

>>> THE PURPOSE OF THIS FORUM IS TO CONTINUE THE DIALOGUE BETWEEN NASA REGARDING THE PLANS FOR COMMERCIAL CREW INITIATIVE.

YOU MAY BE WONDERING WHAT'S DIFFERENT ABOUT THIS FORUM.

IN ADDITION TO THE INFORMATION WE WILL PRESENT TODAY, WE DEDICATE AT LEAST 30 MINUTES TO ADDRESS QUESTIONS FROM EITHER THE AUDIENCE IN THE AUDITORIUM OR THOSE WATCHING ONLINE.

FOR THOSE WATCHES ON EITHER NASA TV OR WEBCAST, YOU CAN SUBMIT QUESTIONS FOR AN ADDITIONAL TWO HOURS AFTER THE CONCLUSION OF TODAY'S FORUM.

WE WILL ATTEMPT TO ADDRESS YOUR QUESTIONS AND WE PLAN TO POST THE QUESTIONS AND ANSWERS ON NASA'S EXPLORATION WEBSITE.

HERE'S HOW VIEWERS CAN SUBMIT QUESTIONS ONLINE TO THE PANEL.

THE WEB ADDRESS IS [WWW.NASA.GOV/EXPLORATION/COMMENTS](http://WWW.NASA.GOV/EXPLORATION/COMMENTS).

FOR THOSE WHO WANT TO DOWNLOAD THE SLIDES YOU'RE ABOUT TO SEE, THEY CAN BE FOUND AT [WWW.NASA.GOV/EXPLORATION](http://WWW.NASA.GOV/EXPLORATION).

WE DO HAVE A LITTLE BIT OF A DISCLAIMER HERE.

THE INFORMATION PRESENTED TODAY REPRESENTS THE RESULTS OF OUR PLANNING EFFORTS TO DATE.

HOWEVER, THIS INFORMATION IS NOT MEANT TO REPRESENT THE FINAL PLANS.

AS A RESULT OF FUTURE PLANNING, GUIDANCE FROM THE ADMINISTRATION AND CONGRESS, AND INPUT FROM YOU, WE MAY ALTER SOME OF THE PLANS PRESENTED TODAY.

NOW THAT WE HAVE THE HOUSE KEEPING CHORES OUT OF THE WAY, IT'S MY PLEASURE TO PRESENT THE DEPUTY ASSOCIATE ADMINISTRATOR, DR. LAURIE LESHIN.

>> THANKS.

GOOD MORNING.

IT'S GOOD TO SEE EVERYBODY HERE.

THRILLED TO BE HERE ON BEHALF OF DOUG COOKE AND THE REST OF THE FOLKS IN ESMD AND ACROSS THE AGENCY THAT ARE SO EXCITED TO BRING IT COMMUNITY TOGETHER TO HAVE THE DISCUSSIONS THAT YOU ALL WILL HAVE AND GIVE YOU AN UPDATE OF ALL THE HARD WORK THAT THESE FOLKS HAVE BEEN DOING.

IT'S A VERY INTERESTING TIME RIGHT NOW, OF COURSE.

BIG CHANGE I THINK IS AN OPPORTUNITY TO REALLY SIT BACK AND REFLECT A BIT ON WHY WE'RE HERE, WHAT ARE WE ABOUT, WHAT ARE WE AS A SPACE EXPLORATION COMMUNITY ALL ABOUT.

AND WE'VE ACTUALLY BEEN DOING THAT INTERNALLY.

WE'VE BEEN HAVING SOME OF THOSE CONVERSATIONS.

IT'S BEEN VERY EXCITING MOMENT TO BE ABLE TO PAUSE AND REFLECT AND THINK ABOUT THAT AS WE GO FORWARD.

AND WHY ARE WE HERE?

WELL, THERE ARE MANY REASONS WE COME UP WITH THAT WE ARE HERE TO DRIVE PROSPERITY IN OUR NATION THROUGH INNOVATION AND SCIENTIFIC DISCOVERY.

WE ARE HERE TO DO CUTTING EDGE RESEARCH.

WE ARE HERE TO ENSURE THAT HUMANS HAVE A SUSTAINED PRESENCE IN DEEP SPACE AS WE MOVE FORWARD AS A PLANET.

AND REALLY WE IN EXPLORATION HAVE FOCUSED QUITE A LOT ON THAT LAST PHRASE, MAKING SHALL YOU ARE THAT HUMANS HAVE A SUSTAINED PRESENCE IN DEEP SPACE AS WE MOVE FORWARD.

AND WHAT DOES THAT MEAN?

WHAT DOES THAT MEAN ABOUT NASA'S ROLE, WHAT'S NASA'S ROLE IN THAT, HOW DO WE IT ACTUALLY ENABLE THAT OR MAKE THAT HAPPEN?

AND WHAT IT MEANS IS WE'VE GOT TO BE INNOVATIVE IN OUR APPROACH AND THIS PROGRAM WE'RE ABOUT TO TALK ABOUT IS PART AND PARCEL TO MAKING THAT HAPPEN.

IT MEANS THAT ISES A HAS TO REEXAMINE WHAT HAS BEEN OUR TRADITIONAL IDENTITY ALMOST, OUR TRADITIONAL ROLE, AND THINK ABOUT OUR ROLE IN A NEW WAY AS CATALYSTS OF A MUCH BROADER AND MORE INCLUSIVE ACTIVITY.

AND TO ME THAT'S ONE OF THE THING THAT'S THE MOST EXCITING ABOUT THIS PROGRAM.

SO I'M THRILLED THAT YOU ALL ARE HERE TO PARTAKE WITH US IN THAT CONVERSATION. THIS PROGRAM I WANT TO EMPHASIZE THAT WE REMAIN INCREDIBLY COMMITTED TO THIS PROGRAM AND WE INTEND TO SEE IT THROUGH. WHAT YOU'LL HEAR ABOUT TODAY ARE INNOVATIVE APPROACHES TO GETTING HUMANS TO LOW EARTH ORBIT, YOU'LL HEAR ABOUT HOW WE WANT THIS PROGRAM TO BE A PARTNERSHIP BETWEEN NASA AND THE PRIVATE SECTOR, WHICH MEANS WE BOTH HAVE A STAKE IN ITS SUCCESS AND THAT WE IN MANY WAYS CO-CREATE THAT PROGRAM WHICH IS WHAT THIS FORUM IS ALL ABOUT.

WE WANT YOU TO KNOW AS MICHAEL SAID IN HIS DISCLAIMER THAT THIS IS STILL A WORK IN PROGRESS AND PART OF OUR COMMITMENT TO PARTNERSHIP WITH YOU IS TO NOT STAND BEHIND CLOSED DOORS UNTIL IT'S ALL DONE, BUT TO, IN FACT, INTERACT WITH YOU IN THE CREATION OF THAT PLAN.

AND, AGAIN, AS I GET OFF THE STAGE, JUST TO EMPHASIZE HOW MUCH EXCITEMENT THERE IS AROUND THE AGENCY WITH ALL THE FOLKS THAT HAVE BEEN WORKING ON THIS ABOUT THE OPPORTUNITIES AND POSSIBILITIES HERE.

WE ALL SEE THIS AS TRULY GAME CHANGING FOR THE FUTURE.

OUR SPACE PROGRAM AS A NEW WAY OF GETTING HUMANS TO LOW EARTH ORBIT, BUT REALLY AS A WAY TO BROADEN ACCESS TO SPACE BEYOND WHAT WE'VE TRADITIONALLY BEEN ABLE TO DO.

SO IT'S A VERY EXCITING TIME.

WE THANK YOU AGAIN FOR YOUR PARTICIPATION AND WE LOOK FORWARD TO TELLING YOU WHERE WE ARE AND HEARING YOUR FEEDBACK AND INTERACTING WITH YOU ON QUESTIONS.

SO THANKS SO MUCH FOR COMING.

AND MY LAST JOB IS TO ACTUALLY INTRODUCE PHIL McALISTER, WHO HAS BEEN DOING AN ABLE JOB LEADING THE PLANNING EFFORT HERE FROM HEADQUARTERS, ALTHOUGH I SEE ALL THE CENTER GUYS HAVE PRACTICALLY PUSHED HIM OFF THE TABLE.

BUT WE GET USED TO THAT HERE.

SO PHIL WILL GET THE PANEL KICKED OFF.

>> THANKS.

GOOD MORNING, EVERYBODY.

I'M GLAD TO SEE SO MANY PEOPLE HERE IN THE AUDITORIUM AND ALSO WELCOME TO THOSE THAT ARE ONLINE AND WATCHING ON NASA TV.

MY NAME IS PHIL McALISTER.

I WILL SPEND A FEW MINUTES ON AN OVERVIEW OF THE COMMERCIAL CREW INITIATIVE.

I KNOW EVERYBODY IS VERY EAGER TO HEAR THE DETAILS OF WHAT WE'VE BEEN PLANNING OVER THE LAST COUPLE MONTHS AND WE HAVE PLENTY OF TIME TO DO THAT, SO I'M GOING TO JUST SPEND A FEW MINUTES ON SORT OF THE STRATEGIC PURPOSE AND OBJECTIVES OF THE PROGRAM.

SO NEXT SLIDE, PLEASE.

THESE ARE THE THINGS I'M GOING TO TOUCH ON.

I WANT TO START WITH OUR VISION OF THE FUTURE, OF WHERE WE ARE GOING HOPEFULLY WITH THIS PROGRAM.

TALK A LITTLE BIT ABOUT THE PURPOSE AND THE FRAMEWORK THAT WE ARE USING TO PUT THIS INITIATIVE TOGETHER, SOME OF THE FEATURES OF OUR STRATEGY.

AND THOUGHTS ABOUT OUR BASELINE PLANNING ASSUMPTIONS ASSOCIATED WITH THE PROGRAM.

NEXT SLIDE.

WHEN WE STARTED OUR PLANNING EFFORT, REALLY BACK IN FEBRUARY AND MARCH, WE REALLY FELT LIKE IT WAS IMPORTANT TO DEFINE AND AGREE ON WHERE WE WERE GOING WITH THIS PROGRAM IN TERMS OF OUR FUTURE STATE.

SO OUR VISION IS TO HAVE A ROBUST COMMERCIAL SPACE, HUMAN SPACE TRANSPORTATION SYSTEM WITH MULTIPLE PROVIDER, MULTIPLE CUSTOMERS, REPRESENTING A VARIETY OF SEGMENTS OF THE POPULATION AS WELL AS PURPOSES FOR THAT TRANSPORTATION TO LOW EARTH ORBIT.

AND WE CREATED THIS GRAPHIC.

WE HAVE VERY ROUTINE OPERATIONS WITH AIRPLANES AND AVIATION, TRANSPORTATION TODAY.

WE WOULD LIKE TO GET TO A POINT WHERE WE ARE IN A MUCH MORE ROUTINE BASIS FOR HUMAN SPACE FLIGHT.

AND THEN KEY TO NASA OBVIOUSLY IS GETTING OUR CREW UP AND DOWN TO THE INTERNATIONAL SPACE STATION, SO WE HAVE THE SPACE STATION IN THE UPPER RIGHT AND WE REALLY FEEL LIKE THAT REALLY DOES EMBODY WHAT WE'RE TRYING TO CREATE HERE AS A PROGRAM FOR OUR FUTURE STATE.

WE BELIEVE THE FUTURE WILL BE BENEFICIAL NOT ONLY FOR NASA, BUT FOR THE NATION AND THE OTHER CUSTOMERS THAT WE SEE FOR THIS SERVICE.

WE HAVE BEEN TALKING ABOUT ROUTINE HUMAN ACCESS TO SPACE FOR DECADES NOW. AND I TRULY BELIEVE THAT THIS COMMERCIAL CREW INITIATIVE WILL BE THE NEXT MAJOR STEP TO ACCOMPLISHING WHAT WE'VE BEEN TALKING ABOUT FOR SO MANY DECADES.

NEXT SLIDE, PLEASE.

A LITTLE BIT ABOUT OUR OBJECTIVES.

THAT'S OBVIOUSLY A KEY STATEMENT FROM WHICH EVERYTHING FLOWS.

WE ARE TRYING TO MEET THE NEEDS OF NASA AND THE NATION FOR HUMAN SPACE FLIGHT SERVICE SO IS WE CAME UP WITH THIS OBJECTIVE TO DRIVE OUR PLANNING.

IT IS TO FACILITATE, THIS IS ABOUT FOR THE DEMONSTRATION PHASE PRIMARILY WHERE WE'RE DEVELOPING AND DEMONSTRATING THESE CAPABILITIES, INVESTING IN THE DEVELOPMENT OF THIS CREW TRANSPORTATION SYSTEM, CAPABLE OF ACHIEVING SAFE, RELIABLE, AND COST EFFECTIVE SPACE BASED TRANSPORTATION.

YOU'LL PROBABLY HEAR ME SAY THAT SEVERAL TIMES.

SAFE, RELIABLE, COST EFFECTIVE HUMAN SPACE BASED TRANSPORTATION.

TO EARTH LOW ORBIT AND THE ISS.

ONCE THIS CAPABILITY IS MATURED, WE HOPE TO BE A RELIABLE NEAR TERM CUSTOMER FOR THESE SERVICES HERE AT NASA.

SO IN ORDER TO MEET HIS OBJECTIVES, WE'LL BE FOLLOWING AS LORI SAID AND IN-KNOW INDICATIVE WAY OF PARTNERS WITH THE PRIVATE SECTOR IN A HOPEFULLY PUBLIC/PRIVATE PARTNERSHIP THAT WILL FEATURE THESE SORT OF STRATEGIC GOALS.

WE REALLY WANT TO USE PRE-NEGOTIATED AGREEMENTS THAT SUPPORT THE DEMONSTRATION OF MULTIPLE SYSTEMS.

WE WANT A BROAD RANGE OF SYSTEMS IN OUR PORTFOLIO AS AN INVESTOR THAT'S KIND OF THE WAY WE LOOK AT THIS, YOU'D LIKE TO HAVE DIVERSITY IN YOUR PORTFOLIO AND THAT'S WHAT WE LIKE TO CHIEF, ALSO, WITH THIS PROGRAM.

WE DO-- WE ARE LOOKING FOR AN END TO END SOLUTION AT THE END OF THIS.

SOME AMOUNT OF INDUSTRY INVESTMENT CAPITAL, THIS IS A KEY FEATURE.

WE DEFINITELY WANT SKIN IN THE GAME ON THE PART OF THE PARTNERS.

WE FEEL LIKE THAT INCENTIVIZES PERFORMANCE, IT REALLY ALIGNS OUR GOALS SO THAT WE ARE ON BOARD ALONG WITH OUR PARTNER IN TRYING TO REALIZE THE OBJECTIVES.

WE DEFINITELY WANT TO HAVE IN A SATISFIES HUMAN SPACE FLIGHT CERTIFICATION OR HUMAN RATING AS WE HAVE REFERRED TO IT IN THE PAST.

AND WE DEFINITELY ARE PARTNERING WITH THE FAA.

WE'VE HAD A LOT OF INITIAL DISCUSSIONS AND WE HOPE THAT PARTNERSHIP WILL GET STRONGER GOING FORWARD.

SO AS YOU SEE, KEY TO THIS-- I'M SORRY.

THAT'S ON THE NEXT SLIDE.

I GOT AHEAD OF MYSELF HERE.

SO THESE ARE KIND OF THE OBJECTIVES AND THE APPROACH THAT WE'RE TRYING TO PUT IN PLACE THERE IS SOME RISK ASSOCIATED WITH THIS APPROACH AND THERE IS NO GUARANTEE OF SUCCESS, BUT IT WE ARE SUCCESSFUL, WE DO BELIEVE THAT THERE ARE SOME SIGNIFICANT BENEFITS TO NASA STRENGTHENING THE ISS PROGRAM, GIVING US AN ADDITIONAL U.S. CAPABILITY TO GET OUR CREW TO AND FROM SPACE STATION, AT TRACKING OTHER SPACE MARKETS, HOPEFULLY REDUCING THE COST OF SPACE TRANSPORTATION IN THE FUTURE.

SO LOTS OF BENEFITS IF WE'RE SUCCESSFUL.

NEXT SLIDE.

SO HOW ARE WE GOING TO DO THAT?

WHAT IS ANOTHER FRAMEWORK THAT WE WILL PUT IN PLACE TO ACCOMPLISH THESE GOALS?

WE PRIMARILY NEED AND WANT OUR CREW TO AND FROM THE SPACE STATION.

WE NEED THAT CAPABILITY TO GET THAT CREW UP AND DOWN.

WE'LL BE USING SOYUZ FOR MANY YEARS.

WE WOULD CERTAINLY LIKE TO HAVE THAT CAPABILITY AS A U.S. CAPABILITY GOING FORWARD.

AND WE ALSO WANT TO SUPPORT THE DEVELOPMENT AS I'VE SAID FOR OTHER CUSTOMERS FOR THE HUMAN SPACE TRANSPORTATION TO AND FROM LOW EARTH ORBIT.

WE'RE TRYING TO ACHIEVE BOTH OF THESE GOALS, NOT ONE AT THE EXPENSE OF THE OTHER.

SO THIS FRAMEWORK REALLY NEEDS TO ACCOMMODATE A DIVERSE RANGE OF POTENTIAL PASSENGERS.

WE ARE NOT TALKING ONLY ABOUT BILLIONAIRES, BUT RESEARCHERS AND SCIENTISTS FROM ALL WALKS OF LIFE AND HOPEFULLY IN A VARIETY OF TECHNICAL DISCIPLINES THAT WILL BE ABLE TO LEVERAGE THESE SERVICES AS WELL AS OUR ASTRONAUTS, ASTRONAUTS FROM OTHER COUNTRIES, POTENTIALLY HUMAN SPACE FLIGHT PARTICIPANTS, A BROAD RANGE OF INDIVIDUALS WE HOPE TO BE ABLE TO LEVERAGE THIS SERVICE.

WE WANT TO SUPPORT A MULTIPLE RANGE OF COMMERCIAL SYSTEMS.

WE WANT TO PROVIDE HIGH LEVEL GOALS IN TERMS OF THE PERFORMANCE OF THESE SYSTEMS, HIGH LEVEL GOALS AND ALLOW MAXIMUM INNOVATION.

AGAIN, MAXIMUM FLEXIBILITY, TO COME UP WITH INNOVATIVE SOLUTIONS.

IN TERMS OF HUMAN RATING AND THAT'S WHAT MOST OF THE PANEL WILL SPEND TALKING ABOUT TODAY, WE DO HAVE ABSOLUTE THINGS THAT WE NEED TO HAVE TO GET THAT HUMAN RATING CERTIFICATION, BUT IN TERMS OF WHAT WE'RE TRYING TO ACCOMPLISH FOR PERFORMANCE, WE'RE GOING TO TRY TO KEEP THAT AS HIGH LEVEL AS POSSIBLE ALLOWING MAXIMUM INNOVATION ON THE PART OF THE PRIVATE SECTOR.

AND YOU CAN SEE SOME OF THE OTHER FEATURES AS WE GO FORWARD.

KEY TO THIS FRAMEWORK IS THAT THERE ARE OTHER CUSTOMERS FOR THIS SERVICE.

AND THERE ARE SEVERAL POSITIVE INDICATORS IN A MAKE US FEEL THAT THERE ARE A LOT OF POTENTIAL A LOT OF CUSTOMERS FOR THE SERVICE.

IT IS NOT NASA'S JOB, WE DO NOT SEE IT AS NASA'S JOB TO CLOSE ANYBODY'S BUSINESS CASE, BUT WE DO HAVE AS A FUNDAMENTAL FEATURE OR ASSUMPTION THAT THERE WILL BE OTHER CUSTOMERS.

AND LOOKING HISTORICALLY OVER THE LAST 30 YEARS SINCE 1978, BOTH RUSSIA AND THE UNITED STATES HAVE LAUNCHED ASTRONAUTS FROM OTHER COUNTRY INTO LOW EARTH ORBIT. IT'S BEEN ABOUT 100 SINCE WE STARTED.

THERE'S ALSO BEEN SINCE 2001 EIGHT SPACE FLIGHT PARTICIPANTS PLUS ONE PREFLIGHT OF A SPACE FLIGHT PARTICIPANT WHICH AVERAGES ABOUT ONE A YEAR.

SO THAT'S HISTORICAL, REAL HISTORICAL DEMAND THAT YOU CAN POINT TO THAT SHOWS THAT THERE IS -- THERE ARE OTHER CUSTOMERS FOR THIS SERVICE.

THERE'S ALSO NUMEROUS MARKET STUDIES THAT POTENTIALLY SHOW A VERY ROBUST DEMAND FOR THIS AS WELL AS ANOTHER POSITIVE INDICATOR IS BIGELOW HAS REPORTED \$180 MILLION ON THEIR INFLATABLE MODULES.

THEY ANTICIPATE VERY ROBUST DEMAND POTENTIALLY AS MANY AS 100 FLIGHTS BY THE END OF THE DECADE.

SO ALL THESE ARE VERY, VERY POSITIVE INDICATORS AS WELL AS THE RECENT COMMERCIAL CREW DEVELOPMENT ACTIVITIES THAT NASA AWARDED BACK IN FEBRUARY.

WE RECEIVED OVER 30 PROPOSALS FROM USA AEROSPACE INDUSTRY PROVIDING OR PROPOSING TO PROVIDE CAPABILITIES AND SYSTEMS FOR COMMERCIAL CREWS.

SO THERE'S A VERY STRONG INTEREST ON THE PART OF INDUSTRY, MOST OF WHICH IS REPRESENTED HERE, TO PROVIDE -- TO SUPPLY THE SERVICES FOR THIS CAPABILITY.

BUT MOST IMPORTANT IN MY MIND, THE KEY INGREDIENT THAT MADE THIS PROGRAM FEASIBLE IN MY MIND WAS THE DECISION ON THE PART OF THE ADMINISTRATION TO EXTEND THE LIFE OF THE SPACE STATION LIKELY TO 2020 OR BEYOND.

IN MY MIND THE SPACE STATION MARKET PROVIDES FOR THE FIRST TIME IN HISTORY A SUSTAINABLE, RELIABLE CUSTOMER FOR CREW TRANSPORTATION SERVICES TO LOW EARTH ORBIT.

THAT'S KEY INGREDIENT THAT MADE THIS INITIATIVE FEASIBLE.

NEXT SLIDE, PLEASE.

SO SOME OF THE ATTRIBUTES THAT WE ARE LOOKING TO TRY AND ACHIEVE WITH THIS PROGRAM, WE HAVE NOT COME UP WITH A SPECIFIC ACQUISITION STRATEGY, SO IF YOU'RE LOOKING FOR DETAILS ON THAT TODAY, WE ARE NOT GOING TO PROVIDE THOSE.

THAT'S A DISCLAIMER RIGHT UP FRONT.

BUT WE ARE WORKING THAT VERY, VERY HARD AND HOPE TO HAVE AN ANSWER SOON ON THAT. BUT WE HAVE NOT FINALIZED OUR ACQUISITION STRATEGY.

BUT SOME OF THE FEATURES THAT WE WOULD LIKE TO GET OUT OF THIS -- THIS PRINT IS EVEN SMALL TO FOR ME, SO I'M SURE IT'S SMALL FOR YOU GUYS IN THE AUDIENCE -- WE ARE LEVERAGING THE LESSONS LEARNED FROM SOME OF OUR PREVIOUS PROGRAMS INCLUDING THE COMMERCIAL ORBITAL TRANSPORTATION SERVICES PROGRAM AS WELL AS SOME OF OUR PREVIOUS HUMAN SPACE FLIGHT ENDEAVORS LIKE THE ORBITAL SOMEPLACE FLIGHT AND CONSTELLATION, AND WE HAVE IDENTIFIED KEY ATTRIBUTES.

AS I MENTIONED, PERFORMANCE BASED MILESTONES.

WE WANT A FIXED GOVERNMENT INVESTMENT BECAUSE WE BELIEVE THAT INCORPORATES A DISCIPLINE THAT WE WOULD LIKE TO SEE A COST EFFECTIVE DISCIPLINE THAT IS KEY TO OUR STRATEGY.

WE WANT INDUSTRY INVESTMENT, AND WE FEEL LIKE A LOT OF THESE FEATURES ARE SYNERGISTIC.

IF THE INDUSTRY HAS SKIN IN THE GAME THAT WILL INCENTIVIZE THEM TO FIND OTHER CUSTOMERS, INCENTIVIZE THEM FOR PERFORMANCE.

WE DEFINITELY WANT COMPETITION.

WE NEED MULTIPLE PROVIDERS THAT ARE COMING FORWARD WITH INNOVATIVE SOLUTIONS AND HOPEFULLY AT THE END HAVE MORE THAN ONE SERVICE PROVIDER THAT WE CAN USE FOR PURCHASING SERVICES AT THE END.

NEXT SLIDE, PLEASE.

SO WHAT THE BASELINE PROGRAM THAT WE'RE PUTTING FORWARD?

AS PART OF THE PRESIDENT'S BUDGET REQUEST, THERE WAS \$5.8 BILLION TO ACCOMPLISH THE DEVELOPMENT PROGRAM -- DEVELOPMENT PART OF THIS PROGRAM.

SO YOU CAN SEE AT THE UPPER SORT OF THE ROW ON THE RIGHT OR THE TOP, WE'VE GOT THE DEVELOPMENT ENDING IN DEMONSTRATION FLIGHTS, THAT'S THE FIVE YEAR PROGRAM, THE \$5.8 BILLION WAS ALLOCATED TO.

AND THEN ONCE SUCCESSFUL, ONCE THESE SYSTEMS ARE MATURE AND ACHIEVE CERTIFICATION, WE DO ANTICIPATE CONTRACTING WITH THOSE COMPANIES FOR MISSIONS OUT BEYOND 2016 FOR SERVICES.

THAT IS WHAT THE PROGRAM BASELINE ASSUMPTIONS ARE.

AGAIN, WE ARE USING A NONTRADITIONAL APPROACH AND WHEN WE LOOK AT INPUTS THAT WE HAVE RECEIVED FROM INDUSTRY IN TERMS OF PREVIOUS ESTIMATES THAT THEY HAVE HAD BOTH TO NASA AND TO THE AUGUSTINE COMMITTEE AS WELL AS OTHERS, WE BELIEVE THAT WE CAN FUND UP TO FOUR PROVIDERS WITH THAT \$5.8 BILLION.

AND THAT IS A KEY ASPECT TO OUR STRATEGY GOING FORWARD BECAUSE COMPETITION, AGAIN, INCENTIVIZES PERFORMANCE, SUPPORTS COST EFFECTIVENESS AND DOES NOT MAKE NASA DEPENDENT ON A SINGLE PROVIDER.

THIS IS GOING TO BE A CHALLENGING PROGRAM FOR BOTH NASA AND THE PRIVATE SECTOR AND IF SOMEBODY STUMBLES ALONG THE WAY, WE WOULD LIKE TO HAVE OTHER PROVIDERS THAT HOPEFULLY WE CAN RELY ON.

BASELINE PLAN REFLECTS A VERY SUCCESSFUL ORIENTED, VERY CHALLENGING SCHEDULE OF ACHIEVING SORT OF INITIAL OPERATING CAPABILITY BY 2015 AND THEN SERVICES SHORTLY THIS AFTER.

AND OF COURSE THERE'S A LOT OF DISCUSSION HERE IN D.C. AND THROUGHOUT THE NATION ON WHAT THIS PROGRAM WILL BE GOING FORWARD.

SO IF REQUIRED, WE ARE GOING TO ADJUST OUR PLANS FOR WHATEVER LAWS GET PASSED BY THE CONGRESS, FUTURE ADMINISTRATION DIRECTION, INPUT FROM YOU GUYS.

WE ARE GOING TO ADJUST IF NECESSARY, BUT THIS IS SORT OF THE BASELINE PROGRAM THAT WE ARE PUTTING FORWARD TODAY.

WITH THAT -- I DO HAVE A SUMMARY SLIDE.

NEXT SLIDE.

I THINK I'VE SAID MOST OF THIS STUFF BEFORE.

LEVERAGING LESSONS LEARNED THAT WE HAVE DEVELOPED OVER 50 YEARS OF HUMAN SPACE FLIGHT TRYING TO MEET BOTH OBJECTIVES TO ISS CREW TRANSPORTATION AS WELL AS ENABLE THE GROWTH OF COMMERCIAL HUMAN SPACE FLIGHT INDUSTRY.

AND ALL THE FUTURE BENEFITS THAT WE HOPE WHEN WE ARE SUCCESSFUL.

SAFE, RELIABLE, COST EFFECTIVE CREW TRANSPORTATION TO ISS, FREE OUR LIMITED RESOURCES SO WE CAN GO BEYOND LO EVENT, RECENT OUR ALLIANCE ON FOREIGN SYSTEMS. THAT'S WHAT WE'RE TRYING TO ACCOMPLISH.

LOTS OF GOOD BENEFITS THERE IS.

WITH THAT, I'M DONE AND I'M GOING TO MOVE OVER TO OUR PANEL SESSION WHICH WILL GIVE YOU -- YOU'LL PROBABLY FEEL A LITTLE WHIPLASH RIGHT NOW BECAUSE I'M AT THE 10,000 FOOT LEVEL AND WE'RE ABOUT TO GO AT ABOUT THE 10 FOOT LEVEL, SOME OF THE VERY TECHNICAL DETAILS THAT WE HAVE DEVELOPED OVER THE LAST FEW MONTHS.

WE'LL START WITH ED MANGO, WHO IS MY NEW BEST FRIEND.

ED AND I TALKED VERY REGULARLY.

HE IS MY COUNTERPART LEADING THE PLANNING EFFORTS AT THE KENNEDY SPACE CENTER WHICH HAS BEEN NAMED AS THE LEAD CENTER FOR THE COMMERCIAL CREW INITIATIVE.

NEXT UP WILL BE SCOTT THURSTON, WHO HAS BEEN OUR KEY POINT PERSON ON THE INSIGHT AND OVERSIGHT APPROACH THAT WE'RE PUTTING TOGETHER.

THAT IS A VERY FUNDAMENTAL AND UNIQUE AND INNOVATIVE APPROACH AND SCOTT WILL BE GIVING YOU SOME DETAILS ON THAT.

AND THEN BRENT JETT FROM THE JOHNSON SPACE FLIGHT CENTER IS SERVING AS THE DEPUTY FOR THE PLANNING EFFORT.

JSC IS THE DEPUTY LEAD CENTER AND BRENT HAS BEEN KEY AT PROVIDING THAT CREW OFFICER EXPERIENCE AND PERSPECTIVE WHICH HAS BEEN VERY BENEFICIAL FOR THE DEVELOPMENT OF OUR PLANS GOING FORWARD.

MARIA COLLURA WILL BE TALKING ABOUT OTHER KEY ASPECTS OF THE PROGRAM.

ED WILL BE TALKING MOSTLY ABOUT THE RFI THEMES THAT WE HEARD AND SOME OF OUR RESPONSES.

AS I MENTIONED SCOTT WILL BE TALKING INSIGHT/OVERSIGHT.

BRENT REALLY COVERING MOST OF THE REQUIREMENTS AND STANDARDS AND HOW WE'RE DEALING WITH THAT.

AND MARIA, SOME OF THE OTHER KEEP TOPICS THAT WE HEARD FROM THE RFI.

AND ALSO HERE AT THE PANEL WHO WE BROUGHT UP TO TAKE ANY QUESTIONS THAT YOU MIGHT HAVE IS THE PROGRAM MANAGER FOR THE CURRENT COST EFFORT, AND ALAN IS BRINGING HIS TEAM AND THEIR EXPERIENCES TO BEAR BECAUSE AS YOU CAN SEE, OUR PROGRAM IS VERY ANALOGOUS TO THE COTS PROGRAM AND WE'RE TRYING TO LEVERAGE THOSE LESSONS THEY'VE LEARNED OVER THE LAST FIVE YEARS.

SO WITH THAT, I'LL TURN IT OVER TO ED WHO WILL START THE PANEL SESSION.

THANK YOU.

>> GOOD MORNING, EVERYBODY.

I'M ED MANGO.

I WANT TO THANK ALL OF THOSE HERE AND ON THE WEB.

WHAT WE'RE TRYING TO BUILD IS A PARTNERSHIP AND IN ORDER TO DO THAT, WE HAVE TO BE ABLE TO COMMUNICATE AND I THINK THAT'S WHAT WE'RE TRYING TO DO WITH THIS PARTICULAR EXERCISE TODAY.

IT'S ALSO A VERY GOOD DAY TO BE PART OF COMMERCIAL CREW.

I THINK THE BIGGEST PART OF THAT IS I'M PART OF A TEAM THAT IS MULTICENTERED WITH EXPERIENCES FROM VARIOUS BACKGROUNDS AND TOGETHER WE'LL GO TRY TO PUT THIS THING TOGETHER AND I'M JUST HAPPY AND HONORED TO BE PART OF A TEAM OF VERY SMART PEOPLE.

WHAT WE WANT TO TALK ABOUT FROM AN AGENDA STANDPOINT ON OUR FIRST CHART IS WE HEARD YOU ALL IN THE RFI WE PUT OUT AND WE'LL TALK ABOUT THE PROCESS WE DID IN TERMS OF UNDERSTANDING WHAT THAT RFI RESPONSES HAD TO SAY BACK TO US.

WE'LL LOOK AT COMMON THEMES AND THEN WE'LL TALK ABOUT SOME OF THOSE COMMON THEMES AND HOW WE PLAN TO ADDRESS THOSE SPECIFIC THINGS.

YOU'RE NOT GOING TO HEAR ABOUT ALL THE RESPONSES BACK FROM THE RFI BECAUSE THERE JUST ISN'T ENOUGH TIME, BUT WE WANTED TO HIT THE ONES THAT ARE MOST IMPORTANT TO OUR OVERALL DEVELOPMENT OF COMMERCIAL CREW.

AND THOSE RESULTS BACK FROM YOU ALL THROUGH NASA FEEDBACK IS OUR PROGRAMMATIC APPROACH.

SO WE'LL GO THROUGH THAT AND ALSO THE INSIGHT/OVERSIGHT APPROACH LOOKING AT WHAT EAT ROLES OF THE INSIDE TEAM AND HOW WE HOPE THAT THEY WILL WORK TOGETHER WITH THE PROVIDERS AND PARTNERS.

AND THE ROLE OF THE OVERSIGHT TEAM TO MAKE SURE THAT IT'S NOT TOO MUCH.

WE'LL ALSO TALK ABOUT TECHNICAL REQUIREMENTS AND TECHNICAL STANDARDS.

WE HIGHLIGHTED THE TECHNICAL STANDARDS A LOT IN THE RFI AND WE'LL TALK ABOUT THAT.

ALSO OUR INITIAL PATH TO FAILURE TOLERANCE.

I THINK IT'S A NEW AND UNIQUE PATH IN HOW TO DEAL WITH THAT PARTICULAR PART OF THE REQUIREMENTS.

ALSO TALK ABOUT FROM A TOP LEVEL TO GET THROUGH CERTIFICATION AND GET INTO A FLIGHT REGIME ON MAKING SURE WE'RE SAFE TO FLY EACH NIGHT.

TALK A LITTLE BIT ABOUT RELIABILITY.

WE'RE TALKING ABOUT A FEW OTHER THINGS THAT IS THE FACILITY USAGE AND HOW WE CAN USE ON THE NASA FACILITIES, HOW YOU ALL CAN USE OTHER NASA CAPABILITIES THROUGHOUT THE AGENCY IN ORDER TO GET THIS CAPABILITY ON THE GROUND AND GOING.

TALK A LITTLE BIT ABOUT OUR CONCEPT OF COTS AND THE ROAD MAP AHEAD.

THE EFFORT STARTED BACK THIS MAY, A LOT OF WORK DONE TO PUT TOGETHER THE BASELINE OF AN RFI THAT WENT OUT IN MAY.

WE PUT IT OUT IN ORDER TO GET FEEDBACK AND WE DEFINITELY GOT FEEDBACK, WHICH IS VERY GOOD.

PART OF THE KEY PART OF THAT DISCUSSION WAS SOMETHING THAT WE CALL THE CURP. AND THAT PLAN WAS THE FIRST ATTEMPT TO SAY THIS IS WHAT WE'RE TALKING ABOUT HOW TO HUMAN RATE A CAPABILITY IN THE SYSTEM.

IT WAS TAILORED FROM 8705 WHICH IS A NASA INTERNAL DOCUMENT THAT SAYS HERE'S WHAT WE NEED TO DO TO BE HUMAN RATED.

AND THAT IS REALLY DRIVEN TOWARDS CERTAIN NASA PROGRAMS, SO IT HAS TO BE TAILORED.

AND WE TRIED TO DO THAT THROUGHOUT CURP PROCESS.

WE ALSO TALKED ABOUT VARIOUS TYPES OF REQUIREMENTS, TYPE ONE, TWO AND THREES AND WE ALSO TALKED ABOUT IT IN THE RFI.

WE SAID IN THE FUTURE WE'LL GIVE MORE INFORMATION ABOUT WHAT WE CALL AN SRD, A SERVICE REQUIREMENTS DOCUMENT, BACK TO ISS.

THAT IS IT WHAT DO WE NEED TO DO IN ORDER TO SUPPLY AN ISS CAPABILITY WHEN THAT BECOMES NECESSARY.

AND ALSO THE KEY INTERFACE DOCUMENT BETWEEN THIS SYSTEM AND OF COURSE THE ISS.

THOSE WILL BE FUTURE RELEASES AND THEY STILL WILL BE FUTURE RELEASES IN A FORMAT THAT WE ALL WHETHER ACCEPT.

SO FAR WE'VE GOT 35 RESPONSES BACK FROM INDUSTRY.

WHAT WE DID IN ORDER TO ADJUST THAT, IT WASN'T JUST THE PLANNING OFFICE THAT REVIEWED ALL THOSE.

WE SET UP A NASA WIDE TEAM TO LOOK AT ALL THOSE RESPONSES AND SAY WHAT DO THEY MEAN TO THE VARIOUS DIFFERENT ENTITIES WITHIN NASA.

AND WE PUT TOGETHER BASICALLY OUR RESPONSE TO RESPONSES.

WE ALSO HAVE BEEN SHARING THAT VERY MUCH WITH THE FAA.

THE NEXT TWO CHARTS, I'M NOT GOING TO GO THROUGH THE DETAILS BECAUSE THEY'RE REALLY SAYING HERE'S ALL THE THEMES WE HEARD.

SO IF YOU GO TO THE NEXT CHART.

ALL THE THEMES YOU HEARD ARE EVERYTHING ON THIS LIST.

THE THINGS IN BLUE IS WHAT WE'LL TALK ABOUT TODAY.

THERE ARE SOME THINGS THAT WE WON'T ADDRESS IN IT THIS PARTICULAR FORUM AND WILL ADDRESS THROUGH OTHER METHODS IN FUTURE FORUMS.

WE THOUGHT BY ADDRESSING THE ONES IN BLUE WE'RE HIGHLIGHTING THE MOST IMPORTANT THING WE GOT BACK FROM THE RFI AND FROM THE THEME THAT WE WERE ABLE TO CAPTURE. NEXT CHART.

THERE IS ONE SECTION ON HERE THAT TALKS ABOUT ACQUISITION.

YOU'RE IN THE GOING HEAR A LOT OF WORDS ABOUT ACQUISITION TODAY, SO IF YOU'RE EXPECTING THAT, WE WANT TO SET THE EXPECTATIONS.

WE'RE VERY MUCH WORKING ON THAT AND WHEN WE WORK THROUGH THOSE DETAILS WITHIN NASA AND WITHIN THE GOVERNMENT, THEN WE'LL BE GLAD TO SHARE THOSE WITH THE COMMUNITY.

SO GETTING IN FOR SOME OF DETAIL, THE PROGRAMMATIC APPROACH.

WHAT WE HEARD FROM THE CURP OR FROM THE RFI AND WHAT THE CURP TALKED ABOUT WAS AN APPROACH FOR THE PROGRAM THAT PROBABLY NEEDED ANOTHER REFINEMENT FROM WHERE IT WAS WITHIN THE CURP AND THAT THAT'S WHAT WE WANTED TO SEE, WHAT WAS THAT REFINEMENT EXPECTED TO BE FROM INDUSTRY.

AND ALSO FROM INTERNAL.

SO WE DID A NUMBER OF INTERNAL REVIEWS, WE ALSO LOOKED AT ALL THE FEEDBACK WE GOT FROM THE PARTNERS THROUGH THE RFI.

AND WHAT WE BASICALLY ARE COMING BACK WITH IS WE BELIEVE THAT THERE NEEDS TO BE A NUMBER OF STATEMENTS ABOUT PROGRAM CONTROL.

SO THESE ARE THOSE BASIC STATEMENTS.

WE BELIEVE THE CREW COMMERCIAL RAM WHEN IT IS ESTABLISHED AND THIS INITIATIVE AND THE PROGRAM THAT ASSUMES THE INITIATIVE IS REQUIRED AND IS AND WILL MANAGE THE REQUIREMENTS THAT ARE GOVERNING THE CERTIFICATION FOR THE CREW TRANSPORTATION SYSTEM.

THAT IS THE CRUX OF WHAT THIS PROGRAM IS TRYING TO ACCOMPLISH.

IT IS THE FACT THAT WE NEED TO MANAGE THOSE REQUIREMENTS AS WELL AS THE RISKS.

THAT WILL BE THE SINGLE INTERFACE OF THE PURPOSE OF THE PROGRAM.

YOU CAN LOOK AT CREW TRANSPORTATION CERTIFICATION AS REALLY OUR HUMAN RATING REQUIREMENTS.

IS THAT'S A SLANG TERM FOR SAYING WE NEED A CERTIFIED SYSTEM.

IN ADDITION WE WANT TO STREAMLINE THE OVERSIGHT AND CONTROL APPROACH.

WHAT WE DON'T WANT TO DO IS HAVE CONTINUOUS OVERSIGHT, CONTINUOUS DISCUSSIONS, IN WHICH THE GOVERNMENT IS CONSTANTLY TELLING OUR PARTNERS WHICH WAY TO GO.

WE REALLY WANT THIS TO AN PARTNERSHIP WHERE THE PROVIDER IS REALLY DRIVING THE BOAT ON THEIR DESIGN AND WE'RE HELPING THEM, WE'RE PARTNERS WITH THEM TO DO THAT.

ALL THE PROGRAMS HAVE A GOAL OF MINIMIZING -- BECAUSE OUR APPROACH IS DIFFERENT, WE THINK WE HAVE A VERY GOOD CHANCE OF TRYING TO MINIMIZE THE NUMBER OF BOARDS AND PANELS.

WE REALLY WANT TO HAVE ONE INTERFACE THAT WILL MAKE ANY KIND OF DECISIONS AND DIRECTIONS BETWEEN A PARTNER AND THE GOVERNMENT AND NASA. AGAIN THIS IS TRYING TO PUSH THE PARTNERSHIP THAT SAYS IF WE KEEP IT AT A HIGH LEVEL, THE PARTNERS CAN DEAL WITH THE DETAILS THAT HAVE TO GO ON WITHIN THEIR DESIGN.

NEXT WE WANT TO TALK ABOUT THE INTERFACES.

NASA HAS AN OUTSTANDING GOVERNANCE ORGANIZATION SYSTEM THAT VERY MUCH TALKS ABOUT HOW WE DEAL WITH OUR ENGINEERING PARTNER, OUR SAFETY PARTNERS, AND OUR HEALTH AND MEDICAL PARTNERS.

WHAT WE WANT TO DO IS MAKE SURE THAT RELATIONSHIP IS WELL ESTABLISHED AND VERY CLEAR BETWEEN WHAT THE PROGRAM NEEDS, WHAT THE TYPE AUTHORITY WILL BE GIVEN US AND WHAT WE WILL BE GIVING THE PARTNERS AS WE GO FORWARD.

THE TECH AUTHORITIES WILL BE GIVING RECOMMENDATIONS TO THE PROGRAM.

THAT IS THEIR PURPOSE.

THEIR PURPOSE IS TO TELL THE PROGRAM HERE ARE THE RISKS YOU'RE DEALING WITH, HERE ARE MITIGATIONS AGAINST THOSE RISKS.

AND THIS IS WHAT THEY WOULD RECOMMEND.

THE PROGRAM THEN TAKES THAT DATA ALONG WITH THE PARTNER DATA AND TRIES TO FIGURE OUT WHAT ROACH WE NEED TO GO TAKE WHEN WE COME UP AGAINST A ROAD BECOME OR SOME TYPE OF ISSUE WE'VE GOT WORK THROUGH IN TERMS OF RISK.

SO I WANT TO CLARIFY THAT THAT IS THE ROLE OF THE TECH AUTHORITIES IS TO HELP THE PROGRAM WITH TECHNICAL ASSESSMENTS AND TECHNICAL RISK UNDERSTANDING.

THE INTERFACE WITH THE COMMERCIAL PARTNERS IS ALSO ONE THAT IS SUPPOSED TO AN PARTNERSHIP AND WHAT WE WANT IS WE WANT TO BE ABLE TO ADDRESS WHEN IS THERE REALLY OVERSIGHT.

OVERSIGHT IS DIRECTION FROM THE NASA PARTNER.

WE WANT TO TRY TO MINIMIZE THAT SO THAT WE HAVE INNOVATION, SO WE CAN HAVE SPEED WITH DEVELOPMENT AND THOSE KIND OF THINGS.

AND REALLY THE INTERFACES THAT WE WILL BE DOING DIRECTION AT ARE GOING TO BE THROUGH MILESTONES.

THAT IS THE ENTRANCE CRITERIA TO GET INTO MILESTONES AND EXIT CRITERIA TO EXIT MILESTONE.

AND ALSO WHEN WE GET READY FOR CERTIFICATION OF OUR SYSTEM.

THOSE ARE REALLY THE ONLY PLACES WHERE WE INTEND TO HAVE DIRECT DIRECTION AND OVERSIGHT FROM OUR SIDE OF THE PARTNERSHIP TO THE COMMERCIAL PROVIDER AND COMMERCIAL PARTNERS.

IT IS A PARTNERSHIP.

WE WANT TO HOLD BACK ON CONSTANTLY GIVING DIRECTION WHICH IS SOMETHING THAT WE WANT TO BACK AWAY FROM.

THE NEXT PART WE WANTED TO ADDRESS WAS WHAT ARE THE CONCERNS WITH OUR PROCESS FOR DOCUMENTATION, OUR REQUIREMENTS AND OUR STANDARDS.

AND THIS BECOMES LIKE THE MEAT WHAT HAVE IT TAKES IN ORDER TO GO PUT TOGETHER A SYSTEM.

SO NEXT CHART.

THIS PICTORIAL CHART IS IT AN ILLUSTRATION THAT SHOWS THAT EVERYTHING ON THE LEFT IS THE ITEMS THAT BASICALLY ARE INPUTS TO OUR LIBRARY.

EVERYTHING ON THE LEFT IS IN THE LIBRARY FORMAT THAT SAYS THESE ARE ALL THE INPUTS WE NEED TO DEAL WITH.

AND THEN WHAT WE'RE TRYING TO DO IS PACKAGE THEM IN A PLANNING OFFICE SETTING, TRYING TO PACKAGE THOSE IN THESE FOUR QUADRANTS THAT SAYS WHERE DO A SPECIFIC ITEM THAT MIGHT BE IN THAT LIBRARY FALL INTO.

AND WE'VE BROKEN THAT DOWN INTO FOUR BASIC CATEGORIES OF AREAS OF THEMES THAT WE NEED TO PUT THINGS IN.

THE FIRST IS OUR ROLES AND INTERFACES, THAT IS THE ROLES BETWEEN US, THE NASA PARTNER, AND THE PARTNER ITSELF, THE COMMERCIAL PARTNER.

WE WANT TO UNDERSTAND WHAT THOSE ROLES ARE.

WE WANT TO DEFINE WHAT THOSE ROLES ARE.

INSTEAD OF EXPLORING WHAT THOSE ROLES ARE IN THE FUTURE AND THEN WE HAVE TO CHANGE IT.

WE WANT TO TRY TO UNDERSTAND WHAT THOSE ROLES ARE TODAY, COMMUNICATE THAT WITH YOU ALL AND OVER TIME LOCK THAT IN ABOUT AND SO THAT'S WHAT'S PART OF THAT RED BOX THERE.

IT ALSO IS ALL THE PROCESSES NEEDED FOR CERTIFICATION, HOW ARE WE PLANNING TO CERTIFY THIS VEHICLE, HOW ARE WE PLANNING TO HAVE THE COMMERCIAL PROVIDER PROVIDE THE DATA SO THAT WE CAN PARTNER THAT CERTIFICATION AS IT MOVES FORWARD. ALL THAT PART, THE PROCESS PART, IS IN THE RED.

OVER IN THE YELLOW BOX IS OUR CREW TRANSPORTATION REQUIREMENTS.

THIS AGAIN YOU CAN RELATE THAT TO THE IDEA OF HUMAN RATING REQUIREMENTS OR HUMAN RATING.

ALL THOSE THINGS ARE REQUIRED IN ORDER TO GET THAT HUMAN RATING FOR US TO FLY A NASA CREW ON THAT PARTICULAR SYSTEM ARE GOING TO BE RELATED TO THAT YELLOW BOX. AND THEN WE HAVE STANDARDS.

NASA HAS OVER 50 YEARS OF EXPERIENCE.

WE DON'T WANT TO LOSE ANY OF THAT EXPERIENCE.

AND SO OVER TIME, NASA AND OUR TECH AUTHORITIES HAVE PUT A NUMBER OF THOSE EXPERIENCES INTO STANDARDS.

WE WANT TO BE ABLE TO USE THOSE STANDARDS.

AT THE SAME POINT WE DON'T WANT TO DICTATE THOSE STANDARDS. WE WILL HAVE PROCESSES BY WHICH WE WILL TALK ABOUT HERE'S THE STANDARDS THAT WE HAVE USED AND DEVELOPED OVER OUR EXPERIENCE AND THEN WE'LL HAVE A PROCESS THAT SCOTT WILL GO THROUGH -- I'M SORRY, BRENT, THAT WILL TALK ABOUT HOW WE'LL WORK THROUGH SOME OF THOSE STANDARDS.

THOSE ARE OVERALL THEMES WHAT WE'RE TRYING TO GET ACROSS IN THE WAY WE WANT TO DEAL WITH EVERYTHING THAT'S IN THE LIBRARY. NEXT CHART.

I THINK I'VE COVERED MOST OF THE WORDS THAT ARE PART OF THIS PICTORAL CHART.

THE ONLY THING I WOULD SAY IS BACK IN RFI WE HAD TYPE ONE REQUIREMENTS.

YOU'RE NOT GOING TO SEE TYPE ONES ANYMORE. BECAUSE TYPE ONES ARE AS IT SAID IN RFI ONE ARE REALLY MANDATORY REQUIREMENTS.

TYPE ONES ARE GOING TO BE FOLDED INTO WHAT YOU CAN LOOK AT AS BEING CREW TRANSPORTATION REQUIREMENTS.

AND THE PROCESSES THAT MIGHT BE IN A TYPE ONE ARE REALLY GOING TO BE IN OUR PROCESSES THAT ARE IN THE RED BOX.

AND THAT'S HOW WE'RE PACKAGING OUR THOUGHT PROCESS TO LOOK FORWARD TO HOW DO WE REALLY WANT TO DOCUMENT OUR SUITE OF THINGS WE NEED TO DO AND PARTNER WITH THE COMMUNITY.

AND SO FROM A TOP LEVEL, THAT'S OUR PROGRAMMATIC APPROACH.

HOPEFULLY BY THIS EXPLANATION AND THROUGH YOUR QUESTIONS YOU MIGHT ASK LATER AND OVER CONTINUING DIALOGUE WE WILL TAKE WHAT WE GOT BACK FROM THE RFI, THIS IS OUR APPROACH AT THIS MOMENT.

IF THERE'S MORE FEEDBACK YOU WOULD LIKE TO GIVE US, WE CERTAINLY WOULD LIKE TO TAKE THAT ON THE OVERALL PROGRAMMATIC APPROACH.

SO LIKE PHIL SAID, HE WAS AT THE 50,000 FOOT LEVEL.

I BROUGHT YOU DOWN TO THE 20,000 FOOT LEVEL.

AND NOW AT THE 10,000 FOOT LEVEL, WE'LL HAVE FOLKS WITH A FEW MORE OF THE DETAILS.

SO I'D LIKE TO INTRODUCE SCOTT WHO WILL GO THROUGH THE INSIGHT AND OVERSIGHT.

>> THANK YOU AND GOOD MORNING.

REALLY THIS IS TALKING ABOUT THOSE INTERFACES, THE STRONG THINGS WE HEARD OUT OF THE RFI WHERE FOLKS WERE WONDERING WHAT IS THIS COMMUNICATION PATH, THIS DIRECTION GOING TO WORK WITH THE PROGRAM.

SO IF WE GO FOR THE FIRST CHART.

REALLY AS A RESULT OF THAT, THE FIRST THING THE PLANNING TEAM DID WAS RELEASE THE FRANK BOWER-WAYNE HALE INSIGHT/OVERSIGHT RECOMMENDATIONS FOR THE COMMERCIAL CREW TRANSPORTATION SERVICE.

SO HOPEFULLY MOST FOLKS HAVE GOT IT AND READ THAT.

THESE ARE EXCERPTS RIGHT OUT OF THAT PAPER TALKING ABOUT WHAT INSIGHT AND OVERSIGHT HAS S. DEFINED AS.

INSIGHT IN THIS PARTICULAR CASE IS DEFINED AS THE CAPACITY TO DISCERN THE TRUE NATURE OF THE PROJECT'S EFFORTS TO DESIGN, DEVELOP, TEST AND OPERATE THE COMMERCIAL TRANSPORTATION -- THE CREW TRANSPORTATION SYSTEM.

IN A LITTLE MORE DETAIL, WE TALKED ABOUT IT'S MODELED AS A COOPERATIVE PARTNERSHIP.

THE IDEA HERE IS FOR THE INSIGHT TEAMS TO NOT BE A BURDEN ON OUR PARTNERS.

IN ORDER TO BE THIS PATIENT HOPEFULLY EVEN MORE EFFICIENT COHESIVE TEAM WITH OUR PARTNERS, INNED TO GET WHAT WE NEED FOR NASA WITHOUT AFFECTING THE PARTNER'S DAY TO DAY OPERATIONS.

OVERSIGHT IS WHAT WE THINK OF, IT'S THAT WATCHFUL AND RESPONSIBLE MANAGEMENT OF THE DEVELOPMENT, DESIGN, OPERATION OF THIS SYSTEM AS IT COMES IT FRUITION.

THE PRIMARY ELEMENT OF OVERSIGHT IS APPROVAL AND/OR DIRECTION.

THROUGH THAT THE DIFFERENCE HERE AS ED POINTED OUT IS GOING TO BE THROUGH VERY DISCREET EVENTS RATHER THAN LIKE WHAT WE ALL FEEL TODAY AND THAT'S WHAT THE NEXT THREE BULLETS ARE TALKING ABOUT IS TRADITIONALLY IN A LOT OF OUR HUMAN SPACE FLIGHT SYSTEMS AND THE DEVELOPMENT OF THOSE, NASA HAS OBVIOUSLY BEEN THE OTHER THAN AND BEEN INVOLVED ALL THE WAY DOWN TO THE FLOOR IN THOSE DECISIONS.

THE IDEA HERE IS MORE LIKE WHAT WE'VE EXPERIENCED WITH THE COTS, THE TEAM WORKING WITH THOSE FOLKS TO WORK WITH THOSE DIFFERENT PARTNERS THERE IS IT WORK WITH THESE GUYS ON A DAY TO DAY BASIS, FLY INFORMATION BACK TO THE OVERSIGHT EFFORTS, BUT NOT BE IN THAT ROLE OF PROVIDING DAY TO DAY DIRECTION.

AND SOME PARTS OF THAT TO POINT OUT, FOR EXAMPLE, WE'RE NOT GOING TO SIGN YOUR PROCEDURES AND NONCONFORMANCES.

TODAY NASA IS A PART OF NEVER PART OF THAT.

THE IDEA HERE AGAIN AS POINTED OUT, THIS IS YOUR DESIGN, THIS IS HOW YOU'RE GOING TO IMPLEMENT AND DEEP IT.

WE'RE GOING TO BE THERE TO LEARN WITH YOU, HOPEFULLY HELP IF NEEDED, BUT WE'LL BE THERE EVERY STEP OF THE WAY, AND, AGAIN, THE FAMILIAR TERM IS ENGINEERING REVIEW BOARDS.

WE'LL PARTICIPATE AS FAR AS INFORMATIONAL, BUT WE ARE NOT THE DECISION AUTHORITY AT THAT LEVEL ON THOSE ENGINEERING REVIEW BOARDS AS THE ISSUES AND ELEMENTS ARE ADDRESSED.

THE BOTTOM BOX THERE IS IDENTIFY.

WE DID KNOW THERE'S DIFFERENT LEVELS OF FOLKS THAT WILL PROBABLY.

SOME WILL WANT MORE HELP, SOME WON'T.

SO WE'LL HAVE TO WORK THAT OUT.

IF WE FIGURE OUT THE RISKS, THESE TEAMS WILL TAYLOR IN ORDER TO MOVE IN AND OUT OF THAT IS REQUIRED.

SO THIS IS A SLIGHT MODIFICATION OUT OF THE HALE/BOWER WHITE PAPER.

THIS IS A PICTORIAL THAT SHOWS THE DIFFERENT MODELS THAT NASA HAS ACROSS ITS AGENCY TODAY.

IT'S PRETTY SELECT, BUT GOING ALL THE WAY FROM OUR SCIENCE MISSION DIRECTOR TYPE OF DEVELOPMENT OF SPACECRAFT ALL THE WAY OVER TO AS WE KNOW SPACE SHUTTLE CONSTELLATION AND THE ISS PROGRAMS AND HOW WE'VE DONE INSIGHT AND OVERSIGHT IN THAT RANGE.

SO IN A PICTORIAL TRYING TO SHOW WHERE DO WE THINK COMMERCIAL CREW MIGHT FIT INTO THIS MODEL.

THE IDEA IS OBVIOUSLY ALL THE WAY OVER ON THE LEFT.

WE'VE GOT A LOWER LEVEL OF INSIGHT AND OVERSIGHT INVOLVEMENT.  
AND THAT RANGES FROM OPERATIONAL PROGRAMS TO DEVELOPMENT PROGRAMS AS POINTED OUT WITH COTS AND THE REPLY.  
THE LAUNCH SERVICES PROGRAM AS WE KNOW THE VERY ACTIVE OPERATIONAL PROGRAM WHO DOES A LOT OF INSIGHT AND NOT QUITE AS MUCH OVERSIGHT IN THE MODEL THAT THEY USE, AND THEN OUR TRADITIONAL SYSTEMS.  
SO OBVIOUSLY COMMERCIAL CREW BEING A DEVELOPMENT TYPE OF EFFORT IS HOW DOES THAT FIT IN AS WE ALL MOVE FORWARD.  
AND IT'S REALLY TO SHOW NOT TO SHOW THAT WE'RE PROVIDING ANY LESS INSIGHT, AND OBVIOUSLY THE SCALE IS A LITTLE BIT SUBJECTIVE, IN THAT IT WILL BE HOPEFULLY MORE EFFICIENT, MORE TARGETED IN THIS PARTNERSHIP ROLE.  
IT'S IN THE GOING TO BE EXTRACTING DATA, BUT PARTICIPATING WITH AND UNDERSTANDING WHAT THAT MEANS AND COMMUNICATE THAT BACK TO THE PROGRAM SO THAT CAN BE USED OBVIOUSLY IN A SMART WAY VERSUS SOME OBJECTIVE SPREADSHEET OR SET OF METRICS THAT MAY OR MAY THE BE EFFECTIVE.  
NEXT CHART, PLEASE.  
SO TO GET A LITTLE BIT MORE DETAIL ABOUT WHAT THAT INSIGHT TEAM AND THEIR ROLES WILL BE, HOW WILL THAT WORK?  
BASICALLY WE SEE THE COLLABORATION EFFORT.  
WE'RE THERE TO WORK WITH THE COMMERCIAL PARTNER AND GETTING TO THE GOAL OF THE CERTIFICATION.  
BUT OBVIOUSLY GETTING NASA WHAT IT NEEDS IN UNDERSTANDING SO WE CAN PROVIDE THAT CERTIFICATION.  
POINT THERE IS THE INSIGHT TEAM IS NOT CHARTERED WITH PROVIDING ANY DIRECTION. SO THAT'S GOING TO BE COMING THROUGH ONE PLACE THAT YOU SEE LATE THEY'RE COMING OUT OF THE PROGRAM DIRECTLY.  
IT IS NOT GOING TO BE A DIRECT INTERFACE OUT OF THESE TEAMS ON A DAY TO DAY BASIS PROVIDING SOME LEVEL OF DIRECTION.  
AS WE HAD TODAY.  
WE'VE HEARD THROUGH THE RFI WHAT THAT MEANS.  
THE INSIGHT MANAGER WHO IS THE LEAD FOR THAT PARTICULAR WORK IS GOING TO BE THAT PRIMARY DAY TO DAY POINT OF CONTACT WITH THE PROVIDER.  
THEY'LL BE THE ONES IN AND AROUND.  
THEY'LL BE PARTICIPATING IN THE MEETINGS, WORKING WITH THE PARTNER, AND THEIR TEAM OBVIOUSLY.  
THE INSIGHT TEAMS WILL BE PART OF THAT EVALUATION, THEY'LL BE PULLING THIS INFORMATION IN HELPING DISSEMINATE IT.  
THEY'LL BE WORKING WITH THE PROGRAM, THESE OVERSIGHT FOLKS IN ORDER TO UNDERSTAND WHAT IS GOING ON AND WE'LL TALK ABOUT OVERSIGHT AND WHAT THAT MEANS IN ITS ROLE IN THE NEXT CHART.  
BUT HELPING TO COMMUNICATE THAT INFORMATION BACK TO THE PROGRAM.  
AND IT RANGES.  
OBVIOUSLY FOR CERTIFICATION IS THE PRIMARY THING, BUT IN RESOLVING ISSUES OR EVEN IN OUR PART OF LOOKING THROUGH THOSE TO SEE POTENTIAL ISSUES.  
IT GOES BACK TO THE HERITAGE THAT NASA HAS.  
WE'VE BEEN THERE AND DONE QUITE A BIT AND WE HAVE SOMETHING TO OFFER BACK IN THE SENSE OF HELPING TO IDENTIFY WHEN WE SEE AN ISSUE THAT MIGHT BE RIGHT TO THAT CERTIFICATION.  
WE TALK ABOUT ACCELERATING MILESTONES.  
IF THERE'S SOMETHING WE CAN DID IT PROVIDE INFORMATION TO HELP THE PARTNER GET OVER A HURDLE, WE'RE ALL FOR THAT.  
A MAIN FACTOR THAT YOU'LL SEE IS THIS EMBEDDED TEAM CONCEPT.  
FOLKS WITH THE LAUNCH SERVICES PROGRAM ARE FAMILIAR WITH THIS.

WE HAVE NASA FOLKS AT THOSE PLANTS PARTICIPATING ON A DAY TO DAY BASIS, BUT THIS IS THAT PARTNERSHIP TO BE PART OF THE TEAM TO BRING THAT INFORMATION BACK TO THE PROGRAM WITHOUT BURDENING THE PROGRAM.

I MEAN, WE DON'T WANT 100 PEOPLE CALLING THE PARTNER EVERY DAY ASKING FOR MULTIPLE REQUESTS FOR THE SAME INFORMATION.

THAT'S NOT THE CASE.

IT'S HOPEFULLY GOING TO BE A DIRECT STREAM COMING IN AND OUT AS FAR AS THAT INFORMATION GOES.

A MAJOR PART OF THAT IS OUR TEAM WILL WORK TO HAVE ACCESS TO THOSE SYSTEMS TO BE ABLE TO EXTRACT THIS DATA.

THERE'S A BIG SENSITIVE TO PROPRIETARY DATA, BUT THE IDEA IS WE'LL BE ABLE TO GET THAT DATA AS NEEDED WITHOUT HAVING TO BURDEN IN DELIVERABLES FROM A PARTNER AND EVERYTHING THAT'S ENTAILED WITH THAT.

THE EMBEDDED TEAMS WILL BE WORKING TO UNDERSTAND THE REQUIREMENTS, COMPLIANCES, INSIGHT AND OVERSIGHT TEAM IN BOTH WAYS TO HELP UNDERSTAND THE REQUIREMENTS, THOSE TECH STANDARDS, BUT ALSO VERIFICATIONS COMING BACK TO THE PROGRAM SO IT'S NOT A FIRST TIME LOOK TYPE OF DEAL.

THE GOAL IS THAT THE PROGRAM IS ACTUALLY READY TO GO SO THEY'RE HOPEFULLY EFFICIENT AND FAST.

ABOUT AGAIN THIS IS TRACKING ANY MAJOR KIND OF PROBLEMS.

IF WE SEE A PROBLEM, THE PROGRAM IS IDENTIFYING A PROBLEM, SOME KIND OF RISK, SOME TYPE OF ISSUE, OBVIOUSLY THE INSIGHT TEAM WILL BE THAT INTERFACE WITH THE COMMERCIAL PARTNER TO TRY TO WORK THROUGH THAT.

THE OTHER LOOP OBVIOUSLY IS IF THERE IS A RECOMMENDATION COMING OUT OF THE PROGRAM THAT IS A CHANGE, THAT WILL COME THROUGH THIS OVERSIGHT RULE, THIS SINGLE ENTITY BACK OUT FROM PROGRAM LEVEL TO PROGRAM LEVEL.

A LITTLE BIT ON WHAT THAT MEAN WILL LOOK LIKE.

FOR LACK OF A BETTER WORD, IT IS KIND OF AN INTEGRATED PRODUCTS TEAM.

IT'S A MANAGER, CREW OFFICE, ENGINEERING, SMA.

ALSO WE FULLY EXPECT AS WE GO THROUGH THIS, FAA, THE SPACE STATION PROGRAM, AS WE COME IN IT AND OUT OF THESE DIFFERENT ISSUES AND THESE MILESTONES, OBVIOUSLY THESE OTHER FOLKS WILL COME INTO HELP AND ASSIST AS NEEDED AS THE DRAW IS NEEDED TO GET THROUGH THESE DIFFERENT ITEMS, WE'LL MOVE IN AND OUT, BUT IT WON'T BE THAT CONSTANT FORCE OF THAT WAVE THAT PEOPLE FEEL.

NEXT CHART.

SO NOW THE OVERSIGHT ROLE.

THEIR PRIMARY PURPOSE IS THIS MANAGEMENT APPROVAL AND DIRECTION LEADING TO THIS CERTIFICATION.

THE GOAL IS THIS CERTIFICATION.

TO GET TO THAT POINT WHERE WE CAN CERTIFY A SPACECRAFT AND SYSTEM AS HUMAN RATED.

BUT THAT WILL BE DONE THROUGH THESE DISCREET MILESTONES THROUGH THE DESIGN, DEVELOPMENT, TEST AND VERIFICATION OF THESE SYSTEMS.

IT IS NOT THAT DAY TO DAY PIECE.

IT IS NOT GOING TO BE PEOPLE ON THE FLOOR SIGNING DOCUMENTS, APPROVING DIFFERENT THINGS.

IT WILL BE AT THE PARTICULAR ENTRANCE AND EXIT MILESTONES AND WHEN WE BOTH RUN INTO AN ISSUE THAT WE KNOW WILL AFFECT CERTIFICATION.

I'LL POINT OUT AGAIN THAT KNOWLEDGE IS COMING THROUGH THOSE INSIGHT TEAMS SO WE WON'T BE HAVING THAT ALTERNATE PATH OF COMMUNICATION BETWEEN THE PARTNER AND THE PROGRAM.

A BIG PART OF WHAT THESE OVERSIGHT TEAMS WILL BE DOING IS WORKING WITH OUR TECHNICAL AUTHORITIES ON THE IDENTIFICATION OF THESE STANDARDS, THE IDENTIFICATION OF STANDARDS THAT WILL OBVIOUSLY BE WORKING TOGETHER TO FIND THOSE ANSWERS FOR, AND PARTNERING THOSE IN A SENSE OF WHAT WAS FORMERLY KNOWN AS

A TYPE TWO AND THE SUBMITTAL OF A STANDARD IN HOW WE GO THROUGH AND APPROVE THAT TAILORING, THE PARTNER PROCESS THAT SATISFIES THAT EQUIVALENT STANDARD. A BIG PART OF THAT IS WHAT BRENT AND JETT WILL GET INTO IS THIS INTEGRATED SAFETY AND DESIGN ANALYSIS PROCESS.

OBVIOUSLY ACROSS MULTIPLE PARTNERS.

WE'LL HAVE TO STANDARDIZE THAT AS MUCH AS POSSIBLE TO SOME LEVEL SO THAT WE DON'T HAVE MULTIPLE VERSIONS OF TRYING TO COME UP WITH THAT ANSWER.

AS ED PUTS IT, WE WANT TO BE ABLE TO PROVIDE HOW WE'RE GOING TO GRADE THE TESTS FOR LACK OF A BETTER WAY OF PUTTING IT.

THAT WAY EVERYBODY KNOWS WHAT THEY'RE COMING UP AGAINST AND CAN BE ABLE TO WORK TO THAT.

AND THEN AS POINTED OUT WORKING WITH THE TECHNICAL AUTHORITIES ON THOSE CERTIFICATION REQUIREMENTS AND STANDARDS.

AND WITH THE INSIGHT TEAMS, COMING IN TO THOSE DISCREET MILESTONES IN AND OUT, OBVIOUSLY WE'LL MOVE FOLKS IN AND OUT TO BE ABLE TO SUPPORT REVIEWS AND THOSE KIND OF THINGS.

NEXT CHART.

SO HERE'S A PICTORIAL TO TRY TO SHOW YOU WHAT THAT INSIGHT LOOKS LIKE.

AS YOU CAN SEE, THERE'S ONLY ONE ARROW COMING FROM A PARTNER TO THE PROGRAM AND THAT'S THROUGH THOSE INSIGHTS, THAT TWO-FOLD INSIGHT TEAM.

THAT EMBEDDED TEAM WITH THE PARTNER, BUT ALSO ENGINEERS, SAFETY EMISSION SERVICE FOLK, CREW TO BE ABLE TO WORK TO THE BEST BENEFIT TO UNDER THOSE REQUIREMENTS.

WE'LL DRAW ON OTHER PARTS OF NASA.

THIS WILL BE A TEAM EFFORT.

AND PROVIDE THOSE RECOMMENDATIONS BACK UP TO THE OVERSIGHT PART OF THE PROGRAM, BUT ALSO WHEN WE HAVE THOSE INTERPRETATIONS REQUIRED BY THE PARTNER ON DIFFERENT THINGS, THAT WE CAN GO WORK WITH THE OVERSIGHT TEAMS AND BRING THOSE BACK TO THE PART THEY ARE.

PARTNER.

THAT WILL BE A TRICKY PIECE IN THE SENSE THAT THOSE INTERPRETATIONS AND BETTER WORDS TO KEEP THAT DECISION VELOCITY GOING, HOW DO WE DO THAT, HOW DO WE DO THAT IN ORDER TO LET THE COMMERCIAL PARTNER PROCEED AT THE PACE THAT THEY NEED TO.

THE CONCEPT OF THE EMBEDDED TEAM IS TO PROVIDE THE LONG TERM PRESENCE, DEVELOPING THOSE INTER-PERSONAL RELATIONSHIPS AND TRUST BETWEEN THE NASA SIDE, THE NASA PROGRAM, AND THESE PARTNERS.

BETTER WORDS, I GUESS THE BADGELESS EFFORT.

WE'RE HERE TO PROVIDE WHATEVER WE CAN, BUT ALSO EXTRACT WHATEVER WE NEED IN ORDER TO THAT CERTIFICATION.

SO WHEN THAT TIME COMES THAT WE'RE COMING INTO THESE MILESTONES OR THERE'S SOME KIND OF ISSUE RELATED TO CERTIFICATION, RATHER THAN THAT TIPPLE CAL DAY TO DAY WORK, THAT OVERSIGHT THAT HAPPENS AT SOME OF THE LOWEST LEVELS, THOSE INSIGHT TEAMS WORKING WITH THE PARTNERS WILL BE WORKING WITH THE OVERSIGHT TEAM TO PROVIDE THAT RECOMMENDATION BACK THROUGH THE PROGRAM TO THE PARTNER.

NOT AT A LOWER LEVEL.

NOT THIS MULTIFACETED PIECE COMING BACK AND FORTH, BUT WORKING ON HAVING JUST THE ONE INTERFACE BACK AND FORTH SO THAT ONCE WE'VE WORKED UP OUR STORY TOGETHER, THERE'S ONLY ONE PLACE THAT THAT'S COMING BACK AND FORTH OUT OF THE PROGRAM.

DIRECTLY OUT OF THE PROGRAM OFFICER MANAGER OR A DELEGATE.

BUT IS IT A BOARD, HOW IS THAT STRUCTURED, THAT'S SOME OF THE WORK WE'RE STILL WORKING TRYING TO FIGURE IT OUT.

BUT TO MAKE THAT A SINGLE PLACE AND THEN TALKING ABOUT IF THERE'S A DESIGN RECOMMENDATION THAT'S NEEDED TO FACILITATE A CERTIFICATION AND EVENTUALLY THAT EVALUATION THAT'S HAPPENING.

SO TO TALK ABOUT THE TECH STANDARDS AND FAULT TOLERANCE AND THAT INTEGRATED SAFETY DESIGN AN THAT WILL SET A BRENT JETT.

>> GOOD MORNING.

MY NAME IS BRENT JETT AND I'M ED'S DEPUTY FOR THE COMMERCIAL CREW PLANNING EFFORT.

IN THE INTEREST OF FULL DISCLOSURE, I ALWAYS HAVE A SECOND JOB WITH THAT IS. I'M STILL THE DIRECTOR OF FLIGHT CREW OPERATIONS.

SO I SOMETIMES HAVE TO TIME SHARE MEETINGS AND I THINK THE MEETING WHERE TOPICS WERE ASSIGNED TO THIS FORUM, I DON'T THINK I WAS AT THAT MEETING.

SO I'M NOT SURE IT'S BECAUSE I'M DEPUTY OR BECAUSE I WASN'T AT THE MEETING, BUT I WAS ASSIGNED TECHNICAL STANDARDS, FAILURE TOLERANCE AND SO HOPEFULLY I'LL BE ABLE TO GET THROUGH THESE WITHOUT SAYING ANYTHING THAT GETS ME FIRED.

NEXT SLIDE, PLEASE.

WE'LL START WITH PROBABLY THE EASIEST OF THE THREE TOPICS.

AND THAT IS TECHNICAL STANDARDS.

IF YOU THINK ABOUT TO THE CHART AND THE RFI, CURP HAD TYPE ONE, WHICH WERE MANDATORY, YOU MUST USE THIS STANDARD IN THE DEVELOPMENT OF YOUR SYSTEM.

THERE WERE TYPE TWO STANDARDS AND WE SAID, WELL, YOU MUST USE THIS STANDARD OR YOU CAN USE YOUR OWN STANDARD AS LONG AS IT MEETS OR EXCEEDS THE NASA STANDARD OR THE STANDARD THAT IS IN THIS LIST.

AND THEN WE HAVE TYPE THREE STANDARD WHICH IS REALLY WERE FOR REFERENCE ONLY AND SO THEY WERE FOR THE COMMERCIAL PARTNER JUST TO REFERENCE HOW WE HAVE USED SOME STANDARDS IN THE PAST.

MOST OF THE COMMENTS WE GOT BACK WERE ON THE TYPE TWO STANDARDS.

THERE WAS A LOT OF CONFUSION OR A GREAT VARIETY OF INTERPRETATION OF WHAT DOES MEET OR EXCEED ACTUALLY MEAN TO THE COMMERCIAL PARTNERS.

SO WE HEARD THAT AND WE PUT A TEAM TOGETHER TO TRY AND -- WHAT THAT TEAM IS DOING IS THEY ARE WRITING DOWN A DOCUMENT TO PROVIDE MORE CLARITY INTO HOW WE WILL GO THROUGH A PROCESS THAT ALLOWS OUR PARTNER TO USE THEIR STANDARDS TO SUBSTITUTE FOR THE TYPE TWOS.

AND THERE WERE TWO KEY AREAS THAT WE WANTED TO FOCUS ON.

ONE WAS WHAT IS IMPORTANT TO NASA IN THOSE STANDARDS.

AND SECOND, WHAT PROCESSES AND PRODUCTS RESULT FROM THOSE STANDARDS THAT WE THINK ARE IMPORTANT AND MUST HAVE IN A SUBSTITUTE STANDARD FROM OUR COMMERCIAL PARTNER.

SO WE HOPE TO GIVE YOU ENOUGH DIRECTION SO YOU CAN GIVE US STANDARDS THAT YOU FEEL ARE SUFFICIENT TO DESIGN AND DEVELOP THIS VEHICLE.

>> SO WHAT WE INTEND TO DO IS EARLY IN THE PARTNERSHIP, WE INTEND TO HAVE ONE OF THE MILESTONES WHERE OUR PARTNER WILL COME BACK AND PROPOSE THOSE STANDARDS THAT THEY WOULD LIKE TO USE FOR THE TYPE TWOS THAT WERE IN THE LIST IN THE CURP.

THE TYPE ONE STANDARDS, YOU WON'T SEE AS TYPE ONES ANYMORE.

THEY'LL BE PART OF THE REQUIREMENTS DOCUMENT.

SO THE TYPE TWOS WILL BE THE ONES YOU SEE IN OUR STANDARDS.

AND THEN EVEN THOUGH WE THINK THIS DOCUMENT WILL BE VERY CLEAR AND WHAT WE EXPECT, WE KNOW THERE'S GOING TO BE A LOT OF DISCUSSION BACK AND FORTH ON WHAT DO YOU MEAN EXACTLY AND SO WE'LL BE AVAILABLE TO DISCUSS WITH OUR PARTNERS WHETHER THE STANDARD THAT THEY ARE PROPOSING IS SUFFICIENT OR NOT OR NEEDS TO BE AUGMENTED.

WE ALSO FEEL LIKE THERE WILL BE SOME CASES THAT ARE PRETTY CLEAR CUT.

WE'LL BE ABLE TO LOOK AT THE STANDARDS THAT OUR PARTNER HAS AND SAY, YEAH, THAT'S A GOOD STANDARD, IT MEETS THE INTENT WHAT HAVE WE NEED AND WE'LL BE ABLE TO ACCEPT IT.

FOR THE CASES WHERE THERE MAY BE A LITTLE IN THE GRAY AREA, WE INTEND TO BE ABLE TO USE OUTSIDE SUBJECT MATTER EXPERTS TO COME IN AND HELP US UNDERSTAND WHETHER OR NOT THAT STANDARD IS ACCEPTABLE OR NOT.

IT'S IMPORTANT THAT WE DO THIS EARLY IN THE PARTNERSHIP, AND SO AS I MENTIONED EARLIER, IT THIS WILL BE ONE OF THE EARLIEST MILESTONES THAT WE INTEND TO HAVE BECAUSE ONCE WE AGREE ON THAT SUBSTITUTE STANDARD FROM OUR PARTNER, THAT STANDARD WILL BE BASELINE AND THEN ESSENTIALLY IS PART OF THE REQUIREMENTS AND WILL BE USED FOR THE CERTIFICATION PROCESS.

WE WILL MAINTAIN JOINT CONTROL OVER THESE STANDARDS.

AND WE HOPE THAT THIS ALLEVIATES SOME OF THE ISSUES THAT HAVE COME UP IN THE PAST WHEN A PROGRAM STARTS OUT WITH A SET OF STANDARDS, THAT GETS UPDATED THROUGH THE TECHNICAL AUTHORITY OR BY THE AGENCY AND THEN THE PROGRAM IS FORCED TO DEAL WITH SOME TYPE OF CHANGE IN THAT STANDARD.

IN THIS SYSTEM BECAUSE WE WILL BE USING BOTH STANDARDS FROM OUR COMMERCIAL PARTNER AS WELL AS NASA STANDARDS, THAT SITUATION COULD ALSO HAPPEN IN REVERSE. A COMPANY COULD HAVE A STANDARD THAT IS UPDATED PART WAY THROUGH THE DEVELOPMENT PROCESS AND WE'LL HAVE TO DEAL WITH HOW THOSE -- WHETHER OR NOT WE ACCEPT THOSE CHANGES JOINTLY OR WHETHER WE MAINTAIN THE ORIGINAL STANDARD WE STARTED WITH. NEXT CHART, PLEASE.

SECOND TOPIC, A LITTLE BIT PERHAPS MORE NOT CONTROVERSIAL, BUT CERTAINLY THERE WAS A LOT OF DISCUSSION AND THERE ALWAYS HAS BEEN ON FAILURE TOLERANCE. AND TAKE INTEGRATED SAFETY AND DESIGN ANALYSIS THAT YOU'VE HEARD DISCUSSED PREVIOUSLY.

BACK IN THE CURP AS YOU REMEMBER, WE HAD THE INITIAL -- WE HAD TWO VERSIONS TO A FAILURE TOLERANCE REQUIREMENT THAT WE PRESENTED.

THE BASELINE VERSION WAS ESSENTIALLY STRAIGHT FROM 8705 WHICH ESSENTIALLY WAS A REQUIREMENT THAT SAID THAT YOU MUST HAVE FAILURE TOLERANCE AND THE LEVEL WOULD BE DERIVED FROM AN INTEGRATED SAFETY AND DESIGN ANALYSIS WHICH WOULD TELL YOU WHETHER YOU NEED SINGLE FAILURE TOLERANCE, DUAL FAILURE TOLERANCE, ET CETERA. THE ALTERNATIVE WORDING THAT WAS PRESENTED BY A LITTLE MORE PRESCRIPTIVE AS A TWO FAILURE TOLERANCE SOLUTION FOR THE SYSTEM.

SO WE HEARD THE RESPONSE FROM INDUSTRY AND THEN THE PROGRAM SAID, WELL, THAT'S GOOD, WE KNOW HOW INDUSTRY FEELS ABOUT THIS.

BUT WE NEED TO GET TOGETHER AS AN AGENCY, AS A TECHNICAL COMMUNITY, AND DISCUSS NOT ONLY INDUSTRY'S RESPONSE BUT ALSO LET'S REVISIT THE WORK THAT WAS DONE IN 8705 AND MAKE SURE WHERE DOES THE NASA TECHNICAL COMMUNITY STAND TODAY.

SO THERE WAS TWO DAY TECHNICAL MEETING HELD AT KENNEDY SPACE CENTER, ED'S CHIEF ENGINEER FOR THE PLANNING EFFORT, STEVE SULLIVAN, PUT IT TOGETHER, BUT WE HAD HEALTH AND MEDICAL, SAFETY TECHNICAL AUTHORITIES WERE ALL INVOLVED, AS WELL. AND COMING OUT OF THAT THE RECOMMENDATION BACK TO THE PROGRAM WAS TO STAY VERY CLOSELY ALIGNED WITH WHAT IS CURRENTLY IN 8705, NOT TO BE PRESCRIPTIVE IN THE LEVEL OF FAILURE TOLERANCE THAT IS REQUIRED, AND THAT IS TO PUT THE ONUS ON THE DESIGNER TO DETERMINE WHAT THE RIGHT AMOUNT OF FAILURE TOLERANCE IS FOR THE VEHICLE.

I SHOULD MENTION THAT THE INTERFACE REQUIREMENTS DO HAVE ADDITIONAL WORDS ON FAILURE TOLERANCE AS YOU PROBABLY ARE AWARE.

WHEN YOU ARE -- THEY DO HAVE A VERY PRESCRIPTIVE FAILURE REQUIREMENT, ALTHOUGH THERE THIS ARE SOME EXCEPTIONS AVAILABLE THERE IN DESIGN FOR MINIMUM RISK. BUT YOU'RE GOING TO HAVE TO DEAL WITH THOSE REQUIREMENTS IN TERMS OF WHEN YOU'RE IN THE PROXIMITY OF THE ISS, BUT DURING THE PRE-FLIGHT PERIOD, WE WILL BE RELYING ON THE DESIGN AND SAFETY ANALYSIS FOR THE LEVEL OF FAILURE TOLERANCE. SO WHAT IS THIS INTEGRATED ANALYSIS AND HOW DO WE USE IT?

OUR EXPERIENCE TO DATE WAS A LITTLE BIT MIXED IN THAT EFFORT.

IN FAIRNESS ORION WAS FAIRLY FAR DOWN THE ROAD, SO THEY DIDN'T GET A CHANCE TO START FROM GROUND ZERO WITH THIS REQUIREMENT.

THE AREAS -- I THINK THE ARES 1 FOLKS DID A NICE JOB WITH IT, THEY WERE IN A BETTER POSITION TO DO THAT TYPE OF ANALYSIS.

BUT WHAT WE INTEND TO DO IS, AS SCOTT MENTIONED, SET YOU'RE EXPECTATIONS FOR WHAT WE EXPECT TO SEE OUT OF THAT ANALYSIS THAT LEADS TO THE DECISION ON FAILURE TOLERANCE, WHETHER THAT'S TRADE STUDIES OF ALTERNATIVE SYSTEMS AND REDUNDANCY IMPLEMENTATIONS, PROTECT RISK ASSESSMENTS DONE TO A CERTAIN STANDARD, WE WILL SET THOSE EXPECTATIONS OF WHAT DATA WE WANT TO SEE TO PROVIDE THAT LEVEL PLAYING FIELD ACROSS THE PROVIDERS AND THEN HOPEFULLY JOINTLY WHEN WE BOTH LOOK AT THE DATA, WE COME TO THE SAME CONCLUSION ABOUT WHAT IS THE PROPER LEVEL OF FAILURE TOLERANCE.

WE ALSO WANT TO EMPHASIZE THAT THERE'S NOT -- WE ACTUALLY AT LEAST IN THE CURRENT WORDS WE'VE REMOVED THE PHRASE THAT SAYS MINIMUM OF ONE.

BECAUSE THE MINIMUM IS WHAT THE ANALYSIS SAYS IT IS.

WE REALIZE FAILURE TOLERANCE MAY JUST NOT BE PRACTICAL AND IN THOSE SYSTEMS THERE WILL BE PROVISIONS TO COME BACK TO THE PROGRAM AND GET APPROVAL AND WE'LL HAVE A MECHANISM TO DEAL WITH THOSE SITUATIONS.

NEXT SLIDE, PLEASE.

MY LAST THREE SLIDES DEAL WITH SYSTEM CERTIFICATION.

I WOULD SAY THREE SLIDES AT THIS POINT MAY BE A LITTLE OVERKILL SINCE WE, NASA, THE NASA COMMUNITY, WE'RE REALLY STILL JUST STARTING TO TALK ABOUT HOW WE'LL HANDLE SYSTEM CERTIFICATION, BUT WE DID GET A LOT OF QUESTIONS BACK, SO WE WANT TO TELL YOU WHAT OUR THINKING IS TODAY.

I WOULD CAVEAT THAT THE WORDS YOU SEE ON THE SLIDES ARE VERY COMMERCIAL CREW PROGRAM CENTERED WORDS.

SO I'LL TRY TO BLEND IN A LITTLE BIT OF THE ISS AND BIGGER PICTURE.

I THINK EVERYONE IS AWARE WHAT WE MEAN BY SYSTEM CERTIFICATION.

BOTH OF THESE PROCESSES ARE REALLY THERE TO JUST ENSURE THAT OUR PARTNER CAN DEMONSTRATE THAT THEIR SYSTEM MEETS OUR REQUIREMENTS.

FROM THE COMMERCIAL CREW PROGRAM PERSPECTIVE, WE'RE MOSTLY INTERESTED IN THE HUMAN RATING PIECE OF THAT, THAT SYSTEM SAFETY, SO OUR GOAL IS TO CERTIFY THE SYSTEM FROM A HUMAN RATING PERSPECTIVE THAT YOU CAN CARRY NASA CREWS.

NOW, THE ISS PROGRAM HAS A LITTLE BIT DIFFERENT PERSPECTIVE ON CERTIFICATION. TELL'S CERTIFY THAT YOU MEET ALL THEIR INTERFACE REQUIREMENTS AND YOU CAN SAFELY OPERATE IN THE PROXIMITY OF SPACE STATION AND DOCK AND STAY DOCKED FOR THE MISSION.

SO THERE REALLY WILL BE TWO PROGRAMS INVOLVED IN THIS CERTIFICATION EFFORT.

ONE OF THE OTHER KEY QUESTIONS WE GOT BACK FROM THE RFI, AND THIS WAS PRIMARILY LAUNCH VEHICLE CENTRIC, BUT IT WAS ALSO SOME SPACECRAFT CENTRIC PIECE OF IT, WAS CAN WE BE GRANDFATHERED IN BASED ON FLIGHT HISTORY.

AND I THINK THE BEST WAY TO ANSWER THAT IS I DON'T THINK ANYONE AT THE PROGRAM LIKES THAT TERM GRANDFATHERED, BUT IT IS FAIR TO SAY THAT YOU CAN USE FLIGHT HISTORY AND FLIGHT DATA TO GET THROUGH THE CERTIFICATION PROCESS AND WE WILL TAKE THAT DATA AND BE WILLING TO USE THAT AND GIVE YOU CREDIT FOR THE DATA THAT YOU CAN PRESENT BASED ON YOUR FLIGHT HISTORY.

BUT JUST THE FACT THAT YOU'VE FLOWN OR BEEN FLYING DOES NOT MEAN YOU'RE GOING TO BE GRANDFATHERED OUT OF A CERTIFICATION PROCESS.

NEXT SLIDE, PLEASE.

THIS HAS A GRAPHIC THAT TALKS ABOUT THE ELEMENTS OF THE CERTIFICATION.

AGAIN REMEMBER THIS IS MORE PROGRAM CENTRIC THAN BOTH PROGRAM AND ISS.

I THINK THE KEY PART ON THIS SLIDE IS THAT WE INTEND FOR THIS PROCESS, THIS CERTIFICATION, THIS INITIAL CERTIFICATION OF YOUR SYSTEM, TO REALLY BE LED BY THE PARTNER.

WE WANT YOU TO DEMONSTRATE THAT YOUR SYSTEM MEETS -- YOUR END TO END SYSTEM MEETS BOTH THE DESIGN AND PERFORMANCE REQUIREMENTS, HAS A PRESCRIBED LEVEL OF SAFETY AND MARGIN IN YOUR SYSTEM.

WE'RE GOING TO EXPECT THE PARTNER TO WRITE THE CERTIFICATION PLAN AND OF COURSE NASA WILL HAVE TO APPROVE IT, BUT WE EXPECT TO COME FROM YOU.

AS OUR INSIGHT TEAMS GO ALONG, WE'LL MAKE SURE THAT WE'RE NOT SEEING ANY HICCUPS ON THE WAY AND AT OUR MILESTONE REVIEWS AND OVERSIGHT, WE WILL EVENTUALLY HAVE THE EQUIVALENT OF A DCR OR CERTIFICATION MILESTONE WHERE YOU GET YOUR CERTIFICATION.

NEXT CHART, PLEASE.

YOU GET AN INITIAL CERTIFICATION, BUT FOR EVERY MISSION JUST LIKE THAT, THERE'S GOING TO BE A PROCESS THAT WE VERIFY THAT THE MISSION SPECIFIC HARDWARE FALLS WITHIN THE CERTIFICATION, ANY MODIFICATIONS HAVE BEEN CERTIFIED, AND THEN WE ALSO FOCUS A LITTLE MORE HEAVILY ON ARE THE PRODUCTS THERE TO GO EXECUTE THIS PARTICULAR MISSION IN TERMS OF -- AND YOU THINK ABOUT YOUR GROUND, YOUR LAUNCH TEAM, YOUR RECOVERY TEAMS, ARE ALL THE PRODUCTS, TRAINING, AND THE TEAM ITSELF, ARE THEY TOWARD GO FORWARD AND EXECUTE THE MISSION.

AGAIN, FROM A PROGRAM PERSPECTIVE, WE EXPECT THIS TO BE LED BY OUR PARTNER WHEN WE DO THE CERTIFICATION AT OUR LEVEL.

AND WE'LL DO IT IN A SIMILAR WAY TO THE INITIAL CERTIFICATION.

IT WILL BE LIKE A TYPICAL FLIGHT READINESS REVIEW FOR A SHUTTLE PROGRAM TODAY. BUT I WOULD MENTION THAT IF YOU'RE ASSUMING THAT WE'LL BE GOING TO THE SPACE STATION AND THOSE ARE THE MISSIONS THAT WE'RE TALKING ABOUT, THERE WILL BE ANOTHER LEVEL THAT WE'LL HAVE TO GO THROUGH TOGETHER, BOTH THE PROGRAM AND THE PARTNER, WE WILL BE REQUIRED TO GO TO A NASA AGENCY LEVEL IN WHICH THE AGENCY WILL HOLD AS THEY DO DAY FOR SOYUZ, FOR SHUTTLE, THERE WILL AN NASA AGENCY PROCESS, BUT AT THAT POINT, OUR INITIAL THINKING IS REALLY THE ONUS IS ON US. THE NASA PROGRAM.

BUT WE'LL BE PRESENTING TO THE AGENCY WHY WE ARE READY TO GO EXECUTE THAT MISSION.

SO IN MY BLACKBERRY DOESN'T HAVE 15 MESSAGES ON IT TELLING ME THAT I SAID THE WRONG THING, THAT WILL BE SUCCESS.

WE DO HAVE SOME KEY TOPICS LEFT AND ONE THAT MARIA WILL COVER IS LIABILITY AND INDEMNIFICATION AND THEN SHE'LL TALK ABOUT FACILITIES, AS WELL.

>> GOOD MORNING.

MY NAME IS MARIA COLLURA AND I'LL COVER THE LAST FEW TOPICS THAT WE HAVE PLANNED TO DISCUSS TODAY.

SO THE GOOD NEWS IS YOU ALL WILL BE ACT TOO INTERACT WITH US VERY SHORTLY.

NEXT CHART, PLEASE.

THE FIRST TOPIC IS LIABILITY.

IT IS A BIG CONCERN BOTH FOR THE GOVERNMENT AND FOR INDUSTRY.

IT IS A MAJOR CONSIDERATION THAT WE HAVE TO ACCOUNT FOR ALL ASPECTS OF THE MISSION.

NOT ONLY LAUNCH AND ENTRY, BUT ALSO FOR PROXIMITY OPERATIONS, OBVIOUSLY FOR THE ISS MISSIONS, AS WELL AS CREW AND SAFE FLIGHT PARTICIPANT SAFETY.

WE RECOGNIZE AND YOU ALL HAVE TOLD US VERY CLEARLY THAT THERE ARE SEVERAL POTENTIAL MITIGATIONS THAT WE CAN LOOK INTO.

THE FIRST OF WHICH IS COMMERCIAL INSURANCE.

WE UNDERSTAND THAT THERE MAY BE SOME ISSUES WITH OBTAINING IT AND THE COST FOR, SO WE ARE CERTAINLY UNDERSTANDING THAT AND LOOKING INTO IT.

THAT'S A POTENTIAL FOR WAVERS OR CONTRACTUAL MEASURES AND ALSO CONGRESSIONAL AND/OR FEDERAL LEGISLATIVE ACTIONS WHICH OBVIOUSLY WILL NEED GOVERNMENT ACTION TO MAKE HAPPEN.

WE WANT TO ASSURE YOU THAT ALTHOUGH WE DON'T HAVE A SPECIFIC SOLUTION TO OFFER TODAY, WE DID HEAR YOU AND WE'RE ALSO CONCERNED AND THAT WE'RE ACTIVELY WORKING WITH THE FAA TO TRY AND ADDRESS THESE THINGS.

SPECIFICALLY THE AUTHORITY AND THE ROLES AND RESPONSIBILITIES OF BOTH NASA AND THE FAA WITH REGARD TO ALL ASPECTS OF THE MISSION, THE LICENSING PROCESS ONLY COVERS LAUNCH AND ENTRY.

IN ADDITION, WE'RE CONSIDERING INDEMNIFICATION OPTIONS.

NEXT CHART, PLEASE.

THE NEXT TOPIC I'M GOING TO TALK ABOUT IS FACILITY USAGE.

FIRST I'D LIKE TO PROVIDE YOU WITH A LITTLE BIT OF BACKGROUND INFORMATION.

AS YOU ALL KNOW, THE SHUTTLE WILL BE RETIRING SOMETIME NEXT YEARS SPACE SHUTTLE PROGRAM ACTUALLY FUNDS THE MAJORITY OF THE SPACE FLIGHT INFRASTRUCTURE ACROSS THE AGENCY.

WITH THE 2011 PRESIDENTIAL BUDGET PROPOSAL, WE HAD TO PUT A NEW EFFORT UNDER WAY TO READDRESS OUR USAGE SITUATION.

SO THERE IS SOME UNCERTAINTY REGARDING THE AVAILABILITY OF A NASA FACILITIES.

TO THAT END, CENTERS ARE PROVIDING RECOMMENDATIONS FOR FACILITY WHAT WE'RE CALLING STATE OF READINESS.

AND WHAT THAT MEANS IS WE'RE ACTUALLY DOING A NEEDS ANALYSIS AND WE'RE CONSIDERING THE TIMING IN WHICH THOSE FACILITIES WOULD BE NEEDED.

AND THE IDEA THERE IS IF IT'S A NEED THAT'S AN IMMEDIATE ONE THAT HAS CONSISTENCY, WE WOULD RECOMMEND THAT THOSE FACILITIES STAY OPEN AND WE PAY TO MAINTAIN THEM.

IF IN FACT THE NEED SHOWED A FACILITY IS NEEDED BUT IT'S NOT FOR A COUPLE OF YEAR, WE WOULD THEN POTENTIALLY SUGGEST THAT WE WOULD PUT THAT IN A MOTH BALL STATE WHERE BASICALLY IT'S GOING TO TAKE SOME FUND TO GO BRING IT BACK UP INTO A USABLE FACILITY.

THERE ARE VARIOUS CATEGORIES AND ALL OF THOSE KINDS OF EFFORTS ARE UNDER WAY LIKE I SAID ACROSS ALL THE CENTERS.

IN ADDITION TO THAT, THERE WAS A RECENT NASA POLICY DECISION THAT WAS MADE REQUIRING USERS TO PAY FOR FACILITIES AS THEY ARE NEEDED.

SO IT'S NOT UNLIKE YOU HEARD ME SAY THE SHUTTLE PROGRAM HAD A LOT OF NEEDS AND THE PROGRAM WAS RESPONSIBLE FOR PAYING FOR THOSE.

SO THERE'S TWO KEY POINTS I'D LIKE TO MAKE REGARDING THAT.

THE FIRST IS PRICING WILL BE BASED ON DEMAND.

IF THERE'S MULTIPLE USERS, COSTS CAN BE SHARED.

IF THERE'S A SINGLE USER, THEY'LL HAVE TO BURDEN THE FULL COST.

THE OTHER ASPECT IS THAT STATE OF READINESS I TALKED ABOUT.

IF THE FACILITY IS UP AND RUNNING, THE COST WOULD NOT BE INCREASED TO BRING TO A READINESS STATE BECAUSE IT WOULD ALREADY BE THERE.

SO THE OTHER THING THAT I WOULD LIKE TO TALK ABOUT IS THE FACT THAT WE HAVE THE 21st CENTURY SPACE LAUNCH COMPLEX INITIATIVE THAT IS ONGOING AND IT MAY BE AN AVENUE FOR HAVING FUNDING AVAILABLE TO HELP IN A SITUATION AT LEAST AT THE FLORIDA LAUNCH COMPLEX.

SO WHAT DOES THIS MEAN FOR COMMERCIAL CREW?

FIRST THE COMMERCIAL CREW PROGRAM AT THE TIME IT BECOMES A PROGRAM WILL NOT DIRECTLY FUND FACILITIES.

IN ADDITION, WE WILL NOT BE IN A POSITION OF NEGOTIATING ON BEHALF OF ANY PARTICULAR COMMERCIAL PARTNER TO ANY NASA CENTER.

SO THE TRUE MESSAGE WE'RE ENCOURAGING YOU ALL TO GO TALK TO THE NASA CENTERS. LET THEM KNOW OF YOUR NEEDS.

LET THEM KNOW OF THE TIMING OF YOUR NEEDS AND START NEGOTIATING PRICING.

THIS WAY AS YOU'RE PUTTING TOGETHER THEIR PLANS AND STATES OF READINESS, THEY CAN AT LEAST HAVE A GOOD UNDERSTANDING OF THE POTENTIAL NEEDS AND PLAN ACCORDINGLY AND HOPEFULLY REDUCE THE COSTS OVERALL.

NEXT CHART, PLEASE.

SO THIS IS THE LAST TOPIC I'M GOING TO COVER.

AS YOU CAN SEE, IT'S A VERY GENERIC DEPICTION OF THE BASIC ELEMENTS THAT WE CONSIDER TO BE A PART OF THE CONCEPT OF OPERATIONS AND IN THIS CASE IT SPECIFICALLY IS FOR AN ISS MISSION.

THE PRIMARY MESSAGE I WANT TO COMMUNICATE HERE IS THAT THE COMMERCIAL PARTNER WILL BE RESPONSIBLE TO PROVIDE END TO END INTEGRATION MANAGEMENT AND INTEGRATION OF THIS CONCEPT OF OPERATIONS ENTIRELY.

AND AS YOU CAN SEE, IT INCLUDES GROUND OPERATIONS, LAUNCH OPERATIONS, MISSION PLAN, CREW TRAINING AND MISSION OPS, VEHICLE AND CREW RECOVERY, AS WELL AS ANY DISPOSABLE ACTIVITIES REQUIRED.

AGAIN, IT WAS JUST AN ATTEMPT IT LET YOU KNOW THAT THE COMMERCIAL PARTNER WILL BE RESPONSIBLE FOR EVERYTHING AND WE EXPECT A FULLY INTEGRATED SOLUTION IN SUPPORT OF COMMERCIAL CREW.

SO WITH THAT, THAT ENDS MY TOPICS.

ED WILL TALK TO YOU A LITTLE BIT ABOUT OUR ROAD MAP AHEAD AND THEN WE'LL START OUR QUESTION AND ANSWER SESSION.

THANK YOU.

>> I WANTED TO TALK ABOUT THE ROAD MAP AHEAD AND THEN WE'LL GO TO THE NEXT SECTION WITH WHAT WE'RE TRYING TO GET ACROSS TODAY TO YOU ALL.

FIRST I WANT TO CONCLUDE THAT OVER THE LAST HOUR, HOUR AND A HALF OR SO OF TIME, HOPEFULLY WE'VE DEMONSTRATED TO YOU ALL THAT WE THINK HUMAN SPACE FLIGHT IS HARD.

AND WE HOPE THAT WE ARE GETTING ACROSS TO YOU ALL THAT PUTTING HUMAN THERE IS TO SPACE IS NOT A SIMPLE ENDEAVOR, IT'S A RATHER DIFFICULT ENDEAVOR.

AND IF YOU THINK ABOUT IT, THE FACTS SPEAK FOR THEMSELVES.

UNITED STATES AND THE SHUTTLE PROGRAM HAS FLOWN ABOUT 130 TIMES.

AND WHICH WE'VE LAUNCHED VEHICLES INTO LOW EARTH ORBIT AND BROUGHT THEM BACK HOME.

OVERALL, THE PLANET ALL THE NATIONS OF THE PLANET, NOT ONLY PUT A FEW HUNDRED MISSIONS INTO SPACE AND RECOVERED THEM BACK AGAIN.

THAT'S JUST A FEW HUNDRED.

AND YOU THINK ABOUT THAT IN RELATION TO THAT VERY FIRST PICTURE AND SOME OF THE THINGS THAT PHIL SAID, IF YOU GO TO A RATHER LARGE AIRPORT, THEY FLY OVER 150 FLIGHTS A DAY.

AND HERE OUR ENTIRE EXPERIENCE IF THE PLANET HAS BEEN A FEW HUNDRED OVER THE COURSE OF OUR ENTIRE HISTORY.

SO GOING FROM AN AIRCRAFT ENVIRONMENT TO A SPACE ENVIRONMENT IS A DIFFICULT ENDEAVOR AND NOT EASY AND WE WANT EVERYONE TO UNDERSTAND THAT IT IS HARD AND WE HAVE TO DO IT RIGHT.

BUT I ALSO WANT TO TELL EVERYONE THAT FROM THE EXPERIENCES OF NASA AND FROM THE EXPERIENCES OF THE ENTIRE PLANET, I THINK WE CAN FIGURE OUT A WAY TO MAKE ANOTHER SYSTEM VERY SUCCESSFUL, A COMMERCIAL CREW SYSTEM, IN PARTNERSHIP WITH THE INDUSTRY OF THIS COUNTRY AND WITH NASA IN ORDER TO MAKE THAT HAPPEN.

SO I'M VERY OPTIMISTIC WE CAN CONTINUE ON WITH THIS ENDEAVOR AND CONTINUE TO HAVE LOW EARTH ORBIT CAPABILITY FOR OUR CREWS AS WELL AS PEOPLE FROM THE PLANET TO GET TO LOW EARTH ORBIT.

ON THE ROAD MAP AHEAD, WHAT I WANTED TO GET ACROSS IS THIS IS THE FIRST OF MANY OPPORTUNITIES I HOPE WE HAVE TO DISCUSS.

SO IF YOU CAN GO TO THE NEXT CHART.

OUR ROAD MAP AHEAD IS TO CONTINUE IN ORDER TO COMMUNICATE WITH YOU ALL THROUGH QUESTIONS AND ANSWERS, THROUGH FORUMS.

OUR IDEA IS TO COMMUNICATE ALMOST MONTHLY IF WE CAN.

OUR ATTEMPT IS TO COMMUNICATE MONTHLY.

IT MAY NOT ALWAYS BE IN THIS TYPE OF FORMAT.

IN FACT, WE'D LIKE TO GET FEEDBACK EVENTUALLY FROM YOU ALL IF THIS FORMAT IS WORTHWHILE OR NOT, BUT THE IDEA IS LET'S COMMUNICATE AT LEAST ONCE A MONTH IN SOME TYPE OF FORUM, SOME TYPE OF METHOD IN ORDER TO CONTINUE THIS DIALOGUE AND OUR DISCUSSIONS.

THE PLANNING TEAM TODAY IS WORKING HARD EACH AND EVERY DAY HERE TO PUT TOGETHER WHAT WE THINK WE NEED TO GO DO IN ORDER TO BUILD OUR FUTURE.

WE'RE NOT DOING THIS FROM A VACUUM.

THE FOLKS THAT ALAN REPRESENTS AND THE FOLKS THAT ALAN IS LEADING ARE VERY MUCH A KEY PART WHAT HAVE WE'RE TRYING TO DO.

HE HAS THE EXPERIENCE OF DOING SOMETHING IN A UNIQUE WAY.

HES HAS THE EXPERIENCE OF GOING THROUGH SOME OF THE PAINS AND TOUGH PARTS OF THAT.

AND HE ALSO HAS THE EXPERIENCE OF WHAT IT TAKES TO GO DO THINGS DIFFERENTLY. SO AT THIS POINT I'D LIKE TO ASK ALAN IF HE HAS COMMENTS ABOUT HOW WE GO FROM TODAY'S ENVIRONMENT IN HUMAN SPACE FLIGHT TO TOMORROW'S.

>> WELL, WE'VE LEARNED SO MUCH OVER THE LAST FOUR YEARS SINCE WE AWARDED OUR FIRST COTS AGREEMENTS ON HOW TO MOVE FROM BECOMING A -- FROM BEING A TRADITIONAL GOVERNMENT CONTRACTOR RELATIONSHIP TO BECOMING A REAL PARTNER WITH INDUSTRY. AND A CONSUMER OF COMMERCIAL SERVICES.

INSTEAD OF PROVIDING DETAILED SPECIFICATIONS AND REQUIREMENT WHICH IS NASA VERIFIES AND APPROVES AND INVOLVE IN THE AN EVERY DAY STEP OF THE WAY, WE NOW IDENTIFY WHAT WE THEY'D, WHAT DO WE NEED IN THE FORM OF A SERVICE TO MEET OUR NEEDS.

SO I THINK THAT'S A BIG DIFFERENCE IN WHAT WE'RE TALKING ABOUT IN TERMS OF A TRADITIONAL RELATIONSHIP AND BECOMING A PARTNER AND A CONSUMER OF SERVICES. WE'RE IDENTIFYING THE NEEDS AND LET THE CREATIVITY AND INNOVATION OF INDUSTRY AND INGENUITY GIVE THE MAXIMUM FLEXIBILITY TO ALLOW THAT TO HAPPEN.

HOPEFULLY THAT WILL RESULT IN LOWER COST SYSTEMS SO THAT THIS WILL MEET THE NEEDS NOT ONLY FOR NASA AND THE GOVERNMENT, BUT ALSO WILL ENABLE THE OPENING OF NEW MARKETS AND HAVE THESE SERVICES AVAILABLE FOR THEIR CUSTOMERS.

THAT'S OUR GOAL.

AND YET WE STILL HAVE TO MAINTAIN OUR STANDARDS OF SAFETY AND RELIABILITY SO THAT WE CAN BE ASSURED THAT THESE WILL BE USEFUL AND MEET OUR NEEDS.

SO WE'VE LEARNED IT STRIKE THAT BALANCE BETWEEN OUR END OF THE PARTNERSHIP WHERE WE BRING, YOU KNOW, OUR VAST KNOWLEDGE AND EXPERIENCE OF HUMAN SPACE FLIGHT AND OUR RESOURCES AND OUR FACILITY AND OUR EQUIPMENT IN SOME CASES WHERE WE FACILITATE THE AVAILABILITY OF THOSE RESOURCES THAT WE HAVE.

SO THAT'S OUR END OF THE PARTNERSHIP.

SO WE'VE LEARNED A LOT BEFORE WE HAVE -- WE'RE LOOKING FORWARD TO COMPLETING THIS INITIAL CARGO PARTNERSHIP NEXT YEAR.

AND WE HAVE ALWAYS EXPECTED TO MOVE ON TO THIS STAGE WHERE WE EVOLVE TO COMMERCIAL CREW AND WE'RE REALLY EXCITED ABOUT CONTINUING OUR WORK WITH YOU AND MOVING INTO THIS NEW PROGRAM.

>> ALAN BROUGHT UP A GOOD POINT THAT THE KEY FACTOR THAT'S DIFFERENT IN COMMERCIAL CREW IS THIS HUMAN SPACE FLIGHT CERTIFICATION AND IT IS IMPORTANT THAT THESE SYSTEMS BE SAFE.

THAT IS ONE OF OUR PRIMARY OBJECTIVES.

AND THERE'S BEEN A LOT OF DIALOGUE ABOUT WHETHER THE PRIVATE SECTOR IS CAPABLE OF DEVELOPING SAFE HUMAN SPACE FLIGHT SYSTEMS.

AND OUR ANSWER TO THAT IS FAIRLY SIMPLE, WHICH IS THAT THESE SYSTEMS WILL NOT FLY UNTIL NASA IS CONVINCED WITH CONFIDENCE THAT THEY ARE SAFE.

WE ARE GOING AWARD ESSENTIALLY THE HUMAN SPACE FLIGHT CERTIFICATION, THAT IS THE ONUS IS STILL ON NASA TO PROVIDE THAT CERTIFICATION.

SO TO SAY WHETHER THE PRIVATE SECTOR IS UP TO THE JOB OR NOT REALLY MISSES THE POINT AGAIN THAT THIS IS STILL A PARTNERSHIP, THE PROVIDER IS BRINGING THEIR SOLUTIONS AND AGAIN NASA HOLDS THE SPACE FLIGHT CERTIFICATION AWARD SO TO SPEAK. SO THE ONUS IS STILL ON THE GOVERNMENT AS WELL AS THE PRIVATE SECTOR TO ENSURING THESE SYSTEMS ARE SAFE.

SO I WANTED TO MAKE THAT POINT CLEAR.

>> VERY GOOD.

THANK YOU, PHIL.

WE'RE VERY HAPPY TO BE WORKING WITH ALAN'S FOLKS AND ALL THE CENTERS IN ORDER TO MAKE THIS HAPPEN.

WHAT THE PLANNING OFFICE IS DOING EACH AND EVERY DAY IS OUR PRIMARY FOCUS TODAY IS REALLY IN TWO AREAS.

THE BIGGEST BEING WHAT IS OUR DEFINITION OF OUR REQUIREMENTS.

YOU SAW US TALK ABOUT THAT, BRENT TALKED ABOUT THAT, WHAT ARE OUR PROCESSES BY WHICH WE WANT TO BE AS STREAMLINED AS POSSIBLE AND HOW DO WE WANT TO INCORPORATE THAT STREAMLINED APPROACH IN WITH OUR PARTNERS AND THEN SHARE THAT WITH YOU ALL. AND THEN WHAT ARE THE INTERFACES, NOT ONLY BETWEEN COMMERCIAL PARTNERS, BUT ALSO WITH THE OTHER BIG PROGRAM, ISS.

FOR US, ISS BECOME AS MAJOR PARTNER IN HOW WE GO FORWARD.

THE SECOND PART IS REALLY UNDERSTAND HOW WE'LL BE INVESTORS IN THIS IDEA, HOW WE'RE GOING TO WORK THROUGH AN ACQUISITION, AND ALL THOSE ARE VERY EARLY STAGES OF WHAT WE'RE TRYING TO WORK THROUGH.

BUT MY TEAM AND THE TEAM THAT SUPPORTS US THROUGHOUT THE AGENCY IS VERY ENGAGED IN BOTH OF THOSE EFFORTS ON A DAY TO DAY BASIS.

AGAIN I WANT TO EMPHASIZE WE ARE LOOKING IN THE END TO HAVE AN END TO END SOLUTION.

WE WOULD LIKE VERY MUCH FOR THE PARTNER TO BRING AN INTEGRATED SYSTEM TO THE TABLE WHICH INCLUDES THE FLIGHT HARDWARE AS WELL AS THE PROCESSES NEEDED TO PROCESS THAT HARDWARE, FLY THAT HARDWARE AND RECOVER THAT HARDWARE AND THROUGHOUT ALL THAT MAKING SURE THAT THE MISSION IS SAFE AND THE MISSION CAN BE COMPLETED.

OF COURSE ALL THIS IS CONTINGENT ON COMPLETE DIRECTION THAT WE WILL GET FROM THE EXECUTIVE BRANCH AND LEGISLATION IN CONGRESS AS WE MOVE FORWARD AND WE'LL BE WATCHING CLOSELY WHAT W. WHAT THOSE ARE AND TRY TO DIALOGUE WITH THEM, AS WELL, SO WE CAN TOGETHER GO CREATE THAT CAPABILITY.

SO OUR ACTIVITIES ARE DEPENDENT ON DIRECTION WE GET.

THAT'S WHAT WE HAVE FOR OUR PREPARED PRESENTATION.

I'LL TURN IT BACK OVER FOR OUR NEXT SERIES OF EVENTS.

>> WE'RE READY FOR THE QUESTION AND ANSWER PERIOD.

HERE AT HEADQUARTERS, PLEASE WALK DOWN TO THE MICROPHONES AND WHILE YOU'RE THINKING ABOUT THAT, WE DO HAVE SOME QUESTIONS ONLINE THAT I'LL GIVE TO THE PANEL WHILE PEOPLE ARE THINKING ABOUT WALKING DOWN FRONT.

FROM DCI SERVICES AND COUPLING FOR ED OR BRENT, DOES NASA COMMERCIAL CREW DEVELOPMENT PROGRAM ENVISION ITSELF AS THE CERTIFICATION AUTHORITY FOR ALL MANNED SPACECRAFT BOTH FOR NASA AND COMMERCIAL CUSTOMERS?

>> I'LL START THAT.

THE ANSWER WOULD BE WE ARE THERE TO CERTIFY FOR NASA MISSIONS AND OUR NASA CREW MISSIONS.

IN THE PROCESS OF DOING THIS FOR THE NASA CREW MISSIONS, WE ENVISION THAT THE PARTNER WILL HAVE A PRETTY ROBUST SYSTEM AND WE'RE ALSO WORKING WITH THE FAA VERY CLOSELY TO WHERE WHEN MISSIONS ARE NOT NASA CREWED MISSIONS, THAT THE FAA IS VERY MUCH A PARTNER OR VERY MUCH THE AGENCY THAT'S GOING TO BE LOOKING TO MAKE SURE THAT THE SYSTEM IS GOING TO GO FLY AND FLY CORRECT.

THE GOAL THERE VERY MUCH FROM THE VERY RFI WAS THAT WE NEED TO BE VERY CLOSE TO FAA AND WE'VE BEGUN TO DO THAT.

JUST IN THE LAST COUPLE WEEKS, WE HAVE PARTICIPATED WITH THEM IN SOME WORKSHOPS AND WE ARE IN THE PROCESS OF SHARING CAPABILITIES FROM WHAT WE DO FOR HUMAN SPACE FLIGHT AND WHAT THEY DO FOR THEIR COMMERCIAL SPACE ENVIRONMENT AND SHARING PEOPLE BACK AND FORTH SO WE CAN BEGIN TO UNDERSTAND HOW EACH OTHER LOOKS AT THOSE CAPABILITIES.

SO THE SHORT ANSWER TO THE QUESTION IS WE ARE GOING TO CERTIFY FOR NASA CREW MISSIONS.

WE BELIEVE THAT WILL BE OUR -- BRING A ROBUST SYSTEM.

>> THE ONLY THING I WOULD ADD IS THAT I THINK IT'S IMPORTANT AS WE WORK THROUGH THIS PROCESS CORRECTLY WITH THE FAA AT THE END WHEN THE FAA IS DOING THE CERTIFICATION FOR A NONNASA MISSION, IT WILL BE VERY SIMILAR AND WE WON'T BE ASKING OUR INDUSTRY PARTNERS TO USE A COMPLETELY DIFFERENT CERTIFICATION PROCESS.

WE DON'T THINK THAT WOULD BE COST EFFECTIVE IN THE LONG RUN.

SO I THINK OUR GOAL IN WORKING WITH THE FAA IS TO ENSURE WE HAVE A VERY SIMILAR PROCESS.

>> THIS PERSON WANTED TO REMAIN ANONYMOUS.

WILL NASA BE OPEN TO COMMERCIAL DESIGN RATHER THAN JUST OPTIMIZE FOR THE ISS CREW TRANSPORTATION MISSION?

>> I CAN TAKE THAT ONE.

AS I SAID IN MY REMARK, WE HAVE TWO GOALS.

ONE IS SAFE RELIABLE COST EFFECTIVE CREW TRANSPORTATION FOR THE ISS AS WELL AS ENABLE THE DEVELOPMENT OF NONNASA MISSIONS TO LOW EARTH ORBIT.

WE'RE TRYING TO ACHIEVE BOTH AND NOT ONE AT THE EXPENSE OF THE OTHER.

SO I WOULD SAY BOTH.

>> THE NEXT QUESTION IS FROM A THOMAS BRUSQUE IN GERMANY.

WHO ARE THE PRIME CONTRACTOR COMPANIES WHO CAN DELIVER THE FULL CREW SERVICE TRANSPORTATION AND WHEN?

>> I THINK WE'RE ASKING THE SAME QUESTION.

WE BELIEVE THAT THERE ARE A NUMBER OF COMPANIES IN THE INDUSTRY WHO CAN PROVIDE THIS CAPABILITY.

WE DO NOT HAVE PARTNERS TODAY.

WE DO NOT HAVE AN ACQUISITION PLAN ON THE STREET IN WHICH WE'VE AWARDED ANYTHING AT THIS POINT.

WE'RE A PLANNING OFFICE AT THIS POINT.

BUT I WOULD SAY THAT THERE ARE A NUMBER OF COMPANIES THAT ARE U.S. BASED THAT CAN DO THIS AND WE ENCOURAGE ALL OF THEM TO COME UP WITH INNOVATIVE WAYS IN ORDER TO ACHIEVE THIS CAPABILITY?

WHEN IN AS SOON AS THEY'RE READY.

THE SUBTLE WHETHER END SOMETIME IN 2011 OF AFTER A GOOD 30 YEARS.

THERE WILL BE A PERIOD OF TIME THAT IT WILL TAKE TO DEVELOP THIS SYSTEM.

WE HAVE VARIOUS RANGES.

WE HAVE FOLKS WHO THINK THEY CAN DO THIS RATHER QUICKLY AND OTHERS WHO THINK IT WILL TAKE A NUMBER OF YEARS.

OUR GOAL IS TO HAVE THE CAPABILITY BY 2015 TIME FRAME.

THAT WOULD BE OUR GOAL TODAY.

OF COURSE THERE'S A LOT OF CONSTRAINTS AND PARAMETERS THAT AFFECT THAT GOAL.

SO WE HAVE TO WORK CLOSELY WITH THE PARTNERS AND THE BRANCHES OF GOVERNMENT IN ORDER TO TRY TO ACQUIRE THE FACT THAT WE CAN GET TO THE DATE OF 2015.

>> ONE THING TO ADD.

WE DO HAVE A VARIETY OF CONCEPTS THAT HAVE BEEN PROPOSED BOTH IN THE PUBLIC AND INTERNALLY TO NASA THROUGH PREVIOUS AWARDS AND SOLICITATIONS.

SO WE HAVE SOME IDEA AND THERE IS A VERY BROAD RANGE OF SYSTEMS DIFFERENT TYPES OF SYSTEMS, DIFFERENT TYPES OF HARDWARE THAT HAVE A WIDE RANGE OF COST ESTIMATES.

AND EVERYBODY WANTS TO KNOW EXACTLY HOW MUCH IT'S GOING TO COST AND EXACTLY HOW LONG IT WILL TAKE.

AND THOSE -- THAT KIND OF INFORMATION CANNOT BE KNOWN AT THIS STAGE OF THE PROGRAM.

IT HAS TO DO WITH A LOT OF DECISIONS THAT HAVE NOT BEEN MADE YET.

A LOT OF IT WILL DEPEND ON THE FINAL APPROACH THAT WE OUT WITH IN TERMS OF HOW WE'LL DO HUMAN SPACE FLIGHT CERTIFICATION AND AS YOU'VE SEEN, WE HAVE A LOT OF DETAILS TODAY, BUT THERE ARE MANY DETAILS GOING FORWARD THAT ARE GOING TO IMPACT THE COST AND SCHEDULE ASSOCIATED WITH THESE SYSTEMS THAT HAVE NOT BEEN MADE YET. SO IT IS IMPOSSIBLE TO ANSWER THOSE KINDS OF QUESTIONS WITH A VERY HIGH DEGREE OF FIDELITY.

BUT ONE THING WE CAN SAY, THE LONGER WE WAIT TO START, THE LONGER IT WILL TAKE TO DEVELOP THE SYSTEMS.

SO WE'RE VERY ANXIOUS TO GET STARTED.

WE'RE HOPING THAT WE CAN GET BUDGET AUTHORITY AND APPROVAL FROM THE LEGISLATIVE BRANCH TO PROCEED ROBUSTLY WITH THIS PROGRAM AS SOON AS POSSIBLE.

THE LONGER WE WAIT, THE LONGER IT WILL TAKE TO HAVE THE NEXT U.S. FLAG MISSION WITH HUMANS ON IT WHICH WILL EXTEND THE GAP WHICH IS SOMETHING THAT WE WOULD NOT -- WE ARE TRYING TO AVOID AS SOON AS POSSIBLE.

>> COULD WE HAVE THE ADDRESS PUT UP?

THANK YOU.

WHAT IS YOUR OPINION ABOUT THE EUROPEAN PARTNERS?

>> I WOULD HOPE THAT THEY WOULD BE CUSTOMERS JUST LIKE NASA IS FOR THIS SERVICE AND WE'LL HAVE TO WORK OUT THE DETAILS OF HOW EXACTLY THEY WOULD ACQUIRE THE SERVICES, BUT IN TERMS OF THE INTERNATIONAL PARTNER, WE SEE THOSE AS CUSTOMERS. ANY PROVIDER COMING FORWARD TO BID ON THESE TYPES OF CAPABILITIES THAT WE'LL ASK FOR HAVE TO MEET ALL U.S. LAWS AND REGULATIONS.

THAT WILL BE A FUNDAMENTAL REQUIREMENT OF THE PROGRAM.

HOWEVER, THAT DOES ALLOW FOR INTERNATIONAL CONTRIBUTIONS AND WOULD HE HAVE SEEN INTERNATIONAL CONTRIBUTIONS FROM OUR COTS PROGRAM.

WE ANTICIPATE THAT THERE WILL BE TO THE HARDWARE WHEN THEY COME FORWARD.

BUT, AGAIN, YOU WILL HAVE TO MEET ALL U.S. LAWS AND REGULATIONS ASSOCIATED WITH OWNERSHIP AND THINGS OF THAT NATURE.

THE COMMERCIAL BASED INDUSTRY, WHILE IT'S NOT EXACTLY THE SAME, BUT YOU CAN SEE IT AS SOMEWHAT LIKE THE AUTOMOTIVE MARKET.

YOU CAN'T FIND A CAR THAT'S 100% BUILT IN ANY PARTICULAR COMPANY.

OR COUNTRY.

WE HAVE A VERY GLOBAL CAPABILITY AND WE'D LIKE BRING THOSE CAPABILITIES TO BEAR AS LONG AS WE STILL AGAIN MEET U.S. LAWS OR REGULATIONS.

ANYTHING TO ADD FROM MY ESTEEMED PANEL MEMBERS?

OKAY.

>> THE NEXT ONE IS FOR ALAN.

WOULDN'T IT BE MORE EFFECTIVE TO CLOSE THE MANNED SPACE FLIGHT GAP BY FUNDING COSTS D IMMEDIATELY?

>> WE HAVE A NUMBER OF GOALS AND OBJECTIVES IN THE PROGRAM, ONE OF WHICH IS COMPETITION.

WE THINK THAT'S A VERY STRONG ELEMENT OF THE COMMERCIAL GROUP PROGRAM.

AND I BELIEVE NOW THAT WE'VE EVOLVED AND MATURED OUR EXPECTATIONS FOR STANDARDS AND HUMAN SAFETY AND WE'VE CONSOLIDATED NOW ALL OF THAT KNOWLEDGE THAT WE'VE GAINED OVER 50 YEARS IN TO A SOUTHWEST REQUIREMENTS, THAT WE SHOULD MAKE THAT AVAILABLE TO EVERYBODY AND HAVE A COMPETITION THAT WOULD INCLUDE MULTIPLE COMPANIES.

SO I DON'T THINK THAT WOULD BE THE OPTIMUM THING TO DO JUST TO AWARD ON COST D.

>> AND FROM JIM JOHNSON FOR BRENT.

IN THE EFFORT TO ELIMINATE TYPE ONE STANDARDS AND INCORPORATES THEM INTO THE REQUIREMENTS DOCUMENT, WILL NEW REQUIREMENTS BE BROKEN OUT AS INDIVIDUAL STAND ALONE REQUIREMENTS?

>> THAT'S A GOOD QUESTION.

WE MENTIONED THAT THE TYPE ONE STANDARDS WILL BE PART OF OUR REQUIREMENTS DOCUMENTS.

IDEALLY WE WOULD AS A PROGRAM BE ABLE TO COMPOSE ALL THOSE AND WE HAVE DONE THIS.

IT'S BIG JOB.

THE HEALTH AND MEDICAL STANDARDS THAT ARE TYPE ONE, WE MADE A LOT OF PROGRESS ON ACTUALLY JUST ESSENTIALLY TRANSFORMING THOSE INTO REQUIREMENT STATEMENTS THAT ARE IN THE DOCUMENT THEMSELVES.

WE HAVEN'T DONE THAT WITH ALL THE TYPE ONE STANDARDS YET.

AND WHETHER OR NOT WE WILL GET THERE BEFORE WE HAVE AN ANNOUNCEMENT ON THE STREET TO BEGIN AN ACQUISITION, I DON'T KNOW.

WE'RE WORKING THROUGH SOME OF THE SAFETY ONES.

IF YOU LOOK AT THE SAFETY TYPE ONE, THEY WERE MORE SPECIFIC IN THEIR LISTING OF THE TYPE ONE STANDARD.

IN MANY CASES UNDER THE SAFETY, THEY ACTUALLY JUST REFERRED TO A SPECIFIC PARAGRAPH OR PARAGRAPHS FROM A STANDARD.

SO WE'LL DO THE BEST WE CAN TO WHITTLE THOSE DOWN INTO VERY SPECIFIC STATEMENTS FOR YOU SINCE THEY ARE MANDATORY.

>> HERE'S A BUDGET QUESTION.

THE PRESIDENT'S BUDGET PROPOSAL ABOUT \$6 BILLION OVER FIVE YEARS APPEARS FOR SUPPORT DEVELOPMENT ASSISTANCE OF FOUR TO SIX COMMERCIAL PARTNERS.

WITH CONGRESS HEADED TOWARD A BUDGET DEBT AT BEST PROVIDES ABOUT \$1.3 BILLION OVER THREE YEARS, HOW MANY COMMERCIAL PARTNERS DO YOU EXPECT THAT FUNDING LEVEL TO SUPPORT THROUGH DEVELOPMENT?

?

>> WELL, THAT'S GOOD QUESTION.

THE REDUCED BUDGET THAT YOU MENTIONED ONLY IS IN THE FIRST FEW YEARS OF THE PROGRAM.

I THINK THE AUTHORIZATION BILL THAT WAS SIGNED BY THE SENATE WAS FOR '11, '12, '13.

SO THAT WAS NOT THE FULL BUDGET THAT WE WOULD EXPECT FOR BRING TO BEAR FOR THE DEVELOPMENT PROGRAM.

SO A LITTLE BIT UNSURE.

RIGHT NOW WE ARE PLANNING FOR THE EXECUTION OF THE PRESIDENT'S BUDGET.

WE ARE HAVING DISCUSSIONS ON CONTINGENCY PLANS ASSOCIATED WITH THAT, BUT WE HAVE NOT FULLY DEVELOPED ANY KIND OF ALTERNATIVE PLAN FOR ALTERNATIVE BUDGETS IN WHICH THERE COULD BE AN INFINITE NUMBER OF VARIATIONS WHICH COULD BE COMING OUT OF THE BUDGET PROCESS.

SO RIGHT NOW WE'RE STILL COMMITTED TO THE PLANNING OF PRESIDENT'S BUDGET, WHICH IS \$5.8 BILLION.

AND AS WE SAID A COUPLE TIMES, IF WE GET LESS, WE WILL HAVE TO REEVALUATE THOSE PLANS.

HOWEVER, WE WOULD AGAIN COMPETITION IS A FUNDAMENTAL ASPECT OF THE STRATEGY.

SO IF WE GOT -- I DON'T WANT TO SAY EXACTLY WHAT WE WOULD DO, BUT WE WOULD HAVE TO TRADE SCHEDULE FOR THE POTENTIAL FOR COMPETITION AND I WOULD SAY COMPETITION IS A VERY STRONG DRIVER.

SO I WOULD JUST SAY THAT.

SO I DON'T GET AN E-MAIL ON MY BLACKBERRY AFTER I'M DONE.

>> MAYBE I COULD ELABORATE.

THE COMPANY ALSO ASKED HOW MANY COMPANIES TO WE THINK WE CAN PARTNER WITH.

WELL, THAT IS CERTAINLY AN UNKNOWN.

WE WON'T KNOW UNTIL WE GET AN UPDATE OF PROPOSALS.

BUT WE DID HAVE THREE ROUNDS OF COMPETITION WHERE WE HAVE SOME INSIGHT INTO THE NUMBER OF COMPANIES INTERESTED AND THERE IS A LARGE NUMBER OF COMPANIES FROM SMALL EMERGING COMPANIES ALL THE WAY UP TO THE LARGE ESTABLISHED AEROSPACE COMPANIES.

AND WE'RE ALSO ENCOURAGING THOUGHT ONLY COMPETITION, BUT A NUMBER OF PARTNERS.

AND WE HAVE SEEN IN THESE EARLY ROUNDS OF THE COST PROPOSALS AND COMMERCIAL CREW DEVELOPMENT THAT THERE'S A LARGE RANGE OF COST ESTIMATES TO COMPLETE RANGING FROM THE LOWER TO THE HIGHER END.

SO WHAT WE CAN SAY IS WE BELIEVE WITH THE FUNDING THAT IS PROPOSED THAT IT SHOULD ENABLE MULTIPLE COMPANIES.

>> THE OTHER ADVANTAGE THAT COMPETITION WILL BRING FOR US IS TRADITIONALLY NASA HAS ACQUIRED A SPECIFIC THING.

WE'VE BEEN VERY CLEAR WE WANT THIS THING AND IT HAS A LOT OF DETAILED SPECIFICATIONS AND WE USUALLY GET THAT ONE THING.

WHAT WE WOULD LIKE WOULD BE TO HAVE TO HAVE A PORTFOLIO OF CAPABILITIES AND OPTIONS.

TO DRAW AN ANALOGY, IT WOULD BE VERY GOOD FOR ANY HOUSEHOLD TO HAVE A MINIVAN AS WELL AS A SPORTS CAR.

DEPENDING ON WHAT YOU'RE TRYING TO DO, IT WOULD BE GREAT TO HAVE BOTH OF THOSE CAPABILITIES FOR WHATEVER NEEDS THAT YOU MAY HAVE.

SO ONE SYSTEM MAY NOT BE THE BEST.

WE WOULD DEFINITELY LIKE TO HAVE A PORTFOLIO OF CAPABILITIES AND I THINK THEY WOULD LEAD TO A MORE ROBUST ISS PROGRAM, IT WOULD LEAD TO MORE OPPORTUNITIES FOR NASA SO GO BEYOND LOW EARTH ORBIT AND OBVIOUSLY MORE OPPORTUNITIES FOR THE PRIVATE SECTOR TO PROVIDE THESE SERVICES, SEE WHICH ONES WORK BEST IN THE PRIVATE SECTOR AND SEE WHICH ONES WIN OUT.

THAT'S VERY TYPICAL MARKETPLACE THAT WE SEE IN ALL ASPECTS, NOT JUST TRANSPORTATION.

>> AND I'LL ADD JUST A WORD OR TWO.

COMPETITION IS EXTREMELY IMPORTANT AND IT IS WHAT WE'RE TRYING TO ACHIEVE HERE BY TRYING TO HAVE MULTIPLE CAPABILITIES THAT WE CAN GO USE.

FROM A PROJECT MANAGEMENT STAND POINT, YOU ALWAYS LOOK AT COST SCHEDULE AND TECHNICAL.

WHEN ONE IS FIXED, IT MEANS THE OTHER TWO CAN FLOAT.

WHEN TWO ARE NIXED, YOU HAVE ONLY ONE TAKE CAN FLOAT.

WHEN ALL THREE ARE FIXED, YOU HAVE END UP HAVING PROBLEMS.

AND SO WE HAVE TO LOOK AT IF WHATEVER FUNDING LEVELS WE GET IN ORDER TO HELP WITH THE PARTNERSHIP, THAT BECOMES OUR FIXED INVESTMENT.

THE TECHNICAL REQUIREMENTS IF YOU LOOK AT THE TECHNICAL SIDE, THE HUMAN RATING REQUIREMENTS THAT WE'LL BE WORKING THROUGH AND EVENTUALLY PARTNERING WITH INDUSTRY BECOMES A PRETTY FIRM SET OF REQUIREMENTS WE NEED TO WORK TOWARDS.

SO THEN WHERE IS THE FLOW?

THE FLOW IN MY MIND IS IN SCHEDULE.

THAT'S WHY I WAS SOFT ABOUT 2015.

IT DEPENDS ON HOW MUCH MONEY WE HAVE TO PROVIDE FOR THE INVESTMENT AND ALSO HOW MANY PARTNERS WITHIN COMPETITION THERE ARE.

AND THE SECOND PART IS HOW DO WE GO DO THAT INVESTMENT.

SO THOSE ARE OUR NOBS THAT WE CAN TURN FROM OUR PROJECT MANAGEMENT INVESTMENT.

NOB THAT TALKS ABOUT HUMAN RATING IS GOING TO BE A FIXED GAIN.

>> IS THE HUMAN RATING BEING REPLACED BY CREW TRANSPORTATION SYSTEMS CERTIFICATION?

>> YES.

>> AND THERE'S SOME REASONS FOR THAT.

WE WITHIN THE PROGRAM REFER TO IT AS A CERTIFICATION PRIMARILY BECAUSE 8705 HAS ALREADY CAPTURED THE TERM HUMAN RATING AND IS A VERY SPECIFIC APPLICATION OF 8705 TO A GOVERNMENT DEVELOPED SYSTEM.

SO WE'RE TRYING TO MOVE AWAY FROM THAT TERM AS MUCH AS WE CAN AND USE THE TERM CERTIFICATION.

>> AND JUST A REMINDER THAT PEOPLE HERE IN THE AUDITORIUM CAN ASK QUESTIONS.

WE'VE GONE THROUGH EVERYONE ON LINE UNLESS YOU'RE SITTING THERE USING YOUR BLACKBERRY TO SEND THEM IN.

OKAY.

PHIL, THIS ONE'S FOR YOU.

IS THE NEW COMMERCIAL CREW DEVELOPMENT PROGRAM GOING TO RESIDE IN IT A NEW NASA COMMERCIAL SPACE FLIGHT MISSIONS?

IT SEEMS THERE'S A CONFLICT OF INTEREST WITH HUMAN SPACE FLIGHT.

>> I GUESS I DON'T PERCEIVE A CONFLICT AT ALL.

THE COMMERCIAL CREW INITIATIVE IS ALREADY BECOMING AN INTEGRAL PART OF OUR EXPLORATION PLAN.

WE HAVE AN ACTIVITY INTERNAL TO THE EXPLORATION SYSTEMS MISSION REFERRED TO AS THE HEFT AND IT IS A FRAMEWORK TEAM LOOKING AT OUR ARCHITECTURE GOING FORWARD OUT MANY, MANY YEARS ON HOW WE'RE GOING TO ACCOMPLISH OUR DEEP SPACE EXPLORATION MISSION.

AND THE EARTH TO LOW EARTH ORBIT TRANSPORTATION MODE FOR ONE OF THE PRIMARY OPTIONS IS PROVIDED BY COMMERCIAL CREW.

SO I DON'T SEE A CONFLICT AT ALL.

I DON'T SEE THE NEED FOR SEPARATE MISSION DIRECTORATE, BUT I WOULD ANTICIPATE AN ORGANIZATION THAT IS FOCUSED ON THE DEVELOP PROGRAM ONCE APPROVED.

SO WE'LL HAVE TO STAND THAT UP JUST LIKE NASA STANDS UP ANY NORMAL PROGRAM.

BUT I SEE THAT AS FITTING IN VERY WELL.

AGAIN, THAT IS WHERE THE COST EFFORT HAS BEEN EXECUTED OVER THE LAST FOUR TO FIVE YEARS, SO IT HAS THE BENEFIT OF THAT EXPERIENCE AND WOULD HOPE TO LEVERAGE THAT.

>> THIS ONE IS FROM HUNTSVILLE STATES PROFESSIONALS.

DO YOU SEE THAT AS A NATIONAL EFFORT, WHAT DO YOU SEE IF ANY AS THE ROLE OF CURRENT NASA CENTERS AND CONTRACTORS FROM ACROSS THE COUNTRY SUCH AS CONSTELLATION AND ALREADY INVOLVED IN FACILITATING CURRENT ISS ACCESS AND FURTHERING HUMAN SPACE EXPLORATION BEYOND LOW EARTH ORBIT?

>> I THINK THE SHORT ANSWER IS WE ARE GOING TO GET HELP FROM EVERYBODY.

AND FROM A NASA STANDPOINT, WE NEED -- AND ON THESE INSIGHT TEAMS, THE CORE OR THE HEART BLOOD OF THAT INSIGHT TEAM IS REALLY THE ENGINEERS AND THE SAFETY COMMUNITY SUPPORTING THE EFFORTS OF THE COMMERCIAL PROVIDER.

SO THOSE ENGINEERS WILL BE MAKING UP THE FOLKS THAT GOT A LOOK AT COOLING SYSTEMS AND ELECTRICAL AND STRUCTURAL SYSTEMS.

LAUNCH ABORT SYSTEMS WILL BE FROM THROUGHOUT NASA INNED TO HELP CREATE THAT INSIGHT TEAM.

THEY'RE NOT GOING TO BE ALL AT KENNEDY SPACE CENTER AND THOUGHT GOING TO ALL BE AT KENNEDY AND JOHNSON SPACE CENTERS.

THEY WILL BE THROUGHOUT THE AGENCY.

THE TYPE OF FOLKS WE NEED ARE FOLKS THAT HAVE THAT EXPERIENCE, BRINGING SOMEONE NEW WHO IS NEW TO NASA AND NEW TO THE ENTRY OF SPACE AND SAYING NOW YOU'RE DOING INSIGHT ON A PARTICULAR PROVIDER OR SYSTEM DOESN'T MAKE ANY SENSE.

WE NEED TO BRING THE EXPERTISE WE HAVE TO HELP THE PROVIDER BE SUCCESSFUL AND YOU ONLY DO THAT BY HAVING FOLKS THAT HAVE THAT EXPERIENCE LEVEL.

AND'S WHAT I WOULD SAY FROM A NASA STANDPOINT.

FROM A CONTRACTOR STANDPOINT WE ENVISION THE FOLKS WILL BE THE CONTRACTORS IN THE WIDE PORTFOLIO OF WHAT IS AVAILABLE TODAY.

SOME OF THOSE ARE LOCATED OBVIOUSLY IN HUNTSVILLE AND OTHERS ARE LOCATED THROUGHOUT THE COUNTRY.

BUT THE GOAL IS EVERY HUMAN SPACE FLIGHT ENDEAVOR THAT NASA HAS TAKEN HAS CONTRACTORS AND IT HAD PARTNERSHIPS AND VERY SMART FOLKS THAT RESIDE WITHIN THE INDUSTRY HELP GET US TO THOSE PARTICULAR CAPABILITIES.

IT ISN'T ALWAYS NASA AND INDUSTRY.

IT'S ALWAYS A PARTNERSHIP.

AND IN MY MIND WE'RE DOING THAT SAME THING HERE.

SO IT'S THE INTELLECTUAL PROPERTY OF THE COUNTRY IN A HAS TO MAKE THIS HAPPEN, NOT NASA OR ALL BY ITSELF THE INDUSTRY.

>> HOW CLOSELY WILL PRIVATE PARTNERS WORK WITH NASA WHILE DRAWING OUT THEIR CERTIFICATION SAFETY REPORTS AS WELL AS MAKING NEW VEHICLE OR PLANNED REVISIONS IF INITIAL DRAFTS ARE UP ACCEPTABLE?

>> THAT PULLS BACK TO HOW THESE INSIGHT AND OVERSIGHT TEAMS WILL WORK TOGETHER WITH THE PARTNER.

OBVIOUSLY AS THOSE PLANS COME TOGETHER WITH THE PARTNER, WORKING WITH THE INSIGHT TEAM, WE'LL COMMUNICATE THAT OBVIOUSLY WITH THE PROGRAM.

THE IDEA HERE IS NOT TO HAND REPORTS BACK AND FORTH, BUT TO WORK TOGETHER TO MAKE SURE THAT WHEN THAT PLAN COMES TO FRUITION, IT'S ALREADY A DONE DEAL AND HOPE PLAY LOT OF THESE REVIEWS ARE REALLY A FORMALITY WOULD OBVIOUSLY BE A GOAL. SO THAT'S ON THE PROCESS SIDE AS MUCH AS WE CAN TO FACILITATE THAT AND.

>> I WOULD ADD TO THAT WHEN YOU THINK ABOUT THE HOW THE PLAN IS DEVELOPED AND PREPARED, YOU START WITH YOUR REQUIREMENTS AND IN THIS CASE THE CERTIFICATION REQUIREMENTS FOR NASA CREW MEMBERS.

WE INTEND TO PARTNER WITH INDUSTRY IN DEVELOPING THE INFORMATION STATEMENTS. ONCE WE HAVE THOSE VERIFICATION STATEMENTS IDENTIFIED, THAT ALONG WITH YOUR STANDARDS, YOUR TYPE TWOS, WHICH HAVE YOUR PRODUCTS THAT NEED TO BE DONE AND CONFORMED WITH FOR CERTIFICATION, THAT REALLY FORMS THE BASIS TO YOUR CERTIFICATION PLAN.

>> THERE WILL BE A LIMIT TO ANY PRIVATE PARTNER ATTEMPTS TO DRAW UP SAFETY CERTIFICATION PLANS BEFORE NASA STEPS IN OR PASSES ON A PARTNERSHIP?

>>. >> I GUESS I HAVE TO UNDERSTAND THAT QUESTION A LITTLE.

IN TERMS OF SETTING UP PARTNERSHIPS, THAT IS TRULY UP TO THE INDUSTRY FORGO DID THAT.

NASA WON'T DRIVE PARTNERSHIPS.

THAT'S TRULY UP TO INDUSTRY TO DO.

IN TERMS OF INDUSTRY COMING UP WITH CERTIFICATION, WE VERY MUCH WOULD LIKE THAT FEEDBACK AND THE WAY WE'LL DID THAT IS AS WE CONTINUE ON THIS SET OF TRYING TO DEFINE WHAT OUR COMMERCIAL TRANSPORTATION CERTIFICATION IS, WE PLAN TO PUT THAT OUT INTO THE PUBLIC REALM WITH THE INDUSTRY AND GET FEEDBACK.

AND SO AS WE WORK THROUGH THAT WHOLE PROCESS OVER THE NEXT NUMBER OF MONTHS, WE DEFINITELY WOULD LIKE FEEDBACK.

AND IF THERE IS A PARTICULAR INDUSTRY PARTNER OUT THERE THAT SAYS THIS IS WHAT WE THINK WE NEED TO DO FOR CERTIFICATION, WE CERTAINLY WOULD LIKE THAT FEEDBACK. NASA COMES WITH 50 YEARS OF HISTORY OF SUCCESSES AND OF HARD FAILURES IN WHICH WE'VE LEARNED WHAT IT MEANS TO BE -- TO PUT PEOPLE ON BOARD A VEHICLE AND TO CERTIFY THAT VEHICLE READY TO GO FLY.

SO WE ARE THAT EXPERIENCE.

WHEN A PARTICULAR PARTNER MIGHT SAY THIS IS WHAT WE NEED TO GO DO, TO ME THAT'S A POINT OF DEPARTURE TO SAY HERE'S HOW WE CAN WORK THIS TOGETHER.

>> WE HAVE A COUPLE QUESTIONS HERE SO LET GO BACK TO HEADQUARTERS.

>> ON THE TYPE TWO REQUIREMENTS, FOR THE COMPANIES THAT COME FORWARD WITH SUBSTITUTE REQUIREMENTS, WILL THAT REMAIN CONFIDENTIAL BETWEEN THE COMMERCIAL PART THEY ARE AND NASA OR WILL THAT BE SHARED ACROSS THE OTHER PARTNERS?

>> THAT'S A VERY GOOD QUESTION.

ONE OF THE REASONS WE BROKE OUT THOSE TYPE TWO ALSO AS A SEPARATE DOCUMENT ESSENTIALLY IS SO THAT WE CAN HAVE A DIFFERENT DID YOU WANT FOR EACH PARTNER AND MAINTAIN PROPRIETARY DATA AND PROCESSES SO THAT WE WOULD NOT SHARE THOSE ACROSS. THOSE WOULD BE UNIQUE TO EACH PARTNER.

>> THANK YOU.

>> A QUESTION TO MS. COLLURA.

I WONDER IF THERE WAS YET A BALLPARK FIGURE FOR HOW MUCH IT MIGHT COST FOR THE FACILITIES COST TO LAUNCH COMMERCIAL CREW TO THE SPACE STATION AND ALSO WHETHER THERE'S ANY CONCERN AS I UNDERSTOOD THE FIXED COSTS FOR THE SHUTTLE PROGRAM WERE PART OF THE REASON TO ARGUE AGAINST ADDITIONAL FLIGHTS AND I WONDERED IF THE COST OF PAYING FOR FACILITIES AT KENNEDY SPACE CENTER MIGHT DISCOURAGE PEOPLE FROM LAUNCHING THERE.

>> UNFORTUNATELY, WE DON'T HAVE A SPECIFIC COST PER FACILITY.

LIKE I MENTIONED, WE'RE GOING THROUGH THE PROCESS NOW OF DETERMINING WHAT THOSE COSTS ARE.

IT'S ANTICIPATED THAT IN THE OCTOBER TIME FRAME, SO VERY SOON, WE'LL HAVE AN IDEA WHAT IT WOULD COST PER FACILITY, BUT OF COURSE IT WILL VARY BECAUSE WE'LL HAVE TO UNDERSTAND WHAT EACH PARTNER'S NEEDS ARE.

SO THOSE COSTS WILL LIKE I SAID VARY.

IF YOU COULD REPEAT THE SECOND PART OF YOUR QUESTION.

>> I UNDERSTOOD THE COSTS OF MAINTAINING THE SHUTTLE PROGRAM IS PART WHAT DISCOURAGING ADDITIONAL FLIGHTS.

I WONDERED IF FIXED COSTS AT THE FACILITIES ARE COSTLIER THAN ELSEWHERE, PROGRAMS IT WOULD DISCOURAGE PEOPLE LAUNCHING FROM KENNEDY OR SENDING THEMSELVES ELSEWHERE.

>> AT THE RISK OF GETTING AN E-MAIL, DO YOU BEHIND IF I JUMP IN HERE?

AS YOU LOOK AT FACILITIES THAT NASA WILL MAINTAIN TO ASSUME OUR EXPLORATION BEYOND LOW EARTH ORBIT, WHERE I THINK THERE'S TREMENDOUS LEVERAGE IS WHERE NASA WILL MAINTAIN THE FACILITY BECAUSE WE NEED IT FOR EXPLORATION BEYOND LOW EARTH ORBIT.

IN THOSE CASES FACILITY IS THERE AND THE COST WILL BE LESS THAN A FACILITY ONLY NEEDED BY ONE OF OUR COMMERCIAL PARTNERS.

IF FACILITY IS NOT NEEDED BY NASA, I SEE AS ALMOST COST PROHIBITIVE FOR A PARTNER TO HAVE ENOUGH USE OF THAT FACILITY TO FUND BOTH THE FIXED AND VARIABLE COSTS.

SO I THINK THE OPPORTUNITY IS WHAT FACILITIES CAN OUR COMMERCIAL PARTNERS LEVERAGE.

>> AND I WOULD SAY THAT THE FACILITIES THAT NASA HAS, THERE ARE SPECIFIC FACILITIES AT THE KENNEDY SPACE CENTER THAT CAN BE USED IN ORDER TO PROCESS AND FLY HARDWARE, BUT THERE'S A NUMBER OF OTHER CAPABILITIES THROUGHOUT OTHER NASA CENTERS THAT INDUSTRY MAY VERY WELL WANT TO GO USE.

WIND TUNNELS, ARC JETS, MODELING AND USING SERVICES THAT NASA HAS FOR SOME OF THOSE THINGS.

CHAMBER, TEST CHAMBERS AND ENGINE TESTING.

NASA HAS FOR OUR BENEFITS OVER THE LAST 50 YEAR, LOTS OF CAPABILITIES THAT CAN COME TO BEAR.

NASA WILL CONTINUE TO DO OTHER THINGS IN SPACE.

SO IF THERE'S MULTIPLE USERS OVER A PARTICULAR FACILITY, OBVIOUSLY THE COST FOR THAT FACILITY FOR ANY PARTICULAR YEAR WILL GO DOWN.

WE HOPE THAT BECOMES A MODEL FOR DIFFERENT FACILITIES.

I DON'T WANT PEOPLE TO THINK THAT KENNEDY IS WHAT WE'RE TALKING ABOUT.

WE'RE TALKING ABOUT ALL THE NASA CENTERS THAT HAVE THE CAPABILITY TO OFFER.

IN TERMS OF THE 21st CENTURY, THAT IS A PROGRAM THAT THE PRESIDENT HAS PUT FORWARD THAT SAYS WE HAVE BEEN FLYING VEHICLES OUT OF THE SPACE COAST FOR QUITE A LONG TIME AND SOME OF THE INFRASTRUCTURE NEEDS TO BE MOVED FROM WHAT WE'VE DONE IN THE PAST, WHAT WE'RE THINKING ABOUT IN THE FUTURE.

IT WOULD BE VERY HELPFUL FROM A STANDPOINT OF 21st CENTURY IN ORDER TO LOOK AT THE CAPABILITIES THAT CAN LAUNCH MULTIPLE SYSTEMS FROM THE SPACE COAST IN AN EFFICIENT MANNER.

AND IT GOES BACK TO WHAT BRENT SAID.

IF WE CAN FIGURE OUT WAYS TO DO THAT EFFICIENTLY WITH MULTIPLE USERS, WE THINK THAT THERE IS AN ECONOMY OF SCALE THERE THAT CAN BE APPROACHED FOR ALL THE PARTNERS.

>> I HAVE ANOTHER QUESTION HERE THAT CAME IN ONLINE.

ARE THEY GOING TO BE PART OF A NEW NASA COMMERCIAL CREW DEVELOPMENT PROGRAM LED NOW BY KSC?

>> THE SIMPLE ANSWER IS YES.

WE WANT THEM.

WE NEED THEM.

THEY HAVE THE EXPERIENCE.

AND WITHOUT THEM, I THINK WE WOULD BE SLOWED UP IN OUR PROCESS.

>> OUR PROGRAM SHOULD BE COMING TO COMPLETION NEXT YEAR AND WE HAD EXPECTED ALL ALONG TO MOVE ON TO THE FULL COMMERCIAL CREW PROGRAM.

SO OF COURSE WE'RE EXCITED ABOUT MOVING FORWARD AND SUPPORTING THE NEW PROGRAM.

>> AND WE HAVE A QUESTION HERE AT HEADQUARTERS.

>> KEVIN MILLER WITH BALL AEROSPACE.

YOU'VE MENTIONED THAT THE INSIGHT/OVERSIGHT TEAMS WILL BE STRUCTURED AND FLEXIBLE BOTH IN TERMS OF SUPPORTING WHAT NASA'S OBJECTIVES ARE AS WELL AS ADDRESSING WHAT THE PARTNER REQUIREMENTS AND DESIREMENTS ARE IN TERMS OF SUPPORT.

MY QUESTION IS WHETHER THAT BE A COSTED ELEMENT OF A PARTNER OFFER?

>> WE HAVEN'T GOTTEN THAT FAR WITH IT AS FAR AS HOW WOULD YOU PARSE OUT SOMEBODY'S TIME.

I MEAN, IT BECOMES STUFF TO DELINEATE WHETHER THEY'RE IN THIS ROLE IF THEY'RE ACTUALLY SUPPORTING THE CERTIFICATION BEHALF OF NASA OR IF THEY'RE PROVIDING A SERVICE TO THE PART THEY WERE.

THERE WOULD BE CLEAR CUT ROLES OBVIOUSLY WHERE IF A PARTNER IS NEEDING A LAB SERVICE OR ANALYSIS OR SOMETHING THAT IS NOT CHARACTERISTICALLY ITSELF PART OF THE CERTIFICATION PROCESS, BUT THAT THE POINT, THE REALITY IS WE JUST WANT TO FIGURE OUT WHAT IS THAT BALANCE.

IN ORDER TO ASSIST THE PARTNER SO WE'RE GETTING THE DATA WE NEED TO DO THAT CERTIFICATION.

SO I SEE THAT PHIL WANTS TO JUMP IN AND HELP ME OUT.

BUT THE REALITY IS, YEAH, WHAT IS THAT LINE, WHAT DOES SOMEBODY'S JOB STOP BEING PART OF THEIR INHERENT NASA JOB AND PROVIDING A SERVICE BACK TO THE PARTNER.

WE'LL HAVE TO FIGURE THAT OUT.

>> WOULD THAT BE SOMETHING THAT NASA WOULD COVER IN TERMS OF COSTS?

IS THAT SOMETHING WE WOULD PAY FOR?

IS THAT THE QUESTION?

>> THE QUESTION REALLY IS IN TERMS OF LEVELING THE PLAYING FIELD, HOW DO YOU DO AN APPLES TO APPLES COMPARISON.

>> I THOUGHT THERE WAS SOMETHING MORE TO THAT.

I'LL LET YOU GUYS -- >> A GOOD POINT.

>> WE DEFINITELY WANT A LEVEL PLAYING FIELD.

AND AT THE SAME POINT, WE KNOW THAT THERE ARE CERTAIN FOLKS THAT DON'T HAVE AS MUCH BASE FLIGHT AS OTHERS.

AND SO NASA WILL BRING TO BEAR THE FACT THAT WE CAN DO THAT, WE CAN MAKE THAT OUR INTELLIGENCE OR OUR CAPABILITIES EQUAL ACROSS THE BOARD.

WHAT WE WILL MAKE SURE WE DON'T DO IS A PROVIDER WHO IS NOW USING A WHOLE LOT OF NASA CAPABILITY GETTING IT FOR NO COST, WE WILL HAVE TO WORK THROUGH THAT AND IT DOESN'T COME AT NO COST.

IF WE'RE REALLY HELPING TO DEVELOP SOMETHING FOR THE PROVIDER AND THE PROVIDER IS NOT DOING THAT ON HIS OWN AND NASA IS PROVIDING THAT SERVICE, THEN THIS DEFINITELY BECOMES SOMETHING THAT WILL BECOME COSTED TO THAT PARTNER.

DOESN'T MEAN WE'RE NOT IN FAVOR OF THAT.

VERY WELL COULD BE HELPFUL.

BUT IT DOESN'T COME AT NO COST.

WHAT THE INSIGHT TEAM IS DOING IS TRYING TO SAY WE CAN BRING OUR CAPABILITY ACROSS ALL PARTNERS EQUALLY AND SAY IF YOU HAVE QUESTIONS, IF WE HAVE, HEY, THIS IS WHAT WE MEAN ABOUT OUR REQUIREMENTS AND IF YOU WANT TO TALK ABOUT, WELL, DOES THIS SOLUTION MEET THOSE SET OF REQUIREMENTS AND HOW CAN WE TALK THROUGH THAT, THE DISCUSSION IS EXACTLY WHAT NASA NEEDS TO PARTICIPATE IN AND THAT REALLY IS AT NO COST.

BUT IF ALL OF A SUDDEN THE PARTNER IS LOOKING FOR NASA TO DO THE HARDCORE ANALYSIS IN ORDER TO GO DO TESTING FOR THAT PARTICULAR PARTNER, THAT WILL HAVE A COST.

>> LAST QUESTION FROM OVER HERE.

>> THANKS, MIKE.

YES, I'M WITH OBITEC.

I WANT TO JUMP AHEAD A FEW YEARS.

WHEN NASA BECOMES A CONSUMER AND YOU SEND A CREW TO ISS AND YOU HAVE MULTIPLE PROVIDER, WHAT ARE GOING TO BE YOUR DISCRIMINATORS AS TO WHICH PROVIDER TO CHOOSE?

>> I WOULD SAY PRIMARILY THE CAPABILITIES THAT THEY BRING TO BEAR AND THE COST. IN CARGO, IT WAS BEST TO HAVE MULTIPLE PROVIDERS.

WE WOULD DO THE SAME SORT OF ANALYSIS FOR CREW, TRYING TO FIGURE OUT WHAT IS IN THE BEST INTERESTS OF NASA.

IN TERMS OF SPECIFIC MISSION, IT WOULD DEPEND ON THE CAPABILITIES.

IF WE HAVE MULTIPLE PROVIDERS, AND THAT IS OUR GOAL, I WOULD THINK IT UNLIKELY THAT THEY HAVE THE SAME CAPABILITY IN TERMS OF TURN AROUND TIME, NUMBER OF SEAT, COST.

SO IN CERTAIN INSTANCES, ONE PROVIDER MAY PERFORM A PARTICULAR MISSION BETTER THAN THE OTHER.

ON AN INDIVIDUAL BASIS.

BUT ON A PORTFOLIO, MIGHT BE BETTER TO HAVE BOTH.

SO I WOULD SAY THAT'S SORT OF AT A VERY HIGH LEVEL ANSWER TO YOUR QUESTION.

>> I'LL JUMP IN HERE AND TALK ABOUT HOW THE CARGO SERVICES CONTRACTS WERE STRUCTURED AND THAT MAY BE -- >> THE WAY IT EVOLVED IS THEY HAD DIFFERENT CAPABILITIES.

SO OF COURSE THERE ARE DISCRIMINATORS BASED ON MISSION NEEDS.

ON THE CREW, IT'S MORE A PERCEIVED BASIS, BUT, AGAIN, THERE WILL BE DIFFERENT MISSION, THERE WILL BE DIFFERENT NEEDS.

BUT IN ANY CASE, IT IS ALWAYS GOOD TO HAVE MULTIPLE REDUNDANT CAPABILITIES TO SERVICE CREW TRANSPORTATION.

>> IN THE CARGO SERVICES, THE CRS CONTRACT, THERE WAS A SPECIFIC NUMBER OF FLIGHTS THAT WERE CONTRACTED FOR EACH PROVIDER, IS THAT CORRECT?

>> WELL, ACTUALLY IT WAS A SPECIFIC AMOUNT OF CARGO THAT WAS CONTRACTED FOR.

>> AND I WOULD POINT OUT, TOO, IS THE LAUNCH SERVICES PROGRAM, THE NASA LAUNCH SERVICES CONTRACT, AND HOW THAT STRUCTURED THAT HAS A PORTFOLIO OF LAUNCH VEHICLES AVAILABLE AND THEN DEPENDING ON THE MISSION, THE PAY LOAD, THERE'S A SELECTION DONE BASED ON THAT PORTFOLIO, HOW DOES IT PLAY OUT LONG TERM, BUT SIMILAR IN THE SENSE OF YOU'RE NOT -- THIS WILL GO BACK TO YOU'RE NOT BUYING THE MINIVAN TO GO TRANSPORT TWO PEOPLE NECESSARILY.

I MEAN, YOU WANT TO FIT THE MISSION, THE COST, THE WHOLE REALM OF THE POSSIBILITY.

SO I CAN SEE IT PROBABLY PROGRESSING SOMEWHERE ALONG THAT FRAME AS IT GETS INTO A SERVICES TIME PERIOD.

>> AND I WOULD ALSO SEE THAT IN THE FUTURE AS STILL TALKED ABOUT, IF YOU LOOK AT WHAT WE EXPECT THE ROBUST CAPABILITY TO BE OUT IN THE FUTURE IS OTHER FOLKS WHO WANT TO GET TO THE ACCESS, BUT FOR US, GET TO ISS AND DO SCIENCE AND EXPERIMENTS

AND THEY VERY WELL MAY WANT TO BRING BACK SOME OF THEIR STUFF IN ADDITION TO THEMSELVES.

AND SO IF WE HAVE ONE CAPABILITY THAT REALLY IS FOCUSED ON BRINGING UP AND DOWN CREW, ANOTHER ONE MIGHT BE FOCUSSED ON MAYBE LESS CREW AND MORE CAPABILITY TO BRING BACK STUFF THAT MIGHT BE RELATED TO THE SCIENCE, THEN WE HAVE A PORTFOLIO TO USE.

THAT'S ONE REASON WHY A PORTFOLIO IS GOOD.

OBVIOUSLY COMPETITION AND IT PROVIDES MULTIPLE WAYS TO GET TO A DESTINATION.

>> THANK YOU, ED.

A COUPLE ANNOUNCEMENTS BEFORE WE CONCLUDE.

A COPY OF TAKE'S PRESENTATION IS AVAILABLE ONLINE AT [WWW.NASA.GOV/EXPLORATION](http://WWW.NASA.GOV/EXPLORATION). IN APPROXIMATELY ONE WEEK WE WILL POST VIDEO FROM THIS MORNING'S FORUM ON THE SAME WEBSITE.

AND ALSO REMEMBER YOU CAN CONTINUE TO SUBMIT QUESTIONS ON LINE FOR ANOTHER TWO HOURS.

WE WILL ATTEMPT TO ANSWER YOUR QUESTIONS AND WE WILL POST THE QUESTIONS AND ANSWERS ON THE WEBSITE.

SO THANK YOU ALL FOR ATTENDING AND FOR WATCHING.

HAVE A GOOD DAY.