

NATIONAL  
AERONAUTICS  
AND SPACE  
ADMINISTRATION



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IN REPLY REFER TO

September 14, 1961

MEMORANDUM FOR THE PRESIDENT

In view of the situation which has arisen in Massachusetts, I believe you should know personally that Dr. Hugh Dryden and I, last night and this morning, have carefully reviewed all the factors relating to the location of the manned space flight center. It included a careful examination of the material brought back from Hingham yesterday by the site survey team. The team was sent without notification to the Governor or anyone in Massachusetts and made its visit and examination without any publicity so far as I know.

Our decision is that this laboratory should be located at Houston, Texas, in close association with Rice University and the other educational institutions there and in that region.

A press release has been prepared announcing this decision, and we are holding it for issue after White House notification of those which your staff feels should have advance information.

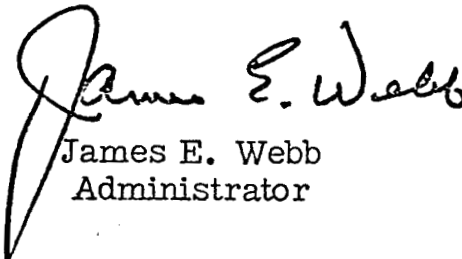
The only personal commitment I have in connection with the release is to personally call the Acting Chairman of the House Committee on Science and Astronautics, Congressman George Miller of California, so that he will know in advance of newspaper release what the decision is. He has been very active and concerned on behalf of California.

Attached hereto is the transcript of the talk I gave at the National Press Club on September 12. On page 15 you will find underlined the reference I made to your instructions. You may need this at your next press conference.

N.A.S.A. HISTORICAL  
ARCHIVES

There are also marked sections in the transcript which refer to you, Vice President Johnson, and the facilities location question on pages 1, 2, 3, 6, 13, 14, 15 and 16.

Incidentally, since we had too little time at our meeting Monday for me to give you as full a report on our activities as I would like, you might wish to take this transcript along for reading, perhaps on the plane. Particularly, the checked paragraph at the bottom of page 10 is an area of thought which you and I need to explore. If we can develop this idea in terms of regional patterns of developing science and technology and feeding them back into economic growth, it may be one of the tremendous accomplishments of your Administration.

  
James E. Webb  
Administrator

Enclosure:

Transcript of National Press Club  
Speech, September 12, 1961.

## SITE SELECTION PROCEDURE

The procedure established for the selection of a site for the manned space flight laboratory, one of four major facilities required for the manned lunar landing mission on the accelerated schedule set by the President, is as follows:

### I.

The selection of the site is to be made by the Administrator of NASA in consultation with the Deputy Administrator.

### II.

As the first step in the collection of information to aid the Administrator in his selection, the Associate Administrator on July 7, 1961 instructed the Director of the Office of Space Flight Programs to establish preliminary site criteria and to propose the membership for a site survey team. The team, appointed on August 7, 1961 consisted of

John F. Parsons, Chairman  
Associate Director  
Ames Research Center

N. Philip Miller  
Chief, Facilities Engineering Division  
Goddard Space Flight Center

Wesley L. Hjernevik  
Assistant Director for Administration  
Space Task Group

I. Edward Campagna  
Construction Engineer  
Space Task Group

Because of the sudden illness of Mr. Hjernevik on August 12, 1961, he was replaced by

Martin A. Byrnes  
Project Management Assistant  
Space Task Group

III.

The site survey team met on August 11 with the Director of the Office of Space Flight Programs, the Associate Director of the Space Task Group, and the Assistant Director of Space Flight Programs for Manned Space Flight. During this meeting tentative site requirements were developed.

IV.

The site requirements were formulated in detail by the site survey team, and at a meeting with the Administrator; Deputy Administrator; Director of Space Flight Programs; Director, Office of Programs; and the Assistant Director for Facilities, Office of Programs, the following criteria were approved by the Administrator:

Essential Criteria

1. Transportation:

Capability to transport by barge large, cumbersome space vehicles (30 to 40 feet in diameter) to and from water shipping. Preferably the site should have its own or have access to suitable docking facilities. Time required in transport will be considered.

Availability of a first-class all-weather commercial jet service airport and a Department of Defense air base installation in the general area capable of handling high-performance military aircraft.

2. Communications:

Reasonable proximity to main routes of the long-line telephone system.

3. Local Industrial Support and Labor Supply:

An existing well-established industrial complex including machine and fabrication shops, to support a research and development activity of high scientific and technical content, and capable of fabricating pilot models of large spacecraft.

A well-established supply of construction contractors and building trades and craftsmen to permit rapid construction of facilities without premium labor costs.

4. Community Facilities:

Close proximity to a culturally attractive community to permit the recruitment and retention of a staff with a high percentage of professional scientific personnel.

Close proximity to a well-established institution of higher education with emphasis on an institution specializing in the basic sciences and in space related graduate and post graduate education and research.

5. Electric Power:

Strong local utility system capable of developing up to 80,000 KVA of reliable power.

6. Water:

Readily available good-quality water capable of supplying 300,000 gallons per day potable and 300,000 gallons per day industrial.

7. Area:

1,000 usable acres with a suitable adjacent area for further development. Suitable areas in the general location for low hazard and nuisance subsidiary installations requiring some isolation.

8. Climate:

A mild climate permitting year-round, ice-free, water transportation; and permitting out-of-door work for most of the year to facilitate operations, reduce facility costs, and speed construction.

Desirable Criteria

1. Impact on Area:

Compatibility of proposed laboratory with the regional planning that may exist and ability of community facilities to absorb the increased population, and to provide the related industrial and transport support required.

2. Site Development Costs:

Consideration of costs for site development required for the proposed laboratory.

3. Operating Costs:

Consideration of costs for normal operations including utility rates, construction costs, wage scales, etc.

4. Interim Facilities:

Availability of reasonably adequate facilities for the temporary use of up to 1,500 people in the same general area as the permanent site.

V.

The site survey team at the same meeting was instructed to survey possible sites on the basis of published and other available information, selecting on the basis of the approved criteria those which should be visited by the team, visiting these sites and such others as might be directed by the Administrator, and preparing a report, including a listing of the advantages and disadvantages of the sites considered.

VI.

A review by the site survey team of climatological data furnished by the United States Weather Bureau and information provided by the Department of the Army, Corps of Engineers, on water-borne commerce in

the United States (references 1 and 2), provided the following preliminary list of prospective areas which would fulfill the essential criteria of water transportation and climate:

- Norfolk, Virginia
- Charleston, South Carolina
- Savannah, Georgia
- Jacksonville, Florida
- Miami, Florida
- Tampa, Florida
- Mobile, Alabama
- New Orleans, Louisiana
- Baton Rouge, Louisiana
- Memphis, Tennessee
- Houston, Texas
- Corpus Christi, Texas
- San Diego, California
- Los Angeles, California
- Santa Barbara, California
- San Francisco, California
- Portland, Oregon
- Seattle, Washington

This preliminary list of possible areas was then reviewed with regard to the other essential site criteria with the assistance of references 3 and 4 and through consultations with the General Services Administration regarding surplus Government property, and the list was reduced on August 16, 1961, to the following nine areas:

- Jacksonville, Florida (Green Cove Springs Naval Station)
- Tampa, Florida (MacDill Air Force Base)
- Baton Rouge, Louisiana
- Shreveport, Louisiana (Barksdale Air Force Base)
- Houston, Texas (San Jacinto Ordnance Depot)
- Victoria, Texas (FAA Airport)
- Corpus Christi, Texas (Naval Air Station)
- San Diego, California (Camp Elliott)
- San Francisco, California (Benicia Ordnance Depot)

To properly evaluate each area accurately a physical inspection of the area by members of the site survey team was deemed essential. Accordingly, arrangements were made to visit these nine areas. While in certain areas additional sites were brought to the attention of the team and arrangements were made to visit those sites. Hence, the original nine sites were increased to twenty-three by the addition of the following:

- Bogalusa, Louisiana
- Houston, Texas (University of Houston Site)
- Houston, Texas (Rice University Site)
- Houston, Texas (Ellington Air Force Base)
- Liberty, Texas
- Beaumont, Texas
- Harlingen, Texas
- Berkeley, California
- Richmond, California
- Moffett Field, California (Naval Air Station)
- St. Louis, Missouri (Daniel Boone Site)
- St. Louis, Missouri (Industrial Park Site)
- St. Louis, Missouri (Lewis and Clarke Site)
- St. Louis, Missouri (Jefferson Barracks Site)

Visits to the above twenty-three sites were initiated on August 21, 1961 and completed September 7, 1961.

It will be noted that the team felt that locations north of the freezing line were unlikely to meet the requirements and hence proposed no visits to sites in this area.

## VII.

While the team was visiting sites, several presentations were made directly to the Administrator, Deputy Administrator, and other officials, notably from proponents of sites in the Boston, Rhode Island, and Norfolk areas. It was agreed to consider these sites in the final review.



On August 12th the Administrator and Deputy Administrator reviewed the factors which had entered into the approved criterion on climate,

i.e.:

"A mild climate permitting year-round, ice-free, water transportation; and permitting out-of-door work for most of the year to facilitate operations, reduce facility costs, and speed construction."

The considerations leading to this criterion are as follows:

1. The purpose of specifying a mild climate which will permit year-round, ice-free, water transportation is self-evident. It is necessary so that the spacecraft and/or its components can be transported by water to other sites at any time of the year to avoid delays in the overall program.
2. The requirement for out-of-door work most of the year stems from our experience with aircraft and large missiles. Since the spacecraft will be of comparable size it is expected that all work cannot be efficiently done within buildings. An appreciable amount of fitting, checking, and/or calibration work will be accomplished out-of-doors to facilitate the overall operation. Also the possibility of handling much larger spacecraft, such as a 10-15 man space station, must be considered. The climate factor will become more important as such spacecraft become parts of the program.
3. A mild climate avoids the necessity of special protection to the spacecraft against freezing of moisture in the many complicated components while transferring to and from sites and between site buildings. To provide such protection would be time-consuming and costly.
4. A mild climate will facilitate recovery procedure training of the astronauts and other activities which must be conducted out-of-doors.
5. A mild climate permits a greater likelihood of day-to-day access by air to and from the site from other parts of the country.
6. In summary, the selection of a site in an area meeting the stated climate criterion will minimize both the cost and the time required for this project. A mild climate will permit year-round construction activity, thereby accelerating the advancement of the project.

Sites north of the freezing line fail to meet these requirements. For example, in the case of the Boston area, the U.S. Department of Commerce Weather Bureau report entitled "Local Climatological Data with Comparative Data, 1960, Boston, Massachusetts," states:

In the year 1960 it rained 114 days for a total amount of 44.46 inches. The rainfall was distributed uniformly throughout the year. The normal total annual rainfall over the years is 38.86 inches falling on 133 days.

The daily minimum temperature for the months of December, January, February and March ranges from 21.6° F to 30.0° F well below freezing while the average maximum temperature for December, January, and February is below 40° F.

Normal degree days, a measure of the heating required, is 5791 -- a high value.

Approximately 52 inches of snow and sleet fell in 1960; the average over the years is about 40 inches.

The average hourly wind speed is 12.5 miles per hour.

In addition to the detailed information outlined above, this same report in describing the Boston climate states:

The city's latitude places it.....in.....large bodies of air from tropical and polar regions, resulting in variety and changeability of the weather elements.

.....assuring an ordinarily dependable precipitation supply.

Hot summer afternoons are....."

The average date of the last killing frost in spring is April 16.

The average date of the first killing frost in autumn is October 25.

Boston has no dry season;....

Coastal storms, or 'northeasters', are prolific producers of rain and snow. The main snow season extends from November through March.

Although winds of 32 m.p.h. or higher may be expected on at least one day in every month of the year, gales are both common and more severe in winter.

By direction of the Administrator, the site survey team visited the Hingham, Massachusetts, site near Boston on September 13 for an inspection of the terrain and existing buildings.

References Used by Site Survey Team

1. Waterborne Commerce of the United States, Calendar Year 1958, Department of the Army, Corps of Engineers.
2. The Intercoastal Waterway, Corps of Engineers, U. S. Army, 1961.
3. Army Map Service Map of Major Army, Navy and Air Force Installations of the United States. 8205 Edition 21-AMS.
4. Education Directory 1959-1960, Part 3, Higher Education, U. S. Department of Health, Education and Welfare, Office of Education