Building 202, Rocket Engine Test Facility (RETF), is located in a ravine at the end of Lower South Road and below Fracture Mechanics Complex (CUY-4623-15). This ravine is reinforced on the east side by a concrete retaining wall beside which are dewars of liquid hydrogen. The south end of the complex is a storage area for liquid hydrogen. The ravine is partially enclosed by corrugated plastic panels and profiled metal siding. The main building is rectangular in plan and is constructed of concrete, but partially clad with profiled metal siding. On the east facade of this building, there is a heavily wooded area located along the southwest and western sides of the facility.

The Lewis Research Center was established in 1941 as the Aircraft Engine Research Laboratory of the National Advisory Committee on Aeronautics. The AERL served as the propulsion research center of NASA until 1958 when the lab became part of the newly-formed National Aeronautics and Space Administration. As a part of this organization, the LeRC has continued its aeronautic research. (cont'd)
51. Condition of Property

- Excellent
- Good/Fair
- Deteriorated
- Ruin
- Destroyed/Burned

Date

52. Historic Outbuildings and Dependencies

Barn Type(s)

- Corn Crib or Shed
- Summer Kitchen
- Silo
- Smoke House
- Spring House
- Privy
- Ice House
- Garage
- Silo
- Ice House
- Designed landscape

53. Affiliated OA1 Site and multiple Archaeological Features: Observed Expected on Basis of Archival Research

- Well
- Privy
- Cistern
- Foundation
- Structural Rubble
- Formal Trash Dump
- Other

54. Farmstead Plan

42. (Cont'd)

building there is a large roll-up door that gives access to test units by way of a monorail system. A covered entryway leads into the service area of this building.

The test cells are located on the north end of the complex and are double height spaces. A shed roof covers the cell and large overhead doors are located on the east and west and are opened during testing. The RETF consists of two major buildings and several support services buildings. Test Stand A, located at the north end of the complex, was designed for sea-level testing of vertically mounted rocket engines into an exhaust gas muffler and scrubber system for high energy and toxic propellants. This test stand has the capability of testing thrust levels (cont'd)

43. (Cont'd)

while also advancing technologies in aerospace propulsion, and space flight systems.

The RETF was listed as a National Historic Landmark in 1984 as part of the National Park Service's Man in Space thematic nomination. Building 202 and Building 100, formerly the Rocket Operations Building (CUY-4611-15), were listed as an integrated, stand-alone test facility that is nationally significant for its contribution in the development of the lightweight, regeneratively cooled hydrogen engine. The facility was also used in the development of engines for the Centaur and Saturn rockets and the engines currently used on the Space Shuttle. The facility tested full-scale hydrogen-fluorine and hydrogen-oxygen rocket thrust chambers. Due to the dangers involved in storing cryogenic liquid propellants, the complex was constructed in a deep ravine in the South Area of the LeRC.

For a more complete discussion of the historical significance of the RETF, see the Man in Space National Historic Landmark Thematic Nomination, 1984.

44. (Cont'd)
of up to 50,000 pounds. Test Stand B can test rocket engines mounted horizontally and exhausting into an exhaust diffuser, cooler, and nitrogen driven ejector system. This stand is used for altitude testing in a space environment.

A system of steel grating catwalks is located on the west facade of the building. The scrubber tower and exhaust piping are located west of the building. Retention basins are located north of the test cells with a pump house to the west.

Several support and storage buildings are located around the RETF. A frame building with a gable roof is located southwest of the main complex by Abram Creek, which runs along the western edge of the facility. A concrete annex building with a shed roof is located north of the test cell, which is equipped with several overhead doors. The concrete block observation building is located further to the north on a small rise. It is a concrete structure with a camera mounted on its roof. It is accessed by a set of metal steps leading from Lower South Road. There are two-paned, fixed windows on the south facade and the building is accessed through a door on the north facade.

In 1965-66, additions were constructed on the first and basement floors, resulting in a 2,000 square foot increase in area. The facility was modified in 1984 for testing of extremely large area ratio nozzles. In 1989, a modification to the RETF rehabilitated the existing shop space and added 200 square feet of new areas to create a new control room, as well as modifying the existing utilities and offices. In April 1996, the RETF was identified in the NASA Zero Base Review for closure in that fiscal year. Currently, the facility stands in an "inactive-mothballed" status, as opposed to the category of "inactive-abandoned," which is synonymous with "demolition." As part of its management policy for the facility, the Aerospace Technology Facilities Division has determined that "relatively small and portable components and items such as valves, transducers, spare parts, instrumentation, etc. will be made available to LeRC facilities and programs." Larger items are to be retained at the facility until the facility is listed as "inactive-abandoned."


   View looking south down Lower South Road at the Rocket Engine Test Facility complex. Note steps to control room in right foreground.

2. C-45652, n.d.
   Rear view looking east at Rocket Engine Test Facility. South Area Propellant Storage and Transfer area is located on the rise in the background.

3. C-83-2643, 1983
   Photograph of rocket engine in test cell.

   Interior view of test cell with rear doors open.

5. C-85-2371, 1983
   View of rocket engine mounted horizontally in test cell.

6. C-74433
   Schematic drawing of the Rocket Engine Test Facility.
INEROFFICE MEMORANDUM

Date: 1/10/02
From: Rich Kalynchuk
Dept: 0540 MS 6-4
Tel. No: 433-8620

TO: DANIEL WHITE

CC: MICHAEL BLOTZER
     JOSEPH MORRIS
     KEVIN COLEMAN
     BONITA SMITH

SUBJECT: OHIO HISTORIC INVENTORY FORMS

In 1996, Gray and Pape, Inc. performed a cultural resources survey at Lewis Research Center. One of their work products was the recordation of all known buildings and structures on Ohio Historic Inventory (OHI) forms. Not every building and structure has its own OHI form. Buildings and structures that form a complex have been consolidated.

All of the forms have been scanned into portable document format and recorded onto the attached CD. Some of the pages are tilted and some of the photographs did not get optimum exposure. As a consequence, the images on the disk are recommended for use only at GRC. If you need high quality images of any of the files, please contact me.

Please note that NASA has not officially accepted these forms.

My thanks to Sandra Jacobson of IDI for linking the forms in the Table of Contents.