

VALLIS COMMODITIES LIMITED

PHOTOGRAPHIC REPORT

COAL SAMPLING IN DJIBOUTI

1. INTRODUCTION

- 1.1 Vallis has recently conducted its first coal sampling on a vessel in Djibouti. The scope of services offered was: initial and final draft surveys and representative sampling. The coal was destined for the Ethiopian industrial energy market as an alternative to fuel oil.
- 1.2 90% of all Ethiopian imports flow through the Port of Djibouti and the volume is set to increase as the Ethiopian economy continues to expand.
- 1.3 Vallis provided its services on a vessel of 50,000 tonnes. The origin of the coal was Richards Bay, South Africa. Operations ran on a 24-hour basis and sampling operations were conducted by Vallis staff. Vallis ensured individual samples were taken from each hold and precise quantities were collected. Samples were stored safely until completion of the discharge, where they were then combined and re-divided down into composite samples to be sent to labs in Europe for analysis.
- 1.4 The decision to increase importation of coal was taken by the Ethiopian Petroleum Enterprise in 2011 when oil prices were at an all-time high. Between 2011 and 2015, the Ethiopian economy required 694 million tonnes of coal to meet the demand from cement factories, which are driving the infrastructure growth in Ethiopia. South African steam coal was favoured by Ethiopian cement producers because of its high calorific value.
- 1.5 The price of coal per tonne dropped steadily over the last five years. However, China's switch from domestic production to imported coal, coupled with a collapse in the Indian coal industry has helped coal prices soar. In December 2016, South African coal was trading at \$82 per tonne. This is unlikely to affect imports into Ethiopia. Coal is still viewed as the cheapest long-term energy source for Ethiopia and all 12 cement factories are able to burn coal to fuel cement output.

2. DRAFT SURVEY AND COAL SAMPLING

- 2.1 This photographic report describes the processes of the initial and final draft surveys and the coal sampling. The purpose of the photo report is to show the services Vallis can perform on the sampling of vessels and the standards required.
- 2.2 Arrival of Vessel and Initial Draft Survey (Photos 1 to 14).
 - 2.2.1 The berthing of the vessel into the Port of Djibouti.
 - 2.2.2 Measurements for the draft survey were taken from the forward, middle and aft of the vessel by Vallis, other parties and importers' surveyors supported by the Chief First Officer.
 - 2.2.3 Calculation of draft survey figures with the Chief First Officer to determine the quantity of cargo on board matches the Bill of Lading.

2.3 Inspection and Sampling of Coal (Photos 15 to 34).

- 2.3.1 The cargo from the vessel arrived in apparent good condition. The consistency of the pieces was mixed, ranging from large pieces (diameter 3cm) to ash particles. There were no visual signs of contamination within the cargo hold.
- 2.3.2 The discharging process involved cargo being lifted from the holds using the ship's grabs. From here, cargo was dropped from a height of around 4 meters onto the quay.
- 2.3.3 The cargo on the quay was manoeuvred by front-end loaders into piles.
- 2.3.4 The coal was then loaded onto trucks on the quay, some for direct delivery to Ethiopia and the rest into tipper trucks for storage in a location outside the port.
- 2.3.5 Vallis staff tallied grabs from each hold onto the quay to ensure samples were taken systematically. Samples were taken from every 12th grab.
- 2.3.6 Vallis staff collected separate samples from all 5 holds. Samples were sealed and labelled.
- 2.3.7 All samples were collected at the end of each shift change and stored in the Vallis office until completion of the vessel discharge.
- 2.3.8 There was some breaking down of the size of the pieces of coal observed during the discharge operation at each stage of the handling process; notably in dropping the cargo onto the quay, in manoeuvring the cargo into piles, and in placing the cargo into the trucks. Cargo was also crushed due to a mechanical loader being placed into the holds.

2.4 Composite Samples (Photos 35 to 39).

- 2.4.1 Individual samples from each hold were combined to give 2 sets of composite samples for each hold. Each composite sample weighed approximately 7kg.
- 2.4.2 The five separate samples from each hold were bagged, sealed and labelled.
- 2.4.3 One set of composite samples was packaged and couriered to Europe for analysis.
- 2.4.4 The second set of composite samples has been retained in the Vallis office in Djibouti.

2.5 Final Draft Survey Photos (Photo 40).

- 2.5.1 Measurements for the final draft survey were conducted around the vessel between Vallis, other parties and the Chief First Officer of the ship.
- 2.5.2 The final draft survey figures were agreed on by all parties and signed off.

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1. The vessel berthing at the coal terminal in the Port of Djibouti.



2. A view of the bow of the vessel.



3. Vessel crew bringing the gangway down after berthing.



4. Vallis Port Manager taking the aft-starboard side measurements.



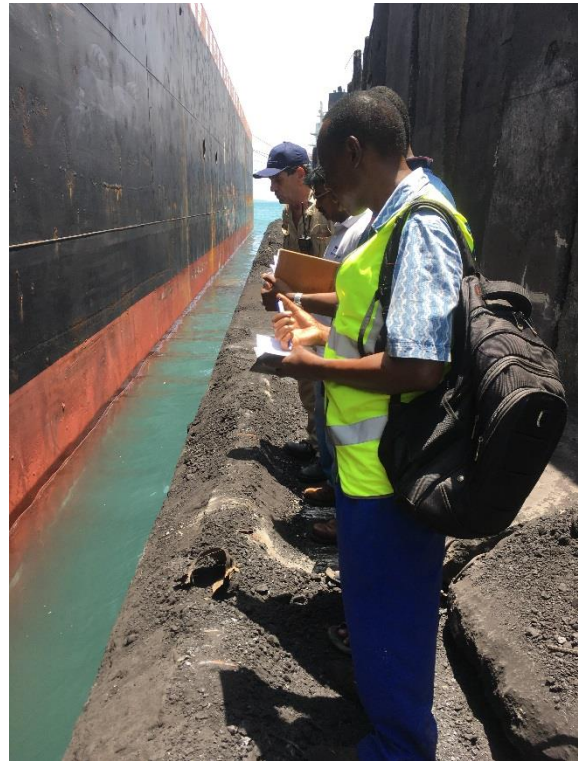
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6. Vallis Port Manager, other parties and importers surveyors with the Chief First Officer confirming measurements on the front-starboard side.



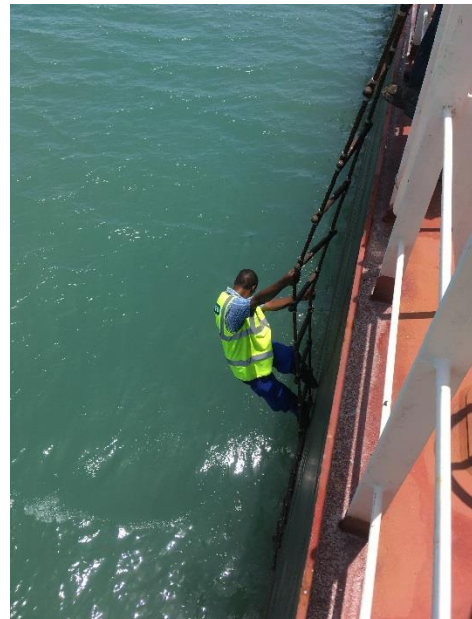
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9. Front-port side measurements being taken.



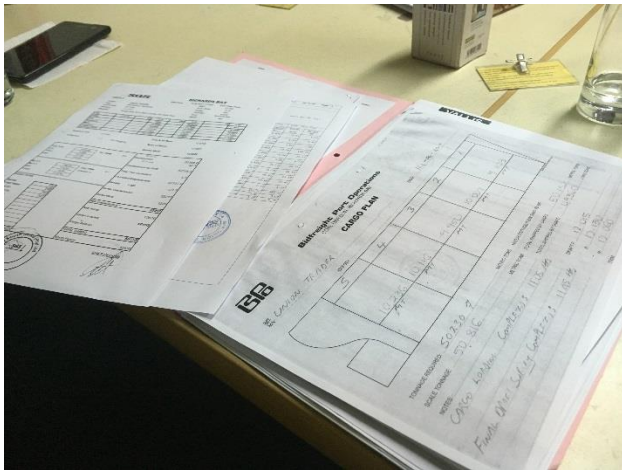
10. Middle-port side measurements being taken.



11. Initial Draft Survey figures being calculated.



12. Vallis and Chief First Officer comparing draft survey figures.



13. Cargo plan documents from Port of Loading.

DRAFT SURVEY

VESSEL : [REDACTED] DATE: 28.04.2017
 BERTH No : 12 VOYAGE :
 PORT : DJIBOUTI OUR REF :
 PRODUCT : COAL IN BULK OBSERVED DENSITY: 1.023

| LDM | 169.3 | Df | 3.9 | Dm | Da | 10.1 |
|-------------------------------|-------|-----------------------|---------------|------------------------------------|---------|------------------|
| DRAFTS | | FORWARD | | MIDSHIP | | AFT |
| PORT | (M) | 12.1 | | 12.05 | | 12.04 |
| STARBOARD | (M) | 12.07 | | 12.02 | | 12.02 |
| MEAN | (M) | 12.085 | | 12.035 | | 12.03 |
| CORRECTION | (M) | -0.001 | | 0.000 | | -0.003 |
| CORR DRAFT | (M) | 12.086 | | 12.035 | | 12.027 |
| Draft Fore | : | 12.086 | Apparent Trim | : | -0.055 | |
| Draft Aft | : | 12.027 | Actual Trim | : | -0.060 | |
| F+ A Mean | : | 12.056 | Mean of Mean | : | 12.046 | |
| Hog/Sag | : | | Quarter Mean | : | 12.0404 | |
| FIRST TRIM CORRECTION | | 100XTrim x LCF x TPC | | Displacement | | 62199.88 |
| LBP | : | | | 0.000 | | |
| Trim | : | -0.060 M | | Disp for draft | | 62199.680 |
| LCF | : | -2.582608 M | | Total trim corr | | 4.797 |
| TPC | : | 57 M | | Corrected Disp | | 62204.677 |
| LBP | : | 183.3 M | | Density corr | | 1.025 121.375 |
| **** | : | 4.782 M | | Gross Disp | | 62083.302 |
| SECOND TRIM CORRECTION | | 50X TRIM2 X DIFF(MTC) | | Deduction | | 997.8 |
| LBP | : | | | Initial Displacement | | 61085.502 |
| MCT 1 | : | 774.3813 | | Cargo discharged | | : |
| MCT 2 | : | 789.6774 | | Cargo on Board | | : |
| DIFF | : | 15.29616 | | Light Ship | | 10442.7 |
| TRIM2 | : | 0.004 | | Declared Constant | | 140 |
| **** | : | 0.015 | | | | |
| DEDUCTIONS | | | | Remarks : | | |
| Ballast | : | 300 | | Sea Condition : slight swell | | |
| Fresh Water | : | 285 | | | | |
| Fuel oil | : | 307.7 | | | | |
| Diesel Oil | : | 105.1 | | Cargo + constant=50,642.802 M/Tons | | |
| Lube Oil | : | 0 | | | | |
| Other | : | 0 | | | | |
| TOTAL | : | 997.8 | | | | |
| VALLIS INSPECTOR | | | | CHIEF OFFICER/MASTER | | |

14. Initial Draft Survey.



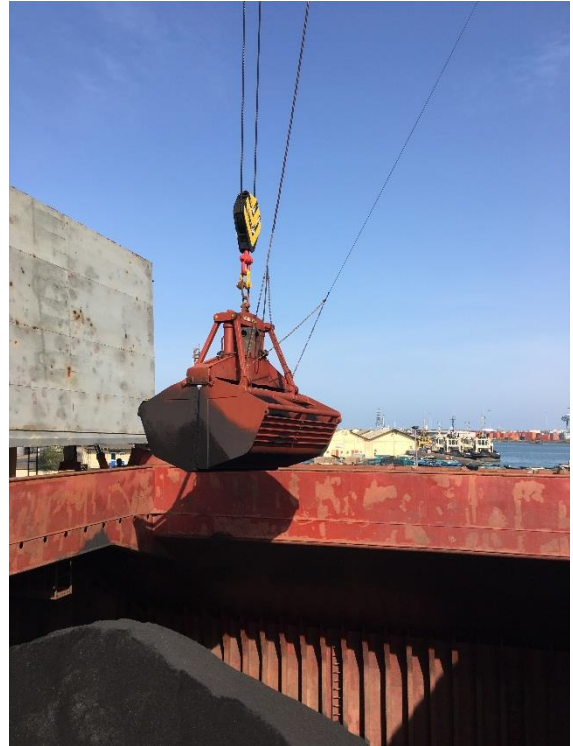
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16. Hold 2 opened for checking product and its quality.



17. Crane grab collecting coal from hold 4.



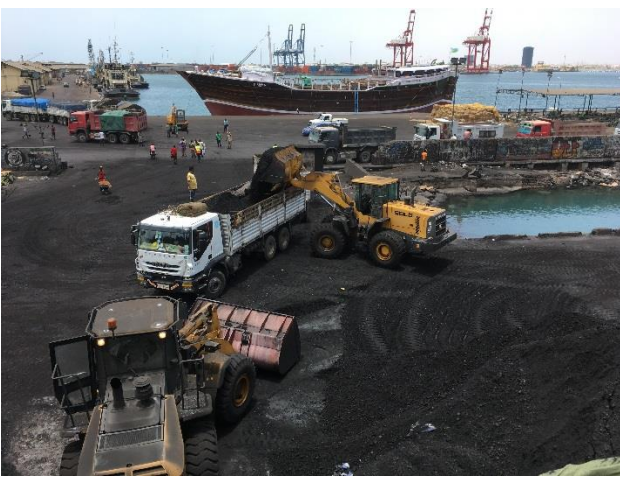
18. Full grab moving coal onto the quay.



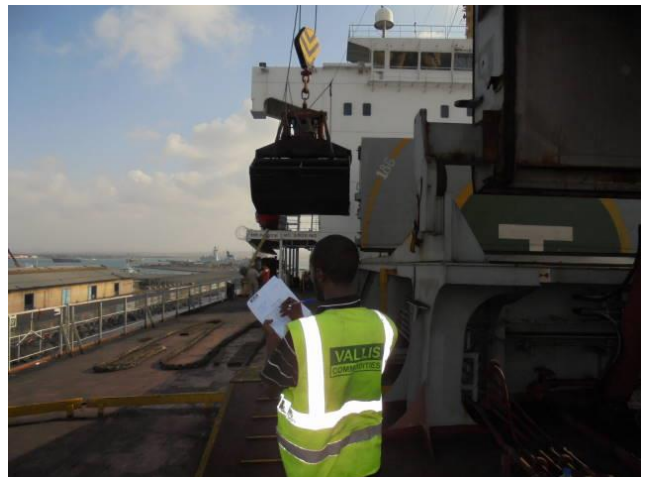
19. Empty crane grab after off-loading coal onto the quay.



20. First pile of coal on the quay from the vessel.



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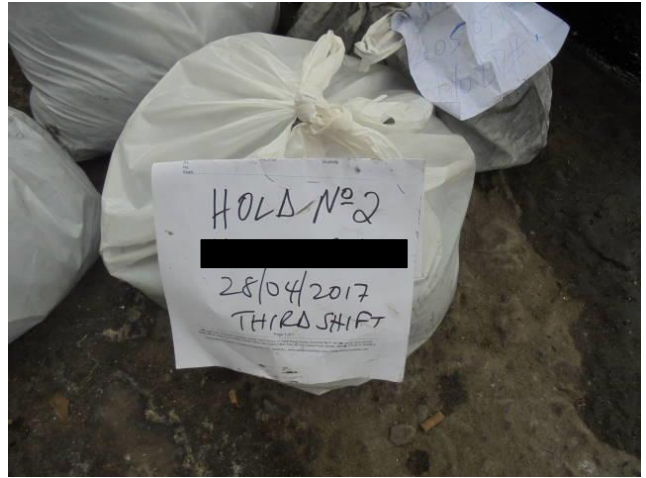
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39. A closer view of the 4 composite samples showing detailed labelling.

| DRAFT SURVEY | | | | |
|--------------------------------|--------------------------|---------------|---|--------------------------------|
| INITIAL | <input type="checkbox"/> | INTERMEDIATE | <input type="checkbox"/> | |
| | | | FINAL <input checked="" type="checkbox"/> | |
| VESSEL | [REDACTED] | | DATE | 09.01.2017 |
| PORT | 12180/11 | VOYAGE NO. | | |
| BERTH NO. | 12 | OUR REF. | | |
| PRODUCT | STEIN OIL | OBSVD DENSITY | 1.023 | |
| LDM (M) | | DF (M) | | Dm (M) |
| DRAFTS | | FORWARD | | MIDSHIP |
| PORT | M | 5.92 | | 5.92 |
| STARBOARD | M | 4.62 | | 5.59 |
| MEAN | M | 4.62 | | 5.47 |
| CORRECTION | M | 0.003 | | 0.012 |
| CORRECTED DRAFT | M | 4.597 | | 5.47 |
| Draft Fore (M) | | 4.597 | | Apparent Trim (M) |
| Draft Aft (M) | | 6.603 | | Actual Trim (M) |
| F+A Mean (M) | | 5.597 | | Mean of Mean (M) |
| HogSag (M) | | | | Quarter Mean (M) |
| FIRST TRIM CORRECTION | | | | Displacement for Draft (MTons) |
| 100 X Trim X LCF X TPC = MTons | | | | 26246.63 |
| LBP | | | | Total Trim correction (MTons) |
| | | | | -250.377 |
| Trim (M) | | 2.041 | | Corrected Displacement (MTons) |
| LCF (M) | | 6.5425 | | 26000.282 |
| TPC (MTCM) | | 51.6 | | Density correction (MTons) |
| LBP (M) | | 182.2 | | 51.688 |
| # | | -325.836 | | Gross Displacement (MTons) |
| | | | | 26051.594 |
| | | | | Inducibles (MTons) |
| | | | | 15045.10 |
| | | | | Net Displacement (MTons) |
| | | | | 10929.68 |
| | | | | Final Displacement (MTons) |
| | | | | 10724.47 |
| | | | | Initial Displacement (MTons) |
| | | | | 6108.02 |
| SECOND TRIM CORRECTION | | | | |
| 50 X Trim X DIF (MCT) = MTons | | | | |
| LBP | | | | |
| MCT 2 (MT) | | 529.1809 | | Cargo on board |
| MCT1 (MT) | | 601.6364 | | 50,155.821 |
| DIF (MT) | | 22.7482 | | Cargo Discharged |
| LBP (M) | | 0.161 | | MTons |
| # | | +25.502 | | Total Cargo disch. |
| | | | | MTons |
| | | | | Cargo difference |
| | | | | MTons |
| | | | | % difference |
| | | | | |
| DEDUCTIBLES | | | | Light Ship |
| BALLAST | | 14828.0 | | 10043.7 |
| FRESH WATER | | 270.0 | | Declared Constant |
| FUEL OIL | | 252.0 | | 149.0 |
| DIESEL OIL | | 105.1 | | Remarks: |
| LUBE OIL | | | | Time: |
| SULFOE | | | | |
| OTHER | | | | |
| TOTAL (MT) | | 15415.1 | | |
| Vallis Surveyor Signature | | | | Vessel's Rep. Signature |

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40. Photo showing the signed final draft survey.