

The challenges posed by the increase of shipbuilding in China

Ship classification



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International Marine Claims Conference 2011 - Dublin

Chinese order books



2010

- Accumulated order book=185m dwt (**largest**)
- Contracts = 57m dwt
- Market share = 39%
- Delivered = 62m dwt
- Orderbook increased from 10.6m dwt (2000) to 185m dwt (2010)
- Strong support from Chinese shipowners

Source: BRS



2010

- 284 cancellations
- 608 delayed to 2011
- Cancellations + delays = 26% of order book
- Increasing labour costs
- Stronger Yuan
- Increasing material costs

Source: BRS



Bulk
(41m dwt)

Oil
(15m dwt)

Container
(4m dwt)

Heavy reliance on exports



China as a major shipbuilding nation

Over four hundred shipyards – *significant variation on size, facilities, quality*

Largest state-owned shipyards

- China State Shipbuilding Corporation (CSSC)
- China Shipbuilding Industry Corporation (CSIC)
- COSCO

Largest private shipyards

- Jiangsu Rongsheng
- Jinhai Heavy Industry Co. Ltd.
- New Times/New Century Shipbuilding Co. Ltd. (NCS)
- Jiangsu Yangzijiang Shipbuilding Co. Ltd.
- Sinopacific

Ship design

- Shanghai Merchant Ship Design & Research Institute (SDARI) (*part of CSSC*)

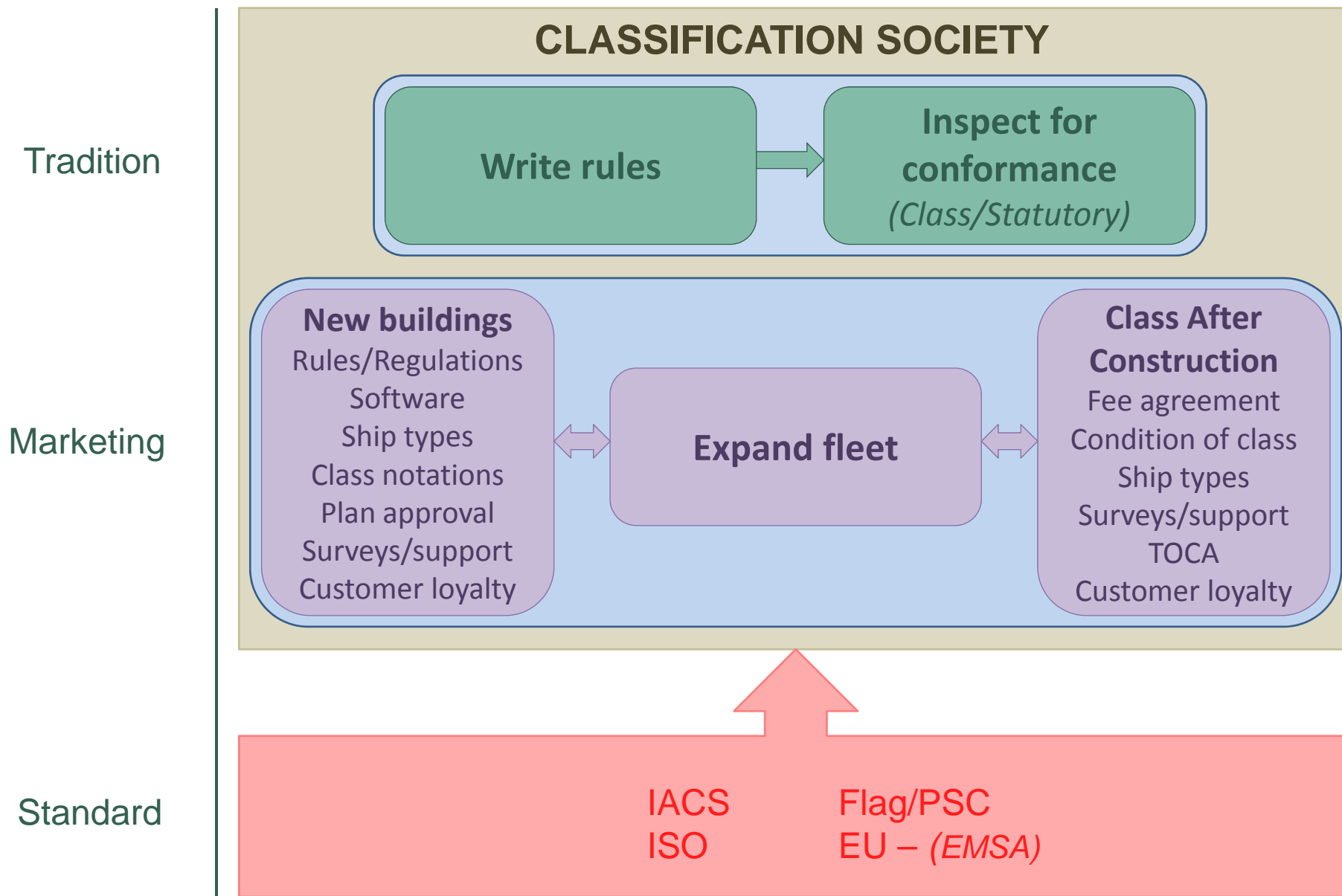
Sophisticated designs
future challenge?



Gas



Passenger





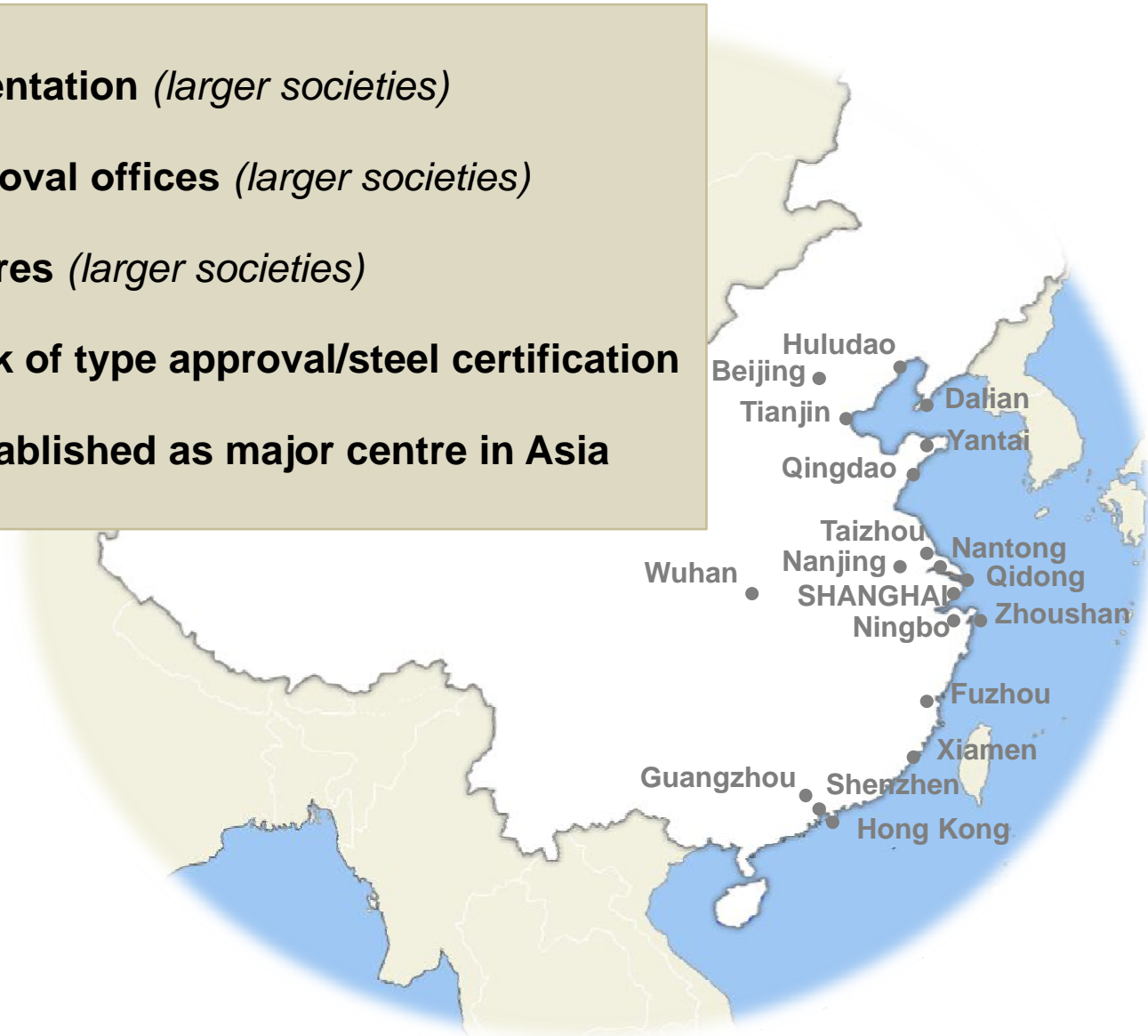
Germanischer Lloyd



Classification societies in China



- Good representation (*larger societies*)
- Siteplan approval offices (*larger societies*)
- Training centres (*larger societies*)
- Good network of type approval/steel certification
- Shanghai established as major centre in Asia



Class challenges?



Who decides on class?

- Yard familiarisation with rules/software
- Plan approval (*standard design*)
- Training
- Quality/availability of surveyors
- Support (*local plan approval...*)

- Shipowner may specify class
- Shipowner may request expatriated surveyor
- Shipyard recommends class
- Shipyard may increase price if class is different than usual
- Shipyard/class may sign memorandum of understanding
- Shipyard/class sign a contract for services

Quality of shipbuilding in china

Quality of production



- *Paperwork may not reflect reality*
- *Use of counterfeit /second hand products*
- *Decisions may reflect national interests*

Quality of inspectors



Backgrounds may vary significantly

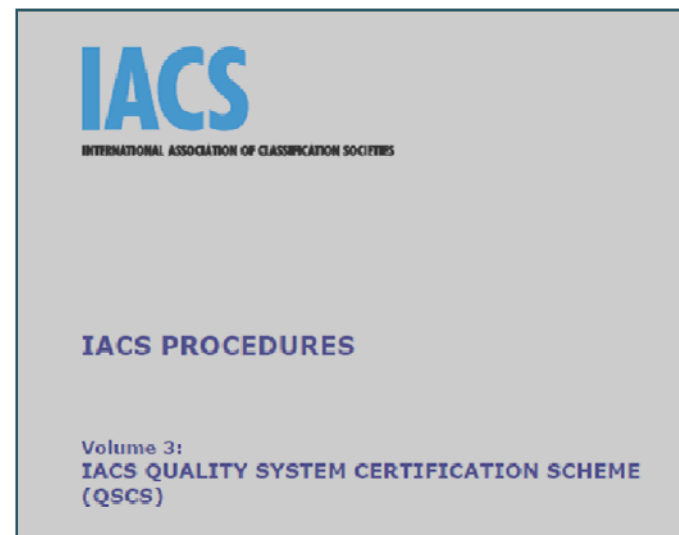
Quality of inspections



Standards may vary significantly

Quality of classification societies

- **Ability to write rules and inspect for conformance**
- **Global representation**
- **Reputation**
- **Flag recognition/delegation**
- **IACS Transfer of Class Agreement (TOCA)**
(Can't compete on conditions of class – no class hopping!)
- **Port State Control detention record**
(class related)
- **Audits (IACS QSCS, ISO...)**
- **Vertical Contract Audits (VCA)**
- **Training of surveyors**
(Surveyor = knowledge worker)



IACS Membership Criteria
ability to provide surveys of ships under construction...

...extensive documented experience in assessing the design and construction of ships...

Contract usually specifies

- **Classification Society**
- **Classification notation**
- **Any specific agreement with class**
- **Applicable version of Rules and Regulations**
- **Exclusion of certain Rules and Regulations**
- **Revision to Rules and Regulations**
- **“Binding” status of Rules**
- **Provision for class inspections**
- **Provision for accommodating class surveyors**
- **Responsible party for class fees**
- **Certificates to be provided**

SHIPBUILDING CONTRACT

FOR
CONSTRUCTION OF ONE (1) 75,000DWT BULK
CARRIER

(HULL No. XYZ-0123)

BETWEEN

SEASTORM Shipping
As Buyer

AND

Pudong Heavy Industries Co. Ltd.
As Builder

March 25th, 2009
Shanghai, the People's Republic of China

Shipbuilding contracts and ship classification

...designed, equipped, built and delivered in compliance with the rules and regulations and under the survey of class and shall carry the class notation...

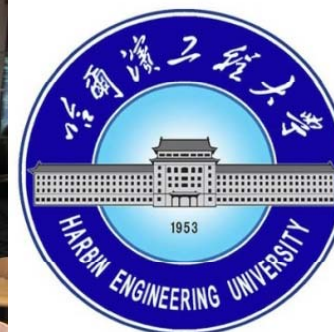
...rules and regulations of the classification society shall be final and binding...

...any amendment in rules and regs after date of contract shall be treated as modifications and subject to adjustment of cost, delivery date...

...if certs. cannot be obtained at the ship's delivery, builder to provide provisional certs. In such a case, builder to deliver definitive certs. as soon as practicable after ship's delivery, prior to the expiration of provisional certs...

Challenges in surveyor recruitment

- **Most surveyors are recruited in China** (*not expatriated*)
- **Top university graduates prefer working for class** (*especially plan approval*)
- **Some class societies have graduate training programs**
- **High turnover of graduate trainees in shipbuilding**
- **Some class societies recruit directly from shipyards**
- **Cultural mind set**



Challenges in plan approval

Adopted by
IACS
INTERNATIONAL ASSOCIATION
OF CLASSIFICATION SOCIETIES

Adopted by
IACS
INTERNATIONAL ASSOCIATION
OF CLASSIFICATION SOCIETIES

Common Structural Rules
for Bulk Carriers

Common Structural Rules
for Double Hull Oil Tankers

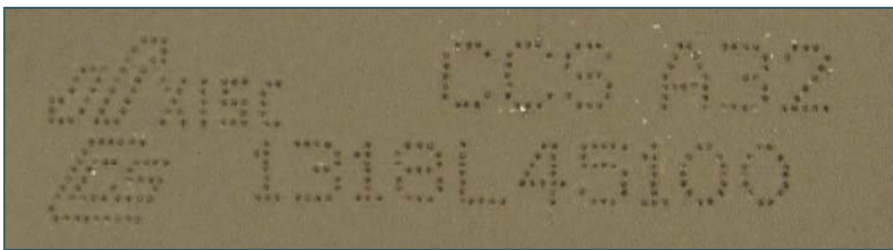
- **Direct communication with builder** (*buyer often left out*)
- **Readiness to accept other class society's approvals**
- **Advantages in approving plans locally**
- **Familiarisation with IACS Common Structural Rules (CSR)**
- **Familiarisation with class rules and software**

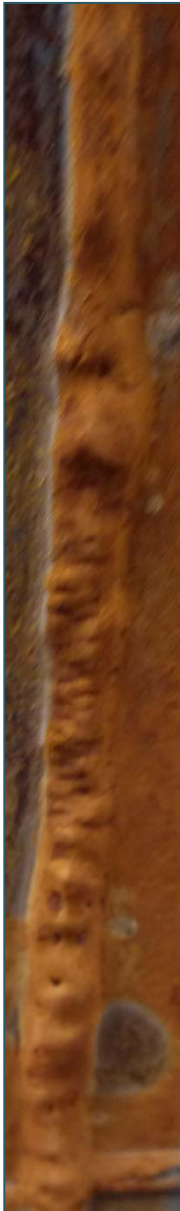

SAFER
SHIPPING

SAFER
SHIPPING



- Quality control in steel mills
- Readiness to accept another class society's certification
- Traceability of steel plates and profiles
- Storage sheds exposed to weather
- Pitting on stored plates
- Control of steel thicknesses and grades
- Reliance on shipyard QA inspectors



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- A vertical close-up photograph of a weld joint on a metal surface, showing a textured, brownish-orange weld bead with some surface irregularities.
- **Certification of welders' qualifications**
 - **Acceptance of welder qualifications issued by other bodies**
 - **Extent of manual welding**
 - **Approval of welding qualifications**
 - **Tight control over weld edge preparation**
 - **Tight control over weld consumables**
 - **Control over welding environment**
 - **Control over weld tests**
 - **Reliance on shipyard QA inspectors**
- 
- A horizontal close-up photograph of a weld joint, showing a dark, textured weld bead with some surface irregularities.

- **Stress raisers** (*misalignment, hard points, discontinuity*)
- **Quality of cutting + shaping**
- **Quality of surface finish**
- **Accuracy of marking-up**
- **Plate/stiffener deformation**
- **Block erection** (*size of gaps*)
- **Compliance with shipbuilding standards**
- **Reliance on shipyard QA inspectors**

- **Knowledge of Performance Standard for Protective Coatings (IMO PSPC)**
- **Past avoidance of PSPC requirements with date of contract**
- **Control of film thickness**
- **Control of coating environment**
- **Control of curing rates**
- **Pressures on buyer to accept coating after inspections**
- **Reliance on coating inspectors for quality**

- **Varying skills of technicians – ultrasonic/magnetic particle tests**
- **Whether NDT is carried out in accordance with test plan**
- **Reliability of pneumatic tests**
- **Buyer normally attends pneumatic tests but not other NDT**
- **Buyer may not know NDT schedule (*relies on class approval*)**
- **Class normally sights results and only attends few tests**
- **Class relies heavily on NDT department of builder**

Challenges in inspections – casting and outfitting



- Efficiency of pipe insulation
- Unacceptable piping arrangement
- Accessibility of valves
- Quality of assembly and casting
(stems, stern frames, rudder posts, rudders, propellers...)
- Proper installation of machinery
- Shaft alignment
- Inaccessible installation arrangements



- **Extent of repairs done during building**
(don't show on certificates)
- **Extent of use of insert plates**
(due to planning errors)
- **Issuing clean class certificates**
(without conditions of class)
- **Issuing all necessary statutory certificates**
(definitives may be issued after delivery)
- **Approving all necessary manuals**
(Access, Cargo Securing, SOPEP...)
- **Giving a “degree of confidence” to a vessel**
(100% inspections are not carried out)
- **Compliance with shipbuilding standards**
- **Accepting production quality of shipyard**
- **Heavy reliance on shipyard QA inspectors**

A light green, multi-lobed cloud graphic with a thin blue outline, containing text.

Class carries out random inspections

NOT 24/7!

Thank you

