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Ball Aerospace to Build Spacecraft for NASA's SPHEREx Mission

Ball Aerospace has received a contract from NASA to build the spacecraft for a mission aimed at exploring the origins of the universe. The two-year Spectro Photometer for the History of the Universe, Epoch of Reionization and Ices Explorer (SPHEREx) medium-class explorer mission is expected to launch in 2023.

Expected to cost \$242m, excluding launch costs, the new space mission is designed to help astronomers gain an understanding of the evolution of the universe and how common are the ingredients for life in our galaxy's planetary systems. According to the contract, Ball will also deliver the system integration and test, support for integration of the spacecraft onto a launch vehicle, and commissioning of the spacecraft after launch.

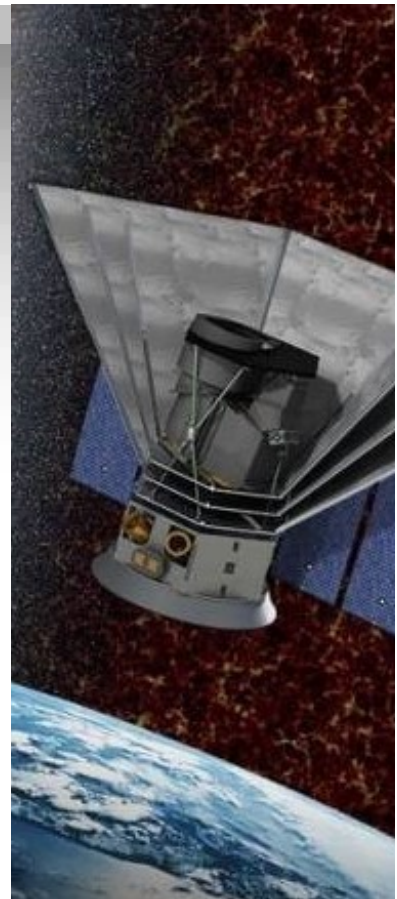
"Ball Aerospace is committed to supporting the goals of NASA and the science community to explore and understand our universe."

Ball Aerospace Civil Space vice-president and general manager, Dr. Makenzie Lystrup said: "Ball Aerospace is committed to supporting the goals of NASA and the science community to explore and understand our universe. Our extensive heritage across a wide breadth of NASA science and exploration mission classes informs our development of technology that will enable the science of tomorrow – providing science at any scale."

SPHEREx will survey the sky in optical and near-infrared light to analyze more than 300 million galaxies and over 100 million stars in our Milky Way. Astronomers will study the nature of physics responsible for cosmic inflation in the early universe. The scope of the mission will also include determining the properties of interstellar ices and investigating the cosmic history of galaxy formation. Interstellar ices are a major source of water and biogenic material during the early phases of star and planet formation.

Ball will build the SPHEREx bus based on the Ball Configurable Platform (BCP) spacecraft, which is designed for flexible, cost-effective applications. Meanwhile, NASA has selected the Korea Astronomy & Space Science Institute to provide test equipment and science analysis for the mission.

Source: Aerospace Technology, Photo Source: Caltech



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Boeing-Safran JV for APU Named Initium Aerospace

Boeing and Safran have announced the name of their new 50:50 joint venture (JV) which will design, build and service auxiliary power units (APUs). The Initium Aerospace JV will leverage Boeing's customer and aircraft knowledge, as well as Safran's experience in designing and producing propulsion systems.

Boeing Global Services president and CEO Stan Deal said: "This is an exciting milestone as we bring together the best of both companies to design and build an advanced APU that will create more lifecycle value for our customers. "This is further proof that Boeing is making strategic investments that strengthen our vertical capabilities and continue to expand our services portfolio.

The JV was formed when Boeing reached an agreement to partner with Safran on APU products. The partners obtained the regulatory and anti-trust approvals for the JV transaction last November. Safran CEO Philippe Petitcolin said: "Initium Aerospace is swiftly capitalizing on the vast expertise of both partners to provide state-of-the-art APUs and innovative solutions to customers. Safran is proud and totally invested in supporting Boeing's growth and operators expectations. We look forward to presenting the first demonstrator engine to the market."

The JV already commenced initial work on the APU design and is collaborating with teams across Boeing and Safran on engineering and production. APU is an onboard engine that provides the power required to start the main aircraft engines and systems while on the ground and, if required, in flight. The initial team is led by Initium Aerospace CEO Etienne Boisseau. Safran is a supplier of components to Boeing commercial and defense programs. As part of a 50:50 JV with GE, the company produces the LEAP-1B engine for the 737 MAX. In addition, Boeing and Safran operate the MATIS JV in Morocco to manufacture wiring products for several airframe and engine companies.

Source: Aerospace Technology

Bombardier to Deliver a Handful of Global 7500 Jets in First Half of 2019

Canadian train-and-plane maker Bombardier will deliver a handful of its new flagship Global 7500 business jet to customers during the first half of 2019, with the remaining 10-15 deliveries expected during the back half of the year, chief financial officer John Di Bert told an investor conference on Wednesday.



The company has forecast 15 to 20 deliveries of the long-range planes, which cost \$73 million at list prices, in 2019. Deliveries are expected to rise to 35 to 40 aircraft in 2020. *Source: Reuters*

In the photo, Bombardier employee Francis Masse polishes the sign of Bombardier's Global 7500, the first business jet to have a queen-sized bed and hot shower shown in a media tour in Montreal, Quebec, Canada.

Photo Source: Christine Muschi

INDYCAR to Introduce Next Phase of Cockpit Safety

INDYCAR announced Tuesday the planned introduction of the next step to improve cockpit safety for all drivers in the NTT IndyCar Series. All cars participating in an April 24 open test on the Indianapolis Motor Speedway oval will be fitted with Advanced Frontal Protection (AFP), a titanium piece made by Dallara.

AFP, which stands a little more than 3 inches tall and averages three-quarters of an inch in width, is designed to deflect debris away from the driver. It will be positioned in front of the cockpit, along the chassis centerline. The piece has passed the same strength tests as Dallara's roll hoop. Versions of AFP have been explored through on-track and simulator testing since 2012. New technology made this a practical option now.

NTT IndyCar Series teams received information about the planned AFP adaptation today. All cars entered in the 103rd Indianapolis 500 presented by Gainbridge in May will be fitted with the piece, and they will carry it through the rest of the season. "Safety is a never-ending pursuit, and this is INDYCAR's latest step in the evolution," INDYCAR President Jay Frye said. "There are more details to come about the phases to follow."



A halo-type device was considered, but it cannot be fitted to the current version of INDYCAR's chassis. INDYCAR has done extensive testing with a windscreen developed in conjunction with PPG Aerospace, including on-track sessions at ISM Raceway and Indianapolis Motor Speedway in 2018. Neither driver who tested the windscreen reported problems, but recent testing at PPG's facility in Huntsville, Alabama, proved that work remains before INDYCAR could implement its use. *Source: Indycar.com Photo Source: Chris Beatty Design*

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AT UNITED PERFORMANCE METALS, WE DON'T JUST SELL METAL, WE OFFER FIRSTCUT+® PROCESSING SERVICES TO FURTHER EXTEND OUR COMMITMENT TO YOU, OUR VALUED CUSTOMER.

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**CUT-TO-LENGTH**
Our Cut-to-Length line will uncoil the material, level it, and then cut it to the required length and stack it. We can custom line mark sheets to MILS, AMS and ASTM standards and insert paper or vinyl protection. Our skilled operators are experts at surface inspection, maintaining flatness and performing shape correction.

**SLITTING**
At UPM, our Slitting operations include a 12", 18" turret, 18" light gauge, 24" and 50" slitting options. Our Turret slitter offers reduced set up time, increased line speeds, the ability to pull narrow cuts, and overall operator efficiency. This slitter also features a pressure bar system which reduces camber and an interchangeable rewind drum capable of 18" or 20" ID options.

**EDGING**
Our in-house Edging capabilities include a #1 round or #5 partial or full square skived edge. UPM will minimize camber for customers who require the tightest tolerances. 2R and 3R groove inserts are available as well as traverse wound coils with many times the linear strip footage as would be possible on conventional or "pancake wound" coils.

**SHEARING**
Shearing utilizes our skilled operators to maintain our customers' most exacting size, square and flatness requirements. We offer PVC protection to minimize scratches. Our 36" x 48" sheet easily ships via FedEx for your most pressing needs.

**BAR SAWS**
UPM has 23 Bar Saws in-house with cutting tolerances as low as +/- 0.030" and up to 36" diameter. Long products can be miter cut at one or both ends. Toll cutting capacity is also available, and we cut large quantity, long-term contracts.

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**PRECISION COLD SAW CUTTING**
Precision Cold Saw Cutting virtually eliminates the heat affected zones often incurred as part of the plasma cutting process and minimizes labor time and expenses. Tungsten Carbide tips provide square and parallel edges at standard length and width tolerances flattened and deburred.

**LASER CUTTING**
Laser Cutting solutions bring your cut metal to you more efficiently than ever before. Our Blue Fiber laser offers faster speeds, superior finish and tighter tolerances. Our CO2 laser delivers material that is custom cut to your exact specifications. Reverse engineering, leveling and deburring options reduce the need for managing multiple sources for laser cut parts.

**PLASMA CUTTING**
Our Plasma Cutting capacity for stainless and nickel plate goes up to 5" thick. The plasma cutter utilizes computer numerically controlled (CNC) systems for the highest degree of accuracy. Nesting software helps reduce scrap by maximizing the number of products per sheet or plate. To ensure clean parts, we can shot blast, tumble blast, or grind the plasma cut edge of the cut parts.

**WATER JET CUTTING**
2-Axis, Water Jet Cutting up to a maximum thickness of 8" on virtually any material can be accomplished on our Calypso Hammerhead waterjet.

**LASER GAUGE MEASUREMENT**
Our Laser Gauge Measurement process involves a high degree of accuracy and repeatability you can rely on. Flatness, width and thickness measurements are taken through the use of discrete laser line sensors and lateral micrometers to ensure the precise gauge measurement of materials meets your exact specifications.

VALUE-ADDED SERVICES
United Performance Metals provides in-house Leveling capabilities. Our skilled operators are experts at surface inspection, maintaining flatness and performing shape correction. Our Arku EcoMaster flattens parts and prepares them for subsequent processing. We can custom line mark sheet to MILS, AMS and ASTM standards. Vinyl or paper inserts are available for added protection. Finishing options are available through our TimeSaver® which will Deburr edges, resulting in high-quality, finished parts. United Performance Metals employs industry leading Packaging solutions to protect your order. Our crates and skids are produced from high quality Hardwood and Southern Yellow Pine. In addition to several standard size skids and crates, we are also equipped to build custom sizes to meet your specific requirements. Ocean, Air and UPS packaging is also available.

QUALITY CERTIFICATIONS: AS9100, ISO9001:2015, ISO 13485, GE Aviation S1 (S1000) Pratt & Whitney LSC
LASER CUTTING APPROVALS: NADCAP A57116, GE S422

Outokumpu, ATI, NAS Price Increases Announced

Outokumpu Stainless bar will be increasing prices between 3% - 5% on 303, 304/L, 316/L, 416 and 17-4 round bar sizes 5" and below effective with shipments acknowledged for delivery week March 3, 2019 and later.

Allegheny Technologies Inc (ATI), flat-rolled products division will increase base prices by 5-10% for nickel-based alloys in sheet and plate form. The flat-rolled increase, the first since June 2018, applies to orders acknowledged after February 4, 2019.

North American Stainless (NAS) will increase base prices for some stainless long and flat steel products effective with shipments on March 1.

Prices for 303, 304 and 304L stainless bar and 400-series stainless bar will increase by \$60 per ton, for 316L stainless bar by \$80 per ton, and for 17Ni4Cr bar are \$100 per ton. Stainless discrete plate will increase by \$80-\$120 per ton, 304/304L increasing by \$80 per ton and 316L plate by \$120 per ton.



Surcharge Totals December 2018 - May 2019

	Dec	Jan	Feb	Mar	Apr	May
15-5	0.5139	0.4790	0.4682	0.4865	*	*
15-7	0.7487	0.7039	0.6837	0.7158	*	*
17-4	0.5107	0.4767	0.4647	0.4802	*	*
17-7	0.5873	0.5321	0.5292	0.5701	*	*
201	0.4968	0.4543	0.4490	0.4712	*	*
301 7.0%	0.5825	0.5277	0.5246	0.5643	*	*
302/304/304L	0.6303	0.5697	0.5678	0.6142	*	*
304-8.5%	0.6494	0.5867	0.5854	0.6351	*	*
305	0.7884	0.7097	0.7123	0.7856	*	*
309	0.8215	0.7378	0.7410	0.8146	*	*
310	1.1087	0.9920	1.0030	1.1236	*	*
316/316L	0.9018	0.8389	0.8228	0.8784	*	*
316LS/316LVM	1.1400	1.1100	1.0700	*	*	*
317L	1.0660	0.9976	0.9748	1.0354	*	*
321	0.6588	0.5953	0.5945	0.6475	*	*
347	0.9684	0.9049	0.9041	0.9572	*	*
409/409 Mod	0.2547	0.2392	0.2275	0.2197	*	*
410/410S	0.2621	0.2456	0.2340	0.2263	*	*
430	0.3047	0.2816	0.2707	0.2633	*	*
434	0.3849	0.3631	0.3461	0.3373	*	*
439	0.3138	0.2893	0.2785	0.2713	*	*
440A	0.3047	0.2816	0.2707	0.2633	*	*
2205	0.8882	0.8389	0.8105	0.8331	*	*
263	9.7101	9.0419	9.0396	8.7744	8.1914	6.6255
276	5.6731	5.3623	5.2863	4.9542	4.8268	4.8402
A286	1.5740	1.4268	1.4048	1.2671	1.1942	1.2554
330	1.9460	1.7418	1.7080	1.5083	1.4042	1.5145
400	3.3883	3.0746	3.0360	2.6645	2.5065	2.6933
455	0.6200	0.6300	0.6000	*	*	*
465	0.7700	0.7700	0.7400	*	*	*
600	3.7080	3.3263	3.2486	2.8281	2.6425	2.8836
601	3.2436	2.9116	2.8487	2.5046	2.3368	2.5331
617	7.6141	7.0881	7.0476	6.7235	6.3381	5.5608
625	5.9070	5.5805	5.5100	5.1717	5.0201	5.1199
718	5.6263	5.3430	5.2874	4.9963	4.8583	4.9881
X-750	4.2708	3.8974	3.8219	3.4131	3.2307	3.4651
825	2.6159	2.3896	2.3497	2.1291	2.0167	2.1033
HX	3.7980	3.5220	3.4674	3.2009	3.0669	3.0802
188	15.0800	14.2300	10.4500	*	*	*
CCM	24.9800	21.9400	14.7200	*	*	*
L-605	18.3100	17.3300	12.4900	*	*	*

*Surcharge currently not available