2016

ANNUAL INSPECTION OF THE SOUTH ORIENT RAIL LINE

UNDER LEASE TO TEXAS PACIFICO TRANSPORTATION COMPANY

May 16 - 19, 2016

Texas Department of Transportation

Introduction

The fifteenth annual review of Texas Pacifico Transportation Company (TXPF) operations on the South Orient rail line (SORR) was conducted from May 16 thru 19, 2016. The Rail Programs Section staff of TxDOT's Rail Division performed this inspection accompanied by TXPF senior management on the hy-rail inspection of the line. A map of the SORR is included in the appendix.

Financial Review

The financial report for the calendar year January 1, 2016, through December 31, 2016 shows positive income from operating the rail line, including a positive cash flow and substantial net profit as traffic has increased since TxDOT began the rehabilitation of the east end of the line in 2009. TxDOT has continued an annual program of track rehabilitation in a generally east-to-west direction since that time. As with previous financial reports, revenues were received from the interchange of cars with connecting railroads during that period, demurrage fees assessed shippers and receivers for loading and unloading time periods, freight car storage for other car owners, and lease revenues assigned to TXPF. Expenses were categorized as transportation, maintenance, general administrative, and other. Expenses listed were routine costs associated with maintenance and operations.

Traffic

The largest volume of traffic on the line in 2015 continues to be due to the dramatic increase in oil and gas exploration efforts in the region. Sand unloading facilities are located in San Angelo, Barnhart, Big Lake, McCamey, Rankin, Fort Stockton, Harriet, Sulphur Junction (Figure 1), and Fort Stockton. Crude oil loading facilities have opened at San Angelo, Barnhart, McCamey (Figure 2) and Sulphur Junction. Pipe traffic has been steady throughout the first half of the year with shipments to various stockpile locations adjacent to the rail line including the Belding siding (Figure 3), and near Fort Stockton (Figure 4). Texas Pacifico is currently storing approximately 150 empty sand cars on the main track west of the Belding siding (Figure 5).

Figure 1: Sand Unloading, Sulphur Junction

Figure 2: Crude Oil Loading east of McCamey

Figure 3: Unloading pipe at Belding

Figure 4: Pipe storage yard near Fort Stockton

Figure 5: Sand cars stored on the main line

Inbound sand received totaled 22,104 carloads, almost identical to last year. Crude oil shipments totaled 416 carloads for the year, a decrease of nearly 71% compared to 2014. The total carloads interchanged were 25,903, which is a 2.1% increase from 2014. Wheat shipments totaled 953 carloads, up 486% over 2014, but still below the 1,147 carloads in 2010 – a sign that the drought conditions of years past are easing. Table 1 shows the carloads moved by commodities since 2011 as well as the percent of change in each commodity and the total percent delta over the past year. Traffic began increasing during the latter half of 2009, which is when TxDOT began the rehabilitation of the eastern tracks. Annual carloads averaged 2,031 from 2001 through 2009, with dramatic increases since. TXPF projects that traffic is not likely to rise significantly in the near future due to a drop in crude oil profit margins. Figure 6 shows the total Carloads from 2011 to 2016, with 2016 being the projected annual carloads. Figure 7 show carloads by commodity over the last 5 years and illustrate the decline in oil shipments, the increases in sand, as well as the smaller variations in the other commodities.

Table 1: Carloads by Commodity

Commodoties	2011	2012	2013	2014	2015	Total	2014 to 2015 % change
Sand	2337	6506	15269	22906	22104	69122	-3.5
Crude Oil	0	2214	5787	1422	416	9839	-70.7
Steel	477	326	404	333	342	1882	2.7
Grain	291	874	927	196	953	3241	386.2
Pipe	0	0	0	0	1362	1362	N/A
Misc	697	729	1171	503	726	3826	44.3
Totals	3,802	10,649	23,558	25,360	25,903	89,272	2.1

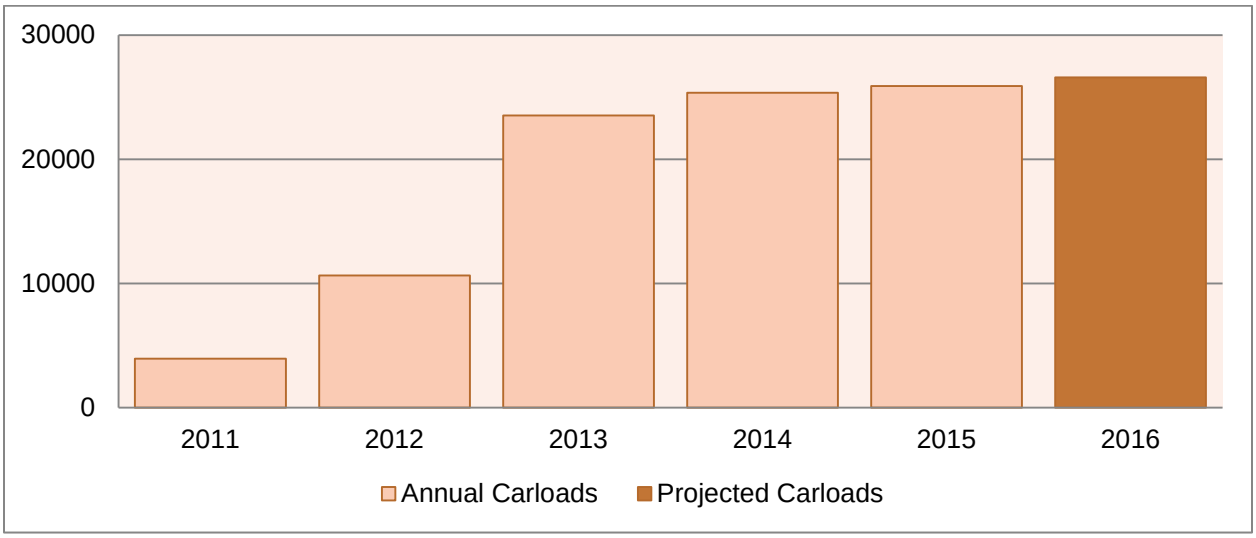

Figure 6: Total annual Carloads from 2011 to 2015 (actual) & 2016 (projected)

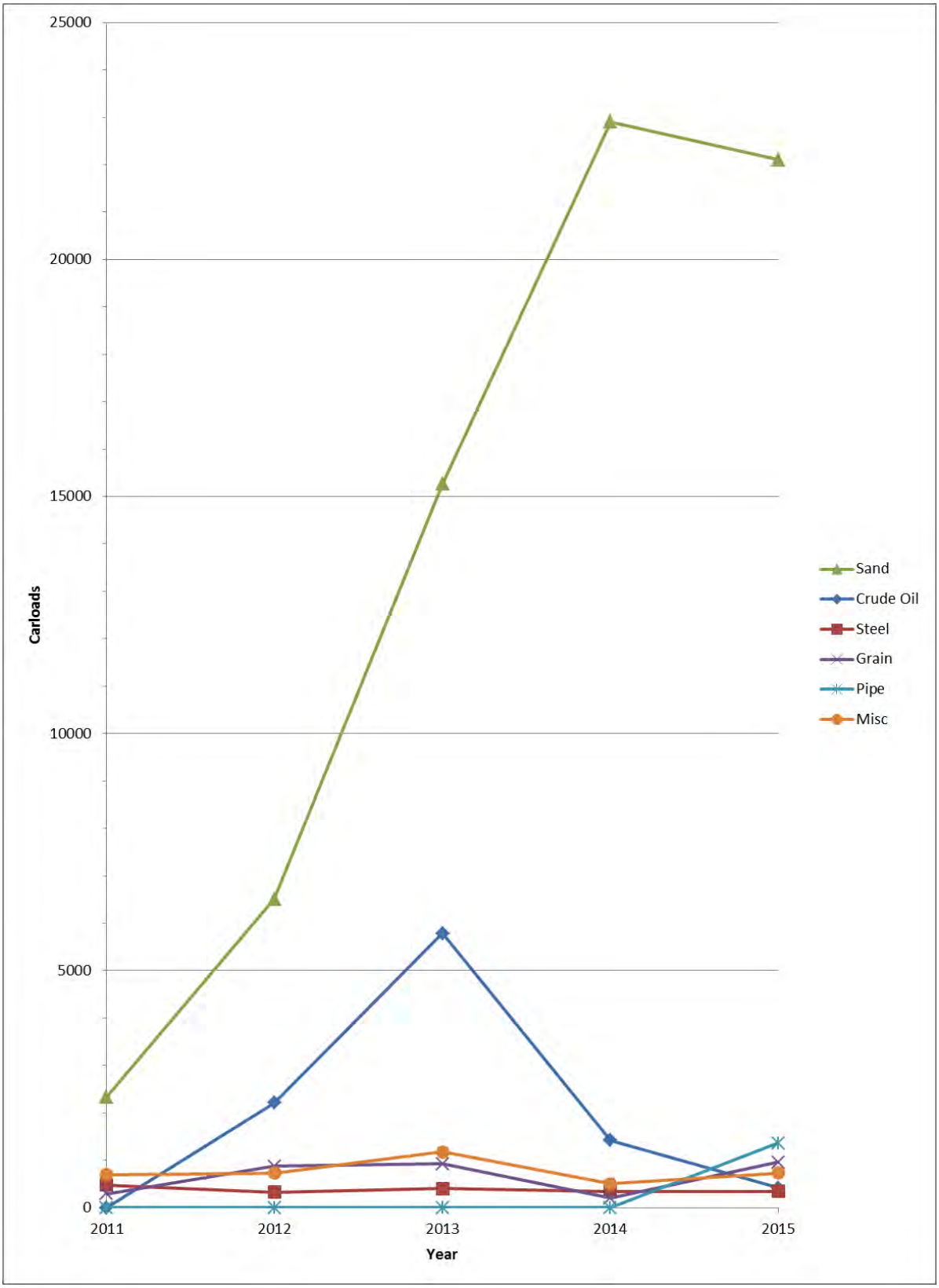

Figure 7: Carloads by commodity

Potential Traffic

There are new sand unloading and crude oil loading facilities in various stages of development at this time. Western Towers, located east of San Angelo, has completed the expansion of their facility, and is providing some transloading services for others on their property (Figure 8).

Figure 8: MP 63.3 - Western Towers Facility

The facilities that have located on the line since 2009 have experienced a steady increase in traffic as their operations become more efficient and volumes increase. TXPF is working with additional new customers who have expressed an interest in transporting freight on the line which include additional sand and crude oil facilities, as well as mining for granite, sulfur, and zeolite at other locations.

Operations

TXPF's current timetable is dated July 17, 2016, and the railroad uses the General Code of operating rules.

The increased customer base and on-going economic development efforts continue to have a significant impact on TXPF staffing. TXPF now has 56 employees in Texas, and expects that employment may double in the future as carload volumes increase.

Train crews and front-line managers work out of the San Angelo yard where the railcar storage yard and equipment servicing facilities are located. TXPF's main office is in the city of San Angelo (Figure 9). TXPF continues to contract for signal maintenance and track maintenance.

Figure 9: TXPF Offices in San Angelo

TXPF is performing many car and locomotive inspection and maintenance activities with in-house staff. Heavy locomotive maintenance is generally provided by the equipment lessor. TXPF now has 26 locomotives which are used in various configurations between San Angelo Junction and Fort Stockton. Trains now operate at 25 mph from San Angelo Junction to San Angelo (MP 2 to MP 69; MP715) and from west of San Angelo to Sulphur Junction (MP 723 to MP 869.4).

Figure 10: MP 68.3, TXPF Train Moving West to San Angelo

Infrastructure

Track

San Angelo Junction at the eastern part of the line is where the interchange with BNSF and Fort Worth & Western Railway occurs. Rail is classified by weight (in pounds) per linear yard. The jointed rail between San Angelo Junction and San Angelo primarily consists of 70#, 85#, and 90# rail that was manufactured between 1915 and 1966. TXPF has continued their annual rail replacement program, and have placed 39 miles of rail between MP 0 and MP 722. There are 9 miles of 112# rail west of Ballinger, from MP 39 to MP 48. TxDOT has replaced a total of 52,751 linear feet of worn rail in some curves in this section with 132# and 136# continuously welded rail (CWR). TXPF has continued the relaying of worn or small-sized rail in curves with 115# or higher CWR. In the past year Texas Pacifico has completed 7 miles of CWR rail relay from MP 20 to MP 35 (Figure 11, Figure 12).

Figure 11: MP 33 - CWR rail relay

Figure 12: MP 20 - CWR rail relay

Figure 13: MP 22 - Stockpile of old rail (replaced with CWR)

TxDOT has completed a tie replacement program west of San Angelo beginning at MP 721 and extending to MP 757. The program included the replacement of 24,000 ties, reconstruction of 19 grade crossings, and 10,000 tons of ballast. This project was part of a multi-year program that shall continue for some time, funded through carload fees from TXPF and limited state funds.

The railroad is designated as Class II (25 mph) from MP 722 to 869.7. The track is constructed predominantly of 112#, 115#, 119# and 131# continuously welded rail (CWR), with 6.15 miles of 132# CWR between MP 809.2 and 815.35, and jointed rail between MP 846.0 and 849.8. TXPF constructed a new 7,300' siding near Barnhart (MP 796.0) in 2015 (Figure 14).

Figure 14: MP 796.0, new siding

The crude facility near McCamey includes a large tank farm (Figure 15) and a mile-long spur into the facility (Figure 16).

Figure 15: MP 836.6 - Crude Oil Tanks

Figure 16: MP 836.6 - Crude Oil Lead Track

New sidings have been constructed at the following locations:

1. Fogleman Siding - MP 41.2 to 42.6 is a 7300 LF industrial siding West of Ballinger in the San Angelo Subdivision (Figure 17).

2. Santa Rita Siding - MP 796.0 to 797.4 is a 7100 LF industrial siding in the Big Lake Subdivision (Figure 18).

3. Vista Sand Siding - MP 790.0 to 790.4 is a 9245 LF triangular spur junction in the Big Lake Subdivision connecting to a new facility owned by Vista Sand (Figure 19, Figure 20).

Figure 17: MP 42.6 - Fogleman Siding (7300 LF)

Figure 18: MP 797 - Santa Rita Siding (7100 LF)

Figure 19: MP 790.3 - Western switch into Vista Sand Facility

Figure 20: MP 790 - Vista Sand Facility

The tracks are constructed with substandard (for today's railcar loading and tonnage), 70# rail beginning just west of the switch at Sulphur Junction at MP 869.4. TxDOT has developed a project to replace the 70# rail from MP 869.4 to MP 881.92 (through Fort Stockton) in order to improve speed and capacity on this section of the line. Funding has not been secured at this time, though TxDOT is pursuing both state and federal appropriations.

The yard at Sulphur Junction owned by Titan Lansing is still being used for sand and oil transloading and storage (Figure 21), while the Vista Sand yard in Fort Stockton and the Fairmont Minerals yard are still being used for sand transloading and storage primarily by Vista Sand (Figure 22, Figure 23). The siding at Belding was recently leased for pipe transloading (Figure 24). The 70# rail continues for a distance of approximately 75.6 miles to the Union Pacific interchange (MP 945.34) at Alpine. This section of the line is also limited to 10 mph due to rail size and track conditions.

Figure 21: MP 867.9 - Titan Lansing Transloading yard in Sulphur Junction

Figure 22: MP 881 - Sand Transloading

Figure 23: MP 792 - Fairmont Minerals Yard

Figure 24: MP 892 - Belding

The inspection team does not travel over Union Pacific (UP) trackage from MP 945 to MP 957, due to restrictions in the trackage rights agreement. The South Orient infrastructure begins again at MP 956.76, also known as Paisano Junction (Figure 25).

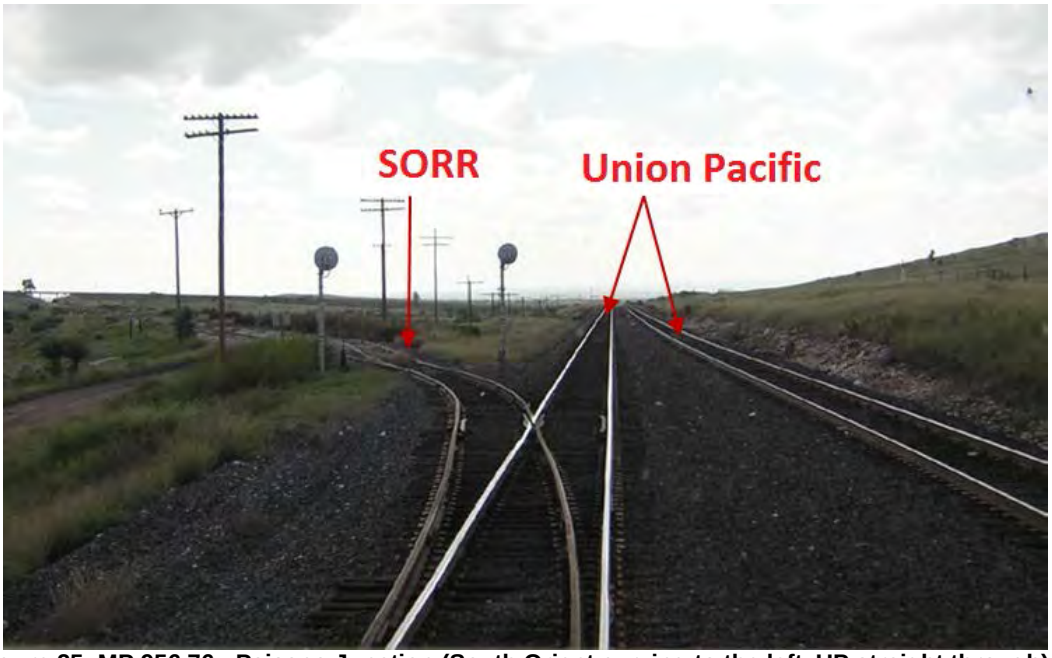

Figure 25: MP 956.76 - Paisano Junction (South Orient curving to the left, UP straight through)

The ties for the first 11 miles south of Paisano Junction are in generally poor to bad condition (Figure 26).

Figure 26: MP 968.0 - South of Paisano Junction

Numerous track washouts existed in Presidio County as a result of flash floods, changes in erosion patterns, and insufficient drainage across the track.

In several areas, the roadbed had been completely washed away due to flood erosion, making the rail line impassable. Various repairs were made by TXPF to the washouts in this area, and are now passable by excepted traffic. Due to geologic soil conditions in this area, heavy rainfall events are likely to generate the need for additional subgrade repairs in the future. A handful of locations already repaired this year will need additional work for this very reason (Figure 27, Figure 28, Figure 29, Figure 30).

Figure 27: MP 1007.7 – Washout (previously repaired)

Figure 28: MP 1007.7 – Washout (previously repaired)

Figure 29: MP 1006.4 – Washout on bridge approach

Figure 30: MP 1007.8 - Subgrade sinking

The section of track between MP 968 and Presidio still displays the benefit of TxDOT's rehabilitation project during 2005 and early 2006. Over 37,000 ties were installed with associated ballast and surfacing in this segment of the line (Figure 31).

Figure 31: MP 1024.8 – Curved track

Bridges and Drainage

TxDOT's work on the east end of the line included rehabilitation work to 30 bridges, the replacement of a structurally deficient bridge with corrugated metal pipe, the replacement of a decayed, timber box culvert with corrugated metal pipe, other drainage repairs, and the replacement of a fire-damaged bridge at MP 715.1 with a concrete structure (Figure 32). Ties were also replaced on all open-deck bridges (Figure 33) and on most ballasted deck bridges.

Figure 32: MP 715.1, Bridge Replaced

Figure 33: MP 716.6 – Rehabilitated bridge structure

TXPF has developed a bridge management program which was reviewed and approved by the FRA. In 2015, TXPF spent $1.5M on routine maintenance and repairs to bridges that were necessary to assure the safety of trains and hazardous materials cars between Fort Stockton and Alpine. Figure 34 and Figure 35 show some typical bridge repairs performed in the last year.

Figure 34: MP 777.9 - Bridge repair, replaced wooden stringers with steel girders

Figure 35: MP 777.9 - Bridge repair, top view

There are various locations west of Fort Stockton where bridge and drainage structure issues still exist (Figure 36, Figure 37, Figure 38, Figure 39). These issues will need to be addressed as traffic develops along portions of the line that are currently out-of-service.

Figure 36: MP 1008.4 – Erosion around wooden box culvert (undertrack drainage)

Figure 37: MP 985.9 – Meandering bank erosion near bridge structure

Figure 38: MP 1007.9 – Erosion of wooden drainage culvert (2016)

Figure 39: MP 1007.9 - Erosion of wooden drainage culvert (2013)

TxDOT and TXPF are in the process of replacing the U.S. portion of the international rail bridge over the Rio Grande at Presidio, which was damaged by fire on February 29, 2008, and March 1, 2009. TXPF is developing the plans and specifications while TxDOT is working on an environmental approval. Once those efforts are complete, TxDOT will coordinate project review and approval with state and federal agencies, TXPF will be responsible for reconstructing the bridge. A timber portion of the bridge just north of the levee still stands (Figure 40), though 15 bents on the extreme north end were damaged by the March 1, 2009 fire.

Figure 40: MP 1029 - Timber Structure North of Levee

The International Boundary and Water Commission made improvements to the levee system in Presidio which has resulted in the tracks being buried in the levee (Figure 41). TXPF's design will raise the bridge and both side approaches by almost 9 feet to cross the levee at grade.

The U.S. portion of the bridge, south of the levee, was completely destroyed by the February 29, 2008 fire. The Mexico portion, made of concrete, still stands (Figure 42), though it is reported that the bridge approaches from that side of the border were washed out during a recent flood event.

Figure 41: MP 1029 - Tracks Buried in Levee

Figure 42: MP 1009 - Remaining structure (Mexican approach) of the international bridge

Grade Crossings

TxDOT's rehabilitation project on the east end included the reconstruction of 119 grade crossings between San Angelo Junction (MP 0) and the west side of San Angelo (MP 721.52). In the latest project completed by TxDOT, 19 crossings were either repaired or replaced between MP 722 and MP 757. Many more still need attention and will be addressed as the rehabilitation program continues. Figure 43 shows a typical crossing in need of repair and Figure 44 shows one that has been completely replaced. The need for reconstruction of these crossings is impacted by the inability of small local governments to fund crossing rehabilitation projects.

Figure 43: MP 735.1 - Grade crossing in poor condition

Figure 44: MP 61 - Reconstructed grade crossing

Recommendations

TXPF should continue to increase their customer base and aggressively pursue additional traffic. Both TXPF and TxDOT should continue to pursue funding for the rehabilitation of the line west of Sulphur Junction and the restoration of traffic across the border at Presidio.

Conclusions

TxDOT and TXPF have made significant investments in the improvement of the east end of the line which has increased train speeds and capacity. TXPF's pursuit of new customers has resulted in dramatic increases in traffic over the years, and their efforts to adapt to changing economic conditions have kept the South Orient Rail Line in operation and profitable. The public-private partnership between TxDOT and TXPF has revitalized a rail corridor that was slated for abandonment, resulting in improved transportation efficiency, economic development opportunities, increased employment in the region, and improved safety.

Appendix

A. Field Inspection Notes
B. Map of the South Orient Railroad

2016 South Orient Inspection Field Notes

MP 0 – 21

1. 90# jointed rail, manufactured 1917 – 1981
2. 11,127 grade 5 ties installed by TXPF, 2003 - 2008
3. 18,047 ties installed by TxDOT, 2009 – 2012
4. Replaced worn rail with CWR in curves 4, 5, 6 by TxDOT 2009 - 2012
5. 17 grade crossings reconstructed (TxDOT)
6. 364 ties replaced on open deck bridges by TxDOT, 2009 - 2012
7. Misc. bridge repairs by TXDOT, 2009 - 2012
8. Upgraded roadway-rail crossings to 25 mph (TxDOT)
9. 7.6 miles of new 136# CWR relay, 8,000 ties, 12,000 tons of ballast between MP 7 and MP 35, 2015
10. Bridge Management Program – 29 bridges repaired between MP 4 and MP 910.9, 2015
11. Ultrasound rail inspection and repairs, MP 0 to 882, 2015

MP 21 – 36

1. 85# jointed rail, manufactured 1918 – 1953
2. 373 ties installed by TXPF, 2003 - 2008
3. 18,293 ties installed by TxDOT, 2009 – 2012
4. Replaced worn rail with CWR in curves 24, 36, 27, 28, 39, 40 (TxDOT)
5. 10 grade crossings reconstructed (TxDOT)
6. 672 ties replaced on open deck bridges by TxDOT, 2009 - 2012
7. Misc. bridge repairs by TXDOT, 2009 - 2012
8. Replaced bridge at 22.4 with culverts (TxDOT)
9. 120 ft bridge replaced at MP 23.1 by CMP culverts, 2015

MP 36 – 46

1. 70# - 112# mixed weights. Jointed rail manufactured 1918 – 1966
2. 2,970 ties installed by TXPF, 2003 - 2008
3. 8,179 ties installed by TxDOT, 2009 – 2012
4. Replaced worn rail with CWR in curve 41
5. 19 grade crossings reconstructed (TxDOT)
6. 167 ties replaced on open deck bridges by TxDOT, 2009 - 2012
7. Misc. bridge repairs by TXDOT, 2009 - 2012
8. Replaced timber box culverts at MP 45.5 with corrugated metal pipes
9. Upgraded roadway-rail crossings to 25 mph (TxDOT)
10. MP 41 to MP 43, 7300 LF Fogleman Siding placed (2014-2016)

MP 46 – 54

1. 90# - 112# jointed rail, manufactured 1941 - 1959
2. 3,863 ties installed by TXPF, 2003 - 2008

3. 4,568 ties installed by TxDOT, 2009 – 2012
4. 10 grade crossings reconstructed (TxDOT)
5. 20 ties replaced on an open deck bridge at 49.2 (TxDOT)
6. Misc. bridge repairs by TXDOT, 2009 - 2012
7. Upgraded roadway-rail crossings to 25 mph (TxDOT)

MP 54 – 74

1. 85# jointed rail, manufactured 1917
2. 15,583 ties installed by TxDOT, 2009 – 2012
3. 36 grade crossings reconstructed (TxDOT)
4. 170 ties replaced on open deck bridges (TxDOT)
5. Misc. bridge repairs (TxDOT)
6. Upgraded roadway-rail crossing to 25 mph at MP 54.2 (TxDOT)
7. Signal Crossings installed MP 70.3 and MP 61.3, 2015-2016 (TxDOT)

MP 712 – 721

1. 70# - 131# mixed wts. Jointed rail manufactured 1915 – 1966
2. 8,324 ties installed by TxDOT, 2010 - 2012
3. 24 grade crossings reconstructed with new track and concrete surfaces (TxDOT)
4. MP 715.8, location of SESCO superfund sight adjacent to ROW
5. 589 ties replaced on open bridge at 716.6 (TxDOT)
6. Replaced fire damaged bridge at 715.1 with concrete structure (TxDOT)
7. Misc. bridge repairs (TxDOT)

San Angelo Yard

1. 7,685 ties installed by TxDOT, 2010 – 2011 rehab
2. 4,548 tons of yard ballast installed (TxDOT)
3. Repairs to 18 yard switches (TxDOT)
4. 30 switch stands replaced with ergonomic design (TXPF)
5. Wye curve track replaced with 136# rail (panels - TXPF)
6. EOG secondary crude oil loading facility in yard
7. Badger Mining sand unloading facility in yard
8. Musket crude oil loading facility in yard
9. Canopy installed over fuel bay, drainage improved, 2015

MP 721 – 738.1

1. 112# jointed rail manufactured 1961
2. 88 ties installed by TXPF, 2004
3. TxDOT rehab projects ended at west Knickerbocker Rd crossing, MP 721.52
4. Class 2 track designation begins MP 722
5. 12,500 ties replaced, 5,000 tons of ballast, and 402 LF of crossings placed (TxDOT, 2015)
6. Ties are in good condition

MP 738.1 – 779

1. 115# CWR manufactured 1981
2. Ties in good condition up to MP 757, then poor to fair condition (limited # of good) through MP 779
3. Class 2 track designated
4. Signal Crossing installed MP 771.56, 2015 (TxDOT)

MP 779 – 815

1. 131# CWR manufactured in 1984 (132# CWR 811 to 815)
2. 4,471 ties installed by TXPF, 2004 (MP 802 thru 855.6)
3. Remaining ties in poor to fair condition (limited # of good)
4. Class 2 track designated

MP 815 – 846

1. 112# CWR manufactured 1970
2. Ties in fair to good condition
3. Most vehicular crossings in fair to bad condition
4. Class 2 track designated

MP 846 – 849.7

1. 112# jointed rail manufactured 1970
2. Ties in fair to good condition
3. Class 2 track designated

MP 849.7 – 869.7

1. 119# welded rail manufactured 1985
2. Ties in fair to good condition
3. Class 2 track designated

MP 869.7 – 945

1. 70# jointed rail manufactured 1912
2. 20,007 ties installed by TXPF, 2004
3. 9,615 ties installed by TXPF, early 2013
4. 390’ rail relay by TXPF, early 2013
5. Remaining ties in fair to good condition
6. MP 883 to MP 962, 22 bridges repaired, 2015

MP 957 – 968

1. 90# jointed rail manufactured 1929

2. 3,362 ties installed by TXPF, 2003
3. Ties in poor to fair condition

MP 968 – 986

1. 90# jointed rail manufactured 1929
2. 11,979 ties installed – TxDOT 2006
3. Remaining ties in fair to good condition
4. MP 985.9 channel north side of bridge continues deterioration

MP 986 – 1029.1

1. 90# jointed rail manufactured 1929
2. 3,125 ties installed by TXPF, 2003
3. 22,447 ties installed – TxDOT 2006
4. Remaining ties in fair to good condition
5. All rock cuts in need of drainage improvements – silting in
6. Excepted track designation
7. Washouts at MP 1007.2; 1005.6
8. International bridge burned down south of levee, Feb 2008; north of levee, March 2009
9. Presidio Depot burned down February 23, 2011

Map of the South Orient Railroad