

# IE3 System performance

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P A Gallagher

20/04/06

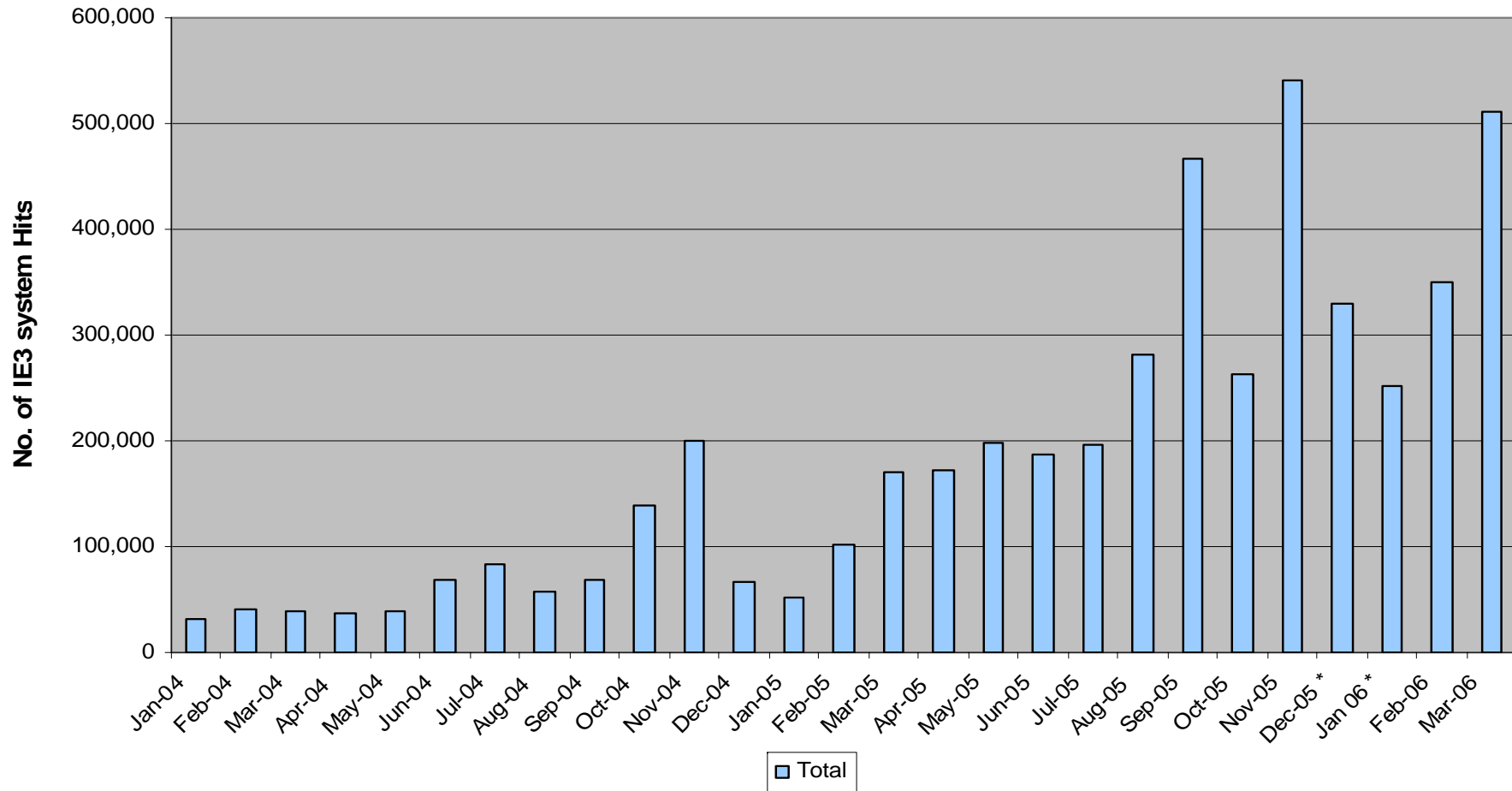
# IE3 System - background

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- ◆ IE3 System implemented in 2002 to deliver NCORM information to the market
- ◆ Designed to deliver daily 'after the day' and monthly information
- ◆ Scope of system increased over time with additional reporting added
- ◆ DTI information initiative implemented in stages from 2003 led to huge loading increase with hourly 'within day' reporting
  - ◆ System performance testing undertaken
- ◆ No infrastructure or application improvements carried out at the time to reflect increased loading
- ◆ Daily Summary report implemented in November 2005
- ◆ System not designed to reflect current level of expectation

# IE3 System - utilisation

Monthly IE3 Website Hits



\* Missing daily logs – total extrapolated using available logs

# Resilience Project - background

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- ◆ Project initiated to resolve industry concerns with site performance
- ◆ Resilience project sanction in August 2005
- ◆ Intended to run in 3 stages through to May 2006
- ◆ Concentrated on improving infrastructure
- ◆ Stage 1 completed in December 2005
- ◆ Following experiences through winter 2005, stages 2 and 3 critically reviewed
- ◆ Scope of project has now been revised following review to also resolve specific application issues
- ◆ Stage 2 and 3 now split into 5 specific phases
- ◆ Project now expected to complete by September 2006

# Resilience Project – phase 1

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- ◆ Work completed in phase 1 (to Dec 05) :
  - ◆ Load Balancing of web servers
    - ◆ To improve data access speeds
  - ◆ Replacement of main application server with a new larger server
    - ◆ Improve data handling and scheduling of reports
  - ◆ Revisions to application server software to increase speed for key reports
    - ◆ Provide more efficient information handling
- ◆ Significant improvement in performance following completion of stage 1 – as noticed by customers

# Resilience Project – phase 2 : infrastructure upgrades

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- ◆ Work planned for phase 2 – Infrastructure (Apr – Sep 2006) :
  - ◆ Replace Disaster Recovery application server with a new larger one to align with main server (Jun 06)
  - ◆ Upgrade disaster recover interfaces and procedures (Sep 06)
    - ◆ Minimise changeover times and maximise capability
  - ◆ Install a backup BCAS control server (Sep 06)
    - ◆ Only non-duplicated key part of current system
  - ◆ Implement automated system monitoring of critical system infrastructure (May 06)
    - ◆ Currently relies on manual monitoring
  - ◆ Move back up process to Disaster Recovery server (Jun 06)
    - ◆ Remove requirement for weekend downtime

# Resilience Project – phase 2 :

## Application improvements

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- ◆ Revamp report scheduling algorithms (controlM and FTP protocols) (Jun06)
  - ◆ Due to issues with late scheduling of within day reports
- ◆ Installation of filewatcher software (Jun 06)
  - ◆ To ensure files are used as soon as they have arrived
- ◆ Automatic alarming if input files delayed (May 06)
  - ◆ To allow earlier manual intervention if required
- ◆ Update data storage procedures (purging, storage, etc) and file structures (Jul 06)
  - ◆ Free up storage space and improve file structure to enhance performance
  - ◆ Creation of new job for periodic purging of data
- ◆ Resolve routing issues from core systems, i.e. iGMS
  - ◆ Minimise delays by providing direct routes for data
- ◆ Alerting for content issues with NTSEOD report (May 06)
  - ◆ To ensure all sites are included within the report
- ◆ Provide better management information (Jun 06)
  - ◆ Provide detailed reporting of publication times

# Resilience Project : no longer required

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- ◆ Review suitability of Operating system
  - ◆ Currently using NT which is becoming outdated, and have looked at other windows products or UNIX, however it is now not believed that the change will be beneficial given the other changes we are implementing.



# IE3 – current performance issues

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- ◆ Database failures (20/02/06 – present)
  - ◆ We have had 7 failures since 20/2/06
  - ◆ New issues we have not experienced before
  - ◆ Oracle have provided code fixes which have not solved the problem
  - ◆ New diagnostic tool installed to help identify problem - supported by Oracle. Potential software issue identified that is being investigating.
  - ◆ Short downtime may be required < 2hrs initially
- ◆ Application server failure (07/03/06)
  - ◆ New upgraded 'NIC' card fitted 20/3/06
  - ◆ Need to resolve 'D' drive issues
  - ◆ May require 4 hrs total system downtime.
- ◆ NG website failure (08/03/06)
  - ◆ Failure of one server feeding corporate site for a number of hours, customers directed to other server had no issues. No problems with IE3 system

## IE3 – current performance issues (cont..)

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- ◆ Incidents on 13<sup>th</sup> & 14<sup>th</sup> March due to a restriction on the size of ANS warning messages on DSR
  - ◆ Change successfully implemented to resolve

# Daily Summary Report - progress

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- ◆ Changes implemented since Go live (15 November 2005):
  - ◆ Improved format to remove some of the 'white' space
  - ◆ Introduced Printer friendly format
  - ◆ Revised colours and terminology for storage withdrawal and interconnector flow data
  - ◆ Improved graphing colours on demand and storage graphs
  - ◆ Changed basis of within day forecast demand data to NB92 report from SISR03
  - ◆ Clarified and improved definitions pages
  - ◆ Introduced Mod 61 multiday trade information upload
  - ◆ Improved layout of interruption graph (and further improvements to be introduced in May)
  - ◆ Enhanced ANS warning facility (to show longer messages on DSR)

# Monitoring and Support

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- ◆ System now has 24/7 infrastructure and application support
- ◆ Offshore team have been provided with revised scripts to follow to allow them to monitor appropriateness of content
- ◆ O&T have implemented our own monitoring routine during office hours
- ◆ Lack of automatic monitoring (to be improved during resilience project) means that problems do take a finite time to be identified
- ◆ Contingency arrangements exist to allow reports to be published under most failure modes, however
  - ◆ Once a problem is found it will take a finite time to put the contingency into action
  - ◆ There are potential failures, such as the loss of a core system, eg GEMINI, that will render information unavailable

# The Future

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- ◆ What is required for winter 2006/7
  - ◆ Add timestamp to graphs on DSR
  - ◆ GBA trigger level to be shown on DSR
  - ◆ Extra characters on Notes field
  - ◆ Consistency/clarification of demand data
    - ◆ Currently forecast demands published on IE3 are the latest approved forecasts on the hour (HH:00) and may be different to Gemini if forecast is approved in iGMS after this time
    - ◆ Actual demands published in different reports are different due to:
      - ◆ Reports containing differing demand calculations (incl/excl Linepack, shrinkage etc)
      - ◆ Physical (metered) demand Vs commercial demand at Storage & Bacton Interconnector
      - ◆ Timing differences
  - ◆ Amend DSR Interruption graph into 2 separate graphs for NTS & LDZ Interruption
  - ◆ Review the potential for text messaging facility for important Notes on DSR

# The Future (cont..)

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- ◆ What information will the industry require as the market develops
- ◆ What is the quality of information delivery required by the market
- ◆ What are the system requirements to deliver the above
- ◆ Modification 006 (Oct 06)

# UNC Mod 006

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# Background

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- ◆ Delivers near real time sub-terminal flow information, in mcm/day
- ◆ Data at 2 minute resolution, delivered to the internet every 12 minutes
- ◆ All sub-terminals with > 10mcm/day capacity
- ◆ Aggregated data for terminals and national supply
- ◆ Includes Interconnector and storage sites
- ◆ Commences October 2006



# System Design

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- ◆ To be delivered using a new purpose built system
- ◆ Accessed in the normal way from the NG website
- ◆ Data to be viewed or downloaded from the website
- ◆ or via an Application Programming Interface (API)
- ◆ Website will contain 3 screens which present the data in a variety of ways to maximise flexibility for users

# Data

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- ◆ Data will be provided directly from the iGMS
- ◆ Always 'quality' issues with real time data
- ◆ Use philosophy that the market will see what the control room sees
- ◆ Data quality indicators will be provided
  - ◆ Amended, late, expired etc
- ◆ Download data file will give indicators of data quality
- ◆ Data stored for upto 2 years
- ◆ Data available in original and amended form

# Screens

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- ◆ Page 1 – provides latest data
  - ◆ Latest 12 minute data in tabular and graphical form
- ◆ Page 2 – provides latest data in graphical context
  - ◆ Up to last 24hrs data in graphical form by terminal / type
- ◆ Page 3 – provides flexible data download facility
  - ◆ Allows user definition of download data
  - ◆ Up to 2 years of data will be available
  - ◆ May need to restrict amount downloaded at any one time
  - ◆ Any combination of sub – terminals can be viewed or downloaded

# Example of screen 1

**Instantaneous Flows Report**

[Print-friendly version](#)

Latest available notes

- timestamped and retained for 2 years

**Instantaneous Flows into the NTS**

**Current Gas Day : Monday, 30-Jan-06**

Notes for Today

[Click here for Notes](#)

Tables of latest data

**Flows into the NTS**

Zone Supply

Terminal Supply

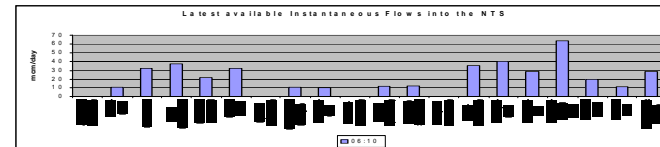
Total Supply

Definitions of data etc

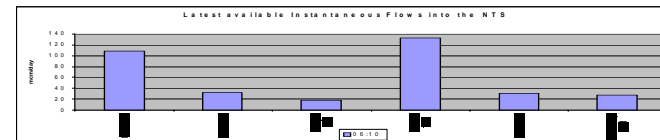
[Entry Zone Graphs](#)

[User defined download](#)

System Entry Name	Instantaneous Flows (m cm/day)					
	06:00	06:02	06:04	06:06	06:08	06:10
Avonmouth - System Entry	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Bacon - Phillips	9.98755	10.01123	10.11491	10.24528	10.42872	10.61217
Bacon - Shell	30.47347	30.60110	31.82730	32.00558	32.18002	32.34446
Bacon Interconnector	36.51360	36.59040	36.66720	36.74400	36.82080	37.05372
Bacon Seal Subterminal	21.60274	21.65794	21.71314	21.76834	21.82354	21.90850
Barrow - BGE&P	29.85459	31.05459	31.05459	31.05459	31.05459	32.03060
Dynevor - System Entry	0.00000	0.00000	0.00000	0.00000	0.00000	0.00456
Easington - BP Dimlington	10.25160	10.27560	10.29960	10.39560	10.41960	10.44360
Easington - Other	9.85470	10.00015	10.52660	10.20280	10.00578	9.99753
Glenmavis - System Entry	0.10563	0.10563	0.10563	0.11043	0.11043	0.12243
Homesa - System Entry	11.95620	11.95482	11.92890	11.86542	11.48439	11.94654
Isle of Grain Sub Terminal	12.50343	12.50703	12.50943	12.51183	12.51195	12.51207
Partington - System Entry	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Rough - System Entry	35.40821	35.40821	35.40905	35.40989	35.41073	35.39873
ST Fergus - Mobil	38.83370	38.83370	38.31901	38.35438	39.81527	40.01018
ST Fergus - Shell	24.92600	25.70313	26.55176	27.32663	28.13838	28.58776
ST Fergus - Total Oil Marine	61.09500	61.44000	61.62720	62.43000	63.08348	63.66097
Teesside - Amoco	18.24000	18.48000	18.96000	18.20000	18.56000	18.77250
Teesside - Enron	11.25863	11.47463	11.59943	10.67943	10.84343	10.84563
Theddlethorpe - Conoco	27.99000	28.20600	28.33080	28.25880	28.18360	28.22040



Terminal Totals	Instantaneous Flows (m cm/day)					
	06:00	06:02	06:04	06:06	06:08	06:10
Bacon Total	104.69221	105.07667	106.60211	107.05600	107.61648	108.14325
Barrow Total	29.85459	31.05459	31.05459	31.05459	31.05459	32.03060
Easington Total	18.43040	18.57440	18.77120	18.77120	18.73530	18.73280
ST Fergus Total	124.67470	126.03683	127.49797	129.11101	131.03714	132.25890
Teesside Total	29.49863	29.95463	30.55943	30.07943	30.40343	30.61833
Theddlethorpe Total	27.99000	28.20600	28.33080	28.25880	28.18360	28.22040



Total System Supply	Instantaneous Flows (m cm/day)					
	06:00	06:02	06:04	06:06	06:08	06:10
Total System Supply	390.32463	394.43482	398.40624	399.93401	402.60078	405.54569
Total System Supply (all zones)	390.32463	394.43482	398.40624	399.93401	402.60078	405.54569

Definitions

[Click here](#) to download data

# Example of screen 2

[Print-friendly version](#)

Entry Zone Graphs

Current Gas Day : Monday, 30-Jan-06

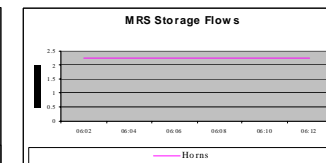
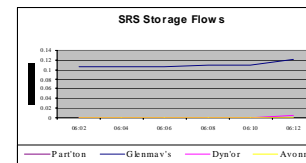
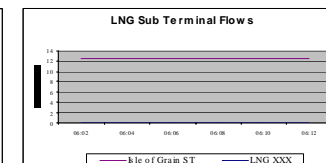
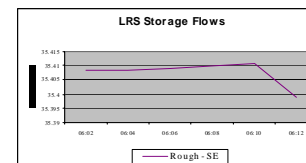
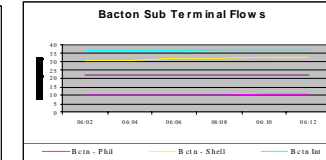
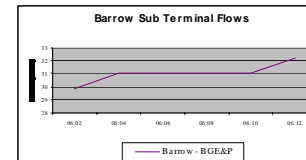
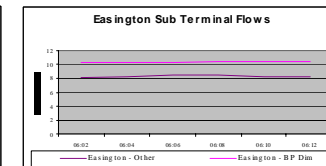
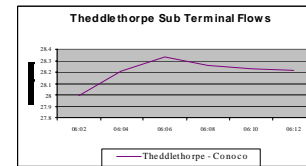
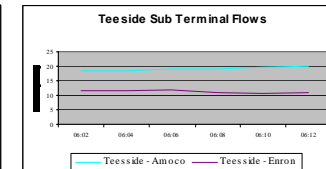
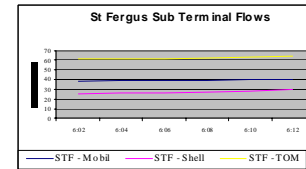
Selectable period

Flows by Entry Zone  
(mcm/day)

Select time period

Last Update	X
Last Hour	
Last 24 hrs	

Graphs reflect selection



[User defined download](#)

[Return to main Instantaneous Flows Page](#)

Definitions

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# Example of screen 3

User Defined Download

Current Gas Day : Monday, 30-Jan-06

Select time period

Last Update	
Last Hour	
Last 24 hrs	

Or user defined time period

From	06:00	30/01/06
To	06:10	30/01/06

Latest Available  X  
Originally published

User to select required Terminal or Individual entry zones

Select Zone	System Entry Name
	Avonmouth - System Entry
	Bacton - Phillips
	Bacton - Shell
	Bacton Interconnector
	Bacton Seal Subterminal
	Barrow - BGE&P
	Dynevor - System Entry
X	Easington - BP Dimlington
X	Easington - Other
	Glenmavis - System Entry
	Homsea - System Entry
	Isle of Grain Sub Terminal
	Partington - System Entry
	Rough - System Entry
X	ST Fergus - Mobil
X	ST Fergus - Shell
X	ST Fergus - Total Oil Marine
	Teeside - Amoco
	Teeside - Enron
	Theddlethorpe - Conoco
	All Zones
	Bacton Terminal
	Barrow Terminal
X	Easington Terminal
X	St Fergus Terminal
	Teeside Terminal
	Theddlethorpe Terminal
	All Terminals

Selectable period

Original or latest data

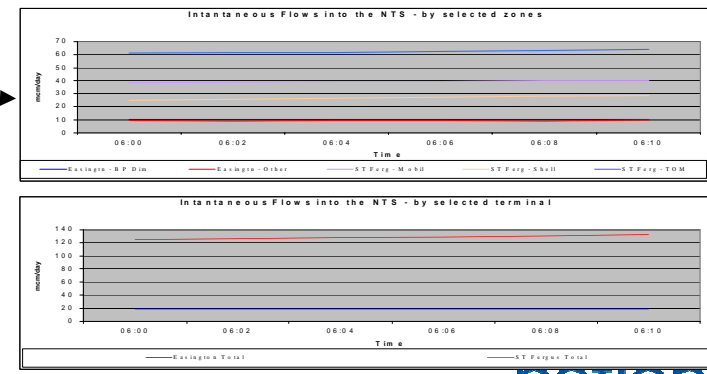
Selectable data

Graphs reflect selections

Click [here](#) to update graphs

Click [here](#) to download

[Entry Zone Graphs](#)  
[Return to main Instantaneous Flows Page](#)



Definitions



# Downloads

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- ◆ Downloads available from pages 1 and 3
- ◆ Page 1 gives latest data
- ◆ Page 3 gives the data requested by the user
  
- ◆ Regular users can get data via an API from a separate URL

# Information Strategy

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# High Level Work Breakdown

