Generation Interconnection Feasibility Study Report Web Version

For

PJM Generation Interconnection Request Queue Position Y2-104

Russell Hill-North Meshoppen 34.5kV Project

May, 2013

Feasibility Study Report

Russell Hill-N. Meshoppen 34.5kV Generation Project

General

This Feasibility/System Impact Study report provides the documentation of an assessment that has been performed by PJM Interconnection and FirstEnergy (FE) in response to a request made by the customer for the connection of a 6.6 MW (6.6 MW Capacity) Russell Hill – N. Meshoppen (Y2-104) Generation Project to the Penelec Distribution System.

PJM Interconnection Study Results

The following is the report describing the results of the analysis performed by PJM engineers with respect to the transmission system impacts.

The Queue Project #Y2-104 was studied as a 6.6MW (Capacity 6.6MW) injection at the North Meshoppen 34.5 kV substation in the Penelec area. Project #Y2-104 was evaluated for compliance with reliability criteria for summer peak conditions in 2016. Potential network impacts were as follows:

Generator Deliverability

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

None

Light Load Analysis

Not Required

Multiple Facility Contingency

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

None

Short Circuit

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

To be determined in Impact Study

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)

1. The LAUREL L-WESTOVER115 115 kV line (from bus 200680 to bus 130807 ckt 1) loads from 106.99% to 108.03% (**DC power flow**) of its emergency rating (150 MVA) for the line fault with failed breaker contingency outage of CONTINGENCY DESCRIPTION ('C2_PN115-SB-46G'). This project contributes approximately 1.57 MW to the thermal violation.

```
CONTINGENCY 'C2_PN115-SB-46G'                                   /* NORTH
MESHOPPEN 115 KV STUCK CB20 - (N MESHOPPEN XFMR 4)
  DISCONNECT BRANCH FROM BUS 200677 TO BUS 200698 CKT 2
  DISCONNECT BRANCH FROM BUS 200677 TO BUS 200674 CKT 1
  DISCONNECT BRANCH FROM BUS 200677 TO BUS 200687 CKT 2
  DISCONNECT BRANCH FROM BUS 200706 TO BUS 200677 CKT 4
  DISCONNECT BRANCH FROM BUS 200675 TO BUS 200924 CKT 1F
  DISCONNECT BRANCH FROM BUS 200706 TO BUS 200924 CKT 1F
  END
```

Please refer to Appendix 1 for a table containing the generators having contribution to this flowgate.

2. The TIFFANY-LAUREL L 115 kV line (from bus 200679 to bus 200680 ckt 1) loads from 110.71% to 111.77% (**DC power flow**) of its emergency rating (149 MVA) for the line fault with failed breaker contingency outage of CONTINGENCY DESCRIPTION ('C2_PN115-SB-46G'). This project contributes approximately 1.57 MW to the thermal violation.

```
CONTINGENCY 'C2_PN115-SB-46G'                                   /* NORTH
MESHOPPEN 115 KV STUCK CB20 - (N MESHOPPEN XFMR 4)
  DISCONNECT BRANCH FROM BUS 200677 TO BUS 200698 CKT 2
  DISCONNECT BRANCH FROM BUS 200677 TO BUS 200674 CKT 1
  DISCONNECT BRANCH FROM BUS 200677 TO BUS 200687 CKT 2
  DISCONNECT BRANCH FROM BUS 200706 TO BUS 200677 CKT 4
  DISCONNECT BRANCH FROM BUS 200675 TO BUS 200924 CKT 1F
  DISCONNECT BRANCH FROM BUS 200706 TO BUS 200924 CKT 1F
  END
```

Please refer to Appendix 2 for a table containing the generators having contribution to this flowgate.

3. The N.MESHPN 230/115 kV transformer (from bus 200825 to bus 200706 ckt 3) loads from 135.0% to 136.0% (**DC power flow**) of its emergency rating (188 MVA) for the

single line contingency outage of CONTINGENCY DESCRIPTION ('B_PN230-SX-#11'). This project contributes approximately 1.89 MW to the thermal violation.

CONTINGENCY 'B_PN230-SX-#11' /* EAST TOWANDA - N MESHOPPEN (ETP) 230 KV & N MESHOPPEN BK 4
DISCONNECT BRANCH FROM BUS 200675 TO BUS 200924 CKT 1F
DISCONNECT BRANCH FROM BUS 200924 TO BUS 200706 CKT 1F
DISCONNECT BRANCH FROM BUS 200706 TO BUS 200677 CKT 4
END

Please refer to Appendix 3 for a table containing the generators having contribution to this flowgate.

4. The NO MESHO-MESH2REA 115 kV line (from bus 200677 to bus 200825 ckt 3) loads from 135.02% to 136.02% (**DC power flow**) of its emergency rating (188 MVA) for the single line contingency outage of CONTINGENCY DESCRIPTION ('B_PN230-SX-#11'). This project contributes approximately 1.89 MW to the thermal violation.

CONTINGENCY 'B_PN230-SX-#11' /* EAST TOWANDA - N MESHOPPEN (ETP) 230 KV & N MESHOPPEN BK 4
DISCONNECT BRANCH FROM BUS 200675 TO BUS 200924 CKT 1F
DISCONNECT BRANCH FROM BUS 200924 TO BUS 200706 CKT 1F
DISCONNECT BRANCH FROM BUS 200706 TO BUS 200677 CKT 4
END

Please refer to Appendix 4 for a table containing the generators having contribution to this flowgate.

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

New System Reinforcements
(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

Refer to Interconnected Transmission Owners Analysis Results section

Delivery of Energy Portion of Interconnection Request

PJM also studied the delivery of the energy portion of this interconnection request. Any 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 Merchant Transmission Interconnection request.

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 will study all overload conditions associated with the overloaded element(s) identified.

Not Applicable

Interconnected Transmission Owner's Analysis Results

The following was generated by FirstEnergy (Penelec) the Interconnected Transmission Owner, based upon its analysis, as well as that of PJM, for mitigation of the project's impacts on the transmission and lower voltage system as applicable. It includes the costs and schedules for any system upgrades.
Costs for affected Transmission owners other than FirstEnergy are included and reported in the "New System Reinforcements" and "Contribution to Previously Identified System Reinforcements" sections of the "PJM Interconnection Study Results" above.

Connection Facilities

In compliance with the PJM Generation Interconnection Procedures, Interconnection Customer (IC) has submitted a "Generation Interconnection Feasibility Study agreement" to PJM that identifies its plan to install 2 – 3.3 MW reciprocating engines to a common bus with a total capability of 6.6 MW (6.6 MW capacity) on a property that is approximately 2.4 miles southwest of Meshoppen, PA., off Rt. 6 (see Attachment 1).

IC has requested a 34.5kV interconnection. The project was studied as an interconnection into the First Energy distribution system via a tap on the 34.5 kV Tunkhannock circuit at pole # NMT-108. Procurement and construction of the 34.5 kV distribution line extending from the tap (POI) to the generating plant 34.5kV export bus is the responsibility of IC as this facility is on the customer's side of the point of interconnection (POI). IC will be responsible for acquiring all easements, properties and permits that may be required to construct both the project 34.5kV line and the attachment facilities. A summary of the Russell Hill - N. Meshoppen (Y2-104) Project direct connection facilities that will be required and their estimated cost are shown on Attachment 3.

Power Flow Analysis (New Project Upgrades and Contributions)

A Power Flow study was conducted to determine the reliability impact of the proposed Russell Hill - N. Meshoppen (Y2-104) Project on the FE Bulk Transmission System (greater than 100 kV). This included the performance of a contingency analysis to identify any facility overload or voltage condition that violates the FE Planning Criteria. Any such violation that is either directly attributable to this project or for which it will have a shared responsibility is included in this report with a least cost plan identified to mitigate them. The Russell Hill - N. Meshoppen (Y2-104) Project Power Flow Analysis was completed using a 2015 summer peak load base case power flow provided by the PJM staff. This base case included an equivalent representation of the Penelec 34.5kV distribution system modeled as lumped equivalent load at the North Meshoppen115 kV substation. The Russell Hill - N. Meshoppen (Y2-104) Project was modeled as an injection into the North Meshoppen 34.5 kV substation via a tap on the 34.5 kV Tunkhannock circuit. A simulation of all possible contingencies within the NERC and FE Planning Standards that are impacted by the Russell Hill - N. Meshoppen (Y2-104) Project was conducted to test for criteria compliance. The results from the PJM's Power Flow Analysis is detailed on Attachment 4. As shown, the FE conclusion from this

analysis is that there are new bulk electric system network upgrades required for the Russell Hill - N. Meshoppen (Y2-104) Project. Furthermore, there are findings of previously identified criteria violations from other generation or transmission interconnection projects in which the Russell Hill - N. Meshoppen (Y2-104) Project contributes.

Power Flow Analysis (Detailed 34.5kV)

In order to identify any overloads or voltage conditions on the 34.5kV system near the Russell Hill - N. Meshoppen (Y2-104) Project, FirstEnergy studied its own detailed model for the 2015 Penelec Summer Peak case. The Russell Hill - N. Meshoppen (Y2-104) Project was modeled at both 6.6 MW output, and with the generator at unity power factor (see Attachment 4).

6.6 MW Energy Output
No overload/voltage issues identified

Short Circuit and Dynamics Analysis

No problems were identified. A circuit breaker analysis was completed for the Y2-104 study. No overdutied breakers were found to be directly attributable to the Y2-104 project.

Note that stability studies may be conducted by the PJM staff should this project proceed to the Facilities Study stage of the Generation Interconnection process.

System Protection Analysis

An analysis was conducted to assess the impact of the Russell Hill - N. Meshoppen (Y2-104) Project on the system protection requirements in the area. The results of this review show that the following relay additions will be required:

The 34.5kV interconnection proposal by IC, to tap Penelec's 34.5kV North Meshoppen to Tunkhannock line, will require IC to meet applicable "Technical Requirements" as outlined in First Energy's document titled “Technical Requirements for the Interconnection of Customer-Owned Generation to the FirstEnergy Distribution System".

Protection requirements are included in the document.

Meeting the protection requirements will include (but not be limited to) FirstEnergy designed & installed modifications, at IC expense, to Penelec's North Meshoppen Substation, Penelec's Tunkhannock Substation, and to Penelec's 34.5kV Line Recloser location (named Tyler Hospital), specifically to install 34.5kV system voltage and synchronism checking equipment on the noted CBs and Recloser.

Also, meeting the protection requirements will involve installation of a Direct Transfer Trip (DTT) system, designed and provided by IC. The DTT system type shall be subject

to FirstEnergy's approval. The DTT system shall include transmitter equipment. This transmitter equipment, so as to receive 34.5kV circuit breaker status at Penelec's North Meshoppen Substation and at Penelec's Tunkhannock Substation, and also at Penelec's 34.5kV Line Recloser location (named Tyler Hospital), will be located in local proximity to this Penelec equipment. Hardware to provide Penelec's equipment status to the DTT transmitters will be designed and installed by FirstEnergy, at IC expense. A receiver shall be located at IC's generation facility to receive the tripping signal. Tripping of the IC generator would be required (via the DTT) for certain open/close configurations of Penelec's CBs and Recloser mentioned above, and these configurations will be defined by FirstEnergy during the design/build process and provided to IC or their DTT system design/build contractor. Tripping of the IC generator would be required for a loss of DTT communication channel between the transmitters and receiver, as well as for times of nonfunctional DTT transmitter/receiver terminals. Mountain, LLC generator will not connect to the Penelec system until full integrity of the DTT system is restored.

Metering

IC will be required to comply with all FE Revenue Metering Requirements for Generation Interconnection Customers. These FE requirements are detailed on Attachment 7 of this report.

Compliance Issues

IC will be responsible for meeting a power factor between 0.95 leading (absorbing MVARs) and 0.95 lagging (producing MVARs) to assure that voltage deviation will be less than 1.0 volt as measured at the POI under all Gen operating conditions.

IC must also meet all PJM, ReliabilityFirst and NERC reliability criteria and operating procedures required for standards compliance. For example, the Developer will need to properly locate and report the over and under-voltage and over and under-frequency system protection elements for its units as well as the submission of the generator model and protection data required to satisfy the PJM and ReliabilityFirst audits. Failure to comply with these requirements may result in a
disconnection of service if the violation is found to compromise the reliability of the FE system.

FE Facility Upgrades and Costs

The results from the FE power flow analysis (Attachment 4) show that there are FE criteria violations that are directly attributable to the capacity of the Russell Hill - N. Meshoppen (Y2-104) Project. Furthermore, there are violations affecting thermal overload on network branches in which the capacity of the Russell Hill - N. Meshoppen (Y2-104) Project is a contributor. In accordance with the Generation Interconnection procedures defined in the PJM Open Access Transmission Tariff and PJM Manuals, IC is responsible for network upgrades, and Attachment 5 has the details of those upgrades. The direct connection costs are detailed in Attachment 3.

Note that all cost estimates contained in this document were produced without a detailed engineering review and are therefore subject to error. More accurate estimates will be determined as a part of the Facilities Study. The IC will be responsible for the actual cost of the direct connection that is implemented. In addition, IC is responsible to provide the distribution line between the tap at pole # NMT-108 and the Y2-104 generating substation, as IC will own this distribution line. FE herein reserves the right to return to any issues in this document and, upon appropriate justification, request additional monies to complete any reinforcements to the distribution system.

Generation Connection Requirements

The proposed interconnection facilities must be designed in accordance with Attachment 8, FirstEnergy's "Technical Requirements for the Interconnection of Parallel-Operated Generation to the FirstEnergy Distribution System" and must also meet IEEE 1547.

The Interconnection Customer will also be responsible for following the requirements of the "FirstEnergy Wholesale Generation Interconnection (WGI) Manual" and the "FE Approved Vendors and Contractors" documents which are also located at the above link.

IC Requirements

In addition to the FE facilities, IC will also be responsible for meeting all criteria as specified in the applicable sections of the "FE Requirements for Transmission Connected Facilities" document including:

1. The purchase and installation of the minimum required FE generation interconnection relaying and control facilities. This includes over/under voltage protection, over/under frequency protection, and zero sequence voltage protection relays.

2. The installation of a Penelec provided 34.5 kV interconnection metering instrument transformer. FE will provide the ratio and accuracy specifications based on the customer load and generation levels.

3. The installation of a Penelec provided revenue class meter for each unit to measure the power delivered in compliance with the FE standards.

4. The purchase and installation of supervisory control and data acquisition (SCADA) equipment to provide information in a compatible format to the FE Transmission System Control Center.

5. The establishment of dedicated communication circuits for SCADA report to the FE Transmission System Control Center.

6. A compliance with the FE and PJM generator power factor and voltage control requirements.

7. The execution of a back-up service agreement to serve the customer load when the units are out-of-service. This assumes the intent of IC is to net the generation with the load.

8. The rough grade of the property for the Y1-047 Interconnection 34.5 kV tap pole and an access road for the delivery of equipment to this site. The above requirements are in addition to any metering and telecommunications required by PJM as specified in PJM Manuals M-01 and M-14D

Summary

The Russell Hill - N. Meshoppen (Y2-104) Project direct connection will require the facility upgrades defined in Attachment 3. As shown, the total estimated cost of the 34.5 kV interconnection is $653,800. The Russell Hill - N. Meshoppen (Y2-104) Project does have network upgrades. The Project will require network upgrades to the FE system as defined in Attachment 5. As shown, the total estimated cost of the upgrades is $10,679,600. This cost includes a CIAC (Contribution in Aid of Construction) Federal Income Tax Gross Up charge of $2,436,100. PJM is responsible for determining the cost allocation.

Based on the scope of the FE direct connection, it is expected to take approximately one half (0.5) year from the signing of a Connection Service Agreement to complete the installation required for the Russell Hill - N. Meshoppen (Y2-104) Project. (Note that the network overloads to which this project contributes will require upgrades. The construction of those upgrades may have an impact on the date this project's energy is deliverable. This will be addressed in the Facilities Study Report.) This includes a preliminary payment that compensates FE for the first three months of the engineering design work that is related to the construction of a new Y2-104 Interconnecting tap pole and the associated equipment of the Penelec 34.5 kV line to this site. It also assumes that IC will provide the property for the attachment tap pole and all right-of-way, permits, easements, etc. that will be needed. A further assumption is that there will be no environmental issues with any of the new properties associated with this project, that there will be no delays in acquiring the necessary permits for implementing the defined direct connection and network upgrades, and that FE will allow all distribution system outages when requested.

Attachment 3		
Russell Hill - N. Meshoppen (Y2-104) Project		
Direct Connection Requirements		
Network Upgrade	Description	Cost
PN-S-638	North Meshoppen SS. Install transfer trip relaying on the 34.5kV Tunkhannock line. Install 34.5kV PT and sync relaying on 34.5kV Tunkhannock line circuit breaker.	$226,500
PN-S-639	Tunkhannock SS. Install transfer trip relaying on the 34.5kV North Meshoppen line	$225,100
EOC	50% Engineering, Oversight, and Commissioning	$85,400
	34.5kV tap, radio controlled switch, and associated equipment	$106,800
	RTU programming for connection to the First Energy SCADA and relay support for the generation installation.	$10,000
Total		$653,800

Attachment 4						
Russell Hill - N. Meshoppen (Y2-104) Project						
FE Contingency Analysis Results						
Detailed 34.5kV analysis						
			FirstEnergy Results		PJM Results	
Outage Description	Overloaded Element	N/4 Hr - Rating	MVA Flow	% Rating	MVA Flow	% Rating
	No Problems					

Transmission System Analysis

Overloaded Element	*Contingency Description*	*Rating*	*% Loading*	*Comments/Reinforcement*
Laurel Lake - Westover (NYSEG) 115kV Line	North Meshoppen Stuck 115kV Breaker 20	**128**	**126.60**	Replace North Meshoppen #4 Transformer 230kV circuit switcher with a breaker.
Tiffany - Laurel Lake 115kV	North Meshoppen Stuck 115kV Breaker 20	**160**	**104.09**	Replace North Meshoppen #4 Transformer 230kV circuit switcher with a breaker.
North Meshoppen #3 230/115kV XFMR	East Towanda - North Meshoppen 230kV Line Fault	188	140.07	Replace the North Meshoppen #3 transformer and remove the reactor.
North Meshoppen #3 XFMR Reactor	East Towanda - North Meshoppen 230kV Line Fault	**197**	**133.69**	Replace the North Meshoppen #3 transformer and remove the reactor.

Delivery of Energy Overloads				
North Meshoppen #3 230/115kV XFMR	East Towanda - North Meshoppen 230kV Line Fault	188	187.34	
North Meshoppen #3 XFMR Reactor	East Towanda - North Meshoppen 230kV Line Fault	**197**	**178.80**	

Note: Values in **RED** have been updated using the latest line ratings.

Attachment 5
Russell Hill - N. Meshoppen (Y2-104) Project
FE Network Facility Reinforcement Conceptual Cost Estimates

North Meshoppen #4 Transformer Breaker

Estimate No.	Description	Total with Tax	Tax	Total Cost
PN-S-586	Replace #4 transformer 230kV circuit switcher with circuit breaker. @ North Meshoppen	1,463,200	333,800	1,129,400

North Meshoppen #3 Transformer

Estimate No.	Description	Total with Tax	Tax	Total Cost
PN-S-508A	**North Meshoppen.** Replace No. 3 TR.	9,216,400	2,102,300	7,114,100

Appendix 1

Bus Number	Bus Name	Full Contribution
200851	MEHOOP3	.44
203125	OAKLAND	.97
294572	P-028 C	.22
294573	P-028 E	39.01
293093	U2-077	7.94
894731	V3-042 C	7.28
894732	V3-042 E	48.8
LTF	V4-050	1.57
902251	W2-023	7.81
LTF	W2-033	1.2
905091	W4-009 OP1	8.73
905181	W4-021	8.73
909021	X2-012 C	12.62
909171	X2-050	8.63
910522	X3-003 E	6.5
912291	X4-048 OP1	28.53
913171	Y1-025 C OP1	8.73
913172	Y1-025 E OP1	.72
913311	Y1-047 OP1	5.01
914371	Y2-089	10.56
914471	Y2-104	1.57

Appendix 2

Bus Number	Bus Name	Full Contribution
200851	MEHOOP3	.44
203125	OAKLAND	.97
294572	P-028 C	.22
294573	P-028 E	39.01
293093	U2-077	7.94
894731	V3-042 C	7.28
894732	V3-042 E	48.8
LTF	V4-050	1.57
902251	W2-023	7.81
LTF	W2-033	1.2
905091	W4-009 OP1	8.73
905181	W4-021	8.73
909021	X2-012 C	12.62
909171	X2-050	8.63
910522	X3-003 E	6.5
912291	X4-048 OP1	28.53
913171	Y1-025 C OP1	8.73
913172	Y1-025 E OP1	.72
913311	Y1-047 OP1	5.01
914371	Y2-089	10.56
914471	Y2-104	1.57

Appendix 3

Bus Number	Bus Name	Full Contribution
247528	05COVRT1	2.21
247529	05COVRT2	2.21
247530	05COVRT3	2.21
247531	05COVRT4	1.33
247532	05COVRT5	1.33
247533	05COVRT6	1.33
200887	ARMNA MT P47	.05
203261	BLOSSBCT	.04
203283	MANOR	.01
200851	MEHOOP3	.52
293270	N-036 C	.7
293942	O-052 C	.64
203125	OAKLAND	.36
294572	P-028 C	.26
884780	S-058 C	6.17
884781	S-058 E	20.36
886091	T-121 C	.96
LTF	V3-012	5.64
894731	V3-042 C	2.48
LTF	W3-083	1.33
203102	WEST TAN	.06
907991	X1-078	10.44
907461	X1-109 C	101.55
LTF	X2-042	6.45
LTF	X3-020	1.79
LTF	X3-021	10.73
LTF	X3-050	11.54
LTF	X3-096	4.32
LTF	X3-097	6.12
LTF	X3-098	5.8
LTF	X4-029D	1.65
LTF	X4-041	5.73
LTF	Y1-002	6.29
LTF	Y1-004	6.62
LTF	Y1-007	4.6
913081	Y1-012	.01
913231	Y1-032 C	.82
LTF	Y1-041	1.65
913311	Y1-047 OP1	5.95
913441	Y1-069 OP1	9.53
LTF	Y2-004	2.91
LTF	Y2-005	2.91

LTF	Y2-006	2.93
LTF	Y2-007	5.82
LTF	Y2-008	5.85
LTF	Y2-030	1.56
LTF	Y2-031	1.56
LTF	Y2-032	1.56
LTF	Y2-033	3.16
LTF	Y2-034	2.46
LTF	Y2-035	1.32
LTF	Y2-036	1.32
LTF	Y2-040	10.73
LTF	Y2-044	18.69
LTF	Y2-049	8.81
LTF	Y2-056	4.96
LTF	Y2-068	30.7
LTF	Y2-069	2.5
LTF	Y2-070	2.5
LTF	Y2-071	2.5
LTF	Y2-072	2.5
LTF	Y2-082	14.98
914331	Y2-085 OP1	9.6
914471	Y2-104	1.89

Appendix 4

Bus Number	Bus Name	Full Contribution
247528	05COVRT1	2.21
247529	05COVRT2	2.21
247530	05COVRT3	2.21
247531	05COVRT4	1.33
247532	05COVRT5	1.33
247533	05COVRT6	1.33
200887	ARMNA MT P47	.05
203261	BLOSSBCT	.04
203283	MANOR	.01
200851	MEHOOP3	.52
293270	N-036 C	.7
293942	O-052 C	.64
203125	OAKLAND	.36
294572	P-028 C	.26
884780	S-058 C	6.17
884781	S-058 E	20.36
886091	T-121 C	.96
LTF	V3-012	5.64
894731	V3-042 C	2.48
LTF	W3-083	1.33
203102	WEST TAN	.06
907991	X1-078	10.44
907461	X1-109 C	101.55
LTF	X2-042	6.45
LTF	X3-020	1.79
LTF	X3-021	10.73
LTF	X3-050	11.54
LTF	X3-096	4.32
LTF	X3-097	6.12
LTF	X3-098	5.8
LTF	X4-029D	1.65
LTF	X4-041	5.73
LTF	Y1-002	6.29
LTF	Y1-004	6.62
LTF	Y1-007	4.6
913081	Y1-012	.01
913231	Y1-032 C	.82
LTF	Y1-041	1.65
913311	Y1-047 OP1	5.95
913441	Y1-069 OP1	9.53
LTF	Y2-004	2.91
LTF	Y2-005	2.91

LTF	Y2-006	2.93
LTF	Y2-007	5.82
LTF	Y2-008	5.85
LTF	Y2-030	1.56
LTF	Y2-031	1.56
LTF	Y2-032	1.56
LTF	Y2-033	3.16
LTF	Y2-034	2.46
LTF	Y2-035	1.32
LTF	Y2-036	1.32
LTF	Y2-040	10.73
LTF	Y2-044	18.69
LTF	Y2-049	8.81
LTF	Y2-056	4.96
LTF	Y2-068	30.7
LTF	Y2-069	2.5
LTF	Y2-070	2.5
LTF	Y2-071	2.5
LTF	Y2-072	2.5
LTF	Y2-082	14.98
914331	Y2-085 OP1	9.6
914471	Y2-104	1.89