

# Distribution Factor Task Force

July 21–22, 1997  
Marriott Eaton Centre  
Ontario, Canada

## Meeting Minutes

### Attendance

Ben Li, Chairman	Canada	Gordon Pietsch	MAPP
Mat Long, Vice Chairman	SERC	Greg Campoli	NPCC
Jon Riley	ECAR	Chi Tang	NPCC
Tom Vitez	ECAR	Bill Tiller	SERC
Greg Krajnik	MAAC	John McCoy	SERC
Roberto Paliza	MAIN	Conrado Counan	NERC
Pat Shanahan	MAIN	Brian M. Nolan	NERC

### Administrative Matters

The Distribution Factor Task Force (DFTF) meeting was called to order at 1 p.m. on July 21, 1997 by Chairman Ben Li. Each representative introduced himself.

The May 5–6, 1997 meeting minutes were approved with modifications.

### Updates on SCS, iIDC, iTIS, and SPSSTF Activities

The date for all entities to begin tagging, for day-ahead transactions using the template, is July 24. The tag reporting is to be done by fax or e-mail. August 1 is the beginning date for using the template to report transactions that are to start in four hours. Purchasing-selling entities are to report all hourly transactions at all times. This will improve the information that is used for line loading relief.

Interim Interchange Distribution Calculator (iIDC) has all of the software and hardware in place for a trial run.

The Excel spreadsheet developed by the interim Transaction Information System Task Force (iTISTF) allows for e-mail or faxing of the information to all parties of the transaction.

The Security Process Support System Task Force (SPSSTF) debated the uses of the tagging at length. Tagging will be used as an approval process instead of a pure informational tool. SPSSTF also discussed the flow-based transmission methodology and the interaction that the Commercial Practices Working Group (CPWG) will have. A symposium will be held September 25–26 to tie together all of the activities that are currently going on. There is also the desire to get input from the industry on the NERC activities on transmission management. Harry Terhune suggested that MAPP and SPP be used to demonstrate the flow-based concept. There was concerns about MAPP being a demonstration site, since it is currently using a flow-based methodology and its available transfer capability (ATC) values are centrally calculated.

### Updates on PTDF Matrix Calculation

The July matrix was completed and distributed. The matrix contained 97 control areas and 1,164 flowgates. The August update will still contain 1,164 flowgates, but may include more control

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areas. The phase-shifter controls will need to be looked at due to an Ontario-to-Manitoba transaction that affected TVA. DFTF needs to discuss with the interim Distribution Calculator Task Force (iDCTF) how to incorporate the phase-shifter PTDFs. The August matrix work has begun, but Chi Tang is still waiting for outage information from some of the Regions. Chairman Li would like to have all of the Security Coordinators represented on the Task Force. A list distributed by Chi Tang indicates that all Security Coordinators are represented by DFTF members. Greg Campoli will monitor NEPOOL for the outage information. It was judged that outages in Quebec and the Maritime would be of little consequence and hence outages in these areas would not be included.

Phase-angle regulators (PARs) need to be understood not only by the members of the Task Force but also by the people using the information. When simulating the transaction, one matrix is produced with the PAR block loaded. Then the calculation is repeated with the PARs adjusted to control-scheduled flow within a tolerance. When these two matrix values are added together, the resulting values will fairly accurately reflect impacts of a transaction with or without PAR adjustments. With both sets of PTDFs, whichever commercial practice that the control area uses, a good estimation of the resulting flows can be made. Currently, 73 phase-angle regulators are in the base case, with only five not regulating power flows. The PARs internal to a control area can be treated as free flowing or as don't care states. A more accurate value will be achieved with the PARs regulating, this would be for predicting values for next week.

A free-flowing PAR would be more appropriate for the line loading relief time frame since in most cases, the operators will not adjust PAR settings. The Task Force needs to know which PARs are fixed angle and which ones are fixed MW. For the short term, most are fixed angle. In a longer term, they may be fixed MW or angle.

Chi Tang will run an ac analysis as a sanity check for the current PTDFs.

Free-flowing is fixed angle. Fixed MW is regulating or controlling. For the time being, the Task Force will use free flowing simulations for developing PTDFs, supplemented by a separate PAR adjustment factor matrix if this matrix can be handled by the iIDC.

iIDC and GAPP are using two different methods to calculate PTDFs, one with load shift and one with generation shift. Also a new set of control area acronyms has been developed. GAPP has inquired about the feasibility of calculating the two matrices using the same approach.

	<b>GAPP</b>	<b>iIDC</b>	<b>Concerns</b>
<b>Transfer Participation Factor (TPF)</b>	Yes	No	
<b>Area - Area Interface</b>	Yes	Some	
<b>Flowgates</b>	Some	Yes	
<b>Base Case</b>	Yes VEM/MEN Modified Net Interchange	NERC/MMWG More Control Areas	May not be a concern
<b>Simulation Methods</b>	AC with Load-to-Load shift	TLTG with Generation- to-Generation shift	
<b>Transactions</b>	Participant to Participant  Participant to Direct connected non	All Bilateral	

	participant		
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Recognizing the fundamental differences, DFTF decided to put GAPP's request on hold until further discussion is held with Lou Leffler at the next GAPP meeting, at the end of August.

### Report on Assigned Tasks

Based on a simulation by Mat Long, the PTDFs with selected line outages are not too far off from the PTDFs with all in service and the time frame on updating appears to be appropriate. The responses to the outage simulations were mostly localized.

What information is available to the adjacent Regions? The schedules need to be available to the other entities as well as the topology of the system, to make sure that other entities have the best information. MAIN will soon begin coordination and validation of the NERC PTDFs to make sure that they are similar to those calculated in MAIN. If the correlation is not good, there will be some concerns with the implementation of the NERC line loading relief procedures. If we can reduce the number of flowgates, the PTDF and OTDF values will become more manageable. MAPP appreciates what NERC is trying to do, but believes that the Regions can move quicker to alleviate a situation than the NERC procedures allow. Chairman Li suggested that this debate has taken place and will continue to take place in the Security Coordinators Subcommittee.

Chairman Li clarified the definition of flowgate in response to some members' queries on the fact that some are a group of lines while others are single lines. The list of flowgates, however, needs to be reviewed as this will affect the data management process, but will have relatively no effect on the PTDF calculation time.

To update the PTDFs after a contingency, either the model with the contingency can be rerun or a set of outage distribution factors (ODFs) can be created and applied to the PTDFs. Due to the volume of lines that are available in the Eastern Interconnection, DFTF will need to be selective about the lines for which ODFs are calculated. A second contingency level of data should be sufficient based on the current NERC procedures. To get the number of ODFs, the Task Force needs to first define the number of outages and then the appropriate number of flowgates. Chi Tang provided a set of formulae which can be used to calculate PTDFs following recognized contingencies or forced outages.

Task Force members are to submit to Chi Tang contingencies that could affect flowgate PTDFs to be used in calculating the ODF.

#### Definitions:

PTDF — Power Transfer Distribution Factor

(L)ODF — Line Outage Distribution Factor

OTDF — Outage Transfer Distribution Factor:  $PTDF + PTDF * ODF$

If the iIDC cannot handle the PAR information, the Task Force members need to find ways to zero out the extraneous information on the transfer flows. This can effectively be done by either physically zeroing the information or using balancing transactions (i.e., putting the generation pickup at the other side of the PAR interconnection).

### More Frequent PTDF Matrix Updates

Weekly updating process:

- Days 1 to 4: Collect transmission outages for the next week
- Day 4: Submit outages by noon
- Days 4 to 5: Produce PTDF matrix

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- Day 5 to 7: Upload matrix by midnight of Day 7

Transmission outages that will last three days or more are to be submitted. Chairman Li will update the modeling guidelines to reflect these changes. These changes will take affect during August. The earliest date that the new weekly updating will take place is August 18. Therefore, the data is to be submitted to Chi Tang by noon Central Daylight time, August 14. Chairman Li will suggest to the iIDCTF that the weekly update process should not start until after the Eastern Interconnection has gained some experience with the actual use of the iIDC.

With the reduction of the outage duration, the number of lines that will be listed will increase. Concerns were raised regarding the need to include dispatch changes in preparation for challenges by the marketing segment.

**Two alternatives:**

- Weekly transmission outages only
- Monthly submit a generation changes list as well as the weekly transmission list.

For now the Task Force will continue the weekly transmission topology changes with the generation dispatch changes as the next step.

Weekly updates to the PTDFs will likely require the provision of a platform where users can review the changes made between updates. The posting of predictive transmission outages may be sensitive data. MAIN and ECAR believe that the data would be commercially sensitive information. After the calculations are made, the information will be sent to the Security Coordinators. The use of a private and public download site is an option. Task Force members are requested to submit an IDEV file with a description of what changes are being made, and Chi will create a DIF file with respect to a reference case to facilitate this update information.

Reference case will be the starting base case (IDC trial 3 based on the Summer 97 Multiregional Modeling Working Group (MMWG) base case) as opposed to previous week's case. When submitting the outages, the IDEV will be based on the starting base case. Permanent changes to the reference case will be accommodated. The reference base case will be posted in a public download site and the weekly base case and transmission outage information will be in a private download site.

### **Draft Modeling Guideline**

By August 6, Chairman Li will distribute the revised modeling guidelines to the Task Force as well as to SPSSTF. Chairman Li anticipated that the subject of modeling and PTDF calculation may come up at the SPSSTF symposium in September.

### **Draft Calculation Procedure**

Chairman Li also proposed submitting the calculating procedures to SPSSTF prior to its August 11, 1997 meeting, as an informational item. Greg Campoli will send the calculation procedures to Chairman Li by August 6, 1997. Chairman Li will then distribute the procedures to the Task Force and the SPSSTF.

### **IDC Development, Security Processes, and FLOBAT**

Chairman Li will distribute to the Task Force his FLOBAT power point presentation as well as the IDC conceptual design.

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**Future Tasks and Assignments**

1. Members are to provide to Chi Tang by the end of the week the phase-angle regulators that are regulating MW.
2. Members are to provide to Chi Tang their line outage information by the end of this week for the month of August.
3. Members are to submit to Chi Tang their contingencies that could affect flowgate PTDF by August 15.
4. Brian Nolan will check the dftf@nerc.com list to include new Task Force members.
5. Roberto Paliza will look at some accuracy of the PTDFs by some means of benchmarking the information.

**Future Meetings**

August 25–26, 1997 San Francisco or Minneapolis 1–5 pm, 8–noon

**Adjournment**

The meeting was adjourned at 11:30 a.m. July 22, 1997 by Chairman Li.