

APPENDIX E. PHOTOSTRESS DATA

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This appendix is only showing the contour plot images produced by the photostress camera during all the various elastic loadings imposed on the nine connections that utilized a photostress coating. For each specimen, the first figure shows a greyscale image of the connection. This image may provide information on where the photostress coating may produce unreliable results, such as those spot that have direct reflections, or those areas with a nonuniform coating thickness. The remaining contour images presented for each specimen represent maximum shear strains, or diameter of Mohr's Circle at the peak of the particular elastic load cycle.

A table of applied loads during each elastic cycle is not provided in this Appendix. Interested reader will have to contact the PI to attain the raw data files to determine that on their own.

For Specimen 307SS3-1, the connection has a shingle plate bolted to each side of the connection throughout the elastic cycling. The photostress coating was only applied to the shingle plate to attain a better understand of load distribution through the shingle plate. As a reminder, this connection was tested to failure without the presence of the shingle plates.

SPECIMEN 307SS3

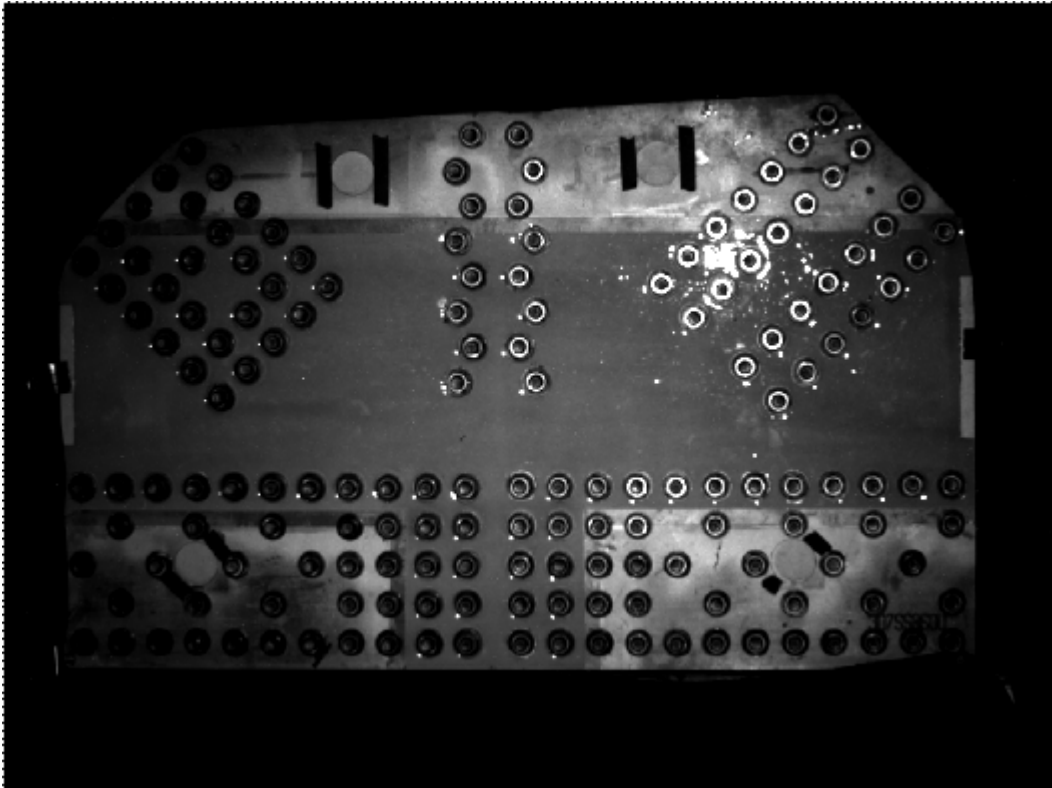


Figure E1. Grayscale image of 307SS3 epoxy coating.

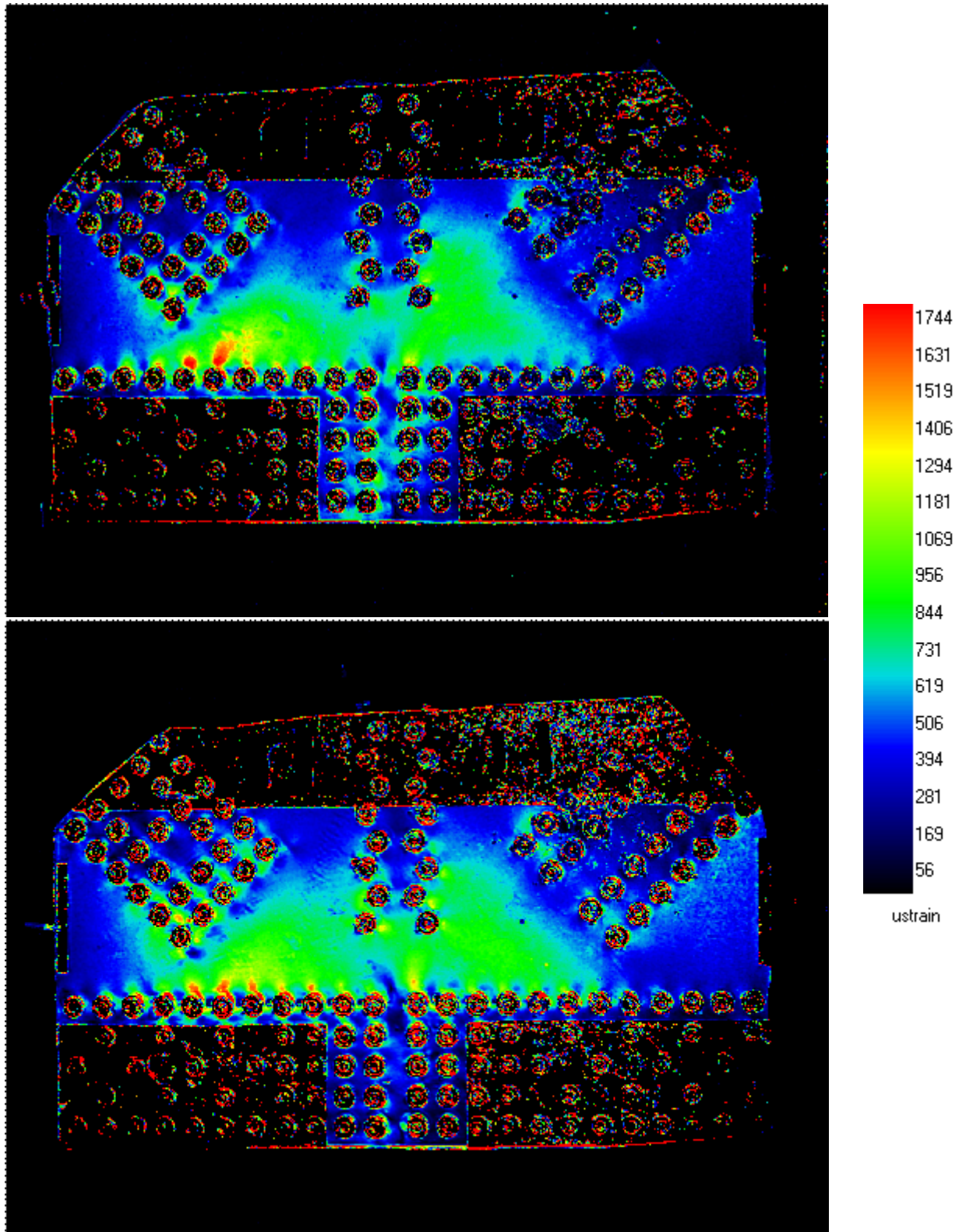


Figure E2. 307SS3 elastic load case #1 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

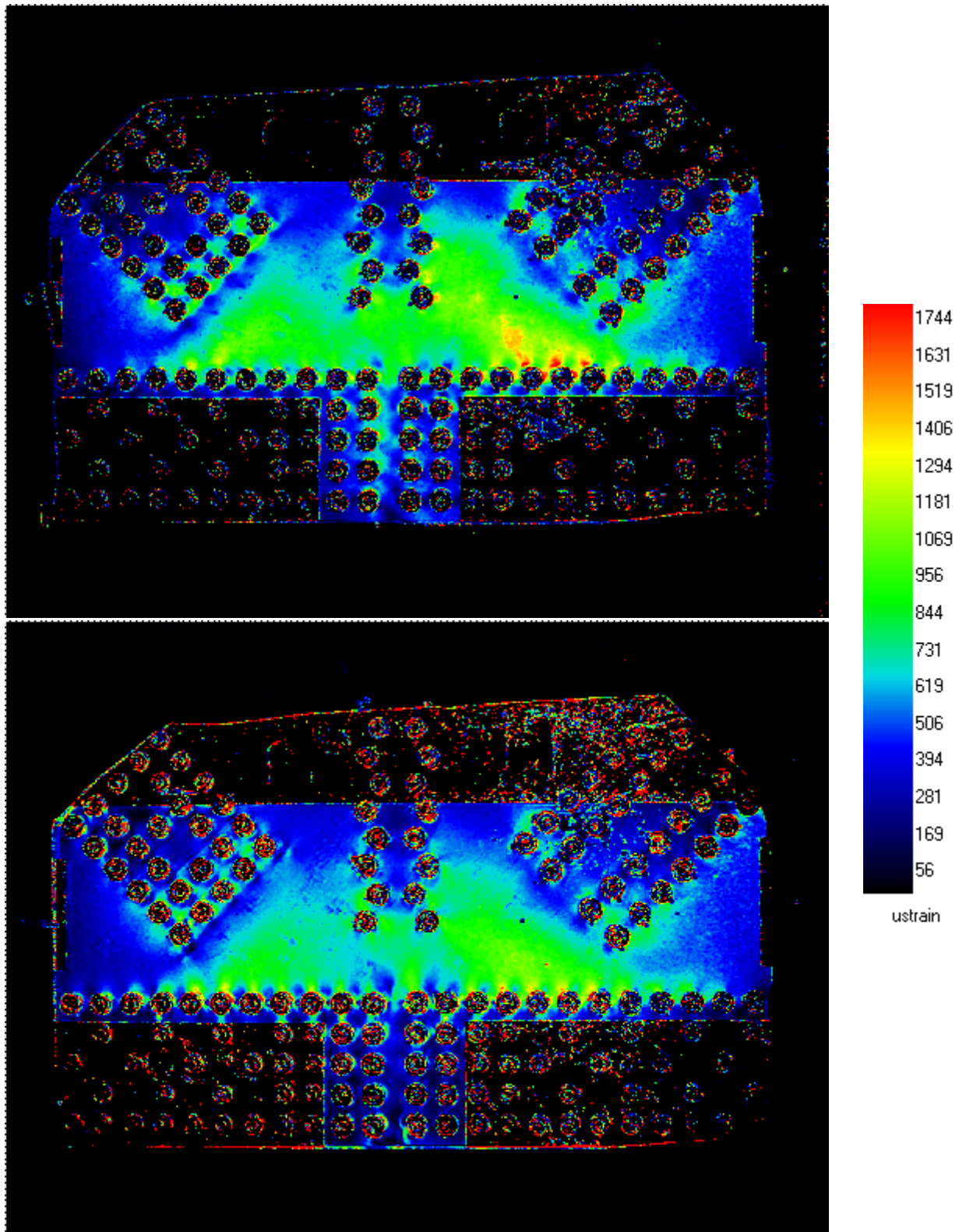


Figure E3. 307SS3 elastic load case #2 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

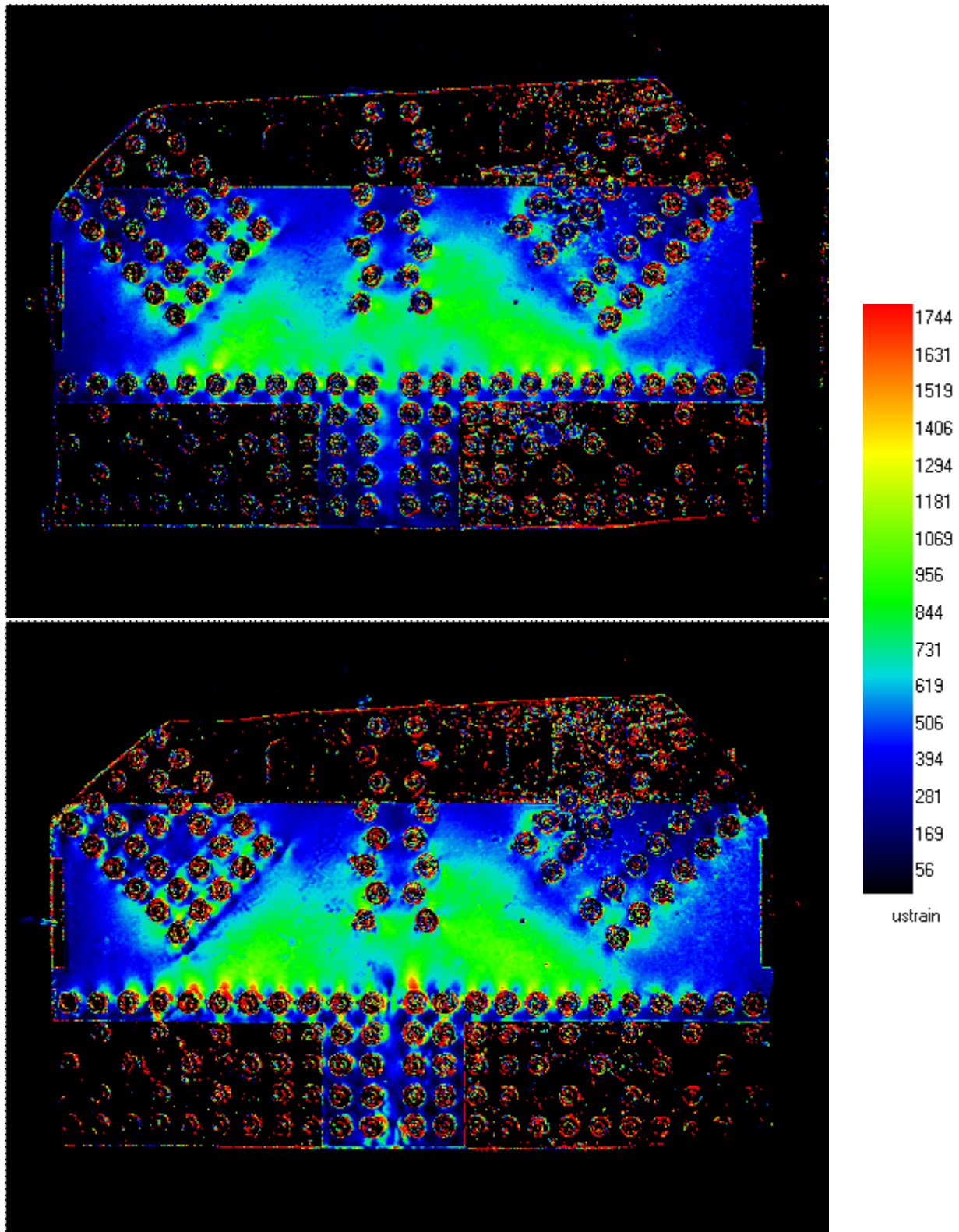


Figure E4. 307SS3 elastic load case #3 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

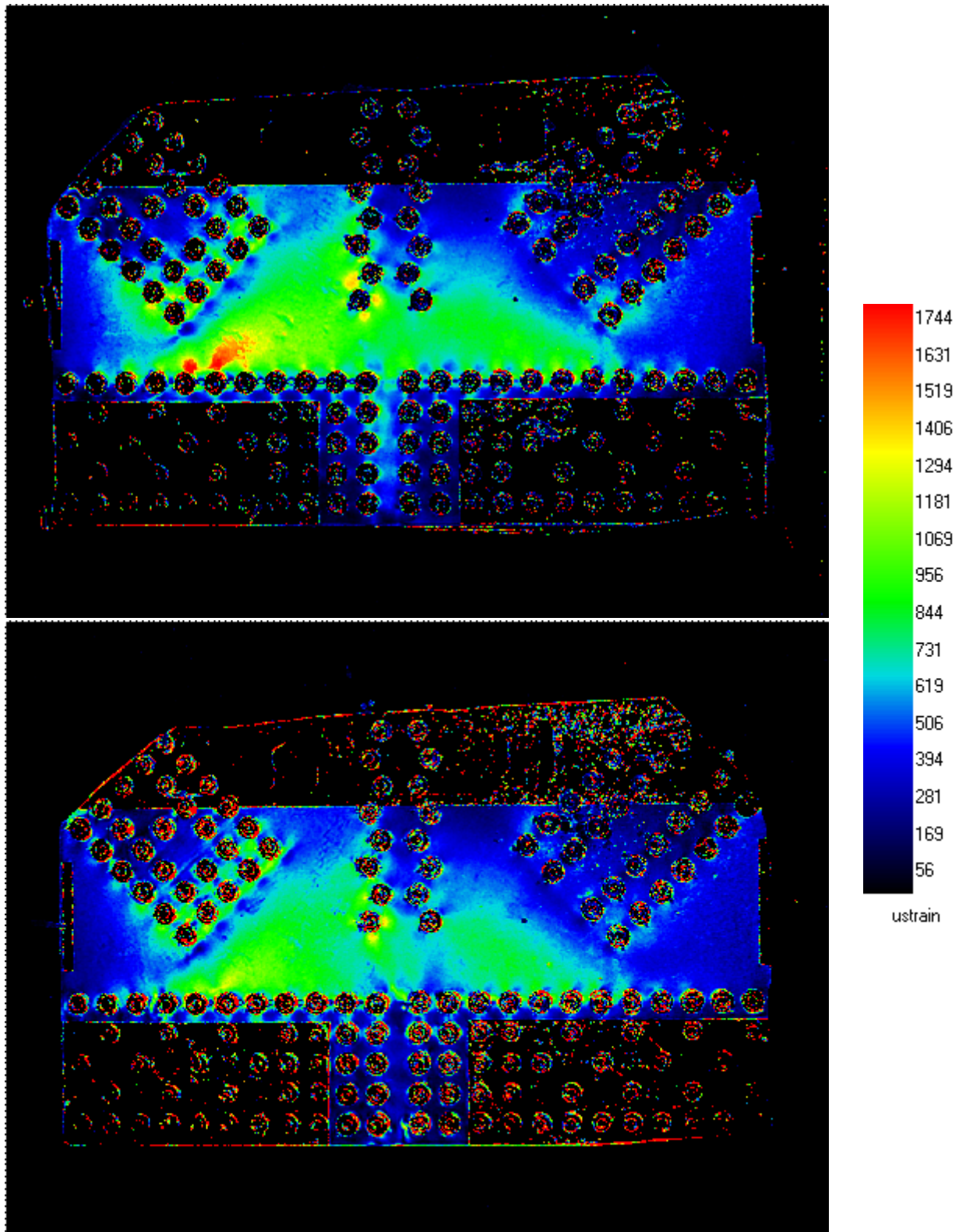


Figure E5. 307SS3 elastic load case #4 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

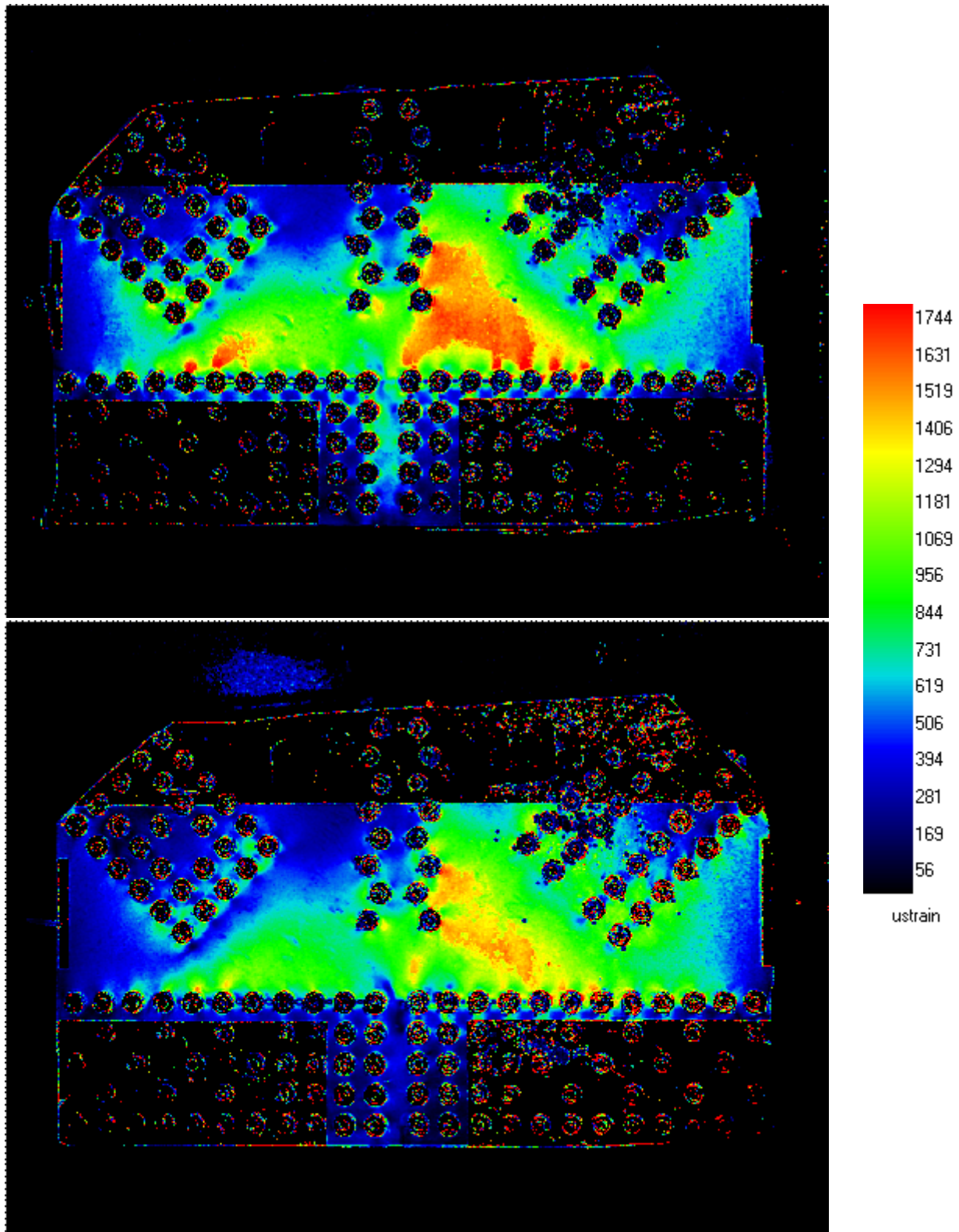


Figure E6. 307SS3 elastic load case #5 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

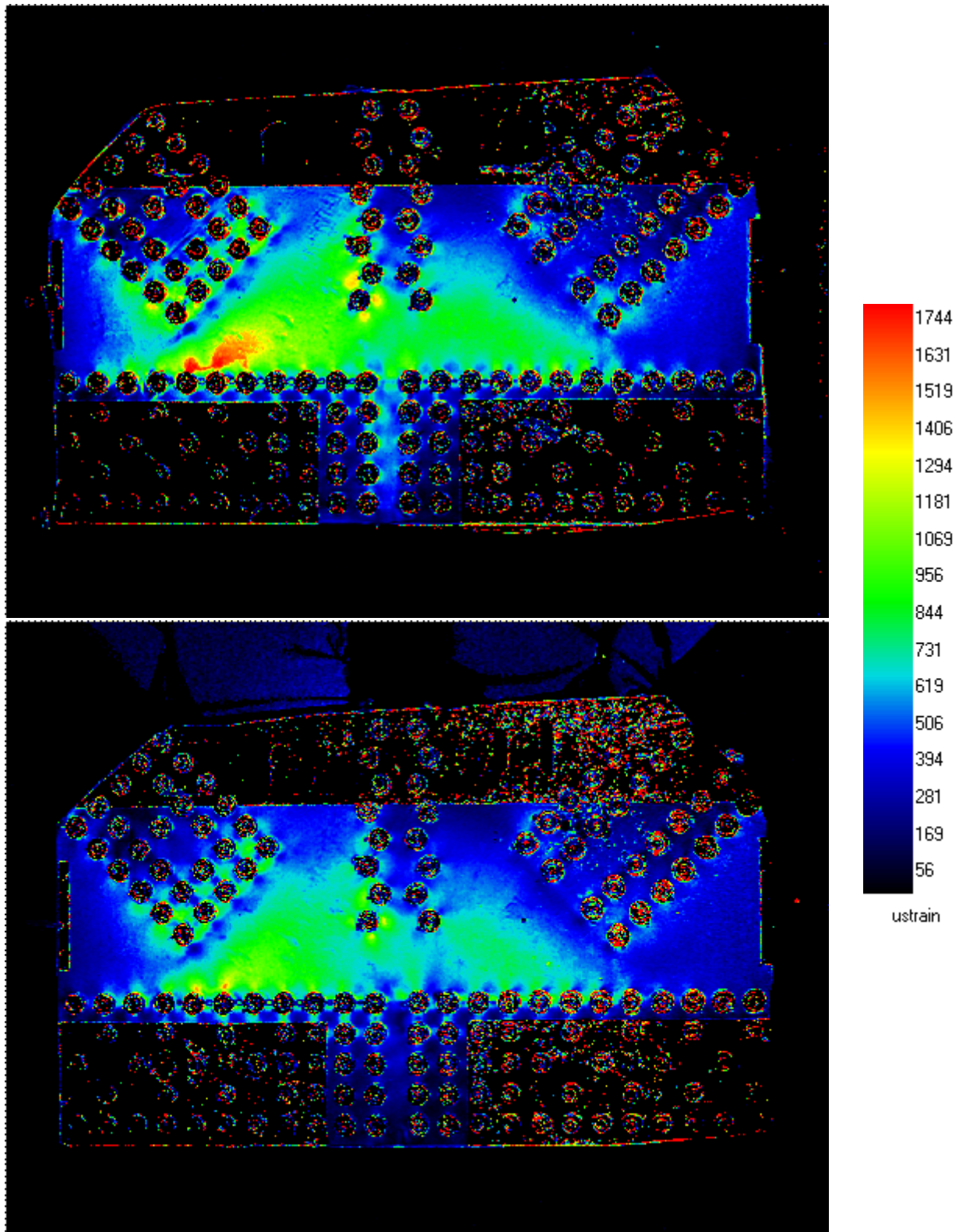


Figure E7. 307SS3 elastic load case #6 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

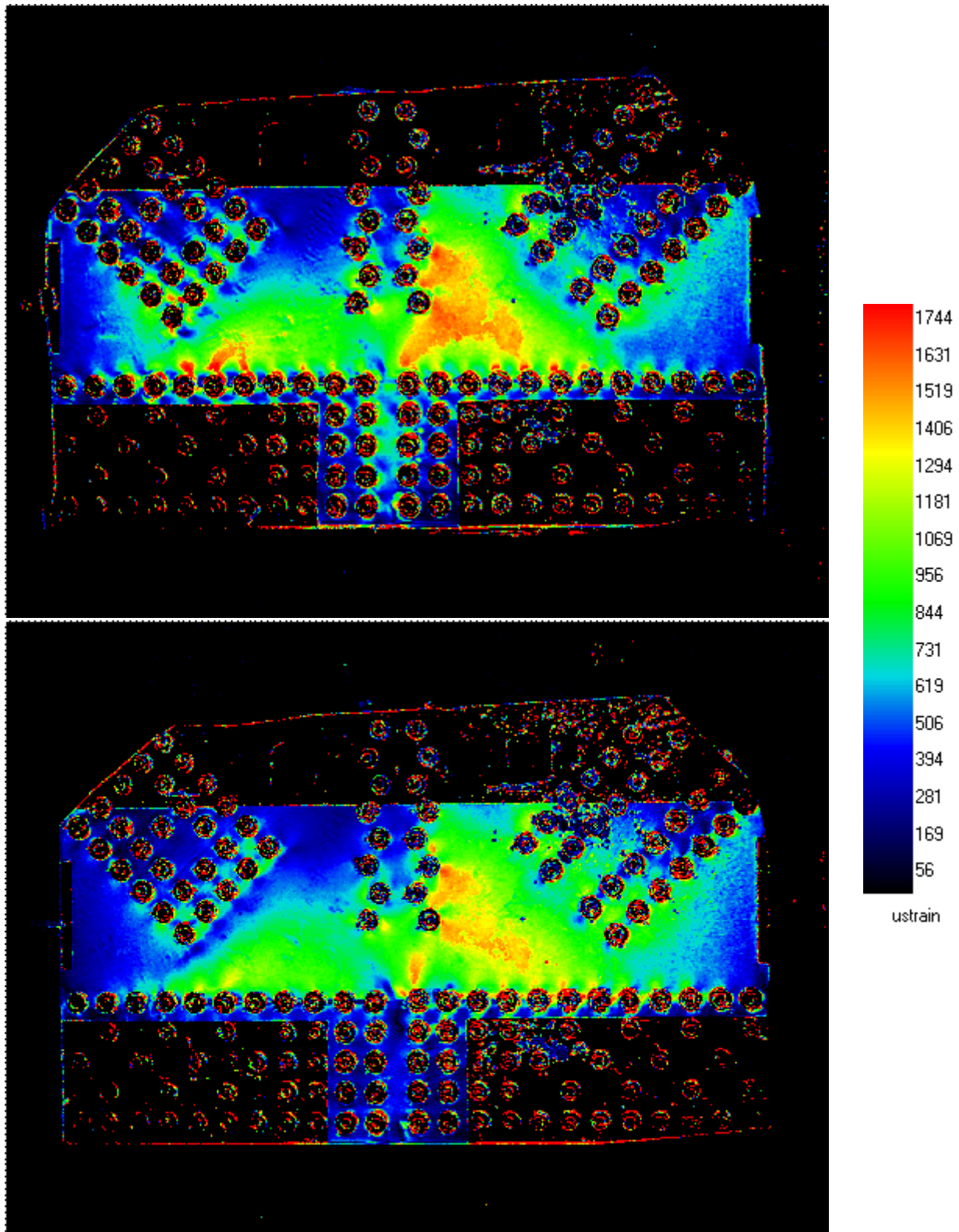


Figure E8. 307SS3 elastic load case #7 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

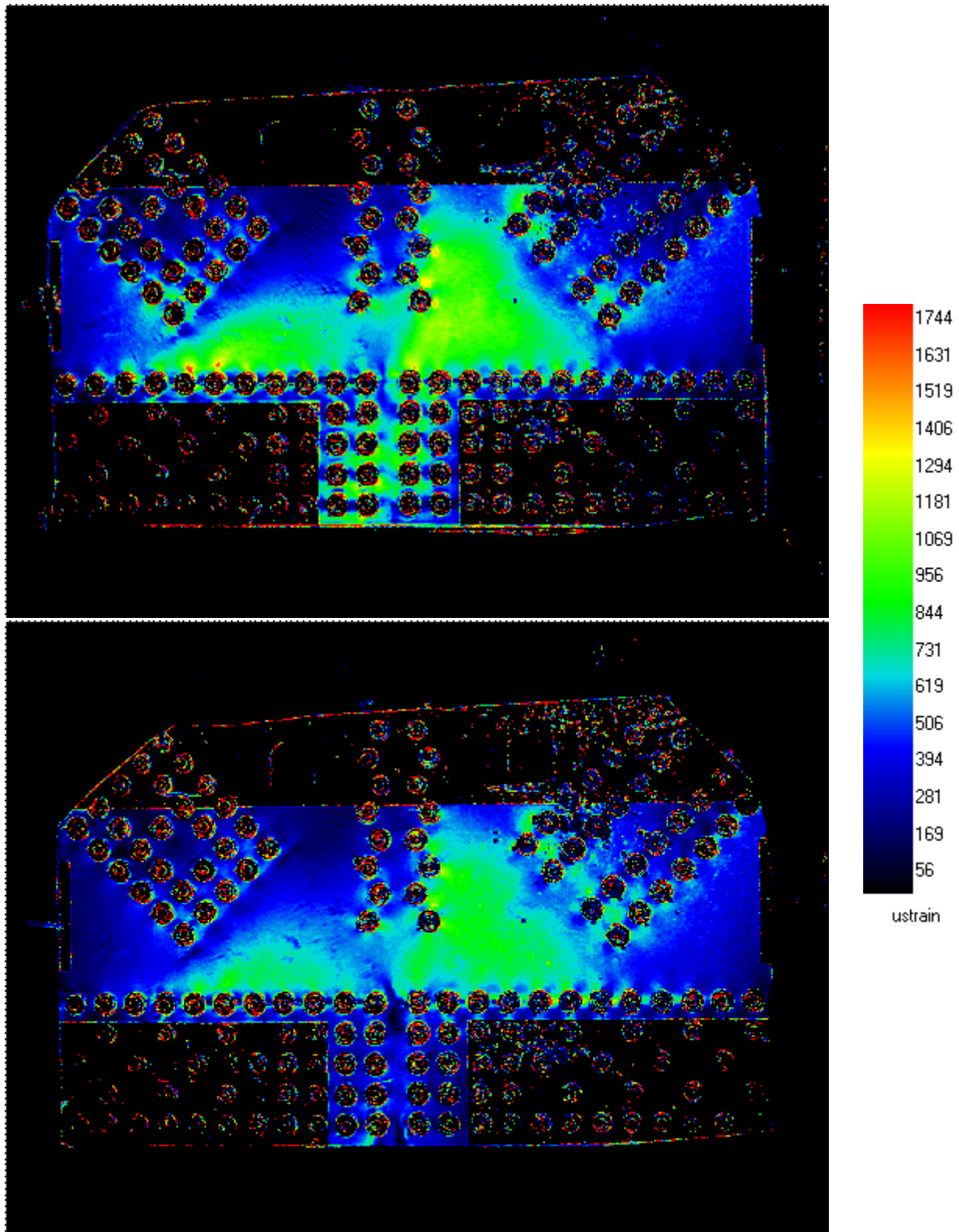


Figure E9. 307SS3 elastic load case #8 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

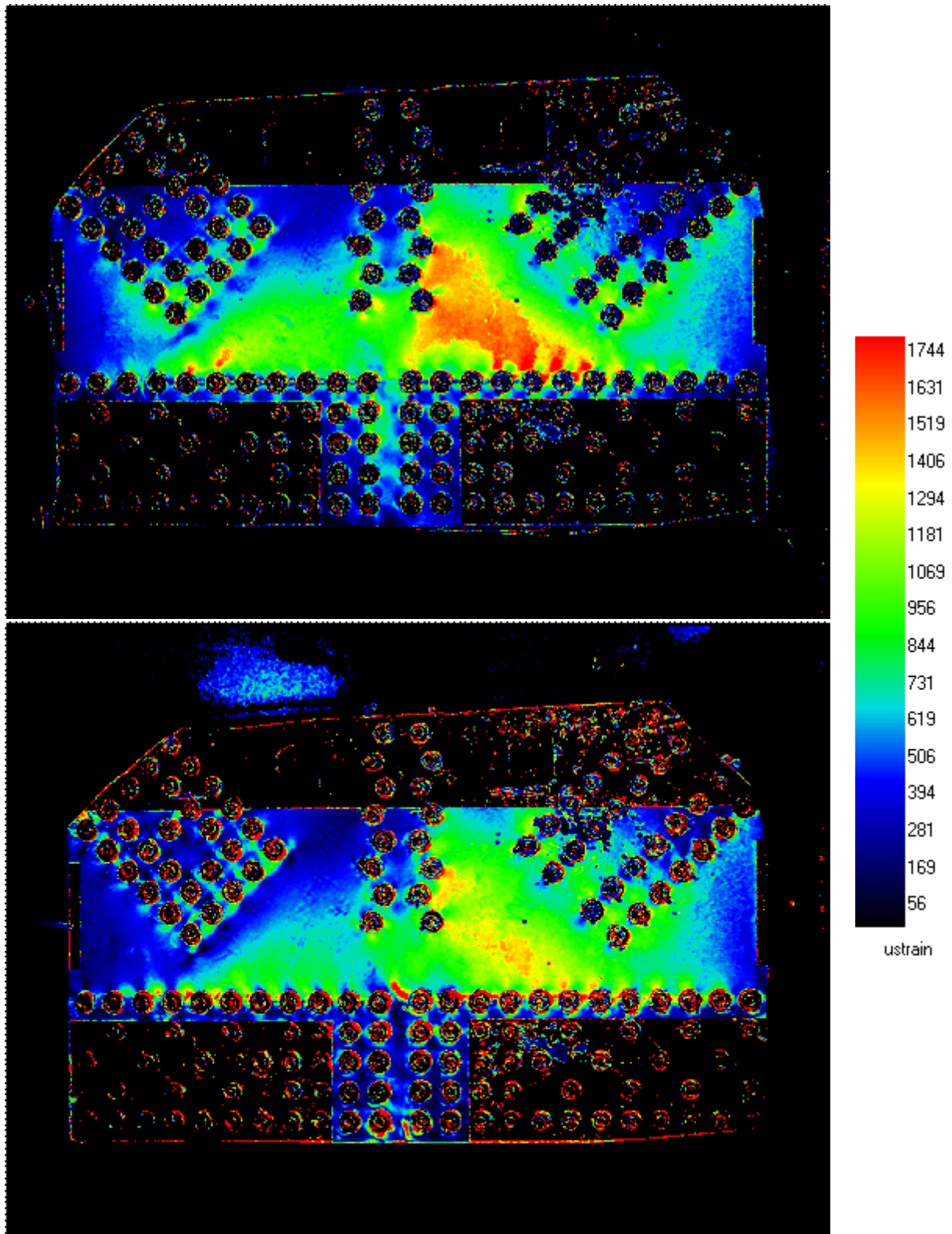


Figure E10. 307SS3 elastic load case #9 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

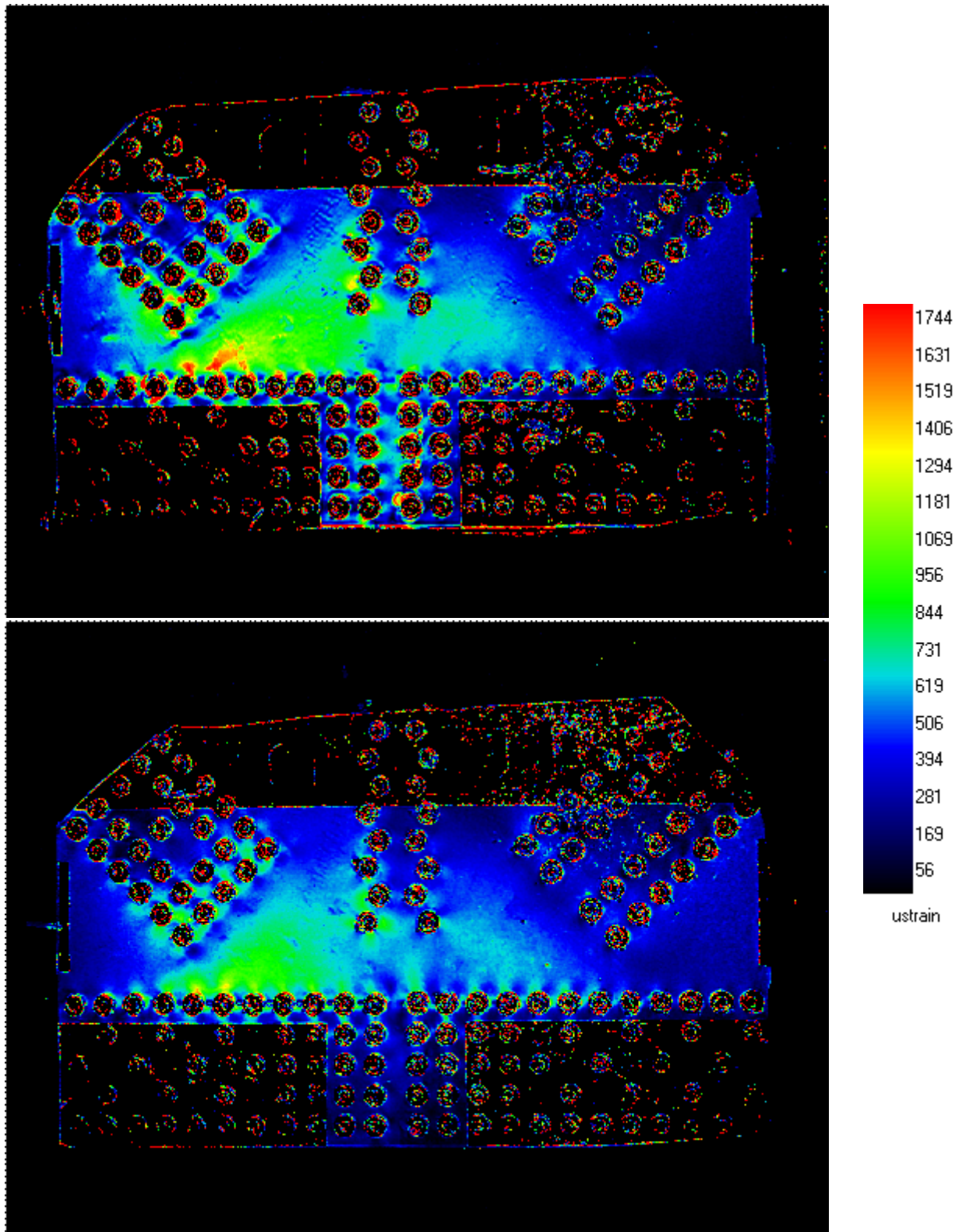


Figure E11. 307SS3 elastic load case #10 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

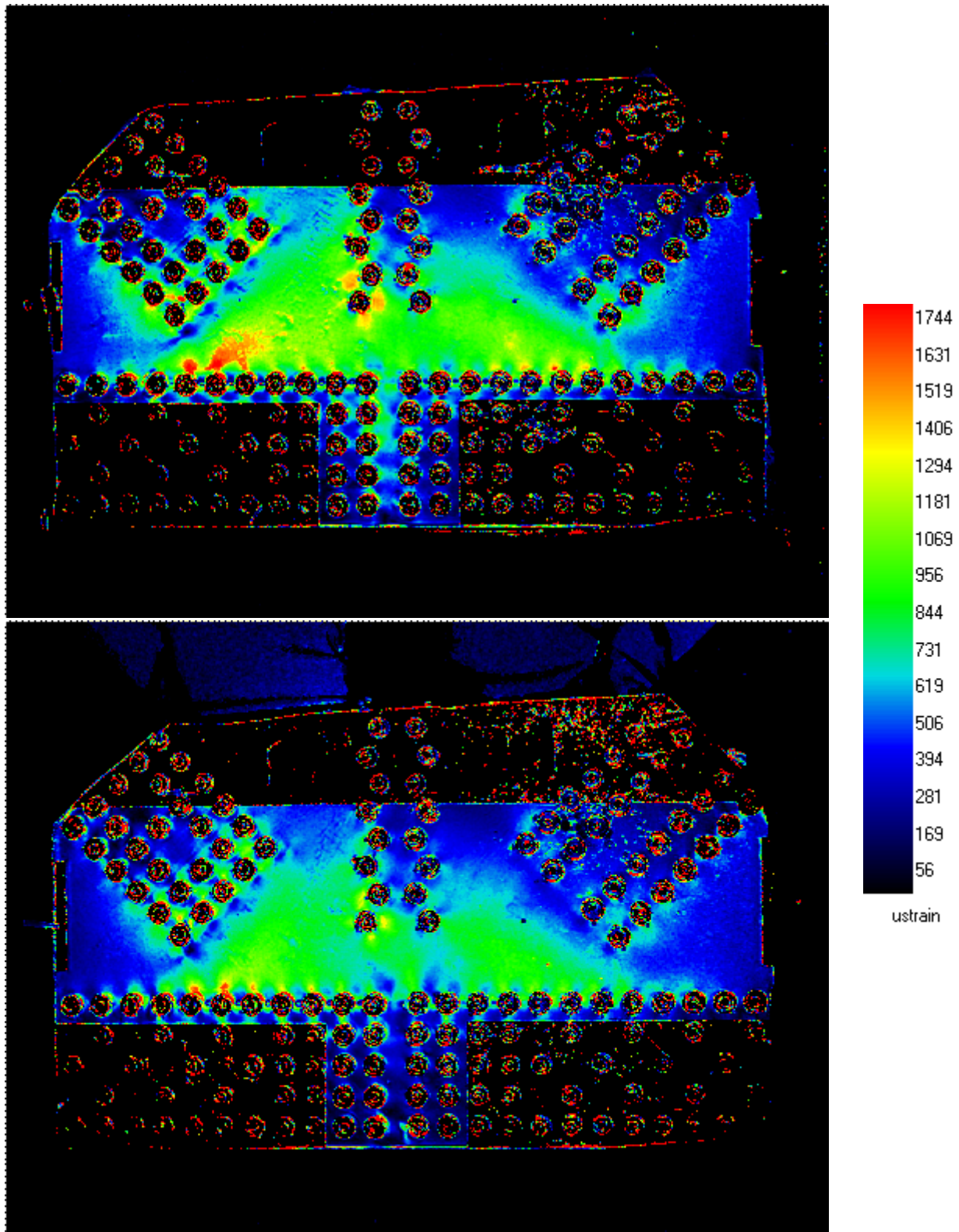


Figure E12. 307SS3 elastic load case #11 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

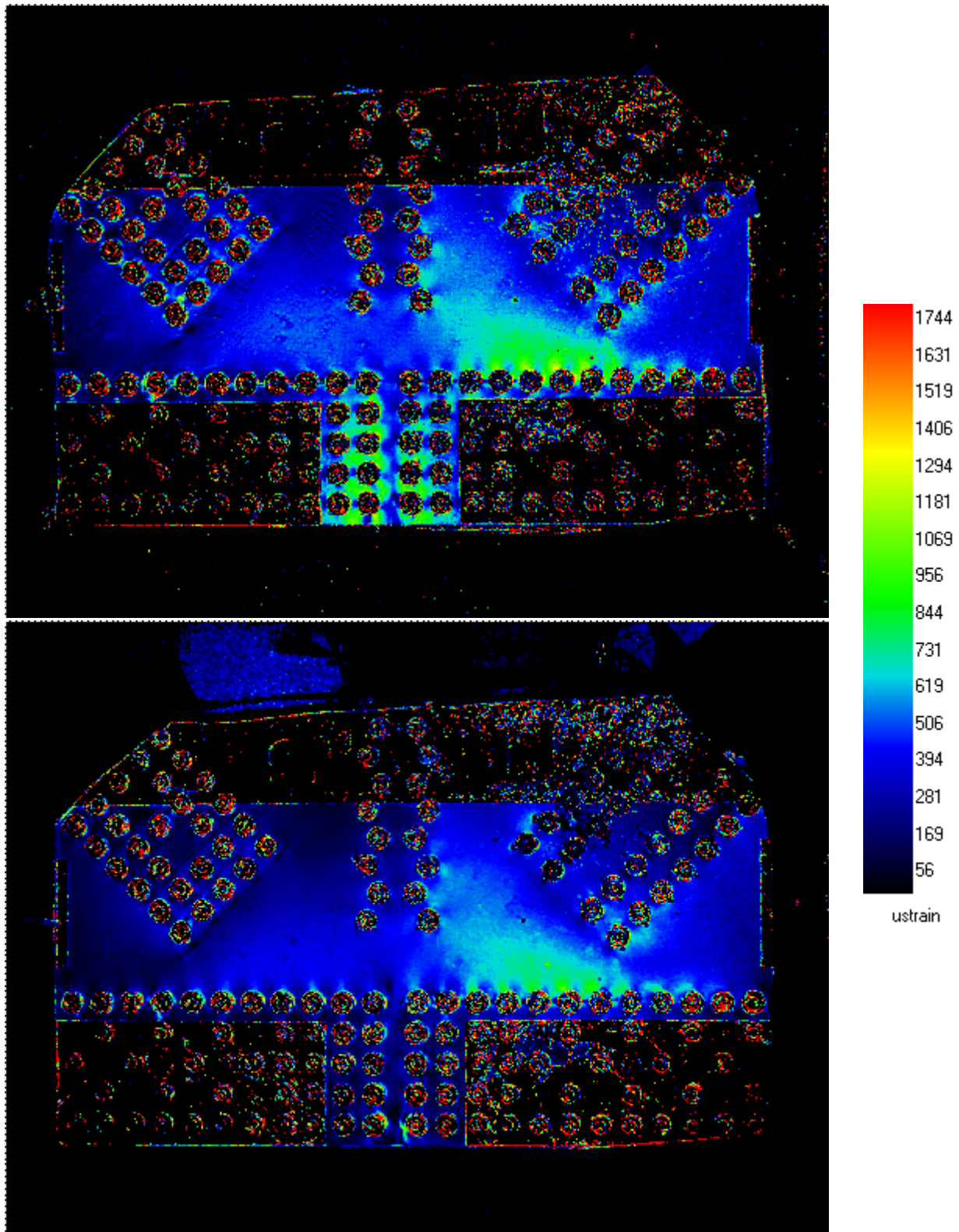


Figure E13. 307SS3 elastic load case #13 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

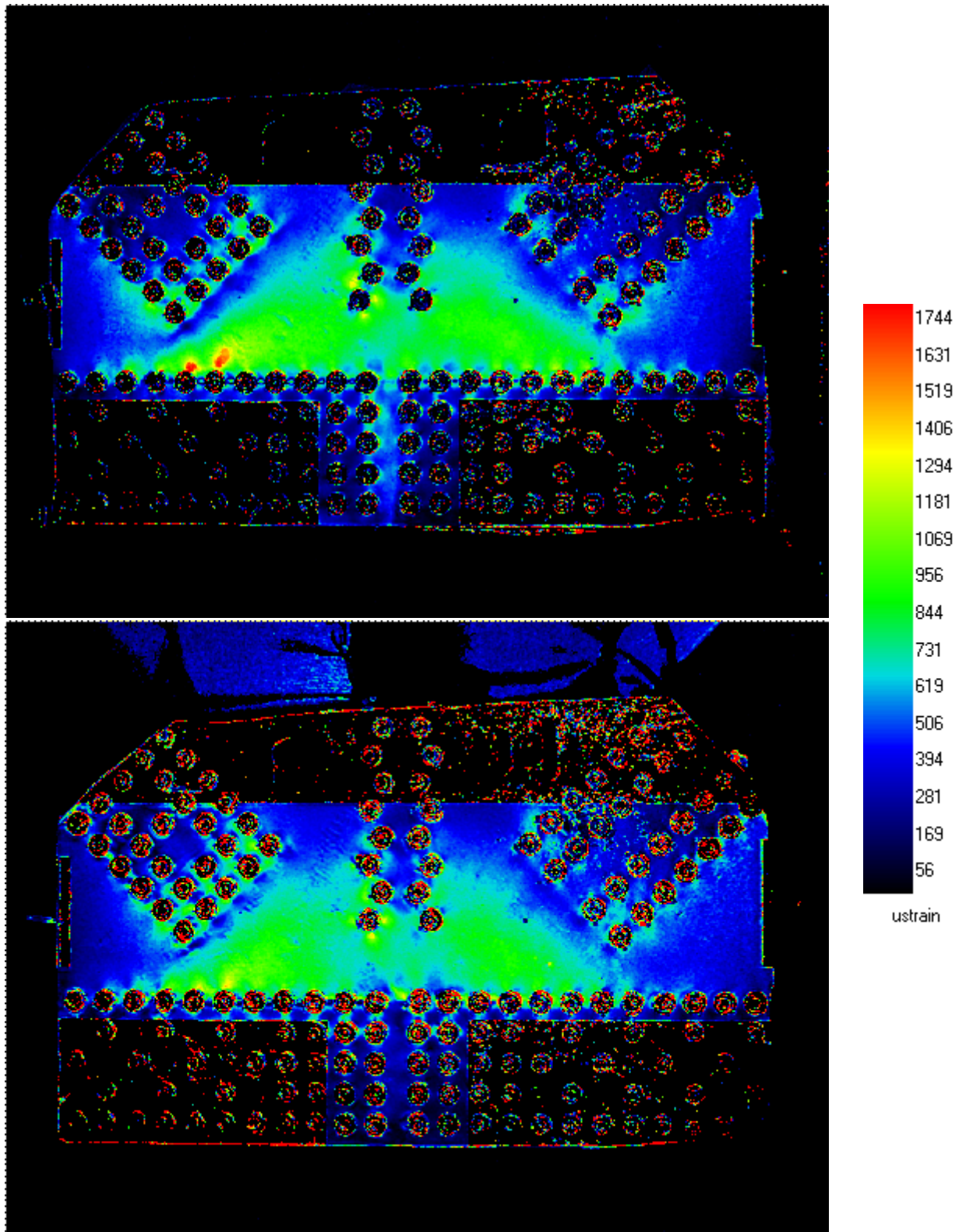


Figure E14. 307SS3 elastic load case #14 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

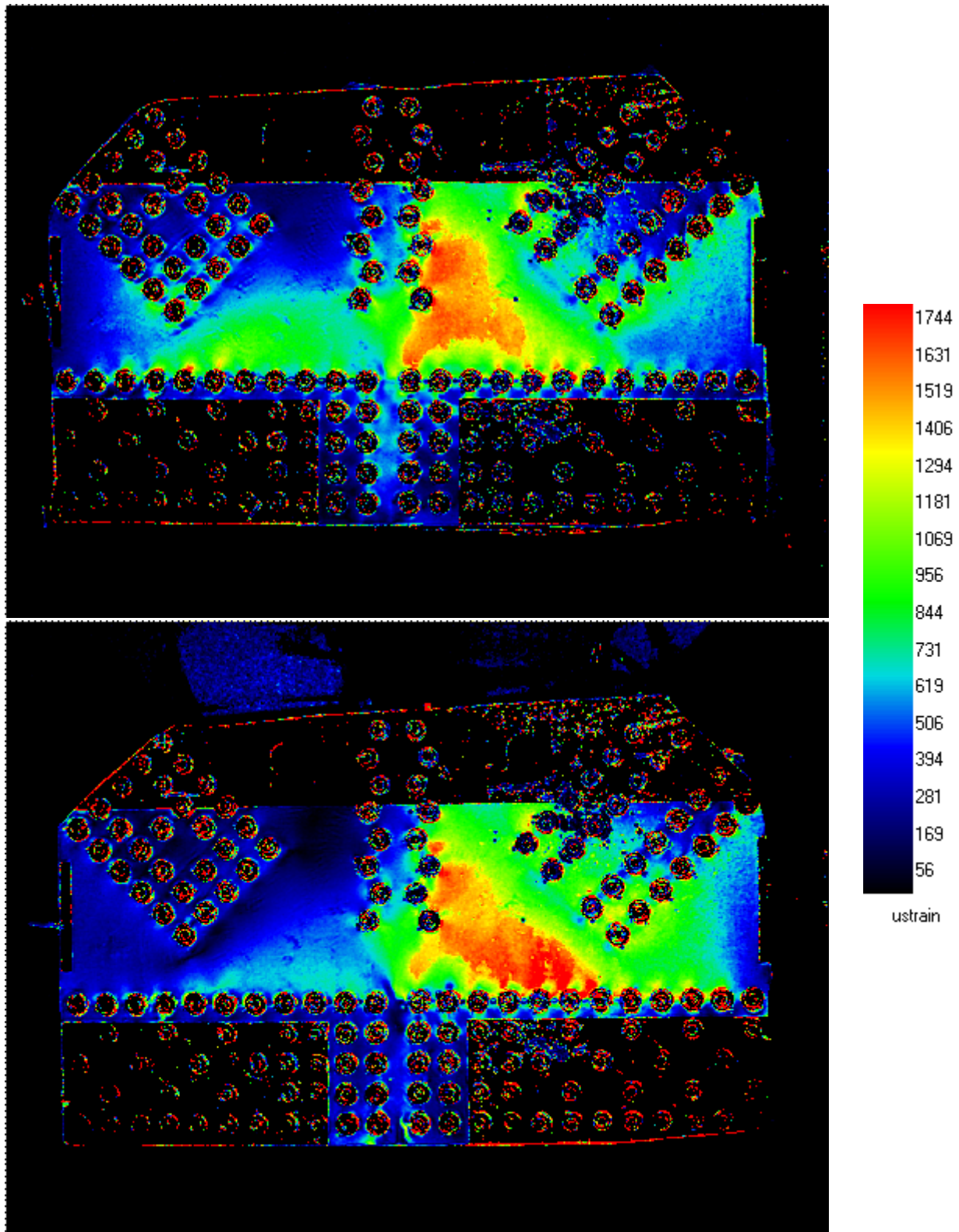


Figure E15. 307SS3 elastic load case #15 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

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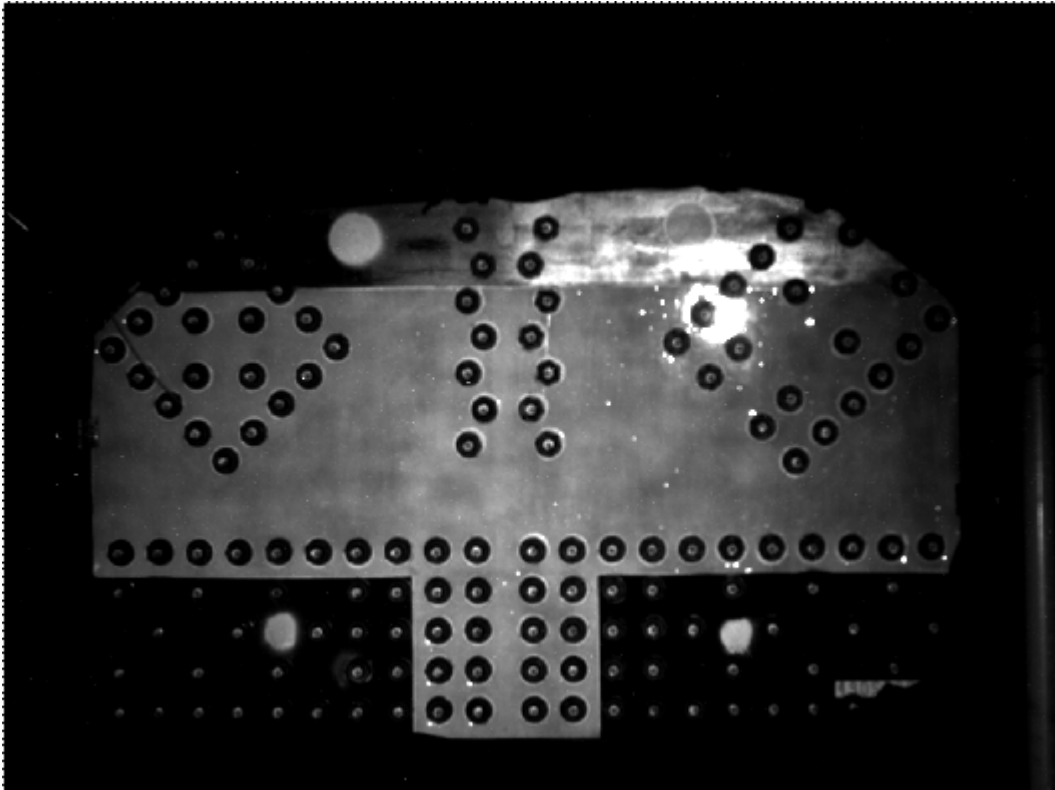


Figure E16. Grayscale image of 490SS3 epoxy coating.

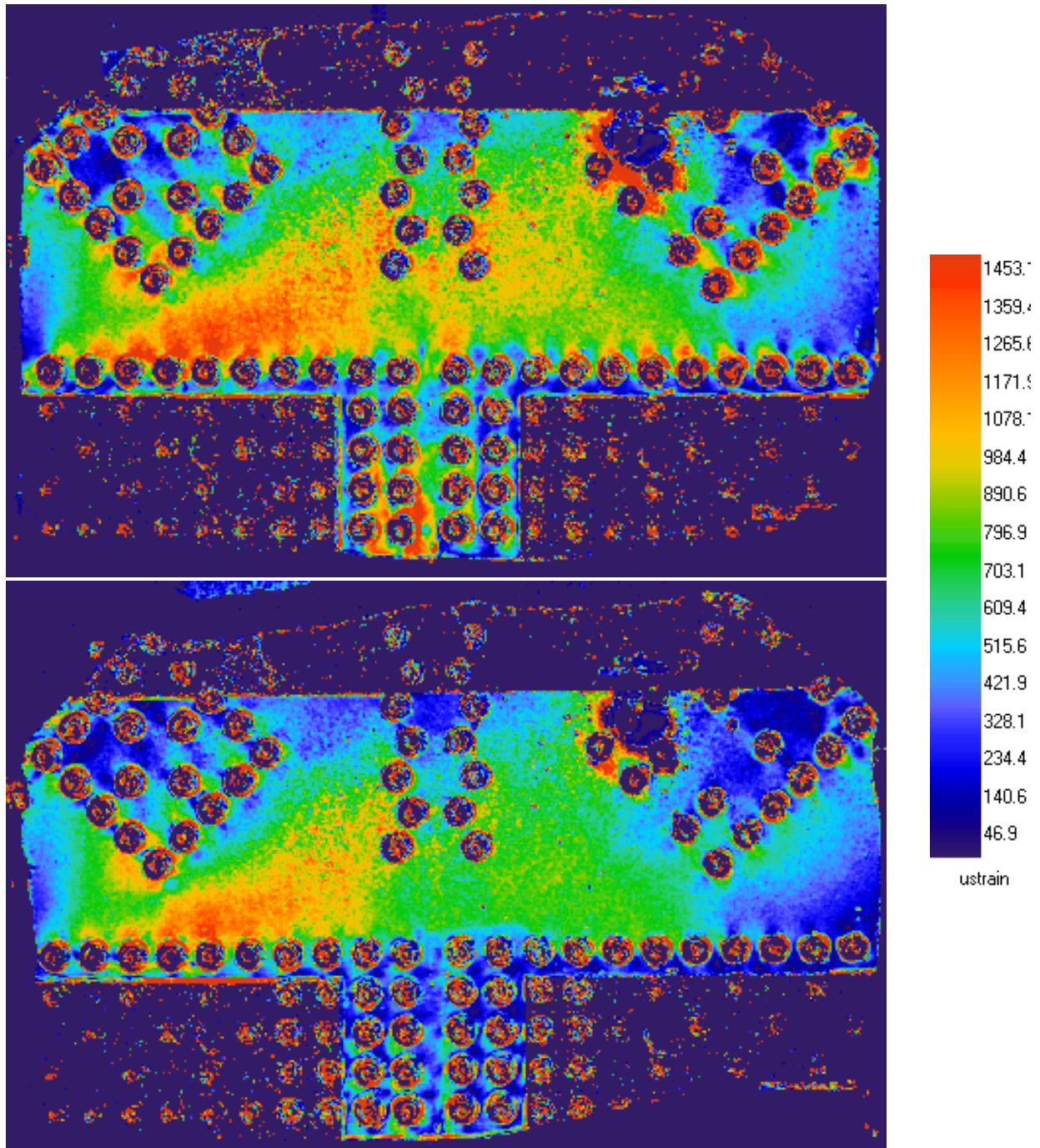


Figure E17. GP490SS3 elastic load case #1 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

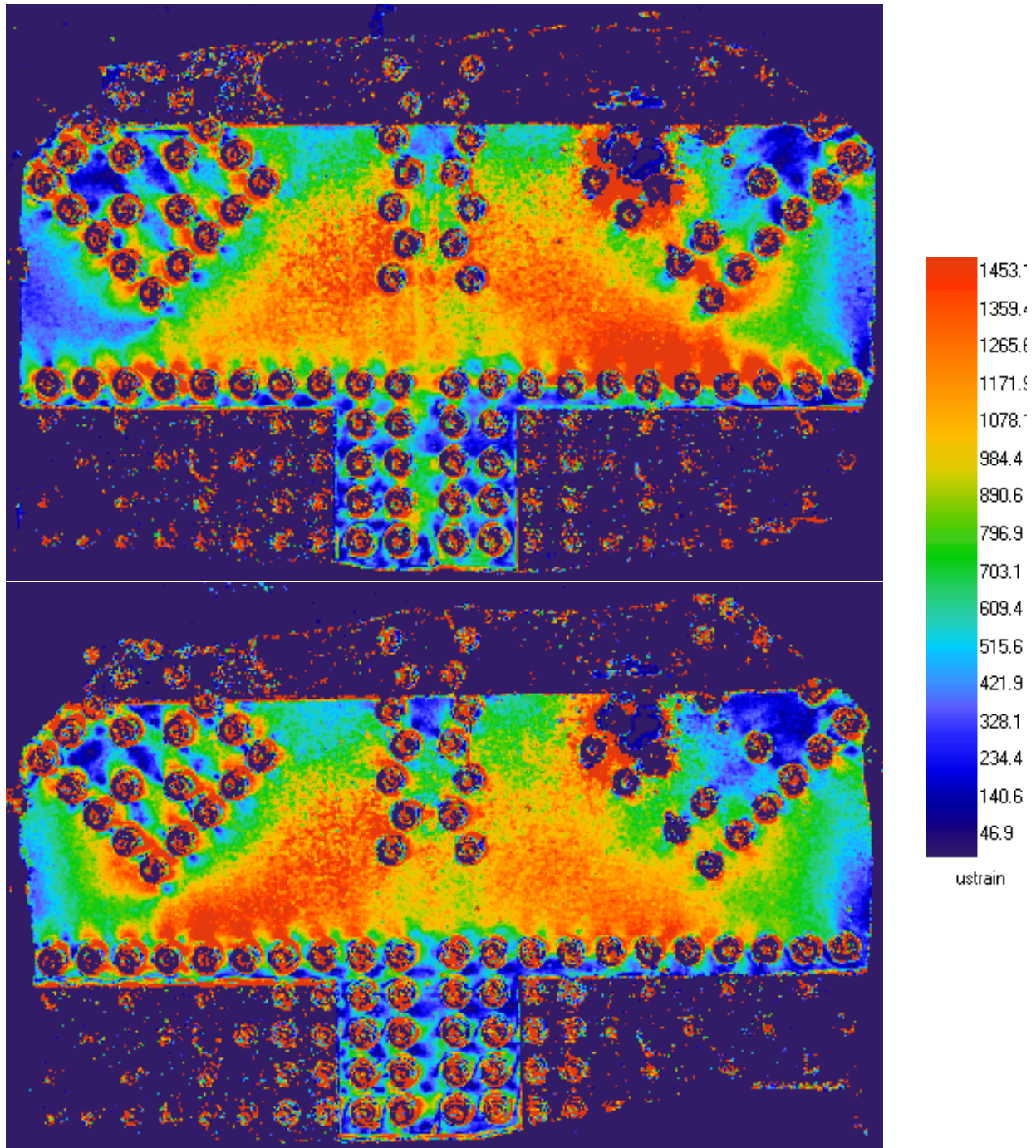


Figure E18. GP490SS3 elastic load case #2 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

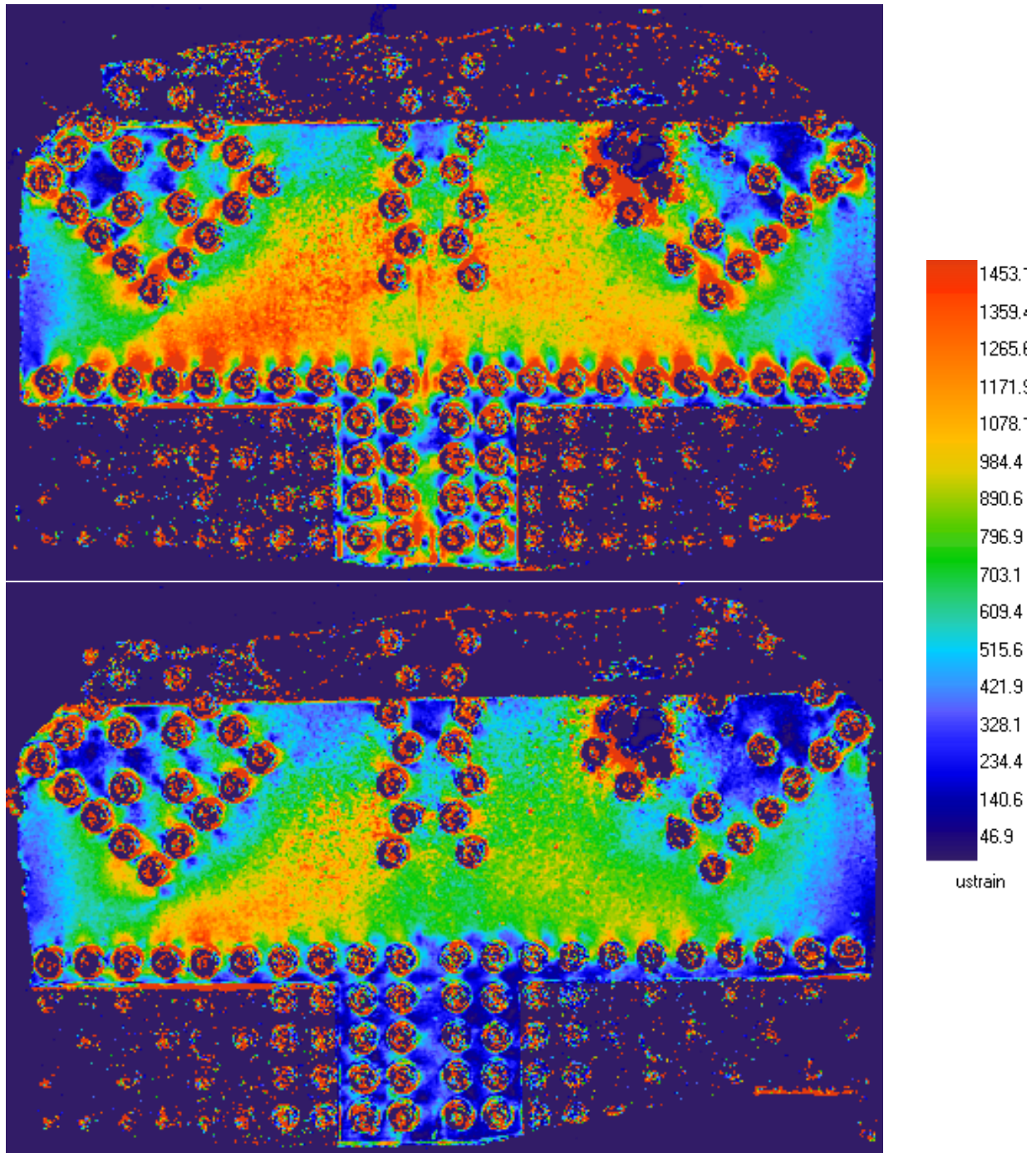


Figure E19. GP490SS3 elastic load case #3 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

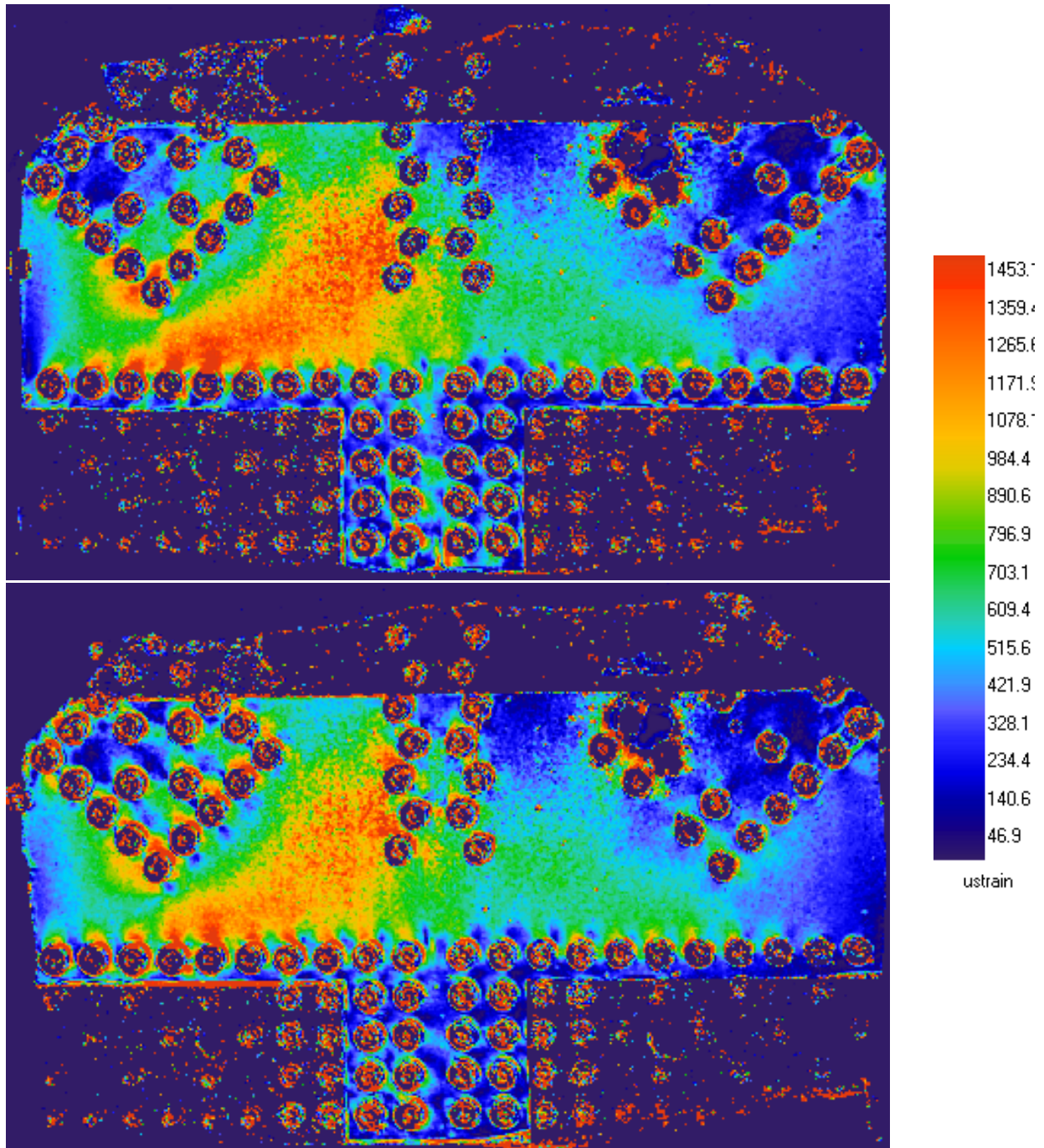


Figure E20. GP490SS3 elastic load case #4 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

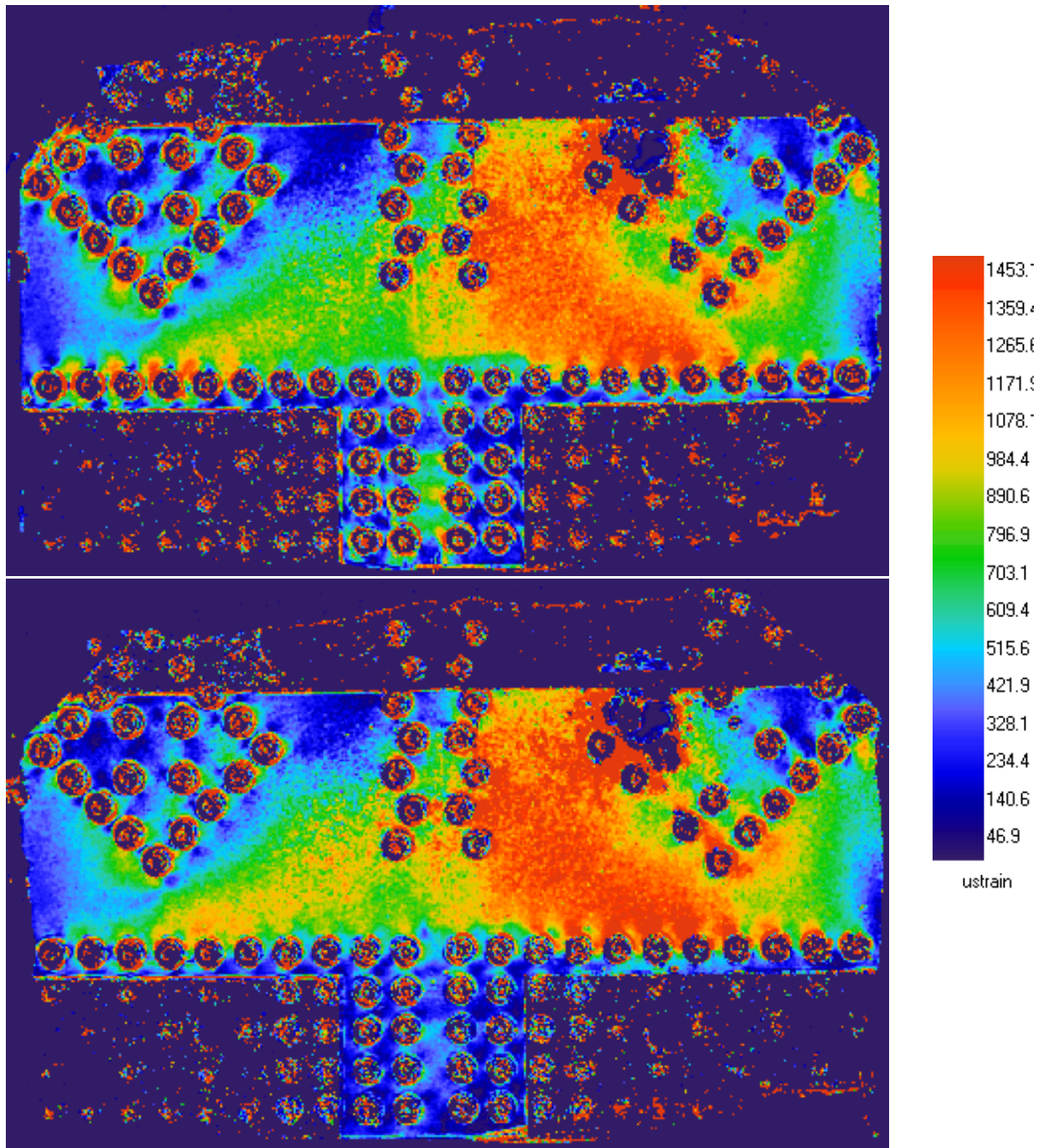


Figure E21. GP490SS3 elastic load case #5 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

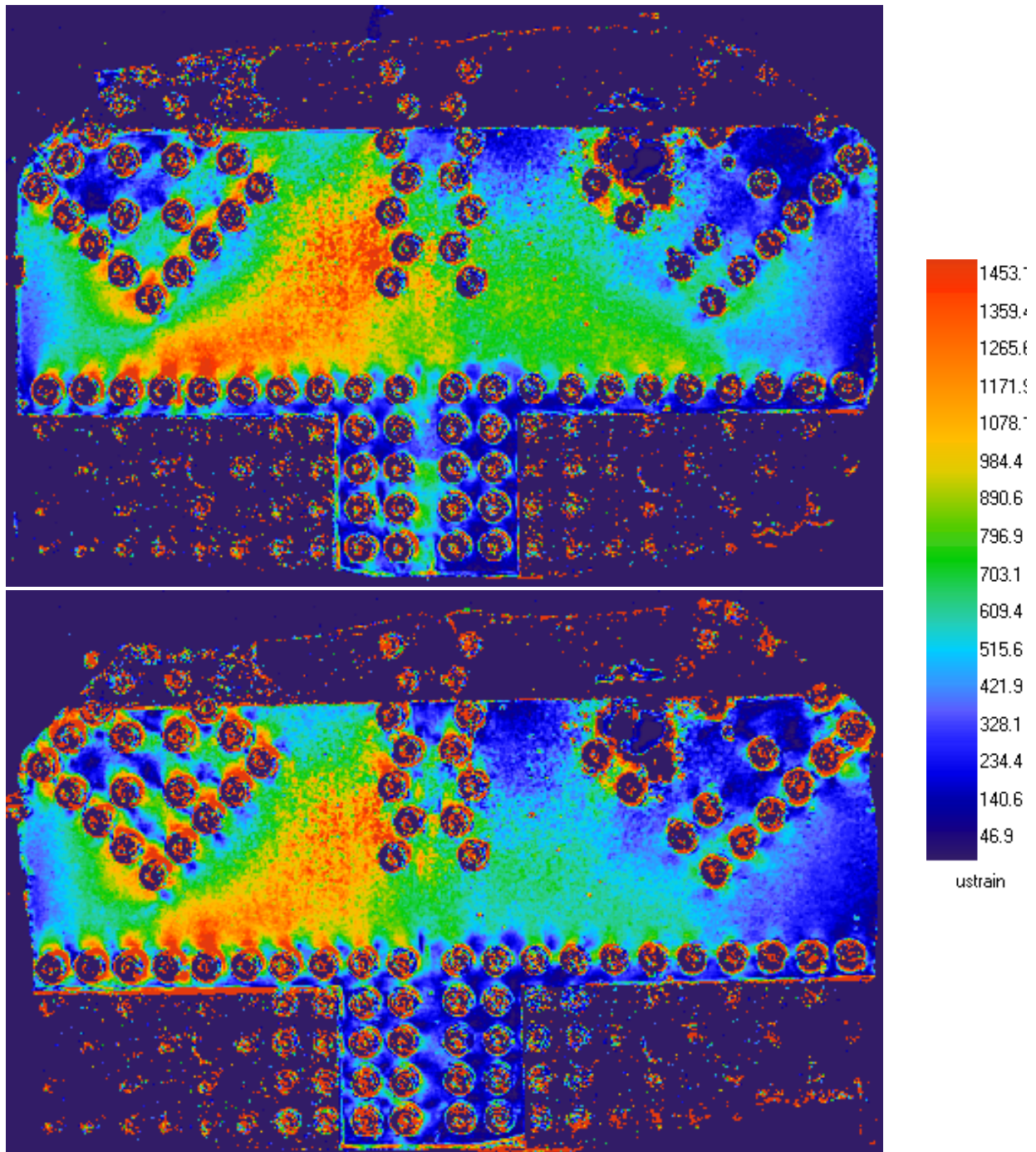


Figure E22. GP490SS3 elastic load case #6 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

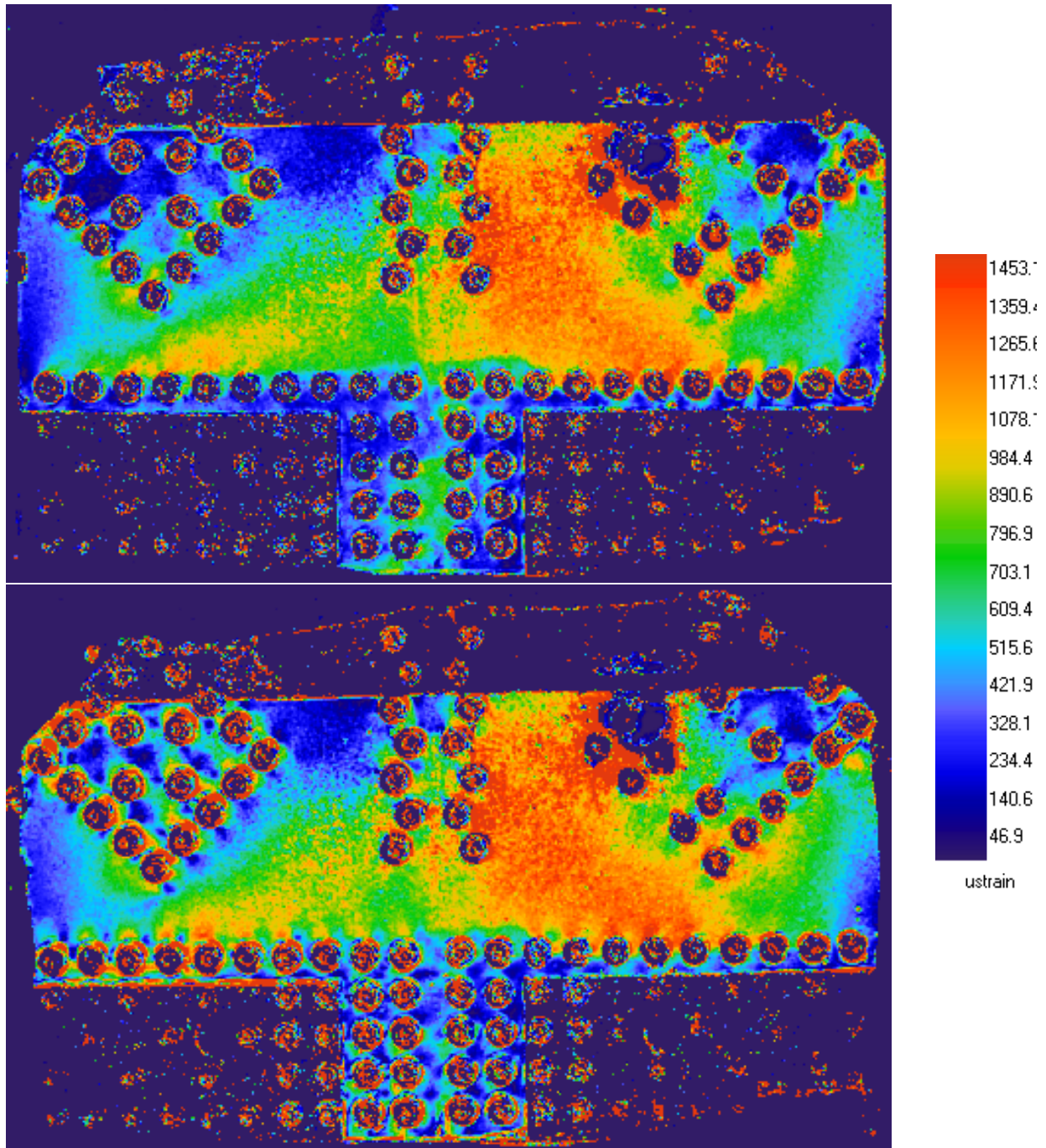


Figure E23. GP490SS3 elastic load case #7 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

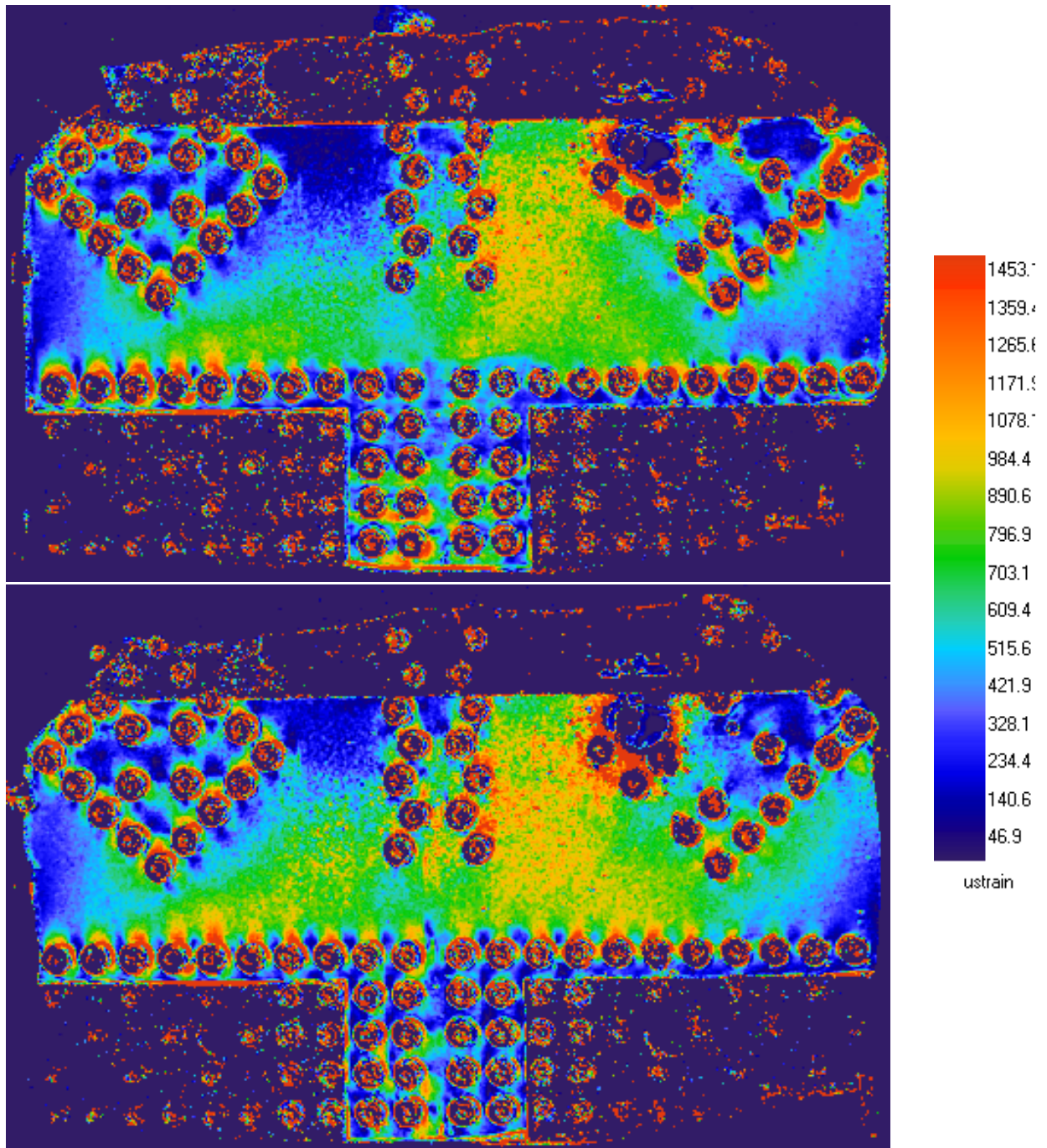


Figure E24. GP490SS3 elastic load case #8 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

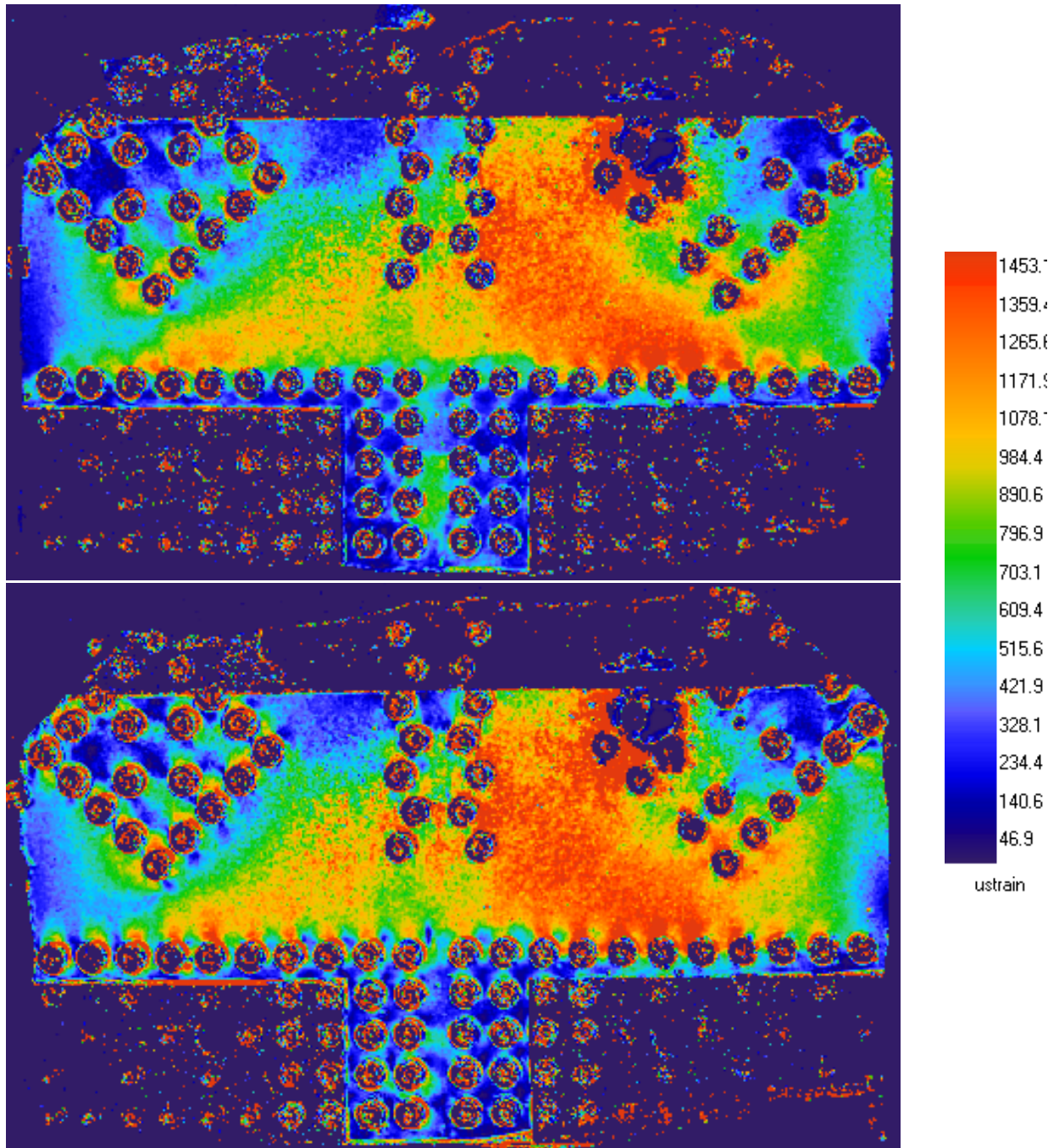


Figure E25. GP490SS3 elastic load case #9 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

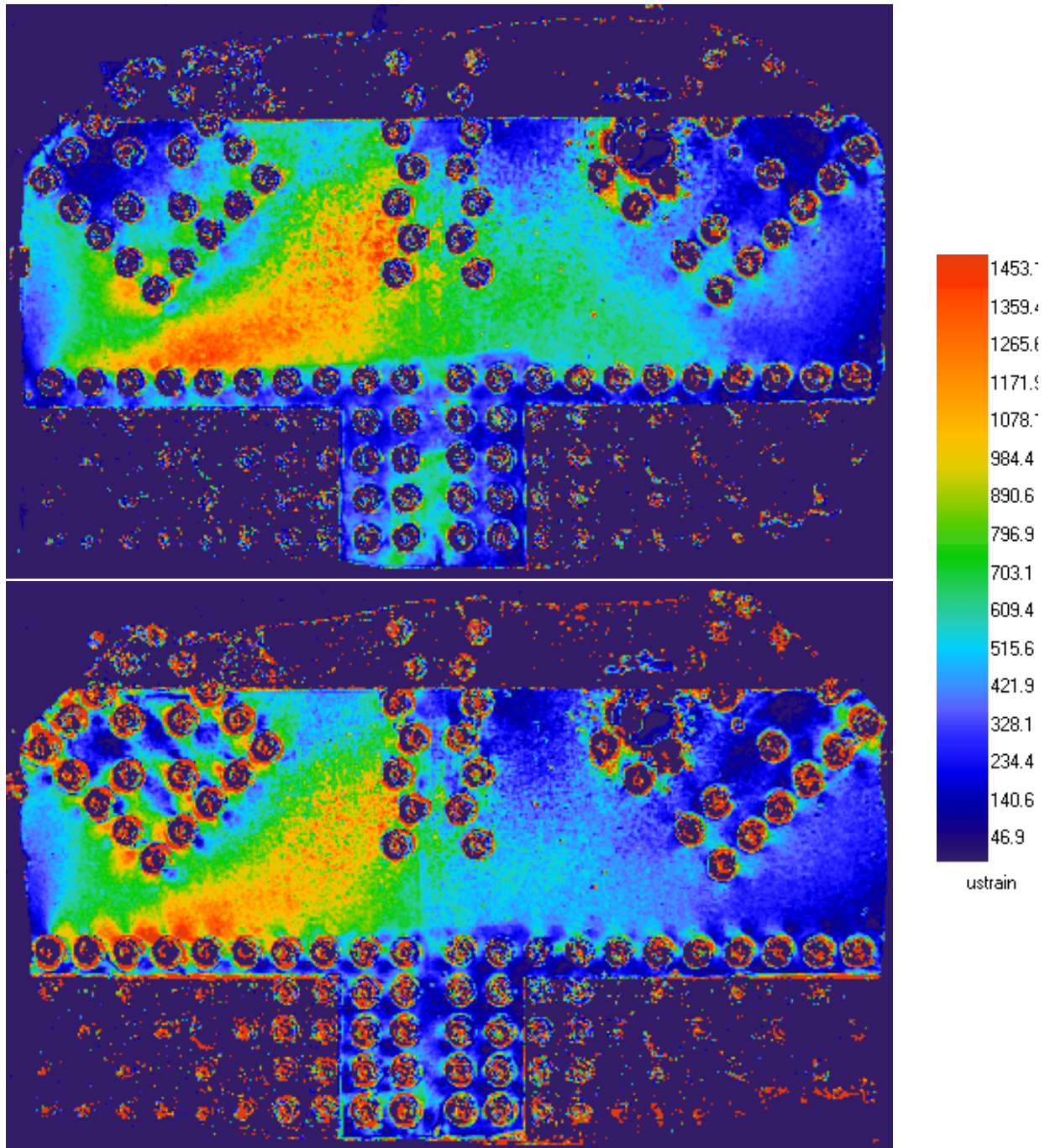


Figure E26. GP490SS3 elastic load case #10 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

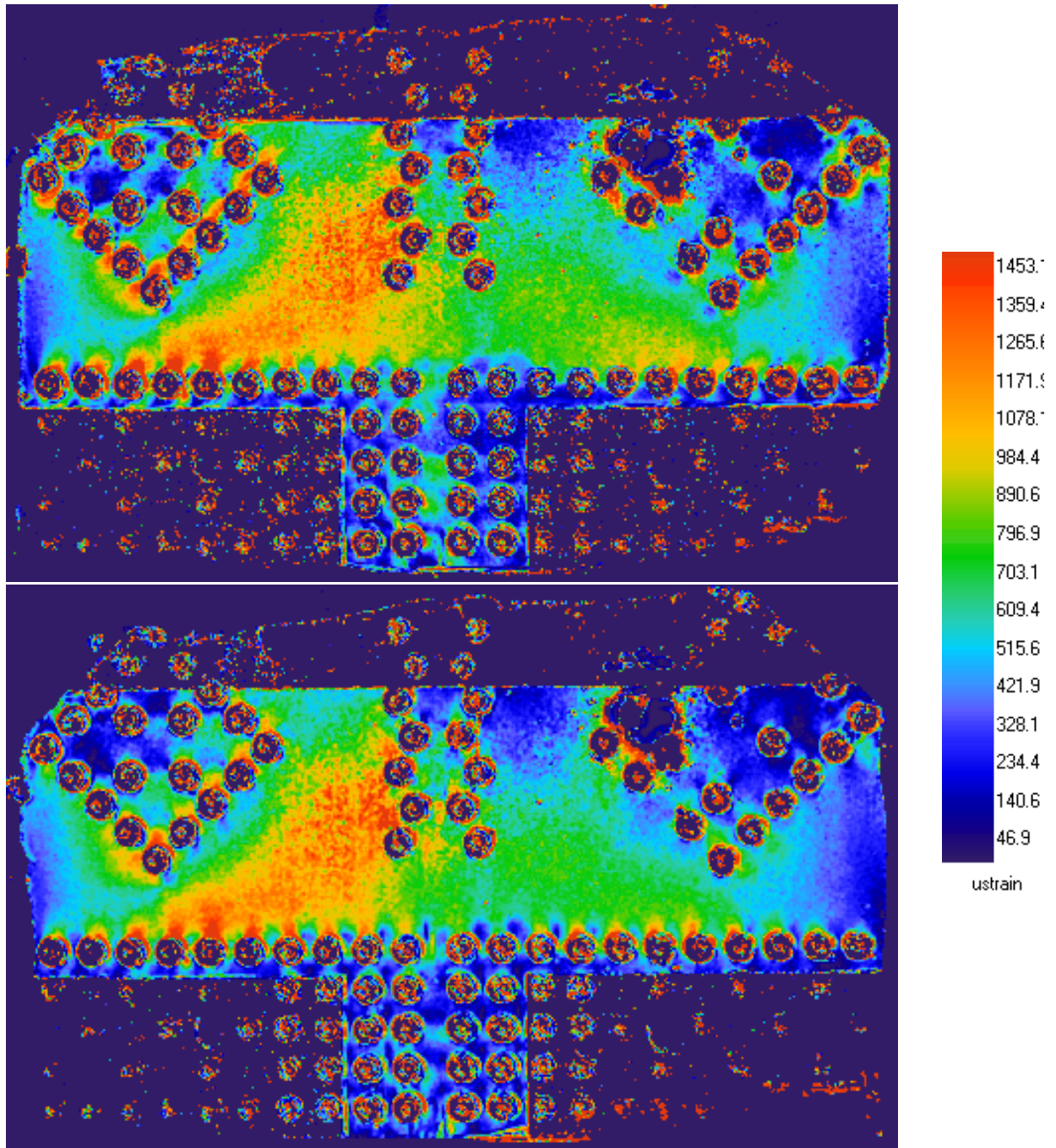


Figure E27. GP490SS3 elastic load case #11 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

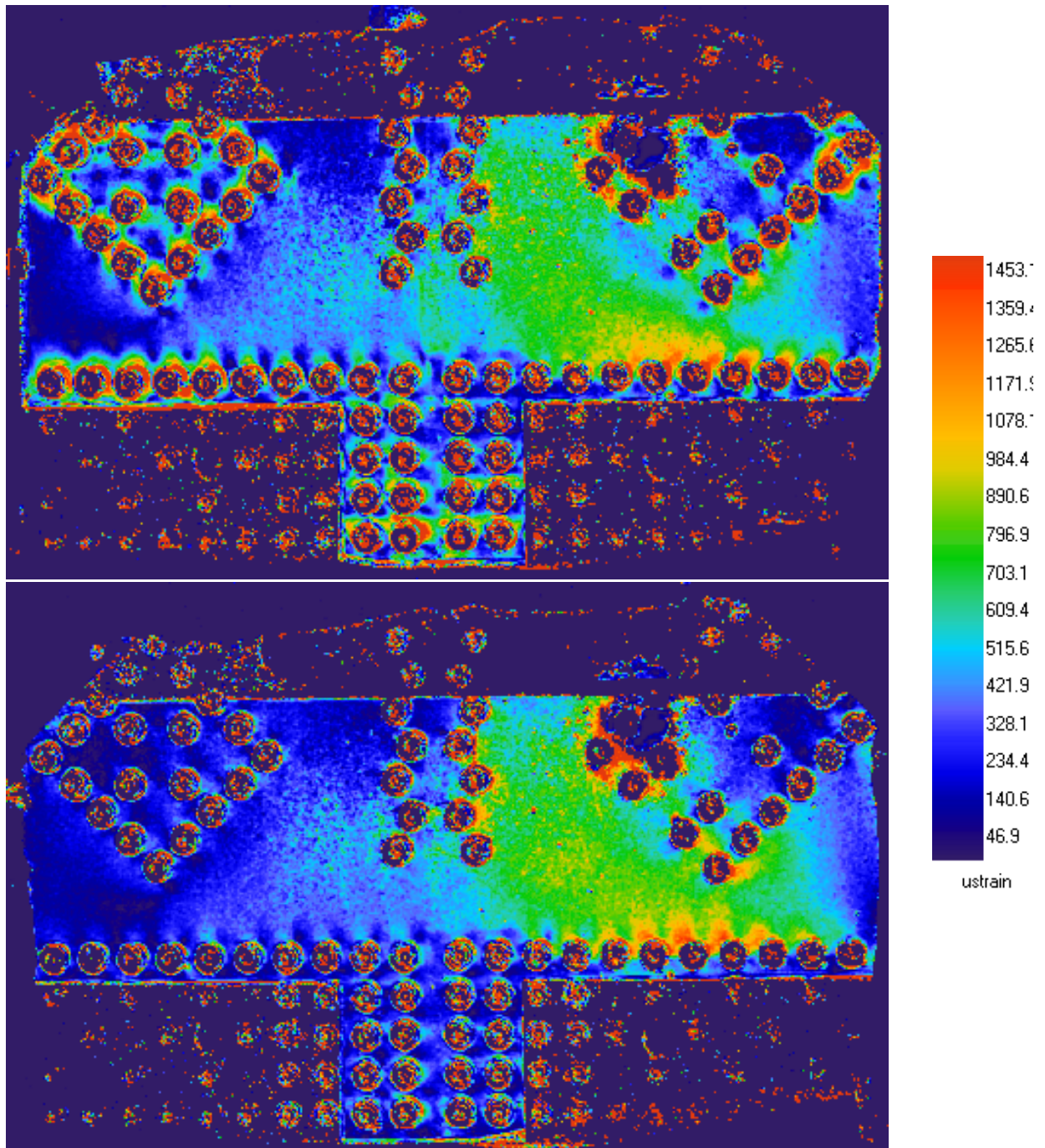


Figure E28. GP490SS3 elastic load case #13 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

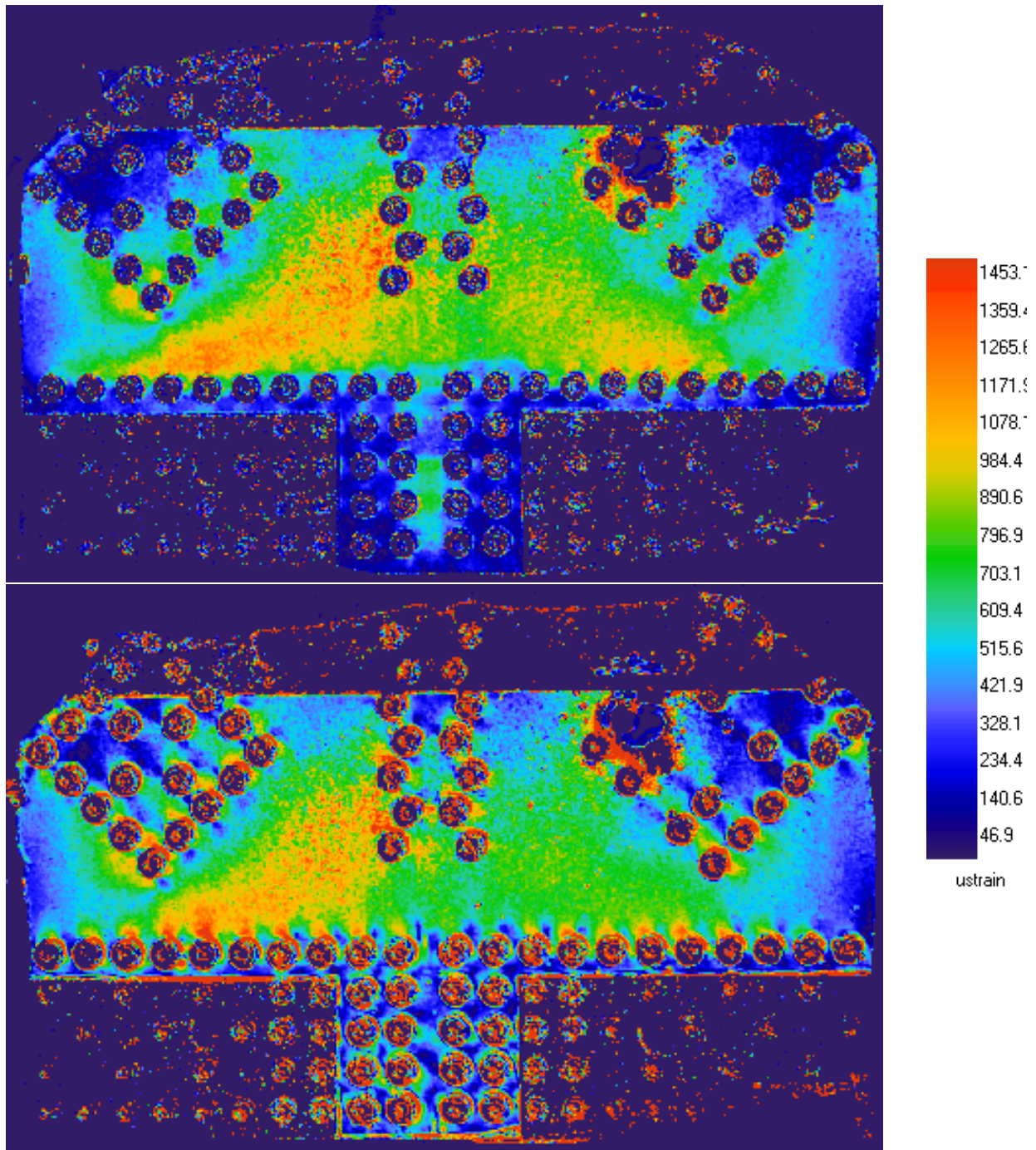


Figure E29. GP490SS3 elastic load case #14 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

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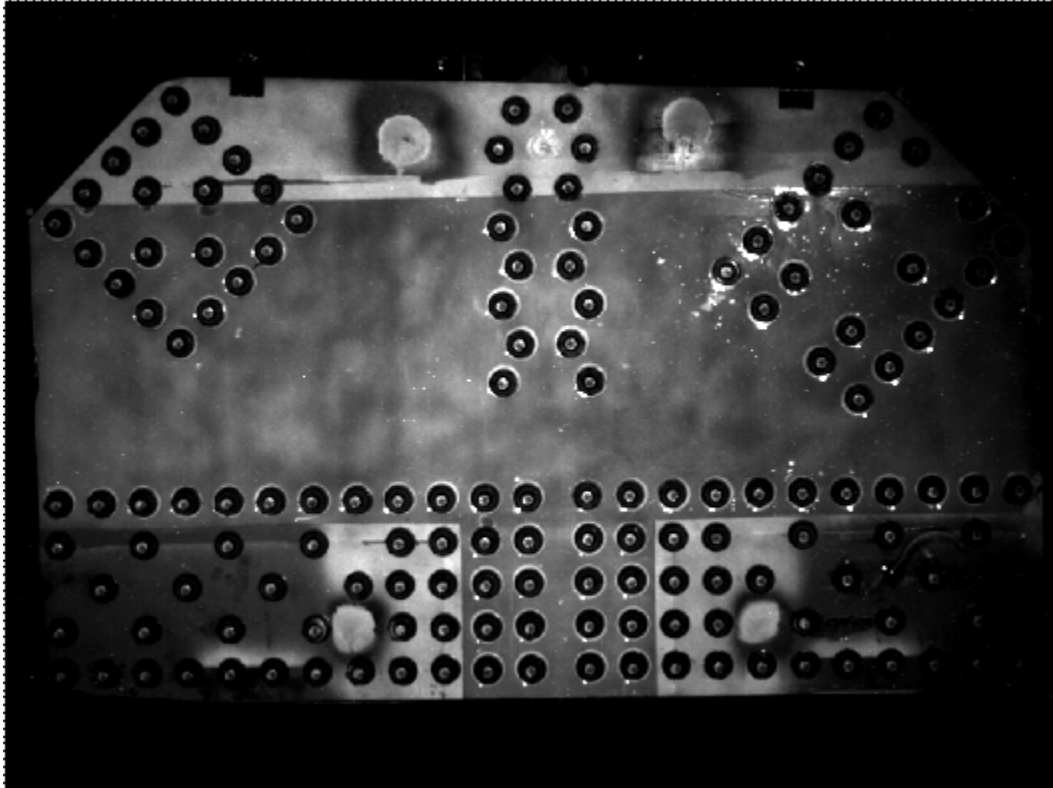


Figure E30. Grayscale image of 490LS3 epoxy coating.

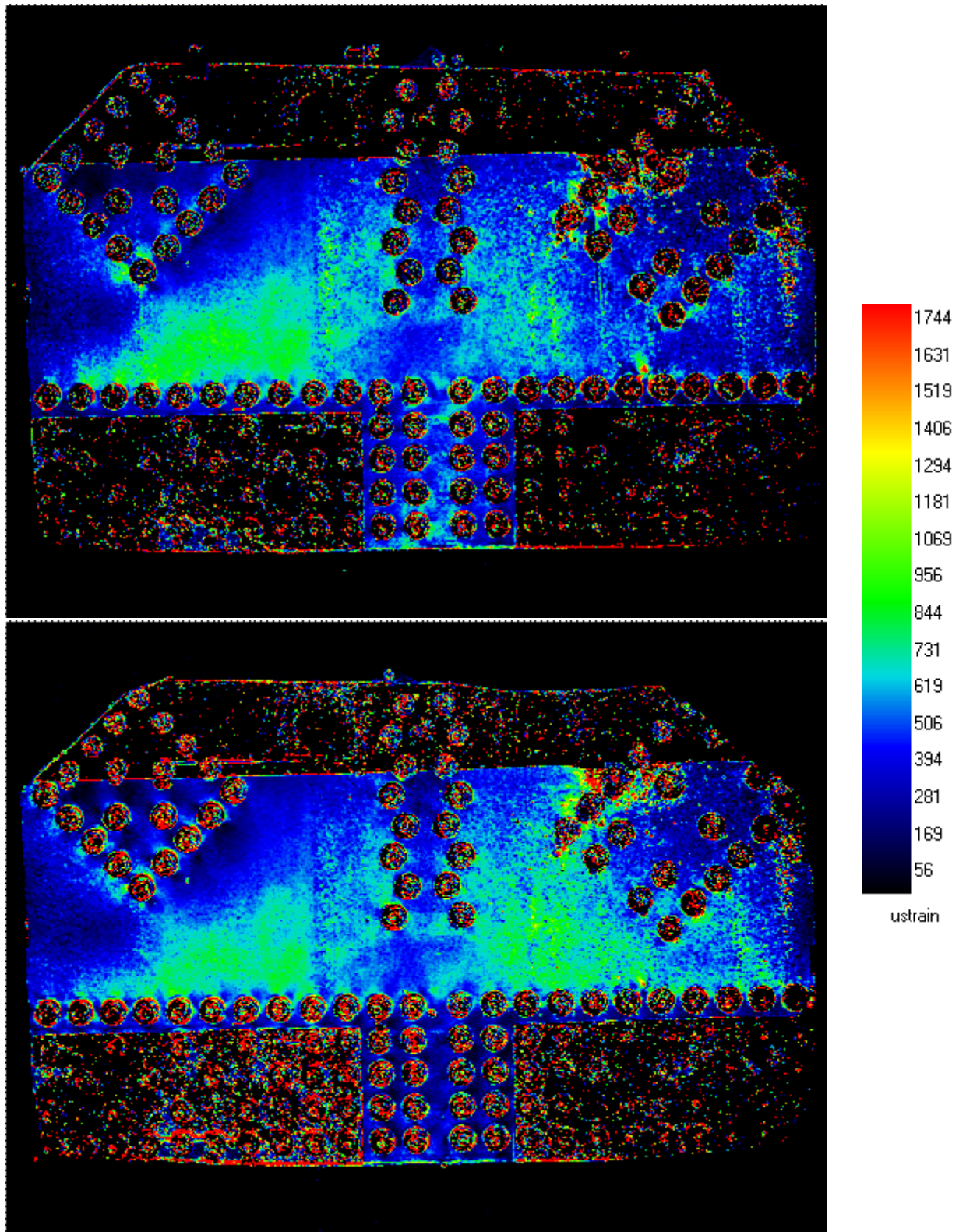


Figure E31. 490LS3 elastic load case #1 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

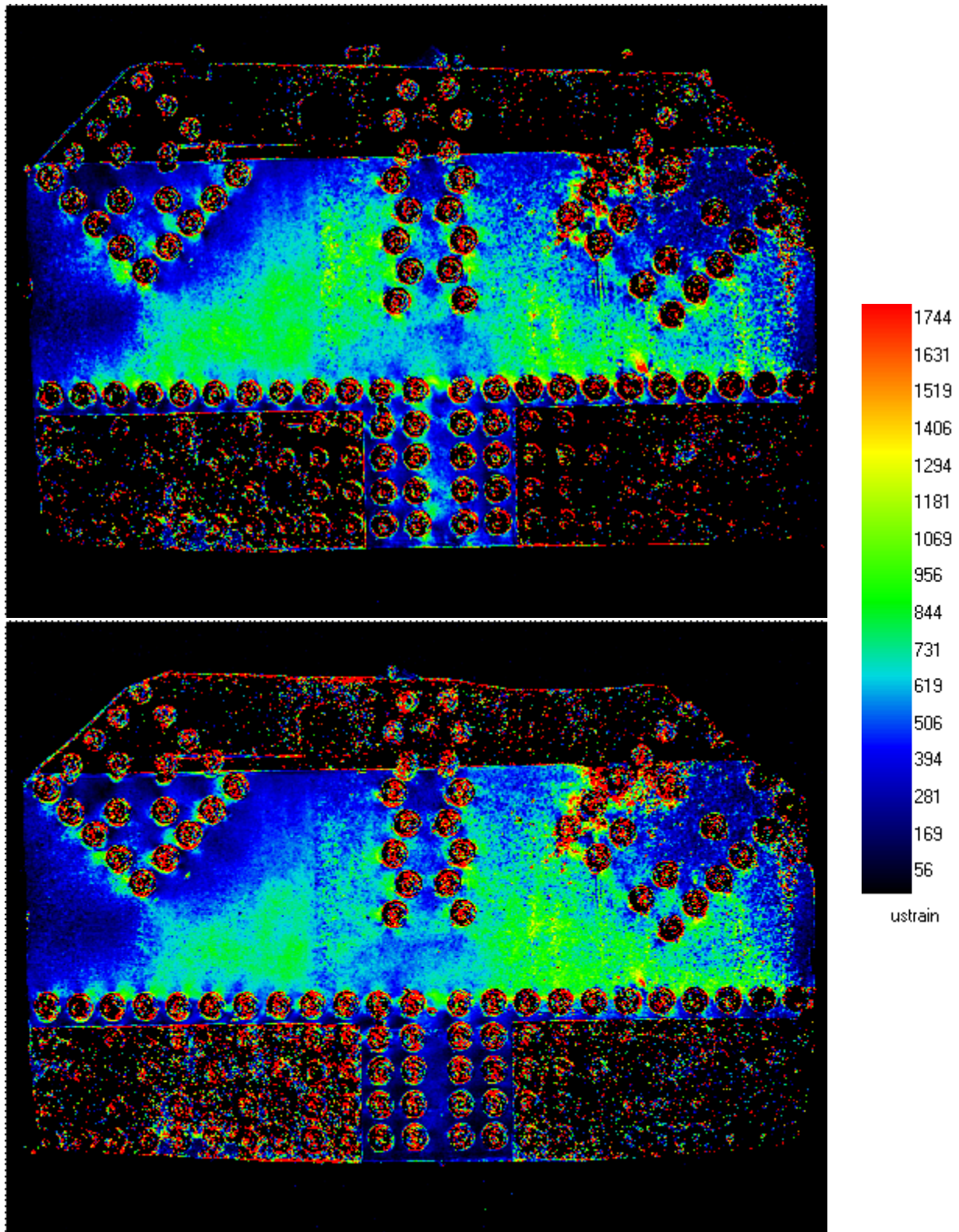


Figure E32. 490LS3 elastic load case #2 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

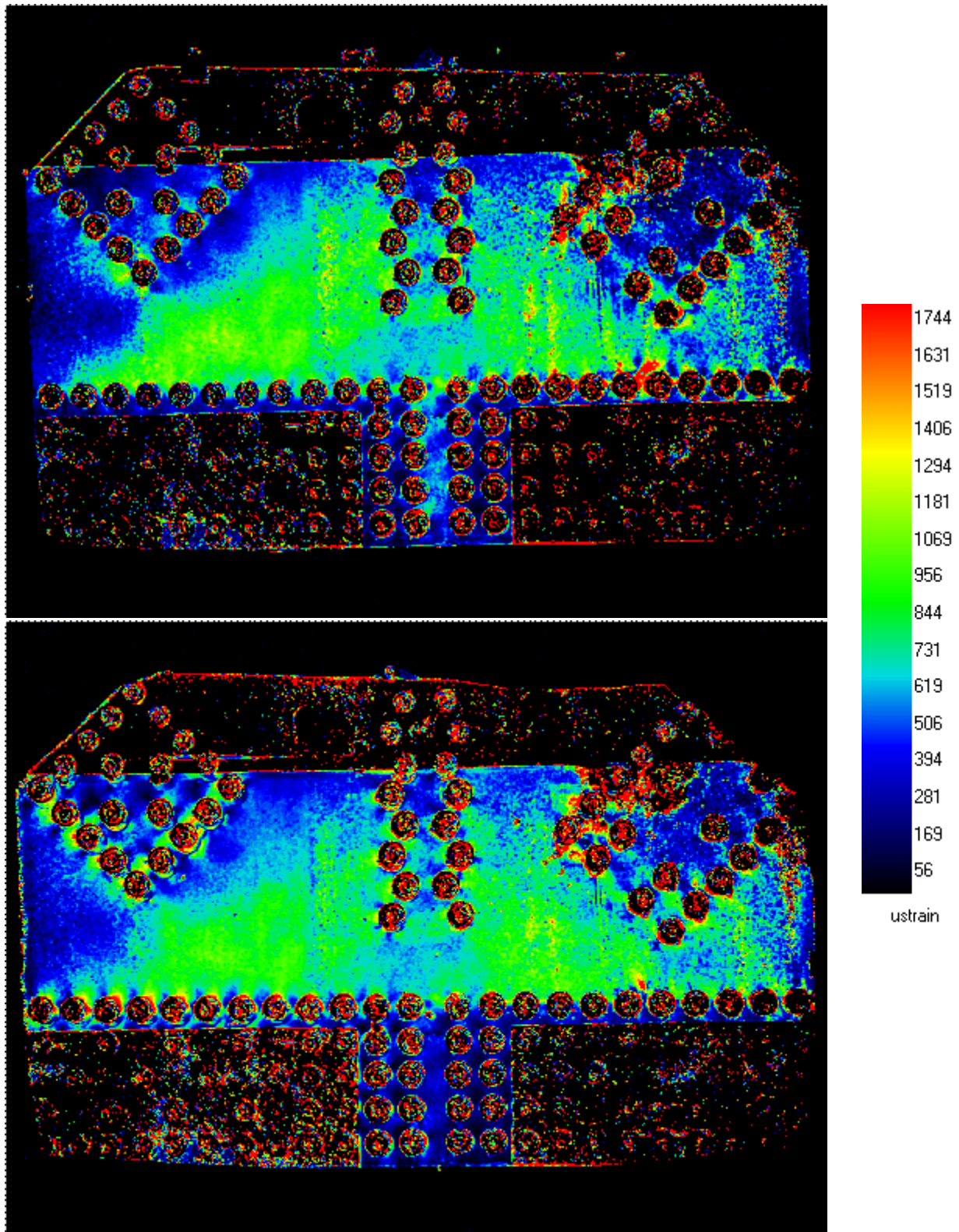


Figure E33. 490LS3 elastic load case #3 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

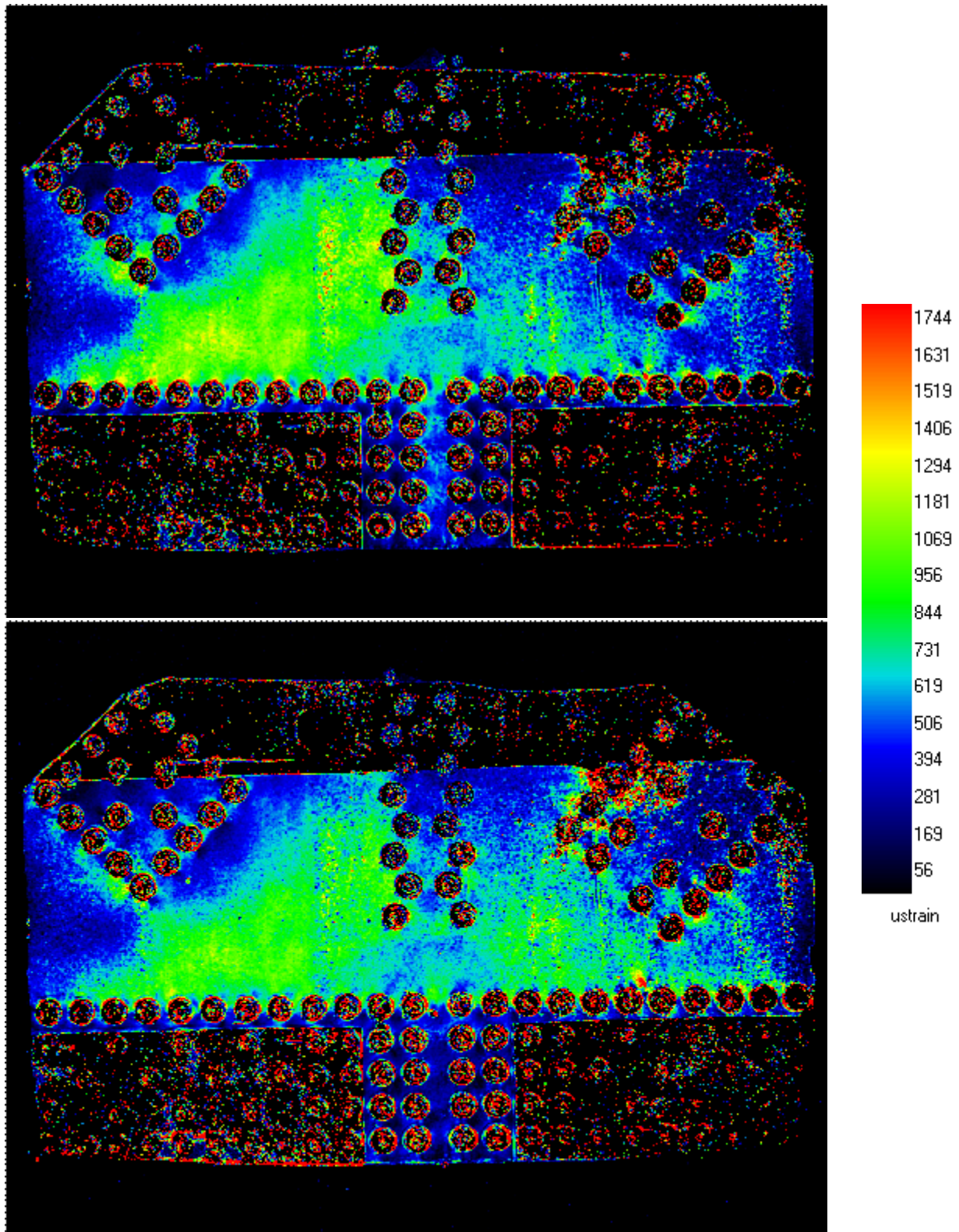


Figure E34. 490LS3 elastic load case #4 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

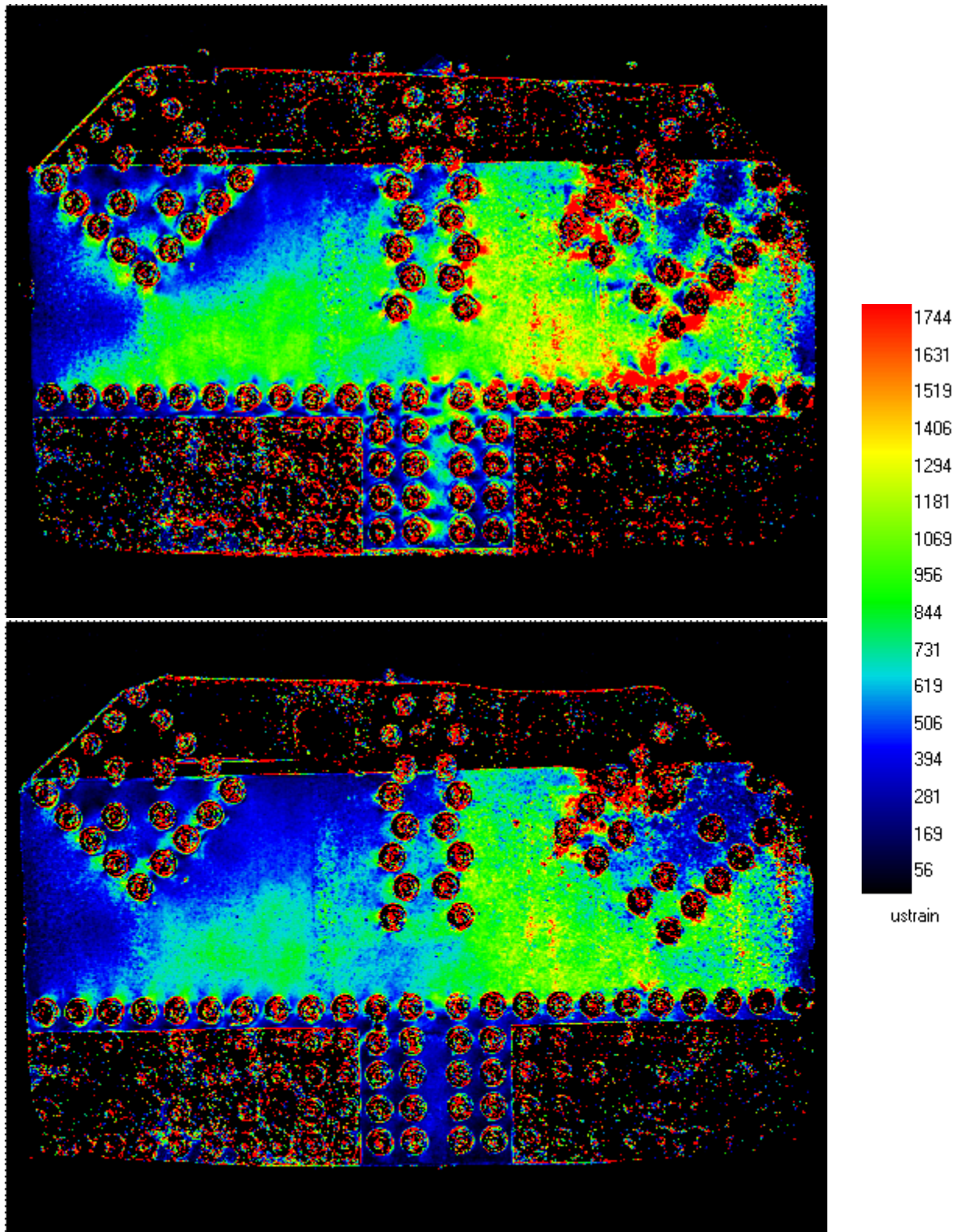


Figure E35. 490LS3 elastic load case #5 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

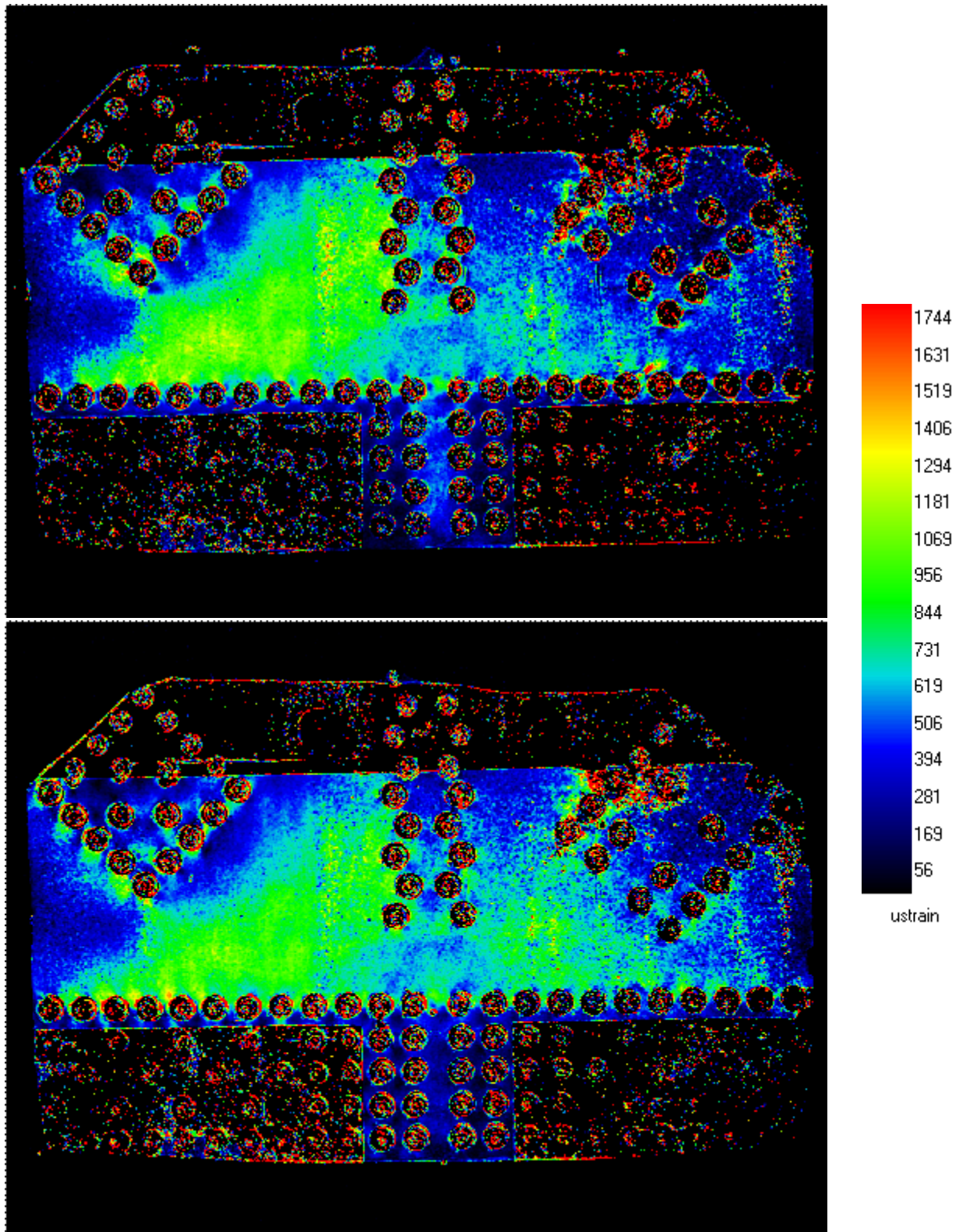


Figure E36. 490LS3 elastic load case #6 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

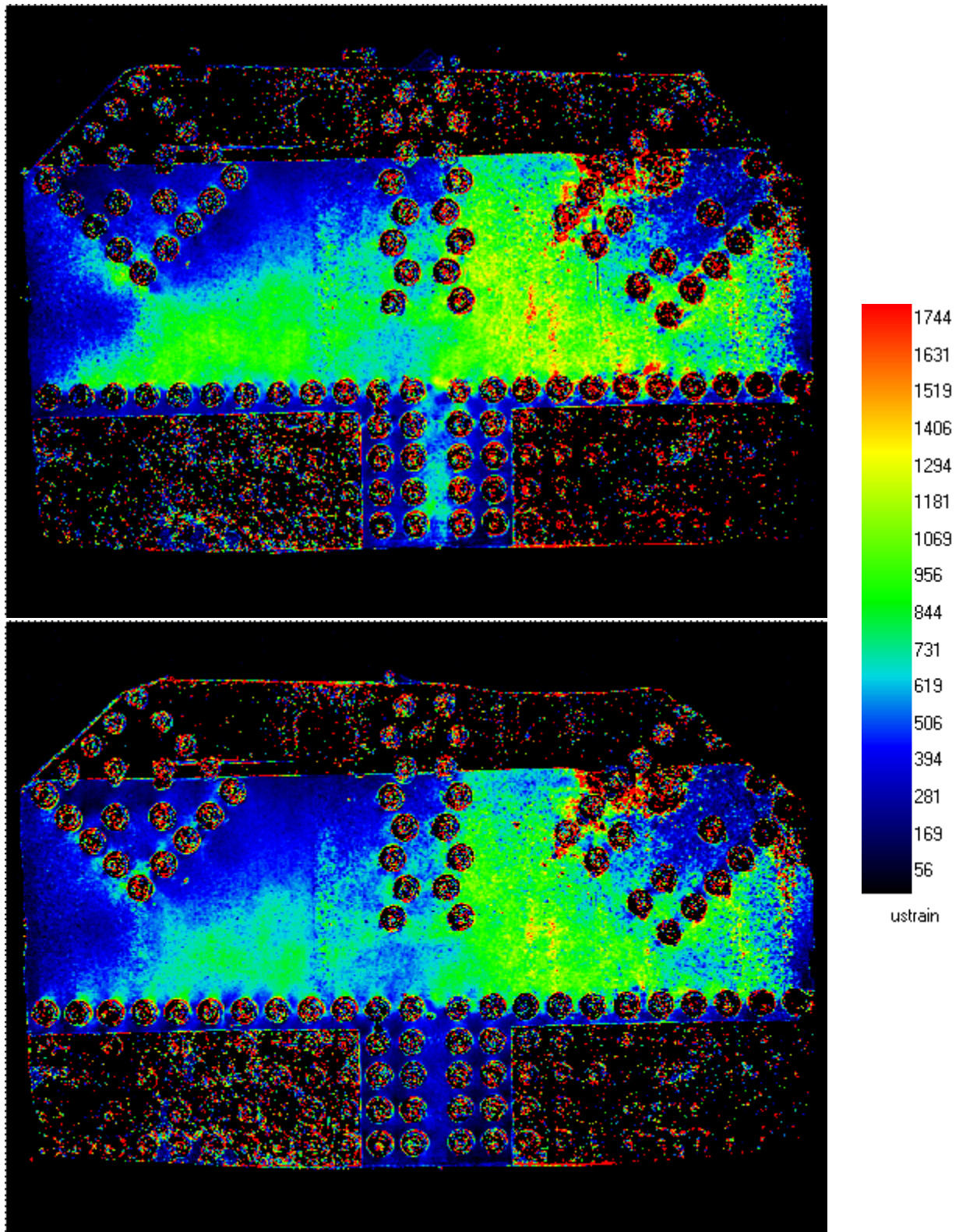


Figure E37. 490LS3 elastic load case #7 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

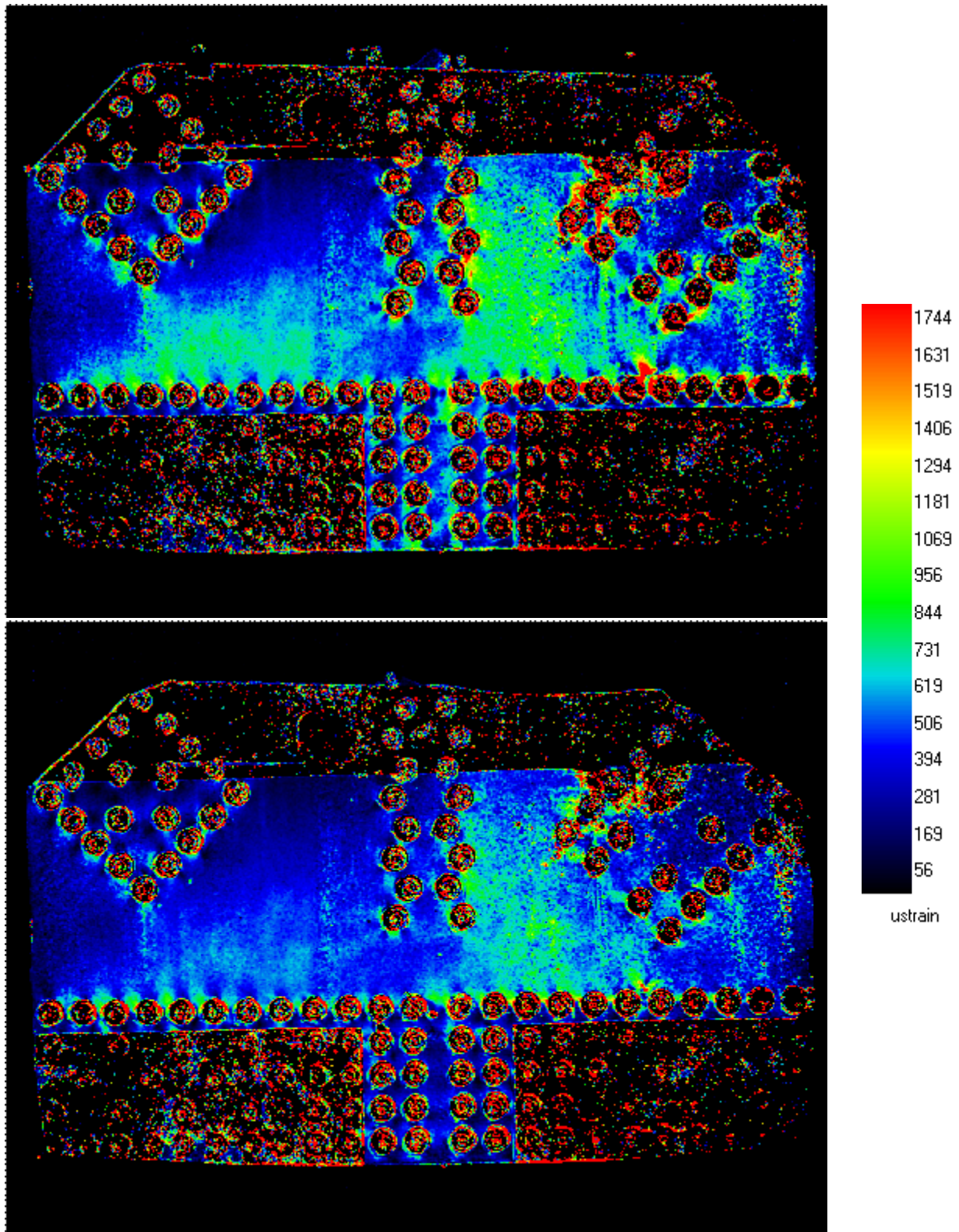


Figure E38. 490LS3 elastic load case #8 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

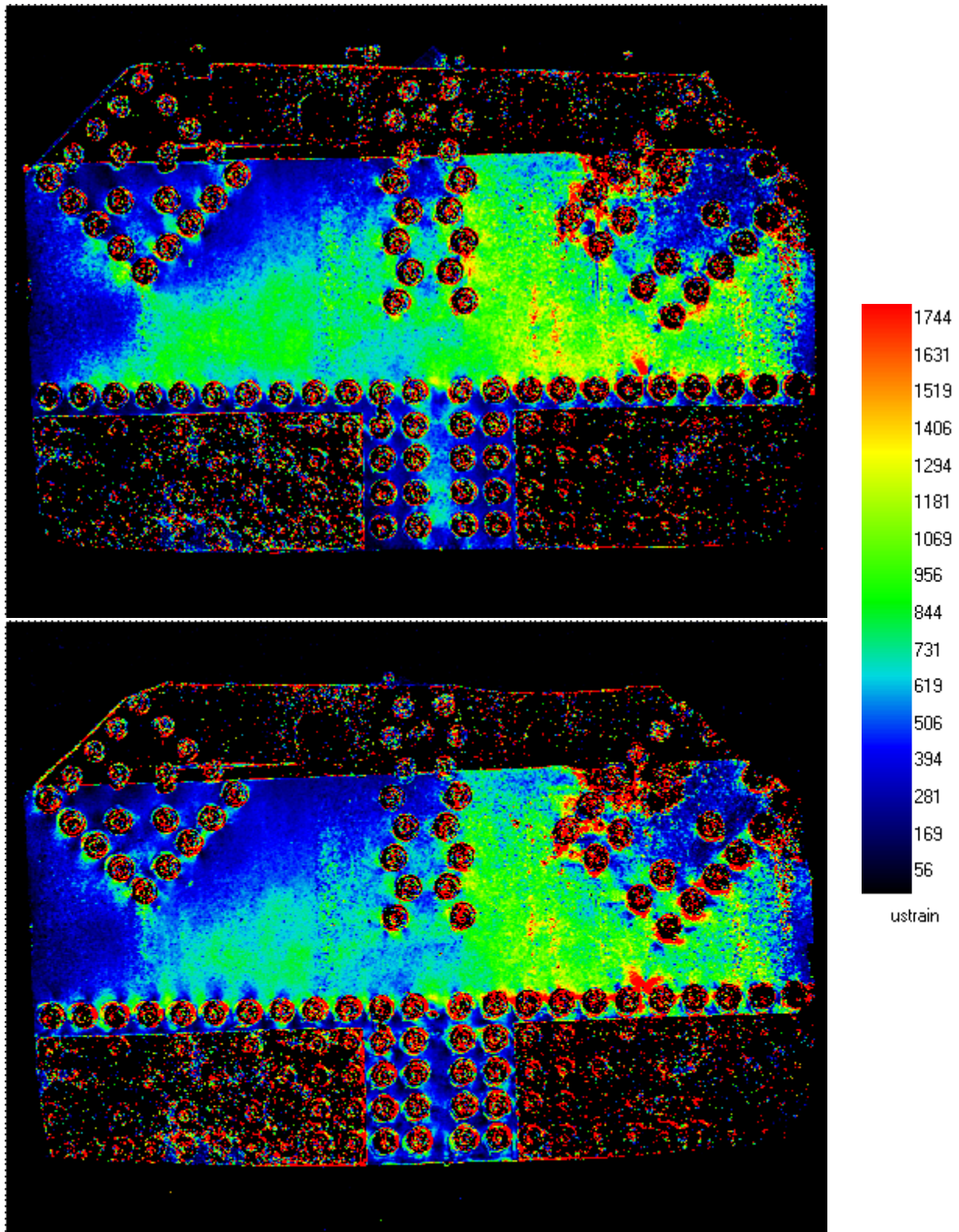


Figure E39. 490LS3 elastic load case #9 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

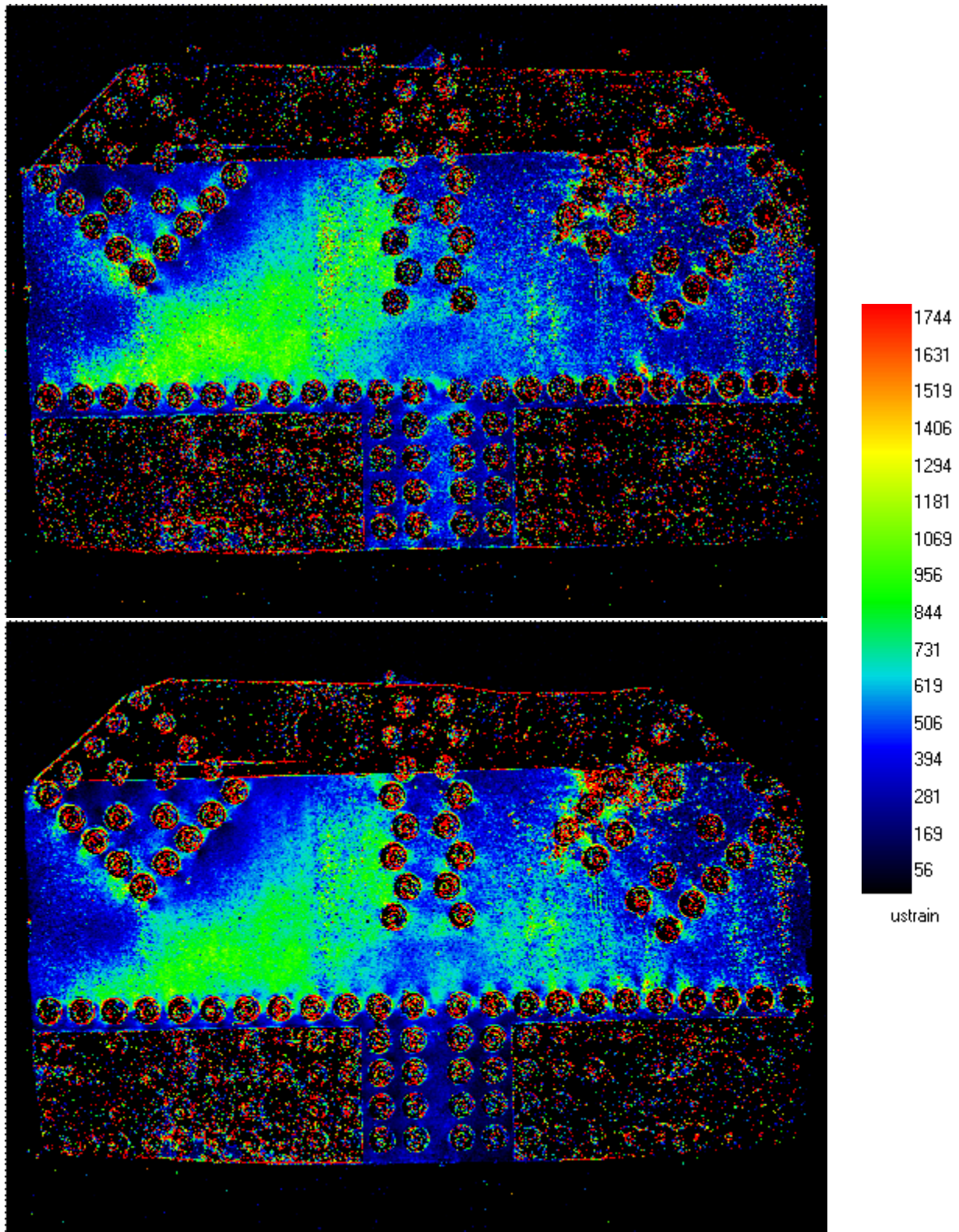


Figure E40. 490LS3 elastic load case #10 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

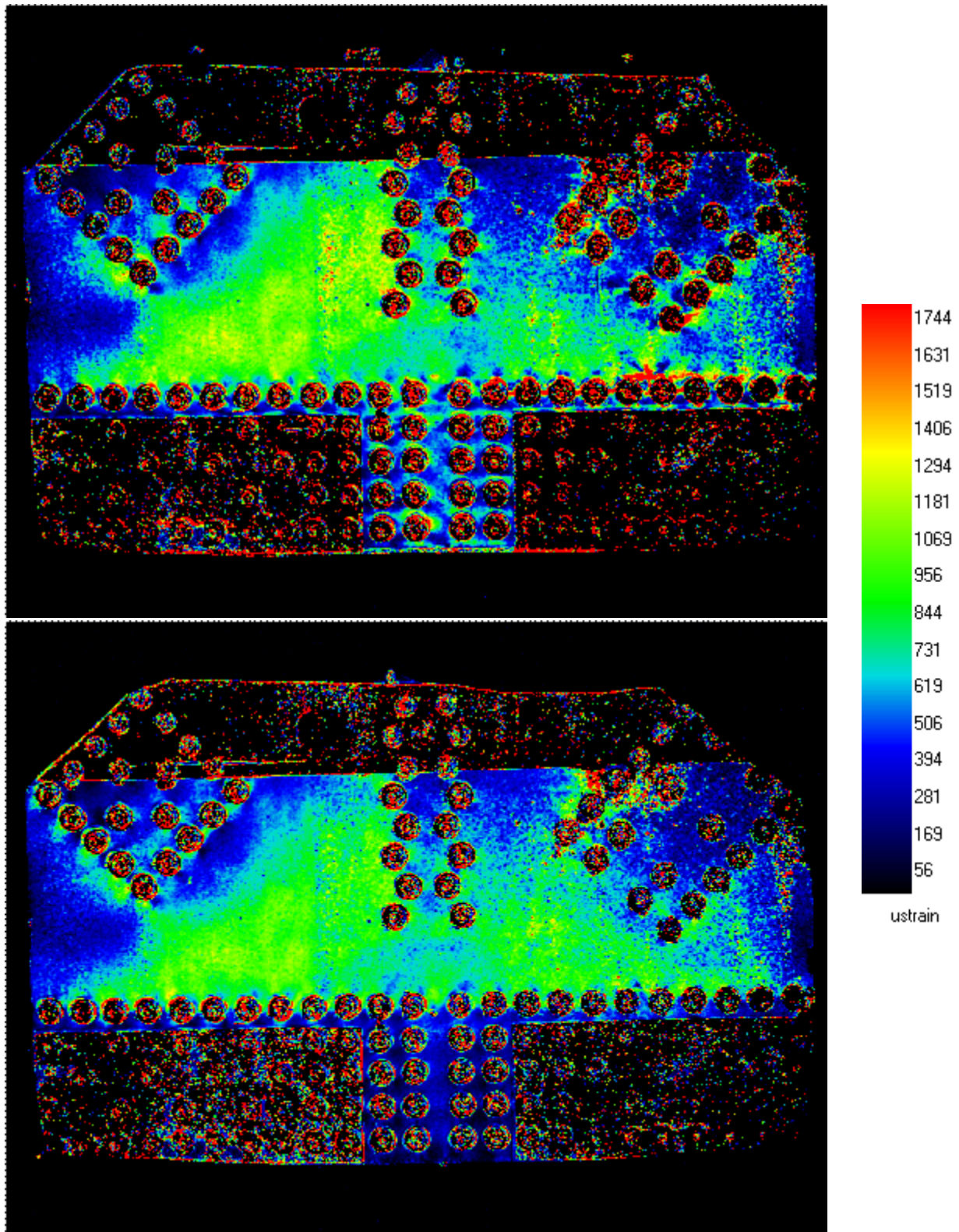


Figure E41. 490LS3 elastic load case #11 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

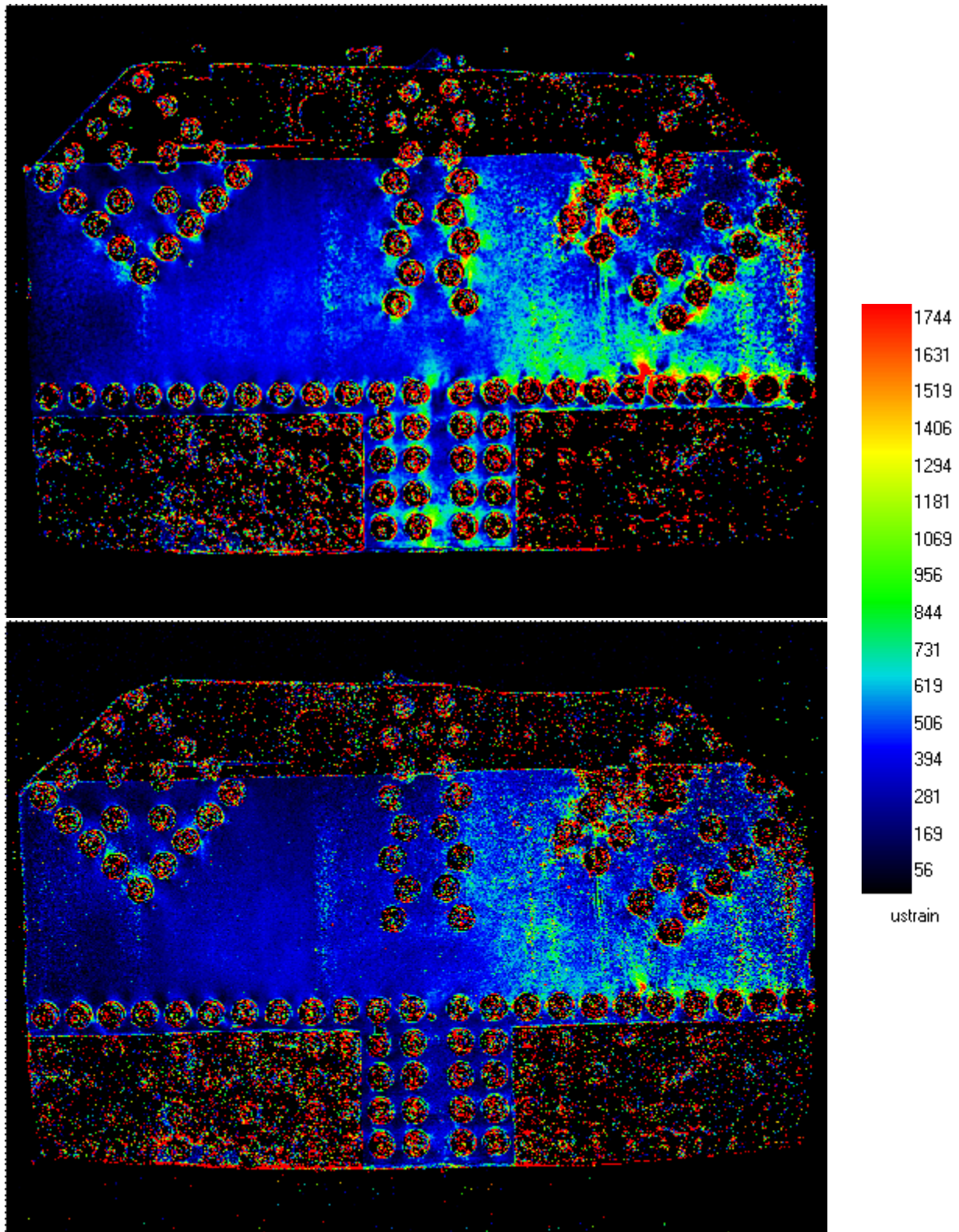


Figure E42. 490LS3 elastic load case #13 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

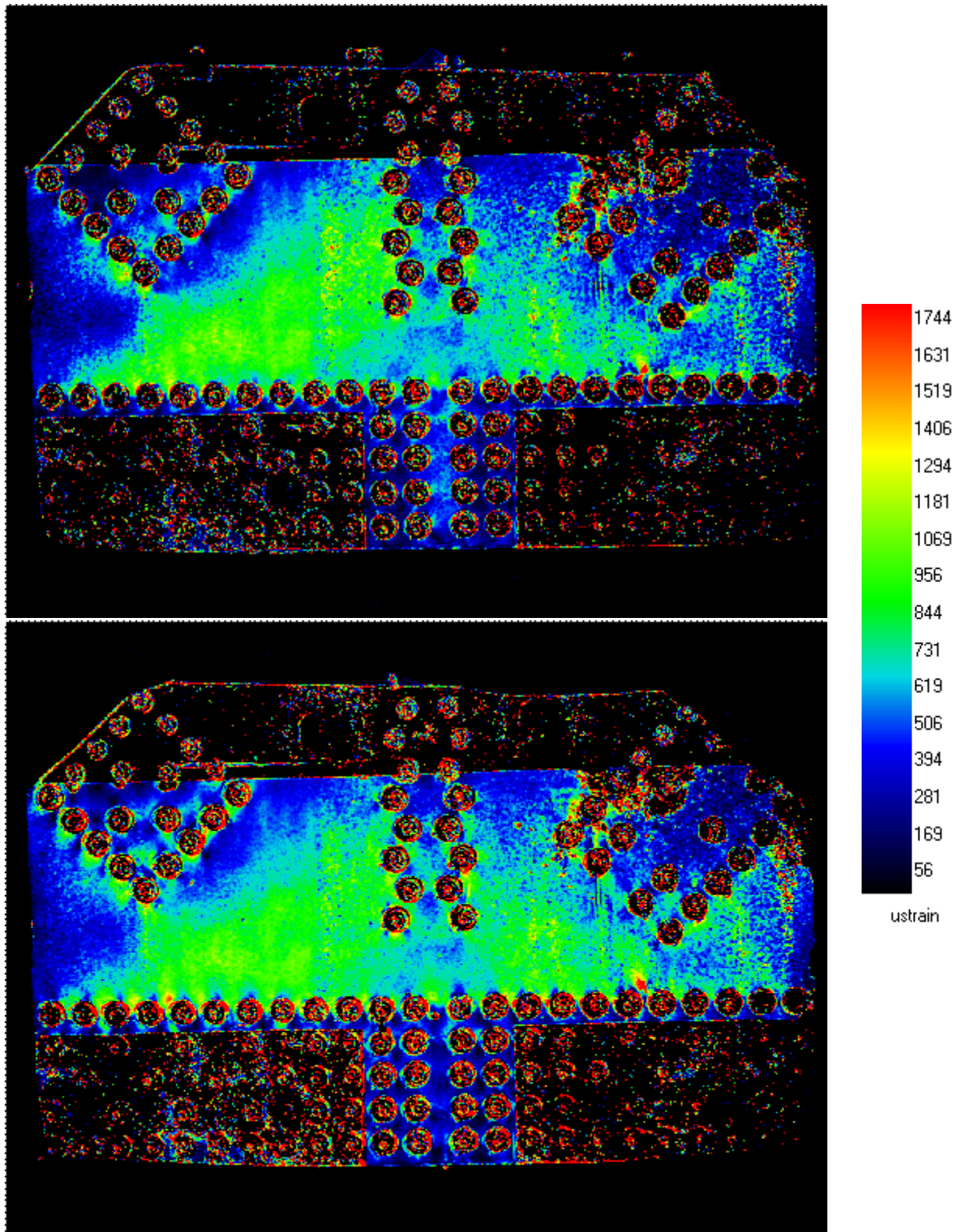


Figure E43. 490LS3 elastic load case #14 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

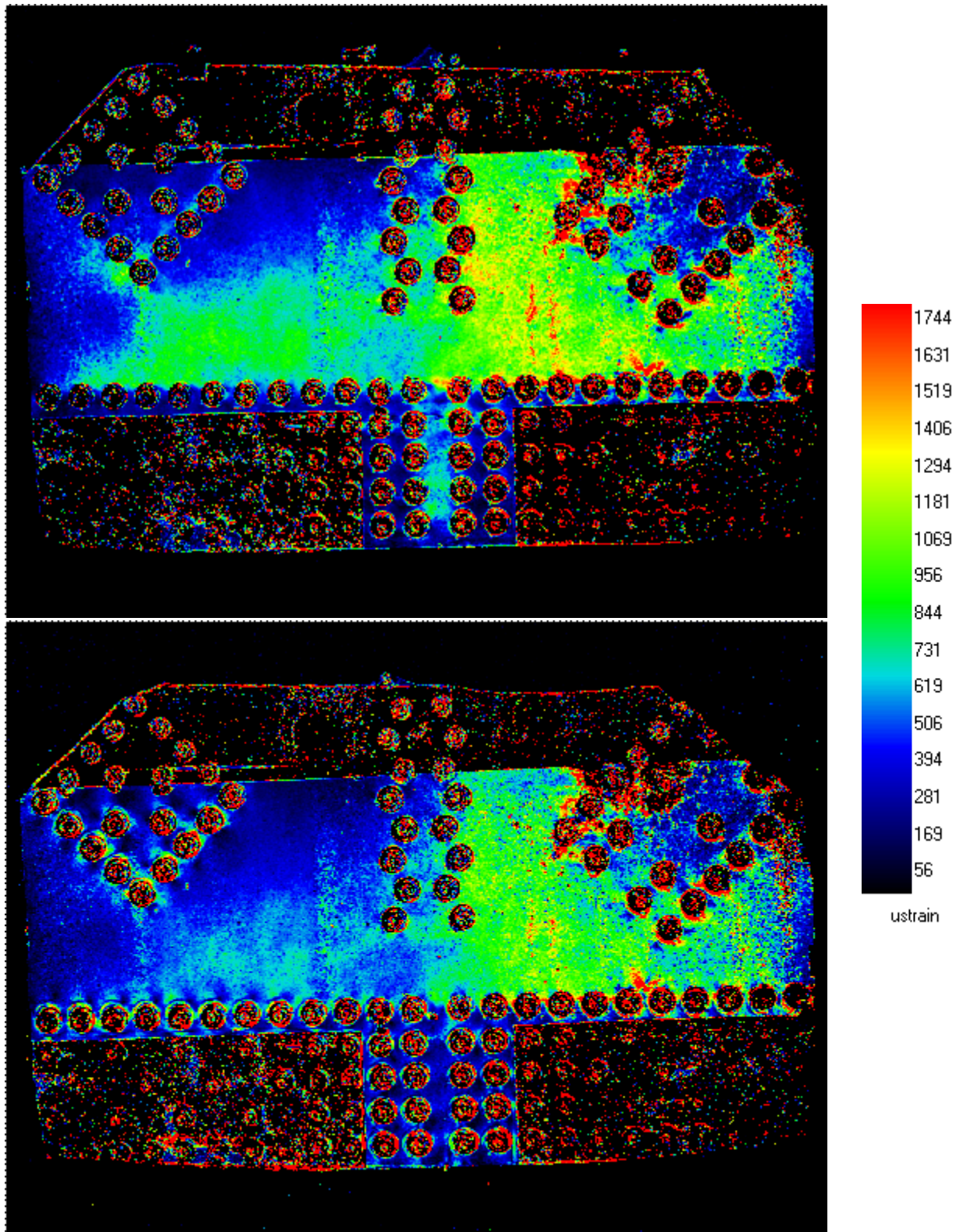


Figure E44. 490LS3 elastic load case #15M maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

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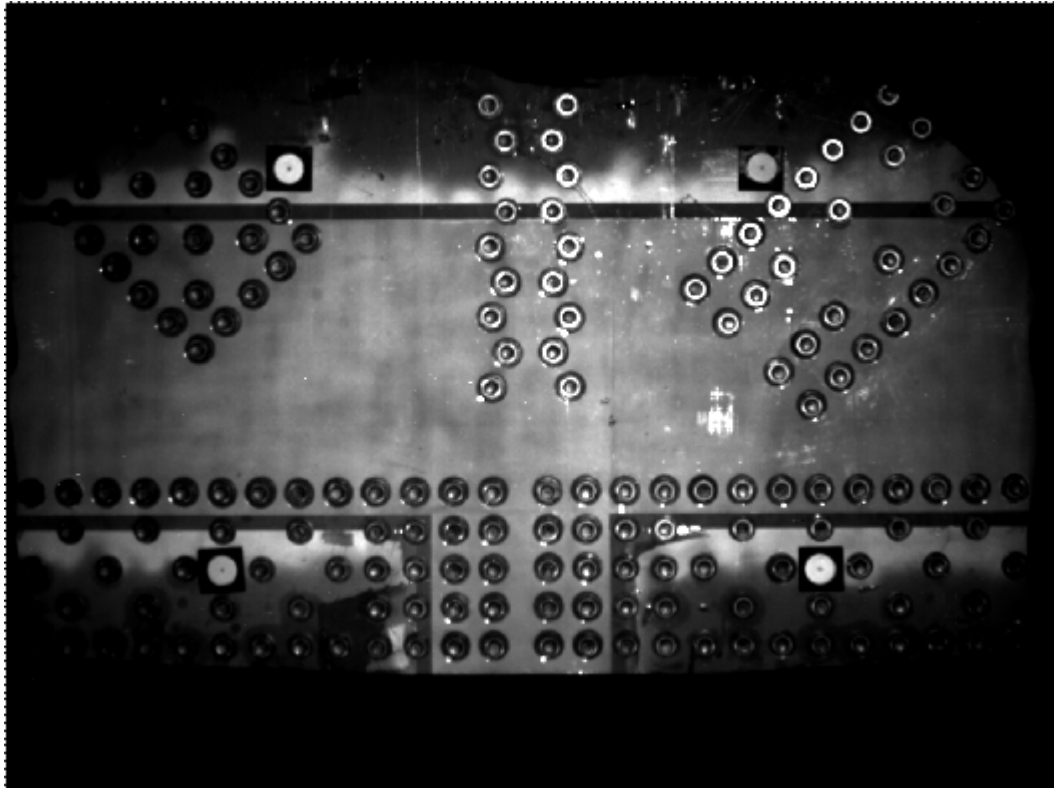
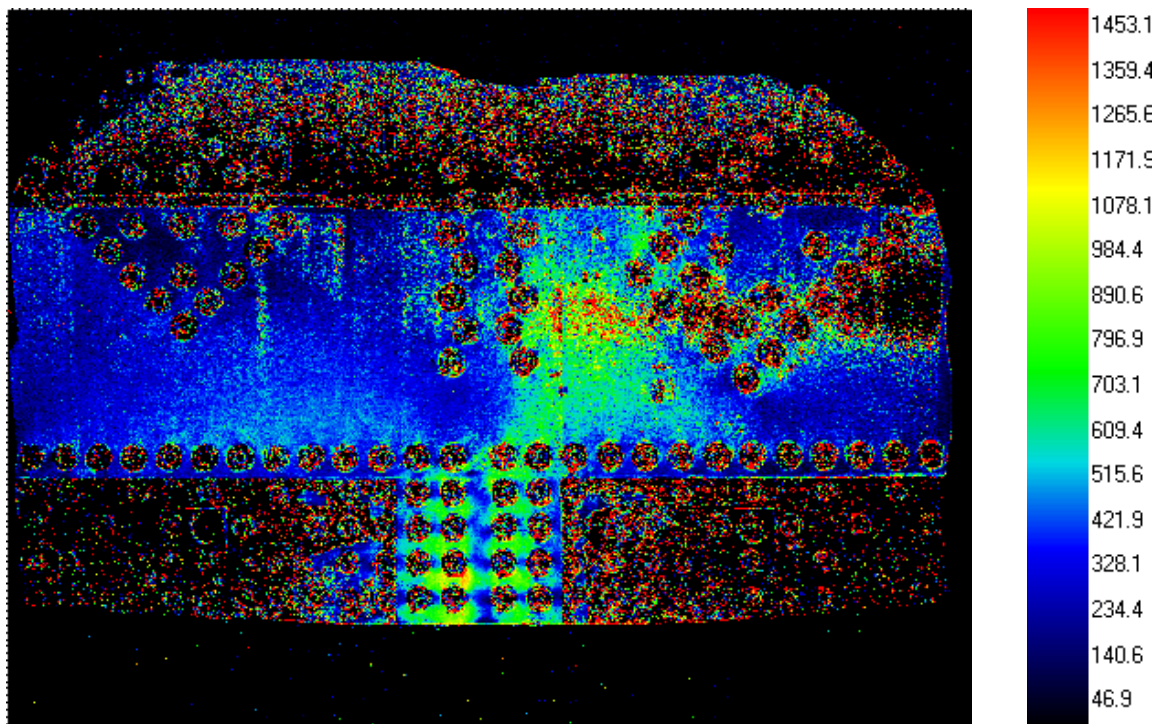


Figure E45. Grayscale image of 307LS3 epoxy coating.



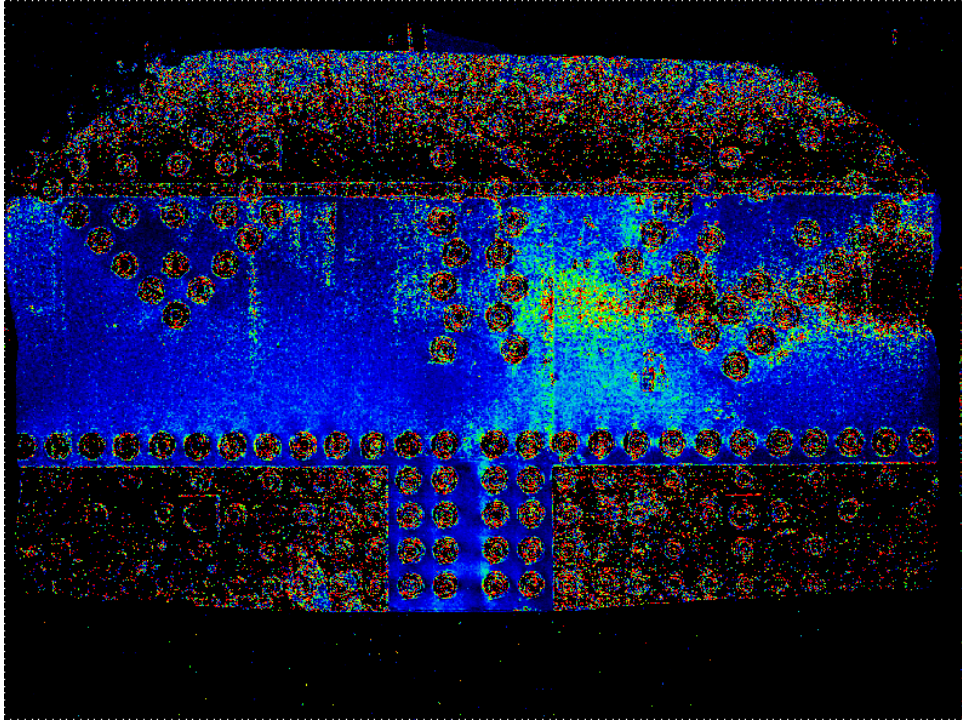
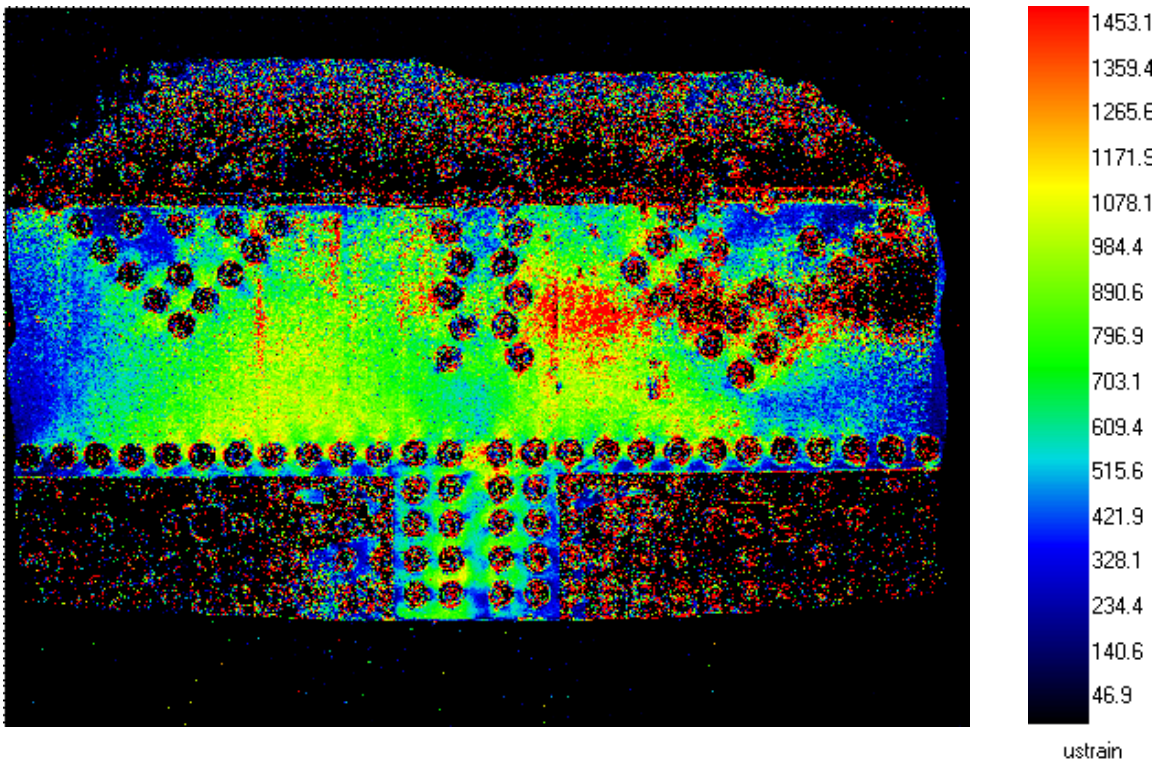


Figure E46. Photostress maximum shear strain data for GP307LS3 elastic load case #12a. (Top) Without splice plates. (Bottom) With splice plates installed.



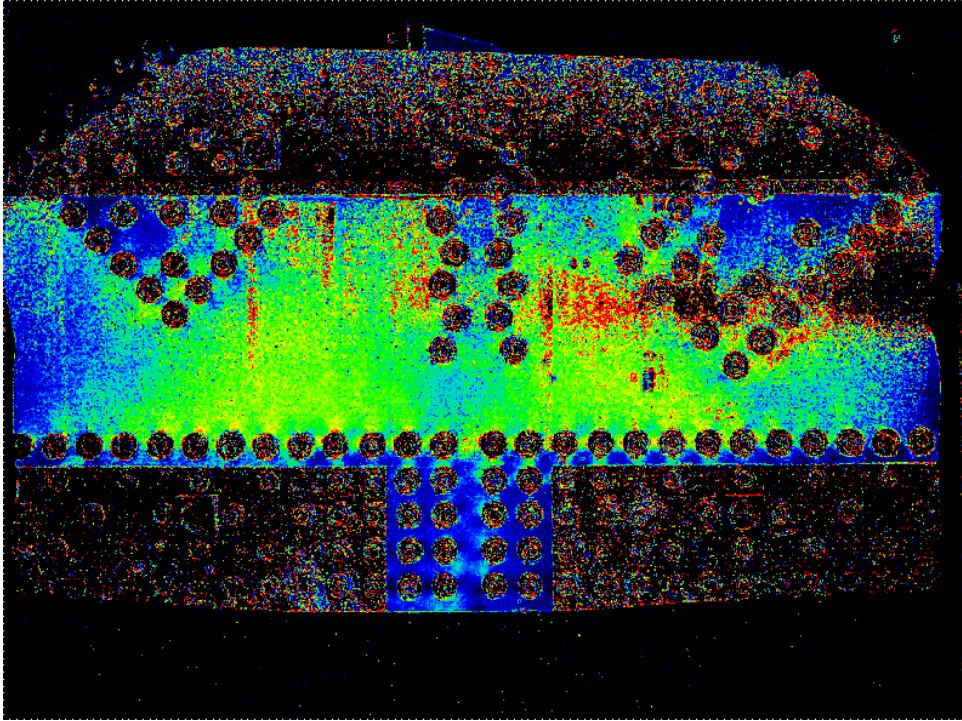
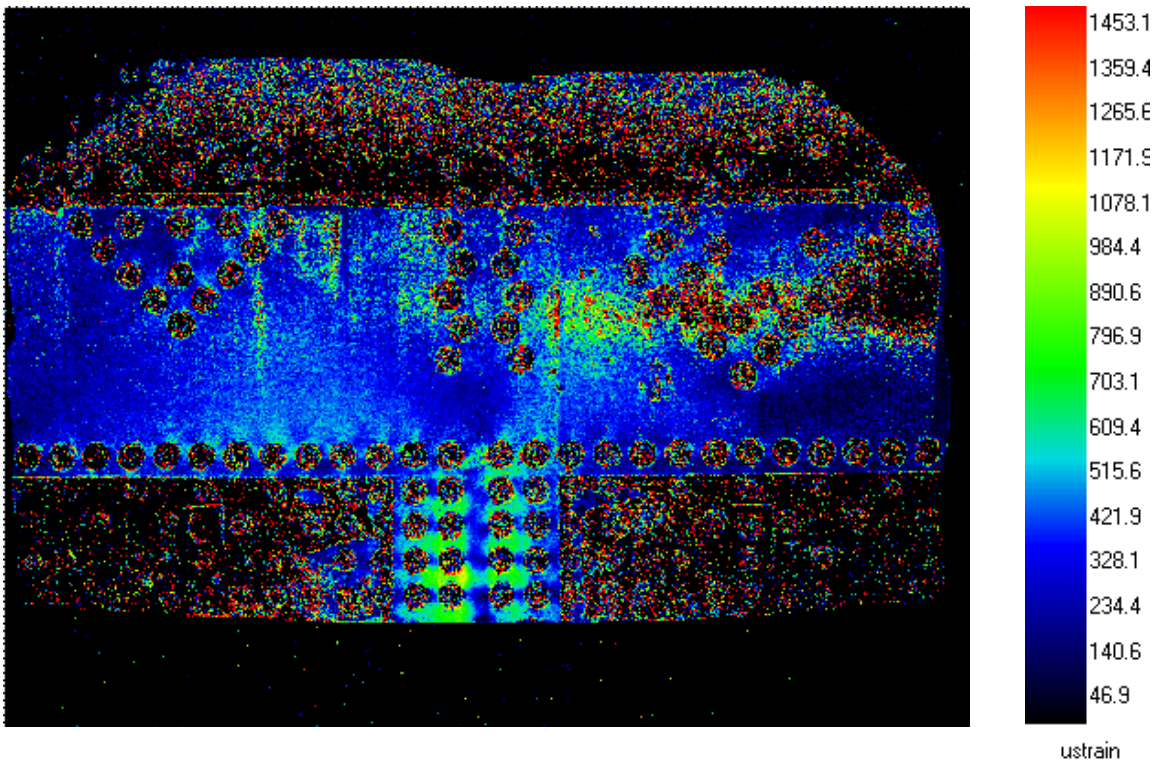


Figure E47. Photostress maximum shear strain data for GP307LS3 elastic load case #12b. (Top) Without splice plates. (Bottom) With splice plates installed.



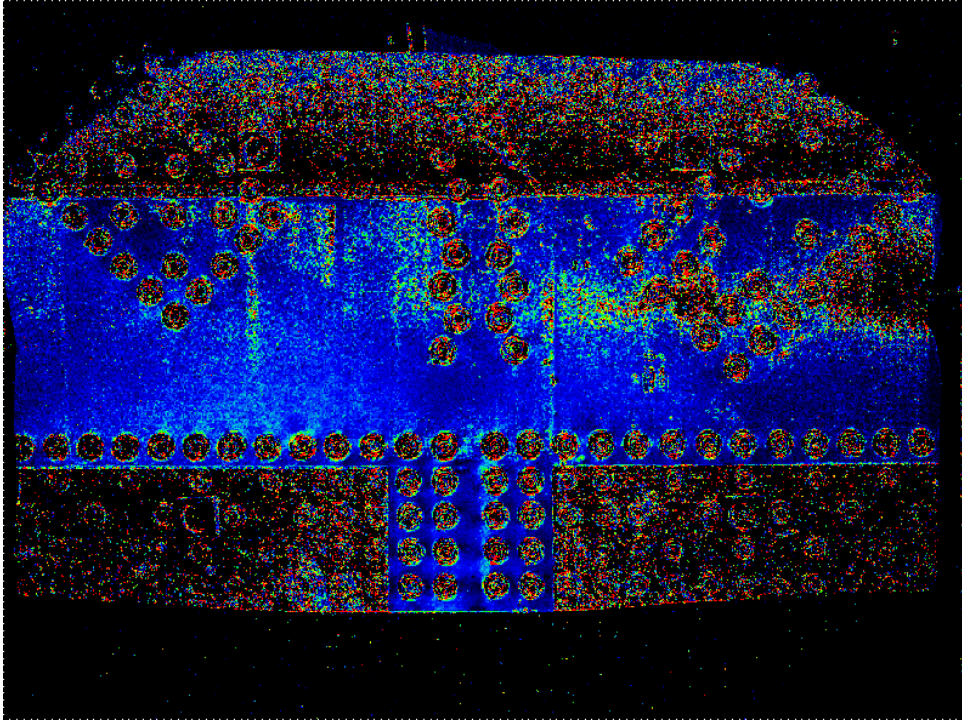
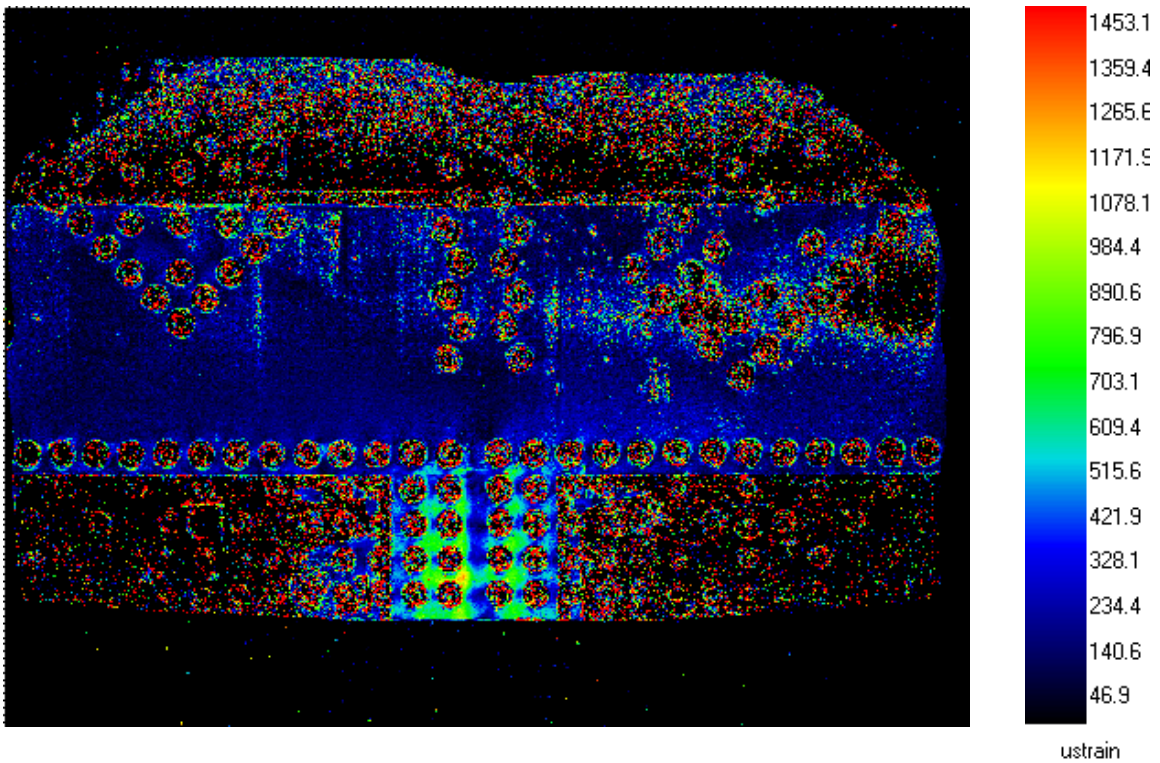


Figure E48. Photostress maximum shear strain data for GP307LS3 elastic load case #12c. (Top) Without splice plates. (Bottom) With splice plates installed.



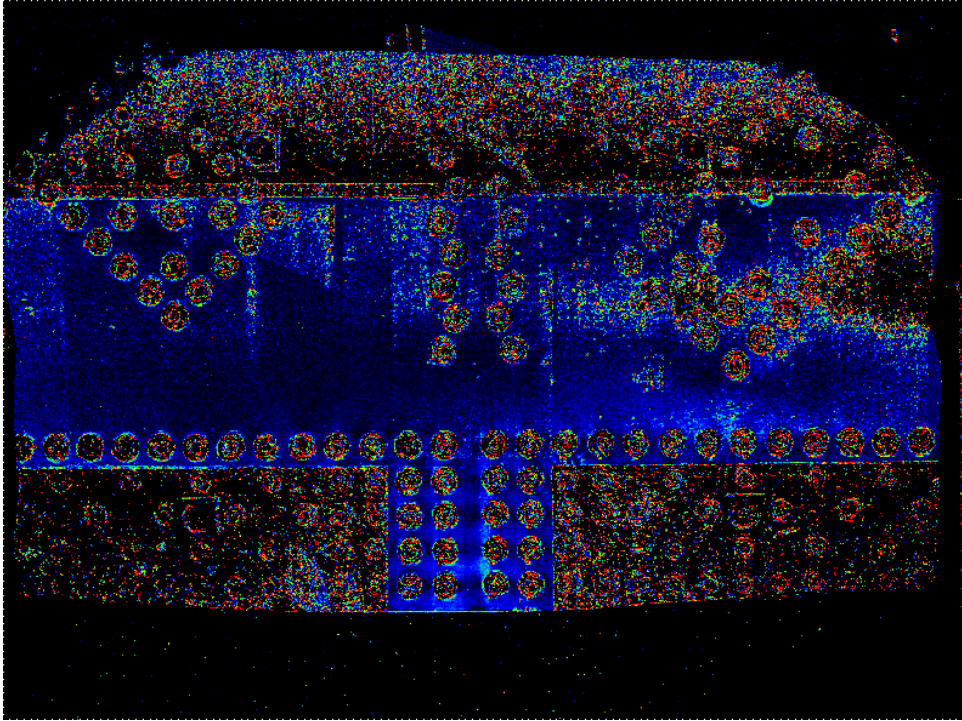
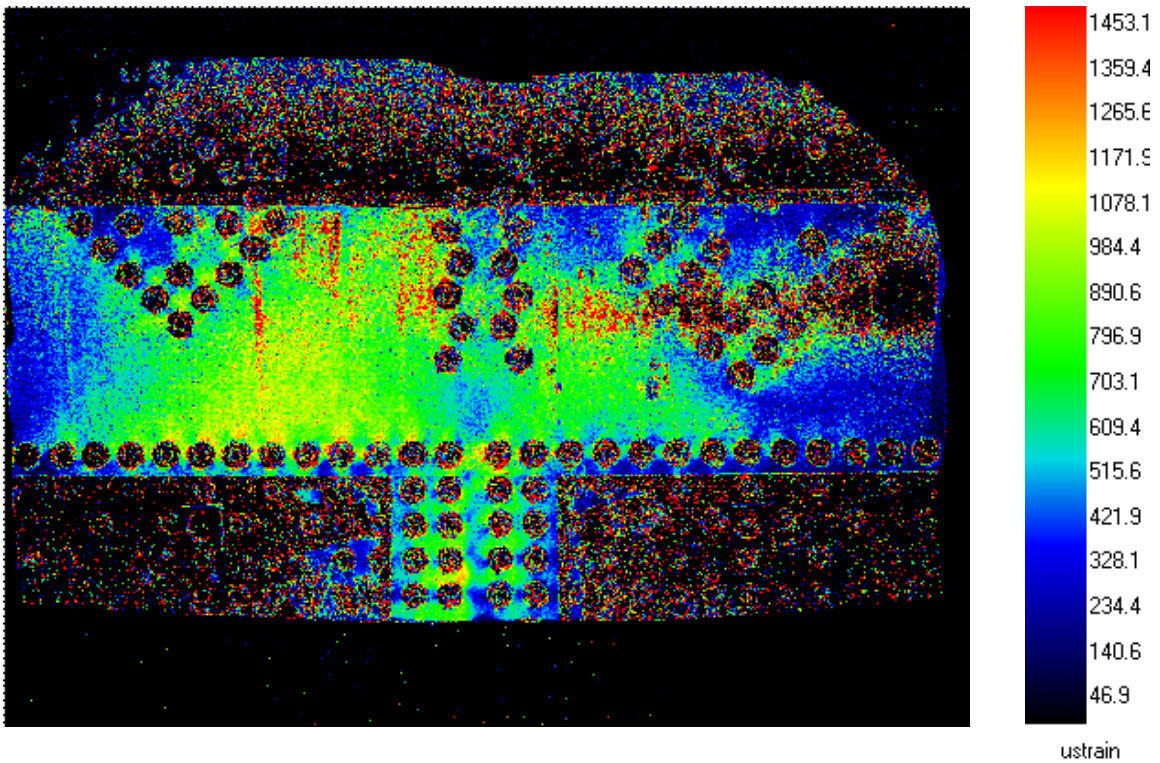


Figure E49. Photostress maximum shear strain data for GP307LS3 elastic load case #12d. (Top) Without splice plates. (Bottom) With splice plates installed.



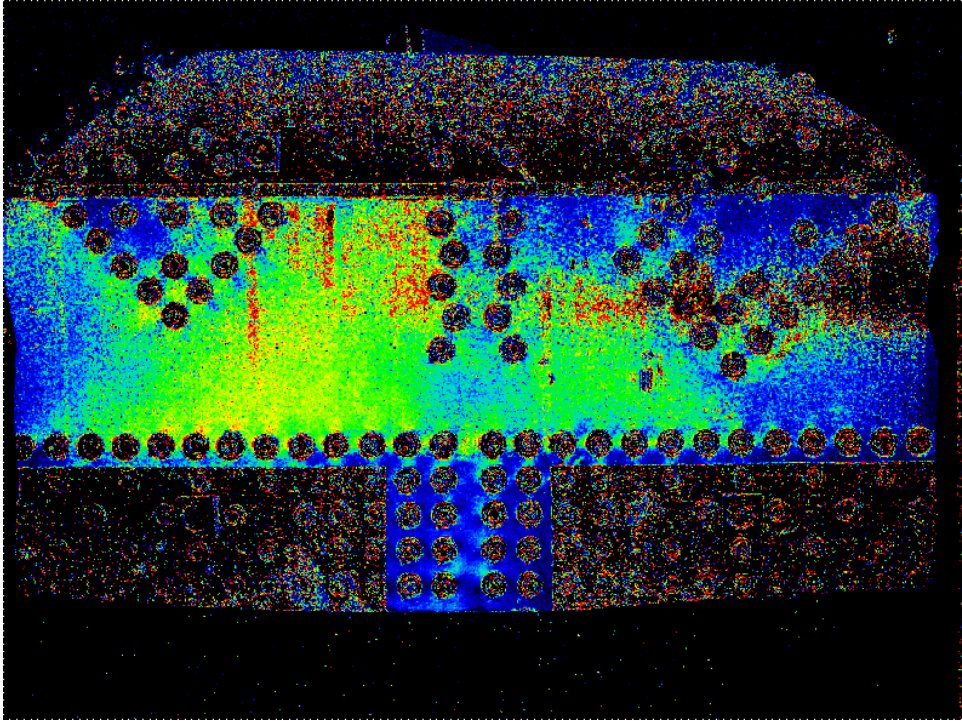
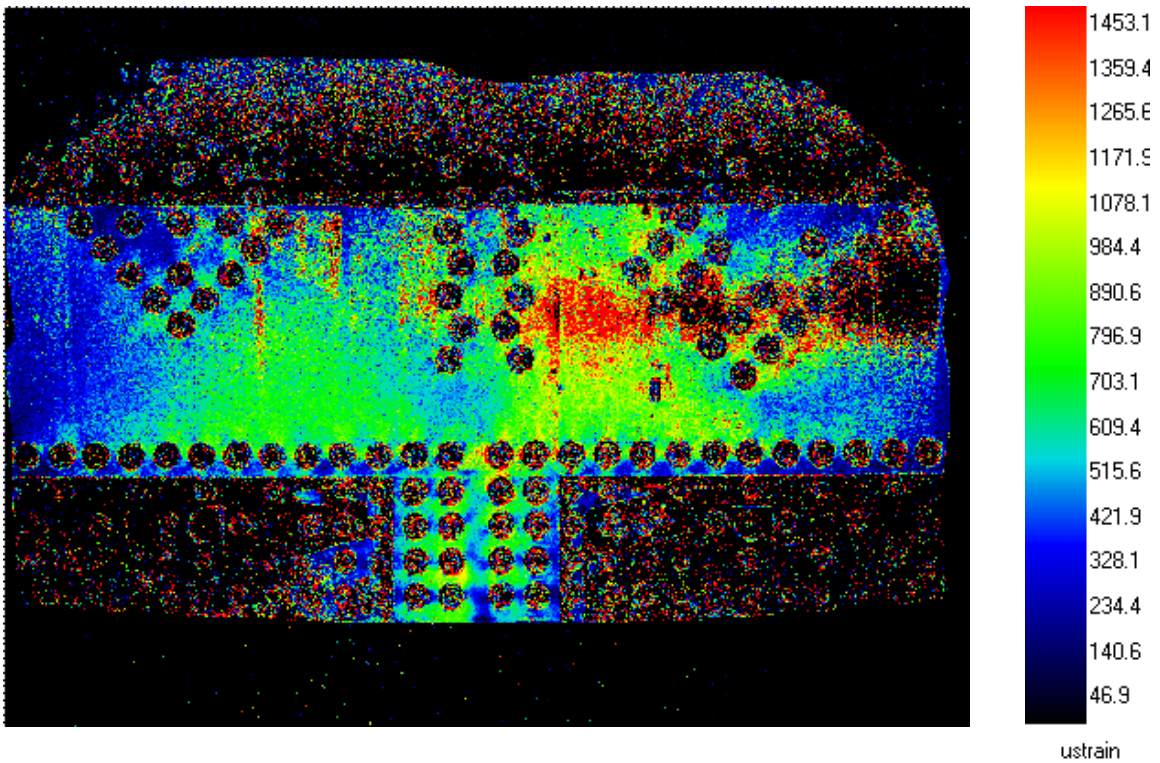


Figure E50. Photostress maximum shear strain data for GP307LS3 elastic load case #12e. (Top) Without splice plates. (Bottom) With splice plates installed.



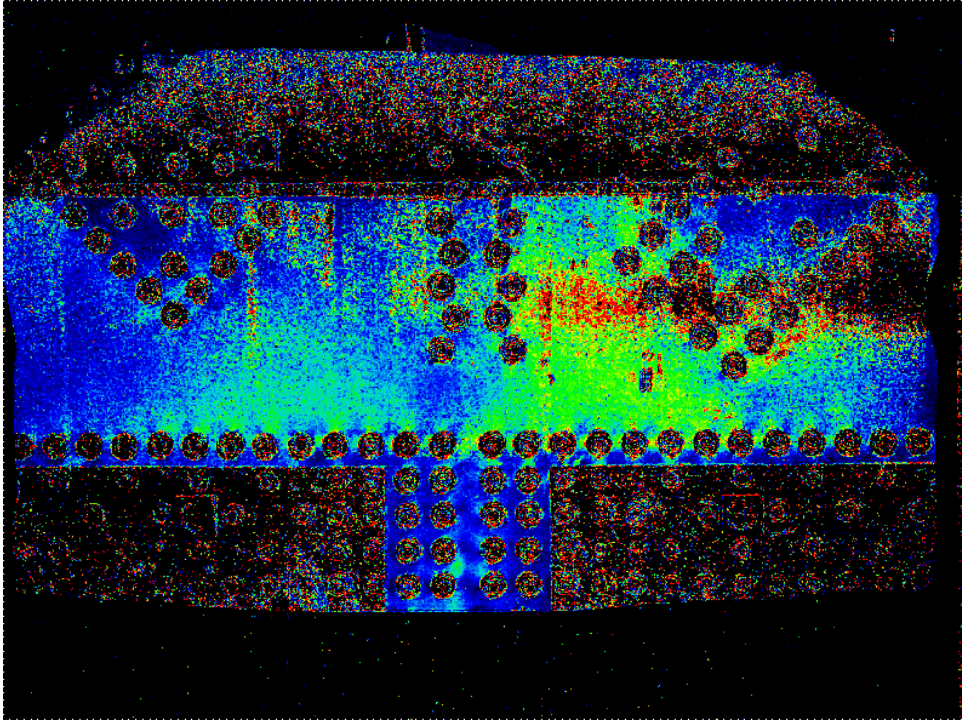
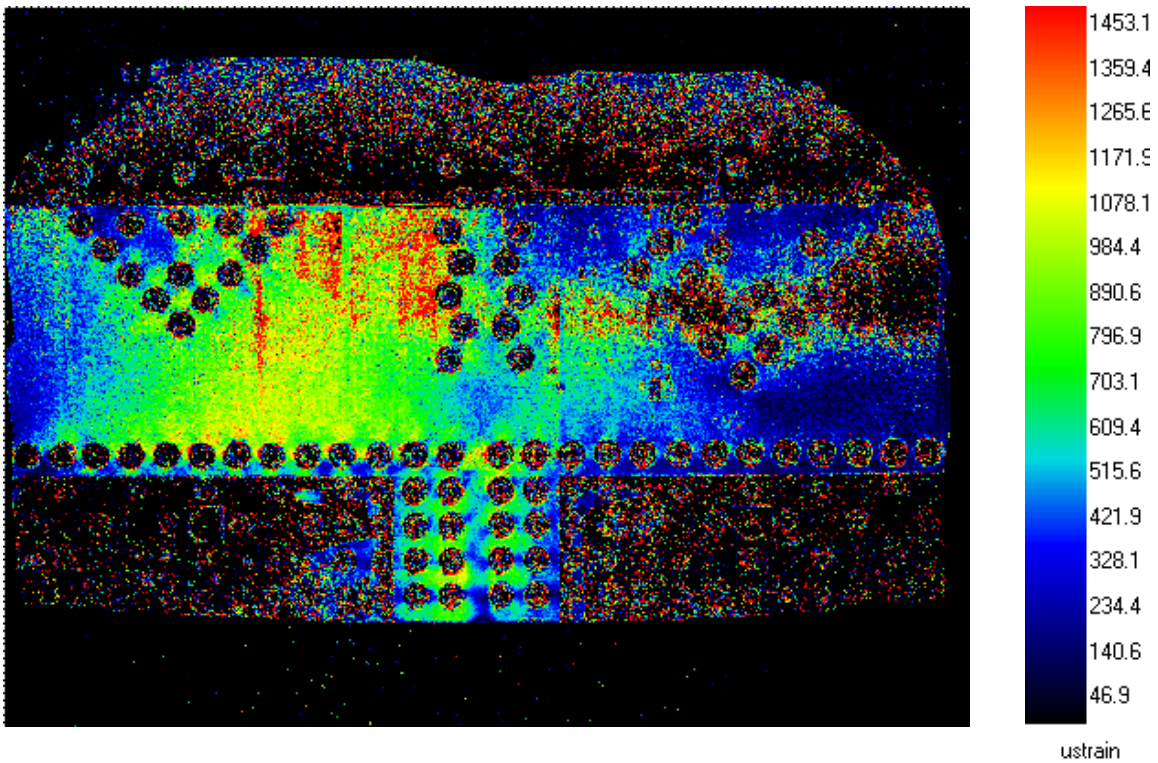


Figure E51. Photostress maximum shear strain data for GP307LS3 elastic load case #12f. (Top) Without splice plates. (Bottom) With splice plates installed.



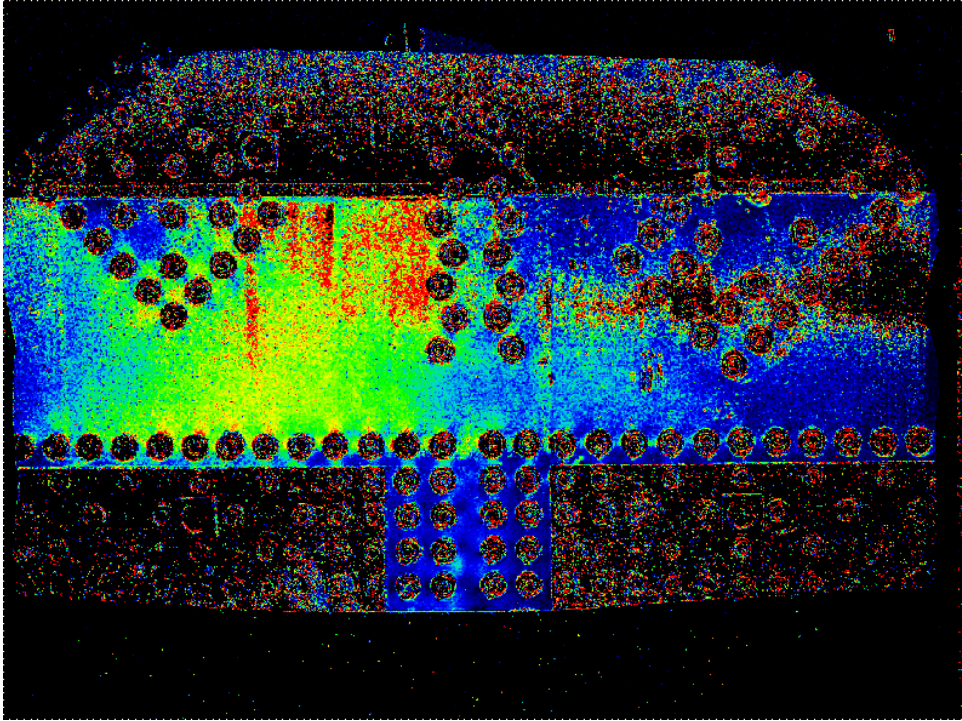
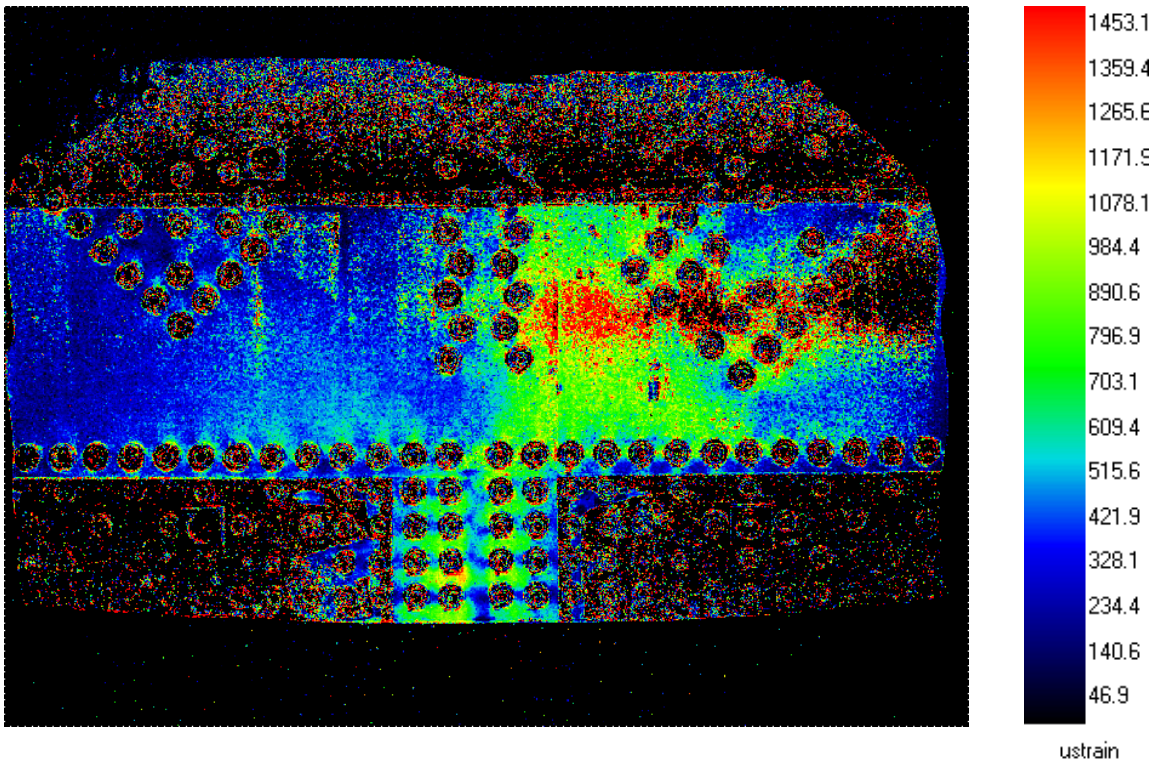


Figure E52. Photostress maximum shear strain data for GP307LS3 elastic load case #12g. (Top) Without splice plates. (Bottom) With splice plates installed.



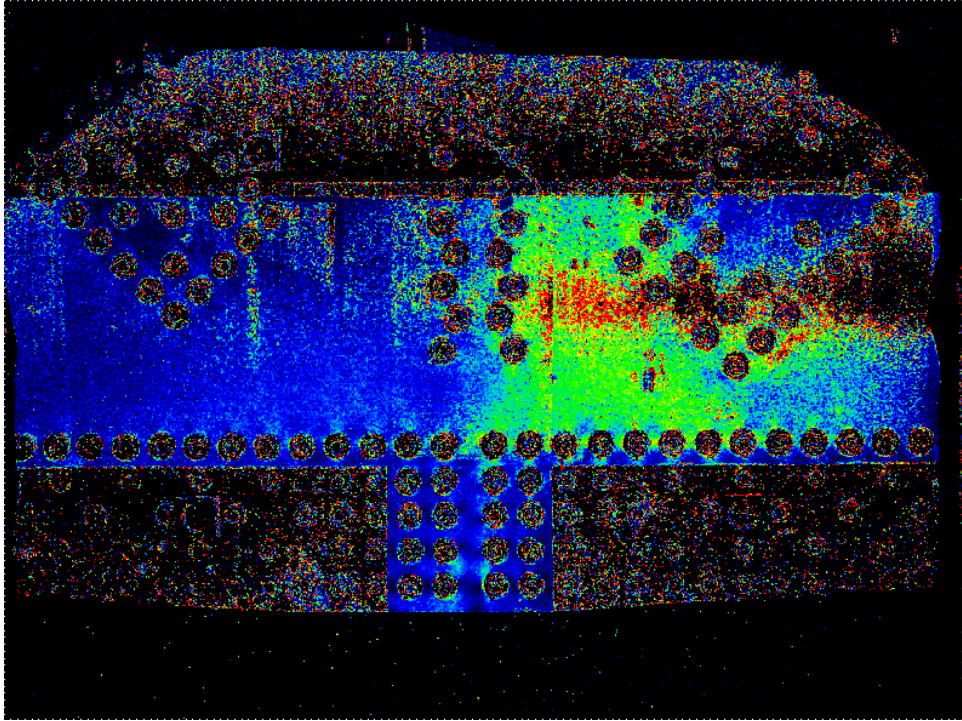


Figure E53. Photostress maximum shear strain data for GP307LS3 elastic load case #12h. (Top) Without splice plates. (Bottom) With splice plates installed.

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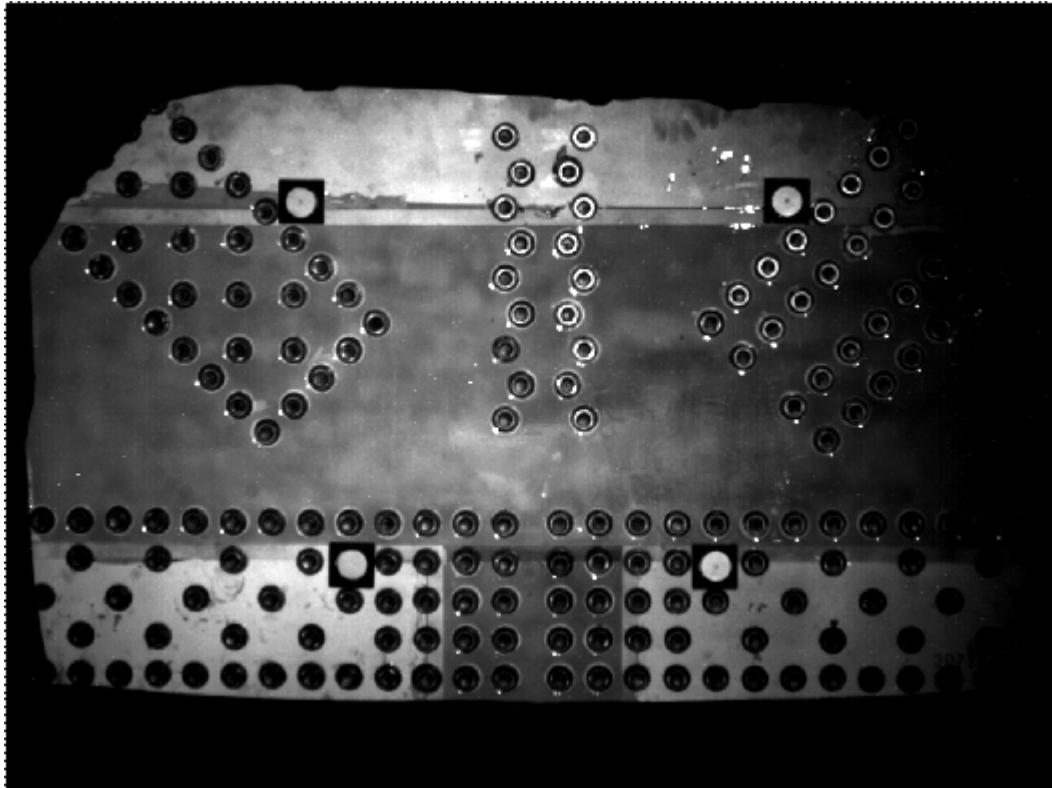
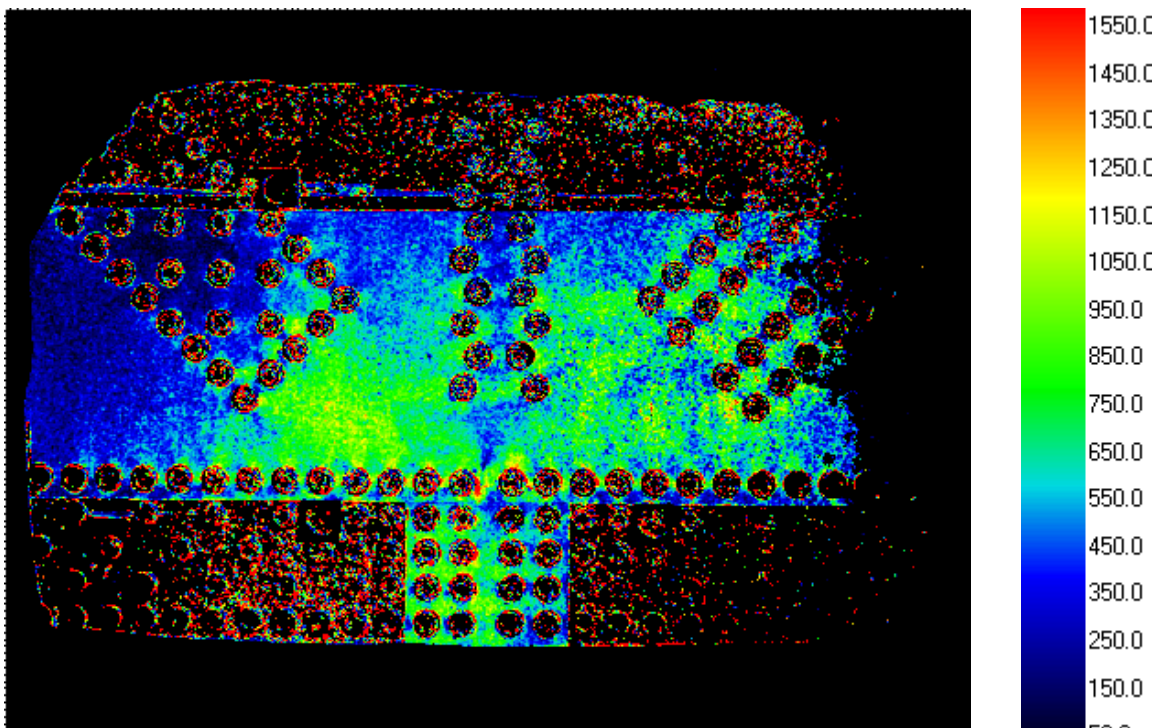


Figure E54. Grayscale image of 307SL3 epoxy coating.



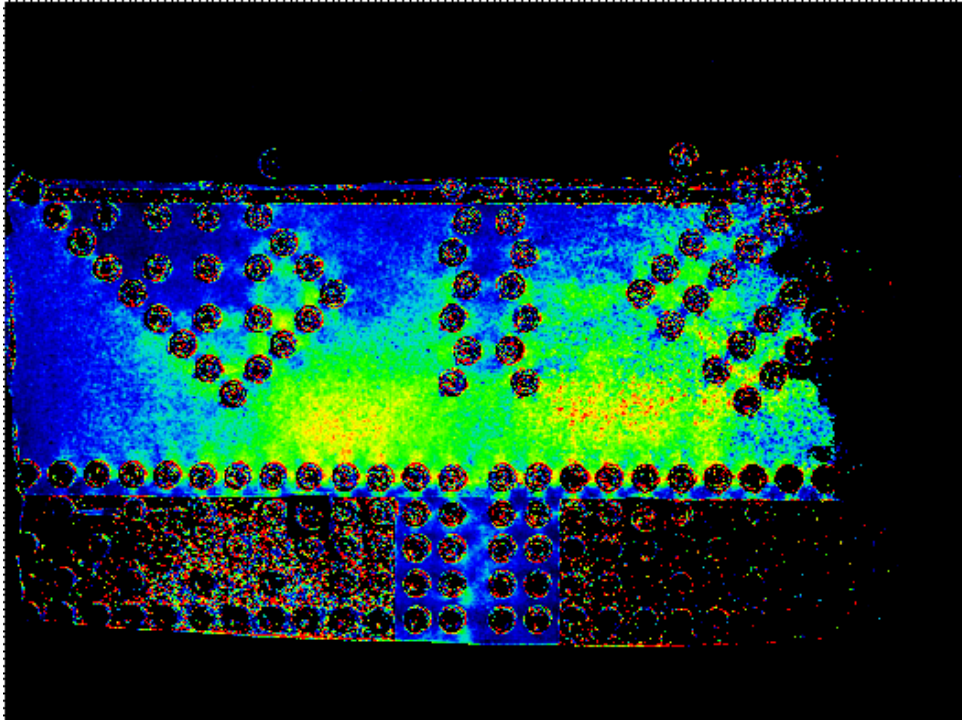
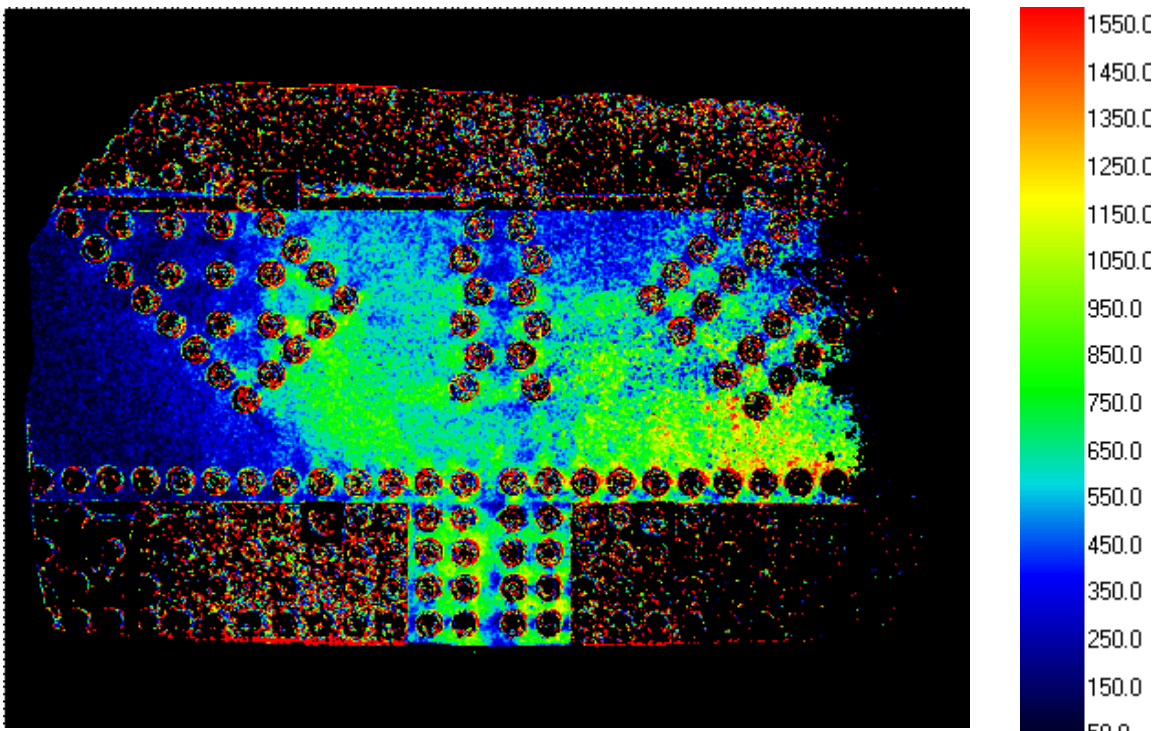


Figure E55. GP307SL3 elastic load case #1 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



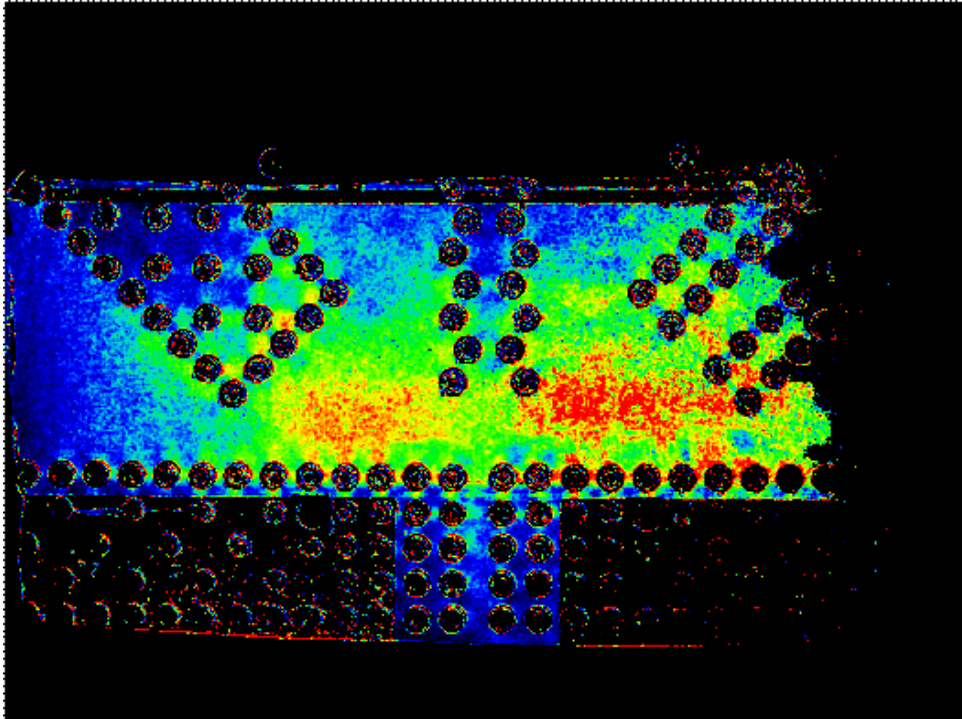
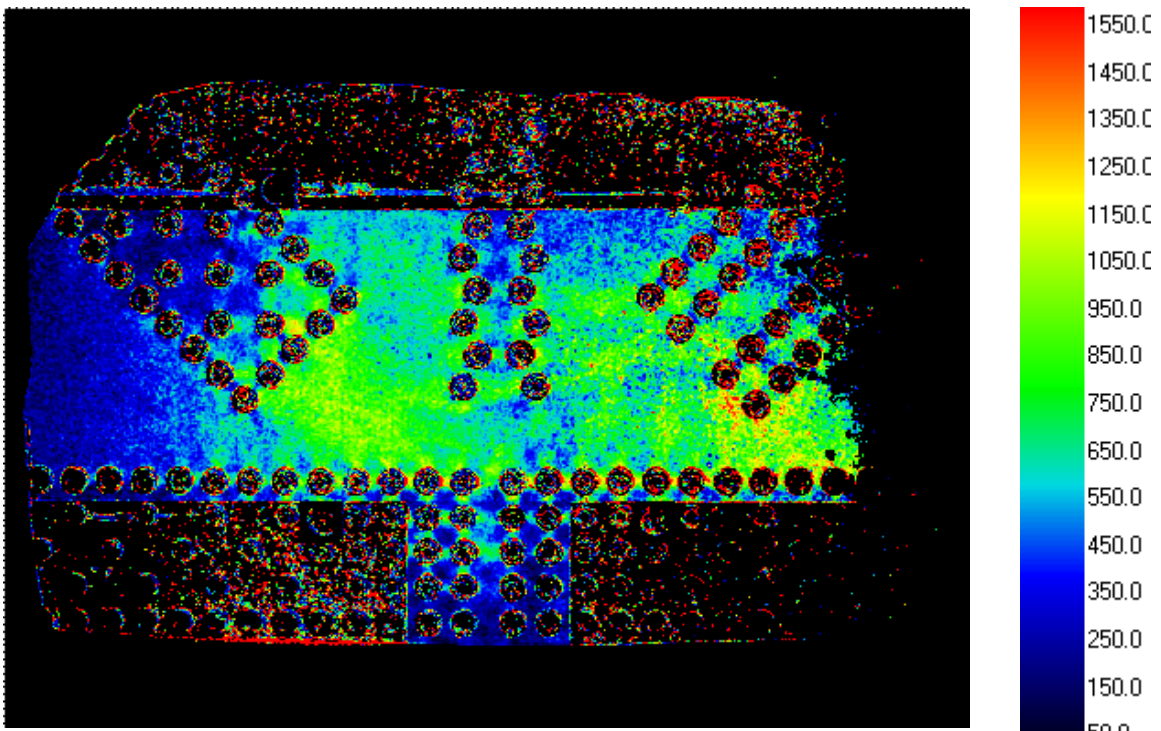


Figure E56. GP307SL3 elastic load case #2 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



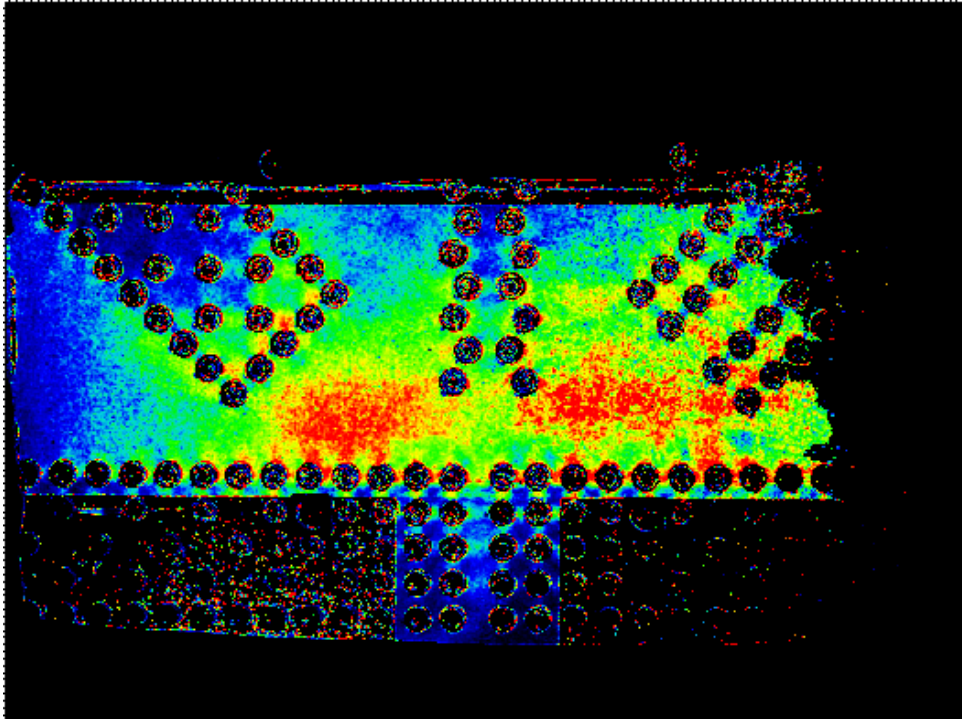
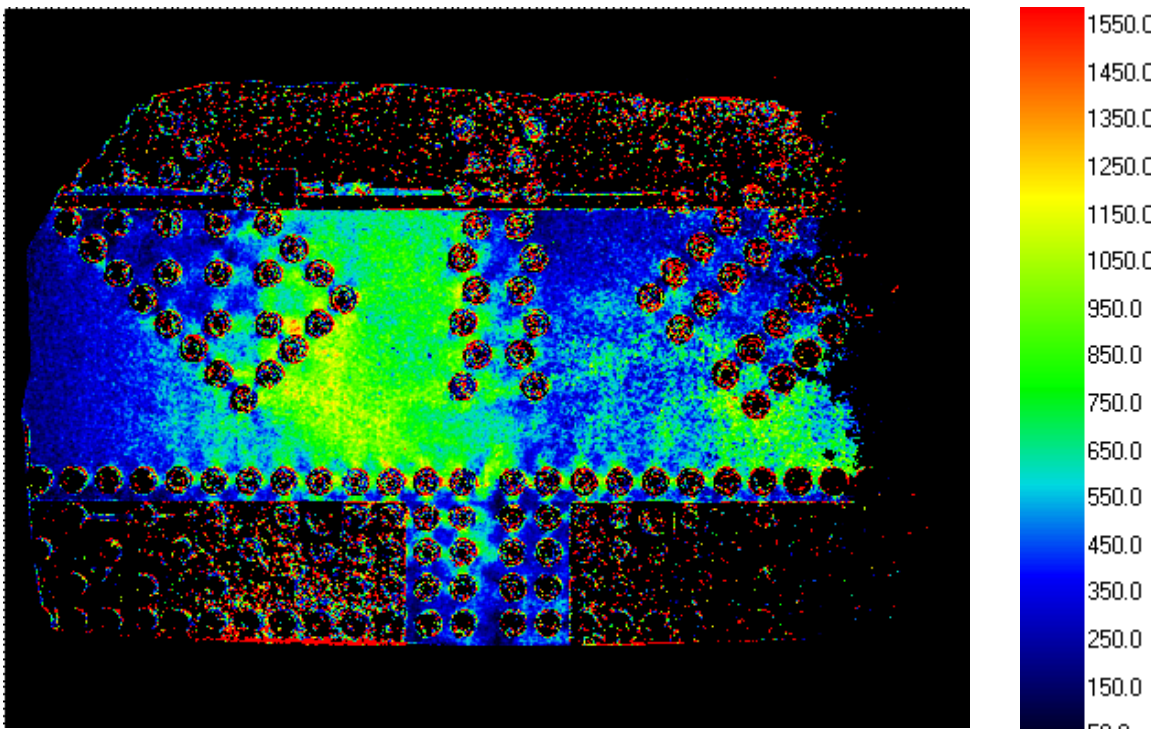


Figure E57. GP307SL3 elastic load case #3 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



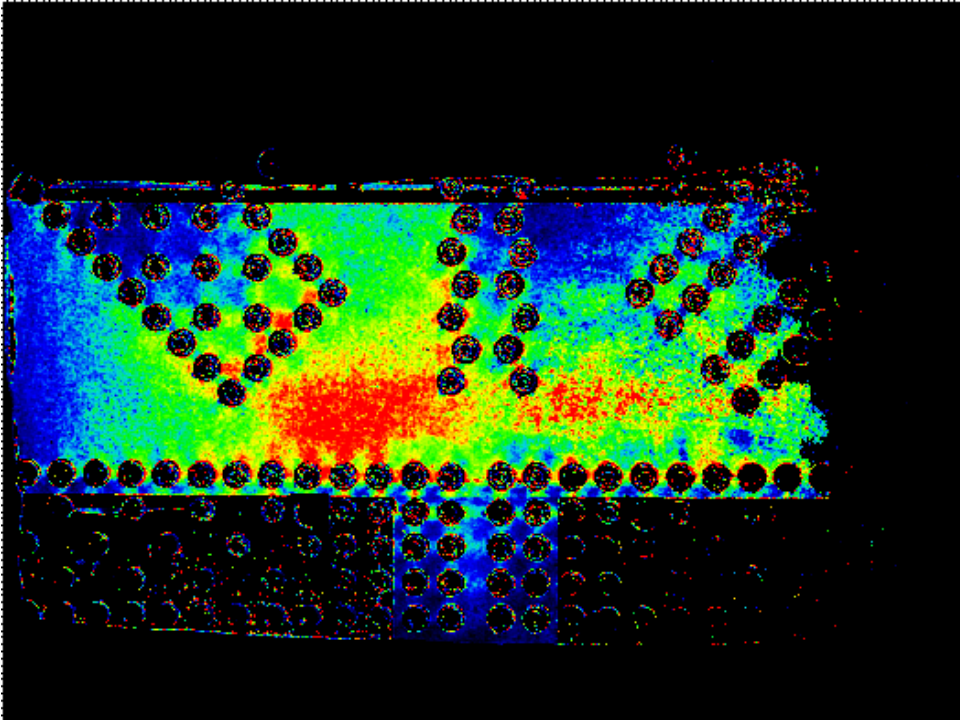
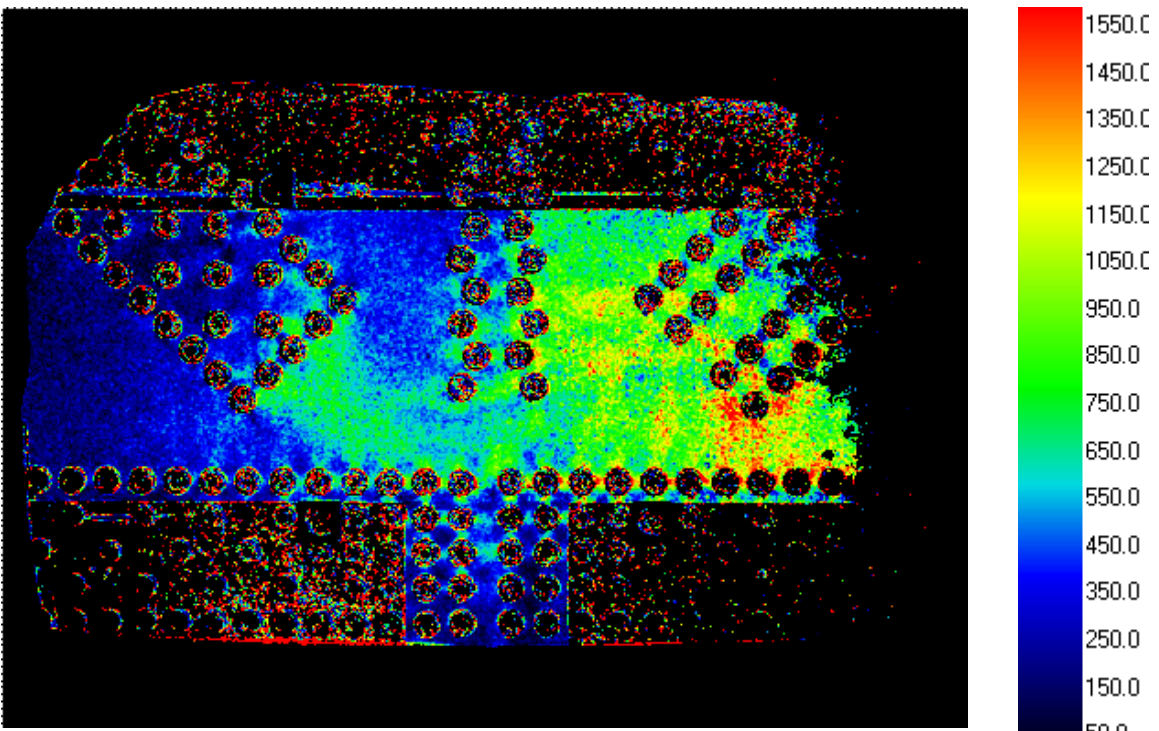


Figure E58. GP307SL3 elastic load case #4 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



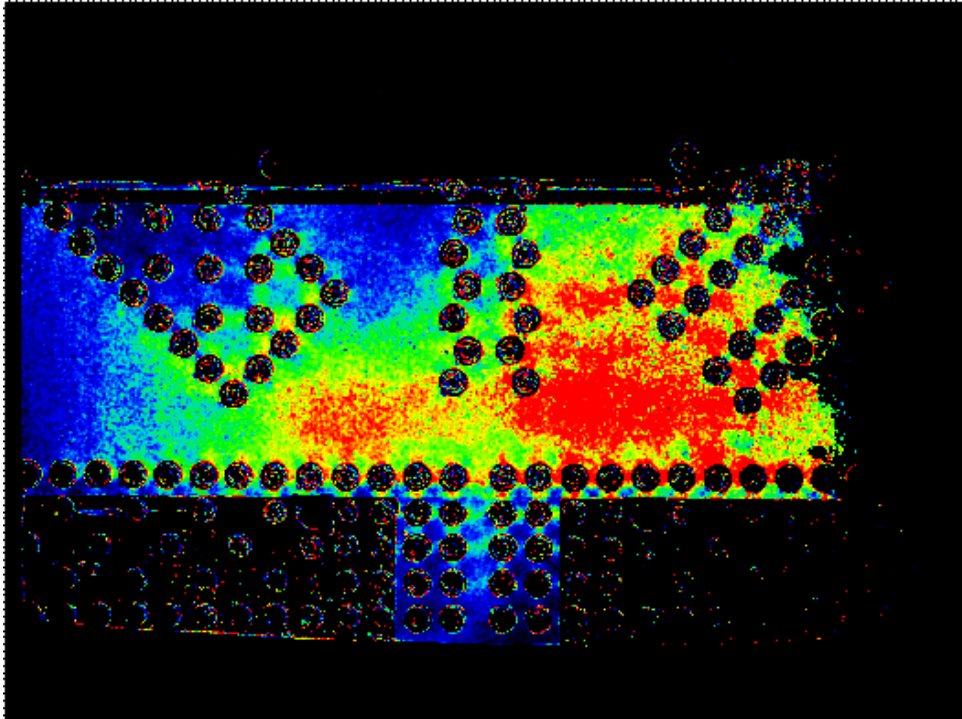
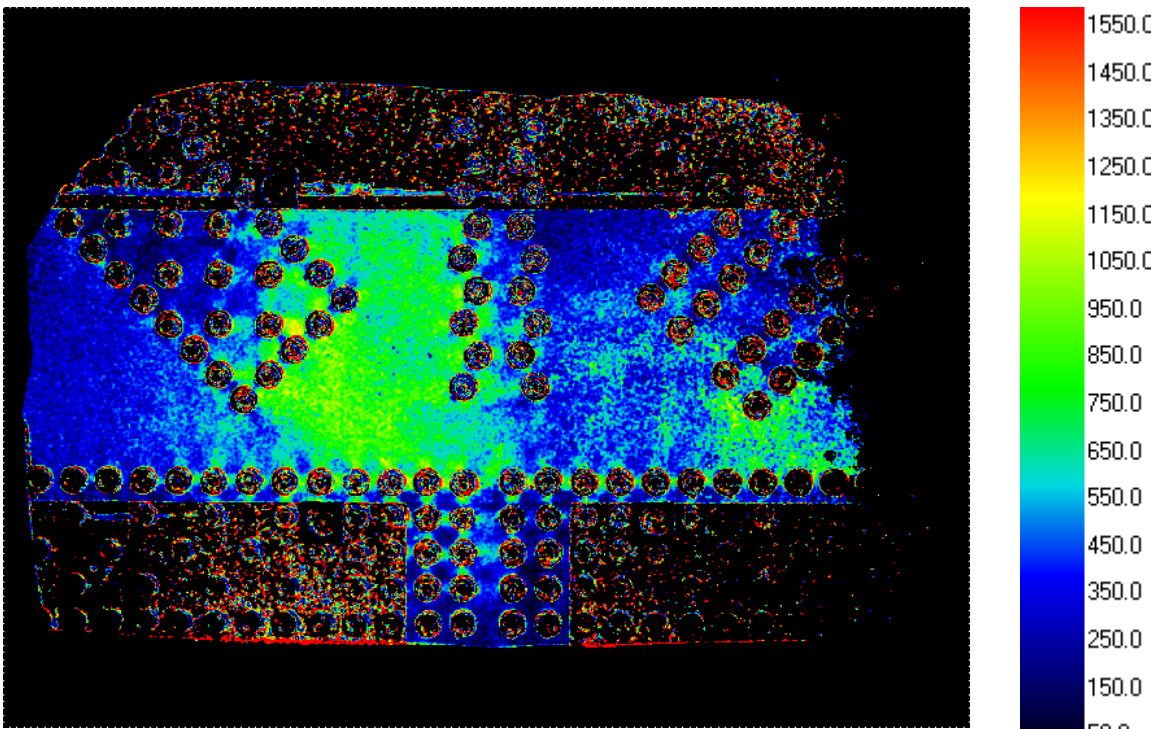


Figure E59. GP307SL3 elastic load case #5 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



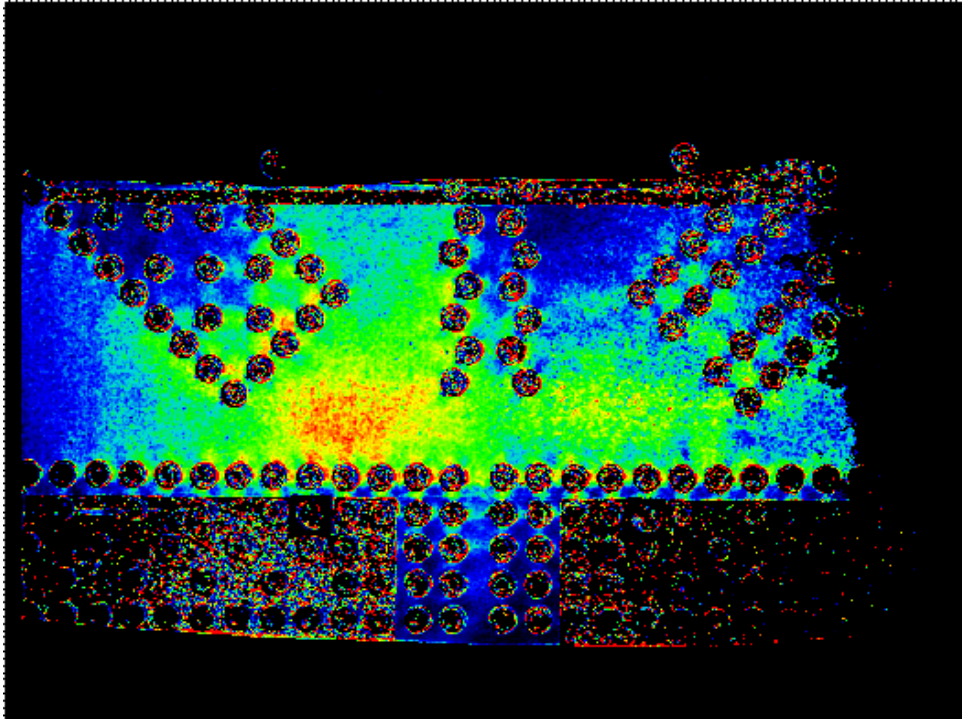
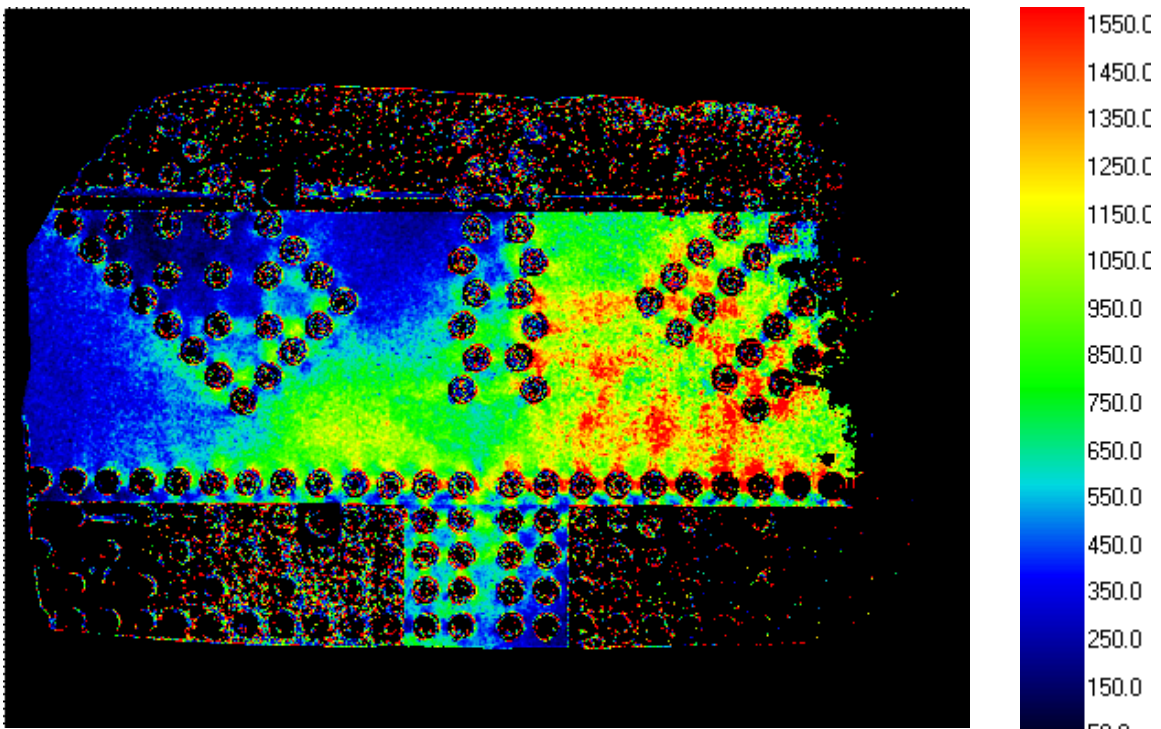


Figure E60. GP307SL3 elastic load case #6 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



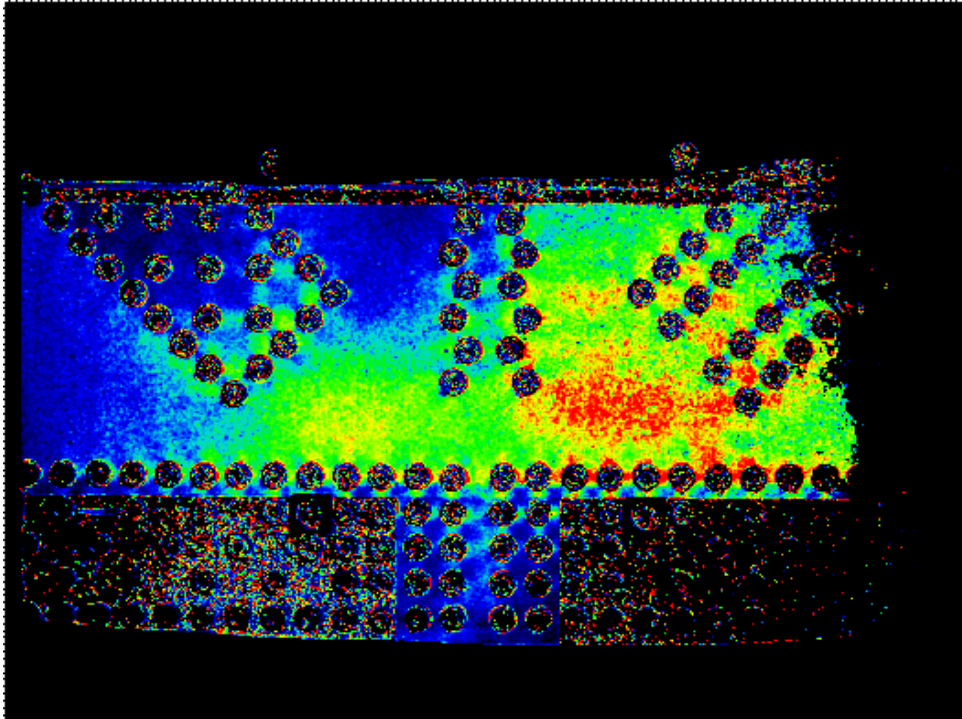
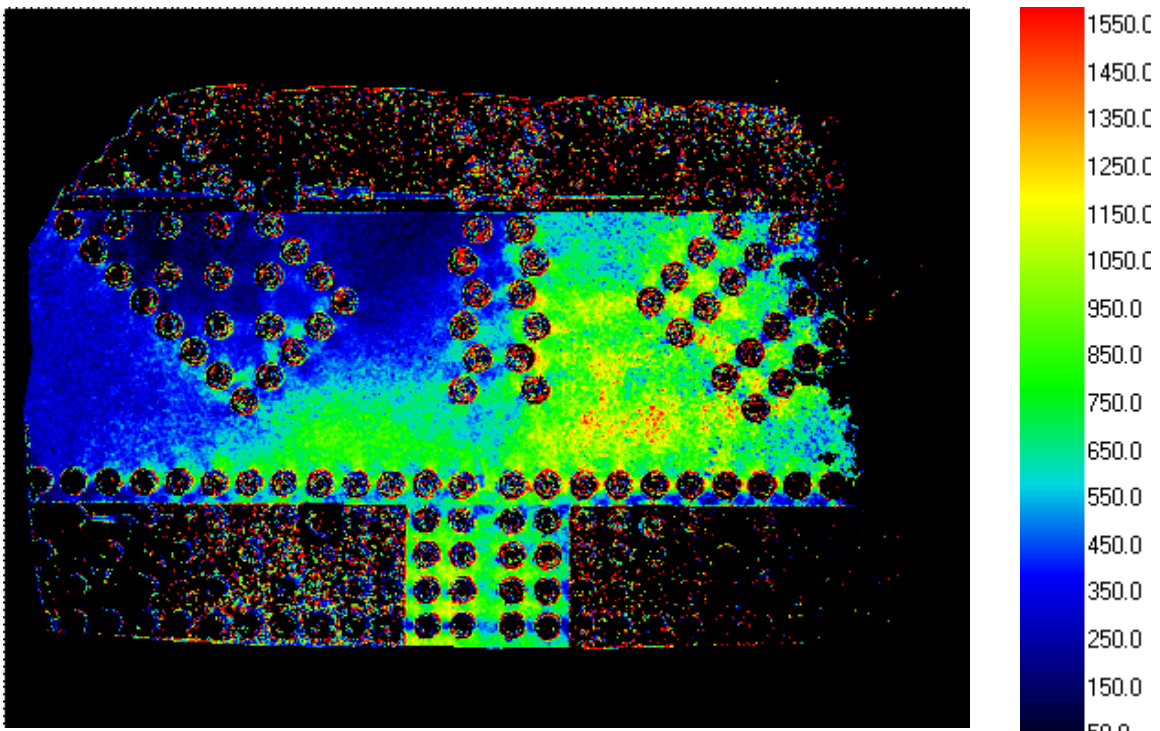


Figure E61. GP307SL3 elastic load case #7 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



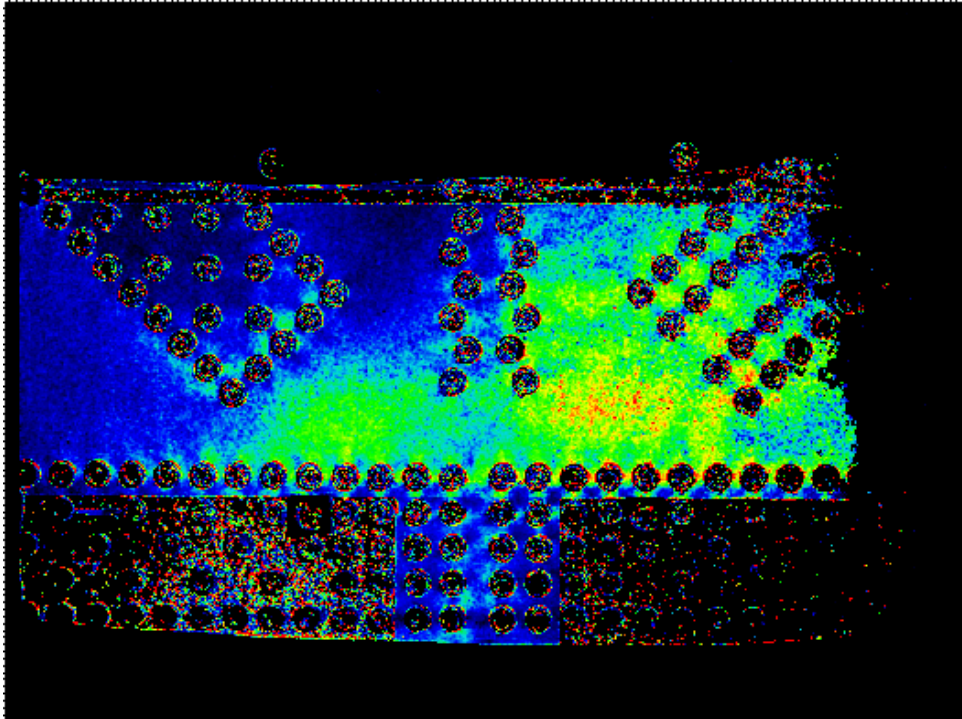
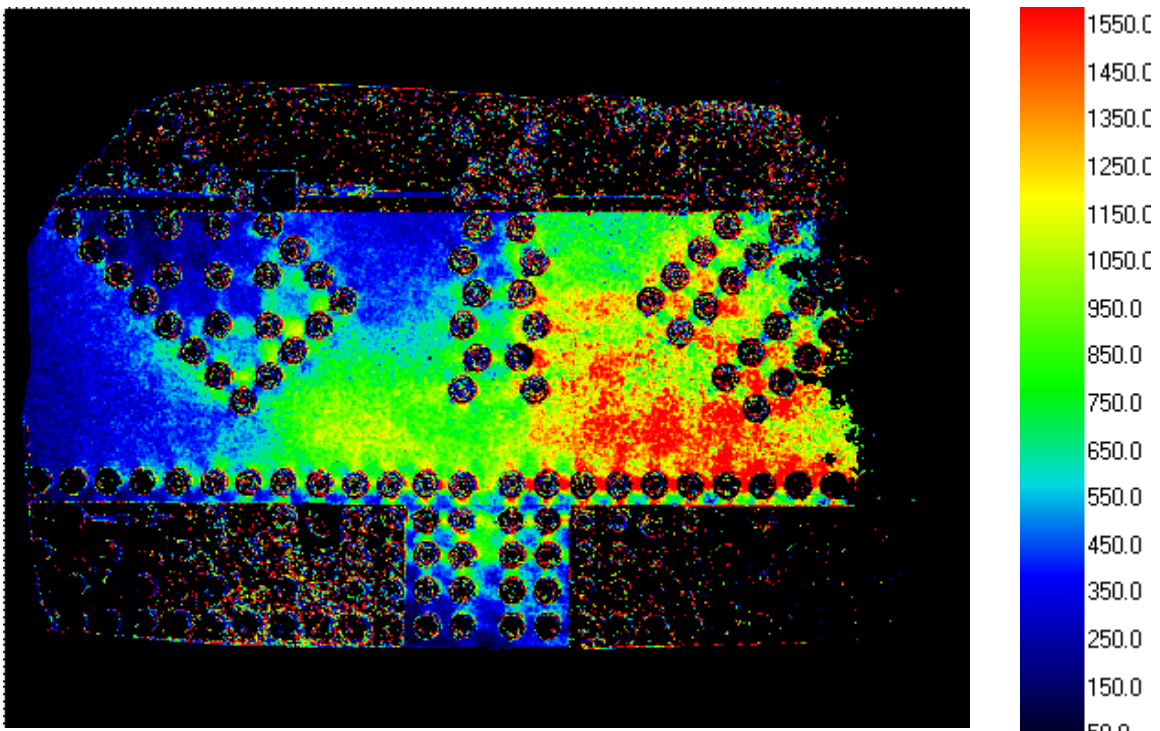


Figure E62. GP307SL3 elastic load case #8 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



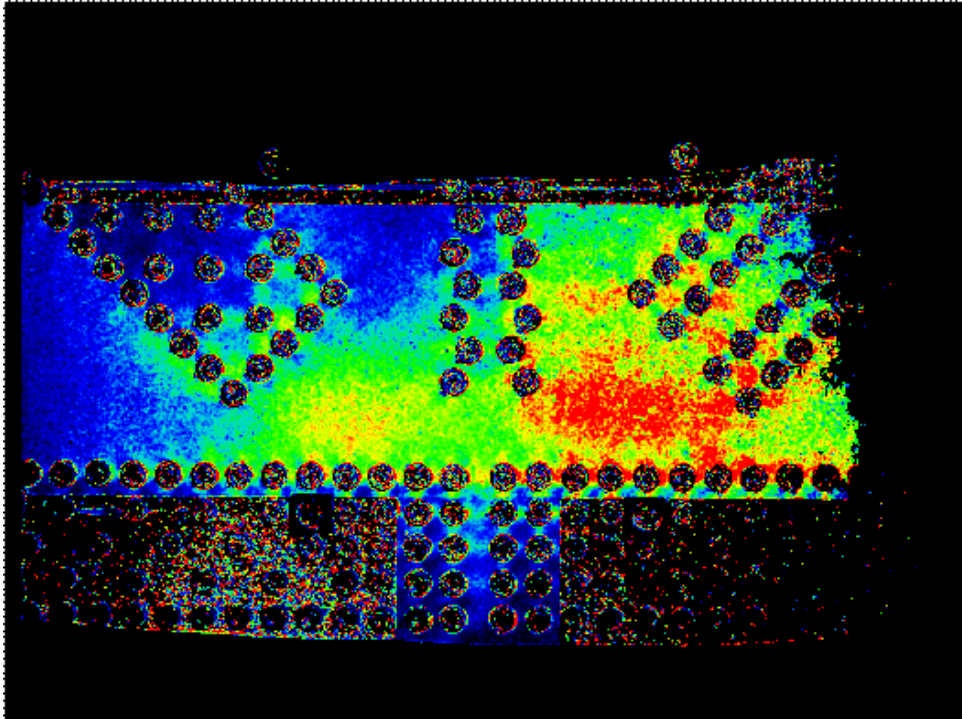
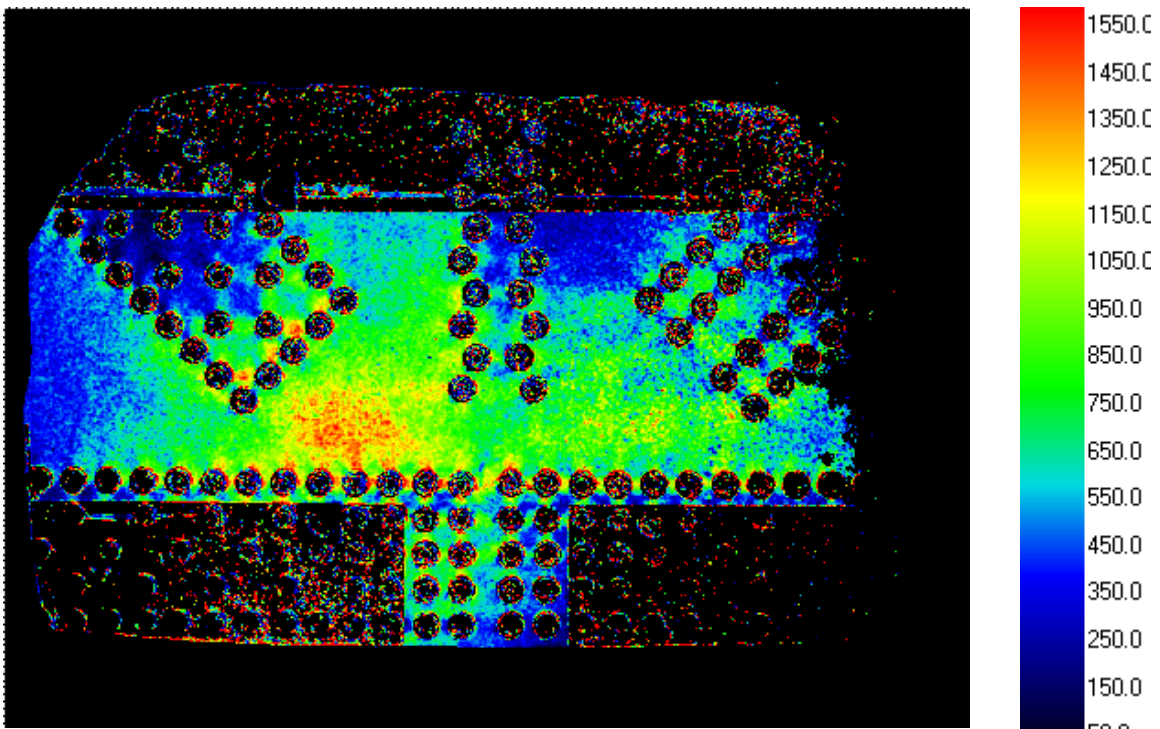


Figure E63. GP307SL3 elastic load case #9 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



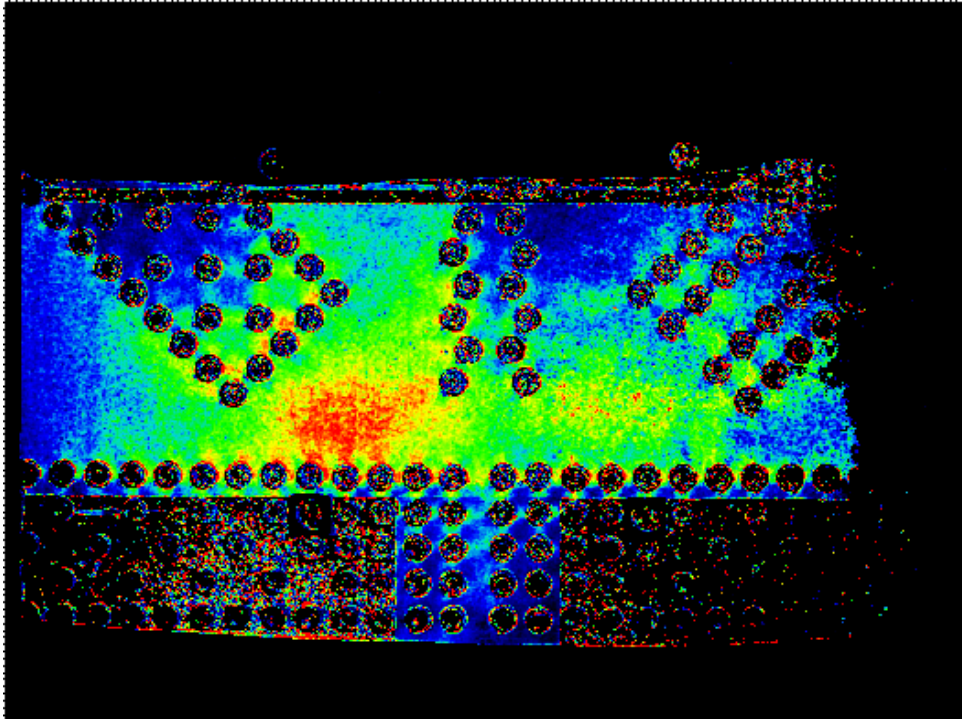
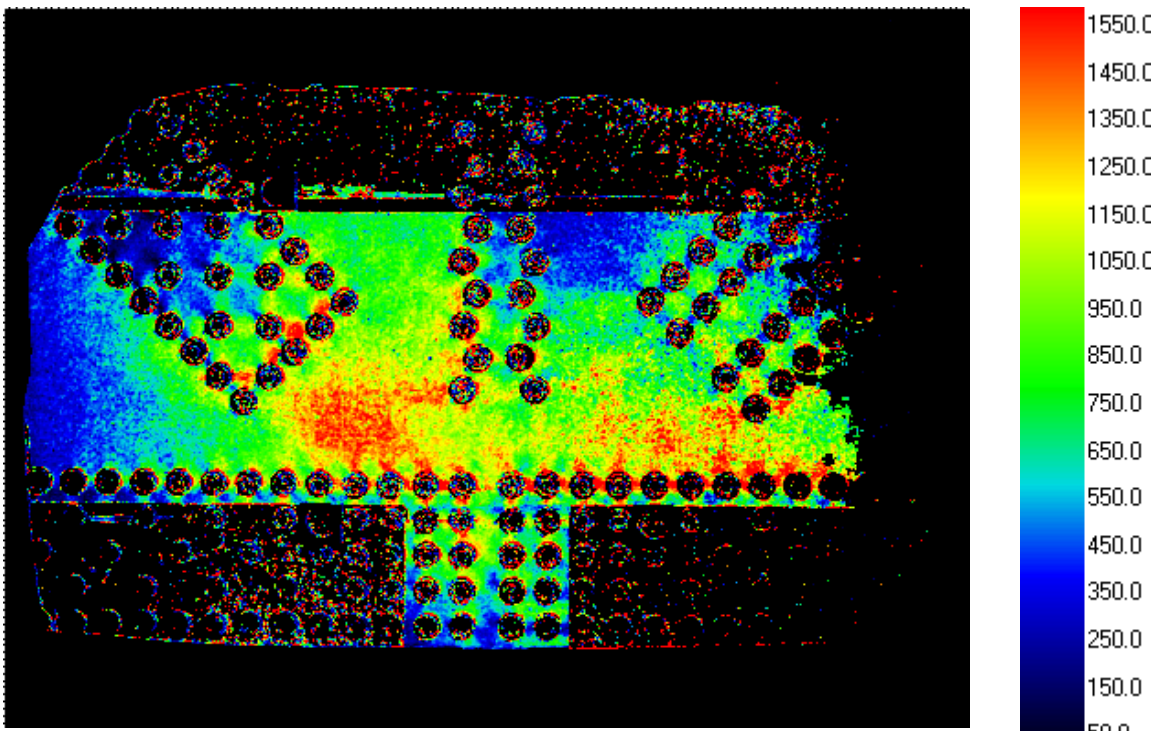


Figure E64. GP307SL3 elastic load case #10 maximum shear strain results. (Top) Photostress camera data without splice plates. (Middle) Photostress data with splice plates installed.



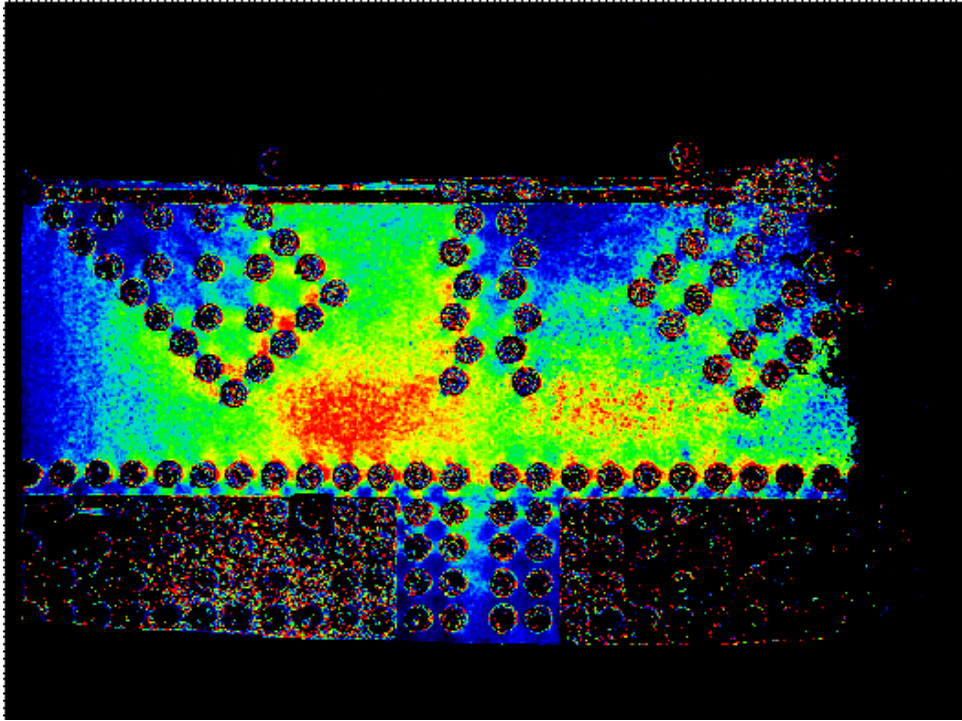
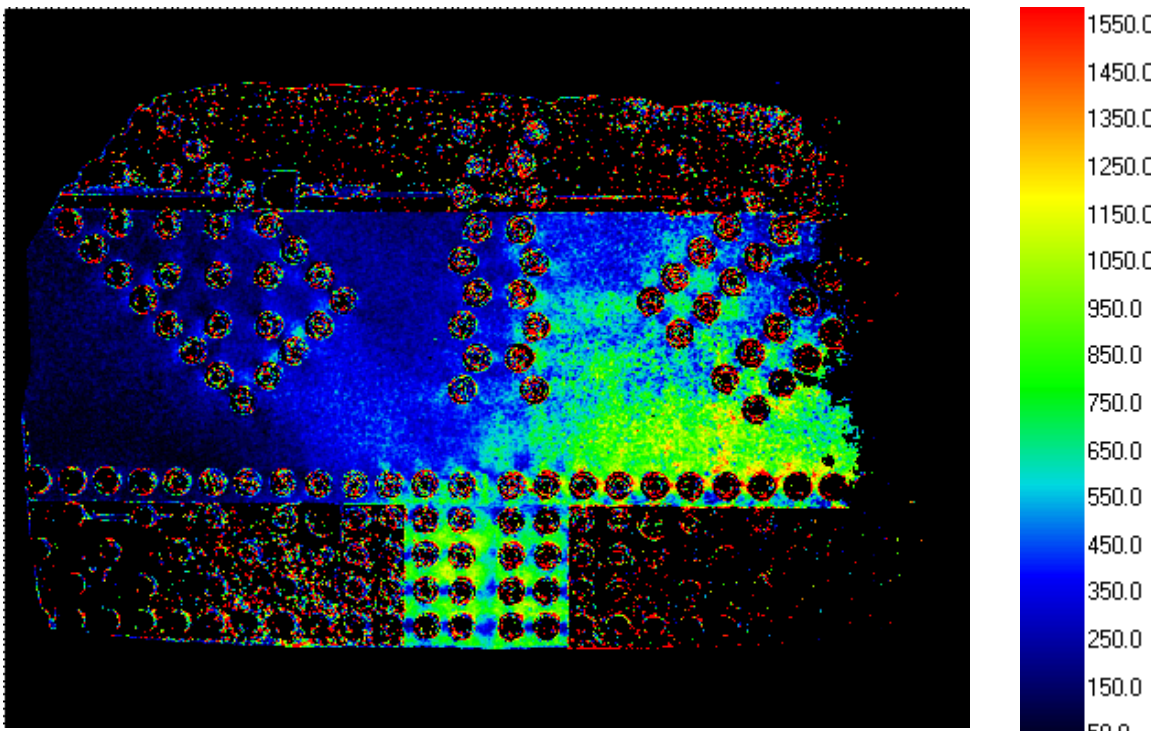


Figure E65. GP307SL3 elastic load case #11 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



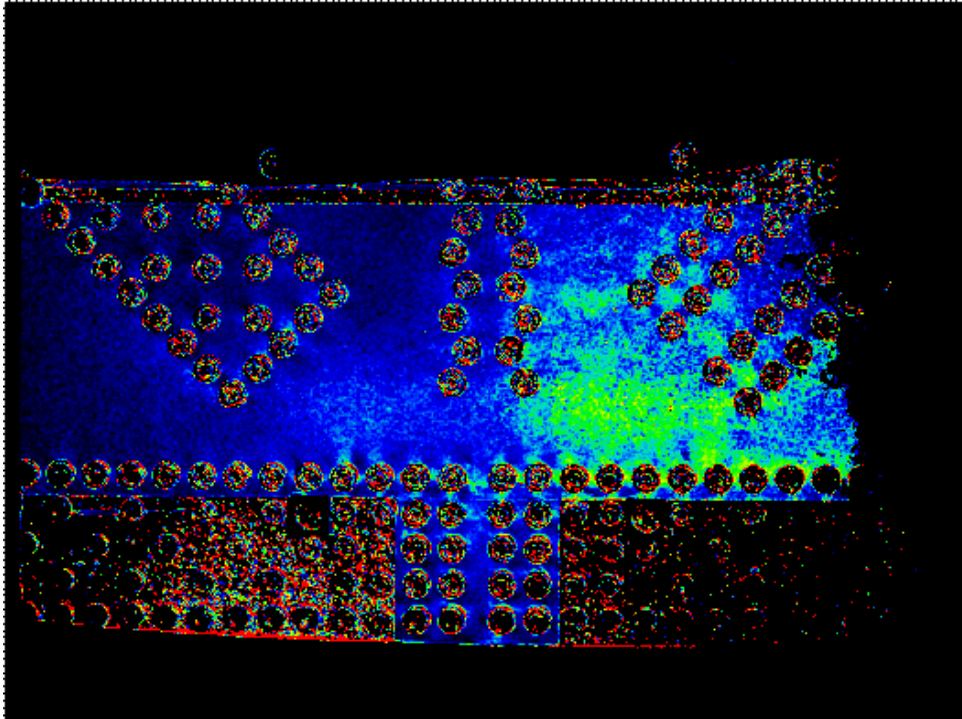
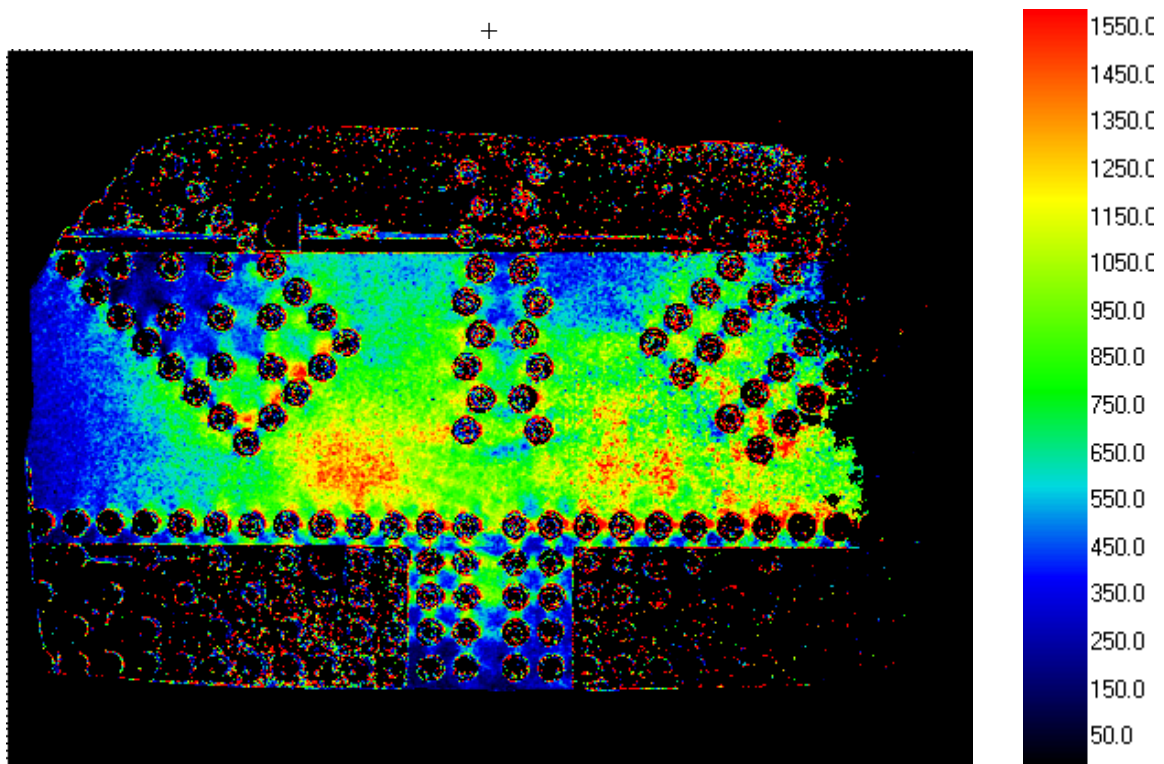


Figure E66. GP307SL3 elastic load case #13 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



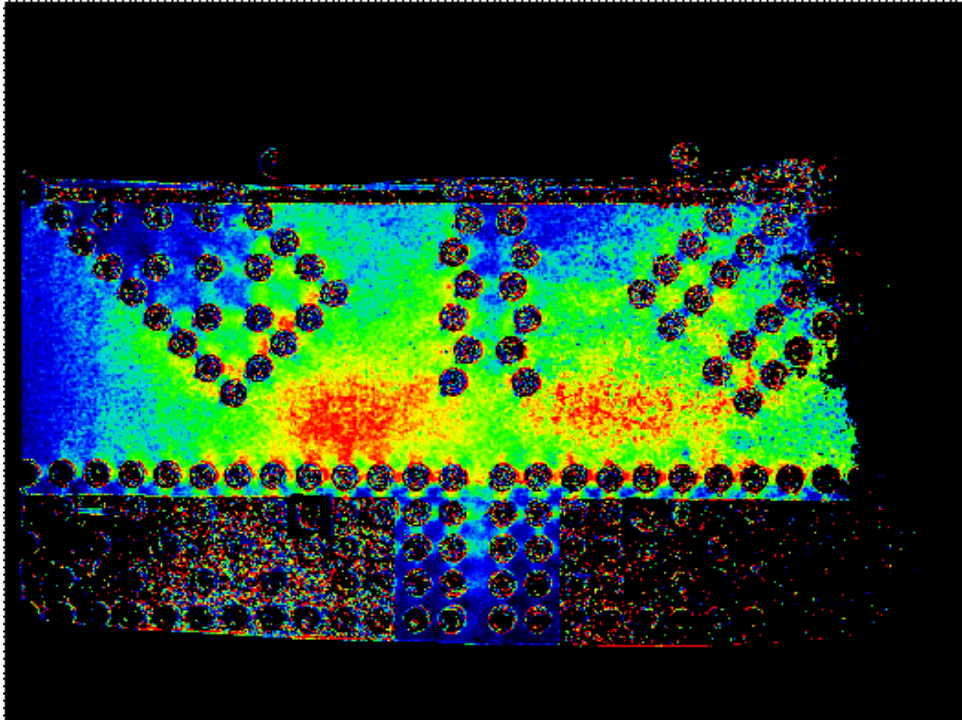
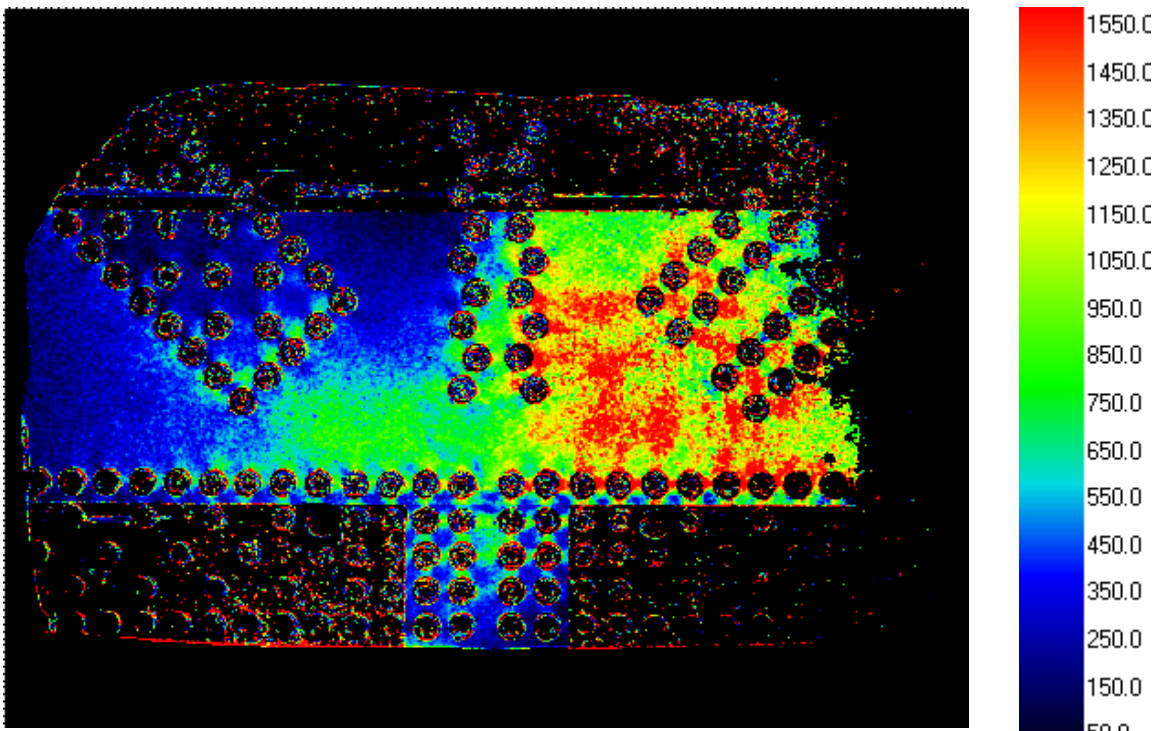


Figure E67. GP307SL3 elastic load case #14 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.



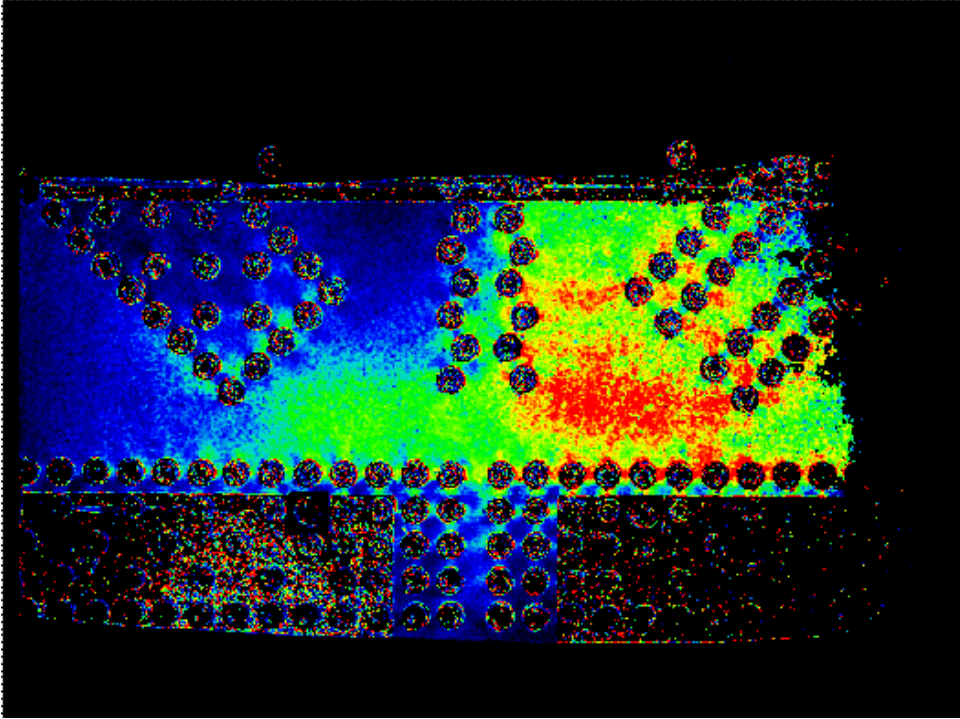


Figure E68. GP307SL3 elastic load case #15 maximum shear strain results. (Top) Photostress camera data without splice plates. (Bottom) Photostress data with splice plates installed.

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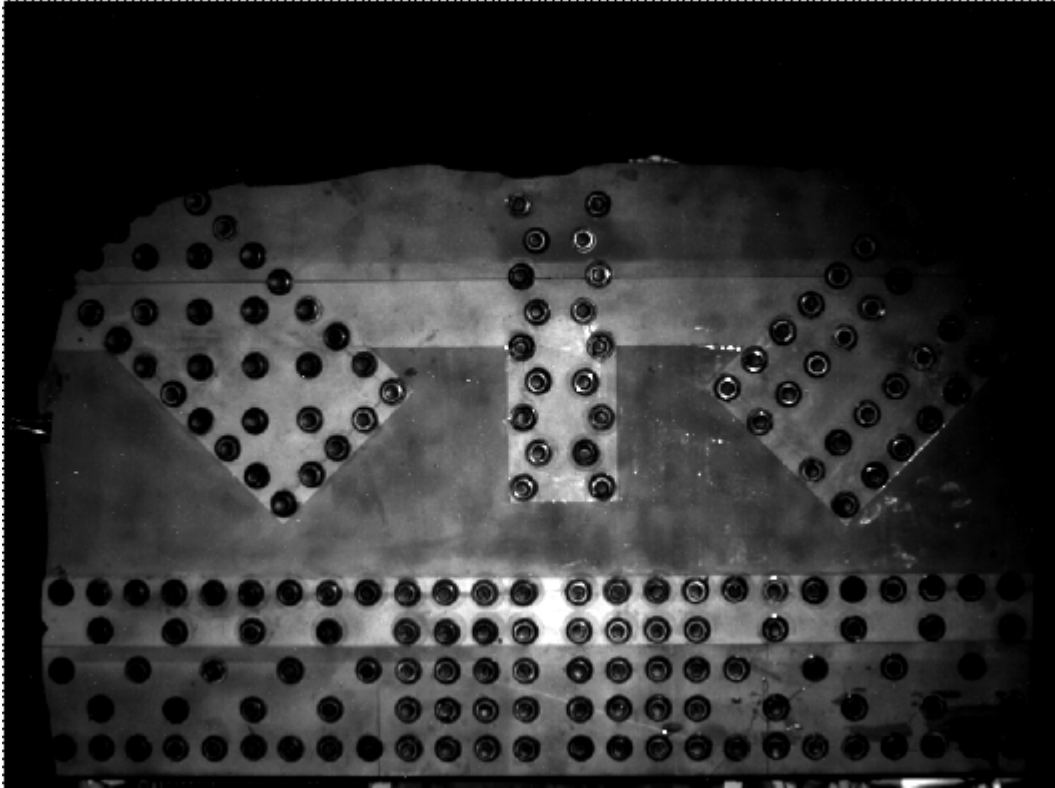


Figure E69. Grayscale image of 307SL4 epoxy coating.

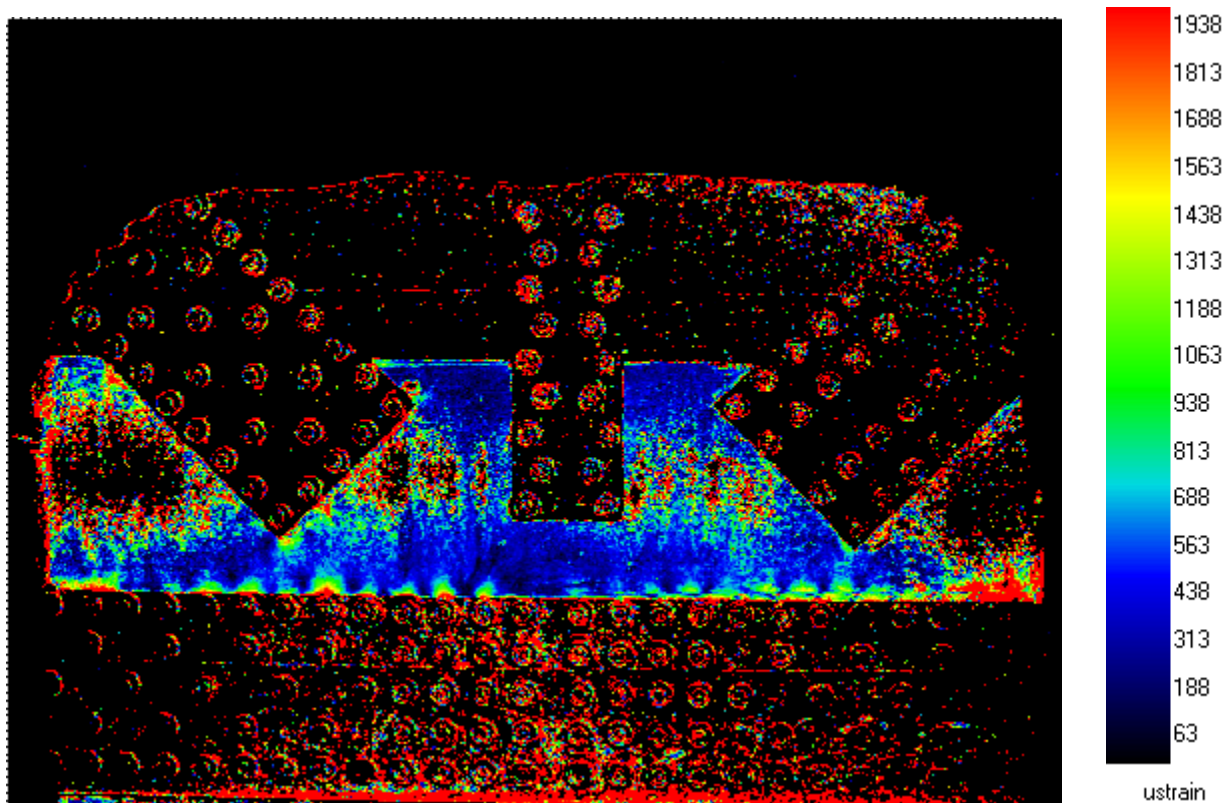


Figure E1. GP307SL4 elastic load case #1 maximum shear strain results with splice plates installed.

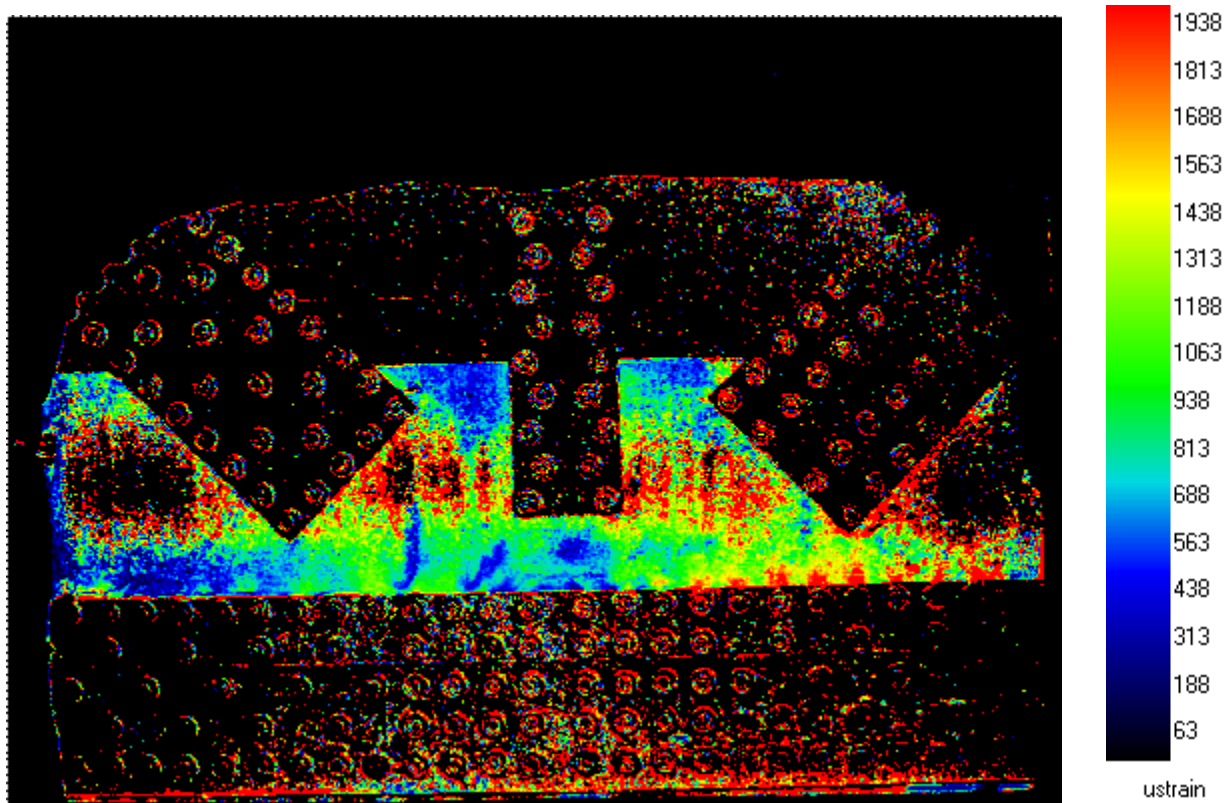


Figure E2. GP307SL4 elastic load case #2 maximum shear strain results with splice plates installed.

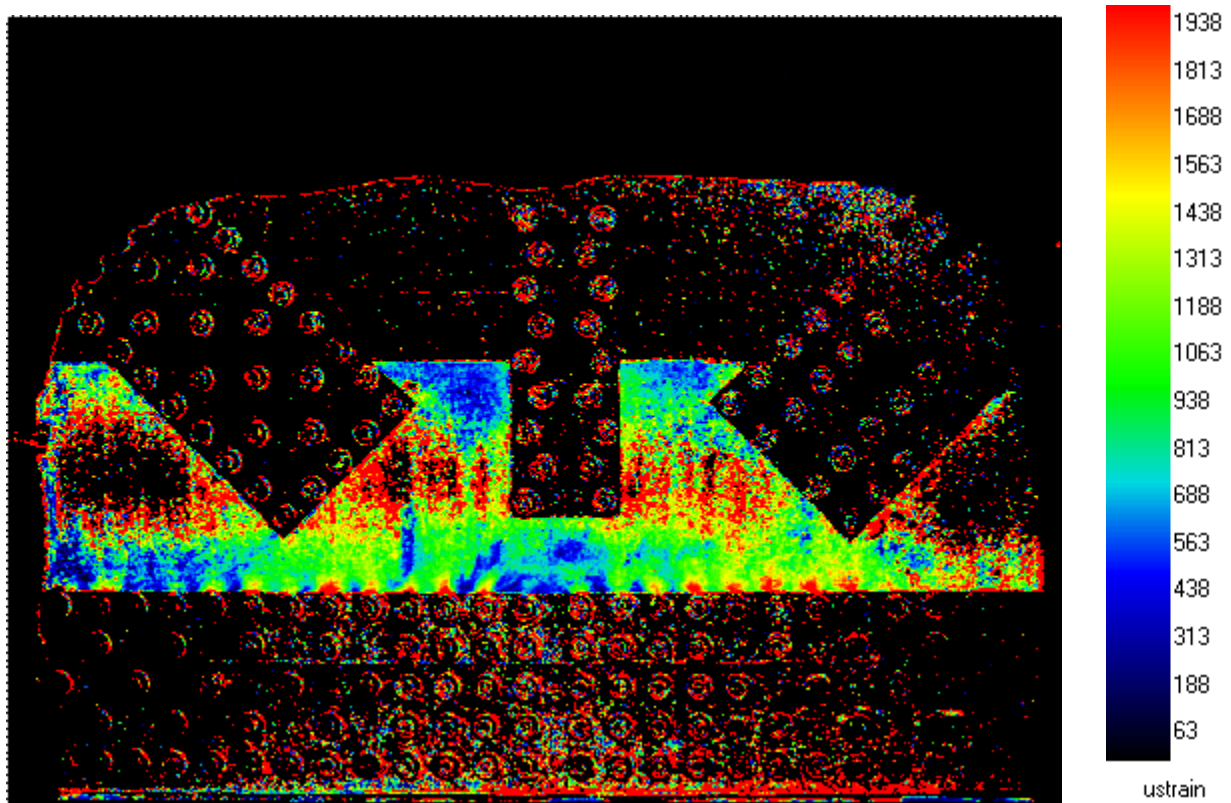


Figure E3. GP307SL4 elastic load case #3 maximum shear strain results with splice plates installed.

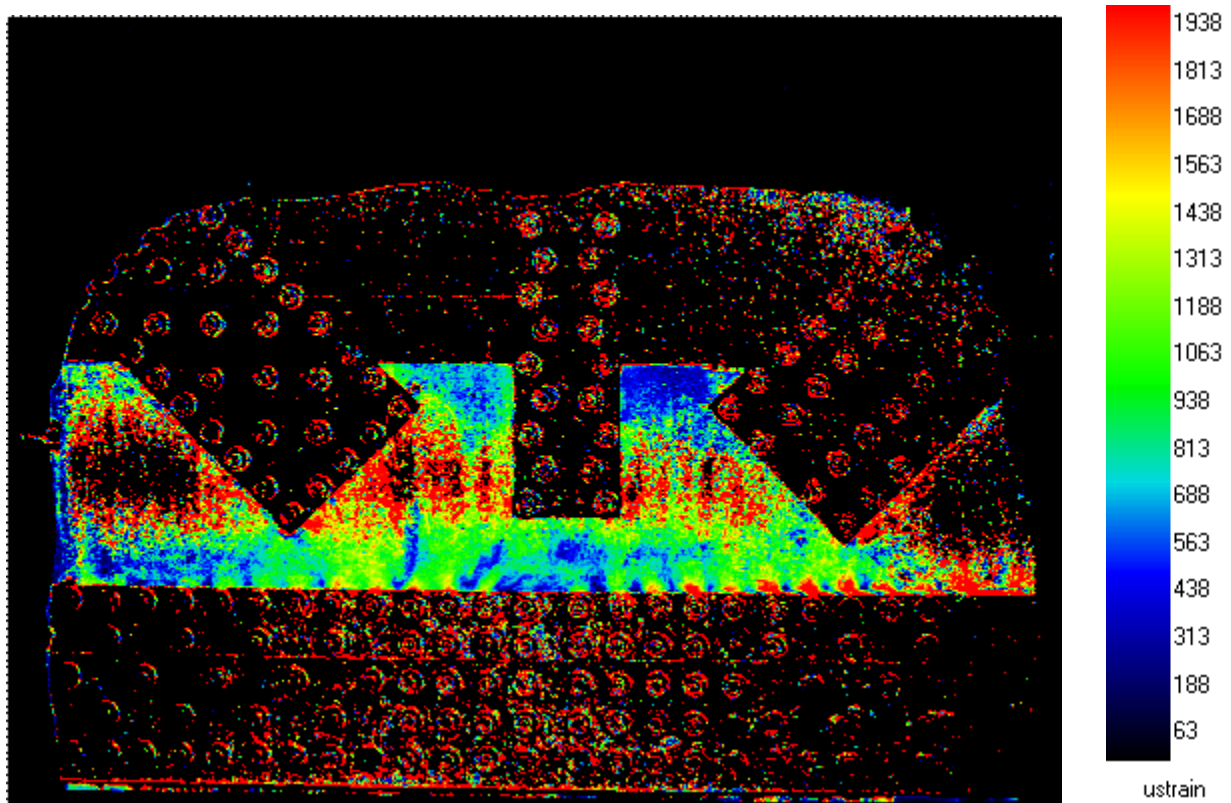


Figure E4. GP307SL4 elastic load case #4 maximum shear strain results with splice plates installed.

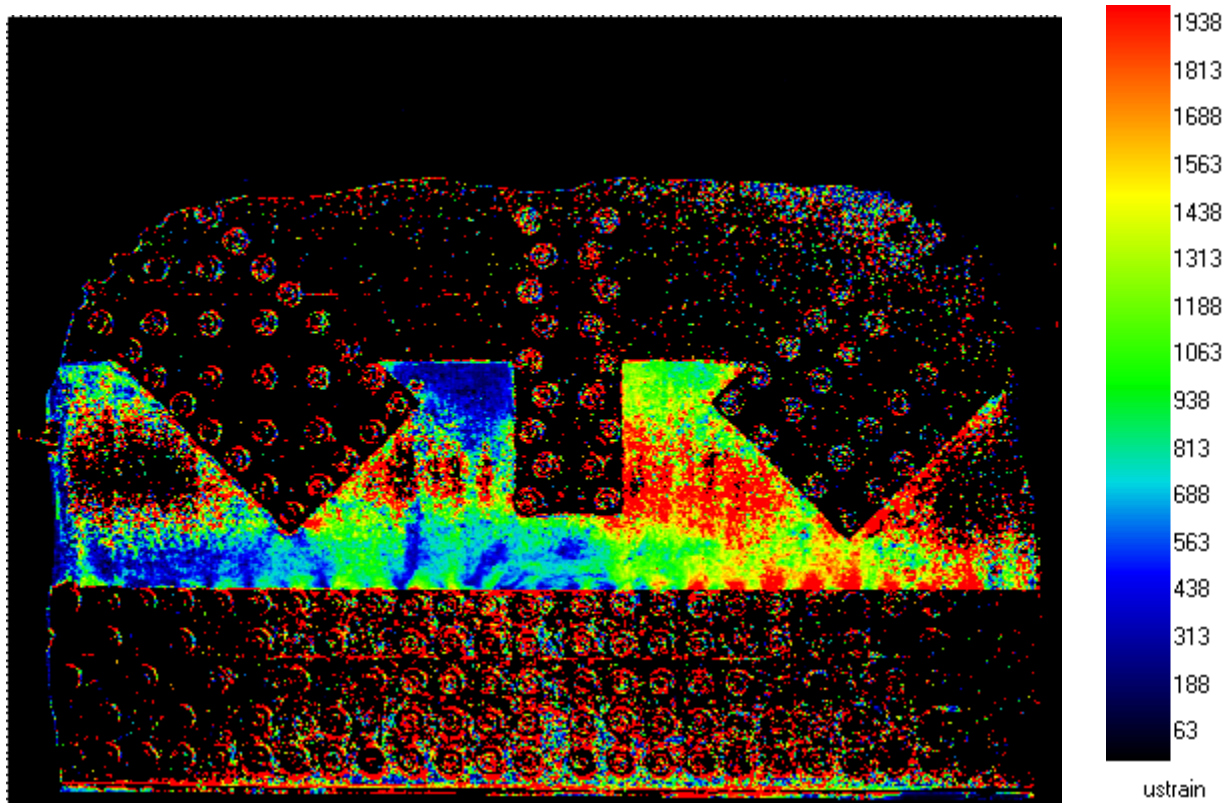


Figure E5. GP307SL4 elastic load case #5 maximum shear strain results with splice plates installed.

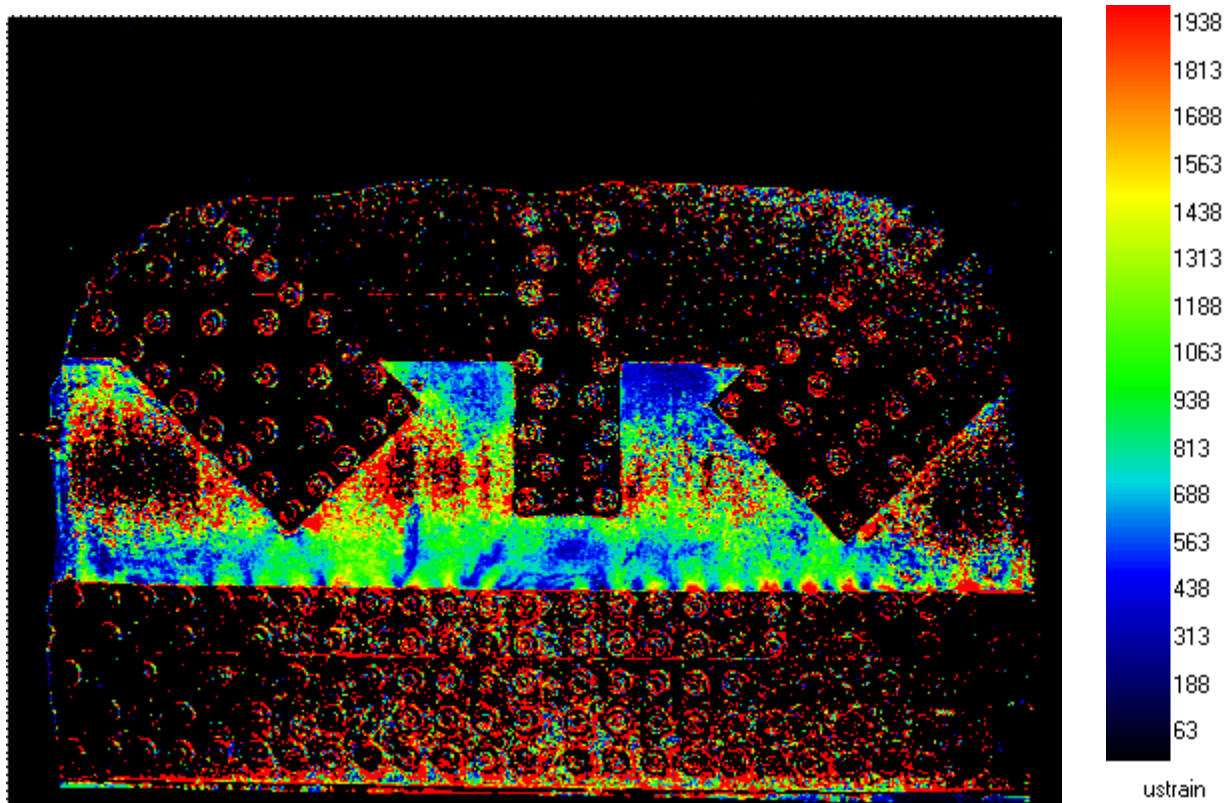


Figure E6. GP307SL4 elastic load case #6 maximum shear strain results with splice plates installed.

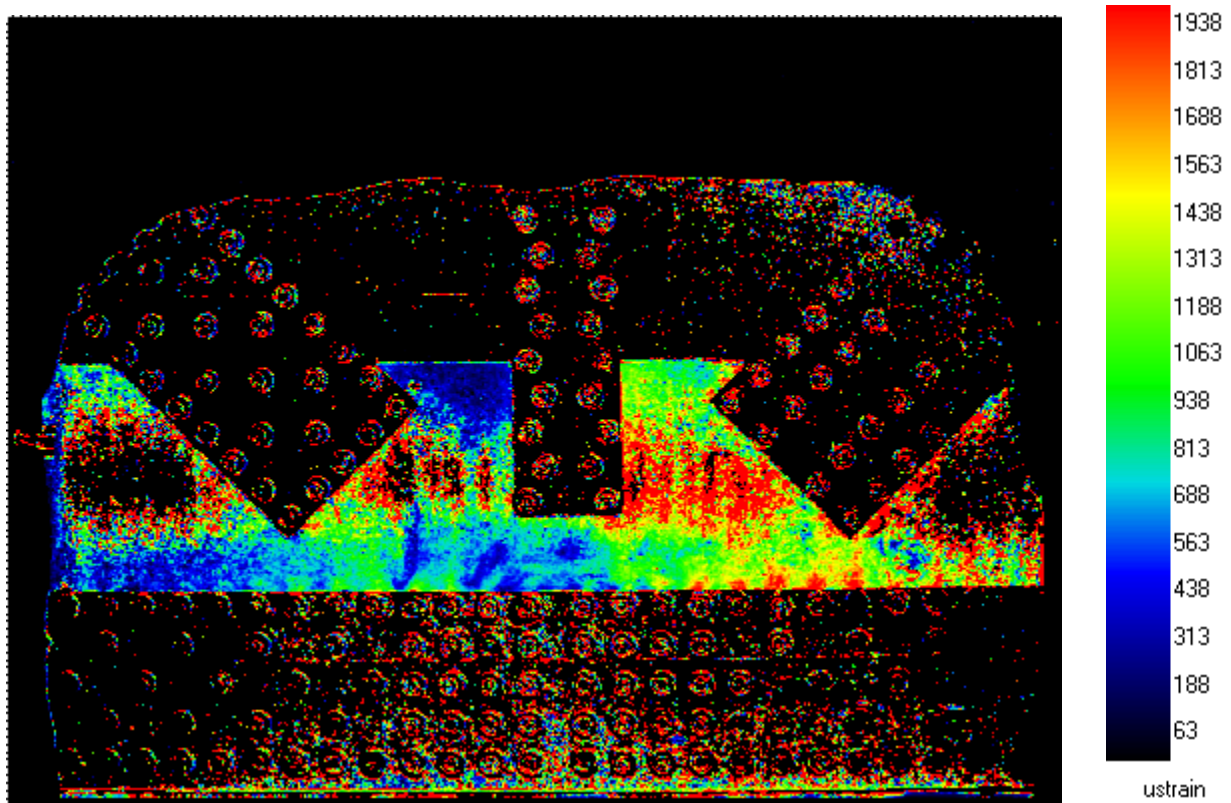


Figure E7. GP307SL4 elastic load case #7 maximum shear strain results with splice plates installed.

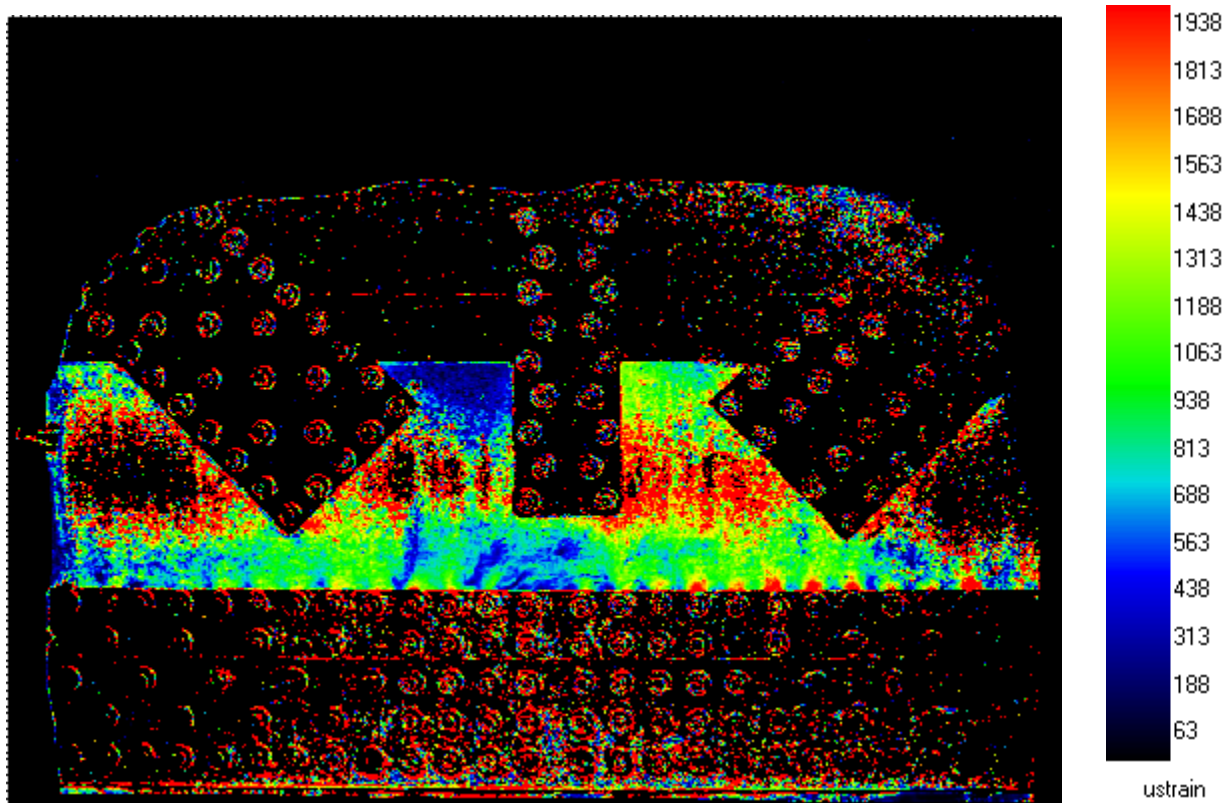


Figure E8. GP307SL4 elastic load case #8 maximum shear strain results with splice plates installed.

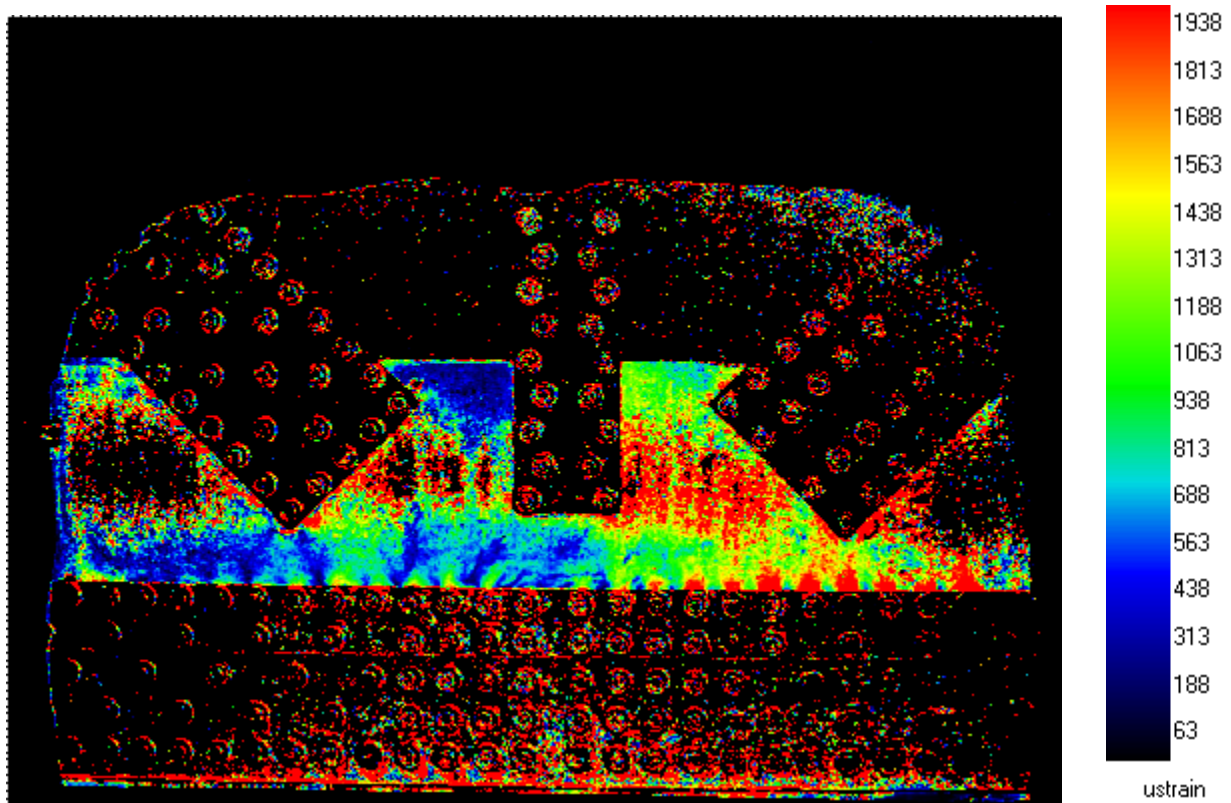


Figure E9. GP307SL4 elastic load case #9 maximum shear strain results with splice plates installed.

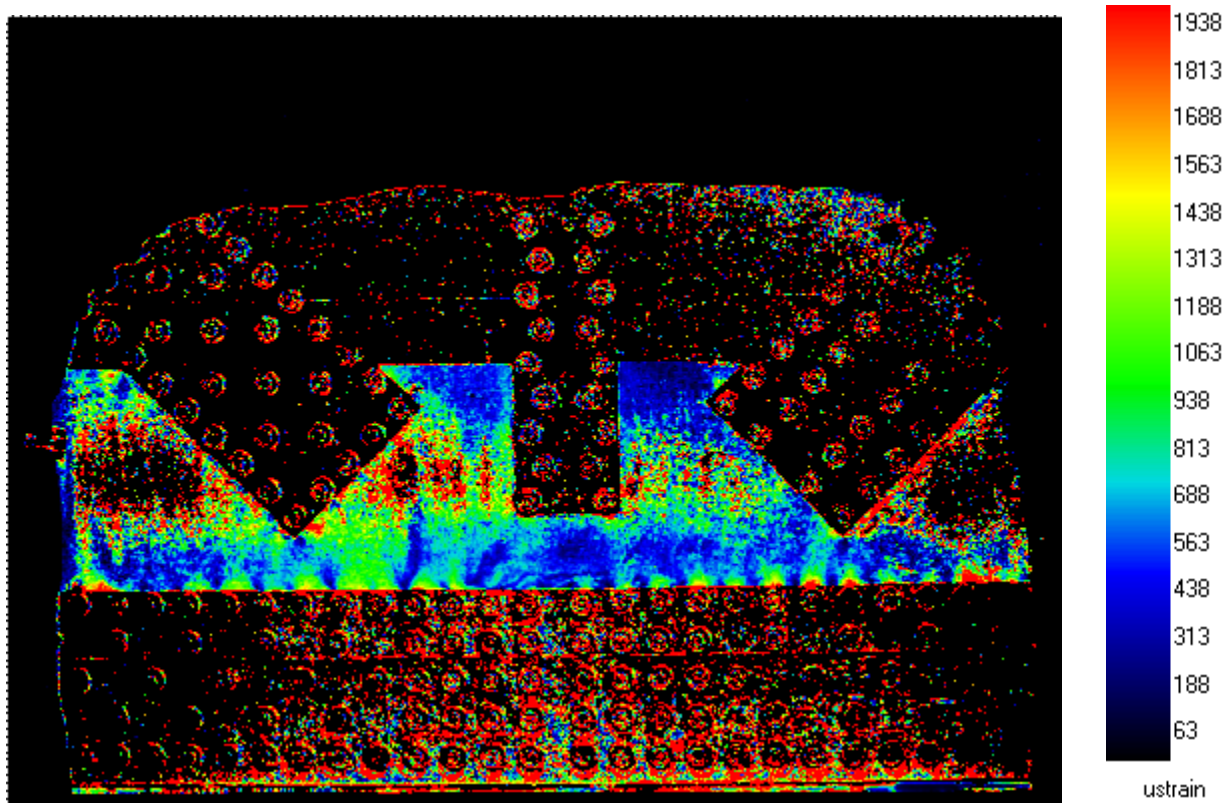


Figure E10. GP307SL4 elastic load case #10 maximum shear strain results with splice plates installed.

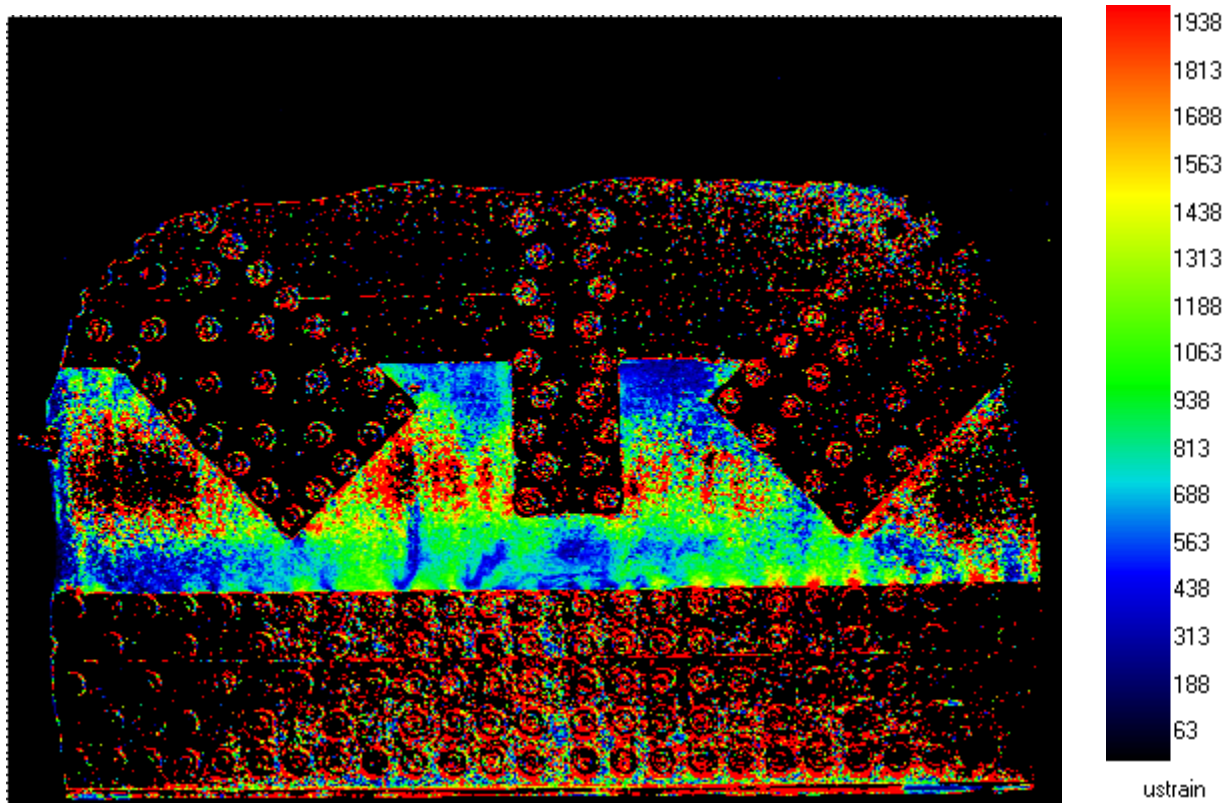


Figure E11. GP307SL4 elastic load case #11 maximum shear strain results with splice plates installed.

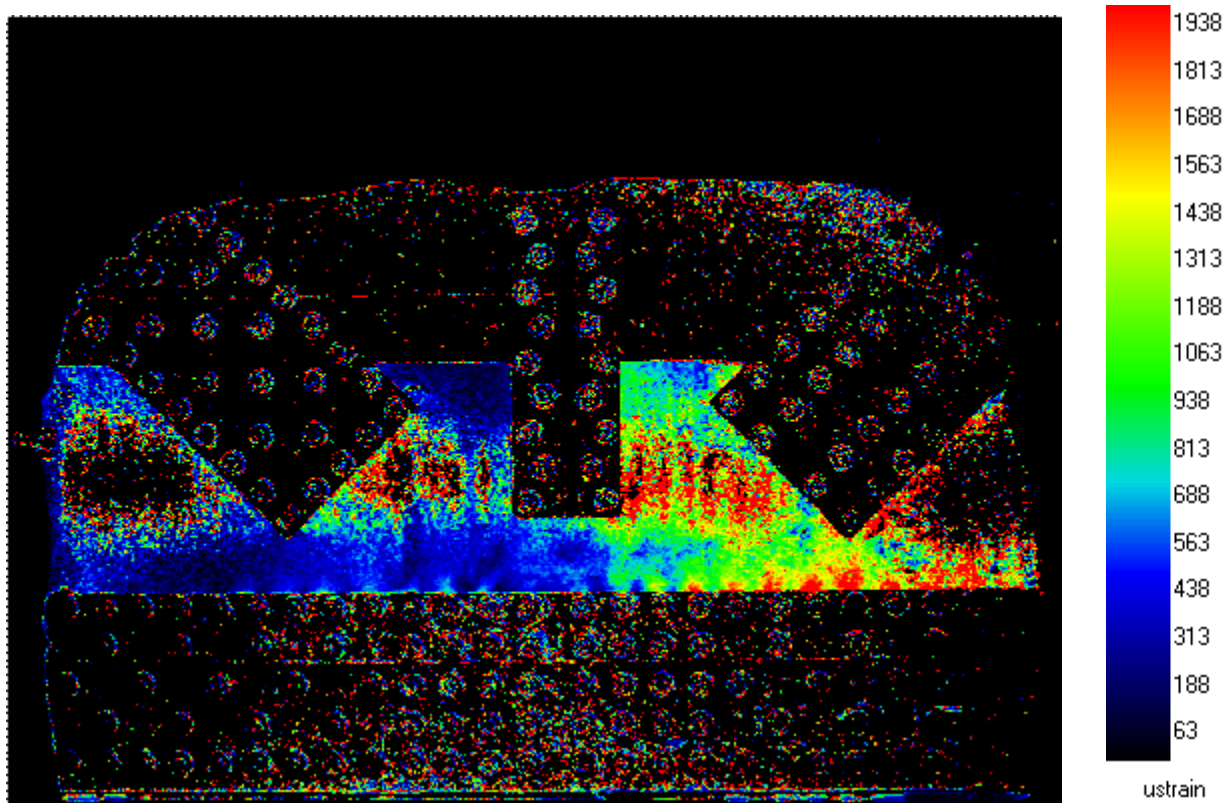


Figure E12. GP307SL4 elastic load case #13 maximum shear strain results with splice plates installed.

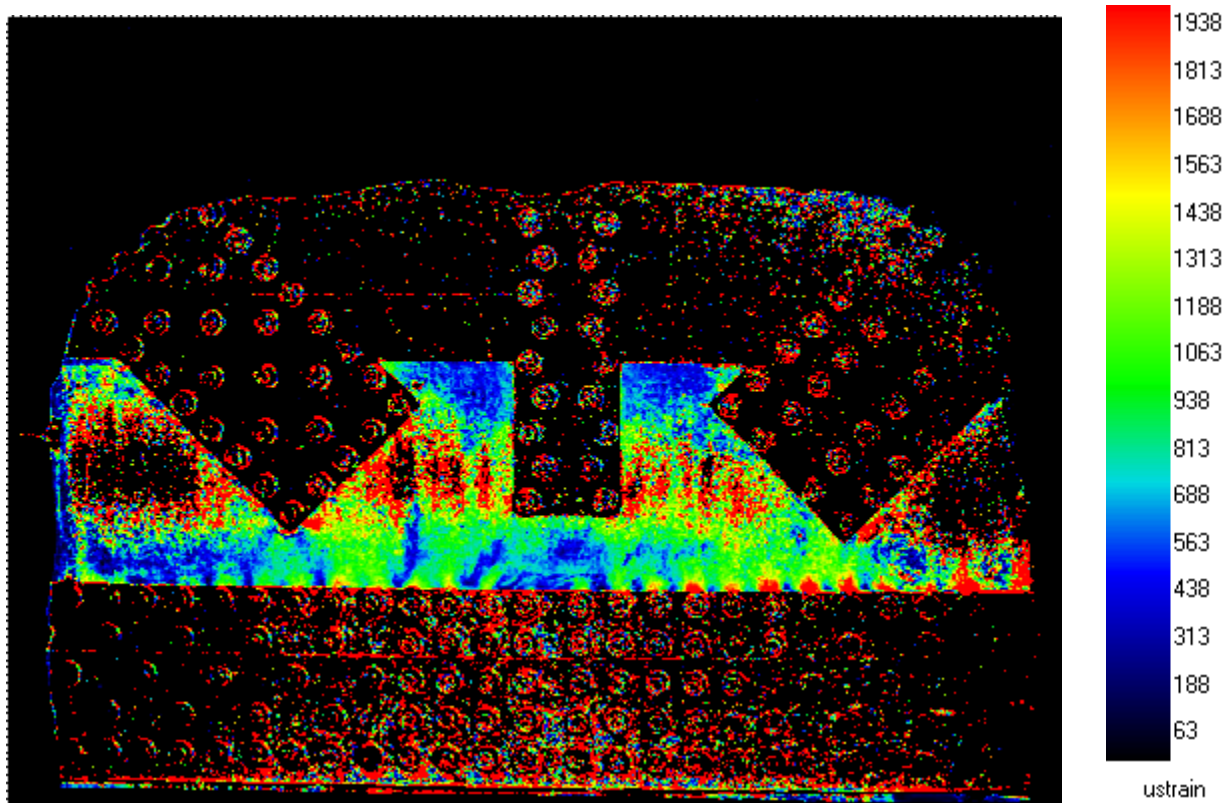


Figure E13. GP307SL4 elastic load case #14 maximum shear strain results with splice plates installed.

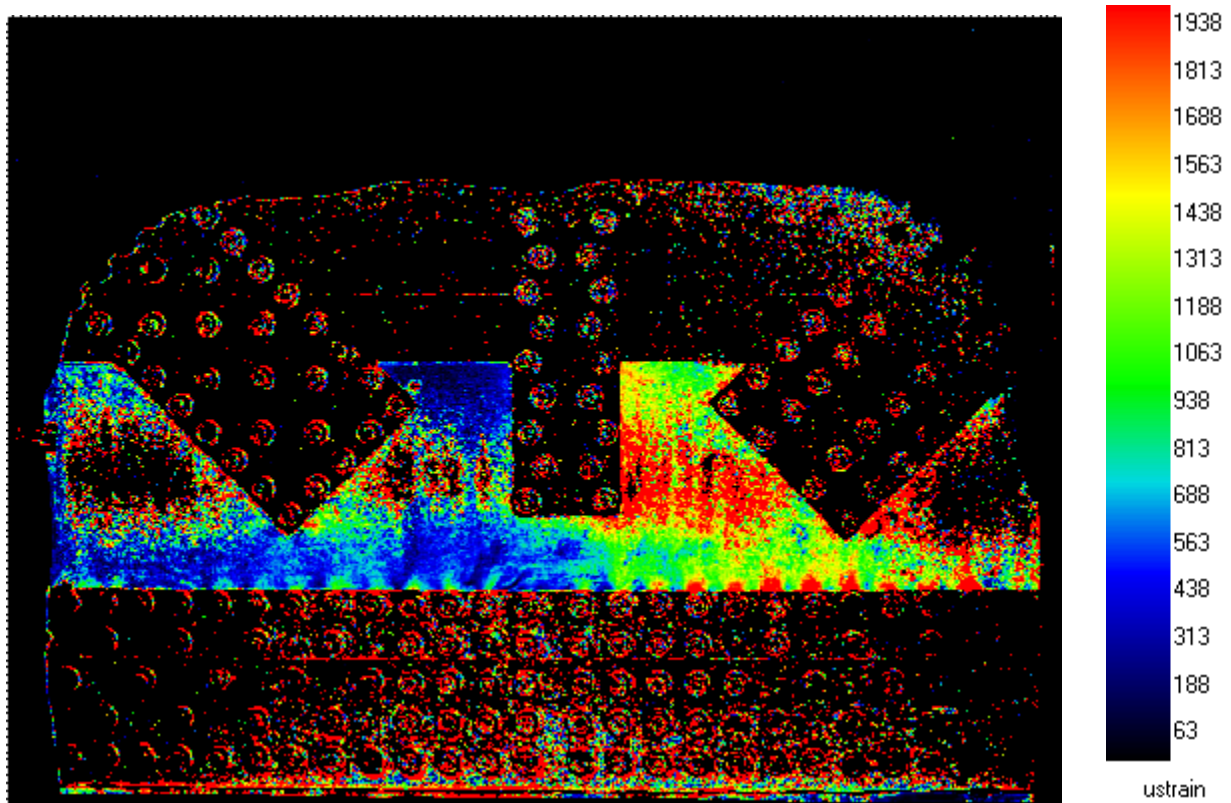


Figure E14. GP307SL4 elastic load case #15 maximum shear strain results with splice plates installed.

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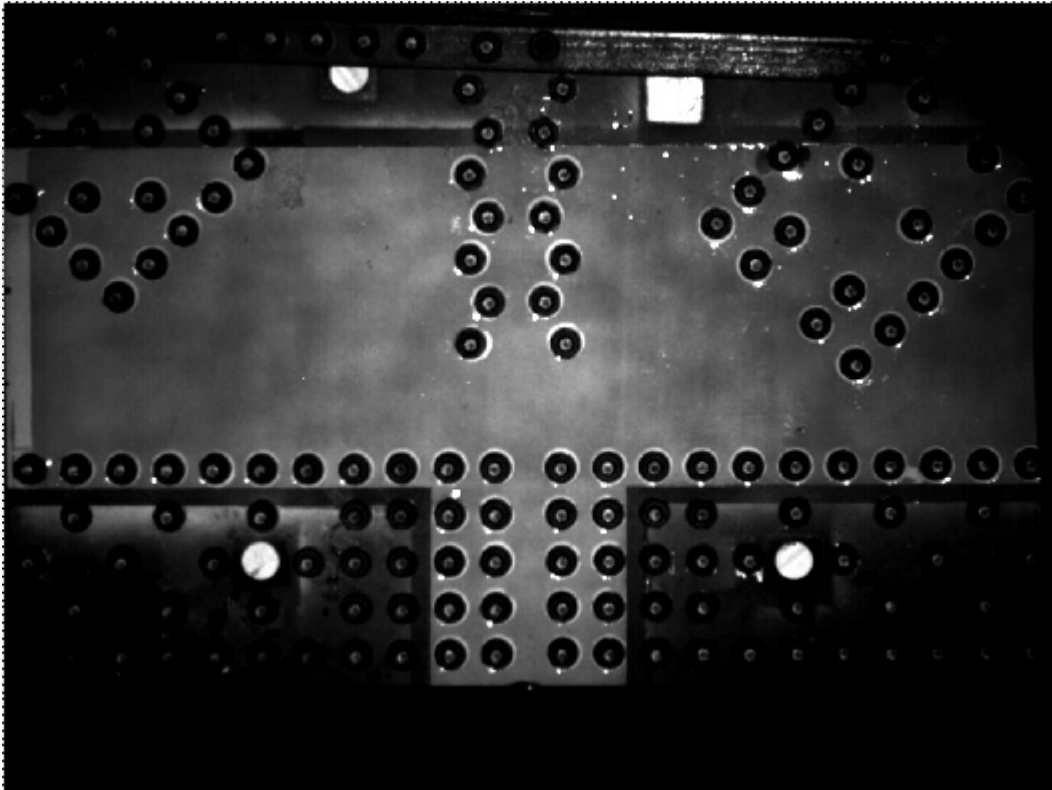


Figure E15. Grayscale image of 490LS3-2 epoxy coating.

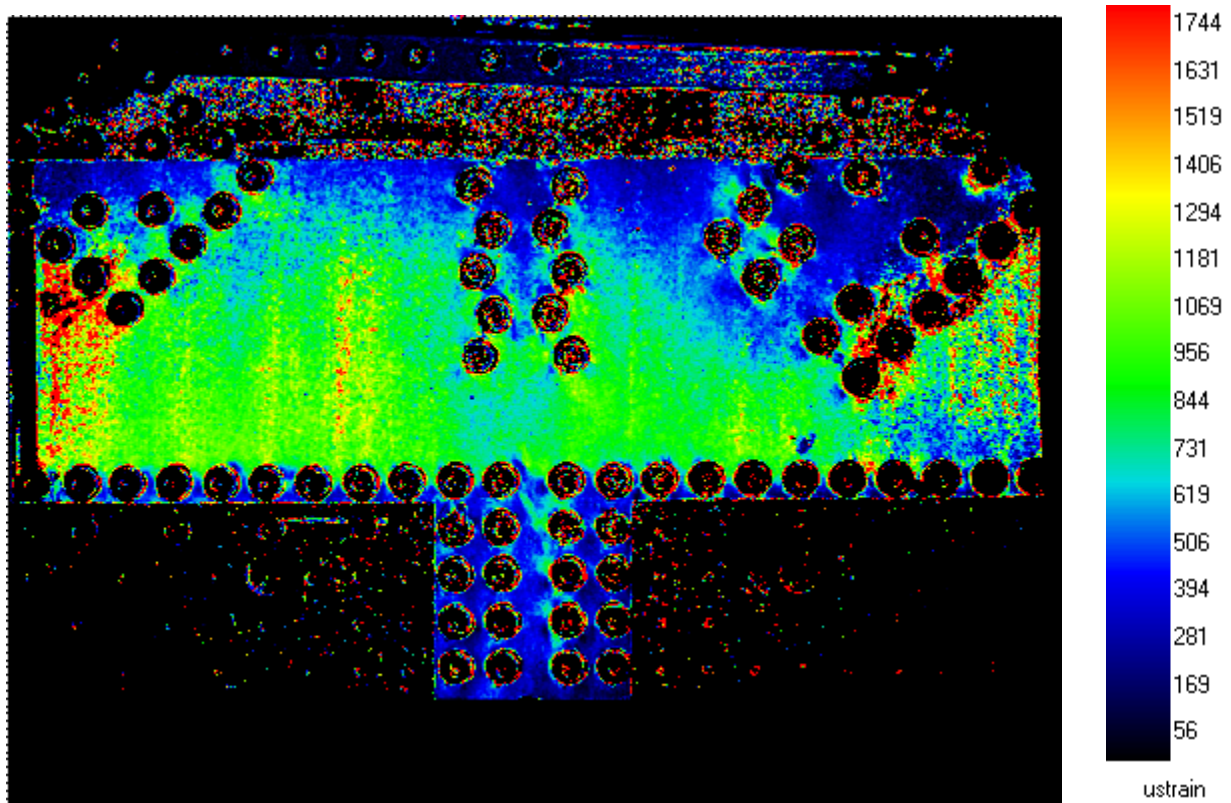


Figure E16. 490LS3-2 elastic load case #1 maximum shear strain results with splice plates installed.

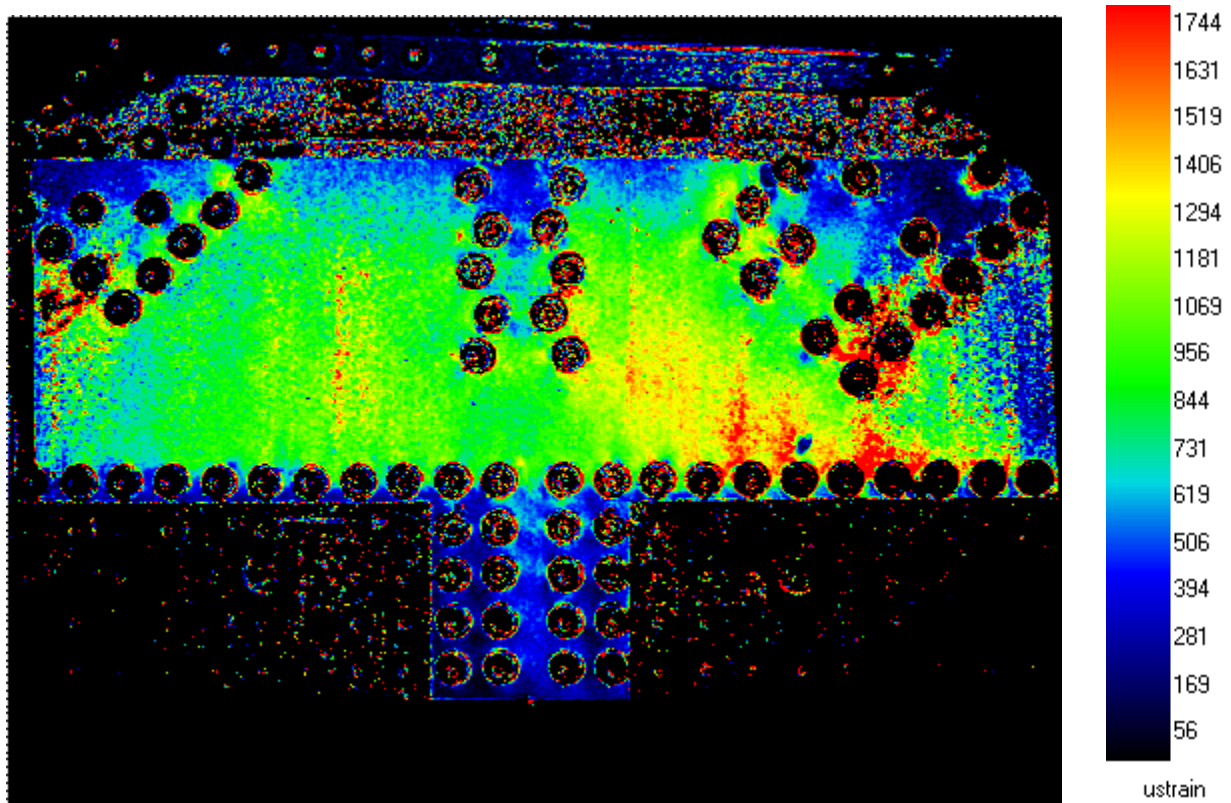


Figure E17. 490LS3-2 elastic load case #2 maximum shear strain results with splice plates installed.

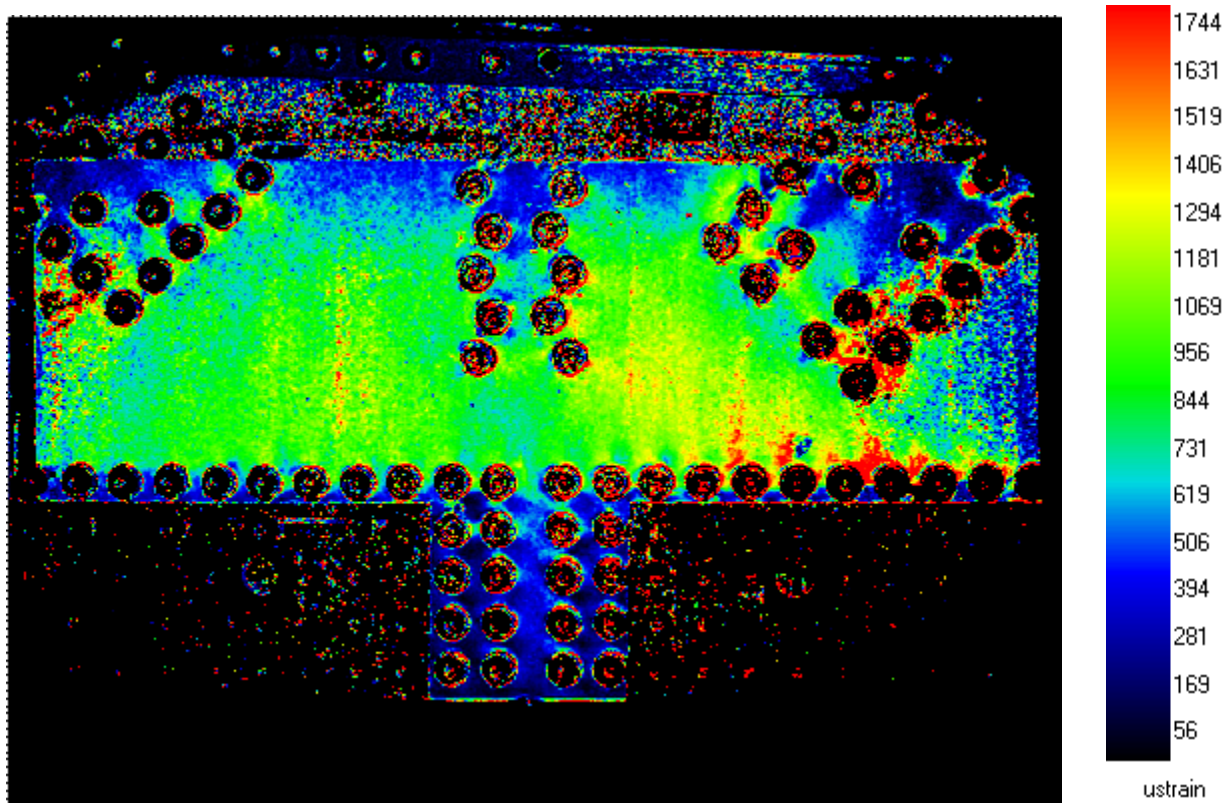


Figure E18. 490LS3-2 elastic load case #3 maximum shear strain results with splice plates installed.

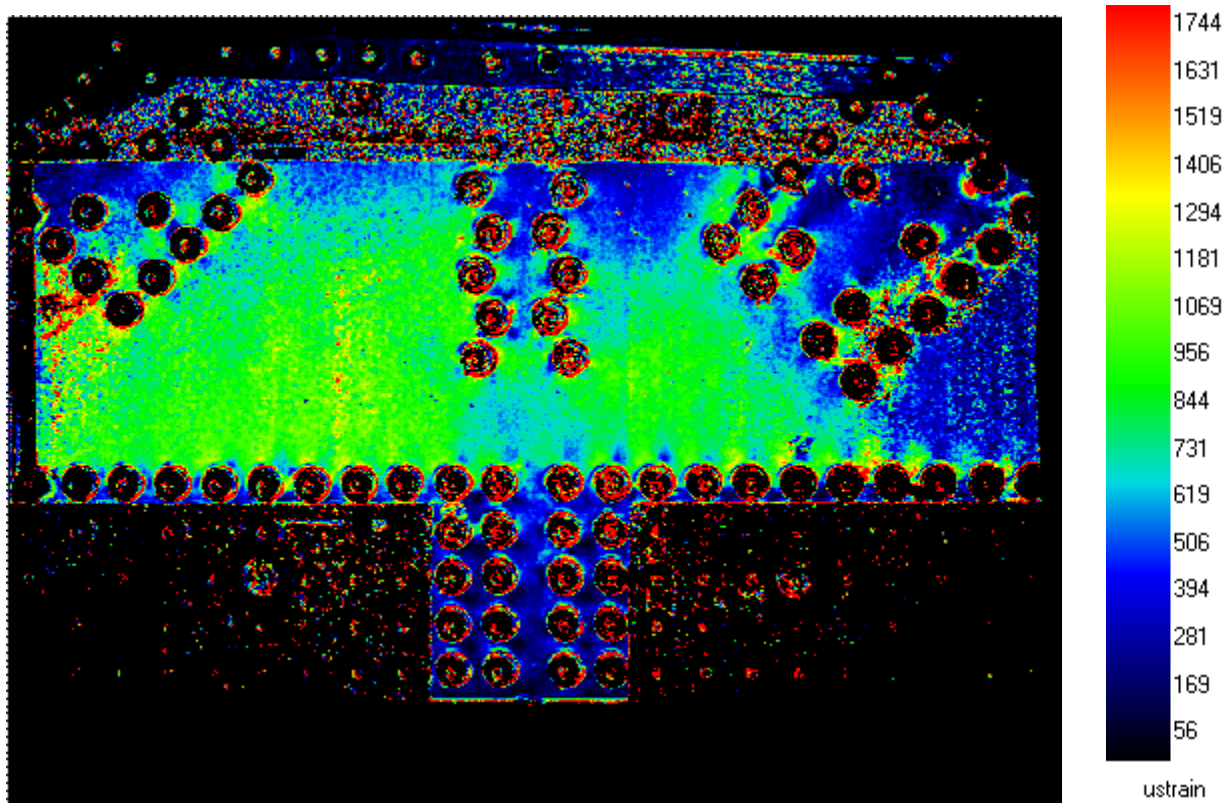


Figure E19. 490LS3-2 elastic load case #4 maximum shear strain results with splice plates installed.

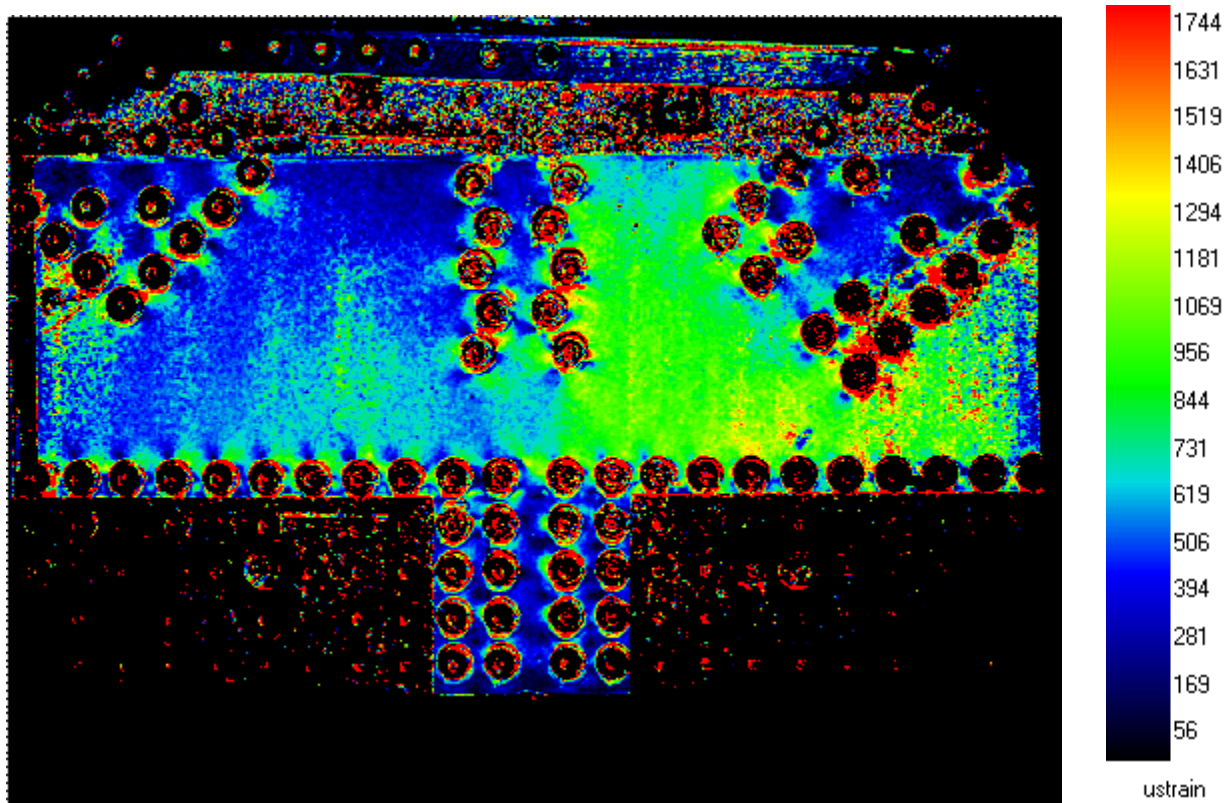


Figure E20. 490LS3-2 elastic load case #5 maximum shear strain results with splice plates installed.

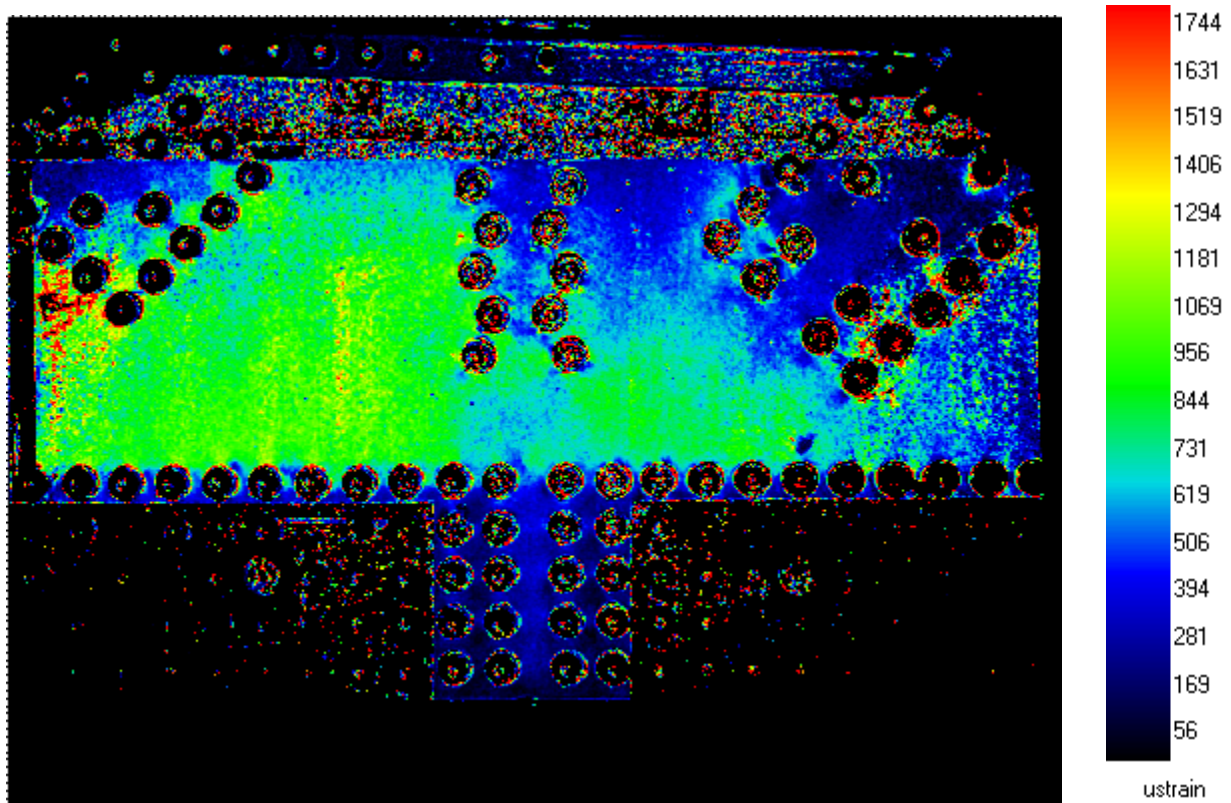


Figure E21. 490LS3-2 elastic load case #6 maximum shear strain results with splice plates installed.

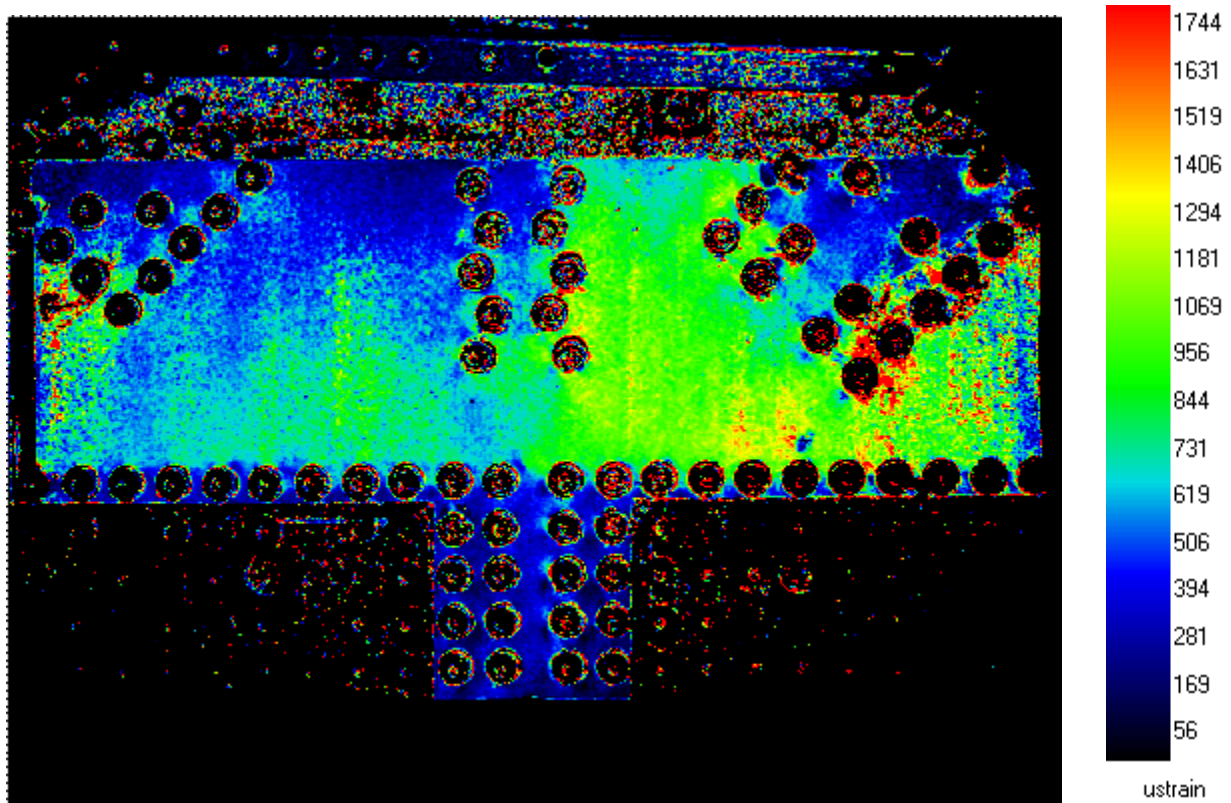


Figure E22. 490LS3-2 elastic load case #7 maximum shear strain results with splice plates installed.

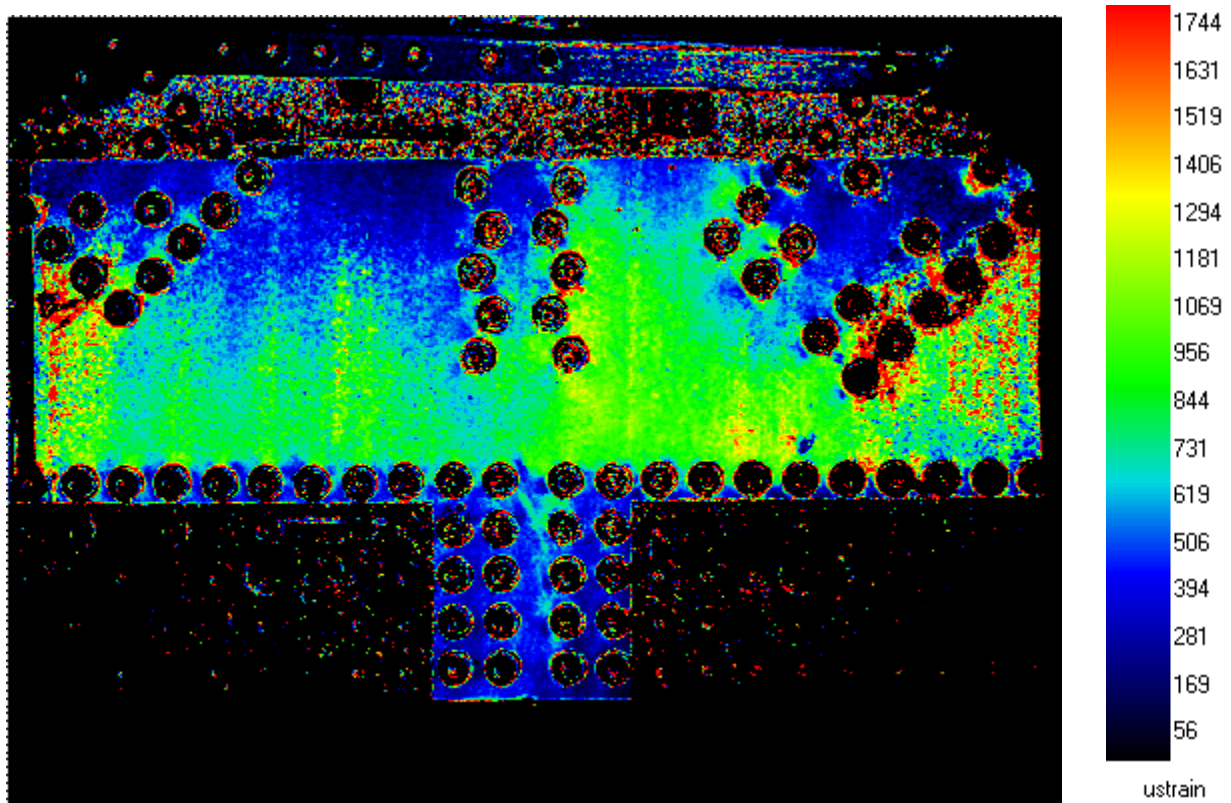


Figure E23. 490LS3-2 elastic load case #8 maximum shear strain results with splice plates installed.

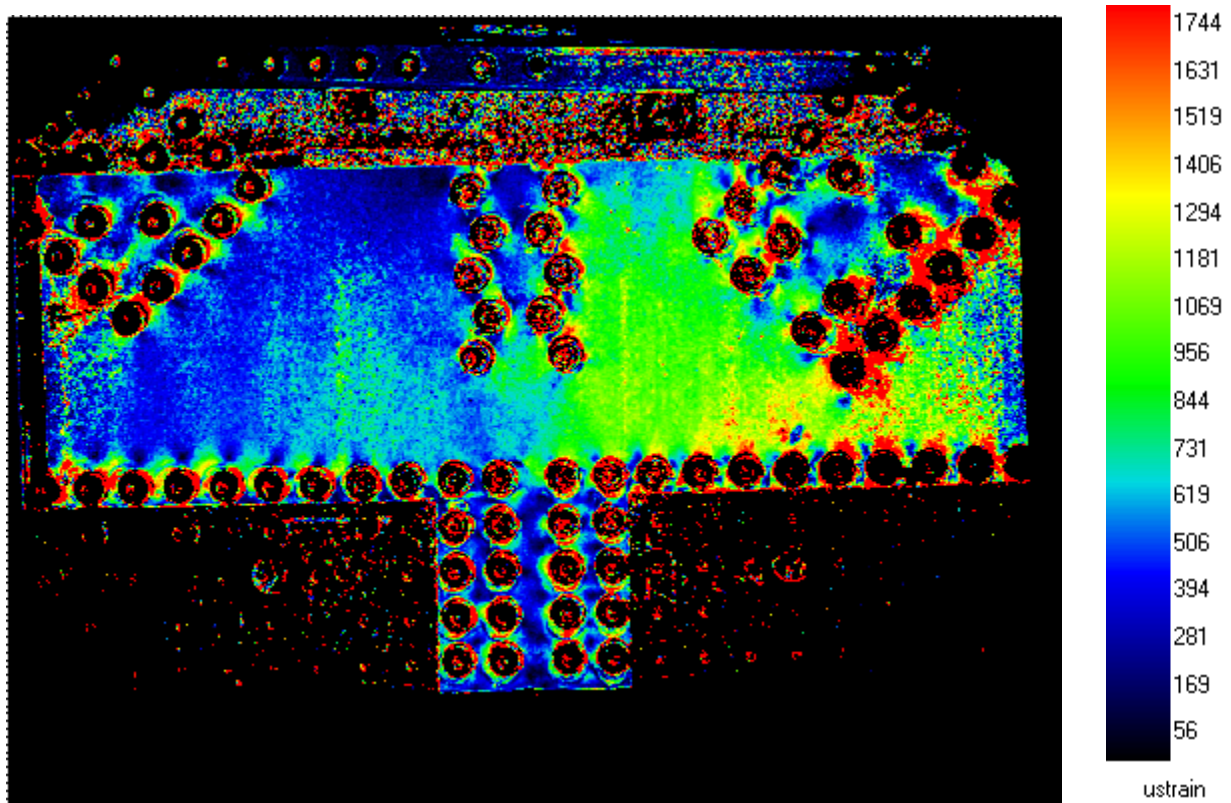


Figure E24. 490LS3-2 elastic load case #9 maximum shear strain results with splice plates installed.

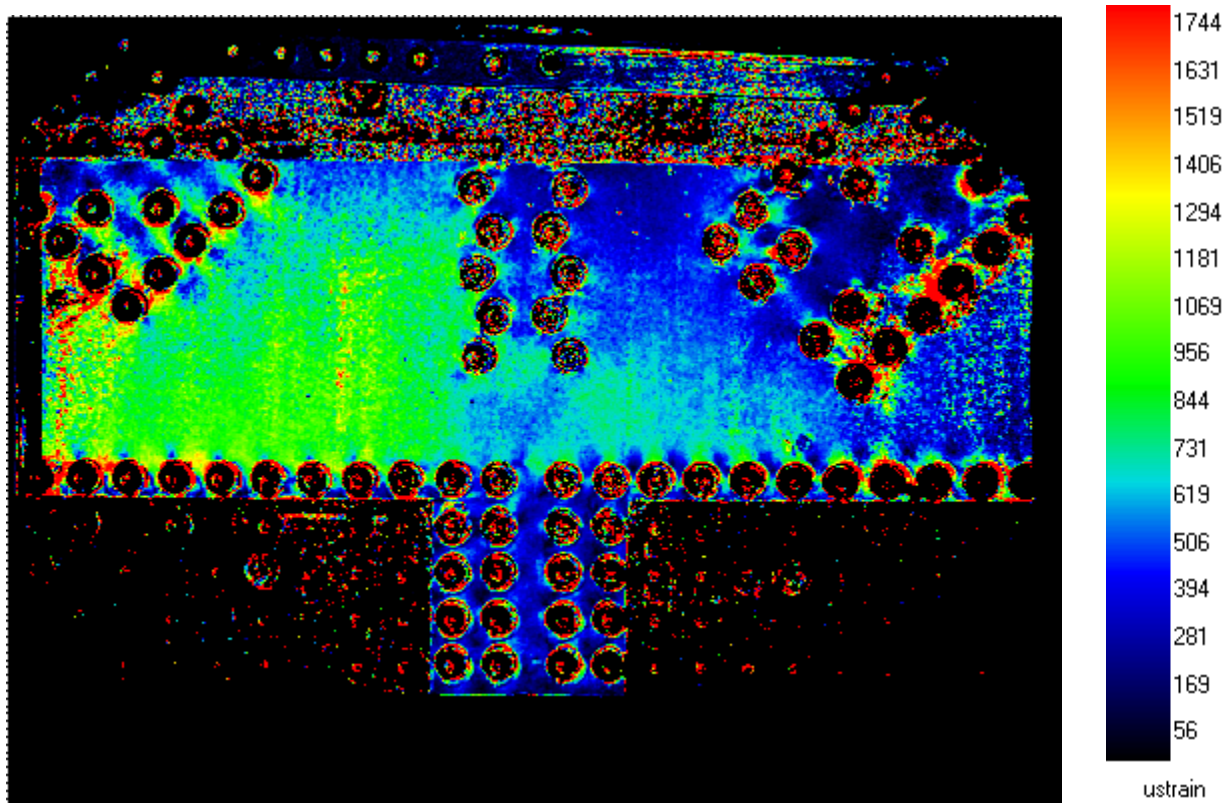


Figure E25. 490LS3-2 elastic load case #10 maximum shear strain results with splice plates installed.

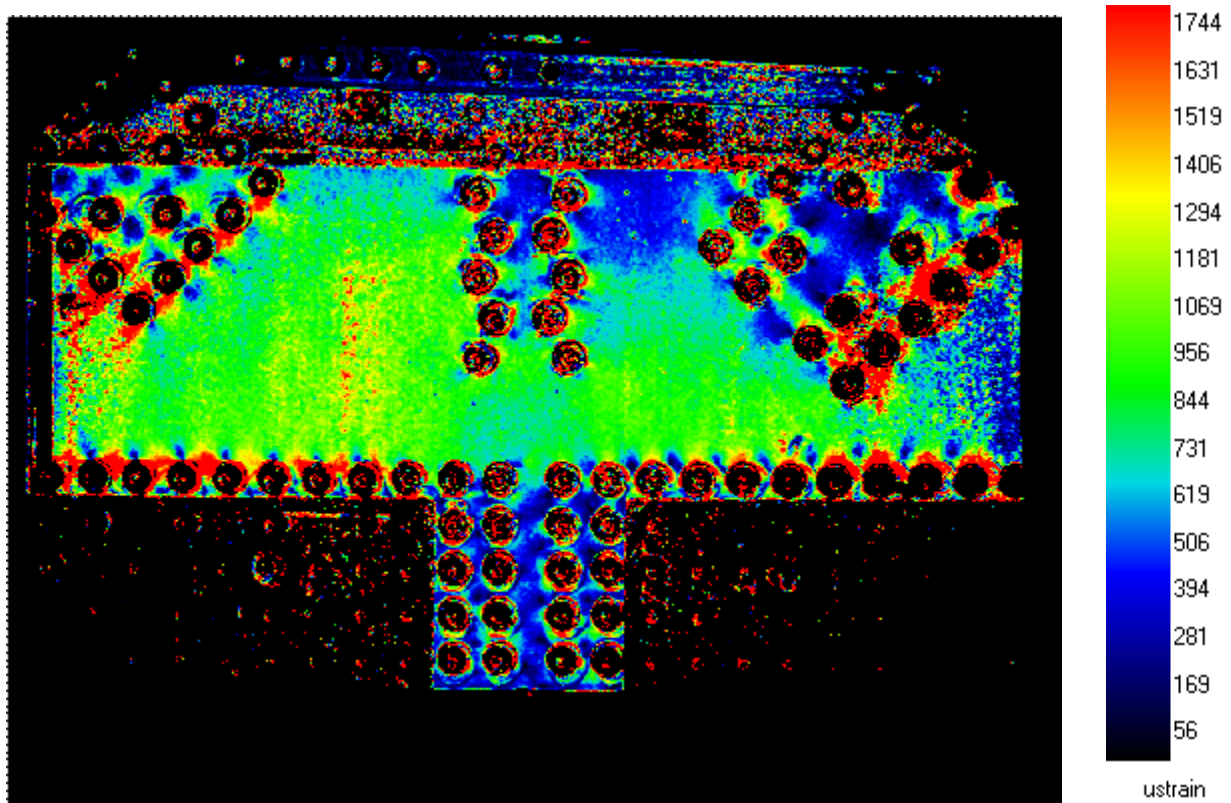


Figure E26. 490LS3-2 elastic load case #11 maximum shear strain results with splice plates installed.

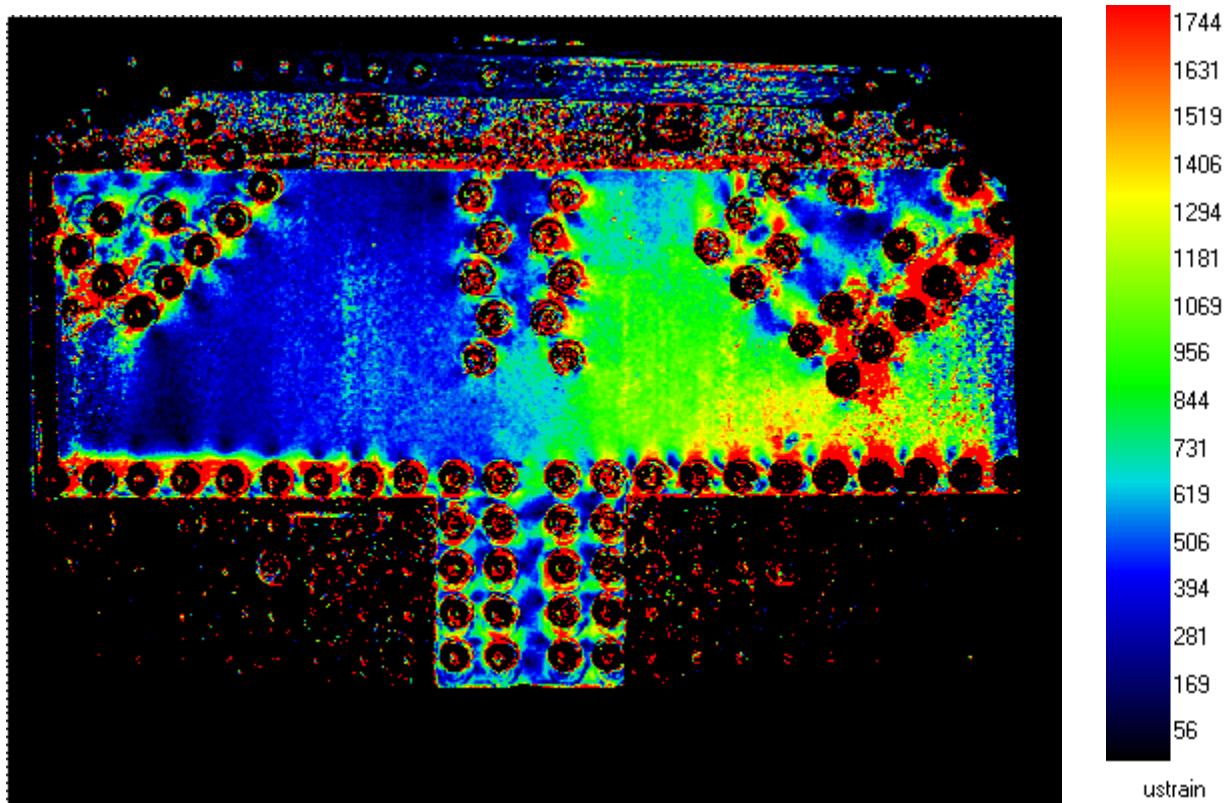


Figure E27. 490LS3-2 elastic load case #13 maximum shear strain results with splice plates installed.

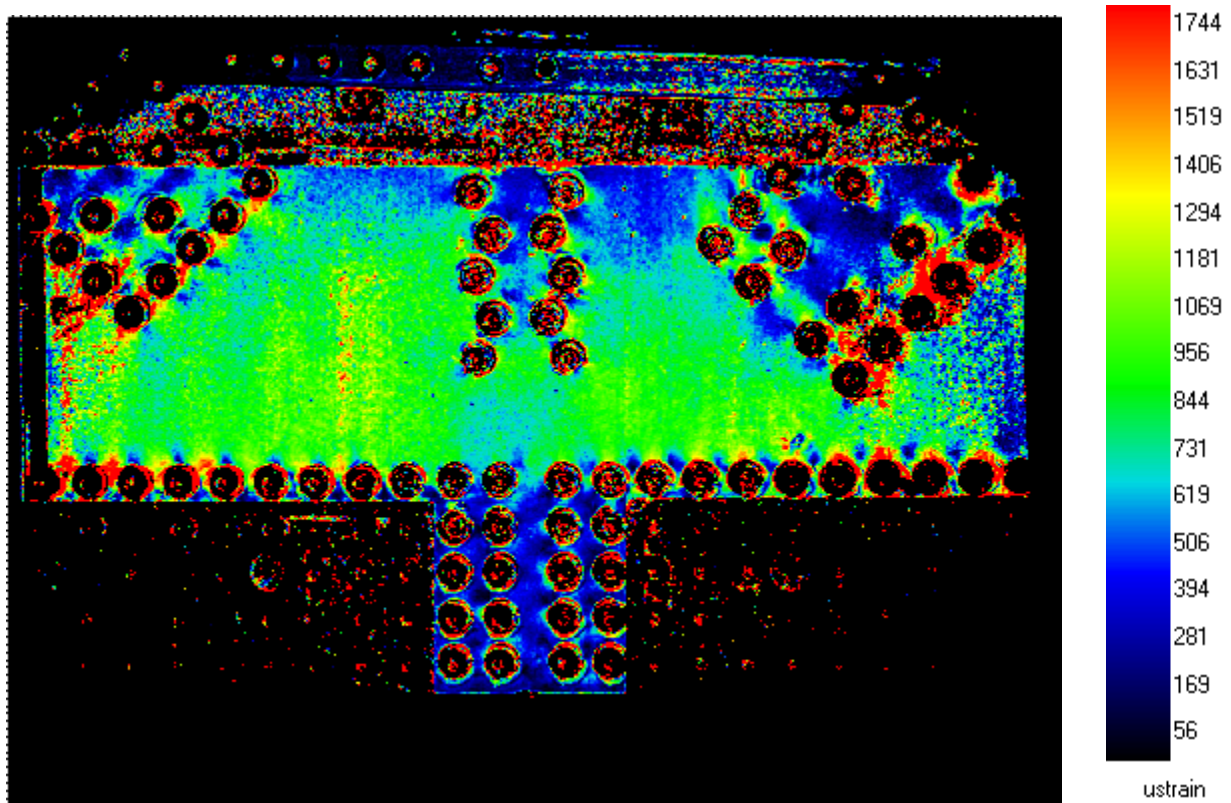


Figure E28. 490LS3-2 elastic load case #14 maximum shear strain results with splice plates installed.

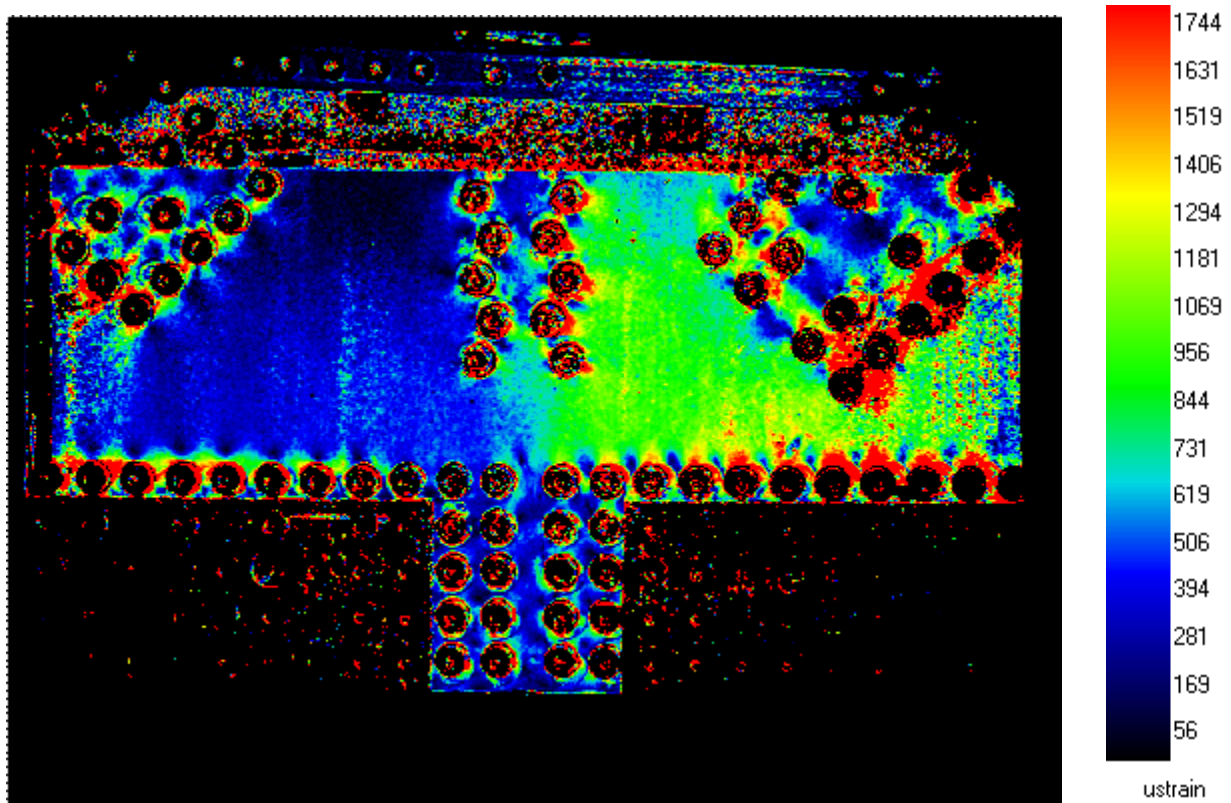


Figure E29. 490LS3-2 elastic load case #15 maximum shear strain results with splice plates installed.

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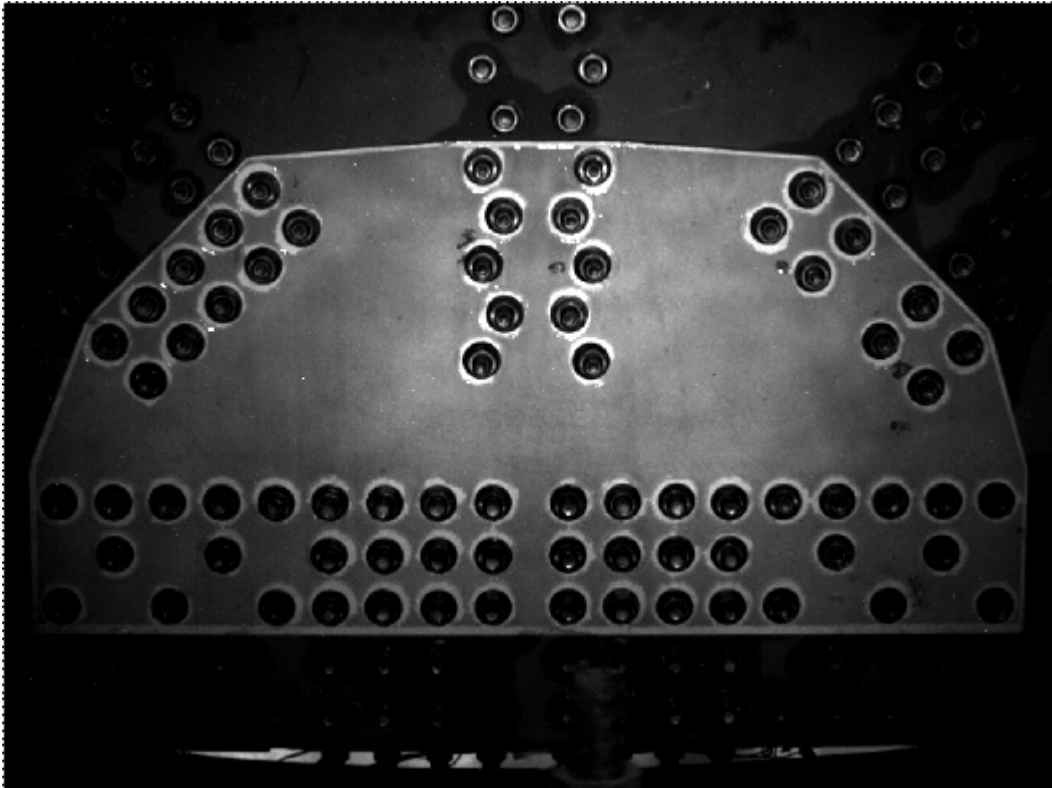


Figure E30. Grayscale image of 307SS3-1 epoxy coating.

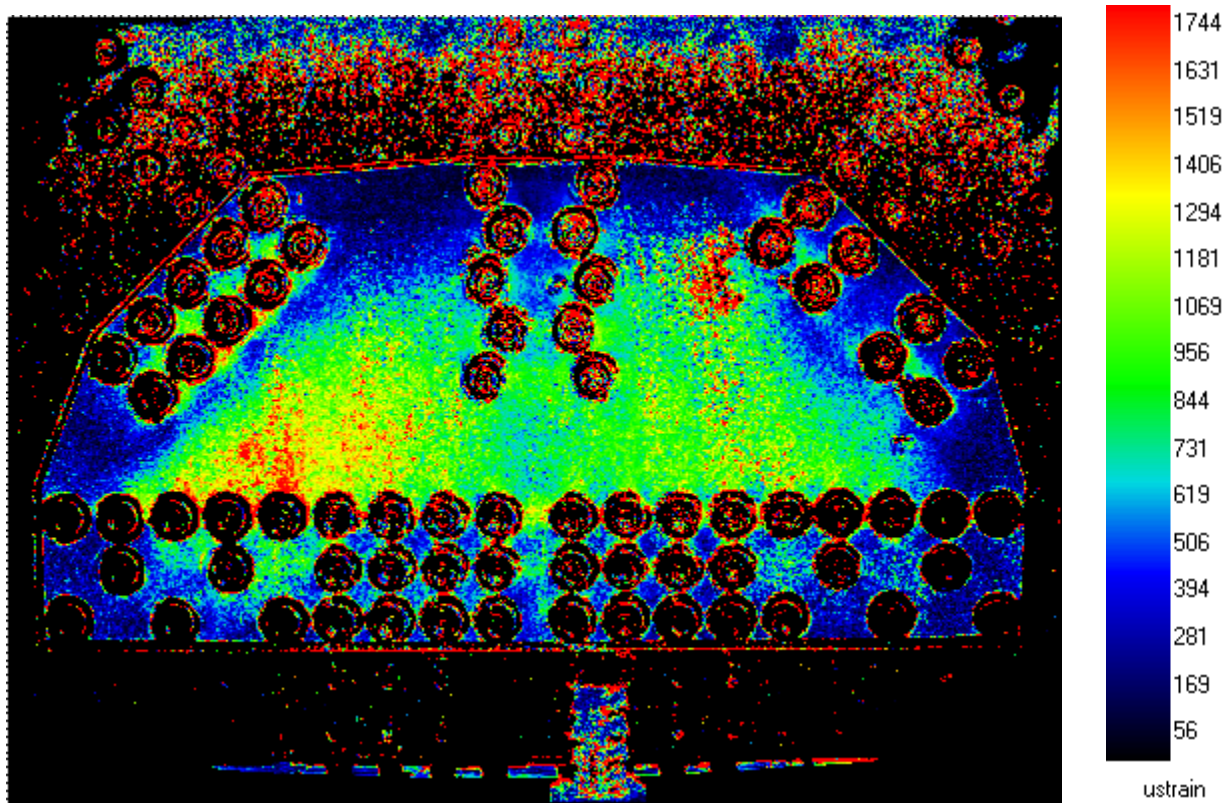


Figure E31. 307SS3-1 elastic load case #1 maximum shear strain results with splice plates installed.

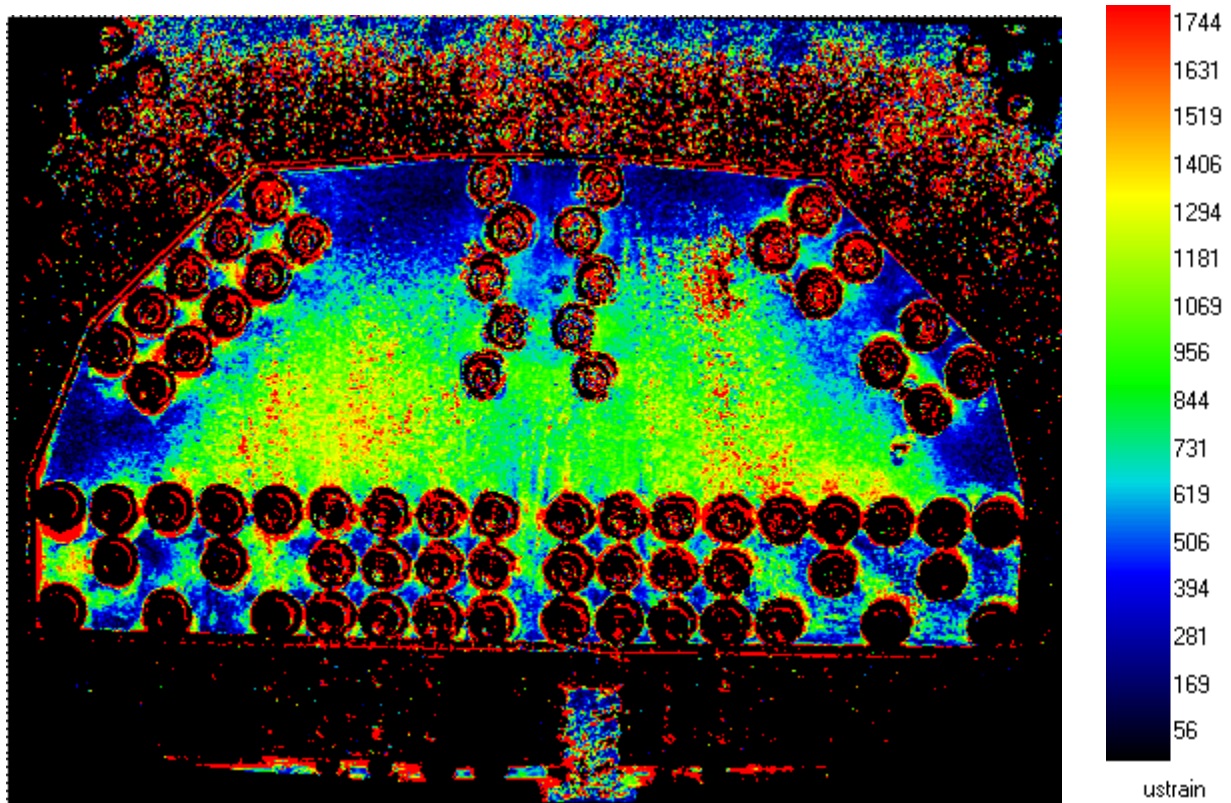


Figure E32. 307SS3-1 elastic load case #2 maximum shear strain results with splice plates installed.

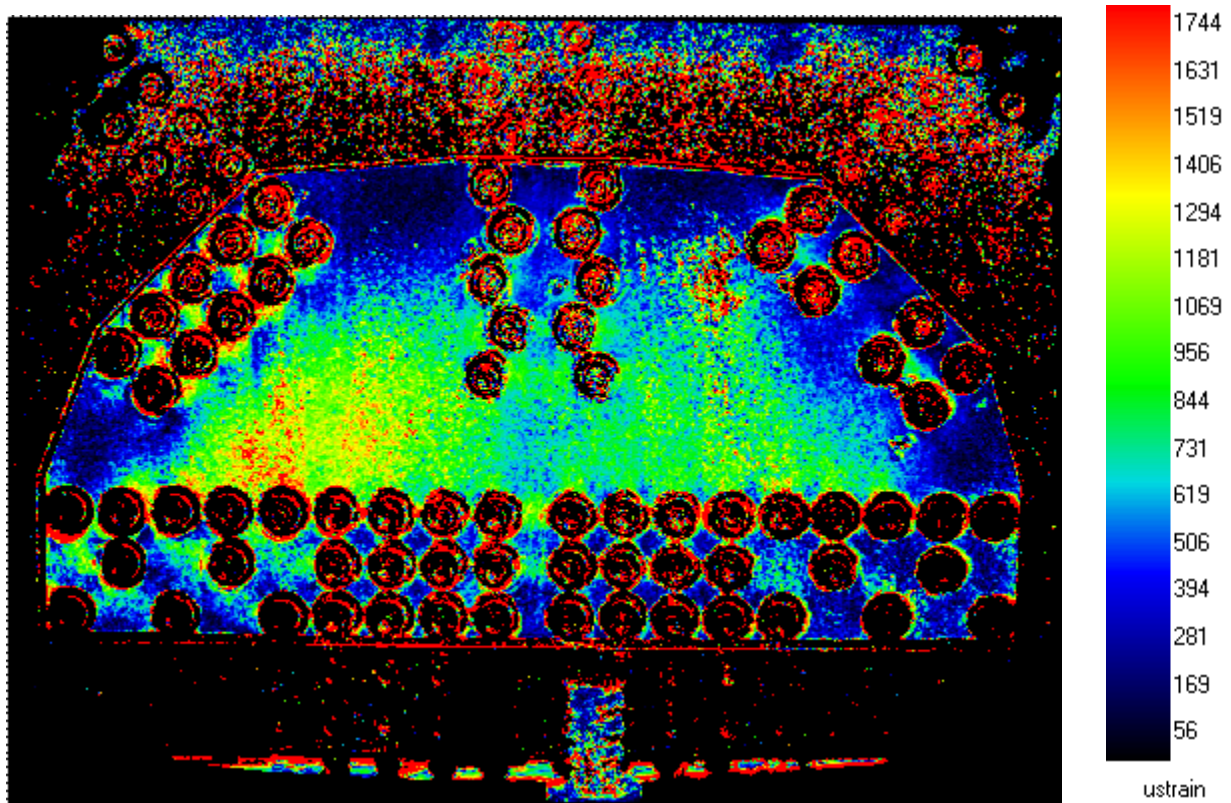


Figure E33. 307SS3-1 elastic load case #3 maximum shear strain results with splice plates installed.

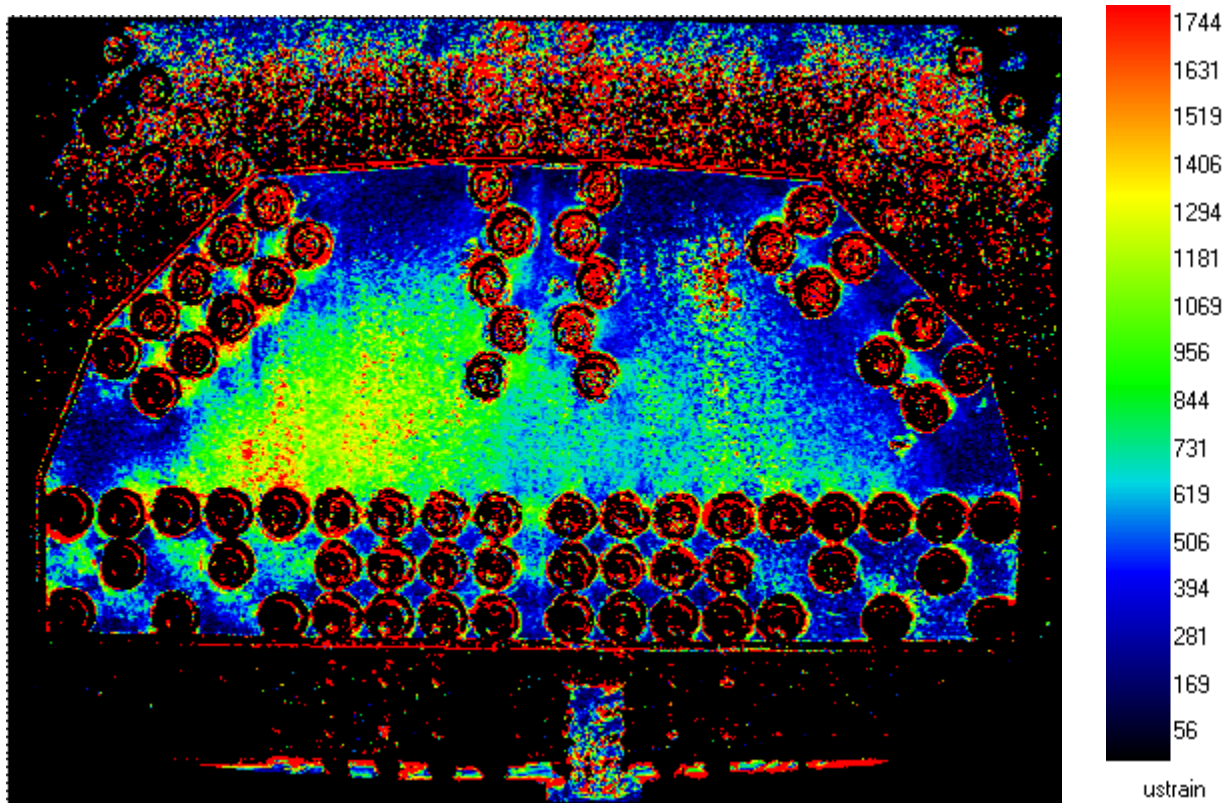


Figure E34. 307SS3-1 elastic load case #4 maximum shear strain results with splice plates installed.

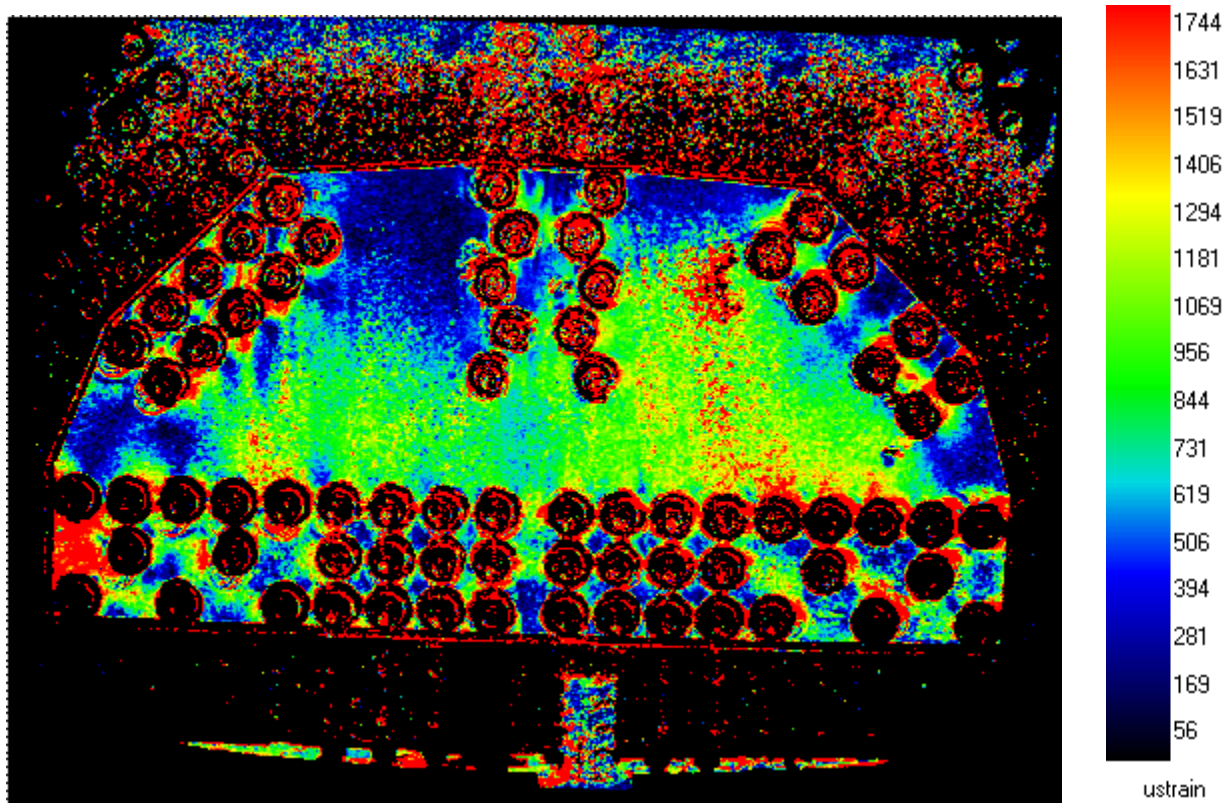


Figure E35. 307SS3-1 elastic load case #5 maximum shear strain results with splice plates installed.

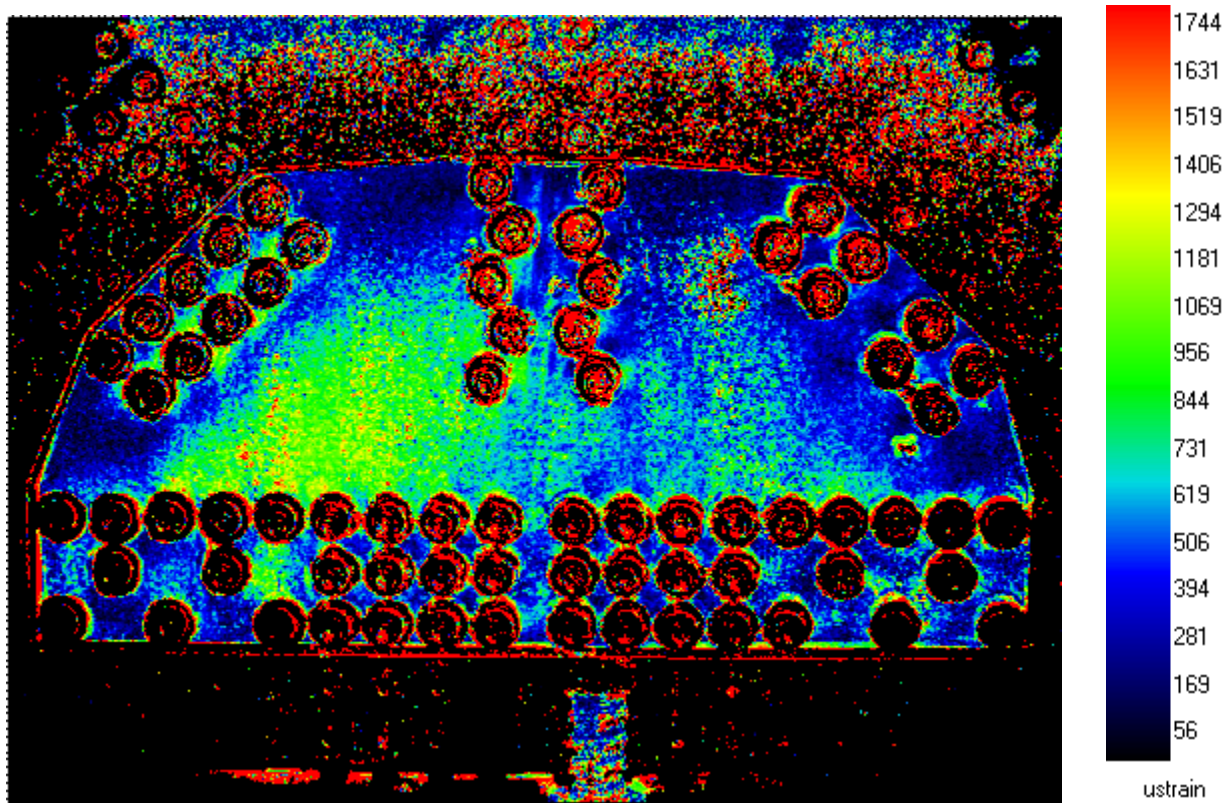


Figure E36. 307SS3-1 elastic load case #6 maximum shear strain results with splice plates installed.

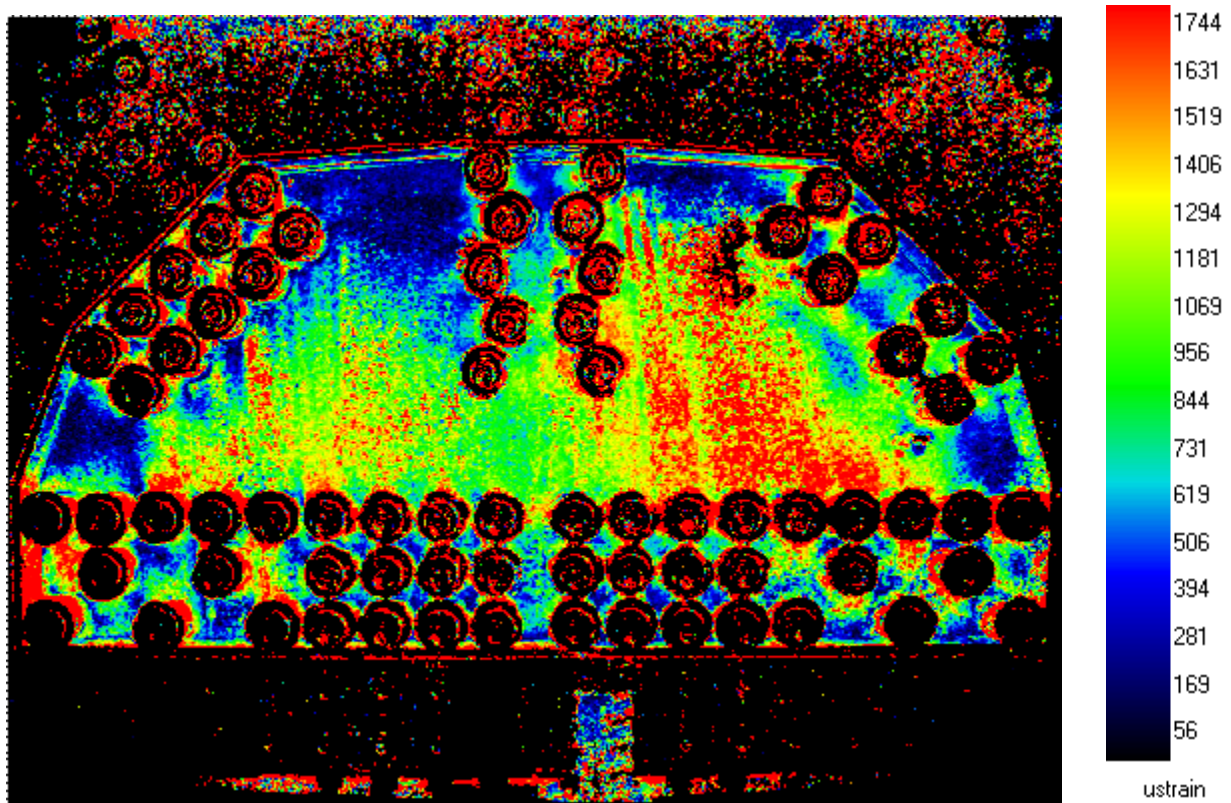


Figure E37. 307SS3-1 elastic load case #7 maximum shear strain results with splice plates installed.

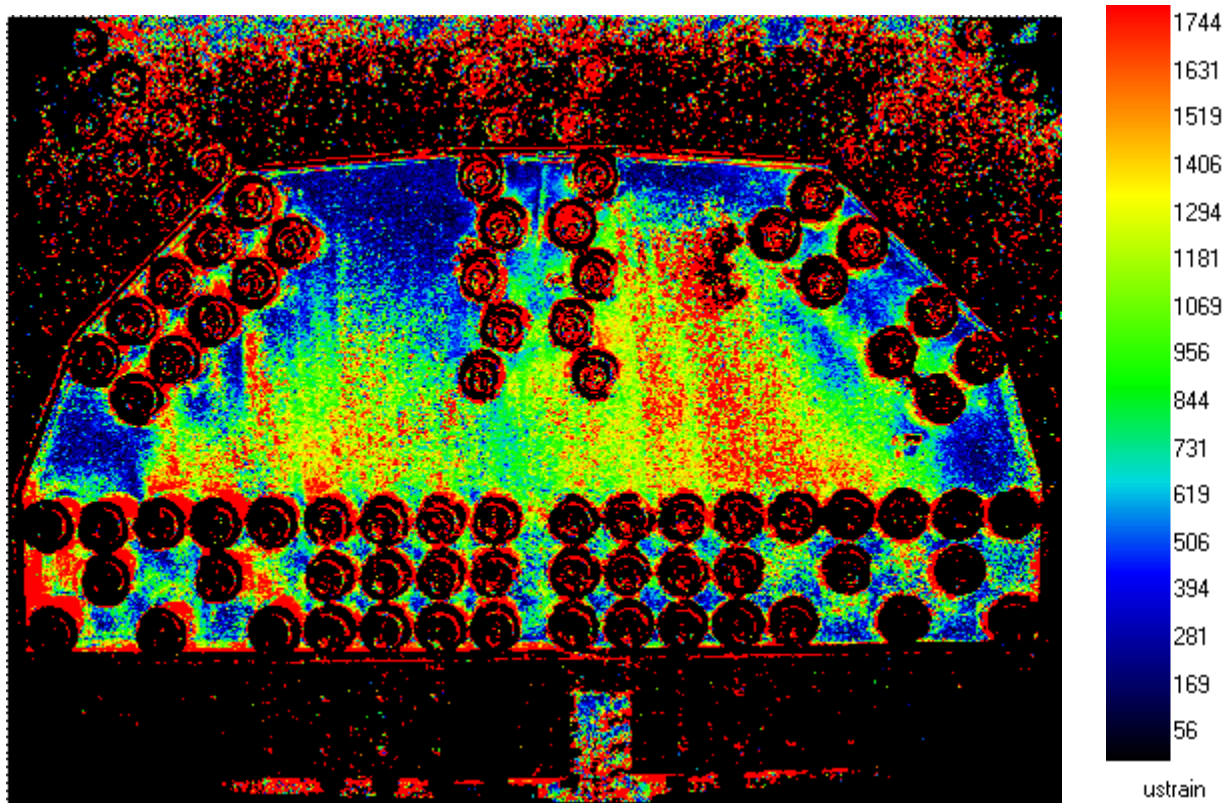


Figure E38. 307SS3-1 elastic load case #8 maximum shear strain results with splice plates installed.

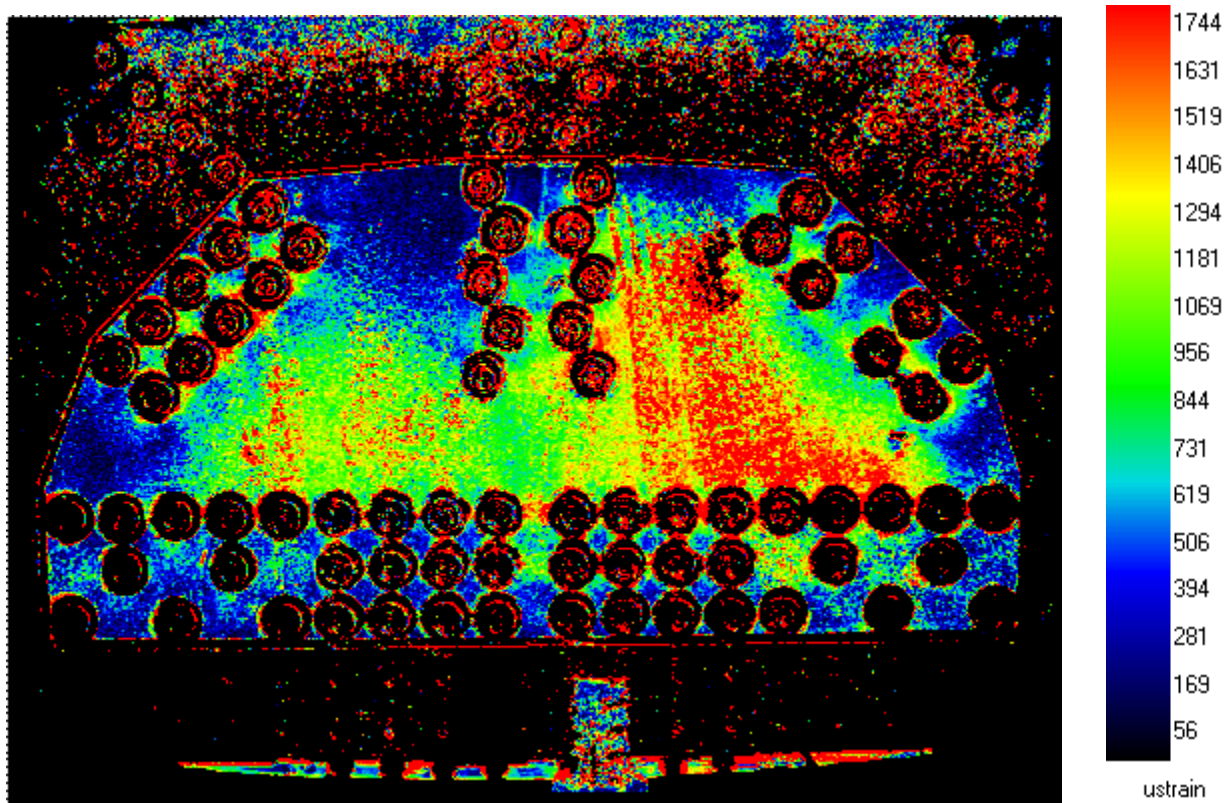


Figure E39. 307SS3-1 elastic load case #9 maximum shear strain results with splice plates installed.

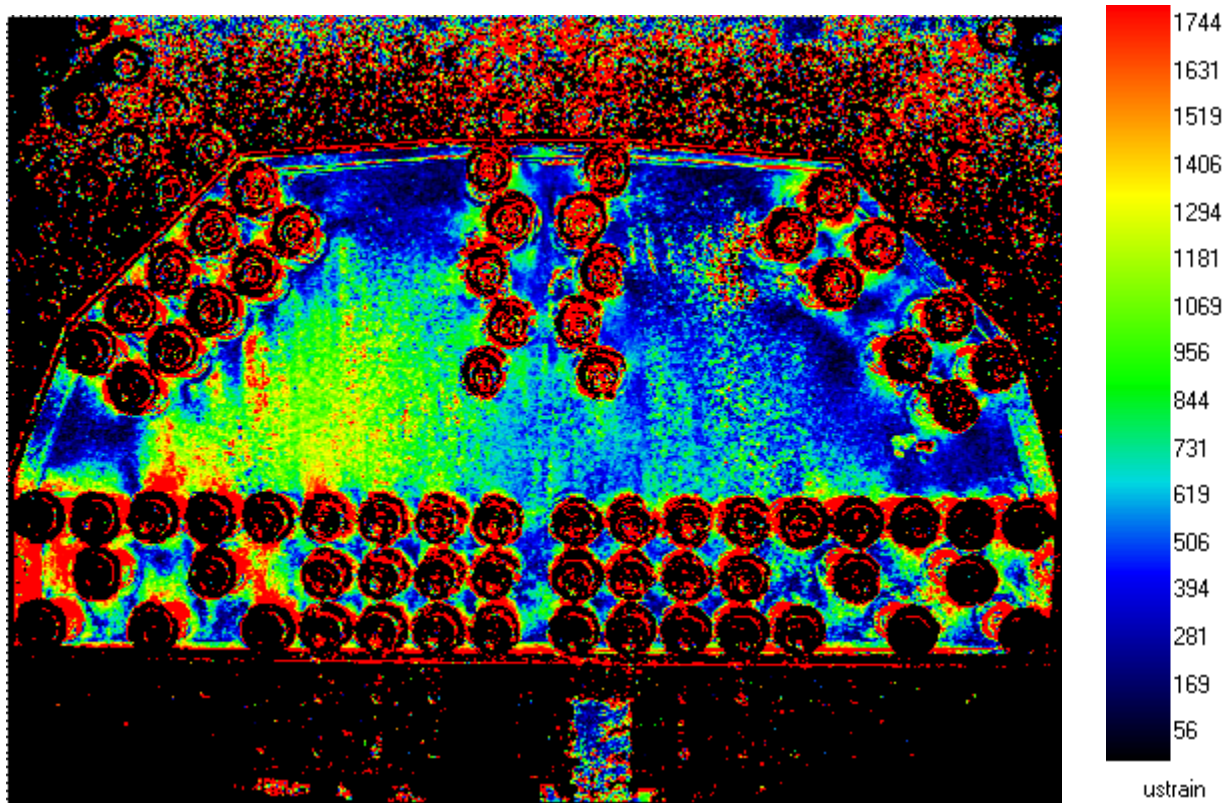


Figure E40. 307SS3-1 elastic load case #10 maximum shear strain results with splice plates installed.

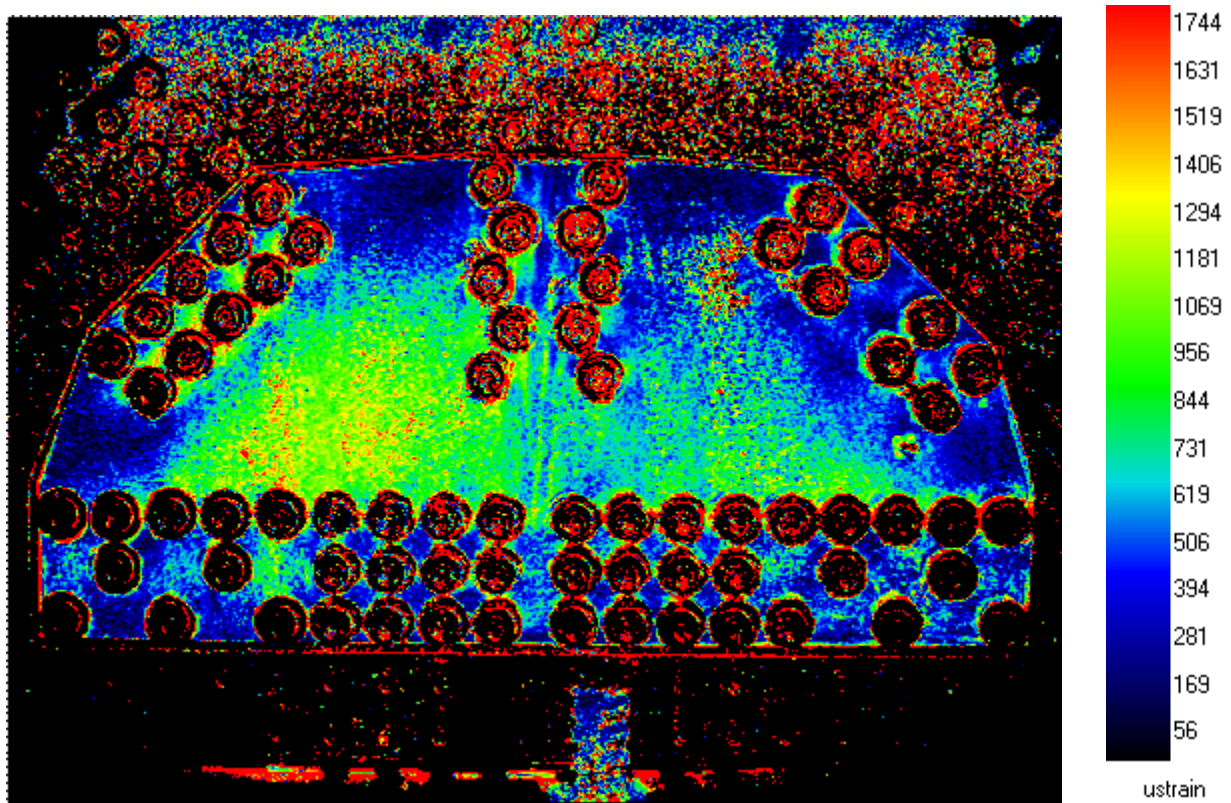


Figure E41. 307SS3-1 elastic load case #11 maximum shear strain results with splice plates installed.

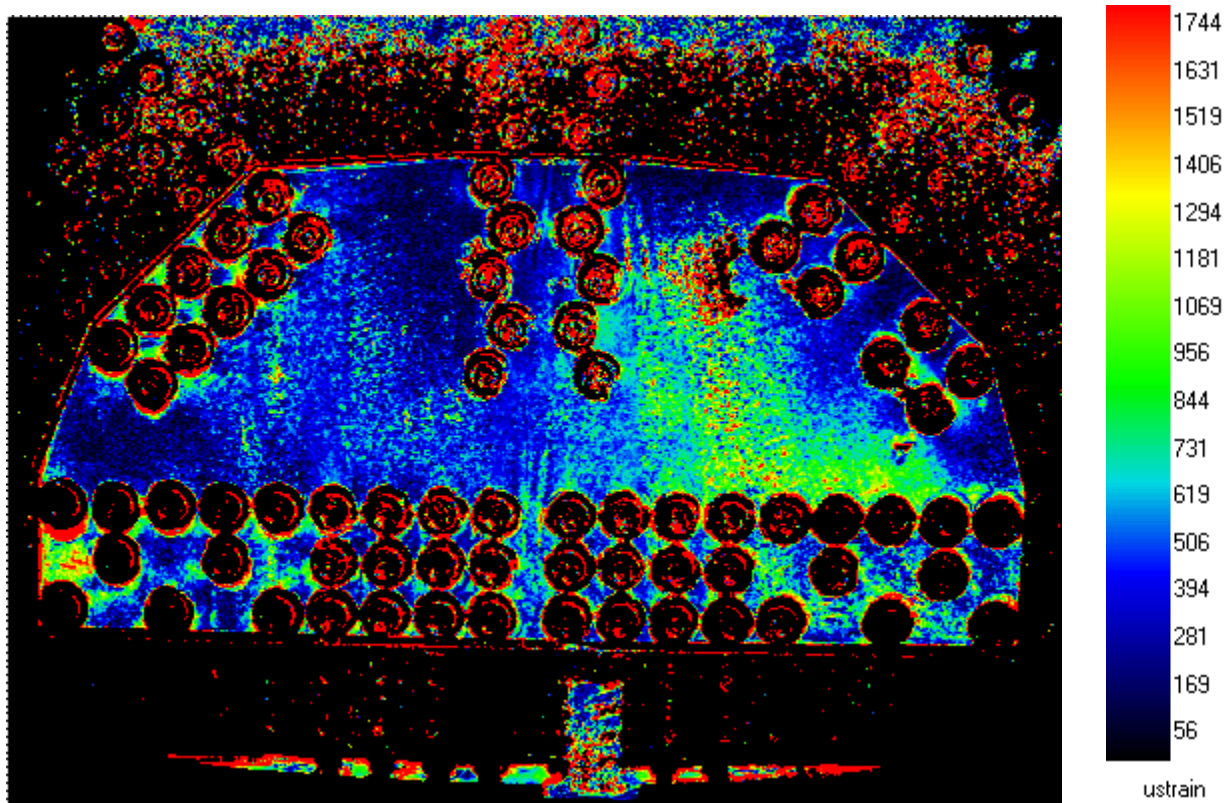


Figure E42. 307SS3-1 elastic load case #13 maximum shear strain results with splice plates installed. (HALF LOAD)

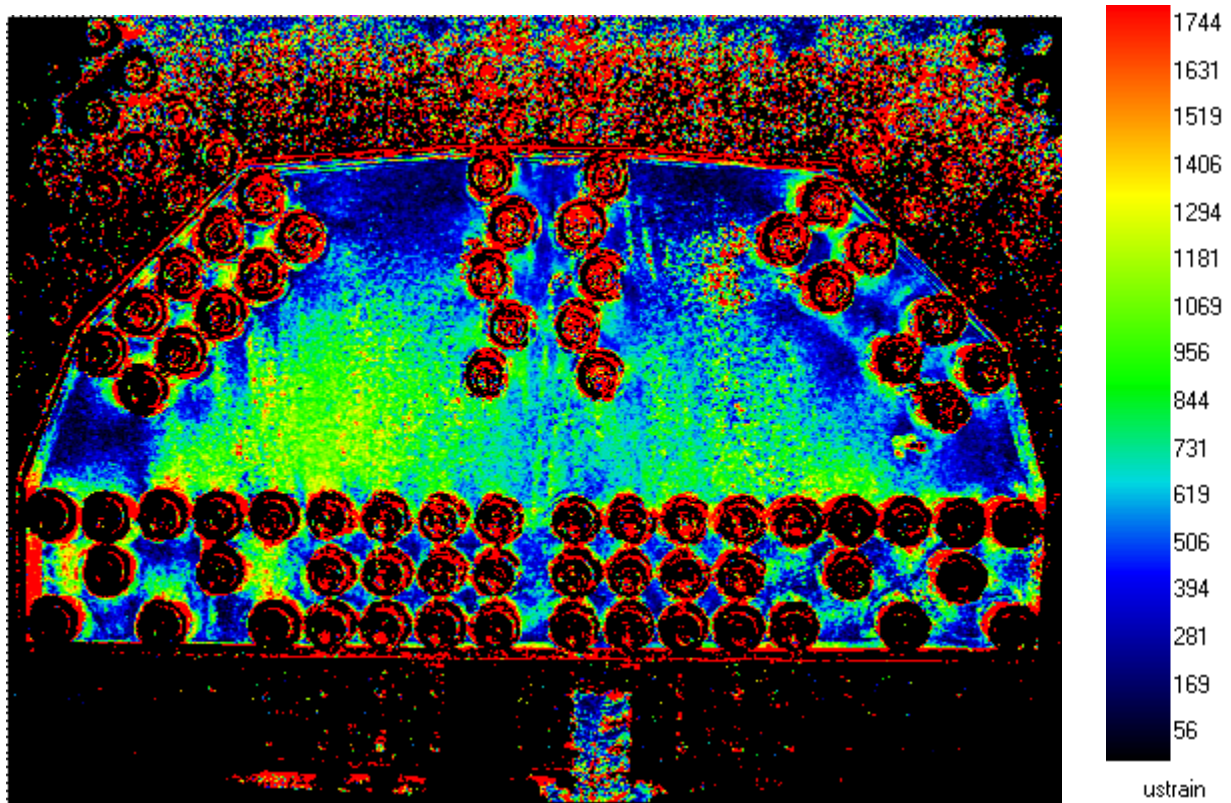


Figure E43. 307SS3-1 elastic load case #14 maximum shear strain results with splice plates installed.

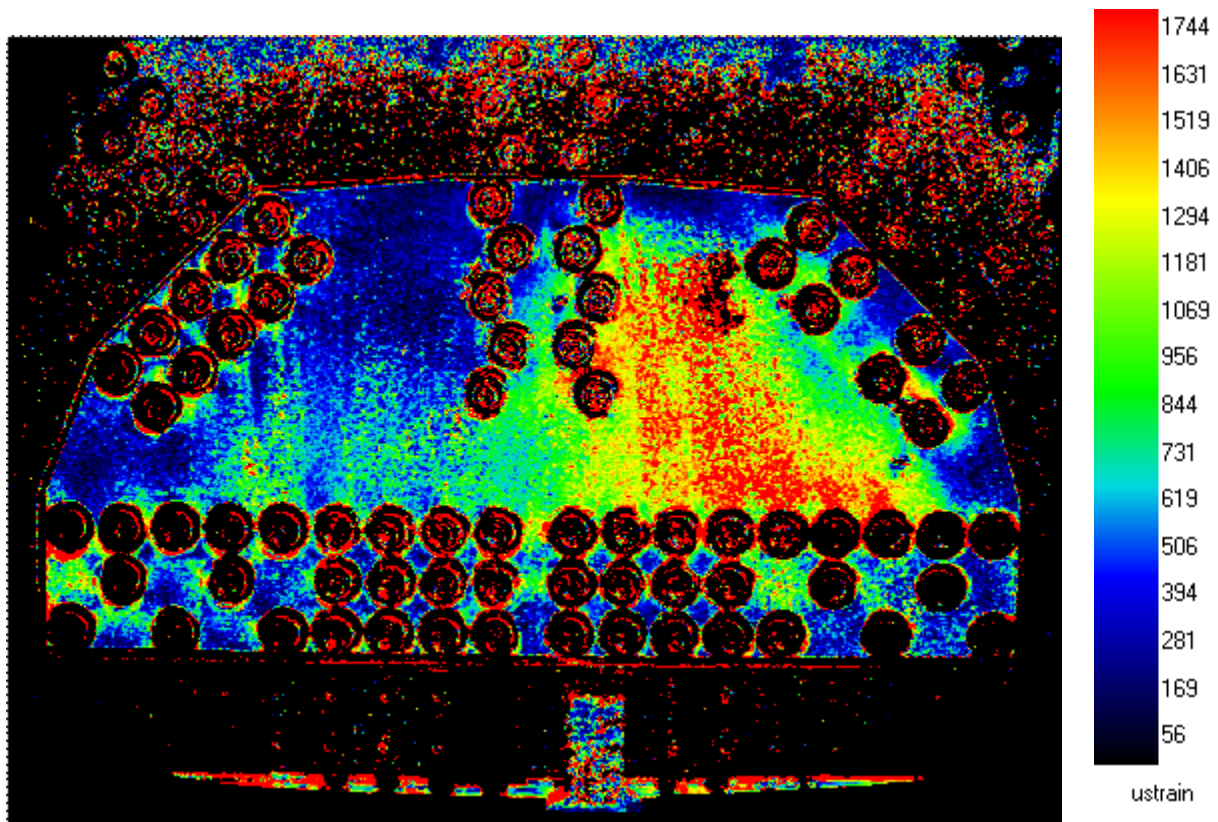


Figure E44. 307SS3-1 elastic load case #15 maximum shear strain results with splice plates installed.

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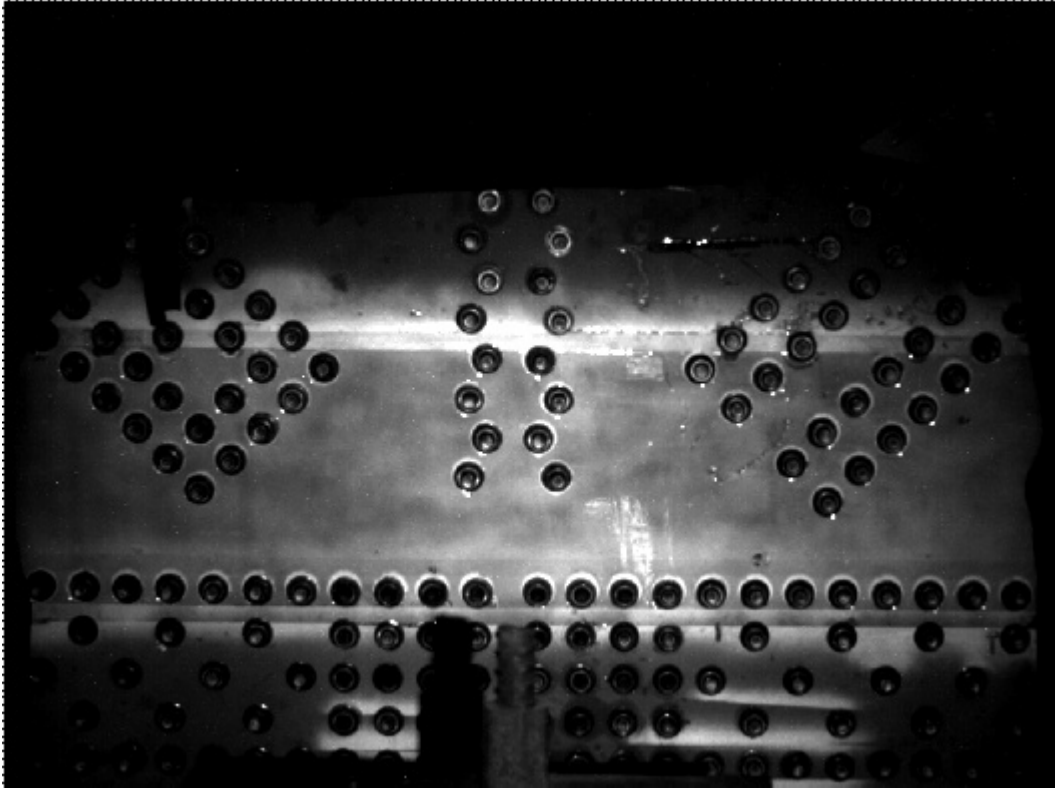


Figure E45. Grayscale image of 307SS3-2 epoxy coating.

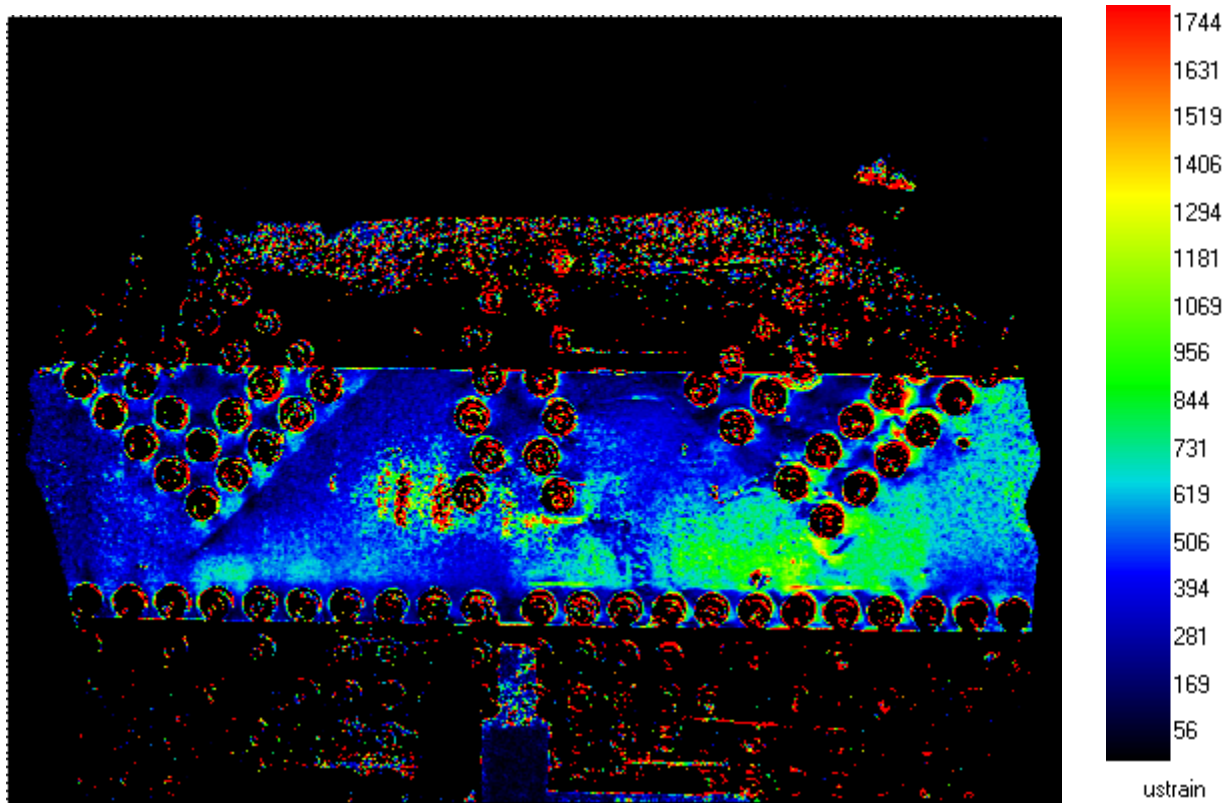


Figure E46. 307SS3-2 elastic load case #1 maximum shear strain results with splice plates installed. (HALF)

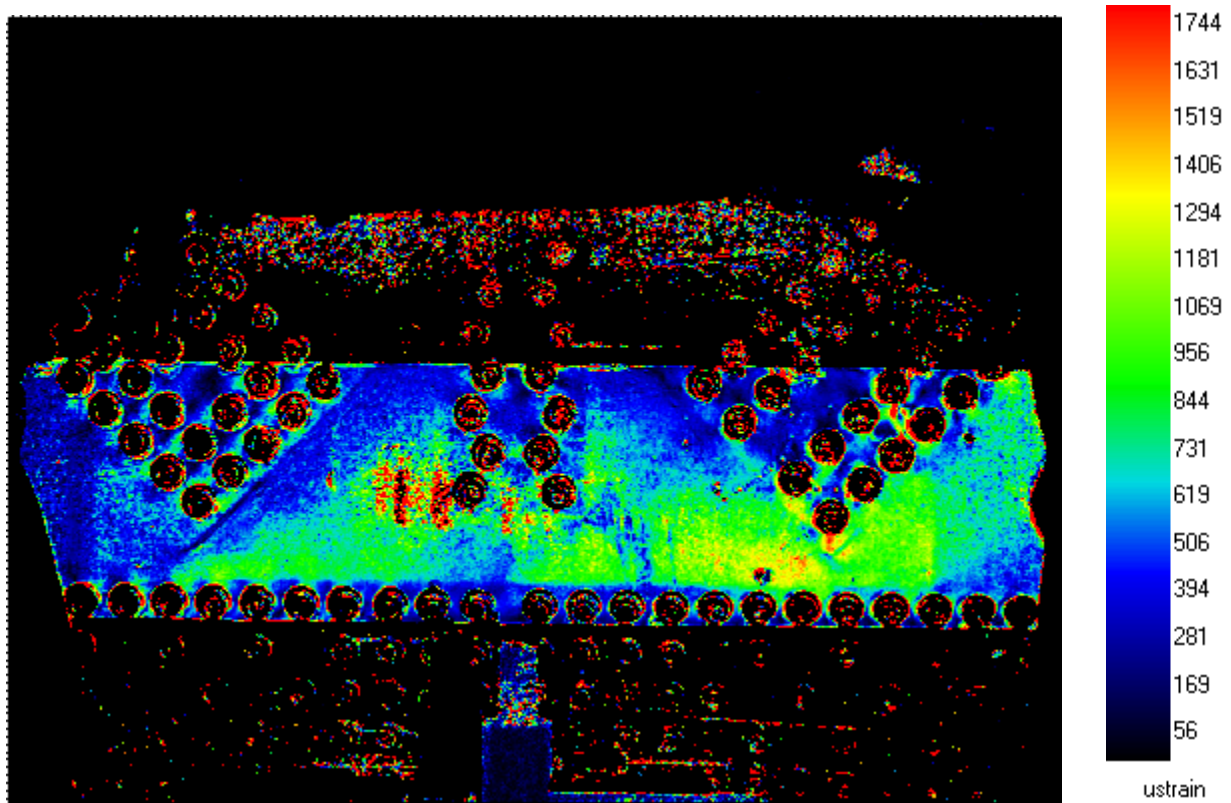


Figure E47. 307SS3-2 elastic load case #2 maximum shear strain results with splice plates installed. (HALF)

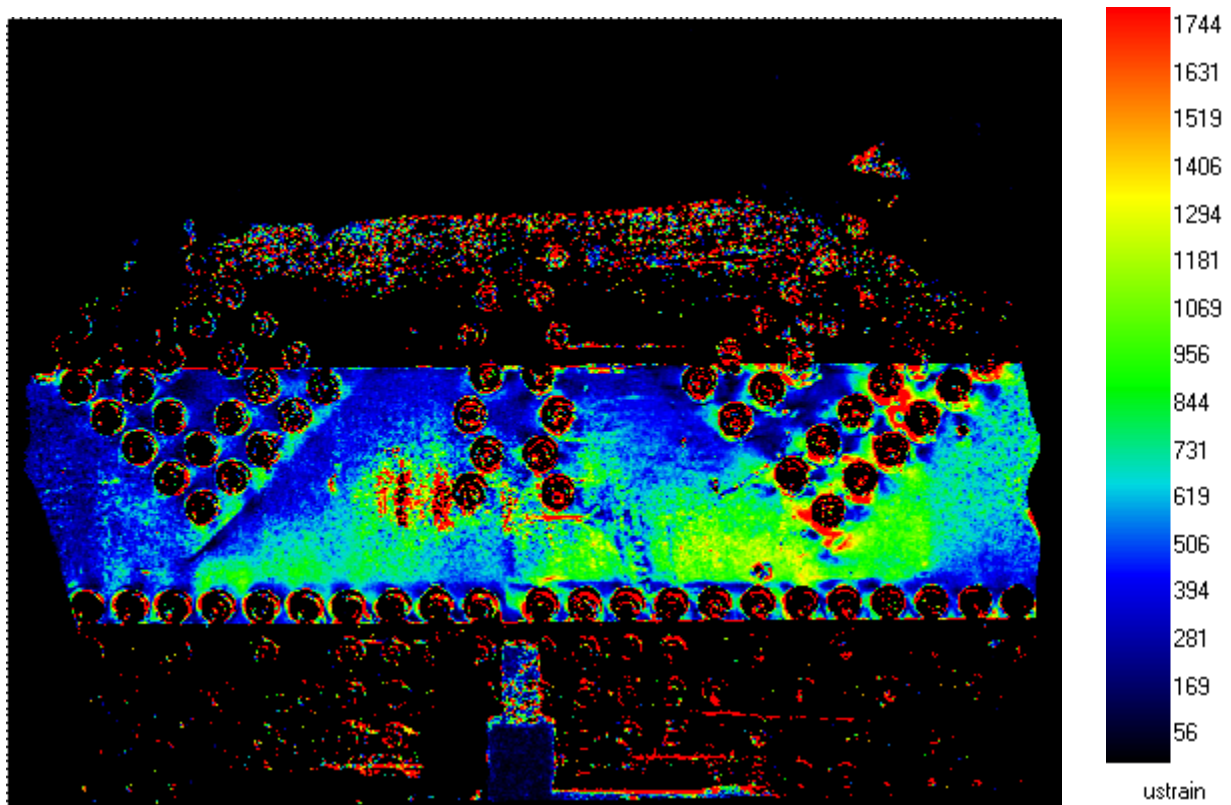


Figure E48. 307SS3-2 elastic load case #3 maximum shear strain results with splice plates installed. (HALF)

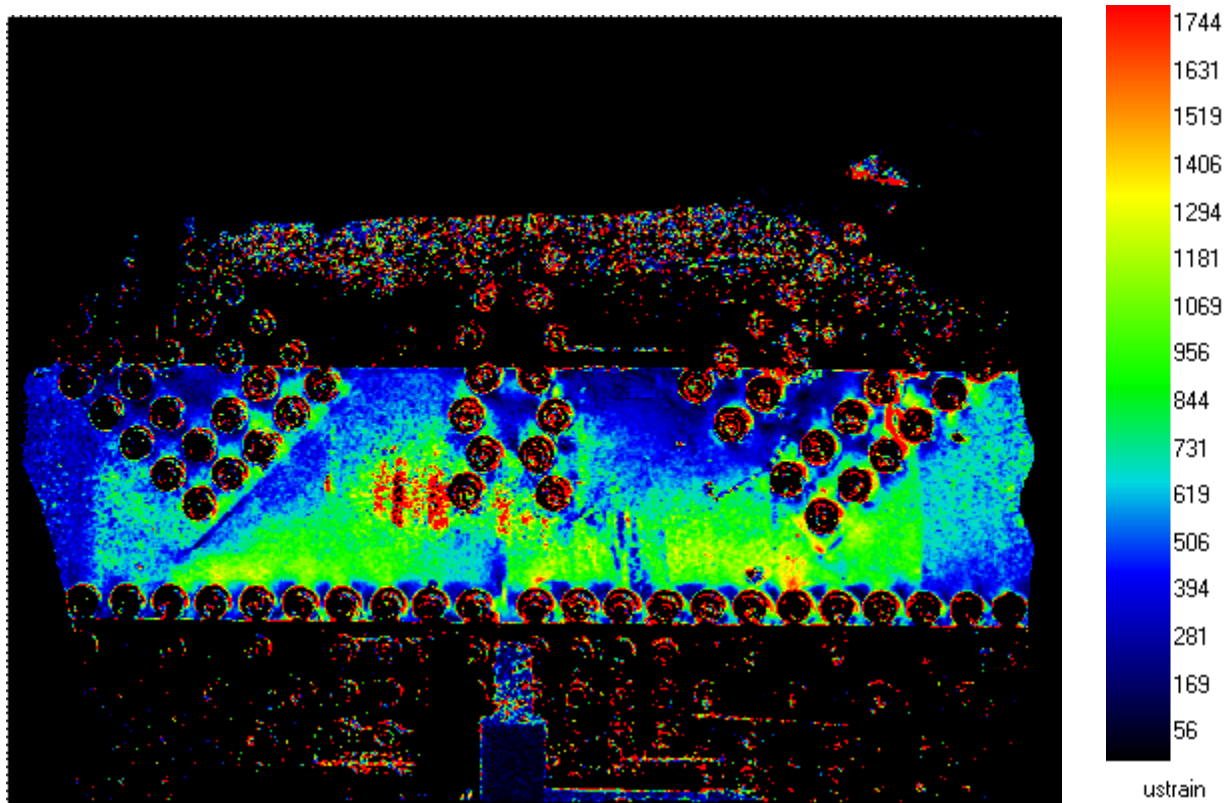


Figure E49. 307SS3-2 elastic load case #4 maximum shear strain results with splice plates installed. (HALF)

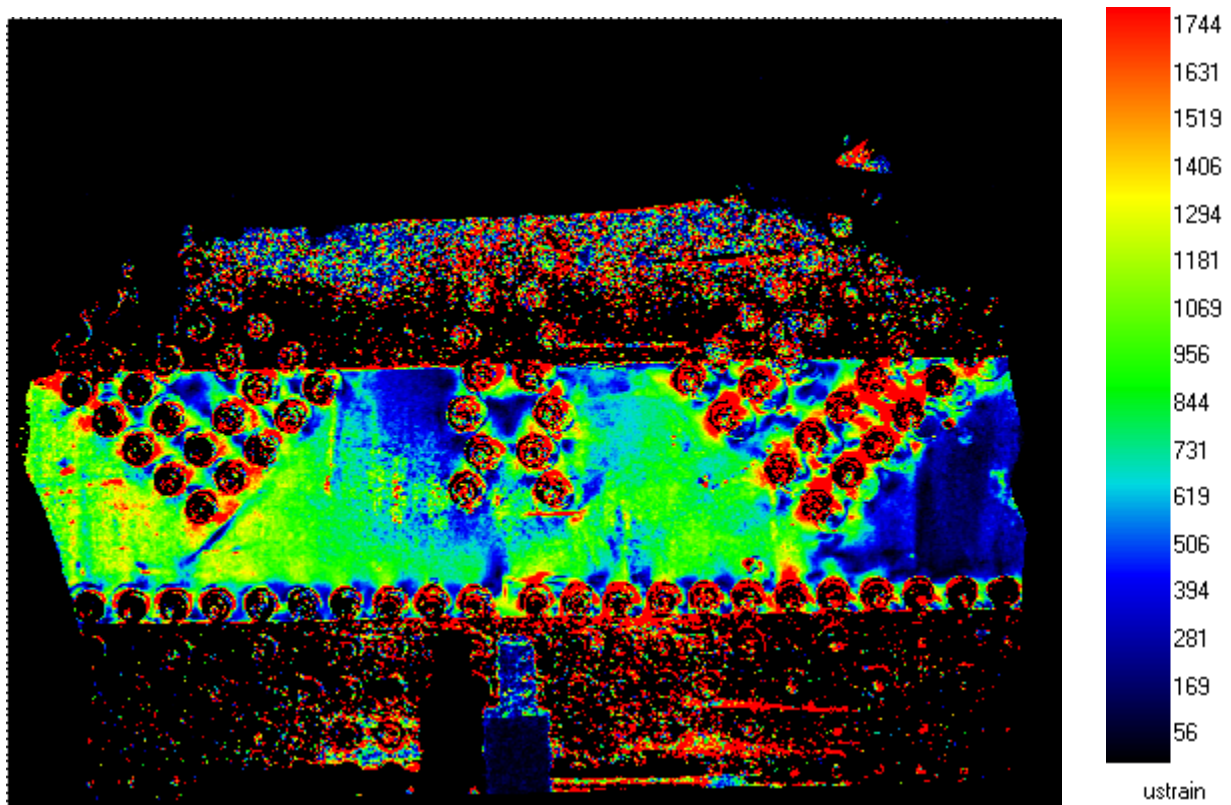


Figure E50. 307SS3-2 elastic load case #5 maximum shear strain results with splice plates installed. (HALF)

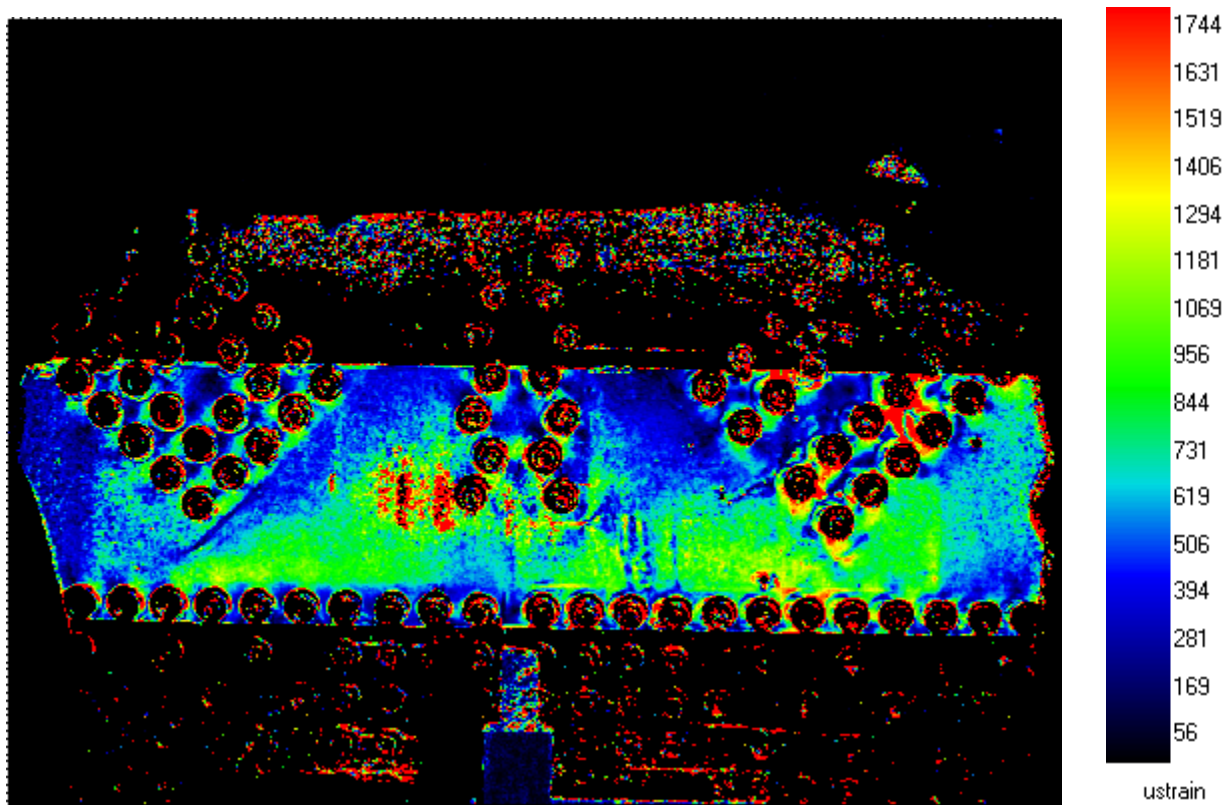


Figure E51. 307SS3-2 elastic load case #6 maximum shear strain results with splice plates installed. (HALF)

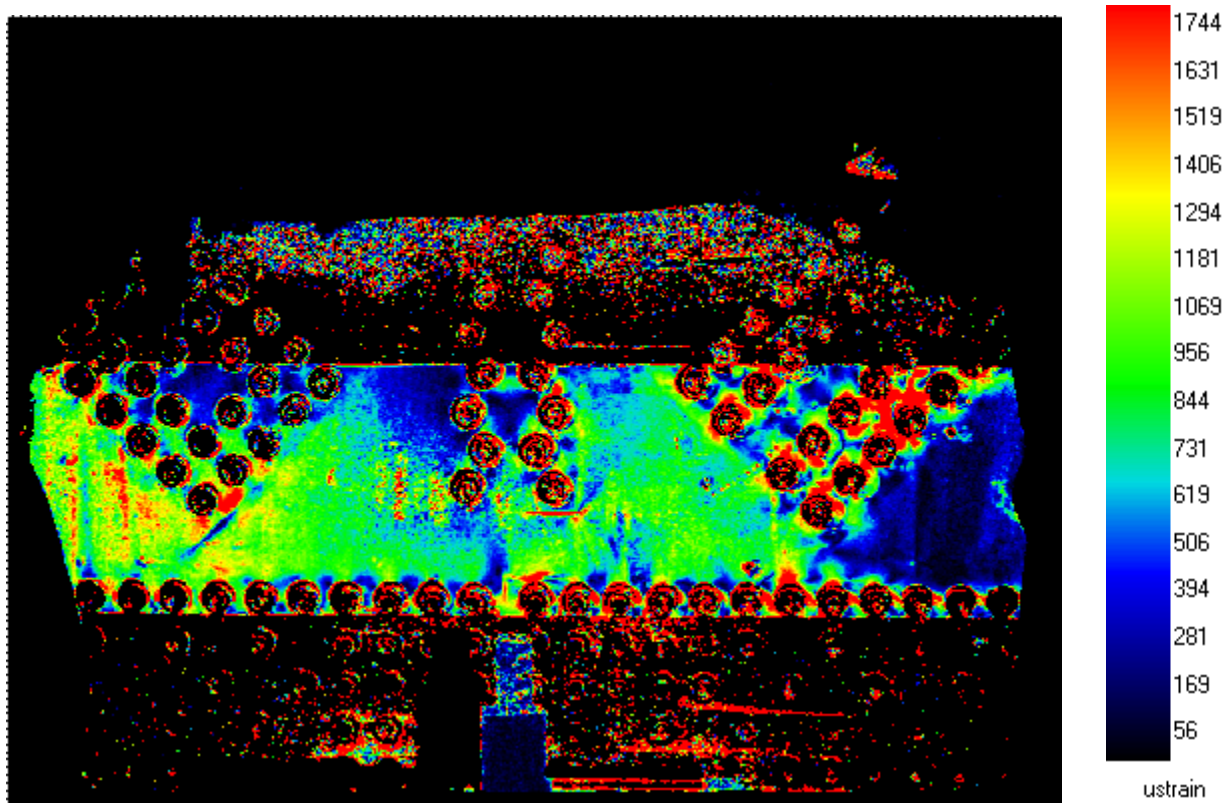


Figure E52. 307SS3-2 elastic load case #7 maximum shear strain results with splice plates installed. (HALF)

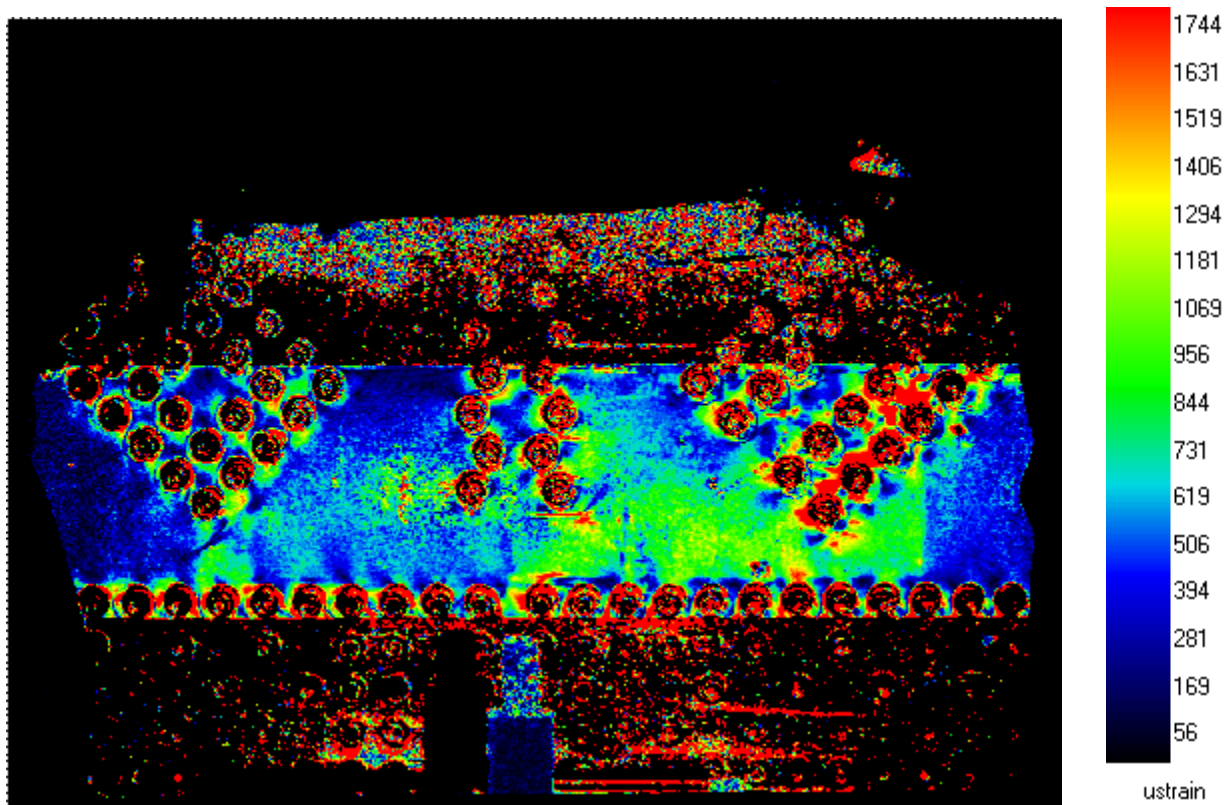


Figure E53. 307SS3-2 elastic load case #8 maximum shear strain results with splice plates installed. (HALF)

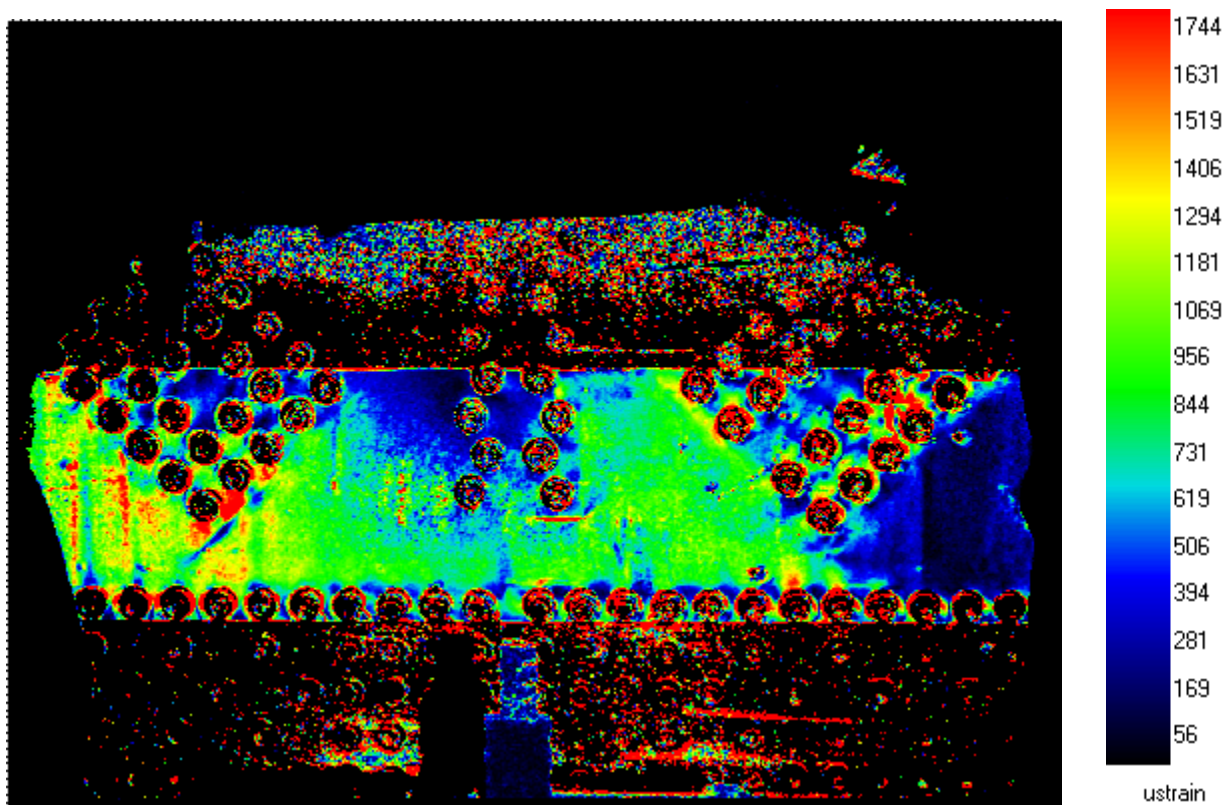


Figure E54. 307SS3-2 elastic load case #9 maximum shear strain results with splice plates installed. (HALF)

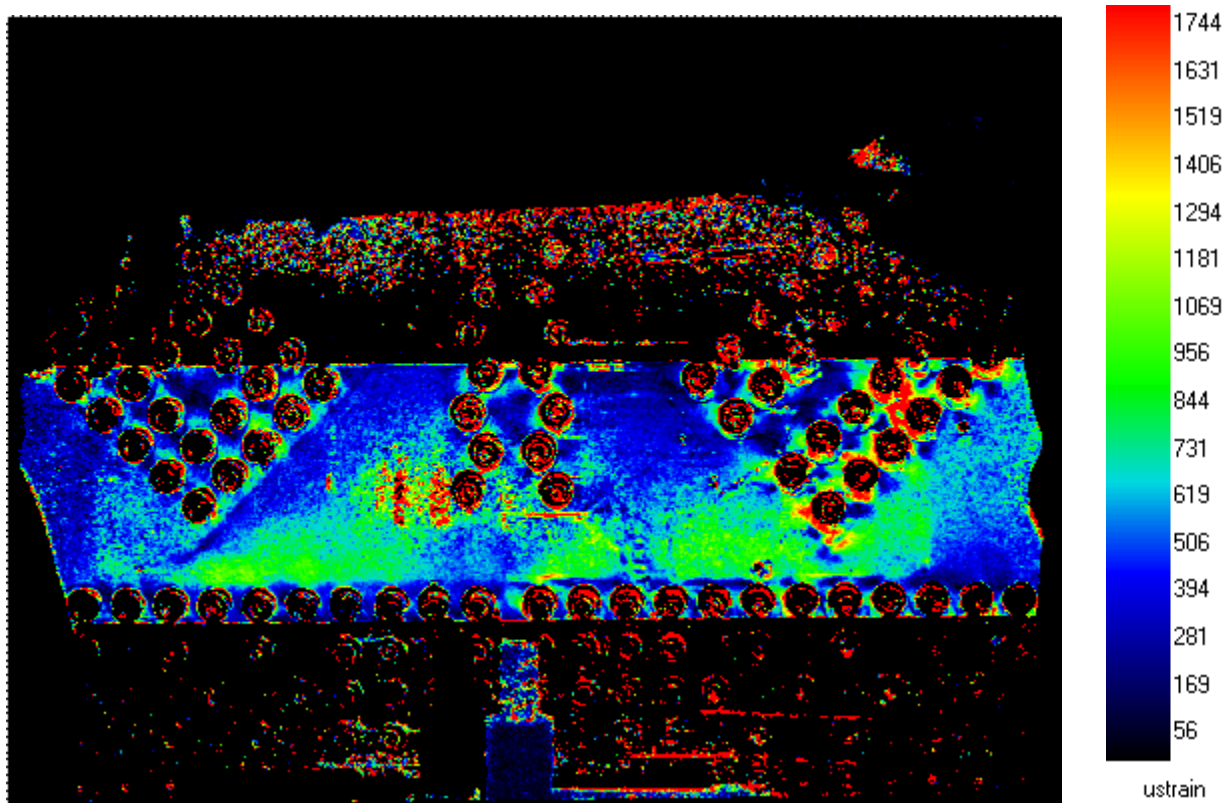


Figure E55. 307SS3-2 elastic load case #10 maximum shear strain results with splice plates installed. (HALF)

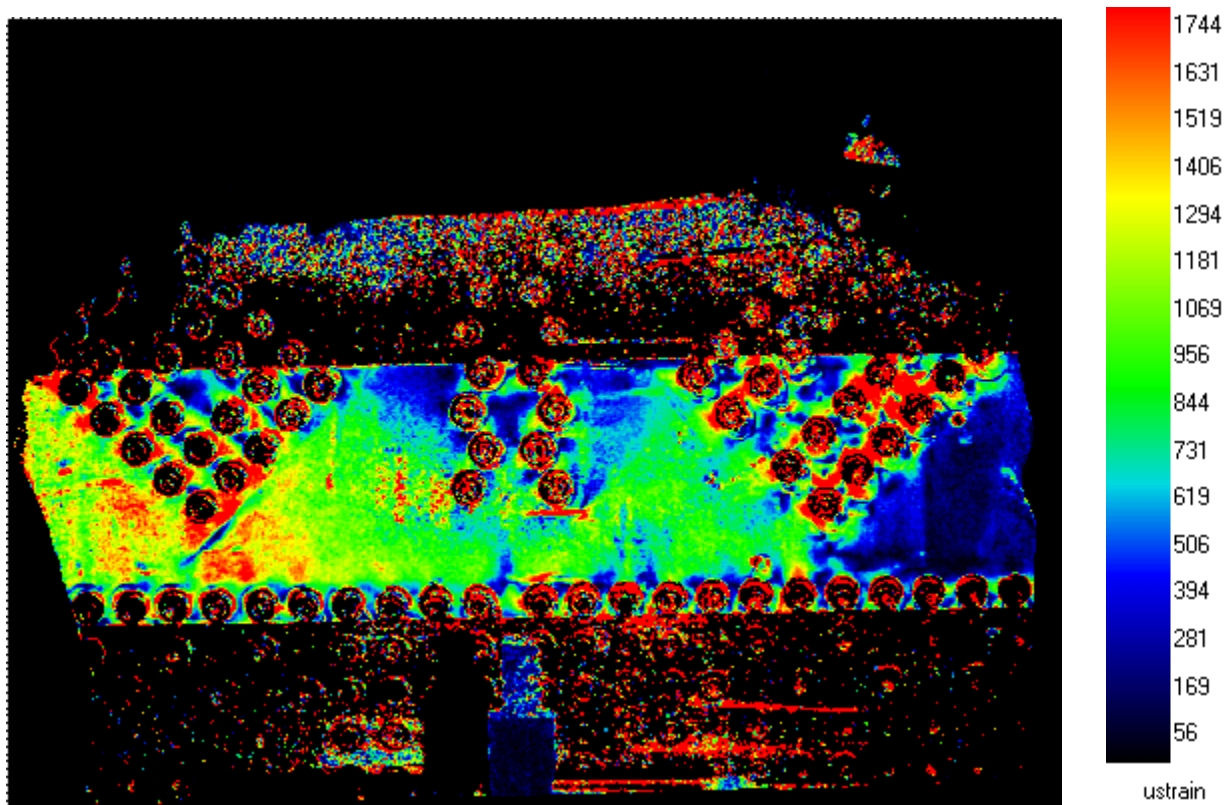


Figure E56. 307SS3-2 elastic load case #11 maximum shear strain results with splice plates installed. (HALF)

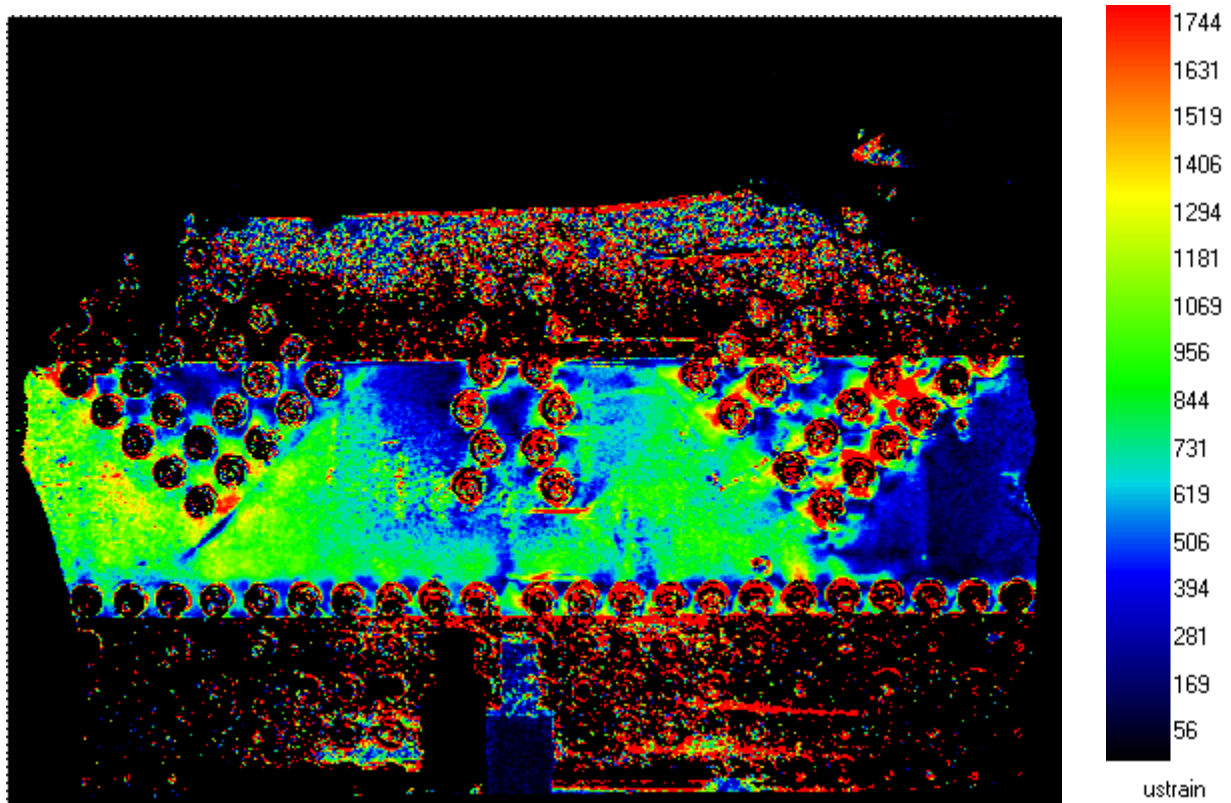


Figure E57. 307SS3-2 elastic load case #13 maximum shear strain results with splice plates installed. (HALF LOAD)

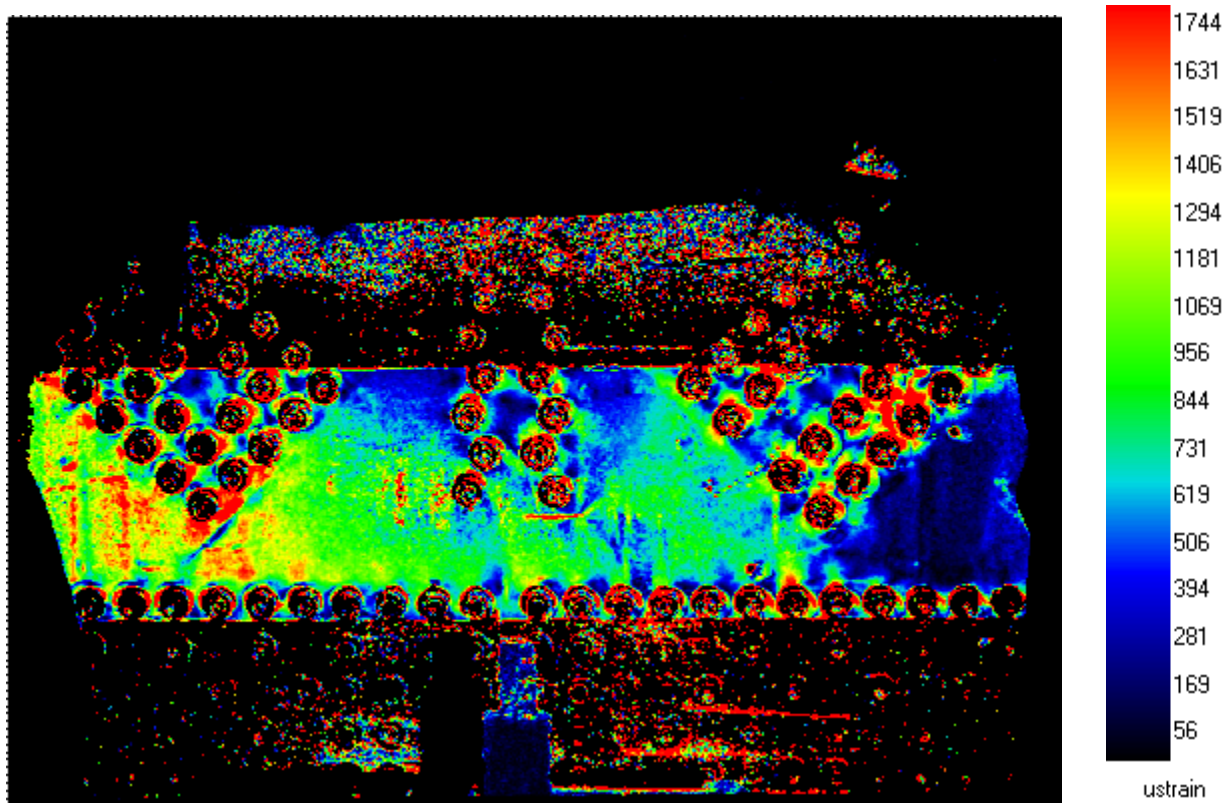


Figure E58. 307SS3-2 elastic load case #14 maximum shear strain results with splice plates installed. (HALF)

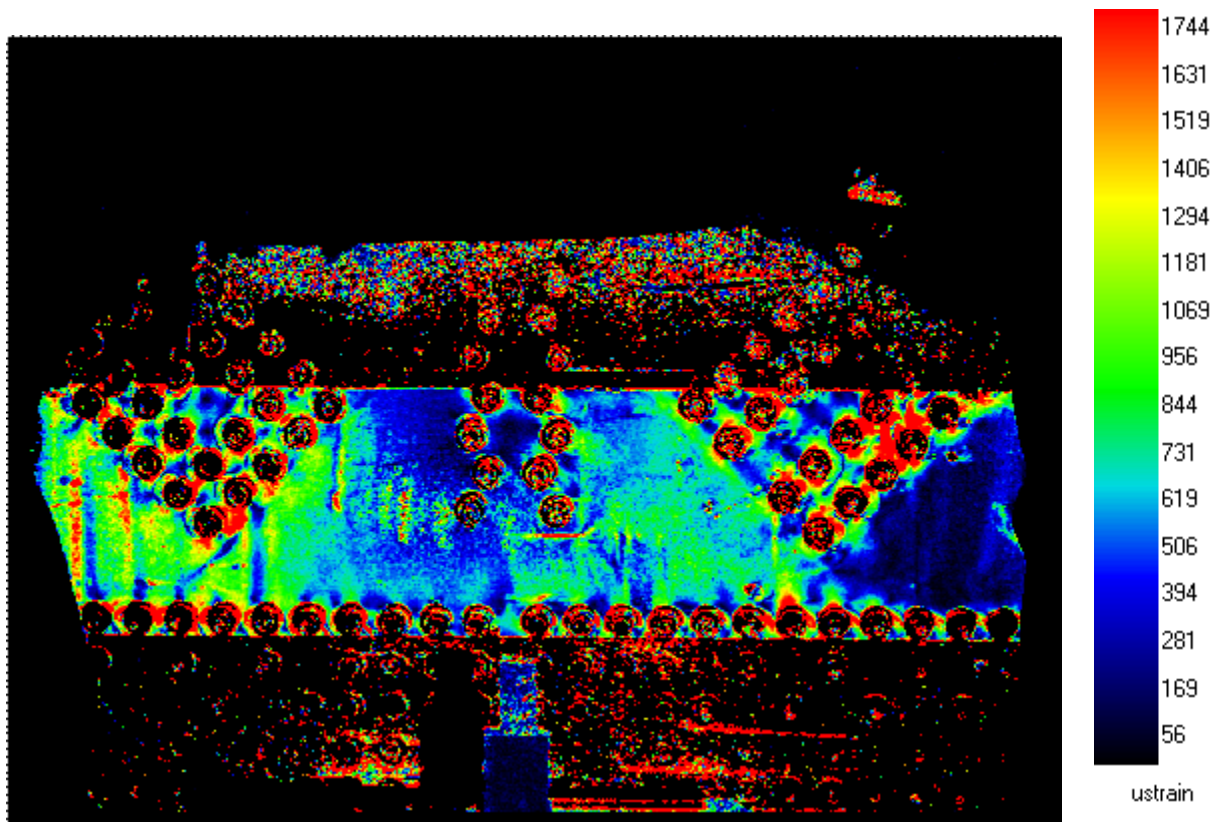


Figure E59. 307SS3-2 elastic load case #15 maximum shear strain results with splice plates installed. (HALF)