



**NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION**

John F. Kennedy Space Center
Kennedy Space Center, Fla. 32899

Dick Young
305 867-2468

FOR RELEASE: SUNDAY
September 23, 1973
Release #KSC-216-73

SPACE SHUTTLE FACILITY CONSTRUCTION TO BEGIN IN 1974

KENNEDY SPACE CENTER, Fla.--The reshaping of Launch Complex 39 to prepare the nation's Spaceport for its new role as prime launch and recovery site for the Space Shuttle will get underway during the first quarter of 1974.

The first facility to be built will be the runway to be constructed on a northwest - southeast alignment a short distance northwest of the Vehicle Assembly Building.

And like all of the facilities needed to usher in the Space Shuttle era in the late 1970s, it has been designed and engineered to reduce the environmental impact to a minimum.

Among the factors which led to KSC's designation as the prime shuttle site was the existence of Launch Complex 39 with structures and facilities readily adaptable to shuttle requirements.

Saturn V/Apollo Complex 39 with its twin pads and supporting systems is suitable for Space Shuttle needs. The huge VAB - used in the Apollo and Skylab programs - will be modified for erection and mating of the booster and orbiter in the high bay portion. Other areas of the VAB will be adapted to additional space shuttle functions.

The existing Industrial Area will provide shop, laboratory, office and warehousing facilities.

Among the new facilities to be needed for the shuttle era are those required for solid rocket motor receiving, storage and recovery/disassembly, orbiter maintenance and checkout and a landing site for orbiter landings on their return from missions into space.

Darwin Brown, the Shuttle Projects Office Engineer who headed the task force preparing the Environmental Impact Statement required on all federal projects, said "every effort was made to minimize the impact of the new shuttle facilities on the environment.

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"When an existing facility could not be used," said Brown, "studies were initiated to determine the best site, weighing equally the concerns of environment, cost and operations."

During the construction period, it is planned to continually monitor environmental conditions at KSC. It is intended that the information gained will be made available to interested agencies and be used as a basis to guide Center efforts to protect the environment.

This work will be accomplished in cooperation with the local representatives of the Bureau of Sport Fisheries and Wildlife, Department of the Interior.

The impact study notes:

"Considerations of operating modes indicate that long and short term land uses will not affect wildlife productivity. The potential for adverse environmental impact is small; such impacts that are foreseen will be local, short in duration, controllable and environmentally acceptable...Where the possibility of some detrimental impact exists, operational constraints will be imposed to minimize these impacts."

Maintenance of environmental stability and planned multiple land use has been stressed at KSC. KSC is also the location of the Merritt Island National Wildlife Refuge. The 140,000-acre Refuge consists of virtually all of the Spaceport's 83,000 acres of land not in operational use plus the surrounding submerged bottomlands in the Indian and Banana Rivers and Mosquito Lagoon owned by the State of Florida.

The shuttle landing site is comprised of the runway, tow-way, Flight Operations Facilities and equipment for the support and safety of flight operations.

According to Brown, "the initial runway installation will be 15,000 feet long by 300 feet wide with 1,000 foot overruns at each end."

The land area required for the landing site is approximately 540 hectares (1,350 acres). The major portion of the area planned for use is high, dry land. Its use before the Spaceport lands were purchased in the early 1960s was primarily agricultural.

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The sites for the buildings, tow-way and the runway will be excavated to a depth of 45 to 75 centimeters (1.5 to 2.5 feet), removing approximately 1,514,250 cubic meters (1,850,000 cubic yards) of material unsuitable for stabilizing the landing facility.

This material will be retained in the site area and used for diking and as mulch blanket for grassing along the sides of the runway.

Approximately 1,663,875 cubic meters (2,175,000 cubic yards) of fill material will then be added to raise the surface of the runway to an elevation of approximately 3 meters (9 feet) above mean sea level.

Present plans are to use mobile scraper type earth moving machines and/or portable dredges to relocate the fill material required for the project. Studies are now being conducted to determine the most economical methods that would result in minimum impact upon the environment.

Present plans are to construct a borrow canal parallel to the runway to obtain fill material.

Obtaining fill material will displace some wild animals and affect natural vegetation but it is expected that an improved aquatic wildlife habitat and productivity should result.

In fact, from observations during the Apollo construction period, the landscaping, seeding, sodding, planting of trees and shrubs along with the maintenance of drainage ditches seem to enhance the growth of wildlife.

The extensive network of existing mosquito control dikes effectively isolates the construction site from the riverine habitat and controlled drainage of the site using culverts and sediment screens will minimize sedimentation of Banana Creek.

According to Steve Harris, Runway Lead Engineer for KSC's Design Engineering Directorate, the first phase construction contract will be let in the first quarter of Calendar Year 1974 and plans call for completion of Phase I by mid-1976.

Harris said Phase I work consists of site clearing and preparation, embankment and paving of the landing strip and tow-way, airfield lights and partial utilities to support airfield lighting and acceptance tests.

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The remaining two phases in the construction process will bring the landing facility to a state of operational readiness by the end of 1977.

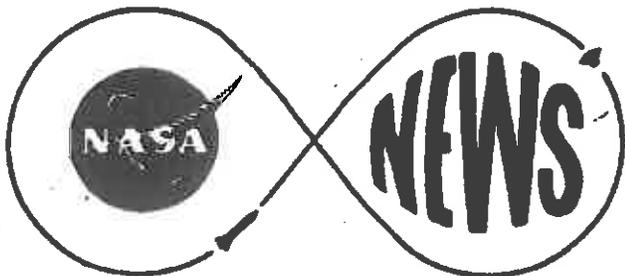
The beginning of construction and modifications on the other shuttle facilities will follow on this schedule, by calendar years: Orbiter Maintenance and Checkout Facility, 1975; Vehicle Assembly Building modifications, 1975; Mobile Launcher modifications, 1975; Launch Pad modifications, 1975; Hypergolic System Facility, 1976; Solid Rocket Booster Facility, 1976, and Parachute Processing Facility, 1976.

Among the other potential sites investigated for the landing facility was the existing Skid Strip at Cape Kennedy Air Force Station. It was found to be lacking in length, lighting and landing aids. Its remoteness from the Launch Complex 39 - VAB area made it both operationally and economically unattractive.

In addition to higher operating costs due to longer vehicle processing time, an increased risk would also have been incurred in that overflight of the KSC Industrial Area and possibly Titusville would have been necessary to assure a two-directional landing capability.

Another factor in eliminating the Skid Strip site was a probable interference with the existing Victor 3 low altitude, main, north-south coastal flyway which borders Merritt Island along the Indian River. This would necessitate a periodic closing of the airway or relocating it to a more westerly non-interfering location.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

John F. Kennedy Space Center
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FOR RELEASE:

January 11, 1974
Release #KSC-7-74

BIDS ASKED ON SPACE SHUTTLE RUNWAY

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has requested bids on the 15,000-foot runway to be built for the Space Shuttle to the northwest of the Vehicle Assembly Building.

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle being developed to carry useful cargo to and from Earth orbit before the end of this decade.

An invitation for bids was issued on December 10 to approximately 50 construction firms, all of which had expressed interest in the contract as a result of pre-solicitation notices.

The work to be performed consists of furnishing labor, equipment and materials required to construct a 15,000-foot runway with associated overruns, apron, towway, taxiway and access roads at KSC's Launch Complex 39.

The project entails construction of:

1. A 15,000-foot runway with a 1,000-foot overrun at each end to include approach, touchdown, high intensity runway edge, taxiway and centerline lights. Runway width is 300 feet.
2. A 30,000 square yard parking apron;
3. A 9,150-foot towway from the runway to the vicinity of the Vehicle Assembly Building;
4. A 650-foot taxiway from the towway to the apron;
5. Drainage systems;

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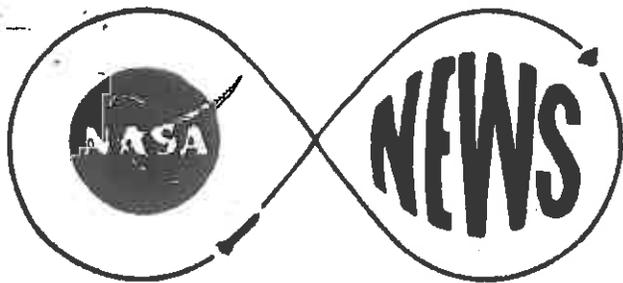
6. Approximately 1.5 miles of access roads;
7. Electrical distribution system with associated cabling, switches, transformers, fixtures and other equipment required to support the lighting systems;
8. Air field lighting vault;
9. Water distribution system, including approximately 7,000 feet of 12-inch water line and other miscellaneous piping;
10. Such other work as required to provide a complete facility in accordance with the plans and specifications.

A pre-bid conference will be held at KSC on January 29 and the bid opening is scheduled for February 22.

The runway will be constructed on a northwest-southeast alignment a short distance to the northwest of the VAB. It will be the first facility to be built in reshaping Launch Complex 39 for its new role in the Space Shuttle program.

The first vertical flight of the Space Shuttle from KSC is scheduled for 1979.

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**NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION**

John F. Kennedy Space Center
Kennedy Space Center, Fla. 32899

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FOR RELEASE:
March , 1974
Release #KSC-49-74

SPACE SHUTTLE RUNWAY CONSTRUCTION CONTRACT TO MORRISON-KNUDSEN

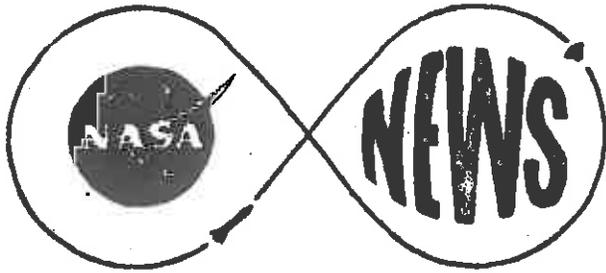
KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$21,812,737 contract for construction of a Space Shuttle runway at the Spaceport to Morrison-Knudsen Co. Inc., Darien, Connecticut.

The contract provides for completion within 850 calendar days after notice to proceed of a 15,000-foot runway with associated overruns, apron, taxiway and access roads.

The 300-foot wide runway is to be built to the northwest of the KSC Vehicle Assembly Building on a northwest-southeast alignment.

The Kennedy Space Center has been designated as the prime launch and landing site for the reusable Space Shuttle being developed to carry useful cargo to and from Earth orbit.

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**NATIONAL AERONAUTICS AND
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FOR RELEASE:
Immediate
Release #KSC-57-74

NOTICE TO EDITORS/NEWS DIRECTORS

KENNEDY SPACE CENTER, Fla.--A Ground Breaking Ceremony marking the beginning of construction of a Space Shuttle Landing Facility at the Kennedy Space Center is scheduled Monday morning, April 1, 1974.

Government officials and officers of Morrison-Knudson Co., contractor for the \$21,812,737 project, will participate.

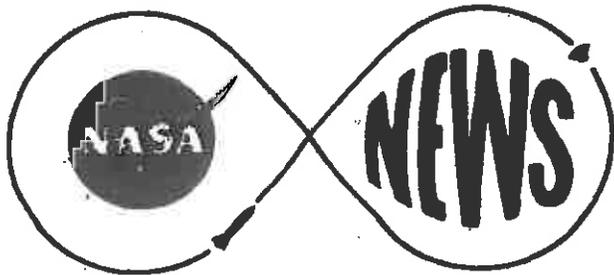
The construction project includes a 15,000-foot runway with associated overruns, apron, towway, taxiway and access roads.

Those desiring to cover the ceremony will be provided transportation from the KSC Public Information Office, Room 1207, Headquarters Building. They should report to the information office by 9:00 a.m.

News media representatives may enter KSC via State Road 3, obtaining their access badges at Temporary Gate 2B, located on the NASA Parkway east of its intersection with the Kennedy Parkway, or via State Road 405 from U. S. 1, obtaining their access badges at the Gate 3 Pass and Identification Building.

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March 27, 1974



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**NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION**
John F. Kennedy Space Center
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FOR RELEASE:
April 24, 1975
KSC-62-75

REINHOLD CONSTRUCTION AWARDED SHUTTLE LANDING FACILITY CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a \$2,376,400 contract for construction of Phase II of the Space Shuttle Landing Facility to the Reinhold Construction Co., Cocoa, Fla.

The project entails construction of a Landing Aids Control Building, Orbiter Landing Instrumentation Facilities and related communications and utility systems.

Phase I of the project - construction of a 15,000-foot-long, 300-foot-wide landing facility northwest of the Vehicle Assembly Building - began April 1, 1974, under a \$21,812,737 contract with the Morrison-Knudsen Co. of Darien, Conn.

Site preparation work has virtually been completed and paving of the runway, towway apron and taxiway with 260,000 cubic yards of cement and aggregate is scheduled to begin in July. The paving task should require from six to eight months for completion.

Completion of Phase I work is scheduled for the summer of 1976. The phase II work awarded under the Reinhold contract is to be completed by the end of 1976.

Other shuttle facility projects to get underway this year include construction of the Orbiter Processing Facility and modification of the Vehicle Assembly Building, a mobile launcher and Complex 39's Pad A to meet the needs of the Space Shuttle era.

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle being developed to carry useful cargo to and from Earth orbit. The first vertical launch from KSC is scheduled for 1979.

The reshaping of KSC for its role in the shuttle program should be completed in mid-1978. Delivery of the first shuttle orbiter to KSC is scheduled for late summer of 1978.

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NASA News

National Aeronautics and
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For Release:
November 3, 1975
KSC 263-75

ORBITER LANDING FACILITY PAVING COMPLETED

KENNEDY SPACE CENTER, Fla.--Another milestone in KSC's preparations for the Space Shuttle era was reached recently with the pouring of the final concrete for the Orbiter Landing Facility.

According to Bill Brannan, Orbiter Landing Facility Project Engineer, the last of the 252,000 cubic yards of concrete for the project was put in place on October 21.

The massive paving project includes a 15,000-foot-long, 300-foot-wide runway with 1,000-foot overruns at each end, a 30,000 square yard parking apron, a 9,150-foot towway from the runway to the vicinity of the Vehicle Assembly Building and a 650-foot taxiway from the towway to the apron.

The paving, which began in May, was done by J. W. Vickrey Enterprises Inc., of Dixon, Calif., under a sub-contract with the Morrison-Knudsen Co. of Darien, Conn., which has the \$21,812,737 prime contract for Phase I of Orbiter Landing Facility construction.

Runway thickness is 16 inches at the center, tapering to 15 inches on the sides, with the concrete resting on a six-inch-thick base of soil cement.

The Orbiter Landing Facility is being built northwest of the Vehicle Assembly Building on a northwest-southeast alignment and is a major facet in the reshaping of KSC's Launch Complex 39 to meet the needs of the Space Shuttle era.

Work still to be completed under Phase I construction includes sealing the concrete joints with neoprene, stabilization of runway shoulders and grooving of the concrete runway to prevent hydroplaning of flight vehicles operating under wet conditions.

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According to Brannan, the grooves will be cut on one and one-eighth inch centers and be one-quarter inch deep and one-quarter inch wide. This process will require approximately five months. The grooving will be done by Cardinal Industries of Conshohocken, Pa.

Runway grooving is a NASA-developed remedy for wet-pavement skidding problems and is now in use at many airports and on dangerous highway sections in about 20 states.

The concrete used in the paving of the landing facility required about 1,000 carloads of cement and 10,000 carloads of crushed limestone and sand aggregate.

The Portland cement and crushed limestone was brought in from Maule Industries near Miami and sand came from the Shands and Baker facility near Ocala.

The 252,000 cubic yards of concrete represents a tremendous amount of material. It is the equivalent of 6.8 million cubic feet, or more than one-twentieth the volume of the 129 million cubic feet in the VAB, one of the world's largest structures.

Phase II of the Orbiter Landing Facility project is being accomplished by the Reinhold Construction Co. of Cocoa under a \$2,376,400 contract. This portion of the project entails construction of a Landing Aids Control Building, Orbiter Landing Instrumentation Facilities and related communications and utility systems.

This work is proceeding in parallel with Phase I construction and should be completed by October 1976.

Other shuttle projects underway include construction of the Orbiter Processing Facility and modification of the Vehicle Assembly Building, a mobile launcher and Complex 39's Pad A.

The reshaping of KSC for its role in the Space Shuttle program should be completed in mid-1978. Delivery of the first shuttle orbiter to KSC is scheduled for the late summer of 1978.

The first vertical shuttle launch from KSC is scheduled for early 1979.

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First Decade...
Lunar
Landing
1969-1979



NASA News

National Aeronautics and
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For Release:

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December 21, 1979

RELEASE NO: KSC 249-79

SHUTTLE LANDING FACILITY OPEN FOR EMERGENCY LANDINGS BY SANTA

KENNEDY SPACE CENTER, Fla.--The Kennedy Space Center's Shuttle Landing Facility (SLF), regarded as one of the world's best airstrips, will be open for emergency landings by Jolly Old Saint Nick if his high-flying reindeer encounter technical problems during his annual rounds on Christmas Eve.

The Shuttle Landing Facility has a concrete runway 15,000 feet long and 300 feet wide which will be used by the Space Shuttle orbiter returning from missions in Earth orbit beginning with the fifth orbital test flight. Landings from the first four missions will be made at the Dryden Flight Research Center at Edwards, California.

"The center will be closed on Christmas Eve," noted Center Director Richard G. Smith, "but we've advised Santa's North Pole Headquarters that he's free to use the strip in event of an emergency."

Bill Study, Airport Manager, added that the Shuttle Landing Facility has a sophisticated electronic landing system which would enable Santa to land under the most unfavorable weather conditions.

"Flying weather can be quite hairy around here in December," said Study, "and our field could prove real handy should one of Santa's reindeer have a flame-out, lose hydraulics or experience some other serious technical problem."

He noted that a recent service bulletin had advised him that Santa's new sleigh is equipped with avionics compatible with the landing facility's Microwave Scanning Beam Landing System, known affectionately to its operations as the "miss-bliss".

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"It's a great system," said Study. "We could bring a blindfolded duck down safely through a zero-zero visibility pea-soup fog at midnight with it."

"Old Santa has a vital mission to perform," Study added. "And if he gets in trouble, we just want him to know that it's okay with NASA if he lands on our shuttle strip. In a way, it means that SLF will have a new meaning - Santa Landing Facility."

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NASA News

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For Release:

January 22, 1987

Diana Boles
Kennedy Space Center, Fla.
(Phone: 305/867-2468)

RELEASE: 88-10

CONTRACT AWARDED FOR SPACE SHUTTLE LANDING FACILITY MODIFICATIONS

A \$635,529 contract has been awarded by EG&G Florida, Inc., the base operations contractor for Kennedy Space Center (KSC), Fla, to Jensen Construction Co., Des Moines, Iowa, for modifications to the Space Shuttle Landing Facility (SLF).

Work to be performed by the contractor consists of grinding a 3,500-foot section at each end of the runway to smooth the surface texture, removing cross grooves and adding longitudinal "corduroy grooving." Also included in the contract are modifications to existing landing zone light fixtures and repainting of the markings on the entire runway and overruns.

The primary purpose of the modifications is to enhance landing safety by reducing Space Shuttle orbiter tire wear during landing operations. Of the 24 successful Space Shuttle missions, five ended with touchdowns on KSC's Shuttle Landing Facility.

The new configuration has been selected following extensive tire/landing gear/runway surface research conducted over the last 18 months at the Langley Research Center, Hampton, Va., by a team of analysts from Johnson Space Center, Houston; Langley; Kennedy; Rockwell International; and B.F. Goodrich engineers.

Completed in late 1975, the SLF is 15,000 feet long and 300 feet wide with a 1,000-foot paved safety overrun at each end. The SLF is 16 inches thick in the center, with the thickness diminishing to 15 inches on the sides. The runway is not perfectly flat, having a slope of 24 inches from centerline to edge.

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Four self-propelled grinding machines, specifically designed to smooth and texture concrete pavement, will be used in the operation. Each machine is equipped with diamond blades and weighs 40,000 pounds. The modified "corduroy" grooves will be smaller than the grooves to be replaced. The new grooves will run the length of these runway sections rather than across the width. Work will begin Jan. 26, 1988 and will be completed by mid-March 1988.

EG&G Florida is the prime contractor for base operations at Kennedy. EG&G provides institutional and technical support services such as utilities, facilities, administrative services, technical operations and health and protective services.

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