Lampiran 6

Bunker Test Report No. H161154855

FROM :
VISWA LAB

TO :

Customer Name :	Bernhard Schulte Shipmanagement (SGP) 2
ATTN :	TECHNICAL DEPT.
Vessel Name :	BERNHARD SCHULTE (IMO No: 9484546)
VLC Log No :	H161154855 [AMBER]
Place & Date Sent :	FREEPORT - BAHAMAS ; 21-Nov-2016
Date Received at VL :	25-Nov-2016

CUSTOMER FURNISHED DATA :

Bunker Port & Date :	FREEPORT, BAHAMAS-BAHAMAS ; 19-Nov-2016
Bunker Supplier :	SHELL TRADING US COMPANY
Barge :	SMIT INESITA
Sample Grade :	IFO380-RMG380
Sample Seal No :	W124236 - Sealed
Bunker Quantity :	229.980 MT

Bunker Density @156 ╟C :	989.6 kg/m3
Bunker Viscosity @506 ╟C :	306.7 cSt
Sulphur Content :	2.36 %
Water Content :	0.20 %
Source of the sample :	MANIFOLD
Sampling Method :	DRIP

SPECIFIED PARAMETERS FOR IFO380-RMG380 & TEST RESULTS :

Parameters	Units	Test Results	Specification Limits
Density @ 156 ╟C	kg/m3	989.5	(991.0 Max)
viscosity @506 ╟C	cSt	306.5	(380.0 Max)
Upper Pour Point	6 ╟C	6	(30 Max)
Carbon Residue	% (mass)	12.87	(18.00 Max)
Ash	% (mass)	0.044	(0.150 Max)
Water	% (vol)	0.20	(0.50 Max)
Sulphur	%	2.35	(3.50 Max)

	(mass)		
Total Sediment Pot.	% (mass)	0.02	(0.10 Max)
Vanadium	ppm	80	(300 Max)
Al + Si	ppm	31	(80 Max)
Flash Point	б╟C	> 70	(60 Min)
Calcium	ppm	13	(30 Max)
Zinc	ppm	3	(15 Max)
Phosphorus	ppm	< 1	(15 Max)

ADDITIONAL PARAMETERS :

Parameters	Test Results	Units
viscosity @100б╟C	30.6	cSt
API Gravity	11.42	
Sodium	46	ppm
Aluminium	16	ppm
Silicon	15	ppm
Iron	40	ppm
Lead	< 1	ppm
Nickel	26	ppm

Magnesium	4	ppm
Potassium	< 1	ppm

CALCULATED VALUES :

Parameters	Computed Val	Units
Net specific energy	40.37	MJ/kg
Gross specific energy	42.66	MJ/kg
CCAI	852	
Temperature at injection (for 13 cSt)	130	◙C
Minimum Transfer Temperature	40	◙C
Engine Friendliness Number (EFN : 1 to 100)	54	

CONFORMANCE:

The fuel sample tested conforms to Table 2 of ISO 8217:2005 specifications for grade IFO 380 - RMG 380

COMMENTS:

High Iron

High iron content can cause damage to fuel pump and fuel nozzle. Ensure purification and filtration systems are functioning efficiently.

SUGGESTIONS & RECOMMENDATIONS TO SHIP OWNERS/OPERATORS/TECHNICAL STAFF

Temperature for injection viscosity of 8 cst is 152ö╟C.
Temperature for injection viscosity of 10 cst is 142ö╟C.
Temperature for injection viscosity of 11 cst is 137ö╟C.
Temperature for injection viscosity of 12 cst is 134ö╟C.
Temperature for injection viscosity of 13 cst is 130ö╟C.
Temperature for injection viscosity of 15 cst is 124ö╟C.
Temperature for injection viscosity of 18 cst is 118ö╟C.
Temperature for injection viscosity of 20 cst is 114ö╟C.

PERCENTAGE WATER

Observation: Presence of water noted.

Ensure water removal through settling and purification.

POUR POINT

Observation:

Heat and store this fuel at 10ö╟C above the measured pour point temperature.

CCAI

Observation: Ignition delay is indicated by CCAI greater than 840 for medium-speed engines and greater than 870 for low-speed engines.

OVERALL QUALITY:

Engine Friendliness Number (EFN) is a unique bench-mark of fuel quality evaluated by VISWA LAB from the point of view of engine wear and tear resulting from the use of this fuel. Based on EFN, which is calculated from the analysis results listed in this report, the quality of this fuel is above average.

NOTE: The conformance of this fuel to the contracted specifications may have no relationship to the evaluation of this fuel based on EFN.

High Iron : High iron content can cause damage to fuel pump and fuel nozzle. Ensure

purification and filtration systems are functioning efficiently.

Questions?
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###VLS DBqJLtrNgRzYg+CeyzowcWhKYFWwv3THsNe3nNVgg1w= VLS###
Б≈┴Viswa Lab Houston is an ISO/IEC 17025:2005 laboratory for testing accredited by Perry Johnson Laboratory Accreditation Inc, Accreditation # 59212