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United States Department of the Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form

This form is used for documenting multiple property groups relating to one or several historic contexts. See instructions in How to Complete the Multiple Property Documentation Form (National Register Bulletin 16B). Complete each item by entering the requested information. For additional space, use continuation sheets (Form 10-900a). Use a typewriter, word processor, or computer to complete all items.

_X_ New Submission ___ Amended Submission

A. Name of Multiple Property Listing

Lustron Houses of Oklahoma

B. Associated Historic Contexts

Prefabricated Housing
Post-World War II Residential Housing
Lustron Corporation, 1946-1950
Lustron Development in Oklahoma, 1949-1950

C. Form Prepared By

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D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation. (__ See continuation sheet for additional comments.)

State Historic Preservation Officer — 1-20-09
Signature and title of certifying official — Date

State or Federal agency and bureau

I hereby certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Signature of the Keeper — Date

E. Statement of Historic Contexts

Discuss each historic context listed in Section B.

Prefabricated Housing

The Lustron house emerged in the 1950s as a practical, prefabricated solution to the post-World War II housing crisis. However, the concept of prefabricated housing is not new. Prefabricated building elements have been used in house construction since the beginning of the Industrial Revolution and in the early to mid nineteenth century, companies in England and in the United States were producing components for metal housing that were shipped around the world. These metal housing units were considered temporary, cheap, and completely inappropriate for long-term, single-family residences. For many years, however, the American public had warmed to the concept of prefabricated housing built from traditional materials. Catalog and kit homes available for sale from Sears, Roebuck and Company, Aladdin, and a host of other prefabricators were extremely popular in the first decades of the twentieth century, largely because of the incorporation of traditional designs and materials. But early in the twentieth century, a series of housing shortages prompted a second look at metal residential prefabrication. In England, World War I left the nation with a housing shortage and a steel surplus. In 1924, designs for Weir and Atholl houses featured steel-clad timber framing. Also developed in the 1920s, the Dorlonco houses had cement coated metal panels attached to a steel frame. However, the public still rejected these dwellings as too experimental and too expensive. Only a few thousand were constructed before the housing shortage ended. An attempt at metal prefabrication by noted engineer, Buckminster Fuller, known as the Dymaxion house was equally unpopular. During the 1920s, there were at least two German designed metal prefabricated houses. One, designed in the Bauhaus tradition and known as the Muche-Paulick house, featured enameled steel wall panels. Another, known as the Hirsch house, utilized a copper structure and had interior copper panels. Neither the German designs nor the Dymaxion house ever reached full production.

Post-World War II Residential Housing

World War II and the post war period, however, forced builders to reexamine the role of metal prefabrication in the production of single-family homes. During World War II, prefabricated units had allowed the military to provide almost instant shelter for thousands of troops. The government supported production of prefabricated housing during the war, with as many as seventy companies producing 200,000 units. Among the houses were several models that used steel and had standardized parts and modular designs. The housing crisis that followed the war created challenges that the traditional building industry could not solve. Following the war, there existed a severe housing shortage. Government estimates in 1946 announced that nearly 3,000,000 moderate and low priced units were needed to house returning veterans, with 10,000,000 units needed over the next decade. Traditional homebuilders simply were not equipped to meet such demand and prefabricated housing became a peacetime priority.

Because of public pressure from veteran's groups, the federal government quickly became involved in the housing market, offering financial assistance to buyers and financial incentives/advantages to companies willing to help solve the crisis. The federal government actively prompted industry to experiment with factory-produced housing, including metal prefabrication. President Truman brought in Wilson Wyatt, former mayor of St. Louis, to head the government's effort to "solve" the housing crisis. The Veteran's Emergency Housing Act of 1946 was passed to ensure that builders had adequate materials, factory space and financing to get the job done. For buyers, the Veteran's administration and the FHA guaranteed mortgages for veterans and low-income individuals.

Under the stimulus of government support, nearly three hundred firms entered the prefab housing industry in the late 1940s. Of these, three were chosen to receive direct federal loans; two of these – General Panel Corporation (1942-1951) and the Lustron Corporation (1946-1950) were subsidized to produce steel houses. General Panel produced the package House, designed by German émigrés, Walter Gropius and Konrad Wachsmann. The housed used interchangeable, standardized parts that led to a variety of designs. But by 1946, despite professional acclaim and government funding, only a few Package Houses had been built. Design and production changes plagued the project. Without a return on the investment, financing dissolved and the firm was liquidated in 1951. In six years, the company built fewer than two hundred houses. Between 1948 and 1950, the Lustron Corporation would produce more than 2000 traditional-looking metal prefabricated houses. Although its ultimate fate was similar to that of General Panel Corporation, Lustron houses across the country remain a lasting, recognizable, and popular example of this attempt at metal prefabricated housing.

Lustron Corporation, 1946-1950

From humble immigrant roots, Carl Strandlund, a self-taught engineer, would become a noted inventor and ultimately the "creator" of the Lustron House. Strandlund began his career working with agricultural implements, but by the 1930s, he had risen to an executive post with Chicago Vitreous Enamel. Chicago Vitreous fabricated enameled steel panels for use in a variety of household and commercial products. In 1946, Chicago Vitreous had received a commission for 500

Standard Oil gas stations to be built of porcelain enamel steel panels. It was C Strandlund's mission to gain approval from the Civilian Production Administration for the steel necessary to construct those gas stations.

Strandlund's request for steel was denied. It was suggested that Chicago Vitreous pursue the prospect of using its steel panels for residential construction. Although a drastic departure from the traditional product line of Chicago Vitreous, Strandlund had already been considering the possibility of using porcelain enamel coated steel panels for residential construction and he went to work to perfect his rough sketches.

Strandlund turned to Roy Blass and Morris Beckman[1] of Illinois to design a low cost house utilizing porcelain enamel steel panels. The seemingly small rectangular house was touted as the "Model T" of the housing industry – capable of being produced on the assembly line, affordable, and easy to assemble on site. This all-metal house looked relatively traditional, and best of all, it was designed to be virtually maintenance free. Strandlund claimed that a subsidiary of Chicago Vitreous could begin full production on the house within nine months, manufacturing 100 models per day, at a retail price of $7,500.

When the designs were complete, Strandlund returned to Washington to pursue the financing, materials, and factory space necessary to begin production. President Truman's housing expediter, Wilson Wyatt, was impressed and worked with Strandlund to overcome Congressional roadblocks and to ensure that Lustron became a reality. Although Strandlund desired to open a plant in Chicago, the federal government eventually made available the former Curtiss-Wright airplane factory in Columbus, Ohio. This 1.1 million square foot plant covered 23 acres, offering sufficient space for the assembly lines Strandlund envisioned.

Financing was the next challenge. Strandlund initially sought fifty-two million dollars in government loans. The Reconstruction Finance Corporation (RFC) was reluctant to allocate that amount because Strandlund had little to no private equity involved in the project. Strandlund was instructed to raise private funds first and then the government would consider loans. Despite limited success in selling company stocks, Strandlund continued to pursue government loans. Wilson Wyatt eventually resigned over the refusal of the RFC to allocate funding for the company. But congressional and even White House intervention on behalf of Lustron saved the project and in June 1947, legislation passed both houses of Congress authorizing the RFC to loan Lustron up to fifty million dollars. Strandlund received $15.5 million in June 1947 for startup costs, $10 million in 1948, and an additional $7 million in 1949, both subsequent allocations being short-term, working capital. With start up capital in place, Strandlund went to work outfitting the factory (modeled on operations at General Motors and Ford) and hiring a workforce.

The first Lustron model, an Esquire, opened in Chicago in November 1946 and was well received by the public who flocked to see this modern, maintenance-free home. There were subsequent openings in major markets like New York City, Milwaukee, and Washington D.C. Over the next several years, more than 100 model Lustron homes would open to the public. To capitalize on this early popularity, the Lustron Corporation began a massive advertising campaign in early 1948. Full-page advertisements and other stories detailing the advantages of the Lustron appeared in popular national magazines like Life and McCall's, as well as in local newspapers. There was also an illustrated pamphlet, detailing the home's features and innovations. Many of the publications also included a mail-in information card, whereby interested consumers could receive additional information about the houses directly from the company.

Lustrons were extremely popular and orders poured in. But, the factory could not keep up with demand. The first Lustrons came off the assembly line in the fall of 1948. Within a matter of months, there were already 20,000 unfilled orders. Production increased in 1949, but at maximum capacity, the plant's best month was July 1949 when it produced only 268 units. Original production estimates had put plant capacity at 100 units per day. The breakeven point for the company was considered to be 50 units per day, with actual production falling far below that number.

Because of underproduction, Lustron was losing approximately one million dollars each month. With such a bleak financial outlook, there was no way that the company could begin to repay its government debt. In an attempt to curtail the company's losses, there were significant attempts at restructuring and other cost cutting measures.

In 1949, Lustron hired architect Carl Koch and Associates to review the production process. Koch was concerned by the quantity of parts required to build each unit and by over design of some building elements, which were slowing production. It also appeared that the Lustron used more steel than necessary. Changes to the design and the manufacturing process could reduce the amount of steel needed for each unit by one-third. Koch also redesigned the panels to be load bearing and interlock in a manner that concealed the joints, eliminating the need for steel studs and rubber gaskets. He also recommended adopting a uniform window size that would be interchangeable with the wall panels, and many other cost and time saving options. The revised design took better advantage of the materials and production system already in place. It was simpler and more versatile. Unfortunately, Koch's ideas never made it to the factory floor.

In February 1950, the Reconstruction Finance Corporation filed a foreclosure action against the company and Lustron

[1] Beckman, a young architect and graduate of MIT, was responsible for the actual design. His previous experience included working as chief draftsman at Skidmore, Owings, and Merrill. In 1946, Beckman had recently opened an office in Chicago with his new partner, Roy Blass.

went into receivership. Eventually, the workers lost their jobs, the plant closed, and the expensive equipment was auctioned at a fraction of its worth.

The Lustron Corporation proved that a prefabricated house could be manufactured in a manner similar to that of an automobile. Moreover, the corporation demonstrated that prefabricated housing could compete against traditional housing. In essence, "Lustron perfected (the method of construction that) had been pioneered a century before."

Lustron Development in Oklahoma, 1949-1950

Dealer Network

From the conception of Lustron, Strandlund modeled his company and his product on the automobile industry. In order to market the homes, Strandlund established a nationwide network of exclusive Lustron dealers. By the end of 1949, there were 143 dealers in 35 states, three of which were located in Oklahoma. New dealers were trained at the factory in Columbus. Once training was complete, dealers were responsible for how they achieved their sales goals and for construction of sold units. Dealers needed between 50,000 and 100,000 in working capital to start a Lustron franchise. The company required dealers to pay for building components (approximately 6,000) when the units left the factory. This, plus the cost of labor to construct each dwelling, made it difficult for many dealers to capitalize sufficiently to embark on large volume Lustron projects. Despite these early efforts to establish an effective dealer network, much in the manner of automobile distribution, the Lustron Corporation failed to establish a substantial distribution system to handle high-volume sales. Because Lustron sold houses on an individual basis through franchised dealers, the company never achieved the sales volume that characterized the large-scale housing developments of the period like those of Levitt and Sons, Inc. Moreover, because production levels remained low, the cost of each house steadily escalated. Soon the proposed $6,000 house was selling for $11,000, a price greater than that of many as houses became available, dealers faced unexpected costs.

The March 1950 Lustron Corporation *Dealer's Report* indicates that a total of nine Lustron houses had been shipped to Oklahoma as of that date.

The Oklahoma Lustron dealerships/builders were:

1.Hall-Abercrombie, Cushing and Stillwater
Very little is known about the Hall-Abercrombie dealership that operated in the Payne County cities of Cushing and Stillwater. The association between Hall-Abercrombie became evident in looking at 1949 editions of the *Cushing Daily Citizen.* The October 9th, October 12th, and October 23rd papers contain Lustron advertisements for the model built by the dealership in Cushing. The October 10th edition contains a brief article outlining the success of the open house for the Lustron model. The 1945 Cushing City Directory identifies Mr. Hugh Abercrombie as the owner/operator of Abercrombie Hardware in downtown Cushing. City directories from Cushing for the years 1946 to 1951 are missing. The 1952-1953 Cushing City Directory identifies Mr. Abercrombie as working for Oil Properties. The 1948 Stillwater City Directory identifies Mr. William H. Hall as owning Farmer's Supply Company at 1024 Main in Stillwater. The 1949 directory identifies Mr. Hall as a Lustron Homes representative. An employer is not listed in subsequent years' entries for Mr. Hall.

2. Whiteford (Whitford) Mercantile, Nowata
Whiteford Mercantile in Nowata, Nowata County was responsible for the construction of only one Lustron home. This Lustron, built by Charles Whitford, was constructed for Mr. Whitford's son, Bill, his wife, and family. Bill Whitford, Jr., grandson of Charles Whitford, now occupies the home. In looking through local newspapers for the time period 1949-1950, there were no newspaper advertisements for Lustron. The only newspaper mention of the house in Nowata is a September 14, 1949 front-page photograph and caption that notes the house's construction (see appendix).

3. John Hubbell Homes, Pawhuska
John Hubbell Homes sold and built more Lustrons than all the other Oklahoma dealers. John Hubbell was a Pawhuska native, married to a full blood Osage Indian, a member of the Leahy family. He attended the University of Kansas and held odd jobs in California before returning to Oklahoma. Upon his return, Mr. Hubbell briefly worked on the Leahy family ranch, leaving during World War II to work at Douglass Aircraft in Tulsa. After the war, he went to work as a contractor for Phillips Petroleum, for whom he continued to work for more than 20 years. In the late 1940s, he was awarded a contract to building housing for Phillips' employees, despite having no background in construction. Mr. Hubbell became associated with the Lustron Corporation through Congressman Michael Feighan of Ohio. Feighan was also married to a full blood Osage and the two men became friends and business associates. Feighan was in Congress during the period that Lustron was granted federal loans and was familiar with this company that would eventually settle in his home state of Ohio. Feighan helped Hubbell to establish his own Lustron dealership. According to his son, Mr. Hubbell had an additional contract with the Navy to build Lustrons at naval bases around the country. This never happened, however, because of the subsequent collapse of the Lustron Corporation. But between 1949 and 1950, Hubbell Homes was responsible for the construction of three, possibly five Lustrons in Bartlesville and Tulsa. City directories for Pawhuska from the Lustron period are not available. In looking through local newspapers from 1949 to 1950, the Lustron homes were not advertised locally or in Bartlesville.

All of the Lustron Houses located in Oklahoma are Westchester two-bedroom models. Two have a single car Lustron garage.

F. Associated Property Types

I. Name of Property Type:
Lustron House

II. Description

Because of its low-maintenance materials and its modern styling, the Lustron House attracted significant attention from the government, the public, and the media as an attractive and affordable solution to the post-war housing crisis. Unlike its prefabricated predecessors, the modern conveniences and more traditional architectural styling of the Lustron allowed it to achieve marketplace success far beyond that of earlier metal prefabs. This single story rectangular home featured a low-pitched gabled roof and a recessed front porch, similar to that of other traditional homes of the period. Ahead of its time in terms of design, the plan for this 1,000 square foot home emphasized openness and utilized built-ins to maximize space in almost every room. It featured an exterior and interior skin of enameled steel panels bolted to a structural steel frame and a concrete slab foundation.

The interior and exterior porcelain enamel coated steel panels are the characteristic feature of the Lustron. The exterior panels of the Lustron measured two feet square. The interior panels were two feet wide and ran eight feet from floor to ceiling. These interior panels were bolted to the wall studs. Enameled ceiling panels were four feet square, and wall panels in the bath and kitchen were two feet square. The house also included prefabricated enameled steel window frame and doors jambs, gable ends, gutters, soffit, and roof "shingles."

The steel panels used in the construction of a Lustron were stamped out by huge presses, dipped in pickling baskets, sprayed with enamel, and then baked in giant drying ovens. The matte-finished panels were durable, easy to maintain, and strong. Attached to the frame in the field, the panels were screwed to the studs along a grooved channel and interlocked along hidden tongue-and-groove joints; polyvinyl chloride gaskets were placed between the flush-fitting panels. Each building element in the Lustron.was fashioned expressly for Lustron and made on the factory floor. No other products would fit.

Although steel houses in the past had suffered problems with insulation, the Lustron house had several energy-efficient features. In addition to the thermal break created by the interior and exterior walls, each exterior panel was insulated on the inside surface with fiberglass batting one and one half inches thick. In addition, a full-house plenum chamber was created by attaching insulation boards to the top member of the double lower chord of the roof truss and hanging steel ceiling panels from the lower member of the bottom chord. An oil or gas forced-air furnace circulated heat through the plenum, and the ceiling panels served as a radiant heat source directing warm air to the living spaces below. The system worked well, although its efficiency was undercut by heat loss attributable to the concrete slab floor and the single glaze windows.

Twenty percent of the wall space in the Lustron was devoted to built-in cabinets, dressers, and closets, manufactured as complete units and plugged into the house at the building site. Sliding, pocket doors were employed throughout the house, and the floor was covered with easy-to-maintain asphalt tiles. Another popular feature was Lustron's unique combination dishwasher/clothes washing machine. The Lustron was the only house being built during that period to offer such an innovation. The permanence and durability of the house were also key selling points. Walls could be hosed down with water and never required painting. In postwar America, newly conscious of comfort and convenience, the Lustron house was decidedly up-to-date.

Models

According to Lustron promotional materials there were 8 different house types: Three models with either two-bedroom or three-bedroom floor plans. These were the Newport, the Meadowbrook, and the Westchester. The Westchester model also came in a deluxe (built-in amenities) or standard (economy) version. The Westchester two-bedroom model is the only one of the three found in Oklahoma. (Approximately 90 percent of all Lustrons sold were the two-bedroom plan).

Westchester –

The first and most widely sold Lustron model was the Westchester. The two-bedroom design measured 31' X 35' on the exterior with a 6' X 12' corner recess for an entrance porch (1,085 square feet).

III. Significance

The Lustron house is significant in architecture and engineering for its association with important developments in post-World War II prefabricated housing; as an excellent example of an innovative and unusual type of prefabrication employing

assembly line production of all-steel building components including porcelain enamel steel panels; and for its modern gabled-roof ranch design. The Lustron house was a technologically advanced prefabricated answer to the housing shortage after the war.

Lustron properties are significant under architecture and engineering if they are an example of one of the aforementioned models of Lustron houses and if they have retained historic integrity. Lustron houses meet Criterion A as an example of the type of innovative use of modern material technology and marketing techniques that were used to meet the demands of a severe housing shortage following World War II. Lustron houses meet Criterion C as examples of the type of creative house design and construction used for prefabricated housing during the late 1940s.

Lustron houses in Oklahoma are eligible for inclusion in the National Register of Historic Places under Criterion C, as a regionally rare and early example of a metal, prefabricated house designed to help alleviate the housing crisis in the post World War II era. As such, these houses are historically significant for their contribution to residential housing in Oklahoma following World War II.

IV. Property Type Registration Requirements

In order to be eligible for the National Register of Historic Places as part of this Multiple Property Submission, a property must be a single story, ranch style home manufactured by the Lustron Corporation. All Lustrons must retain their original porcelain enamel steel exterior wall and roof panels, as well as the majority of the original steel casement windows. Additions to the original home must not be easily visible from the street and should not obscure or overwhelm the original form. The interior should retain a significant portion of the original enamel steel ceiling and wall panels. Updates to heating and air systems or replacement of functionally obsolete items, such as the combination dishwasher/clothes washer do not detract from the overall integrity of a Lustron. Because most Oklahoma Lustrons are currently rental properties, it may difficult to assess the integrity of the interior. For that reason, if sufficient exterior integrity remains, the house will be considered eligible for listing in the National Register of Historic Places.

See continuation sheets for additional property types.

G. Geographical Data

Lustron Houses in Oklahoma (Complete Listing)

	Model	Color	Garage
Bartlesville			
519 SE Comanche	Westchester	Gray	
1554 SW Rogers	Westchester	Yellow	
1574 SW Rogers	Westchester	Gray	
Cushing			
1135 E Moses	Westchester	Gray	X
1138 E Cherry	Westchester		
Nowata			
1012 W Davis	Westchester	Gray	
Stillwater			
2119 W Sherwood	Westchester	Gray	X
915 W 8th	Westchester	Gray	
Tulsa			
1713 N Harvard	Westchester	Blue	

H. Summary of Identification and Evaluation Methods

Discuss the methods used in developing the multiple property listing.

This multiple property nomination is largely based upon sources listed in Major Bibliographical References, from newspaper clippings, interviews and site visits with Lustron owners and the son of a former franchise dealer. The Lustron Development in Oklahoma section is a preliminary document based upon Lustron Corporation sales records, newspaper clippings, as well as telephone calls and interview with Lustron owners and the son of a former franchise dealer.

I. Major Bibliographical References

Architectural Forum. "The Factory-Built House is Here, But Not the Answer to the $33 Million Question: How to Get It To Market. May 1949.

Cushing Daily Citizen

Fetters, Tom. *The Lustron Home: The History of a Postwar Prefabricated Housing Experiment.* Jefferson, N.C.: McFarland, 2002.

James, Alex. *An Employee's Perspective of the Lustron Home: the Real Reason Why Lustron Failed.* Columbus: privately printed, 2003.

Jandl, H. Ward. "Lustron: The All-Metal Dream House" in *Houses of Yesterday's Tomorrow.* Washington, D.C.: Preservation Press, National Trust for Historic Preservation, 1991.

Keister, Kim. "Showing Its Metal." *Historic Preservation: The Magazine of the National Trust for Historic Preservation.* January-February 1995.

Kelly, Burnham. *Prefabrication of Houses: A Study by the Albert Farwell Bemis Foundation of the Prefabrication Industry in the United States.* New York: Technology Press of Massachusetts Institute of Technology and Wiley, 1951.

Knerr, Douglas. *Suburban Steel: The Magnificent Failure of the Lustron Corporation, 1946-1951.* Columbus: Ohio State University Press, 2004.

Lustron Corporation. *Lustron Dealer Performance Report of 1950.* Columbus.

Mitchell, Robert A. "What Ever Happened to Lustron Homes?" *APT Bulletin* vol. XXIII, No. 2, 1991.

Niedermeier, Lynn E. *A House Like a Ford: The Prefab Porcelain-Steel Lustron Home, 1946-1950.* Tennessee State University Press, 1992.

Nowata Daily Star

Burley, Ray H. "Stillwater's Lustron Homes Still Shine." *Payne County Historical Review* vol. 1, no. 1, 1980.

Riaflo, Lisa. *Lustron Houses in Georgia Multiple Property Nomination.* Atlanta: Historic Preservation Division, Georgia Department of Natural Resources, 1995.

Saxman-Rogers, Michelle C. *Lustron Houses in South Dakota Multiple Property Nomination.* Pierre: South Dakota State Historic Preservation Office _____.

Stillwater News Press

Wolfe, Tom and Leonard Garfield. "A New Standard for Living: The Lustron House, 1946-1950." *Perspectives in Vernacular Architecture.* Columbia: The University of Missouri Press, 1989.

Wright, Gwendolyn. *Building the Dream: A Social History of Housing in America.* New York: Pantheon Books, 1981.

Primary location of additional documentation:

X	state historic preservation office	__	local government
__	other state agency	__	university
__	Federal agency	__	other

specify repository: _____