# National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *Guidelines* for *Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documents. Here "NA" for "not applicable." For functions, siyles, materials, and areas of significance, enter only the categories and subcategories listed in the instructional space use continuation sheets (Form 10-906a). Type all entries.

(Form 10-0003). Type an enuice.					
1. Name of Property					
historic name	Huffman Prairie Flying	r Field			
other namee/site numberman Pra	irie: Huffman Field; Wi	right Flying Field			
2. Location					
street & number vlon Road an	d Marl Road	not for publication			
city, town Wright-P	atterson Air Force Bas	e vicinity			
state Ohio code	OH county Greene	code 5/ zip code			
3. Classification					
Ownership of Property	Category of Property	Number of Recources within Property			
private	building(s)	Contributing Noncontributing			
public-leas	district	buildings			
public-State	x site				
X public-Federal	structure	1 structures			
ال رادي محمد معني الرادي	object	objects			
Name of related multiplo property list Wright Brothers-Associa		Number of contributing resources previously			
	ted properties in the	listers in the Notlenal Register _1			
Dayton, Ohic, Area					
4. Sizie/Forcent Agonay Contine					
L nomination in request for determination of eligibility meets the documentation standards for registering properties in the National Register of Heastle Picco and mette the procedural and professional requirements set forth in 30 CFR Part 60. In my opinian, the property meets and deco new meet the National Register Gifterio. L See community show.					
Signature of centifying official	na an a	Deta			
State of Federal agency and bureau					
In my opinion, the property me	ets does not meet the National Re	egister criteria. See continuation sheet.			
Signature of commenting or other offic	ial	Date			
State or Federal agency and bureau					
5. National Park Service Certific	ation				
I, hereby, certify that this property is:					
entered in the National Register.					
See continuation sheet.					
determined eligible for the Nation	al				
Register. See continuation sheet					
determined not eligible for the	•				
National Register.					
Hatonar Hoyistor.					
removed from the National Regist	er.				
other, (explain:)					

Historic Functions (enter categories from instructions)	Current Functions (enter categories from instructions		
TRANSPORTATION: air-related DEFENSE: air facility	DEFENSE: air facility		
7. Description Architectural Classification (enter categories from instructions)	Materiais (enter categories from instructions)		
n/a	foundation		
	otherearth		

Describe present and historic physical appearance.

When the Wright brothers began their flying experiments at Huffman Prairie in 1904, it was a farm meadow used to pasture livestock. Covered with prairie vegetation, the field was open and flat with an uneven surface. The 72 acre site was damp and subject to occasional flooding until the nearby Huffman Dam was built in 1922 for flood control.

The first improvement the Wrights made to the field was to build a hangar. Constructed in 1904, the structure was a low wooden gable roofed shed with horizontal drop siding. One of the short walls under a gable end opened the full width of the building to form a large awning door that could be propped open to admit a flying machine pushed in wing tips first. This first hangar was converted into a livestock shelter in the winter of 1904 and was torn down sometime thereafter.

Also during 1904, the Wrights developed a derrick and weight launching system and positioned it on Huffman Field. Dropping a 1600 pound weight from the top of a thirty foot derrick sent the plane, attached by ropes run through pulleys, rolling down a short launching rail. The derrick and weight launching system was used at Huffman Field until 1910 when the Wrights replaced the system with the use of airplane skids.

In 1905, the Wrights constructed another hanger on Huffman Field, similar in design to the 1904 structure, but larger in size. This hangar remained until ca. 1910 when the Wrights built a new one near the intersection of the Yellow Springs and Springfield Pike for the Wright Company. Larger and wider, the new building also had a low pitched gable roof of frame construction covered with horizontal board siding. Four large vertical board doors across the front featured two small access doors. The wooden hangar was used both for the Wright School of Aviation and for testing company

Statement of Significance Certifying official has considered the significance of this propert     Inationally	y in relation to other properties: tatewide locally	
Applicable National Register Criteria A B C C National Historic Landmark Criteria: Criteria Considerations (Exceptions) A B C C	]D ] <sup>1</sup> , 2 ]D' []E []F []G	
Areas of Significance (enter categories from instructions) Transportation Invention Engineering	Period of Significance 1904-1905 1910-1916	Significant Dates
	Cultural Affiliation	
Significant Person Wright, Wilbur and Orville	Architc::t/Builder n/a	

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

Huffman Prairie Flying Field is significant because of its outstanding role in the development and testing of the world's first practical airplane, the Wright Flyer III. Moreover, Huffman Field, touted by some historians as the cradle of aviation and the world's first aerodrome, is the flying field where Wilbur and Orville Wright obtained the necessary practice and experience to master the principles of flight. The Wright brothers themselves always said they really learned to fly on Huffman Field.<sup>1</sup>

Although the initial powered, controlled, and sustained flights were made by the Wrights at Kitty Hawk, North Carolina, in 1903, it was at Huffman Field in 1904 and 1905 that the Wrights continued their quest to conquer the air and developed the world's first practical airplane. At Huffman Field, the Wrights perfected the technique of flying and developed a powered airplane completely controllable by the pilot; able to bank, turn, circle, and make figure eights; withstand repeated take-offs and landings; and remain airborne trouble-free for more than half an hour.' Huffman Field is significant as the location of both the Wright Company's School of Aviation and Exhibition Company. Huffman Field was made famous by the Wright brother's School of Aviation which operated there from 1910 through 1916 and trained many pilots for World War I. The field also served as the testing grounds for the Wright Company; every model of plane designed and manufactured by the Wright Company was test flown at Huffman Prairie. The world's

<sup>1</sup>Carillon Park, <u>The Wright Brothers</u> (Dayton, Ohio: Carillon Park, n.d.), p. 17.

<sup>2</sup>Charles Gibbs-Smith, "The World's First Practical Aeroplane," <u>NCR WORLD</u>, Fourth Quarter, 1978, p. 18. -----

Previous documentation on file (NPS):  preliminary determination of individual listing (36 CFR 67) has been requested  previously listed in the National Register  previously determined eligible by the National Register designated a National Historic Landmark recorded by Historic American Buildings Survey #  recorded by Historic American Engineering Record #	See continuation sheet         Primary location of additional data:         State historic preservation office         Other State agency         Federal agency         Local government         University         Other         Specify repository:
	Wright, State University
10. Geographical Data Acreage of property	Wright-Patterson AFB
UTM, References A 1/16 1/15,017,3,01 14,411,018,2,0 Zone Easting Northing C 1/16 1/15,1/18,1.01 14,410,914,2,01	$B [ \frac{1}{2} ] [\frac{7}{5} ] [\frac{1}{8} ] [\frac{1}{2} ] [\frac{1}{4} ] [\frac{1}{2} ] [\frac{1}{$
Verbal Boundary Description	
The boundary of Huffman Prairie shaped area shown on the accompa	Flying Field is the irregularly- nying site map.
	See continuation sheet
Boundary Justification	
	historically associated with the map drawn by Orville Wright.
11. Form Prepared By	t, Historian; David G. Richardson,
name/title Jill York O'Bright	t, Historian, David G. Richardson,

name/title	Jill York O'Bright, Histo	rian; Dav	Tu-G. Richardson,
organization	Historian; and William S. Harlow, Hi	date	January 18, 1990
street & number	National Park Service, Midwest Regio	telephone	
city or town	1709 Jackson Street	state	
	Omana		<u></u>

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planes. The 1910 hangar was razed by the Miami Conservancy District in 1938.

Overall, the terrain has changed little since the Wright brothers used Huffman Prairie. Today, a portion of Huffman Field and a large adjoining land area remain undisturbed prairie remnants and are designated as a Ohio Natural Landmark. However, no buildings dating to the Wright experiments remain on the site. A poured concrete pylon now stands where the 1904 hangar stood. Built in 1939, the pylon rises from a square footprint to carry a six inch thick overhanging slab sloped at a thirty degree angle. This square slab is visible from the terrace of the monument at Wright Brothers Hill to the southwest. In addition to the form boards visible in the concrete work an ornamental groove is molded into the monolithic structure. The concrete structure is painted white and carries a brass plaque above the access hatch. Trimmed shrubbery surround the monument and sign, and the grass is mowed in a small area immediately adjacent to the pylon.

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first air cargo shipment was made from Huffman Field in 1910, thus adding to the site's historical significance. Huffman Prairie Flying Field has made a significant contribution to America's history of aviation.

#### <u>History</u>

On December 17, 1903, the Wrights made the world's first powered and controlled airplane flights. These flights were a major breakthrough in the brother's conquest of the air; however, they represented only another stage in the evolution of developing a flying machine of practical utility. The longest flight at Kitty Hawk lasted less than a minute and covered a distance of only 852 feet.<sup>3</sup> As Aviation historian Charles Gibbs-Smith contends:

They had made the first powered, sustained, and controlled flights, and possessed the first potentially practical flying machine. . . The Wright's task now was to produce a properly practical machine, which they evolved successfully in 1904 and 1905."<sup>4</sup>

In January 1904, the Wrights began work on an improved flying machine, the 1904 Wright Flyer II. Unlike the prior years, when the Wrights traveled to Kitty Hawk to conduct their aviation experiments, the extensive experiments planned for 1904 and 1905 were conducted closer to Dayton to avoid the great expenses associated with trips to Kitty Hawk. As author Fred Kelly wrote:

If the machine was to be practical, many improvements would be necessary, and they would need more experience in flying. Much practice would be required, and that would mean more expense in proportion to income, for they would have less time for building and repairing bicyc-

<sup>3</sup>Tom D. Crouch, <u>The Bishop's Boys: A Life of Wilbur and</u> <u>Orville Wright</u> (New York: W.W. Norton, 1989), p. 271.

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<sup>6</sup>Charles H. Gibbs-Smith, <u>Aviation: An Historical Survey from</u> <u>its Origins to the End of World War II</u> (London: Her Majesty's Stationery Office, 1970), p. 101.

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les. But they decided to devote to aviation whatever amount of time seemed necessary.<sup>5</sup>

Thus to evade costly and lengthy trips to experiment with their machines, the Wrights sought a suitable locale closer to home.

They selected Huffman Prairie for their flying field. The 100acre cow pasture located about eight miles east of Dayton had two distinct advantages, it was conveniently located adjacent to a Simms Station on the Dayton, Springfield, and Urbana Interurban (locally known as the "Damned Slow and Uncertain" interurban), thus providing handy and economical transportation to the field; and it was relatively isolated, thus granting.privacy to experiment.<sup>6</sup> The owner of Huffman Prairie, Torence Huffman, a west side Dayton banker, agreed to let the Wrights use the field rent-free if they would drive his cows away to a safe place and not run over them.<sup>7</sup>

Huffman Prairie, however, was far from an ideal flying field, especially in comparison to the grounds at Kitty Hawk. Wilbur noted the conditions to fellow aviation pioneer Octave Chanute:

Our Kitty Hawk grounds possess advantages not to be found at our present location, but we must learn to accommodate ourselves to circumstances. At Kitty Hawk we had unlimited space and wind enough to make starting easy with a short track. If the wind was very light we could utilize the hills if necessary in getting the initial velocity. Here we must depend on a long track, and light winds or even dead calms. We are in a very large meadow of about 100 acres. It is skirted on the west and north by trees. This not only shuts off the wind somewhat but also probably gives a slight downtrend. However, this

<sup>5</sup>Fred C. Kelly, <u>The Wright Brothers: A Biography Authorized</u> by <u>Orville Wright</u> (New York: Harcourt Brace, 1943; reprint ed., New York: Farrar, Straus and Young, 1950), p. 120.

<sup>6</sup>Lois E. Walker and Shelby E. Wickam, <u>From Huffman Prairie to</u> <u>the Moon: The History of Wright-Patterson Air Force Base</u> (Washington D.C.: U.S. Government Printing Office, n.d.), p. 3.

<sup>7</sup>Kelly, <u>Wright Biography</u>, p. 123.

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matter we do not consider anything serious. The greater troubles are the facts that in addition to cattle there have been a dozen or more horses in pasture and as it is surrounded by barbwire fencing we have been at much trouble to get them safely away before making trials. Also the ground is an old swamp and is filled with grassy hummocks some six inches high so that it resembles a prairie-dog town.<sup>8</sup>

Chanute acknowledged the situation by replying, "Meantime I hope that you will use great caution in your experiments, and will not run into a cow. I shall be glad to know how you are progressing."

Despite less than perfect conditions, the Wrights made progress with the flying machine at Huffman Field. By mid-April 1904, the brothers erected a wooden hangar on the pasture, thus establishing what aviation historian Gibbs-Smith called the world's first airport.<sup>10</sup> On May 26, Orville made the first of more than one hundred starts of the 1904 flying season. On September 7, the brothers used a catapult starting device for the first time. Consisting of a 1600-pound weight attached to the airplane by ropes and pulleys and hung from inside a thirty-foot derrick positioned at the end of the launching monorail, the device allowed the Wrights to overcome conditions at Huffman Prairie and further increased the practicality of their invention by reducing the dependency on weather conditions. The catapult allowed a machine to "be put into the air after a run of only fifty feet, even in a dead calm."<sup>11</sup> The plane could now be launched almost anytime, no

<sup>8</sup>Wilbur Wright to Octave Chanute, 21 June 1904, in <u>The Papers</u> of Wilbur and Orville Wright: Including the Chanute-Wright Letters and Other Papers of Octave Chanute, 2 vols., ed. Marvin W. McFarland (New York: McGraw-Hill, 1953), 1:441.

<sup>9</sup>Octave Chanute to Wilbur Wright, 25 June 1904, in <u>Papers of</u> <u>Wright</u>, ed. McFarland, 1:443.

<sup>10</sup>Charles H. Gibbs-Smith, "The World's First Practical Aeroplane," <u>NCR World</u>, Fourth Quarter 1978, p. 19.

<sup>11</sup>Kelly, <u>Wright Biography</u>, p. 128.

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matter what the weather conditions. The Wrights used this catapult launching technique until 1910 when they began using skids.<sup>12</sup>

On September 15, 1904, the Wrights again made aviation history, making the first airborne turn in a flying machine. Five days later, Wilbur flew the world's first complete and controlled circle in an airplane. By December 9, 1904, the Wrights had made a total of 105 starts for a total flight time of about fifty minutes.<sup>13</sup>

The 1904 season at Huffman Field was quite successful. Although the flights of the year remained short and accidents were frequent, the year was very beneficial in the experience gained by the brothers. However, the machine had not yet been proven to be a machine of practical utility.

In spring 1905, the Wrights returned to Huffman Field to capitalize on and continue with their experiments of the previous season. They erected a new enlarged hangar to replace the 1904 structure which had been turned into a livestock shelter, and by May, they were assembling the new Wright Flyer III.<sup>14</sup> On June 23, 1905, Orville Wright made the first flight of the season. During the first month of testing, the Flyer III showed no improvement in performance over the 1904 aircraft. The longest flight of the period was only 19.5 seconds and damages and accidents were daily It was only after some rebuilding and redesigning occurrences.<sup>13</sup> that the Flyer III emerged as the world's first practical airplane. At Huffman Field with the 1905 machine the Wrights finally learned the secrets of powered flight and solved its basic problems.<sup>10</sup> At Huffman Field, the brothers learned to successfully bank, turn, circle, and make figure eights with ease and under the complete control of the pilot. On October 5, Wilbur made the longest flight

<sup>12</sup>Gibbs-Smith, <u>Aviation</u>, 102.

<sup>13</sup>Renstrom, <u>Chronology</u>, p. 140.

<sup>14</sup>Walker and Wickam, <u>Huffman to Moon</u>, p. 4.

<sup>15</sup>Tom D. Crouch, "The 1905 Wright Flyer: A Machine of Practicality," <u>Timeline</u>, August September 1985, p. 28.

<sup>16</sup>Gibbs-Smith, "First Practical Aeroplane," p. 18.

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of year, flying for more than thirty-nine minutes and making twenty-nine rounds of the field, thus proving the reliability and endurance of the machine.<sup>17</sup> That same day, the <u>Dayton Daily News</u> published an article declaring that the Wrights were making sensational flights every day at Huffman Prairie.<sup>18</sup>

By the end of the 1905 flying season, the Wrights knew they had their "baby." However, until they could secure a patent and until a contract for the purchase of the Wrights' knowledge and invention could be completed, the brothers would not fly. The number of spectators and newspapermen gathering at Huffman Field was increasing, thus forcing the brothers to discontinue their experiments if secrecy was to be maintained. After two years and 155 flight starts at Huffman Field, the Wright brothers, having finally achieved their goal of developing a flying machine of practical utility, packed up their equipment and abandoned Huffman Prairie Flying Field.

The skies over Huffman Field, however, did not remain quiet for long. In 1910, after the Wrights successfully secured a patent for their flying machine and arranged for Wright designed and licensed planes to be sold abroad in Germany, France, and Great Britain, they incorporated the Wright Company of America and opened a factory in Dayton. Not only did this company intend to manufacture and sell airplanes, it also planned to train pilots and operate an exhibition flying team. Consequently, they opened both a Wright Exhibition Company and Wright School of Aviation at Huffman Prairie, and conducted flight tests daily at the field.

The exhibition company, started in March of 1910, was organized to increase the prestige and acceptance of aviation and to create a market for the airplane; however, it also served as a profitable sideline for the Wright Company. The exhibition team, which was managed by Roy Knabenshue, operated out of a new hangar erected on Huffman Field, and flew at airshows, carnivals, county fairs, and

<sup>17</sup>Renstrom, <u>Chronology</u>, p. 17.

<sup>18</sup>Fred Howard, <u>Wilbur and Orville: A Biography of the Wright</u> <u>Brothers</u> (New York: Alfred A. Kopf, 1987), p. 184.

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other large public gatherings throughout the country. The team's first exhibition was in Indianapolis, Indiana, on June 13, 1910.<sup>19</sup>

The Wright School of Aviation also opened at Huffman Field in the spring of 1910. Although previously operating a winter flying school in Montgomery, Alabama, Orville Wright, the principal instructor of the school, moved the permanent operations to Huffman Field in Dayton in May 1910.<sup>20</sup> Here at Huffman Field, from 1910 to 1916, Orville and his staff of instructors operated a school billed as "superior to any in this country, if not in the world."<sup>21</sup> The flight school produced "competent pilots eight or ten days after their first trip in an aeroplane."<sup>22</sup> Overall, one hundred and nineteen students were trained at Huffman Field between May 1910 and February 1916.<sup>23</sup> Among the more notable students trained at Huffman Prairie were Lt. Henry H. "Hap" Arnold, Commander of the U.S. Army Air Corps in World War II; Griffith Brewer, the first Englishman to fly an airplane; Cal P. Rodgers, the first person to fly across the U.S.; A. Roy Brown, the pilot who shot down the Red Baron during World War I; and three daring women: Rose Dugan, Mrs. Richberg Hornsby, and Marjorie Stinson.<sup>24</sup>

Besides giving flight instruction to the students at the Wright School of Aviation, Wilbur and Orville Wright continued to test new and experimental Wright company aircraft at Huffman Prairie. Almost all of the airplane models manufactured by the Wright Company between 1910 and 1916 were test flown at Huffman Prairie. Wilbur made his last flight as a pilot in America at Huffman Field on May 21, 1910; he was test flying the Wright Model B. Among the

<sup>19</sup>Renstrom, <u>Chronology</u>, p. 51.

<sup>20</sup>Ibid., p. 50.

<sup>21</sup>Wright Company, "Wright School of Aviation," n.d., Wright Brothers Collection, Wright State University, Dayton, Ohio.

<sup>22</sup>Ibid.

<sup>23</sup>Walker and Wickam, <u>Huffman to Moon</u>, p. 14.

<sup>24</sup>Mary Ann Johnson, <u>A Field Guide to Flight: On the Aviation</u> <u>Trail in Dayton, Ohio</u> (Dayton, Ohio: Landfall Press, 1986), p. 86.

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Wright Company aircraft Orville test flew at Huffman Prairie were the Model B, Model R, Model EX, Model C, and Model E.<sup>25</sup> Orville also tested many automatic flying and safety devices at Huffman Prairie. On February 5, 1914, Orville received the Aero Club of America Trophy for 1913 for the invention of his automatic stabilizer which was tested and developed at Huffman Field.<sup>26</sup> Orville made his last flight as a pilot on May 13, 1918, flying a Wright 1911 model flyer alongside a new Dayton-Wright Company DeHavilland-4.

On November 7, 1910, Huffman Prairie was also the starting point of America's first commercial air-freight flight. Witnessed by Orville and Katharine Wright, Wright Company pilot Phil Parmalee began a sixty-two mile flight to Columbus, Ohio, to deliver ten bolts of silk to a local department store.<sup>27</sup> Although the flight was designed as a promotion for the department store, it represented the future possibilities of air freight.

In 1916, about one year after Orville Wright sold the Wright Company, the flight school at Huffman Field closed. In 1917, Huffman Prairie became part of Wilbur Wright Field which was established to train Army pilots, armorers, and aircraft mechanics for World War I.<sup>28</sup> Huffman Prairie is still associated with the field of aviation, being a part of Wright-Patterson Air Force Base.

Huffman Prairie Flying Field is historically significant for the notable contribution it has made to America's history in the areas of transportation, invention, and engineering. At Huffman Prairie, the Wright brothers not only tested the last of their experimental flyers, but mastered the principles of flight. Wilbur noted:

There are only two ways of learning to ride a fractious horse: one is to get on him and learn by actual practice how each motion and trick may be best met; the other is

<sup>26</sup>Ibid., p. 206.

<sup>28</sup>Johnson. <u>Field Guide</u>, p. 86.

<sup>&</sup>lt;sup>25</sup>Renstrom, <u>Chronology</u>, pp. 203-08.

<sup>&</sup>lt;sup>27</sup>Ibid., p. 53.

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to sit on a fence and watch the beast awhile, and then retire to the house and at leisure figure out the best way of overcoming his jumps and kicks. The latter system is the safer, but the former, on the whole, turns out the larger proportion of good riders. It is very much the same in learning to ride a flying machine; if you are looking for perfect safety you will do well to sit on a fence and watch the birds, but if you really wish to learn you must mount a machine and become acquainted with its tricks by actual trial.<sup>29</sup>

Here at Huffman Prairie, the Wrights received the necessary practice in maneuvering and controlling the airplane to develop the world's first practical airplane and overcome the "tricks" of flying. At the Huffman Prairie Flying Field, the brothers conquered the air and ushered in the age of the airplane. The later use of Huffman Prairie as a leading aviation testing field and flight school attests to the new era of flight the Wright brothers introduced.

Today, the site retains its integrity as a large open field. The adjacent and partially overlapping natural prairie remnant, designated an Ohio Natural Landmark, contributes to the overall setting. The historic structures are gone; the only structures on the field are a ten foot by ten foot cement "pylon" erected ca. 1939 to mark the location of the hangar and an interpretive sign.<sup>30</sup>

<sup>29</sup>Gibbs-Smith, <u>Aviation Survey</u>, pp. 222-23.

<sup>30</sup>The pylon was erected in 1939 as part of a memorial to the Wright brothers; however, the pylon does not contribute to the historical quality and value of Huffman Field, and enhancement plans call for the removal of the structure. The location of the pylon is designated as the site of the 1904 hangar, although recent evidence suggests that the pylon may actually be on the site of the 1905 hangar. See Walker and Wickam, <u>Huffman to Moon</u>, p. 5; and Chris Widener and Lois Walker, "Huffman Prairie Enhancement Plan," mimeographed (Dayton, Ohio: Wright-Patterson Air Force Base, 1989).

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