

September 2016 ERCOT Monthly Operations Report

Reliability and Operations Subcommittee Meeting

November 3rd, 2016

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# Report Highlights

* The unofficial ERCOT peak for September was 66,853 MW.
* There were four frequency events in September. PMU data indicates the ERCOT system transitioned well in each case.
* There was one instance where Responsive Reserves were deployed, this sole event was the result of a frequency events.
* There were twenty-five RUC commitments in September.
* The level of reportable SCED congestion slightly increased in September. This congestion was due primarily to high loads, planned outages and area load/gen patterns as well as high North to Houston Imports. There were forty-one instances over 23 days on the Generic Transmission Constraints (GTCs) in September. There was one day of activity on the Zorillo – Ajo GTC, thirteen days on the Panhandle GTC, seven days on the Laredo GTC, one day on the Valley Import and nineteen days on the Liston GTC in September. There was no activity on the remaining GTCs during the Month.
* There were two application issues to report for September. On 9/8/16, there was a SCED failure where a watch was issued and on 9/15/16, a watch was issued due to MMS Application unavailable resulting in HRUC application failure.

# Frequency Control

## Frequency Events

The ERCOT Interconnection experienced four frequency events in September, all of which resulted from Resource trips. The average event duration was approximately 0:08:06.

When analyzing frequency events, ERCOT evaluates PMU data according to industry standards. Events with an oscillating frequency of less than 1 Hz are considered to be inter-area, while higher frequencies indicate local events. Industry standards specify that damping ratio for inter-area oscillations should be 3.0% or greater. All events listed below indicate the ERCOT system met these standards and transitioned well after each disturbance.

Reported frequency events will include both frequency events where frequency was outside the range of 60±0.1 Hz as well as those determined to be Frequency Measurable Events (FME) as defined by BAL-001-TRE-1. Delta Frequency is defined as the difference between the pre-perturbation and post-perturbation frequency. The Duration of Event is defined as the time it takes for the frequency to recover to lesser/greater of the frequency at the time of the frequency event (t(0) or “A-point”) for low/high-frequency events, respectively. Further details on FMEs can be found in the MIS posted BAL-001-TRE-1 PDCWG Unit Performance reports. A summary of the frequency events is provided below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Date and Time** | **Delta Frequency** | **Max/Min Frequency** | **Duration of Event** | **PMU Data** | **Load** | **Wind** | **Inertia** | **Comments** |
| **(Hz)** | **(Hz)** | **Oscillation Mode (Hz)** | **Damping Ratio** | **(MW)** | **%**  | **(GW-s)** |  |
| 9/8/2016 13:22 | 0.096 | 59.90 | 0:07:55 | 0.61 | 11% |  60,355  | 8% |  340,759  | Unit Trip of 582MW  |
| 9/18/2016 9:16 | 0.053 | 59.94 | 0:05:54 | No PMU Data Available. |  40,609  | 6% |  293,422  | Unit Trip of 453MW  |
| 9/18/2016 12:00 | 0.072 | 59.92 | 0:09:50 | No PMU Data Available. |  51,520  | 3% |  322,706  | Unit Trip of 437MW  |
| 9/19/2016 16:23 | 0.042 | 59.92 | 0:08:46 | No PMU Data Available. |  66,988  | 3% |  373,597  | Unit Trip of 419MW  |

(Note: frequency events highlighted in blue have been identified as FMEs per BAL-001-TRE-1 and the Performance Disturbance Compliance Working group.)



## Responsive Reserve Events

There were one events where Responsive Reserve MWs were released to SCED in September. The events highlighted in blue were related to frequency events reported in Section 2.1 above.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date and Time Released to SCED** | **Date and Time Recalled** | **Duration of Event** | **Maximum MWs Released** | **Comments** |
| 9/8/2016 13:23:04 | 9/8/2016 13:26:40 | 0:03:36 | 261.40 |   |

## Load Resource Events

None.

# Reliability Unit Commitment

ERCOT reports on Reliability Unit Commitments (RUC) on a monthly basis. Commitments are reported grouped by operating day and weather zone. The total number of hours committed is the sum of the hours for all the units in the specified region. Additional information on RUC commitments can be found on the MIS secure site at Grid 🡪 Generation 🡪 Reliability Unit Commitment.

There were no DRUC commitments in September.

There were 25 HRUC commitments in September.

|  |
| --- |
| **HRUC Commitments** |
| **Resource Location** | **# of Resources** | **Operating Day** | **Total # of Hours Committed** | **Total MWhs** | **Reason for Commitment** |
| North Central | 3 | 9/4/2016 | 15 | 1,458 | Local Congestion and Capacity |
| North | 1 | 9/4/2016 | 4 | 932 | Local Congestion |
| Coastal | 1 | 9/5/2016 | 8 | 4,200 | Local Congestion |
| North Central | 1 | 9/5/2016 | 7 | 427 | Local Congestion |
| North Central | 3 | 9/6/2016 | 15 | 1,939 | Local Congestion |
| Coastal | 1 | 9/6/2016 | 5 | 810 | Local Congestion |
| Southern | 1 | 9/12/2016 | 8 | 2,563 | Local Congestion |
| Coastal | 1 | 9/13/2016 | 5 | 845 | Local Congestion |
| North Central | 1 | 9/13/2016 | 2 | 236 | Local Congestion |
| Coastal | 1 | 9/14/2016 | 8 | 4,200 | Local Congestion |
| South Central | 1 | 9/14/2016 | 1 | 220 | Local Congestion |
| North Central | 1 | 9/14/2016 | 2 | 236 | Local Congestion |
| North Central | 1 | 9/15/2016 | 2 | 236 | Local Congestion |
| North Central | 2 | 9/16/2016 | 8 | 3,741 | Local Congestion |
| Coastal | 2 | 9/16/2016 | 12 | 4,876 | Local Congestion |
| Southern | 1 | 9/19/2016 | 8 | 309 | Local Congestion |
| Coastal | 4 | 9/21/2016 | 22 | 6,928 | Local Congestion |
| Southern | 1 | 9/21/2016 | 1 | 56 | Local Congestion |
| North Central | 1 | 9/21/2016 | 1 | 449 | Local Congestion |
| Coastal | 2 | 9/22/2016 | 12 | 4,860 | Local Congestion |
| North Central | 2 | 9/23/2016 | 7 | 834 | Local Congestion |
| North Central | 1 | 9/24/2016 | 2 | 236 | Local Congestion |
| Southern | 2 | 9/26/2016 | 7 | 486 | Local Congestion |
| Southern | 1 | 9/29/2016 | 8 | 2,495 | Local Congestion |
| Southern | 1 | 9/30/2016 | 13 | 8,060 | Local Congestion |

# Wind Generation as a Percent of Load



# Congestion Analysis

The number of congestion events experienced by the ERCOT system slightly increased in September. There were forty-one instances of activity on the Generic Transmission Constraints (GTCs) in September.

## Notable Constraints for September

Nodal protocol section 3.20 specifies that ERCOT shall identify transmission constraints that are active or binding three or more times within a calendar month. As part of this process, ERCOT reports congestion that meets this criterion to ROS. In addition ERCOT also highlights notable constraints that have an estimated congestion rent exceeding $1,000,000 for a calendar month. These constraints are detailed in the table below. Rows highlighted in blue indicate the congestion was affected by one or more outages. For a list of all constraints activated in SCED for the month of September, please see Appendix A at the end of this report.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Contingency** | **Overload** | **# of Days Constraint Active** | **Estimated Congestion Rent** | **Transmission Project** |
| DKCT Roans Prarie-Rothwood & Singleton-Tomball 345kV | Singleton - Zenith 345kV | 24 | $15,401,819.47 | Houston Import Project |
| WA Parish - Bailey & Hillje 345 kV  | Oasis - Dow Chemical 345kV | 1 | $5,749,309.96 |   |
| WA Parish - Bailey & Hillje 345 kV  | Dow Chemical - South Texas Project 345kV | 5 | $5,002,442.42 |   |
| Tmpsw-Knbsw 345kV & Belcnty 138kV | Round Rock - Chief Brady 138kV | 2 | $4,788,796.74 |   |
| Fort Worth Subsation to West Denton 138 kV | Jim Christal Substation - West Denton 138kV | 7 | $4,486,985.63 |   |
| Midland East - Moss Switch - Odessa Ehv Switch 345 kV | Odessa EHV Switch to Trigas Odessa Tap | 12 | $3,326,505.23 |   |
| North Mcallen to North Edinburg 138 kV | North Edinburg - Mccoll Road 138kV | 3 | $2,422,336.31 |   |
| DCKT Jewett - Singleton 345 kV | Btu\_Jack\_Creek - Twin Oak Switch 345kV | 25 | $2,362,070.30 | Houston Import Project |
| Jim Christal Substation - West Denton 138 kV | Fort Worth Subsation - West Denton 138kV | 5 | $1,589,501.52 |   |
| Hicks Switch - Alliance & Roanoke Switch 345 kV | Eagle Mountain Ses - Eagle Mountain Poi 138kV | 3 | $1,479,031.96 |   |
| WA Parish - Hillje & Bailey 345 kV | Dow Chemical - South Texas Project 345kV | 2 | $1,240,885.28 |   |
| Mountain Creek Ses Unit Unit8 | Industrial Blvd - Compton Street 138kV | 2 | $1,115,685.69 |   |
| Basecase | Laredo | 7 | $568,364.58 |   |
| DCKT Hill Country - Marion and Elmcreek 345 kV | Cibolo - Schertz 138kV | 5 | $555,286.54 | 5234 |
| Bevo Substation - Asherton 138 kV | Big Wells Sub - Cotulla Sub 69kV | 6 | $491,818.85 | 5217 |
| Mcses-Cdcsw 138kV | Irving Hunter Ferrell Tap 2 - Trinity River Authority 138kV | 6 | $354,220.29 |   |
| Jardin to Cotulla Sub 138 kV | Dilley Switch Aep - Cotulla Sub 69kV | 10 | $352,873.73 | 5222 |
| Mlses - Elktn And Tygnd 345 | Tyler Northwest - Shamburger Switch 138kV | 4 | $348,001.36 | 09TPIT0122 |
| DCKT Gibbons Creek - Singleton 345 kV | Jewett - Singleton 345kV | 8 | $338,626.00 | Houston Import Project |
| Polk Street to Oak Cliff South (6)138/138/138/138/138/138 kV | Cedar Crest Switch - Oak Cliff South 138kV | 5 | $268,046.68 |   |
| DCKT Chambers - King and Cedar Bayou - Jordan 345 kV | Aritek - Chorin 138kV | 3 | $260,107.73 | 4426 |
| Elmcreek-Marion 345kV | Cibolo - Schertz 138kV | 3 | $162,861.93 | 5235 |
| Basecase | Liston | 19 | $126,907.38 |   |
| Gila - Hiway 9 138 kV | Morris Street - Gila 138kV | 5 | $122,594.93 | 5542 |
| Basecase | Panhandle | 13 | $107,969.33 | Panhandle Upgrade |
| Lobo 2\_345\_138 345/138 kV  | Freer - San Diego 69kV | 4 | $73,513.06 |   |
| Choke Canyon Aep to Sigmor (2)138/138 kV | San Miguel Tap - North Calliham Sub 69kV | 3 | $55,897.02 | 3819 |
| DCKT Sandow Switch - Austrop 345kV | Howard Lane Tap - Howard Lane Aen 138kV | 4 | $50,861.19 |   |
| Skyline-Marion&Elmcreek 345kV | Cibolo - Schertz 138kV | 3 | $43,875.47 | 5236 |
| West Levee Switch Axfmr1h\_H (3)345/138 kV | Industrial Blvd - Compton Street 138kV | 4 | $31,652.05 |   |
| Uvalde Aep - Odlaw Switchyard 138 kV | Hamilton Road - Maverick 138kV | 4 | $31,477.19 | 16TPIT0024 |
| Mesa View Switch to Fort Lancaster 138 kV | Big Lake - Big Lake Phillips Tap 69kV | 3 | $27,214.56 |   |
| Mercers Gap Sw to Comanche Switch (Oncor) 138 kV | Camp Bowie (Oncor) - Brownwood Switch 138kV | 3 | $18,212.52 | 5713 |
| Eskota Switch - Abilene South 138 kV | Eskota Switch - Longworth 69kV | 3 | $10,143.07 |   |
| Laquinta - Lobo 138 kV | Bruni Sub 69\_1 138/69kV | 3 | $6,930.59 |   |
| Bighil-Kendal 345kV | Hamilton Road - Maverick 138kV | 4 | $6,076.09 | 16TPIT0024 |
| Carrolton Northwest - Lewisville Switch 345 kV | Lewisville Switch - Jones Street Tnp 138kV | 3 | $4,667.45 |   |
| DCKT Ferguson - Granite Mountain and Wirtz - Starcke - Paleface 138 kV | Flat Rock Lcra - Paleface 138kV | 3 | $2,432.92 | 4465 |

## Generic Transmission Constraint Congestion

There were seven days of activity on the Laredo GTC, one day of activity on the Zorillo – Ajo GTC, thirteen days on the Panhandle GTC, one day on the Valley Import GTC and nineteen days on the Liston GTC in September. There was no activity on the remaining GTCs during the Month.

Note: This is how many times a constraint has been activated to avoid exceeding a GTC limit, it does not imply an exceedance of the GTC occurred or that the GTC was binding.

## Manual Overrides for September

There were no manual overrides for the month of September 2016.

## Congestion Costs for Calendar Year 2016

The following table represents the top twenty active constraints for the calendar year based on the estimated congestion rent attributed to the congestion. ERCOT updates this list on a monthly basis.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Contingency** | **Binding Element** | **# of 5-min SCED Intervals** | **Estimated Congestion Rent** | **Transmission Project** |
| Rns-Rtw & Sng-Tb 345kv | Singleton - Zenith 345kV | 7,942 |  $ 40,978,824.35  | Houston Import Project |
| Ph Robinson At1l\_H (3)345/138 KV | Meadow AT1 345/138kV | 1,470 |  $ 37,410,531.94  | 4708 |
| Villa Cavazos to Military Highway Aep (2)138/138 KV | Los Fresnos - Loma Alta Substation 138kV | 3,272 |  $ 26,026,381.24  |   |
| Jim Christal Substation to West Denton 138 KV | Fort Worth Subsation - West Denton 138kV | 1,662 |  $ 12,552,670.88  |   |
| Jewet-Sng 345kv | Btu\_Jack\_Creek - Twin Oak Switch 345kV | 9,539 |  $ 11,649,642.38  | Houston Import Project |
| Fort Worth Subsation to West Denton 138 KV | Jim Christal Substation - West Denton 138kV | 1,977 |  $ 10,434,357.63  |   |
| Rnksw-W\_Dent&Lwssw-Krwsw 345kv | Fort Worth Subsation - West Denton 138kV | 1,774 |  $ 10,027,611.63  |   |
| Hcksw-Allnc&Rnksw 345kv | Eagle Mountain Ses - Morris Dido 138kV | 1,420 |  $ 8,755,553.47  | 4252 |
| Basecase | Panhandle | 6,612 |  $ 8,222,680.21  | Panhandle Upgrade |
| Bm-Sr73 & Sr81 138kv | Bellaire - San Felipe 138kV | 196 |  $ 7,119,922.62  | 4703 |
| Rosen Heights to Eagle Mountain Compressor (5)138/138/138/138/138 KV | Rosen Heights Tap 2 - Morris Dido 138kV | 857 |  $ 6,945,775.57  | 4252 |
| Meadow to Ph Robinson 345 KV | Meadow AT1 345/138kV | 89 |  $ 6,552,987.55  | 4708 |
| Basecase | Valley Import | 113 |  $ 6,494,964.50  | LRGV (lower Rio Grande Valley) Import Project |
| WA Parish - Bailey & Hillje 345 kV  | Oasis - Dow Chemical 345kV | 64 |  $ 5,749,309.96  |   |
| Lwssw-Krwsw&Rnksw 345kv | Fort Worth Subsation - West Denton 138kV | 791 |  $ 5,462,367.54  |   |
| Hcksw-Allnc&Rnksw 345kv | Rosen Heights Tap 2 - Morris Dido 138kV | 805 |  $ 5,063,292.44  | 4252 |
| South Carbide to Loma Alta Substation 138 KV | La Palma - Villa Cavazos 138kV | 505 |  $ 5,060,645.62  | 4490 |
| WA Parish - Bailey & Hillje 345 kV  | Dow Chemical - South Texas Project 345kV | 225 |  $ 5,002,442.42  |   |
| Tmpsw-Knbsw 345kv & Belcnty 138kv | Round Rock - Chief Brady 138kV | 151 |  $ 4,788,796.74  |   |
| Mason Road to Obrien 138 KV | Betka - Hockley 138kV | 257 |  $ 4,451,883.67  | 3682A,3682,3682C |

# System Events

## ERCOT Peak Load

The unofficial ERCOT peak load for the month was 66,853 MW and occurred on September 19th during hour ending 17:00.

## Load Shed Events

None.

## Stability Events

None.

## Notable PMU Events

ERCOT analyzes PMU data for any significant system disturbances that do not fall into the Frequency Events category reported in section 2.1. The results are summarized in this section once the analysis has been completed.

There were no reportable events in September.

## TRE/DOE Reportable Events

None.

## New/Updated Constraint Management Plans

None.

## New/Modified/Removed SPS

* 09/06/2016 ONCOR's ALNSW SPS 15 has been retired from service.

## New Procedures/Forms/Operating Bulletins

|  |  |  |
| --- | --- | --- |
| 09/28/2016 | Transmission and Security Desk V1 Rev 47 | [760](http://www.ercot.com/content/wcm/pobs/107646/Power_Operations_Bulletin_760.doc) (doc – 524.5 KB) |
| 09/28/2016 | Shift Supervisor Desk V1 Rev 40 | [759](http://www.ercot.com/content/wcm/pobs/107643/Power_Operations_Bulletin_759.doc) (doc – 328 KB) |
| 09/28/2016 | Scripts V1 Rev 8 | [758](http://www.ercot.com/content/wcm/pobs/107639/Power_Operations_Bulletin_758.doc) (doc – 264.5 KB) |
| 09/28/2016 | Reliability Unit Commitment Desk V1, Rev 36 | [757](http://www.ercot.com/content/wcm/pobs/107635/Power_Operations_Bulletin_757.doc) (doc – 239.5 KB) |
| 09/28/2016 | Real Time Desk V1 Rev44 | [756](http://www.ercot.com/content/wcm/pobs/107630/Power_Operations_Bulletin_756.doc) (doc – 328 KB) |
| 09/28/2016 | DC Tie Desk V1 Rev 39 | [755](http://www.ercot.com/content/wcm/pobs/107627/Power_Operations_Bulletin_755.doc) (doc – 277.5 KB) |

# Emergency Conditions

## OCNs

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 9/16/16 02:34 | OCN issued due to capacity insufficiency |

## Advisories

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 9/3/16 15:02 | Advisory issued due to Physically Responsive Capability being less than 3,000MW. |
| 9/15/16 15:06 | Advisory issued due to Physically Responsive Capability being less than 3,000MW. |
| 9/17/16 14:00 | Advisory issued due to Physically Responsive Capability being less than 3,000MW. |
| 9/18/16 15:27 | Advisory issued due to Physically Responsive Capability being less than 3,000MW. |
| 9/19/16 15:27 | Advisory issued due to Physically Responsive Capability being less than 3,000MW. |
| 9/28/16 15:56 | Advisory issued due to Physically Responsive Capability being less than 3,000MW. |

## Watches

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 9/08/16 19:56 | Watch issued due to MMS Application unavailable resulting in SCED application failure |
| 9/15/16 03:53 | Watch due to HRUC not completing due MMS Application unavailable resulting in HRUC application failure. |

## Emergency Notices

None.

# Application Performance

## TSAT/VSAT Performance Issues

None.

## Communication Issues

None.

## Market System Issues

* + - **9/**8/16 – A watch was issued due to MMS Application unavailable resulting in SCED application failure
		- 9/15/16 – A watch was issued due to MMS Application unavailable resulting in HRUC application failure.

# Appendix A: Real-Time Constraints

The following is a complete list of constraints activated in SCED for the month of September. Full contingency descriptions can be found in the Standard Contingencies List located on the MIS secure site at Grid 🡪 Generation 🡪 Reliability Unit Commitment.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Contingency** | **Constrained Element** | **From Station** | **To Station** | **# of Days Constraint Active** |
| DJEWSNG5 | JK\_TOKSW\_1 | TOKSW | JK\_CK | 25 |
| DRNS\_TB5 | SNGZEN99\_A | SNG | ZEN | 24 |
| BASE CASE | LISTON | n/a | n/a | 19 |
| BASE CASE | PNHNDL | n/a | n/a | 13 |
| SMDLODE5 | 6475\_\_C | ODEHV | TROTP | 12 |
| SJARDIL8 | DIL\_COTU\_1 | DILLEYSW | COTULAS | 10 |
| DGIBSNG5 | 260\_A\_1 | JEWET | SNG | 8 |
| SFTWW\_D8 | AIR\_W\_DE\_1 | W\_DENT | JMCRSTL | 7 |
| BASE CASE | LAREDO | n/a | n/a | 7 |
| DMCSCDC8 | 3405\_\_B | TRIRA | IHFT2 | 6 |
| SBEVASH8 | BIG\_COTU\_1 | COTULAS | BIGWELS | 6 |
| SGILNU78 | GILA\_MORRIS1\_1 | GILA | MORRIS | 5 |
| SPLKMCS8 | 3160\_\_A | CDCSW | OKCLS | 5 |
| DHILELM5 | 293T304\_1 | CIBOLO | SCHERT | 5 |
| DWAPHLJ5 | DOWSTP27\_A | STP | DOW | 5 |
| SJMCW\_D8 | FTW\_W\_DE\_1 | W\_DENT | FTWORTH | 5 |
| DAUSSND5 | HWRDLN\_1 | HWRDTP | HWRDLN | 4 |
| SBRAUVA8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 4 |
| XLOB58 | FREER\_SAN\_DI1\_1 | SAN\_DIEG | FREER | 4 |
| DBIGKEN5 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 4 |
| DTRCELK5 | 1760\_\_A | SHBSW | TYLNW | 4 |
| XWL2V58 | 3130\_\_B | INDST | CMPST | 4 |
| SLAQLOB8 | BRUNI\_69\_1 | BRUNI | BRUNI | 3 |
| DCHBJOR5 | ATKRIN87\_A | RIN | ATK | 3 |
| DSKYMAR5 | 293T304\_1 | CIBOLO | SCHERT | 3 |
| SFTLMES8 | BGLK\_PHBL\_T1\_1 | BGLK | PHBL\_TAP | 3 |
| SZEPCMN8 | 670\_\_B | BRNSW | CMPBW | 3 |
| DCRLLSW5 | 590\_\_A | LWSSW | LWVJS | 3 |
| DFERPAL8 | 43T365\_1 | PALEPE | FLATRO | 3 |
| SN\_MNED8 | MCOLL\_\_NEDIN1\_1 | NEDIN | MCOLL\_RD | 3 |
| DHCKRNK5 | 6270\_\_A | EMSES | EGPOI | 3 |
| DELMMAR5 | 293T304\_1 | CIBOLO | SCHERT | 3 |
| DFERPAL8 | 43T365\_1 | FLATRO | PALEPE | 3 |
| SSIGSAN8 | NCA\_SMTP\_1 | SANMTAP | NCALHMS | 3 |
| DAUSDUN8 | CKT\_972\_1 | HWRDLN | MCNEIL | 3 |
| SMCEABS8 | 6780\_\_A | ESKSW | LONGWRTH | 3 |
| UMC2UNI1 | 3130\_\_B | INDST | CMPST | 2 |
| STENCR28 | TEN\_CRD1\_1 | TEN | CRD | 2 |
| BASE CASE | NEDIN\_REDTAP1\_1 | REDTAP | NEDIN | 2 |
| DHLJBLY5 | DOWSTP27\_A | STP | DOW | 2 |
| SCABWES8 | B\_DAVI\_RODD\_F1\_1 | B\_DAVIS | RODD\_FLD | 2 |
| XLOB58 | ASHERT\_CATARI1\_1 | ASHERTON | CATARINA | 2 |
| SFT\_BAL8 | CONCHO\_VRBS1\_1 | CONCHO | VRBS | 2 |
| SBUZLME8 | BUZSW\_AXF1 | BUZSW | BUZSW | 2 |
| DTMPBE58 | 213T378\_1 | RNDRK | CHIEBR | 2 |
| DMARSKY5 | 293T304\_1 | CIBOLO | SCHERT | 2 |
| XSA2N58 | SANMIGL\_ATAH | SANMIGL | SANMIGL | 2 |
| BASE CASE | RANDAD\_ZAPATA1\_1 | RANDADO | ZAPATA | 2 |
| XWTR58 | 3130\_\_B | INDST | CMPST | 2 |
| DWH\_STP5 | BLESSI\_LOLITA1\_1 | BLESSING | LOLITA | 2 |
| XSCS58 | 1450\_\_B | NCDSE | NCSFA | 1 |
| DTOKJK\_5 | 260\_A\_1 | JEWET | SNG | 1 |
| DELMSKY5 | 293T304\_1 | CIBOLO | SCHERT | 1 |
| DFERGRA8 | 38T365\_1 | WIRTZ | FLATRO | 1 |
| DELMMAR5 | MAR\_SKY\_1 | MARION | SKYLINE | 1 |
| SVLDO2W8 | MRK\_VNVL\_1 | MRKHMSW | VNVLKSW | 1 |
| SMCEABS8 | ROBY\_RONDTP1\_1 | ROBY | RONDTPT | 1 |
| DFERGRA8 | SANDCR\_AT1 | SANDCR | SANDCR | 1 |
| SCOLLON5 | VICTO\_WARBU\_1A\_1 | VICTORIA | WARBURTN | 1 |
| SSNDAU15 | 450\_\_A | SNDSW | AUSTRO | 1 |
| DSNGZEN5 | BETHK\_66\_A | HK | BET | 1 |
| DWAPHLJ5 | DOWOAS18\_A | DOW | OAS | 1 |
| BASE CASE | VALIMP | n/a | n/a | 1 |
| XJEW158 | 1240\_\_K | TRSES | WINKLER | 1 |
| XNED258 | NEDIN\_138H | NEDIN | NEDIN | 1 |
| BASE CASE | S104A\_1 | RIOHONDO | MV\_BURNS | 1 |
| SW\_DJCK5 | HLND\_LWSSW\_1 | LWSSW | HILND | 1 |
| SFTLMES8 | MIDW\_OZONA1\_1 | MIDW | OZONA | 1 |
| DALNRYS5 | 1627\_\_A | APOLLO | REAST | 1 |
| XLOB58 | GARZA\_ROMA\_S1\_1 | GARZA | ROMA\_SW | 1 |
| DELMMAR5 | HIL\_MAR\_1 | MARION | HILLCTRY | 1 |
| SFTLMES8 | LVOK\_SANTIA1\_1 | SANTIAGO | LVOK | 1 |
| DHILELM5 | MAR\_SKY\_1 | MARION | SKYLINE | 1 |
| XDOW58 | MRK\_VNVL\_1 | MRKHMSW | VNVLKSW | 1 |
| XSA2N58 | SANMIGL\_ATAL | SANMIGL | SANMIGL | 1 |
| XLWS58 | 1065\_\_L | EULES | GRHWY | 1 |
| DFERGRA8 | 458T458\_1 | PALEFA | BEECRE | 1 |
| SBRNCMN8 | 670\_\_B | BRNSW | CMPBW | 1 |
| XLOB58 | DILLEY\_JARDIN1\_1 | DILLEYSW | JARDIN | 1 |
| DVICV\_D8 | GREENL\_WEAVER1\_1 | WEAVERRD | GREENLK | 1 |
| SHIWCIT8 | WEIL\_T\_WESTSI1\_1 | WEIL\_TRC | WESTSIDE | 1 |
| DFERHOR8 | 41T196\_1 | WIRTZ | STARCK | 1 |
| SRDODES8 | 940\_\_C | ENWSW | WXHCH | 1 |
| SFORGIL8 | FRPHIL\_GILLES1\_1 | GILLES | FRPHILLT | 1 |
| SLISBAT8 | GARZA\_ROMA\_S1\_1 | GARZA | ROMA\_SW | 1 |
| DNEDPAL8 | MCOLL\_\_NEDIN1\_1 | NEDIN | MCOLL\_RD | 1 |
| BASE CASE | ZO\_AJO | n/a | n/a | 1 |