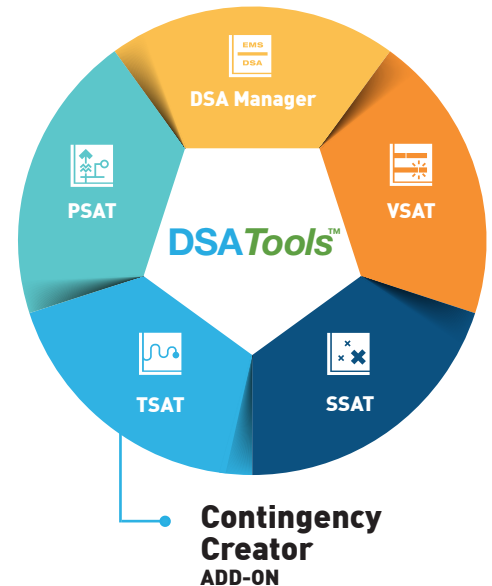


# Contingency Creator

The Contingency Creator is an add-on module for TSAT. It allows transmission planners and coordinators to automatically create TSAT contingencies using an easy-to-use wizard. Currently, it is able to create contingencies compliant to the NERC TPL-001-4 standard.



The Contingency Creator is able to use substation node-breaker data to create TPL compliant contingencies. Since the tool uses the same exemplary engine to read powerflow and node-breaker data as DSA Tools™, large system data can be handled easily.

## APPROACH

Traditional powerflow files and/or node-breaker or CIM information is input to the Contingency Creator. Users make use of the tool's intuitive, systematic wizard-like interface to create TPL-001-4 standard compliant contingencies. The Contingency Creator takes full advantage of the comprehensive modelling and computation options available in DSA Tools™, developed by Powertech Labs Inc.

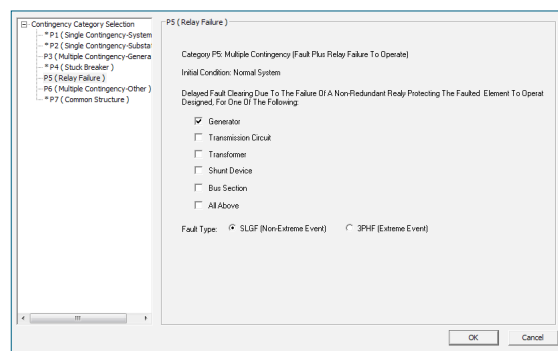
An array of customizable parameters for creating contingencies exist that include:

- TSAT simulation parameters
- Subsystem parameters
- Fault clearance time
- Contingency category and event specification
- Transmission circuit reclosing option
- Extreme event scenarios for specific category of contingencies e.g. stuck breaker
- Contingency output option (list sequence, contingency title format)

## APPLICATIONS

The following are some of the salient features of the tool that allow for an enhanced user experience:

- Define subsystem that is either substation based on the balancing authority/planning entity's boundaries
- Save study configuration of the tool for sharing amongst teammates or later use
- Multiple options to customize contingencies e.g. custom tags to name contingencies



## PRODUCT FEATURES:

- Complaint with NERC TPL-001-4 standard
- Ability to create and customize contingencies based on substation node-breaker or CIM data
- Intuitive, functional wizard-like user interface
- Define, select, and customize subsystem to apply contingencies
- Save study configuration to share with others or later use

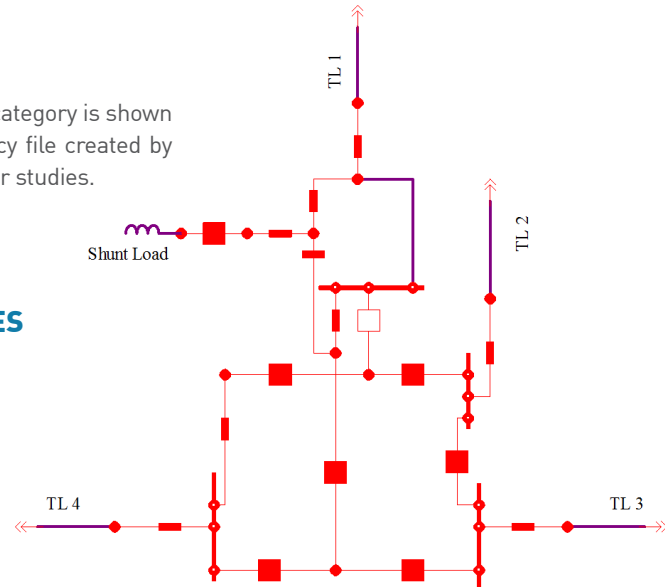
# Contingency Creator

## EXAMPLE

For a typical transmission level substation shown on the right, the Contingency Creator will automatically make a total of 52 contingencies as per the TPL standard. A breakdown of the

number of contingencies per category is shown in table below. The contingency file created by the tool can be used in TSAT for studies.

CATEGORY	CONTINGENCY DESCRIPTION	NO. OF CONTINGENCIES
P1	Single Contingency System	5
P2	Single Contingency - Substation	6
P3	Multiple Contingencies - Generator	0
P4	Stuck Breaker	12
P5	Relay Failure	12
P6	Multiple Contingencies - Other	16
P7	Multiple Contingencies - Common Structure	1



## SPECIFICATIONS AND REQUIREMENTS

- Powerflow in PFB, RAW, or GE EPC format
- Needs node-breaker data in PSAT XML format if creating contingencies for substations and for breaker-level events
- TSAT must be installed to use the contingencies produced by the tool
- Run on MS Windows 7/10/Server 2012 R2/Server 2016

## OTHER POWERTECH SERVICES

- Licensing of the power system analysis software package *DSATools™*
- Licensing of other software products for utility applications
- Implementation of on-line dynamic security assessment (DSA) systems
- Development of custom software systems
- Development of models for use in power system analysis
- Generator field testing, model development and validation
- Training
- Technical consultancy studies including
  - Development of power system base cases
  - System planning and operation studies
  - Facility (including renewables) interconnection studies
  - Compliancy studies (such as NERC TPL, CIP, UFLS, etc.)
  - Post-mortem analysis of system disturbances

## ABOUT POWERTECH LABS

*PowerTech Labs Inc. is one of the largest testing and research laboratories in North America, situated in beautiful British Columbia, Canada. Our 11-acre facility offers 15 different testing labs for a one-stop-shop approach to managing utility generation, transmission and distribution power systems.*

*Outside of the utilities industry, PowerTech provides routine testing capabilities, product development, research and consulting services to support an array of industrial-type operations, electrical equipment manufacturers and automotive original equipment manufacturers.*

[www.powertechlabs.com](http://www.powertechlabs.com)

## FOR MORE INFORMATION CONTACT:

**Xi Lin - 604.590.6652**  
 Director, Power Systems  
[xi.lin@powertechlabs.com](mailto:xi.lin@powertechlabs.com)

[dsainfo@powertechlabs.com](mailto:dsainfo@powertechlabs.com)  
[www.dsatools.com](http://www.dsatools.com)

81022-0086A

