




FAC-003-AB1-1
Transmission Vegetation
Management Program

Year: **2024**

Rev. **2024.0**

Date: **February 20, 2024**

	Name/Position	Signature	Date
Author	Paul Kitchen – Senior Planner		Feb. 20, 2024
Checked	Ed Anderson - Supervisor		Feb. 20, 2024
Approved	Stephen Tao - Manager		
Approved	Sarah Walker – Manager		

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REVISION HISTORY

Rev. #	Description	Author	Date
2024.0	2024 Program - 9LA93, 9L162 and 9L193 were commissioned and added to the Circuit Listing (Table 4.4).	Paul Kitchen	Feb. 20, 2024

ISO REQUEST HISTORY

ISO Request Date	Rev. #	Description	Author	Submission Date
Annual Submission – No Specific Request	2024.0	2024 Program	Paul Kitchen	Feb. 20, 2024

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1 OBJECTIVE

The objective of this TVMP is to maintain the integrity and security of ATCO Electric Ltd.'s (AE), ATCO Energy Solutions Ltd.'s (AESL), and Alberta PowerLine General Partner Ltd.'s (APL) transmission facilities by ensuring that right-of-way vegetation treatment requirements are identified early, prioritized, scheduled and then completed in an orderly, cost-effective and efficient manner.

2 PRACTICES

2.1 Clearance

Table 1: Clearances – Estimated growth rates by treatment cycle for three specific regions

NORTH REGION - Grande Prairie, Peace River, Slave Lake, Fort McMurray

Voltage (kV)	Clearance 1 distance (m) = estimated annual growth + 1m safety + Flash over								Clearance 2 distance (m)
	Deciduous				Non Deciduous				
	1yr	2yrs	3yrs	4yrs	1yr	2yrs	3yrs	4yrs	
230-242	4.23	5.23	5.98	6.73	3.33	3.83	4.28	4.63	1.58
500-550 AC	6.28	7.28	8.03	8.78	5.38	5.88	6.33	6.68	3.63
500-550 DC	5.18	6.18	6.93	7.68	4.28	4.78	5.23	5.58	2.53
Estimated Growth Rate (m)	1.65	1.00	0.75	0.75	0.75	0.50	0.45	0.35	

SOUTH CENTRAL REGION - Cold Lake, Lloydminster, St. Paul, Vegreville

Voltage (kV)	Clearance 1 distance (m) = estimated annual growth + 1m safety + Flash over								Clearance 2 distance (m)
	Deciduous				Non Deciduous				
	1yr	2yrs	3yrs	4yrs	1yr	2yrs	3yrs	4yrs	
230-242	4.08	5.08	5.58	6.08	3.08	3.48	3.83	4.18	1.58
500-550 AC	6.13	7.13	7.63	8.13	5.13	5.53	5.88	6.23	3.63
500-550 DC	5.03	6.03	6.53	7.03	4.03	4.43	4.78	5.13	2.53
Estimated Growth Rate (m)	1.50	1.00	0.50	0.50	0.50	0.40	0.35	0.35	

SOUTHEAST REGION - Stettler, Drumheller, Oyen

Voltage (kV)	Clearance 1 distance (m) = estimated annual growth + 1m safety + Flash over								Clearance 2 distance (m)
	Deciduous				Non Deciduous				
	1yr	2yrs	3yrs	4yrs	1yr	2yrs	3yrs	4yrs	
230-242	3.83	4.58	5.08	5.58	3.08	3.43	3.78	4.03	1.58
500-550 AC	5.88	6.63	7.13	7.63	5.13	5.48	5.83	6.08	3.63
500-550 DC	4.78	5.53	6.03	6.53	4.03	4.38	4.73	4.98	2.53
Estimated Growth Rate (m)	1.25	0.75	0.50	0.50	0.50	0.35	0.35	0.25	

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2.2 Personnel Qualifications

Table 2: Position Requirements

Position	Position Requirements	Acceptable Documentation
Legal owner of a transmission facility, AE, AESL, and APL. AE manages AESL and APL systems on behalf of AESL and APL respectively.	Professional Vegetation Management Association of Alberta (PVMA)	Documentation provided upon request
Manager	Financial Authority	Documentation provided upon request
Supervisor	RPF or RPFT or 5 years Vegetation Management Experience or related experience	Documentation provided upon request
Senior Planner	RPF or RPFT or 5 years Vegetation Management Experience or related experience	Documentation provided upon request
Patrolling and Consenting Pre-Qualified Consenter	RPF or RPFT or CUA or UA or 5 years Vegetation Management Experience or Journeyman Powerline Technician or related experience, and or UTW or UTT	Documentation provided upon request
Implementation / Pre-Qualified Contractor	Certified UTT or UTW or CUA or UA, Valid Insurance, WCB, ATCO Electric Approved Safety Program & pre-qualified	Documentation provided upon request

Table 3: Individual Requirements

Individual	Position	Position Requirements	Applicable Documentation
Stephen Tao	Manager	Financial Authority	Documentation provided upon request
Ed Anderson	Supervisor	Design Review	Documentation provided upon request
Paul Kitchen	Senior Planner	Design and Creation	Documentation provided upon request
Sarah Walker	Manager	Implementation	Documentation provided upon request
Neil Harpe	Supervisor	Implementation	Documentation provided upon request
Darcy Soderstrom	Supervisor	Implementation	Documentation provided upon request

3 PROCEDURES

3.1 Mitigation Measures - Clearance 1 Exceptions

Presently there are no locations on any of AE's, AESL's, or APL's 200kV and greater systems that are restricted from attaining clearance 1 distances.

3.2 Communication of Imminent Threats

The process for communication of vegetation conditions that present an imminent threat of a Transmission Line outage is described in ATCO Electric Ltd.'s *HSE Requirements for High Hazard Work for Vegetation Management General Services* document.

Currently there are no locations which present an imminent threat on any of AE's, AESL's, or APL's, 200kV and greater systems. As of the date of this report, no imminent threats have been identified on any of AE's, AESL's, or APL's 200kV and greater systems during this calendar year.

4 Work Specifications

4.1 Site Work Specification

ATCO Electric's vegetation control methods are developed around the PVMA Industry *Standards and Good Practices for Vegetation Management*. All methods used are to suit the specific site conditions and are target specific. The overall goal is to limit or eliminate unwanted vegetation, while promoting the establishment or enhancement of compatible vegetation.

The following methods are adopted by ATCO Electric:

4.1.1 Mechanical

Trim: A selective control treatment used in areas where tree removal has been denied by private landowners or other affected stakeholders. Trimming methods involve the removal of branches to redirect growth to maintain vegetation clearances.

Slash: A treatment method used to remove non-compatible vegetation where the use of mowers is restricted due to environmental, safety, or economic conditions.

Mow: A treatment method used to remove non-compatible vegetation when herbicide use is restricted due to vegetation height or due to another reason (I.e. adjacent to a crop).

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Hazard Reduction: Hazard reduction is executed by falling either single hazard trees or small clumps of hazard trees which can adversely impact the system. This includes:

1. The removal of hazard trees to mitigate the incidence of encroachment within flashover distances. Hazard trees can be either dead or alive, either having visible defects or being predisposed to wind-throw (singly or combined) which increases the risk of structural failure in whole or in part and is also located where the encroachment of flashover distances is possible upon failure.
2. ROW widening and tree-freeing occurs when mature trees from outside of the right-of-way are removed to target the establishment of a tree free condition, which may include the removal of healthy trees which could come within the flash-over distance to the conductor upon failure or any other trees which could have an adverse effect to the system.

4.1.2 Herbicide

Herbicide Application: Herbicides are applied to inhibit the growth of non-compatible vegetation and reduce the amount of root "suckering" after a mechanical program. Typically, herbicide applications will follow mowing and slashing operations. ATCO uses various methods to apply herbicides including basal which targets specific vegetation stems and blanket or broadcast applications which can use different methods and types of equipment.

4.2 Inspection Schedule

4.2.1 Inspection

Detailed Air Patrol (DAP): A patrol where vegetation data is collected from a platform using remote sensing technology, such as (or similar to) Light Detection And Ranging (LiDAR) with aerial imagery, which allows for determining the accurate geo-referenced positions of objects.

Detailed Ground Patrol (DGP): A patrol where vegetation data is collected from the ground by a qualified person with the aid of technology.

Yearly Air Patrol (YAP): A patrol that is completed from an aerial platform, to examine the general condition of a transmission line and the associated right-of-way for off-cycle vegetation issues.

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4.2.2 Inspection Schedule 2023

Line	Inspection Type	Planned Year	Date Complete	Applicable Documentation
9L01	YAP	2023	Sept. 2023	Documentation Filed
9L02	YAP	2023	Sept. 2023	Documentation Filed
9L05	YAP	2023	Sept. 2023	Documentation Filed
9L07	YAP	2023	Sept. 2023	Documentation Filed
9L08	YAP	2023	Sept. 2023	Documentation Filed
9L09	YAP	2023	Sept. 2023	Documentation Filed
9L10	YAP	2023	Sept. 2023	Documentation Filed
9L11	YAP	2023	Sept. 2023	Documentation Filed
9L15	YAP	2023	Sept. 2023	Documentation Filed
9L16	YAP	2023	Sept. 2023	Documentation Filed
9L19	YAP	2023	Sept. 2023	Documentation Filed
9L20	YAP	2023	Sept. 2023	Documentation Filed
9L22	YAP	2023	Sept. 2023	Documentation Filed
9L23	YAP	2023	Sept. 2023	Documentation Filed
9L24	YAP	2023	Sept. 2023	Documentation Filed
9L27	YAP	2023	Sept. 2023	Documentation Filed
9L28	YAP	2023	Sept. 2023	Documentation Filed
9L29	YAP	2023	Sept. 2023	Documentation Filed
9L30	YAP	2023	Sept. 2023	Documentation Filed
9L32	YAP	2023	Sept. 2023	Documentation Filed
9L36	YAP	2023	Sept. 2023	Documentation Filed
9L37	YAP	2023	Sept. 2023	Documentation Filed
9L39	YAP	2023	Sept. 2023	Documentation Filed
9L40	YAP	2023	Sept. 2023	Documentation Filed
9L43	YAP	2023	Sept. 2023	Documentation Filed
9L45	YAP	2023	Sept. 2023	Documentation Filed
9L46	YAP	2023	Sept. 2023	Documentation Filed
9L47	YAP	2023	Sept. 2023	Documentation Filed
9L55	YAP	2023	Sept. 2023	Documentation Filed
9L56	YAP	2023	Sept. 2023	Documentation Filed
9L57	YAP	2023	Sept. 2023	Documentation Filed
9L58	YAP	2023	Sept. 2023	Documentation Filed
9L59	YAP	2023	Sept. 2023	Documentation Filed
9L66	YAP	2023	Sept. 2023	Documentation Filed
9L69	YAP	2023	Sept. 2023	Documentation Filed
9L70	YAP	2023	Sept. 2023	Documentation Filed
9L74	YAP	2023	Sept. 2023	Documentation Filed
9L77	YAP	2023	Sept. 2023	Documentation Filed
9L79	YAP	2023	Sept. 2023	Documentation Filed
9L80	YAP	2023	Sept. 2023	Documentation Filed
9L81	YAP	2023	Sept. 2023	Documentation Filed
9L84	YAP	2023	Sept. 2023	Documentation Filed

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Line	Inspection Type	Planned Year	Date Complete	Applicable Documentation
9L85	YAP	2023	Sept. 2023	Documentation Filed
9L89	YAP	2023	Sept. 2023	Documentation Filed
9L93	YAP	2023	Sept. 2023	Documentation Filed
9L97	YAP	2023	Sept. 2023	Documentation Filed
9L99	YAP	2023	Sept. 2023	Documentation Filed
9L100	YAP	2023	Sept. 2023	Documentation Filed
9L101	YAP	2023	Sept. 2023	Documentation Filed
9L112	YAP	2023	Sept. 2023	Documentation Filed
9L144	YAP	2023	Sept. 2023	Documentation Filed
9L912	YAP	2023	Sept. 2023	Documentation Filed
9L913	YAP	2023	Sept. 2023	Documentation Filed
9L930	YAP	2023	Sept. 2023	Documentation Filed
9L933	YAP	2023	Sept. 2023	Documentation Filed
9L934	YAP	2023	Sept. 2023	Documentation Filed
9L938	YAP	2023	Sept. 2023	Documentation Filed
9L939	YAP	2023	Sept. 2023	Documentation Filed
9L948	YAP	2023	Sept. 2023	Documentation Filed
9L950	YAP	2023	Sept. 2023	Documentation Filed
9L953	YAP	2023	Sept. 2023	Documentation Filed
9L960	YAP	2023	Sept. 2023	Documentation Filed
9L961	YAP	2023	Sept. 2023	Documentation Filed
9L966	YAP	2023	Sept. 2023	Documentation Filed
9L990	YAP	2023	Sept. 2023	Documentation Filed
9LJH1	YAP	2023	Sept. 2023	Documentation Filed
9LJH2	YAP	2023	Sept. 2023	Documentation Filed
9LS1M	YAP	2023	Sept. 2023	Documentation Filed
L9900	YAP	2023	Sept. 2023	Documentation Filed
907L	YAP	2023	Sept. 2023	Documentation Filed
923L	YAP	2023	Sept. 2023	Documentation Filed
1035L	YAP	2023	Sept. 2023	Documentation Filed
1087L	YAP	2023	Sept. 2023	Documentation Filed
1088L	YAP	2023	Sept. 2023	Documentation Filed
75-PLH-901	YAP	2023	Sept. 2023	Documentation Filed
75-PLH-902	YAP	2023	Sept. 2023	Documentation Filed
12L41	YAP	2023	Sept. 2023	Documentation Filed
12L44	YAP	2023	Sept. 2023	Documentation Filed
12L70	YAP	2023	Sept. 2023	Documentation Filed
12L85	YAP	2023	Sept. 2023	Documentation Filed
13L50	YAP	2023	Sept. 2023	Documentation Filed
9L10	DGP	2023	Mar. 2023	Documentation Filed
9L100	DGP	2023	Jun. 2023	Documentation Filed
9L11	DGP	2023		Filed Upon Completion. Patrol started in Fall of 2023 and completed all

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Line	Inspection Type	Planned Year	Date Complete	Applicable Documentation
				accessible portions. Require frozen ground to complete outstanding portions in early 2024.
9L16	DGP	2023	Oct. 2023	Documentation Filed
9L27	DGP	2023	Jun. 2023	Documentation Filed
9L29	DGP	2023	Aug. 2023	Documentation Filed
9L45	DGP	2023	Feb. 2023	Documentation Filed
9L46	DGP	2023	Oct. 2023	Documentation Filed
9LA46	DGP	2023	Sept. 2023	Documentation Filed
9L47	DGP	2023	Dec. 2023	Documentation Filed
9L55	DGP	2023	Dec. 2023	Documentation Filed
9L56	DGP	2023	Jun. 2023	Documentation Filed
9L57	DGP	2023	Mar. 2023	Documentation Filed
9L59	DGP	2023	Aug. 2023	Documentation Filed
9L74	DGP	2023	Jan. 2023	Documentation Filed
9L85	DGP	2023	Jan. 2023	Documentation Filed
9L930	DGP	2023		Filed Upon Completion. Patrol started in Fall of 2023 and completed all accessible portions. Require frozen ground to complete outstanding portions in early 2024.
9L933	DGP	2023	Jul. 2023	Documentation Filed
9L934	DGP	2023	Jul. 2023	Documentation Filed
9L950	DGP	2023	Jul. 2023	Documentation Filed
9L953	DGP	2023	Jun. 2023	Documentation Filed
9L99	DGP	2023	Jun. 2023	Documentation Filed
9LJH-1	DGP	2023	May 2023	Documentation Filed
9LJH-2	DGP	2023	May 2023	Documentation Filed
923L	DGP	2023	Jul. 2023	Documentation Filed
1035L	DGP	2023	Jul. 2023	Documentation Filed
1087L	DGP	2023	Jul. 2023	Documentation Filed
1088L	DGP	2023	Jul. 2023	Documentation Filed
12L41	DGP	2023	May 2023	Documentation Filed
12L44	DGP	2023	Mar. 2023	Documentation Filed
12L70	DGP	2023	Oct. 2023	Documentation Filed
12L85	DGP	2023	Oct. 2023	Documentation Filed

4.2.3 Inspection Schedule 2024

Line	Inspection Type	Planned Year	Date Complete	Applicable Documentation
9L01	YAP	2024		Filed Upon Completion
9L02	YAP	2024		Filed Upon Completion
9L05	YAP	2024		Filed Upon Completion

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Line	Inspection Type	Planned Year	Date Complete	Applicable Documentation
9L07	YAP	2024		Filed Upon Completion
9L08	YAP	2024		Filed Upon Completion
9L09	YAP	2024		Filed Upon Completion
9L10	YAP	2024		Filed Upon Completion
9L11	YAP	2024		Filed Upon Completion
9L15	YAP	2024		Filed Upon Completion
9L16	YAP	2024		Filed Upon Completion
9L19	YAP	2024		Filed Upon Completion
9L20	YAP	2024		Filed Upon Completion
9L22	YAP	2024		Filed Upon Completion
9L23	YAP	2024		Filed Upon Completion
9L24	YAP	2024		Filed Upon Completion
9L27	YAP	2024		Filed Upon Completion
9L28	YAP	2024		Filed Upon Completion
9L29	YAP	2024		Filed Upon Completion
9L30	YAP	2024		Filed Upon Completion
9L32	YAP	2024		Filed Upon Completion
9L36	YAP	2024		Filed Upon Completion
9L37	YAP	2024		Filed Upon Completion
9L39	YAP	2024		Filed Upon Completion
9L40	YAP	2024		Filed Upon Completion
9L43	YAP	2024		Filed Upon Completion
9L45	YAP	2024		Filed Upon Completion
9L46	YAP	2024		Filed Upon Completion
9L47	YAP	2024		Filed Upon Completion
9L55	YAP	2024		Filed Upon Completion
9L56	YAP	2024		Filed Upon Completion
9L57	YAP	2024		Filed Upon Completion
9L58	YAP	2024		Filed Upon Completion
9L59	YAP	2024		Filed Upon Completion
9L66	YAP	2024		Filed Upon Completion
9L69	YAP	2024		Filed Upon Completion
9L70	YAP	2024		Filed Upon Completion
9L74	YAP	2024		Filed Upon Completion
9L77	YAP	2024		Filed Upon Completion
9L79	YAP	2024		Filed Upon Completion
9L80	YAP	2024		Filed Upon Completion
9L81	YAP	2024		Filed Upon Completion
9L84	YAP	2024		Filed Upon Completion
9L85	YAP	2024		Filed Upon Completion
9L89	YAP	2024		Filed Upon Completion
9L93	YAP	2024		Filed Upon Completion
9LA93	YAP	2024		Filed Upon Completion

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Line	Inspection Type	Planned Year	Date Complete	Applicable Documentation
9L97	YAP	2024		Filed Upon Completion
9L99	YAP	2024		Filed Upon Completion
9L100	YAP	2024		Filed Upon Completion
9L101	YAP	2024		Filed Upon Completion
9L112	YAP	2024		Filed Upon Completion
9L137	YAP	2024		Filed Upon Completion
9L144	YAP	2024		Filed Upon Completion
9L155	YAP	2024		Filed Upon Completion
9L162	YAP	2024		Filed Upon Completion
9L193	YAP	2024		Filed Upon Completion
9L912	YAP	2024		Filed Upon Completion
9L913	YAP	2024		Filed Upon Completion
9L930	YAP	2024		Filed Upon Completion
9L933	YAP	2024		Filed Upon Completion
9L934	YAP	2024		Filed Upon Completion
9L938	YAP	2024		Filed Upon Completion
9L939	YAP	2024		Filed Upon Completion
9L948	YAP	2024		Filed Upon Completion
9L950	YAP	2024		Filed Upon Completion
9L953	YAP	2024		Filed Upon Completion
9L960	YAP	2024		Filed Upon Completion
9L961	YAP	2024		Filed Upon Completion
9L966	YAP	2024		Filed Upon Completion
9L990	YAP	2024		Filed Upon Completion
9LJH1	YAP	2024		Filed Upon Completion
9LJH2	YAP	2024		Filed Upon Completion
9LS1M	YAP	2024		Filed Upon Completion
L9900	YAP	2024		Filed Upon Completion
907L	YAP	2024		Filed Upon Completion
923L	YAP	2024		Filed Upon Completion
1035L	YAP	2024		Filed Upon Completion
1087L	YAP	2024		Filed Upon Completion
1088L	YAP	2024		Filed Upon Completion
12L41	YAP	2024		Filed Upon Completion
12L44	YAP	2024		Filed Upon Completion
12L70	YAP	2024		Filed Upon Completion
12L85	YAP	2024		Filed Upon Completion
13L50	YAP	2024		Filed Upon Completion
9L07	DGP	2024		Filed Upon Completion
9L08	DGP	2024		Filed Upon Completion
9L09	DGP	2024		Filed Upon Completion
9L11	DGP	2024		Filed Upon Completion
9L19	DGP	2024		Filed Upon Completion

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Line	Inspection Type	Planned Year	Date Complete	Applicable Documentation
9L20	DGP	2024		Filed Upon Completion
9L24	DGP	2024		Filed Upon Completion
9L28	DGP	2024		Filed Upon Completion
9L30	DGP	2024		Filed Upon Completion
9L39	DGP	2024		Filed Upon Completion
9L40	DGP	2024		Filed Upon Completion
9L69	DGP	2024		Filed Upon Completion
9L70	DGP	2024		Filed Upon Completion
9L77	DGP	2024		Filed Upon Completion
9L79	DGP	2024		Filed Upon Completion
9L80	DGP	2024		Filed Upon Completion
9L93	DGP	2024		Filed Upon Completion
9LA93	DGP	2024		Filed Upon Completion
9L97	DGP	2024		Filed Upon Completion
9L101	DGP	2024		Filed Upon Completion
9L137	DGP	2024		Filed Upon Completion
9L144	DGP	2024		Filed Upon Completion
9L155	DGP	2024		Filed Upon Completion
9L162	DGP	2024		Filed Upon Completion
9L193	DGP	2024		Filed Upon Completion
9L912	DGP	2024		Filed Upon Completion
9L930	DGP	2024		Filed Upon Completion
9L966	DGP	2024		Filed Upon Completion
9L990	DGP	2024		Filed Upon Completion
L9900	DGP	2024		Filed Upon Completion

4.3 Uncontrollable Environmental Factors and Other Site Conditions

The emergence of uncontrollable environmental factors and other site conditions may (at times) require altering the planned activities in the Transmission Vegetation Management Program (TVMP). Impacted activities will be reincorporated into the program by identifying the timeline for the completion of the activity and/or by providing an attestation letter and/or a declaration of deferral, which explains why the activity was not completed. The following is a list of common uncontrollable factors and constraints (not comprehensive) that can impact activity schedules:

- Adverse weather conditions;
- Inoperable ground conditions;
- Extreme fire hazard ratings and forest closures;
- Atmospheric conditions that increase the risk of line contacts;
- Delays in post-construction reclamation, resulted in the circuit has not being released for patrolling activities;
- Delays in site entry approvals;
- Other higher priority inspections and/or work being identified.

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4.4 ATCO Electric Ltd., ATCO Energy Solutions Ltd. and Alberta PowerLine General Partner Ltd. Circuit Listing

Circuit Designation	Circuit Designation	Circuit Designation	Circuit Designation	Circuit Designation
9L01	9L30	9L70	9L144	9LJH1
9L02	9L32	9L74	9L155	9LJH2
9L05	9L36	9L77	9L162	9LS1M
9L07	9L37	9L79	9L193	L9900
9L08	9L39	9L80	9L912	907L
9L09	9L40	9L81	9L913	923L
9L10	9L43	9L84	9L930	1035L
9L11	9L45	9L85	9L933	1087L
9L15	9L46	9L89	9L934	1088L
9L16	9LA46	9L92	9L938	12L41
9L19	9L47	9L93	9L939	12L44
9L20	9L55	9LA93	9L948	12L70
9L22	9L56	9L97	9L950	12L85
9L23	9L57	9L99	9L953	13L50
9L24	9L58	9L100	9L960	
9L27	9L59	9L101	9L961	
9L28	9L66	9L112	9L966	
9L29	9L69	9L137	9L990	