

There was no objection.  
The resolution was agreed to.  
A motion to reconsider was laid on the table.

#### SPECIAL ORDERS

The SPEAKER pro tempore (Mr. OSE). Under the Speaker's announced policy of January 6, 1999, and under a previous order of the House, the following Members will be recognized for 5 minutes each.

#### HONORING ASTRONAUT PETE CONRAD

The SPEAKER pro tempore. Under a previous order of the House, the gentleman from California (Mr. CALVERT) is recognized for 5 minutes.

Mr. CALVERT. Mr. Speaker, I rise today on the sad occasion of the recent loss of a great American hero. Pete Conrad truly embodied our Nation's preeminence in space exploration and the progress of our Nation's space program.

As a lifetime fan of space exploration, I have been inspired by Captain Conrad's achievements in space and devotion to building America's space program.

I recently had the honor of meeting this great man, a brief meeting that I will never forget. In the short amount of time we spent together, I sensed the passion and dedication he held for our Nation's space program. As I shook his hand to say goodbye, I knew that I had just met a true American hero.

Captain Conrad's memorable career as an astronaut is very well documented. He was the third man to walk on the Moon. He was aboard four missions to space. He set numerous records for space travel, including the endurance record for an individual in space and the world space altitude record. His achievements helped pave the way for our Nation's success in space exploration, which have recently included the early stages of the International Space Station and the successful mission to Mars.

For these heroic efforts, he received the Congressional Space Medal of Honor among his other distinguished career awards and medals.

Not so well known, however, were his activities following his retirement from NASA and the Navy. Pete Conrad continued his dedication to our Nation's space program by promoting America's commercial activities in space.

Throughout his 20-year career at McDonnell Douglas, Captain Conrad led many efforts to advance our Nation's emergence in space exploration. During this time, he earned the reputation as a leader in private space industry. More recently, through his establishment of a group of companies called the Universal Space Lines, Cap-

tain Conrad continued his activities to ensure that America would remain the preeminent Nation in space.

The continued development of commercial activities in space will be the lasting memory of Captain Conrad.

I believe Pete Conrad was intricately responsible for our Nation's long-standing posture as a leader in space. As we develop commercial space activities and benefit from them, we should remember that without the leadership, dedication, bravery, and ingenuity of Captain Pete Conrad, these would not have been possible.

I send my condolences to Pete's family, friends, associates.

Pete, thank you for inspiring me and our entire Nation.

When I think of Pete's lifetime achievements, I get inspired to gleefully exclaim the first word he spoke as he took his first step on the Moon: "Whoopie".

Godspeed, Pete. I will remember you always.

Mr. Speaker, I yield to my friend, the gentleman from California (Mr. ROHRABACHER).

Mr. ROHRABACHER. Mr. Speaker, I would like to at this moment to submit for the RECORD a testimony that Pete Conrad gave before my subcommittee, and I chair the Subcommittee on Space and Aeronautics in this House Committee on Science, on October 1, 1998, which was his testimony at the 40th anniversary of NASA. The title of his testimony was "Life Begins at Forty."

It is a terrific, terrific vision for the future that Pete outlined his goals for America's space program in the next millennium.

Mr. Speaker, I commend my friend, the gentleman from California (Mr. CALVERT), for being here tonight. I will have 5 minutes a little bit later on to say my piece, as well.

The gentleman from California (Mr. CALVERT) is just one of many people like myself who have been inspired by Pete Conrad, a man who is not just a great pilot and a great technician but a beautiful human being, a person with an incredible sense of humor.

And of course, let me just say to the gentleman from California (Mr. CALVERT) that when he quoted Pete and his first word when he stepped onto the Moon, I think he had to give a little bit more umph to it. It was "whoopie!" And not just "whoopie," because Pete Conrad had a zest for life and was just a fantastic human being. He was a naval pilot who was a very successful naval pilot.

Today we buried Pete Conrad in Arlington Cemetery. And as we stood there and as his body was about to be lowered down, a team of naval pilots flew over that site and one pilot peeled off and headed straight for the heavens. And that is Pete heading straight for the heavens. It was a glorious sight.

We just thank God for men and women in our military and in the serv-

ice of our country as astronauts and the rest like Pete Conrad, leading the way for America.

NASA 1998: LIFE BEGINS AT FORTY  
TESTIMONY BEFORE THE SUBCOMMITTEE ON SPACE AND AVIATION OF THE HOUSE COMMITTEE ON SCIENCE, CONGRESSMAN DANA ROHRABACHER, CHAIRMAN

CHARLES "PETE" CONRAD, JR., CHAIRMAN AND CHIEF EXECUTIVE OFFICER, UNIVERSAL SPACE LINE, INC., NEWPORT BEACH, CA, OCTOBER 1, 1998

Good afternoon Chairman Rohrabacher, Congressman Gordon, and other honored members of the Space and Aeronautics Subcommittee. I'd like to thank you for inviting me to speak to the Subcommittee about the future, and the role NASA can play to develop that future. Having been a long time NASA team member on Gemini, Apollo and Skylab, I rode the wave of public support and popularity the U.S. space program engendered through the 1960s and early 1970s.

I enjoyed the rare opportunity of being an astronaut for this great country, but the bigger legacy I hope to leave behind is a robust commercial space industry making money for America in the 21st Century. I can't speak for the entire industry, but I would like to speak for my part of it, Universal Space Lines (USL). USL is a small business just over two years old, but already with over fifty employees. Our long-term company goal is to position ourselves as the world's premier provider of affordable commercial space transportation services, including purchase and operation of both expendable and reusable launch vehicles. Our current products range from the commercial tracking and commanding of satellites, to a near term, low cost expendable launch vehicle for small to medium payloads. And Mr. Goldin will be interested to hear we've begun planning for the eventual transition to reusable launch vehicles as their technology matures.

Our success will primarily be driven by the growing commercial space sector. Commercial space revenues will exceed \$100 billion annually at the turn of this Century, a figure far greater than today's combined NASA and Air Force space budgets. And remember: this new millennium is only 15 months away!

As many as a thousand or more new commercial communications satellites will be placed in orbit during the next decade, extending the World Wide Web into the sky. Iridium, Globalstar, Teledesic and others are literally betting tens of billion dollars on the opportunity to cash in on an annual trillion-dollar global communications market.

My company and others are gambling we will be a part of the emerging commercial space industry. However, we should not become too sanguine about the power of the word "commercial." Both NASA and the Defense Department will also play a major role, for good or for bad, in the ultimate environment that emerges. In the years ahead my hope is that this Congress will help guide our nation to establish a free and competitive market in which all companies can participate fairly. NASA, if it so chooses, can be a major player helping the transition to a commercially focused profitable space industry.

As an example of how our country dealt with a similar issue from our past, I'd like to draw your attention to the early history of commercial aviation. Between the late 1940s and early 1960s, during a post war era of declining budgets, NASA (and its predecessor agency, the NACA) and the Air Force invested in a host of experimental aircraft that

opened America's skies to military and commercial aviation. In particular, experimental and military jet aircraft spawned the thriving commercial aviation industry we have inherited today.

During those early pivotal years after World War II, visionary leaders in the Air Force and NACA pursued a technology policy of building and flying demonstration hardware; hardware that was built quickly and flown often. These early investments pushed aviation into a thriving, commercially focused and profitable industry. Our challenge today is to ensure the same opportunity is afforded our budding commercial space industry. Just as the success of our aviation industry hinged on the introduction of affordable and reliable aircraft, the commercial space industry can't truly take off without affordable and reliable launch vehicles.

#### FORTY YEARS HENCE: THROUGH A GLASS DARKLY

Mr. Chairman, history is a funny thing, full of unexpected discontinuities. So before I try to look forward into the middle of the next Century, I'd like to briefly look back to the middle of this Century.

Forty years after the Wright Brothers first flew at Kill Devil Hills, B-17s and B-24s were bombing Germany, and the B-29 was in initial full scale production. In Germany, the Me-262, a jet fighter (and probably the finest airplane in the war) was also just entering initial full scale production. So, too, was the A.4 (the V-2)—an honest-to-God war rocket.

But we haven't seen the same sort of progress in the forty years since the founding of NASA in 1958. Why? In 1903, people aboard an airplane were called "aeronauts." Forty years later, they were called "passengers." Where are the passenger tickets to space available for purchase today?

A second cautionary analogy. USL is a business being run virtually. We depend upon the interconnectivity of the Internet. I have no idea how I would do my job without access to the information resources of the World Wide Web.

But the Web only came into existence around 1992—just six years ago!

And we're not at all unique—scores of other businesses are also now totally dependent upon the Web's existence.

How do you predict the coming of something like the Web? It's roughly equivalent to being able to predict, in 1900, that the coming of the automobile is going to lead to the suburb, or to drive-through fast food stands. . . .

I'm a bit reluctant, then, about trying to predict or describe what 2038 might look like. But I can describe what I'd like it to look like.

#### STRATEGIC U.S. GOALS IN SPACE FOR THE NEXT 40 YEARS

The committee has asked, "What should be the strategic goals of the U.S. in space for the next forty years?" I think that there are four overarching goals. (1) Foster a commercial space industry. (2) Explore the Solar System. (3) Settle the Solar System. (4) Explore the Universe.

For the first time, there now exists a nascent commercial launch services industry. It came slowly into existence during the last part of the 1990s, and it came into existence primarily because, for the first time, NASA didn't try to strangle this new industry in its cradle. The foremost thing a medical doctor learns is "First, do no harm." This prime principle of medicine should also become the foremost policy of the Federal Government with respect to the newborn commercial launch industry.

Exploration of the Solar System will be done by robots and by humans. In the case of robots, these missions will be primarily scientific, and could be pursued by the Government, or by academia, or both. Commercial data purchase is one method that either or both could pursue as a means to achieve their exploration goals, and at the same time save money, and again at the same time help to foster a commercial space sector.

Exploration by humans will probably be confined to the inner Solar System over the next forty years—i.e., Luna, Mars, and the small bodies (asteroids). These explorations will also be primarily scientific, certainly so in the case of Mars, but in the case of Luna and the asteroids, one can easily see economic rationales. There are thus business cases that can be made and that will be pursued.

Settlement of the Solar System may begin with Luna. There's lunar water ice at both poles, making settlements and outposts on Luna tremendously easier to accomplish than might have been otherwise. Lunar water ice, in a phrase, changes everything. One might even speak of a lunar "Cold Rush. . . ."

The exploration of the Universe is primarily a scientific one, using space-based astronomy facilities. Such work, of course, is done to "do" science, but a lot of this science will begin to lay the ground work for the first robotic missions to the near stars, possibly in the 22nd Century.

#### THE SINGLE ISSUE THAT MUST BE ADDRESSED

But before any of the above can be attempted, much less accomplished, there must be Cheap Access to Space. You need to be able to get to low Earth orbit ("LEO") easily, frequently, reliably, and cheaply. There is no inherent technical barrier to the creation of such a capability—"only" engineering development need occur for cheap, easy to operate, robust access to low Earth orbit to become available.

And as has been pointed out, once you're in LEO, in terms of energy, you're halfway to anywhere else in the Solar System.

#### ROLES OF THE FEDERAL GOVERNMENT

The second issue the Subcommittee wished addressed is "What are the appropriate roles of the federal government in pursuing those goals?" I would argue that there are four roles for the Federal Government. The first appropriate role is to support and encourage science, both directly funding it as well as helping to encourage and underwrite its accomplishment by the private sector and academia. This also applies to exploration activity, both human and robot. The Government ought to help academia and the private sector explore, through underwriting, partnerships, tax credits, and other such mechanisms. In some rare cases, the Government itself might also mount its own explorations. These were the patterns and methods of exploration employed by Spain and England in the 1500s and 1600s, as well as by the United States in the 1800s.

The second appropriate role of the Federal Government in my opinion is to foster long-term, high-risk technology development. The Federal Government should strongly invest in next generation technology, including experimental reusable launch vehicles and military demonstration hardware.

The third activity that I feel is appropriate for the Federal Government to pursue is that of the use of space for the defense of the United States.

Finally, the Federal Government has, I believe, an important, if not critical, role in

the encouragement and incentivization of the growth of the nascent entrepreneurial commercial launch industry.

#### SHORT TERM POLICIES TO ACCOMPLISH THESE GOALS

"What policies and priorities should Congress and the Administration be putting in place in the near term to begin the transition to the future?"

Here are a few of the possible options I think would go a long way in the short term for encouraging and incentivizing the growth of our emerging commercial launch industry.

NASA and the Air Force should procure all launch services via competitive bids that are truly open to all companies, not just the largest defense contractors. These "fly before buy" launch service contracts must not develop new launch vehicles; instead, they should be structured like the Air Mail "service" contracts of the 1930s to encourage private investment. During the next forty years NASA should transition totally out of operating space launch vehicles, or of on-orbit support infrastructure.

Space science data should be purchased by NASA in order to help to support science and the development of a commercial space sector. Resupply and support of the International Space Station should be provided commercially by the private sector, so as to also help support the development of a commercial space sector. The International Space Station should also be commercially operated.

In parallel, Congress can also pass legislation providing incentives to the commercial space transportation sector. One possibility is investment tax credits to incentivize the creation of launch service providers. Such credits ought to be able to be traded. Other possibilities include interest write-offs, legislated market incentives like "air-mail," and regulatory improvements. All of these incentives can help give birth to a thriving commercial launch industry modeled after today's aviation industry. The one thing we must not do is create a monopoly where a single company controls the ability to launch critical commercial and military assets into space. Guaranteeing government loans or market share for a single company would be catastrophic to the emerging commercial industry.

In the future tax credits may also be an appropriate mechanism for helping to encourage long term goals, such as Lunar missions and settlement.

A third policy thrust should be to robustly invest in the experimental technology and military demonstration hardware that supports truly low cost space launch vehicles. No technology investment is required for expendable launch vehicles, as the commercial sector is well positioned to develop such vehicles today. Instead, the government should be investing in the longer term, higher risk reusable launch vehicle technologies that promise to reduce launch costs by two orders of magnitude.

Mr. Goldin at NASA has already done a good job with his early investments in experimental vehicles, but it's just the first step. NASA's early, but underfunded plan to fly many "Future-X" experimental vehicles is an excellent blueprint for the future. In the past, Mr. Goldin has shared his vision of "blackening the sky with X-vehicles"—not prototypes or commercial vehicles, but pure experimental demonstrators. If we truly want low cost launch vehicles, it will require the flight of many experimental vehicles built by many different companies.

The policy goal of flying X-vehicles for technology demonstrations should become the basic way that the government (and NASA) should approach technology development. Build 'em, fly 'em, and break 'em—both by intent and accident, this approach has led to today's thriving commercial aviation industry.

In coordination with NASA, DoD should also be investing in their own experimental vehicles and early military demonstration hardware. Either the Air Force or the Navy should develop a Military Spaceplane capability that supports global reach and the ability to defend U.S. interests "anywhere, anytime," with dramatically smaller force structures than exist today. Blue ribbon panel after blue ribbon panel has advocated the need for such technology investments starting with General Moorman's Space Launch Modernization Panel in 1994. Most recently, the Defense Science Board is recommending an ongoing investment in the Space Maneuver Vehicle flight tested at Holloman AFB just last month.

Finally, while institutional changes are not necessarily required at NASA, the mindset must change. NASA should be the leading advocate of change and the transition to a primarily commercial space industry. Nonetheless, the real change is up to Congress. NASA, the Administration, and Congress must decide to place funding and budget priorities on the side of change. The Government should be investing in technology, experimental vehicles, and military hardware for the defense of the country.

#### 2038: FREE PEOPLE IN FREE SPACE

The United States is at a seminal point in our transition to a commercial space industry. If we choose to encourage and incentivize the move towards a commercially based space industry we can accelerate and fundamentally enable America's move into space. We did this once before when America invested in the technology of commercial aviation, and it paid handsome dividends. Now it's time to build the same bridge to the future of commercial space.

Thank you, Mr. Chairman, for this opportunity to present USL's views. I would be pleased to answer any questions you or any other Members might have.

#### COMMON STATE PROPOSAL BETWEEN NAGORNO KARABAGH AND AZERBAIJAN

The SPEAKER pro tempore. Under a previous order of the House, the gentleman from New Jersey (Mr. PALLONE) is recognized for 5 minutes.

Mr. PALLONE. Mr. Speaker, I wanted to spend just a short amount of time this evening talking about the optimism that many of us are seeing as a result of the meeting that took place in Geneva last week between President Kocharian of Armenia and President Aliyev of Azerbaijan.

I am sure that many people know, particularly those of us who have been involved with the Armenia Caucus for many years, that we are very hopeful that, as a result of this meeting and some other activities that have taken place over the last few months, that we could see a resolution of the conflict in Nagorno Karabagh, which has been basically a bone of contention, if you

will, between the two countries for some time.

I think many people know that Nagorno Karabagh is an independent republic that is Armenian speaking, ethnically Armenian, that fought a war, if you will, about 10 years ago that at the time when the Soviet Union broke up, and even though it has been independent and has been a state for all practical purposes, for about 10 years it is not recognized by the United States and there is a continued conflict, albeit mostly peaceful conflict, between Armenia and Azerbaijan over the future of Nagorno Karabagh.

It would certainly behoove anyone who is concerned about peace in the Caucasus region to see if these two countries could come to an agreement over the future of Nagorno Karabagh that, of course, involves the people of Nagorno Karabagh, as well.

The Presidents of Armenia and Azerbaijan met last week in Geneva for talks that seek a political settlement of the Nagorno Karabagh conflict. President Robert Kocharian of Armenia went to Geneva directly from Warsaw, where he had been for other business, and while there he told the news conference that he was optimistic about the meeting with President Aliyev. He said that there had been serious progress since active talks have begun with President Aliyev, most recently in April during the NATO summit conference when both leaders were here in Washington.

I must say also and give praise to U.S. Secretary of State Madeleine Albright, who had written to both presidents after those Washington talks urging further direct discussions between the two presidents.

The latest proposal of the OSCE Minsk Group, and the Minsk Group has been set forth by the United States and other countries to try to come to a settlement of the Nagorno Karabagh conflict, basically last fall the Minsk Group put forth a proposal called the "common state proposal," which essentially sets up a sort of confederation, if you will, between Nagorno Karabagh and Azerbaijan where the two countries would be part of a confederation or common state with equal status.

We know that Azerbaijan very quickly after that announcement last fall by the Minsk Group rejected the common state proposal. But there have been strong indications recently that if it was not for the actual label "common state" that Baku and Azerbaijan essentially might be willing to accept the idea of what the common state proposal is all about.

In other words, they may not like the term "common state," but if another term like "confederation" or "free association" or something like that was used that they might be willing to go along with it.

I must say, Mr. Speaker, that what I am hoping and I think the atmosphere

is ripe for it is that after this meeting of the two presidents that it might be possible to engage in some kind of direct negotiations between the three parties, between Armenia, Azerbaijan, and Nagorno Karabagh, which is something that I and most members of the Armenia Caucus have been talking about for some time, that we can see the three sides, if you will, get together perhaps at some point nearby and simply start negotiations using the common state proposal or something like it and ultimately come up with a peaceful settlement.

I wanted to praise our own House of Representatives and particularly the House Committee on Foreign Operations Appropriations because in the bill that they reported out of the subcommittee last week and I think will be considered by the full committee on appropriations tomorrow that bill incorporated several constructive initiatives to help jump start the Karabagh peace initiative.

□ 2115

If I could just give some examples, in the report language for the Foreign Ops bill, it specifically says that the primary national interest of the United States in the Southern Caucasus is peace, and it recommends continued support for the people of Armenia and Azerbaijan, and says that the extent and timing of United States assistance should depend on whether or not the parties move towards a peaceful settlement.

I want to commend our own Foreign Operations appropriations subcommittee for what it did and that this leads in the long run to a peaceful settlement of the conflict.

#### TRIBUTE TO ASTRONAUT PETE CONRAD, AMERICAN HERO

The SPEAKER pro tempore (Mr. OSE). Under a previous order of the House, the gentleman from California (Mr. ROHRBACHER) is recognized for 5 minutes.

Mr. ROHRBACHER. Mr. Speaker, earlier the gentleman from California (Mr. CALVERT) spoke about Pete Conrad whom we laid to rest today in Arlington National Cemetery, an American hero and a member of the team that walked on the Moon, in fact the third man to have walked on the Moon. It was my honor to have represented Mr. Conrad in Congress. In fact, he lived in Huntington Beach, California. I had many, many meetings with Pete. I was very honored to not only know him but I was very, very pleased to have had the guidance that he gave me over the years in dealing with American space policy. Now as the chairman of the Subcommittee on Space and Aeronautics, that advice that he was giving me was of real importance and of real value. Pete was