Etchells

Hull Documentation and Specification Project

One Design Technical Committee

History

- It has long been accepted that there are discrepancies in the class drawings and the boats.
- The class only owns one hull plug and all active molds to date have been built from that plug.
- The three active molds and boats from the three builders have never been correlated.
- It would be disastrous for the class if the hull plug was lost, destroyed or damaged.
- Issues are arising from discrepancies in our boats, plug, molds and drawings.

Actions to Date

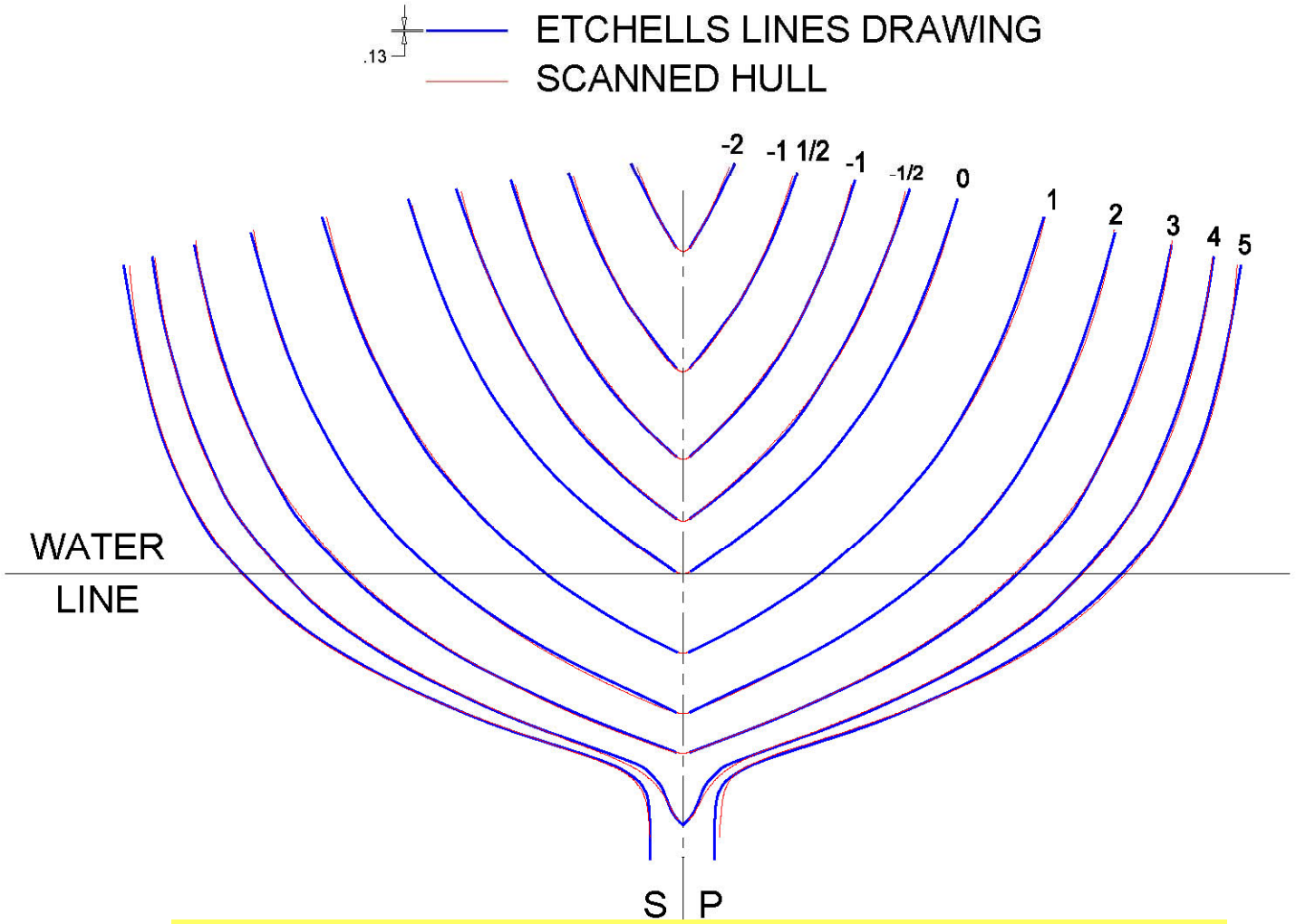
- 2005 IGC Approved Laser Scanning of One Hull and the Class Plug.
  - Scanning Performed by Futuramic Industries, Detroit Michigan
  - Scanning of a Ontario Yachts Boat (1342) and the class plug performed.
  - Results presented at the 2006 IGC Perth
- 2006 IGC Approved the Additional Laser Scanning.
  - Boat from Bashford / Smidmore Mold
    - Scheduled 7 July 2007
  - Petticrows / Heritage Mold
    - Ante R has offered his boat
    - Class will need to transport the boat from Florida to Detroit and back
    - Not scheduled
- Comparison of Class Drawings to Plug Performed by Burtek Industries
  - Results presented at 2007 IGC

Comparison of Class Drawings to Hull Plug Model

- Burtek Incorporated (Bruce Burton USA 1350) used Pro Engineer CAD software to compare the solid model of the plug generated by Futuramic Industries to the class hull drawings.
- Hull and Plug were “Lined Up” to Minimize the Discrepancies
- Results are Shows Graphically on the Following Pages

Etchells

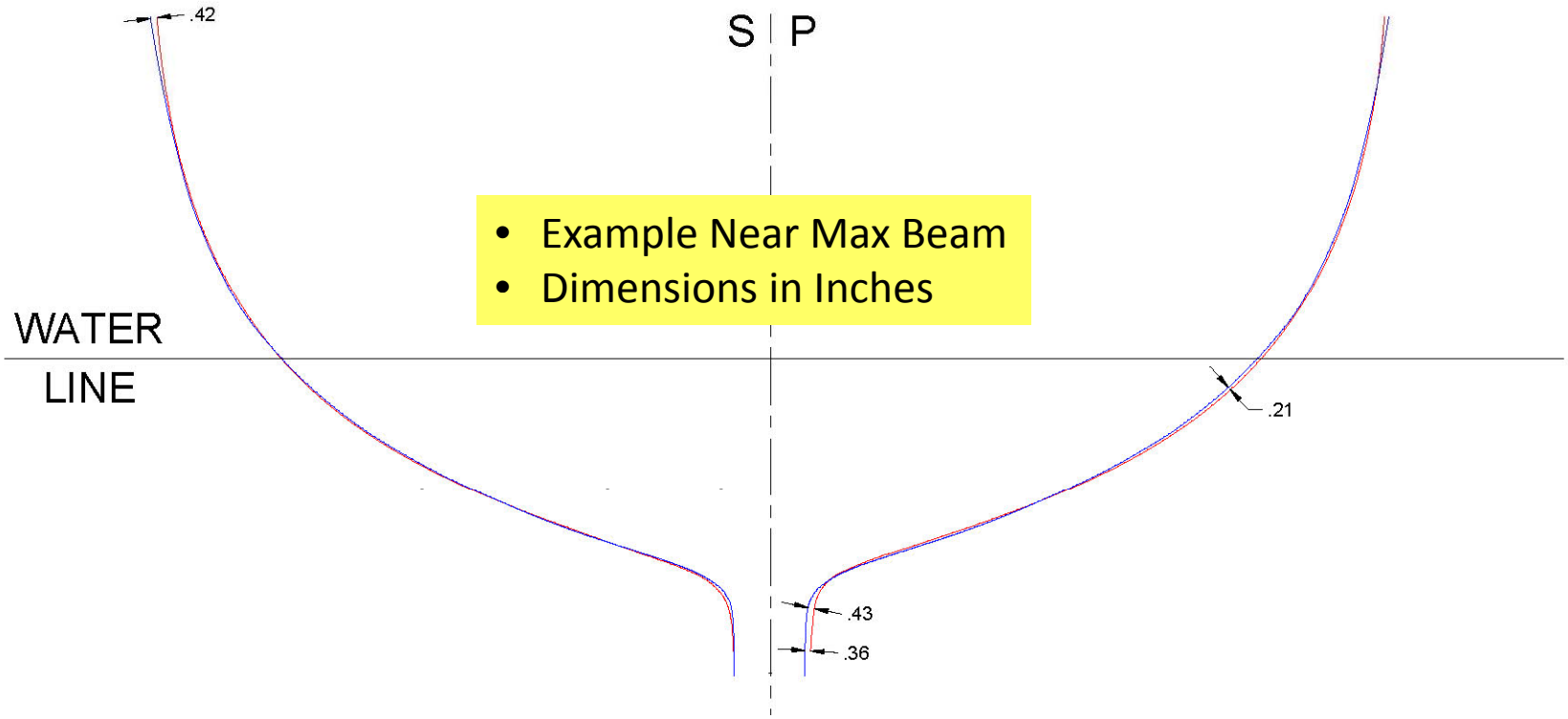
Comparison of Plug vs. Class Drawings



- Small discrepancies and asymmetries exist everywhere

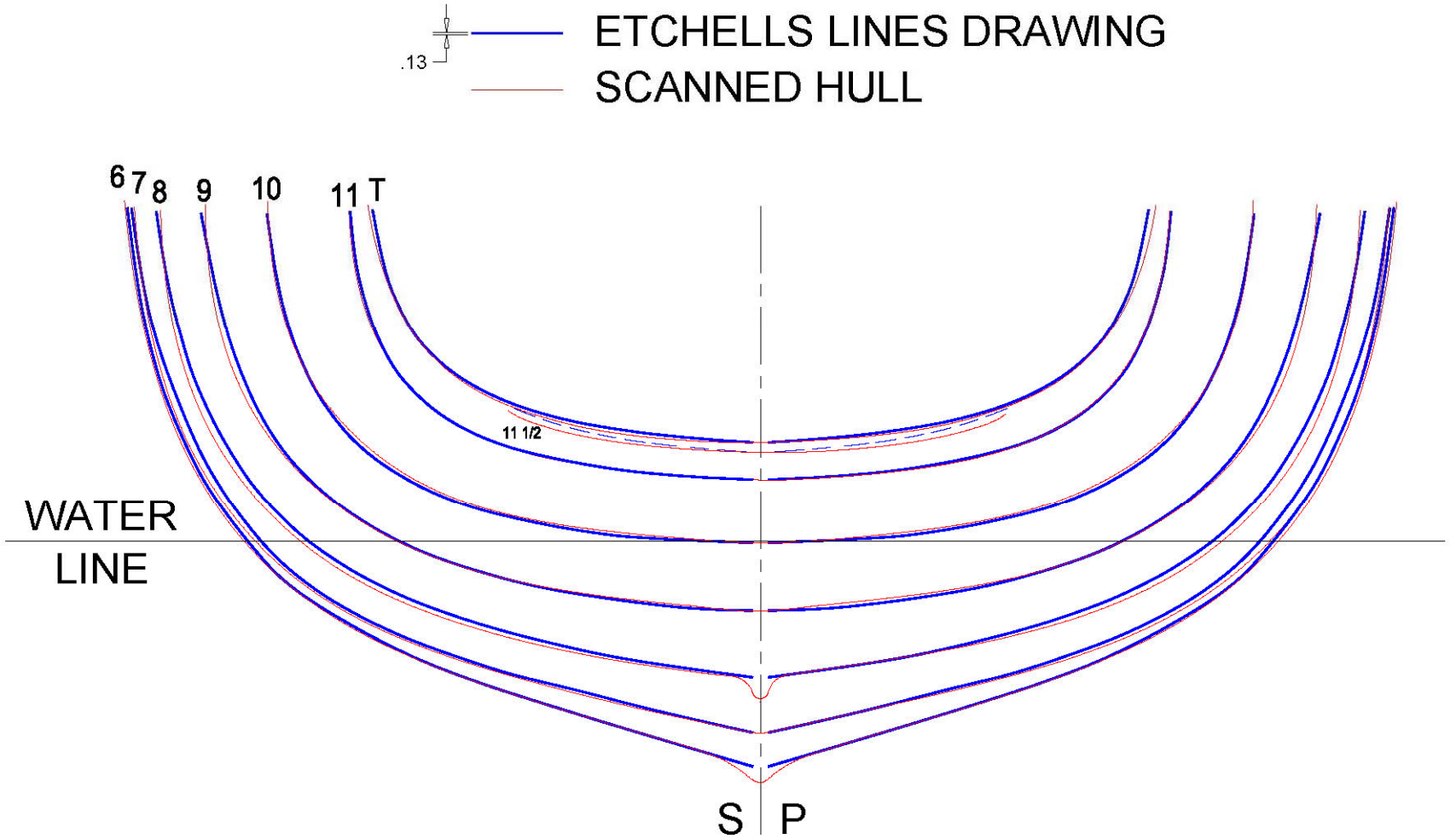
Comparison of Plug vs. Class Drawings

STATION 5



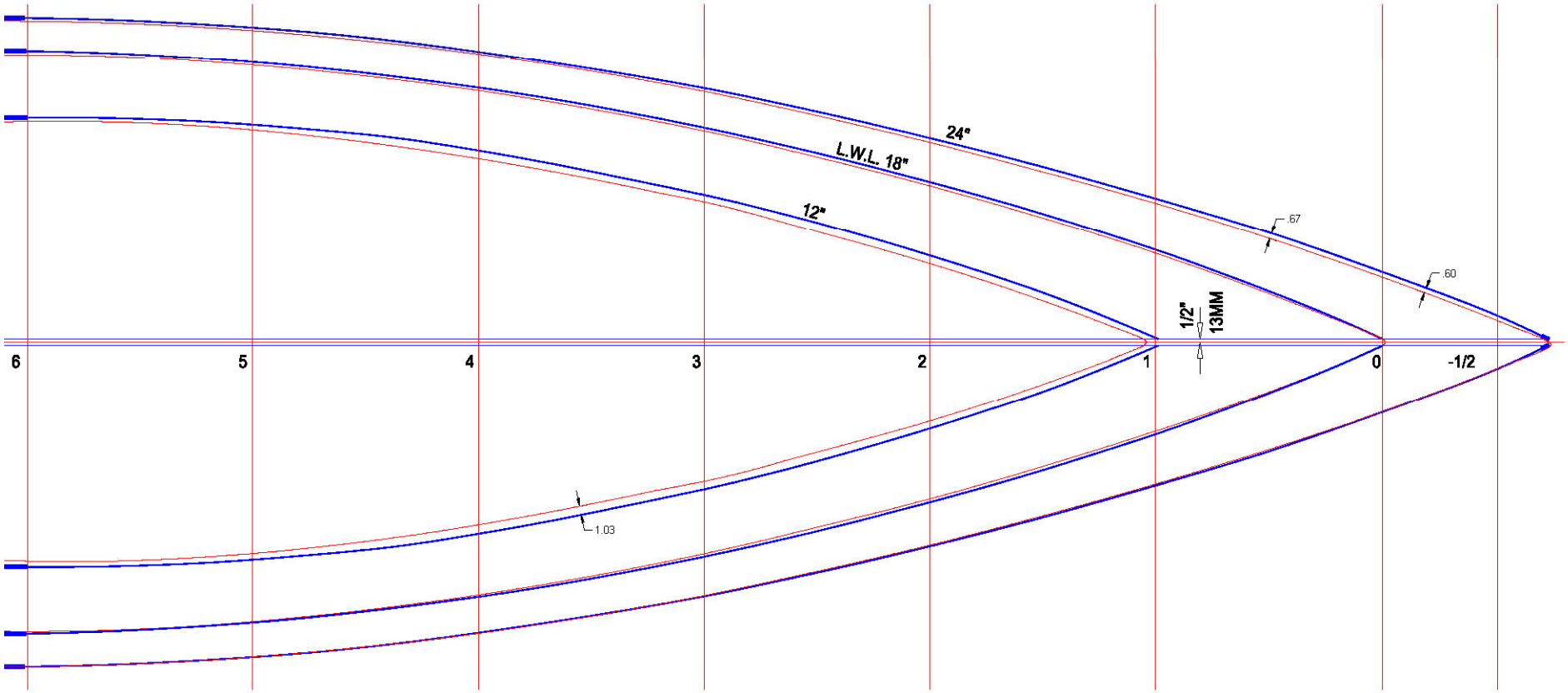
- Example Near Max Beam
- Dimensions in Inches

Comparison of Plug vs. Class Drawings



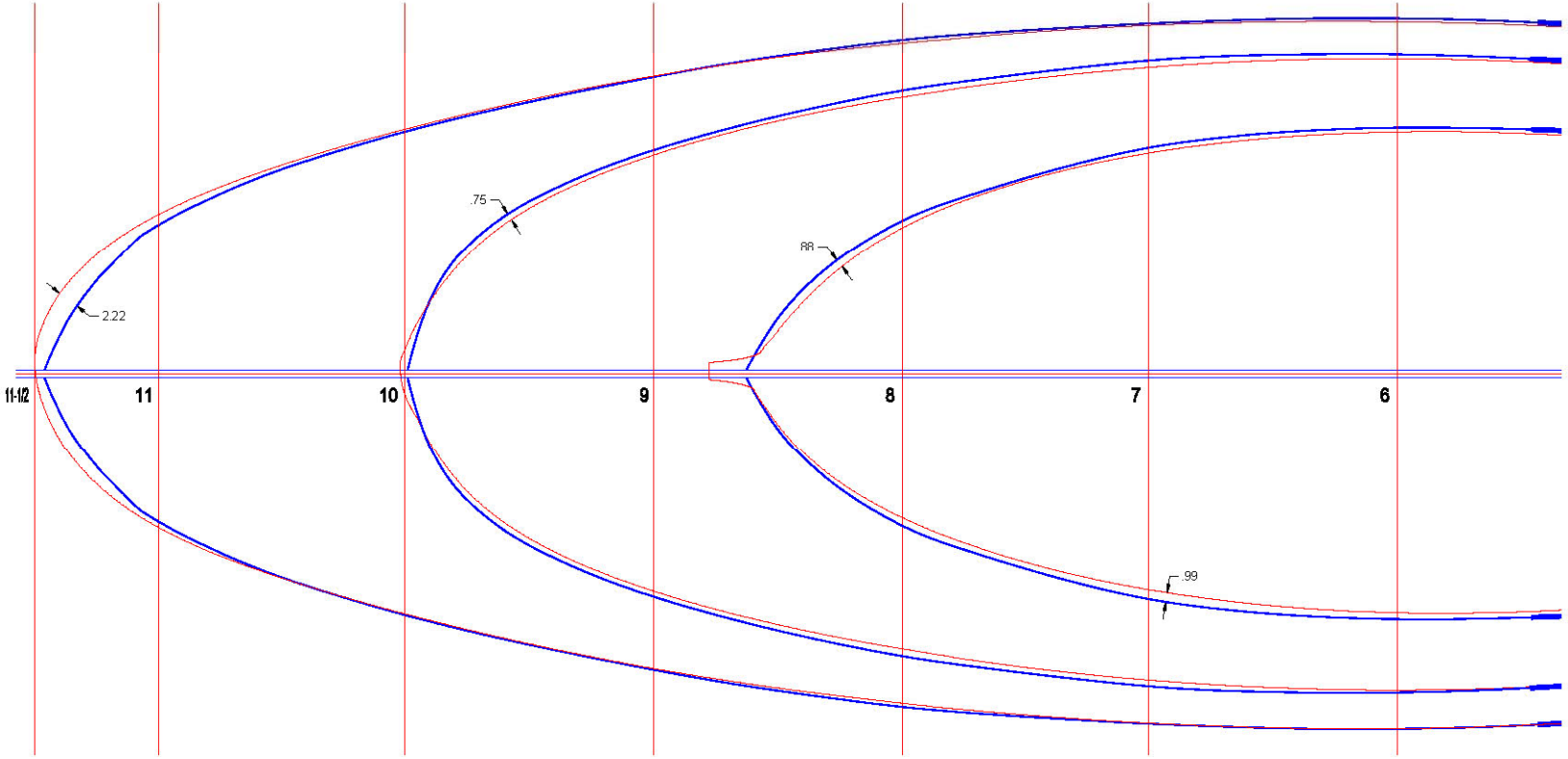
- Discrepancies in the aft sections are greater than in the bow

Comparison of Plug vs. Class Drawings



Comparison of Plug vs. Class Drawings

PLAN VIEW



- Obviously Discrepancies are Largest in the Plan View

Summary of Comparison

- The Results are Not Good or Bad Just Data.
- There are Significant Discrepancies Between the Plug and The Class Drawings. This is Not Surprising Since it is Unlikely that the Drawings Were ever Validated.

Personally I am surprised that the plug and class drawings are as close as they are and were at the limit of the technology that was used to generate them and their evolution history.

Evolution History

1. Drawings
2. Wood Boat
3. Mold From Wood Boat
4. Glass Boats
5. New Plug from Glass Boats
6. All Current Molds Made from #5

Recommendations

- Invalidate the Class Hull Drawing #3MKB-1a and Mark “For Reference Only”
- Make the Plug Solid Model the “Official Hull Shape Description”
- Use Scanned Data from Boats from All Three Class Molds to set Acceptable Tolerances.
- Potentially Generate a Hull Solid Based on the Tolerances Determined in the Step Above.
- All Drawings Must be Reviewed. Errors do Exist, Sail Plan Drawing Allows for ~80’ Tall Mast.
- Set a “Order of Precedent” for Specifications. In Case of Contradiction What is the Correct Document / Specification?