

**October 2015 ERCOT Monthly Operations Report**

**Reliability and Operations Subcommittee Meeting**

**December 3rd, 2015**

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# Report Highlights

* The unofficial ERCOT peak for October was 59,193 MW.
* There were six frequency events in October. PMU data indicates the ERCOT system transitioned well in each case.
* There were four instances where Responsive Reserves were deployed, all of which were the result of frequency events.
* There were seventeen RUC commitments in October. Seven in the Northern region, seven in the Southern region and three in the Coastal region. All were due to local congestion.
* The level of reportable SCED congestion decreased in October. This congestion was due primarily to planned outages and area load/gen patterns. There were thirteen days of activity on the Generic Transmission Constraints (GTCs) in October. This included one day of activity on the Laredo GTC, nine on the Zorillo – Ajo GTC and three on the Valley Import GTC.
* There were no significant system events for the month of October.
* ERCOT Applications performed well throughout the month. There were no ERCOT related application performance issues.

# Frequency Control

## Frequency Events

The ERCOT Interconnection experienced six frequency events in October, all of which resulted from Resource trips. The average event duration was approximately 0:04:42.

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** | **Comments** |
| **(Hz)** | **(Hz)** | **Oscillation Mode (Hz)** | **Damping Ratio** |
| 10/2/2015 16:11 | 0.028 | 59.91 | 0:03:33 | PMU Data Not Available. | Unit Trip of 358 MW  |
| 10/3/2015 10:00 | 0.078 | 59.90 | 0:06:37 | PMU Data Not Available. | Unit Trip of 494 MW  |
| 10/23/2015 5:31 | 0.107 | 59.82 | 0:05:33 | 0.72 | 9% | Unit Trip of 834 MW  |
| 10/23/2015 6:05 | 0.068 | 59.79 | 0:03:56 | 0.73 | 11% | Unit Trip of 830 MW  |
| 10/24/2015 10:43 | 0.038 | 59.92 | 0:02:31 | PMU Data Not Available. | Unit Trip of 306 MW  |
| 10/27/2015 15:47 | 0.115 | 59.85 | 0:06:04 | PMU Data Not Available. | Unit Trip of 680 MW  |

 (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 four events where Responsive Reserve MWs were released to SCED in October. 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** |
|
| 10/2/2015 16:11:26 | 10/2/2015 16:14 | 00:02:56 | 121 |   |
| 10/23/2015 5:31:36 | 10/23/2015 5:35 | 00:04:08 | 520 |   |
| 10/23/2015 6:05:22 | 10/23/2015 6:09 | 00:03:40 | 881 |   |
| 10/27/2015 15:47:21 | 10/27/2015 15:51 | 00:04:24 | 538 |   |

## Load Resource Events

There were no load resource deployment events in October.

# 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 October.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Resource Location** | **# of Resources** | **Operating Day** | **Total # of Hours Committed** | **Total MWhs** | **Reason for commitment** |
| Southern | 1 | 10/2/2015 | 6 | 1,821 | Local Congestion |
| Northern | 1 | 10/7/2015 | 1 | 118 | Local Congestion |
| Southern | 1 | 10/12/2015 | 11 | 547 | Local Congestion |
| Southern | 1 | 10/13/2015 | 14 | 720 | Local Congestion |
| Southern | 1 | 10/13/2015 | 14 | 5,834 | Local Congestion |
| Northern | 1 | 10/142015 | 3 | 1,704 | Local Congestion |
| Northern | 1 | 10/15/2015 | 18 | 10,224 | Local Congestion |
| Northern | 1 | 10/21/2015 | 7 | 1,681 | Local Congestion |
| Northern | 1 | 10/23/2015 | 8 | 1,846 | Local Congestion |
| Northern | 1 | 10/25/2015 | 1 | 628 | Local Congestion |
| Northern | 1 | 10/26/2015 | 6 | 3,782 | Local Congestion |
| Coast | 1 | 10/27/2015 | 12 | 6,540 | Local Congestion |
| Southern | 1 | 10/28/2015 | 18 | 897 | Local Congestion |
| Southern | 1 | 10/28/2015 | 3 | 125 | Local Congestion |
| Southern | 1 | 10/29/2015 | 15 | 809 | Local Congestion |
| Coast | 1 | 10/29/2015 | 12 | 3,259 | Local Congestion |
| Coast | 1 | 10/29/2015 | 12 | 3,209 | Local Congestion |

# Wind Generation as a Percent of Load



# Congestion Analysis

The number of congestion events experienced by the ERCOT system increased in October due to planned outages and area load/gen patterns. There were thirteen days of activity on the Generic Transmission Constraints (GTCs) in October.

## Notable Constraints for October

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 October, please see Appendix A at the end of this report.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Contingency** | **Overload** | **# of Days Constraint Active** | **Estimated Congestion Rent** | **Transmission Project** |
| Base case | Valley Import | 3 | $13,810,161  |   |
| Nacogdoches Se - Mt Enterprise 345 kV | Centerville I45 - Pleasant Springs (Hcec) 138kV | 5 | $1,389,209  |   |
| Gibbons Creek -Singleton 345 kV | Jewett - Singleton 345kV | 8 | $674,685  | 4298 |
| Base case | Zorillo to Ajo | 11 | $525,418  |   |
| West Levee Switch Axfmr1h\_H 345/138 KV | Industrial Blvd - Compton Street 138kV | 3 | $485,314  |   |
| Laquinta - Lobo 138 KV | Bruni Sub 138/69kV | 10 | $359,937  |   |
| Bluff Creek T2\_H 345/138 kV | Bluff Creek 345/34.5/138kV | 6 | $350,601  |   |
| Alazan - Barney Davis 138/138 kV | Rodd Field - Holly 138kV | 3 | $328,854  |   |
| Marion - Hill Country & Skyline 345 kV | E C Mornhinweg - Parkway Lcra 138kV | 8 | $298,905  | 13TPIT0047 |
| Laredo Vft North - Lobo 138 kV | Bruni Sub 138/69kV | 3 | $217,031  |   |
| Ferguson – Granite Mountain & Wirtz-Paleface 138 kV | Flat Rock Lcra - Wirtz 138kV | 11 | $177,181  | 4465 |
| Tortuga - Koch Up River 138 KV | Morris Street - Gila 138kV | 11 | $176,374  |   |
| Ennis Southeast - Ennis 138 KV | Ennis West Switch - Waxahachie 138kV | 3 | $117,816  |   |
| Roans Prairie - Rothwood & Singleton - Tomball 345 Kv | Singleton - Zenith 345kV | 3 | $112,560  | 4485, 3937, 3950 (a,b) |
| Mercers Gap Sw to Comanche Switch 138 kV | Camp Bowie (Oncor) - Brownwood Switch 138kV | 6 | $103,220  |   |
| Mg Industries - Waxahachie North 138 kV | Trumbull 138/69kV | 4 | $64,031  | 2014 RTP Reliability Need |
| Marion - Zorn 345 kV | Marion - Clear Springs 345kV | 9 | $58,320  |   |
| Lobo 2\_345\_138\_H 345/138 KV | Freer - San Diego 69kV | 3 | $38,806  | 3903 |
| Marion – Clear Springs & Zorn 345 kvV | Clear Springs 345/13.2/138kV | 5 | $35,701  | 4462 |
| Asphalt Mines - Odlaw Switchyard 138 KV | Hamilton Road - Maverick 138kV | 3 | $28,339  | In 2014 LTSA |
| Twin Oak Switch –Gibbons Creek & Btu Jack Creek 345 kV | Jewett - Singleton 345kV | 5 | $18,188  | 4485, 3937, 3950 (a,b) |
| Marion –Hill Country & Skyline 345 kV | Marion 345/138kV | 3 | $16,940  | 4081 |
| Bosque Switch to Whitney 138 kV | Lake Whitney Tnp - Bosque Switch 138kV | 3 | $6,607  |   |

## Generic Transmission Constraint Congestion

There was one day of activity on the Laredo GTC, nine days of activity on the Zorillo – Ajo GTC and three days of activity on the Valley Import GTC in October. There was no activity on the remaining GTCs during the Month of October.

## Manual Overrides for October

There were no manual overrides for the month of October 2015

## Congestion Costs for Calendar Year 2015

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** |
| Roans Prairie - Rothwood & Singleton - Tomball 345 kV | Singleton - Zenith 345kV | 2798 | $25,034,946  | 4485, 3937, 3950 (a,b) |
| Base case | Valley Import | 199 | $15,591,256  |   |
| San Angelo North 138\_69t1 138/69 kV | San Angelo College Hills 138/69kV | 1100 | $12,124,531  |   |
| Los Fresnos - Loma Alta Substation 138 kV | La Palma - Villa Cavazos 138kV | 1079 | $10,680,014  | 4490 |
| Flewellen – Obrien & Mason Road 138 kV | Betka - Hockley 138kV | 667 | $9,396,616  |   |
| Collin Switch 345 kV - Collin Ses 138 kV | Collin Ses - Collin Switch 345 Kv 138kV | 235 | $9,098,021  |   |
| Topeka Termination to West Levee Switch 345/345 KV | Cedar Hill Switch - Mountain Creek Ses 138kV | 276 | $7,327,162  | 13TPIT0060 |
| Hill Country – Marion & Elmcreek 345 kV | Skyline - Marion 345kV | 1328 | $7,321,029  | 4081 |
| Jewett - Singleton 345 kV | Btu\_Jack\_Creek - Twin Oak Switch 345kV | 4898 | $7,318,336  |   |
| San Angelo College Hills 138\_69t1 138/69 kV | San Angelo Power Station 138/69kV | 1456 | $7,141,012  |   |
| North Alvin Tnp to Meadow 138 KV | Southshore Tnp - Ph Robinson 138kV | 187 | $6,531,939  |   |
| Lost Pines Lcra – Austrop & Aen Dunlap 345 kV | Fayette Plant 1 - Fayette Plant 2 345kV | 2975 | $6,416,648  |   |
| Hutto Switch Axfmr1h (3)345/138 KV | Pflugerville - Gilleland 138kV | 565 | $4,639,067  | 16TPIT0062 |
| Bevo Substation - Asherton 138 kV | Hamilton Road - Maverick 138kV | 320 | $4,635,315  |   |
| Orange Grove Switching Station - Lon Hill 138 kV | Lon Hill - Smith 69kV | 4186 | $4,156,156  | 16TPIT0026 |
| Rio Hondo 345\_138\_1l 345/138 KV | Aderhold Sub - Elsa 138kV | 121 | $4,047,071  |   |
| Falcon Seaboard - Midland East 345 kV | Glenhaven - Odessa 138kV | 70 | $3,753,436  |   |
| Base case | North to Houston (Houston Import) | 92 | $3,656,328  | 4485, 3937, 3950 (a,b) |
| Calaveras – Hotwells & Laredo1 138 kV | Calaveras - Streich 138kV | 738 | $3,654,243  |   |
| Falcon Seaboard to Morgan Creek Ses 345 kV | Crmwd 8 Tap - Glenhaven 138kV | 65 | $3,638,593  |   |

# System Events

## ERCOT Peak Load

The unofficial ERCOT peak load for the month was 59,153 MW and occurred on October 12th during hour ending 17:00.

This demand value was a record peak for ERCOT.

## 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 October.

## TRE/DOE Reportable Events

10/13/15 - ERCOT issued a Media Appeal for energy conservation as a precautionary measure due to a potential Rio Grande Valley Import limit exceedance.

## New/Updated Constraint Management Plans

None.

## New/Modified/Removed SPS

None.

## New Procedures/Forms/Operating Bulletins

None.

# Emergency Conditions

## OCNs

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 10/23/15 06:14 | ERCOT issued an OCN due to a projected Reserve Capacity Insufficiency. |
| 10/23/15 14:27 | ERCOT issued an OCN due to a significant rain event affecting the ERCOT region. |

## Advisories

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 10/7/15 14:43 | ERCOT issued an Advisory due to a geomagnetic disturbance of K-7. |

## Watches

None.

## Emergency Notices

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 10/13/15 10:25 | ERCOT issued a Transmission Emergency Notice due to a potential Rio Grande Valley Import limit exceedance. |
| 10/28/15 14:18 | ERCOT issued a Transmission Emergency Notice due to a potential Rio Grande Valley Import limit exceedance. |

# Application Performance

ERCOT system applications performed well in October. There were no issues to report.

## TSAT/VSAT Performance Issues

None.

## Communication Issues

None.

## Market System Issues

None.

# Net-Forecast Bias Applied to NSRS Procurement for November 2015

Each month, ERCOT calculates a net Forecast Bias pursuant to the ERCOT Ancillary Services Methodology for procurement of Non-Spinning Reserve Service (NSRS). The table below indicates the amount of net Forecast Bias that was applied to the NSRS procurement for specified blocks of time for the month of November 2015.

|  |  |
| --- | --- |
| **Blocks** | **Negative Net Load Forecast Average Error - By Weather Zone for the 5 Largest Zones** |
| **Coast** | **East** | **North Central** | **South Central** | **Southern** |
| **1-2** | -28 | -5 | -33 | -17 | -8 |
| **3-6** | 0 | 0 | 0 | 0 | 0 |
| **7-10** | 0 | 0 | 0 | 0 | 0 |
| **11-14** | 0 | 0 | 0 | 0 | 0 |
| **15-18** | -8 | -1 | -10 | -5 | -3 |
| **19-22** | 0 | 0 | 0 | 0 | 0 |
| **23-24** | -28 | -5 | -33 | -17 | -8 |

# Appendix A: Real-Time Constraints

The following is a complete list of constraints activated in SCED for the month of October. 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** |
| BASE CASE | VALIMP |   |   | 3 |
| SNCDTRS5 | 1230\_\_D | CNI45 | PLSSP | 5 |
| DFRAPAR8 | G0\_L2\_1 | G0 | L2 | 1 |
| DGIBSNG5 | 260\_A\_1 | JEWET | SNG | 8 |
| DGIBSNG5 | 240\_\_A | JEWET | SNG | 2 |
| BASE CASE | ZO\_AJO |   |   | 11 |
| XWI2N89 | WINKS\_FMR1 | WINKS | WINKS | 2 |
| XWL2V58 | 3130\_\_B | INDST | CMPST | 3 |
| DLONWAR5 | LONHILL\_PAWNEE\_1 | PAWNEE | LON\_HILL | 1 |
| SWCOW2C8 | G138\_18\_1 | WCOLMAIN | WCOLLOCL | 2 |
| BASE CASE | LAREDO |   |   | 1 |
| SELMTH25 | WHTNY\_HT1L | WHTNY | WHTNY | 2 |
| SLAQLOB8 | BRUNI\_69\_1 | BRUNI | BRUNI | 10 |
| XBL2U58 | BLUF\_CRK\_T1\_H | BLUF\_CRK | BLUF\_CRK | 6 |
| XEMS58 | EMSES\_AX2H | EMSES | EMSES | 1 |
| SALAN\_28 | HOLLY4\_RODD\_F1\_1 | RODD\_FLD | HOLLY4 | 3 |
| DMARSKY5 | 581T581\_1 | ECMORN | PARKWA | 8 |
| SLARLO28 | BRUNI\_69\_1 | BRUNI | BRUNI | 3 |
| STELMCN8 | 6465\_\_C | MDLNE | MDDTN | 3 |
| DFL\_MAR8 | BETHK\_66\_A | HK | BET | 1 |
| DFPPFAY5 | 192T175\_1 | SMITHV | WINCHE | 2 |
| DEMSHCK5 | 6110\_\_A | BNBSW | CMTSW | 1 |
| DFERPAL8 | 38T365\_1 | WIRTZ | FLATRO | 11 |
| SKOCNU28 | GILA\_MORRIS1\_1 | GILA | MORRIS | 11 |
| SPLKMCS8 | 3160\_\_A | CDCSW | OKCLS | 1 |
| SVLSANA5 | 404\_\_A | VLYSO | FMRVL | 2 |
| SGARROM8 | GARZA\_69A1 | GARZA | GARZA | 1 |
| SENSENW8 | 940\_\_C | ENWSW | WXHCH | 3 |
| DRNS\_TB5 | SNGZEN99\_A | SNG | ZEN | 3 |
| SKLELOY8 | LOYOLA\_69\_1 | LOYOLA | LOYOLA | 2 |
| SLULLOC8 | 124T157\_1 | LOCKHA | MAGNME | 1 |
| SZEPCMN8 | 670\_\_B | BRNSW | CMPBW | 6 |
| SCOLLON5 | VICTO\_WARBU\_1A\_1 | VICTORIA | WARBURTN | 1 |
| XNCD58 | 1230\_\_D | CNI45 | PLSSP | 1 |
| SSANELM5 | SANMIGL\_ATBL | SANMIGL | SANMIGL | 1 |
| SHRSREN8 | 755\_\_D | RENSW | NPKWY | 1 |
| SENSENS8 | 940\_\_C | ENWSW | WXHCH | 1 |
| DRNS\_TB5 | SNGZEN98\_A | SNG | ZEN | 1 |
| SMGIENW8 | TRU\_UAT1 | TRU | TRU | 4 |
| SMARZOR5 | 419T419\_1 | CLEASP | MARION | 9 |
| XLOB58 | SANMIGL\_ATAH | SANMIGL | SANMIGL | 3 |
| SLOCMEN8 | 101T158\_1 | ZORN | POOLRO | 1 |
| XLOB58 | FREER\_SAN\_DI1\_1 | SAN\_DIEG | FREER | 3 |
| DMARZOR5 | CLEASP\_AT2H | CLEASP | CLEASP | 5 |
| XWFA89 | 6945\_\_A | LKWSW | WFALS | 1 |
| SBIGDIL8 | BAT\_CRST\_1 | BATESVL | CRSTLSW | 1 |
| SZEPCMN8 | 670\_\_C | CMPBW | BRNSO | 1 |
| SCRNLC38 | 6465\_\_C | MDLNE | MDDTN | 2 |
| SCHABSP9 | SACH\_SAGT1\_1 | SACH | SAGT | 1 |
| SBRAUVA8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 3 |
| DJEWSNG5 | JK\_TOKSW\_1 | TOKSW | JK\_CK | 1 |
| SPAWLON5 | KENEDS\_KENEDY1\_1 | KENEDSW | KENEDY | 1 |
| DSTPWHI5 | COLETO\_KENEDS1\_1 | COLETO | KENEDSW | 1 |
| SBRAUVA8 | EAGLHY\_ESCOND1\_1 | EAGLHYTP | ESCONDID | 1 |
| DTOKJK\_5 | 260\_A\_1 | JEWET | SNG | 5 |
| DMARSKY5 | MARION\_4AT2 | MARION | MARION | 3 |
| SCLNWLC8 | 565\_\_D | PAYSW | SHRTI | 1 |
| DHUTGAB8 | 211T147\_1 | GILLCR | MCNEIL\_ | 2 |
| XLWS158 | 180001\_D\_1 | N\_DENT | DENARCOC | 1 |
| DFPPFAY5 | AUSTRO\_AT1H | AUSTRO | AUSTRO | 1 |
| DCHBJOR5 | CBYCD\_84\_A | CBY | CD | 2 |
| DDUNLOS5 | AUSTRO\_AT1H | AUSTRO | AUSTRO | 2 |
| DCALBEC8 | G0\_L2\_1 | G0 | L2 | 1 |
| DHILELM5 | MAR\_SKY\_1 | MARION | SKYLINE | 2 |
| DMARPA\_8 | 38T365\_1 | WIRTZ | FLATRO | 2 |
| SBOSWHT8 | OLKW\_BOS\_1 | BOSQUESW | LKWHITNY | 3 |
| SCOLBAL8 | BALG\_HUMBLT1\_1 | BALG | HUMBLTAP | 1 |
| SLOBSAN5 | BESSEL\_LON\_HI1\_1 | LON\_HILL | BESSEL | 1 |
| SLOBSAN5 | FREER\_SAN\_DI1\_1 | SAN\_DIEG | FREER | 1 |
| XPAW58 | COLETO\_KENEDS1\_1 | COLETO | KENEDSW | 1 |
| DLONOR58 | KINGSV\_KLEBER1\_1 | KLEBERG | KINGSVIL | 2 |
| SAJORI25 | CELANE\_KLEBER1\_1 | CELANEBI | KLEBERG | 1 |
| SBOSELM5 | WHTNY\_HT1L | WHTNY | WHTNY | 1 |
| SLOBSAN5 | DILLEY\_JARDIN1\_1 | DILLEYSW | JARDIN | 1 |
| SSPUASP8 | ROTN\_WOLFGA1\_1 | WOLFGANG | ROTN | 1 |
| DCLEZOR5 | 87T233\_1 | MCCALA | HENNE | 1 |
| SSCUSUN8 | ROTN\_WOLFGA1\_1 | WOLFGANG | ROTN | 3 |
| DTRSTRC5 | 940\_\_C | ENWSW | WXHCH | 1 |
| DCHBJOR5 | BRNLAN86\_A | LAN | BRN | 1 |
| DMCSCDC8 | 3405\_\_C | MCSES | TRIRA | 2 |
| SSPUMW18 | ROTN\_WOLFGA1\_1 | WOLFGANG | ROTN | 2 |
| DCLEZOR5 | 86T235\_1 | HENNE | COMAL | 1 |
| DMARZOR5 | 91T335\_1 | COMAL | LOP337 | 1 |
| SKOCNU28 | GILA\_MORRIS1\_1 | MORRIS | GILA | 1 |
| DMARSKY5 | 293T304\_1 | CIBOLO | SCHERT | 2 |
| DVLYANA5 | 565\_\_D | PAYSW | SHRTI | 1 |
| SCLEMAR5 | 5T248\_1 | ZORN | MARION | 1 |
| SVLSANA5 | 562\_\_D | PAYSW | MEMWT | 1 |
| SHILMAR5 | MAR\_SKY\_1 | MARION | SKYLINE | 1 |
| DELMTEX5 | PLEASANT\_69A1 | PLEASANT | PLEASANT | 1 |
| BASE CASE | SNYDER\_WKN\_BK1\_1 | ENAS | WKN\_BKR | 2 |
| SWLALCS8 | 1290\_\_A | LCSES | RBNSN | 1 |
| SCOLPAW5 | COLETO\_KENEDS1\_1 | COLETO | KENEDSW | 1 |
| DMARZOR5 | CLEASP\_AT1 | CLEASP | CLEASP | 1 |
| SCRDLOF9 | POS\_SHAN\_1 | SHANNON | POSTOKSW | 2 |
| XEMS58 | EMSES\_AX2L | EMSES | EMSES | 1 |
| STBSNG5 | SNGZEN99\_A | SNG | ZEN | 1 |