

米国における宇宙政策に関する会議の概要について

平成22年4月21日
宇宙開発委員会事務局

1. 背景・経緯

(1) 米国ブッシュ前政権では、2004年のブッシュビジョン（米国の宇宙探査のための大統領ビジョン）の発表以降、新しい有人輸送用ロケット・宇宙船の開発、有人での月再着陸等を目標とする宇宙探査構想に基づく計画を進めてきた。

(2) オバマ政権では、その探査構想の中核をなすNASAの有人飛行計画について、「米国有人宇宙飛行再検討委員会」において再検討を行い、昨年10月、報告書を取りまとめた。

●米国有人宇宙飛行再検討委員会の報告書のポイント

- ・国際宇宙ステーション（ISS）計画の2015年までの運用期間を延長することは、米国及び国際パートナー双方にとって、その投資に見合う意義深い成果が期待される
- ・複数選択肢を検討した結果、現行の資金計画では、有人宇宙探査を実施することは不可能。

(3) オバマ政権は、本年2月1日、2011会計年度（2010年10月1日～2011年9月30日）の予算教書を公表した。

●2011会計年度予算教書（NASA）のポイント

- ・今後5年間でNASAに60億ドルを追加（5年間の予算総額1,000億ドル）
- ・ブッシュ政権の下で開始され、2020年までに有人月面探査を目指した計画（コンステレーション計画）を中止
- ・国際宇宙ステーションの運用を少なくとも2020年まで継続
- ・宇宙探査に関し、将来の有人宇宙活動を見据えた、低コストの大型輸送ロケットや探査技術の高度化を目指した先行的な研究開発等を推進
- ・気候変動研究や地球観測に関する取組みを充実・強化

(4) 本年4月15日（米国時間）、NASAケネディ宇宙センター（フロリダ州）において開催された宇宙政策に関する会議にオバマ大統領が出席し、米国の宇宙政策を公表した。その概要は以下のとおり。

なお、今回示されたものは、2月1日に公表された予算教書の方角性を基本的に踏襲するものであるが、それをより具体化したものと考えられる。なお、予算教書と比して、新たな定量目標等は下線のとおり。

2. 今回明らかにされた計画の概要

(1) 宇宙探査

- ・米国の有人宇宙飛行・太陽系探査のコミットメントを強化
- ・2025年までに、新しい宇宙船により月以遠への有人宇宙探査計画を開始。
- ・2030年代の中頃までに火星の周回軌道に人を送り、かつ、安全に帰還させ、その後、火星に着陸させる。
- ・地球周回軌道を越えた将来の有人輸送機の技術的基盤を確立。新しい大型ロケットの設計を2015年に決定し、その後開発に着手。
- ・将来の探査の能力向上、コスト低減を目的とした新たな技術開発を開始。
- ・科学的な成果とともに、将来の有人ミッションの安全性・能力の向上のため、先端的なロボットによる持続的な探査ミッションを開始。

(2) 経済発展・雇用対策

- ・NASA予算を5年間で60億ドル増加。
- ・民間による国際宇宙ステーションへの有人・無人輸送機開発を活性化することにより、5年間で国内的に推定10,000以上の雇用を創出。
- ・フロリダへの投資（ケネディ宇宙センターの管理）を30億ドル以上増加（60%増）。
- ・従来の計画と比較し、2012年までにケネディ宇宙センター周辺に2,500人以上の雇用を増加。ホワイトハウス主導によるケネディ宇宙センター付近の再開発計画（40百万ドル）を立ち上げる。その具体的計画は8月15日までに明らかにする。

(3) 国際宇宙ステーション（ISS）関連

- ・ブッシュ政権の下で推進されたきた、2020年までに有人月面探査を目指す計画の一部であった有人宇宙船「オリオン」については、国際宇宙ステーションの緊急脱出用に転換することにより、他国への依存を減少
- ・国際宇宙ステーションの運用期間を延長し（2020年以降の延長もあり得る）、次の10年間でより多くの宇宙飛行士を宇宙に送る。

※本資料は、米国NASA、大森誠社が公表資料を元に、財団法人、事務局が作成したものです。

Florida's Space Workers and the New Approach to Human Spaceflight April 15, 2010

The Administration is committed to a bold, new approach to human spaceflight, and is increasing the NASA budget by \$6 billion over the next five years in order to embark on this ambitious strategy that will foster the development of path-breaking technologies, increase the reach and reduce the cost of human spaceflight, and help create thousands of new jobs. Along with the already planned end of the Shuttle program, this transformation will have an impact on the critical space industry in Florida.

Building on its significant new investments to help Florida retain its important role in NASA's human space programs, the Administration today is taking additional steps to help Florida's Space Coast adjust and succeed in the years ahead. Most importantly, the Administration is launching a \$40 million, multi-agency initiative to help the Space Coast transform its economy and prepare its workers for the opportunities of tomorrow. This effort will build on and complement ongoing economic and workforce development efforts by convening a task force comprised of senior-level Administration officials to construct an economic development action plan for the President's review within 120 days. In addition to this assistance, the Administration will work to jumpstart the commercial space industry at Kennedy Space Center; dedicate more than \$2 billion in funds to modernize Kennedy Space Center's facilities; and restructure the Orion crew exploration vehicle program to a more efficient design for a crew emergency escape capsule.

Compared to the prior path we were on, the President's new plan for human spaceflight is expected to generate more than 2,500 additional jobs in the Kennedy Space Center area by 2012.

PREPARING FLORIDA'S SPACE WORKERS FOR THE JOBS OF TOMORROW

The men and women who work in the Space Coast's aerospace industry are some of the most talented and highly trained in the nation. It's critical that their skills are tapped as we transform and grow the country's space exploration efforts. The 2004 decision to end the Shuttle means that approximately 6,000 jobs need to be transitioned into the new space strategy and related industries. To ease the transition for workers dislocated while the new space strategy is being implemented, the President is proposing to dedicate \$40 million of the funds requested for the Constellation transition to transform the regional economy and prepare its workforce for these new opportunities.

The President will select a high-level team of senior officials from the Departments of Defense, Commerce, and Labor; NASA; and the White House to develop a plan for regional economic growth and retraining dislocated workers to seize new work opportunities. The team will report its recommendations to the President by August 15. This interagency group's recommendations will build on the Administration's on-going efforts in the region. The Department of Labor is already planning a pilot program to better assist the region's workers, including those highly-skilled workers who work in the aerospace industry, through efforts to establish one-stop local transition centers for affected workers where they can receive coordinated local, state, and federal workforce assistance tied to economic development efforts; and the designation of a one-stop-shop federal point-of-contact for affected areas.

To further facilitate these efforts, the Department of Commerce's Economic Development Administration (EDA) is prepared to support a comprehensive economic adjustment strategy for the Kennedy Space Center economic region. With funding provided through NASA, the EDA will provide both financial and technical assistance to start implementing those plans and promote economic development in the region through such activities as infrastructure upgrades and improvements, entrepreneurial networks, and skill-training facilities and equipment. The exact mix of activities will depend on the recommendations and request of local entities across the region.

Working with local and state partners, the EDA also will analyze whether other proven assistance efforts can be implemented in the area, including: additional economic development resources such as enhanced capital funding to support efforts to start new technology ventures based on the specific skills of dislocated engineers; technical assistance to guide public officials, management, and labor through a local economic adjustment effort, and Federal Team Visits to further support local adjustment efforts.

INVESTING IN KENNEDY SPACE CENTER AND THE SPACE COAST

In order to expand our potential in space, the President is committed to increasing the NASA budget in FY 2011 and each of the next five years. This will mean more people working in the aerospace industry to support NASA programs and missions. In order to harness Florida's unique and talented workforce, the Kennedy Space Center has been selected to manage several of the new programs in the President's FY 2011 budget request. All told, the President's new plan is expected to generate more than 2,500 additional jobs in the Kennedy Space Center area by 2012, as compared to the prior path.

Highlights include:

- ***Jumpstarting a new industry and thousands of new jobs.*** A new Commercial Crew Development Program Office at the Kennedy Space Center will manage \$500 million in FY 2011 and \$5.8 billion over five years to foster private-sector transportation services to Earth orbit. Florida would also be a beneficiary of the new Commercial Crew and cargo investments, which an independent analysis projects will create more than 10,000 jobs nationwide over the next five years.*
- ***Modernizing Kennedy Space Center so it remains a world-class launch port for decades to come.*** A new 21st Century Launch Complex Program Office at the Kennedy Space Center will manage \$429 million in FY 2011 and \$1.9 billion over five years to modernize the Kennedy Space Center's facilities to reduce launch costs not only for NASA, but for other users. These investments will create hundreds of jobs by 2012, upgrade Kennedy Space Center's facilities for the 21st century, and ensure that the Kennedy Space Center will remain a world-class launch port for decades to come, attracting new commercial business in addition to reliably and efficiently supporting government flights.
- ***Helping make the I-4 corridor the Silicon Valley of space.*** A new Flagship Technology Demonstrations Deputy Program Office will help manage, along with the Johnson Space Center's Program Office, \$424 million in FY 2011 and \$6 billion over five years to demonstrate transformational technologies for next-generation space flight capabilities.

*Error in 4/13/2010 version corrected 4/15/2010

A Bold Approach for Space Exploration and Discovery

Fact Sheet on the President's April 15th Address in Florida

On Thursday, April 15, at the Kennedy Space Center in Florida, the President will outline a bold strategy for human spaceflight that increases the NASA budget by \$6 billion over the next five years. His plan represents an ambitious effort to foster the development of path-breaking technologies; increase the number, scope, and pace of manned and unmanned space missions; make human spaceflight safer and more efficient; and help create thousands of jobs. The President will lay out the goals and strategies in this new vision for NASA, including a sequence of deep-space destinations matched to growing capabilities, progressing step-by-step until we are able to reach Mars. He will provide new information about specific elements of the plan, including proceeding with a scaled-down variant of the Orion space-capsule technology developed in the Constellation program (to support crew escape requirements on the International Space Station) and setting a decision date for moving from research to development and production of a heavy-lift launch vehicle. In addition, he will speak to the new technologies, new jobs, and new industries this approach will create along the way.

This new strategy means more money for NASA, more jobs for the country, more astronaut time in space, and more investments in innovation. It will result in a longer operating lifetime for the International Space Station, new launch capabilities becoming available sooner, and a fundamentally more ambitious space strategy to take us to an increased number of destinations and to new frontiers in space. By undertaking this strategy, we will no longer rely on our past achievements, and instead embrace a new and bold course of innovation and discovery.

This new plan:

- Advances America's commitment to human spaceflight and exploration of the solar system, with a bold new vision and timetable for reaching new frontiers deeper in space.
- Increases NASA's budget by \$6 billion over 5 years.
- Leads to more than 2,500 additional jobs in Florida's Kennedy Space Center area by 2012, as compared to the prior path.
- Begins major work on building a new heavy lift rocket sooner, with a commitment to decide in 2015 on the specific heavy-lift rocket that will take us deeper into space.
- Initiates a vigorous new technology development and test program to increase the capabilities and reduce the cost of future exploration activities.
- Launches a steady stream of precursor robotic exploration missions to scout locations and demonstrate technologies to increase the safety and capability of future human missions, while also providing scientific dividends.

- Restructures Constellation and directs NASA to develop the Orion crew capsule effort in order to provide stand-by emergency escape capabilities for the Space Station – thereby reducing our reliance on foreign providers.
- Establishes the technological foundation for future crew spacecraft needed for missions beyond low Earth orbit.
- Increases the number of astronaut days in space by 3,500 over the next decade, extends the life of the International Space Station, likely beyond 2020, and enables the launching of astronauts on new vehicles from the Kennedy Space Center 1- 2 years sooner
- Jumpstarts a new commercial space transportation industry to provide safe and efficient crew and cargo transportation to the Space Station, projected to create over 10,000 jobs nationally over the next five years.
- Invests in Florida, adding \$3 billion more for the Kennedy Space Center to manage -- a 60 percent increase.
- Makes strategic investments to develop critical knowledge, technologies, and capabilities to expand long-duration human exploration into deep space in a more efficient and safe manner, thus getting us to more destinations in deep space sooner.
- And puts the space program on a more ambitious trajectory that pushes the frontiers of innovation to propel us on a new journey of innovation and discovery deeper into space.

Specific New Elements of the President's Plan:

Outlining A Bold New Vision for Reaching New Frontiers in Space: Building on the announcement of a new heavy-lift rocket decision date and the restructuring of Orion, the President will outline a broad vision and timetable for unlocking our ambitions and expanding our frontiers in space, until ultimately we can meet the challenge of sending humans to Mars

The President's vision for NASA space exploration enables:

- a set of stepping-stone achievements in space that will take us further and faster into space, allowing us to reach a range of destinations including lunar orbit, Lagrange points, near-Earth asteroids, and the moons of Mars, and eventually Mars itself. This sequence of missions will begin with a set of crewed flights to prove the capabilities required for exploration beyond low Earth orbit. After these initial missions, our long-duration human spaceflight technologies will enable human explorers to conduct the first-ever crewed mission into deep space to an asteroid, thereby achieving an historical first: venture into deep space locations such as the Lagrange points (potential sites of fuel depots that would enable more capable future missions to the Moon, Mars, and other destinations); and then send humans to orbit Mars and return them safely to Earth

- increasing investments in ground-breaking technologies that will allow astronauts to reach space faster and more often, to travel further distances for less cost, and to stay in space for longer periods of time
- systematically tackling the hard problems of space exploration – from protecting our astronauts from radiation to developing advanced in-space propulsion -- so that we can push the boundaries not only of where we can go in space but also what we can do there to improve our lives here on Earth

Developing a Heavy Lift Rocket, with a Specific Decision in 2015, to Expand Our Reach in Space: To demonstrate a concrete timetable and commitment for expanding human exploration further, the President is announcing that, in addition to investing in transformative heavy-lift technologies, he will commit to making a specific decision in 2015 on the development of a new heavy-lift rocket architecture. This new rocket would eventually lift future deep-space spacecraft to enable humans to expand our reach toward Mars and the rest of the Solar System. This new rocket would take advantage of the new technology investments proposed in the budget – primarily a \$3.1 billion investment over five years on heavy-lift R&D. This propulsion R&D effort will include development of a U.S. first-stage hydrocarbon engine for potential use in future heavy lift (and other) launch systems, as well as basic research in areas such as new propellants, advanced propulsion materials manufacturing techniques, combustion processes, and engine health monitoring, all of which are expected to shorten the development time for any future heavy-lift rocket. The new rocket also will benefit from the budget's proposed R&D on other breakthrough technologies in our new strategy for human exploration (such as in-space refueling), which should make possible a more cost-effective and optimized heavy lift capability as part of future exploration architectures. A decision in 2015 means that major work on building a new heavy lift rocket will likely begin two years sooner than under the troubled Constellation program.

Restructuring the Orion Crew Capsule: Our goal is to take advantage of the best work undertaken in the Constellation program. The President is announcing that NASA will restructure the Orion crew exploration vehicle program to a simpler and more efficient design that will be focused on crew emergency escape from the International Space Station. Under the Constellation program, the Orion crew capsule was intended to house astronauts during their travel to the International Space Station and later missions to the Moon. It also was to be capable of docking at the Space Station for six months and returning crews to the Earth. As part of the President's new plan for NASA, the development work already performed on this capability will be re-oriented to meet the important safety requirement of providing stand-by emergency escape capabilities for astronauts on the space Station. We will be able to launch this vehicle within the next few years, creating an American crew escape capability that will increase the safety of our crews on the Space Station, reduce our dependence on foreign providers, and simplify requirements for other commercial crew providers. This effort will also help establish a technological foundation for future exploration spacecraft needed for human missions beyond low Earth orbit and will preserve some critical high-tech contractor jobs in Colorado, Texas, and Florida.