

ANNEX  
BETWEEN  
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
LYNDON B. JOHNSON SPACE CENTER  
AND THE PROCTER & GAMBLE COMPANY  
UNDER SPACE ACT UMBRELLA AGREEMENT  
NO. 31321, DATED \_\_\_\_\_ (ANNEX NUMBER ).

ARTICLE 1. PURPOSE

The purpose of this Annex shall be to research effective cleaning methods for clothing that can advance the state-of-the-art in environmentally-friendly, low-resource-use cleaning. This includes experimental or existing formulations of effective laundry detergents for resource-constrained environments. The detergent formulations should meet the jointly established NASA and Procter and Gamble (P&G) goals, including deionized water use, low toxicity, and compatibility with biological water processing systems. P&G will formulate, and NASA will test, one or more detergents and potential systems for cleaning fabric, and NASA will provide technical results for use by both parties. NASA has extensive experience with water reclamation and closed loop air systems in resource constrained environments, and P&G has extensive experience in detergent formulation for many use cases. Together the Parties will also investigate the best existing products, as well as innovative new products and approaches, to improve cleaning of textiles in resource-constrained environments such as outer space and water stressed regions of the Earth. All releasable, non-proprietary results of this collaboration will be shared with the public, in support of NASA's mission to ensure wide dissemination of its activities and to provide maximum benefit to the public at large. There is no guarantee that any usable data or final products will result from this research effort.

The collaboration will contribute to NASA's Strategic Goal 2: "Extend human presence deeper into space and to the moon for sustainable long-term exploration and utilization." Missions that support humans in space or on a planetary surface for longer durations will benefit from being able to wash clothing and other items in a sustainable fashion. This collaboration will also contribute to P&G's 2030 corporate sustainability goals by promoting water savings among its 5 billion customers. The research conducted under this collaboration has the potential to lead to new products that meet the needs of P&G customers while also helping to better protect the planet and its resources. The data, detergent, and other innovations developed under this collaboration, if any, will help advance both NASA and P&G goals and missions and will provide additional benefits to humanity.

The legal authority for this Annex, consistent with the Umbrella Agreement, is in accordance with the National Aeronautics and Space Act (51 U.S.C. § 20113(e)).

## ARTICLE 2. RESPONSIBILITIES

A. NASA JSC will use reasonable efforts to:

1. Provide unique space exploration knowledge and consultation for various surfaces and softgoods materials (including fabric types), closed loop “zero waste” systems, and insights into human physiology that can effect cleaning demand in space.
2. Perform relevant laboratory tests on laundry detergent formulations delivered by P&G, including possible testing conducted in space, as well as other cleaning agents that are commercially available and report results to P&G.
3. Share research results to-date related to fabric cleaning, sanitation, and habitation in resource-constrained environments, and will explore non-traditional approaches (e.g. no water plus vacuum) for optimal and evolving long-term on- and off-planet cleaning solutions and share conclusions with P&G.
4. Publish together with Partner the releasable, non-proprietary results of this Annex to provide maximum benefit to the public and the environment.

B. Partner will use reasonable efforts to:

1. Develop a laundry detergent formulation/system optimized for de-ionized water, low wash water use, and low toxicity requirements.
2. Explore non-traditional approaches (e.g. no water plus vacuum) for optimal and evolving long-term on- and off-planet cleaning solutions and share conclusions with NASA.
3. Identify commercially available, modified commercially available, and/or innovative products/systems that can meet habitation needs in outer space or other resource-constrained environments.
4. Publish together with NASA the releasable, non-proprietary results of this Annex to provide maximum benefit to the public and the environment.

## ARTICLE 3. SCHEDULE AND MILESTONES

The planned major milestones for the activities of this Annex defined in the "Responsibilities" Article are as follows:

NASA will provide goals and constraints for space laundry detergent to P&G along with an overview of past experience with off-Earth regenerative life support systems and methods of cleaning fabrics, surfaces and people. [NASA Responsibility 1]	One (1) month after the Effective Date
P&G will provide sample quantities of laundry detergent(s) and potential system(s) that meets NASA and P&G sustainability goals. [P&G Responsibility 1]	Eight (8) months after the Effective Date
NASA will provide technical test results from evaluation of the P&G provided detergent used in deionized water wash cycles and	Fourteen (14) months after the Effective Date

comparison to other commercially available cleaning agents. [NASA Responsibility 2]

P&G and NASA will co-author a written report comparing alternative clothes cleaning methods to the effectiveness and efficiency of the previous P&G detergent/NASA deionized water test. [NASA Responsibility 3, P&G Responsibilities 2 and 3]

Twenty-two (22) months after the Effective Date

P&G and NASA will co-author a final summary report on the results of this Annex to share resource-saving advances with the public. [NASA Responsibility 4, P&G Responsibility 4]

Twenty-four (24) months after the Effective Date

#### ARTICLE 4. FINANCIAL OBLIGATIONS

There will be no transfer of funds between the Parties under this Agreement and each Party will fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, (31 U.S.C. § 1341).

#### ARTICLE 5. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

A. Data produced under this Annex which is subject to paragraph C. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement will be protected for the period of one year.

B. Under paragraph H. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement, Disclosing Party provides the following Data to Receiving Party. The lists below may not be comprehensive, are subject to change, and do not supersede any restrictive notice on the Data provided.

1. Background Data: The Disclosing Party's Background Data, if any, will be identified in a separate technical document.
2. Third Party Proprietary Data: The Disclosing Party's Third Party Proprietary Data, if any, will be identified in a separate technical document.
3. Controlled Government Data: The Disclosing Party's Controlled Government Data, if any, will be identified in a separate technical document.
4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement: None

#### ARTICLE 6. TERM OF ANNEX

This Annex becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or two years from the Effective Date, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

ARTICLE 7. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Annex by providing thirty (30) calendar days written notice to the other Party.

ARTICLE 8. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Annex.

Management Points of Contact

NASA Lyndon B. Johnson Space Center  
Victoriano Untalan  
Chief, Design and Analysis Branch  
Mail Stop: EC2  
2101 NASA Parkway  
Houston, Texas 77058  
Phone: 281-483-9145  
victoriano.z.untalan@nasa.gov

The Procter & Gamble Company  
William Scheper  
Vice President R&D, P&G Fabric Care  
1 P&G Plaza  
Cincinnati, OH 45202-3315  
Phone: (513) 627-0260  
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Technical Points of Contact

NASA Lyndon B. Johnson Space Center  
Michael Ewert  
Life Support Systems Analyst  
Mail Suite: EC2  
2101 NASA Parkway  
Houston, Texas 77058  
Phone: 281-483-9134  
michael.k.ewert@nasa.gov

The Procter & Gamble Company  
Mary Begovic Johnson  
Scientific Communications Director  
1 P&G Plaza  
Cincinnati, OH 45202-3315  
Phone: (513) 602-4252  
Johnson.mb.3@pg.com

ARTICLE 9. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Modification of an Annex does not modify the terms of the Umbrella Agreement.

ARTICLE 10. SIGNATORY AUTHORITY

The signatories to this Annex covenant and warrant that they have authority to execute this

Annex. By signing below, the undersigned agrees to the above terms and conditions.

NATIONAL AERONAUTICS AND  
SPACE ADMINISTRATION  
LYNDON B. JOHNSON SPACE  
CENTER

THE PROCTER & GAMBLE  
COMPANY

BY: \_\_\_\_\_  
Kevin Window  
Director, Engineering

BY  \_\_\_\_\_  
Agnieszka Orlik  
Senior Vice President, P&G North  
America Fabric Care

DATE: \_\_\_\_\_

DATE: August 3, 2020 \_\_\_\_\_