

HISTORIC AMERICAN ENGINEERING RECORD

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MICHOUD ASSEMBLY FACILITY
13800 Old Gentilly Road
New Orleans
Orleans Parish
Louisiana

HAER LA-24

INDEX TO BLACK AND WHITE PHOTOGRAPHS

Jet Lowe, photographer, April 2013

- LA-24-1 General exterior view of the west elevation of the main manufacturing plant, building 103 and the Vehicle Assembly Building, building 110. In the background right of the image, building 131, the former spray facility is being modified for the manufacturing process of the core booster for the Space Launch System (SLS) program..
- LA-24-2 Close-up, exterior view of a single bay of of the manufacturing plant, building 103 and the Vehicle Assembly Building, building 110 showing the bay doors of both partly open.
- LA-24-3 General exterior view from from a parking lot located southeast of the main manufacturing complex looking northwest. The parking lot is a temporary staging area for equipment that will be retired or reused. In the foreground are sections of the External Tank (ET)Transporter, used for the transportation of complete ET assemblies to various parts of the site during the finishing process. In the background, from left to right is, an industrial water tower for fire suppression, the southeast elevations of buildings 131 and 130. The Vehicle Assembly Building 110 and the High Bay facility 114 rise up from behind building 130 and building 103 continues off through the background right.

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- LA-24-4 General exterior view from the east looking west. The Vehicle Assembly Building, building 110 and the High Bay Building, building 114 are in the image left and the main Manufacturing Building, building 103 extends through the right of the image.
- LA-24-5 Close-up exterior view of the north corner of the main Manufacturing Building, building 103 and the East Vertical Assembly Building, building 115. Building 115 was constructed in anticipation for the Constellation Program. Since the cancellation of the Constellation Program the building has been mostly empty. It is currently being tooled for manufacturing of the core stage of the Space Launch System booster.
- LA-24-6 Oblique exterior view looking at the northwest corner of the Administration Building, building 101 that was constructed as part of the original manufacturing plant. In the background and on the right of the view is the Engineering Building, building 102, which was also part of the original construction.
- LA-24-7 Exterior view looking north east along the passage way between the original Administration Building, building 101, on the left of the image, and the original Engineering Building, building 102, on the right of the image and the pedestrian bridges connecting the two buildings on the second floor.
- LA-24-8 General, elevated, exterior view taken from the roof of the Vehicle Assembly Building looking to the northeast across the expansive roof of the Manufacturing Building, building 103. The East Vehicle Assembly Building, building 115, is projecting up from the roof line of the main plant in the background left of the image. Building 115 was constructed for the Constellation program but is now being tooled for the Space Launch System core booster assembly.

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- LA-24-9 General, elevated, exterior view taken from the roof of the Vehicle Assembly Building looking southwest. In the foreground, from left to right is the Ablator Spray Facility, building 131, External Tank Staging Facility, building 303, Industrial Water Tower, structure 302 and storage building number 305. In the far background and left in the image is the Pneumatic Test Facility, building 451 undergoing modifications in preparation for the Space Launch System core booster manufacturing. The Facilities Operations Building, building 320, and storage facility, building 325 is in the background center of the view.
- LA-24-10 General, elevated, exterior view taken from the roof of the Vehicle Assembly Building looking southeast. A demineralized water storage tank, structure 168, is in the foreground bottom-left of the image foreground center bottom is a partial view of the Thermal Protection System storage building number 130 and the Ablator Spray Facility, building 131, is foreground, bottom right of the image. Middle ground center of the image are articles and equipment used during the manufacturing of the External Tanks. Middle ground right is the Component Ablator Facility, building 318. In the background center of the image is the External Tank Acceptance and Prep Building, building 420
- LA-24-11 Close-up exterior view of the southeast elevation of the External Tank Acceptance and Prep building, building number 420
- LA-24-12 Oblique exterior view looking east at the External Tank Acceptance and Prep building, building number 420. The Engineering Structures Test Facility, building 404, is in the background and left of the image.
- LA-24-13 Oblique, exterior view looking southwest at the Pneumatic Test Facility, building 451. Note that the structure is undergoing modifications to test the longer section of the Space Launch System's core stage.

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- LA-24-14 General view of the model room located in the northwest corner at the approximate location of column M-2 of the main Manufacturing Building, building 103. This image is viewing a model of the manufacturing plant. The white placards indicate areas where new equipment will be placed for the manufacturing of the core stages of the Space Launch System's boosters.
- LA-24-15 General view of the model room located in the northwest corner at the approximate location of column M-2 of the main Manufacturing Building, building 103. This view is looking at the model representation from what would be the south corner of the main manufacturing area.
- LA-24-16 General view of the model room located in the northwest corner at the approximate location of column M-2 of the main Manufacturing Building, building 103. This is a close-up view of a model of the external tank broken apart into its segments and a cutaway through the liquid oxygen tank section.
- LA-24-17 General view of the machine shop area. Aluminum billets are in the lower foreground of the image and two metal lathes are in the middle foreground of the image.
- LA-24-18 General View looking southwest down aisle four of building 103 looking at the nose of External Tank number 94. Aisle four is one of the few locations in building 103 where you can see almost see the full length of the main Manufacturing Building, building 103.
- LA-24-19 General view looking northeast down aisle four in the opposite direction of HAER image LA-24-19. Aisle four is one of the few locations in building 103 where you can see almost see the full length of the main Manufacturing Building, building 103.
- LA-24-20 General view looking over the chemical and rinsing tanks of the chemical clean line in the main Manufacturing Building, building 103. This line was used to clean and/or etch relatively small parts for the External Tank assembly.

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- LA-24-21 Close-up view of the chemical clean line tanks in the main Manufacturing Building, building 103. A caustic etching tank is on the right side of the image and a rinsing tank is on the left side of the image.
- LA-24-22 Detail view of small-parts baskets used for dunking parts into the tanks of the chemical clean line in the main Manufacturing Building, building 103.
- LA-24-23 Close-up view of the T-Ring Machine Adapter in the Manufacturing Building, building 103. This workstation was used to machine the height of the T-Rings to within their tolerances prior to being welded onto their respective barrel sections.
- LA-24-24 Close-up view of the 27 foot Niles Vertical Boring Mill in the Manufacturing Building, building 103. This mill was used as an alternate machining fixture for edge trimming of T-Rings, Dome Flanges and Barrel edges.
- LA-24-25 Close-up View of a barrel support frame in building 103, the main manufacturing building
- LA-24-26 Close-up view of an aft ogive handling and truing jig in the manufacturing building, building 103. An aft ogive is under protective covering for storage.
- LA-24-27 Elevation view of a process-testing mockup of the Liquid-Oxygen tank portion of the external tank as it sits in the LO2 (liquid oxygen) Offload fixture in manufacturing building 103.
- LA-24-28 View of an inter-tank assembly test article in a storage and staging yard just to the south and west of building 103
- LA-24-29 View of remaining barrel segments for the liquid-hydrogen tank segment of the External Tank in building 103. Eight of the segments make up a barrel and four barrels plus two domes are used to make the Hydrogen tank.

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- LA-24-30 View from the upper platform of one of the pair of friction stir-weld fixtures looking at welded barrel segments in the left of the image and the second friction stir-weld fixture of the pair is on the right side of the image. This image was taken in manufacturing building 103.
- LA-24-31 General view from the upper platform of a friction stir-weld fixture looking into its center and the support structure for the friction stir-weld mechanism and weld head.
- LA-24-32 General view of the interior of the manufacturing building, building 103, at the southwest end looking west. External Tank number 94 is on the left side of the image and remaining portions of the Liquid Hydrogen (LH2) Tank Weld Assembly Fixture spans from the approximate image center to image right. The Weld Gantry is to the right of ET 94, the Headstick with the Barrel Adapter and Mandrel attached is next to the gantry, a secondary mandrel is to the right of the Headstock assembly and the Tailstock is on the right side of the image.
- LA-24-33 Close-up view looking at the Tailstock of the Liquid Hydrogen (LH2) Tank Weld Assembly Fixture in the manufacturing building, building 103.
- LA-24-34 Close-up view of the segments of the roll ring assemblies which were attached to the Liquid Hydrogen (LH2) tank barrel sections to rotate them during the welding process in the LH2 Tank Weld Assembly Fixture. The Headdstock, Barrel Adapter and Mandrel of the weld assembly is seen in the background of this image.
- LA-24-35 Close-up detail of the roll ring assemblies and their adjustable attachment cleats which were attached to the Liquid Hydrogen (LH2) tank barrel sections to rotate them during the welding process in the LH2 Tank Weld Assembly Fixture in the manufacturing building 103.

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- LA-24-36 General view of two mandrels of the Liquid Hydrogen (LH2) Tank Weld Assembly Fixture. The Mandrel closest to center in the image is mounted on a support stand. The Mandrel in the background is mounted on the Headstock of the weld assembly in manufacturing building number 103.
- LA-24-37 Detail-view of a Mandrel from the Liquid Hydrogen (LH2) Tank Assembly Weld Fixture.
- LA-24-38 Close-up View of the Headstock looking at the Mandrel mounting and support structure and the Barrel Adaptor in the manufacturing building number 103.
- LA-24-39 View looking down the approximate centerline of a Headstock and the mounting structure for a mandrel in the manufacturing building number 103.
- LA-24-40 View from an elevated platform in the vehicle Assembly Building, building 110 looking at, from left to right, Cell F, used to proof test the Liquid Oxygen (LO2) Tanks, Cell E, used for cleaning the interior and exterior of the LO2 tanks and the interior of the Liquid Hydrogen (LH2) tanks and Cell D which was used to apply Spray On Foam Insulation (SOFI) to the aft dome of the LH2 tanks.
- LA-24-41 View from an elevated platform in the vehicle Assembly Building, building 110 looking clockwise from the upper left of the image at Cell A which was used to splice and close out the three main segments of the External Tank, the Liquid Oxygen (LO2) Tank, the Inter-Tank Assembly and the Liquid Hydrogen (LH2) Tank, the positions of cells B and C which have been removed prior to this photograph, were used for the application of Spray On Foam Insulation (SOFI) to the LH2 barrels and forward domes, Cell F in the bottom center of the image used for proof testing the LO2 tanks and in the center left of the image is a partial view of Cell E, used for cleaning the interior and exterior of the LO2 tanks and cleaning the interior of the LH2 tanks.

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- LA-24-42 Ground level view in the Vehicle Assembly Building, building 110 looking from right to left, foreground to background are Cell D, used to apply Spray On Foam Insulation on the aft dome of the Liquid Hydrogen (LH2) Tanks, Cell E, used to clean the interior and exterior of the Liquid Oxygen (LO2) Tanks and clean the interiors of the LH2 Tanks, and Cell F, used to proof test the LO2 Tanks.
- LA-24-43 Ground level view from the base of Cell D in the Vehicle Assembly Building, building 110, looking across the aisle at the interior of Cell A, which was used to splice and close out the three main segments of the External Tank, the Liquid Oxygen (LO2) Tank, the Inter-Tank Assembly and the Liquid Hydrogen (LH2) Tank. Note in the center and background of the image Cells B and C have been removed in preparation of retooling for the Space Launch System's Core Booster manufacturing. Cells B and C were used to apply Spray On Foam Insulation (SOFI) to the barrels and forward dome of the Liquid Hydrogen (LH2) Tanks.
- LA-24-44 Ground level view looking southeast down the aisle of the High Bay Addition Building, building 114, from image left to image center, foreground to background is Cell H, used to apply Spray On Foam Insulation (SOFI) to the Inter-Tank Assemblies (IT) and the Liquid Oxygen (LO2) Tanks, Cell J, used to splice the IT and LO2 sections together, Cell K where spray primer was applied to the LO2 Tanks and SOFI applied to LO2 Tanks aft domes, and Cell L was used for the automated machining of SOFI on the exterior surfaces on the ITs.
- LA-24-45 View looking into the Horizontal Installation Position number 2 in the manufacturing building, building 103. This workstation was used for final preparation and installation of the remaining External Tank components such as Feedlines, pressure lines, umbilical lines and connections, etc., perform systems tests and Tehrmal Protection System closeouts in conjunction with mechanical installations

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- LA-24-46 View looking into the interstitial space between Horizontal Installation Positions Three and Four in the manufacturing building, building 103, at an External Tank (ET) Straddle Carrier used for the transportation of major ET assemblies between manufacturing buildings and between major fixtures when needed.
- LA-24-47 Oblique view of External Tank (ET) 94 looking at the forward end of the tank as it sits on an ET Transporter in aisle four of the manufacturing building number 103.
- LA-24-48 Side elevation view of External Tank (ET) 94 as it sits on an ET Transporter in aisle four of the manufacturing building number 103.
- LA-24-49 Oblique view of External Tank (ET) 94 looking at the aft end of the tank as it sits on an ET Transporter in aisle four of the manufacturing building number 103.