

**March 2015 ERCOT Monthly Operations Report**

**Reliability and Operations Subcommittee Meeting**

**May 7, 2015**

# Table of Contents

[Table of Contents 2](#_Toc416700585)

[1 Report Highlights 3](#_Toc416700586)

[Frequency Control 4](#_Toc416700587)

[1.1 Frequency Events 4](#_Toc416700588)

[1.2 Responsive Reserve Events 5](#_Toc416700589)

[1.3 Load Resource Events 5](#_Toc416700590)

[2 Reliability Unit Commitment 5](#_Toc416700591)

[3 Wind Generation as a Percent of Load 6](#_Toc416700592)

[4 Congestion Analysis 6](#_Toc416700593)

[4.1 Notable Constraints for March 6](#_Toc416700594)

[4.2 Generic Transmission Constraint Congestion 8](#_Toc416700595)

[4.3 Manual Overrides for March 8](#_Toc416700596)

[4.4 Congestion Costs for Calendar Year 2015 8](#_Toc416700597)

[5 System Events 9](#_Toc416700598)

[5.1 ERCOT Peak Load 9](#_Toc416700599)

[5.2 Load Shed Events 9](#_Toc416700600)

[5.3 Stability Events 10](#_Toc416700601)

[5.4 Notable PMU Events 10](#_Toc416700602)

[5.5 TRE/DOE Reportable Events 10](#_Toc416700603)

[5.6 New/Updated Constraint Management Plans 10](#_Toc416700604)

[5.7 New/Modified/Removed SPS 10](#_Toc416700605)

[5.8 New Procedures/Forms/Operating Bulletins 10](#_Toc416700606)

[6 Emergency Conditions 10](#_Toc416700607)

[6.1 OCNs 10](#_Toc416700608)

[6.2 Advisories 10](#_Toc416700609)

[6.3 Watches 11](#_Toc416700610)

[6.4 Emergency Notices 11](#_Toc416700611)

[7 Application Performance 11](#_Toc416700612)

[7.1 TSAT/VSAT Performance Issues 11](#_Toc416700613)

[7.2 Communication Issues 11](#_Toc416700614)

[7.3 Market System Issues 11](#_Toc416700615)

[8 Net-Forecast Bias Applied to NSRS Procurement for April 2015 12](#_Toc416700616)

[Appendix A: Real-Time Constraints 13](#_Toc416700617)

# Report Highlights

* The unofficial ERCOT peak for March was 53,084 MW.
* ERCOT had a wind penetration record on March 29, 2015 at 2:12 AM. Total wind was 10,308 MW, accounting for 40.6% of the total 25,400 MW of ERCOT system load. The previous record was on December 14, 2014 at 2:50 AM where wind accounted for 39.7% of system load.
* There were three frequency events in March. PMU data indicates the ERCOT system transitioned well in each case.
* There were three instances where Responsive Reserves were deployed, all three of which were the result of frequency events.
* There were no RUC commitments in March.
* The level of reportable SCED congestion increased in March. This congestion was due primarily to planned outages and area load/gen patterns. There was six days of activity on the new Zorillo - Ajo Generic Transmission Constraint (GTC).
* There were no significant system events in ERCOT during the month of March.
* ERCOT’s Market Management System (MMS) went down at 6:13 until 7:00 on March 30, 2015 due to a hardware failure on a server that supports the MMS. ERCOT’s EMS performed well during the period controlling system frequency.

# Frequency Control

## Frequency Events

The ERCOT Interconnection experienced three frequency events in March, all of which resulted from Resource trips. The average event duration was approximately 11.33 seconds.

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. Further details on the Resource trip events can be seen in the Performance Disturbance Compliance Working Group report.

A summary of the frequency events is provided below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date and Time** | **Max/Min Frequency****(Hz)** | **Duration of Event****(seconds)** | **PMU Data** | **Comments** |
| **Oscillation Mode (Hz)** | **Damping Ratio** |
| 3/1/2015 21:37:13 | 59.882 | 10 | 0.67 | 12.0% | Unit trip with approximately 600 MW |
| 3/12/2015 16:39:52 | 59.885 | 8 | 0.62 | 3.0% | Unit trip with approximately 358 MW |
| 3/28/2015 11:01:20 | 59.804 | 16 | 0.73 | 11.0% | Unit trip with approximately 698 MW |

(Note: the duration of the frequency events is defined to be the time at which the frequency was outside the range of 60±0.1 Hz)



## Responsive Reserve Events

There were three events where Responsive Reserve MWs were released to SCED in March. 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** |
| 3/1/2015 21:37:18 | 3/1/2015 21:39:54 | 0:02:36 | 255.2 |  |
| 3/12/2015 16:39:58 | 3/12/2015 16:43:06 | 0:03:08 | 353.08 |  |
| 3/28/2015 23:01:26 | 3/28/2015 23:04:02 | 0:02:36 | 791.32 |  |

## Load Resource Events

There were no load resource deployment events in March.

# 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 or HRUC commitments in March.

# Wind Generation as a Percent of Load



# Congestion Analysis

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

## Notable Constraints for March

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Contingency** | **Overload** | **# of Days Constraint Active** | **Estimated Congestion Rent** | **Transmission Project** |
| Topeka Termination - West Levee Switch 345 kV | Cedar Hill Switch - Mountain Creek 138 kV | 1 | $8,199,323  | 13TPIT0060 |
| DCKT Lost Pines - Austrop & Dunlop 345 kV | Fayette Plant 1 - Fayette Plant 2 345 kV | 9 | $3,863,579  |   |
| Orange Grove Switching Station - Lon Hill 138 kV | Lon Hill - Smith 69 kV | 18 | $1,680,457  | 16TPIT0026 |
| Navarro - Watermill Switch 345 kV | Big Brown - Richland Chambers 345 kV | 1 | $1,251,268  | 2014-NC15, 4298 |
| Laquinta - Lobo 138 kV | Bruni 138\_69\_1 138/69 kV | 11 | $450,619  | 13TPIT0148 |
| Bluff Creek T2 (3) 345/138 kV | Bluff Creek T1 (3) 345/138 kV | 3 | $412,460  |   |
| Basecase | Ajo - Zorillo 345 kV | 3 | $279,082  |   |
| Cedar Bayou Plant - Chambers & Jordan 345 kV | Langston - Brine 138 kV | 4 | $269,800  |   |
| Basecase | Ajo - Zorillo GTC | 6 | $261,837  |   |
| DCKT Lon Hill - North Edinburg 345 kV and Orange Grove Switching Station 138 kV | Lon Hill - Smith 69 kV | 5 | $256,722  | 16TPIT0026 |
| Nelson Sharpe - Ajo 345 kV | Las Pulgas - Raymondville 2 138 kV | 7 | $240,177  | 4496 |
| Yellow Jacket - Fort Mason 138 kV | Fort Mason - Mason 69 kV | 3 | $199,953  | 3673 |
| Carrolton Northwest - Lewisville Switch 345 kV | Lakepoint - Carrollton Northwest 138 kV | 4 | $199,746  |   |
| Gila - Hiway 9 138 kV | Gila - Morris Street 138 kV | 3 | $192,976  | 3990 |
| Pawnee Switching Station - Lon Hill 345 kV | Rincon - Airco Aep 138 kV | 3 | $168,731  | 08TPIT0132 |
| Lon Hill 345\_138\_2 (3) 345/138 kV | Rincon - Airco Aep 138 kV | 3 | $87,059  | 08TPIT0132 |
| Pawnee Switching Station - Lon Hill 345 kV | Lon Hill - Smith 69 kV | 4 | $65,814  | 16TPIT0026 |
| DCKT Ferguson - Granite Mountain and Wirtz - Starcke - Paleface 138 kV | Wirtz - Flat Rock Lcra 138 kV | 8 | $44,594  | 2014-SC10 |
| DCKT Rio Hondo - North Edinburg 345 kV and Rio - Hondo Harlingen Switch 138 kV | Weslaco Switch - Weslaco Sub 138 kV | 4 | $19,722  | 3998 |
| Cottonwood Road Switch - Loftin 69 kV | Shannon - Post Oak Switch 69 kV | 8 | $16,100  | 15TPIT0011 |
| Howard Lane Tap - Wells Branch 138 kV | McNeil - Howard Lane Tap 138 kV | 4 | $15,873  |   |
| Scurry Switch - Sun Switch 138 kV | Wolfgang - Rotan 69 kV | 3 | $7,728  |   |
| Bosque Switch - Elm Mott 345 kV | Bosque Switch - Rogers Hill 138 kV | 3 | $5,244  | 2014-NC39 |
| Cottonwood Road Switch - Olney 69 kV | Cottonwood Road Switch - Anarene 69 kV | 3 | $2,373  |   |

## Generic Transmission Constraint Congestion

There were nine days of activity on the Ajo - Zorillo GTC in March, including six days where it was an ERCOT defined GTC. This GTC was added to address ERCOT identified system stability concerns in the Ajo area during contingency conditions. More information on this new GTC can be found on the [ERCOT MIS](https://mis.ercot.com/pps/tibco/mis/Pages/Grid%2BInformation/Transmission). There was no activity on the remaining GTCs during the Month of March.

## Manual Overrides for March

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **# of Resources with an Override** | **Number of SCED Intervals** | **Reason** | **Type** |
| 3/25/2015 | 1 | 1 | Unsolved Contingency | HDL Override |

## 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** |
| Topeka Termination - West Levee Switch 345 kV | Cedar Hill Switch - Mountain Creek 138 kV | 276 | $8,199,323  | 13TPIT0060 |
| DCKT Hill Country - Marion and Elmcreek 345 kV | Marion - Skyline 345 kV | 1,043 | $7,607,083  | 4081 |
| DCKT Lost Pines - Austrop & Dunlop 345 kV | Fayette Plant 1 - Fayette Plant 2 345 kV | 2,975 | $6,624,462  |   |
| Orange Grove Switching Station - Lon Hill 138 kV | Lon Hill - Smith 69 kV | 5,237 | $5,585,981  | 16TPIT0026 |
| San Angelo North 138\_69T1 138/69kV | San Angelo College Hills 138\_69T1 138/69 kV | 352 | $4,833,944  |   |
| Rio Hondo (2H) Axfmr 345/138 kV | Aderhold - Elsa 138 kV | 272 | $4,745,658  |   |
| Bates - Frontera 138 kV | Frontera - Goodwin 138 kV | 249 | $4,074,788  |   |
| Scurry Switch - Sun Switch 138 kV | Matador - Roaring Springs 69 kV | 182 | $2,047,958  |   |
| Basecase | Valley Import | 32 | $1,989,446  | 14TPIT0050 |
| Los Fresnos - Loma Alta Substation 138 kV | La Palma - Villa Cavazos 138 kV | 58 | $1,575,342  |   |
| DCKT Flewellen - Obrien and Maso Road 138 kV | Tomball - Hockley 138 kV | 664 | $1,286,964  | 3682A, 3682B |
| Navarro - Watermill Switch 345 kV | Big Brown - Richland Chambers 345 kV | 55 | $1,251,268  | 2014-NC15, 4298 |
| Winks Sub - No Trees Switch 138 kV | Holt Switch - Amoco Midland Farms Tap 138 kV | 99 | $1,140,419  |   |
| Laquinta - Lobo 138 kV | Bruni 138\_69\_1 138/69 kV | 2,216 | $1,139,937  | 13TPIT0148 |
| DCKT Jewett - Singleton 345 kV | Gibbons Creek - Singleton (SNGXGC99) | 1,458 | $897,168  | 2013-R63 |
| DCKT Tonkawa Switch - Scurry County South Switch 345 kV | Bluff Creek Switch - Exxon Sharon Ridge 138 kV | 162 | $894,593  |   |
| DCKT Royse Switch - Forney Switch 345 kV | Forney Switch AXFMR3L 345/138 kV | 44 | $868,192  | 12TPIT0080 |
| Jim Christal Substation - West Denton 138 kV | Bonnie Brae Substation - North Lakes Substation 69 kV  | 56 | $847,165  | 4137 |
| DCKT Jewett - Singleton 345 kV | Gibbons Creek - Singleton 345 kV (SNGXGC75) | 1,057 | $829,987  | 2013-R63 |
| Victoria 138\_69A2 138/69 kV | Victoria - Magruder 138 kV | 472 | $653,553  |   |

# System Events

## ERCOT Peak Load

The unofficial ERCOT peak load for the month was 53,084 MW and occurred on March 6 during hour ending 08:00.

## 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 March.

## TRE/DOE Reportable Events

None.

## New/Updated Constraint Management Plans

Two CMPs were added/updated in March.

* MP added for the loss of Gillespie – Live Oak 69kV line overloading the Fredericksburg 138/69 kV Autotransformer. Effective 3/4/2015.
* MP updated to reflect contingency naming change for the Loss of Andrews North Autotransformers causing low voltage on surrounding 69kV system. Effective 3/30/2015.

## New/Modified/Removed SPS

One SPS was removed in March.

* Collin Switching Station SPS #19 was retired on March 31, 2015.

## New Procedures/Forms/Operating Bulletins

|  |  |  |
| --- | --- | --- |
| **Date** | **Document** | **Description** |
| 3/1/2015 | Power Operations Bulletin 697 | DC Tie Desk V1 Rev32 |
| 3/1/2015 | Power Operations Bulletin 698 | Real Time Desk V1 Rev35 |
| 3/1/2015 | Power Operations Bulletin 699 | Reliability Unit Commitment Desk V1 Rev28 |
| 3/1/2015 | Power Operations Bulletin 700 | Resource Desk V1 Rev33 |
| 3/1/2015 | Power Operations Bulletin 701 | Shift Supervisor Desk V1 Rev31 |
| 3/1/2015 | Power Operations Bulletin 702 | Transmission and Security Desk V1 Rev36 |
| 3/30/2015 | Power Operations Bulletin 703 | Real Time Desk V1 Rev 36 |
| 3/30/2015 | Power Operations Bulletin 704 | Shift Supervisor Desk V1 Rev 32 |
| 3/30/2015 | Power Operations Bulletin 705 | Transmission and Security Desk V1 Rev 37 |

# Emergency Conditions

## OCNs

None.

## Advisories

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 3/3/2015 10:36 | ERCOT issued an Advisory for Thursday, March 5, 2015 and Friday, March 6, 2015 due to the cold weather system with freezing rain, sleet and snow forecasted for the North and West zones with reduced availability of generation due to the number of generators having already begun their spring outages.  |
| 3/17/2015 9:22 | ERCOT issued an Advisory for a GMD Alert of K-7 for Tuesday, March 17, 2015 from 07:00 to 12:00. It has now been upgraded to a K-8 until further notice. |
| 3/30/2015 13:27 | ERCOT issued an Advisory due to the postponing of the DAM solution for Operating Day Tuesday, March 31, 2015 due to a software issue causing a late start. |

## Watches

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 3/4/2015 9:57 | ERCOT issued a Watch for Thursday, March 5, 2015 until Friday, March 6, 2015 at 12:00 due to the cold weather system with freezing rain, sleet and snow forecasted for the North and West zones with reduced availability of generation due to the number of generators having already begun their spring outages. |
| 3/30/2015 6:30 | ERCOT issued a Watch due to a SCED Failure due to ERCOT’s Market Management System (MMS) went down at 6:13 and SCED failed to run due to a hardware failure on a server that supports the MMS.  Emergency Base Points (EMBP) were activated automatically at 6:20.  ERCOT Operations continued to enter EMBP Offsets to maintain the morning load ramp.  The MMS was restored at 6:39 with EMBPs being deactivated at 6:58.  The MMS SCED execution returned to normal operations at 7:00.  ERCOT’s EMS performed well during the period controlling system frequency. |
| 3/30/2015 6:41 | ERCOT has declared an Emergency due to the failure of the HRUC process for HE 7, starting at 06:37. |

## Emergency Notices

None.

# Application Performance

ERCOT’s Market Management System (MMS) went down during March due to a hardware failure on a server that supports the MMS. ERCOT’s EMS performed well during the period controlling system frequency. Other ERCOT system applications performed well during March; there were no other issues to report.

## TSAT/VSAT Performance Issues

None.

## Communication Issues

None.

## Market System Issues

|  |  |
| --- | --- |
| **Date and Time** | **Description** |
| 3/30/2015 6:13 | ERCOT’s Market Management System (MMS) went down at 6:13 and SCED failed to run due to a hardware failure on a server that supports the MMS.  Emergency Base Points (EMBP) were activated automatically at 6:20.  ERCOT Operations continued to enter EMBP Offsets to maintain the morning load ramp.  The MMS was restored at 6:39 with EMBPs being deactivated at 6:58.  The MMS SCED execution returned to normal operations at 7:00.  ERCOT’s EMS performed well during the period controlling system frequency. |

# Net-Forecast Bias Applied to NSRS Procurement for April 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 April, 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** | 0 | 0 | 0 | 0 | 0 |
| **3-6** | 0 | 0 | 0 | 0 | 0 |
| **7-10** | 0 | 0 | 0 | 0 | 0 |
| **11-14** | 0 | 0 | 0 | 0 | 0 |
| **15-18** | 0 | 0 | 0 | 0 | 0 |
| **19-22** | 0 | 0 | 0 | 0 | 0 |
| **23-24** | 0 | 0 | 0 | 0 | 0 |

# Appendix A: Real-Time Constraints

The following is a complete list of constraints activated in SCED for the month of March. 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** |
| SORNLON8 | LON\_HI\_SMITH1\_1 | LON\_HILL | SMITH | 18 |
| SLAQLOB8 | BRUNI\_69\_1 | BRUNI | BRUNI | 11 |
| DAUSLOS5 | 336T405\_1 | FPPYD1 | FPPYD2 | 9 |
| DFERPAL8 | 38T365\_1 | WIRTZ | FLATRO | 8 |
| SCRDLOF9 | POS\_SHAN\_1 | SHANNON | POSTOKSW | 8 |
| SN\_SAJO5 | LASPUL\_RAYMND1\_1 | LASPULGA | RAYMND2 | 7 |
| BASE CASE | AJO\_ZO |   |   | 6 |
| DLONOR58 | LON\_HI\_SMITH1\_1 | LON\_HILL | SMITH | 5 |
| DCBYJOR5 | BRNLAN86\_A | LAN | BRN | 4 |
| DCRLLSW5 | 591\_\_A | LKPNT | CRLNW | 4 |
| DRIOHAR5 | WES\_MV\_W\_1 | WESLACO | MV\_WESL4 | 4 |
| SHWRWEL8 | 1163T163\_1 | MCNEIL\_ | HWRDTP | 4 |
| SPAWLON5 | LON\_HI\_SMITH1\_1 | LON\_HILL | SMITH | 4 |
| BASE CASE | AJO\_ZORILL1\_1 | ZORILLO | AJO | 3 |
| SBOSELM5 | 1030\_\_B | BOSQUESW | RGH | 3 |
| SCRDOL29 | 6840\_\_A | CRDSW | ANARN | 3 |
| SFORYEL8 | FORTMA\_MASN1\_1 | FORTMA | MASN | 3 |
| SGILNU78 | GILA\_MORRIS1\_1 | GILA | MORRIS | 3 |
| SPAWLON5 | AIRCO4\_RINCON1\_1 | RINCON | AIRCO4 | 3 |
| SSCUSUN8 | ROTN\_WOLFGA1\_1 | WOLFGANG | ROTN | 3 |
| XBL2U58 | BLUF\_CRK\_T1\_H | BLUF\_CRK | BLUF\_CRK | 3 |
| XLO2N58 | AIRCO4\_RINCON1\_1 | RINCON | AIRCO4 | 3 |
| DCBYJOR5 | CBYRNG87\_A | CBY | RNG | 2 |
| DHILELM5 | MAR\_SKY\_1 | MARION | SKYLINE | 2 |
| SBRAUVA8 | HAMILT\_MAVERI1\_1 | HAMILTON | MAVERICK | 2 |
| SCHYWIN8 | 6090\_\_D | HLTSW | AMMFT | 2 |
| SKNADMT8 | 6240\_\_A | SACRC | SNYDR | 2 |
| SN\_SAJO5 | NEDIN\_RACHAL1\_1 | NEDIN | RACHAL | 2 |
| SSCUSUN8 | SPUR\_69\_1 | SPUR | SPUR | 2 |
| SSPUMW18 | JATN\_SPUR\_1C\_1 | GIRA\_TAP | DKEC | 2 |
| SSPUMW18 | ROTN\_WOLFGA1\_1 | WOLFGANG | ROTN | 2 |
| SSPUMW18 | SPUR\_69\_1 | SPUR | SPUR | 2 |
| SSTABSP8 | 6620\_\_A | STASW | MRCAP | 2 |
| STOPNOR5 | 3210\_\_A | CDHSW | MCSES | 2 |
| XBSP89 | 6610\_\_A | BUZSW | CHATP | 2 |
| XLO2N58 | LON\_HI\_SMITH1\_1 | LON\_HILL | SMITH | 2 |
| DAUSLOS5 | 10T211\_1 | FPPYD1 | SALEM | 1 |
| DCALSKY8 | E1\_M1\_1 | M1 | E1 | 1 |
| DCBYJOR5 | EXNLH\_03\_A | EXN | LH | 1 |
| DELMTEX5 | BLESSI\_LOLITA1\_1 | BLESSING | LOLITA | 1 |
| DFPPFAY5 | 197T171\_1 | AUSTRO | GIDEON | 1 |
| DGARHIC8 | CKT\_1027\_1 | DUNLAP | DECKER | 1 |
| DJEWSNG5 | JK\_TOKSW\_1 | TOKSW | JK\_CK | 1 |
| DLONOR58 | EDROY\_SMITH1\_1 | SMITH | EDROY | 1 |
| DLONWAR5 | LONHILL\_PAWNEE\_1 | PAWNEE | LON\_HILL | 1 |
| DMARPA\_8 | 38T365\_1 | WIRTZ | FLATRO | 1 |
| DNAVWTR5 | 30\_\_A | BBSES | RCHBR | 1 |
| DSC\_SL28 | CO\_WAS84\_A | CO | WAS | 1 |
| DSTPWHI5 | BLESSI\_LOLITA1\_1 | BLESSING | LOLITA | 1 |
| DWH\_STP5 | LON\_HILL\_382L | LON\_HILL | LON\_HILL | 1 |
| SAJORI25 | MV\_YUT\_RAYMND1\_1 | MV\_YUTT | RAYMND2 | 1 |
| SBUZLME8 | LMESA\_FMR1 | LMESA | LMESA | 1 |
| SCANSAN8 | MOUNTO\_1AT1 | MOUNTO | MOUNTO | 1 |
| SCOLPAW5 | COLETO\_KENEDS1\_1 | COLETO | KENEDSW | 1 |
| SENSEN28 | 941\_\_B | ENNIS | ENSSW | 1 |
| SI\_DI\_48 | I\_DUPP\_I\_DUPS2\_1 | I\_DUPP1 | I\_DUPSW | 1 |
| SMOOPEA8 | MOO\_PEAR\_1 | PEARSALL | MOORES | 1 |
| SPADPAD9 | ROTN\_WOLFGA1\_1 | WOLFGANG | ROTN | 1 |
| SPAWLON5 | CSA\_ORN\_1 | ORNGRVS | CASA\_BLA | 1 |
| SSACSUN8 | 6474\_\_A | SUNSW | MGSES | 1 |
| SSCLWF28 | 6560\_\_B | MRKLY | RICSW | 1 |
| SSCUSUN8 | DKE\_JAT\_1 | DKEC | JATN | 1 |
| SSCUSUN8 | JATN\_SPUR\_1C\_1 | GIRA\_TAP | DKEC | 1 |
| SSPUASP8 | ROBY\_ROTN1\_1 | ROBY | ROTN | 1 |
| XCED89 | BALG\_ROWE1\_1 | BALG | ROWE | 1 |
| XCGR89 | 6685\_\_A | CLCTY | CGRSW | 1 |
| XLO2N58 | BONIVI\_RINCON1\_1 | RINCON | BONIVIEW | 1 |
| XNED258 | S104A\_1 | RIOHONDO | MV\_BURNS | 1 |
| XOLN89 | 6840\_\_A | CRDSW | ANARN | 1 |
| XSA2C89 | SAPOWER\_69T1 | SAPOWER | SAPOWER | 1 |