PROGRESS UPDATE ON DNO SURVEY IN QUANTIFYING

SMALL EMBEDDED GENERATION LOSS RISK ON SYSTEM HIGH FREQUENCY EXCURSIONS

National Grid

BACKGROUND

NGET has concerns on the possible risk to the security to the GB power system likely to be posed by the loss of an unknown but significant amount of small embedded generation at time of high frequency excursions and a paper (GCRP paper 08/07- 'Small Embedded Generation Loss Risk on System High Frequency Excursion') was presented by NGET at the February 2008 GCRP meeting.

Since then, requests for data from DNOs were made at different stages and the results indicated there could be 5-6 GW of plant with high frequency setting at 50.5 Hz. Although the quality of some of the data has improved since the November GCRP meeting, NGET remains concerned that there is still insufficient information to assess and quantify the level of risk to the security of the GB system. Further data/clarifications continue to be urgently required.

DATA RECEIVED FROM DNO'S

A summary of the revised data received since the November GCRP meeting is given in the Table. As indicated, critical data remain outstanding.

Column (A) of the Table shows a sub-total of 5306.9 MW of small embedded generation which are expected to have an over frequency relay setting of 50.5 Hz. No data has been received from EDF(L). Column A' is as Column A except that the effect of load factors has been taken into consideration. CEE and WPD have provided their estimates while some others have given their views on load factors of certain plant type only (ie without completing column A'). Some of the load factors provided by the DNOs were derived from dividing the accumulative energy metered over a period by the equivalent energy generated on rated output for the same period.

Column (B) for non-standard over frequency settings shows returns of Not Applicable (N/A) from most DNOs except 12.8 MW (at 51 Hz) reported at SSE(South). Column (C) shows a sub-total of 1200.8MW with unknown over frequency settings. It is critical that the settings of these sites are clarified to allow the appropriate volume of plant with settings of 50.5 Hz to be entered into columns A and A'.

DISCUSSIONS/RECOMMENDATIONS

Although incomplete, the data in the table shows that a potential generation loss risk of 5-6 GW at 50.5 Hz may exist. This level of potential loss is significant and NGET continues to need urgent input from DNOs to undertake and complete a meaningful risk assessment.

The GCRP is invited to:

a) Note the concerns of National Grid regarding the still unquantified and present risk to the security of the GB system posed by likely tripping of a significant amount of embedded generation during secure, credible high frequency deviations

b) Note the urgent need for DNOs to complete the outstanding data set out in the Table by end of February 2009

c) Note that given the significant implications to the security of the GB power system, National Grid intends to regularly update the Energy Emergency Executive Committee (E3C) on this issue and on the steps the industry is taking to addressing it.

Table - Embedded Generation Over Frequency Trip Settings
Summary of Revised Data from DNO's (January 2009)

DNO Area	Total Installed Capacity with Standard Over Frequency Setting (ie 50.5Hz)	Estimated equivalent total generation loss risk taken into consideration of load factors	Total Installed Capacity with Non-standard Over Frequency Setting (other than 50.5Hz)	Total Installed Capacity with Unknown Over Frequency Setting	Comments
	(A)	(A')	(B)	(C)	
	MW	MW	MW	MW	
CEE (NEDL)	386.0	282.0	N/A	N/A	
CEE (YEDL)	656.1	535.0	N/A	N/A	
CN (East)	459.3	?	N/A	N/A	
CN (West)	310.2	?	N/A	N/A	
SP (S)	151.6	?	N/A	294.0*	
SP (M)	676.5	?	N/A	N/A	
ENW	445.1	?	N/A	N/A	
WPD (SWales)	330.5	211.1	N/A	N/A	
WPD (SWest)	352.9	141.3	N/A	N/A	
SSE (So)	192.1	?	12.8	N/A	12.8MW at 51Hz
SSE (Sc)	611.0	?	N/A	N/A	
EDFE (E)	735.6	?	N/A	N/A	104 MW excluded for >50MW
EDFE (S)	?	?	N/A	906.8*	
Sub-Total	**5306.9**	**?**	**12.8**	**1200.8**	
EDFE (L)	?	?	?	?	No data yet received
Total	?	?	?	?	

?urgent need for confirmation of volume in MW
*urgent need to confirm their frequency settings in Hz and transfer to the appropriate volume to column A and A'

N/A – clarify if it meant a) ‘no data’, b) ‘not known’ or c) ‘0MW’, please confirm