GL Noble Denton

Allocation of Unidentified Gas Expert

9th March 2011

Outline

- Introduction from the chair
- Introductions
- GL Noble Denton overview
  - High level plan
  - Consultations/presenting to industry
  - Allocation of Unidentified Gas
    - Understanding of the problem
    - Proposed methodology
  - Summary / Q&A
- AOB

Who is GL?

GL is a world class technical assurance and consulting company and leading ship classification society.

Three business areas:

- Maritime Services
- Renewables – GL Garrad Hassan
- Oil And Gas – GL Noble Denton

GL Noble Denton - Our heritage

Originally formed as the Research and Development Group of British Gas

With the re-structuring of British Gas our name changed to BG Technology and acquired Transco Engineering Services & Transco Technical Training in 1997

In 2001 we acquired Risx and Stoner Associates Inc. and became Advantica

In 2007 Advantica was acquired by Germanischer Lloyd

GL Noble Denton has become a leading global advisor to the Oil & Gas industry

Oil & Gas assets


MOPU


MODU

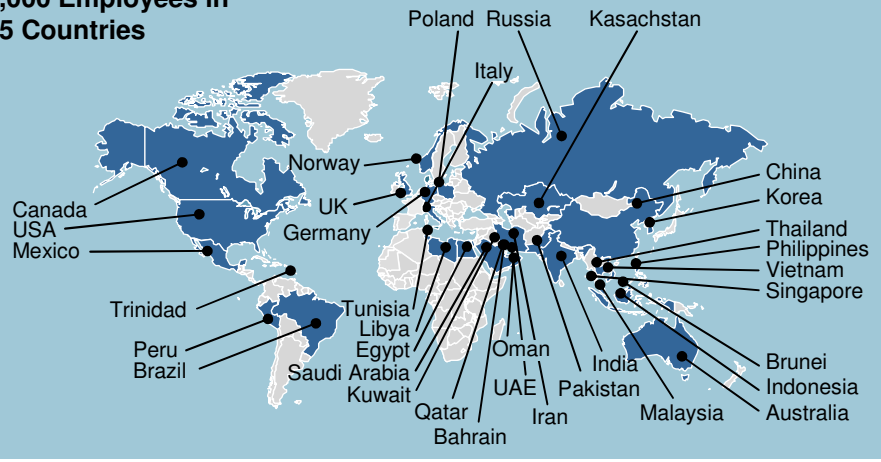

Offshore Structures


Pipelines


Onshore Facilities


Subsea Installations

3,000 Employees in 35 Countries



GL Noble Denton comprises experts from:

GL OPERATING 24/7 · ADVANTICA A GL company · MCS A GL company · TRIDENT CONSULTANTS A GL company · PV INSPECTION A GL company · irs · NOBLE DENTON

Competencies along the whole asset life cycle

Technical Assurance
- Verification, Certification and Classification
- Industrial Inspection

Advanced Engineering & Consulting
- Adv. Analysis & Eng. Consulting
- Field Development Planning
- Testing Services
- Asset Integrity Mgmt / Optimization
- Safety & Risk
- Software Solutions

Marine Consulting & Operations
- Marine Warranty
- Marine Consulting, Vetting & Surveys, Marine Operations
- Marine Casualty Investigation
- Dynamic Positioning

Project Execution
- Project Management
- Design
- Transportation & Installation
- Due Diligence
- Construction Monitoring

Conflicts of Interest

- GL Noble Denton is independent of all UK industry bodies
- GL Noble Denton have not previously been involved with this particular unidentified gas problem
- One of our core values is to be “the most respected international technical advisor and trusted partner” for all our clients
- Our objectives are simple – to devise a methodology that is unbiased, meets the requirements of the industry bodies and is approved by the UNCC

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Overview of Project Plan

High Level Plan

Key Dates	Brief description	Data	Analysis
2nd March	Kick off meeting with Xoserve		
9th March	Industry Workshop	Provision of Data	Analysis and Development of Methdology
3rd May	1st Draft AUGS published		
9th May	UNCC Meeting GL Noble Denton present AUGS		
3rd May-15th June	1st Consultation Period		
4th July	UNCC Meeting GL Noble Denton to present AUGS		
31st July	2nd Draft AUGS published		
1st August-31st August	2nd Consultation Period		
5th September	UNCC Meeting GL Noble Denton to present AUGS		Apply Methodology
30th September	Final version of AUGS published		
25th October	AUGS table published		
October 2011->February 2012	Query Process		

Presenting to the industry

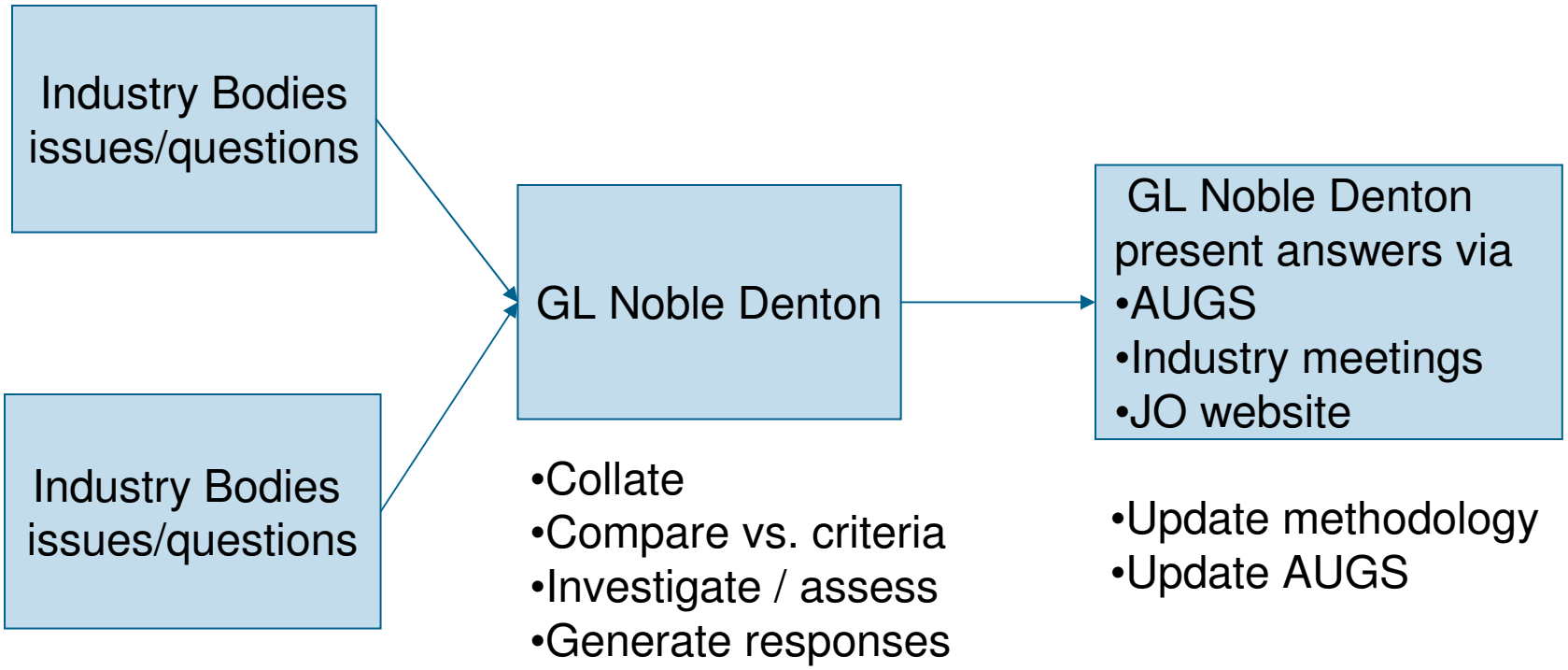
The AUGS will cover

- Adherence to AUGE Guidelines terms of reference
- Proposed topics for unidentified gas and their status
- Data provision status/issues
- AUGE Methodology
  - Reasoning
  - Assumptions
  - Data Used
  - Issues/recommendations going forward
  - For incomplete aspects of the Methodology (e.g. pending data) the AUGS will contain details of the remaining steps to complete it
- Consultation questions and responses as appropriate

Reporting Progress

- Primarily through the main UNCC presentations and publications of AUGS
- There will also be visibility of activities from data requests and responses to consultation questions
- In addition, brief progress reports will be provided via JO website

Consultations



Questions/issues can be raised via **AUGE@gl-group.com**

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Unidentified Gas – The Problem

21st December 2010

Unidentified Gas – Understanding of the Problem

The AUGE

- Robust and repeatable algorithm
- Estimates of Unidentified Gas that are
  - Accurate
  - Unbiased

- Unidentified Gas estimation is the core of the consultation/publication process

Unidentified Gas – Statement of the Problem

UK gas market sectors

- Daily Metered (DM)
- Non-Daily Metered Larger Supply Points (NDM LSP)
- Smaller Supply Points (SSP)

- Threshold between SSP and LSP is 73,200kWh pa

Unidentified Gas – Statement of the Problem

Additional factors:

- LDZ Shrinkage
  - Leakage
  - Own Use Gas
  - Transporter-Responsible Theft
- Unidentified Gas
- Both unknown, both have to be estimated

Unidentified Gas – Statement of the Problem

Unidentified Gas

- Unregistered and Shipperless sites
- Independent Gas Transporter (CSEP) errors
- Corrections to the shrinkage estimate
- Shipper-responsible theft

- Potential additional sources of Unidentified Gas
  - LDZ offtake meter errors
  - Supply point meter errors
  - These only apply if there is a long-term metering bias

Unidentified Gas – Statement of the Problem

Calculation of Unidentified Gas

- Understand process flow
  - Location of UG at each stage of the calculation
- Calculate UG at optimal process stage
  - Directly
  - By subtraction
- Time frame covered by individual UG calculations
  - Daily (aggregate results to annual level for UNC table)
  - Monthly (aggregate results to annual level for UNC table)
  - Annual

Unidentified Gas – Statement of the Problem

Previous UNC Modification Proposals

- 194/194A
  - Gave framework for quantifying Unidentified Gas
  - Relied on set percentages of RbD or set values
- 228/228A
  - Populated framework with set percentages (228) or set values (228A)
  - No provision for year-on-year updates at this stage
- Potential areas for improvement
  - Both carry assumption that all or most of RbD is Unidentified Gas
  - Recognition of allocation algorithm error

Unidentified Gas – Statement of the Problem

- The AUGE is independent and impartial
- Modification 229 allows UG estimates to be updated every year
  - No UNC amendments required
- Estimates from the AUGE circulated and agreed prior to implementation

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Unidentified Gas – The Solution

Unidentified Gas – The Solution

Daily Allocation Process

- Based on End User Categories
- Trained on metered data
  - Minimum 3900 Small NDM, 1600 Large NDM supply points
  - 2010 analysis actually used a total of 12715 supply points
- Estimates raw (metered demand) – i.e. no Unidentified Gas
- Scaled up to meet LDZ load (minus Shrinkage and DM load)
- Scaling process introduces Unidentified Gas
  - Value unknown
  - Split between EUCs by AQ

Unidentified Gas – The Solution

Composition of allocation estimate

- Actual EUC load
- Model error (can be positive or negative)
- Unidentified Gas (always positive)

- Each EUC total known, but composition unknown

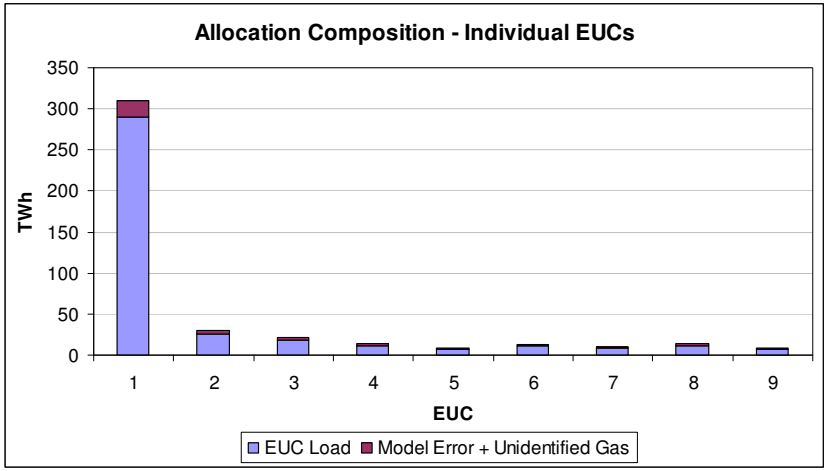
Unidentified Gas – The Solution

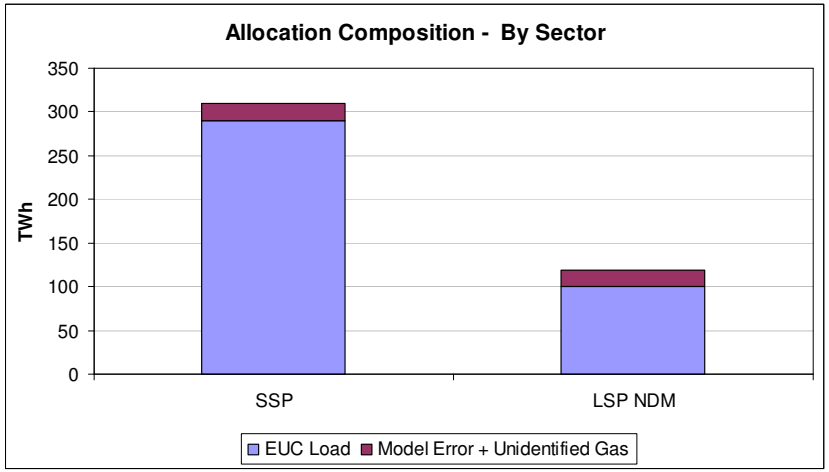
Final calculation steps

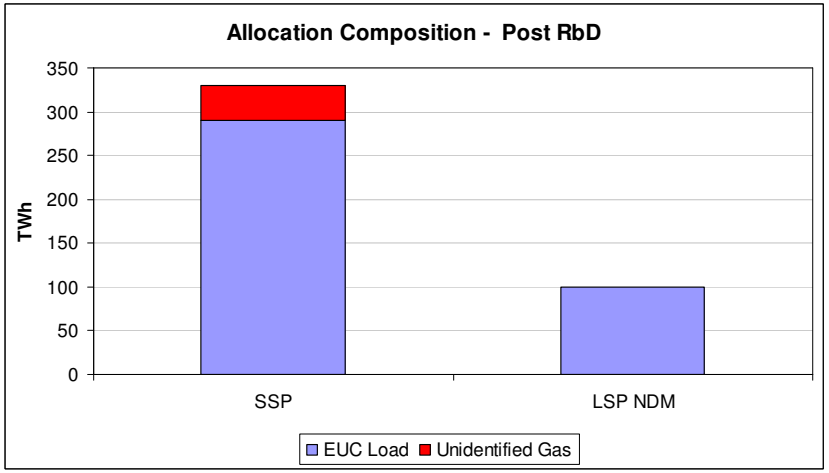
- Aggregate to SSP and NDM LSP level
  - SSP corresponds to one EUC
  - NDM LSP is the sum of the remaining EUCs
  - This is the basis for initial (deemed) load allocation

- Actual NDM LSP monthly meter reads become available
- Apply Reconciliation by Difference
  - NDM LSP load now accurate
  - Model error eliminated
  - SSP allocation is now actual SSP load plus Unidentified Gas
  - SSP/UG split unknown

Unidentified Gas – The Solution







Unidentified Gas – The Solution

Unidentified Gas Estimation

- Location known, UG accumulated into one figure
- Estimate should now be made
- Recommended approach – calculate each component directly
- Calculation granularity is part of analysis

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Unidentified Gas – Individual Elements

Unidentified Gas – Data Requirements

- Site AQs (for all DM, LSP and SSP sites)
- Actual daily loads (DM sites)
- Profiled daily loads (from meter reads for LSP NDM sites)
- Deemed daily loads (LSP NDM and SSP sites)
- RbD quantities
- LDZ Shrinkage (calculated)

Plus data for

- Unregistered sites
- IGT errors
- LDZ shrinkage initial and final estimates
- Theft

Unidentified Gas – Unregistered/Shipperless Sites

- Shipperless Sites
  - Closing meter reading taken when site is unregistered
  - Opening meter reading taken when site is registered
  - If they differ, Shipperless gas has been taken
  - This gets assigned to SSP sector via RbD

- Unregistered Sites
  - Opening meter reading taken when site is registered
  - If this is not zero, Unregistered gas has been taken

- Potential impact of Mod 369

- Data available on UK Link

Unidentified Gas – IGT Errors

- Similar issues to Unregistered/Shipperless Sites
- Areas supplied by IGTs
- Less clear until data and background has been examined

- Data available on UK Link

Unidentified Gas – Shrinkage Error

- Difference between initial estimate and final estimate of shrinkage
- Can be positive or negative
- Affects SSP load only
- If estimates are unbiased they will even out over time

- Is this Unidentified Gas?
- Alternatively, could include via potential amendment to RbD calculation

Unidentified Gas – Shipper-Responsible Theft

- Data available for
  - Detected theft
  - Alleged theft
- LDZ Shrinkage calculation contains
  - Overall theft level (historically 0.3% of throughput)
  - Split between Transporter and Shipper
  - Shipper element is part of Unidentified Gas
- More data?

Unidentified Gas – Meter Error

Metering takes place

- At LDZ offtakes
- At Supply Meter Points
  - DMs – daily
  - NDM LSP – monthly
  - SSP – less frequently

- Meter errors only have an impact over time if they carry a long term aggregate bias
- Potential effects can be positive or negative
- May sit better in RbD calculation if it is required

Summary – Q/A

- Any other areas of UG to consider?
- Clarifications/Questions?
- Can raise further questions/issues post meeting via **AUGE@gl-group.com**

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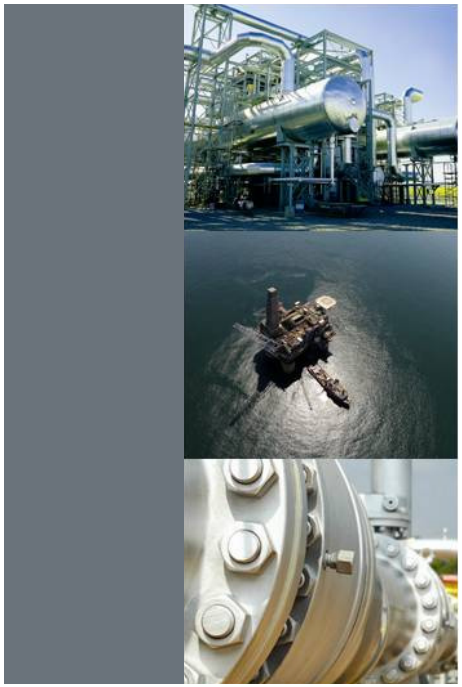

Thank you for your attention