

|   |   |                                       |                   |
|---|---|---------------------------------------|-------------------|
| <b>Fiscal Year:</b>                               | FY 2009   | <b>Task Last Updated:</b>             | FY 02/17/2010     |
| <b>PI Name:</b>                                   | Johnston, Smith M.D.  |                                       |                   |
| <b>Project Title:</b>                             | Develop and Implement Operational Ground Testing Protocols to Individualize Astronaut Sleep Medication Efficacy and Individual Effects  |                                       |                   |
| <b>Division Name:</b>                             | Human Research  |                                       |                   |
| <b>Program/Discipline:</b>                        | HUMAN RESEARCH  |                                       |                   |
| <b>Program/Discipline--Element/Subdiscipline:</b> | HUMAN RESEARCH--Behavior and performance  |                                       |                   |
| <b>Joint Agency Name:</b>                         |   | <b>TechPort:</b>                      | Yes               |
| <b>Human Research Program Elements:</b>           | (1) <b>BHP</b> :Behavioral Health & Performance (archival in 2017)  |                                       |                   |
| <b>Human Research Program Risks:</b>              | (1) <b>BMed</b> :Risk of Adverse Cognitive or Behavioral Conditions and Psychiatric Disorders   |                                       |                   |
| <b>Space Biology Element:</b>                     | None  |                                       |                   |
| <b>Space Biology Cross-Element Discipline:</b>    | None  |                                       |                   |
| <b>Space Biology Special Category:</b>            | None  |                                       |                   |
| <b>PI Email:</b>                                  | <a href="mailto:smith.l.johnston@nasa.gov">smith.l.johnston@nasa.gov</a>  | <b>Fax:</b>                           | FY                |
| <b>PI Organization Type:</b>                      | NASA CENTER   | <b>Phone:</b>                         | (281) 483-0453    |
| <b>Organization Name:</b>                         | NASA Johnson Space Center   |                                       |                   |
| <b>PI Address 1:</b>                              | Flight Surgeon  |                                       |                   |
| <b>PI Address 2:</b>                              | Space Medicine  |                                       |                   |
| <b>PI Web Page:</b>                               |   |                                       |                   |
| <b>City:</b>                                      | Houston   | <b>State:</b>                         | TX                |
| <b>Zip Code:</b>                                  | 77058   | <b>Congressional District:</b>        | 22                |
| <b>Comments:</b>                                  |   |                                       |                   |
| <b>Project Type:</b>                              | GROUND  | <b>Solicitation / Funding Source:</b> | Directed Research |
| <b>Start Date:</b>                                | 03/18/2009  | <b>End Date:</b>                      | 01/21/2010        |
| <b>No. of Post Docs:</b>                          |   | <b>No. of PhD Degrees:</b>            |                   |
| <b>No. of PhD Candidates:</b>                     |   | <b>No. of Master' Degrees:</b>        |                   |
| <b>No. of Master's Candidates:</b>                |   | <b>No. of Bachelor's Degrees:</b>     |                   |
| <b>No. of Bachelor's Candidates:</b>              |   | <b>Monitoring Center:</b>             | NASA JSC          |
| <b>Contact Monitor:</b>                           | Shea, Camile  | <b>Contact Phone:</b>                 | 281-244-2017      |
| <b>Contact Email:</b>                             | <a href="mailto:shea@dsls.usra.edu">shea@dsls.usra.edu</a>  |                                       |                   |
| <b>Flight Program:</b>                            |   |                                       |                   |
| <b>Flight Assignment:</b>                         |   |                                       |                   |
| <b>Key Personnel Changes/Previous PI:</b>         |   |                                       |                   |
| <b>COI Name (Institution):</b>                    | Dinges, David ( University of Pennsylvania School of Medicine )<br>Barger, Laura ( Harvard Medical School )<br>Czeisler, Chuck ( Harvard Medical School )<br>Beven, Gary ( NASA Johnson Space Center )<br>Sipes, Walter ( NASA Johnson Space Center ) |                                       |                   |
| <b>Grant/Contract No.:</b>                        | Directed Research   |                                       |                   |
| <b>Performance Goal No.:</b>                      |   |                                       |                   |
| <b>Performance Goal Text:</b>                     |   |                                       |                   |

|   |   |
|---|---|
| <b>Task Description:</b>                    | The proposed pilot study provides an opportunity to test the feasibility of a protocol to use with astronauts and other NASA personnel (e.g., flight surgeons, flight directors and flight controllers) to assess potential carry over effects from sleep medications used during spaceflight operations (including overseas training periods), and following an abrupt awakening from sleep. This information is critically needed to establish optimal and individually tailored usage of sleep medications by key personnel relative to operational demands. The proposed protocol is a feasibility study that will determine the percentage change in sleep inertia from using a medication compared to normal sleep inertia. Subject participants will each choose a hypnotic as their preferred sleep aid; once an appropriate medication is identified, each subject volunteer, in a controlled setting in the Crew Quarters Facility at JSC, will undergo several awakenings during two nights of sleep (one night with the medication, another night with a placebo). Cognitive performance, using a set of three measures, will be evaluated at each awakening. This process will occur under the direction of the study Principal Investigator, a NASA Flight Surgeon. |
| <b>Rationale for HRP Directed Research:</b> |   |
| <b>Research Impact/Earth Benefits:</b>      |   |
| <b>Task Progress:</b>                       | New project for FY2009.<br>[Ed. note: project added to Task Book in 02/2010 per JSC information]  |
| <b>Bibliography Type:</b>                   | Description: (Last Updated: 04/09/2019)   |