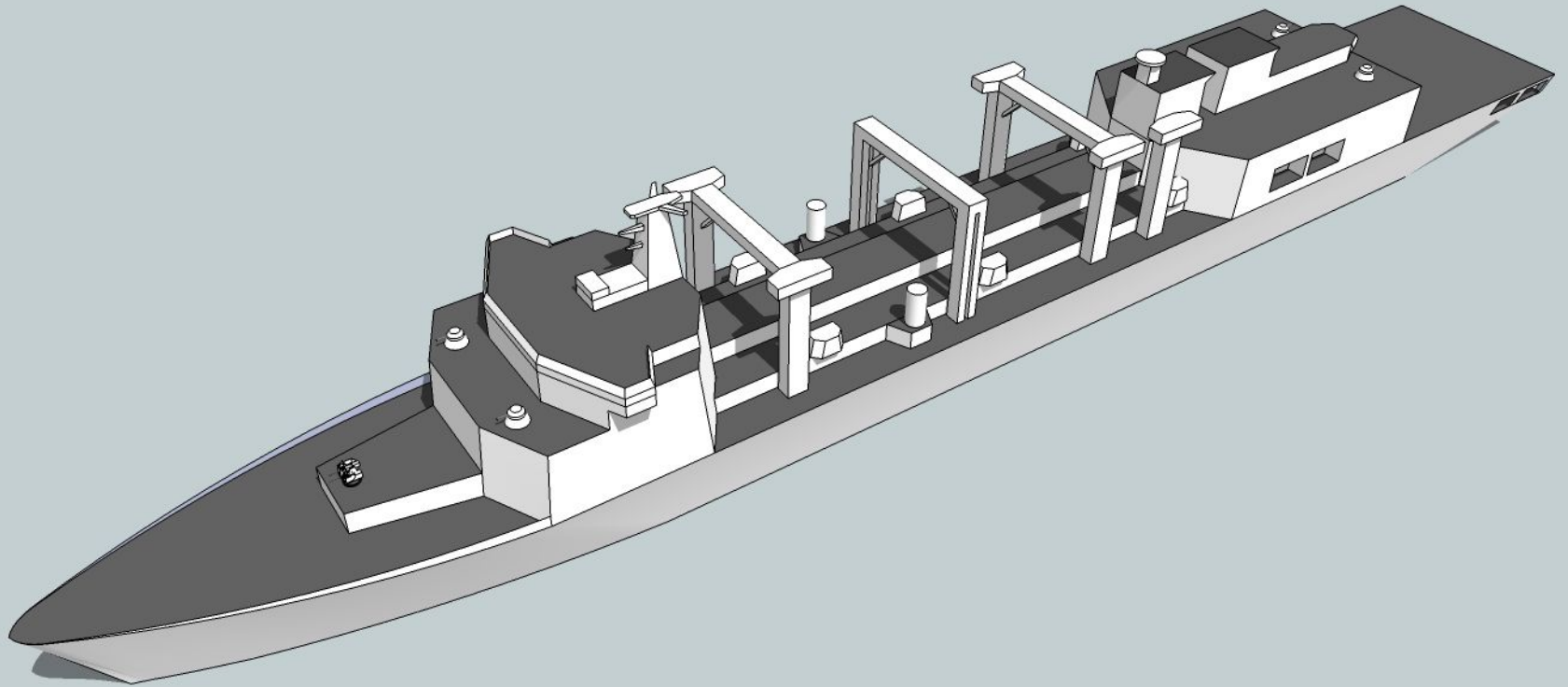


Type 901 Integrated Supply Ship Analysis



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11 February 2016

Type 901 Supply Ship Construction



- ◆ First seen in overhead imagery on 28 Sep 2015 at the Guangzhou Shipyard International (GSI) Longxue Island Shipyard
- ◆ By 20 Oct 2015, significant progress had been made with all of the main hull sections on the keel blocks

Type 901 Supply Ship Dimensions

- ◆ Google Earth imagery measurements put the hull length in the graving dock at about 219.4 m
- ◆ Hull beam was measured as 32.5 m
 - Note this is larger than Jane's initial estimate of 31.5 m

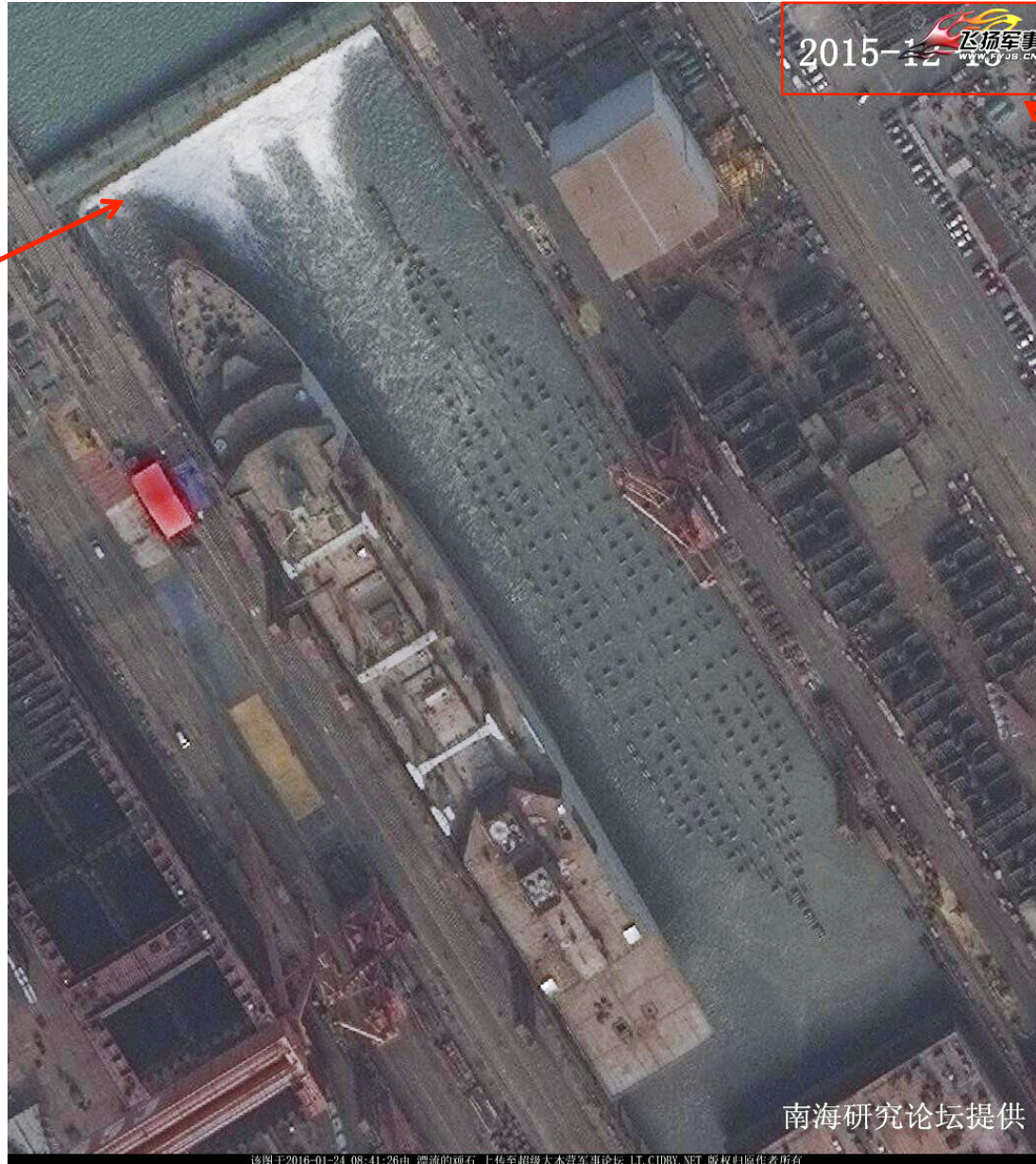


Type 901 Supply Ship Launch



- ◆ Towards the end of November 2015, hand held photos of the Type 901 integrated supply ship still in the graving dock began showing up on Chinese websites
- ◆ Based on photos posted to Chinese websites, it appears the Type 901 was launched early on 16 December 2015
- ◆ A Google Earth image posted in late January 2016 on the Chinese FYJS.cn blog site clearly show the graving dock with the Type 901 in it being flooded
 - The FYJS.cn website claims the image was taken on 15 December 2015 and is consistent with a launch early on 16 December

Type 901 Supply Ship Launch



Graving dock
being flooded
for launch

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Type 901 Supply Ship at Fitting Out Pier



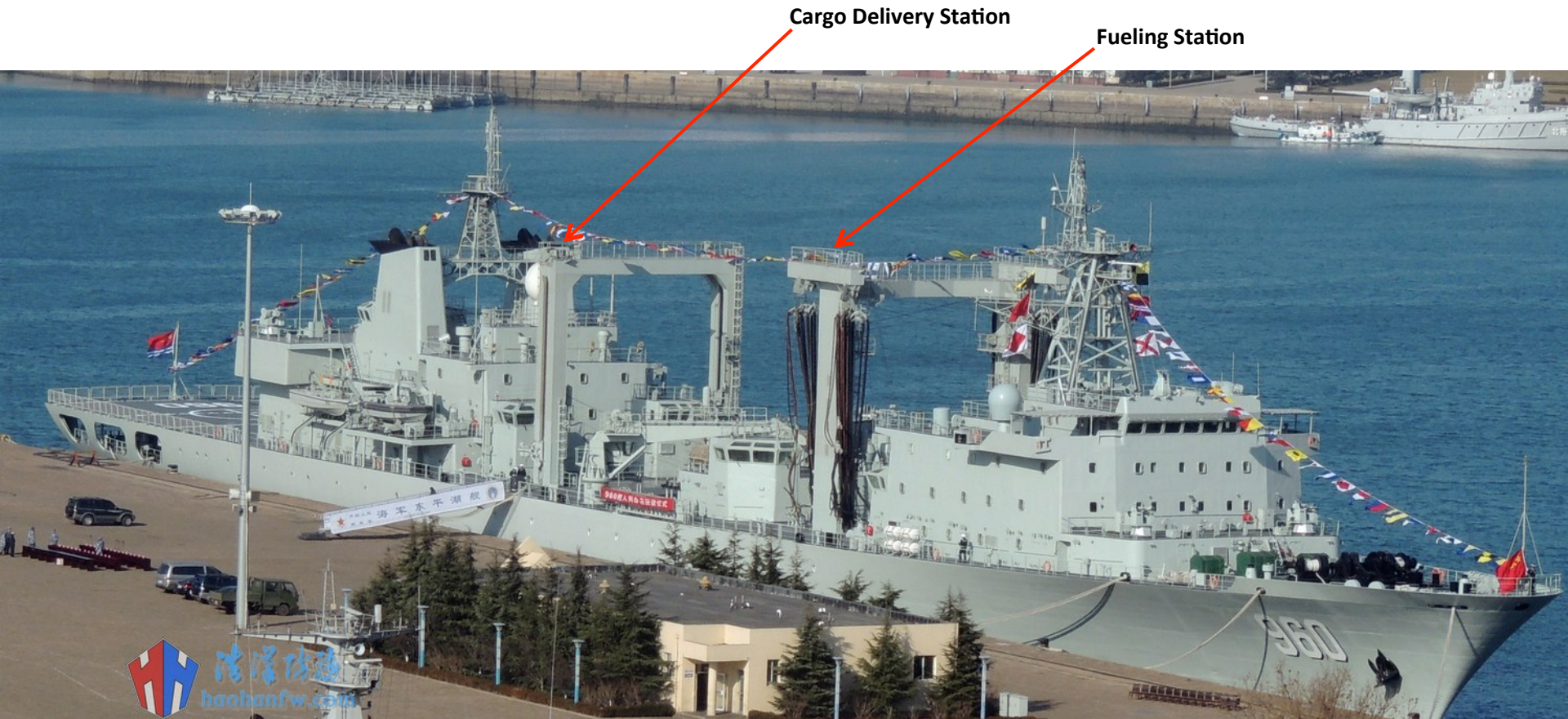
- ◆ As more photos began to appear, it was clear the Type 901 was considerably larger than the Type 903A supply ship

Type 901 Supply Ship Dimensions



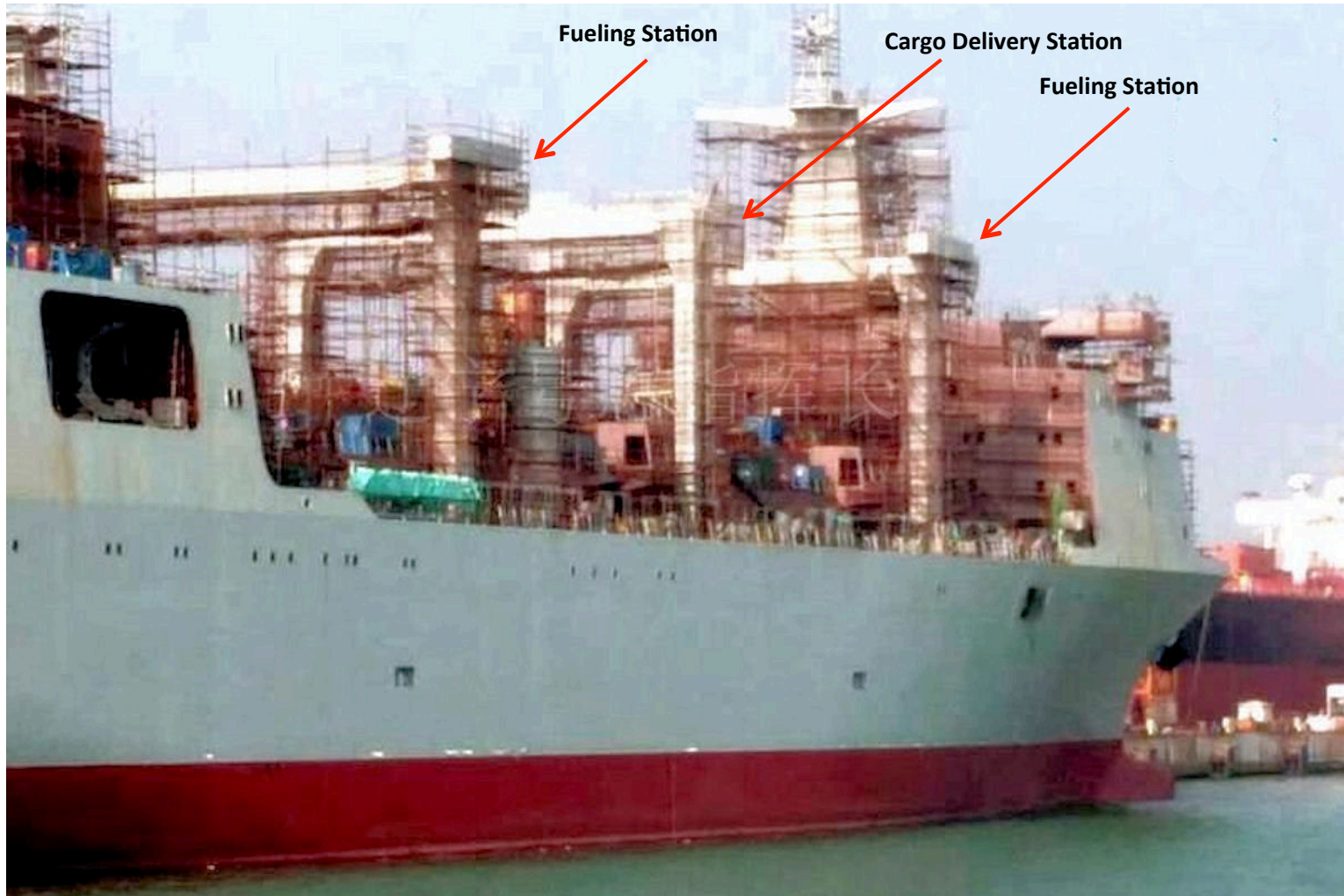
- ◆ Measurements of the ship's length overall is about 229 meters
- ◆ Length from the stern to the forward perpendicular is about 219 meters and is consistent with the length derived from Google Earth imagery when the ship was in the graving dock
- ◆ Reference is the height of the fueling kingpost, determined by measurements of the same kingpost design on Type 903A supply ships
 - The height of 17.5 m is consistent with stations on U.S. Navy UNREP ships

Type 903A Supply Ship



- ◆ Fuel and cargo delivery station kingpost designs on the Type 903A and Type 901 are identical

Type 901 Supply Ship UNREP Stations



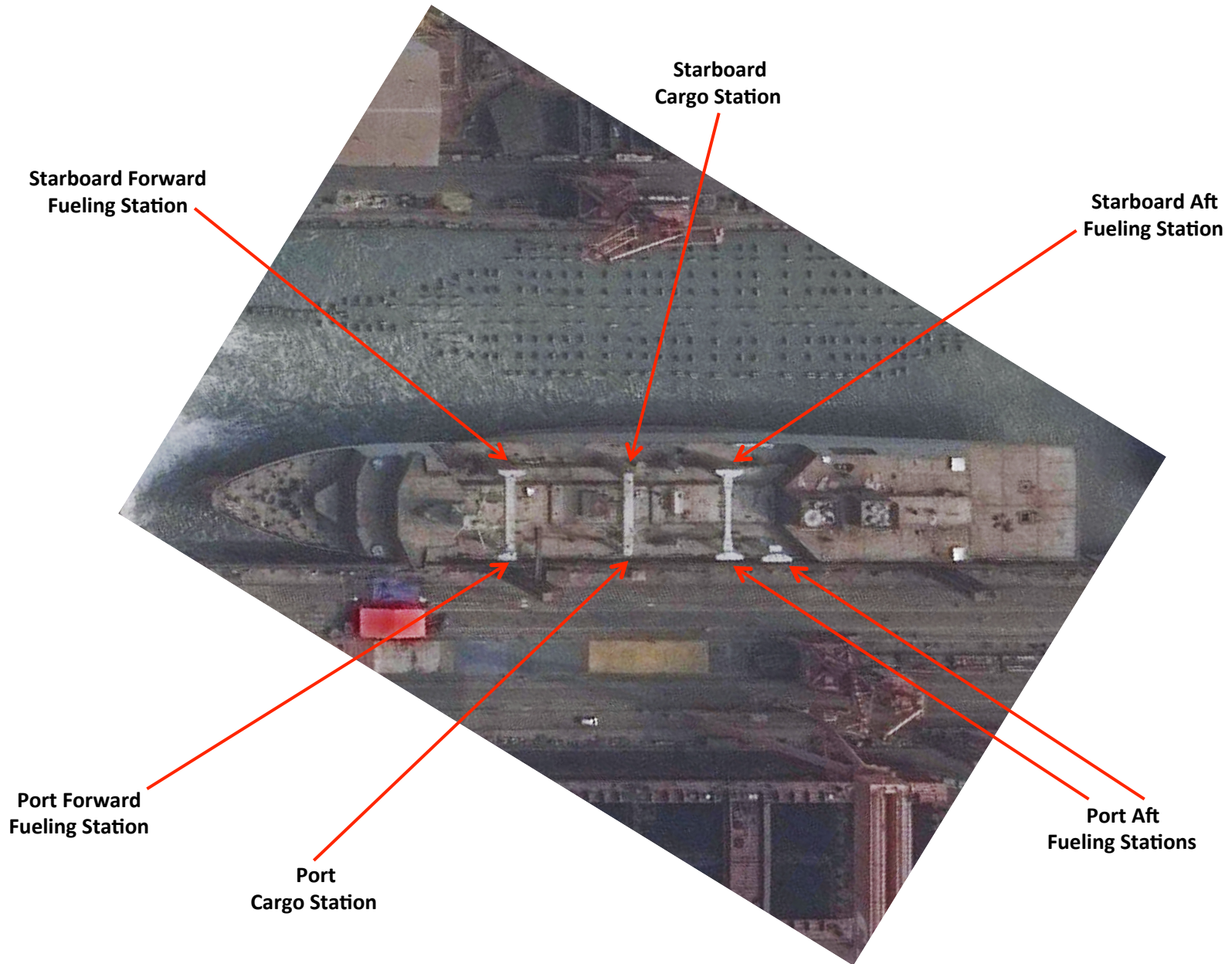
- ◆ The Type 901 has multiple fueling and cargo delivery stations
- ◆ Unlike earlier PLAN supply ships the arrangement is not symmetrical
 - Starboard: 2 fueling stations and one cargo delivery station
 - Port: 3 fueling stations and one cargo delivery station

Type 901 Supply Ship UNREP Stations



- ◆ Three refueling stations to port strongly argues for replenishment of an aircraft carrier
- ◆ U.S. Navy AO/AOR/AOE all have three refueling stations to port and two to starboard
 - Aircraft carrier island is on the starboard side and ship handling is critical for UNREP evolutions

Type 901 Supply Ship UNREP Stations



Type 901 Propulsion Plant



- ◆ Air intakes are consistent with a gas turbine propulsion plant
- ◆ High speed requirement also argues for a ship that is to support an aircraft carrier group
- ◆ Note stacks are aligned fore and aft, not port and starboard as on the Type 903A

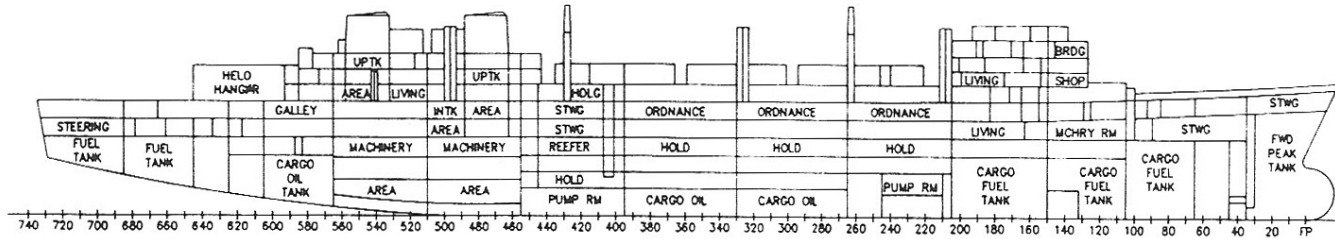
Type 901 Supply Ship Assessment

- ◆ Ship's overall length is approximately 229 meters
- ◆ Ship's beam is approximately 32.5 meters
- ◆ Displacement would likely be on the order of 45,000 to 50,000 tons full load
 - This value is seen often on Chinese blogs
- ◆ Ship likely has gas turbine propulsion, which would support the often claimed speed of 25 knots
- ◆ Exhaust stacks are aligned fore and aft like on the *Supply* class
- ◆ UNREP station arrangement is most definitely based on U.S. Navy practice
 - The Type 901 and *Supply* have the same number and arrangement of fueling stations
 - The biggest difference in capability is the Type 901 only has two cargo delivery stations in comparison to *Supply's* six – three each port and starboard

Assessment:

The Type 901 is very heavily based on the U.S. *Supply* class AOE

Supply Class AOE Data



LENGTH OVERALL	753.7 FT (229.7 m)
LENGTH BETWEEN PERPENDICULARS	730 FT
BREADTH	107 FT (32.6 m)
DRAFT FULL LOAD	37.8 FT
DISPLACEMENT LIGHT SHIP	20,800 FT
DISPLACEMENT FULL LOAD	48,500 TONS
CARGO CAPACITY: FUEL	156,000 BBL
ORDNANCE	1800 TONS
DRY STORES	250 TONS
REFRIGERATED STORES	400 TONS
CARGO FUEL OIL PUMPS: DFM (F-76)	5 - 3,000 GPM
JP-5 (F-44)	4 - 3,000 GPM
ELEVATORS	4 16,000 LB CAP, 3 12,000 LB CAP
CONVEYORS	1 PALLET, 3 - 85 LB PKG
PROPULSION EQUIPMENT	4 GAS TURBINES/REVERSING REDUCTION GEARS
SHAFT HORSEPOWER	100,000 SHP
PROPELLERS	2
SPEED	26+ KN
COMPLEMENT	40 OFFICERS, 627 ENLISTED
ARMAMENT	2 CIWS, 1 NSSMS
HELICOPTER STORAGE (HANGAR)	3

Ship Comparison

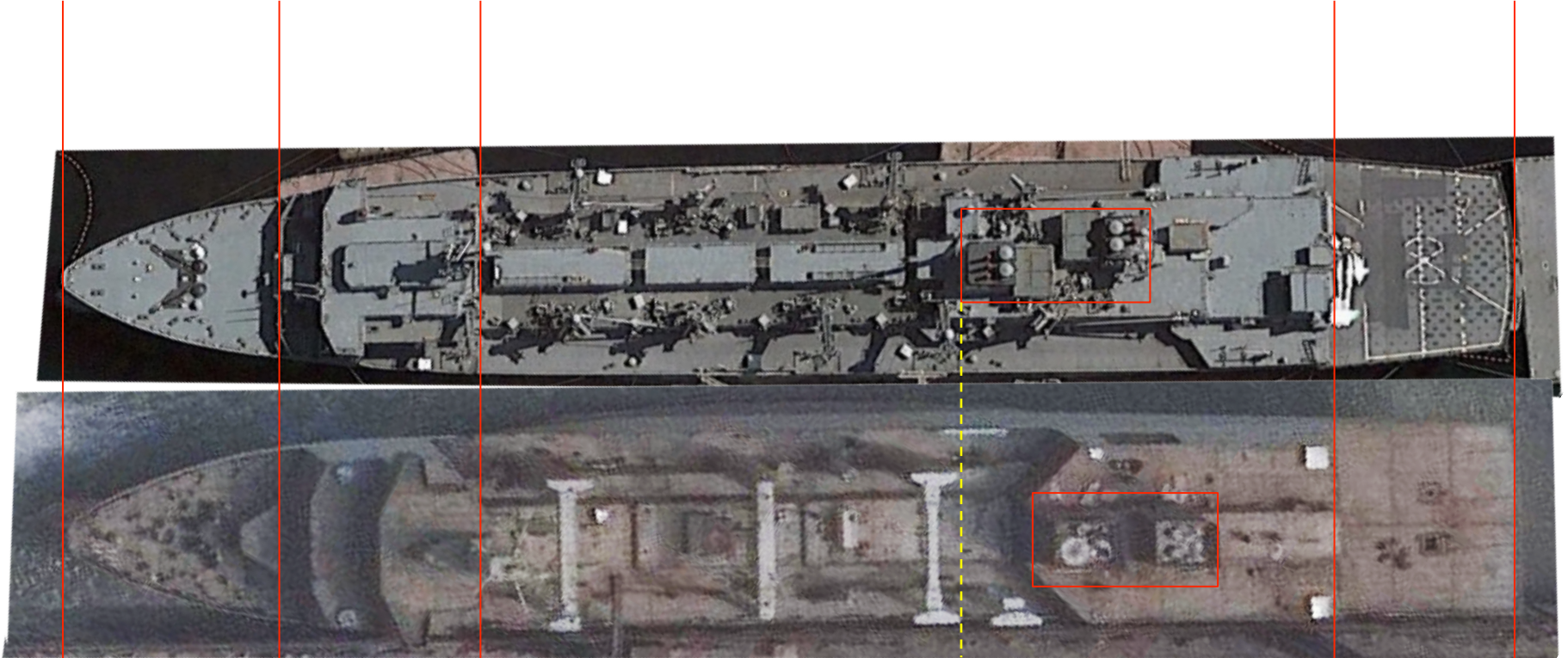
Type 901



Supply Class



Ship Comparison



- ◆ Type 901 and *Supply* are very similar in overall layout – hull size appears to be identical
- ◆ Differences in appearance are minor design changes, largely occur above the main deck
- ◆ Type 901 stack location is located a little further back than on the *Supply* class AOE
 - This appears to be driven by the Chinese use of large kingposts for their replenishment stations, the aft port fueling station forces the after superstructure back about 10 meters

Conclusions



- ◆ The Type 901's design is far too close to the U.S. *Supply* AOE class to be a coincidence
- ◆ The Type 901 was constructed in record time, the graving dock she was built in had a tanker in it as of 19 January 2015 based on Google Earth imagery, which strongly suggests access to detailed and mature computer aided design/manufacturing plans
- ◆ The Type 901's fueling arrangement (3 port/2 starboard) and estimated high speed supports the role as an aircraft carrier group supply ship
- ◆ The Type 901's much lower cargo delivery capability suggests a lower priority for resupplying ordnance – not inconsistent with the limited strike capability of the *Liaoning* and the new CV 17 now under construction