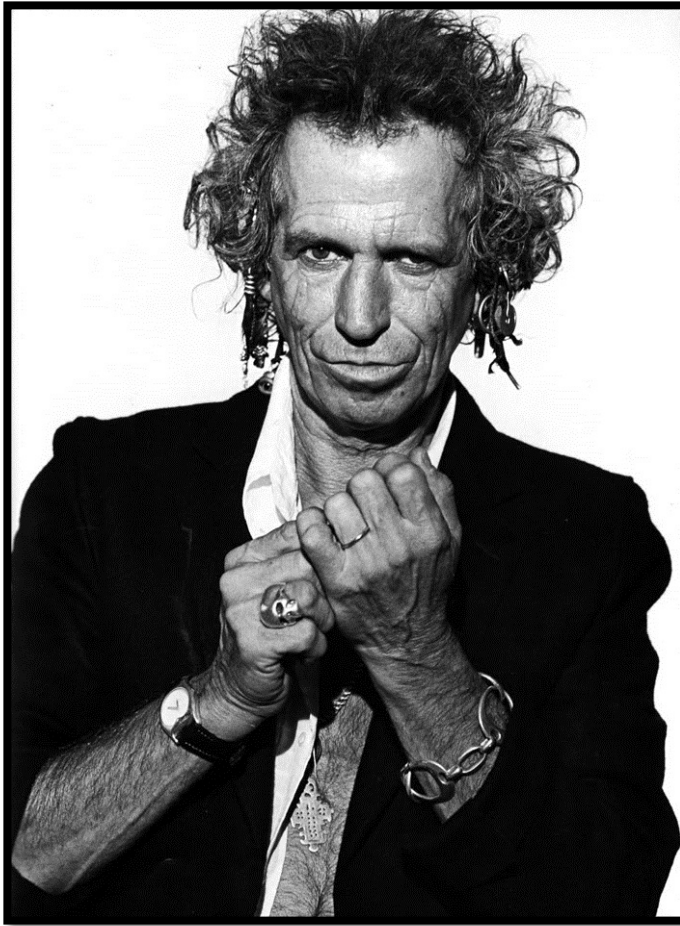
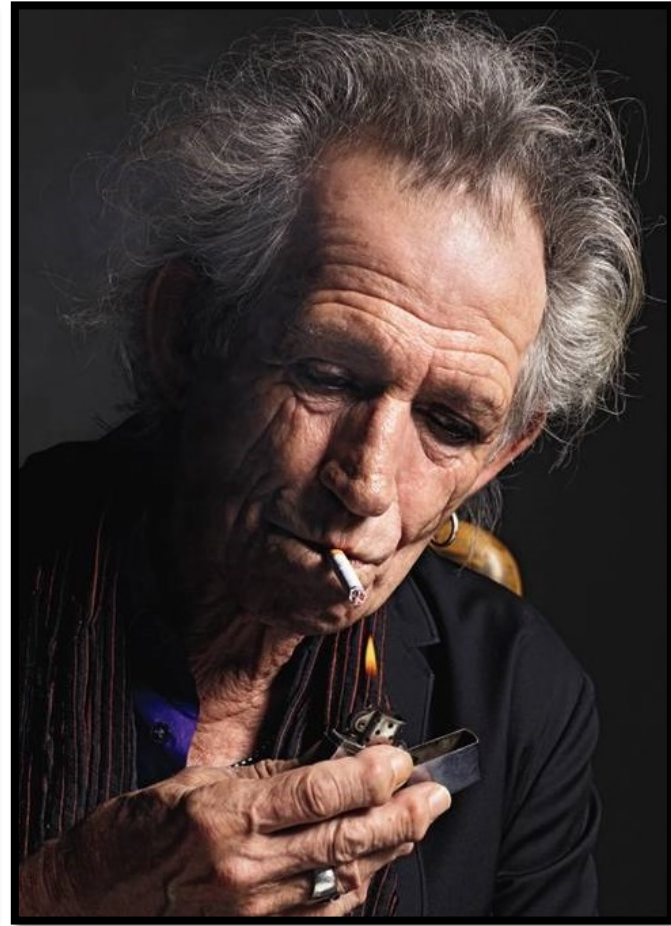


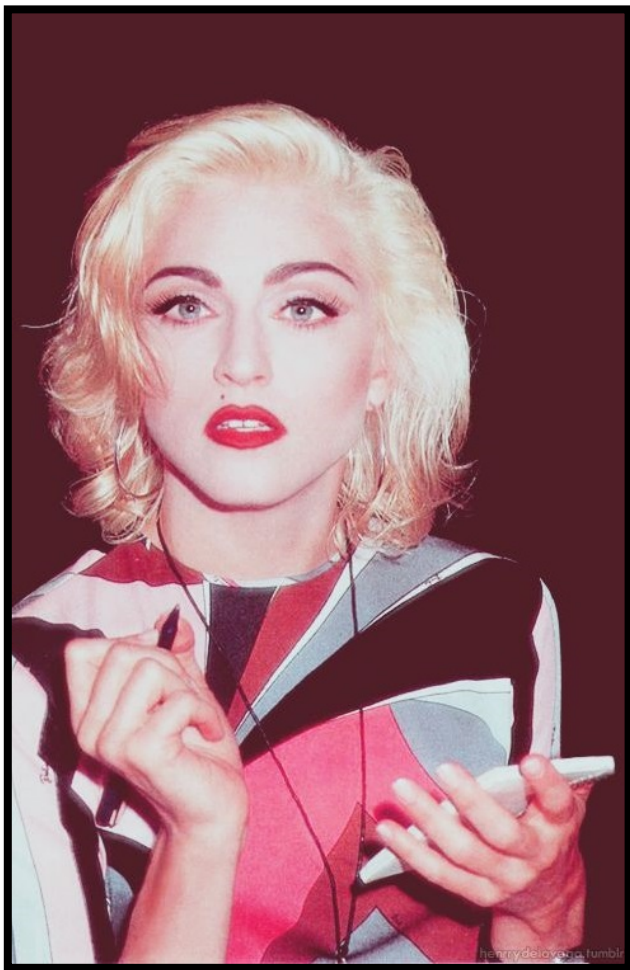


1999



2010

South American River Case Study

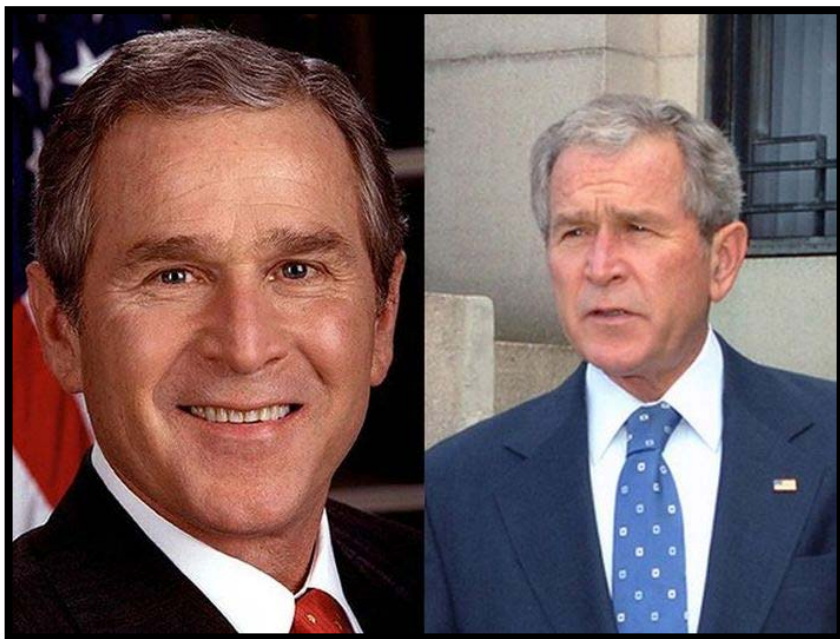


1992



2012

ANTI-AGING



2001

2008



2009

2016

RAPID AGING



HULL CORROSION

THE STARTING POINT

“Usually some hypothesis is a necessary preliminary to the collection of facts, since the selection of facts demands some way of determining relevance. Without something of this kind, the mere multiplicity of facts is baffling.”

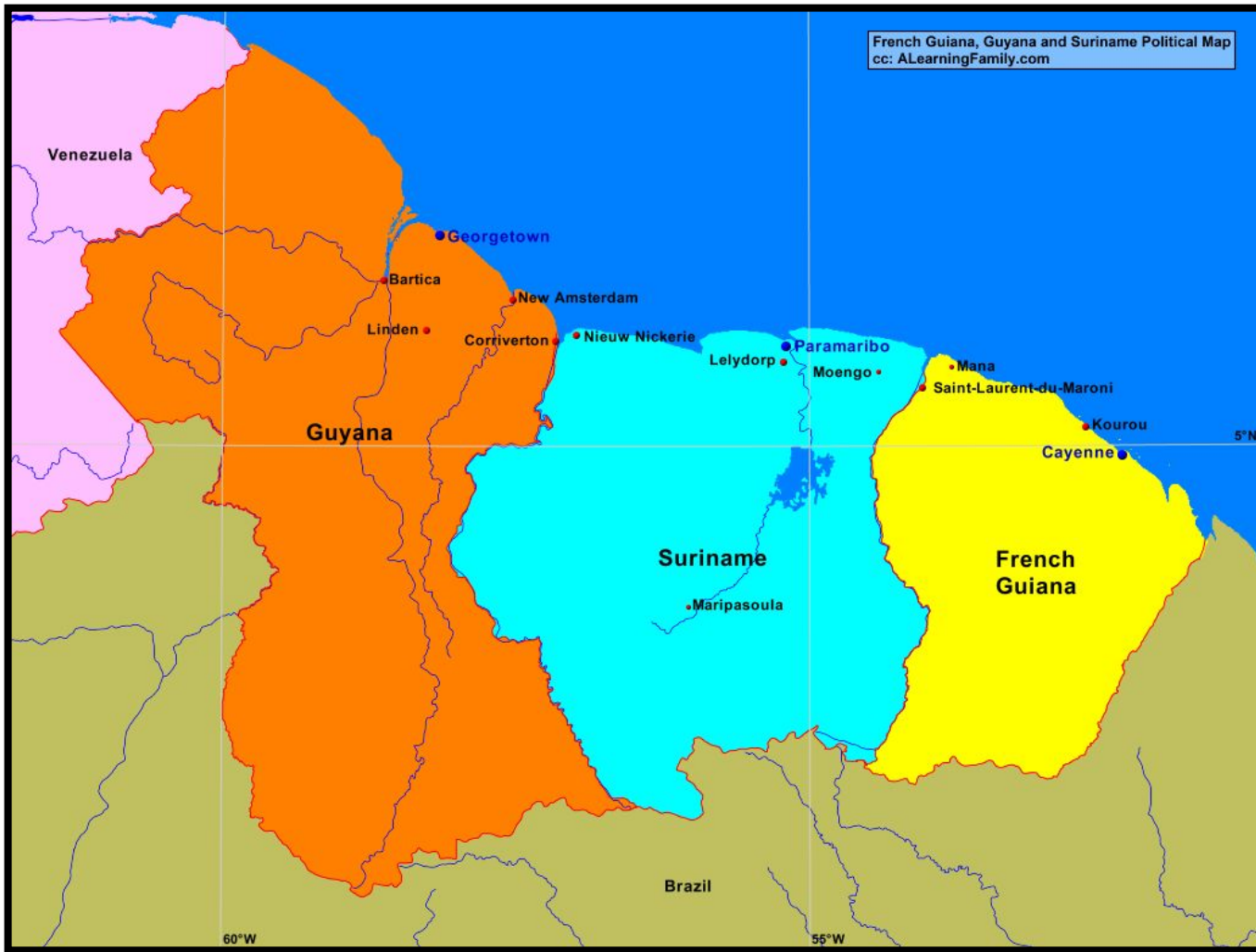
Bertrand Russell

This presentation has been contributed to by published materials, correspondence and direct input from:

Metallurgists Cartographers Hydrographers Geologists Coatings Experts
Sandblasting Experts Corrosion Experts Anti-Corrosion Systems Engineers Depth Gauging
Equipment Manufacturers Side Scan Sonar Technicians Chemists Bathymetric Surveyors
Bottom Sampling Experts Geomatics Engineers Environmental Scientists Geomorphologists
Divers Pilots Port Operators Naval Architects Master Mariners Chief Engineers and
Many more



SOUTH AMERICA



THE GUYANAS



SOUTH AMERICAN RIVER



SOUTH AMERICAN RIVER BEACH

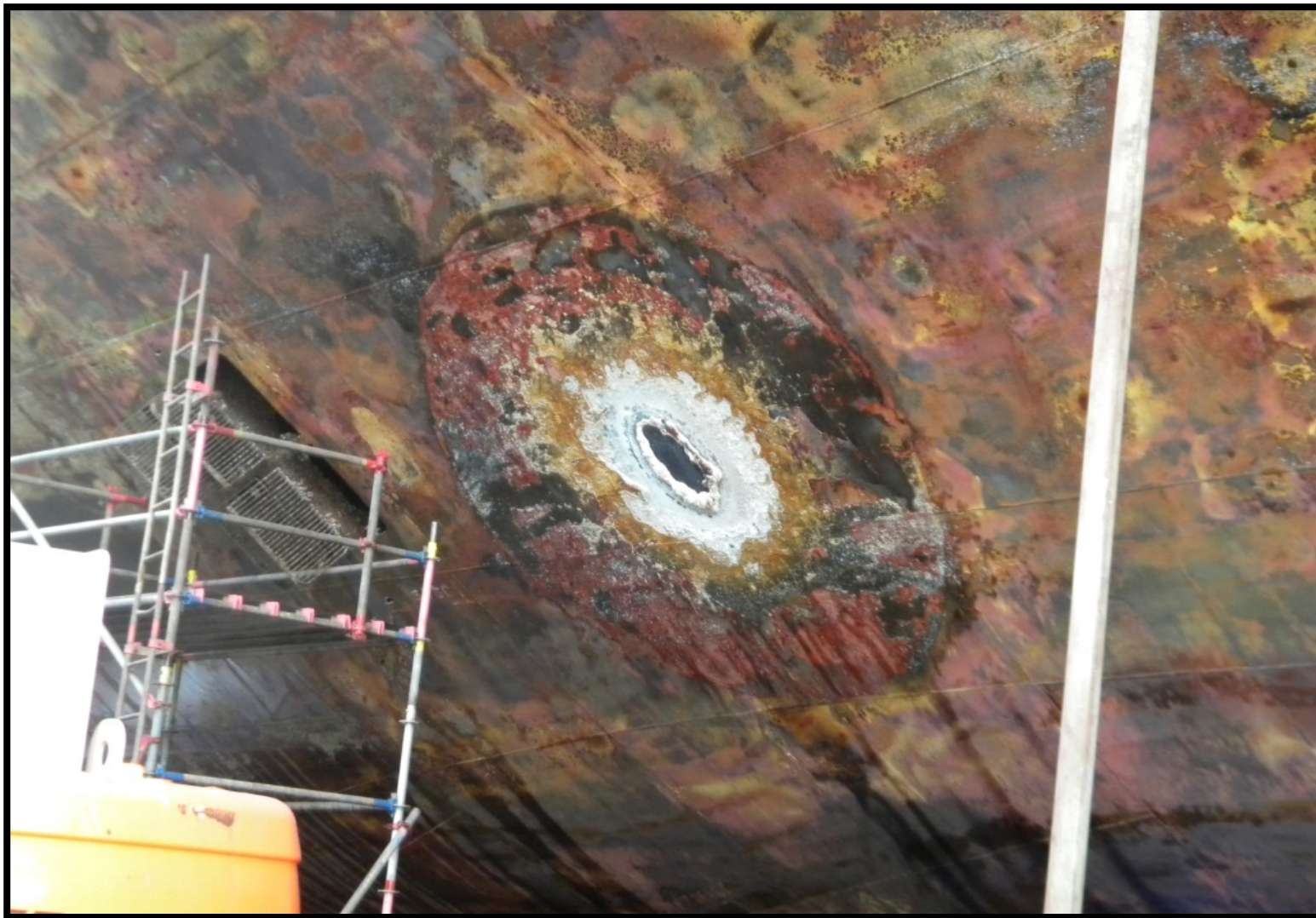


RIVER TRAFFIC



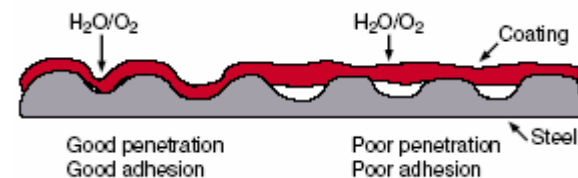
2 STAGE PROCESS:

1. COATING REMOVAL



2 STAGE PROCESS: 2. CORROSION

COATING LOSS

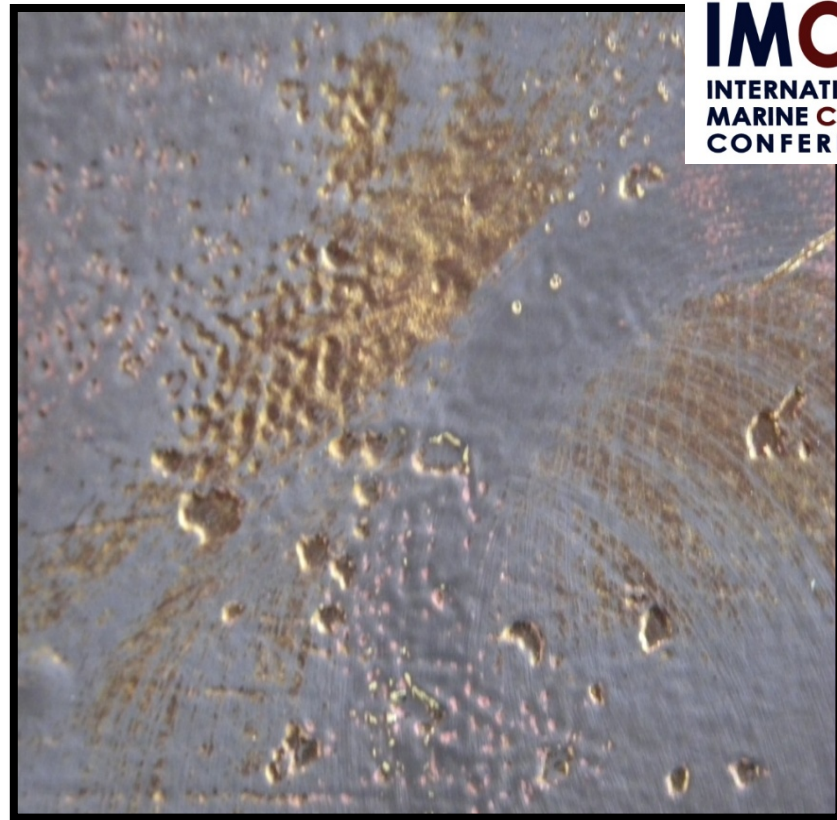


Quality
Contaminants
Application
Mechanical





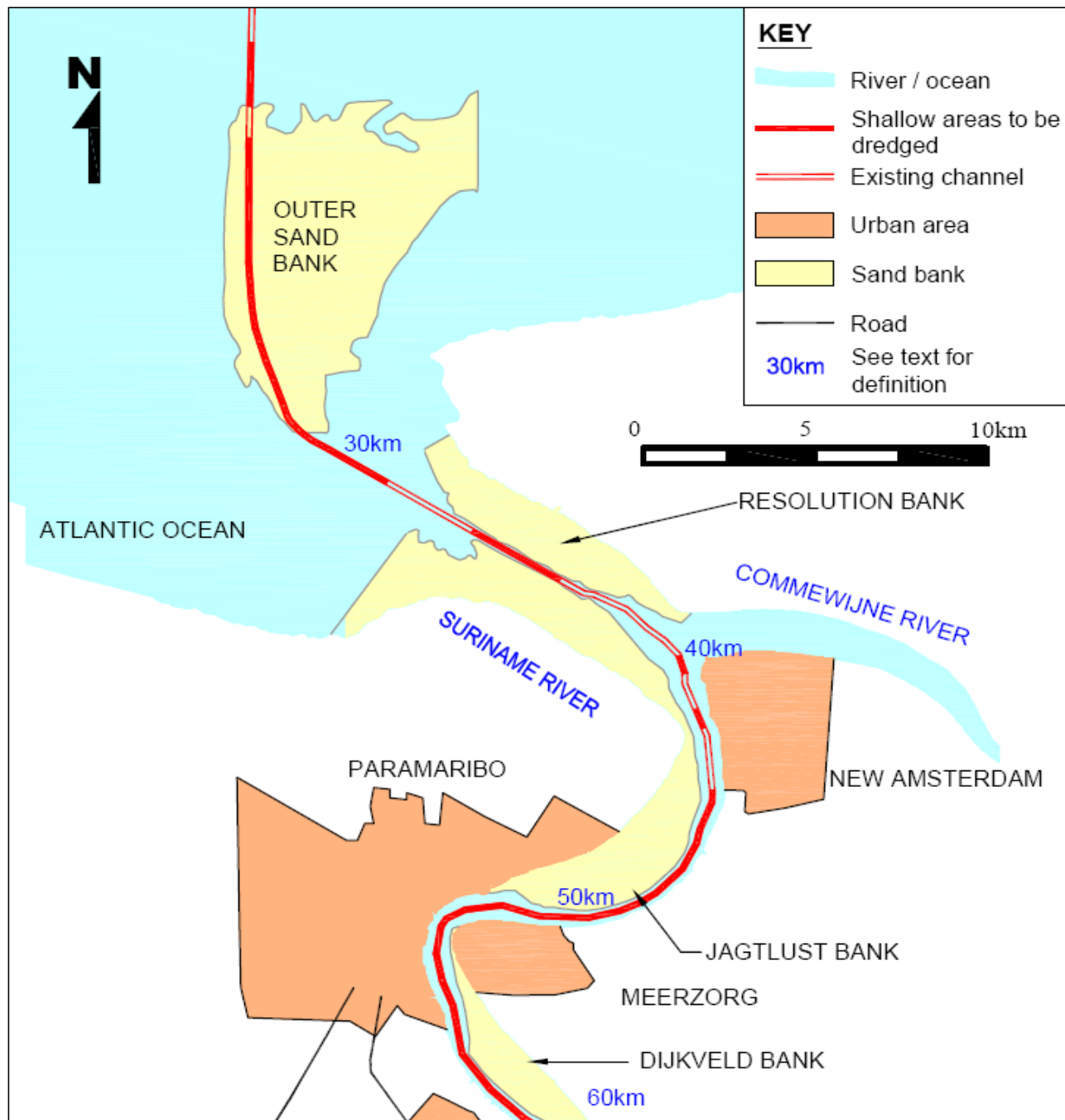
VIETNAM
Thi Vai River



SURINAME
River

PATTERN OF REMOVAL





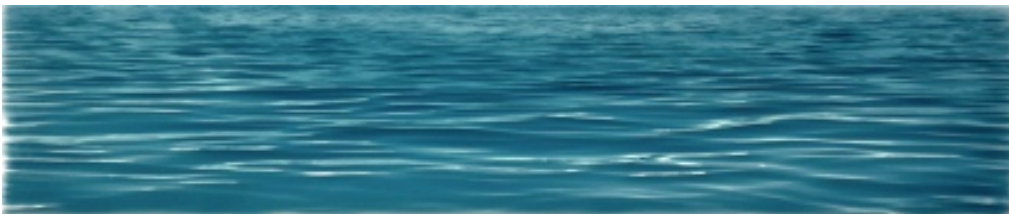
TUBE MAP

SHELL PLATE THINNING

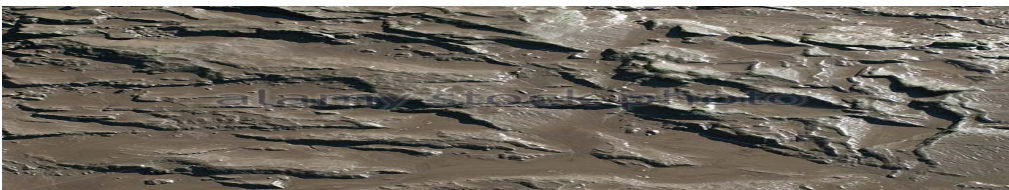


HUMAN ACTIVITY





Water



Sling Mud: sg 1.2 / 75% water
12% sand / 8% bauxite over
Soft mud



Sand: Shell sand / building
sand – Abrasion test Miller No.
30 (< 50 = non-abrasive)



Hard Clay

RIVERBED LAYERS

SURINAME RIVER DRAFT RECOMMENDATIONS

WATERLEVEL: MEAN RIZE BY SPRING- AND NEAPTIDE

Mean rise at springtide: 2.80 metres

Mean rise at neap tide: 2.15 metres

Bar depth in the River Mouth: 4.50 metres.

Spring to Neaptide	: 2.80 m.
<u>Bar depth</u>	: <u>4.50 m.</u>
Total	: 7.30 m.
<u>Keel clearance</u>	: <u>0.40 m.</u>
Shipsdraft to depart	: 6.90 m.

At mean **spring tide** (2.80 m.) can safely load to ± 6.90 m.

Neaptide to springtide	: 2.15 m.
<u>Bardepth</u>	: <u>4.50 m.</u>
Total	: 6.65 m.
<u>Keel clearance</u>	: <u>0.30 m.</u>
Shipdraft to depart	: 6.35 m.

At mean **neap tide** (2.15 m.) can safely load to ± 6.35 m.

DEPTHS AND AIDS TO NAVIGATION

The channels and depths shown on this chart are subject to frequent change. The buoyage and other aids to navigation are adjusted accordingly. For the latest information, consult local authorities.

Considering chart GB 2765 “Suriname River Entrance”, the level to which Chart Datum is set is stated on the GB chart as “approximately the level of Mean Low Water Springs”. This is taken from the level of Chart Datum stated on the relevant Netherlands Hydrographic Office (NLHO) charts and those attributable to the Maritieme Autoriteit Suriname (MAS) charts. Therefore the methods and practises used to establish this level would need to be commented on directly by those parties.

In a similar vein, your question regarding the charted depths and to what “base” or floor they relate again would need to be put to the aforementioned parties.

DISCLAIMER

KLEIN SYSTEM 3900



“This method is not accurate or recommended if the Klein is being used for water depth measurement.”



BOTTOM SAMPLING

Charted depth 4.5 m

SQUAT HAPPENS

Load to maximum draft

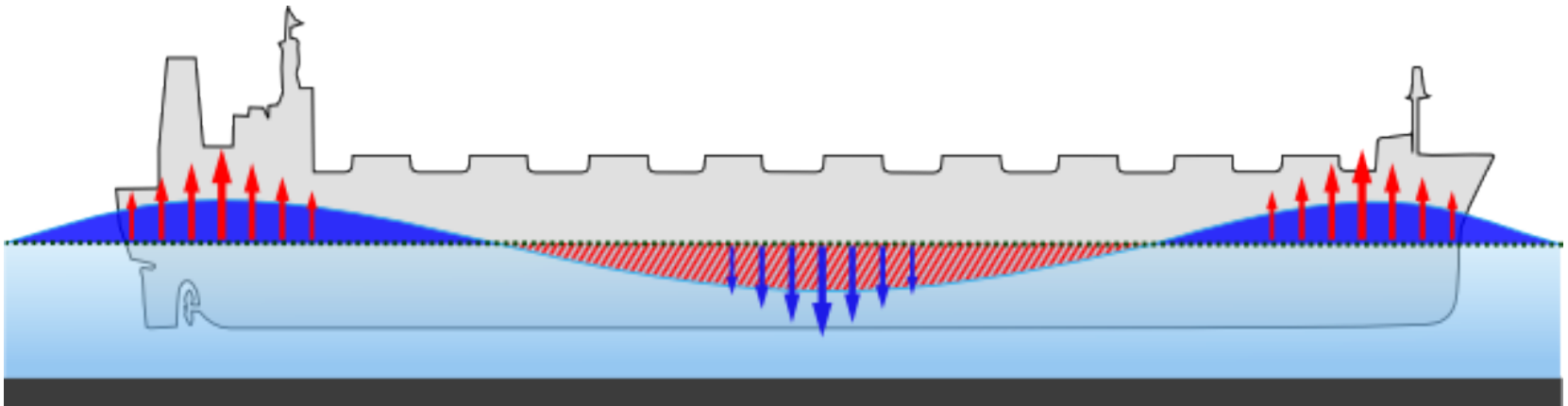
Source of datum depth

Standard UKC / MAS UKC

Identified bottom – pressing mud

Trim and speed

Channel width



UNAFFECTED VESSELS

Frequency / Size / Speed / Location / Reporting



IS THE REPUTATION DESERVED?



OTHER CAUSES



CATHODIC PROTECTION

UNDER MY PROTECTION

UNDER PROTECTION

PROTECTED

INADEQUATE PROTECTION

COATINGS LOSS



HULL CORROSION



THE RESULTS



AFTER ONLY 4 YEARS



MORNING TEA

Loss of coatings

Abrasion

Affected and unaffected vessels

Suspects dismissed:

Water Quality

Poor application

Trade

Age

Frequency

Location

Suspects held:

Size

Speed

Design

Charted Depths

UKC



South American River Case Study

By

Rupert Steer

Cariconsult Group of Companies