Operational Guidance Note

Simultaneous Tap Change Instruction by National Grid ENCC via Fax

Issue 3: 10/01/2012

Background

Simultaneous tap changing is a technique that can be used to manage system voltage.

Under certain system conditions it can be far more effective than changing taps at each power station separately.

Simultaneous tap changing is a normal (although infrequently used) control action. Its use is described in Grid Code BC2.A.2.6.

Whilst other reactive instructions are normally sent via the automatic logging device (EDL), the nature of simultaneous tap changes does not readily lend itself to this form of instruction.

Historically, simultaneous tap instructions were issued via the Operational Broadcast System (OBS).

With the increase in connection of new power stations, the OBS is no longer capable of supporting simultaneous tap instructions. As a consequence, no simultaneous tap change instructions have been issued in recent years, and operational experience of both the delivery and efficacy of simultaneous tap change has diminished.

Consideration is currently being given to a replacement communication system that would support simultaneous tap change.

In the interim, it is proposed that a fax notification process will be used to deliver simultaneous tap instructions, in order that such instructions can be utilised, and their efficacy in managing system voltage can be assessed.

The purpose of this document is to summarise the fax process and advise how simultaneous tap instructions will be sent.

How Will Simultaneous Tap Instructions be sent?

Advance notification of simultaneous tap change will be sent via fax from National Grid ENCC to power station control points.

The fax templates used will clearly highlight those power stations to be included in the simultaneous tap change instruction.

The fax will be sent well in advance and in all cases at least 30 minutes prior to the designated time of the tap(s).

Shortly after the faxes have been sent, each power station required to be included in the simultaneous tap change instruction will be telephoned by National Grid ENCC The purpose of the telephone call is to highlight to the power station Control Engineer that:

- a simultaneous tap instruction notification fax has been sent in respect of the power station
- the power station is required to follow the instruction at hh:mm (i.e. the requested time)
- that if the fax is not received, the instruction cannot be complied with, or there are any queries, then the power station Control Engineer should contact ENCC, and that
- otherwise the instruction should be followed at the requested time.

To what is the instruction applicable?

The advanced notification fax will clearly highlight those power stations to be included in the simultaneous tap change instruction.

Instructions are applicable to all synchronised **Gensets** with MVAr reserves at the power station(s) highlighted in the fax.

BC 2.A.2.6 specifies that simultaneous tap instructions can be made in relation to all Gensets.

A **Genset** is defined in the Grid Code as:

A Generating Unit, Power Park Module or CCGT Module at a Large Power Station or any Generating Unit, Power Park Module or CCGT Module which is directly connected to the National Electricity Transmission System.

In practice, instructions will be used to manage the voltage on the National Electricity Transmission System.

As a result, it is not anticipated that instructions will be made to embedded power stations. Instructions to **Power Stations** connected to Offshore Transmission Networks may be included where National Grid identifies a potential benefit in doing so.

National Grid may not necessarily include all **Power Stations** in the instruction.

What will the advanced notification fax contain?

The advanced notification fax will include the information below.

A set of sample faxes is included in Annexe 1 of this paper.

- Message the type of message, i.e. Notification of Simultaneous Tap Change
- Incident Number XXXX where XXXX will be a unique number

Included Power stations

Those p**ower stations** at which the simultaneous tap instruction is to apply will be clearly highlighted. All generator step up transformers at each power station highlighted on the fax should be tapped at the allotted time.

Time and Date Required

This is the time and date at which the simultaneous tap instruction shall be executed.

The time will be in the format **HH:MM** where **HH** is the hours in 24 hour clock convention and **MM** the minutes.

Simultaneous tap changes are to be executed commencing at the start of the notified minute.

The date will be in the format dayname dd/mm/yyyy (eg Monday 01/11/2011)

Voltage Change

this is provided to ensure each power station taps in the appropriate direction and gives the intended change in **System** voltage on the transmission system, therefore:

Raise System Volts (+ve MVAr direction)' means tap to increase System volts

Lower System Volts (-ve MVAr direction)' means tap to decrease System volts

No. of taps Requested

this will a positive number, either **1** or **2**, representing the number taps to be executed on each **genset** at each applicable power station in accordance with BC2.A.2.6.

How will the Simultaneous Tap be delivered?

No further communications following the notification fax and confirmatory telephone call will be made from ENCC.

The step up transformers of all **Gensets** at applicable **power stations** should be tapped in accordance with the instruction at the designated time.

The time will be in the format **HH:MM** where HH is the hours in 24 hour clock convention and MM the minutes.

Simultaneous tap changes will be commenced at the start of the notified minute.

Once the instruction has been fulfilled (i.e. requested taps completed), no further tap changes will be made until receipt of further reactive power instructions from National Grid in accordance with BC2.A.2.6

Stephen Curtis National Grid Network Operations July 2011

Annexe 1: Fax Proforma for Simultaneous Tap Instruction

a) Scotland

Date: Monday 1 st Nove	mber 2011	The National Grid Company plc ENCC	St Catherine's L Bearwood Road Sindlesham, Nr Wokingham Berkshire, RG41 5BN
From: National Grid EN To: Power Stations Pages (inclusive): 1 Incident Number: 0001		TIONS MARKE	CTN: 790 2385 Tel: 0844 892 03 Fax: 0844 892 03
	BEE TO FOWER STA		
COCKENZIE 1 & 2	HUNTERSTON	XX	Peterhead Torness
Power Stations marked 'X' are re	quested to carry out a SIMULTAN	NEOUS TAP CHANG	E as follows:
Please note the applicability, dire	ction of tap, number of taps and	time of this instructi	on carefully
Time & Date Required:	17:30 hrs Monday	01/11/2011	
	RAISE System Volts X		em Volts
Instruction	(+ve MVAr direction)	(-ve mv/u	airection)
Instruction No of Taps Requested:	(+ve MVAr direction)		
No of Taps Requested:	(+ve MVAr direction)		
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To: Pages (inclusive): Incident Number:	Power Stations [North 1 0001			CTN: 790 2385 Tel: 0844 892 03 Fax: 0844 892 03
INSTRUCTIO	N APPLICABI	E TO POWER STAT	TIONS MARKE	D 'X' BELOW
Cc		FIDDLERS FERRY	X	SALTEND SOUTH
		HARTLEPOOL	Sout	"H HUMBER BANK
COTTAM DEVELOPI		HEYSHAM 1	X	
		HEYSHAM 2	X	
		HUMBER REFINERY	_	
F				
FE				
	FEESTINIOG	- ROCKSAVAGE	X	
Power Stations m <u>Please note the ap</u>	arked 'X' are reques	ted to carry out a SIMULTAN	IEOUS TAP CHANG	E as follows: <u>on carefully</u>
Power Stations m <u>Please note the ap</u> Time & Da Instruction	arked 'X' are reques oplicability, direction ate Required: n	ted to carry out a SIMULTAN of tap, number of taps and 17:30 hrs Monday RAISE System Volts X (+ve MVAr direction)	IEOUS TAP CHANGI time of this instruction 01/11/2011 LOWER Syst (-ve MVAr of	E as follows: on carefully em Volts
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From: To: Pages (inclu Incident Nu	National Grid ENCC Power Stations [Ea usive): 1 mber: 0001	st]		Tel: 0844 892 038 Fax: 0844 892 035
INSTRU	JCTION APPLICA	BLE TO POWER STATION	S MARKED) 'X' BELOW:
	BARKING CORYTON X AD CREEK X	GRAIN (CCGT) X KINGSNORTH LITTLE BARFORD		RYE HOUSE SIZEWELL B STAYTHORPE
ENFIELD	D ENERGY RAIN (OIL)	MEDWAY X RATCLIFFE		
<u>Please not</u>	te the applicability, direct	ion of tap, number of taps and time o	f this instruction	as follows: <u>n carefully</u>
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No of Taps Requested: 1 X	2
Notes:	
All power stations marked 'X' above will receive a confirmatory telephone call from National Grid in frequencies.	espect of this no
In the event that:	
any power station identified with an 'X' above does not intend to comply with this inst	uction
or there are any questions in relation to this fax or its applicability,	
then please contact the ENCC transmission desk on 506 immediately	
otherwise: all power stations marked 'X' should proceed with the instruction at th without further reference to National Grid ENCC	
	e highlighted