate. Facilities utilizing rail on a regular basis require space to build a train, *plus* space to store a backup stock of empty railcars. For facilities with outbound (northbound) loadings, the number of required rail car spots is typically equal to the maximum number of rail cars loaded, *plus* the safety stock for empty rail cars which ensures that sufficient rail cars are available to be loaded each day. These extra empty rail cars, also known as "safety stock," help to ensure that sufficient rail cars are available to be loaded each day and thus, regular train service can be uninterrupted.

Safety stock is necessary because an operation requiring regular rail service is not guaranteed to receive the same amount of empty rail cars that would be needed for the next day's outbound shipment. For example, Pasha Automotive Services' (PAS) vehicle processing facility at the National City Marine Terminal (NCMT) requires regular rail service to transport vehicles to points east of California. On a nearly daily basis, a train carrying empty vehicle-carrying (e.g., bi-level, tri-level, Automax) train cars comes inbound to NCMT. PAS then loads those empty rail cars with vehicles and the train departs outbound (northbound) via the five rail subdivisions described above before it travels to points east of California. PAS is not guaranteed the same amount of empty railcars with each inbound (empty) train.

The quantity of empty railcars is dependent on the number of loaded train cars arriving at BNSF's facilities from the east. Once BNSF unloads those train cars, the empty railcars are dispatched to the next facility, such as PAS' facility at NCMT, for loading. Therefore, safety stock is required to ensure that sufficient empty rail cars are available to be loaded each day and that outbound shipments remain uninterrupted. The necessary safety stock can be as high as one (1) to one and a half (1.5) times the amount of loading spots. Train cars are pooled assets throughout the United States and must remain moving as much as possible, so facilities that utilize these train cars are only allowed to keep safety stock on hand for a few days at a time.

Mixed freight switching yards, such as the BNSF facility near Cesar Chavez Parkway, are usually designed to handle only mixed freight trains for switching (reorganizing the order of train cars). Unit trains usually must be spotted (fit) directly into terminals or into separate storage tracks. Storage capacity is the number of rail cars that fit into separate storage tracks and is also a term used to describe the space necessary to build a train. These tracks augment terminals and yards. Thus, the National City rail yard must accommodate the storage and building capacity for the vehicle unit trains that depart NCMT daily. Rail cars used to build a PAS vehicle unit train are not stored at the BNSF yard near Cesar Chavez Parkway.

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Operations

There are three types of main line freight trains that BNSF operates in San Diego:

- Mixed Freight (Manifest) - These trains move the mixed freight which includes tank cars, box cars, flat cars, and hopper cars for a multitude of area customers. The District is served by these trains which provide some soda ash to the Tenth Avenue Marine Terminal (TAMT) and lumber to NCMT.

- Vehicle Unit Trains - These trains consist of only multi-level autoracks carrying vehicles. These trains originate and terminate at NCMT and at the BNSF facility near Cesar Chavez Parkway where BNSF loads vehicles for outbound rail shipments.

- Unit Trains - These trains contain a solid commodity for a single customer. These types of trains serve TAMT for commodities such as wind energy, military equipment, and bulk soda ash. This train type runs on an infrequent basis, as needed.

BNSF typically operates one roundtrip mixed freight and one roundtrip vehicle train per day. The mixed freight is daily while the vehicle trains are typically six days per week.

As mentioned earlier, there are eight (four roundtrips) daily freight train slots, or operating windows, modeled for the San Diego Subdivision. The regularly scheduled trains are as follows:

- 1 roundtrip mixed freight manifest (nighttime) – 2 trains
- 1 round trip vehicle train (nighttime) – 2 trains

And the following freight train slots run infrequently, on as "as needed" basis.

- 1 round trip train (nighttime) – 2 trains
- 1 round trip train (morning) – 2 trains

Of the eight slots, four are typically used (one mixed freight roundtrip and one vehicle roundtrip); however, each of the eight slots has been used at least once over the last 90 days. For example, there have been instances where the regularly scheduled mixed freight or vehicle trains miss their night time slot. In these cases, BNSF often dispatches those trains to depart San Diego within the morning slot.

Conclusion

In summary, while there is train capacity to allow for an additional PAS vehicle unit train each day, in order to accommodate constraints on the rail line, including freight train operating windows, length constraints, and constraints on rail car storage, improvements in rail infrastructure at NCMT are required to accommodate additional cargo movement by rail.

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Should you have any questions, please contact me at (619) 686-6293 or via email at ccoats@portofsandiego.org or Anna Buzaitis at (619) 686-7263 or via email to abuzaiti@portofsandiego.org.

Attachments:

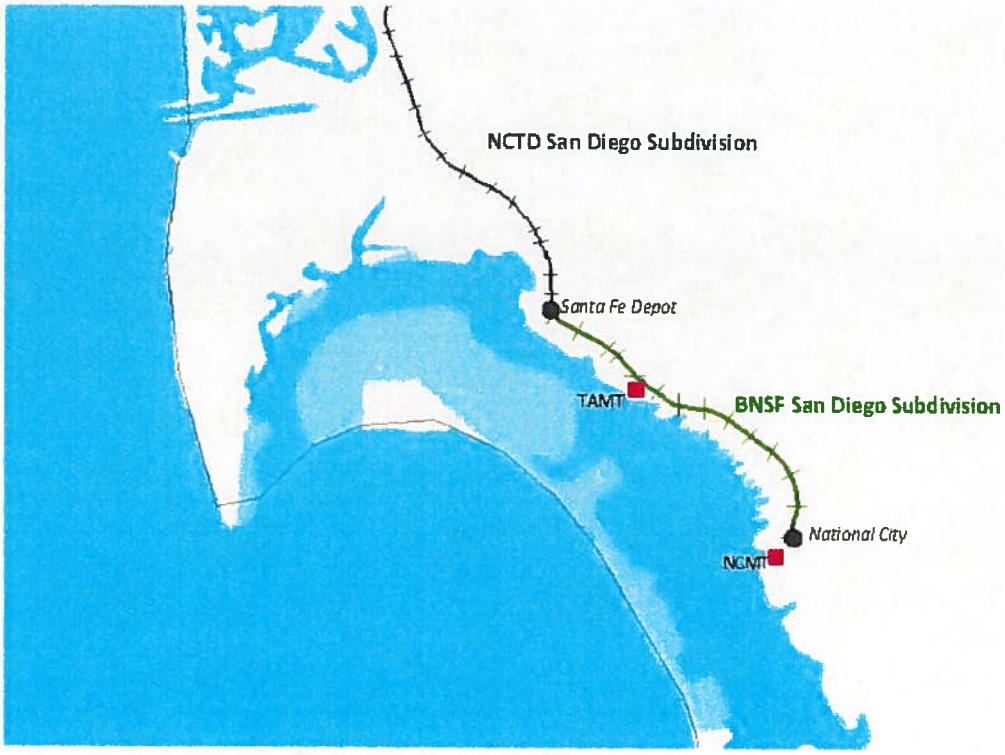
Attachment A: Rail Segments in San Diego and Los Angeles Regions and Central San Diego

Attachment B: Typical Rail Operations within San Diego Subdivision, South of Santa Fe Depot

Attachment A

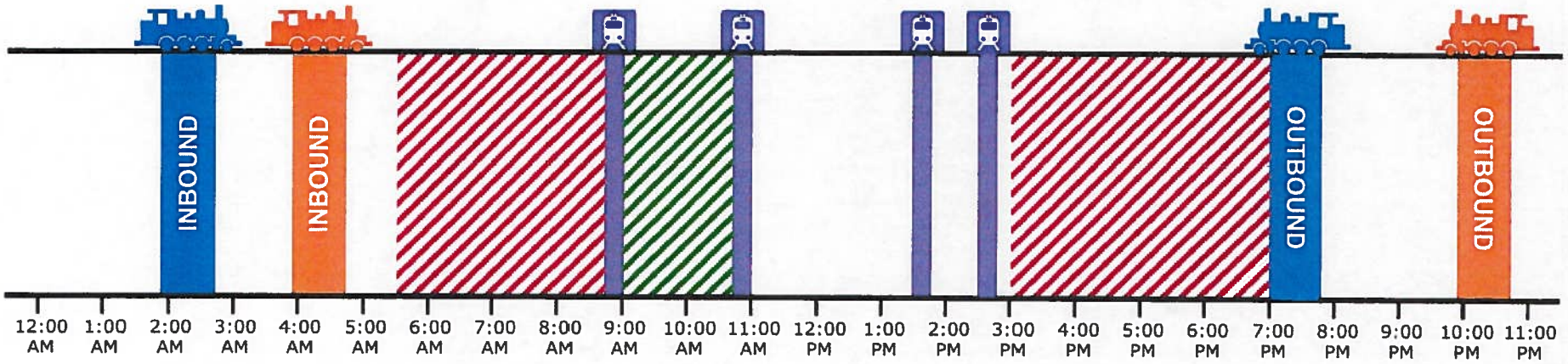
Rail Segments in San Diego and Los Angeles Regions

Rail Segments in Central San Diego



Attachment B

Typical Rail Operations within San Diego Subdivision, South of Santa Fe Depot



- Manifest Train
- Vehicle Train
- Coaster at MTS Storage Track between commute periods
- Operating Window for Daytime Freight Train
- Restricted To Passenger Trains Only