

Network Impacts

The Queue Project #Y2-084 was studied as a 64.0 MW (Capacity 3.3 MW) injection at the Dequine 345 kV substation in the AEP area. Project #Y2-084 was evaluated for compliance with reliability criteria for summer peak conditions in 2016. Potential network impacts were as follows:

Potential network impacts were as follows:

Table 1 - Contingency List for Option 1	
Contingency Name	Description
6484	CONTINGENCY '6484' OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 1 / 243217 05DEQUIN 345 243878 05MEADOW 345 1 OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 2 / 243217 05DEQUIN 345 243878 05MEADOW 345 2 END
2877_C2_05OLIVE 345-B1	CONTINGENCY '2877_C2_05OLIVE 345-B1' OPEN BRANCH FROM BUS 243215 TO BUS 243229 CKT 1 / 243215 05COOK 345 243229 05OLIVE 345 1 OPEN BRANCH FROM BUS 243229 TO BUS 243353 CKT 2 / 243229 05OLIVE 345 243353 05OLIVE 138 2 OPEN BRANCH FROM BUS 243327 TO BUS 243353 CKT 1 / 243327 05LAPORT 138 243353 05OLIVE 138 1 END
4689_B2_TOR15257_A	CONTINGENCY '4689_B2_TOR15257_A' OPEN BRANCH FROM BUS 243878 TO BUS 914010 CKT 1 / 243878 05MEADOW 345 914010 Y2-010 TAP 345 1 END
4690_C2_05OLIVE 345-D	CONTINGENCY '4690_C2_05OLIVE 345-D' OPEN BRANCH FROM BUS 914010 TO BUS 243229 CKT 1 / 914010 Y2-010 TAP 345 243229 05OLIVE 345 1 OPEN BRANCH FROM BUS 243229 TO BUS 274804 CKT 1 / 243229 05OLIVE 345 274804 UPNOR;RP 345 1 END
6489_B2_TOR16002	CONTINGENCY '6489_B2_TOR16002' OPEN BRANCH FROM BUS 243878 TO BUS 243230 CKT 1 / 243878 05MEADOW 345 243230 05REYNOL 345 1 OPEN BRANCH FROM BUS 243229 TO BUS 243230 CKT 1 / 243229

Table 1 - Contingency List for Option 1

Contingency Name	Description
	05OLIVE 345 243230 05REYNOL 345 1 OPEN BRANCH FROM BUS 243230 TO BUS 255173 CKT 1 / 243230 05REYNOL 345 255173 17RYNLDS 138 1 END
667_B2_TOR169 7	CONTINGENCY '667_B2_TOR169' OPEN BRANCH FROM BUS 243213 TO BUS 243217 CKT 1 / 243213 05BREED 345 243217 05DEQUIN 345 1 END

Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

Light Load Analysis

Light Load Studies to be conducted during later study phases (applicable to wind, coal, nuclear, and pumped storage projects).

Multiple Facility Contingency

(Double Circuit Tower Line (DCTL), Line with Failed Breaker(LFFB) and Bus Fault(Bus) contingencies for the full energy output.)

Table 2 below provides a summary of the impacts caused by Y2-084 on the AEP transmission system and other TO areas for multiple facility contingency:

Table 2a - Y2-084 Multiple Facility Contingency for Option 1												
#	Contingency		Facility Description	Bus		Cir.	Loading		Rating		MW Contrib.	FG App.
	Type	Name		From	To		Initial	Final	Type	MVA		
1	DCTL	6484	05REYNOL 345/138 kV transformer	255173	243230	1	99.26	103.34	ER	318	12.98	1

Short Circuit

(Summary form of Cost allocation for breakers will be inserted here if any)

No Overdutied breakers reported

Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. “Network Impacts”, identified for earlier generation or transmission interconnection projects in the PJM Queue)

Table 3 below provides a summary of the impacts caused by Y2-084 on the AEP transmission system and other TO areas for contribution to previously identified overloads:

Table 3a. - Y2-084 Contribution to Previously Identified Overloads												
#	Contingency		Facility Description	Bus		Cir.	Loading		Rating		MW Cont.	FG App.
	Type	Name		From	To		Initial	Final	Type	MVA		
1	LFFB	2877_C2_05OLIVE 345-B1	05OLIVE-X2-052 TAP 345 kV line	243229	909180	2	155.11	156.25	ER	1409	16.4	2
2	LFFB	4690_C2_05OLIVE 345-D	05REYNOL- 05OLIVE 345 kV line	243230	243229	1	157.1	158.76	ER	972	16.19	3
3	LFFB	2877_C2_05OLIVE 345-B1	X2-052 TAP- 05DUMONT 345 kV line	909180	243219	2	187.02	188.16	ER	1409	16.4	4

Steady-State Voltage Requirements

(Results of the steady-state voltage studies should be inserted here)

To be determined

Stability and Reactive Power Requirement

(Results of the dynamic studies should be inserted here)

To be determined

Energy Portion of Interconnection Request

PJM also studied the delivery of the energy portion of the surrounding generation. Any potential problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which analyzes all overload conditions associated with the overloaded element(s) identified. As a result of the aggregate energy resources in the area, the following violations were identified.

Table 4a. - Y2-084 Delivery of Energy Portion of Interconnection Request												
#	Contingency		Facility Description	Bus			Loading		Rating		MW Cont.	FG App.
	Type	Name		From	To	Cir.	Initial	Final	Type	MVA		
1	Non	Non	Y2-010 TAP-05OLIVE 345 kV line	914010	243229	1	115.53	116.77	NR	971	12.02	
2	N-1	6489_B2_TOR16002	Y2-010 TAP-05OLIVE 345 kV line	914010	243229	1	115.44	116.69	ER	1400	17.43	
3	Non	Non	05MEADOW-Y2-010 TAP 345 kV line	243878	914010	1	116.05	117.29	NR	971	12.02	
4	N-1	6489_B2_TOR16002	05MEADOW-Y2-010 TAP 345 kV line	243878	914010	1	115.8	117.05	ER	1400	17.43	
5	N-1	667_B2_TOR1697	05EUGENE-05DEQUIN 345 kV line	243221	243217	1	140.41	142.79	ER	971	23.08	
6	N-1	4689_B2_TOR15257_A	05MEADOW-05REYNOL 345 kV line	243878	243230	1	191.48	193.55	ER	971	20.12	

Option 2 Meadow Lake 345 kV Sensitivity Analysis

Contingencies:

Option 2	
Contingency Name	Description
438	CONTINGENCY '438' OPEN BRANCH FROM BUS 243215 TO BUS 243223 CKT 1 / 243215 05COOK 345 243223 05JACKSR 345 1 OPEN BRANCH FROM BUS 243215 TO BUS 243229 CKT 1 / 243215 05COOK 345 243229 05OLIVE 345 1 END
6484	CONTINGENCY '6484' OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 1 / 243217 05DEQUIN 345 243878 05MEADOW 345 1 OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 2 / 243217 05DEQUIN 345 243878 05MEADOW 345 2 END
2877_C2_05OLIVE 345-B1	CONTINGENCY '2877_C2_05OLIVE 345-B1' OPEN BRANCH FROM BUS 243215 TO BUS 243229 CKT 1 / 243215 05COOK 345 243229 05OLIVE 345 1 OPEN BRANCH FROM BUS 243229 TO BUS 243353 CKT 2 / 243229 05OLIVE 345 243353 05OLIVE 138 2 OPEN BRANCH FROM BUS 243327 TO BUS 243353 CKT 1 / 243327 05LAPORT 138 243353 05OLIVE 138 1 END
2879_C2_05OLIVE 345-E1_X2-052	CONTINGENCY '2879_C2_05OLIVE 345-E1_X2-052' OPEN BRANCH FROM BUS 243219 TO BUS 909180 CKT 2 / 243219 05DUMONT 345 243229 05OLIVE 345 2 OPEN BRANCH FROM BUS 243229 TO BUS 243353 CKT 2 / 243229 05OLIVE 345 243353 05OLIVE 138 2 OPEN BRANCH FROM BUS 243327 TO BUS 243353 CKT 1 / 243327 05LAPORT 138 243353 05OLIVE 138 1 END
4689_B2_TOR15257	CONTINGENCY '4689_B2_TOR15257' OPEN BRANCH FROM BUS 243878 TO BUS 243229 CKT 1 / 243878 05MEADOW 345 243229 05OLIVE 345 1 END

Option 2	
Contingency Name	Description
4690_C2_05OLIVE 345-D	CONTINGENCY '4690_C2_05OLIVE 345-D' OPEN BRANCH FROM BUS 243878 TO BUS 243229 CKT 1 / 243878 05MEADOW 345 243229 05OLIVE 345 1 OPEN BRANCH FROM BUS 243229 TO BUS 274804 CKT 1 / 243229 05OLIVE 345 274804 UPNOR;RP 345 1 END
6489_B2_TOR16002	CONTINGENCY '6489_B2_TOR16002' OPEN BRANCH FROM BUS 243878 TO BUS 243230 CKT 1 / 243878 05MEADOW 345 243230 05REYNOL 345 1 OPEN BRANCH FROM BUS 243229 TO BUS 243230 CKT 1 / 243229 05OLIVE 345 243230 05REYNOL 345 1 OPEN BRANCH FROM BUS 243230 TO BUS 255173 CKT 1 / 243230 05REYNOL 345 255173 17RYNLDS 138 1 END
667_B2_TOR1697	CONTINGENCY '667_B2_TOR1697' OPEN BRANCH FROM BUS 243213 TO BUS 243217 CKT 1 / 243213 05BREED 345 243217 05DEQUIN 345 1 END

Load Flow Results:

Option 2												
Y2-084 Multiple Facility Contingency												
#	Contingency		Facility Description	Bus			Loading		Rating		MW Cont	FG App.
	Type	Name		From	To	Cir.	Initial	Final	Type	MVA		
1	DCTL	6484	05REYNOL 345/138 kV transformer	255173	243230	1	99.26	103.34	ER	318	12.98	1

Y2-084 Contribution to Previously Identified Overloads												
#	Contingency		Facility Description	Bus			Loading		Rating		MW Cont	FG App.
	Type	Name		From	To	Cir.	Initial	Final	Type	MVA		
2	DCTL	438	X2-052 TAP- 05DUMONT 345 kV line	909180	243219	2	145	146.14	ER	1409	16.46	2
3	LFFB	2877_C2_05OLIVE 345-B1	05OLIVE-X2- 052 TAP 345 kV line	243229	909180	2	153.9	155.18	ER	1409	19.28	3
4	LFFB	2879_C2_05OLIVE 345-E1_X2-052	05OLIVE- 05COOK 345 kV line	243229	243215	1	159.32	160.43	ER	1409	16.03	4
5	LFFB	4690_C2_05OLIVE 345-D	05REYNOL- 05OLIVE 345 kV line	243230	243229	1	157.1	159.05	ER	972	19	5
6	LFFB	2877_C2_05OLIVE 345-B1	X2-052 TAP- 05DUMONT 345 kV line	909180	243219	2	186	187.28	ER	1409	19.28	6

Y2-084 Delivery of Energy Portion of Interconnection Request												
#	Contingency		Facility Description	Bus			Loading		Rating		MW Cont	FG App.
	Type	Name		From	To	Cir.	Initial	Final	Type	MVA		
7	N-1	667_B2_TOR1697	05EUGENE- 05DEQUIN 345 kV line	243221	243217	1	140.38	142.44	ER	971	19.96	
8	N-1	6489_B2_TOR16002	05MEADOW- 05OLIVE 345 kV line	243878	243229	1	167.05	169.19	ER	971	20.76	
9	N-1	4689_B2_TOR15257	05MEADOW- 05REYNOL 345 kV line	243878	243230	1	191.24	193.78	ER	971	24.66	

Appendix 1

Bus Number	Bus Name	Full Contribution
243859	05FR11_E	5.22
243862	05FR12_E	5.13
243864	05FR21_E	5.49
247924	05FRCS22_E	5.25
247925	05FRCS-3_E	10.64
247926	05FRCS-4_E	8.
887741	U1-087 C	1.3
887742	U1-087 E	8.7
887751	U1-088 C	.87
887752	U1-088 E	5.8
LTF	V3-012	5.71
LTF	W2-033	4.69
LTF	X2-042	17.
LTF	X3-020	2.9
900404	X3-028 C	75.91
LTF	X3-096	6.97
LTF	X3-097	9.89
LTF	X3-098	9.37
LTF	X4-041	9.26
LTF	Y1-004	6.55
LTF	Y1-007	4.55
LTF	Y2-004	4.78
LTF	Y2-005	4.78
LTF	Y2-006	6.66
LTF	Y2-007	9.56
LTF	Y2-008	16.95
LTF	Y2-033	3.43
LTF	Y2-034	1.95
LTF	Y2-068	49.61
914321	Y2-084 C OP1	.22
914322	Y2-084 E OP1	4.04

Appendix 2

Bus Number	Bus Name	Full Contribution
243858	05FR11_C	.12
243859	05FR11_E	20.07
243861	05FR12_C	.12
243862	05FR12_E	19.73
243863	05FR21_C	.12
243864	05FR21_E	21.09
243866	05FRCS22_C	.12
247924	05FRCS22_E	20.19
243870	05FRCS-3_C	.24
247925	05FRCS-3_E	40.9
243873	05FRCS-4_C	.18
247926	05FRCS-4_E	30.75
246908	05MLCS1_C	.28
246909	05MLCS1_E	48.14
246910	05MLCS-2_C	.28
247930	05MLCS-2_E	48.14
292535	CE23CL12	.29
292536	CE23EL12	1.15
274670	CRAWF;7G	8.93
274671	CRAWF;7Y	9.07
274672	CRAWF;8U	27.07
274849	CRESC;1U	4.1
294702	CRESC;2U	3.61
274751	CRETE;1U	.22
274752	CRETE;2U	.22
274753	CRETE;3U	.22
274754	CRETE;4U	.22
274858	EASYR;U2	13.6
274673	FISK ;9U	27.47
990700	FREETPT_G	4.61
299901	K-002 E	4.57
990901	L-005 E	8.88
274850	M HIL;RU	3.63
293061	N-015 E	10.06
293120	N-021 C	.09
293121	N-021 E	.35
293130	N-022 C	.16
293131	N-022 E	.63
293140	N-023 C	.16
293141	N-023 E	.63
293150	N-024 C	.16
293151	N-024 E	.63
293160	N-025 C	.16
293161	N-025 E	.63

293190	O-003 C	.13
293191	O-003 E	.45
293513	O-009 C1	1.47
293514	O-009 C2	.75
293515	O-009 C3	.82
293516	O-009 E1	5.89
293517	O-009 E2	2.99
293518	O-009 E3	3.3
293655	O-023 E	18.9
293715	O-029 E	6.3
293716	O-029 E	3.45
293717	O-029 E	3.17
290007	O-033 E	1.15
293771	O-035 E	4.51
290021	O-050 E	12.63
293645	O22E	18.9
294392	P-010 E	12.78
294401	P-011 E1	5.93
294410	P-011 E2	5.93
290051	P-014 E	4.61
294500	P-020 C	2.96
294502	P-020 E	11.84
295103	P-024 C	.28
295104	P-024 E	1.13
295106	P-025 C	.28
295107	P-025 E	1.13
290053	P-026 E	1.15
294670	P-037 C	2.03
294671	P-037 E	8.1
294700	P-040 C	.3
294701	P-040 E	1.2
294763	P-046 E	5.76
290089	Q-039 C	2.18
290090	Q-039 E	5.61
290108	Q-057 E	13.88
882311	Q-066	.18
882331	Q-067B	.27
295990	R-016 C1	.91
295992	R-016 C2	.91
295991	R-016 E1	3.63
295993	R-016 E2	3.63
296335	R-033 1	12.19
296336	R-033 2	12.19
296346	R-033 3	8.83
296348	R-033 4	8.83
296827	R-079 C1	2.42

296741	R-079 C2	2.42
296828	R-079 E1	9.66
296740	R-079 E2	9.66
290294	S-036 C1	3.16
290295	S-036 E1	12.62
290298	S-037 C1	3.16
290299	S-037 E1	12.62
884891	S-062 C1	2.9
884901	S-062 C2	2.88
884911	S-062 C3	2.9
884892	S-062 E1	11.61
884902	S-062 E2	11.62
884912	S-062 E3	11.61
274679	SLINE;3U	14.9
274680	SLINE;4U	24.71
885861	T-074 1	.6
885862	T-074 2	.6
885961	T-099 C	1.45
885962	T-099 E	5.82
292416	T-127 C	.28
292417	T-127 E	48.2
886211	T-143 C1	1.91
886221	T-143 C2	1.91
886212	T-143 E1	7.64
886222	T-143 E2	7.64
886261	T-148 C	1.45
886262	T-148 E	5.82
292735	T-183 C	12.05
292736	T-183 E	48.2
292741	T-184 C	12.05
292742	T-184 E	48.2
274861	TCROP;1U	8.03
274862	TCROP;2U	15.59
246416	TWBRANCH	-.35
274853	TWING;U1	1.85
274854	TWING;U2	1.85
274802	U PAR;5U	.13
274803	U PAR;6U	.13
887641	U1-049 C	1.17
887642	U1-049 E	7.84
887741	U1-087 C	5.
887742	U1-087 E	33.44
887751	U1-088 C	3.33
887752	U1-088 E	22.3
890511	U3-021 1	3.68
890521	U3-021 2	3.68

891021	U4-003 C	7.83
891022	U4-003 E	52.42
891131	U4-027	7.35
891171	U4-033	.14
891211	U4-037 C	1.82
891212	U4-037 E	12.19
274814	UPNOR;0U	.16
274805	UPNOR;1U	.16
274806	UPNOR;2U	.16
274807	UPNOR;3U	.16
274808	UPNOR;4U	.16
274809	UPNOR;5U	.16
274810	UPNOR;6U	.16
274811	UPNOR;7U	.16
274812	UPNOR;8U	.16
274813	UPNOR;9U	.16
274815	UPNOR;XU	.16
274816	UPNOR;YU	.16
892051	V1-022 1	14.44
892061	V1-022 2	14.44
LTF	V3-012	18.11
900371	V4-046	1.44
900381	V4-047	1.44
LTF	W2-033	13.57
902352	W2-048 E	4.36
902491	W2-079 C	.53
902492	W2-079 E	.87
903432	W3-046	4.25
903442	W3-046	3.94
903452	W3-046	4.25
903462	W3-046	3.94
LTF	W3-083	10.52
903791	W3-132 C	.54
903792	W3-132 E	.87
905071	W4-005 C	3.2
905072	W4-005 E	21.44
905252	W4-033 E1	.39
905262	W4-033 E2	.13
905471	W4-084	.28
905491	W4-086	.17
905501	W4-087	.3
907141	X1-045	.22
907361	X1-087	1.37
907432	X1-099 E	.31
909041	X2-019 C	13.41
909062	X2-022 E OP1	13.17

LTF	X2-042	36.77
910541	X3-005 C	.3
910542	X3-005 E	.49
LTF	X3-020	13.42
910711	X3-045 1	1.2
910721	X3-045 2	1.25
LTF	X3-096	32.28
LTF	X3-097	45.77
LTF	X3-098	43.39
LTF	X4-029D	12.98
LTF	X4-041	42.87
LTF	Y1-002	55.47
LTF	Y1-004	16.36
913011	Y1-005 1	14.97
913021	Y1-005 2	14.96
LTF	Y1-007	11.36
LTF	Y1-041	12.98
913522	Y1-078 E	1.71
LTF	Y2-004	22.4
LTF	Y2-005	22.4
LTF	Y2-006	14.08
LTF	Y2-007	44.8
LTF	Y2-008	37.81
LTF	Y2-033	9.07
LTF	Y2-056	38.93
LTF	Y2-068	229.68
914321	Y2-084 C OP1	.85
914322	Y2-084 E OP1	15.55

Appendix 3

Bus Number	Bus Name	Full Contribution
243858	05FR11_C	.12
243859	05FR11_E	19.8
243861	05FR12_C	.12
243862	05FR12_E	19.47
243863	05FR21_C	.12
243864	05FR21_E	20.81
243866	05FRCS22_C	.12
247924	05FRCS22_E	19.93
243870	05FRCS-3_C	.24
247925	05FRCS-3_E	40.36
243873	05FRCS-4_C	.18
247926	05FRCS-4_E	30.35
246908	05MLCS1_C	.28
246909	05MLCS1_E	47.43
246910	05MLCS-2_C	.28
247930	05MLCS-2_E	47.43
246427	BERRIENS	-.36
246431	BUCHANAN	-.22
292416	T-127 C	.28
292417	T-127 E	47.49
292735	T-183 C	11.87
292736	T-183 E	47.49
292741	T-184 C	11.87
292742	T-184 E	47.49
887741	U1-087 C	4.93
887742	U1-087 E	33.
887751	U1-088 C	3.29
887752	U1-088 E	22.
891021	U4-003 C	7.72
891022	U4-003 E	51.65
LTF	V3-012	13.24
LTF	W2-033	11.09
LTF	X2-042	41.
LTF	X3-020	6.01
900404	X3-028 C	212.62
LTF	X3-096	14.46
LTF	X3-097	20.5
LTF	X3-098	19.44
LTF	X4-041	19.2
LTF	Y1-004	15.16
LTF	Y1-007	10.53
LTF	Y2-004	9.91
LTF	Y2-005	9.91
LTF	Y2-006	16.37

LTF	Y2-007	19.82
LTF	Y2-008	40.96
LTF	Y2-033	7.96
LTF	Y2-068	102.89
914321	Y2-084 C OP1	.84
914322	Y2-084 E OP1	15.34

Appendix 4

Bus Number	Bus Name	Full Contribution
243858	05FR11_C	.12
243859	05FR11_E	20.07
243861	05FR12_C	.12
243862	05FR12_E	19.73
243863	05FR21_C	.12
243864	05FR21_E	21.09
243866	05FRCS22_C	.12
247924	05FRCS22_E	20.19
243870	05FRCS-3_C	.24
247925	05FRCS-3_E	40.9
243873	05FRCS-4_C	.18
247926	05FRCS-4_E	30.75
246908	05MLCS1_C	.28
246909	05MLCS1_E	48.14
246910	05MLCS-2_C	.28
247930	05MLCS-2_E	48.14
292535	CE23CL12	.29
292536	CE23EL12	1.15
274670	CRAWF;7G	8.93
274671	CRAWF;7Y	9.07
274672	CRAWF;8U	27.07
274849	CRESC;1U	4.1
294702	CRESC;2U	3.61
274751	CRETE;1U	.22
274752	CRETE;2U	.22
274753	CRETE;3U	.22
274754	CRETE;4U	.22
274858	EASYR;U2	13.6
274673	FISK ;9U	27.47
990700	FREETPT_G	4.61
299901	K-002 E	4.57
990901	L-005 E	8.88
274850	M HIL;RU	3.63
293061	N-015 E	10.06
293120	N-021 C	.09
293121	N-021 E	.35
293130	N-022 C	.16
293131	N-022 E	.63
293140	N-023 C	.16
293141	N-023 E	.63
293150	N-024 C	.16
293151	N-024 E	.63
293160	N-025 C	.16
293161	N-025 E	.63

293190	O-003 C	.13
293191	O-003 E	.45
293513	O-009 C1	1.47
293514	O-009 C2	.75
293515	O-009 C3	.82
293516	O-009 E1	5.89
293517	O-009 E2	2.99
293518	O-009 E3	3.3
293655	O-023 E	18.9
293715	O-029 E	6.3
293716	O-029 E	3.45
293717	O-029 E	3.17
290007	O-033 E	1.15
293771	O-035 E	4.51
290021	O-050 E	12.63
293645	O22E	18.9
294392	P-010 E	12.78
294401	P-011 E1	5.93
294410	P-011 E2	5.93
290051	P-014 E	4.61
294500	P-020 C	2.96
294502	P-020 E	11.84
295103	P-024 C	.28
295104	P-024 E	1.13
295106	P-025 C	.28
295107	P-025 E	1.13
290053	P-026 E	1.15
294670	P-037 C	2.03
294671	P-037 E	8.1
294700	P-040 C	.3
294701	P-040 E	1.2
294763	P-046 E	5.76
290089	Q-039 C	2.18
290090	Q-039 E	5.61
290108	Q-057 E	13.88
882311	Q-066	.18
882331	Q-067B	.27
295990	R-016 C1	.91
295992	R-016 C2	.91
295991	R-016 E1	3.63
295993	R-016 E2	3.63
296335	R-033 1	2.01
296336	R-033 2	2.01
296346	R-033 3	1.45
296348	R-033 4	1.45
296827	R-079 C1	2.42

296741	R-079 C2	2.42
296828	R-079 E1	9.66
296740	R-079 E2	9.66
290294	S-036 C1	3.16
290295	S-036 E1	12.62
290298	S-037 C1	3.16
290299	S-037 E1	12.62
884891	S-062 C1	2.9
884901	S-062 C2	2.88
884911	S-062 C3	2.9
884892	S-062 E1	11.61
884902	S-062 E2	11.62
884912	S-062 E3	11.61
274679	SLINE;3U	14.9
274680	SLINE;4U	24.71
885861	T-074 1	.6
885862	T-074 2	.6
885961	T-099 C	1.45
885962	T-099 E	5.82
292416	T-127 C	.28
292417	T-127 E	48.2
886211	T-143 C1	1.91
886221	T-143 C2	1.91
886212	T-143 E1	7.64
886222	T-143 E2	7.64
886261	T-148 C	1.45
886262	T-148 E	5.82
292735	T-183 C	12.05
292736	T-183 E	48.2
292741	T-184 C	12.05
292742	T-184 E	48.2
274861	TCROP;1U	8.03
274862	TCROP;2U	15.59
246416	TWBRANCH	-.35
274802	U PAR;5U	.13
274803	U PAR;6U	.13
887641	U1-049 C	1.17
887642	U1-049 E	7.84
887741	U1-087 C	5.
887742	U1-087 E	33.44
887751	U1-088 C	3.33
887752	U1-088 E	22.3
890511	U3-021 1	3.68
890521	U3-021 2	3.68
891021	U4-003 C	7.83
891022	U4-003 E	52.42

891131	U4-027	7.35
891171	U4-033	.14
274814	UPNOR;0U	.16
274805	UPNOR;1U	.16
274806	UPNOR;2U	.16
274807	UPNOR;3U	.16
274808	UPNOR;4U	.16
274809	UPNOR;5U	.16
274810	UPNOR;6U	.16
274811	UPNOR;7U	.16
274812	UPNOR;8U	.16
274813	UPNOR;9U	.16
274815	UPNOR;XU	.16
274816	UPNOR;YU	.16
892051	V1-022 1	14.44
892061	V1-022 2	14.44
LTF	V3-012	18.11
900371	V4-046	1.44
900381	V4-047	1.44
LTF	W2-033	13.57
902491	W2-079 C	.53
902492	W2-079 E	.87
903432	W3-046	4.25
903442	W3-046	3.94
903452	W3-046	4.25
903462	W3-046	3.94
LTF	W3-083	10.52
903791	W3-132 C	.54
903792	W3-132 E	.87
905071	W4-005 C	3.2
905072	W4-005 E	21.44
905252	W4-033 E1	.39
905262	W4-033 E2	.13
905471	W4-084	.28
905491	W4-086	.17
905501	W4-087	.3
907141	X1-045	.22
907361	X1-087	1.37
907432	X1-099 E	.31
909041	X2-019 C	13.41
LTF	X2-042	36.77
909181	X2-052	496.75
910541	X3-005 C	.3
910542	X3-005 E	.49
LTF	X3-020	13.42
910711	X3-045 1	1.2

910721	X3-045 2	1.25
LTF	X3-096	32.28
LTF	X3-097	45.77
LTF	X3-098	43.39
LTF	X4-029D	12.98
LTF	X4-041	42.87
LTF	Y1-002	55.47
LTF	Y1-004	16.36
913011	Y1-005 1	14.97
913021	Y1-005 2	14.96
LTF	Y1-007	11.36
LTF	Y1-041	12.98
913522	Y1-078 E	1.71
LTF	Y2-004	22.4
LTF	Y2-005	22.4
LTF	Y2-006	14.08
LTF	Y2-007	44.8
LTF	Y2-008	37.81
LTF	Y2-033	9.07
LTF	Y2-056	38.93
LTF	Y2-068	229.68
914321	Y2-084 C OP1	.85
914322	Y2-084 E OP1	15.55