

**September 2015 ERCOT Monthly Operations Report**

**Reliability and Operations Subcommittee Meeting**

**November 5th, 2015**

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# Report Highlights

* The unofficial ERCOT peak for September was 64,465MW.
* There were six frequency events in September. PMU data indicates the ERCOT system transitioned well in each case.
* There were six instances where Responsive Reserves were deployed, all of which were the result of frequency events.
* There were seventeen RUC commitments in September. Seven in the Northern region, eight in the Southern region and two in the Coastal region. All were due to local congestion.
* The level of reportable SCED congestion increased in September. This congestion was due primarily to planned outages and area load/gen patterns. There were fourteen days of activity on the Generic Transmission Constraints (GTCs) in September. This included five days of activity on the Laredo GTC, six on the Zorilla – Ajo GTC and three on the Panhandle GTC.
* There were no significant system events for the month of September.
* 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 September, all of which resulted from Resource trips. The average event duration was approximately 0:04:36.

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** |
| 9/6/2015 15:22 | 0.056 | 59.91 | 0:06:13 | PMU Data Not Available. | Unit Trip of 419 MW |
| 9/10/2015 13:10 | 0.059 | 59.86 | 0:03:41 | 0.71 | 15% | Unit Trip of 514 MW  |
| 9/12/2015 13:36 | 0.069 | 59.90 | 0:07:18 | PMU Data Not Available. | Unit Trip of 464 MW  |
| 9/17/2015 7:45 | 0.072 | 59.83 | 0:05:12 | PMU Data Not Available. | Unit Trip of 815 MW  |
| 9/17/2015 22:20 | 0.059 | 59.87 | 0:02:16 | PMU Data Not Available. | Unit Trip of 643 MW  |
| 9/26/2015 3:32 | 0.041 | 59.90 | 0:02:54 | PMU Data Not Available. | Unit Trip of 422 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 six 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** |
|
| 9/6/2015 15:22:20 | 9/6/2015 15:25 | 00:03:36 | 150 |  |
| 9/10/2015 13:10:59 | 9/10/2015 13:15 | 00:04:24 | 632 |  |
| 9/12/2015 13:36:47 | 9/12/2015 13:38 | 00:02:08 | 195 |  |
| 9/17/2015 7:45:02 | 9/17/2015 7:49 | 00:04:48 | 551 |  |
| 9/17/2015 22:20:14 | 9/17/2015 22:22 | 00:01:56 | 248 |  |
| 9/26/2015 3:32:41 | 9/26/2015 3:35 | 00:02:24 | 176 |  |

## Load Resource Events

There were no load resource deployment events in September.

# 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.

|  |
| --- |
| **HRUC Commitments** |
| **Resource Location** | **# of Resources** | **Operating Day** | **Total # of Hours Committed** | **Total MWhs** | **Reason for commitment** |
| Northern | 1 | 9/2/2015 | 1 | 11 | Local Congestion |
| Southern | 1 | 9/8/2015 | 4 | 212 | Local Congestion |
| Coast | 1 | 9/8/2015 | 2 | 320 | Local Congestion |
| Coast | 1 | 9/8/2015 | 1 | 515 | Local Congestion |
| Southern | 1 | 9/9/2015 | 5 | 201 | Local Congestion |
| Southern | 1 | 9/9/2015 | 8 | 331 | Local Congestion |
| Southern | 1 | 9/10/2015 | 1 | 38 | Local Congestion |
| Southern | 1 | 9/11/2015 | 7 | 274 | Local Congestion |
| Northern | 1 | 9/14/2015 | 8 | 976 | Local Congestion |
| Northern | 1 | 9/15/2015 | 2 | 236 | Local Congestion |
| Northern | 1 | 9/16/2015 | 1 | 118 | Local Congestion |
| Northern | 1 | 9/17/2015 | 1 | 118 | Local Congestion |
| Northern | 1 | 9/17/2015 | 9 | 5,112 | Local Congestion |
| Southern | 1 | 9/17/2015 | 13 | 615 | Local Congestion |
| Northern | 1 | 9/18/2015 | 7 | 3,976 | Local Congestion |
| Southern | 1 | 9/18/2015 | 10 | 421 | Local Congestion |
| Southern | 1 | 9/21/2015 | 9 | 469 | Local Congestion |

# Wind Generation as a Percent of Load



# Congestion Analysis

The number of congestion events experienced by the ERCOT system increased in September due to planned outages and area load/gen patterns. There were fourteen days 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** |
| Los Fresnos - Loma Alta Substation 138 kV | La Palma - Villa Cavazos 138 kV | 8 | $5,881,730 | 4490 |
| Dermott Switch Ax1hh (3)345/138 KV | Morgan Creek Ses - Sun Switch 138 kV | 2 | $2,504,197 | 4213 |
| Waco Mm Mars 2 to Robinson (6) 138 KV | Elm Mott - Northcrest Tap 138kV | 3 | $1,569,660 | 10TPIT0091 |
| Polk Street to Oak Cliff South (6) 138 KV | Cedar Crest Switch - Oak Cliff South 138kV | 7 | $1,546,926 | 16TPIT0052 |
| Nacogdoches Se to Mt Enterprise 345 KV | Centerville I45 - Pleasant Springs 138kV | 4 | $1,432,926 |   |
| Royse Switch Axfmr3 345/138 KV | Forney Switch - Forney West 138kV | 2 | $1,105,467 |   |
| Basecase | Laredo GTC | 5 | $1,098,375 |   |
| Tradinghouse Ses to Lake Creek Ses 345 KV | Tradinghouse SES - Sam Switch 345kV | 2 | $1,077,721 | 4304 |
| West Levee Switch Axfmr1h\_H (3)345/138 KV | Industrial Blvd. - Compton Street 138kV | 8 | $633,195 |   |
| Laquinta - Lobo 138 kV | Bruni 138\_69\_1 138/69 kV | 22 | $568,153 |   |
| Lake Wichita Switch - Bowman Switch 138 kV | Certain Teed - Wichita Falls Cogen Switch 138 kV | 3 | $520,310 |   |
| Bakke to Unocal Parker Bakke (8) 138 KV | Holt Switch - Emma Tap 69kV | 4 | $387,154 | 14TPIT0008 |
| Fratt to Parkway Lcra 138 KV | Weiderstein - Randolph 138kV | 3 | $352,026 |   |
| Decker To Sandhsyd And -Onion 138kv | Onion Creek - Pilot Knob 138kV | 10 | $327,839 |   |
| DKCT Roans Prarie-Rothwood & Singleton-Tomball 345kV | Singleton - Zenith 345 kV (SNGZEN99) | 3 | $218,221 | 4485, 3937, 3950 (a,b) |
| Marion to Zorn 345 KV | Clear Springs - Marion 345kV | 7 | $171,274 |   |
| Bbses-Navarro 345kv | Richland Chambers - Trinidad SES 345kV | 3 | $144,706 |   |
| Lobo - San Miguel 345\_138 kV Switchyards 345 kV | San Diego - Freer 69kV | 5 | $114,104 | 3903 |
| Basecase | Zorillo - Ajo GTC | 6 | $82,321 |   |
| Uvalde Aep - Odlaw Switchyard 138 kV | Hamilton Road - Maverick 138kV | 3 | $24,755 |   |
| Lolita to Blessing 138 KV | Blessing - Palacios 69kV | 4 | $9,442 |   |
| Coleto Creek - Pawnee Switching Station 345 KV | Coleto Creek to Kenedy Switch 138 kV | 4 | $9,262 |   |
| DCKT Ferguson - Granite Mountain and Wirtz - Starcke - Paleface 138 kV | Wirtz - Flat Rock Lcra 138 kV | 5 | $4,157 | 4465 |
| Dupont-Whitepoint & Whitepoint To Hecker 138 Kv | Rincon - Witepoint 138kV | 6 | -$19 |   |
| Ingleside Dupont -Whitepoint 138kv | Rincon - Witepoint 138kV | 8 | -$3,200 |   |

## Generic Transmission Constraint Congestion

There were five days of activity on the Laredo GTC, six of activity on the Zorilla – Ajo GTC and 3 days of activity on the Panhandle GTC in September. There was no activity on the remaining GTCs during the Month of September.

## Manual Overrides for September

There were no manual overrides for the month of September 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** |
| DKCT Roans Prarie-Rothwood & Singleton-Tomball 345kV | Singleton - Zenith 345 kV (SNGZEN99) | 2532 | $24,922,386 | 4485, 3937, 3950 (a,b) |
| San Angelo North 138\_69T1 138/69kV | San Angelo College Hills 138\_69T1 138/69 kV | 1100 | $12,124,531 |   |
| Los Fresnos - Loma Alta Substation 138 kV | La Palma - Villa Cavazos 138 kV | 1079 | $10,680,014 | 4490 |
| DCKT Flewellen - Obrien and Maso Road 138 kV | Hockley - Betka 138 kV | 634 | $9,190,633 |   |
| Collin Ses to Collin Switch 345 Kv 138 KV | Collin Switch to Collin SES 138 kV | 235 | $9,098,021 |   |
| Topeka Termination - West Levee Switch 345 kV | Cedar Hill Switch - Mountain Creek 138 kV | 276 | $7,327,162 | 13TPIT0060 |
| DCKT Hill Country - Marion and Elmcreek 345 kV | Marion - Skyline 345 kV | 1261 | $7,312,564 | 4081 |
| DCKT Jewett - Singleton 345 kV | Twin Oak Switch - Btu\_Jack\_Creek 345 kV | 4791 | $7,291,879 | 4485, 3937, 3950 (a,b) |
| San Angelo College Hills 138\_69T1 138/69 kV | SA Power 69T1 138/69 kV | 1456 | $7,141,012 |   |
| North Alvin Tnp to Meadow 138 KV | PH Robinson to Southshore TNP 138 kV | 187 | $6,531,939 |   |
| DCKT Lost Pines - Austrop & Dunlop 345 kV | Fayette Plant 1 - Fayette Plant 2 345 kV | 2975 | $6,416,648 |   |
| Hutto Switch Axfmr 1 (3) 345/138 kV | Gilleland - Pflugerville 138 kV | 565 | $4,639,067 | 16TPIT0062 |
| Bevo Substation - Asherton 138 kV | Hamilton Road - Maverick 138 kV | 320 | $4,635,315 |   |
| Orange Grove Switching Station - Lon Hill 138 kV | Lon Hill - Smith 69 kV | 4186 | $4,156,156 | 16TPIT0026 |
| Rio Hondo (2H) Axfmr 345/138 kV | Aderhold - Elsa 138 kV | 121 | $4,047,071 |   |
| Falcon Seaboard - Midland East 345 kV | Odessa - Glenhaven 138kV | 70 | $3,753,436 |   |
| DCKT Calaveras-Hotwells & Laredo1 138 kV | Calaveras - Streich 138 kV | 738 | $3,654,243 |   |
| Falcon Seaboard to Morgan Creek Ses 345 KV | Glenhaven - Crmwd 8 Tap 138 kV | 65 | $3,638,593 |   |
| DCKT West Levee Switch - 800/900 Network 138 kV | East Levee Switch - Reagan Street 138 kV (3410\_A) | 366 | $3,589,511 | 16TPIT0061 |
| Bates - Frontera 138 kV | Frontera - Goodwin 138 kV | 249 | $3,476,829 |   |

# System Events

## ERCOT Peak Load

The unofficial ERCOT peak load for the month was 64,465MW and occurred on September 8th 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 September.

## TRE/DOE Reportable Events

None.

## New/Updated Constraint Management Plans

None.

## New/Modified/Removed SPS

One Special Protection System was removed in September.

* Liggett Switching Station SPS

## New Procedures/Forms/Operating Bulletins

|  |  |  |
| --- | --- | --- |
| **Date** | **Document** | **Description** |
| 9/9/2015 | Power Operations Bulletin 718 | Resource Desk V1 Rev36 |
| 9/9/2015 | Power Operations Bulletin 719 | Transmission and Security Desk V1 Rev40 |

# Emergency Conditions

## OCNs

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 09/09/15 10:07 | ERCOT issued an OCN due to a new Generic Transmission Constraint due to Laredo area voltage stability. |
| 09/21/15 05:46 | ERCOT issued an OCN due to a delay in the posting of MIS reports. |

## Advisories

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 09/11/15 07:03 | ERCOT issued an Advisory due to a geomagnetic disturbance of K-7. |
| 09/20/15 03:13 | ERCOT issued an Advisory due to a geomagnetic disturbance of K-7. |

## Watches

None.

## Emergency Notices

None.

# Application Performance

ERCOT system applications performed well in September. 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 October 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 October, 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** | -131 | -21 | -154 | -78 | -39 |
| **3-6** | -35 | -6 | -42 | -21 | -11 |
| **7-10** | -15 | -3 | -19 | -10 | -5 |
| **11-14** | -6 | -1 | -7 | -4 | -2 |
| **15-18** | 0 | 0 | 0 | 0 | 0 |
| **19-22** | 0 | 0 | 0 | 0 | 0 |
| **23-24** | -131 | -21 | -154 | -78 | -39 |

# 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** |
| SL\_FLA\_8 | LA\_PAL\_VCAVAZ1\_1 | LA\_PALMA | VCAVAZOS | 8 |
| XDMT158 | 6474\_\_A | MGSES | SUNSW | 2 |
| SWMMLCS8 | 1010\_\_A | ELMOT | NCRTP | 3 |
| SPLKMCS8 | 3160\_\_A | CDCSW | OKCLS | 7 |
| SNCDTRS5 | 1230\_\_D | CNI45 | PLSSP | 4 |
| XRYS58 | 1090\_\_A | FORSW | FORWE | 2 |
| BASE CASE | LAREDO |   |   | 5 |
| SLCSTH25 | 505\_\_A | THSES | SAMSW | 2 |
| DFL\_MAR8 | BETHK\_66\_A | HK | BET | 1 |
| XWL2V58 | 3130\_\_B | INDST | CMPST | 8 |
| XWLV258 | 14030\_\_A | MGSES | BRBSW | 1 |
| SLAQLOB8 | BRUNI\_69\_1 | BRUNI | BRUNI | 22 |
| SLKWBOM8 | 6170\_\_D | CNTED | WFCOG | 3 |
| SL\_FLA\_8 | LAUREL\_LA\_PAL1\_1 | LA\_PALMA | LAURELES | 2 |
| SBAKHLT8 | 6596\_\_F | HLTSW | EMATP | 4 |
| SSKISIN9 | LON\_HI\_SMITH1\_1 | LON\_HILL | SMITH | 2 |
| SFRAPAR8 | WEIDER\_RAND\_1 | WEIDER | W2 | 3 |
| DDECSAN8 | CKT\_948\_1 | ONION | PILOT | 10 |
| DEMSSAG8 | 6265\_\_A | EMSES | MRSDO | 3 |
| DRNS\_TB5 | SNGZEN99\_A | SNG | ZEN | 3 |
| SBIGDIL8 | BAT\_CRST\_1 | BATESVL | CRSTLSW | 1 |
| SMDLODE5 | ODEHV\_MR2H | ODEHV | ODEHV | 1 |
| SELMTH25 | 1280\_\_A | LCSES | WLASL | 1 |
| XFSH58 | 6170\_\_D | CNTED | WFCOG | 2 |
| SMARZOR5 | 419T419\_1 | CLEASP | MARION | 7 |
| DNAVBBS5 | 31\_\_A | RCHBR | TRSES | 3 |
| XLOB58 | DILLEY\_JARDIN1\_1 | DILLEYSW | JARDIN | 1 |
| DWH\_STP5 | KENEDS\_KENEDY1\_1 | KENEDSW | KENEDY | 2 |
| SLOBSAN5 | FREER\_SAN\_DI1\_1 | SAN\_DIEG | FREER | 5 |
| DWAP\_BI5 | JN\_AT3 | JN | JN | 1 |
| DLHSCNR8 | 3650\_\_A | LHSES | SATP1 | 1 |
| DZEN\_OB5 | OB\_AT2H | OB | OB | 1 |
| SLANLAN8 | BLESSING\_69A1 | BLESSING | BLESSING | 1 |
| SPAUSAR8 | REDCRE\_SACK1\_1 | REDCREEK | SACK | 1 |
| SUVAD18 | 2584\_1 | DOWNIES | UVALDE | 2 |
| BASE CASE | ZO\_AJO |   |   | 6 |
| DSALKLN5 | 630\_\_A | BLTON | BLTSW | 2 |
| SGILNU78 | GILA\_MORRIS1\_1 | GILA | MORRIS | 2 |
| XNCD58 | 1230\_\_D | CNI45 | PLSSP | 1 |
| DELMSKY5 | MAR\_SKY\_1 | MARION | SKYLINE | 1 |
| DJEWSNG5 | JK\_TOKSW\_1 | TOKSW | JK\_CK | 3 |
| DNAVLEG5 | 40\_\_A | JEWET | BBSES | 1 |
| DNEDPAL8 | ADERHO\_DUKE1\_1 | DUKE | ADERHOLD | 1 |
| DCHBJOR5 | BRNLAN86\_A | LAN | BRN | 1 |
| DTHSLCS5 | 290\_\_A | LCSES | THSES | 1 |
| SCNRFOR5 | 210\_\_A | FORSW | RYSSW | 2 |
| SBRAUVA8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 3 |
| DWH\_STP5 | BONIVI\_RINCON1\_1 | RINCON | BONIVIEW | 4 |
| DGARHIC8 | LYTTON\_S\_AT2H | LYTTON\_S | LYTTON\_S | 1 |
| DCAGCO58 | 419T419\_1 | CLEASP | MARION | 1 |
| DSTEXP12 | 419T419\_1 | CLEASP | MARION | 2 |
| SSIGSAN8 | NCA\_SMTP\_1 | SANMTAP | NCALHMS | 1 |
| SLOLBLE8 | BLESSI\_PALACI1\_1 | BLESSING | PALACIOS | 4 |
| SCOLPAW5 | COLETO\_KENEDS1\_1 | COLETO | KENEDSW | 4 |
| DMCSCDC8 | 3405\_\_C | MCSES | TRIRA | 1 |
| XBL2U58 | BLUF\_CRK\_T1\_H | BLUF\_CRK | BLUF\_CRK | 2 |
| DBBSJEW5 | 31\_\_A | RCHBR | TRSES | 1 |
| SLCDYN8 | SE\_WA\_65\_A | WA | SE | 1 |
| XJEW58 | 1230\_\_J | LFKSW | LFCML | 1 |
| SLAQLOB8 | MOLINA\_RIO\_BR1\_1 | RIO\_BRAV | MOLINA | 1 |
| DCLEZOR5 | 86T235\_1 | HENNE | COMAL | 5 |
| DMARZOR5 | CLEASP\_AT2H | CLEASP | CLEASP | 2 |
| DFERPAL8 | 38T365\_1 | WIRTZ | FLATRO | 5 |
| DMARZOR5 | CLEASP\_AT1 | CLEASP | CLEASP | 2 |
| SBRAUVA8 | EAGLHY\_ESCOND1\_1 | EAGLHYTP | ESCONDID | 1 |
| SSPUASP8 | SPUR\_69\_1 | SPUR | SPUR | 1 |
| SSPUASP8 | ROTN\_WOLFGA1\_1 | WOLFGANG | ROTN | 1 |
| DI\_DRIN8 | I\_DUPS\_WHITE\_1\_1 | I\_DUPSW | WHITE\_PT | 2 |
| SSPUASP8 | JATN\_SPUR\_1C\_1 | GIRA\_TAP | DKEC | 1 |
| XLOB58 | FREER\_SAN\_DI1\_1 | SAN\_DIEG | FREER | 1 |
| DSAMTHS5 | 1200\_\_A | WHTNY | HLSBR | 1 |
| SZEPCMN8 | 670\_\_B | BRNSW | CMPBW | 1 |
| DHILELM5 | MAR\_SKY\_1 | MARION | SKYLINE | 1 |
| DBIGKEN5 | BONDRO\_SONR1\_1 | SONR | BONDROAD | 2 |
| DCAGTA58 | 419T419\_1 | CLEASP | MARION | 1 |
| SPRUOLI8 | OLI\_BEN1\_1 | OLINGR | BNDVS | 1 |
| BASE CASE | LNCRK2\_T2 | LNCRK2 | LNCRK2 | 1 |
| DMARZOR5 | 581T581\_1 | ECMORN | PARKWA | 1 |
| SSCUSUN8 | ROTN\_WOLFGA1\_1 | WOLFGANG | ROTN | 1 |
| SFORYEL8 | FORTMA\_MASN1\_1 | FORTMA | MASN | 1 |
| SPAWLON5 | KENEDS\_KENEDY1\_1 | KENEDSW | KENEDY | 1 |
| SLOLFOR8 | BLESSI\_PALACI1\_1 | BLESSING | PALACIOS | 1 |
| DCAGBRA5 | SKYLINE\_MR2H | SKYLINE | SKYLINE | 1 |
| DHILELM5 | SKYLINE\_MR2H | SKYLINE | SKYLINE | 1 |
| SSPRDEC8 | CKT\_948\_1 | ONION | PILOT | 1 |
| SHRSREN8 | 755\_\_D | RENSW | NPKWY | 1 |
| SLAQLOB8 | FRE\_BRUN\_1 | BRUNI | FREERS | 1 |
| SRICEL\_8 | BLESSI\_PALACI1\_1 | BLESSING | PALACIOS | 1 |
| BASE CASE | PNHNDL |   |   | 3 |
| DHCKRNK5 | 6265\_\_A | EMSES | MRSDO | 2 |
| DKOCNUE8 | CHAMPL\_WEIL\_T1\_1 | WEIL\_TRC | CHAMPLIN | 2 |
| USCEUNI1 | 300\_\_A | TMPSW | LCSES | 1 |
| DCRLLSW5 | 590\_\_A | LWSSW | LWVJS | 2 |
| DWHII\_D8 | RINCON\_WHITE\_2\_1 | RINCON | WHITE\_PT | 6 |
| DI\_DWHI8 | RINCON\_WHITE\_2\_1 | RINCON | WHITE\_PT | 8 |