

ONEOK GENERATOR STUDY

**GENERAL:** Construct a 200 Mega-Watt ONEOK (OPMC) generating unit on the Sooner – Northwest 345kV line as identified in OASIS request #113550.

The generator is to be located 7 miles North of Northwest sub, which is 90% of the distance and 90% of the per unit impedance of the line from Sooner to Northwest subs. The SPP bus numbers are: 4703 SONR 7 – 4780 NOWST7.

**ASSUMPTIONS:**

Market:           Local: Reduce OG&E generation by 200 MW.  
                       Export – Entergy: Reduce Entergy generation by 200MW at swing bus via area interchange and increase OGE net interchange by 200MW.

**SCENARIOS:**

The addition of a new 200MW generator was modeled using 1999 series SPP load-flow data and the GE PSLF package. The models were created for the years 2000 and 2005, Summer Peak and April Minimum, and either a local or export market for the power. The scenarios and filenames are summarized below:

Model #	YEAR MODELED:	SEASON:	MARKET:	FILENAME:
1.	2000	Summer Peak	Local	ONEOK0.SAV
2.	2000	Summer Peak	Export – Entergy	ONEOK01.SAV
3.	2000	April Minimum	Local	ONEOK02.SAV
4.	2000	April Minimum	Export – Entergy	ONEOK03.SAV
5.	2005	Summer Peak	Local	ONEOK5.SAV
6.	2005	Summer Peak	Export – Entergy	ONEOK51.SAV
7.	2005	Winter Peak	Local	ONEOK52.SAV
8.	2005	Winter Peak	Export – Entergy	ONEOK53.SAV

**MODEL:**

Bus Numbers: Busses were added to the SPP model as shown:

- ONEOK 7 4708 345 kV bus
- ONEOK 4 4707 138 kV bus
- ONEOK G 4709 22kV Generator bus

GSU:                   4707 ONEOK 4 – 4709 ONEOKG 138/22kV with R and X equal: (0.0004, 0.0118)

Bus Tie Transformer:   4707 ONEOK 4 – 4708 ONEOK7 138/345kV with R and X equal to: (0.0005,0.0275)

Transmission Line:   4703 SONR7 – 4708 ONEOK 7 with R, X and B: (0.0036,0.0310,0.5218) and  
 4708 ONEOK 7 – 4780 NOWST7 (0.0004, 0.0035, 0.0580) both with a 717 MVA rating per the existing line.

Generator:           4709 ONEOKG 22.00 kV with  
 (PGEN, QMAX, QMIN, IREG, NAME, VSCHEd) as follows:  
 (200.0, 50.0, -80.0, 4709, ONEOKG, 1.0108)

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**RESULTS:** A contingency analysis was run for each scenario. This analysis consisted of solving each model with each of the 614 elements removed individually. As each element was removed from service, the model was solved and any overloads recorded. For the cases studied, the requested transaction did not cause any lines or transformers to be in excess of the emergency ratings.

**CONCLUSION:** The transaction requested in OASIS request #113550 does not cause thermal overloads to OG&E facilities for the cases considered.

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