

Appendix A1- Study on each design parameters

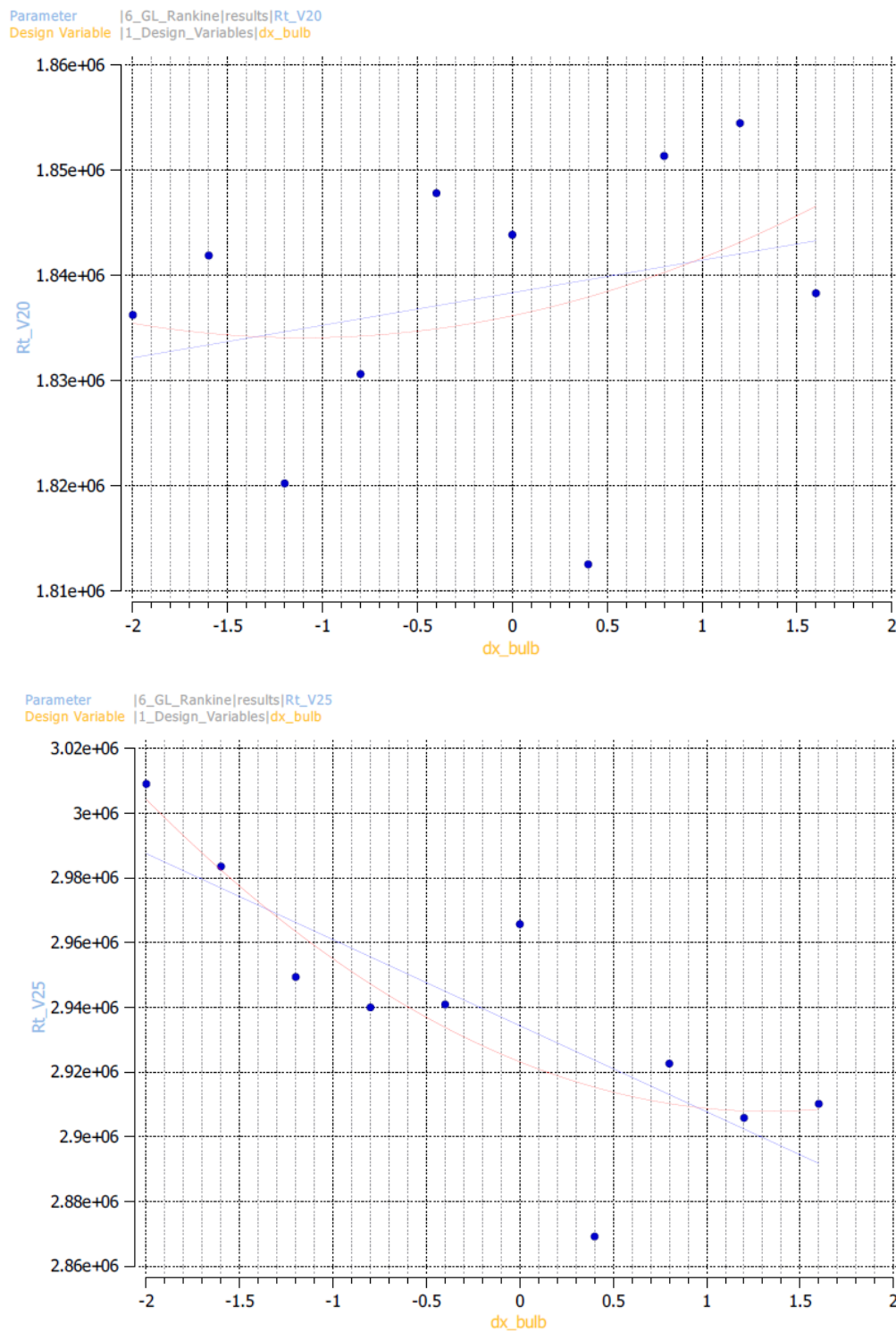


Figure A1- 1- Influence of bulb length variable on ship total resistance

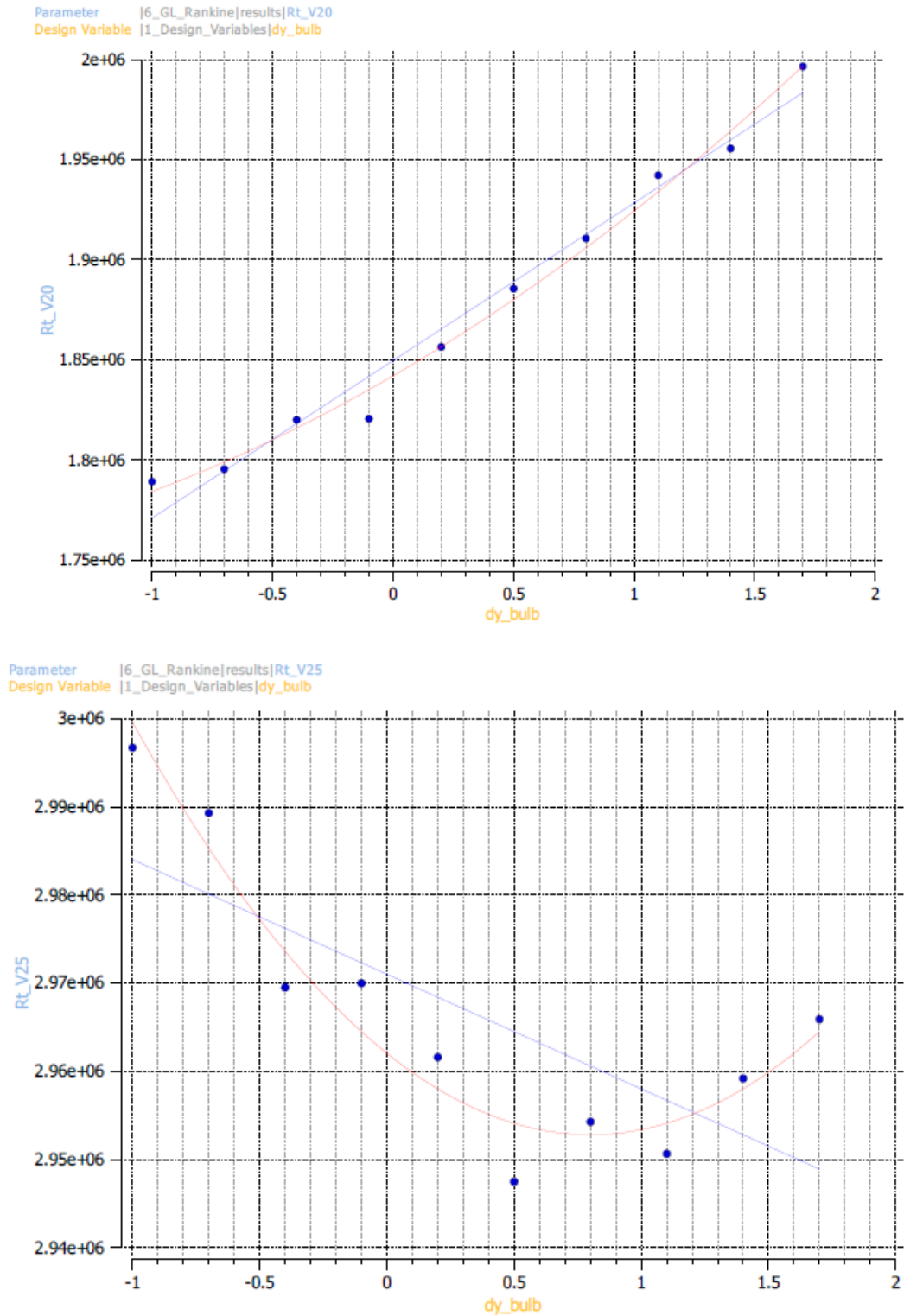


Figure A1- 2- Influence of bulb width variable on ship total resistance

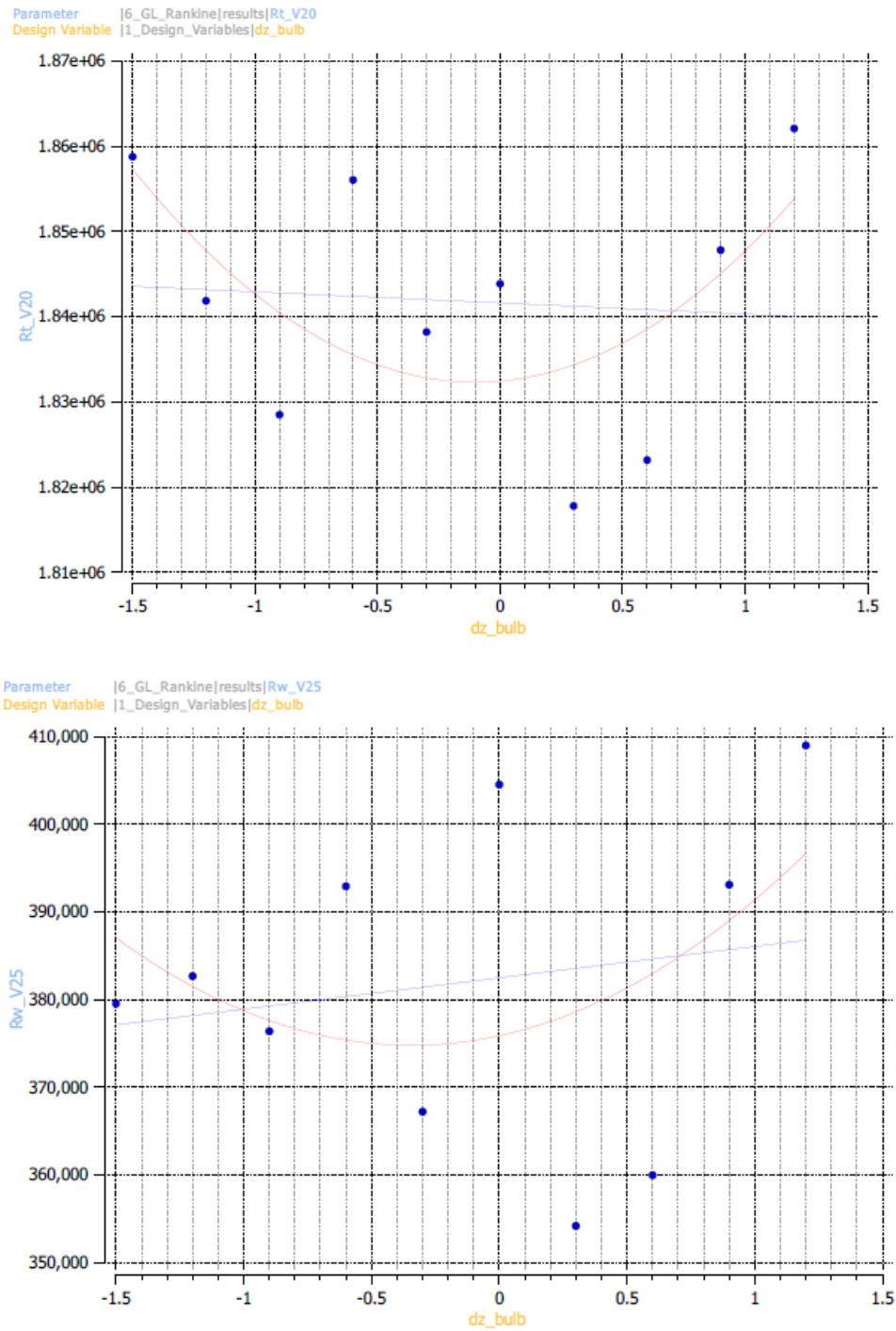


Figure A1- 3- Influence of bulb tip elevation variable on ship total resistance

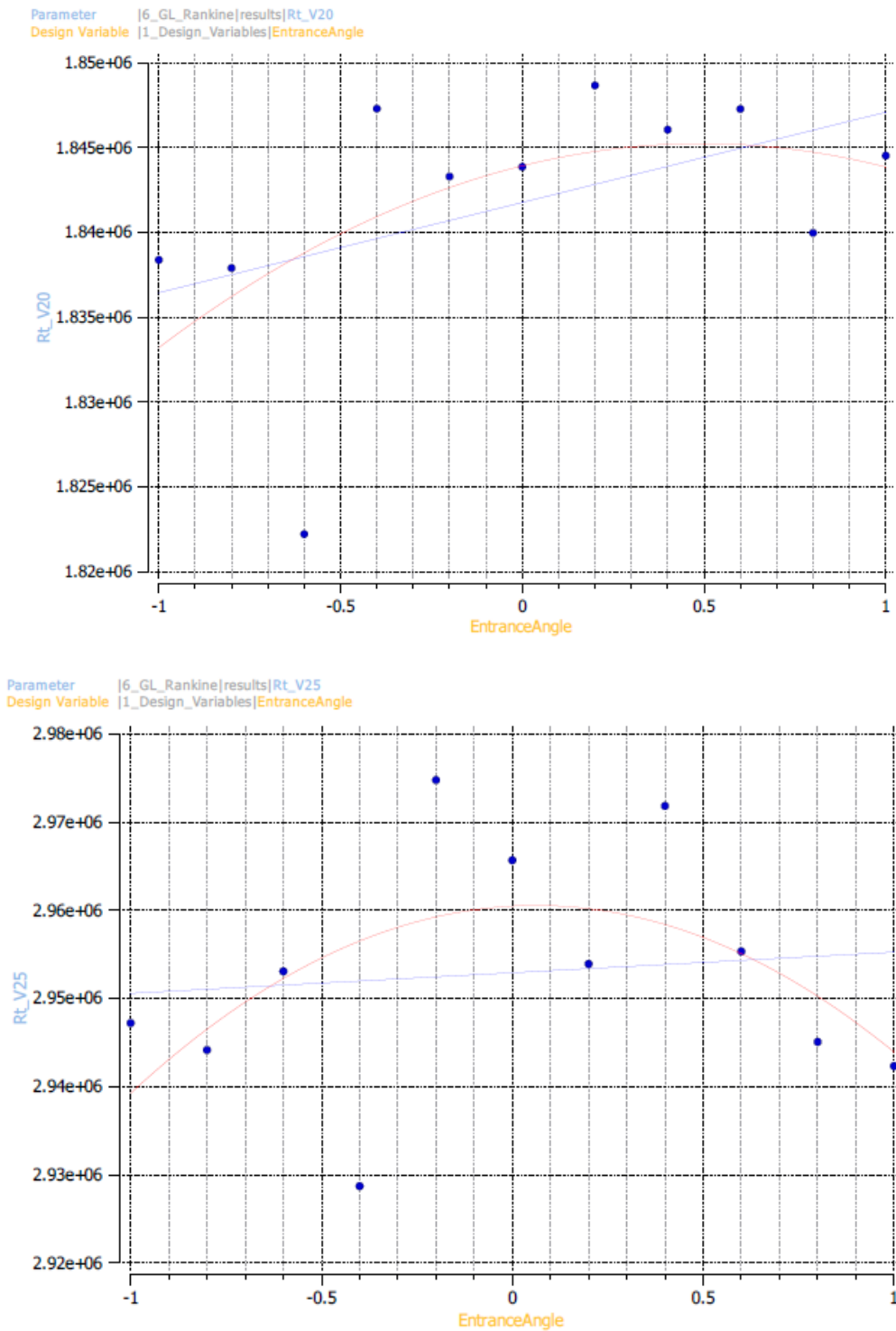


Figure A1- 4- Influence of WL entrance angle variable on ship total resistance

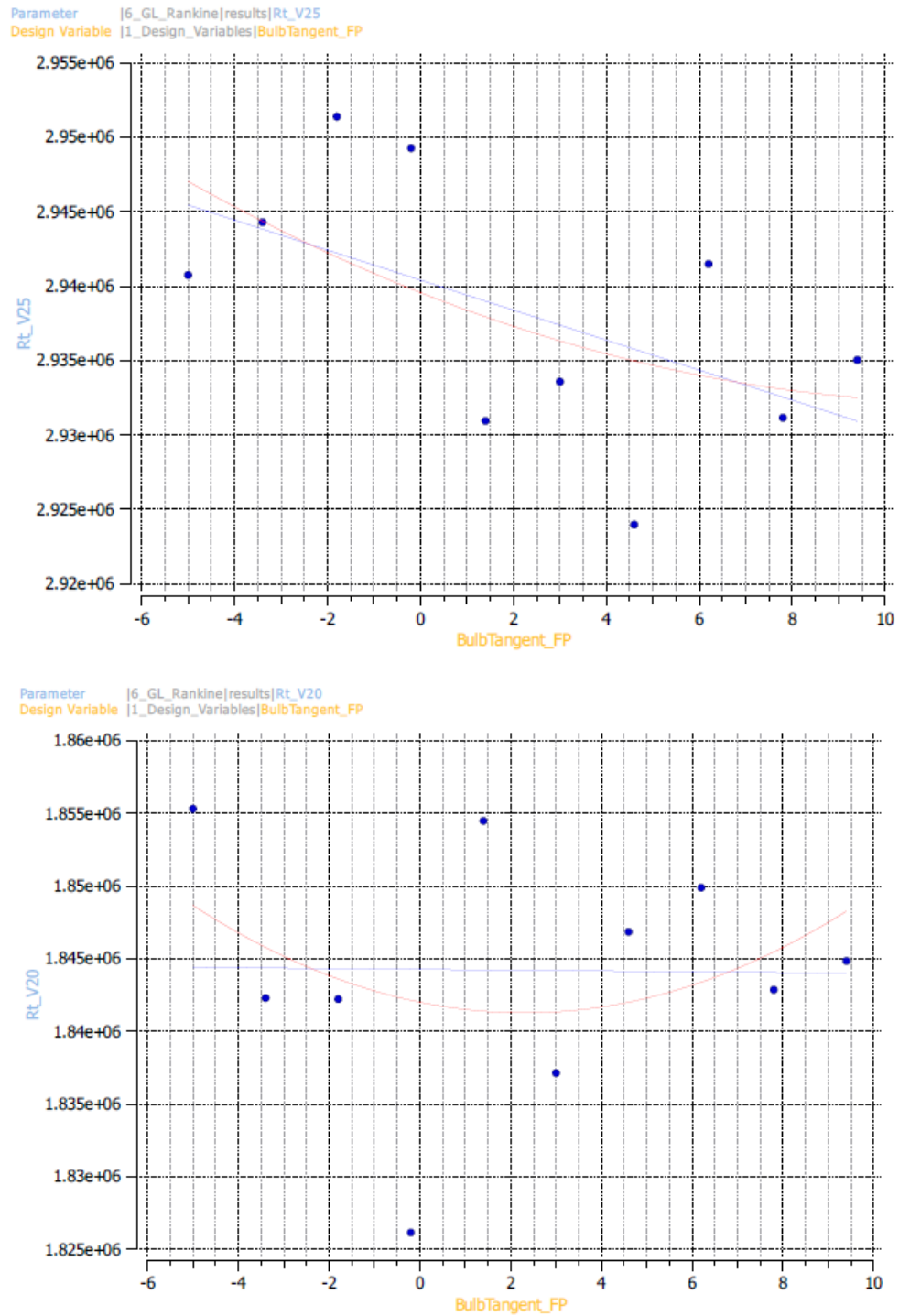


Figure A1- 5- Influence of Bulb top tangent at FP variable on ship total resistance